



March 28, 2022

Vertex Project #: 22E-00710

Spill Closure Report: Cotton Draw 32 State Federal Com #003H
Unit K, Section 32, Township 24 South, Range 32 East
County: Lea
API: 30-025-41171
Tracking Number: nAPP2205351635

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

New Mexico Oil Conservation Division – District 1 – Hobbs

1625 North French Drive
Hobbs, New Mexico 88240

Devon Energy Production Company (Devon) retained Vertex Resource Services Inc. (Vertex) to conduct a spill assessment and liner inspection for a produced water release that occurred at Cotton Draw 32 State Federal Com #003H (hereafter referred to as “Cotton Draw”). Devon provided notification of the spill to New Mexico Oil Conservation Division (NMOCD), on February 22, 2022, via the NMOCD portal – Notification of Release (Attachment 1). Form C-141 was received by NMOCD on March 7, 2022, and is included in Attachment 2. The NMOCD tracking number assigned to this incident is nAPP2205351635.

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

Incident Description

On February 22, 2022, a release occurred at Devon’s Cotton Draw site when a water transfer pump developed a leak. The incident resulted in the release of approximately 89 barrels (bbl) of produced water into lined containment. A hydrovac arrived on-site to recover free fluids; approximately 89 bbl of produced water were recovered from the containment and removed for disposal off-site. The spill was fully contained within the bermed, lined containment on the facility pad. No produced water was released into undisturbed areas or waterways.

Site Characterization

The release at Cotton Draw occurred on federally owned land, N 32.173030, W 103.699467, approximately 22 miles east of Malaga, New Mexico. The legal description for the site is Unit K, Section 32, Township 24 South, Range 32 East, Lea County, New Mexico. An aerial map of the site is included in Attachment 3.

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3101 Boyd Drive, Carlsbad, New Mexico 88220, USA | P 575.725.5001

Cotton Draw is typical of oil and gas exploration and production sites in the western portion of the Permian Basin and is currently used for oil and gas production and storage. The following sections specifically describe the area in which the Cotton Draw facility is located.

The surrounding landscape is associated with sandy plains typical of elevations of 3,000 to 3,900 feet above sea level. The climate is semi-arid, with average annual precipitation ranging between 10 and 12 inches. Historically, the plant community was dominated by grasses, which stabilized the potentially erosive sandy soils; however, more recent conditions, resulting from fire suppression and extensive grazing, show increased woody plant abundance. The dominant grass species are black grama, dropseeds and bluestems, with scattered shinnery oak and sand sage. Litter and, to a lesser extent, bare ground are a considerable proportion of ground cover while grasses compose the remainder (United States Department of Agriculture, Natural Resources Conservation Service, 2022). Limited to no vegetation is allowed to grow on the compacted facility pad.

The *Geological Map of New Mexico* indicates the surface geology at Cotton Draw is comprised of Qep – eolian and piedmont deposits that include eolian sands interlaid with piedmont-slope deposits (New Mexico Bureau of Geology and Mineral Resources, 2022). The Natural Resources Conservation Service *Web Soil Survey* characterizes the soil at the site as Pyote loamy fine sands, characterized by deep, fine sandy and loamy fine sandy soil. It tends to be well-drained with negligible runoff and low available moisture levels in the soil profile (United States Department of Agriculture, Natural Resources Conservation Service, 2022). There is low potential for karst geology to be present near Cotton Draw, though some erosional karst is possible (United States Department of the Interior, Bureau of Land Management, 2018).

There is no surface water located at Cotton Draw. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 NMAC, is an intermittent stream located approximately 4.37 miles south of the site. An emergent wetland is located approximately 1.65 miles northeast and a stock pond is located approximately 11.2 miles east of the release site (United States Fish and Wildlife Service, 2022). At Cotton Draw, there are no continuously flowing watercourses, lakebeds, sinkholes, playa lakes, or other critical water or community features nearby as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

The nearest well to Cotton Draw is a New Mexico Office of the State Engineer (NMOSE) identified well located 1.59 miles east-northeast of the site. The NMOSE well had an approximate water depth of 314 feet below ground surface (bgs; New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System, 2022). Documentation pertaining to site characterization and depth to groundwater determination is included in Attachment 4.

Closure Criteria Determination

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

Based on data included in the closure criteria determination worksheet, the release at Cotton Draw is not subject to the requirements of Paragraph (4) of Subsection C of 19.15.29.12 NMAC. The nearest depth to groundwater reference is more than 0.5 miles from the site; therefore, the closure criteria for the incident assume the most stringent conditions

(depth to groundwater <50 feet bgs) and are determined to be associated with the following constituent concentration limits.

Table 1. Closure Criteria for Soils Impacted by a Release		
Minimum depth below any point within the horizontal boundary of the release to ground water less than 10,000 mg/L TDS ¹	Constituent	Limit
< 50 feet	Chloride	600 mg/kg
	TPH ² (GRO + DRO + MRO)	100 mg/kg
	BTEX ³	50 mg/kg
	Benzene	10 mg/kg

¹Total Dissolved Solids (TDS)

²Total petroleum hydrocarbons (TPH) = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO)

³Benzene, toluene, ethylbenzene, and xylenes (BTEX)

Liner Inspection

On March 14, 2022, Vertex provided 48-hour notification of the liner inspection to NMOCD District 1 and the Bureau of Land Management, as required by Subparagraph (a) of Paragraph (5) of Subsection A 19.15.29.11 NMAC (Attachment 5). On March 17, 2022, Vertex was on-site to conduct an inspection of the lined containment and verify that the liner was intact and had the ability to contain the release. The Daily Field Report and associated photographs of the liner inspection are included in Attachment 6. The inspection confirmed the liner remained intact and had the ability to contain the release. This is further evidenced by the amount of fluid released (~89 bbl) and recovered (~89 bbl). There was a bolt on a sidewall with defects but would not have compromised the integrity of the liner for the release.

Closure Request

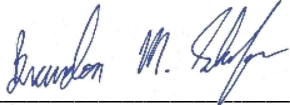
Vertex recommends no additional remediation action to address the release at Cotton Draw. The secondary containment liner was intact and contained the release. There are no anticipated risks to human, ecological or hydrological receptors associated with the release site.

Vertex requests that this incident (nAPP2205351635) be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. Devon certifies that all information in this report and the attachments is correct, and that they have complied with all applicable closure requirements and conditions specified in Division rules and directives to meet NMOCD requirements to obtain closure on the February 22, 2022, release at Cotton Draw. A completed C-141 form is included in Attachment 7.

Devon Energy Production Company
Cotton Draw 32 State Federal Com #003H

2022 Spill Assessment and Closure
March 2022

Should you have any questions or concerns, please do not hesitate to contact the undersigned at 701.301.1564 or bschafer@vertex.ca



Brandon Schafer, B.Sc.
PROJECT MANAGER, REPORTING

March 28, 2022

Date

Attachments

- Attachment 1. Notification of Release
- Attachment 2. NMOCD C-141 Initial Notification
- Attachment 3. Aerial Site Map
- Attachment 4. Closure Criteria for Soils Impacted by a Release Research Determination Documentation
- Attachment 5. Required 48-hr Notification
- Attachment 6. Daily Field Report with Photographs
- Attachment 7. Complete C-141 Form

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Devon Energy Production Company
Cotton Draw 32 State Federal Com #003H

2022 Spill Assessment and Closure
March 2022

References

- New Mexico Bureau of Geology and Mineral Resources. (2022). *Interactive Geologic Map*. Retrieved from <http://geoinfo.nmt.edu>.
- New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System. (2022). *Water Column/Average Depth to Water Report*. Retrieved from <http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html>.
- New Mexico Oil Conservation Division. (2018). *New Mexico Administrative Code – Natural Resources and Wildlife Oil and Gas Releases*. Santa Fe, New Mexico.
- United States Department of Agriculture, Natural Resources Conservation Service. (2022). *Web Soil Survey*. Retrieved from <https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.
- United States Department of the Interior, Bureau of Land Management. (2018). *CFO Karst Public*. https://www.nm.blm.gov/shapeFiles/cfo/carlsbad_spatial_data.html
- United States Fish and Wildlife Service. (2022). *National Wetlands Inventory*. Retrieved from <https://www.fws.gov/wetlands/data/Mapper.html>.

Devon Energy Production Company
Cotton Draw 32 State Federal Com #003H

2022 Spill Assessment and Closure
March 2022

Limitations

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

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

ATTACHMENT 1

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

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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

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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 83338

QUESTIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 83338
	Action Type: [NOTIFY] Notification Of Release (NOR)

QUESTIONS

Location of Release Source	
<i>Please answer all of the questions in this group.</i>	
Site Name	COTTON DRAW 32 STATE FEDERAL COM #003H
Date Release Discovered	02/22/2022
Surface Owner	Federal

Incident Details	
<i>Please answer all of the questions in this group.</i>	
Incident Type	Produced Water Release
Did this release result in a fire or is the result of a fire	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	
<i>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.</i>	
Crude Oil Released (bbls) Details	Not answered.
Produced Water Released (bbls) Details	Cause: Equipment Failure Other (Specify) Produced Water Released: 89 BBL Recovered: 89 BBL Lost: 0 BBL
Is the concentration of dissolved chloride in the produced water >10,000 mg/l	No
Condensate Released (bbls) Details	Not answered.
Natural Gas Vented (Mcf) Details	Not answered.
Natural Gas Flared (Mcf) Details	Not answered.
Other Released Details	Not answered.
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	lease operator got to location and found a leaking water line inside the containment. The leak was isolated and recovery activities engaged. 88.9 bbls of produced water released. Fluids did not leave containment. Fluids did not leave location.

