

June 19, 2023 Vertex Project #: 23E-03362

Spill Closure Report: Anderson Pad A Battery

Section 02, Township 22 South, Range 32 East

API: 30-025-49429

County: Lea

Incident Report: nAPP2314462488

Prepared For: Matador Production Company

One Lincoln Centre Dallas, Texas 75240

New Mexico Oil Conservation Division - District 1 - Hobbs

1625 North French Drive Hobbs, New Mexico 88240

Matador Production Company(Matador) retained Vertex Resource Services Inc. (Vertex) to conduct a Spill Assessment for a release of produced water due to a water tank overflow at Anderson Pad A Battery, API 30-025-49429, Incident nAPP2314462488 (hereafter referred to as "Anderson"). Matador provided spill notification to the New Mexico Oil Conservation Division (NMOCD) District 1, via submission of initial C-141 Release Notification (Attachment 1). This letter provides a description of the Spill Assessment and includes a request for Incident Closure. The spill area is located at N 32.42633, W -103.64027.

Background

The site is located approximately 22.65 miles north of Oil Center, New Mexico (Google Inc., 2023). The legal location for the site is Section 02, Township 22 South and Range 32 East in Lea County, New Mexico. The spill area is located on Bureau of Land Management property. This location is within the Permian Basin in southeast New Mexico and has been historically used for oil and gas exploration, and production.

The Geological Map of New Mexico (New Mexico Bureau of Geology and Mineral Resources, 2023) indicates the site's surface geology is comprised primarily of Qep – Eolian and piedmont deposits (Holocene to middle Pleistocene) and is characterized as eolian sands and piedmont-slope deposits. The Natural Resources Conservation Service Web Soil Survey characterizes the predominant soil texture on the site as Pyote and Maljamar fine sands. It tends to be well drained with negligible runoff and moderate available moisture levels in the soil profile (United States Department of Agriculture, Natural Resources Conservation Service, 2023).

The surrounding landscape is associated with plains at elevations of 3,000 to 3,900 feet above sea level. The climate is semi-arid, with annual precipitation ranging between 10 to 12 inches. Historically, the plant community has grassland aspect, dominated by grasses with shrubs. Black grama is dominant with a mixture of creosotebush, dropseeds, bluestems, and sand sage. Overgrazing and extended drought can reduce grass cover (United States Department of Agriculture, Natural Resources Conservation Service, 2023).

Matador Production Company Anderson Pad A Battery, nAPP2314462488 2023 Spill Assessment and Closure June 2023

There is no surface water located at Anderson. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 *New Mexico Administrative Code* (NMAC; New Mexico Oil Conservation Division, 2018), is the Pecos River located approximately 25.4 miles southwest of the site (United States Fish and Wildlife Service, 2023). There are no continuous flowing watercourses or significant watercourses, lakebeds, sinkholes, playa lakes, or other critical water or community features as outlined in Paragraph (4) of Subsection C of 19.15.29.12 NMAC.

Incident Description

The spill occurred on May 24, 2023, due to the incorrect procedure of a well shut in causing the produced water tank to overflow into the secondary containment. The spill was reported on May 24, 2023, and involved the release of approximately 140 barrels (bbl.) of produced water into the lined containment. Approximately 140 bbl. of free fluid was removed during initial spill clean-up. The NMOCD C-141 Report: nAPP2314462488 is included in Attachment 1. The daily field report (DFR) and site photographs are included in Attachment 2.

Closure Criteria Determination

The depth to groundwater was determined using information from the Office of the State Engineer's Water Rights Database. A 0.5-mile search radius was used to determine groundwater depth. The closest recorded depth to groundwater was determined to be greater than 100 feet below ground surface and located on the pad site (New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System, 2023). Atkins Engineering completed the drilling of a borehole for depth to groundwater determination to 105 feet below ground surface. Documentation used in Closure Criteria Determination research is included in Attachment 3.

Matador Production Company Anderson Pad A Battery, nAPP2314462488

2023 Spill Assessment and Closure June 2023

Closure C	riteria Worksheet		
Site Nam	e: Anderson Pad A Battery		
Spill Coo	dinates:	X: 32.42633	Y: -103.64027
Site Spec	ific Conditions	Value	Unit
1	Depth to Groundwater	>100	feet
2	Within 300 feet of any continuously flowing	134,163	feet
watercourse or any other significant watercourse		134,103	reet
3	Within 200 feet of any lakebed, sinkhole or playa lake	48,868	feet
3	(measured from the ordinary high-water mark)	40,000	1661
4	Within 300 feet from an occupied residence, school,	44,035	feet
	hospital, institution or church	44,033	1000
	i) Within 500 feet of a spring or a private, domestic		
5	fresh water well used by less than five households for	14,181	feet
	domestic or stock watering purposes, or		
	ii) Within 1000 feet of any fresh water well or spring	14,181	feet
	Within incorporated municipal boundaries or within a		
	defined municipal fresh water field covered under a		(Y/N)
6	municipal ordinance adopted pursuant to Section 3-27-	No	
	3 NMSA 1978 as amended, unless the municipality		
	specifically approves		_
7	Within 300 feet of a wetland	2,502	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
		Low	Critical
9	Within an unstable area (Karst Map)		High
	` ''		Medium
			Low
10	Within a 100-year Floodplain	Undetermined	year
11	Soil Type	Pyote and Maljamar	
		fine sands	
12	Ecological Classification	Loamy Sand	
12	Leological classification	Loanly Sand	
13	Geology	Qep	
		ζζ.	
	, , , , , , , , , , , , , , , , , , ,	400	<50'
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	>100'	51-100'
			>100'

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

vertex.ca

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

Based on data included in the closure criteria determination worksheet, the release at Anderson was not subject to the requirements of Paragraph (4) of Subsection C of 19.15.29.12 NMAC and the closure criteria for the site were determined to be associated with the following constituent concentration limits based on depth to groundwater. The closure criteria determined for the site are associated with the following constituent concentration limits as presented in Table 1.

Table 1. Closure Criteria for Soils Impacted by a Release		
Minimum depth below any point within the		
horizontal boundary of the release to groundwater		
less than 10,000 mg/l TDS	Constituent	Limit
	Chloride	20,000 mg/kg
	TPH (GRO+DRO+MRO)	2,500 mg/kg
> 100 feet	GRO+DRO	1,000 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

TDS - Total dissolved solids

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

BTEX - Benzene, toluene, ethylbenzene, and xylenes

Remedial Actions Taken

An initial site inspection of the spill area was completed on June 8, 2023, which identified the area of the spill specified in the initial C-141 Report. The DFR associated with the site inspection is included in Attachment 2.

Notification that a liner inspection was scheduled to be completed was provided to the NMOCD on June 5, 2023 (Attachment 4). Visual observation of the liner was completed on all sides and the base of the containment, around equipment, and of all seams in the liner. As evidenced in the DFR (Attachment 2), liner integrity was confirmed.

Closure Request

Vertex recommends no remediation action to address the release at Anderson. The secondary containment liner appeared to be intact and had the ability to contain the release, as shown in the inspection photographs included with the DFR (Attachment 2). There are no anticipated risks to human, ecological or hydrological receptors associated with the release site.

Vertex requests that incident nAPP2314462488 be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. Matador 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 open release at Anderson Pad A Battery.

Matador Production Company Anderson Pad A Battery, nAPP2314462488

2023 Spill Assessment and Closure June 2023

Should you have any questions or concerns, please do not hesitate to contact the undersigned at 575.361.9880 or mpeppin@vertex.ca.

Date

June 19, 2023

Monica Peppin, A.S.

PROJECT MANAGER, REPORTING

Attachments

Attachment 1. NMOCD C-141 Report

Attachment 2. Daily Field Report with Photographs

Attachment 3. Closure Criteria Research Determination Documentation

Attachment 4. Required 48-hr Notification of Liner Inspection to Regulatory Agencies

2023 Spill Assessment and Closure June 2023

References

- Google Inc. (2023). Google Earth Pro (Version 7.3.4) [Software]. Retrieved from http://www.google.com/earth
- New Mexico Bureau of Geology and Mineral Resources. (2023). *Interactive Geologic Map.* Retrieved from http://geoinfo.nmt.edu
- New Mexico Mining and Minerals Division. (2023). *Coal Mine Resources in New Mexico*. Retrieved from http://www.emnrd.state.nm.us/MMD/gismapminedata.html
- New Mexico Office of the State Engineer, New Mexico Water Rights Reporting System. (2023). *Point of Diversion Location Report.* Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/wellSurfaceDiversion.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. (2023). Web Soil Survey, New Mexico.

