

July 27, 2023

Vertex Project #: 23E-03325

| Spill Closure Report: | North Brushy Draw Federal 35 #002H           |
|-----------------------|--|
|                       | Section 35, Township 25 South, Range 29 East |
|                       | API: 30-015-40006                            |
|                       | County: Eddy                                 |
|                       | Incident Report: nAPP2314969734              |

Prepared For:WPX Energy Permian, LLC5315 Buena Vista DriveCarlsbad, New Mexico 88220

New Mexico Oil Conservation Division – District 2 – Artesia 811 South 1<sup>st</sup> Street Artesia, New Mexico 88210

WPX Energy Permian, LLC (WPX) retained Vertex Resource Services Inc. (Vertex) to conduct a Spill Assessment for a release of produced water due to a water tank overflow at North Brushy Draw Federal 35 #002H, API 30-015-40006, Incident nAPP2314969734 (hereafter referred to as "North Brushy"). WPX provided spill notification to the New Mexico Oil Conservation Division (NMOCD) District 2, 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 32.0926247, W -103.9486084.

## Background

The site is located approximately 11.63 miles southeast of Malaga, New Mexico (Google Inc., 2023). The legal location for the site is Section 35, Township 25 South and Range 29 East in Eddy 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 is Pajarito loamy fine sand complex. It tends to be well drained with very low 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, dunes, and interdunes at elevations of 2,700 to 5,500 feet above sea level. The climate is semi-arid, with annual precipitation ranging between 5 to 15 inches. Historically, the plant community has grassland aspect, dominated by grasses with shrubs. Black grama is dominant with a mixture of creosotebush, honey mesquite, broom snakeweed, and sand sage. Overgrazing and extended drought can reduce grass cover (United States Department of Agriculture, Natural Resources Conservation Service, 2023).

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There is no surface water located at North Brushy. The nearest significant watercourse, as defined in Subsection P of 19.15.17.7 *Mexico Administrative Code* (NMAC; New Mexico Oil Conservation Division, 2018), is the Pecos River located approximately 3.6 miles southwest of the site (Google Inc., 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. North Brushy is located within a 100-year floodplain and is within 300 feet of a wetland.

## **Incident Description**

The spill occurred on May 15, 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 15, 2023, and involved the release of approximately 82 barrels (bbl.) of produced water into the lined containment. Approximately 82 bbl. of free fluid was removed during initial spill clean-up. The NMOCD C-141 Report: nAPP2314969734 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 United States Geological Survey National Water Information Mapping System (United States Geological Survey, 2023) and Office of the State Engineer's (NMOSE) 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 a nearby wellsite 0.21 miles west of North Brushy (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. Depth to groundwater was determined to be greater than 101 feet below ground surface and was registered with the NMOSE database. Documentation used in Closure Criteria Determination research is included in Attachment 3. North Brushy Draw Federal 35 #002H, nAPP2314969734

2023 Spill Assessment and Closure July 2023

| Site Nam  | e: North Brushy Draw Federal 35 #002H                  |                                     |                  |  |
|-----------|--|-------------------------------------|------------------|--|
|           | rdinates:  | X: 32.0926247                       | Y: -103.9486084  |  |
| Site Spec | ific Conditions  | Value                               | Unit             |  |
| 1         | Depth to Groundwater                                   | >101                                | feet             |  |
| 2         | Within 300 feet of any continuously flowing            | 40.000                              | <b>c</b> .       |  |
| 2         | watercourse or any other significant watercourse       | 19,029                              | feet             |  |
| 2         | Within 200 feet of any lakebed, sinkhole or playa lake | 25 701                              | fact             |  |
| 3         | (measured from the ordinary high-water mark)           | 35,781                              | feet             |  |
| 4         | Within 300 feet from an occupied residence, school,    | 16 246                              | feet             |  |
| 4         | hospital, institution or church                        | 46,346                              | Teet             |  |
|           | i) Within 500 feet of a spring or a private, domestic  |                                     |                  |  |
| 5         | fresh water well used by less than five households for | 46,346                              | feet             |  |
| Э         | domestic or stock watering purposes, <b>or</b>         |                                     |                  |  |
|           | ii) Within 1000 feet of any fresh water well or spring | 46,346                              | feet             |  |
|           | Within incorporated municipal boundaries or within a   |                                     |                  |  |
|           | defined municipal fresh water field covered under a    |                                     |                  |  |
| 6         | municipal ordinance adopted pursuant to Section 3-27-  | No                                  | (Y/N)            |  |
|           | 3 NMSA 1978 as amended, unless the municipality        |                                     |                  |  |
|           | specifically approves                                  |                                     |                  |  |
| 7         | Within 300 feet of a wetland                           | 246                                 | feet             |  |
| 8         | Within the area overlying a subsurface mine            | No                                  | (Y/N)            |  |
|           |  |                                     | Critical         |  |
| 9         | Within an unstable area (Karst Map)                    | Low                                 | High<br>Medium   |  |
|           |  |                                     | Low              |  |
|           |  |                                     |                  |  |
| 10        | Within a 100-year Floodplain                           | 100                                 | year             |  |
| 11        | Soil Type  | Pajarito loamy fine                 |                  |  |
| <b>-</b>  |  | sand                                |                  |  |
| 12        | Ecological Classification                              | Loamy Sand                          |                  |  |
|           |  | · ·                                 | <u> </u>         |  |
| 13        | Geology  | Qep                                 |                  |  |
|           |  |                                     |                  |  |
|           | NMAC 10 15 20 12 5 (Table 1) Cleaning Criteria         | <e0'< td=""><td>&lt;50'</td></e0'<> | <50'             |  |
|           | NMAC 19.15.29.12 E (Table 1) Closure Criteria          | <50'                                | 51-100'<br>>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.

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| WPX Energy Permian, LLC                            |  |
|--|--|
| North Brushy Draw Federal 35 #002H, nAPP2314969734 |  |

Based on data included in the closure criteria determination worksheet, the release at North Brushy 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          | 600 mg/kg |  |
| < 50 feet   | TPH (GRO+DRO+MRO) | 100 mg/kg |  |
| < 50 leet   | 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 July 14, 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 July 11, 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 during the initial inspection of the site. As evidenced in the DFR (Attachment 2), liner integrity was confirmed.

## **Closure Request**

Vertex recommends no remediation action to address the release at North Brushy. 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 nAPP2314969734 be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. WPX 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 North Brushy Draw Federal 35 #002H.

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#### WPX Energy Permian, LLC

North Brushy Draw Federal 35 #002H, nAPP2314969734

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

Monica Peppin, A.S. PROJECT MANAGER, REPORTING

July 27, 2023

Date

## 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

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#### 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
- United States Geological Survey. (2023). *National Water Information System: Mapper*. Retrieved from Water Resources of the United States—National Water Information System (NWIS) Mapper (usgs.gov).

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#### WPX Energy Permian, LLC North Brushy Draw Federal 35 #002H, nAPP2314969734

#### Limitations

This report has been prepared for the sole benefit of WPX Energy Permian, LLC. 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 WPX Energy Permian, LLC. 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.

