Volume calculator

There was no volume calculator prepared when the spill occurred.

General Information

NMOCD District:	District 1 – Hobbs	Incident ID:	NGRL0926450258
Landowner:	State	RP Reference:	1RP-2278-0
Client:	Devon Energy Production Company, LP	Site Location:	Outland State Unit #003
Date:	March 27, 2024	Project #:	23E-05199
Client Contact:	Dale Woodall	Phone #:	405.318.4697
Vertex PM:	Kent Stallings	Phone #:	346.814.1413

Objective

The objective of the environmental remediation work plan is to identify exceedances found during the site assessment/characterization activity and propose an appropriate remediation technique to address these areas. Areas of environmental concern identified and delineated include: the northwest corner of the reclaimed pad associated with Outland State Unit #003 (hereafter referred to as "site"). In 2009, lightning struck the fiberglass water tank that was on-site causing the release of 53 barrels (bbls) of produced water. The release was contained in the dike around the battery, and no produced water was recovered. Closure criteria has been selected as per New Mexico Administrative Code (NMAC) 19.15.29. All applicable research as it pertains to closure criteria selection is presented in Attachment 1. The closure criteria for the site are presented below.

Table 1. Closure Criteria for Soils Impacted by a Release

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

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

Site Assessment/Characterization

Site characterization was started on November 14, 2023, and completed on February 1, 2024. A total of six sample points were established and 25 samples collected for field screening. Samples at the deepest vertical distance below closure criteria were submitted to the laboratory for analysis. In total, 17 samples were submitted to Eurofins Environmental Testing South Central, formerly Hall Environmental Analysis Laboratory, Alburquerque, New Mexico, for analysis. An aerial photograph of the site with an approximate area of release impact and the sample locations is presented on Figure 1 (Attachment 2). Laboratory analysis results have been compared to the above noted closure criteria and the results from the characterization activity are presented in Attachment 3. Exceedances are identified in the table as bold with a green background. The laboratory data reports with chain of custody forms are included in Attachment 4, and the daily field reports with photographs are included in Attachment 5. The NMOCD C-141 Report is included in Attachment 6.

Remedial Activities/Variance Request

General

Areas identified with contaminant concentrations above closure criteria will 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 1 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 30 mil 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 and seeded with approved State Land Office seed mix.

A variance is being requested for safety concerns due to the site's location approximately 65 feet south of a state highway. To excavate the entire impacted area, depths of up to 23 feet would be necessary per strictest closure criteria, requiring benching and sloping expanding the excavation area. Currently, no depth to groundwater data exist within 0.5 miles of the site resulting in the selection of NMAC Closure Criteria for Soils Impacted by a Release locations "under 50 feet to groundwater." According to the New Mexico Office of the State Engineer, groundwater in the surrounding area is approximately 100 feet below ground surface (bgs) on average. It is being requested to use the closest depth to ground water data approximately 0.62 mile and 0.74 mile southeast of the site at CP-1848 POD 2 and POD 3. Depth to ground water at CP-1848 POD 2 was determined at 81 feet bgs and at POD 3 was determined at 68 feet bgs. Drilling was completed on these wells on June 2, 2021, and August 19, 2021. Applicable documents pertaining to the variance request are included in Attachment 1.

The closure criteria for the site would then be as presented below and the excavation depth adjusted to approximately 6 feet bgs and 288 cubic yards. If the variance were not to be approved, the excavation, per strictest closure criteria, would likely be to approximately 22 to 23 feet bgs and 2,500 cubic yards.

Table 2. Closure Criteria for Soils to Remediation & Reclamation Standards

	Constituent	Limit
0-4 feet bgs (19.15.29.13)	Chloride	600 mg/kg
	TPH (GRO+DRO+MRO)	100 mg/kg
DTGW 51-100 feet (19.15.29.12)	Chloride	10,000 mg/kg
	TPH (GRO+DRO+MRO)	2,500 mg/kg
	GRO+DRO	1,000 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

bgs – Below ground surface
DTGW – Depth to groundwater
TPH – Total petroleum hydrocarbons = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO),
BTEX – Benzene, toluene, ethylbenzene, and xylenes

NGRL0926450258 - Produced Water Release Contained in Dike

A total of 17 samples were collected for analysis in and around the formerly bermed containment area of the tank. Exceedances to closure criteria were identified at one sample point established within the former containment area. Soil will be excavated at a planned depth of 6 feet around BH23-01 to meet reclamation closure criteria and benched every 4 feet for safety. Heavy equipment will be used to complete excavation in open areas. A hydrovac truck and hand crews will be used to complete areas next to buried lines or equipment if necessary. Field screening will be utilized to find the horizontal and vertical extents of the spill area. Confirmatory samples will be collected as per New Mexico Oil Conservation Division guidance and submitted for laboratory analysis of all applicable parameters. The estimated volume to be excavated is **288 cubic yards**.

Sample Point		Excavation Depth	Remediation Method
BH23-01 (Edge of Excavation)	(621 sq. ft.)	2' for benching	Backhoe
BH23-01	(872 sq. ft.)	6'	Backhoe

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 TECHNOLOGIST, REPORTING

March 27, 2024
Date

kent stallings P.G.

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

April 18, 2024
Date

Attachments

Attachment 1. Closure Criteria Research
Attachment 2. Characterization Sampling Site Schematic
Attachment 3. Initial Characterization Sample Field Screen and Laboratory Results – Depth to Groundwater <50 feet bgs
Attachment 4. Laboratory Data Reports with Chain of Custody Forms
Attachment 5. Daily Field Reports with Photographs
Attachment 6. NMOCD C-141 Report

ATTACHMENT 1

Closure Criteria Determination			
Site Name: Outland State Unit #003			
Spill Coordinates: 32.4880943,-103.4352875		X: 647014.90	Y: 3595617.73
Site Specific Conditions		Value	Unit
1	Depth to Groundwater (nearest reference)	81	feet
	Distance between release and nearest DTGW reference	3,303	feet
		0.62	miles
	Date of nearest DTGW reference measurement	June 2, 2021	
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	7,279	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	14,909	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	17,142	feet
5	i) Within 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, **or**	-	feet
	ii) Within 1000 feet of any fresh water well or spring	14,100	feet
6	Within incorporated municipal boundaries or within a defined municipal fresh water field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves	No	(Y/N)
7	Within 300 feet of a wetland	5,797	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
	Distance between release and nearest registered mine	**47,756**	feet
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
	Distance between release and nearest High Karst	**108,418 feet**	feet
10	Within a 100-year Floodplain	Undetermined	year
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	**115,236**	feet
11	Soil Type	Berino-Cacique loamy fine sands	
12	Ecological Classification	Loamy sand	
13	Geology	To	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	<50'	<50' 51-100' >100'

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD2(MW-2)	n/a	CP-1848

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Permian Water Solutions	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
415 W. Wall St. Ste 320	Midland	NM	79701

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	28	51.28	N
	LONGITUDE	103	25	45.67	W

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

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

SE NE S13 T21S, R34E

OSE DIT JUL 1 2021 AM9:38

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1249	Jackie D. Atkins	Atkins Engineering Associates, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
06/01/2021	06/02/2021	96	±104	±81

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 81.36

DRILLING FLUID: ☐ AIR ☐ MUD ADDITIVES – SPECIFY:

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

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
0	76	±8.5	2" Sch. 40 PVC Riser	Flush Thread 2 TPI	2.067	0.154	--
76	--	±8.5	3" Sch. 40 PVC Pre-packed Screen	Flush Thread 2 TPI	3.042	0.216	.010
--	96	--	with inner 2" Sch. 40 PVC Screen	--	2.067	0.154	.010

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	1	±8.5	Quik Crete 5000 PSI	±2.2	from surface
1	70	±8.5	Portland Neat Cement	±28.3	through HSA
70	74	±8.5	Bentonite Chips	±3.1	through HSA
74	96	±8.5	12/20 Silica Sand	±3.7	through HSA

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO. CP-1848	POD NO. 2	TRN NO. 675231	
LOCATION Mon 21.34.13.431		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	Caliche, White, dry	Y ✓ N	
5	10	5	Sand, coarse grained, loose, Red	Y ✓ N	
10	15	5	Caliche, dry, White	Y ✓ N	
15	60	45	Sand, coarse grained, loose, dry, Red	Y ✓ N	
60	80	20	Sand, coarse grained, loose, some gravel, Red	Y ✓ N	
81	104	23	Sand, coarse grained, loose, some gravel, Red	✓ 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	

OSE DII JUL 1 2021 AM 9:38

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

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

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

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: monitor well, above ground temporary completion, no pump test, well logs adapted from drillers and Tetra Tech Tech field notes.

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

Shane Eldridge, Cameron Pruitt, Carmelo, Trevino

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:

Jack Atkins — Jackie D. Atkins — 06/29/2021

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/30/2017)

FILE NO. CP-1848	POD NO. 2	TRN NO. 675231	
LOCATION Mon 21.34.13.431		WELL TAG ID NO. —	PAGE 2 OF 2

Atkins
ENGINEERING ASSOCIATES INC.

2904 W 2nd St.
Roswell, NM 88201
voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

06/30/2021

DII-NMOSE
1900 W 2nd Street
Roswell, NM 88201

Hand Delivered to the DII Office of the State Engineer

Re: Well Log and Record for CP-1848

To whom it may concern:

Atkins Engineering Associates, Inc. (AEA) has installed one (1) Soil boring/monitoring well that encountered groundwater at 32 28' 51.28" -103 25' 45.67" in Lea County, NM.

Please find, in duplicate, *Well Record and Log.*

If you, have any questions, please contact me at 575.499.9244 or lucas@atkinseng.com.

Sincerely,

OSE DII JUL 1 2021 AM9:33

Lucas Middleton
lucas@atkinseng.com

Enclosures: As noted above.

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD3 (MW-3)	n/a	CP-1848

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Permina Water Solutions	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
415 W Wall St	Midland	TX	79707

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	28	52.08	N
	LONGITUDE	103	25	33.41	W

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

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

NE SE NW Sec. 13 T21S R34E

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1249	Jackie D. Atkins	Atkins Engineering Associates, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
08/19/2021	08/19/2021	87	87	±70

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 68.9

DRILLING FLUID: ☐ AIR ☐ MUD ADDITIVES – SPECIFY:

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

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
+3	67	±8.5	2" Sch 40 PVC Riser	Flush Treaded 2 TPI	2.067	0.154	--
67	--	±8.5	3" Sch 40 PVC Pre PackScreen	Flush Treaded 2 TPI	3.042	0.216	0.010
--	87	--	with inner 2" Sch 40 PVC Screen	--	2.067	0.154	0.010

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	1	±8.5	Quick Crete 5000 PSI	±1.8	from surface
1	59	±8.5	Portland Neat Cement	±20.6	through HSA
59	62	±8.5	Bentonite Pellets	±1.4	through HSA
62	87	±8.5	12/20 Silica Sand	±4.7	through HSA

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO. CP-1848	POD NO. 3	TRN NO. 702136	
LOCATION EXP 21S.34E.13.142		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	15	15	Sand, Fine-grained, with well sorted gravel , Brown / Black	Y ✓ N	
15	40	25	Caliche with fine grain sand, Gray / Black , Dry	Y ✓ N	
40	45	5	Silty Sand, poorly sorted, Dark Brown	Y ✓ N	
45	65	20	Silty Sand, very fine grain, poorly sorted, Light Brown , Dry	Y ✓ N	
65	87	22	Silty Sand, very fine grain, poorly sorted, Light Brown , Moist	✓ 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:

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

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: Monitoring well, above ground completion, no pump test.
Logs adapted from Tetra Tech field notes

OSE DII SEP 13 2021 PM1:23

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

Shane Eldridge, Cameron Pruitt, Carmelo Travino

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:

Jack Atkins — Jackie D. Atkins — 09/10/2021

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 06/30/2017)

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

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	CP 01848 POD2	4	3	1	13	21S	34E	647587	3594789

Driller License: 1249 **Driller Company:** ATKINS ENGINEERING ASSOC. INC.