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QUESTIONS, Page 2

Action 83338

QUESTIONS (continued)

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 83338
	Action Type: [NOTIFY] Notification Of Release (NOR)

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 19.15.29.7(A) NMAC	Yes, major release.
Reasons why this would be considered a submission for a notification of a major release	<ul style="list-style-type: none"> Unauthorized release of a volume, excluding gases, of 25 barrels or more
If YES, was immediate notice given to the OCD, by whom	Dale Woodall
If YES, was immediate notice given to the OCD, to whom	575-626-0830 Mr. Garcia
If YES, was immediate notice given to the OCD, when	02/22/2022
If YES, was immediate notice given to the OCD, by what means (phone, email, etc.)	telephone
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 19.15.29.8 B. (4) 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 19.15.29.11(A)(5)(a) NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.

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ACKNOWLEDGMENTS

Action 83338

ACKNOWLEDGMENTS

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	Action Number: 83338
	Action Type: [NOTIFY] Notification Of Release (NOR)

ACKNOWLEDGMENTS

<input checked="" type="checkbox"/>	I acknowledge that I am authorized to submit notification of a releases on behalf of my operator.
<input checked="" type="checkbox"/>	I acknowledge that upon submitting this application, I will be creating a new incident file (assigned to my operator) to track the notification(s) and corrective action(s) for a release, pursuant to NMAC 19.15.29.
<input checked="" type="checkbox"/>	I acknowledge that creating a new incident file will require my operator to file subsequent submission(s) of form "C-141, Application for administrative approval of a release notification and corrective action", pursuant to NMAC 19.15.29.
<input checked="" type="checkbox"/>	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.
<input checked="" type="checkbox"/>	I acknowledge the fact that 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.
<input checked="" type="checkbox"/>	I acknowledge the fact that, 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.

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CONDITIONS

Action 83338

CONDITIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 83338
	Action Type: [NOTIFY] Notification Of Release (NOR)

CONDITIONS

Created By	Condition	Condition Date
wdale	When submitting future reports regarding this release, please submit the calculations used or specific justification for the volumes reported on the initial C-141.	2/22/2022

ATTACHMENT 2

District I
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State of New Mexico
Energy Minerals and Natural
Resources Department

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

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

Incident ID	
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

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

Location of Release Source

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

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

Unit Letter	Section	Township	Range	County

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

Nature and Volume of Release

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

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

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

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

Initial Response

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

<input type="checkbox"/> The source of the release has been stopped.	
<input type="checkbox"/> The impacted area has been secured to protect human health and the environment.	
<input type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.	
<input type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: _____	Title: _____
Signature: <u>Kendra DeHoyos</u>	Date: _____
email: _____	Telephone: _____
<u>OCD Only</u>	
Received by: <u>Ramona Marcus</u>	Date: <u>3/9/2022</u>

NAPP2205351635

Spills In Lined Containment	
Measurements Of Standing Fluid	
Length(Ft)	150
Width(Ft)	50
Depth(in.)	1
Total Capacity without tank displacements (bbls)	111.32
No. of 500 bbl Tanks In Standing Fluid	8
No. of Other Tanks In Standing Fluid	
OD Of Other Tanks In Standing Fluid(feet)	15
Total Volume of standing fluid accounting for tank displacement.	88.92

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CONDITIONS

Action 87713

CONDITIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 87713
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

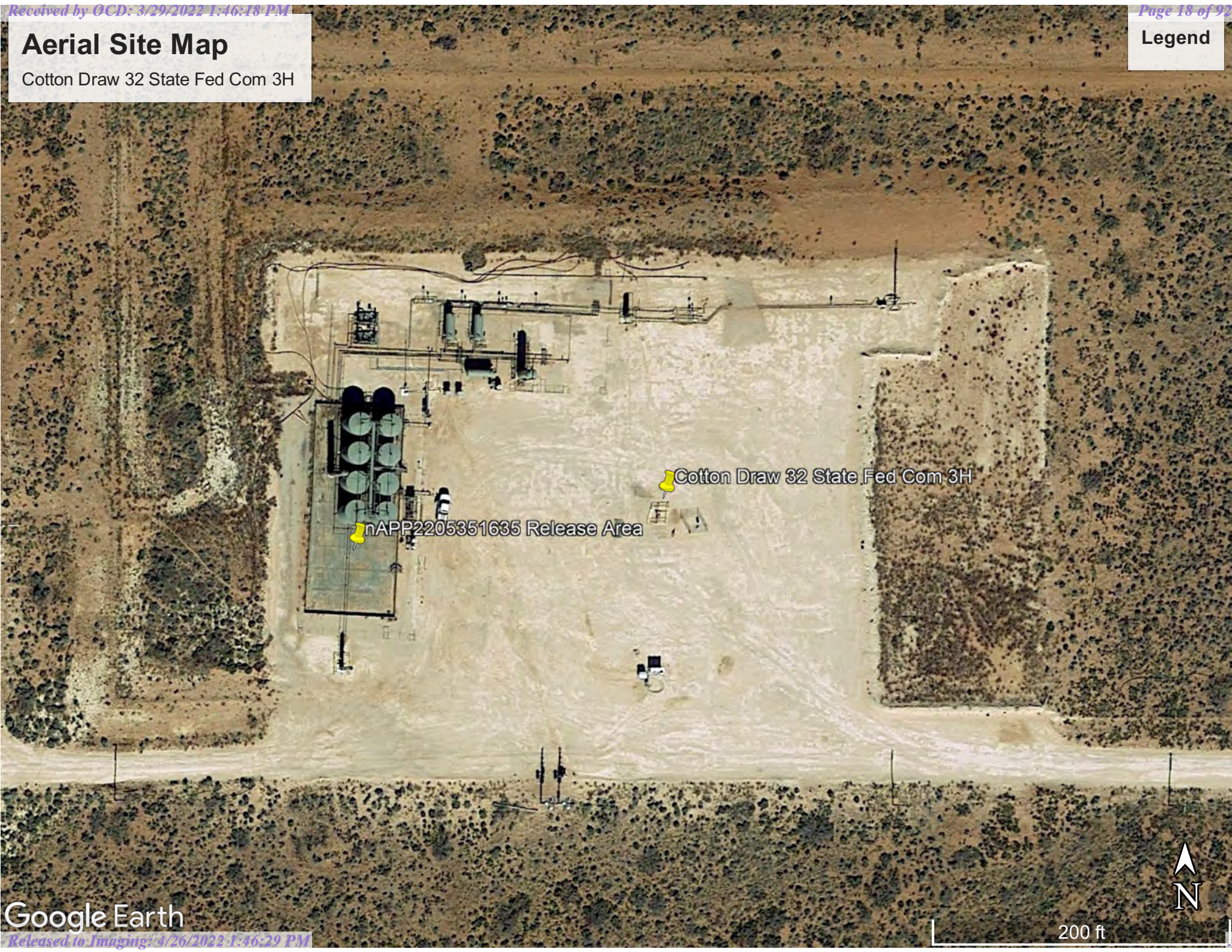
Created By	Condition	Condition Date
rmarcus	None	3/9/2022

ATTACHMENT 3

Aerial Site Map

Cotton Draw 32 State Fed Com 3H

Legend



Google Earth

200 ft

ATTACHMENT 4

Closure Criteria Worksheet			
Site Name: Cotton Draw 32 State Federal Com #003H			
Spill Coordinates:		X: 32.173030	Y: -103.699467
Site Specific Conditions		Value	Unit
1	Depth to Groundwater	314	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	23,114	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	59,256	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	8,120	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	5,866	feet
	ii) Within 1000 feet of any fresh water well or spring	5,866	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	8,716	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
10	Within a 100-year Floodplain	Undetermined	year
11	Soil Type	loamy fine sand and fine sandy loam	
12	Ecological Classification	Loamy sand	
13	Geology	Eolian and piedmont deposits	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	<50'	<50' 51-100' >100'



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
20E37	C 04536 POD1	1	2	2	33	24S	32E	625019	3561244

x

Driller License: 1706 **Driller Company:** ELITE DRILLERS CORPORATION

Driller Name: BRYCE WALLACE

Drill Start Date: 06/09/2021	Drill Finish Date: 06/10/2021	Plug Date:
Log File Date: 06/21/2021	PCW Rcv Date:	Source: Shallow
Pump Type:	Pipe Discharge Size:	Estimated Yield: 4 GPM
Casing Size: 4.30	Depth Well: 500 feet	Depth Water: 314 feet

x

Water Bearing Stratifications:	Top	Bottom	Description
	235	480	Sandstone/Gravel/Conglomerate

x

Casing Perforations:	Top	Bottom
	300	500

x

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

2/28/22 12:28 PM

POINT OF DIVERSION SUMMARY



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	Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tw	Rng	X	Y	Distance	DepthWell	DepthWater	Water Column
C 04536 POD1	C	LE		1	2	2	33	24S	32E	625019	3561244	2562	500	314	186
C 02568	CUB	ED		4	3	1	01	25S	31E	619103	3558892*	3805	1025		
C 02572	CUB	ED		4	2	2	02	25S	31E	618695	3559294*	4062	852		
C 02569	CUB	ED		4	4	2	02	25S	31E	618699	3558891*	4181	1016		
C 02573	CUB	ED		1	4	2	02	25S	31E	618499	3559091*	4306			
C 02570	CUB	ED		4	2	4	02	25S	31E	618704	3558489*	4334	895		
C 03830 POD1	CUB	ED		4	2	4	02	25S	31E	618632	3558432	4423	450		
C 02571	CUB	ED		4	1	2	02	25S	31E	618292	3559294*	4452	860		
C 02574	CUB	ED		1	1	2	02	25S	31E	618092	3559494*	4605			