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## **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    | nAPP2314969734 |
|----------------|----------------|
| District RP    |                |
| Facility ID    |                |
| Application ID |                |

## **Responsible Party**

| Responsible Party WPX Energy Permain, LLC                          | OGRID 246289                                |
|--|---|
| Contact Name Jim Raley   | Contact Telephone 575-689-7597              |
| Contact email Jim.Raley@dvn.com                                    | Incident # (assigned by OCD) nAPP2314969734 |
| Contact mailing address 5315 Buena Vista Drive, Carlsbad, NM 88220 |   |

## **Location of Release Source**

Latitude \_\_\_\_\_32.0926247\_\_\_

Longitude \_\_\_\_-103.9486084\_ (NAD 83 in decimal degrees to 5 decimal places)

| Site Name: NORTH BRUSHY DRAW FEDERAL 35 #002H | Site Type Oil Well                |
|---|-----------------------------------|
| Date Release Discovered: 5/15/2023            | API# (if applicable) 30-015-40006 |

| Unit Letter | Section | Township | Range | County |
|-------------|---------|----------|-------|--------|
| А           | 35      | 25S      | 29E   | Eddy   |

Surface Owner: State Federal Tribal Private (Name: \_\_\_\_\_

## Nature and Volume of Release

| Mater                   | ial(s) Released (Select all that apply and attach calculations or specific     | c justification for the volumes provided below)         |
|-------------------------|--|---|
| Crude Oil               | Volume Released (bbls)   | Volume Recovered (bbls)                                 |
| Produced Water          | Volume Released (bbls) 82  | Volume Recovered (bbls) 82                              |
|                         | Is the concentration of dissolved chloride in the produced water >10,000 mg/l? | Yes No  |
| Condensate              | Volume Released (bbls)   | Volume Recovered (bbls)                                 |
| Natural Gas             | Volume Released (Mcf)  | Volume Recovered (Mcf)                                  |
| Other (describe)        | Volume/Weight Released (provide units)   | Volume/Weight Recovered (provide units)                 |
| Course of Dalasses Down |  | nume This sourced mechanical water tents to overflow 92 |

Cause of Release: Power was inadvertently shut off to produced water transfer pump. This caused produced water tank to overflow 82 bbls of produced water to lined secondary containment. Fluids were fully recovered by vac truck and disposed.

Release Volume = Recovered Volume from lined secondary containment.

| <b>Received by</b><br>Form C-141 | OCD: | 8/1/2023 | 2:47:23 | PM.      |     |        |
|----------------------------------|------|----------|---------|----------|-----|--------|
| Form C-141                       |      |          |         | State of | New | Mexico |

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| Was this a major<br>release as defined by<br>19.15.29.7(A) NMAC? | If YES, for what reason(s) does the responsible party consider this a major release?<br>Volume exceeded 25 bbls.  |
|--|---|
| 🛛 Yes 🗌 No   |   |
|  |   |
|  | otice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? nd Rosa Romero on 5/15/2023 |

## **Initial Response**

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

 $\boxtimes$  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.

 $\boxtimes$  All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not 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: \_\_Jim Raley\_\_\_\_\_ Title: \_\_\_Environmental Professional\_\_\_\_\_

Signature: \_\_\_\_\_\_ Date: \_\_\_\_\_\_ Date: \_\_\_\_\_\_

email: \_\_\_\_jim.raley@dvn.com\_\_\_\_\_

OCD Only

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

Telephone: 575-689-7597

Received by OCD: 8/1/2023 2:47:23 PM Form C-141 State of New Mexico

Oil Conservation Division

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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>&gt;101</u> (ft bgs) |
|---|-------------------------|
| Did this release impact groundwater or surface water?   | 🗌 Yes 🔀 No              |
| Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?  | 🗌 Yes 🗶 No              |
| Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?  | 🗌 Yes 🗶 No              |
| Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?  | 🗌 Yes 🗶 No              |
| Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes? | 🗌 Yes 🔀 No              |
| Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?  | 🗌 Yes 🔀 No              |
| Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?   | 🗌 Yes 🔀 No              |
| Are the lateral extents of the release within 300 feet of a wetland?  | 🗌 Yes 🗶 No              |
| Are the lateral extents of the release overlying a subsurface mine?   | Yes X No                |
| Are the lateral extents of the release overlying an unstable area such as karst geology?  | Yes X No                |
| Are the lateral extents of the release within a 100-year floodplain?  | Yes X No                |
| Did the release impact areas <b>not</b> 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.
- X Field data
- MA Data table of soil contaminant concentration data
- X Depth to water determination
- X Determination of water sources and significant watercourses within <sup>1</sup>/<sub>2</sub>-mile of the lateral extents of the release
- MA Boring or excavation logs
- X Photographs including date and GIS information
- X Topographic/Aerial maps
- NA 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.

| Received by OCD: 8/1/2   | <i>223 2:47:23 PM</i><br>State of New Mexico |   |  |   | Page 12 of 6   |
|--|--|---|--|---|--|
| Page 4   | Oil Conservation Division                    |   |  | Incident ID   | nAPP2314969734   |
| l age 4  | On Conservation Division                     |   |  | District RP   |  |
|  |  |   |  | Facility ID   |  |
|  |  |   |  | Application ID  |  |
| regulations all operators a<br>public health or the enviro<br>failed to adequately inves | Rhy  | otifications and per<br>OCD does not re<br>reat to groundwat<br>of responsibility for | rform co<br>lieve the<br>er, surfa<br>or compl<br>nvironm<br>/2023 | prrective actions for rele<br>e operator of liability sh<br>ce water, human health<br>iance with any other fe<br>ental Professional | eases which may endanger<br>ould their operations have<br>or the environment. In |
| OCD Only<br>Received by: <u>Shelly W</u>   | Vells  | Date:   | 8/1/20   | )23   |  |

**Received by OCD: 8/1/2023 2:47:23 PM** Form C-141 State of New Mexico

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Oil Conservation Division

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# **Remediation Plan**

| <b><u>Remediation Plan Checklist</u></b> : Each of the following items must be  | included in the plan.  |
|---|--|
| <ul> <li>Detailed description of proposed remediation technique</li> <li>Scaled sitemap with GPS coordinates showing delineation points</li> <li>Estimated volume of material to be remediated</li> <li>Closure criteria is to Table 1 specifications subject to 19.15.29.12</li> <li>Proposed schedule for remediation (note if remediation plan time</li> </ul>           | 2(C)(4) NMAC   |
| <b>Deferral Requests Only:</b> Each of the following items must be conf   | irmed as part of any request for deferral of remediation.  |
| Contamination must be in areas immediately under or around prodeconstruction.   | duction 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,  | the environment, or groundwater.   |
| I hereby certify that the information given above is true and complete  |  |
| rules and regulations all operators are required to report and/or file ce<br>which may endanger public health or the environment. The acceptan<br>liability should their operations have failed to adequately investigate<br>surface water, human health or the environment. In addition, OCD a<br>responsibility for compliance with any other federal, state, or local la | ertain release notifications and perform corrective actions for releases<br>ce of a C-141 report by the OCD does not relieve the operator of<br>and remediate contamination that pose a threat to groundwater,<br>cceptance of a C-141 report does not relieve the operator of |
| Printed Name: Jim Raley   | Title: Environmental Professional  |
| Signature: fin Rthy   | Date: <u>8/1/2023</u>  |
| email:jim.raley@dvn.com   | Telephone:575-689-7597   |
| OCD Only  |  |
| Received by: <u>Shelly Wells</u>  | Date: <u>8/1/2023</u>  |
| Approved Approved with Attached Conditions of A   | Approval Denied Deferral Approved  |
| Signature: I  | 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.