Driller Name: JACKIE ATKINS

Drill Start Date: 06/01/2021 **Drill Finish Date:** 06/02/2021 **Plug Date:**

Log File Date: 07/01/2021 **PCW Rcv Date:** **Source:** Shallow

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 2.00 **Depth Well:** 96 feet **Depth Water:** 80 feet

Water Bearing Stratifications:	Top	Bottom	Description
	81	96	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	0	96

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

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

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

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

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
CP 01848 POD2		CP	LE	4	3	1	13	21S	34E	647587	3594789	1006	96	80	16
CP 01848 POD3		CP	LE	2	4	1	13	21S	34E	647904	3594858	1168	87	70	17
CP 00089	O	CP	LE		2	1	13	21S	34E	647840	3594615	1298	235		
CP 00590 POD1		CP	LE				01	21S	34E	648099	3597829*	2462	79		
CP 01970 POD1		CP	LE	1	3	4	01	21S	34E	648223	3598476	3103	55		
CP 00939 POD1		CP	LE	4	1	2	07	21S	35E	649974	3596760*	3171	400	165	235
CP 00940 POD1		CP	LE	4	1	2	07	21S	35E	649974	3596760*	3171	400	165	235
CP 01366 POD1		CP	LE	4	4	1	16	21S	34E	643196	3594698	3927	180	110	70
CP 00092 POD1		CP	LE	1	3	1	25	21S	34E	647479	3591694*	3951	196		
CP 01671 POD1		CP	LE	2	4	1	16	21S	34E	643108	3594887	3974	157		
CP 01364 POD1		CP	LE	4	2	3	16	21S	34E	643147	3594331	4076	165	105	60
CP 00489		CP	LE				04	21S	34E	643274	3597749*	4305	125	95	30
CP 01801 POD1		CP	LE	3	3	1	30	21S	35E	649052	3591562	4538	140	48	92
CP 00755		CP	LE	1	3	4	17	21S	35E	651427	3594168*	4644	200		
CP 00498		CP	LE		2	4	08	21S	34E	642287	3595932*	4738	145	120	25
CP 01805 POD1		CP	LE	3	1	3	30	21S	35E	649025	3591127	4919	140	50	90
CP 00667		CP	LE		2	3	20	21S	35E	651144	3592857*	4967	85		

Average Depth to Water: **100 feet**

Minimum Depth: **48 feet**

Maximum Depth: **165 feet**

Record Count: 17

UTMNAD83 Radius Search (in meters):

Easting (X): 647014.9 **Northing (Y):** 3595617.73 **Radius:** 5000

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

OSE POD Location Map Outland State Unit #003

3/20/2024, 4:08:05 PM

Override 1
Plugged
Artesian Planning Area
GIS WATERS PODs
NHD Flowlines
Active
OSE District Boundary
Stream River
Pending
Water Right Regulations
Closure Area

1:18,056

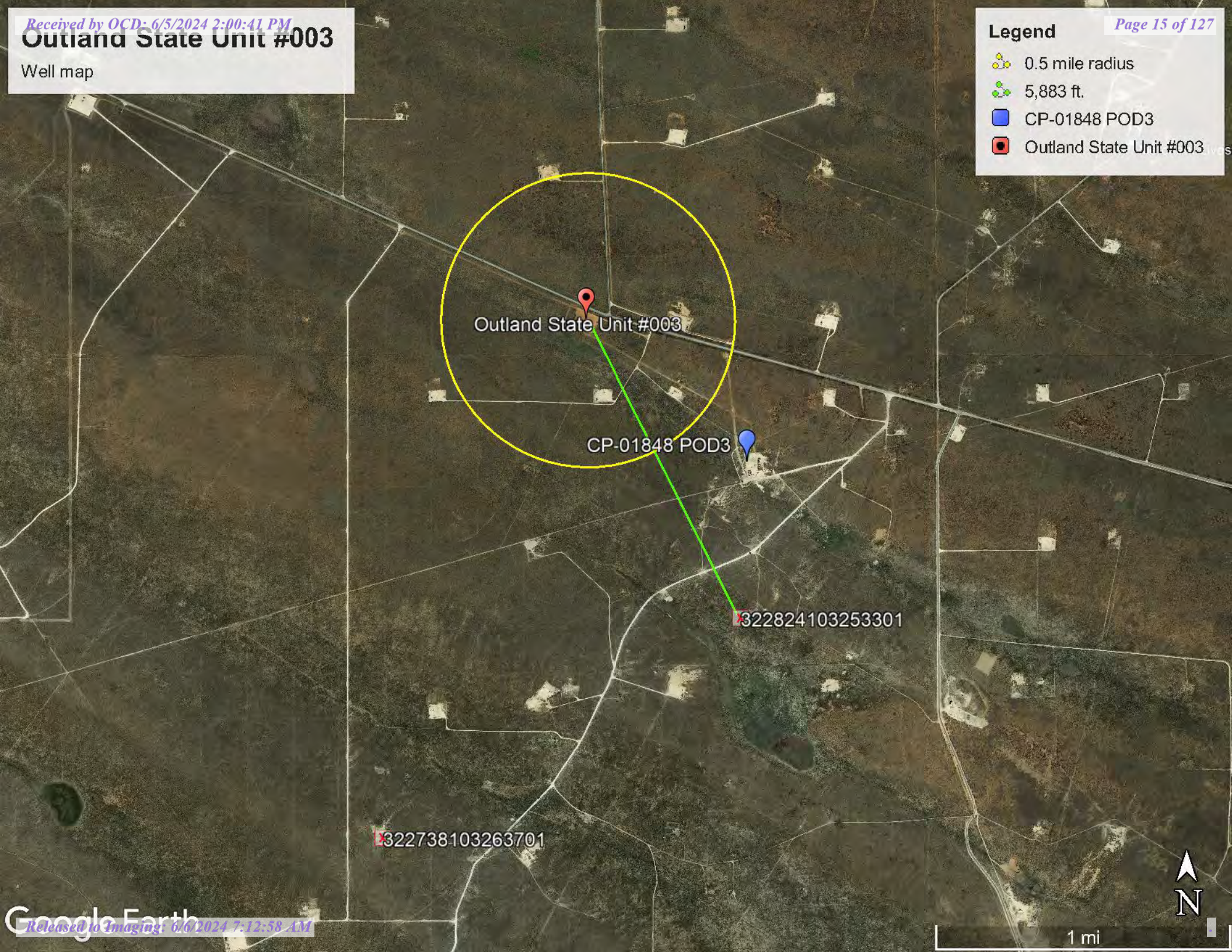
0 0.17 0.35 0.7 mi
0 0.28 0.55 1.1 km

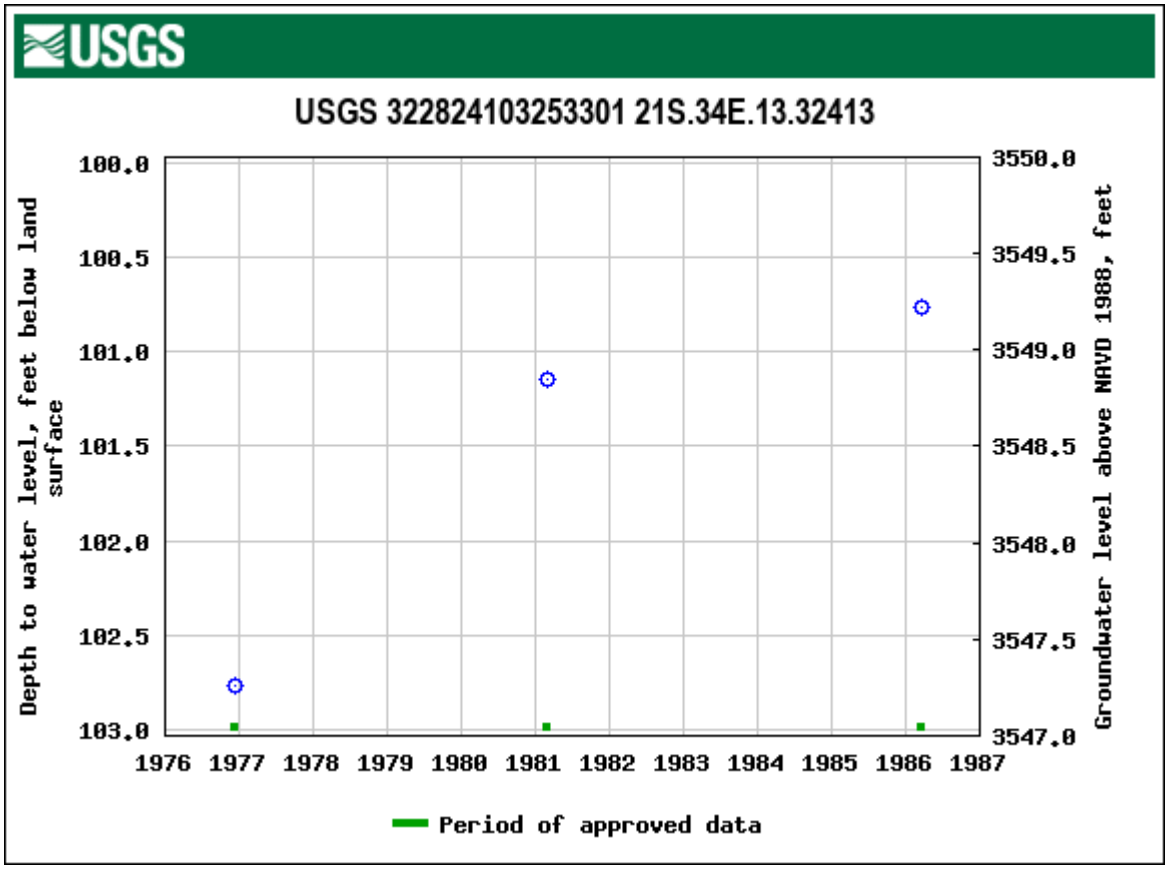
Esri, HERE, iPC, Esri, HERE, Garmin, iPC, Maxar

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

Outland State Unit #003

Well map




USGS
USGS 322824103253301 21S.34E.13.32413
Depth to water level, feet below land surface
100.0
100.5
101.0
101.5
102.0
102.5
103.0
Groundwater level above NAVD 1988, feet
3550.0
3549.5
3549.0
3548.5
3548.0
3547.5
3547.0
1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987
Period of approved data

U.S. Fish and Wildlife Service
National Wetlands Inventory

Outland State Unit #003 Watercourse
7,279 ft

October 22, 2023

Wetlands

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

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

U.S. Fish and Wildlife Service
National Wetlands Inventory

Outland State Unit #003 Lake 14,909 ft

October 22, 2023

Wetlands

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

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

Outland State Unit #003

Nearest Residence

CP-00489-POD1 Fresh Water Well Location Map Outland State Unit #003 2.67

3/20/2024, 4:54:12 PM

Override 1

Override 1

GIS WATERS PODs

Active

Pending

OSE District Boundary

Water Right Regulations

Closure Area

Artesian Planning Area

1:18,056

0 0.17 0.35 0.7 mi

0 0.28 0.55 1.1 km

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

Online web user

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

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	Twn	Rng	X	Y
CP 01848	CP	MON	0	PERMIAN WATER SOLUTIONS	LE	CP 01848 POD2	NA			Shallow	4	3	1	13	21S	34E	647586	3594789
					LE	CP 01848 POD3				Shallow	2	4	1	13	21S	34E	647904	3594858
CP 01779	CP	COM	0	XRI HOLDINGS, LLC	LE	CP 01779 POD1	NA				4	1	4	14	21S	34E	646744	3594285
CP 01848	CP	MON	0	PERMIAN WATER SOLUTIONS	LE	CP 01848 POD1	NA				1	3	2	13	21S	34E	648307	3594920
CP 00089	CP	COM	23.5	WILSON OIL COMPANY	LE	CP 00089 POD1						2	3	13	21S	34E	647942	3594417*
CP 01780	CP	COM	0	XRI HOLDINGS, LLC	LE	CP 01780 POD1	NA				1	1	3	14	21S	34E	645832	3594530
CP 00090	CP	COM	42.9	WILSON OIL COMPANY	LE	CP 00090 POD1					2	2	2	23	21S	34E	647247	3593698*
CP 00091	CP	COM	28.2	WILSON OIL COMPANY	LE	CP 00091 POD1					2	2	2	23	21S	34E	647247	3593698*
CP 01778	CP	COM	0	XRI HOLDINGS, LLC	LE	CP 01778 POD1	NA				1	3	2	23	21S	34E	646725	3593283
CP 00590	CP	PLS	3	THE MERCHANT LIVESTOCK COMPANY	LE	CP 00590 POD1				Shallow				01	21S	34E	648099	3597829*
CP 01777	CP	COM	0	XRI HOLDINGS, LLC	LE	CP 01777 POD1	NA				4	2	2	22	21S	34E	645658	3593508
CP 00095	CP	COM	40.2	WILSON OIL COMPANY	LE	CP 00095 POD1						2	1	07	21S	35E	649473	3596856*
CP 01781	CP	COM	0	XRI HOLDINGS, LLC	LE	CP 01781 POD1	NA				3	2	3	23	21S	34E	646204	3592761
CP 01094	CP	MON	0	CASCATA RESOURCES LLC	LE	CP 00320 POD1					4	1	3	23	21S	34E	645995	3592764
CP 01970	CP	MON	0	DEVON ENERGY RESOURCES	LE	CP 01970 POD1	NA				1	3	4	01	21S	34E	648222	3598476
CP 00093	CP	COM	15.71	WILSON OIL COMPANY	LE	CP 00093 POD1					4	1	2	07	21S	35E	649974	3596760*
CP 00094	CP	COM	15.71	WILSON OIL COMPANY	LE	CP 00094 POD1					4	1	2	07	21S	35E	649974	3596760*
CP 00939	CP	PDM	3	MERCHANT LIVESTOCK CO	LE	CP 00939 POD1					4	1	2	07	21S	35E	649974	3596760*
CP 00940	CP	PDM	3	MERCHANT LIVESTOCK CO	LE	CP 00940 POD1					4	1	2	07	21S	35E	649974	3596760*
CP 00668	CP	STK	3	MERCHANT LIVESTOCK CO	LE	CP 00668						4	4	23	21S	34E	647166	3592393*
CP 01775	CP	EXP	0	XRI HOLDINGS, LLC	LE	CP 01775 POD1	NA				2	4	4	22	21S	34E	645583	3592370
CP 01366	CP	EXP	0	ATKINS ENGR ASSOC INC	LE	CP 01366 POD1				Shallow	4	4	1	16	21S	34E	643196	3594698
CP 01367	CP	COM	100	ATKINS ENGR ASSOC INC	LE	CP 01366 POD1				Shallow	4	4	1	16	21S	34E	643196	3594698
CP 00092	CP	COM	23.5	POGO PRODUCING COMPANY	LE	CP 00092 POD1					1	3	1	25	21S	34E	647479	3591694*
CP 01671	CP	DOL	3	THE MERCHANT LIVESTOCK CO INC	LE	CP 01671 POD1	205F4			Shallow	2	4	1	16	21S	34E	643108	3594887
CP 01350	CP	EXP	0	ATKINS ENGR ASSOC INC	LE	CP 01350 POD1					3	2	4	16	21S	34E	643146	3594331
CP 01364	CP	EXP	0	ATKINS ENGR ASSOC INC	LE	CP 01364 POD1				Shallow	4	2	3	16	21S	34E	643146	3594331
CP 01365	CP	COM	100	MERCHANT LIVESTOCK CO	LE	CP 01364 POD1				Shallow	4	2	3	16	21S	34E	643146	3594331
CP 01536	CP	COM	0	MERCHANT LIVESTOCK CO	ED	CP 01536 POD1					4	2	3	16	21S	34E	643146	3594331
CP 01537	CP	COM	0	MERCHANT LIVESTOCK CO/GWWS INC	LE	CP 01364 POD1				Shallow	4	2	3	16	21S	34E	643146	3594331
CP 00489	CP	STK	3	MERCHANT LIVESTOCK CO	LE	CP 00489				Shallow				04	21S	34E	643274	3597749*
CP 01801	CP	EXP	0	MERCHANT LIVESTOCK CO	LE	CP 01801 POD1	NA			Shallow	3	3	1	30	21S	35E	649052	3591562
CP 00755	CP	PRO	0	ULTRAMAR OIL & GAS LIMITED	LE	CP 00755					1	3	4	17	21S	35E	651427	3594168*
CP 00498	CP	STK	3	THE MERCHANT LIVESTOCK COMPANY	LE	CP 00498				Shallow		2	4	08	21S	34E	642287	3595932*
CP 01821	CP	EXP	0	MERCHANT LIVESTOCK CO	LE	CP 01821 POD1	NA				2	1	3	30	21S	35E	649180	3591391
CP 01906	CP	MON	0	HARRISON & COOPER INC	LE	CP 01906 POD1	NA				1	1	3	04	21S	34E	642613	3597582
CP 01820	CP	EXP	0	MERCHANT LIVESTOCK CO	LE	CP 01820 POD1	NA				2	1	3	30	21S	35E	649310	3591279
CP 01805	CP	COM	125	MERCHANT LIVESTOCK CO	LE	CP 01805 POD1	NA			Shallow	3	1	3	30	21S	35E	649025	3591127
CP 00667	CP	PRO	0	POGO PRODUCING CO.	LE	CP 00667						2	3	20	21S	35E	651144	3592857*