 Retrieved from http://www.wipp.energy.gov/library/Information_Repository_A/Supplemental_Information/
 Chugg%20et%20al%201971%20w-map.pdf
- United States Department of Homeland Security, FEMA Flood Map Service Center. (2023). *Flood Map Number* 35015C1875D. Retrieved from https://msc.fema.gov/portal/search?AddressQuery=malaga% 20new%20mexico#searchresultsanchor
- United States Fish and Wildlife Service. (2023). *National Wetland Inventory Surface Waters and Wetland*. Retrieved from https://www.fws.gov/wetlands/data/mapper.html

Matador Production Company Anderson Pad A Battery, nAPP2314462488 2023 Spill Assessment and Closure June 2023

Limitations

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

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

ATTACHMENT 1

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

State of New Mexico Energy Minerals and Natural Resources Department

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Form C-141 Revised August 24, 2018 Submit to appropriate OCD District office

Incident ID	nAPP2314462488
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible	Party			OGRID A	
C + + N				Contact Te	228937
Chillon Talley					2 337-319-0390
Contact ema	clinton.	talley@matadorre	sources.com	Incident #	# (assigned by OCD) nAPP2314462488
Contact mail	ling address	One Lincoln Ce	ntre Dallas, Texas	75240	
			Location	of Release So	Source
Latitude	Latitude 32.42633 Longitude -103.64027 (NAD 83 in decimal degrees to 5 decimal places)				
					•
	Anderson Pa	d A Battery		Site Type	Oli
Date Release	Discovered	05/24/2023		API# (if app	pplicable) 30-025-49429
Unit Letter	Section	Township	Range	Cour	inty
A	02	22S	32E	L	Lea
Surface Owne	r: State	X Federal T	ribal Private (A	Name:)
			Nature and	l Volume of l	Release
	Materia	l(s) Released (Select a	I that apply and attach	calculations or specific	c justification for the volumes provided below)
X Crude Oi		Volume Release		calculations of specific	Volume Recovered (bbls) 140
Produced	Water	Volume Release	d (bbls)		Volume Recovered (bbls)
			tion of dissolved cl	hloride in the	☐ Yes ☐ No
produced water >10,000 mg/l? Condensate Volume Released (bbls)					Volume Recovered (bbls)
Natural Gas Volume Released (Mcf)			d (Mcf)		Volume Recovered (Mcf)
Other (describe) Volume/Weight Released (provide unit		e units)	Volume/Weight Recovered (provide units)		
C. CD.1					
Cause of Rel	ease				
Tank overflow into secondary containment. All fluid recovered					
			Ž		

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Was this a major release as defined by 19.15.29.7(A) NMAC? X Yes No If YES, was immediate no	If YES, for what reason(s) does the responsible Section 25 bbls otice given to the OCD? By whom? To wh	om? When and by what means (phone, email, etc)?	
Yes, OCD through Port	tal and email by Vertex to BLM		
	Initial Re	esponse	
The responsible	party must undertake the following actions immediately	unless they could create a safety hazard that would result in injury	
 ☑ The source of the release has been stopped. ☑ The impacted area has been secured to protect human health and the environment. ☑ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. ☑ All free liquids and recoverable materials have been removed and managed appropriately. 			
If all the actions described above have <u>not</u> been undertaken, explain why:			
has begun, please attach	a narrative of actions to date. If remedial of	emediation immediately after discovery of a release. If remediation efforts have been successfully completed or if the release occurred lease 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: Clin	ton Talley	Title: EHS Supervisor	
Signature: Clina	t Talley	Date: 6/27/2023	
	matadorresources.com	Telephone: 337-319-8398	
OCD Only			
Received by:		Date:	

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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?	<u>>100</u> (ft bgs)	
Did this release impact groundwater or surface water?	Yes X No	
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No	
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes 🗓 No	
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes X No	
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No	
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	Yes X No	
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No	
Are the lateral extents of the release within 300 feet of a wetland?	Yes X No	
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes 🗓 No	
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes 🗓 No	
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes X No	
Did the release impact areas not on an exploration, development, production, or storage site?	☐ Yes 🗓 No	
Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.		
Characterization Report Checklist: Each of the following items must be included in the report.		
Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells. Field data Data table of soil contaminant concentration data Depth to water determination Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release		
Boring or excavation logs		

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.

X Photographs including date and GIS information

NA Laboratory data including chain of custody

Topographic/Aerial maps

Received by OCD: 6/27/2023 9:33:25 AM Form C-141 State of New Mexico Oil Conservation Division Page 4

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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: Clinton Talley	Title: EHS Supervisor	
Signature: Clint Talley	Date: <u>6/27/2023</u>	
email:clinton.talley@matadorresources.com	Telephone: 337-319-8398	
OCD Only		
Received by: Shelly Wells	Date: <u>6/27/2023</u>	

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Remediation Plan

Remediation Plan Checklist: Each of the following items must be included in the plan.		
 □ Detailed description of proposed remediation technique □ Scaled sitemap with GPS coordinates showing delineation points □ Estimated volume of material to be remediated □ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC □ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required) 		
Deferral Requests Only: Each of the following items must be con	nfirmed as part of any request for deferral of remediation.	
Contamination must be in areas immediately under or around p deconstruction.	roduction equipment where remediation could cause a major facility	
☐ Extents of contamination must be fully delineated.		
Contamination does not cause an imminent risk to human health	n, the environment, or groundwater.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.		
Printed Name: Clinton Talley	Title: EHS Supervisor	
Signature: Clint Tallsy	Date: <u>6/27/2023</u>	
email:clinton.talley@matadorresources.com	Telephone: 337-319-8398	
OCD Only		
· · · · · · · · · · · · · · · · · · ·		
Received by:	Date:	
Approved	Approval	
Signature:	Date:	

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Application ID	

Closure

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

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

X A scaled site and sampling diagram as described in 19.15.2	9.11 NMAC
X Photographs of the remediated site prior to backfill or phomust be notified 2 days prior to liner inspection)	tos of the liner integrity if applicable (Note: appropriate OCD District office
X Laboratory analyses of final sampling (Note: appropriate C	DDC District office must be notified 2 days prior to final sampling)
▼ Description of remediation activities	
and regulations all operators are required to report and/or file cer may endanger public health or the environment. The acceptance should their operations have failed to adequately investigate and human health or the environment. In addition, OCD acceptance compliance with any other federal, state, or local laws and/or reg	plete to the best of my knowledge and understand that pursuant to OCD rules tain release notifications and perform corrective actions for releases which of a C-141 report by the OCD does not relieve the operator of liability remediate contamination that pose a threat to groundwater, surface water, of a C-141 report does not relieve the operator of responsibility for gulations. The responsible party acknowledges they must substantially conditions that existed prior to the release or their final land use in e OCD when reclamation and re-vegetation are complete.
Printed Name: Clinton Talley	Title: EHS Supervisor
Signature: Clint Talley	Date: 6/27/2023
email:clinton.talley@matadorresources.com	Telephone: <u>337-319-8398</u>
OCD Only	
Received by: Shelly Wells	Date: <u>6/27/2023</u>
	rty of liability should their operations have failed to adequately investigate and ce water, human health, or the environment nor does not relieve the responsible nd/or regulations.
Closure Approved by: Nelson Velez Printed Name: Nelson Velez	Date: 09/21/2023
Printed Name: Nelson Velez	Title: Environmental Specialist - Adv

ATTACHMENT 2



Client: **Matador Resources** Inspection Date: 6/8/2023 6/13/2023 9:04 PM Site Location Name: Anderson Pad A Battery Report Run Date: Client Contact Name: Arsenio Jones API#: Client Contact Phone #: (575)361-4333 Unique Project ID Project Owner: **Clinton Talley** Project Reference # Project Manager: Monica Peppin

Summary of Times							
Arrived at Site	6/8/2023 2:32 PM						
Departed Site	6/8/2023 2:50 PM						



Field Notes

- 12:32 Liner inspection of containment area
- 12:33 Liner shows no signs of any potential breach. Containment area is clean and has no tears or rips or any weathering
- 12:40 Containment does have rain water standing in northern portion from rain event that occurred the night before the inspection.