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

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

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

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

 $\overline{\mathbf{X}}$  Description of remediation activities

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

| Printed Name: Jim Raley                  | Title: Environmental Professional   |
|--|---|
| Signature:                               | Date:8/1/2023   |
| email:jim.raley@dvn.com                  | Telephone:575-689-7597  |
|  |   |
| OCD Only                                 |   |
| Received by: Shelly Wells                | Date: <u>8/1/2023</u>   |
|  | of liability should their operations have failed to adequately investigate and<br>water, human health, or the environment nor does not relieve the responsible<br>or regulations. |
| Closure Approved by: <u>Shelly Wells</u> | Date: <u>9/13/2023</u>  |
| Printed Name: Shelly Wells               | Title: Environmental Specialist-Advanced  |

## **ATTACHMENT 2**



| Devon Energy<br>Corporation           | Inspection Date:  | 7/14/2023   |
|---------------------------------------|---|---|
| North Brushy Draw 35<br>Federal #002H | Report Run Date:  | 7/18/2023 1:50 PM   |
| Jim Raley                             | API #:  |   |
| 405-318-4697                          |   |   |
|                                       | Project Owner:  | Jim Raley   |
|                                       | Project Manager:  | Monica Peppin   |
|                                       | Summary of T  | limes   |
| 7/14/2023 11:28 AM                    |   |   |
| 7/14/2023 12:44 PM                    |   |   |
|                                       | Corporation<br>North Brushy Draw 35<br>Federal #002H<br>Jim Raley<br>405-318-4697<br>7/14/2023 11:28 AM | CorporationNorth Brushy Draw 35Federal #002HJim Raley405-318-4697Project Owner:Project Manager:Summary of 17/14/2023 11:28 AM |

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#### **Field Notes**

12:32 Liberia intact and shows no signs of damage. No rips tears or holes and able to contain release

**Next Steps & Recommendations** 

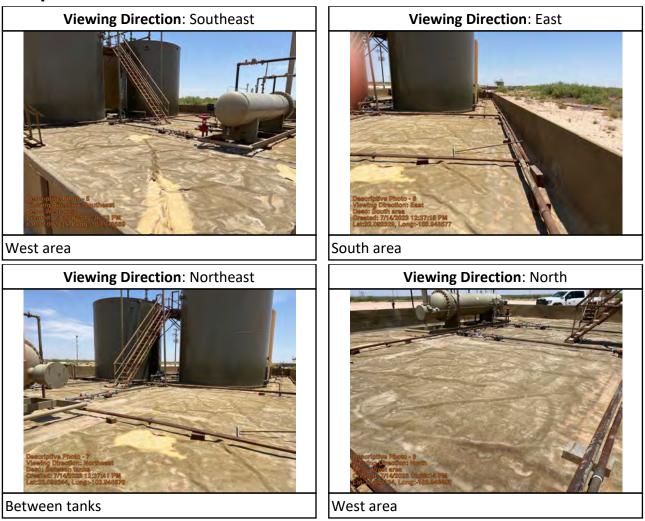
1 Closure report

2 Submit to OCD for closure



# **Site Photos** Viewing Direction: North Viewing Direction: Northwest East side South side Viewing Direction: Northwest Viewing Direction: South Between tanks East area







