General Information

NMOCD District:	District 2 – Artesia	Incident ID:	nAB1911254304
Landowner:	Bureau of Land Management	RP Reference:	2RP-5365
Client:	Devon Energy Production Company, LP	Site Location:	Todd 23 A Federal #029
Date:	April 04, 2025	Project #:	21E-02816-15
Client Contact:	Jim Riley	Phone #:	575.689.7597
Vertex PM:	Kent Stallings	Phone #:	346.814.1413

Objective

The objective of this Environmental Site Remediation Work Plan is to identify areas of exceedance for constituents of concern found during spill assessment and site characterization activities, and propose appropriate remediation techniques to address the open release at the Todd 23 A Federal #029 site. This incident occurred when a HDPE flowline ruptured, resulting in the release of approximately 0.2 barrels of produced water into the undisturbed pastureland. The pastureland area located approximately 0.3 mi south/southeast of the lease, next to the neighboring well pad (Todd 23 H Federal #006, now reclaimed) was identified and delineated as an area of environmental concern. An aerial photograph of the site with characterization locations and approximate area of release impact is presented on Figure 1 (Attachment 1). Closure criteria have been selected as per New Mexico Administrative Code (NMAC) 19.15.29.12 and are presented below.

Table 1. Closure Criteria for Soils to Remediation & Reclamation Standards

Minimum depth below any point within the horizontal boundary of the release to groundwater less than 10,000 mg/l TDS	Constituent	Limit
0-4 feet bgs (19.15.29.13)	Chloride	600 mg/kg
	TPH (GRO+DRO+MRO)	100 mg/kg
DTGW > 100 feet (19.15.29.12)	Chloride	20,000 mg/kg
	TPH (GRO+DRO+MRO)	2,500 mg/kg
	GRO+DRO	1,000 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

bgs – below ground surface
DTGW – depth to groundwater
TPH – total petroleum hydrocarbons, GRO – gas range organics, DRO – diesel range organics, MRO – motor oil range organics
BTEX – benzene, toluene, ethylbenzene and xylenes

Site Assessment/Characterization

Site characterization was completed on July 9, 2023. A total of 13 sample points (boreholes) were established for field screening, achieving horizontal delineation at six points around the excavation area. In total, 38 samples were submitted to Eurofins Environmental Testing South Central, formerly Hall Environmental Analysis Laboratory for analysis. The characterization sampling locations are presented in Figure 1 (Attachment 1). Laboratory analyses were compared to the above noted closure criteria and the results from the characterization activity are presented in Table 2 (Attachment 2). Sampling at BH23-05 hit refusal with various equipment at 16 feet below ground surface (bgs). For safety concerns due to the site's location approximately 55 feet west of a high use local road, exploration vertically was concluded and therefore vertical delineation was not completed. Daily field reports and laboratory data reports are included in Attachments 3 and 4, respectively. All applicable research as it pertains to closure criteria selection is presented in Attachment 5. Exceedances to reclamation criteria are identified in the table in bold with green background.

Variance Request

Due to ground water being greater than 105 feet bgs and safety concerns due to proximity to the road, we respectfully request a variance to the vertical delineation where the collection of samples exceed delineation criteria.

On December 14, 2023, a monitoring well was drilled 0.3 miles north of Todd 23 A Federal #029 and registered with the New Mexico Office of the State Engineer. The well was confirmed dry at 105' and confirms the above noted closure criteria. Drilling and plugging logs and associated documents are included with all other applicable research as it pertains to closure criteria selection is presented in Attachment 5.

The variance request is protective of groundwater as the depth-to-water is greater than 105-feet and the compacted lithology at depth will continue to retard downward vertical migration of chlorides and hydrocarbons (chemicals of concern).

Proposed Remedial Activities

Vertex Resource Services Inc. (Vertex) proposes areas with identified contaminant concentrations above closure criteria be remediated through excavation. Laboratory results from the site assessment/characterization have been referenced to estimate both the vertical and horizontal limits of the impacts and the volume of soil to be removed. Soil will be excavated to the extents of the known contamination or in 2-foot increments, whichever is less. Field screening will be utilized to confirm removal of contaminated soil below the applicable closure criteria. Contaminated soils will be stored on a 30mil liner prior to disposal at an approved facility. Once excavation is complete, confirmatory samples will be collected and laboratory analysis completed to confirm closure criteria guidelines are met. Excavations will be backfilled with clean soil sourced locally, placed to match the site's existing grade and prevent ponding of water or erosion, and covered with a layer of topsoil or other suitable material to establish vegetation at the site per 19.15.29.13 NMAC.

nAB1911254304, 2RP-5365 – Pasture Release

Remediation should include excavation of the entire horizontal release footprint of 1,826 square feet to a depth of 4.1 feet bgs to meet New Mexico Oil Conservation Division (NMOCD) Closure Criteria. The proposed excavation footprint, corresponding to the spill extent, is presented on Figure 1 (Attachment 1). A Vertex environmental technician will be on-site during final excavation activities to conduct additional field screening to confirm removal of contaminated soil to below the applicable closure criteria as shown in Table 1. Remediated areas will be field screened utilizing a five-point composite sampling method, obtaining both base and wall samples, in correspondence with paragraph 1 of Subsection D of 19.15.29.12 NMAC, to confirm removal of contaminated soil below the applicable closure criteria. Approximately **350 cubic yards** of contaminated soils are projected to be removed during excavation for remediation and reclamation purposes.

The confirmatory samples will be Confirmation samples will be collected as per New Mexico Oil Conservation Division guidance and submitted for laboratory analysis of all applicable parameters. A Trimble global positioning system unit, or equivalent, will be used to map the approximate center of each of the five-point composite sample. Laboratory analyses will include Method 300.0 for chlorides, Method 8021B for volatile organics, including benzene and BTEX, and EPA Method 8015 for TPH, including MRO, DRO and GRO.

Timeline for Completion

Remediation activities are projected to be completed approximately 90 days following NMOCD approval of this workplan.

Should you have any questions or concerns, please do not hesitate to contact Kent Stallings at 346.814.1413 or KStallings@vertex.ca.

Stephanie McCarty

Stephanie McCarty, B.Sc.
ENVIRONMENTAL SPECIALIST, REPORTING

April 04, 2025
Date

Kent Stallings

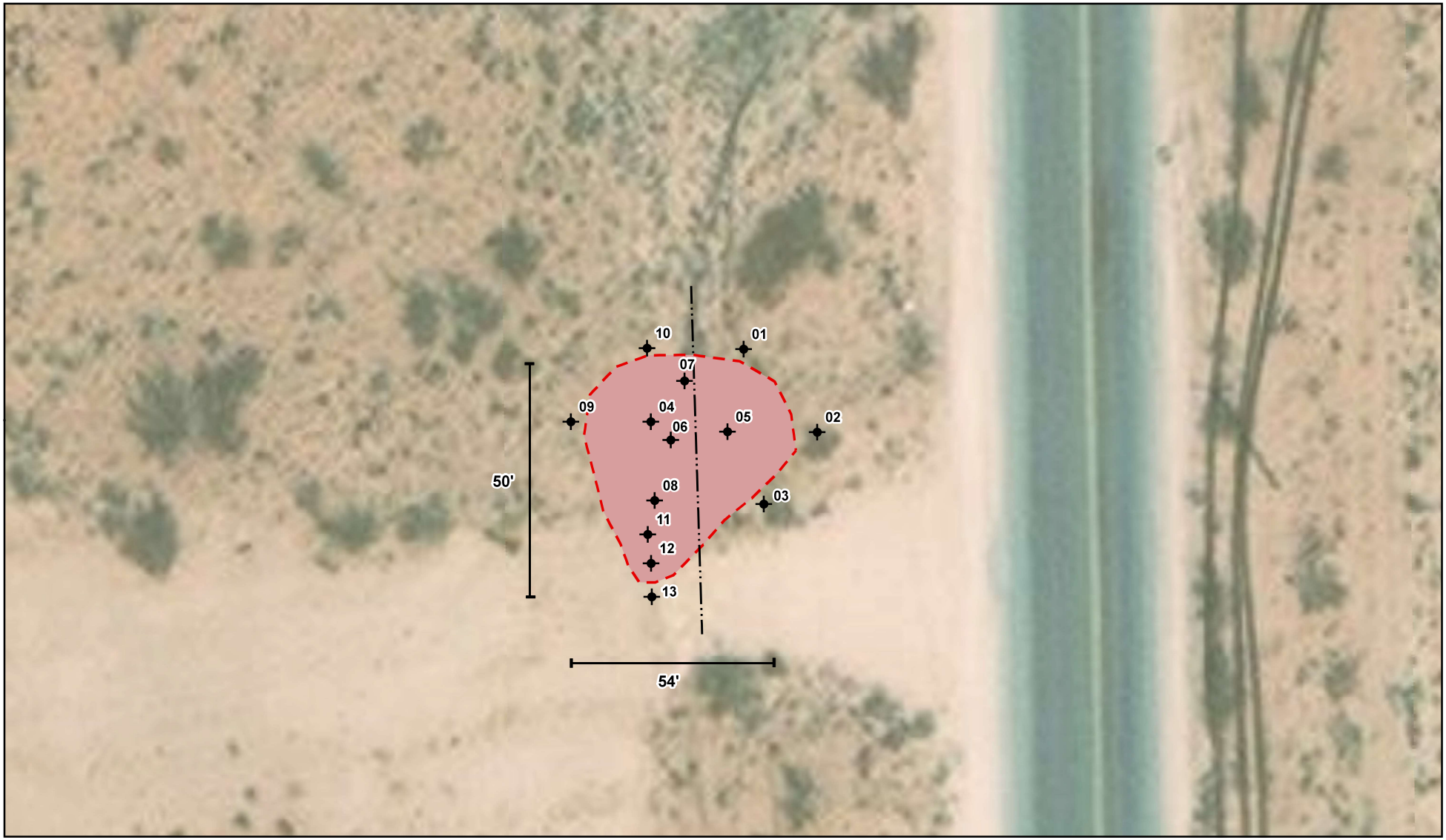
Kent Stallings, P.G.
PROJECT MANAGER, REPORT REVIEW

April 04, 2025
Date

Attachments

Attachment 1. Characterization Sampling Site Schematic
Attachment 2. Field Screening and Laboratory Results Table
Attachment 3. Daily Field Reports with Photographs
Attachment 4. Laboratory Data Reports with Chain of Custody Forms
Attachment 5. Closure Criteria Research

ATTACHMENT 1



Borehole (Prefixed by "BH23-") — Pipeline (Underground) — Approximate Release Area (~1,826 sq.ft.)

VERTEX

0 20 40 Ft.

Map Center:
Lat/Long: 32.290912, -103.740984

NAD 1983 UTM Zone 13N
Date: Jul 17/23

N

Characterization Sampling Site Schematic
Todd 23 A Federal #029

FIGURE:
1

devon

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

Note: Georeferenced image from ESRI, 2022. Site features from GPS, Vertex Professional Services Ltd., 2023.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Devon Energy Corporation\2021\21E-02816\015- Todd 23 A Federal 29\Figure 1 Characterization Schematic Todd 23 A Federal

ATTACHMENT 2

Table 2. Initial Characterization Laboratory Results - Depth to Groundwater >100 ft bgs
Devon Energy Production Company LP
Harvard Divestiture Program\Todd 23 A Federal 29
NM OCD Tracking #: 2RP-5365, nAB1911254304
21E-02816-15
Lab Reports: 2302931, 2303965 and 2307358

Table 2. Characterization Sampled Field Screen and Laboratory Results - Depth to groundwater - Depth >100 ft. bgs										
Sample Description			Petroleum Hydrocarbons							Inorganic
Sample ID	Depth (ft)	Date	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH23-01	0	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-02	0	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-03	0	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	ND
BH23-04	0	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	**600**
	4	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	3700
	6	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	4000
BH23-05	4	February 20, 2023	ND	ND	ND	**830**	**500**	**830**	**1330**	**2200**
	6	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	5600
	7	February 20, 2023	ND	ND	ND	59	ND	59	59	3000
	8	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	4900
	12	March 16, 2023	ND	ND	ND	22	ND	22	22	7600
	13	March 16, 2023	ND	ND	ND	32	ND	32	32	9600
	14	March 16, 2023	ND	ND	ND	150	140	150	290	5900
	15	March 16, 2023	ND	ND	ND	98	140	98	238	4600
	16	March 16, 2023	ND	ND	ND	210	390	210	600	5300
BH23-06	0	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	**650**
	4	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	**7300**
	5	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	1900
BH23-07	0	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	530
	4	February 20, 2023	ND	ND	ND	ND	ND	ND	ND	**4900**
BH23-08	0	July 9, 2023	ND	ND	ND	ND	ND	ND	ND	66
	2	July 9, 2023	ND	ND	ND	ND	ND	ND	ND	**1000**
BH23-09	0	July 9, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	July 9, 2023	ND	ND	ND	ND	ND	ND	ND	91
BH23-10	0	July 9, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	July 9, 2023	ND	ND	ND	ND	ND	ND	ND	230
BH23-11	0	July 9, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	July 9, 2023	ND	ND	ND	ND	ND	ND	ND	**800**
BH23-12	0	July 9, 2023	ND	ND	ND	160	230	160	**390**	170
	2	July 9, 2023	ND	ND	ND	15	ND	15	15	67
BH23-13	0	July 9, 2023	ND	ND	ND	ND	ND	ND	ND	ND
	2	July 9, 2023	ND	ND	ND	ND	ND	ND	ND	ND

ND - Not Detected at the Reporting Limit
Bold and green shaded indicates exceedance outside of NMOCD Reclamation Criteria (off-pad)

ATTACHMENT 3

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	2/20/2023
Site Location Name:	Todd 23 A Federal #029	Report Run Date:	2/22/2023 1:16 AM
Client Contact Name:	Wes Matthews	API #:	30-015-31881
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	2/20/2023 9:35 AM
Departed Site	2/20/2023 6:00 PM

Field Notes

17:16 Arrived on site and filled out JSA
Had Halo crew sign JSA

17:16 Today's focus was to continue site delineation with horizontal and vertical sample points

17:17 At 10:00 I had Halo crew began potholing boreholes at various depths ranging from 0'-8' depths

17:17 21 samples were collected today

17:18 All samples collected were field screened on EC meter

17:19 18 samples were field screened on Petroflag unit

17:21 Upon arrival, an underground gas line was being exposed by hydro vac truck in 3 different locations on site

17:31 Samples are jarred and ready for lab

Next Steps & Recommendations

1 Continue vertical Delineation

Daily Site Visit Report

Site Photos

Viewing Direction: North

BH23-04 at 0’ and 2’
Facing North

Viewing Direction: North

BH23-06 at 0’-5’
Facing north

Viewing Direction: North

BH23-03 at 0-2’
Facing north

Viewing Direction: North

BH23-02 at 0-2’
Facing North

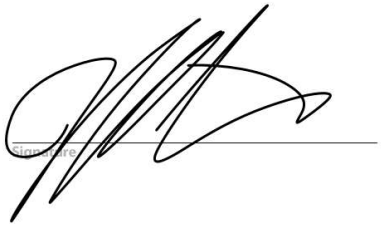
Daily Site Visit Report

Viewing Direction: North	**Viewing Direction**: South
	
BH23-01 at 0-2’ Facing North	BH23-05 at 4’-8’ facing South
Viewing Direction: North	**Viewing Direction**: South
	
BH23-07 at 0’-4’ Facing north	Overview of site Facing South

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Jacob Reta

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	3/15/2023
Site Location Name:	Todd 23 A Federal #029	Report Run Date:	3/15/2023 7:57 PM
Client Contact Name:	Wes Matthews	API #:	30-015-31881
Client Contact Phone #:	(575) 748-0176		
Unique Project ID	-Todd 23 A Federal #029	Project Owner:	Amanda Davis
Project Reference #	Stuffing Box	Project Manager:	Dennis Williams

Summary of Times

Arrived at Site	3/15/2023 8:20 AM
Departed Site	3/15/2023 2:00 PM

Field Notes

13:49 Arrived on site and filled out safety documents. 08:20
Met with Devon contractors, discussing work plan for the day and safety and signing safety documents. 08:45

13:49 Excavated borehole BH22-05 to 10ft depth at (32.290910, -103.74099) at 9:03.
Collected sample BH22-05 10’ at 9:12.
Field screened for chlorides, 9:30.

13:50 Excavated borehole BH22-05 to 12ft depth at (32.290910, -103.74099) at 10:00.
Collected sample BH22-05 12’ at 10:04.
Field screened for chlorides, 10:30.

13:50 Excavated borehole BH22-05 to 12ft 4 inches depth at (32.290910, -103.74099) at 11:15 with difficulty from stony layers in lithology.
Excavated borehole BH22-05 to 12ft inches depth at (32.290910, -103.74099) at 11:58.
Collected sample BH22-05 12.5’ at 12:00.
Field screened for chlorides, 12:30.

13:51 Coordinates with crew to obtain equipment for achieving greater depth following day and fencing off borehole 13:30

Completed Daily Field Report and Daily Soil Sampling. 14:00

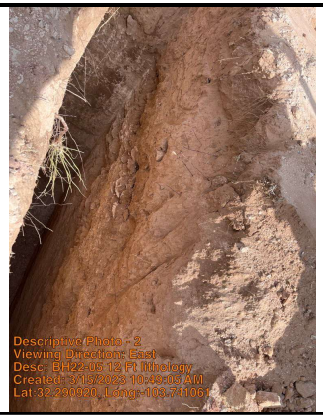
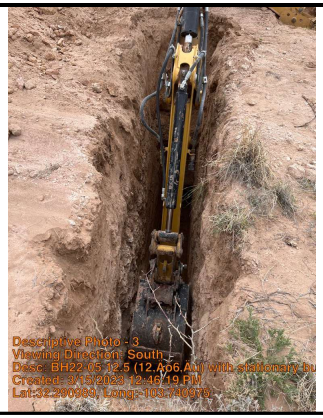
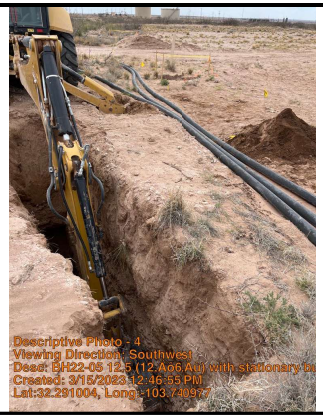
Daily Site Visit Report

Next Steps & Recommendations

1 Continue with delineation on 3/16/23

Daily Site Visit Report

Site Photos

Viewing Direction: East	**Viewing Direction**: East
	
BH22-05 10’ & 12’ borehole	BH22-05 12 Ft lithology
Viewing Direction: South	**Viewing Direction**: Southwest
	
BH22-05 12.5 (12’6”) with stationary bucket in borehole	BH22-05 12.5 (12’6”) with stationary bucket in borehole

Daily Site Visit Report

Viewing Direction: Northeast

Fenced off borehole

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Stephanie McCartyM

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	3/16/2023
Site Location Name:	Todd 23 A Federal #029	Report Run Date:	3/16/2023 10:38 PM
Client Contact Name:	Wes Matthews	API #:	30-015-31881
Client Contact Phone #:	(575) 748-0176		
Unique Project ID	-Todd 23 A Federal #029	Project Owner:	Amanda Davis
Project Reference #	Stuffing Box	Project Manager:	Dennis Williams

Summary of Times

Arrived at Site	3/16/2023 8:00 AM
Departed Site	3/16/2023 4:45 PM

Field Notes

8:11 Arrived on site and filled out safety documents.

16:27 Met with Halo contractors, discussing work plan for the day and safety and signing safety documents.
Backhoe and equipment for reaching greater depth arrived and unloaded. 09:00

15:33 Excavated borehole BH22-05 to 12ft depth at (32.290910, -103.74099) at 10:00 for characterization.
Collected sample BH22-05 12’ at 11:00.
Field screened for chlorides, 11:10.
Difficulty reaching depth from hard sandstone layer in lithology.

Excavated borehole BH22-05 to 13ft depth at 11:14.
Collected sample BH22-05 13’ at 11:15.
Field screened for chlorides, 11:30.

Daily Site Visit Report

15:35 Excavated borehole BH22-05 to 14ft depth at 13:00
Collected sample BH22-05 14' at 13:13.
Field screened for chlorides, 13:30.

Excavated borehole BH22-05 to 15ft depth at at 13:28.
Collected sample BH22-05 15' at 13:30.
Field screened for chlorides, 13:45.

15:35 Experienced issues with hammer attachment to backhoe at 13:45.

15:41 Excavated borehole BH22-05 to 16 ft inches depth at 14:30.
Collected sample BH22-05 16' at 14:35.
Field screened for chlorides, 14:45.

16:21 Communicated with project manager 15:20. Obtained updates and coordinated with with excavation crew and planned for steps moving forwards 15:45

Prepared samples for lab 16:15.

16:32 Completed daily field report and daily soil sampling report 16:30.

Note: Borehole depth experienced changes from previous day with overnight conditions and initial hammering potentially filling in borehole.