Record Count: 39

UTMNAD83 Radius Search (in meters):

Easting (X): 647014.9 **Northing (Y):** 3595617.73 **Radius:** 5000

Sorted by: Distance

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

U.S. Fish and Wildlife Service
National Wetlands Inventory

Outland State Unit #003 Wetland
5,797 ft

October 22, 2023

Wetlands

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

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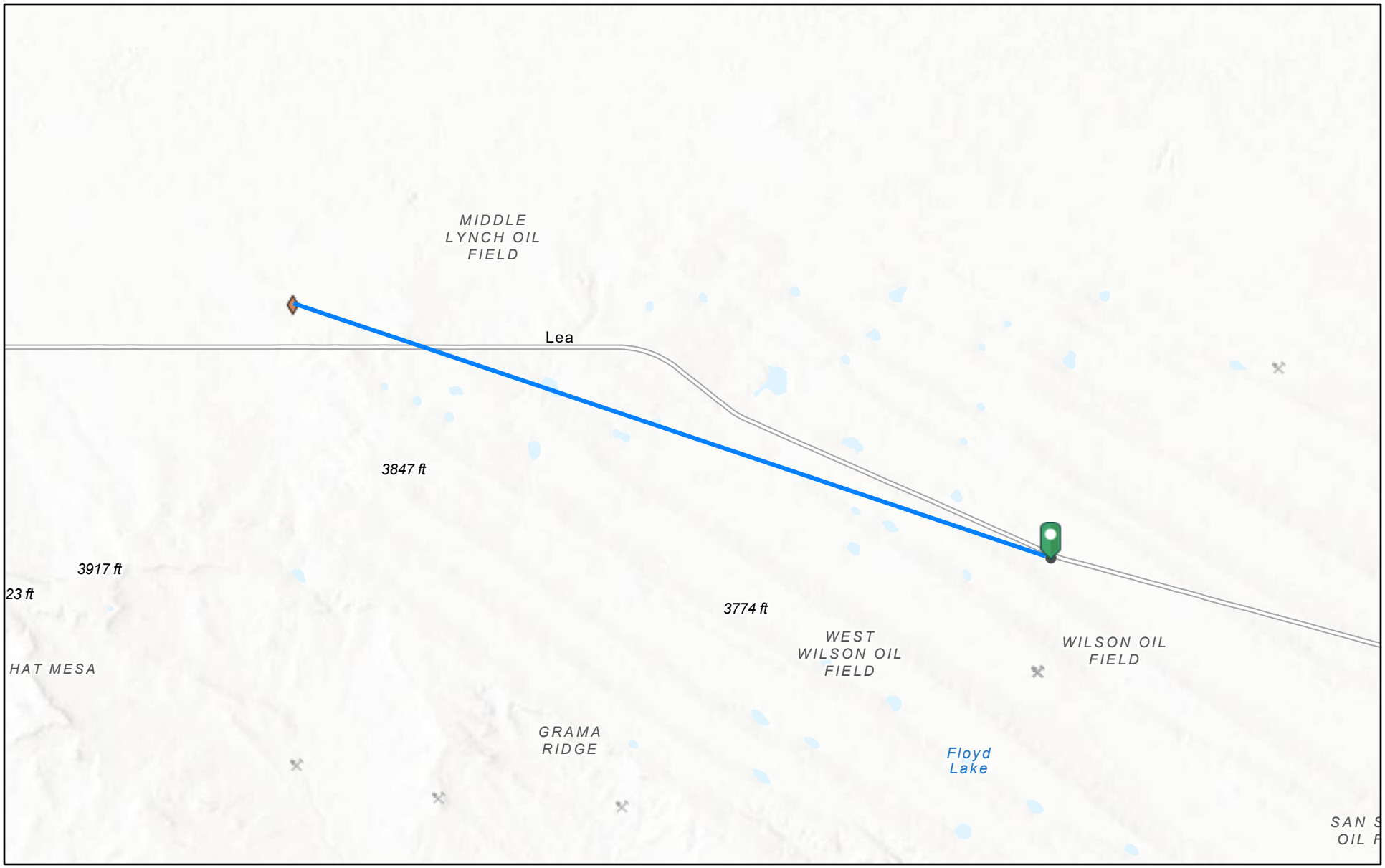
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Outland State Unit #003 - 47,756 feet from mine



1/26/2024, 9:10:04 AM

1:116,988

0 0.75 1.5 3 mi

0 1.25 2.5 5 km

Registered Mines

Aggregate, Stone etc.

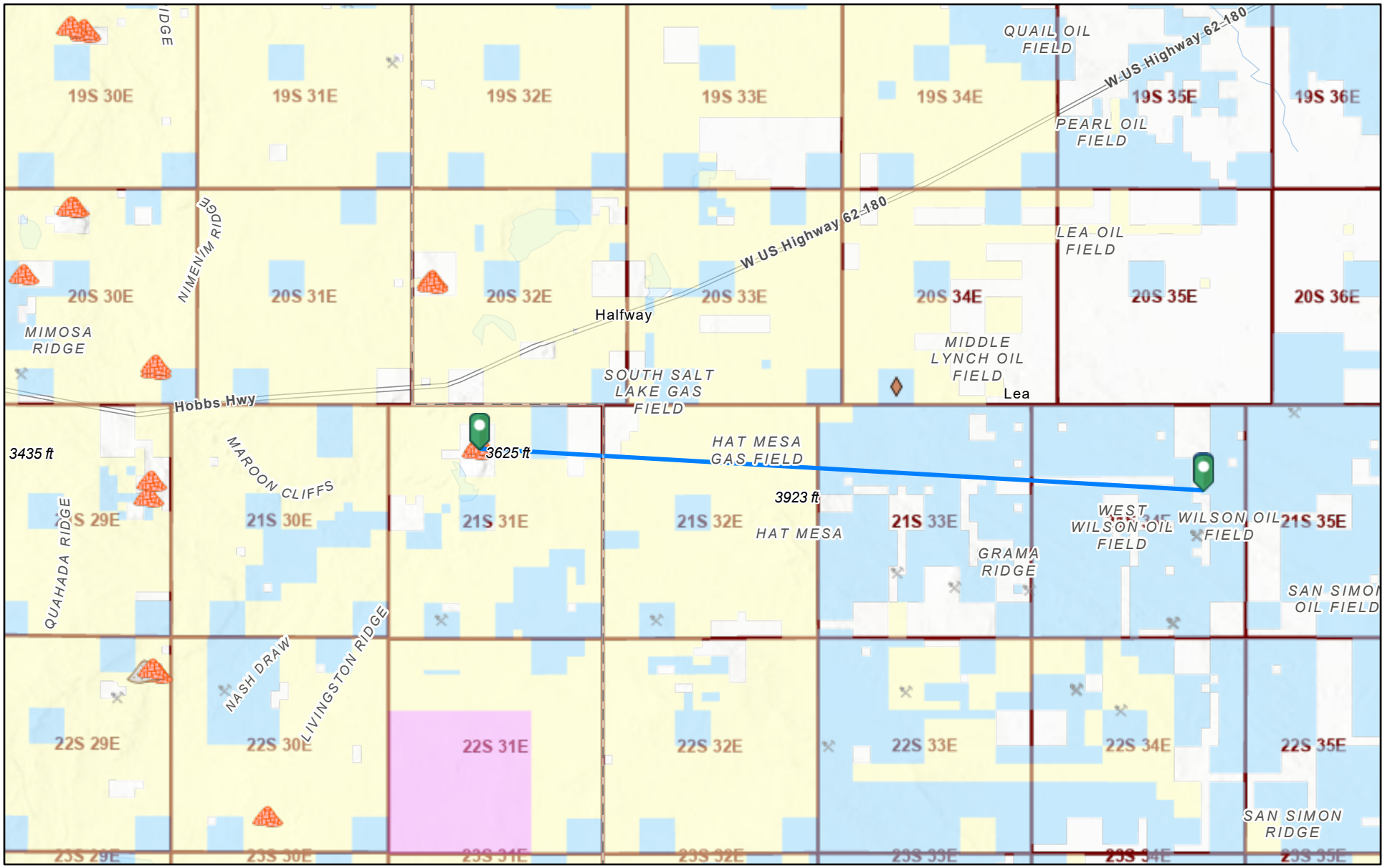
Industrial Minerals (Other)

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)

Outland State Unit #003 Nearest Subsurface Mine 107,091 ft.



12/13/2023, 12:16:01 PM

1:288,895

0 2 4 8 mi

0 3.25 6.5 13 km

Registered Mines

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

Land Ownership

- BLM
- DOE
- P
- S
- PLSS Townships

U.S. BLM, Esri, NASA, NGA, USGS, New Mexico State University, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, SafeGraph, METI/NASA,

EMNRD MMD GIS Coordinator

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

Karst Potential

- High
- Medium
- Low
- Site Location
- Site Buffer (1000 ft)

Overview Map

0 0.25 0.5 1 mi

Detail Map

0 150 300 600 ft

VERTEX

Map Center:
Lat/Long: 32.488094, -103.435288

NAD 1983 UTM Zone 13N
Date: Dec 13/23

N

Karst Potential Map
Outland State Unit #003

FIGURE:
X

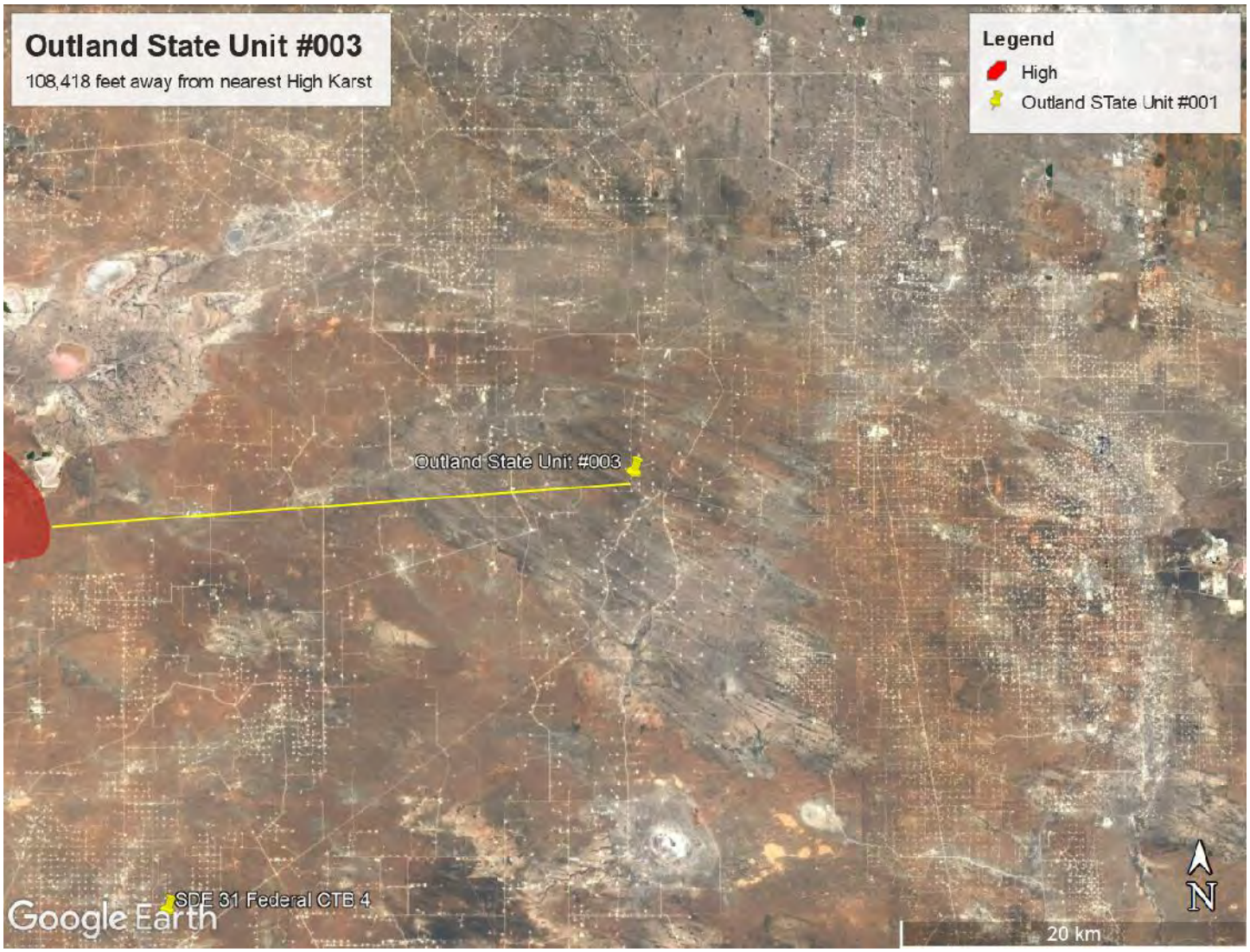
devon

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

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

VERSATILITY. EXPERTISE.