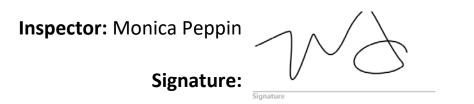


Near separator

Run on 7/18/2023 1:50 PM UTC



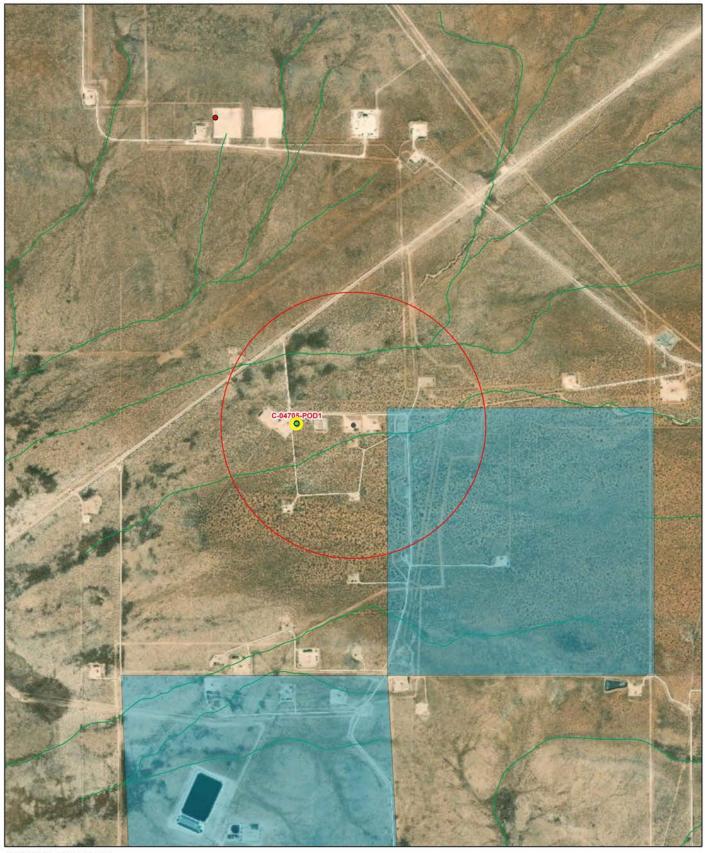
## **Daily Site Visit Signature**

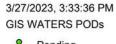


•

## **ATTACHMENT 3**

Received by OCD: 8/1/2023 2:47:23 PM North Brushy Draw Federal 35 #002H







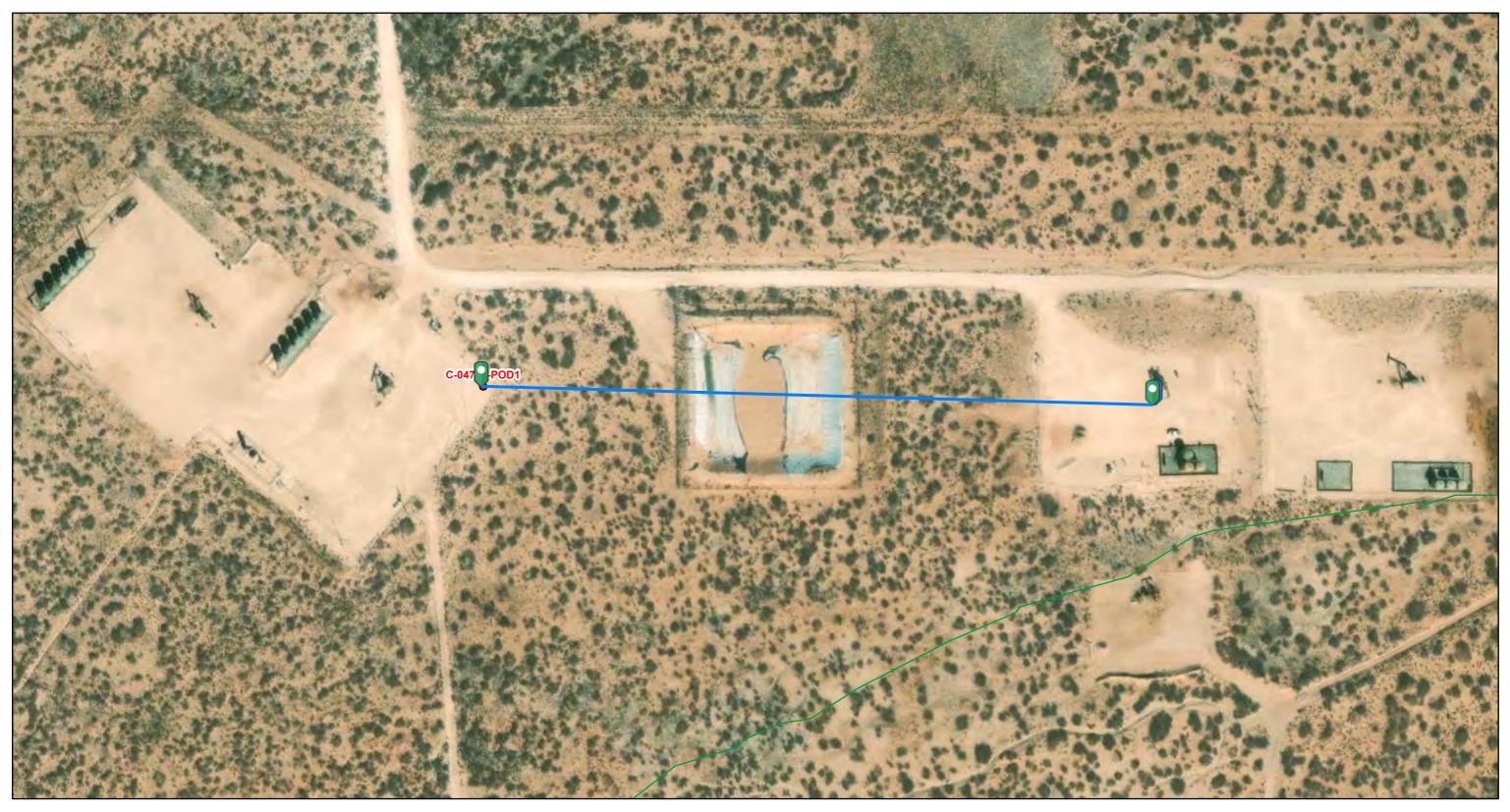
**NHD** Flowlines



| 0 | 0.17 | 0.35 | 0.7 mi           |
|---|------|------|------------------|
| 0 | 0.28 | 0.55 | ,',','<br>1.1 km |

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

# North Brushy Draw Federal 35 #002H



7/24/2023, 6:40:02 PM

Override 1

OSE District Boundary SiteBoundaries

GIS WATERS PODs NHD Flowlines

Plugged Stream River

|   |            | 1:2,257            |          |
|---|------------|--------------------|----------|
| 0 | 0.02       | 0.04               | 0.09 mi  |
|   | - <u>\</u> | , l <sub>i</sub> . | <u> </u> |
| 0 | 0.04       | 0.07               | 0.15 km  |

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



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

August 18, 2022

DII-NMOSE 1900 W 2<sup>nd</sup> Street Roswell, NM 88201

Hand Delivered to the DII Office of the State Engineer

Re: Well Record C-4705 Pod-1

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-4705 Pod-1.

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

Sincerely,

Groon Middle

Lucas Middleton

Enclosures: as noted above

99106 feb 566 egil.



# WELL RECORD & LOG

# OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

| LOCATION                      | POD 1 (TW<br>well owner<br>Devon Ener           | R NAME(S)<br>gy |                               | n/a   |   |   | C-4705<br>PHONE (OPTIC<br>575-748-183 |                        |                          |  |   |
|-------------------------------|---|-----------------|-------------------------------|---|---|---|---------------------------------------|------------------------|--------------------------|--|---|
| WELL                          | WELL OWNER<br>6488 7 Rive                       |                 | ADDRESS                       |   |   |   | CITY<br>Artesia                       |                        |                          | STATE<br>NM 88210  | ZIP   |
| GENERAL AND WELL LOCATION     | WELL<br>LOCATION<br>(FROM GPS<br>DESCRIPTION    | ) LON           | TITUDE<br>NGITUDE             | GREES MINUTES<br>32 5<br>103 57<br>STREET ADDRESS AND COMMO                           | SECONDS<br>33.74<br>8.17<br>N LANDMARKS | N<br>W<br>– PLS   | * DATUM REC                           | QUIRED: WO             | GS 84                    | TH OF A SECOND   |   |
| 1.                            | NE NW NE<br>LICENSE NO.<br>1249<br>DRILLING STA | ,               | C25S R29E NMPM                |   |   | E HO  | LE DEPTH (FT)                         |                        | Atkins Engi              | LLING COMPANY<br>ineering Associates, I<br>IT ENCOUNTERED (FT) |   |
|                               | 2/22/2<br>COMPLETED                             | -               | 2/22/23                       | Soil boring   | OW (UNCONFIN                            |   |                                       | WATER LE               |                          |  | M 88210<br>DF A SECOND<br>E AVAILABLE<br>ING COMPANY<br>ering Associates, Inc.<br>ENCOUNTERED (FT)<br>n/a<br>DATE STATIC MEASURED<br>3/2/23<br>RE IF PITLESS ADAPTER IS |
| DRILLING & CASING INFORMATION | DRILLING FLU<br>DRILLING ME                     |                 | AIR                           | 5.5°  | VES - SPECIFY:<br>HER - SPECIFY:        | F   | (FT)<br>Hollow Stem A                 | Auger                  | CHECK                    | HERE IF PITLESS ADA  |   |
|                               | DEPTH (1<br>FROM                                | èet bgl)<br>TO  | BORE HOLE<br>DIAM<br>(inches) | CASING MATERIAL AN<br>GRADE<br>(include each casing string<br>note sections of screen | , and                                   | CASING<br>CONNECTION<br>TYPE<br>(add coupling diameter) |                                       | INSIDE                 | SING<br>E DIAM.<br>ches) |  | SIZE  |
| TING & C                      | 0   | 101             | ±6.25                         | Boring  |   |   |                                       |                        |                          |  |   |
| 2. DRIL                       |   |                 |                               |   |   |   |                                       | ¥4,                    |                          | 3  |   |
|                               |   |                 |                               |   |   |   |                                       |                        |                          |  |   |
| AL                            | DEPTH (1<br>FROM                                | eet bgl)<br>TO  | BORE HOLE<br>DIAM. (inches)   | LIST ANNULAR S<br>GRAVEL PACK SIZE  |   |   |                                       | AMOUNT<br>(cubic feet) |                          |  |   |
| ANNULAR MATERIAL              |   | 10              |                               |   |   |   |                                       |                        |                          |  |   |
| 3. ANNU                       |   |                 |                               |   |   |   |                                       |                        |                          |  |   |