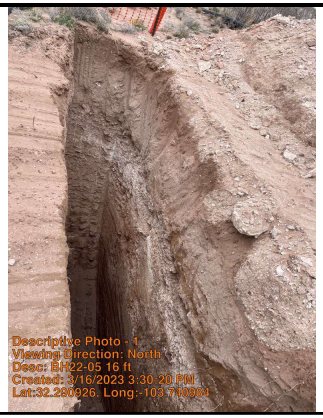
Next Steps & Recommendations

1 Continue excavation of borehole

Daily Site Visit Report

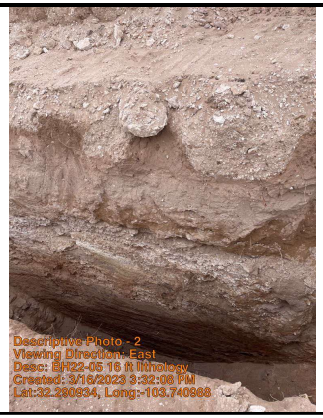
Site Photos

Viewing Direction: North



BH22-05 16 ft

Viewing Direction: East



BH22-05 16 ft lithology

Viewing Direction: North

BH22-05 16 ft borehole with fencing

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Stephanie McCartyM

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	7/9/2023
Site Location Name:	Todd 23 A Federal #029	Report Run Date:	7/9/2023 7:27 PM
Client Contact Name:	Dale Woodall	API #:	30-015-31881
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	7/9/2023 7:30 AM
Departed Site	7/9/2023 11:30 AM

Field Notes

7:32 On site. JSAs completed, locating sampling area and performing secondary sweep with magnetic locator

8:18 Beginning field screens of BH23-08 through 10 at 0 and 2’

9:31 Stepped out BH23-08 to BH23-11

Next Steps & Recommendations

1 Proceed to remediation

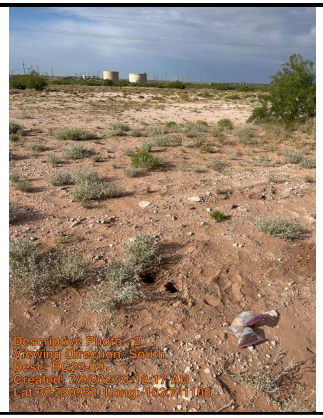
Daily Site Visit Report

Site Photos

Viewing Direction: East

BH23-10

Viewing Direction: South

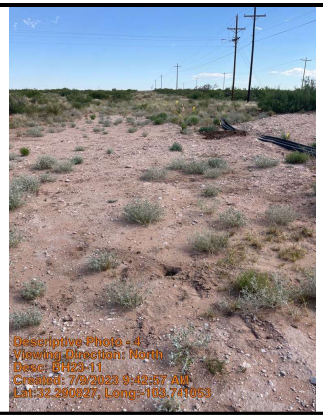


BG23-09

Viewing Direction: East

BH23-08

Viewing Direction: North



BH23-11

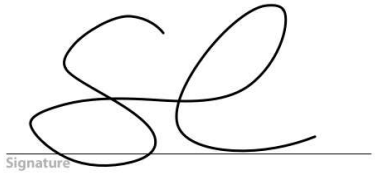
Daily Site Visit Report

Viewing Direction: West	**Viewing Direction**: South
	
BH23-12	BH23-13

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Sally Carttar

Signature: 

ATTACHMENT 4

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 02, 2023

Kent Stallings

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

RE: Todd 23 A Federal 29 OrderNo.: 2302931

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 21 sample(s) on 2/22/2023 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-001 **Matrix:** SOIL

Client Sample ID: BH23-01 0'
Collection Date: 2/20/2023 10:00:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	2/24/2023 4:04:52 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/24/2023 4:04:52 PM
Surr: DNOP	120	69-147		%Rec	1	2/24/2023 4:04:52 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/23/2023 10:40:00 PM
Surr: BFB	105	37.7-212		%Rec	1	2/23/2023 10:40:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/27/2023 4:05:18 PM
Toluene	ND	0.048		mg/Kg	1	2/27/2023 4:05:18 PM
Ethylbenzene	ND	0.048		mg/Kg	1	2/27/2023 4:05:18 PM
Xylenes, Total	ND	0.095		mg/Kg	1	2/27/2023 4:05:18 PM
Surr: 4-Bromofluorobenzene	92.5	70-130		%Rec	1	2/27/2023 4:05:18 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	2/23/2023 7:29:51 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-002 **Matrix:** SOIL

Client Sample ID: BH23-01 2'
Collection Date: 2/20/2023 10:05:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	2/24/2023 4:15:35 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	2/24/2023 4:15:35 PM
Surr: DNOP	116	69-147		%Rec	1	2/24/2023 4:15:35 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	2/23/2023 11:39:00 PM
Surr: BFB	101	37.7-212		%Rec	1	2/23/2023 11:39:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	2/27/2023 4:29:08 PM
Toluene	ND	0.050		mg/Kg	1	2/27/2023 4:29:08 PM
Ethylbenzene	ND	0.050		mg/Kg	1	2/27/2023 4:29:08 PM
Xylenes, Total	ND	0.10		mg/Kg	1	2/27/2023 4:29:08 PM
Surr: 4-Bromofluorobenzene	89.7	70-130		%Rec	1	2/27/2023 4:29:08 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	2/23/2023 8:31:53 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-003 **Matrix:** SOIL

Client Sample ID: BH23-02 0'
Collection Date: 2/20/2023 10:10:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	2/24/2023 4:26:09 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/24/2023 4:26:09 PM
Surr: DNOP	119	69-147		%Rec	1	2/24/2023 4:26:09 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/24/2023 12:38:00 AM
Surr: BFB	97.8	37.7-212		%Rec	1	2/24/2023 12:38:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	2/27/2023 4:53:02 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 4:53:02 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 4:53:02 PM
Xylenes, Total	ND	0.098		mg/Kg	1	2/27/2023 4:53:02 PM
Surr: 4-Bromofluorobenzene	94.9	70-130		%Rec	1	2/27/2023 4:53:02 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	61		mg/Kg	20	2/23/2023 8:44:17 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-004 **Matrix:** SOIL

Client Sample ID: BH23-02 2'
Collection Date: 2/20/2023 10:15:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	2/24/2023 4:36:42 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	2/24/2023 4:36:42 PM
Surr: DNOP	124	69-147		%Rec	1	2/24/2023 4:36:42 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/24/2023 12:57:00 AM
Surr: BFB	104	37.7-212		%Rec	1	2/24/2023 12:57:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/27/2023 5:16:49 PM
Toluene	ND	0.048		mg/Kg	1	2/27/2023 5:16:49 PM
Ethylbenzene	ND	0.048		mg/Kg	1	2/27/2023 5:16:49 PM
Xylenes, Total	ND	0.096		mg/Kg	1	2/27/2023 5:16:49 PM
Surr: 4-Bromofluorobenzene	93.0	70-130		%Rec	1	2/27/2023 5:16:49 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	2/23/2023 8:56:42 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-005 **Matrix:** SOIL

Client Sample ID: BH23-03 0'
Collection Date: 2/20/2023 10:20:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	2/23/2023 3:15:16 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/23/2023 3:15:16 PM
Surr: DNOP	109	69-147		%Rec	1	2/23/2023 3:15:16 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/24/2023 1:17:00 AM
Surr: BFB	98.1	37.7-212		%Rec	1	2/24/2023 1:17:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/27/2023 5:40:30 PM
Toluene	ND	0.047		mg/Kg	1	2/27/2023 5:40:30 PM
Ethylbenzene	ND	0.047		mg/Kg	1	2/27/2023 5:40:30 PM
Xylenes, Total	ND	0.094		mg/Kg	1	2/27/2023 5:40:30 PM
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	2/27/2023 5:40:30 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	2/23/2023 9:09:07 PM

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

Qualifiers:

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-006 **Matrix:** SOIL

Client Sample ID: BH23-03 2'
Collection Date: 2/20/2023 10:25:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	2/24/2023 4:47:11 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	2/24/2023 4:47:11 PM
Surr: DNOP	121	69-147		%Rec	1	2/24/2023 4:47:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/24/2023 1:37:00 AM
Surr: BFB	101	37.7-212		%Rec	1	2/24/2023 1:37:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/27/2023 6:04:11 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 6:04:11 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 6:04:11 PM
Xylenes, Total	ND	0.098		mg/Kg	1	2/27/2023 6:04:11 PM
Surr: 4-Bromofluorobenzene	92.4	70-130		%Rec	1	2/27/2023 6:04:11 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	2/23/2023 9:21:31 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	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quanitative Limit	RL	Reporting Limit
S	% Recovery outside of standard limits. If undiluted results may be estimated.		

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-007 **Matrix:** SOIL

Client Sample ID: BH23-04 0'
Collection Date: 2/20/2023 10:30:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	2/24/2023 2:58:06 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	2/24/2023 2:58:06 PM
Surr: DNOP	102	69-147		%Rec	1	2/24/2023 2:58:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/24/2023 1:56:00 AM
Surr: BFB	100	37.7-212		%Rec	1	2/24/2023 1:56:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	2/27/2023 6:27:47 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 6:27:47 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 6:27:47 PM
Xylenes, Total	ND	0.099		mg/Kg	1	2/27/2023 6:27:47 PM
Surr: 4-Bromofluorobenzene	95.4	70-130		%Rec	1	2/27/2023 6:27:47 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	2/23/2023 9:33:56 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-008 **Matrix:** SOIL

Client Sample ID: BH23-04 2'
Collection Date: 2/20/2023 10:35:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	2/24/2023 3:12:09 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/24/2023 3:12:09 PM
Surr: DNOP	96.1	69-147		%Rec	1	2/24/2023 3:12:09 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/24/2023 2:16:00 AM
Surr: BFB	100	37.7-212		%Rec	1	2/24/2023 2:16:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	2/27/2023 6:51:36 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 6:51:36 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 6:51:36 PM
Xylenes, Total	ND	0.099		mg/Kg	1	2/27/2023 6:51:36 PM
Surr: 4-Bromofluorobenzene	93.7	70-130		%Rec	1	2/27/2023 6:51:36 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	600	59		mg/Kg	20	2/23/2023 9:46:21 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-009 **Matrix:** SOIL

Client Sample ID: BH23-04 4'
Collection Date: 2/20/2023 10:40:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	2/24/2023 3:26:06 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	2/24/2023 3:26:06 PM
Surr: DNOP	98.8	69-147		%Rec	1	2/24/2023 3:26:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/24/2023 2:35:00 AM
Surr: BFB	101	37.7-212		%Rec	1	2/24/2023 2:35:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/27/2023 7:15:14 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 7:15:14 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 7:15:14 PM
Xylenes, Total	ND	0.097		mg/Kg	1	2/27/2023 7:15:14 PM
Surr: 4-Bromofluorobenzene	92.1	70-130		%Rec	1	2/27/2023 7:15:14 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	3700	150		mg/Kg	50	2/24/2023 9:06:07 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-010 **Matrix:** SOIL

Client Sample ID: BH23-04 6'
Collection Date: 2/20/2023 10:45:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	2/24/2023 3:40:09 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/24/2023 3:40:09 PM
Surr: DNOP	101	69-147		%Rec	1	2/24/2023 3:40:09 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/24/2023 3:15:00 AM
Surr: BFB	99.7	37.7-212		%Rec	1	2/24/2023 3:15:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	2/27/2023 8:02:36 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 8:02:36 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 8:02:36 PM
Xylenes, Total	ND	0.099		mg/Kg	1	2/27/2023 8:02:36 PM
Surr: 4-Bromofluorobenzene	93.6	70-130		%Rec	1	2/27/2023 8:02:36 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	4000	150		mg/Kg	50	2/24/2023 9:18:27 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-011 **Matrix:** SOIL

Client Sample ID: BH23-05 4'
Collection Date: 2/20/2023 10:50:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	830	19		mg/Kg	2	2/28/2023 2:20:21 PM
Motor Oil Range Organics (MRO)	500	96		mg/Kg	2	2/28/2023 2:20:21 PM
Surr: DNOP	93.4	69-147		%Rec	2	2/28/2023 2:20:21 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	24		mg/Kg	5	2/24/2023 3:34:00 AM
Surr: BFB	102	37.7-212		%Rec	5	2/24/2023 3:34:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/27/2023 8:26:15 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 8:26:15 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 8:26:15 PM
Xylenes, Total	ND	0.097		mg/Kg	1	2/27/2023 8:26:15 PM
Surr: 4-Bromofluorobenzene	91.4	70-130		%Rec	1	2/27/2023 8:26:15 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	2200	150		mg/Kg	50	2/24/2023 9:31:19 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-012 **Matrix:** SOIL

Client Sample ID: BH23-05 6'
Collection Date: 2/20/2023 10:55:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	2/24/2023 3:54:06 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/24/2023 3:54:06 PM
Surr: DNOP	99.9	69-147		%Rec	1	2/24/2023 3:54:06 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/24/2023 3:53:00 AM
Surr: BFB	104	37.7-212		%Rec	1	2/24/2023 3:53:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	2/27/2023 8:50:01 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 8:50:01 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 8:50:01 PM
Xylenes, Total	ND	0.098		mg/Kg	1	2/27/2023 8:50:01 PM
Surr: 4-Bromofluorobenzene	93.0	70-130		%Rec	1	2/27/2023 8:50:01 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	5600	300		mg/Kg	100	2/24/2023 9:44:11 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-013 **Matrix:** SOIL

Client Sample ID: BH23-05 7'
Collection Date: 2/20/2023 11:00:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	59	9.5		mg/Kg	1	2/24/2023 4:08:25 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/24/2023 4:08:25 PM
Surr: DNOP	101	69-147		%Rec	1	2/24/2023 4:08:25 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/24/2023 4:13:00 AM
Surr: BFB	98.8	37.7-212		%Rec	1	2/24/2023 4:13:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/27/2023 9:13:38 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 9:13:38 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 9:13:38 PM
Xylenes, Total	ND	0.097		mg/Kg	1	2/27/2023 9:13:38 PM
Surr: 4-Bromofluorobenzene	90.0	70-130		%Rec	1	2/27/2023 9:13:38 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	3000	150		mg/Kg	50	2/24/2023 9:57:03 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-014 **Matrix:** SOIL

Client Sample ID: BH23-05 8'
Collection Date: 2/20/2023 11:05:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	2/24/2023 4:22:02 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/24/2023 4:22:02 PM
Surr: DNOP	114	69-147		%Rec	1	2/24/2023 4:22:02 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/24/2023 4:32:00 AM
Surr: BFB	107	37.7-212		%Rec	1	2/24/2023 4:32:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	2/27/2023 9:37:17 PM
Toluene	ND	0.047		mg/Kg	1	2/27/2023 9:37:17 PM
Ethylbenzene	ND	0.047		mg/Kg	1	2/27/2023 9:37:17 PM
Xylenes, Total	ND	0.093		mg/Kg	1	2/27/2023 9:37:17 PM
Surr: 4-Bromofluorobenzene	93.2	70-130		%Rec	1	2/27/2023 9:37:17 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	4900	300		mg/Kg	100	2/24/2023 10:09:54 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-015 **Matrix:** SOIL

Client Sample ID: BH23-06 0'
Collection Date: 2/20/2023 11:30:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	2/24/2023 4:35:25 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	2/24/2023 4:35:25 PM
Surr: DNOP	102	69-147		%Rec	1	2/24/2023 4:35:25 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/24/2023 4:52:00 AM
Surr: BFB	99.4	37.7-212		%Rec	1	2/24/2023 4:52:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	2/27/2023 10:00:54 PM
Toluene	ND	0.047		mg/Kg	1	2/27/2023 10:00:54 PM
Ethylbenzene	ND	0.047		mg/Kg	1	2/27/2023 10:00:54 PM
Xylenes, Total	ND	0.094		mg/Kg	1	2/27/2023 10:00:54 PM
Surr: 4-Bromofluorobenzene	92.5	70-130		%Rec	1	2/27/2023 10:00:54 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	2/23/2023 11:38:01 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-016 **Matrix:** SOIL

Client Sample ID: BH23-06 2'
Collection Date: 2/20/2023 11:35:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	2/24/2023 4:49:03 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/24/2023 4:49:03 PM
Surr: DNOP	106	69-147		%Rec	1	2/24/2023 4:49:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/24/2023 5:12:00 AM
Surr: BFB	102	37.7-212		%Rec	1	2/24/2023 5:12:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	2/27/2023 10:24:33 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 10:24:33 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 10:24:33 PM
Xylenes, Total	ND	0.098		mg/Kg	1	2/27/2023 10:24:33 PM
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	2/27/2023 10:24:33 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	650	60		mg/Kg	20	2/23/2023 11:50:26 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-017 **Matrix:** SOIL

Client Sample ID: BH23-06 4'
Collection Date: 2/20/2023 11:40:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	2/24/2023 5:02:22 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/24/2023 5:02:22 PM
Surr: DNOP	102	69-147		%Rec	1	2/24/2023 5:02:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	2/24/2023 5:31:00 AM
Surr: BFB	104	37.7-212		%Rec	1	2/24/2023 5:31:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	2/27/2023 10:48:15 PM
Toluene	ND	0.046		mg/Kg	1	2/27/2023 10:48:15 PM
Ethylbenzene	ND	0.046		mg/Kg	1	2/27/2023 10:48:15 PM
Xylenes, Total	ND	0.092		mg/Kg	1	2/27/2023 10:48:15 PM
Surr: 4-Bromofluorobenzene	92.7	70-130		%Rec	1	2/27/2023 10:48:15 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	7300	300		mg/Kg	100	2/24/2023 10:22:46 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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-018 **Matrix:** SOIL

Client Sample ID: BH23-06 5'
Collection Date: 2/20/2023 11:45:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	2/24/2023 5:15:42 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/24/2023 5:15:42 PM
Surr: DNOP	103	69-147		%Rec	1	2/24/2023 5:15:42 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/24/2023 5:51:00 AM
Surr: BFB	99.7	37.7-212		%Rec	1	2/24/2023 5:51:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/27/2023 11:11:49 PM
Toluene	ND	0.048		mg/Kg	1	2/27/2023 11:11:49 PM
Ethylbenzene	ND	0.048		mg/Kg	1	2/27/2023 11:11:49 PM
Xylenes, Total	ND	0.095		mg/Kg	1	2/27/2023 11:11:49 PM
Surr: 4-Bromofluorobenzene	91.6	70-130		%Rec	1	2/27/2023 11:11:49 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	1900	60		mg/Kg	20	2/24/2023 12:15:15 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-019 **Matrix:** SOIL

Client Sample ID: BH23-07 0'
Collection Date: 2/20/2023 11:50:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	2/24/2023 5:29:01 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	2/24/2023 5:29:01 PM
Surr: DNOP	104	69-147		%Rec	1	2/24/2023 5:29:01 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/24/2023 6:10:00 AM
Surr: BFB	100	37.7-212		%Rec	1	2/24/2023 6:10:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/27/2023 11:35:22 PM
Toluene	ND	0.049		mg/Kg	1	2/27/2023 11:35:22 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/27/2023 11:35:22 PM
Xylenes, Total	ND	0.098		mg/Kg	1	2/27/2023 11:35:22 PM
Surr: 4-Bromofluorobenzene	90.8	70-130		%Rec	1	2/27/2023 11:35:22 PM
EPA METHOD 300.0: ANIONS						Analyst: **NAI**
Chloride	ND	60		mg/Kg	20	2/24/2023 12:27:40 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-020 **Matrix:** SOIL

Client Sample ID: BH23-07 2'
Collection Date: 2/20/2023 11:55:00 AM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	2/28/2023 5:13:49 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/28/2023 5:13:49 PM
Surr: DNOP	83.3	69-147		%Rec	1	2/28/2023 5:13:49 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **CCM**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	2/24/2023 6:49:00 AM
Surr: BFB	97.5	37.7-212		%Rec	1	2/24/2023 6:49:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/28/2023 12:22:24 AM
Toluene	ND	0.047		mg/Kg	1	2/28/2023 12:22:24 AM
Ethylbenzene	ND	0.047		mg/Kg	1	2/28/2023 12:22:24 AM
Xylenes, Total	ND	0.094		mg/Kg	1	2/28/2023 12:22:24 AM
Surr: 4-Bromofluorobenzene	90.8	70-130		%Rec	1	2/28/2023 12:22:24 AM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	530	60		mg/Kg	20	2/23/2023 10:06:16 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2302931**
Date Reported: **3/2/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Devon Energy
Project: Todd 23 A Federal 29
Lab ID: 2302931-021 **Matrix:** SOIL

Client Sample ID: BH23-07 4'
Collection Date: 2/20/2023 12:00:00 PM
Received Date: 2/22/2023 7:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	2/27/2023 5:15:44 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	2/27/2023 5:15:44 PM
Surr: DNOP	92.6	69-147		%Rec	1	2/27/2023 5:15:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	2/25/2023 5:22:27 PM
Surr: BFB	103	37.7-212		%Rec	1	2/25/2023 5:22:27 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	2/25/2023 5:22:27 PM
Toluene	ND	0.048		mg/Kg	1	2/25/2023 5:22:27 PM
Ethylbenzene	ND	0.048		mg/Kg	1	2/25/2023 5:22:27 PM
Xylenes, Total	ND	0.095		mg/Kg	1	2/25/2023 5:22:27 PM
Surr: 4-Bromofluorobenzene	95.4	70-130		%Rec	1	2/25/2023 5:22:27 PM
EPA METHOD 300.0: ANIONS						Analyst: **JMT**
Chloride	4900	150		mg/Kg	50	2/24/2023 10:35:39 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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2302931**