Next Steps & Recommendations

1 Closure report



Site Photos



Between tanks



Viewing Direction: North

East side



Middle area





Descriptive Photo - 14
Viewing Direction: West

Descriptive Photo - 14
Viewing Direction: West
Describtiddle area
Crusted: 04/2022 12:48:00 PM
Lat:32.428044, Long-103.840748

Middle area



Middle area



West side of containment









North end









West end



South end



Between tanks



Daily Site Visit Signature

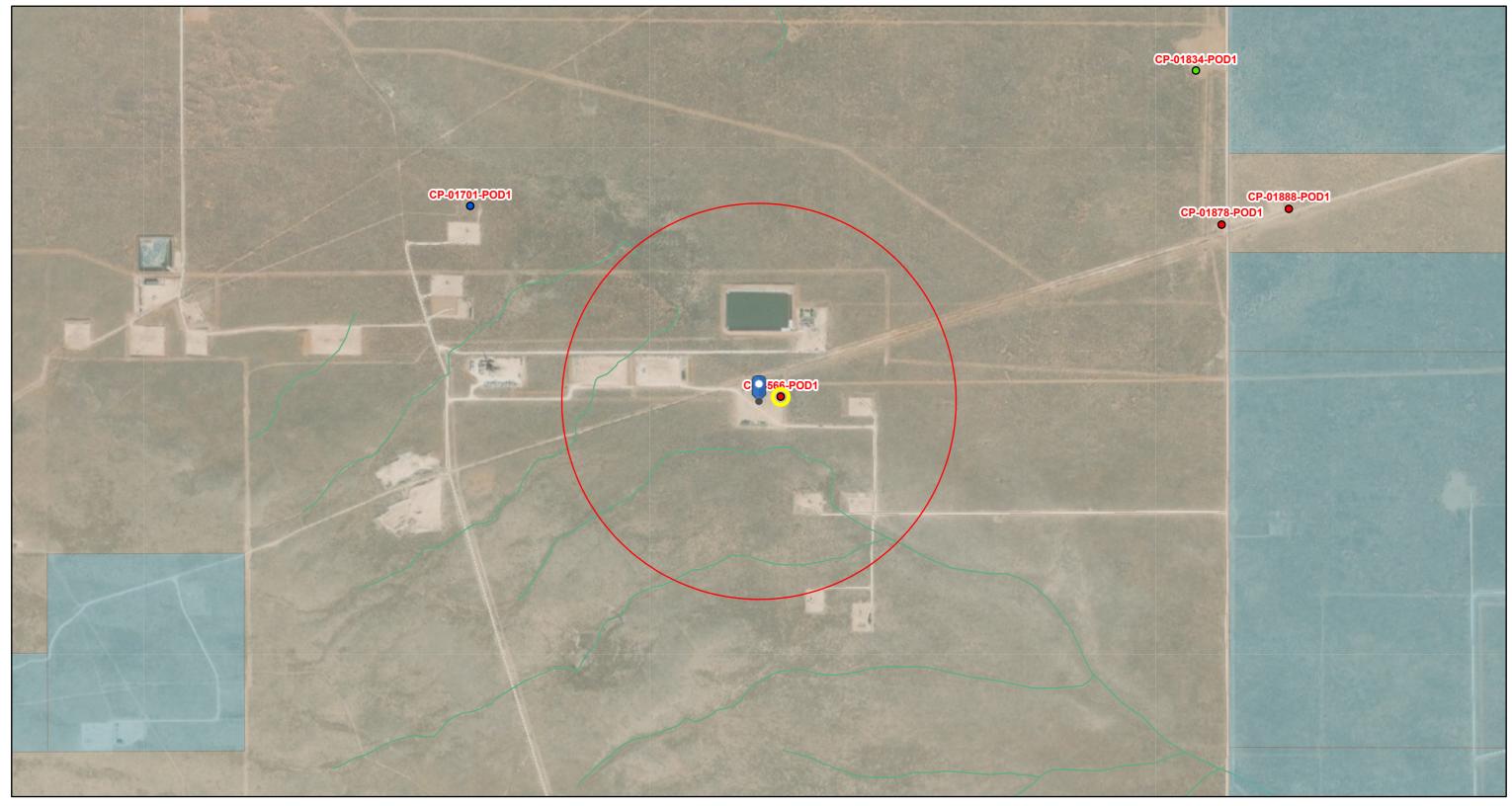
Inspector: Monica Peppin

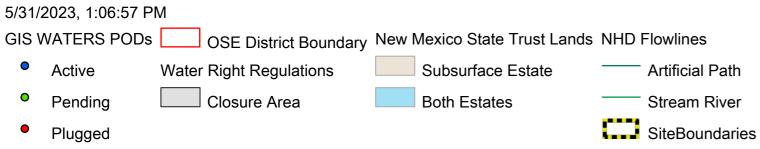
Signature:

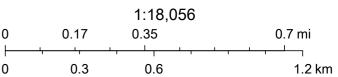
ATTACHMENT 3

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Anderson Pad A Battery







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



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

10/22/2021

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

Hand Delivered to the DII Office of the State Engineer

Re: Well Record C-4566 Pod1

Grown Middle

To whom it may concern:

Attached please find a well log & record and a plugging record, in duplicate, for a one (1) soil borings, C-4566 Pod1.

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

Sincerely,

Lucas Middleton

Enclosures:

as noted above

131 J. 10 22 2021 M2:31



	OSE POD NO	. (WELL NO.)		WELL TAG ID NO).		OSE FILE NO	S).			
NO NO	POD1 (TW-1) n/a						C-4566					
CAT	WELL OWNER NAME(S) Advanced Energy Partners						PHONE (OPTION 832.672.470					
2										STATE	ZIP	
GENERAL AND WELL LOCATION	WELL OWNER MAILING ADDRESS 11490 Westheimer Rd. Stuit 950						CITY Houston		TX 7707			
é			DI	GREES	MINUTES	SECO	NDS					
A.	WELL LOCATION LATITUDE			32 25 35.34 _N			* ACCURACY	REQUIRED: ONE TENT	TH OF A SECOND			
RAI	(FROM GP	S) 231	TITUDE					+ DATERA DECLEDED, NACE OF				
ENE	LONGITUDE DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE											
1. G			2S R32E, NMPM	SIREEI ADDI	RESS AND COMMO	N LANDM	AKKS - FLS	s (section, 10	WINDIN, RAINGE) WIL	INCAVALED LE		
	LICENSE NO		NAME OF LICENSED	DRILLER					NAME OF WELL DRI	ILLING COMPANY		
	124				Jackie D. Atkin	S			Atkins Eng	ineering Associate	es, Inc.	
	DRILLING STARTED DRILLING ENDED 09/22/21 09/22/21							.E DEPTH (FT) 105	DEPTH WATER FIRS	T ENCOUNTERED (FT)	
	07/22		03/22/21						STATIC WATER LEV	TEL IN COMPLETED	WELL (PT)	
Z	COMPLETED WELL IS: ARTESIAN FORY HOLE SHALLOW (UNCONFINED)							SIRIIC WALLKED	n/a			
ATIC	DRILLING FI	LUID:	☐ AIR	MUD	ADDITT	VES – SPE	CIFY:					
2. DRILLING & CASING INFORMATION	DRILLING METHOD: ROTARY HAMMER CABLE TOOL OTHER - SPECIFY: Hollow Stem Auger											
	DEPTH (feet bgl) BORE HOLE			CASING	MATERIAL AN	D/OR	C/	ASING	CASING	CASING WAL	L SLOT	
	FROM TO DIAM		GRADE (include each casing string, and		CON	NECTION	INSIDE DIAM.	THICKNESS	SIZE			
ASI	(inches)					YPE ling diameter)	(inches)	(inches)	(inches)			
S C	0	105	±6.5	Boring- HSA			-		-			
NG												
LEI												
DE												
7							71					
										L		
	DEPTH	(feet bgl)	BORE HOLE		LIST ANNULAR SEAL MATERIAL AND				AMOUNT		HOD OF CEMENT	
M	FROM	то	DIAM. (inches)	GRA	GRAVEL PACK SIZE-RANGE BY INTERVAL			RVAL	(cubic feet)	TLA	SEMICIA I	
TER												
MA												
AR.												
M										and the second		
ANNULAR MATERIAL				-						_		
હ												
				1					l			
FOR	OSE INTER	NAL USE						WR-2	0 WELL RECORD	& LOG (Version (06/30/17)	