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

| 1.1                                 | DEPTH (feet bgl)  | THICKNESS                      | COLOR AND TYPE OF MATERIAL ENCOUNTERED -   | WATER                                       | ESTIMATED<br>YIELD FOR          |  |  |
|-------------------------------------|---|--------------------------------|--|---|---------------------------------|--|--|
|                                     | FROM TO   | (feet)                         | INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONE<br>(attach supplemental sheets to fully describe all units)  | S BEARING?<br>(YES / NO)                    | WATER-<br>BEARING<br>ZONES (gpm |  |  |
|                                     | 0 4   | 4                              | Sand, fine-grained, poorly graded, unconsolidated, Brownish Tan  | Y V N                                       |                                 |  |  |
|                                     | 4 14  | 10                             | Sand, fine-grained, poorly graded, semi consolidated, with caliche, Tan/   | White Y 🗸 N                                 |                                 |  |  |
|                                     | 14 101  | 87                             | Sand, very fine-grained, poorly graded, unconsolidated, with clay, Tan B   | rown Y 🗸 N                                  |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
| 5                                   |   |                                |  | Y N   |                                 |  |  |
| 2                                   |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
| 4. III INVOLOTOROFOOIO FOO OF WEITE |   |                                |  | Y N   |                                 |  |  |
| ŕ                                   |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
| 0                                   |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
|                                     |   |                                |  | Y N   |                                 |  |  |
|                                     | METHOD USED TO H  | ESTIMATE YIELD                 | OF WATER-BEARING STRATA:   | TOTAL ESTIMATED                             |                                 |  |  |
|                                     |   | AIR LIFT                       | BAILER OTHER – SPECIFY:  | WELL YIELD (gpm):                           | 0.00                            |  |  |
| NTO YOU A NEW                       | WELL TEST STAI  | RT TIME, END TI                | ACH A COPY OF DATA COLLECTED DURING WELL TESTING, ING<br>ME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OV<br>emporary well material removed and soil boring backfilled using dre<br>clow ground surface(bgs), then hydrated bentonite chips ten feet bg | ER THE TESTING PERIO                        | D.                              |  |  |
|                                     |   |                                | sow ground surface ogs, then nydrated bentome emps ten reet og   | s to surface.                               |                                 |  |  |
|                                     | PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:<br>Shane Eldridge, Cameron Pruitt |                                |  |   |                                 |  |  |
|                                     | ,   | HEREBY CERTI                   | FIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BEI<br>DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL  | IEF, THE FOREGOING I<br>RECORD WITH THE STA | S A TRUE AN                     |  |  |
|                                     | CORRECT RECORD  | OF THE ABOVE I                 | 30 DAYS AFTER COMPLETION OF WELL DRILLING:   |   | TE ENGINEE                      |  |  |
|                                     | CORRECT RECORD  | OF THE ABOVE I                 |  | 3/9/23                                      | TE ENGINEE                      |  |  |
|                                     | CORRECT RECORD O<br>AND THE PERMIT H  | OF THE ABOVE I<br>OLDER WITHIN | 30 DAYS AFTER COMPLETION OF WELL DRILLING:   | 3/9/23<br>DATE                              |                                 |  |  |
|                                     | CORRECT RECORD O<br>AND THE PERMIT H  | OF THE ABOVE I<br>OLDER WITHIN | 30 DAYS AFTER COMPLETION OF WELL DRILLING:<br>Jackie D. Atkins<br>BR / PRINT SIGNEE NAME   |   |                                 |  |  |



# PLUGGING RECORD



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

#### I. GENERAL / WELL OWNERSHIP:

| Well 0<br>Mailin | wher:                 |                                    |   |                           |                         | Dham                      | No. 575            | 5-748-1838          |                                  |
|------------------|-----------------------|------------------------------------|---|---------------------------|-------------------------|---------------------------|--------------------|---------------------|----------------------------------|
|                  | a address:            | on Energy<br>6488 7 Rivers H       | wy                                      |                           |                         | Phon                      | e No.:             |                     |                                  |
| City:            | Artesia               |                                    |   | State:                    |                         | New Mexico                | )                  | _ Zip code:         | 88210                            |
| п. w             | ELL PLUG              | GING INFORM                        | ATION:                                  |                           |                         |                           |                    |                     |                                  |
| 1)               | Name of               | well drilling com                  | pany that plugged                       | well: Jac                 | ckie D. A               | tkins ( Atkins E          | Engineering        | Associates I        | nc.)                             |
| 2)               |                       |                                    | License No.: 124                        |                           |                         |                           |                    |                     |                                  |
| 3)               | Well plug             |                                    | ere supervised by                       | the follow                | ing well                | driller(s)/rig s          | upervisor(s        | :):                 |                                  |
| 4)               | Date wel              | l plugging began                   | 3/2/23                                  |                           | Date                    | vell plugging o           | concluded:         | 3/2/23              |                                  |
| 5)               | GPS We                | ll Location:                       | Latitude:                               | 32 (<br>103 (             | leg,<br>leg,            | 5 min,<br>57 min,         | 33.74<br>8.17      | _ sec<br>_ sec, WGS | 84                               |
| 6)               | Depth of<br>by the fo | well confirmed a llowing manner:   | t initiation of plug<br>weighted tape   | ging as: _                | 101                     | _ ft below gro            | ound level (       | bgl),               |                                  |
| 7)               | Static wa             | ter level measure                  | d at initiation of p                    | ugging:                   | n/a                     | _ft bgl                   |                    |                     |                                  |
| 8)               | Date wel              | l plugging plan o                  | f operations was a                      | pproved by                | y the Sta               | te Engineer:              | 2/7/23             |                     |                                  |
| 9)               | Were all differenc    | plugging activities between the ap | es consistent with a pproved plugging p | an approve<br>blan and th | ed pluggi<br>ie well as | ng plan?<br>it was plugge | Yes<br>d (attach a |                     | lease describe<br>es as needed): |
|                  |                       |                                    |   |                           |                         |                           |                    |                     |                                  |
|                  |                       |                                    |   |                           |                         |                           |                    |                     |                                  |
|                  |                       |                                    |   |                           |                         |                           |                    | 01:4411             |                                  |
|                  |                       |                                    |   |                           |                         |                           |                    |                     |                                  |

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

| Depth<br>(ft bgl) | Plugging<br><u>Material Used</u><br>(include any additives used) | Volume of<br><u>Material Placed</u><br>(gallons) | Theoretical Volume<br>of Borehole/ Casing<br>(gallons) | Placement<br><u>Method</u><br>(tremie pipe,<br>other) | <u>Comments</u><br>("casing perforated first", "open<br>annular space also plugged", etc.) |
|-------------------|--|--|--|---|--|
| -                 | 0-10'<br>Hydrated Bentonite                                      | Approx. 15 gallons                               | 15 gallons   | Augers  |  |
| -                 |  |  |  |   |  |
| -                 |  |  |  |   |  |
| ).                | 10'-101'<br>Drill Cuttings                                       | Approx. 145 gallons                              | 145 gallons  | Boring  |  |
| -                 |  |  | -  |   |  |
| -                 |  |  |  |   |  |
|                   |  |  |  |   |  |
| -                 |  |  |  |   |  |
| -                 |  |  |  |   |  |
|                   |  |  |  |   |  |
| -                 |  |  |  |   |  |
| -                 |  |  |  |   |  |
| -                 |  |  |  |   |  |
|                   |  |  |  |   | 144702020#42.C.  |
| ·                 |  | -  |  |   |  |
| -                 |  |  |  |   |  |
|                   | ]  | MULTIPLY   | AND OBTAIN   | 1   |  |
|                   |  | cubic feet x 7.<br>cubic yards x 201.            | 1805 = gallons   |   |  |

#### For each interval plugged, describe within the following columns:

#### **III. SIGNATURE:**

I, <u>Jackie D. Atkins</u>, 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.