02-Mar-23

Client: Devon Energy

Project: Todd 23 A Federal 29

Sample ID: **MB-73347**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **73347**	RunNo: **94838**							
Prep Date: **2/23/2023**	Analysis Date: **2/23/2023**	SeqNo: **3428303**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-73347**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **73347**	RunNo: **94838**							
Prep Date: **2/23/2023**	Analysis Date: **2/23/2023**	SeqNo: **3428304**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	99.0	90	110			

Sample ID: **MB-73360**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **PBS**	Batch ID: **73360**	RunNo: **94857**							
Prep Date: **2/23/2023**	Analysis Date: **2/23/2023**	SeqNo: **3428380**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: **LCS-73360**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**							
Client ID: **LCSS**	Batch ID: **73360**	RunNo: **94857**							
Prep Date: **2/23/2023**	Analysis Date: **2/23/2023**	SeqNo: **3428381**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	96.5	90	110			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2302931**

02-Mar-23

Client: Devon Energy

Project: Todd 23 A Federal 29

Sample ID: **LCS-73328**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **73328**	RunNo: **94848**
Prep Date: **2/22/2023**	Analysis Date: **2/23/2023**	SeqNo: **3427960** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.6	61.9	130			
Surr: DNOP	4.2		5.000		84.3	69	147			

Sample ID: **MB-73328**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **73328**	RunNo: **94848**
Prep Date: **2/22/2023**	Analysis Date: **2/23/2023**	SeqNo: **3427963** 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	8.6		10.00		86.5	69	147			

Sample ID: **2302931-001AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH23-01 0'**	Batch ID: **73328**	RunNo: **94894**
Prep Date: **2/22/2023**	Analysis Date: **2/27/2023**	SeqNo: **3430259** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	9.8	49.21	0	95.8	54.2	135			
Surr: DNOP	4.9		4.921		100	69	147			

Sample ID: **LCS-73337**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **73337**	RunNo: **94894**
Prep Date: **2/23/2023**	Analysis Date: **2/27/2023**	SeqNo: **3430270** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	40	10	50.00	0	80.6	61.9	130			
Surr: DNOP	3.7		5.000		74.8	69	147			

Sample ID: **MB-73337**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **73337**	RunNo: **94894**
Prep Date: **2/23/2023**	Analysis Date: **2/27/2023**	SeqNo: **3430276** 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	9.2		10.00		91.7	69	147			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2302931**

02-Mar-23

Client: Devon Energy

Project: Todd 23 A Federal 29

Sample ID: **2302931-001AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH23-01 0'**	Batch ID: **73328**	RunNo: **94894**
Prep Date: **2/22/2023**	Analysis Date: **2/27/2023**	SeqNo: **3431138** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	98	9.6	95.51	0	102	54.2	135	69.8	29.2	R
Surr: DNOP	9.8		9.551		103	69	147	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2302931**

02-Mar-23

Client: Devon Energy

Project: Todd 23 A Federal 29

Sample ID: **lcs-73318**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **73318**	RunNo: **94853**							
Prep Date: **2/22/2023**	Analysis Date: **2/23/2023**	SeqNo: **3428439**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.8	72.3	137			
Surr: BFB	2100		1000		212	37.7	212			S

Sample ID: **mb-73318**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **73318**	RunNo: **94853**							
Prep Date: **2/22/2023**	Analysis Date: **2/23/2023**	SeqNo: **3428442**	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	980		1000		97.8	37.7	212			

Sample ID: **2302931-001ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **BH23-01 0'**	Batch ID: **73318**	RunNo: **94853**							
Prep Date: **2/22/2023**	Analysis Date: **2/23/2023**	SeqNo: **3428446**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.8	23.81	0	100	70	130			
Surr: BFB	2300		952.4		237	37.7	212			S

Sample ID: **2302931-001amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **BH23-01 0'**	Batch ID: **73318**	RunNo: **94853**							
Prep Date: **2/22/2023**	Analysis Date: **2/23/2023**	SeqNo: **3428466**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.8	23.79	0	99.2	70	130	1.30	20	
Surr: BFB	2200		951.5		228	37.7	212	0	0	S

Sample ID: **lcs-73320**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **LCSS**	Batch ID: **73320**	RunNo: **94858**							
Prep Date: **2/22/2023**	Analysis Date: **2/25/2023**	SeqNo: **3429445**	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	91.2	72.3	137			
Surr: BFB	1900		1000		191	37.7	212			

Sample ID: **mb-73320**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**							
Client ID: **PBS**	Batch ID: **73320**	RunNo: **94858**							
Prep Date: **2/22/2023**	Analysis Date: **2/25/2023**	SeqNo: **3429447**	Units: **mg/Kg**						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2302931**

02-Mar-23

Client: Devon Energy

Project: Todd 23 A Federal 29

Sample ID: **mb-73320**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **73320**	RunNo: **94858**
Prep Date: **2/22/2023**	Analysis Date: **2/25/2023**	SeqNo: **3429447** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	970		1000		96.8	37.7	212			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2302931**

02-Mar-23

Client: Devon Energy

Project: Todd 23 A Federal 29

Sample ID: **LCS-73320**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **73320**	RunNo: **94858**
Prep Date: **2/22/2023**	Analysis Date: **2/25/2023**	SeqNo: **3429489** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	1.000	0	88.4	80	120			
Toluene	0.90	0.050	1.000	0	90.2	80	120			
Ethylbenzene	0.89	0.050	1.000	0	89.3	80	120			
Xylenes, Total	2.7	0.10	3.000	0	89.9	80	120			
Surr: 4-Bromofluorobenzene	0.95		1.000		94.6	70	130			

Sample ID: **mb-73320**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **73320**	RunNo: **94858**
Prep Date: **2/22/2023**	Analysis Date: **2/25/2023**	SeqNo: **3429491** 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	0.92		1.000		92.0	70	130			

Sample ID: **LCS-73318**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **73318**	RunNo: **94890**
Prep Date: **2/22/2023**	Analysis Date: **2/27/2023**	SeqNo: **3430284** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	92.6	80	120			
Toluene	0.96	0.050	1.000	0	95.8	80	120			
Ethylbenzene	0.95	0.050	1.000	0	95.3	80	120			
Xylenes, Total	2.9	0.10	3.000	0	96.3	80	120			
Surr: 4-Bromofluorobenzene	0.98		1.000		98.4	70	130			

Sample ID: **mb-73318**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **73318**	RunNo: **94890**
Prep Date: **2/22/2023**	Analysis Date: **2/27/2023**	SeqNo: **3430300** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.96		1.000		95.8	70	130			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2302931**

02-Mar-23

Client: Devon Energy

Project: Todd 23 A Federal 29

Sample ID: **2302931-002ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-01 2'**	Batch ID: **73318**	RunNo: **94890**
Prep Date: **2/22/2023**	Analysis Date: **2/28/2023**	SeqNo: **3430743** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.025	0.9940	0	88.0	68.8	120			
Toluene	0.92	0.050	0.9940	0.01711	90.3	73.6	124			
Ethylbenzene	0.92	0.050	0.9940	0	92.2	72.7	129			
Xylenes, Total	2.7	0.099	2.982	0	91.7	75.7	126			
Surr: 4-Bromofluorobenzene	0.94		0.9940		94.8	70	130			

Sample ID: **2302931-002amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-01 2'**	Batch ID: **73318**	RunNo: **94890**
Prep Date: **2/22/2023**	Analysis Date: **2/28/2023**	SeqNo: **3430744** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.87	0.025	0.9930	0	87.5	68.8	120	0.692	20	
Toluene	0.90	0.050	0.9930	0.01711	88.5	73.6	124	2.09	20	
Ethylbenzene	0.89	0.050	0.9930	0	89.5	72.7	129	3.02	20	
Xylenes, Total	2.7	0.099	2.979	0	89.3	75.7	126	2.68	20	
Surr: 4-Bromofluorobenzene	0.93		0.9930		93.8	70	130	0	0	

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Devon Energy | Work Order Number: 2302931 | RcptNo: 1

Received By: Juan Rojas 2/22/2023 7:30:00 AM

Completed By: Tracy Casarrubias 2/22/2023 8:19:49 AM

Reviewed By: JA 2-22-23

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: JA 2/22/23

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.0	Good	Yes	Morty		

Chain-of-Custody Record

Client: Devon (Vertex)

Mailing Address: on file

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 48 Hr

Project Name: Todd 23 A Federal 29

Project #: 21E-02816

Project Manager: Kent Stallings

Sampler: J. Reta

On Ice: ~~☐ Yes~~ ☐ No

# of Coolers: 1 Wet

Cooler Temp(including CF): 2.0-0=2.0 (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2307301	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)
02/20/23	10:00	Soil	BH23-01 0'	4oz Jar	Ice	001										
	10:05		BH23-01 2'			002										
	10:10		BH23-02 0'			003										
	10:15		BH23-02 2'			004										
	10:20		BH23-03 0'			005										
	10:25		BH23-03 2'			006										
	10:30		BH23-04 0'			007										
	10:35		BH23-04 2'			008										
	10:40		BH23-04 4'			009										
	10:45		BH23-04 6'			010										
	10:50		BH23-05 4'			011										
	10:55		BH23-05 6'			012										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
02/20/23	19:04	J. Reta			2/21/23	815
2/21/23	1900			courier	2/22/23	7:30

Remarks: Direct Bill to Devon
CC: Jacob Reta

Devon/Harvard

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 (Vertex)

Mailing Address: on file

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☐ Standard ☒ Rush 48 Hr

Project Name: Tocti 23 A Federal 29

Project #: 21E-02816

Project Manager: Kent Stallings

Sampler: J. Reta

On Ice: ☒ Yes ☐ No

# of Coolers: 1 carty

Cooler Temp(Including CF): 2.0-0=2.0 (°C)

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

Analysis Request

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 23029301	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)
02/20/23	11:00	Soil	BH23-05 7'	4oz Jar	Ice	013										
	11:05		BH23-05 8'			014										
	11:30		BH23-06 0'			015										
	11:35		BH23-06 2'			016										
	11:40		BH23-06 4'			017										
	11:45		BH23-06 5'			018										
	11:50		BH23-07 0'			019										
	11:55		BH23-07 2'			020										
	12:00		BH23-07 4'			021										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
02/20/23	19:04	J. Reta			2/21/23	815
2/21/23	1900					

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
				courier	2/22/23	7:30

Remarks: Direct Bill to Devon
CC: Jacob Reta
Devon/Harvard.

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

March 24, 2023

Kent Stallings

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

RE: Todd 23 A Fed 29 OrderNo.: 2303965

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 5 sample(s) on 3/18/2023 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Analytical Report
Lab Order **2303965**
Date Reported: **3/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH22-05 12'
Project: Todd 23 A Fed 29
Collection Date: 3/16/2023 11:00:00 AM
Lab ID: 2303965-001 **Matrix:** SOIL
Received Date: 3/18/2023 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	22	9.8		mg/Kg	1	3/22/2023 11:39:28 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	3/22/2023 11:39:28 AM
Surr: DNOP	85.2	69-147		%Rec	1	3/22/2023 11:39:28 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/22/2023 11:12:27 AM
Surr: BFB	103	37.7-212		%Rec	1	3/22/2023 11:12:27 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	3/22/2023 11:12:27 AM
Toluene	ND	0.048		mg/Kg	1	3/22/2023 11:12:27 AM
Ethylbenzene	ND	0.048		mg/Kg	1	3/22/2023 11:12:27 AM
Xylenes, Total	ND	0.096		mg/Kg	1	3/22/2023 11:12:27 AM
Surr: 4-Bromofluorobenzene	92.9	70-130		%Rec	1	3/22/2023 11:12:27 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	7600	300		mg/Kg	100	3/22/2023 9:58:42 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2303965**
Date Reported: **3/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH22-05 13'
Project: Todd 23 A Fed 29
Collection Date: 3/16/2023 11:15:00 AM
Lab ID: 2303965-002 **Matrix:** SOIL
Received Date: 3/18/2023 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	32	9.8		mg/Kg	1	3/22/2023 11:50:03 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	3/22/2023 11:50:03 AM
Surr: DNOP	96.8	69-147		%Rec	1	3/22/2023 11:50:03 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/22/2023 11:36:13 AM
Surr: BFB	106	37.7-212		%Rec	1	3/22/2023 11:36:13 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	3/22/2023 11:36:13 AM
Toluene	ND	0.048		mg/Kg	1	3/22/2023 11:36:13 AM
Ethylbenzene	ND	0.048		mg/Kg	1	3/22/2023 11:36:13 AM
Xylenes, Total	ND	0.096		mg/Kg	1	3/22/2023 11:36:13 AM
Surr: 4-Bromofluorobenzene	94.2	70-130		%Rec	1	3/22/2023 11:36:13 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	9600	600		mg/Kg	200	3/22/2023 10:11:06 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2303965**
Date Reported: **3/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH22-05 14'
Project: Todd 23 A Fed 29
Collection Date: 3/16/2023 1:13:00 PM
Lab ID: 2303965-003 **Matrix:** SOIL
Received Date: 3/18/2023 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	150	9.8		mg/Kg	1	3/22/2023 11:07:45 AM
Motor Oil Range Organics (MRO)	140	49		mg/Kg	1	3/22/2023 11:07:45 AM
Surr: DNOP	84.5	69-147		%Rec	1	3/22/2023 11:07:45 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	3/22/2023 11:59:53 AM
Surr: BFB	106	37.7-212		%Rec	1	3/22/2023 11:59:53 AM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	3/22/2023 11:59:53 AM
Toluene	ND	0.048		mg/Kg	1	3/22/2023 11:59:53 AM
Ethylbenzene	ND	0.048		mg/Kg	1	3/22/2023 11:59:53 AM
Xylenes, Total	ND	0.097		mg/Kg	1	3/22/2023 11:59:53 AM
Surr: 4-Bromofluorobenzene	94.4	70-130		%Rec	1	3/22/2023 11:59:53 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	5900	300		mg/Kg	100	3/22/2023 10:23:31 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2303965**
Date Reported: **3/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH22-05 15'
Project: Todd 23 A Fed 29
Collection Date: 3/16/2023 1:30:00 PM
Lab ID: 2303965-004 **Matrix:** SOIL
Received Date: 3/18/2023 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	98	9.8		mg/Kg	1	3/22/2023 12:23:45 PM
Motor Oil Range Organics (MRO)	140	49		mg/Kg	1	3/22/2023 12:23:45 PM
Surr: DNOP	99.2	69-147		%Rec	1	3/22/2023 12:23:45 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	3/22/2023 12:23:24 PM
Surr: BFB	102	37.7-212		%Rec	1	3/22/2023 12:23:24 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	3/22/2023 12:23:24 PM
Toluene	ND	0.047		mg/Kg	1	3/22/2023 12:23:24 PM
Ethylbenzene	ND	0.047		mg/Kg	1	3/22/2023 12:23:24 PM
Xylenes, Total	ND	0.094		mg/Kg	1	3/22/2023 12:23:24 PM
Surr: 4-Bromofluorobenzene	93.7	70-130		%Rec	1	3/22/2023 12:23:24 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	4600	150		mg/Kg	50	3/22/2023 10:35:56 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2303965**
Date Reported: **3/24/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH22-05 16'
Project: Todd 23 A Fed 29
Collection Date: 3/16/2023 2:35:00 PM
Lab ID: 2303965-005 **Matrix:** SOIL
Received Date: 3/18/2023 8:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	210	9.1		mg/Kg	1	3/22/2023 12:47:52 PM
Motor Oil Range Organics (MRO)	390	45		mg/Kg	1	3/22/2023 12:47:52 PM
Surr: DNOP	106	69-147		%Rec	1	3/22/2023 12:47:52 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	3/22/2023 12:46:49 PM
Surr: BFB	103	37.7-212		%Rec	1	3/22/2023 12:46:49 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	3/22/2023 12:46:49 PM
Toluene	ND	0.049		mg/Kg	1	3/22/2023 12:46:49 PM
Ethylbenzene	ND	0.049		mg/Kg	1	3/22/2023 12:46:49 PM
Xylenes, Total	ND	0.098		mg/Kg	1	3/22/2023 12:46:49 PM
Surr: 4-Bromofluorobenzene	94.3	70-130		%Rec	1	3/22/2023 12:46:49 PM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	5300	150		mg/Kg	50	3/22/2023 10:48:21 AM

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

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2303965**
24-Mar-23

Client: Vertex Resources Services, Inc.
Project: Todd 23 A Fed 29

Sample ID: **MB-73843** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **73843** RunNo: **95459**
Prep Date: **3/21/2023** Analysis Date: **3/21/2023** SeqNo: **3453137** Units: **mg/Kg**

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

Sample ID: **LCS-73843** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **73843** RunNo: **95459**
Prep Date: **3/21/2023** Analysis Date: **3/21/2023** SeqNo: **3453138** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	99.2	90	110			

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2303965**
24-Mar-23

Client: Vertex Resources Services, Inc.
Project: Todd 23 A Fed 29

Sample ID: **MB-73838** SampType: **MBLK** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS** Batch ID: **73838** RunNo: **95454**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3453576** 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	8.5		10.00		85.2	69	147			

Sample ID: **LCS-73838** SampType: **LCS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS** Batch ID: **73838** RunNo: **95454**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3453578** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	90.1	61.9	130			
Surr: DNOP	4.3		5.000		86.3	69	147			

Sample ID: **2303965-001AMS** SampType: **MS** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH22-05 12'** Batch ID: **73838** RunNo: **95454**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3454051** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.40	21.50	60.6	54.2	135			
Surr: DNOP	4.4		5.040		88.1	69	147			

Sample ID: **2303965-001AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH22-05 12'** Batch ID: **73838** RunNo: **95454**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3454054** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	58	9.9	49.65	21.50	72.9	54.2	135	10.2	29.2	
Surr: DNOP	4.5		4.965		90.9	69	147	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2303965**
24-Mar-23

Client: Vertex Resources Services, Inc.
Project: Todd 23 A Fed 29

Sample ID: **lcs-73832** SampType: **LCS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS** Batch ID: **73832** RunNo: **95464**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3453426** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	28	5.0	25.00	0	110	70	130			
Surr: BFB	2100		1000		213	37.7	212			S

Sample ID: **mb-73832** SampType: **MBLK** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS** Batch ID: **73832** RunNo: **95464**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3453427** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		105	37.7	212			

Sample ID: **2303965-001ams** SampType: **MS** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH22-05 12'** Batch ID: **73832** RunNo: **95464**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3454080** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.8	23.85	0	98.0	70	130			
Surr: BFB	1900		954.2		200	37.7	212			

Sample ID: **2303965-001amsd** SampType: **MSD** TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH22-05 12'** Batch ID: **73832** RunNo: **95464**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3454081** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.8	24.06	0	101	70	130	3.88	20	
Surr: BFB	1900		962.5		202	37.7	212	0	0	

Qualifiers:

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

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **2303965**
24-Mar-23

Client: Vertex Resources Services, Inc.
Project: Todd 23 A Fed 29

Sample ID: **LCS-73832** SampType: **LCS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS** Batch ID: **73832** RunNo: **95464**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3453431** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	1.000	0	90.7	80	120			
Toluene	0.91	0.050	1.000	0	91.5	80	120			
Ethylbenzene	0.92	0.050	1.000	0	91.8	80	120			
Xylenes, Total	2.7	0.10	3.000	0	91.5	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	70	130			

Sample ID: **mb-73832** SampType: **MBLK** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS** Batch ID: **73832** RunNo: **95464**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3453432** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.94		1.000		93.7	70	130			

Sample ID: **2303965-002ams** SampType: **MS** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH22-05 13'** Batch ID: **73832** RunNo: **95464**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3454088** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.024	0.9569	0	92.0	68.8	120			
Toluene	0.88	0.048	0.9569	0	92.3	73.6	124			
Ethylbenzene	0.89	0.048	0.9569	0	92.6	72.7	129			
Xylenes, Total	2.6	0.096	2.871	0	92.3	75.7	126			
Surr: 4-Bromofluorobenzene	0.91		0.9569		95.2	70	130			

Sample ID: **2303965-002amsd** SampType: **MSD** TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH22-05 13'** Batch ID: **73832** RunNo: **95464**
Prep Date: **3/21/2023** Analysis Date: **3/22/2023** SeqNo: **3454089** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.85	0.024	0.9533	0	88.7	68.8	120	4.08	20	
Toluene	0.85	0.048	0.9533	0	89.1	73.6	124	3.92	20	
Ethylbenzene	0.85	0.048	0.9533	0	89.0	72.7	129	4.39	20	
Xylenes, Total	2.5	0.095	2.860	0	89.0	75.7	126	4.01	20	
Surr: 4-Bromofluorobenzene	0.89		0.9533		93.8	70	130	0	0	

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Vertex Resources Services, Inc.