Document Path: C:\Users\scartar\Vertex Resource Group Ltd\Vertex US Operations - General\Environmental Services\10 - Geomatics\SPC\Devon 23E-05199 Outland State Unit #003\Figure X Karst Potential 23E-05199 Req 17550.mxd


Outland State Unit #003
108,418 feet away from nearest High Karst
Legend
High
Outland STate Unit #001
Outland State Unit #003
SDE 31 Federal CTB 4
Google Earth
20 km
N

National Flood Hazard Layer FIRMette

FEMA

103°26'26"W 32°29'32"N

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

1:6,000

103°25'48"W 32°29'2"N

Basemap Imagery Source: USGS National Map 2023

Legend

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

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

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

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

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

OTHER FEATURES
- 20.2 / 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

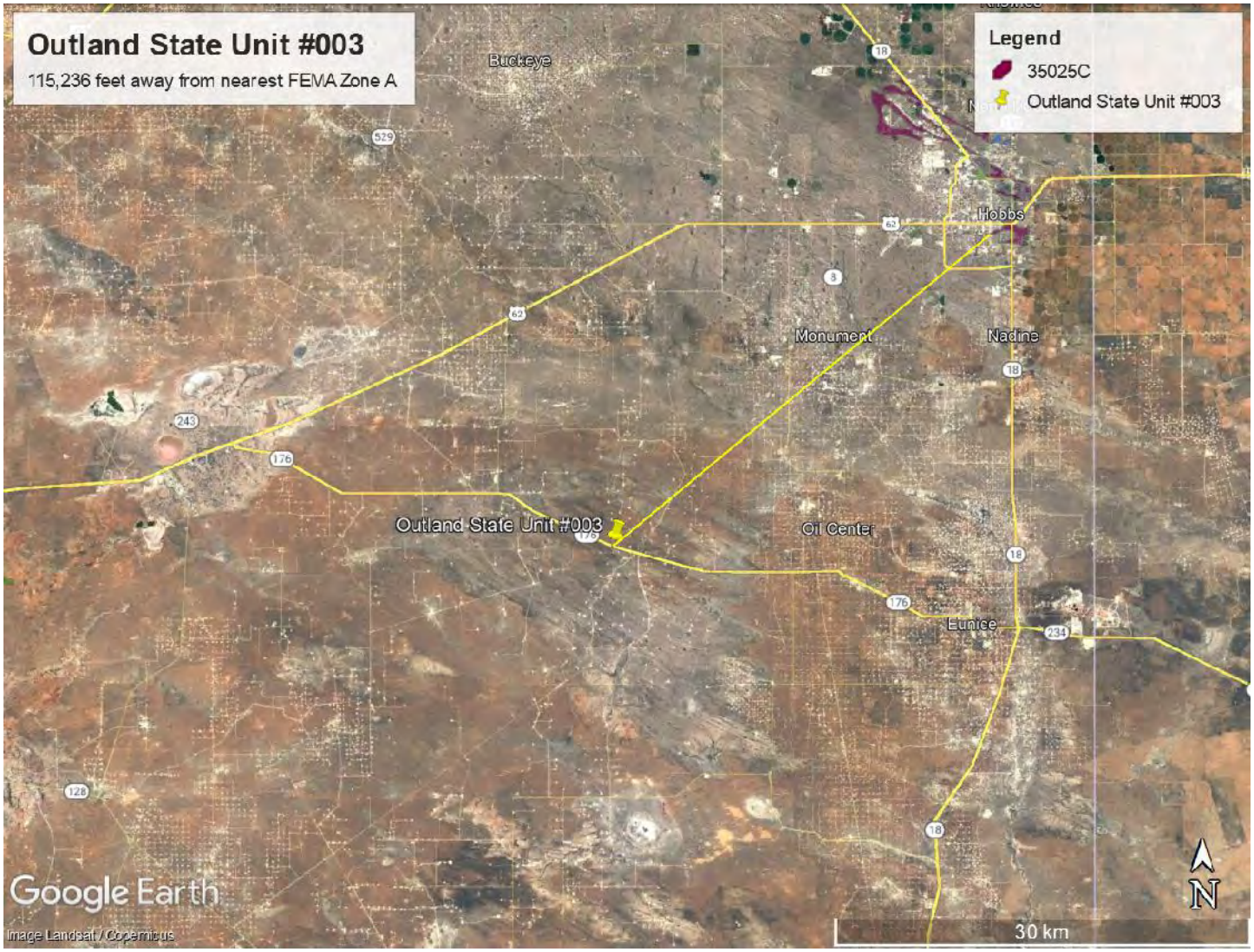
N

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 10/22/2023 at 11:10 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.


Outland State Unit #003
115,236 feet away from nearest FEMA Zone A
Legend
35025C
Outland State Unit #003
Buckeye
Hobbs
Monument
Nadine
Oil Center
Eunice
Outland State Unit #003
Google Earth
Image Landsat / Copernicus
30 km
N

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Lea County, New Mexico

October 22, 2023

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.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

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 LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

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

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BE	Berino-Cacique loamy fine sands association	5.3	100.0%
Totals for Area of Interest		**5.3**	**100.0%**

Map Unit Descriptions

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

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

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

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

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

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

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

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

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

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

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

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

Lea County, New Mexico

BE—Berino-Cacique loamy fine sands association

Map Unit Setting

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

Map Unit Composition

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

Description of Berino

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
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
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Description of Cacique

Setting

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

Typical profile

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

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Minor Components

Maljamar

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

Palomas

Percent of map unit: 4 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

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USDA Natural Resources Conservation Service

Ecological site R070BD003NM
Loamy Sand

Accessed: 12/13/2023

General information

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

Figure 1. Mapped extent

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

Associated sites

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

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

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

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

Table 2. Representative physiographic features

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

Climatic features

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

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

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

Table 3. Representative climatic features

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

Influencing water features

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

Soil features

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

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

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

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

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

Characteristic soils are:
Maljamar
Berino
Parjarito
Palomas
Wink
Pyote

Table 4. Representative soil features

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

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

Ecological dynamics

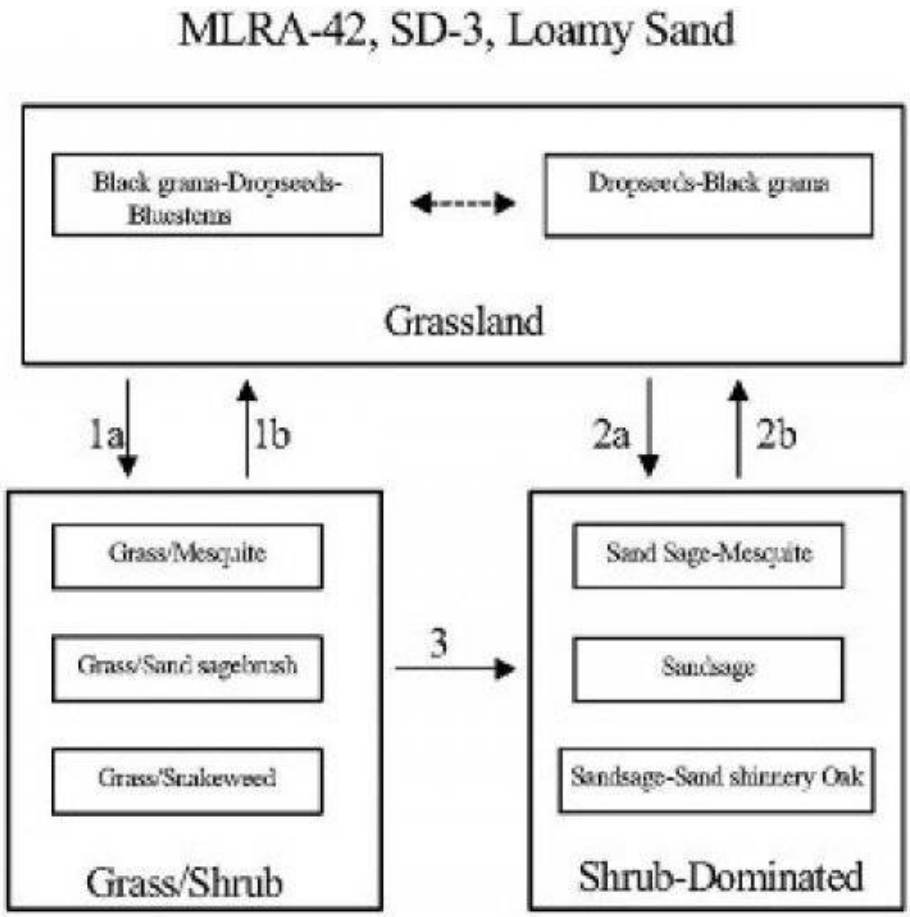
Overview

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

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

State and transition model

Plant Communities and Transitional Pathways (diagram):



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

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

3. Continued loss of grass cover, erosion.

State 1
Historic Climax Plant Community

Community 1.1
Historic Climax Plant Community

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

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

Table 5. Annual production by plant type

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

Table 6. Ground cover

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

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

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

State 2
Grass/Shrub

Community 2.1
Grass/Shrub

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

State 3
Shrub Dominated

Community 3.1
Shrub Dominated

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

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

Additional community tables

Table 7. Community 1.1 plant community composition

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

	sand sagebrush	ARFI2	*Artemisia filifolia*	61–123	–
	Havard oak	QUHA3	*Quercus havardii*	61–123	–
11	**Shrub**			34–61	
	fourwing saltbush	ATCA2	*Atriplex canescens*	37–61	–
	featherplume	DAFO	*Dalea formosa*	37–61	–
12	**Shrub**			37–61	
	jointfir	EPHED	*Ephedra*	37–61	–
	littleleaf ratany	KRER	*Krameria erecta*	37–61	–
13	**Other Shrubs**			37–61	
	Shrub (>.5m)	2SHRUB	*Shrub (>.5m)*	37–61	–
Forb					
14	**Forb**			61–123	
	leatherweed	CRPOP	*Croton pottsii var. pottsii*	61–123	–
	Indian blanket	GAPU	*Gaillardia pulchella*	61–123	–
	globemallow	SPHAE	*Sphaeralcea*	61–123	–
15	**Forb**			12–37	
	woolly groundsel	PACA15	*Packera cana*	12–37	–
16	**Forb**			61–123	
	touristplant	DIWI2	*Dimorphocarpa wislizeni*	61–123	–
	woolly plantain	PLPA2	*Plantago patagonica*	61–123	–
17	**Other Forbs**			37–61	
	Forb (herbaceous, not grass nor grass-like)	2FORB	*Forb (herbaceous, not grass nor grass-like)*	37–61	–

Animal community

This Ecological Site provides habitat which supports a resident animal community that is characterized by pronghorn antelope, desert cottontail, spotted ground squirrel, black-tailed prairie dog, yellow faced pocket gopher, Ord’s kangaroo rat, northern grasshopper mouse, southern plains woodrat, badger, roadrunner, meadowlark, burrowing owl, white necked raven, lesser prairie chicken, morning dove, scaled quail, Harris hawk, side blotched lizard, marbled whiptail, Texas horned lizard, western diamondback rattlesnake, dusty hognose snake and ornate box turtle.
Where mesquite has invaded, most resident birds and scissor-tailed flycatcher, morning dove and Swainson’s hawk, nest. Vesper and grasshopper sparrows utilize the site during migration.

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
Berino B
Kinco A
Maljamar B
Pajarito B
Palomas B
Wink B
Pyote A

Recreational uses

This site offers recreation potential for hiking, borseback riding, nature observation, photography and hunting. During years of abundant spring moisture, this site displays a colorful array of wildflowers during May and June.

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 at any time of year. In cases where this site has been invaded by brush species it is especially suited for goats. Mismanagement of this site will cause a decrease in species such as the bluestems, blsck grama, bush muhly, plains bristlegrass, New Mexico feathergrass, Arizona cottontop and fourwing saltbush. A corresponding increase in the dropseeds, windmill grass, fall witchgrass, silver bluestem, sand sagebrush, shinery oak and ephedra will occur. This will also cause an increase in bare ground which will increase soil erodibility. This site will respond well to a system of management that rotates the season of use.