Average Depth to Water: **314 feet**

Minimum Depth: **314 feet**

Maximum Depth: **314 feet**

Record Count: 9

UTMNAD83 Radius Search (in meters):

Easting (X): 622616

Northing (Y): 3560356

Radius: 5000

*UTM location was derived from PLSS - see Help

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2/28/22 12:22 PM

WATER COLUMN/ AVERAGE DEPTH TO WATER



(/index.html)

U.S. Fish & Wildlife Service

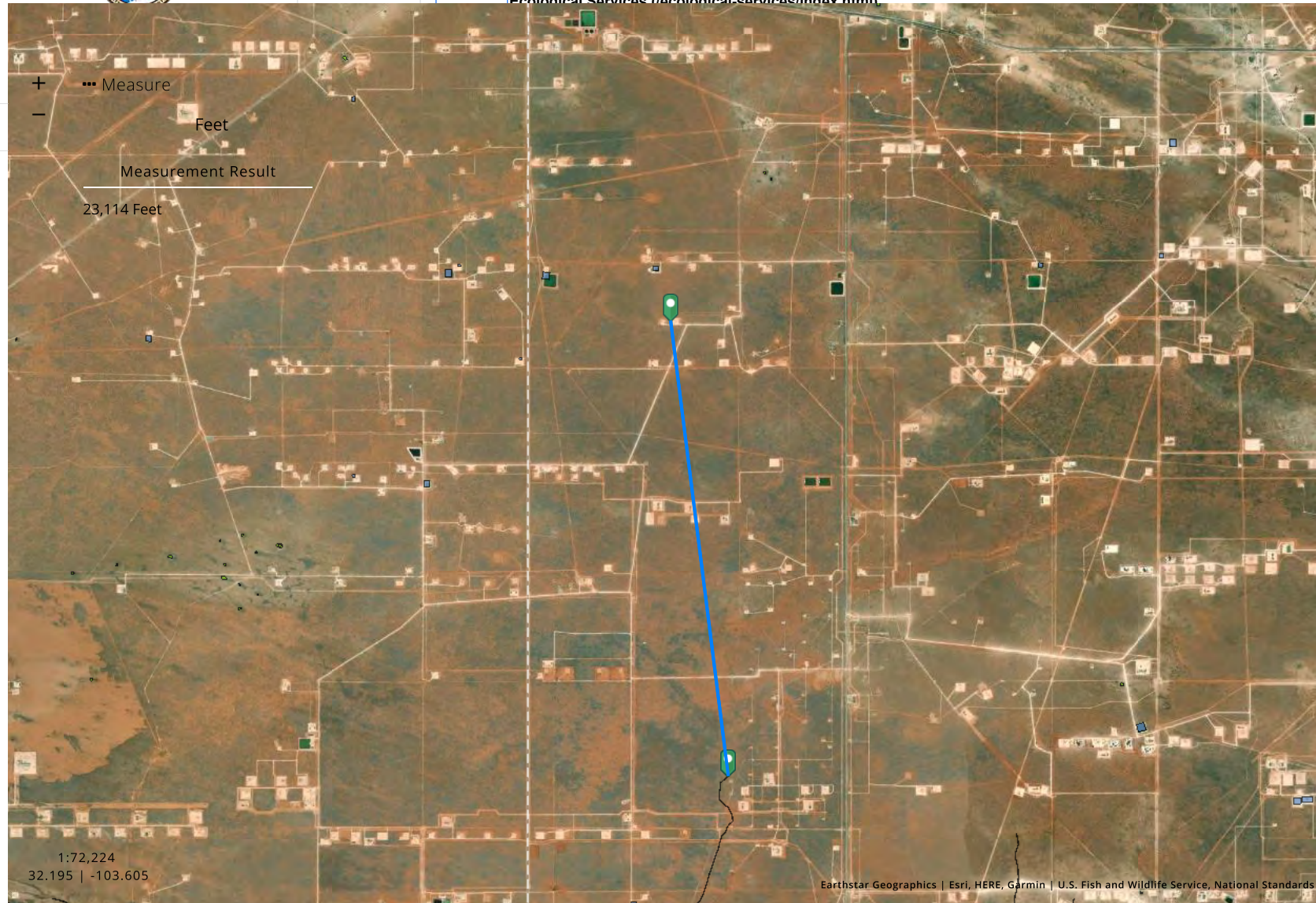
National Wetlands Inventory

Ecological Services (/ecological-services/index.html)

BASEMAPS >

MAP LAYERS >

- ☒ Wetlands 1 ?
- ☒ Riparian 1 ?
- ☐ Riparian Mapping Areas 1 ?
- ☒ Data Source 1 ?
 - ☐ Source Type
 - ☐ Image Scale
 - ☐ Image Year
- ☐ Areas of Interest ?
- ☐ FWS Managed Lands 1 ?
- ☐ Historic Wetland Data 1 ?



(https://www.fws.gov/wetlands/data/_Mapper-Terms-and-Conditions.html) NWI data desktop/mobile viewer; data last modified Dec 1, 2021.

(<https://fwsprimary.wim.usgs.gov/wetland-projects-v2/>) Recent wetland data additions and active wetland mapping projects.

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U.S. Fish & Wildlife Service

National Wetlands Inventory

Ecological Services (/ecological-services/index.html)

BASEMAPS >

MAP LAYERS >

☒ Wetlands 1 ?
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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
20662	C 04161 POD1	4	4	1	33	24S	32E	624386	3560611



x

Driller License:**Driller Company:****Driller Name:****Drill Start Date:****Drill Finish Date:****Plug Date:****Log File Date:****PCW Rev Date:****Source:****Pump Type:****Pipe Discharge Size:****Estimated Yield:****Casing Size:****Depth Well:****Depth Water:**

x

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2/28/22 12:57 PM

POINT OF DIVERSION SUMMARY



New Mexico Office of the State Engineer

Water Right Summary


[get image list](#)

WR File Number: C 04161

Subbasin: C

Cross Reference: -

Primary Purpose: DOL 72-12-1 DOMESTIC AND LIVESTOCK WATERING

Primary Status: PMT PERMIT

Total Acres:

Subfile: -

Header: -

Total Diversion: 3

Cause/Case: -

Agent: DJ ENGINEERING INC

Contact: DALE JOHNSON

Owner: JEFF ROBBINS

Documents on File


[get images](#)

Trn #	Doc	File/Act	Status		Transaction Desc.	From/ To	Acres	Diversion	Consumptive
			1	2					
616613	72121	2017-11-21	PMT	APR	C 04161 POD1	T		3	

Current Points of Diversion

POD Number	Well Tag	Source	Q						X	Y	Other Location Desc
			64	Q16	Q4	Sec	Tws	Rng			
C 04161 POD1	20662		4	4	1	33	24S	32E	624386	3560611	0.5 MILES WEST OF ORLA ROAD

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2/28/22 12:44 PM

WATER RIGHT SUMMARY



New Mexico Office of the State Engineer

Water Right Summary


[get image list](#)

WR File Number: C 04536

Subbasin: C

Cross Reference: -

Primary Purpose: STK 72-12-1 LIVESTOCK WATERING

Primary Status: PMT PERMIT

Total Acres:

Subfile: -

Header: -

Total Diversion: 3

Cause/Case: -

Owner: BASIN PROPERTIES RANCHES LLC

Contact: JOHN LANGDON

Documents on File


[get images](#)

Trn #	Doc	File/Act	Status		Transaction Desc.	From/ To	Acres	Diversion	Consumptive
			1	2					
695378	72121	2021-05-14	PMT	LOG	C 04536 POD1	T		3	

Current Points of Diversion

(NAD83 UTM in meters)

POD Number	Well Tag	Source	Q				X	Y	Other Location Desc	
			64	Q16	Q4	Sec				
C 04536 POD1	20E37	Shallow	1	2	2	33	24S 32E	625019	3561244	

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2/28/22 12:44 PM

WATER RIGHT SUMMARY

OSE POD Locations Map



2/28/2022, 2:25:54 PM

GIS WATERS PODs

- Active
- Pending

OSE District Boundary

Water Right Regulations

Closure Area

New Mexico State Trust Lands

Subsurface Estate

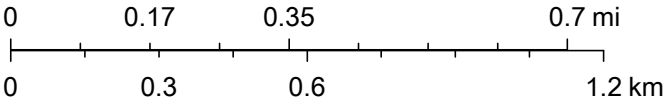


Both Estates



SiteBoundaries

1:18,056















Esri, HERE, GeoTechnologies, Inc., Esri, HERE, Garmin, GeoTechnologies, Inc., U.S. Department of Energy Office of Legacy Management, Maxar