Work Order Number: 2303965

RcptNo: 1

Received By: Juan Rojas 3/18/2023 8:00:00 AM

Completed By: Juan Rojas 3/18/2023 8:12:16 AM

Reviewed By: TMe 3/18/23

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ 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: JM 3/18/23

Special Handling (if applicable)

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

Person Notified: _____ Date _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	2.8	Good	Monty 3/20/23			

Chain-of-Custody Record

Client: Devon / Vertex

Mailing Address: on file

Phone #:

email or Fax#:

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

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

Turn-Around Time:
☐ Standard ☑ Rush 48 hr

Project Name: Todd 23 A Fed 29

Project #: 2IE-02816-15

Project Manager: Kent Stallings

Sampler: SM

On Ice: ☑ Yes ☐ No

# of Coolers: 1 Mo. +1

Cooler Temp (including CF): 2.9-0.1=2.8 (°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. 2303965	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
3/16/23	11:00	Soil	BH22-05 12'	4oz jar ice	ice	-001	✓	✓					✓			
	11:15		BH22-05 13'			-002										
	13:13		BH22-05 14'			-003										
	13:30		BH22-05 15'			-004										
	14:35		BH22-05 16'			-005										

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
3/16/23	19:08	Steph McCarty				
3/17/23	1900				3/17/23	800

Date	Time	Relinquished by:	Received by:	Via:	Date	Time
3/17/23	1900				3/18/23	8:00

Remarks: Bill directly to: Devon

cc. smccarty@vertex.ca

pg. 1 of 1

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

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

July 18, 2023

Kent Stallings

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

RE: Todd 23 A Federal 029 OrderNo.: 2307358

Dear Kent Stallings:

Hall Environmental Analysis Laboratory received 12 sample(s) on 7/11/2023 for the analyses presented in the following report.

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

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

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

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-08 0'
Project: Todd 23 A Federal 029
Collection Date: 7/9/2023 7:45:00 AM
Lab ID: 2307358-001 **Matrix:** SOIL
Received Date: 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	7/13/2023 1:09:30 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/13/2023 1:09:30 AM
Surr: DNOP	90.0	69-147		%Rec	1	7/13/2023 1:09:30 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/13/2023 6:40:00 AM
Surr: BFB	93.9	15-244		%Rec	1	7/13/2023 6:40:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	7/13/2023 6:40:00 AM
Toluene	ND	0.049		mg/Kg	1	7/13/2023 6:40:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/13/2023 6:40:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	7/13/2023 6:40:00 AM
Surr: 4-Bromofluorobenzene	94.2	39.1-146		%Rec	1	7/13/2023 6:40:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	66	61		mg/Kg	20	7/12/2023 2:58:21 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-08 2'
Project: Todd 23 A Federal 029 **Collection Date:** 7/9/2023 7:50:00 AM
Lab ID: 2307358-002 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	7/13/2023 1:20:18 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/13/2023 1:20:18 AM
Surr: DNOP	86.5	69-147		%Rec	1	7/13/2023 1:20:18 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/13/2023 7:02:00 AM
Surr: BFB	97.8	15-244		%Rec	1	7/13/2023 7:02:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	7/13/2023 7:02:00 AM
Toluene	ND	0.048		mg/Kg	1	7/13/2023 7:02:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/13/2023 7:02:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	7/13/2023 7:02:00 AM
Surr: 4-Bromofluorobenzene	95.7	39.1-146		%Rec	1	7/13/2023 7:02:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	1000	60		mg/Kg	20	7/12/2023 4:00:23 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-09 0'
Project: Todd 23 A Federal 029 **Collection Date:** 7/9/2023 7:55:00 AM
Lab ID: 2307358-003 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	7/13/2023 1:31:07 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/13/2023 1:31:07 AM
Surr: DNOP	88.2	69-147		%Rec	1	7/13/2023 1:31:07 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	7/13/2023 7:24:00 AM
Surr: BFB	93.2	15-244		%Rec	1	7/13/2023 7:24:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	7/13/2023 7:24:00 AM
Toluene	ND	0.048		mg/Kg	1	7/13/2023 7:24:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	7/13/2023 7:24:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	7/13/2023 7:24:00 AM
Surr: 4-Bromofluorobenzene	94.2	39.1-146		%Rec	1	7/13/2023 7:24:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	7/12/2023 4:12:48 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-09 2'
Project: Todd 23 A Federal 029 **Collection Date:** 7/9/2023 8:00:00 AM
Lab ID: 2307358-004 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	7/13/2023 1:41:55 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/13/2023 1:41:55 AM
Surr: DNOP	82.5	69-147		%Rec	1	7/13/2023 1:41:55 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/13/2023 7:46:00 AM
Surr: BFB	93.9	15-244		%Rec	1	7/13/2023 7:46:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	7/13/2023 7:46:00 AM
Toluene	ND	0.050		mg/Kg	1	7/13/2023 7:46:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	7/13/2023 7:46:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	7/13/2023 7:46:00 AM
Surr: 4-Bromofluorobenzene	94.2	39.1-146		%Rec	1	7/13/2023 7:46:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	91	60		mg/Kg	20	7/12/2023 4:25:13 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-10 0'
Project: Todd 23 A Federal 029
Collection Date: 7/9/2023 8:05:00 AM
Lab ID: 2307358-005 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/13/2023 1:52:46 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/13/2023 1:52:46 AM
Surr: DNOP	84.1	69-147		%Rec	1	7/13/2023 1:52:46 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/13/2023 8:07:00 AM
Surr: BFB	94.0	15-244		%Rec	1	7/13/2023 8:07:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	7/13/2023 8:07:00 AM
Toluene	ND	0.049		mg/Kg	1	7/13/2023 8:07:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/13/2023 8:07:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	7/13/2023 8:07:00 AM
Surr: 4-Bromofluorobenzene	93.7	39.1-146		%Rec	1	7/13/2023 8:07:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	7/12/2023 4:37:37 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-10 2'
Project: Todd 23 A Federal 029 **Collection Date:** 7/9/2023 8:10:00 AM
Lab ID: 2307358-006 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	7/13/2023 2:14:21 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/13/2023 2:14:21 AM
Surr: DNOP	87.1	69-147		%Rec	1	7/13/2023 2:14:21 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/13/2023 8:29:00 AM
Surr: BFB	95.4	15-244		%Rec	1	7/13/2023 8:29:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	7/13/2023 8:29:00 AM
Toluene	ND	0.049		mg/Kg	1	7/13/2023 8:29:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/13/2023 8:29:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	7/13/2023 8:29:00 AM
Surr: 4-Bromofluorobenzene	94.1	39.1-146		%Rec	1	7/13/2023 8:29:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	230	60		mg/Kg	20	7/12/2023 4:50:02 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-11 0'
Project: Todd 23 A Federal 029
Collection Date: 7/9/2023 9:25:00 AM
Lab ID: 2307358-007 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/13/2023 2:25:12 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/13/2023 2:25:12 AM
Surr: DNOP	85.2	69-147		%Rec	1	7/13/2023 2:25:12 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/13/2023 8:51:00 AM
Surr: BFB	94.3	15-244		%Rec	1	7/13/2023 8:51:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	7/13/2023 8:51:00 AM
Toluene	ND	0.049		mg/Kg	1	7/13/2023 8:51:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/13/2023 8:51:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	7/13/2023 8:51:00 AM
Surr: 4-Bromofluorobenzene	94.2	39.1-146		%Rec	1	7/13/2023 8:51:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	7/12/2023 5:02:27 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-11 2'
Project: Todd 23 A Federal 029
Collection Date: 7/9/2023 9:30:00 AM
Lab ID: 2307358-008 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	7/13/2023 2:36:05 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/13/2023 2:36:05 AM
Surr: DNOP	86.4	69-147		%Rec	1	7/13/2023 2:36:05 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/13/2023 9:13:00 AM
Surr: BFB	99.5	15-244		%Rec	1	7/13/2023 9:13:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	7/13/2023 9:13:00 AM
Toluene	ND	0.050		mg/Kg	1	7/13/2023 9:13:00 AM
Ethylbenzene	ND	0.050		mg/Kg	1	7/13/2023 9:13:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	7/13/2023 9:13:00 AM
Surr: 4-Bromofluorobenzene	94.5	39.1-146		%Rec	1	7/13/2023 9:13:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	800	60		mg/Kg	20	7/12/2023 5:14:51 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 standard limits. If undiluted results may be estimated.
B	Analyte detected in the associated Method Blank
E	Above Quantitation Range/Estimated Value
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-12 0'
Project: Todd 23 A Federal 029 **Collection Date:** 7/9/2023 9:45:00 AM
Lab ID: 2307358-009 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	160	9.2		mg/Kg	1	7/13/2023 10:56:40 AM
Motor Oil Range Organics (MRO)	230	46		mg/Kg	1	7/13/2023 10:56:40 AM
Surr: DNOP	105	69-147		%Rec	1	7/13/2023 10:56:40 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/13/2023 2:50:00 PM
Surr: BFB	99.0	15-244		%Rec	1	7/13/2023 2:50:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.024		mg/Kg	1	7/13/2023 2:50:00 PM
Toluene	ND	0.049		mg/Kg	1	7/13/2023 2:50:00 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/13/2023 2:50:00 PM
Xylenes, Total	ND	0.098		mg/Kg	1	7/13/2023 2:50:00 PM
Surr: 4-Bromofluorobenzene	97.1	39.1-146		%Rec	1	7/13/2023 2:50:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	170	60		mg/Kg	20	7/12/2023 5:27:16 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-12 2'
Project: Todd 23 A Federal 029
Collection Date: 7/9/2023 9:50:00 AM
Lab ID: 2307358-010 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	15	9.6		mg/Kg	1	7/13/2023 3:28:30 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/13/2023 3:28:30 AM
Surr: DNOP	88.1	69-147		%Rec	1	7/13/2023 3:28:30 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/13/2023 3:12:00 PM
Surr: BFB	99.1	15-244		%Rec	1	7/13/2023 3:12:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	7/13/2023 3:12:00 PM
Toluene	ND	0.050		mg/Kg	1	7/13/2023 3:12:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/13/2023 3:12:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/13/2023 3:12:00 PM
Surr: 4-Bromofluorobenzene	99.5	39.1-146		%Rec	1	7/13/2023 3:12:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	67	61		mg/Kg	20	7/12/2023 6:04:30 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-13 0'
Project: Todd 23 A Federal 029 **Collection Date:** 7/9/2023 10:15:00 AM
Lab ID: 2307358-011 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/13/2023 3:39:28 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/13/2023 3:39:28 AM
Surr: DNOP	97.2	69-147		%Rec	1	7/13/2023 3:39:28 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/13/2023 3:34:00 PM
Surr: BFB	99.6	15-244		%Rec	1	7/13/2023 3:34:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	7/13/2023 3:34:00 PM
Toluene	ND	0.050		mg/Kg	1	7/13/2023 3:34:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/13/2023 3:34:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/13/2023 3:34:00 PM
Surr: 4-Bromofluorobenzene	98.0	39.1-146		%Rec	1	7/13/2023 3:34:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	7/12/2023 6:16:55 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2307358**
Date Reported: **7/18/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-13 2
Project: Todd 23 A Federal 029 **Collection Date:** 7/9/2023 10:25:00 AM
Lab ID: 2307358-012 **Matrix:** SOIL **Received Date:** 7/11/2023 9:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	7/13/2023 3:50:25 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/13/2023 3:50:25 AM
Surr: DNOP	84.4	69-147		%Rec	1	7/13/2023 3:50:25 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **KMN**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/13/2023 3:56:00 PM
Surr: BFB	97.9	15-244		%Rec	1	7/13/2023 3:56:00 PM
EPA METHOD 8021B: VOLATILES						Analyst: **KMN**
Benzene	ND	0.025		mg/Kg	1	7/13/2023 3:56:00 PM
Toluene	ND	0.050		mg/Kg	1	7/13/2023 3:56:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/13/2023 3:56:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/13/2023 3:56:00 PM
Surr: 4-Bromofluorobenzene	96.1	39.1-146		%Rec	1	7/13/2023 3:56:00 PM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	ND	60		mg/Kg	20	7/12/2023 6:29:19 PM

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2307358**

18-Jul-23

Client: Vertex Resources Services, Inc.

Project: Todd 23 A Federal 029

Sample ID: **MB-76147**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **76147**	RunNo: **98158**
Prep Date: **7/12/2023**	Analysis Date: **7/12/2023**	SeqNo: **3571790** Units: **mg/Kg**

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

Sample ID: **LCS-76147**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **76147**	RunNo: **98158**
Prep Date: **7/12/2023**	Analysis Date: **7/12/2023**	SeqNo: **3571791** Units: **mg/Kg**

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

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2307358**

18-Jul-23

Client: Vertex Resources Services, Inc.

Project: Todd 23 A Federal 029

Sample ID: **LCS-76138**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **76138**	RunNo: **98153**
Prep Date: **7/12/2023**	Analysis Date: **7/13/2023**	SeqNo: **3571522** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	87.1	61.9	130			
Surr: DNOP	3.9		5.000		77.7	69	147			

Sample ID: **MB-76138**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **76138**	RunNo: **98153**
Prep Date: **7/12/2023**	Analysis Date: **7/13/2023**	SeqNo: **3571525** 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	8.0		10.00		80.4	69	147			

Sample ID: **LCS-76160**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **76160**	RunNo: **98169**
Prep Date: **7/12/2023**	Analysis Date: **7/13/2023**	SeqNo: **3572216** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.5		5.000		110	69	147			

Sample ID: **MB-76160**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **76160**	RunNo: **98169**
Prep Date: **7/12/2023**	Analysis Date: **7/13/2023**	SeqNo: **3572219** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	11		10.00		107	69	147			

Sample ID: **LCS-76168**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **76168**	RunNo: **98169**
Prep Date: **7/13/2023**	Analysis Date: **7/13/2023**	SeqNo: **3572752** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.3		5.000		85.0	69	147			

Sample ID: **MB-76168**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **76168**	RunNo: **98169**
Prep Date: **7/13/2023**	Analysis Date: **7/13/2023**	SeqNo: **3572754** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.8		10.00		87.9	69	147			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2307358**

18-Jul-23

Client: Vertex Resources Services, Inc.

Project: Todd 23 A Federal 029

Sample ID: **lcs-76130**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **76130**	RunNo: **98150**
Prep Date: **7/11/2023**	Analysis Date: **7/13/2023**	SeqNo: **3571263** 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	70	130			
Surr: BFB	2100		1000		210	15	244			

Sample ID: **mb-76130**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **76130**	RunNo: **98150**
Prep Date: **7/11/2023**	Analysis Date: **7/13/2023**	SeqNo: **3571264** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	950		1000		94.5	15	244			

Sample ID: **lcs-76155**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **76155**	RunNo: **98174**
Prep Date: **7/12/2023**	Analysis Date: **7/13/2023**	SeqNo: **3572761** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	2200		1000		216	15	244			

Sample ID: **mb-76155**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **76155**	RunNo: **98174**
Prep Date: **7/12/2023**	Analysis Date: **7/13/2023**	SeqNo: **3572762** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	990		1000		99.3	15	244			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2307358**

18-Jul-23

Client: Vertex Resources Services, Inc.

Project: Todd 23 A Federal 029

Sample ID: **lcs-76130**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **76130**	RunNo: **98150**
Prep Date: **7/11/2023**	Analysis Date: **7/13/2023**	SeqNo: **3571315** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	94.6	70	130			
Toluene	0.95	0.050	1.000	0	95.1	70	130			
Ethylbenzene	0.95	0.050	1.000	0	95.2	70	130			
Xylenes, Total	2.9	0.10	3.000	0	95.0	70	130			
Surr: 4-Bromofluorobenzene	0.96		1.000		95.9	39.1	146			

Sample ID: **mb-76130**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **76130**	RunNo: **98150**
Prep Date: **7/11/2023**	Analysis Date: **7/13/2023**	SeqNo: **3571316** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		94.8	39.1	146			

Sample ID: **lcs-76155**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **76155**	RunNo: **98174**
Prep Date: **7/12/2023**	Analysis Date: **7/13/2023**	SeqNo: **3572787** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.99		1.000		99.4	39.1	146			

Sample ID: **mb-76155**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **76155**	RunNo: **98174**
Prep Date: **7/12/2023**	Analysis Date: **7/13/2023**	SeqNo: **3572788** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.98		1.000		98.2	39.1	146			

Qualifiers:

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

HALL ENVIRONMENTAL ANALYSIS LABORATORY

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

Sample Log-In Check List

Client Name: Vertex Resources Services, Inc.

Work Order Number: 2307358

RcptNo: 1

Received By: Cheyenne Cason 7/11/2023 9:10:00 AM

Completed By: Cheyenne Cason 7/11/2023 10:09:10 AM

Reviewed By: TMC 7/11/23

Chain of Custody

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

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☐ No ☐ NA ☑
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (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: SCM 07/11/23

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: _____

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.0	Good	Not Present	Yogi		
2	3.3	Good	Not Present	Yogi		

Chain-of-Custody Record

Client: Vertex (Devon)

Mailing Address: on file

Phone #:

email or Fax#: permian@vertex.ca

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation: ☐ Az Compliance

☐ NELAC ☐ Other________

☐ EDD (Type) ________

Turn-Around Time:

☐ Standard ☑ Rush 48 hr

Project Name: Todd 23 A Federal #029

Project #: 21E-02816-15

Project Manager: Kent Stallings

Sampler: SPC

On Ice: ☑ Yes ☐ No Yes

\# of Coolers: 2 0.1-0.1=0.0

Cooler Temp (including CF): 3.4-0.1=3.3 (°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. 2307358	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)					
7/9/23	7:45	Soil	BH23-08	0'	4oz jar	ice	001	✓	✓					✓								
	7:50		BH23-08	2'			002															
	7:55		BH23-09	0'			003															
	8:00		BH23-09	2'			004															
	8:05		BH23-10	0'			005															
	8:10		BH23-10	2'			006															
	9:25		BH23-11	0'			007															
	9:30		BH23-11	2'			008															
	9:45		BH23-12	0'			009															
	9:50		BH23-12	2'			010															
	10:15		BH23-13	0'			011															
	10:25		BH23-13	2'			012															

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
7/10/23	0600	Sally Cartta	[signature]		7/10/23	0600
7/10/23	1900	[signature]	Cme cour		7/11/23	0910

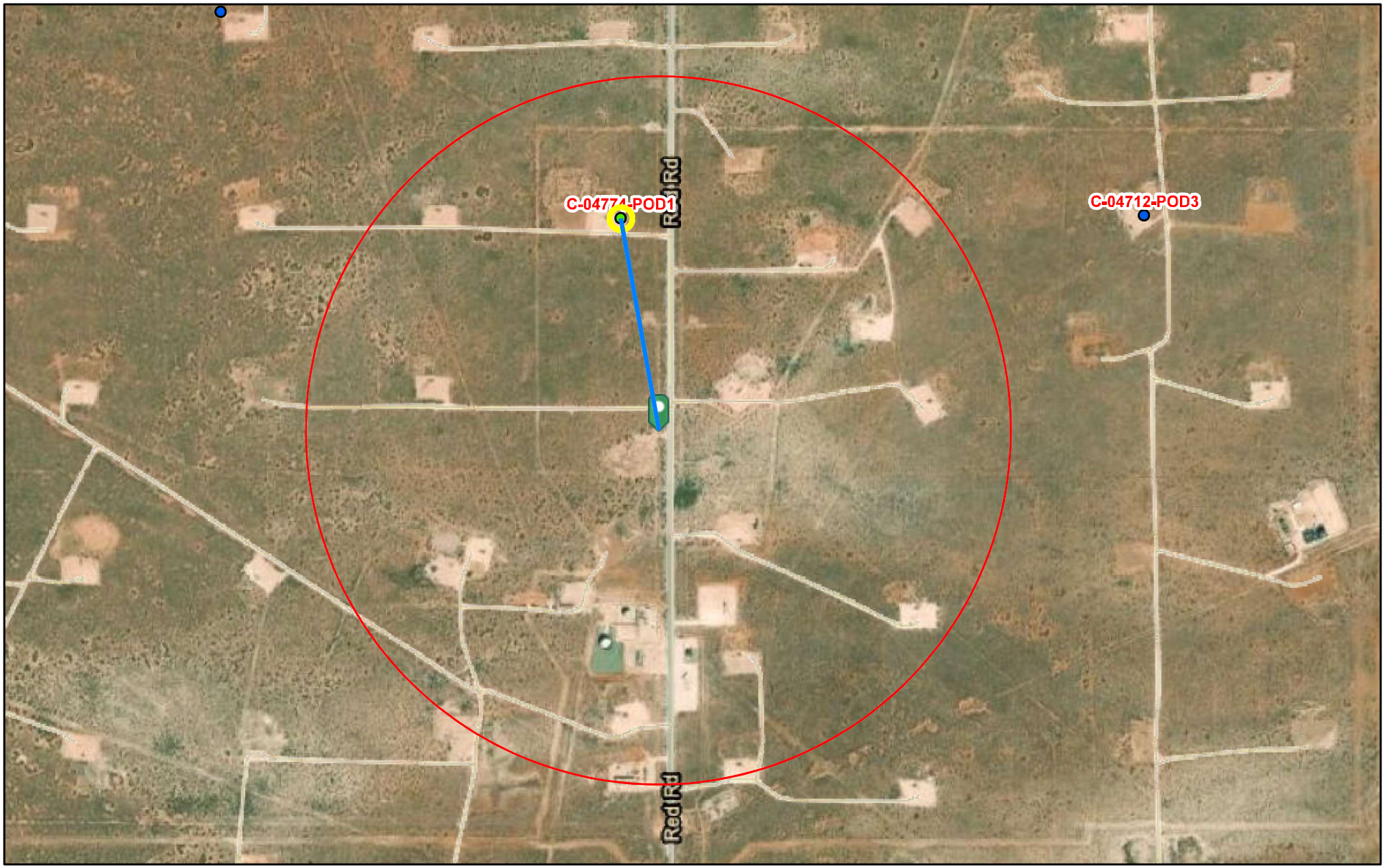
Remarks: Direct bill Devon (Dale Woodall)