Other information

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month
Similarity Index Ac/AUM
100 - 76 2.3 – 3.5
75 – 51 3.0 – 4.5
50 – 26 4.6 – 9.0
25 – 0 9.1 +

Inventory data references

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

Other references

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Contributors

Don Sylvester
Quinn Hodgson

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):**

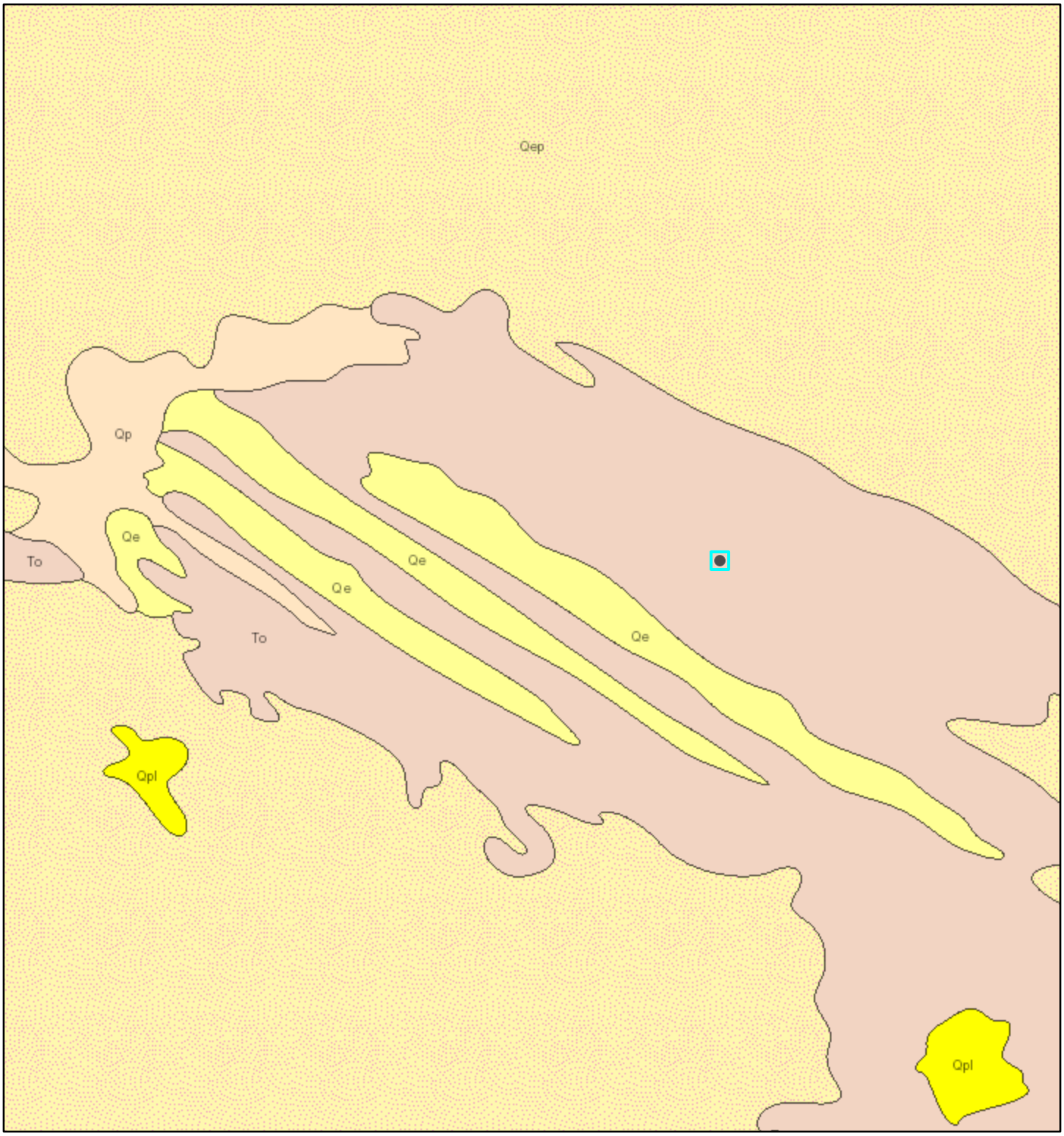
---

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:**

Outland State Unit #003_Geology



10/22/2023, 9:54:35 AM

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

Lithologic Units

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

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

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

ATTACHMENT 2

Borehole (Prefixed by "BH23-") Approximate Lease Boundary Approximate Release Area (~ 785 sq. ft.)

VERTEX

0 10 20 40 ft

Map Center:
Lat/Long: 32.488094, -103.435288

NAD 1983 UTM Zone 13N
Date: Dec 15/23

N

Characterization Sampling Site Schematic
Outland State Unit #003

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: Image from Esri, 2022. Boreholes from GPS by Vertex Professional Services Ltd. (Vertex), 2023. Approximate lease boundary from imagery by Vertex, 2023.

VERSATILITY. EXPERTISE.

Document Path: D:\Vertex\GeoRequests\23E-05199\Figure 1 Release Area (23E-05199).mxd

ATTACHMENT 3

Client Name: Devon Energy Production Company, LP
Site Name: Outland State Unit #003
NMOCD Tracking #: NGRL0926450258
Project #: 23E-05199
Lab Reports: 2311929, 2312840 and 2402166

Table 2. Initial Characterization Sample Field Screen and Laboratory Results - Depth to Groundwater <50 feet bgs

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (PetroFlag)	Chloride Concentration	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride Concentration
			(ppm)	(ppm)	(ppm)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH23-01	0	November 14, 2023	-	**765**	**8,160**	ND	ND	ND	54	ND	54	54	**11,000**
	2	November 14, 2023	-	**117**	**3,159**	ND	ND	ND	ND	ND	ND	ND	**3,000**
	4	November 14, 2023	-	71	**5,034**	ND	ND	ND	ND	ND	ND	ND	**5,600**
	5	December 12, 2023	-	-	**11,230**	ND	ND	ND	ND	ND	ND	ND	**12,000**
	6	December 12, 2023	-	-	**13,666**	ND	ND	ND	ND	ND	ND	ND	**15,000**
	8	December 12, 2023	-	-	**9,925**	ND	ND	ND	ND	ND	ND	ND	**9,200**
	10.5	February 1, 2024	0	-	**6,449**	-	-	-	-	-	-	-	-
	12	February 1, 2024	0	-	**2,964**	-	-	-	-	-	-	-	-
	14	February 1, 2024	0	-	**2,372**	-	-	-	-	-	-	-	-
	16	February 1, 2024	0	-	**2,344**	-	-	-	-	-	-	-	-
	18	February 1, 2024	0	-	**979**	-	-	-	-	-	-	-	-
	20	February 1, 2024	0	-	**1,194**	-	-	-	-	-	-	-	-
	21	February 1, 2024	0	-	**1,145**	-	-	-	-	-	-	-	-
	22	February 1, 2024	0	-	**663**	-	-	-	-	-	-	-	-
	23	February 1, 2024	0	7	376	ND	ND	ND	ND	ND	ND	ND	320
BH23-02	0	November 14, 2023	-	57	**1,036**	ND	ND	ND	ND	ND	ND	ND	**600**
	2	November 14, 2023	-	56	**636**	ND	ND	ND	ND	ND	ND	ND	370
BH23-03	0	November 14, 2023	-	67	183	ND	ND	ND	ND	ND	ND	ND	ND
	2	November 14, 2023	-	21	241	ND	ND	ND	ND	ND	ND	ND	ND
BH23-04	0	November 14, 2023	-	31	220	ND	ND	ND	ND	ND	ND	ND	ND
	2	November 14, 2023	-	43	538	ND	ND	ND	ND	ND	ND	ND	290
BH23-05	0	November 14, 2023	-	27	243	ND	ND	ND	ND	ND	ND	ND	ND
	2	November 14, 2023	-	34	0	ND	ND	ND	ND	ND	ND	ND	ND
BH23-06	0	November 14, 2023	-	32	113	ND	ND	ND	ND	ND	ND	ND	ND
	2	November 14, 2023	-	45	274	ND	ND	ND	ND	ND	ND	ND	180

"ND" Not Detected at the Reporting Limit
"-" indicates not analyzed/assessed
Bold and grey shaded indicates exceedance outside of NMOCD Closure Criteria (on-pad)
Bold and green shaded indicates exceedance outside of NMOCD Reclamation Criteria (off-pad)

ATTACHMENT 4

eurofins | Environment Testing

Eurofins Environment Testing South Central, LLC
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

November 30, 2023

Kent Stallings

Vertex Resources Services, Inc.
3101 Boyd Drive
Carlsbad, NM 88220
TEL:
FAX:

RE: Outland State Unit 003 OrderNo.: 2311929

Dear Kent Stallings:

Eurofins Environment Testing South Central, LLC received 13 sample(s) on 11/17/2023 for the analyses presented in the following report.

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

Please do not hesitate to contact Eurofins Albuquerque 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 **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-01 0'
Project: Outland State Unit 003
Collection Date: 11/14/2023 9:00:00 AM
Lab ID: 2311929-001 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	54	9.3		mg/Kg	1	11/22/2023 11:58:50 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/22/2023 11:58:50 PM
Surr: DNOP	108	69-147		%Rec	1	11/22/2023 11:58:50 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/23/2023 5:48:47 PM
Surr: BFB	93.9	15-244		%Rec	1	11/23/2023 5:48:47 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	11/23/2023 5:48:47 PM
Toluene	ND	0.049		mg/Kg	1	11/23/2023 5:48:47 PM
Ethylbenzene	ND	0.049		mg/Kg	1	11/23/2023 5:48:47 PM
Xylenes, Total	ND	0.097		mg/Kg	1	11/23/2023 5:48:47 PM
Surr: 4-Bromofluorobenzene	92.4	39.1-146		%Rec	1	11/23/2023 5:48:47 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	11000	600		mg/Kg	200	11/22/2023 6:11:54 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	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 **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-01 2'
Project: Outland State Unit 003
Collection Date: 11/14/2023 9:10:00 AM
Lab ID: 2311929-002 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	11/23/2023 12:09:10 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/23/2023 12:09:10 AM
Surr: DNOP	103	69-147		%Rec	1	11/23/2023 12:09:10 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/23/2023 6:12:16 PM
Surr: BFB	96.4	15-244		%Rec	1	11/23/2023 6:12:16 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	11/23/2023 6:12:16 PM
Toluene	ND	0.047		mg/Kg	1	11/23/2023 6:12:16 PM
Ethylbenzene	ND	0.047		mg/Kg	1	11/23/2023 6:12:16 PM
Xylenes, Total	ND	0.094		mg/Kg	1	11/23/2023 6:12:16 PM
Surr: 4-Bromofluorobenzene	95.5	39.1-146		%Rec	1	11/23/2023 6:12:16 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	3000	150		mg/Kg	50	11/22/2023 6:24:19 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	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 **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-01 4'
Project: Outland State Unit 003
Collection Date: 11/14/2023 9:20:00 AM
Lab ID: 2311929-003 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	11/23/2023 12:19:40 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	11/23/2023 12:19:40 AM
Surr: DNOP	85.8	69-147		%Rec	1	11/23/2023 12:19:40 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/23/2023 6:35:46 PM
Surr: BFB	93.2	15-244		%Rec	1	11/23/2023 6:35:46 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	11/23/2023 6:35:46 PM
Toluene	ND	0.047		mg/Kg	1	11/23/2023 6:35:46 PM
Ethylbenzene	ND	0.047		mg/Kg	1	11/23/2023 6:35:46 PM
Xylenes, Total	ND	0.094		mg/Kg	1	11/23/2023 6:35:46 PM
Surr: 4-Bromofluorobenzene	92.3	39.1-146		%Rec	1	11/23/2023 6:35:46 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	5600	300		mg/Kg	100	11/22/2023 6:36:43 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	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 **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-02 0'
Project: Outland State Unit 003 **Collection Date:** 11/14/2023 9:30:00 AM
Lab ID: 2311929-004 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	11/23/2023 12:29:59 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/23/2023 12:29:59 AM
Surr: DNOP	90.8	69-147		%Rec	1	11/23/2023 12:29:59 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/23/2023 6:59:13 PM
Surr: BFB	93.5	15-244		%Rec	1	11/23/2023 6:59:13 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	11/23/2023 6:59:13 PM
Toluene	ND	0.050		mg/Kg	1	11/23/2023 6:59:13 PM
Ethylbenzene	ND	0.050		mg/Kg	1	11/23/2023 6:59:13 PM
Xylenes, Total	ND	0.099		mg/Kg	1	11/23/2023 6:59:13 PM
Surr: 4-Bromofluorobenzene	91.7	39.1-146		%Rec	1	11/23/2023 6:59:13 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	600	60		mg/Kg	20	11/22/2023 10:31:15 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 **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-02 2'
Project: Outland State Unit 003 **Collection Date:** 11/14/2023 9:40:00 AM
Lab ID: 2311929-005 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	11/23/2023 12:40:18 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	11/23/2023 12:40:18 AM
Surr: DNOP	93.2	69-147		%Rec	1	11/23/2023 12:40:18 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/23/2023 7:22:43 PM
Surr: BFB	94.2	15-244		%Rec	1	11/23/2023 7:22:43 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	11/23/2023 7:22:43 PM
Toluene	ND	0.050		mg/Kg	1	11/23/2023 7:22:43 PM
Ethylbenzene	ND	0.050		mg/Kg	1	11/23/2023 7:22:43 PM
Xylenes, Total	ND	0.10		mg/Kg	1	11/23/2023 7:22:43 PM
Surr: 4-Bromofluorobenzene	93.6	39.1-146		%Rec	1	11/23/2023 7:22:43 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	370	60		mg/Kg	20	11/22/2023 11:08:28 AM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	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 **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-03 0'
Project: Outland State Unit 003
Collection Date: 11/14/2023 9:50:00 AM
Lab ID: 2311929-006 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	11/22/2023 1:37:56 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/22/2023 1:37:56 PM
Surr: DNOP	121	69-147		%Rec	1	11/22/2023 1:37:56 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/22/2023 1:19:44 PM
Surr: BFB	88.4	15-244		%Rec	1	11/22/2023 1:19:44 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	11/22/2023 1:19:44 PM
Toluene	ND	0.049		mg/Kg	1	11/22/2023 1:19:44 PM
Ethylbenzene	ND	0.049		mg/Kg	1	11/22/2023 1:19:44 PM
Xylenes, Total	ND	0.097		mg/Kg	1	11/22/2023 1:19:44 PM
Surr: 4-Bromofluorobenzene	89.3	39.1-146		%Rec	1	11/22/2023 1:19:44 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	ND	60		mg/Kg	20	11/22/2023 11:45:42 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-03 2'
Project: Outland State Unit 003 **Collection Date:** 11/14/2023 10:00:00 AM
Lab ID: 2311929-007 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	11/27/2023 1:06:22 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	11/27/2023 1:06:22 PM
Surr: DNOP	103	69-147		%Rec	1	11/27/2023 1:06:22 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/22/2023 1:43:21 PM
Surr: BFB	88.4	15-244		%Rec	1	11/22/2023 1:43:21 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	11/22/2023 1:43:21 PM
Toluene	ND	0.048		mg/Kg	1	11/22/2023 1:43:21 PM
Ethylbenzene	ND	0.048		mg/Kg	1	11/22/2023 1:43:21 PM
Xylenes, Total	ND	0.096		mg/Kg	1	11/22/2023 1:43:21 PM
Surr: 4-Bromofluorobenzene	88.3	39.1-146		%Rec	1	11/22/2023 1:43:21 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	ND	60		mg/Kg	20	11/22/2023 11:58:07 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 **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-04 0'
Project: Outland State Unit 003
Collection Date: 11/14/2023 10:10:00 AM
Lab ID: 2311929-008 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	11/22/2023 2:25:40 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/22/2023 2:25:40 PM
Surr: DNOP	93.4	69-147		%Rec	1	11/22/2023 2:25:40 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	11/22/2023 2:06:53 PM
Surr: BFB	90.0	15-244		%Rec	1	11/22/2023 2:06:53 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	11/22/2023 2:06:53 PM
Toluene	ND	0.047		mg/Kg	1	11/22/2023 2:06:53 PM
Ethylbenzene	ND	0.047		mg/Kg	1	11/22/2023 2:06:53 PM
Xylenes, Total	ND	0.093		mg/Kg	1	11/22/2023 2:06:53 PM
Surr: 4-Bromofluorobenzene	90.6	39.1-146		%Rec	1	11/22/2023 2:06:53 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	ND	60		mg/Kg	20	11/22/2023 3:05:48 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 **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-04 2'
Project: Outland State Unit 003
Collection Date: 11/14/2023 10:20:00 AM
Lab ID: 2311929-009 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	11/22/2023 2:49:33 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/22/2023 2:49:33 PM
Surr: DNOP	107	69-147		%Rec	1	11/22/2023 2:49:33 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	11/22/2023 2:30:28 PM
Surr: BFB	89.5	15-244		%Rec	1	11/22/2023 2:30:28 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	11/22/2023 2:30:28 PM
Toluene	ND	0.050		mg/Kg	1	11/22/2023 2:30:28 PM
Ethylbenzene	ND	0.050		mg/Kg	1	11/22/2023 2:30:28 PM
Xylenes, Total	ND	0.099		mg/Kg	1	11/22/2023 2:30:28 PM
Surr: 4-Bromofluorobenzene	89.4	39.1-146		%Rec	1	11/22/2023 2:30:28 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	290	60		mg/Kg	20	11/22/2023 12:47:45 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-05 0'
Project: Outland State Unit 003
Collection Date: 11/14/2023 10:30:00 AM
Lab ID: 2311929-010 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	11/22/2023 3:13:25 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/22/2023 3:13:25 PM
Surr: DNOP	93.7	69-147		%Rec	1	11/22/2023 3:13:25 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/22/2023 2:54:06 PM
Surr: BFB	90.4	15-244		%Rec	1	11/22/2023 2:54:06 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	11/22/2023 2:54:06 PM
Toluene	ND	0.048		mg/Kg	1	11/22/2023 2:54:06 PM
Ethylbenzene	ND	0.048		mg/Kg	1	11/22/2023 2:54:06 PM
Xylenes, Total	ND	0.097		mg/Kg	1	11/22/2023 2:54:06 PM
Surr: 4-Bromofluorobenzene	90.4	39.1-146		%Rec	1	11/22/2023 2:54:06 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	ND	60		mg/Kg	20	11/22/2023 1:01:42 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 **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-05 2'
Project: Outland State Unit 003
Collection Date: 11/14/2023 10:40:00 AM
Lab ID: 2311929-011 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	11/22/2023 3:37:20 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	11/22/2023 3:37:20 PM
Surr: DNOP	94.9	69-147		%Rec	1	11/22/2023 3:37:20 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	11/22/2023 3:17:43 PM
Surr: BFB	90.0	15-244		%Rec	1	11/22/2023 3:17:43 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.024		mg/Kg	1	11/22/2023 3:17:43 PM
Toluene	ND	0.048		mg/Kg	1	11/22/2023 3:17:43 PM
Ethylbenzene	ND	0.048		mg/Kg	1	11/22/2023 3:17:43 PM
Xylenes, Total	ND	0.096		mg/Kg	1	11/22/2023 3:17:43 PM
Surr: 4-Bromofluorobenzene	90.8	39.1-146		%Rec	1	11/22/2023 3:17:43 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	ND	60		mg/Kg	20	11/22/2023 1:14:06 PM