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 meters)					
WR File Nbr	Sub	basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q	q	q	Sec	Tws	Rng	X	Y	Distance
C 04161	C	DOL		3	JEFF ROBBINS	LE	C 04161 POD1	20662				4	4	1	33	24S	32E	624386	3560611	 1788
C 04536	C	STK		3	BASIN PROPERTIES RANCHES LLC	LE	C 04536 POD1	20E37			Shallow	1	2	2	33	24S	32E	625019	3561244	 2562
C 04221	CUB	MON		0	AND PRODUCTION CHEVRON NORTH AMERICA EXPLORAT	ED	C 04221 POD1	NA				2	1	2	09	25S	32E	624855	3557903	 3320
C 02568	CUB	COM		3	BUREAU OF LAND MANAGEMENT	ED	C 02568					4	3	1	01	25S	31E	619103	3558892*	 3805
C 02572	CUB	COM		3	BUREAU OF LAND MANAGEMENT	ED	C 02572					4	2	2	02	25S	31E	618695	3559294*	 4062
C 02569	CUB	COM		12	BUREAU OF LAND MANAGEMENT	ED	C 02569				Shallow	4	4	2	02	25S	31E	618699	3558891*	 4181
C 02573	CUB	COM		3	OXY USA INC	ED	C 02573					1	4	2	02	25S	31E	618499	3559091*	 4306
C 02570	CUB	COM		3	OXY USA INC	ED	C 02570					4	2	4	02	25S	31E	618704	3558489*	 4334
C 02245	C	STK		3	JR ENGINEERING & CONST. CO.	ED	C 02245					1	1	12	25S	31E	619018	3557785*	 4422	
C 03830	CUB	EXP		0	ROCKHOUSE RANCH INC	ED	C 03830 POD1				Shallow	4	2	4	02	25S	31E	618632	3558432	 4423
C 02571	CUB	COM		3	OXY USA INC	ED	C 02571				Shallow	4	1	2	02	25S	31E	618292	3559294*	 4452
C 02574	CUB	COM		12	BUREAU OF LAND MANAGEMENT	ED	C 02574				Shallow	1	1	2	02	25S	31E	618092	3559494*	 4605

Record Count: 12

UTMNAD83 Radius Search (in meters):

Easting (X): 622616

Northing (Y): 3560356

Radius: 5000

Sorted by: Distance

*UTM location was derived from PLSS - see Help

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2/28/22 12:22 PM

ACTIVE & INACTIVE POINTS OF DIVERSION

Cotton Draw 32 State Federal Com #003H Proximity Map

Nearest Well

Livestock Water Well C 04161 POD1

Distance: 1.11 miles

Nearest Depth to Groundwater (DTGW) Reference Well

Livestock Water Well C 04536 POD 1




Distance: 1.59 miles

DTGW: 314 feet below ground surface

Nearest Residence

Distance: 1.53 miles

Legend

-  Cotton Draw 32 State Federal Com #003H Release
-  Residence
-  Water Wells





(/index.html)

U.S. Fish & Wildlife Service

National Wetlands Inventory

Ecological Services ([/ecological-services/index.html](http://ecological-services/index.html))

BASEMAPS >

MAP LAYERS >

☒ Wetlands 1 ?
 ☒ Riparian 1 ?
 ☐ Riparian Mapping Areas 1 ?
 ☒ Data Source 1 ?

☐ Source Type
 ☐ Image Scale
 ☐ Image Year

☐ Areas of Interest ?
 ☐ FWS Managed Lands 1 ?
 ☐ Historic Wetland Data 1 ?



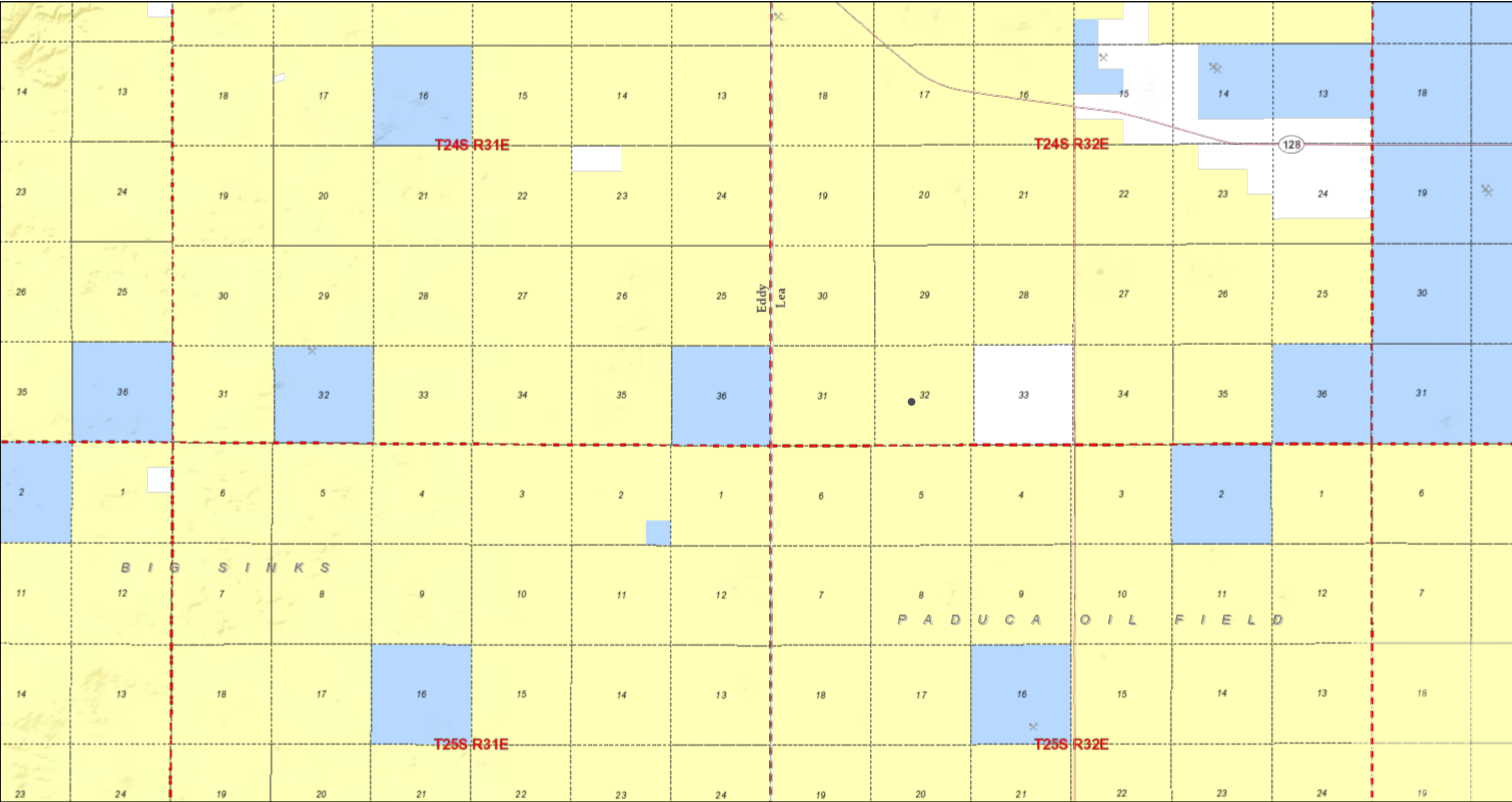
(https://www.fws.gov/wetlands/data/_Mapper-Terms-and-Conditions.html) NWI data desktop/mobile viewer; data last modified Dec 1, 2021.

(<https://fwsprimary.wim.usgs.gov/wetland-projects-v2/>) Recent wetland data additions and active wetland mapping projects.

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Active Mines in New Mexico



2/28/2022, 2:40:46 PM

Township / Range

Sections

Land Ownership

Bureau of Land Management

Bureau of Reclamation

Department of Agriculture

Department of Defense

Department of Energy

National Park Service

Private Land

State Game and Fish

State Land

State Parks

Tribal

US Fish and Wildlife Service

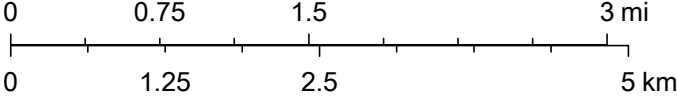
US Forest Service

Registered Mines

Aggregate, Stone etc.