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

ATTACHMENT 5

Closure Criteria Determination				
Site Name: Todd 23 A Federal #029				
Spill Coordinates: 32.290909,-103.740990		X: 618547	Y: 3573377	
Site Specific Conditions		Value	Unit	Reference
1	Depth to Groundwater (nearest reference)	**105'**	feet	1
	Distance between release and nearest DTGW reference	**1,605**	feet	
		0.30	miles	
	Date of nearest DTGW reference measurement	**December 14, 2023**		
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	14,788	feet	2
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	17,828	feet	3
4	Within 300 feet from an occupied residence, school, hospital, institution or church	24,840	feet	4
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**	8,130	feet	5
	ii) Within 1000 feet of any fresh water well or spring	5,253	feet	5
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)	6
7	Within 300 feet of a wetland	18,182	feet	7
8	Within the area overlying a subsurface mine	No	(Y/N)	8
	Distance between release and nearest registered mine	49,770	feet	
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low	9
	Distance between release and nearest unstable area	**29,404**	feet	
10	Within a 100-year Floodplain	>500	year	10
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	**35,177**	feet	
11	Soil Type	Loamy fine sand		11
12	Ecological Classification	Loamy		12
13	Geology	Eolian and piedmont deposits		13
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	>100'	<50' 51-100' >100'	

Todd 23 A Federal #029 - 1,605 ft from DTGW reference



1/26/2024, 10:01:15 AM

1:14,623

0 0.1 0.2 0.4 mi

0 0.15 0.3 0.6 km

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

Online web user

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

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

Todd 23f

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.): C-4774 POD 1	WELL TAG ID NO.	OSE FILE NO(S).: C04774
WELL OWNER NAME(S): Devon Energy Resources		PHONE (OPTIONAL)
WELL OWNER MAILING ADDRESS: 205 E. Bender Road # 150		CITY: Hobbs STATE: NM ZIP: 88210

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
LATITUDE	32	17	42.8604	N
LONGITUDE	103	44	30.8436	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

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

2. DRILLING & CASING INFORMATION

LICENSE NO.: 1833	NAME OF LICENSED DRILLER: Jason Maley		NAME OF WELL DRILLING COMPANY: Vision Resources
DRILLING STARTED: 12-14-23	DRILLING ENDED: 12-14-23	DEPTH OF COMPLETED WELL (FT): 105'	BORE HOLE DEPTH (FT): 105' / DEPTH WATER FIRST ENCOUNTERED (FT): Dry

COMPLETED WELL IS: ☐ ARTESIAN *add Centralizer info below ☑ DRY HOLE ☐ SHALLOW (UNCONFINED) | STATIC WATER LEVEL IN COMPLETED WELL (FT): N/A | DATE STATIC MEASURED: 12-17-23

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY: | CHECK HERE IF PITLESS ADAPTER IS INSTALLED ☐

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

3. ANNULAR MATERIAL

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

FOR OSE INTERNAL USE

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

FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	5'	5'	Brown sand with coarse rock	Y ✓ N	
5'	30'	25'	Tan fine sand with coarse rock	Y ✓ N	
30'	105'	75'	Brown sand mixed with clay	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

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

TOTAL ESTIMATED WELL YIELD (gpm): Dry

5. TEST; RIG SUPERVISION

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

MISCELLANEOUS INFORMATION:

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

6. SIGNATURE

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

Jason Maley — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

1/10/24 — DATE

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

FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 2 OF 2

PLUGGING RECORD

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

I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: C-4774

Well owner: Devon Energy Resources Phone No.: _____

Mailing address: 205 E. Bender Road # 150

City: Hobbs State: NM Zip code: 88240

II. WELL PLUGGING INFORMATION:

1) Name of well drilling company that plugged well: Vision Resources

2) New Mexico Well Driller License No.: 1833 Expiration Date: 10-7-25

3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Jason Maley

4) Date well plugging began: 12-20-23 Date well plugging concluded: 12-20-23

5) GPS Well Location: Latitude: 32 deg, 17 min, 42.8604 sec
Longitude: 103 deg, 44 min, 30.8436 sec, WGS 84

6) Depth of well confirmed at initiation of plugging as: 105' ft below ground level (bgl), by the following manner: Tape

7) Static water level measured at initiation of plugging: N/A ft bgl

8) Date well plugging plan of operations was approved by the State Engineer: 9-21-23

9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

10) Log of Plugging Activities - Label vertical scale with depths, and indicate separate plugging intervals with horizontal lines as necessary to illustrate material or methodology changes. Attach additional pages if necessary.

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging Material Used (include any additives used)	Volume of Material Placed (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
0		155	155	Tremie pipe Open Hole	
	Wyoming Bentonite				
105'					

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

III. SIGNATURE:

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

Signature of Well Driller

1/10/24
Date

Version: September 8, 2009
Page 2 of 2

New Mexico Office of the State Engineer
Water Column/Average Depth to Water

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

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

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Twn	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 04774 POD1		CUB	ED	4	2	2	23	23S	31E	618456	3573856	487	105		
C 04712 POD3		CUB	ED	4	1	2	24	23S	31E	619651	3573877	1212	55		
C 04712 POD4		CUB	ED	1	4	3	14	23S	31E	617535	3574316	1380	55		
C 02258		C	ED		3	2	26	23S	31E	618055	3571853*	1601	662		
C 04704 POD1		CUB	ED	3	2	2	13	23S	31E	619854	3575363	2378			
C 02348		C	ED	1	4	3	26	23S	31E	617648	3571068	2478	700	430	270
C 02777		CUB	ED	4	4	4	10	23S	31E	616974	3575662	2774	890		
C 03749 POD1		CUB	ED		2	2	15	23S	31E	616974	3575662	2774	865	639	226
C 04709 POD1		CUB	ED	3	1	1	15	23S	31E	615509	3575262	3575			
C 04712 POD1		CUB	LE	1	4	1	31	23S	32E	620917	3570289	3892	55		
C 04746 POD1		CUB	ED	3	4	3	36	23S	31E	619226	3569417	4016	105		
C 03851 POD1		CUB	LE	3	3	4	20	23S	32E	622880	3572660	4391	1392	713	679
C 03529 POD1		C	LE	2	4	3	29	23S	32E	622651	3571212	4639	550		
C 04712 POD5		CUB	ED	4	4	3	09	23S	31E	614393	3575754	4786	55		
C 02405		CUB	ED		4	1	02	24S	31E	617690	3568631*	4822	275	160	115
C 04712 POD2		CUB	LE	4	4	4	17	23S	32E	623332	3574331	4879	55		
C 02464		C	ED	2	3	1	02	24S	31E	617645	3568581	4879	320	205	115

Average Depth to Water: **429 feet**
Minimum Depth: **160 feet**
Maximum Depth: **713 feet**

Record Count: 17

UTMNAD83 Radius Search (in meters):

Easting (X): 618547 **Northing (Y):** 3573377 **Radius:** 5000

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

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	Tws	Rng	X	Y
NA	C 04774 POD1	4	2	2	23	23S	31E	618456	3573856

Driller License: 1833 **Driller Company:** VISION RESOURCES, INC

Driller Name: JASON MALEY

Drill Start Date:	12/14/2023	**Drill Finish Date:**	12/14/2023	**Plug Date:**	12/20/2023
Log File Date:	01/12/2024	**PCW Rcv Date:**		**Source:**	
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	2.00	**Depth Well:**	105 feet	**Depth Water:**	

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: C 04774 **Subbasin:** CUB **Cross Reference:** -

Primary Purpose: MON MONITORING WELL

Primary Status: PMT PERMIT

Total Acres: **Subfile:** - **Header:** -

Total Diversion: 0 **Cause/Case:** -

Owner: DEVON ENGERGY RESOURCES

Contact: DALE WOODALL

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	751178	EXPL	2023-09-19	PMT	APR	C-4774 POD1	T	0	0	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
C 04774 POD1	NA		4	2	2	23	23S	31E	618456	3573856	

Source

Acres	Diversion	CU	Use	Priority	Source	Description
0	0		MON		GW	

New Mexico Office of the State Engineer
Transaction Summary

EXPL Permit To Explore

Transaction Number: 751178 **Transaction Desc:** C-4774 POD1 **File Date:** 09/15/2023

Primary Status: PMT Permit
Secondary Status: APR Approved
Person Assigned: *******
Applicant: DEVON ENGERGY RESOURCES
Contact: DALE WOODALL

Events

	Date	Type	Description	Comment	Processed By
get images	09/15/2023	APP	Application Received	*	*******
get images	09/15/2023	TEC	Technical Report	*PLUG PLAN C-4774	*******
	09/19/2023	FTN	Finalize non-published Trans.		*******
	10/26/2023	QAT	Quality Assurance Completed	SQ2	*******
	10/31/2023	QAT	Quality Assurance Completed	IMAGE	*******
	01/12/2024	LOG	Well Log Received	*WELL LOG C-4774-	*******
	01/12/2024	DRY	Dry well log received	DRY WELL C-4774-	*******
	01/12/2024	LGI	Well Log Image	*PLG RECORD C-	*******

Water Right Information

WR File Nbr	Acres	Diversion	Consumptive	Purpose of Use
C 04774	0	0		MON MONITORING WELL
**Point of Diversion				
C 04774 POD1		618456	3573856	

Conditions

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

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

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

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

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

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

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

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

Q The State Engineer retains jurisdiction over this permit.

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

Action of the State Engineer

SHOULD THE PERMITTEE CHANGE THE PURPOSE OF USE TO OTHER THAN MONITORING PURPOSES, AN APPLICATION SHALL BE ACQUIRED FROM THE OFFICE OF THE STATE ENGINEER.

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

Approval Code: A - Approved

Action Date: 09/19/2023

Log Due Date: 09/18/2024

State Engineer: Mike A. Hamman, P.

U.S. Fish and Wildlife Service
National Wetlands Inventory

Todd 23A Fed 029, Intermittent 14788 feet

August 20, 2021

Wetlands

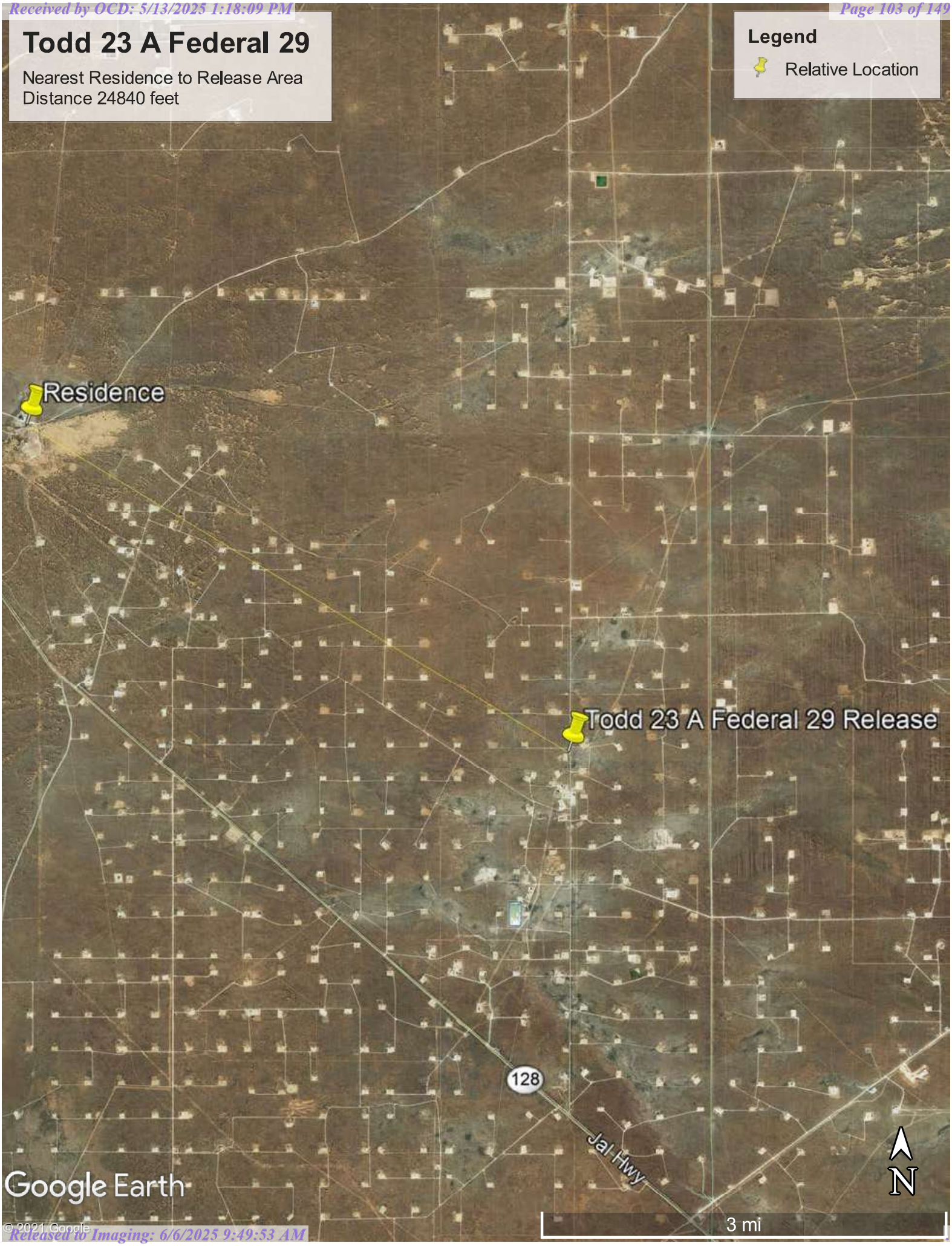
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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

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

Todd 23 A Federal 29

Nearest Residence to Release Area
Distance 24840 feet



New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

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

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 64	q 16	q 4	Sec	Tws	Rng	X	Y
C 04712	CUB	MON	0	HARVARD PETROLEUM COMPANY LLC	ED	C 04712 POD3	NA				4	1	2	24	23S	31E	619650	3573877
					ED	C 04712 POD4					1	4	3	14	23S	31E	617535	3574316
C 02258	C	PRO	0	DEVON ENERGY CORP.(NEVADA)	ED	C 02258						3	2	26	23S	31E	618055	3571853*
C 04704	CUB	MON	0	DEVON ENERGY	ED	C 04704 POD1	NA				3	2	2	13	23S	31E	619854	3575363
C 02348	C	STK	3	NGL WATER SOLUTIONS PERMIAN	ED	C 02348				Shallow	1	4	3	26	23S	31E	617647	3571068
C 02602	C	SAN	0	POGO PRODUCING COMPANY	ED	C 02602						2	2	35	23S	31E	618471	3570650*
C 02777	CUB	MON	0	US DEPT OF ENERGY WIPP	ED	C 02777					4	4	4	10	23S	31E	616973	3575662
C 03749	CUB	MON	0	US DEPARTMENT OF ENERGY	ED	C 03749 POD1				Shallow		2	2	15	23S	31E	616973	3575662
C 04709	CUB	MON	0	DEVON ENERGY	ED	C 04709 POD1	NA				3	1	1	15	23S	31E	615508	3575262
C 04724	CUB	MON	0	DEVON ENERGY	ED	C 04724 POD1	NA				4	3	3	10	23S	31E	615709	3575738
C 04712	CUB	MON	0	HARVARD PETROLEUM COMPANY LLC	LE	C 04712 POD1	NA				1	4	1	31	23S	32E	620917	3570289
C 04746	CUB	MON	0	DEVON ENERGY RESOURCES	ED	C 04746 POD1	NA				3	4	3	36	23S	31E	619225	3569417
C 03851	CUB	MON	0	US DEPARTMENT OF ENERGY	LE	C 03851 POD1				Artesian	3	3	4	20	23S	32E	622879	3572660
C 03529	C	STK	0	ANNETTE MCCLOY	LE	C 03529 POD1					2	4	3	29	23S	32E	622651	3571212
C 04712	CUB	MON	0	HARVARD PETROLEUM COMPANY LLC	ED	C 04712 POD5	NA				4	4	3	09	23S	31E	614392	3575754
C 00225 A	CUB	IRR	8.4	GREGORY ROCKHOUSE RANCH	ED	C 02405				Shallow		4	1	02	24S	31E	617690	3568631*
C 01246 AO	CUB	IRR	47.82	CATHLEEN MC INTIRE	ED	C 02405				Shallow		4	1	02	24S	31E	617690	3568631*
C 02405	C	PRO	0	TEXACO EXPLORATION & PROD. IND	ED	C 02405				Shallow		4	1	02	24S	31E	617690	3568631*
C 02452	C	PRO	0	TEXACO EXPLORATION & PROD INC.	ED	C 02405				Shallow		4	1	02	24S	31E	617690	3568631*
					ED	C 02452						4	1	02	24S	31E	617690	3568631*
C 02576	C	PRO	0	SONAT EXPLORATION COMPANY	ED	C 02405				Shallow		4	1	02	24S	31E	617690	3568631*
C 04712	CUB	MON	0	HARVARD PETROLEUM COMPANY LLC	LE	C 04712 POD2	NA				4	4	4	17	23S	32E	623331	3574331
C 02464	C	PRO	0	COMMISSIONER OF PUBLIC LANDS	ED	C 02464				Shallow	2	3	1	02	24S	31E	617644	3568581
C 02901	C	PUB	0	B & H MAINTENANCE & CONST.	ED	C 02901						3	4	1	02	24S	31E	617589	3568530*

Record Count: 24

UTMNAD83 Radius Search (in meters):

Easting (X): 618547 **Northing (Y):** 3573377 **Radius:** 5000

Sorted by: Distance

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

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	Tws	Rng	X	Y
	C 02258		3	2	26	23S	31E	618055	3571853*

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

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

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: C 02258 **Subbasin:** C **Cross Reference:** -

Primary Purpose: PRO 72-12-1 PROSPECTING OR DEVELOPMENT OF NATURAL RESOURCE

Primary Status: PMT PERMIT

Total Acres: **Subfile:** - **Header:** -

Total Diversion: 0 **Cause/Case:** -

Owner: DEVON ENERGY CORP.(NEVADA)

Contact: CHARLES W. HORSMAN

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	469242	72121	1992-05-27	EXP	EXP	C 02258	T		3	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Twn	Rng	X	Y	Other Location Desc
C 02258				3	2	26	23S	31E	618055	3571853*	

***An (*) after northing value indicates UTM location was derived from PLSS - see Help**

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	Tws	Rng	X	Y
	C 02348	1	4	3	26	23S	31E	617648	3571068

Driller License: 1654 **Driller Company:** NOT WORKING FOR HIRE--SIRMAN DRILLING AND CONSTRUC

Driller Name:

Drill Start Date:	10/31/2013	**Drill Finish Date:**	11/01/2013	**Plug Date:**	
Log File Date:	11/07/2013	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	10 GPM
Casing Size:	6.00	**Depth Well:**	700 feet	**Depth Water:**	430 feet

Water Bearing Stratifications:	Top	Bottom	Description
	15	125	Sandstone/Gravel/Conglomerate
	315	700	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	560	620
	680	700

New Mexico Office of the State Engineer
Water Right Summary

get image list

WR File Number: C 02348 **Subbasin:** C **Cross Reference:** -

Primary Purpose: STK 72-12-1 LIVESTOCK WATERING

Primary Status: PMT PERMIT

Total Acres: **Subfile:** - **Header:** -

Total Diversion: 3 **Cause/Case:** -

Owner: NGL WATER SOLUTIONS PERMIAN

Contact: R CHARLES WILKIN

Documents on File

	Trn #	Doc	File/Act	Status 1	Status 2	Transaction Desc.	From/ To	Acres	Diversion	Consumptive
get images	633178	COWNF	2018-09-17	CHG	PRC	C 02348	T		0	
get images	491413	72121	2011-12-14	PMT	LOG	C 02348: SUBSEQUENT STK PERMIT	T		3	
	422940	COWNF	2009-02-02	CHG	PRC	C 02348	T		0	
	154822	COWNF	1998-09-09	CHG	PRC	C 02348	T	0	0	
	154817	DCL	1998-09-09	DCL	PRC	C 02348	T	0	3	