FOR OSE INTERNAL USE	WR-20 WELL RECORD	& LOG (Version 06/30/17)		
FILE NO.	POD NO.		TRN NO.	
LOCATION		WELL	TAG ID NO.	PAGE 1 OF 2

			THICKNESS	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES					WAT BEAR		ESTIMATED YIELD FOR WATER-
	FROM	TO	(feet)		plemental sheets to fully de				(YES	/NO)	BEARING ZONES (gpm)
	0	0 14 14 Sand, Fine-grained, poorly graded, Brownish Red Dry							Y	√N	
	14 24 10 Sand, Fine-grained, poorly graded, with gravel 0.25" Tan Dry								Y	✓ N	
	24 54 20 Sand, Fine-grained, poorly graded, Tan Red Dry							Y	√N		
	54								Y	√N	
	59	105	46	Sand, Fine-gr	ained, poorly graded, caliche	, Red B	rown, Dry		Y	√ N	
1									Y	N	
VEL									Y	N	
OF									Y	N	
4. HYDROGEOLOGIC LOG OF WELL									Y	N	
ICT		1							Y	N	
507									Y	N	
EO									Y	N	
ROC									Y	N	
IXD									Y	N	
4									Y	N	
									Y	N	
									Y	N	
									Y	N	
									Y	N	
									Y	N	
									Y	N	
	METHOD U	SED TO ES	TIMATE YIELD	OF WATER-BEARING	STRATA:				AL ESTIN		
	PUM	P	IR LIFT	BAILER OT	HER - SPECIFY:			WEI	L YIELD	(gpm):	0.00
NO	WELL TEST TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.										
VISION	MISCELLA	NEOUS INF	ORMATION: Te	emporary well materia	ls removed and the soil b	oring b	ackfilled usin	ıg dril	l cuttings	from to	tal depth to ten
TEST; RIG SUPER			fe	et below ground surfa	ce, then hydrated bentoni	te chips	from ten fee	t belo	w ground	i surface	to surface.
G St											
); RI											
TEST	PRINT NAM	IE(S) OF DI	RILL RIG SUPER	VISOR(S) THAT PRO	VIDED ONSITE SUPERVIS	SION O	F WELL CON	STRU	CTION O	THER TI	IAN LICENSEE:
.y.	Shane Eldridge, Carmelo Trevino, Cameron Pruitt										
URE	CORRECT I	RECORD OF	F THE ABOVE I	ESCRIBED HOLE AN	EST OF HIS OR HER KNO D THAT HE OR SHE WILL PLETION OF WELL DRILL	L FILE '	THIS WELL I	ECOF	ED WITH	THE ST.	IS A TRUE AND ATE ENGINEER
6. SIGNATURE	Jack Atkins			Jac	ekie D. Atkins					1-2021	
•		SIGNAT	URE OF DRILLE	R / PRINT SIGNEE 1	NAME					DATE	
FOI	R OSE INTER	NAL USE					WR-20 WE	LL RE	CORD &	LOG (Ve	rsion 06/30/2017)
	E NO.				POD NO.		TRN NO.				
LO	CATION					WELL	TAG ID NO.				PAGE 2 OF 2

2021-10-21_C-4566_OSE_Well Record and Log_-forsign

Final Audit Report 2021-10-21

Created: 2021-10-21

By: Lucas Middleton (lucas@atkinseng.com)

Status: Signed

Transaction ID: CBJCHBCAABAANuiDd9d_mUJqQQsQfAg6LdZqTybmXLzJ

"2021-10-21_C-4566_OSE_Well Record and Log_-forsign" History

- Document created by Lucas Middleton (lucas@atkinseng.com) 2021-10-21 9:04:18 PM GMT- IP address: 174.242.233.24
- Document emailed to Jack Atkins (jack@atkinseng.com) for signature 2021-10-21 9:04:43 PM GMT
- Email viewed by Jack Atkins (jack@atkinseng.com) 2021-10-21 10:20:15 PM GMT- IP address: 64.90.153.232
- Document e-signed by Jack Atkins (jack@atkinseng.com)

 Signature Date: 2021-10-21 10:21:10 PM GMT Time Source: server- IP address: 64.90.153.232
- Agreement completed. 2021-10-21 - 10:21:10 PM GMT

OSE DI SCY 22 ZUZ 24/2/35





PLUGGING RECORD



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

	GENERAL / WELL OWNERSHIP: te Engineer Well Number: C-4566-POD1								
Wel	ell owner: Advanced Energy Partners				Phone N	lo.: 832.	672.4700		
Mai	iling address: 11490 Westheimer Rd. Stuit 950								
City	y: Houston	_ State:		Те	xas		_ Zip code	e: 77077	
<u>п. </u>	WELL PLUGGING INFORMATION:								
1)	Name of well drilling company that plugged	i well:	Jackie D.	Atkins (A	tkins Eng	ineering	Associates	inc.)	
2)	New Mexico Well Driller License No.: 124						tion Date:		
3)	Well plugging activities were supervised by Shane Eldridge, Carmelo Trevino, Cameron		owing wel	l driller(s	s)/rig sup	ervisor(s)	:		
4)	Date well plugging began: 09/29/21		_ Date	well plug	gging cor	cluded: _	09/29/21		
5)	GPS Well Location: Latitude: Longitude:	32 103	deg, deg,	25 38	_ min, _ _ min, _	35.34 21.54	_sec _sec, WGS	S 84	
6)	Depth of well confirmed at initiation of plug by the following manner: weighted tape	gging as	105	ft bel	ow groun	d level (t	ogl),		
7)	Static water level measured at initiation of p	olugging	: <u>n/a</u>	ft bgl					
8)	Date well plugging plan of operations was a	pproved	by the Sta	ate Engin	eer: _07	/12/2021	-		
9)	Were all plugging activities consistent with differences between the approved plugging	an approplan	oved plugg I the well a	ging plan' as it was j	? plugged (Yes (attach ad	_ If not, ditional pa		
						property and the Columns of	er, engles over 185 men 1960.	15 - 25 - 25 - 25 - 2	يعد يحدر يوس
						03E I	M 507 2	S MAD DA	Zidb

Version: September 8, 2009

Page 1 of 2

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

For each interval plugged, describe within the following columns:

Depth (ft bgl)	Plugging <u>Material Used</u> (include any additives used)	Volume of <u>Material Placed</u> (gallons)	Theoretical Volume of Borehole/ Casing (gallons)	Placement Method (tremie pipe, other)	Comments ("casing perforated first", "open annular space also plugged", etc.)
3 -	0-10' Hydrated Bentonite	15.6 gallons	15 gallons	Augers	
	10'-105' Drill Cuttings	Approx. 151 gallons	151 gallons	Boring	
=		Approx. 101 ganons	To I gallone	Joining	
_					
=					
·-					
) <u> </u>					
-		MULTIPLY cubic feet x 7. cubic yards x 201.	BY AND OBTAIN 4805 = gallons 97 = gallons	05E DII	

III. SIGNATURE:

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

Signature of Well Driller

Date

Version: September 8, 2009 Page 2 of 2

2021-10-21_C-4566_WD-11 Plugging Record-forsign

Final Audit Report 2021-10-21

Created: 2021-10-21

By: Lucas Middleton (lucas@atkinseng.com)