Jack Atkins 3/9/23

Signature of Well Driller

Date

Version: September 8, 2009 Page 2 of 2

# 40-WR-20 Well Record and Log-packet-forsign

**Final Audit Report** 

2023-03-09

| Created:        | 2023-03-09                                   |
|-----------------|--|
| By:             | Lucas Middleton (lucas@atkinseng.com)        |
| Status:         | Signed                                       |
| Transaction ID: | CBJCHBCAABAASz0v3gmjC45ka6Ygtt5P1p6Yaqf9TXk4 |

# "40-WR-20 Well Record and Log-packet-forsign" History

- Document created by Lucas Middleton (lucas@atkinseng.com) 2023-03-09 - 8:45:32 PM GMT- IP address: 64.17.82.146
- Document emailed to Jack Atkins (jack@atkinseng.com) for signature 2023-03-09 - 8:46:14 PM GMT
- Email viewed by Jack Atkins (jack@atkinseng.com) 2023-03-09 - 8:48:34 PM GMT- IP address: 64.90.153.232
- Document e-signed by Jack Atkins (jack@atkinseng.com) Signature Date: 2023-03-09 - 8:49:18 PM GMT - Time Source: server- IP address: 64.90.153.232

Agreement completed. 2023-03-09 - 8:49:18 PM GMT

002.00 4441.0 2620 442101





USGS Home Contact USGS Search USGS

## **National Water Information System: Web Interface**

| LISGS Wate | er Resources | Data Cate |
|------------|--------------|-----------|
| 0000 1100  |              |           |

| Data Category: |   | Geographic Area: |   |    |  |
|----------------|---|------------------|---|----|--|
| Groundwater    | ~ | United States    | ~ | GO |  |

## Click to hideNews Bulletins

- Explore the NEW <u>USGS National Water Dashboard</u> interactive map to access realtime water data from over 13,500 stations nationwide.
- Full News 🔊

Groundwater levels for the Nation

Important: <u>Next Generation Monitoring Location Page</u>

## Search Results -- 1 sites found

site\_no list =

• 320532104001701

## Minimum number of levels = 1

Save file of selected sites to local disk for future upload

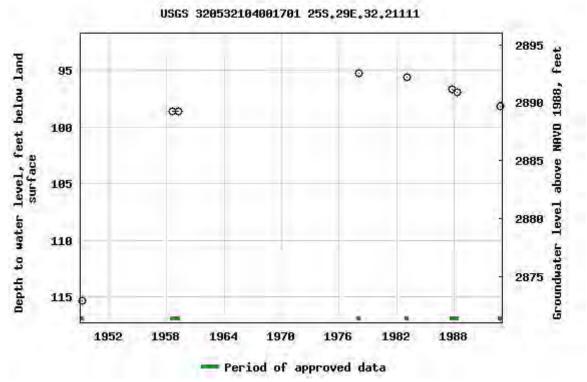
## USGS 320532104001701 25S.29E.32.21111

Available data for this site Groundwater: Field measurements V GO

Eddy County, New Mexico Hydrologic Unit Code 13060011 Latitude 32°05'32", Longitude 104°00'17" NAD27 Land-surface elevation 2,988 feet above NAVD88 The depth of the well is 128 feet below land surface. This well is completed in the Other aquifers (N99990THER) national aquifer. This well is completed in the Rustler Formation (312RSLR) local aquifer.

## Output formats

| Table of data      |  |
|--------------------|--|
| Tab-separated data |  |
| Graph of data      |  |
| Reselect period    |  |



Breaks in the plot represent a gap of at least one year between field measurements. Download a presentation-quality graph

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

Accessibility FOIA Privacy Policies and Notices

U.S. Department of the Interior | U.S. Geological Survey Title: Groundwater for USA: Water Levels URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: <u>USGS Water Data Support Team</u> Page Last Modified: 2023-03-31 11:49:50 EDT 0.6 0.49 nadww01



## Received by OCD: 8/1/2023 2:47:23 PM North Brushy Draw Federal 35 #002H

Nearest Well: USGS320532104001701 Distance: 3.32 miles DTGW: 98 feet Last Reading: 1992

320532104001701

Legend

 Page 33 of 64

North Brushy Draw Federal 35 #002H

North Brushy Draw Federal 35 #002H

1 mi

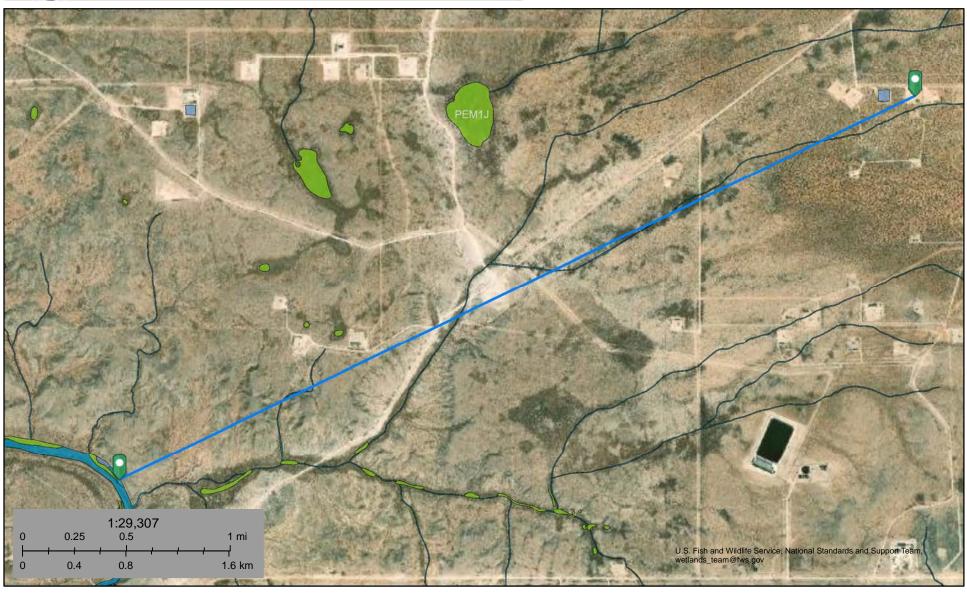
Galasa an Laging: 9/13/2023 11:22:10 AM

**U.S. Fish and Wildlife Service** 

# National Wetlands Inventory

# North Brushy Draw Federal 35 #002H

Page 34 of 64



#### March 31, 2023

#### Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- - - **Freshwater Pond**

Freshwater Emergent Wetland

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.

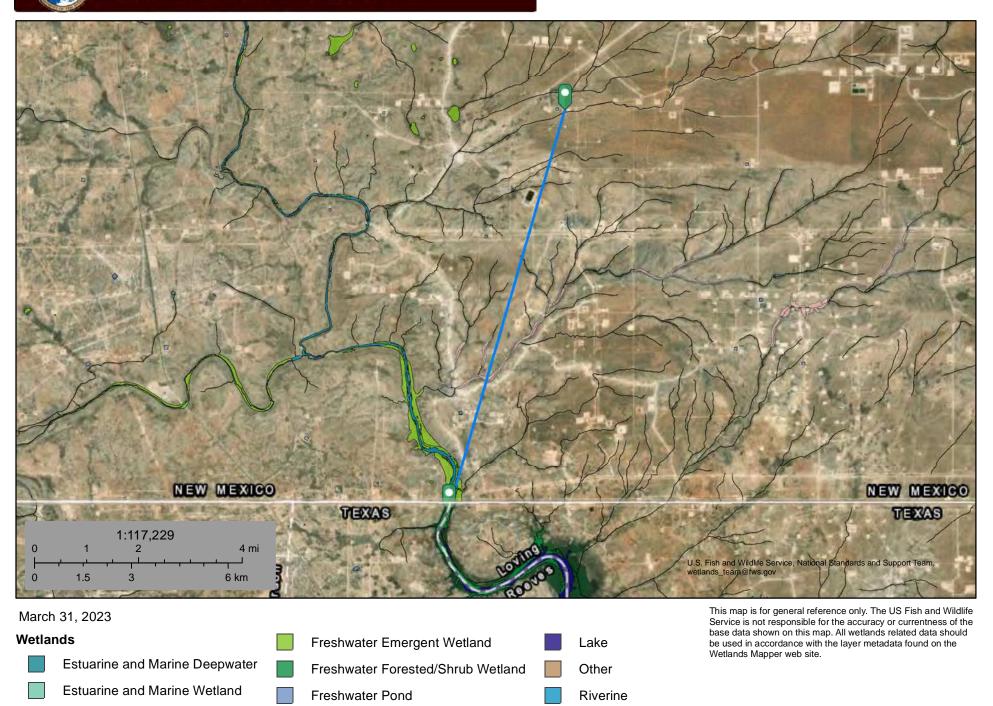
### Released to Imaging: 9/13/2023 11:22:10 AM

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

U.S. Fish and Wildlife Service

# National Wetlands Inventory

# North Brushy Draw Federal 35 #002H



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

Page 35 of 64

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Residence: 8.78 miles (46,346 feet)

Legend

Page 36 of 64

A4 ....