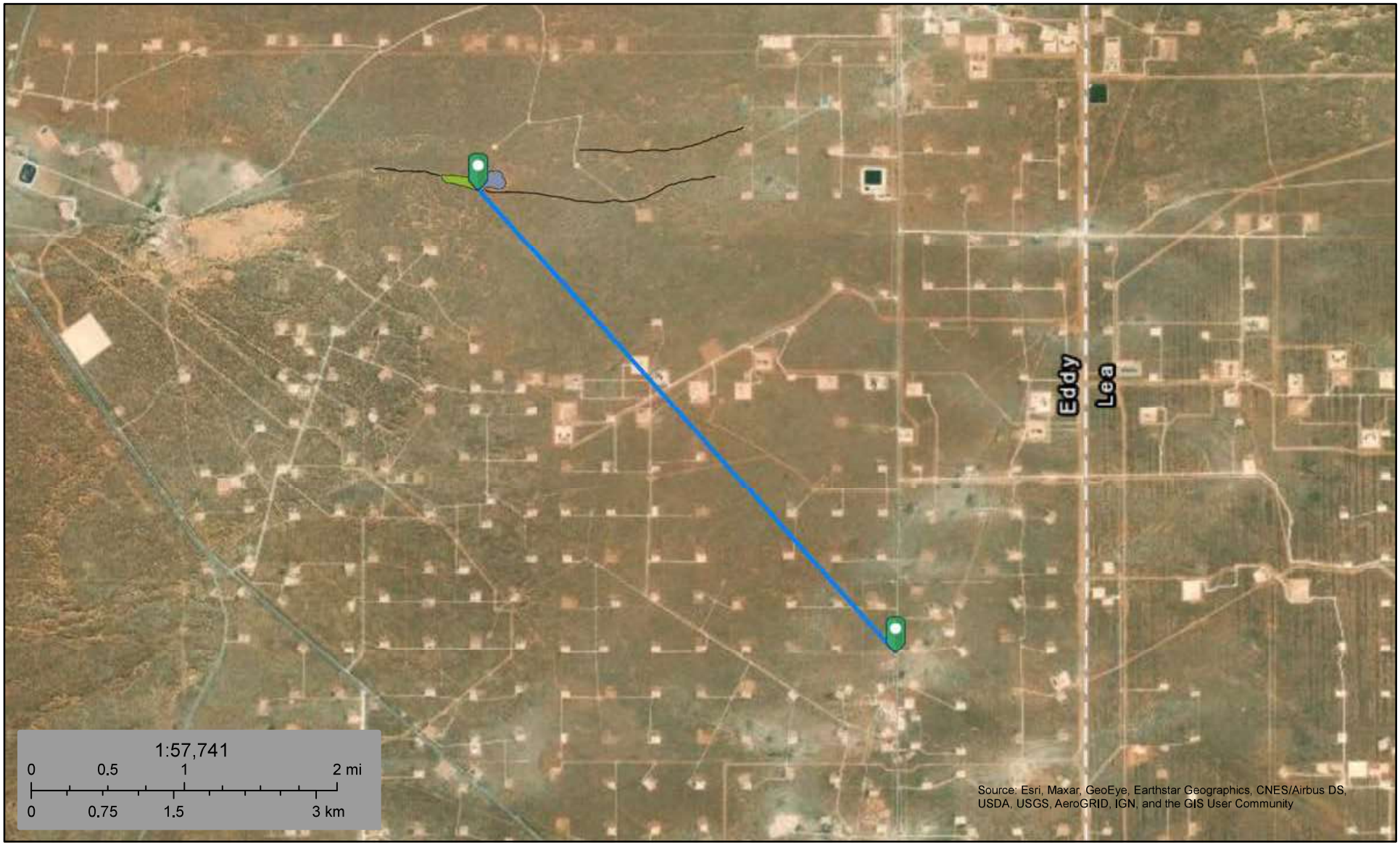
Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q 64	Q16	Q4	Sec	Tws	Rng	X	Y	Other Location Desc
C 02348		Shallow	1	4	3	26	23S	31E	617648	3571068	

U.S. Fish and Wildlife Service
National Wetlands Inventory

Todd 23A Fed 029, Wetland 18182 feet



August 20, 2021

Wetlands

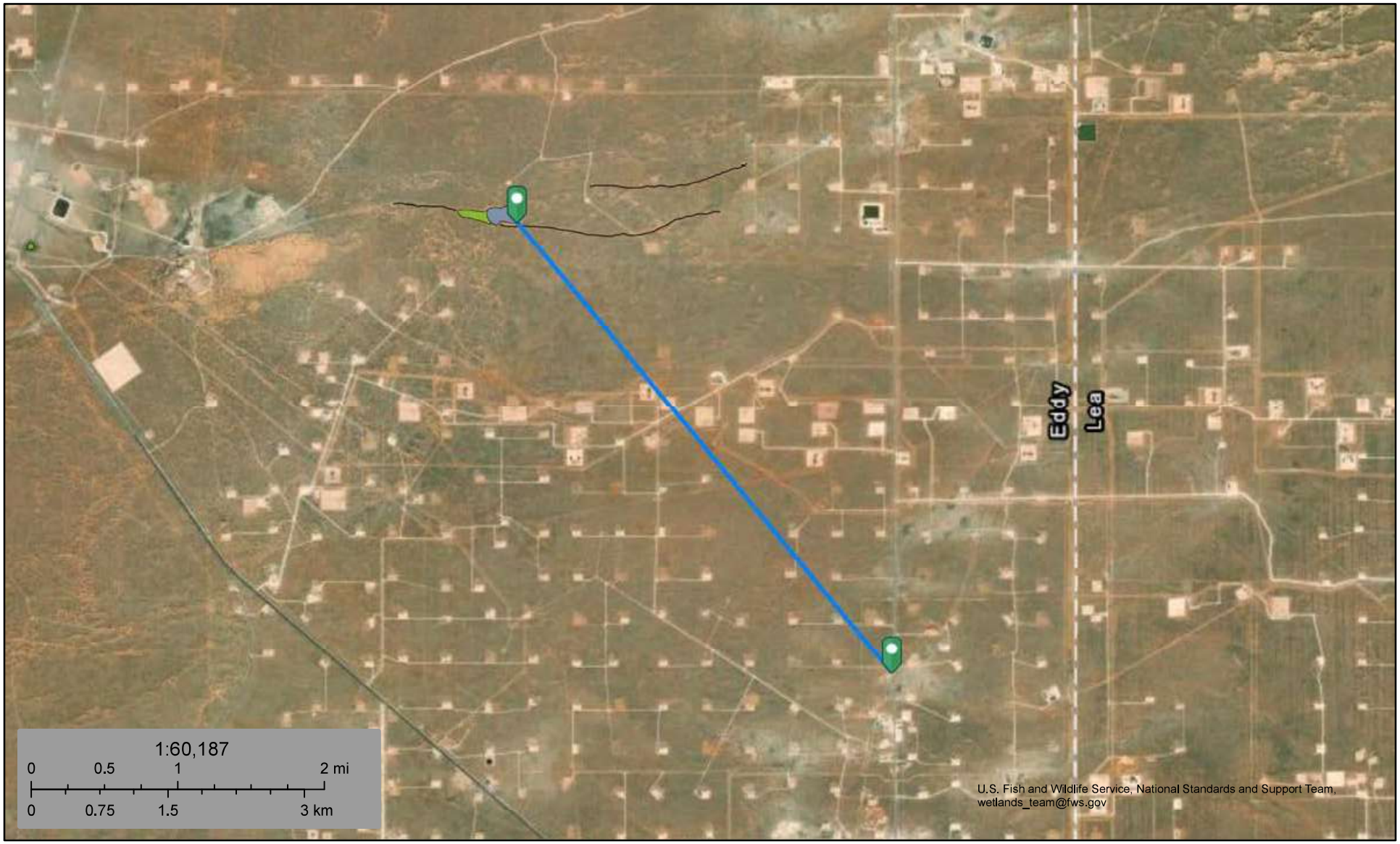
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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

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

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetland 17,828 feet



July 6, 2023

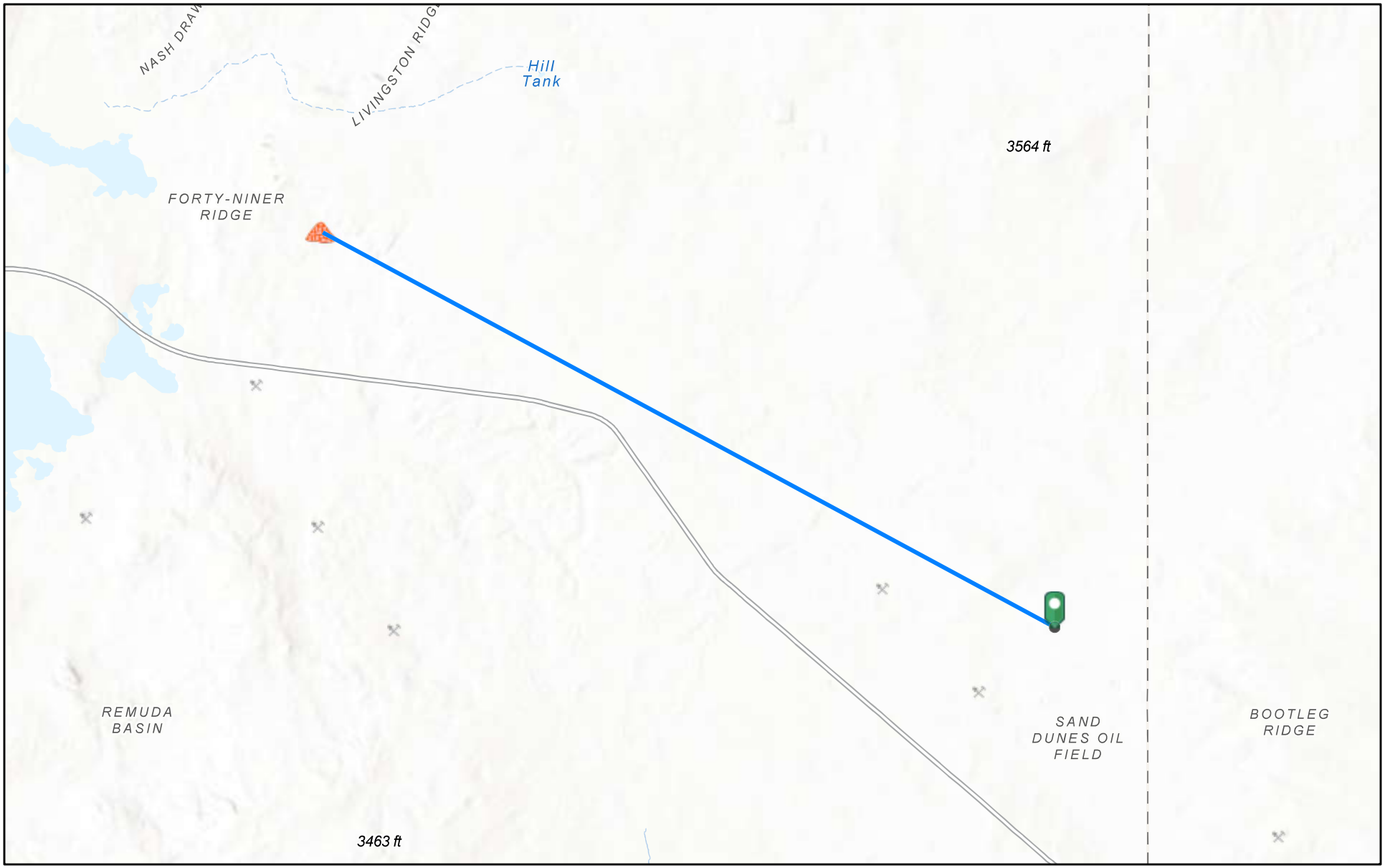
Wetlands

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

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

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

Todd 23 A Federal #029 - 49,770 feet from mine



1/26/2024, 10:28:32 AM

1:116,988

0 0.75 1.5 3 mi

0 1.25 2.5 5 km

Registered Mines

Aggregate, Stone etc.

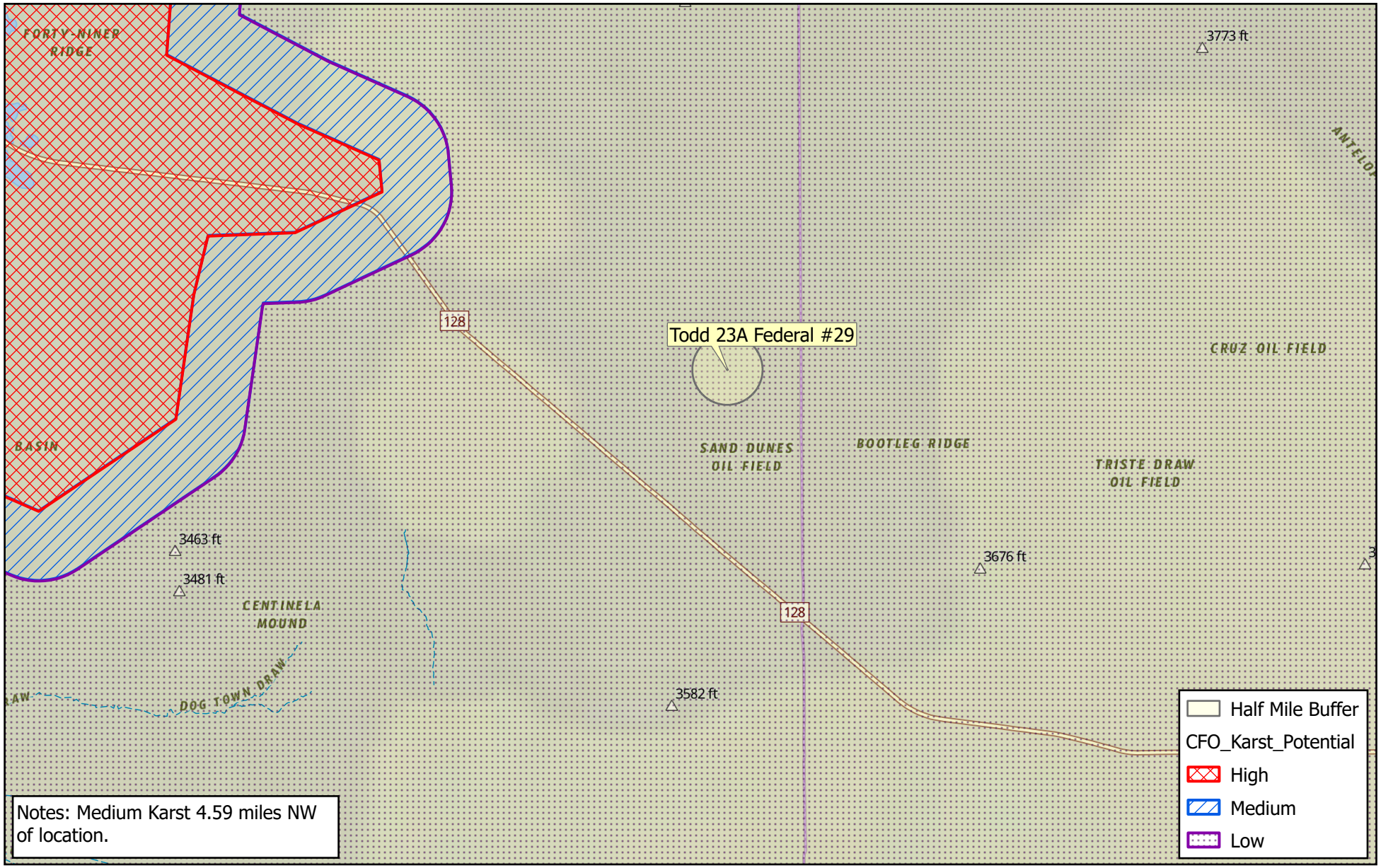
Aggregate, Stone etc.

Potash

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

EMNRD MMD GIS Coordinator

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



VERTEX

0 1 2 Miles

NAD 1983 StatePlane New Mexico East FIPS 3001 Feet

Map Center:
Lat/Long: 32.277523°N, 103.750156°W

Date: Apr 04/25

N

Plate 8 Karst Potential
Todd 23A Federal #29

PLATE: 8

devon

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

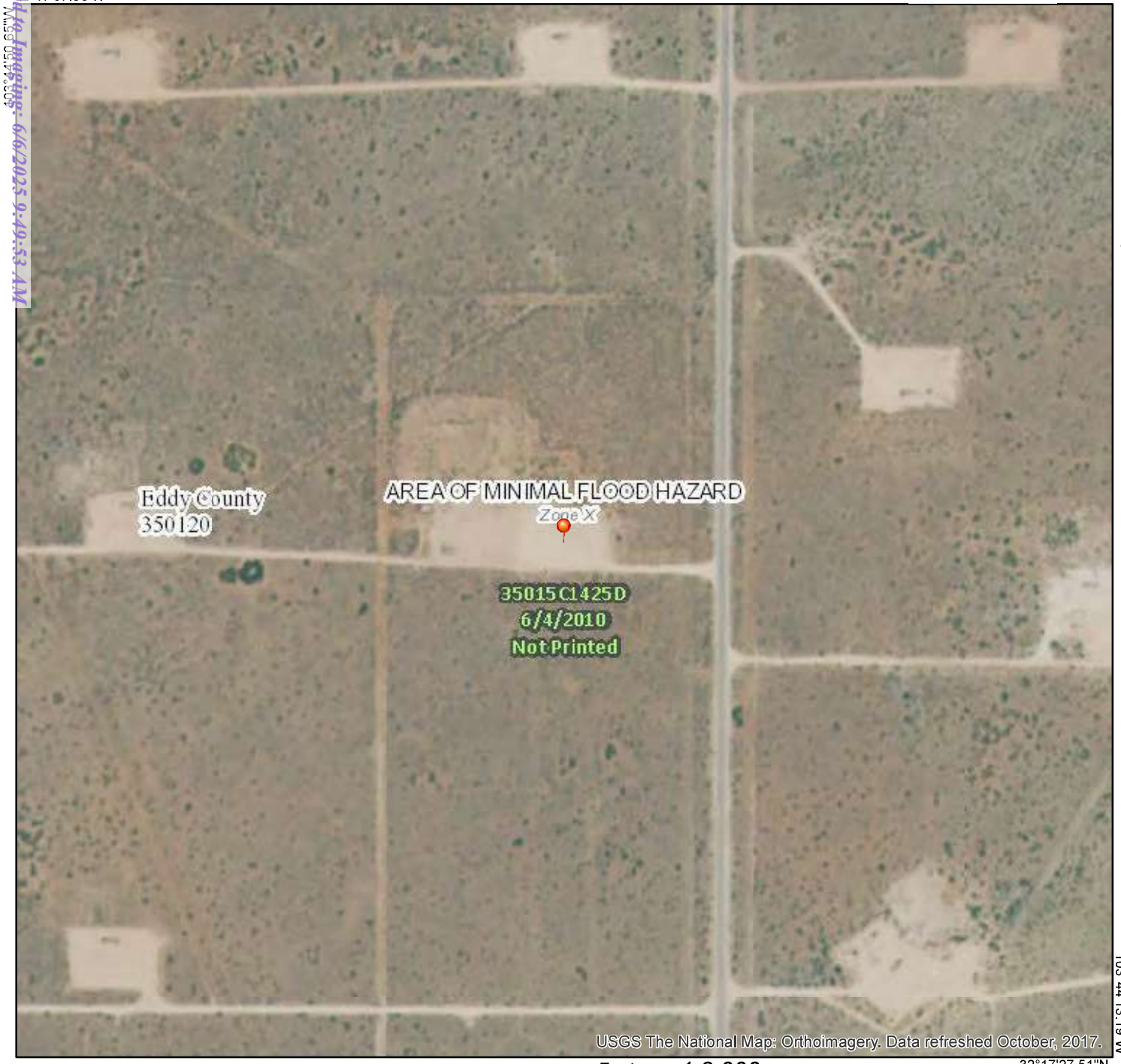
Note: Georeferenced image from Esri, 2025. Site features from GPS, Vertex, 2025.

VERSATILITY. EXPERTISE.