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

Qualifiers:

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

Analytical Report
Lab Order **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc.
Client Sample ID: BH23-06 0'
Project: Outland State Unit 003
Collection Date: 11/14/2023 10:50:00 AM
Lab ID: 2311929-012 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	11/22/2023 4:01:11 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	11/22/2023 4:01:11 PM
Surr: DNOP	93.5	69-147		%Rec	1	11/22/2023 4:01:11 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	11/22/2023 3:41:19 PM
Surr: BFB	88.9	15-244		%Rec	1	11/22/2023 3:41:19 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	11/22/2023 3:41:19 PM
Toluene	ND	0.049		mg/Kg	1	11/22/2023 3:41:19 PM
Ethylbenzene	ND	0.049		mg/Kg	1	11/22/2023 3:41:19 PM
Xylenes, Total	ND	0.099		mg/Kg	1	11/22/2023 3:41:19 PM
Surr: 4-Bromofluorobenzene	89.6	39.1-146		%Rec	1	11/22/2023 3:41:19 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	ND	60		mg/Kg	20	11/22/2023 1:26:31 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 **2311929**
Date Reported: **11/30/2023**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-06 2'
Project: Outland State Unit 003 **Collection Date:** 11/14/2023 11:00:00 AM
Lab ID: 2311929-013 **Matrix:** SOIL **Received Date:** 11/17/2023 7:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **DGH**
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	11/22/2023 4:25:03 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	11/22/2023 4:25:03 PM
Surr: DNOP	85.8	69-147		%Rec	1	11/22/2023 4:25:03 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	11/22/2023 4:28:27 PM
Surr: BFB	91.7	15-244		%Rec	1	11/22/2023 4:28:27 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.023		mg/Kg	1	11/22/2023 4:28:27 PM
Toluene	ND	0.046		mg/Kg	1	11/22/2023 4:28:27 PM
Ethylbenzene	ND	0.046		mg/Kg	1	11/22/2023 4:28:27 PM
Xylenes, Total	ND	0.093		mg/Kg	1	11/22/2023 4:28:27 PM
Surr: 4-Bromofluorobenzene	93.4	39.1-146		%Rec	1	11/22/2023 4:28:27 PM
EPA METHOD 300.0: ANIONS						Analyst: **KCB**
Chloride	180	59		mg/Kg	20	11/22/2023 1:38:55 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.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2311929**

30-Nov-23

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **MB-78941** SampType: **MBLK** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **78941** RunNo: **101366**
Prep Date: **11/21/2023** Analysis Date: **11/21/2023** SeqNo: **3729033** Units: **mg/Kg**

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

Sample ID: **LCS-78941** SampType: **LCS** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **78941** RunNo: **101366**
Prep Date: **11/21/2023** Analysis Date: **11/21/2023** SeqNo: **3729034** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.4	90	110			

Sample ID: **MB-78949** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS** Batch ID: **78949** RunNo: **101390**
Prep Date: **11/22/2023** Analysis Date: **11/22/2023** SeqNo: **3730330** Units: **mg/Kg**

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

Sample ID: **LCS-78949** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS** Batch ID: **78949** RunNo: **101390**
Prep Date: **11/22/2023** Analysis Date: **11/22/2023** SeqNo: **3730331** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.6	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#: **2311929**

30-Nov-23

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **2311929-005AMS**	SampType: **MS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH23-02 2'**	Batch ID: **78921**	RunNo: **101387**
Prep Date: **11/21/2023**	Analysis Date: **11/23/2023**	SeqNo: **3729935** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	9.8	49.07	0	88.3	54.2	135			
Surr: DNOP	4.6		4.907		94.2	69	147			

Sample ID: **2311929-005AMSD**	SampType: **MSD**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **BH23-02 2'**	Batch ID: **78921**	RunNo: **101387**
Prep Date: **11/21/2023**	Analysis Date: **11/23/2023**	SeqNo: **3729936** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	42	9.1	45.70	0	92.3	54.2	135	2.59	29.2	
Surr: DNOP	4.5		4.570		98.6	69	147	0	0	

Sample ID: **LCS-78921**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **78921**	RunNo: **101387**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3729953** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	85.4	61.9	130			
Surr: DNOP	4.3		5.000		86.3	69	147			

Sample ID: **LCS-78933**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **78933**	RunNo: **101387**
Prep Date: **11/22/2023**	Analysis Date: **11/23/2023**	SeqNo: **3729954** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.2		5.000		84.7	69	147			

Sample ID: **MB-78921**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **78921**	RunNo: **101387**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3729956** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.9		10.00		88.8	69	147			

Sample ID: **MB-78933**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **78933**	RunNo: **101387**
Prep Date: **11/22/2023**	Analysis Date: **11/23/2023**	SeqNo: **3729957** Units: **%Rec**

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of 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#: **2311929**

30-Nov-23

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **MB-78933**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **78933**	RunNo: **101387**
Prep Date: **11/22/2023**	Analysis Date: **11/23/2023**	SeqNo: **3729957** Units: **%Rec**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	8.7		10.00		87.0	69	147			

Sample ID: **MB-78932**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **78932**	RunNo: **101391**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3730313** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.7		10.00		97.0	69	147			

Sample ID: **LCS-78932**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **78932**	RunNo: **101391**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3730314** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	107	61.9	130			
Surr: DNOP	4.2		5.000		84.1	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#: **2311929**

30-Nov-23

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **lcs-78922**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **78922**	RunNo: **101367**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3729169** 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	87.0	70	130			
Surr: BFB	1800		1000		177	15	244			

Sample ID: **mb-78922**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **78922**	RunNo: **101367**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3729170** 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	890		1000		88.6	15	244			

Sample ID: **lcs-78913**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **78913**	RunNo: **101367**
Prep Date: **11/20/2023**	Analysis Date: **11/23/2023**	SeqNo: **3730045** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	82.4	70	130			
Surr: BFB	1900		1000		186	15	244			

Sample ID: **mb-78913**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **78913**	RunNo: **101367**
Prep Date: **11/20/2023**	Analysis Date: **11/23/2023**	SeqNo: **3730046** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	900		1000		90.3	15	244			

Sample ID: **2311929-006ams**	SampType: **MS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-03 0'**	Batch ID: **78922**	RunNo: **101367**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3730070** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.9	24.39	0	97.6	70	130			
Surr: BFB	2000		975.6		201	15	244			

Sample ID: **2311929-006amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-03 0'**	Batch ID: **78922**	RunNo: **101367**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3730071** 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#: **2311929**

30-Nov-23

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **2311929-006amsd**	SampType: **MSD**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **BH23-03 0'**	Batch ID: **78922**	RunNo: **101367**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3730071** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.8	24.13	0	93.1	70	130	5.81	20	
Surr: BFB	1900		965.3		194	15	244	0	0	

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2311929**

30-Nov-23

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **LCS-78922**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **78922**	RunNo: **101367**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3729174** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	99.0	70	130			
Toluene	0.97	0.050	1.000	0	96.6	70	130			
Ethylbenzene	0.93	0.050	1.000	0	93.4	70	130			
Xylenes, Total	2.8	0.10	3.000	0	93.4	70	130			
Surr: 4-Bromofluorobenzene	0.93		1.000		93.5	39.1	146			

Sample ID: **mb-78922**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **78922**	RunNo: **101367**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3729175** 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		91.5	39.1	146			

Sample ID: **LCS-78913**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **78913**	RunNo: **101367**
Prep Date: **11/20/2023**	Analysis Date: **11/23/2023**	SeqNo: **3730116** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.92	0.025	1.000	0	91.9	70	130			
Toluene	0.92	0.050	1.000	0	92.2	70	130			
Ethylbenzene	0.91	0.050	1.000	0	91.4	70	130			
Xylenes, Total	2.7	0.10	3.000	0	90.5	70	130			
Surr: 4-Bromofluorobenzene	0.92		1.000		91.9	39.1	146			

Sample ID: **mb-78913**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **78913**	RunNo: **101367**
Prep Date: **11/20/2023**	Analysis Date: **11/23/2023**	SeqNo: **3730117** 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		92.3	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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2311929**

30-Nov-23

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **2311929-007ams**	SampType: **MS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-03 2'**	Batch ID: **78922**	RunNo: **101367**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3730142** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.024	0.9515	0	105	70	130			
Toluene	1.0	0.048	0.9515	0	105	70	130			
Ethylbenzene	0.98	0.048	0.9515	0	103	70	130			
Xylenes, Total	2.9	0.095	2.854	0	102	70	130			
Surr: 4-Bromofluorobenzene	0.89		0.9515		93.8	39.1	146			

Sample ID: **2311929-007amsd**	SampType: **MSD**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **BH23-03 2'**	Batch ID: **78922**	RunNo: **101367**
Prep Date: **11/21/2023**	Analysis Date: **11/22/2023**	SeqNo: **3730143** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.024	0.9579	0	101	70	130	2.78	20	
Toluene	0.97	0.048	0.9579	0	101	70	130	3.19	20	
Ethylbenzene	0.95	0.048	0.9579	0	99.7	70	130	2.58	20	
Xylenes, Total	2.8	0.096	2.874	0	99.0	70	130	1.94	20	
Surr: 4-Bromofluorobenzene	0.88		0.9579		92.0	39.1	146	0	0	

Qualifiers:

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

eurofins | Environment Testing

Eurofins Environment Testing South Central, LLC
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 | Work Order Number: 2311929 | RcptNo: 1