5 mi

North Brushy Draw Federal 35 #002H

North Brushy Draw Federal 35 #002H

NEW-MEXICO

Residence

453

GRaensed 109maging: \$13/2023 11:22:10 AM

# Received by OCD: 8/1/2023 2:47:23 PM North Brusny Draw Federal 35 #002H

744

Nearest Town: Malaga, New Mexico Distance: 11.63 miles (61,383 feet) Legend

In the Frank

Page 37 of 64

North Brushy Draw Federal 35 #002H

700gle Easth/2023 11:22:10 AM

North Brushy Draw Federal 35 #002H

National Wetlands Inventory

# North Brushy Draw Federal 35 #002H



Other

Riverine

Freshwater Forested/Shrub Wetland

**Freshwater Pond** 

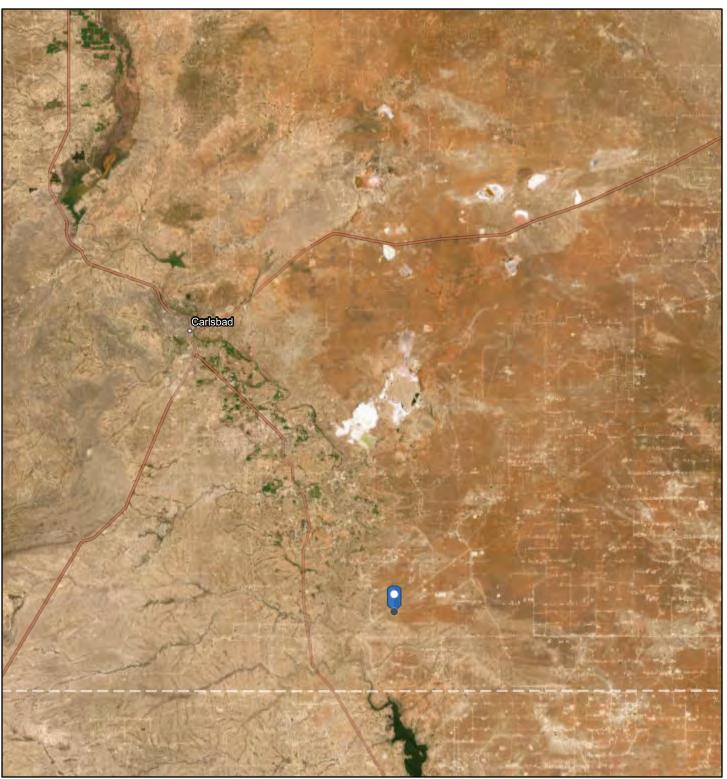
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

**Released to Imaging: 9/13/2023 11:22:10 AM** 

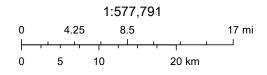
National Wetlands Inventory (NWI) This page was produced by the NWI mapper

Page 38 of 64

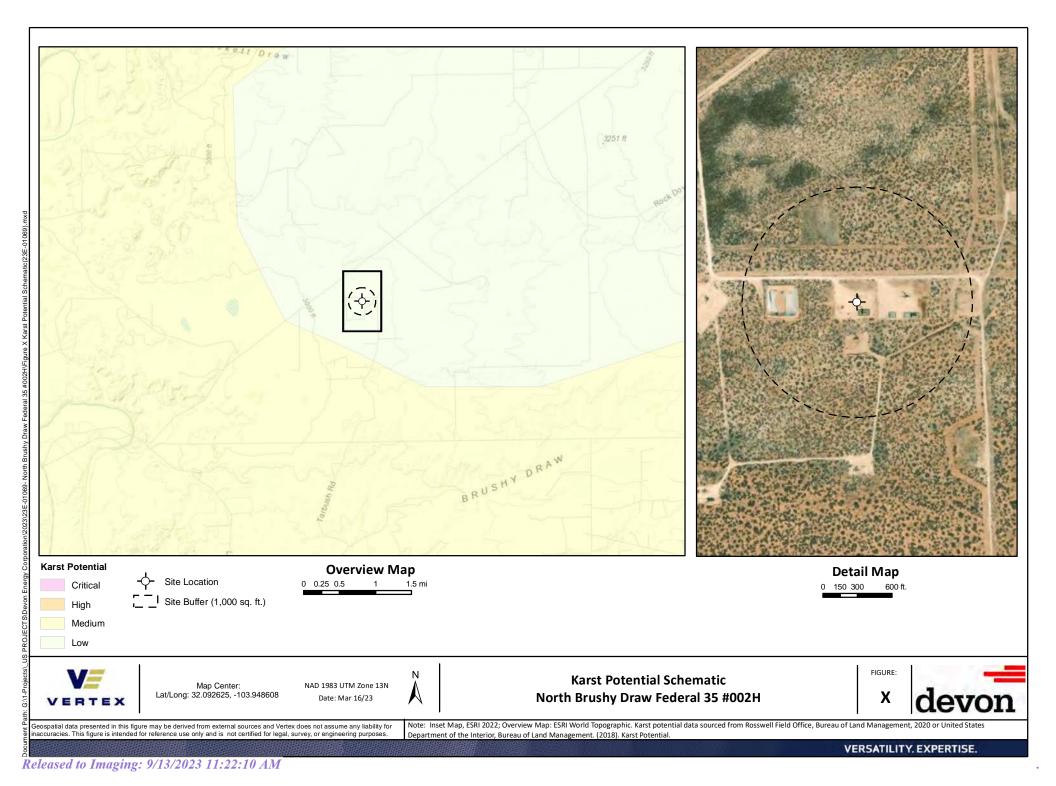
# North Brushy Draw Federal 35 #002H



3/31/2023, 10:10:31 AM



New Mexico State University, Texas Parks & Wildlife, CONANP, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, EPA, NPS, Earthstar Geographics, NM Coal Mine Reclamation Program, NM EMNRD