National Flood Hazard Layer FIRMette

32°17'57.93"N

103°44'50.65"W



103°44'13.19"W

32°17'27.51"N

Feet

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

1:6,000

Legend

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

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

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

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

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

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

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

N

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

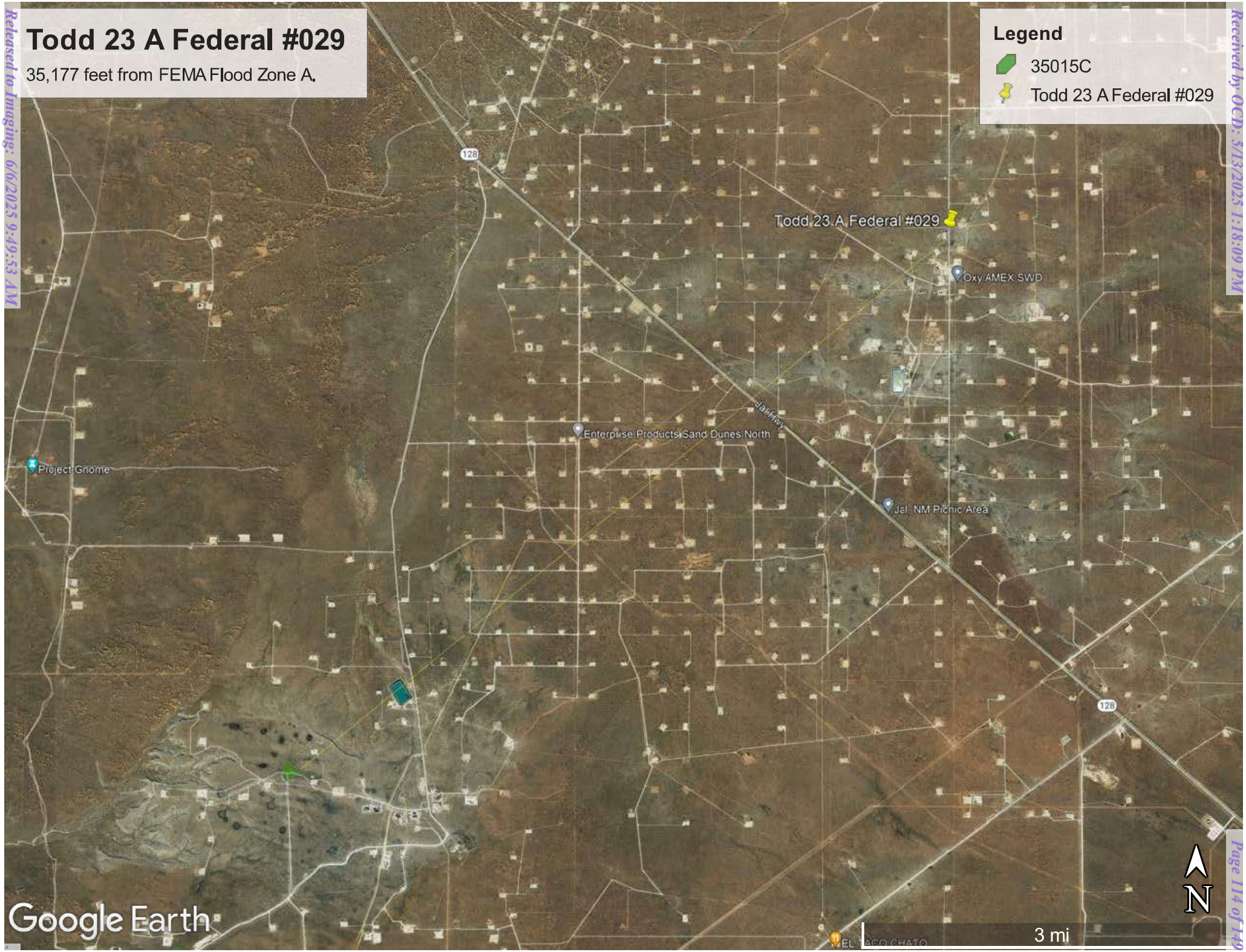
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 4/28/2019 at 11:33:56 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

Todd 23 A Federal #029

35,177 feet from FEMA Flood Zone A.



United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Eddy Area, New Mexico

August 23, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

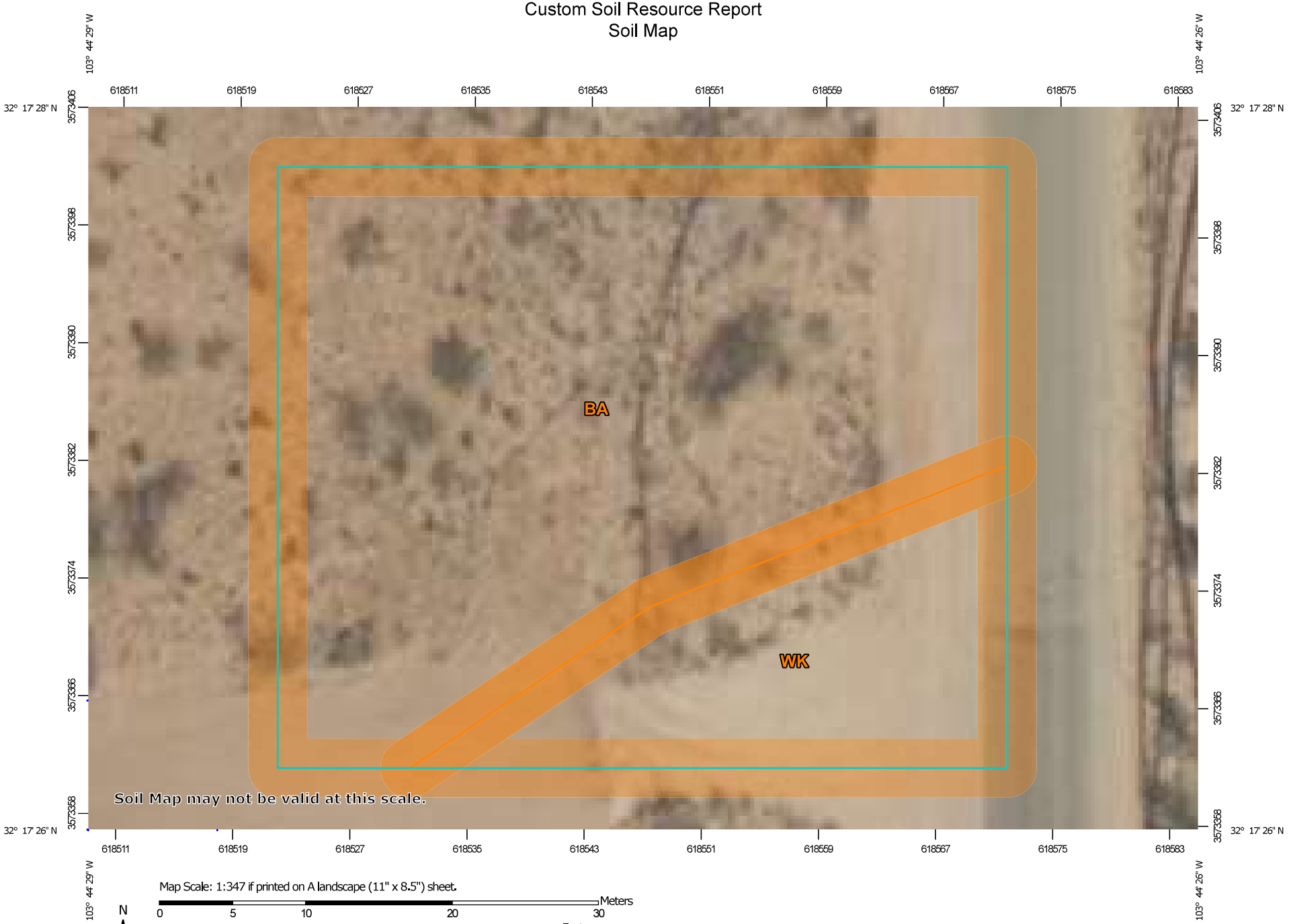
alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:347 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 5 10 20 30

Feet
0 15 30 60 90

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

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BA	Berino loamy fine sand, 0 to 3 percent slopes	0.4	76.7%
WK	Wink loamy fine sand, 0 to 3 percent slopes, eroded	0.1	23.3%
Totals for Area of Interest		**0.5**	**100.0%**

Map Unit Descriptions

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

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

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

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

onsite investigation is needed to define and locate the soils and miscellaneous areas.

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

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

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

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

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

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

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

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

Eddy Area, New Mexico

BA—Berino loamy fine sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1w42
Elevation: 2,000 to 5,700 feet
Mean annual precipitation: 6 to 14 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 180 to 260 days
Farmland classification: Not prime farmland

Map Unit Composition

Berino and similar soils: 99 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berino

Setting

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

Typical profile

H1 - 0 to 12 inches: loamy fine sand
H2 - 12 to 58 inches: sandy clay loam
H3 - 58 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R042XC007NM - Loamy
Hydric soil rating: No

Minor Components

Pajarito

Percent of map unit: 1 percent
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

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

Map Unit Setting

National map unit symbol: 1w6c
Elevation: 2,700 to 5,000 feet
Mean annual precipitation: 5 to 14 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 180 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Wink

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Low (about 5.7 inches)

Interpretive groups

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

Minor Components

Wink

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

Simona

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

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Ecological site R042XC007NM
Loamy

Accessed: 08/23/2021

General information

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

Figure 1. Mapped extent

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

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This site occurs on uplands landforms, mainly on hill slopes, ridges, plains, terraces and some fan remnants. Slopes range from 1 to 5 percent and average about 3 percent. Average annual precipitation is about 8 to 14 inches. Elevations range from 2,842 to 5,000 feet.

Table 2. Representative physiographic features

Landforms	(1) Plain (2) Terrace (3) Fan piedmont
Flooding frequency	None
Ponding frequency	None
Elevation	2,842–5,000 ft

Slope	0-5%
Aspect	E, S, W

Climatic features

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

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

Table 3. Representative climatic features

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

Influencing water features

This site is not influenced by wetland or streams.

Soil features

The soils of this site are deep to moderately deep. The moderately deep soils have either a petrocalcic, petrogypsic or gypsum horizon between 30 and 40 inches.

Surface textures are loam, silt loam, very fine sandy loam, or clay loam. Substratum textures are loam, silty clay loam, clay loam, or silt loams. Subsoil textures are silt loam , clay loam silty clay loam, gravelly loam, gravelly clay loam or very gravelly loam. Permeability is moderate to slow and the available water holding capacity is high to moderate. The Atoka, Reeves, Russler, Milner soils may have highr amounts of CaC03, ranging as high as 40 percent in the subsoil. Rock fragments range fro 5 to 50 percent in the subsoil. Reeves, Rusler, Milner, Holloman soils will have 40 to 80 percent gypsum in the underlying material.

Maximum and minimum values listed below represent the characteristic soils for this site.

Characteristic Soils:

Atoka (petrocalcic)
Bigetty
Reagan
Reakor
Reeves (gypsum)
Russler (gypsum)
Largo
Russler (gypsum)
Largo

Berino
Tinney
Midessa
Ratliff
Holloman (gypsum)
Milner (gypsum)

Table 4. Representative soil features

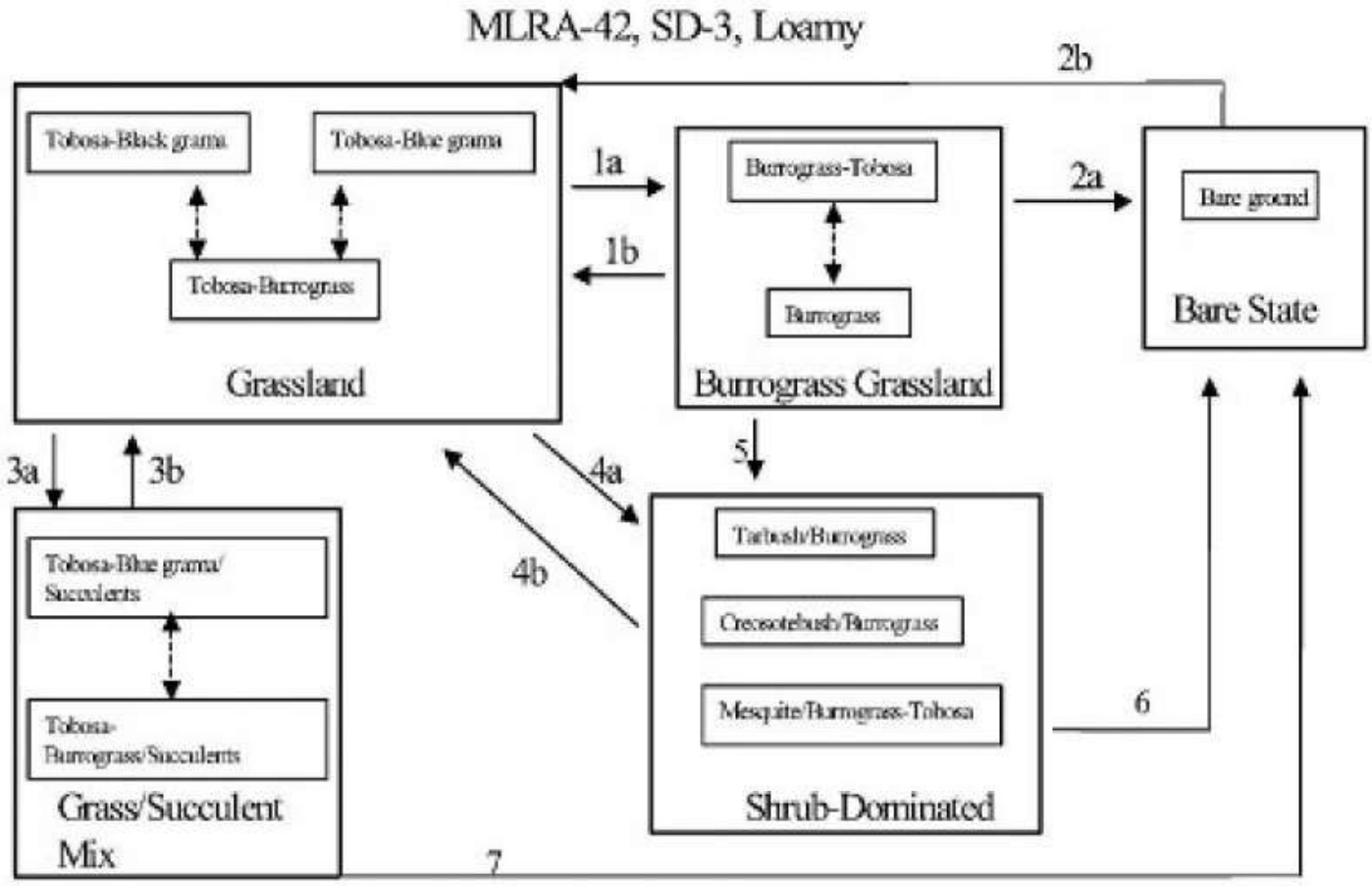
Surface texture	(1) Loam (2) Very fine sandy loam (3) Silt loam
Family particle size	(1) Loamy
Drainage class	Well drained to somewhat excessively drained
Permeability class	Moderate to slow
Soil depth	30–72 in
Surface fragment cover <=3"	0–5%
Surface fragment cover >3"	0%
Available water capacity (0-40in)	5–12 in
Calcium carbonate equivalent (0-40in)	0–10%
Electrical conductivity (0-40in)	0–8 mmhos/cm
Sodium adsorption ratio (0-40in)	0–6
Soil reaction (1:1 water) (0-40in)	6.6–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–5%
Subsurface fragment volume >3" (Depth not specified)	0%

Ecological dynamics

Overview: The Loamy site is associated with the Gyp Upland ecological site with which it intergrades. There is a pronounced increase in alkali sacaton along this interface. The loamy site is also associated with the Gravelly and Shallow ecological sites from which it receives run-on water. The Draw site often dissects Loamy sites and is distinguished from the Loamy site by increased production or greater densities of woody species. The historic plant community has a grassland aspect, dominated by grasses with shrubs and half-shrubs sparse and evenly distributed. Tobosa, black grama and blue grama are the dominant species. Retrogression within this state is characterized by a decrease in black and blue grama and an increase in burrograss. Continuous overgrazing and drought can initiate a transition to a Burrograss- Grassland state. Continued reduction in grass cover and resulting infiltration problems may eventually effect a change to a Bare State, with very little or no remaining grass cover. Alternatively, creosotebush, tarbush or mesquite may expand or invade. Transitions back to a Grassland State from a Bare or Shrub-Dominated state are costly and may not be economically feasible. Decreased fire frequency may play a part in the transition to the Grass/Succulent Mix state with increased amounts of cholla and prickly pear.

State and transition model

Plant Communities and Transitional Pathways (diagram)



1a. Soil drying, overgrazing, drought, soil surface sealing. 1b. Restore natural overland flow, increase infiltration, prescribed grazing.

2a. Severe reduction in cover, soil surface sealing, decreased infiltration, erosion. 2b. Restore hydrology, break up physical crust, range seeding, prescribed grazing.

3a. Lack of fire, overgrazing, hail storms or other physical disturbance, drought. 3b. Prescribed fire, brush control, prescribed grazing.

4a. Seed dispersal of shrubs, persistent loss of grass cover, competition by shrubs, lack of fire. 4b. Brush control, range seeding -dependent on amount of grass (seed bank) remaining.

5. Loss of grass cover, seed dispersal of shrubs, competition by shrubs.

6. & 7. Brush control with continued loss of grass cover, soil sealing, erosion.

Figure 4.

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

State Containing Historic Climax Plant Community
Grassland:

The historic plant community has a grassland aspect, dominated by grasses with shrubs and half-shrubs sparse and evenly distributed. Black grama, blue grama, and tobosa are the dominant grass species. There are a variety of

perennial forbs and their production varies widely by season and year. Globemallow, verbena, groundsels, croton and filaree are forbs commonly found on this site. Fourwing saltbush and winterfat are two of the more palatable shrubs. The Loamy ecological site encompasses a wide variety of soils, with surface textures ranging from sandy loams to clay loams. Soil depths range from shallow to very deep and can include sub surface features such as calcic, petrocalcic, and gypsic horizons. These variations cause differences in plant community composition and dynamics. Black grama is found at highest densities on coarser textured sandy loams, with blue grama preferring finer textured loam and silt loam, and tobosa favoring lower landscape positions and loam to clay loam surface textures. Burrograss may often be the dominant grass species on silty soils, perhaps in part due to the seedlings ability to auger into and establish on physically crusted soils. Gypsum influenced soils typically have greater amounts of tobosa, burrograss, and ephedra. There is greater representation of sideoats and vine mesquite within the tobosa-blue grama community. Retrogression under continuous heavy grazing results in a decrease of black grama, blue grama, sideoats grama, plains bristlegrass, bush muhly, cane bluestem, vine mesquite, winterfat, and fourwing saltbush. Species such as burrograss, threeawns, sand dropseed, sand muhly, and broom snakeweed increase under continuous heavy grazing or prolonged periods of drought. Under continued retrogression burrograss can completely dominate the site. Creosotebush, tarbush, and mesquite, can also dominate. Cholla and prickly pear can increase on areas that are disturbed or overgrazed.

Diagnosis: Tobosa, black grama, and blue grama are the dominant species. Grass cover is uniformly distributed with few large bare areas. Shrubs are sparse and evenly distributed. Slopes range from level to gently sloping and usually display limited evidence of active rills and gully formation if plant cover remains intact. Litter movement associated with overland flow is limited to smaller size class litter and short distances.

Other shrubs include: yucca, mesquite, tarbush, cholla and creosote bush.

Other forbs include: desert holly, scorpionweed, bladderpod, flax, nama, fleabane, Indianwheat, Indian blanket flower, groundcherry, deerstongue, and rayless goldenrod.

Table 5. Annual production by plant type

Plant Type	Low (Lb/Acre)	Representative Value (Lb/Acre)	High (Lb/Acre)
Grass/Grasslike	585	833	1080
Forb	39	55	72
Shrub/Vine	26	37	48
Total	**650**	**925**	**1200**

Table 6. Ground cover

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

Figure 6. Plant community growth curve (percent production by month).

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	10	10	25	30	15	5	0	0

State 2
Burrograss-Grassland

Community 2.1
Burrograss-Grassland

Burrograss-Grassland: Changes in hydrology resulting in decreased available soil moisture, reduces grass cover and increases bare ground. Burrograss is the dominant grass. Tobosa cover is variable and can range from sizeable areas to small patches occupying only depressions or the lowest and wettest positions within the site. Threeawns, ear muhly, sand muhly, and fluffgrass occur at increased densities compared to the grassland state. Shrub densities may increase especially mesquite, creosotebush or tarbush. Retrogression within this state is characterized by a further decrease in grass cover and increased bare ground. Further deterioration of this site can result in the transition to a bare state or becoming shrub dominated.

Diagnosis: Burrograss is the dominant species. Grass cover is no longer uniformly distributed, instead tending to be patchy with large areas of bare ground present. Physical crusts are present in bare areas reducing infiltration and suppressing seedling establishment by any grass species other than burrograss.

Transition to Burrograss-Grassland (1a): Transitions from grassland to a burrograss-grassland state may occur due to changes in hydrology. Gullies, roads or obstructions that alter natural water flow patterns may cause this transition. Changes in surface hydrology may also occur due to overgrazing or drought. The reduction in grass cover promotes increased soil physical crusts and reduces infiltration. 5

Key indicators of approach to transition:
? Diversion of overland flow resulting in decreased soil moisture.
? Increase in amount of burrograss cover
? Reduction in grass cover and increase in size and frequency of bare patches.
? Formation of physical crusts—indicating reduced infiltration.
? Evidence of litter movement—indicating loss or redistribution of organic matter.

Transition back to Grassland (1b) The natural hydrology of the site must be returned. Culverts, turnouts, or rerouting roads may help re-establish natural overland flow, if roads or trails have altered the hydrology. Erosion control structures or shaping and filling gullies may help regain natural flow patterns and establish vegetation if the flow has been channeled. Breaking up physical crusts by soil disturbance may promote infiltration and seedling emergence. Allow natural revegetation to take place. Prescribed grazing will help ensure proper forage utilization and reduce grass loss due to grazing.