Status: Signed

Transaction ID: CBJCHBCAABAAUOL3tUwXvK9p0MLcPWxM8FjeSHZkENMJ

"2021-10-21_C-4566_WD-11 Plugging Record-forsign" History

- Document created by Lucas Middleton (lucas@atkinseng.com) 2021-10-21 9:05:14 PM GMT- IP address: 174.242.233.24
- Document emailed to Jack Atkins (jack@atkinseng.com) for signature 2021-10-21 9:05:36 PM GMT
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- Document e-signed by Jack Atkins (jack@atkinseng.com)

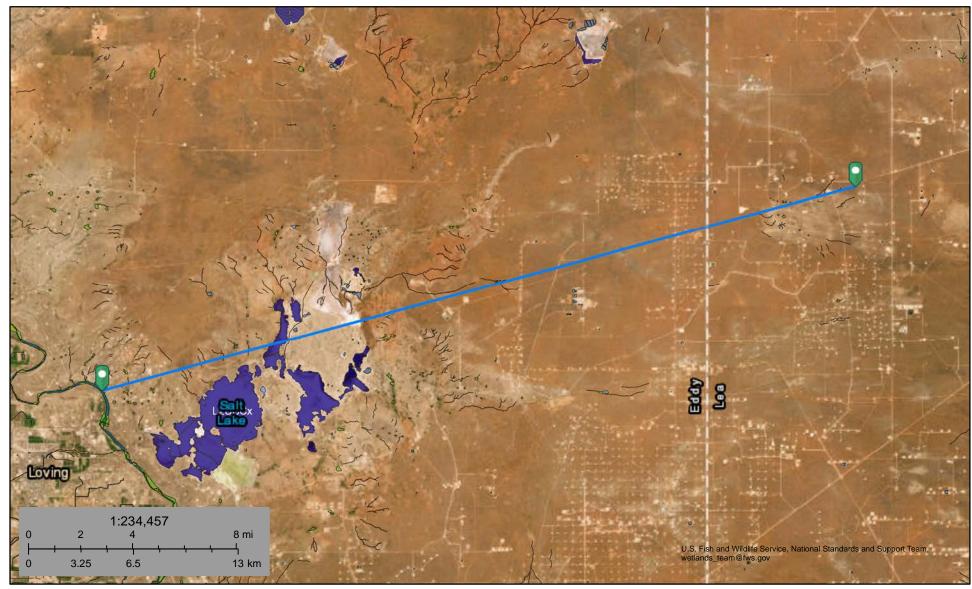
 Signature Date: 2021-10-21 10:22:04 PM GMT Time Source: server- IP address: 64.90.153.232
- Agreement completed. 2021-10-21 - 10:22:04 PM GMT

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Anderson Pad A Battery



May 26, 2023

Wetlands

Estuarine and Marine Deepwater

Estuarine and Marine Wetland

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Lake

Other

Riverine

Other

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



Anderson Pad A Battery



May 26, 2023

Wetlands

Estuarine and Marine Deepwater

Estuarine and Marine Wetland

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Freshwater Pond

Lake

Othor

Riverine

Other

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





New Mexico Office of the State Engineer

Water Right Summary

WR File Number: C 03717

Subbasin: C

Cross Reference: -

Primary Purpose: STK

72-12-1 LIVESTOCK WATERING

Primary Status:

PMT PERMIT

Total Acres:

Subfile:

Header: -

Total Diversion:

Cause/Case:

Transaction Desc.

Owner: SLASH 46 RANCH

Contact:

STACY MILLS

Documents on File

Status

From/

To

Diversion Consumptive

2014-01-15

PMT LOG C 03717 POD1

2

3

Current Points of Diversion

Trn#

(NAD83 UTM in meters)

File/Act

Well Tag Source 64Q16Q4Sec Tws Rng

Other Location Desc

POD Number C 03717 POD1

Shallow 4 4 1 09 22S 32E

624094 3586365

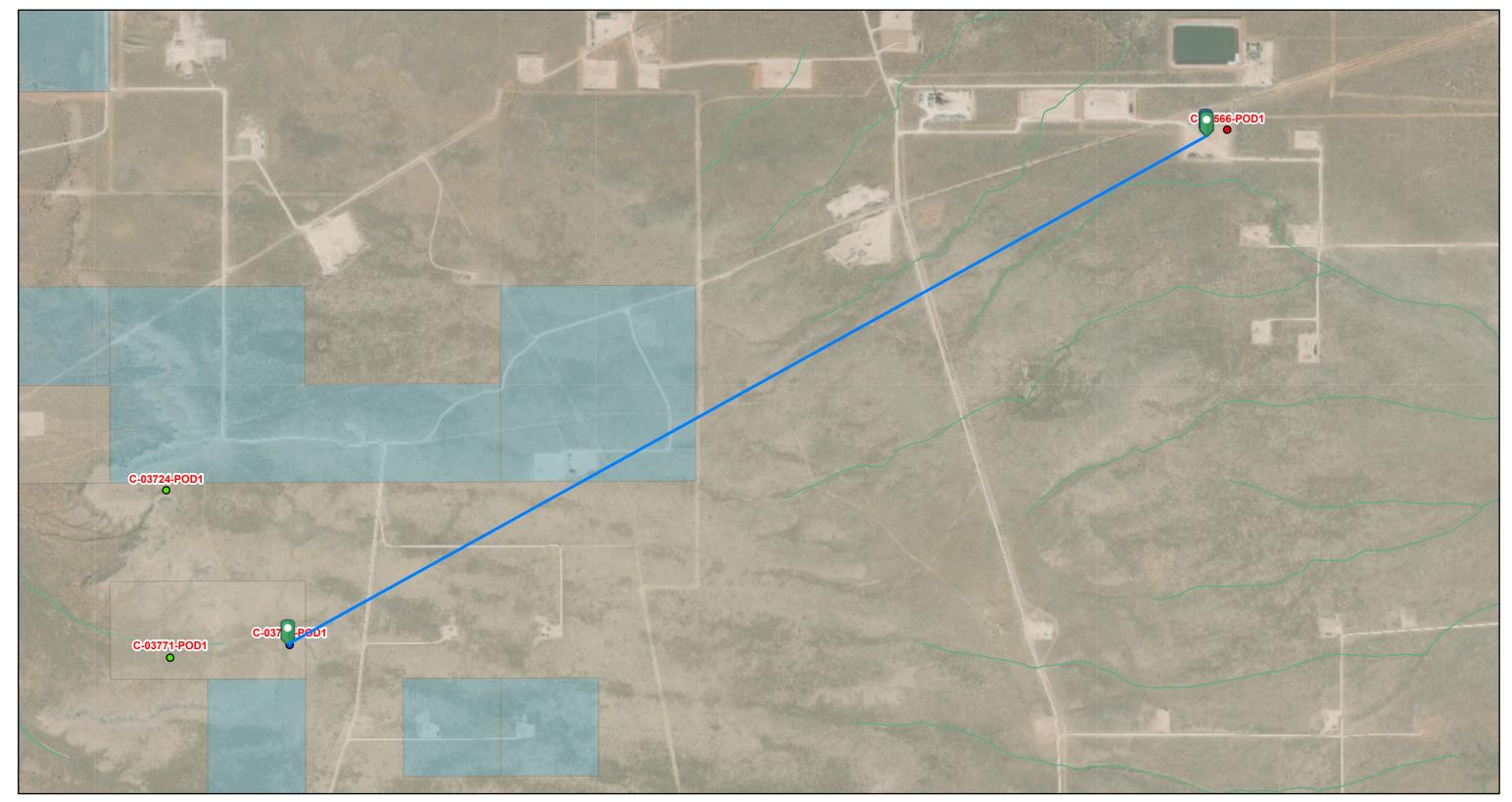
The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