Received By: Tracy Casarrubias 11/17/2023 7:45:00 AM

Completed By: Tracy Casarrubias 11/17/2023 9:01:58 AM

Reviewed By: [signature] 11/17/23

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 ☐	# of preserved bottles checked for pH: (<2 or >12 unless noted)
12. Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	Adjusted?
13. Is it clear what analyses were requested?	Yes ☑	No ☐	
14. Were all holding times able to be met? (If no, notify customer for authorization.)	Yes ☑	No ☐	Checked by: SCM 11/17/23

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: Mailing address, phone number, and Email/Fax are missing on COC- TMC 11/17/23

16. Additional remarks:

Client did not relinquish chain of custody

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.3	Good	Yes	Yogi		

Chain-of-Custody Record

Client: Vertex (Devon)

Mailing Address: on file

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☑ Rush 5 day

Project Name: Outland State Unit #003

Project #: 23E-05199

Project Manager: Kent Stallings

Sampler: Zach Englebert

On Ice: ☑ Yes ☐ No Yogi

# of Coolers: 1

Cooler Temp(including CF): 4.3-0=4.3 (°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. 2311929	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)
11-14-23	9 00	soil	BH23-01 0'	1 jar	ice	001										
	9 10		BH23-01 2'			002										
	9 20		BH23-01 4'			003										
	9 30		BH23-02 0'			004										
	9 40		BH23-02 2'			005										
	9 50		BH23-03 0'			006										
	10 00		BH23-03 2'			007										
	10 10		BH23-04 0'			008										
	10 20		BH23-04 2'			009										
	10 30		BH23-05 0'			010										
	10 40		BH23-05 2'			011										
	10 50		BH23-06 0'			012										

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					11/16/23	900
11/16/23	1100			courier	11/17/23	7:45

Remarks: Direct bill to Devon
cc KStallings@vertex.ca

Chain-of-Custody Record

Client: Vertex (Devon)

Mailing Address: on File

Phone #:

email or Fax#:

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

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

Turn-Around Time:
☑ Standard ☐ Rush 5 DAY

Project Name: Outland State Unit #003

Project #: 23E-05199

Project Manager: Kent Stallings

Sampler: Zach Englebert

On Ice: ☑ Yes ☐ No 4 ogi

# of Coolers: 1

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

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 2311929	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) NO: 9me	8270 (Semi-VOA)	Total Coliform (Present/Absent)
11-14-23	1100	soil	BH23-06 2'	1 jar	ice	013	X	X					X			

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
			[illegible]		11/16/23	900
11/16/23	1900	[signature]	[signature]	courier	11/17/23	7:45

Remarks: Direct bill to Devon
cc Kstallings@vertex.ca

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

Eurofins Environment Testing South Central, LLC
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

January 02, 2024

Kent Stallings

Vertex Resources Services, Inc.
3101 Boyd Drive
Carlsbad, NM 88220
TEL:
FAX:

RE: Outland State Unit 3 OrderNo.: 2312840

Dear Kent Stallings:

Eurofins Environment Testing South Central, LLC received 3 sample(s) on 12/14/2023 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 do not hesitate to contact Eurofins Albuquerque 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 **2312840**
Date Reported: **1/2/2024**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-01 5'
Project: Outland State Unit 3 **Collection Date:** 12/12/2023 10:00:00 AM
Lab ID: 2312840-001 **Matrix:** SOIL **Received Date:** 12/14/2023 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	12/21/2023 3:17:19 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/21/2023 3:17:19 PM
Surr: DNOP	78.9	69-147		%Rec	1	12/21/2023 3:17:19 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/22/2023 7:40:00 AM
Surr: BFB	95.7	15-244		%Rec	1	12/22/2023 7:40:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	12/22/2023 7:40:00 AM
Toluene	ND	0.049		mg/Kg	1	12/22/2023 7:40:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	12/22/2023 7:40:00 AM
Xylenes, Total	ND	0.098		mg/Kg	1	12/22/2023 7:40:00 AM
Surr: 4-Bromofluorobenzene	95.3	39.1-146		%Rec	1	12/22/2023 7:40:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	12000	610		mg/Kg	200	12/22/2023 11:23:41 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2312840**
Date Reported: **1/2/2024**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-01 6'
Project: Outland State Unit 3 **Collection Date:** 12/12/2023 10:30:00 AM
Lab ID: 2312840-002 **Matrix:** SOIL **Received Date:** 12/14/2023 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/21/2023 3:41:44 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/21/2023 3:41:44 PM
Surr: DNOP	79.7	69-147		%Rec	1	12/21/2023 3:41:44 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/22/2023 8:01:00 AM
Surr: BFB	97.4	15-244		%Rec	1	12/22/2023 8:01:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	12/22/2023 8:01:00 AM
Toluene	ND	0.048		mg/Kg	1	12/22/2023 8:01:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	12/22/2023 8:01:00 AM
Xylenes, Total	ND	0.095		mg/Kg	1	12/22/2023 8:01:00 AM
Surr: 4-Bromofluorobenzene	96.0	39.1-146		%Rec	1	12/22/2023 8:01:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	15000	600		mg/Kg	200	12/22/2023 11:36:06 AM

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

Qualifiers:

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

Analytical Report
Lab Order **2312840**
Date Reported: **1/2/2024**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-01 8'
Project: Outland State Unit 3 **Collection Date:** 12/12/2023 11:00:00 AM
Lab ID: 2312840-003 **Matrix:** SOIL **Received Date:** 12/14/2023 8:15:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **PRD**
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	12/21/2023 4:06:13 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/21/2023 4:06:13 PM
Surr: DNOP	78.7	69-147		%Rec	1	12/21/2023 4:06:13 PM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **RAA**
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/22/2023 8:23:00 AM
Surr: BFB	97.2	15-244		%Rec	1	12/22/2023 8:23:00 AM
EPA METHOD 8021B: VOLATILES						Analyst: **RAA**
Benzene	ND	0.024		mg/Kg	1	12/22/2023 8:23:00 AM
Toluene	ND	0.048		mg/Kg	1	12/22/2023 8:23:00 AM
Ethylbenzene	ND	0.048		mg/Kg	1	12/22/2023 8:23:00 AM
Xylenes, Total	ND	0.097		mg/Kg	1	12/22/2023 8:23:00 AM
Surr: 4-Bromofluorobenzene	97.0	39.1-146		%Rec	1	12/22/2023 8:23:00 AM
EPA METHOD 300.0: ANIONS						Analyst: **SNS**
Chloride	9200	600		mg/Kg	200	12/22/2023 11:48:31 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.		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **2312840**

02-Jan-24

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 3

Sample ID: **MB-79529**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **79529**	RunNo: **102021**
Prep Date: **12/20/2023**	Analysis Date: **12/21/2023**	SeqNo: **3765787** Units: **mg/Kg**

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

Sample ID: **LCS-79529**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **79529**	RunNo: **102021**
Prep Date: **12/20/2023**	Analysis Date: **12/21/2023**	SeqNo: **3765788** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.0	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical 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#: **2312840**

02-Jan-24

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 3

Sample ID: **MB-79516**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **79516**	RunNo: **102022**
Prep Date: **12/20/2023**	Analysis Date: **12/21/2023**	SeqNo: **3764563** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.8		10.00		98.0	69	147			

Sample ID: **LCS-79516**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **79516**	RunNo: **102022**
Prep Date: **12/20/2023**	Analysis Date: **12/21/2023**	SeqNo: **3764564** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	10	50.00	0	95.8	61.9	130			
Surr: DNOP	4.1		5.000		82.1	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#: **2312840**

02-Jan-24

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 3

Sample ID: **mb-79509**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **79509**	RunNo: **102015**
Prep Date: **12/19/2023**	Analysis Date: **12/21/2023**	SeqNo: **3765288** 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		98.1	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#: **2312840**

02-Jan-24

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 3

Sample ID: **lcs-79509**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **79509**	RunNo: **102015**
Prep Date: **12/19/2023**	Analysis Date: **12/21/2023**	SeqNo: **3765432** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	99.3	70	130			
Toluene	1.0	0.050	1.000	0	101	70	130			
Ethylbenzene	1.0	0.050	1.000	0	102	70	130			
Xylenes, Total	3.1	0.10	3.000	0	102	70	130			
Surr: 4-Bromofluorobenzene	0.98		1.000		98.3	39.1	146			

Sample ID: **mb-79509**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **79509**	RunNo: **102015**
Prep Date: **12/19/2023**	Analysis Date: **12/21/2023**	SeqNo: **3765433** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.96		1.000		96.0	39.1	146			

Qualifiers:

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

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Eurofins Environment Testing South Central, LLC
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 | Work Order Number: 2312840 | RcptNo: 1

Received By: Tracy Casarrubias 12/14/2023 8:15:00 AM

Completed By: Tracy Casarrubias 12/14/2023 9:33:49 AM

Reviewed By: 12-14-23

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: 12/14/23

Special Handling (if applicable)

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

Person Notified: _____ Date: _____

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

Regarding: _____

Client Instructions: Mailing address,phone number and Email/Fax are missingon COC- TMC 12/14/23

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.8	Good	Yes	Yogi		

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Chain of Custody

Houston, TX (281) 240-4200, Dallas, TX (214) 902-0300
Midland, TX (432) 704-5440, San Antonio, TX (210) 509-3334
EL Paso, TX (915) 585-3443, Lubbock, TX (806) 794-1296
Hobbs, NM (575) 392-7550, Carlsbad, NM (575) 988-3199

Work Order No: 2312840

www.xenco.com Page _____ of _____

Project Manager:	Kent Stallings	Bill to: (if different)	Deron
Company Name:	Vertex (Devon)	Company Name:	
Address:	on file	Address:	
City, State ZIP:		City, State ZIP:	
Phone:	Email:		

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐
State of Project:
Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐
Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	Outland State Unit 3	Turn Around	
Project Number:	23E-05199	☑ Routine ☑ Rush	
Project Location:	same as Project Name	Due Date:	5 DAY
Sampler's Name:	Zach Englebert	TAT starts the day received by the lab, if received by 4:30pm	
PO #:			

SAMPLE RECEIPT			
Temp Blank:	Yes (No)	Wet Ice:	(Yes) No
Samples Received Intact:	(Yes) No	Thermometer ID:	409i
Cooler Custody Seals:	(Yes) No N/A	Correction Factor:	0
Sample Custody Seals:	Yes No (N/A)	Temperature Reading:	3.8°C
Total Containers:	1	Corrected Temperature:	3.8°C

Preservative Codes

None: NO | DI Water: H_2O
Cool: Cool | MeOH: Me
HCL: HC | HNO_3: HN
H_2SO_4: H_2 | NaOH: Na
H_3PO_4: HP
$NaHSO_4$: NABIS
$Na_2S_2O_3$: $NaSO_3$
Zn Acetate+NaOH: Zn
NaOH+Ascorbic Acid: SAPC

Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Grab/ Comp	# of Cont	Pres. Code	Parameters: TPH	BTEX	Chlorides	Sample Comments
BH23-01 5'	soil	12-12-23	10:00	5'	grab			X	X	X	001
BH23-01 6'	↓	↓	10:30	6'	↓			↓	↓	↓	002
BH23-01 8'	↓	↓	11:00	8'	↓			↓	↓	↓	003

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO_2 Na Sr Tl Sn U V Zn
Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010 : 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U Hg: 1631 / 245.1 / 7470 / 7471

Notice: Signature of this document and relinquishment of samples constitutes a valid purchase order from client company to Eurofins Xenco, its affiliates and subcontractors. It assigns standard terms and conditions of service. Eurofins Xenco will be liable only for the cost of samples and shall not assume any responsibility for any losses or expenses incurred by the client if such losses are due to circumstances beyond the control of Eurofins Xenco. A minimum charge of $85.00 will be applied to each project and a charge of $5 for each sample submitted to Eurofins Xenco, but not analyzed. These terms will be enforced unless previously negotiated.

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
1		12/13/23 1015	2	courier	12/14/23 8:15
3			4		
5			6		

Revised Date: 08/25/2020 Rev. 2020.2

1 of 1.