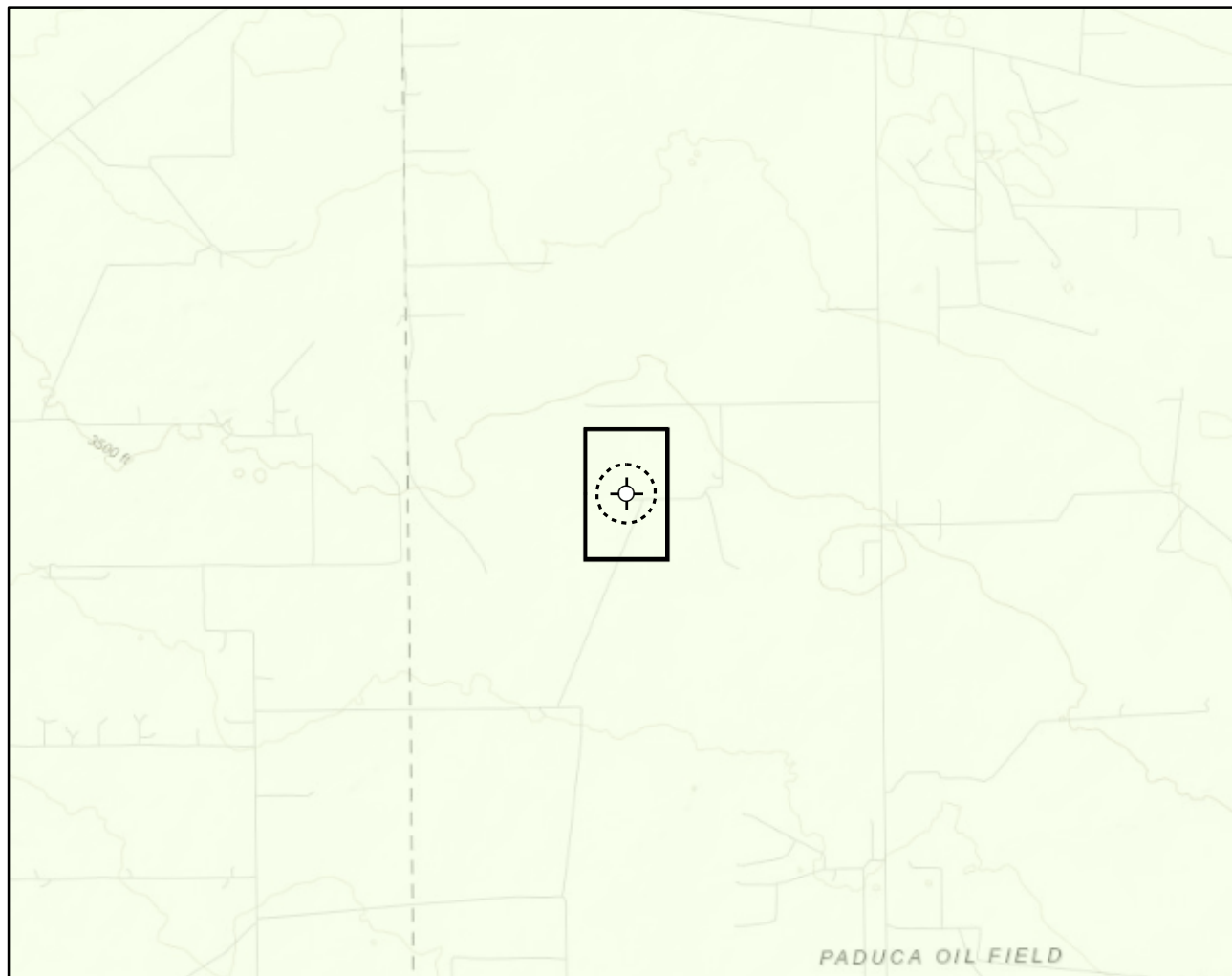
Aggregate, Stone etc.

1:72,224



U.S. Bureau of Land Management - New Mexico State Office, Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS

Document Path: G:\Projects\US PROJECTS\Devon Energy Corporation\22E-00710 - Cotton Draw 32 State Federal Com #003H\Figure X Karst Potential Map Cotton Draw 32 State Federal Com #003H.mxd



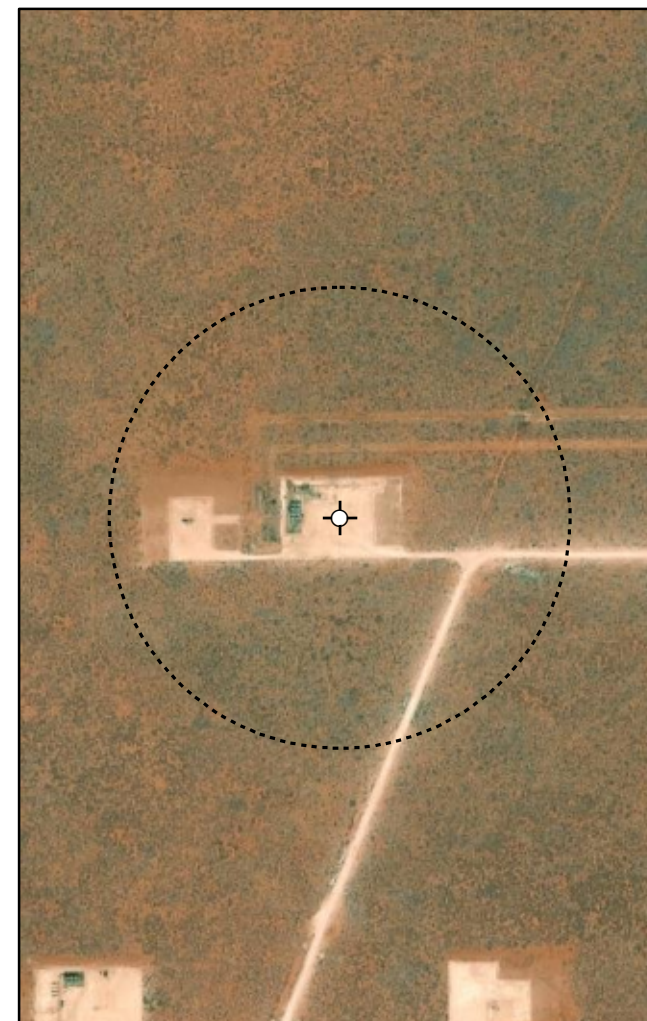
Karst Potential

- Critical
- High
- Medium
- Low

- Site Location
- Site Buffer (1,000 ft.)

Overview Map

0 0.25 0.5 1 mi



Detail Map

0 150 300 600 ft.



Map Center:
Lat/Long: 32.173000, -103.698830

NAD 1983 UTM Zone 13N
Date: Mar 28/22



Karst Potential Map Cotton Draw 32 State Federal Com #003H

FIGURE:

X



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

Note: Inset Map, ESRI 20XX; Overview Map: ESRI World Topographic. Karst potential data sourced from Rosswell Field Office, Bureau of Land Management, 2020 or United States Department of the Interior, Bureau of Land Management. (2018). Karst Potential.

VERSATILITY. EXPERTISE.

National Flood Hazard Layer FIRMette



103°42'15"W 32°10'38"N



Legend

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

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **2/28/2022 at 3:45 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

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

Custom Soil Resource Report for **Lea County, New Mexico**



February 28, 2022

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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 Soil Map.....9

 Legend.....10

 Map Unit Legend..... 11

 Map Unit Descriptions.....11

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 PT—Pyote loamy fine sand..... 13

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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

Custom Soil Resource Report

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

Custom Soil Resource Report

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




Custom Soil Resource Report

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 18, Sep 10, 2021

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.

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Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PT	Pyote loamy fine sand	5.6	100.0%
Totals for Area of Interest		5.6	100.0%

Map Unit Descriptions

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

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

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

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

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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.

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Lea County, New Mexico

PT—Pyote loamy fine sand

Map Unit Setting

National map unit symbol: dmqp

Elevation: 3,000 to 3,900 feet

Mean annual precipitation: 10 to 12 inches

Mean annual air temperature: 60 to 62 degrees F

Frost-free period: 190 to 200 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Pyote and similar soils: 85 percent

Minor components: 15 percent

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

Description of Pyote

Setting

Landform: Plains

Landform position (three-dimensional): Rise

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 25 inches: loamy fine sand

Bt - 25 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum 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 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 6e

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Ecological site: R042XC003NM - Loamy Sand

Hydric soil rating: No

Custom Soil Resource Report

Minor Components

Maljamar

Percent of map unit: 8 percent

Ecological site: R042XC003NM - Loamy Sand

Hydric soil rating: No

Palomas

Percent of map unit: 7 percent

Ecological site: R042XC003NM - Loamy Sand

Hydric soil rating: No

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Custom Soil Resource Report

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Ecological site R042XC003NM

Loamy Sand

Accessed: 02/28/2022

General information



Figure 1. Mapped extent

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

Associated sites

R042XC004NM	Sandy Sandy
R042XC005NM	Deep Sand Deep Sand

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

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

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

Table 2. Representative physiographic features

Landforms	(1) Fan piedmont (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):