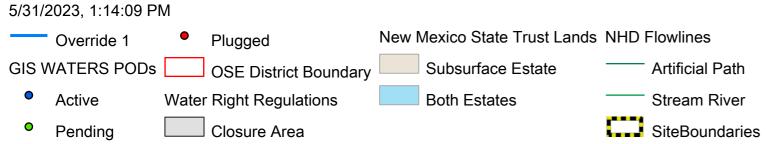
5/31/23 3:50 PM

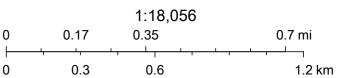
WATER RIGHT SUMMARY

Page 36 of 64

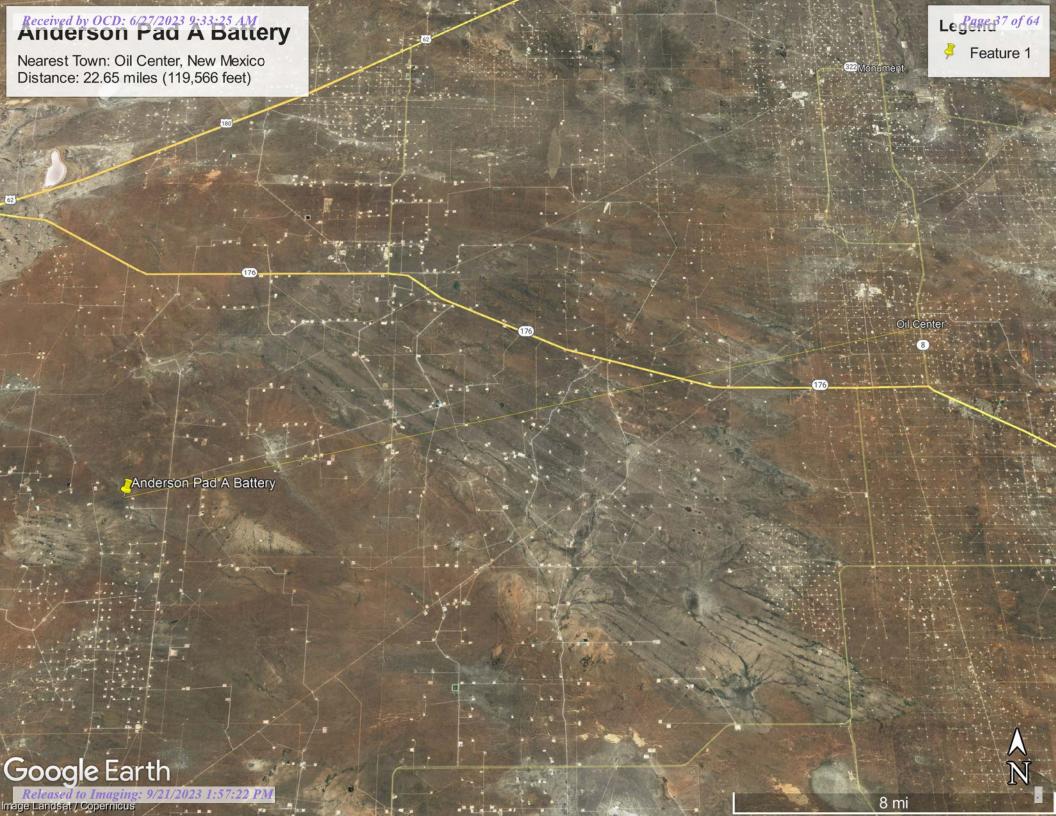
Anderson Pad A Battery







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





Anderson Pad A Battery



May 26, 2023

Wetlands

Estuarine and Marine Deepwater

Estuarine and Marine Wetland

Freshwater Emergent Wetland

Freshwater Pond

Freshwater Forested/Shrub Wetland

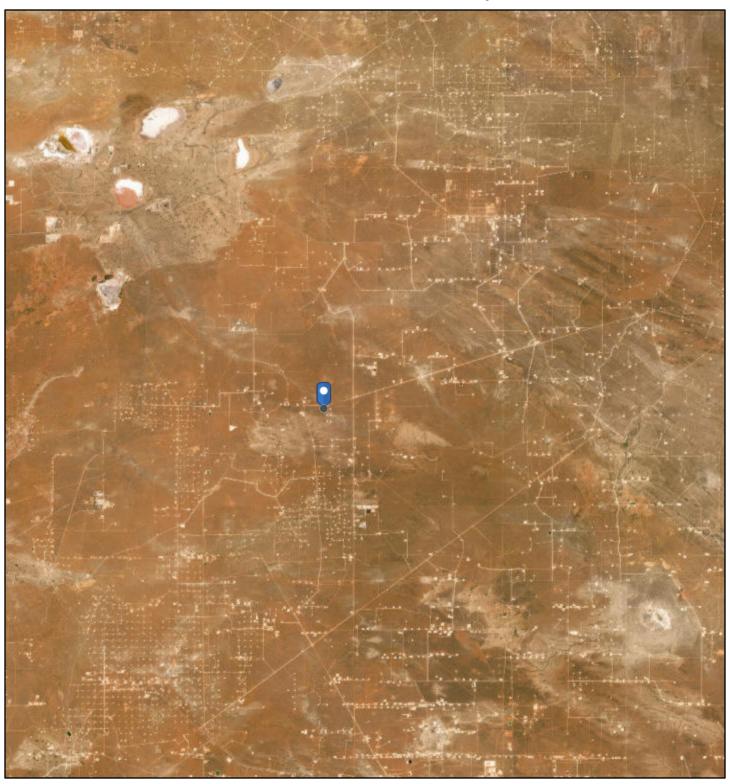
Lake

Other

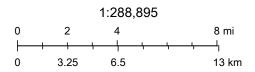
Riverine

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

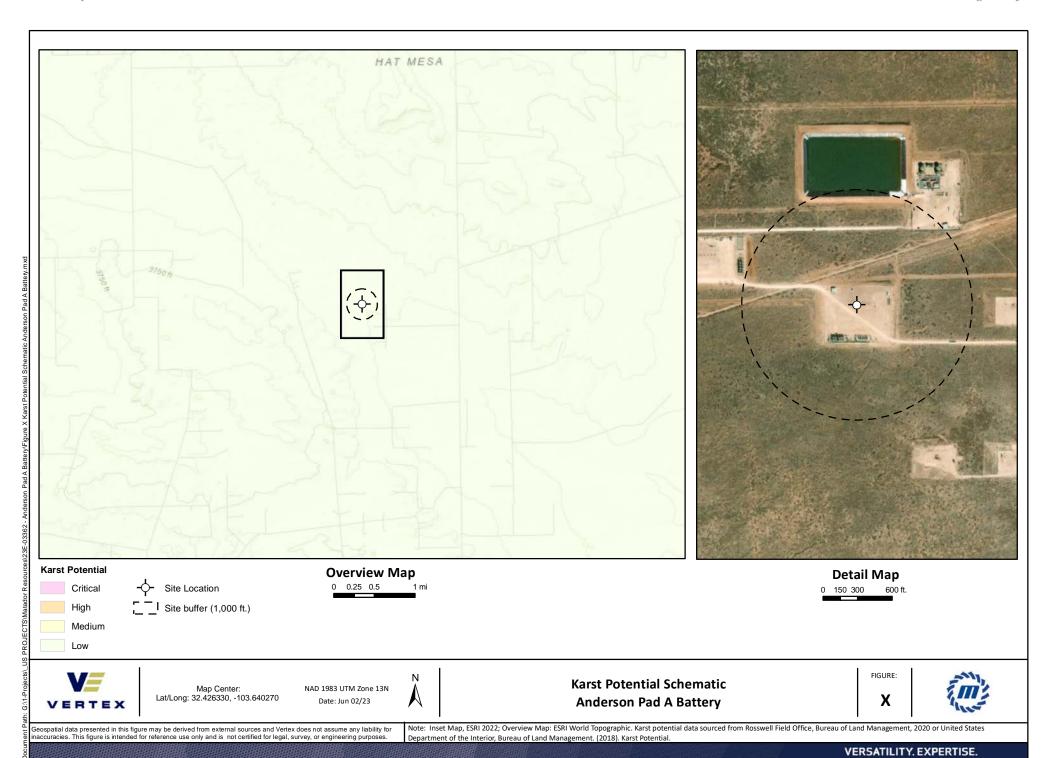
Anderson Pad A Battery



6/13/2023, 2:42:41 PM



Earthstar Geographics, NM Coal Mine Reclamation Program, NM EMNRD



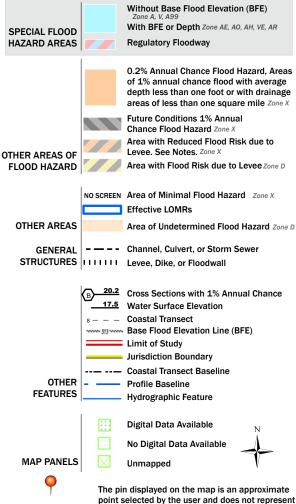
OReleas 250 Im 5 9/21/2023 P.997:22 PM

Received by OCD: 6/27/2023 9:33:25,AM National Flood Hazard Layer FIRMette



Legend

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



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

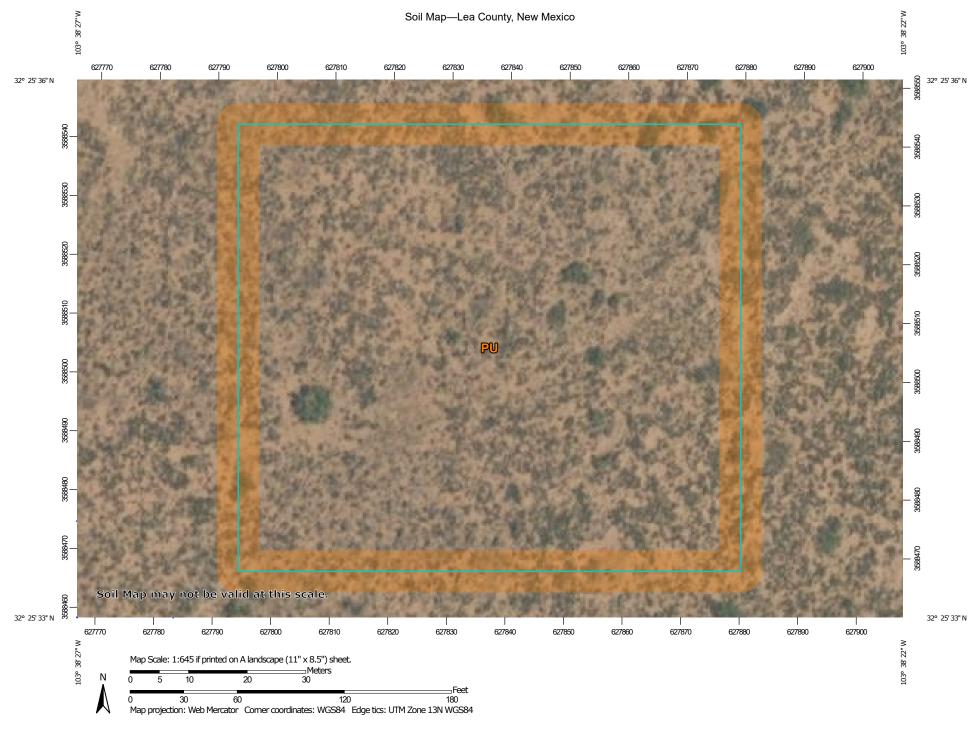
an authoritative property location.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/31/2023 at 2:58 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.



2.000



MAP LEGEND

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Water Features

Transportation

Background

Spoil Area

Stony Spot

Wet Spot

Other

Rails

US Routes

Major Roads

Local Roads

Very Stony Spot

Special Line Features

Streams and Canals

Interstate Highways

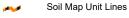
Aerial Photography

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons



Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Candfill

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

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 19, Sep 8, 2022

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PU	Pyote and Maljamar fine sands	1.6	100.0%
Totals for Area of Interest		1.6	100.0%

Lea County, New Mexico

PU—Pyote and Maljamar fine sands

Map Unit Setting

National map unit symbol: dmqq Elevation: 3,000 to 3,900 feet

Mean annual precipitation: 10 to 12 inches Mean annual air temperature: 60 to 62 degrees F

Frost-free period: 190 to 205 days

Farmland classification: Not prime farmland

Map Unit Composition

Pyote and similar soils: 46 percent Maljamar and similar soils: 44 percent

Minor components: 10 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 30 inches: fine sand

Bt - 30 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

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

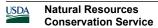
mmhos/cm)

Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 6e



Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Ecological site: R070BD003NM - Loamy Sand

Hydric soil rating: No

Description of Maljamar

Setting

Landform: Plains

Landform position (three-dimensional): Rise

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Sandy eolian deposits derived from sedimentary

rock

Typical profile

A - 0 to 24 inches: fine sand

Bt - 24 to 50 inches: sandy clay loam
Bkm - 50 to 60 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 40 to 60 inches to petrocalcic

Drainage class: Well drained Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): Very low

to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum 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 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B

Ecological site: R070BD003NM - Loamy Sand

Hydric soil rating: No

Minor Components

Kermit

Percent of map unit: 10 percent

Ecological site: R070BC022NM - Sandhills

Hydric soil rating: No

Data Source Information

Soil Survey Area: Lea County, New Mexico Survey Area Data: Version 19, Sep 8, 2022



Ecological site R070BD003NM Loamy Sand

Accessed: 05/26/2023

General information

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

Figure 1. Mapped extent

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

Associated sites

R070BD004NM	Sandy Sandy	
R070BD005NM	Deep Sand Deep Sand	

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