State 3
Bare State

Community 3.1
Bare State

Bare State: Extremely low ground cover, soil degradation and erosion characterize this state. Very little vegetation remains. Burrograss is the dominant grass and cover is extremely patchy. Physical soil crusts are extensive. Erosion and resource depletion increase as site degrades.

Diagnosis: Very little cover remains. Erosion is evident by soil sealing, water flow patterns, pedestals or terracettes. Rills and gullies may be present and active.

Transition to Bare State (2a): Extended drought, continuous heavy grazing, or other disturbance that severely

depletes grass cover can effect this transition. As grass cover decreases, sheet flow and erosion increase, and physical soil crusts form, thereby further reducing infiltration.

Key indicators of approach to transition:
? Continued reduction in grass cover.
? Increased soil surface sealing.
? Increased erosion.
? Reduced aggregate stability in bare areas.

Transition back to Grassland (2b) Restore the hydrology, see (1a). With the extent of grass loss range seeding may be necessary. Utilizing livestock or mechanical means to break up the physical crusts may increase infiltration and aid seedling establishment. Prescribed grazing will help ensure adequate deferment period following seeding, and proper forage utilization once the grass stand is well established. The degree to which this site is capable of recovery depends on the restoration of hydrology, extent of degradation to soil resources, and adequate rainfall necessary to establish grasses.

State 4
Grass/Succulent Mix

Community 4.1
Grass/Succulent Mix

Grass / Succulent Mix: Increased representations of succulents characterize this site. Increased densities of cholla or pricklypear is recognized as a management concern, but their impact on grass production is unclear. Light to medium cholla or prickly pear infestation doesn't seem to greatly reduce grass production, however it limits access to palatable grasses and interferes with livestock movement and handling. Tobosa and blue grama are the dominant species on this site. Retrogression within this site is characterized by a decrease in blue grama and an increase in succulents, tobosa and burrograss.

Diagnosis: Cholla or prickly pear is found at increased densities. Grass cover is variable ranging from uniformly distributed to patchy with frequent areas of bare ground present. Tobosa or blue grama is the dominant grass species.

Transition to Grass/Succulent Mix (3a): If fire was historically a part of desert grassland ecosystem and played a role in suppressing seedlings of shrubs and succulents, then fire suppression may favor the increase of succulents.1 Heavy grazing by livestock or other physical disturbances may help disseminate seed and increase the establishment of succulents. Areas historically overgrazed by sheep are sometimes associated with higher densities of Succulents. Intense hailstorms can spread pricklypear by breaking off joints causing new plants to take root.3 During severe drought perennial grass cover can decline significantly, leaving resources available for use by more drought tolerant succulents. Cholla and pricklypear are both adapted to and favored by drought due to the ability of their shallow, wide spreading root systems to absorb and store water.4

Key indicators of approach to transition:
? Decrease or change in distribution of grass cover.
? Increase in amount of succulent seedlings.
? Increased cover of succulents.

Transition back to Grassland (3b) Fire is an effective means of controlling cholla and prickly pear if adequate grass cover remains to carry fire.2 Cholla greater than two feet tall or pricklypear with a large amount of pads (>15-20) are harder to kill. Chemical control is effective in controlling prickly pear and cholla; apply when growth starts in May. Hand grubbing is also effective if cholla or pricklypear is severed 2-4 inches below ground and care is taken not to let broken joints or pads take root. Stacking and burning piles and grubbing during winter or drought help keeps broken joints and pads from rooting. Prescribed grazing will help ensure proper forage utilization and sustain grass cover.

State 5
Shrub Dominated

Community 5.1
Shrub Dominated

Shrub Dominated: Increased shrub cover characterizes this state. Mesquite, creosotebush, and/or tarbush are the dominant shrub species. Burrograss or tobosa is the dominant grass species. Grass cover is decreased, typically patchy with large bare areas present; however, sometimes grass cover can remain relatively high for extended periods when associated with light to moderate infestations of mesquite. Variations in soil characteristics play a part in determining which shrub species increase. Mesquite is well adapted to a wide range of soil types, but increases more often on deep soils low in carbonates, that have a sandy surface overlying finer textured soils. Tarbush prefers finer textured, calcareous soils, usually in lower positions that receive some extra water. Creosotebush is less tolerant of fine textured soils, preferring sandy, calcareous soils that have some gravel. Creosotebush also does well on soils that are shallow over caliche. Retrogression within this state is characterized by a decrease in tobosa, and an increase in burrograss. As the site continues to degrade shrub cover continues to increase and grass cover is severely reduced.

Diagnosis: Mesquite, Creosotebush, and/or tarbush are the dominant shrubs. Blue grama and black grama cover is low or absent. Burrograss or tobosa are the dominant grasses. Typically grass cover is patchy with large interconnected bare areas present. Physical soil crusts are present, especially on silt loam surface soils.

Transition to Shrub Dominated (4a): Wildlife and livestock consume and disperse mesquite seeds. Flood events may wash creosote or tarbush seeds off adjacent gravelly sites onto the loamy site and supply adequate moisture for germination. Persistent loss of grass cover due to overgrazing or drought can cause large bare patches, providing competition free areas for shrub seedling establishment. As shrub cover increases, competition for soil resources, especially water, becomes a major factor in further reducing grass cover. Reduction of fire, due to either fire suppression policy or loss of adequate fine fuels may increase the probability of shrub encroachment. Increased soil surface physical crusts and associated decreased infiltration, may prevent the establishment of grass seedlings.

Transition to Shrub Dominated (5): The dispersal of creosotebush, tarbush or mesquite seed, combined with loss of grass cover and resource competition by shrubs may cause this transition.

Key indicators of approach to transition:
? Decreased grass and litter cover.
? Increased bare patch size.
? Increased physical soil crusts.
? Increased amount of mesquite, creosotebush, or tarbush seedlings.
? Increased shrub cover.

Transition back to Grassland (4b) Brush control will be necessary to remove shrubs and eliminate competition for resources necessary for grass establishment or reproduction. Seeding may be necessary on those sites where desired grass species are absent or very limited. Pitting and seeding may increase the chances of successful grass establishment. Prescribed grazing will help ensure adequate time is elapsed before grazing seeded area is allowed and proper forage utilization following seeding establishment.

Transition to Bare State (6): If grass cover on the shrub-dominated state is severely limited and shrubs are removed a bare state may result. This transition will depend on amount of grasses or seed remaining, whether site is seeded, or if seeding is successful.

Transition to Bare State (7): Removal of succulents and continued overgrazing or drought may cause loss of remaining grasses and erosion. Soil surface physical crusting may also be an important factor in inhibiting grass seedling establishment

Additional community tables

Table 7. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Lb/Acre)	Foliar Cover (%)
Grass/Grasslike					

Grass/Grasslike					
1	**Warm Season**			278–324	
	tobosagrass	PLMU3	*Pleuraphis mutica*	278–324	–
2	**Warm Season**			9–46	
	burrograss	SCBR2	*Scleropogon brevifolius*	9–46	–
3	**Warm Season**			231–278	
	black grama	BOER4	*Bouteloua eriopoda*	231–278	–
	blue grama	BOGR2	*Bouteloua gracilis*	231–278	–
4	**Warm Season**			28–46	
	sideoats grama	BOCU	*Bouteloua curtipendula*	28–46	–
5	**Warm Season**			46–93	
	bush muhly	MUPO2	*Muhlenbergia porteri*	46–93	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	46–93	–
6	**Warm Season**			9–28	
	Arizona cottontop	DICA8	*Digitaria californica*	9–28	–
7	**Warm Season**			46–93	
	threeawn	ARIST	*Aristida*	46–93	–
	muhly	MUHLE	*Muhlenbergia*	46–93	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	46–93	–
8	**Warm Season**			28–46	
	Graminoid (grass or grass-like)	2GRAM	*Graminoid (grass or grass-like)*	28–46	–
Shrub/Vine					
9	**Shrub**			9–28	
	fourwing saltbush	ATCA2	*Atriplex canescens*	9–28	–
	jointfir	EPHED	*Ephedra*	9–28	–
	winterfat	KRLA2	*Krascheninnikovia lanata*	9–28	–
	cane bluestem	BOBA3	*Bothriochloa barbinodis*	5–24	–
	Arizona cottontop	DICA8	*Digitaria californica*	5–24	–
	plains bristlegrass	SEVU2	*Setaria vulpiseta*	5–24	–
10	**Shrub**			9–28	
	javelina bush	COER5	*Condalia ericoides*	9–28	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	9–28	–
	Grass, annual	2GA	*Grass, annual*	5–15	–
11	**Shrubs**			9–28	
	Shrub (>.5m)	2SHRUB	*Shrub (>.5m)*	9–28	–
Forb					
12	**Forb**			9–46	
	threadleaf ragwort	SEFLF	*Senecio flaccidus var. flaccidus*	9–46	–
	globemallow	SPHAE	*Sphaeralcea*	9–46	–
	verbena	VEPO4	*Verbena polystachya*	9–46	–
	broom snakeweed	GUSA2	*Gutierrezia sarothrae*	5–15	–
	pricklypear	OPUNT	*Opuntia*	5–15	–
13	**Forb**			9–28	
	croton	CROTO	*Croton*	9–28	–

	woolly groundsel	PACA15	*Packera cana*	9–28	–
14	**Forb**			9–28	
	Goodding's tansyaster	MAPIG2	*Machaeranthera pinnatifida ssp. gooddingii var. gooddingii*	9–28	–
	woolly paperflower	PSTA	*Psilostrophe tagetina*	9–28	–
15	**Forb**			9–28	
	redstem stork's bill	ERCI6	*Erodium cicutarium*	9–28	–
	Texas stork's bill	ERTE13	*Erodium texanum*	9–28	–
16	**Forb**			9–28	
	Forb (herbaceous, not grass nor grass-like)	2FORB	*Forb (herbaceous, not grass nor grass-like)*	9–28	–

Animal community

This site provides habitats which support a resident animal community that is characterized by pronghorn antelope, black-tailed jackrabbit, black tailed prairie dog, yellow-faced pocket gopher, banner-tailed kangaroo rat, hispid cotton rat, swift fox, burrowing owl, horned lark, mockingbird, meadowlark, mourning dove, scaled quail, Great Plains toad, plains spadefoot toad, prairie rattlesnake and western coachwhip shake.

Hydrological functions

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

Hydrologic Interpretations
Soil Series Hydrologic Group
Atoka C
Bigetty B
Ratliff B
Reyab B
Holloman B
Largo B
Holloman B
Bigetty B
Berino B
Reagan B
Reakor B
Reeves B
Russler C

Recreational uses

This site offers limited potential for hiking, horseback riding, nature observation and photography. Game bird, antelope and predator hunting are also limited.

Wood products

This site has no potential for wood products

Other products

This site is suitable for grazing by all kinds and classes of livestock, during all seasons of the year. Under retrogression, such plants as black grama, blue grama, sideoats grama, bush muhly, plains bristlegrass, Arizona cottontop, fourwing saltbush and winterfat decrease and there is an increase in burrograss, threeawns, sand dropseed, tarbush, broom snakeweed and javilinabush. Under continued retrogression, burrograss can completely

dominate the site. Creosotebush, mesquite, and tarbush can also dominate. Grazing management alone will not improve the site in the above situation. This site is well suited to a system of management that rotates the season of use.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index Ac/AUM
100 - 76 3.0 – 4.2
75 – 51 4.1 – 5.5
50 – 26 5.3 – 7.0
25 – 0 7.1 +

Inventory data references

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

Other references

Literature References:

1. Brooks, M.L., AND D.A. Pyke. 2001. Invasive plants and fire in the deserts of North America. Pages 1–14 in K.E.M. Galley and T.P. Wilson (eds.). Proceedings of the Invasive Species Workshop: the Role of Fire in the Control and Spread of Invasive Species.

2. Bunting, S.C., H.A. Wright, and L.F. Neuenschwander. 1980. Long-term effects of fire on cactus in the Southern Mixed Prairie of Texas. J. Range. Manage. 33: 85-88.

3. Laycock, W.A. 1982. Hail as an ecological factor in the increase of prickly
pear cactus. p. 359-361. In: J.A. Smith and V.W. Hays (eds.) Proc. XIV Int. Grassland Congr. Westview Press, Boulder, Colo.

4. Vallentine, J.F. 1989. Range Developments and Improvements. 3rd Edition. Academic Press. San Diego, California.

5. U.S. Department of Agriculture, Natural Resources Conservation Service. 2001. Soil Quality Information Sheet. Rangeland Soil Quality—Physical and Biological Soil Crusts. Rangeland Sheet 6, [Online]. Available: http://www.statlab.iastate.edu/survey/SQI/range.html

Contributors

David Trujillo
Don Sylvester

Rangeland health reference sheet

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

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

Indicators

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

   _____

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

   _____

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

   _____

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

   _____

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

   _____

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

   _____

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

   _____

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

   _____

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

   _____

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

    _____

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

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

    Dominant:

    Sub-dominant:

    Other:

    Additional:

---

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

---

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

---

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

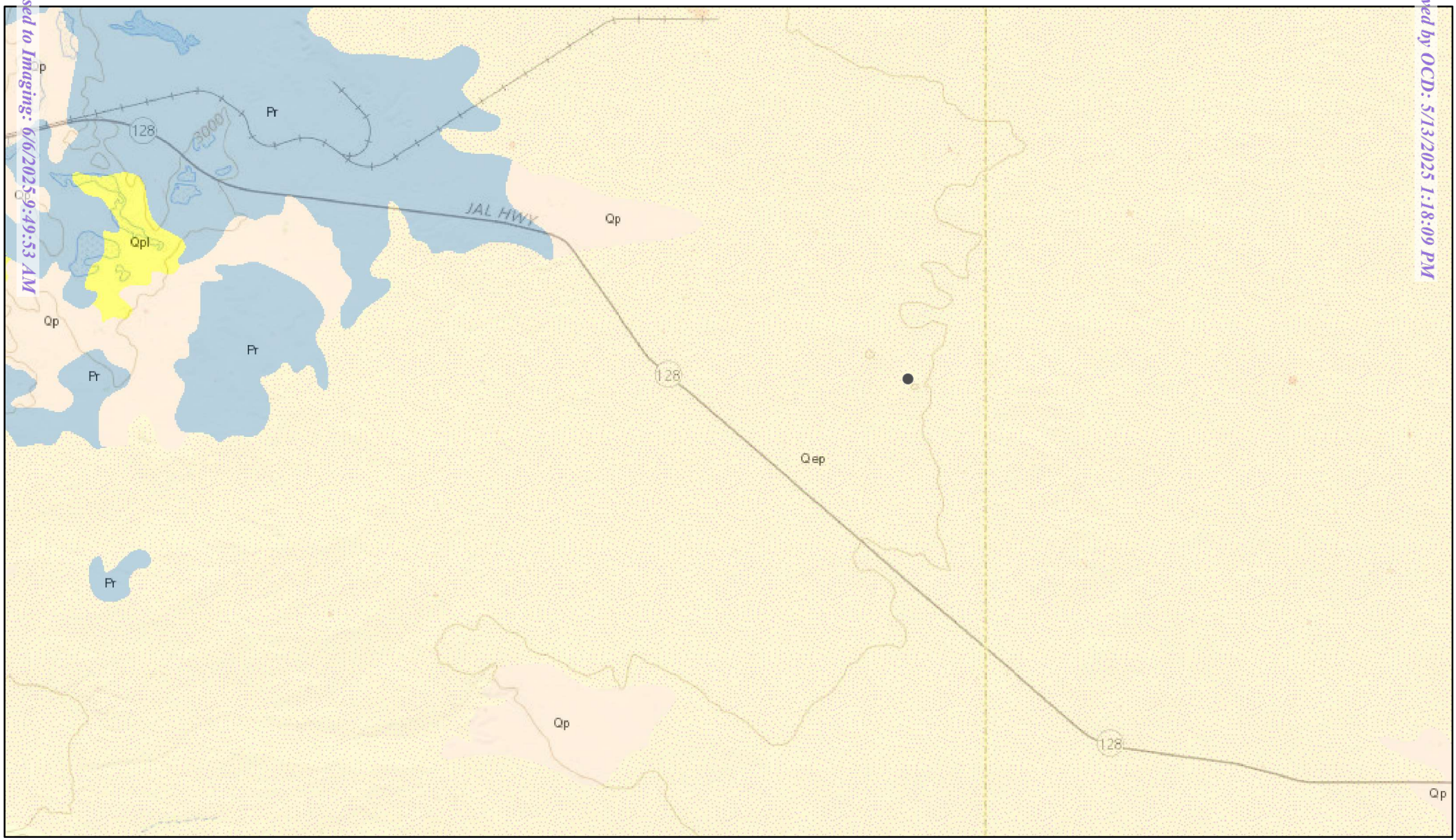
---

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

---

17. **Perennial plant reproductive capability:**

ArcGIS Web Map



4/29/2021, 1:40:55 PM

Faults

Fault, Exposed

Fault, Intermittent

Fault, Concealed

Shere Zone

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

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

ArcGIS Web AppBuilder

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

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS

Action 460238

QUESTIONS

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 460238
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nAB1911254304**
Incident Name	**NAB1911254304 TODD 23 A FEDERAL #029 @ 30-015-31881**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Received**
Incident Well	**[30-015-31881] TODD 23 A FEDERAL #029**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	TODD 23 A FEDERAL #029
Date Release Discovered	02/03/2019
Surface Owner	Federal

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

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	*Not answered.*
Produced Water Released (bbls) Details	Cause: Corrosion | Flow Line - Production | Produced Water | Released: 0 BBL | Recovered: 0 BBL | Lost: 0 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	No
Condensate Released (bbls) Details	*Not answered.*
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	*Not answered.*

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 460238
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

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

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

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

I hereby agree and sign off to the above statement	Name: Roni Kidd Title: Business Manager Email: rkidd@buckhornproduction.com Date: 05/08/2025

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 460238
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Site Characterization	
Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Between 100 and 500 (ft.)
What method was used to determine the depth to ground water	U.S. Geological Survey
Did this release impact groundwater or surface water	No
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
A continuously flowing watercourse or any other significant watercourse	Between 1 and 5 (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between 1 and 5 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Between 1 and 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1 and 5 (mi.)
Any other fresh water well or spring	Between 1 and 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1 and 5 (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Greater than 5 (mi.)
Categorize the risk of this well / site being in a karst geology	Low
A 100-year floodplain	Greater than 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

Remediation Plan	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
Requesting a remediation plan approval with this submission	Yes
Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	7300
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	1300
GRO+DRO (EPA SW-846 Method 8015M)	830
BTEX (EPA SW-846 Method 8021B or 8260B)	0
Benzene (EPA SW-846 Method 8021B or 8260B)	0
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
On what estimated date will the remediation commence	05/09/2025
On what date will (or did) the final sampling or liner inspection occur	07/14/2025
On what date will (or was) the remediation complete(d)	07/14/2025
What is the estimated surface area (in square feet) that will be reclaimed	1826
What is the estimated volume (in cubic yards) that will be reclaimed	350
What is the estimated surface area (in square feet) that will be remediated	1826
What is the estimated volume (in cubic yards) that will be remediated	350
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 460238
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Remediation Plan (continued)	
Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.	
This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:	
(Select all answers below that apply.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for **off-site** disposal	OWL LANDFILL JAL [fJEG1635837366]
OR which OCD approved well (API) will be used for **off-site** disposal	*Not answered.*
OR is the **off-site** disposal site, to be used, out-of-state	*Not answered.*
OR is the **off-site** disposal site, to be used, an NMED facility	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	*Not answered.*
(In Situ) Soil Vapor Extraction	*Not answered.*
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	*Not answered.*
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
I hereby agree and sign off to the above statement	Name: Roni Kidd Title: Business Manager Email: rkidd@buckhornproduction.com Date: 05/08/2025
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 460238
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

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

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

General Information
Phone: (505) 629-6116

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

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

QUESTIONS (continued)

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 460238
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	*{Unavailable.}*

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	No

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

General Information
Phone: (505) 629-6116

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

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

CONDITIONS

Operator: HARVARD PETROLEUM COMPANY, LLC P.O. Box 936 Roswell, NM 88202	OGRID: 10155
	Action Number: 460238
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	The Remediation Plan is Conditionally Approved. The variance is denied forgoing vertical delineation/remediation on the partial intrusion onto the road. Please install a temporary safety fence/barrier to prevent vehicles from entering the area. All samples must be analyzed for all constituents listed in Table I of 19.15.29.12 NMAC. Floor confirmation samples should be delineated/excavated to meet closure criteria standards from Table 1 of the OCD Spill Rule for site assessment/characterization/proven depth to water determination. Sidewall/edge samples should be delineated/excavated to 600 mg/kg for chlorides and 100 mg/kg for TPH to define the edge of the release. Please make sure that the edge of the release extent is accurately defined. Please collect confirmation samples, representing no more than 200 ft2. All off-pad areas must meet reclamation standards in the OCD Spill Rule.	6/6/2025