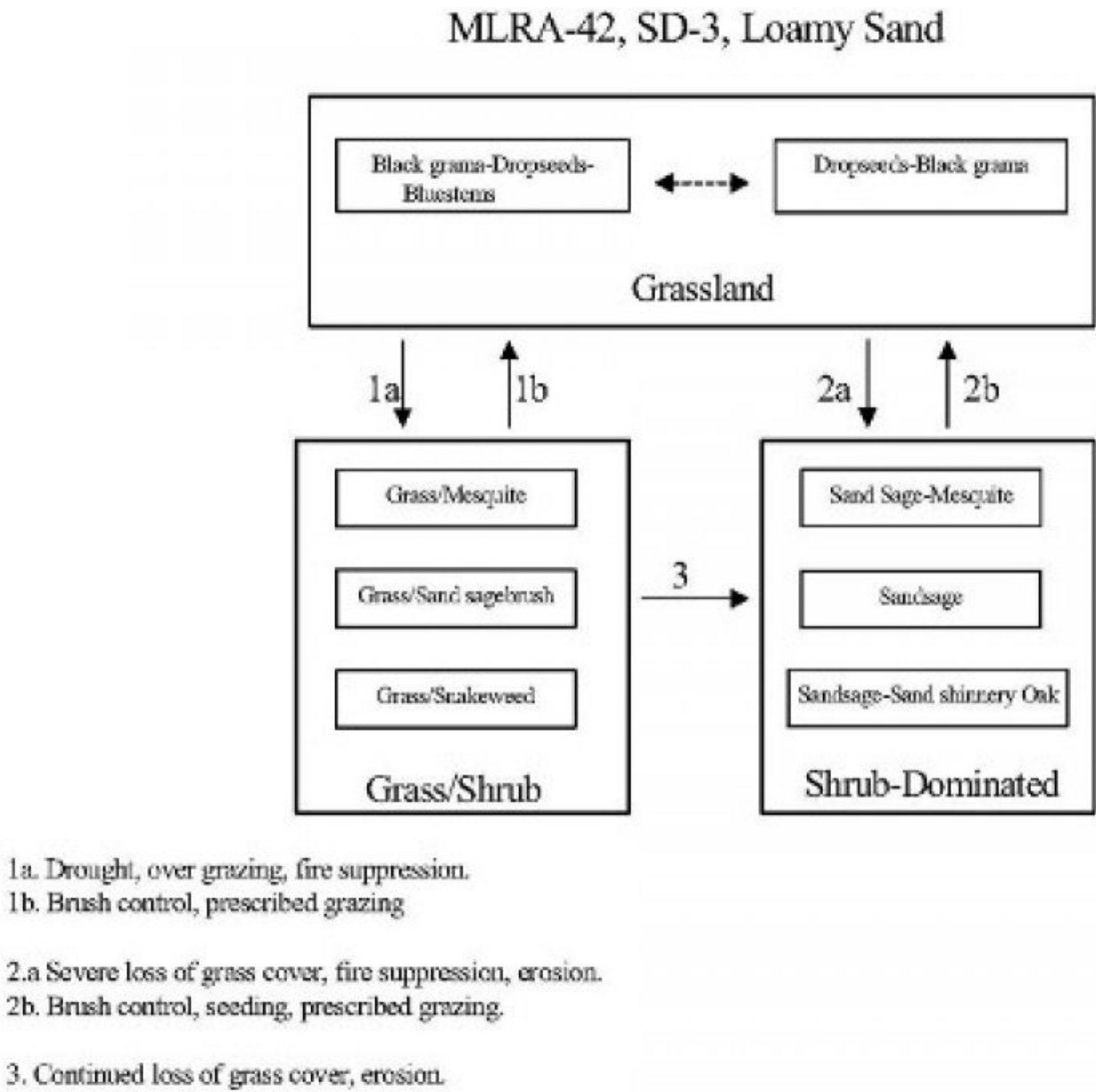


Figure 4.

State 1
Historic Climax Plant Community

Community 1.1

Historic Climax Plant Community

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

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

Table 5. Annual production by plant type

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

Table 6. Ground cover

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

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

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

State 2

Grass/Shrub

Community 2.1

Grass/Shrub



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

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

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

Key indicators of approach to transition:

- Loss of black grama cover
- Surface soil erosion
- Bare patch expansion
- Increased dropseed/threeawn and mesquite, snakeweed, or sand sage abundances

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

State 3 Shrub Dominated

Community 3.1

Shrub Dominated

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

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

Key indicators of approach to transition:

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

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

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

Key indicators of approach to transition:

- Continual loss of dropseeds/threawns cover
- Surface soil erosion
- Bare patch expansion
- Increased sand sage, shinnery oak, and mesquite/dropseed/threawn 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	<i>Schizachyrium scoparium</i>	61–123	–
2	Warm Season			37–61	
	sand bluestem	ANHA	<i>Andropogon hallii</i>	37–61	–
3	Warm Season			37–61	
	cane bluestem	BOBA3	<i>Bothriochloa barbinodis</i>	37–61	–
	silver bluestem	BOSA	<i>Bothriochloa saccharoides</i>	37–61	–
4	Warm Season			123–184	
	black grama	BOER4	<i>Bouteloua eriopoda</i>	123–184	–
	bush muhly	MUPO2	<i>Muhlenbergia porteri</i>	123–184	–
5	Warm Season			123–184	
	thin paspalum	PASE5	<i>Paspalum setaceum</i>	123–184	–
	slender bluestem	SEV410	<i>Setaria verticillata</i>	123–184	–

	plains bristleglass	SEVU2	<i>Setaria vulpiseta</i>	123-184	-
	fringed signalgrass	URCI	<i>Urochloa ciliatissima</i>	123-184	-
6	Warm Season			123-184	
	spike dropseed	SPCO4	<i>Sporobolus contractus</i>	123-184	-
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	123-184	-
	mesa dropseed	SPFL2	<i>Sporobolus flexuosus</i>	123-184	-
7	Warm Season			61-123	
	hooded windmill grass	CHCU2	<i>Chloris cucullata</i>	61-123	-
	Arizona cottontop	DICA8	<i>Digitaria californica</i>	61-123	-
9	Other Perennial Grasses			37-61	
	Grass, perennial	2GP	<i>Grass, perennial</i>	37-61	-
Shrub/Vine					
8	Warm Season			37-61	
	New Mexico feathergrass	HENE5	<i>Hesperostipa neomexicana</i>	37-61	-
	giant dropseed	SPGI	<i>Sporobolus giganteus</i>	37-61	-
10	Shrub			61-123	
	sand sagebrush	ARFI2	<i>Artemisia filifolia</i>	61-123	-
	Havard oak	QUHA3	<i>Quercus havardii</i>	61-123	-
11	Shrub			34-61	
	fourwing saltbush	ATCA2	<i>Atriplex canescens</i>	37-61	-
	featherplume	DAFO	<i>Dalea formosa</i>	37-61	-
12	Shrub			37-61	
	jointfir	EPHED	<i>Ephedra</i>	37-61	-
	littleleaf ratany	KRER	<i>Krameria erecta</i>	37-61	-
13	Other Shrubs			37-61	
	Shrub (>.5m)	2SHRUB	<i>Shrub (>.5m)</i>	37-61	-
Forb					
14	Forb			61-123	
	leatherweed	CRPOP	<i>Croton pottsii var. pottsii</i>	61-123	-
	Indian blanket	GAPU	<i>Gaillardia pulchella</i>	61-123	-
	globemallow	SPHAE	<i>Sphaeralcea</i>	61-123	-
15	Forb			12-37	
	woolly groundsel	PACA15	<i>Packera cana</i>	12-37	-
16	Forb			61-123	
	touristplant	DIWI2	<i>Dimorphocarpa wislizeni</i>	61-123	-
	woolly plantain	PLPA2	<i>Plantago patagonica</i>	61-123	-
17	Other Forbs			37-61	
	Forb (herbaceous, not grass nor grass-like)	2FORB	<i>Forb (herbaceous, not grass nor grass-like)</i>	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, black 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

Literature Cited:

Ansley, R. J.; Jacoby, P. W. 1998. Manipulation of fire intensity to achieve mesquite management goals in north Texas. In: Pruden, Teresa L.; Brennan, Leonard A., eds. Fire in ecosystem management: shifting the paradigm from suppression to prescription: Proceedings, Tall Timbers fire ecology conference; 1996 May 7-10; Boise, ID. No. 20. Tallahassee, FL: Tall Timbers Research Station: 195-204.

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Herbel, C. H, Steger, R, Gould, W. L. 1974. Managing semidesert ranges of the Southwest Circular 456. Las Cruces, NM: New Mexico State University, Cooperative Extension Service. 48 p.

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McPherson, Guy R. 1995. The role of fire in the desert grasslands. In: McClaran, Mitchel P.; Van Devender, Thomas R., eds. *The desert grassland*. Tucson, AZ: The University of Arizona Press: 130-151.

Pettit, Russell D. 1986. Sand shinnery oak: control and management. Management Note 8. Lubbock, TX: Texas Tech University, College of Agricultural Sciences, Department of Range and Wildlife Management. 5 p.

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:**



NMBGMR Interactive Map



+

32.1729546,-103.6988297

×

Q

Show search results for 32.1729546,-...



Qep



2mi

-103.723 32.209 Degrees

Legend

Geologic_Resources

State Geologic Map 1:500,000

Volcanic Vents



Dikes

— Dike

— Dike intruding fault

Faults

— Fault, Exposed

— Fault, Intermittent

--- Fault, Concealed

~ Shere Zone

Lithologic Contacts

— Contact, Exposed

--- Contact, Gradational

-·- Nomenclature change

— Map Boundary

Lithologic Units

Playa--Alluvium and evaporite deposits (Holocene)

Water--Perennial standing water

Qa--Alluvium (Holocene to upper Pleistocene)

Ql--Landslide deposits and colluvium (Holocene to Pleistocene) – Landslide deposits on western flanks of Socorro Mountains not shown for clarity

Qpl--Lacustrine and playa deposits (Holocene) – Includes associated alluvial and eolian deposits of major lake basins

Qp--Piedmont alluvial deposits (Holocene to lower Pleistocene)

Qe--Eolian deposits (Holocene to middle Pleistocene)

ATTACHMENT 5

From: [Dhugal Hanton](#)
To: [EMNRD-OCD-District1spills](#); [Enviro. OCD](#); [EMNRD](#); [CFO Spill](#); [BLM NM](#)
Cc: dale.woodall@dvn.com; [Brandon Schafer](#)
Subject: 48-hr Liner Inspection Notice: Cotton Draw 32 State Fed Com 3H (nAPP2205351635)
Date: Monday, March 14, 2022 3:17:55 PM

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled a liner inspection to be conducted for the following releases:

nAPP2205351635 DOR: 2/22/22 Site Name: Cotton Draw 32 State Federal Com #003H

This work will be completed on behalf of Devon Energy Production Company.