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

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

Table 2. Representative physiographic features

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

Climatic features

The average annual precipitation ranges from 8 to 13 inches. Variations of 5 inches, more or less, are common. Over 80 percent of the precipitation falls from April through October. Most of the summer precipitation comes in the form of high intensity-short duration thunderstorms.

Temperatures are characterized by distinct seasonal changes and large annual and diurnal temperature changes.

The average annual temperature is 61 degrees with extremes of 25 degrees below zero in the winter to 112 degrees in the summer.

The average frost-free season is 207 to 220 days. The last killing frost being late March or early April and the first killing frost being in later October or early November.

Temperature and rainfall both favor warm season perennial plant growth. In years of abundant spring moisture, annual forbs and cool season grasses can make up an important component of this site. Strong winds blow from the southwest from January through June, which accelerates soil drying during a critical period for cool season plant growth.

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

Table 3. Representative climatic features

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

Influencing water features

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

Soil features

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

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

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

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

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

Characteristic soils are:

Maljamar

Berino

Parjarito

Palomas

Wink

Pyote

Table 4. Representative soil features

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

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

Ecological dynamics

Overview

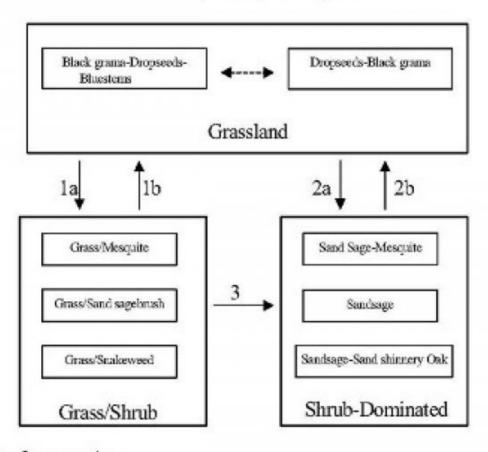
The Loamy Sand site intergrades with the Deep Sand and Sandy sites (SD-3). These sites can be differentiated by surface soil texture and depth to a textural change. Loamy Sand and Deep Sand sites have coarse textured (sands and loamy sand) surface soils while Sandy sites have moderately coarse textured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

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

State and transition model

Plant Communities and Transitional Pathways (diagram):

MLRA-42, SD-3, Loamy Sand



- Drought, over grazing, fire suppression.
- 1b. Brush control, prescribed grazing
- 2.a Severe loss of grass cover, fire suppression, erosion.
- 2b. Brush control, seeding, prescribed grazing.
- Continued loss of grass cover, erosion.

State 1 Historic Climax Plant Community

Community 1.1 Historic Climax Plant Community

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

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

Table 5. Annual production by plant type

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

Table 6. Ground cover

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

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

Jai	ı Fe	eb	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





*Blads grams/Mesquite community, with some dropseeds, threesoms, and scattered sand shimmery oak *Ones cover low to moderate

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

State 3 Shrub Dominated

Community 3.1 Shrub Dominated

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

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

Additional community tables

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

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

Animal community

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

Where mesquite has invaded, most resident birds and scissor-tailed flycatcher, morning dove and Swainson's hawk, nest. Vesper and grasshopper sparrows utilize the site during migration.