Eurofins Environment Testing South Central, LLC
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

February 15, 2024

Kent Stallings

Vertex Resources Services, Inc.
3101 Boyd Drive
Carlsbad, NM 88220
TEL:
FAX:

RE: Outland State Unit 003 OrderNo.: 2402166

Dear Kent Stallings:

Eurofins Environment Testing South Central, LLC received 1 sample(s) on 2/3/2024 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 do not hesitate to contact Eurofins Albuquerque 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 **2402166**
Date Reported: **2/15/2024**

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resources Services, Inc. **Client Sample ID:** BH23-01 23'
Project: Outland State Unit 003 **Collection Date:** 2/1/2024 2:00:00 PM
Lab ID: 2402166-001 **Matrix:** SOIL **Received Date:** 2/3/2024 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS						Analyst: **JKU**
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	2/9/2024 11:09:23 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	2/9/2024 11:09:23 AM
Surr: DNOP	70.4	61.2-134		%Rec	1	2/9/2024 11:09:23 AM
EPA METHOD 8015D: GASOLINE RANGE						Analyst: **JJP**
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	2/11/2024 8:36:11 PM
Surr: BFB	93.1	15-244		%Rec	1	2/11/2024 8:36:11 PM
EPA METHOD 8021B: VOLATILES						Analyst: **JJP**
Benzene	ND	0.025		mg/Kg	1	2/11/2024 8:36:11 PM
Toluene	ND	0.049		mg/Kg	1	2/11/2024 8:36:11 PM
Ethylbenzene	ND	0.049		mg/Kg	1	2/11/2024 8:36:11 PM
Xylenes, Total	ND	0.098		mg/Kg	1	2/11/2024 8:36:11 PM
Surr: 4-Bromofluorobenzene	82.8	39.1-146		%Rec	1	2/11/2024 8:36:11 PM
EPA METHOD 300.0: ANIONS						Analyst: **RBC**
Chloride	320	60		mg/Kg	20	2/9/2024 1:12:28 PM

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

Qualifiers:

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Above Quantitation Range/Estimated Value
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical 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#: **2402166**

15-Feb-24

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **MB-80358**	SampType: **MBLK**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBS**	Batch ID: **80358**	RunNo: **103010**
Prep Date: **2/9/2024**	Analysis Date: **2/9/2024**	SeqNo: **3807709** Units: **mg/Kg**

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

Sample ID: **LCS-80358**	SampType: **LCS**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSS**	Batch ID: **80358**	RunNo: **103010**
Prep Date: **2/9/2024**	Analysis Date: **2/9/2024**	SeqNo: **3807710** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.4	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical 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#: **2402166**

15-Feb-24

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **MB-80330**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **PBS**	Batch ID: **80330**	RunNo: **102994**
Prep Date: **2/7/2024**	Analysis Date: **2/8/2024**	SeqNo: **3806975** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		112	61.2	134			

Sample ID: **LCS-80330**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range Organics**
Client ID: **LCSS**	Batch ID: **80330**	RunNo: **102994**
Prep Date: **2/7/2024**	Analysis Date: **2/8/2024**	SeqNo: **3806976** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	62	10	50.00	0	123	59.7	135			
Surr: DNOP	5.3		5.000		105	61.2	134			

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#: **2402166**

15-Feb-24

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **lcs-80289**	SampType: **LCS**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **LCSS**	Batch ID: **80289**	RunNo: **103014**
Prep Date: **2/7/2024**	Analysis Date: **2/11/2024**	SeqNo: **3807952** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	103	70	130			
Surr: BFB	2000		1000		203	15	244			

Sample ID: **mb-80289**	SampType: **MBLK**	TestCode: **EPA Method 8015D: Gasoline Range**
Client ID: **PBS**	Batch ID: **80289**	RunNo: **103014**
Prep Date: **2/7/2024**	Analysis Date: **2/11/2024**	SeqNo: **3807953** 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		97.7	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#: **2402166**

15-Feb-24

Client: Vertex Resources Services, Inc.

Project: Outland State Unit 003

Sample ID: **LCS-80289**	SampType: **LCS**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **LCSS**	Batch ID: **80289**	RunNo: **103014**
Prep Date: **2/7/2024**	Analysis Date: **2/11/2024**	SeqNo: **3807961** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.86	0.025	1.000	0	86.1	70	130			
Toluene	0.87	0.050	1.000	0	87.0	70	130			
Ethylbenzene	0.88	0.050	1.000	0	87.7	70	130			
Xylenes, Total	2.6	0.10	3.000	0	87.9	70	130			
Surr: 4-Bromofluorobenzene	0.89		1.000		88.8	39.1	146			

Sample ID: **mb-80289**	SampType: **MBLK**	TestCode: **EPA Method 8021B: Volatiles**
Client ID: **PBS**	Batch ID: **80289**	RunNo: **103014**
Prep Date: **2/7/2024**	Analysis Date: **2/11/2024**	SeqNo: **3807962** 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	0.87		1.000		87.0	39.1	146			

Qualifiers:

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

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Eurofins Environment Testing South Central, LLC
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** Work Order Number: **2402166** RcptNo: **1**

Received By: **Tracy Casarrubias** **2/3/2024 9:40:00 AM**

Completed By: **Tracy Casarrubias** **2/3/2024 11:21:19 AM**

Reviewed By: 2/5/24

Chain of Custody

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

Log In

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

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

Adjusted? _____

Checked by: TMC 2/3/24

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:

Mailing address,phone number, and Email/Fax are missing on COC- TMC 2/3/24

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.8	Good	Yes	Morty		

Chain-of-Custody Record

Client: Vertex (Devon)

Mailing Address: on file

Phone #:

email or Fax#:

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

Accreditation: ☐ Az Compliance
☐ NELAC ☐ Other

☐ EDD (Type)

Turn-Around Time:
☑ Standard ☐ Rush 5 Day

Project Name: Outland State Unit #003

Project #: 23E-05199

Project Manager: Kent Stallings

Sampler: Zach Englebert

On Ice: ☑ Yes ☐ No marty

# of Coolers: 1

Cooler Temp(including CF): 1.8 + 0 = 1.8 (°C)

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

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No. 24021616	BTEX / MTBE / TMB's (8021)	TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO_3, NO_2, PO_4, SO_4	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
2-1-24	1400	soil	BH23-01 23'	1 jar: 4oz.	ice	001	X	X					X			

Analysis Request

Date:	Time:	Relinquished by:	Received by:	Via:	Date	Time
					2/2/24	1100
Date:	Time:	Relinquished by:	Received by:	Via: courier	Date	Time
2/2/24	1900				2/3/24	9:40

Remarks: Direct bill to Devon
cc Kstallings@vertex.ca

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

ATTACHMENT 5

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	
Site Location Name:	Outland State Unit #003	Report Run Date:	11/14/2023 11:55 PM
Client Contact Name:	Dale Woodall	API #:	
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	
Departed Site	

Field Notes

10:03 On site for delineation.

10:03 Held safety meeting, used line locater.

15:02 Collected sample 01 at 0', 2', and 4'. Collected samples 02 through 06 at 0' and 2'. Samples 01 and 02 were high for chlorides and hydrocarbons. The other samples were clean.

15:03 Delineation is complete, pending project manager approval.

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: North

Sample point 01

Viewing Direction: South

Sample point 02

Viewing Direction: West

Sample point 03

Viewing Direction: West

Sample point 04

Daily Site Visit Report

Viewing Direction: South

Sample point 05

Viewing Direction: North

Sample point 06

Viewing Direction: Northeast

Dry-hole marker

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Zachery Englebert

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	12/12/2023
Site Location Name:	Outland State Unit #003	Report Run Date:	12/12/2023 11:05 PM
Client Contact Name:	Jim Raley	API #:	
Client Contact Phone #:	575-748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	12/12/2023 9:17 AM
Departed Site	12/12/2023 2:37 PM

Field Notes

9:35 Completed safety meeting and filled out safety paperwork

11:40 Collected 5’ sample for BH23-01 and screened it for chloride

11:41 Hand auger failed to extend to desirable length to collect the 6’ and 8’ samples so Zach will return to office to fetch an operational one

13:53 Zach returned with working auger and pursuit of 6’ and 8’ samples are underway

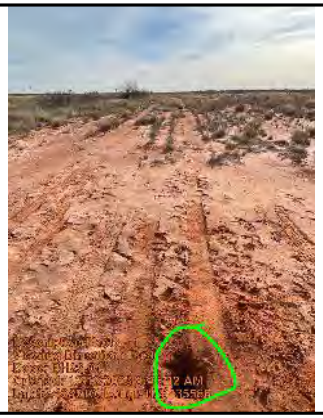
14:34 The 6’ and 8’ samples for BH23-01 have been screened for chloride (all were dirtier than the 0-4’ samples)

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: East

BH23-01

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Bryce Mortimer

Signature: 

Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	2/1/2024
Site Location Name:	Outland State Unit #003	Report Run Date:	2/2/2024 12:03 AM
Client Contact Name:	Dale Woodall	API #:	
Client Contact Phone #:	405-318-4697		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	2/1/2024 8:05 AM
Departed Site	2/1/2024 3:26 PM

Field Notes

16:34 Arrived on site 8:05am. Filled out safety paperwork and held safety meeting. Chatted with crew about project.

16:34 Ran line locator.

16:39 Instructed crew to dig down at BH23-01 to 10' depth.

20:00 Gathered sample BHat depths of 10.5', 12', 14', 16', 18', 20', 21', and 22' which tested high for chlorides.

20:43 Gathered sample BH23-01 at 23' which tested clean for chlorides and hydrocarbons.

21:57 Crew backfilled sample area.

23:39 Left site 3:23pm and went to office.

Next Steps & Recommendations

1

Daily Site Visit Report

Site Photos

Viewing Direction: Southeast	**Viewing Direction**: Northeast
	
Sample point BH23-01.	Sample point BH23-01 after backfill.

Daily Site Visit Report

Daily Site Visit Signature

Inspector: Zachery Englebert

Signature: 

ATTACHMENT 6

District I
1625 N French Dr , Hobbs, NM 88240
District II
1301 W Grand Avenue, Artesia, NM 88
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S St Francis Dr , Santa Fe, NM 87505

RECEIVED
AUG 10 2009
HOBBSOCD

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

Form C-141
Revised March 17, 1999

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Devon Energy	Contact Roger Hernandez
Address P. O. Box 250 Artesia, NM 88211	Telephone No. 575-748-5238
Facility Name Outland State Unit #3	Facility Type Gas Well

Surface Owner STATE	Mineral Owner	Lease No.

API # 3 -025-35243-00-00

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
P	11	21S	34E	660	South	990	East	Lea County

NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 53 BPW	Volume Recovered 0
Source of Release Fiberglass Water Tank	Date and Hour of Occurrence Sometime during nite of 8-3-09	Date and Hour of Discovery August 4, 2009 9:34 AM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Lea County OCD (Robert Harrison)	
By Whom? Ernie Duran	Date and Hour 8-4-2009 1:25 PM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

N/A

GW @ 105

Describe Cause of Problem and Remedial Action Taken.*
Lightening from the previous night had struck the fiberglass water tank releasing 53 bbls., of produced water. The water was contained in the dike around the battery, the area is a dirt dike and none of it was recovered This is a shut-in well that is flowed once a month.

Describe Area Affected and Cleanup Action Taken *
Water was contained in the dirt dike, the area is approximately 30'x50'.

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

Signature Ernie Duran

Printed Name. Ernie Duran for Roger Hernandez

Title. Asst Production Foreman

Date August 6, 2009 Phone: 575-513-1768

OIL CONSERVATION DIVISION

Approved by ENV ENGINEER ~~District Supervisor~~ Geoffrey Leking

Approval Date 08/18/09 Expiration Date 10/18/09

Conditions of Approval: DELINEATE TO CLEAN +1, SUBMIT FINAL C-141 BY 11/18/09

Attached ☐ IRP-09-8-2278

* Attach Additional Sheets If Necessary

fGRL0926159639

Form C-141
Page 3

State of New Mexico
Oil Conservation Division

Incident ID	NGRL0926450258
District RP	1RP-2278-0
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

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

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

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

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NGRL0926450258
District RP	1RP-2278-0
Facility ID	
Application ID	

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

Printed Name: Dale Woodall Title: Environmental Professional

Signature: Date:

email: dale.woodall@dvn.com Telephone: 575-748-1838

OCD Only

Received by: Date:

Incident ID	NGRL0926450258
District RP	1RP-2278-0
Facility ID	
Application ID	

Remediation Plan

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

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

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

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Dale Woodall Title: Environmental Professional

Signature: _____ Date: _____

email: dale.woodall@dvn.com Telephone: 575-748-1838

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

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

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

QUESTIONS

Action 351111

QUESTIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 351111
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nGRL0926450258**
Incident Name	**NGRL0926450258 OUTLAND STATE UNIT #003 @ 30-025-35243**
Incident Type	**Produced Water Release**
Incident Status	**Remediation Plan Received**
Incident Well	**[30-025-35243] OUTLAND STATE UNIT #003**

Location of Release Source	
Please answer all the questions in this group.	
Site Name	OUTLAND STATE UNIT #003
Date Release Discovered	08/03/2009
Surface Owner	State

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: Lightning | Tank (Any) | Produced Water | Released: 53 BBL | Recovered: 0 BBL | Lost: 53 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
Condensate Released (bbls) Details	*Not answered.*
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	*Not answered.*

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QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 351111
	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)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**Yes**
Reasons why this would be considered a submission for a notification of a major release	**From paragraph A. "Major release" determine using:** **(1) an unauthorized release of a volume, excluding gases, of 25 barrels or more.**
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

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

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

I hereby agree and sign off to the above statement	Name: Dale Woodall Title: EHS Professional Email: Dale.Woodall@dvn.com Date: 06/05/2024

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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
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Santa Fe, NM 87505

QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 351111
	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 26 and 50 (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	Greater than 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	Between 1 and 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)	15000
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	54
GRO+DRO (EPA SW-846 Method 8015M)	0
BTEX (EPA SW-846 Method 8021B or 8260B)	0
Benzene (EPA SW-846 Method 8021B or 8260B)	0
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
On what estimated date will the remediation commence	07/22/2024
On what date will (or did) the final sampling or liner inspection occur	08/01/2024
On what date will (or was) the remediation complete(d)	08/01/2024
What is the estimated surface area (in square feet) that will be reclaimed	785
What is the estimated volume (in cubic yards) that will be reclaimed	288
What is the estimated surface area (in square feet) that will be remediated	785
What is the estimated volume (in cubic yards) that will be remediated	288
These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.	
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 351111
	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	R360 Artesia LLC LANDFARM [fEEM0112340644]
OR which OCD approved well (API) will be used for **off-site** disposal	*Not answered.*
OR is the **off-site** disposal site, to be used, out-of-state	*Not answered.*
OR is the **off-site** disposal site, to be used, an NMED facility	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	*Not answered.*
(In Situ) Soil Vapor Extraction	*Not answered.*
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	*Not answered.*
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
OTHER (Non-listed remedial process)	*Not answered.*
Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
I hereby agree and sign off to the above statement	Name: Dale Woodall Title: EHS Professional Email: Dale.Woodall@dvn.com Date: 06/05/2024
The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.	

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

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

QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 351111
	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

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QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 351111
	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

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CONDITIONS

Action 351111

CONDITIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 351111
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

CONDITIONS

Created By	Condition	Condition Date
amaxwell	Remediation plan approved.	6/5/2024
amaxwell	Variance request of depth to groundwater of 51-100 feet approved.	6/5/2024
amaxwell	Submit a report via the OCD permitting portal by October 11, 2024.	6/6/2024