On Thursday, March 17, 2022 at approximately 8:30 a.m., Jaime Balencia will be on site to conduct a liner inspection. He can be reached at 575-361-6453. If you need directions to the site, please do not hesitate to contact him. If you have any questions or concerns regarding this notification, please give me a call at 701-301-1564.

Thank you,

Brandon Schafer
Project Manager

Vertex Resource Services Inc.

P 701.645.3111 Ext. 706
C 701.301.1564
F 780.464.3731

www.vertex.ca

Confidentiality Notice: This message and any attachments are solely for the intended recipient and may contain confidential or privileged information. If you are not the intended recipient, any disclosure, copying, use, or distribution of the information included in this message and any attachment is prohibited. If you have received this communication in error, please notify us by reply email and immediately and permanently delete this message and any attachments. Thank you.

ATTACHMENT 6



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	3/17/2022
Site Location Name:	Cotton Draw 32 State Fed Com 3H Battery	Report Run Date:	3/21/2022 4:16 PM
Client Contact Name:	Wes Matthews	API #:	
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site 3/17/2022 8:17 AM

Departed Site 3/17/2022 9:20 AM

Field Notes

11:03 This is DFR 1 of 2 due to the maximum photo amount being reached. This is a liner inspection for incident nAPP2205351635.

Next Steps & Recommendations

1

Daily Site Visit Report



Site Photos

Viewing Direction: South



Photo is from the Northwest corner of containment facing South looking down the West side wall.

Viewing Direction: West

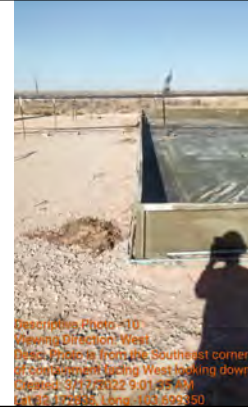






Photo is from the Southeast corner of containment facing West looking down the South wall.




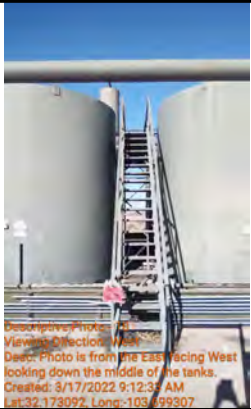


Daily Site Visit Report

<p>Viewing Direction: Northwest</p>  <p>Descriptive Photo - 11 Viewing Direction: Northwest Desc: Photo is from the Southeast corner of containment facing Northwest into containment. Created: 3/17/2022 9:03:33 AM Lat: 32.172845 Long: -103.699646</p> <p>Photo is from the Southeast corner of containment facing Northwest into containment.</p>	<p>Viewing Direction: Southeast</p>  <p>Descriptive Photo - 12 Viewing Direction: Southeast Desc: Photo is of the Southeast corner of containment from inside the containment. Created: 3/17/2022 9:03:26 AM Lat: 32.172845 Long: -103.699646</p> <p>Photo is of the Southeast corner of containment from inside the containment.</p>
<p>Viewing Direction: North</p>  <p>Descriptive Photo - 13 Viewing Direction: North Desc: Photo is from the Southwest corner of containment facing North looking down the West wall. Created: 3/17/2022 9:05:38 AM Lat: 32.172845 Long: -103.699646</p> <p>Photo is from the Southwest corner of containment facing North looking down the West wall.</p>	<p>Viewing Direction: East</p>  <p>Descriptive Photo - 14 Viewing Direction: East Desc: Photo is from the Southwest corner of containment facing East looking down the South wall. Created: 3/17/2022 9:05:38 AM Lat: 32.172845 Long: -103.699646</p> <p>Photo is from the Southwest corner of containment facing East looking down the South wall.</p>







Daily Site Visit Report

<p>Viewing Direction: Northeast</p>  <p>Descriptive Photo - 15 Viewing Direction: Northeast Desc: Photo is from the Southwest corner of containment facing Northeast into containment. Created: 3/17/2022 9:07:57 AM Lat: 32.173092 Long: 103.699507</p> <p>Photo is from the Southwest corner of containment facing Northeast into containment.</p>	<p>Viewing Direction: Southwest</p>  <p>Descriptive Photo - 16 Viewing Direction: Southwest Desc: Photo is of the Southwest corner of containment from inside the containment. Created: 3/17/2022 9:07:57 AM Lat: 32.173092 Long: 103.699507</p> <p>Photo is of the Southwest corner of containment from inside the containment.</p>
<p>Viewing Direction: South</p>  <p>Descriptive Photo - 17 Viewing Direction: South Desc: Photo is from the North facing South looking down the middle of the tanks. Created: 3/17/2022 9:09:24 AM Lat: 32.173092 Long: 103.699507</p> <p>Photo is from the North facing South looking down the middle of the tanks.</p>	<p>Viewing Direction: West</p>  <p>Descriptive Photo - 18 Viewing Direction: West Desc: Photo is from the East facing West looking down the middle of the tanks. Created: 3/17/2022 9:12:35 AM Lat: 32.173092 Long: 103.699507</p> <p>Photo is from the East facing West looking down the middle of the tanks.</p>







Daily Site Visit Report

<p>Viewing Direction: North</p>  <p><small>Descriptive Photo : 19 Viewing Direction: North Desc: Photo is from the South facing North looking down the middle of the tanks. Created: 3/17/2022 9:14:47 AM Lat: 32.172807, Long: -103.699560</small></p> <p>Photo is from the South facing North looking down the middle of the tanks.</p>	<p>Viewing Direction: East</p>  <p><small>Descriptive Photo : 2 Viewing Direction: East Desc: Photo is from the Northwest corner of containment facing East looking down the North side wall. Created: 3/17/2022 8:48:49 AM Lat: 32.173238, Long: -103.699560</small></p> <p>Photo is from the Northwest corner of containment facing East looking down the North side wall.</p>
<p>Viewing Direction: East</p>  <p><small>Descriptive Photo : 20 Viewing Direction: East Desc: Photo is from the West facing East looking down the middle of the tanks. Created: 3/17/2022 9:16:35 AM Lat: 32.172807, Long: -103.699560</small></p> <p>Photo is from the West facing East looking down the middle of the tanks.</p>	<p>Viewing Direction: Southeast</p>  <p><small>Descriptive Photo : 3 Viewing Direction: Southeast Desc: Photo is from the Northwest corner of containment facing Southeast looking into containment. Created: 3/17/2022 9:50:01 AM Lat: 32.173238, Long: -103.699560</small></p> <p>Photo is from the Northwest corner of containment facing Southeast looking into containment.</p>



Daily Site Visit Report

<p>Viewing Direction: Northwest</p>  <p>Descriptive Photo - 4 Viewing Direction: Northwest Desc: Photo is of the Northwest corner of containment from inside the containment. Created: 3/17/2022 8:52:41 AM Lat: 32.173185, Long: -103.699533</p> <p>Photo is of the Northwest corner of containment from inside the containment.</p>	<p>Viewing Direction: South</p>  <p>Descriptive Photo - 5 Viewing Direction: South Desc: Photo is from the Northeast corner of containment facing South looking down the East side wall. Created: 3/17/2022 8:54:17 AM Lat: 32.173238, Long: -103.699428</p> <p>Photo is from the Northeast corner of containment facing South looking down the East side wall.</p>
<p>Viewing Direction: West</p>  <p>Descriptive Photo - 6 Viewing Direction: West Desc: Photo is from the Northeast corner of containment facing West looking down the North wall. Created: 3/17/2022 8:55:24 AM Lat: 32.173205, Long: -103.699402</p> <p>Photo is from the Northeast corner of containment facing West looking down the North wall.</p>	<p>Viewing Direction: Southwest</p>  <p>Descriptive Photo - 7 Viewing Direction: Southwest Desc: Photo is from the Northeast corner of containment facing Southwest looking into containment. Created: 3/17/2022 8:57:19 AM Lat: 32.173212, Long: -103.699375</p> <p>Photo is from the Northeast corner of containment facing Southwest looking into containment.</p>



Daily Site Visit Report

Viewing Direction: Northeast



Photo is of the Northeast corner of containment from inside the containment.

Viewing Direction: North



Photo is from the Southeast corner of containment facing North looking down the East wall.