Hydrological functions

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

Hydrologic Interpretations

Soil Series Hydrologic Group

Berino B

Kinco A

Maljamar B

Pajarito B

Palomas B

Wink B

Pyote A

Recreational uses

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

Wood products

This site has no potential for wood products.

Other products

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

Other information

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

Inventory data references

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

Other references

Literature Cited:

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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.

McDaniel, Kirk C.; Pieper, Rex D.; Loomis, Lyn E.; Osman, Abdelgader A. 1984. Taxonomy and ecology of perennial snakeweeds in New Mexico. Bulletin 711. Las Cruces, NM: New Mexico State University, Agricultural Experiment Station. 34 p.

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.

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Contributors

Don Sylvester Quinn Hodgson

Rangeland health reference sheet

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

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

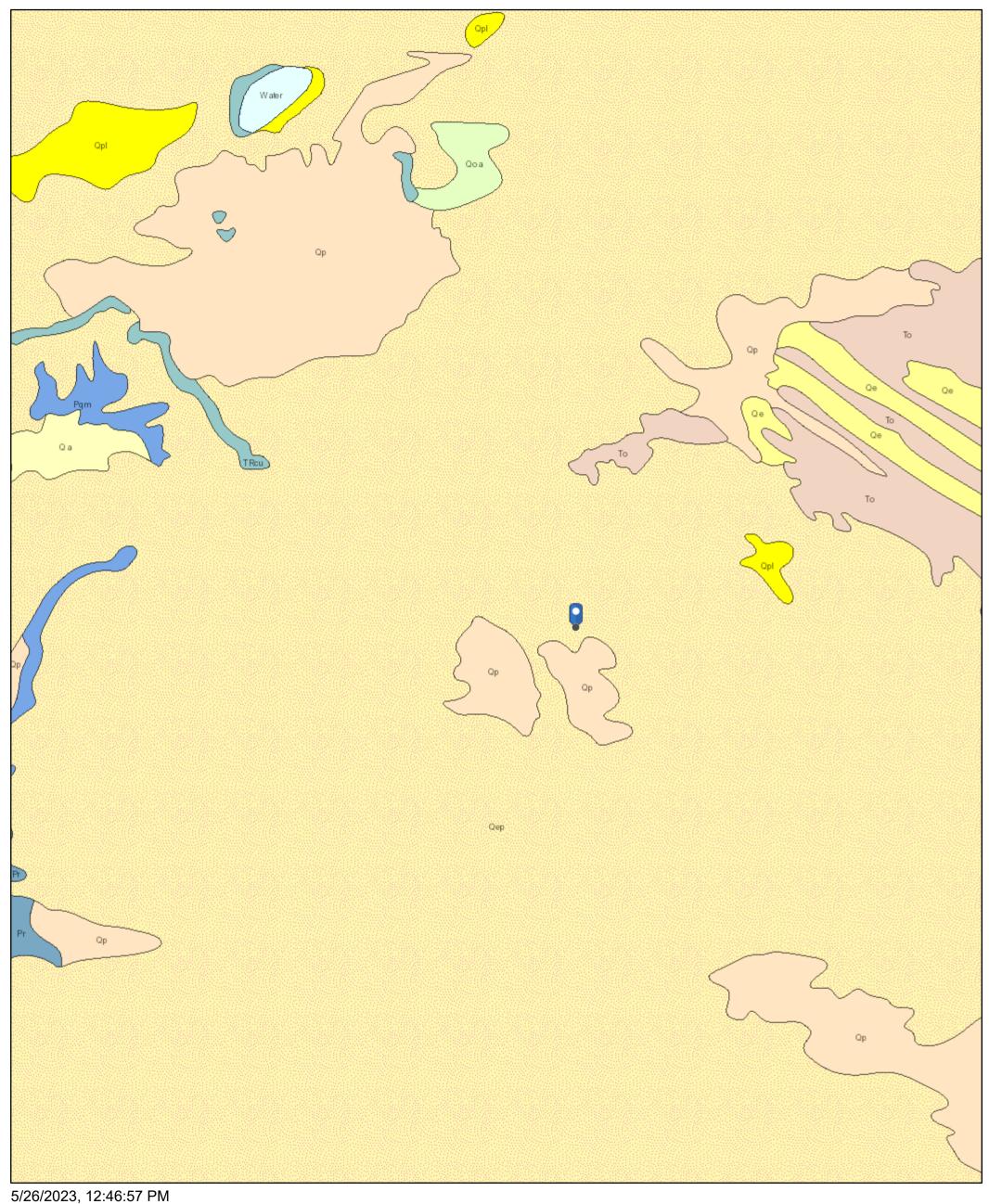
Indicators

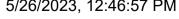
	diction 3		
1.	Number and extent of rills:		
2.	Presence of water flow patterns:		
3.	Number and height of erosional pedestals or terracettes:		
4.	Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):		
5.	Number of gullies and 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:

Anderson Pad A Battery



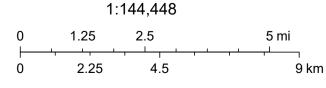


Lithologic Units

Playa—Alluvium and evaporite deposits (Holocene)

Water—Perenial standing water

Qa—Alluvium (Holocene to upper Pleistocene)



Earthstar Geographics, NMBGMR

ATTACHMENT 4



Dhugal Hanton <vertexresourcegroupusa@gmail.com>

nAPP2314462488

2 messages

Dhugal Hanton <vertexresourcegroupusa@gmail.com>

Mon, Jun 5, 2023 at 2:36 PM

To: "Enviro, OCD, EMNRD" < OCD. Enviro@emnrd.nm.gov>

Cc: "CFO_Spill, BLM_NM" <blm_nm_cfo_spill@blm.gov>, Clinton Talley <clinton.talley@matadorresources.com>

All,

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

nAPP2314462488 DOR: 05/24/2023 Site Name: Anderson Pad A Battery

This work will be completed on behalf of Matador Production Company

On Thursday, June 8, 2023 at approximately 2:30 p.m., Monica Peppin will be on site to conduct the liner inspection. She can be reached at 575-361-9880. If you need directions to the site, please do not hesitate to contact her. If you have any questions or concerns regarding this notification, please give me a call at 575-361-9880.

Thank you,

Monica Peppin, A.S.

Project Manager

Vertex Resource Services Inc. 3101 Boyd Drive, Carlsbad, NM 88220

P 575.725.5001 Ext. 711 C 575.361.9880

www.vertex.ca

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Enviro, OCD, EMNRD < OCD.Enviro@emnrd.nm.gov>

Tue, Jun 6, 2023 at 9:20 AM

To: Dhugal Hanton <vertexresourcegroupusa@gmail.com>

Cc: "Bratcher, Michael, EMNRD" <mike.bratcher@emnrd.nm.gov>, "Velez, Nelson, EMNRD" <Nelson.Velez@emnrd.nm.gov>

Monica,

Thank you for the notification. Please include a copy of this and all notifications in the remedial and/or closure reports to ensure the notifications are documented in the project file.

JH

Jocelyn Harimon • Environmental Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

1220 South St. Francis Drive | Santa Fe, NM 87505

(505)469-2821 | Jocelyn.Harimon@emnrd.nm.gov

http://www.emnrd.nm.gov



From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>

Sent: Monday, June 5, 2023 2:36 PM

To: Enviro, OCD, EMNRD < OCD. Enviro@emnrd.nm.gov>

Cc: CFO_Spill, BLM_NM <blm_nm_cfo_spill@blm.gov>; Clinton Talley <clinton.talley@matadorresources.com>

Subject: [EXTERNAL] nAPP2314462488

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

[Quoted text hidden]

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

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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 233220

CONDITIONS

Operator:	OGRID:
MATADOR PRODUCTION COMPANY	228937
One Lincoln Centre	Action Number:
Dallas, TX 75240	233220
	Action Type:
	[C-141] Release Corrective Action (C-141)

CONDITIONS

Created By		Condition Date
nvelez	Liner inspection is approved. Release Resolved.	9/21/2023