Daily Site Visit Report



Daily Site Visit Signature

Inspector: Monica Peppin

Signature: 
Signature



Daily Site Visit Report

Client:	Devon Energy Corporation	Inspection Date:	3/17/2022
Site Location Name:	Cotton Draw 32 State Fed Com 3H Battery	Report Run Date:	3/21/2022 4:17 PM
Client Contact Name:	Wes Matthews	API #:	
Client Contact Phone #:	(575) 748-0176		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	

Summary of Times

Arrived at Site	3/17/2022 9:20 AM
Departed Site	3/17/2022 10:15 AM

Field Notes

10:52 On 03/17/2022 I completed a liner inspection for #nAPP2205351635. The liner appeared to be in good overall condition. There was only one area where the lining hadn't fully sealed around the bolt. This area was approximately 6 inches off the ground and the metal sidewall was not compromised. It was located on the East wall near oil tank #3 SN: 1-19404.

Next Steps & Recommendations

1

Daily Site Visit Report



Site Photos

Viewing Direction: West



Photo is from the East facing West looking into the containment on the South side of the tanks.

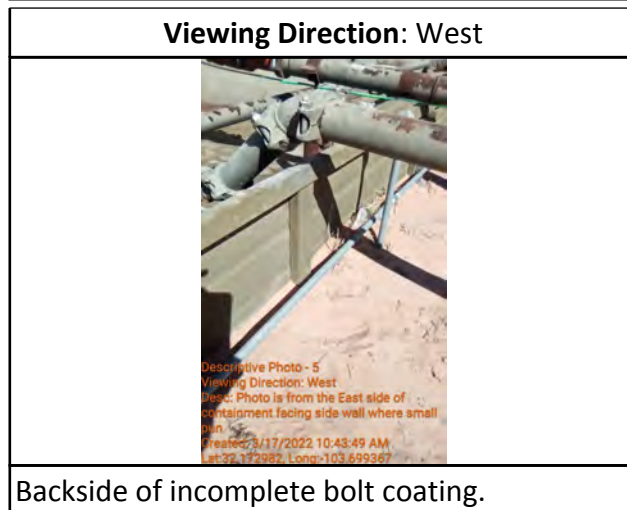
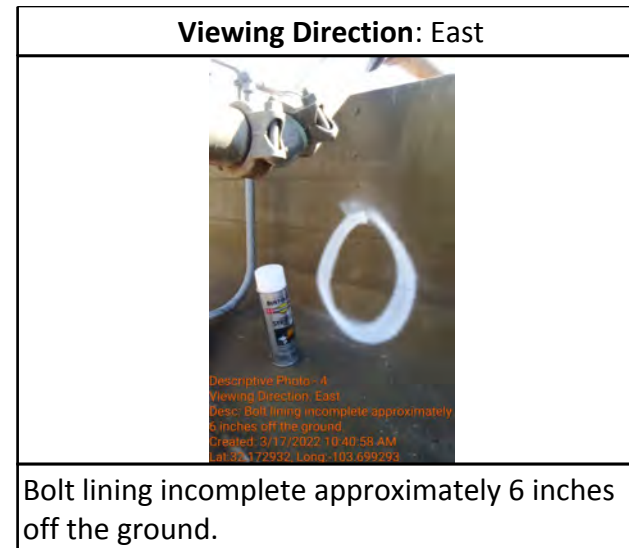
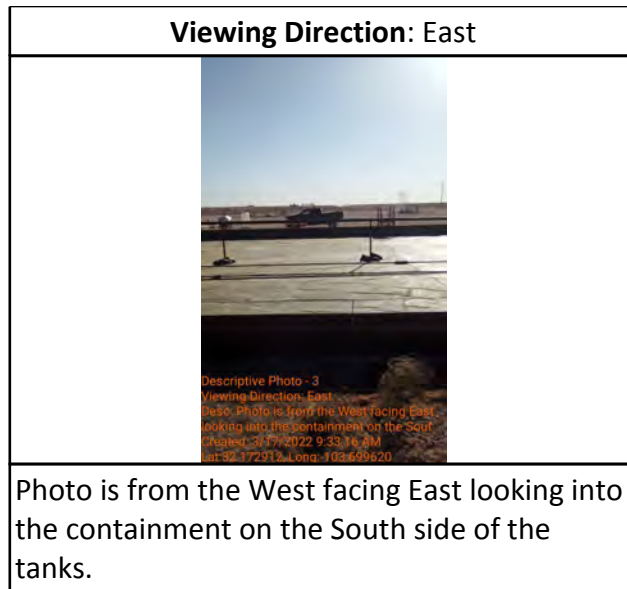
Viewing Direction: North



Photo is from the South facing North looking into the containment on the South side of the tanks.



Daily Site Visit Report



Daily Site Visit Report



Daily Site Visit Signature

Inspector: Monica Peppin

Signature:

A handwritten signature in black ink, appearing to be 'MP', written over a horizontal line. The word 'Signature' is printed in small text below the line on the left.

ATTACHMENT 7

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

State of New Mexico
Energy Minerals and Natural
Resources Department

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

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

Incident ID	nAPP2205351635
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

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

Location of Release Source

Latitude 32.17299775 Longitude -103.6988076
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Cotton Draw 32 State Fed Com 3H	Site Type Oil
Date Release Discovered 02/22/2022	API# (if applicable) 30-025-41171

Unit Letter	Section	Township	Range	County
K	32	24S	32E	Lea

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

Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 88.92 BBLS	Volume Recovered (bbls) 88.92 BBLS
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release Water transfer pump developed leak. All fluid stayed inside lined containment.

State of New Mexico
Oil Conservation Division

Incident ID	nAPP2205351635
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? Spill is over 25 BBLS.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Notice was given on the OCD portal by Dale Woodall on 02/22/2022.	

Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why: 	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: Kendra DeHoyos	Title: EHS Associate
Signature: <u>Kendra DeHoyos</u>	Date: <u>03/07/2022</u>
email: Kendra.Ruiz@dvn.com	Telephone: 575-748-0167
<u>OCD Only</u>	
Received by: <u>Ramona Marcus</u>	Date: <u>3/9/2022</u>

Incident ID	nAPP2205351635
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

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

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

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

State of New Mexico
Oil Conservation Division

Page 4

Incident ID	nAPP2205351635
District RP	
Facility ID	
Application ID	

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

Printed Name: Dale Woodall Title: EHS Professional
Signature: *Dale Woodall* Date: 03/28/2022
email: dale.woodall@dvn.com Telephone: 575-748-1838

OCD Only

Received by: _____ Date: _____

Incident ID	nAPP2205351635
District RP	
Facility ID	
Application ID	

Closure

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

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

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

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

Printed Name: Dale Woodall Title: EHS Professional

Signature: Dale Woodall Date: 03/28/2022

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

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: Jennifer Nobui Date: 04/26/2022

Printed Name: Jennifer Nobui Title: Environmental Specialist A

Spills In Lined Containment	
Measurements Of Standing Fluid	
Length(Ft)	150
Width(Ft)	50
Depth(in.)	1
Total Capacity without tank displacements (bbls)	111.32
No. of 500 bbl Tanks In Standing Fluid	8
No. of Other Tanks In Standing Fluid	
OD Of Other Tanks In Standing Fluid(feet)	15
Total Volume of standing fluid accounting for tank displacement.	88.92

District I
1625 N. French Dr., Hobbs, NM 88240
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District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural
Resources Department

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

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

Incident ID	nAPP2205351635
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

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

Location of Release Source

Latitude 32.17299775 Longitude -103.6988076
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Cotton Draw 32 State Fed Com 3H	Site Type Oil
Date Release Discovered 02/22/2022	API# (if applicable) 30-025-41171

Unit Letter	Section	Township	Range	County
K	32	24S	32E	Lea

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

Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 88.92 BBLS	Volume Recovered (bbls) 88.92 BBLS
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release Water transfer pump developed leak. All fluid stayed inside lined containment.

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Was this a major release as defined by 19.15.29.7(A) NMAC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? Spill is over 25 BBLS.
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Notice was given on the OCD portal by Dale Woodall on 02/22/2022.	

Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why: 	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: Kendra DeHoyos	Title: EHS Associate
Signature: <u>Kendra DeHoyos</u>	Date: <u>03/07/2022</u>
email: Kendra.Ruiz@dvn.com	Telephone: 575-748-0167
<u>OCD Only</u>	
Received by: <u>Ramona Marcus</u>	Date: <u>3/9/2022</u>

NAPP2205351635

Spills In Lined Containment	
Measurements Of Standing Fluid	
Length(Ft)	150
Width(Ft)	50
Depth(in.)	1
Total Capacity without tank displacements (bbls)	111.32
No. of 500 bbl Tanks In Standing Fluid	8
No. of Other Tanks In Standing Fluid	
OD Of Other Tanks In Standing Fluid(feet)	15
Total Volume of standing fluid accounting for tank displacement.	88.92

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

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

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

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

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

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

Printed Name: Dale Woodall Title: EHS Professional

Signature: Dale Woodall Date: 03/28/2022

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

OCD Only

Received by: _____ Date: _____

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Closure

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

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

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

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

Printed Name: Dale Woodall Title: EHS Professional

Signature: Dale Woodall Date: 03/28/2022

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

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 93993

CONDITIONS

Operator: DEVON ENERGY PRODUCTION COMPANY, LP 333 West Sheridan Ave. Oklahoma City, OK 73102	OGRID: 6137
	Action Number: 93993
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	Closure Report Approved.	4/26/2022