# Received by OCD: 8/1/2023 2:47:23 PM National Flood Hazard Layer FIRMette

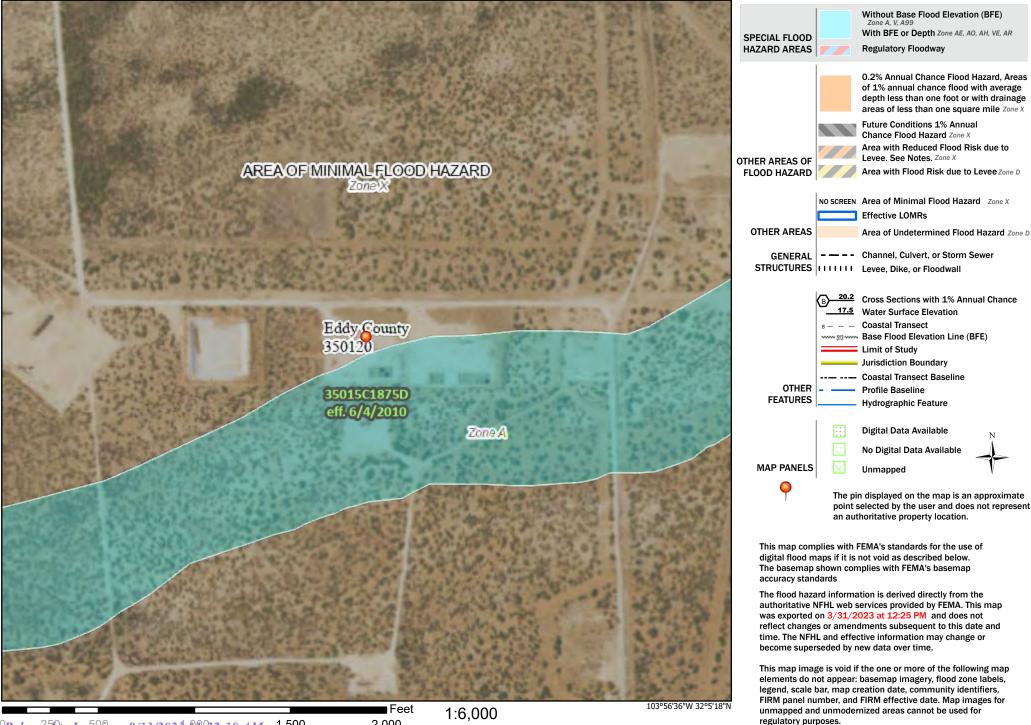
103°57'14"W 32°5'49"N



# Legend

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

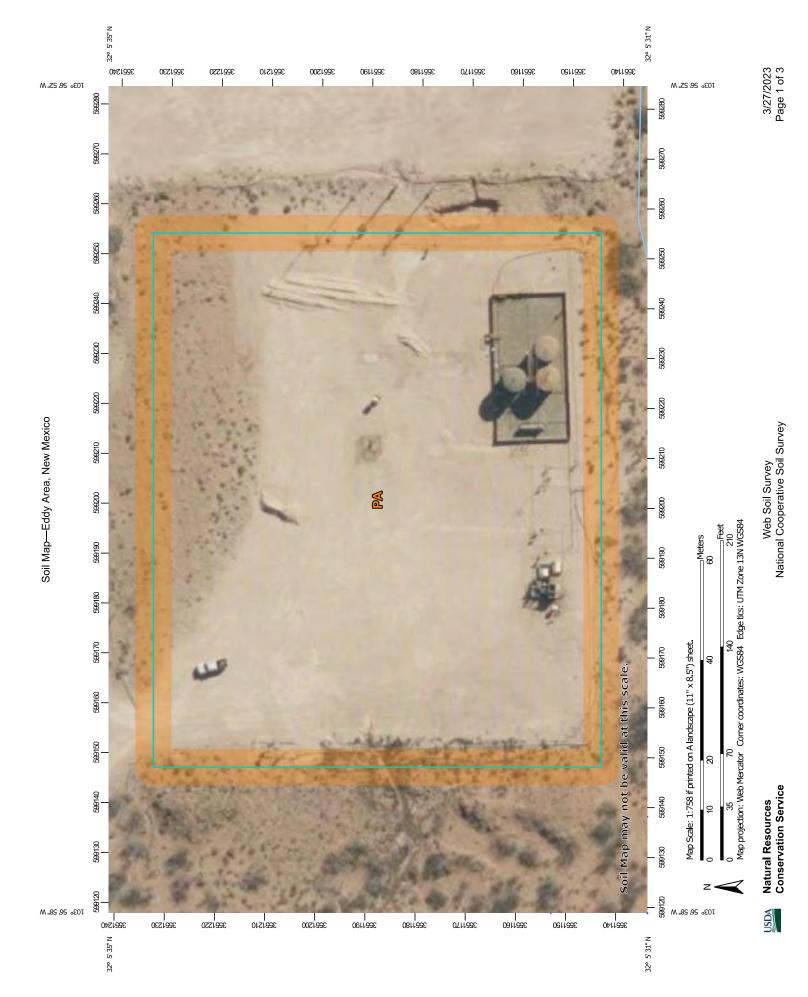
#### Page 41 of 64



Releasea to Imaging: 9/13/2023 PP.22:10 AM 1,500 2.000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Received by OCD: 8/1/2023 2:47:23 PM



| Area of In       | Area of Interest (AOI) Area of Interest (AOI) | sto Sto               | Spoil Area<br>Stonv Spot | The soil surveys that comprise your AOI were mapped at 1:20,000.   |
|------------------|---|-----------------------|--------------------------|--|
| Soils            |   | Nei                   | Very Stony Spot          | Warning: Soil Map may not be valid at this scale.  |
|                  | Soil Map Unit Polygons<br>Soil Map Unit Lings | we<br>م               | Wet Spot                 | Enlargement of maps beyond the scale of mapping can cause  |
| • ۱              | Soil Map Unit Points                          | ₽                     | Other                    | misurucerstanting on the detail of mapping and accuracy of som<br>line placement. The maps do not show the small areas of      |
| Special          | Special Point Features                        | Spi                   | Special Line Features    | contrasting soils that could have been shown at a more detailed scale.   |
| ອ                | Blowout                                       | Water Features        | 0                        |  |
| X                | Borrow Pit                                    | ₹<br>₹                | Streams and Canals       | Please rely on the par scale on each map sheet for map<br>measurements.  |
| ж                | Clay Spot                                     | Transportation<br>Rai | ion<br>Rails             | Source of Map: Natural Resources Conservation Service  |
| \$               | Closed Depression                             |                       | Interstate Highways      | Web Soil Survey URL:<br>Coordinate Svstem: Web Mercator (EPSG:3857)  |
| *                | Gravel Pit                                    | SU                    | US Routes                | Maps from the Web Soil Survey are based on the Web Mercator  |
| 8 <mark>0</mark> | Gravelly Spot                                 | Ma                    | Major Roads              | projection, which preserves direction and shape but distorts   |
| ٥                | Landfill                                      | Foc                   | Local Roads              | distance and area. A projection that preserves area, such as the<br>Albers equal-area conic projection, should be used if more |
| ~                | Lava Flow                                     | Background            |                          | accurate calculations of distance or area are required.  |
|                  | Marsh or swamp                                | Ae                    | Aerial Photography       | This product is generated from the USDA-NRCS certified data as<br>of the version date(s) listed below                          |
| 6                | Mine or Quarry                                |                       |                          | Soil Survey Area - Eddy Area New Mavico  |
| 0                | Miscellaneous Water                           |                       |                          |  |
| 0                | Perennial Water                               |                       |                          | Soil map units are labeled (as space allows) for map scales  |
| >                | Rock Outcrop                                  |                       |                          | 1:50,000 or larger.  |
| +                | Saline Spot                                   |                       |                          | Date(s) aerial images were photographed: Feb 7, 2020—May   |
| •••              | Sandy Spot                                    |                       |                          | The orthorhoto or other base man on which the soil lines were  |
| Ŵ                | Severely Eroded Spot                          |                       |                          | compiled and digitized probably differs from the background  |
| \$               | Sinkhole                                      |                       |                          | imagery displayed on these maps. As a result, some minor<br>shifting of map unit boundaries may be evident.                    |
| A                | Slide or Slip                                 |                       |                          |  |
| Ø                | Sodic Spot                                    |                       |                          |  |

•



# Map Unit Legend

| Map Unit Symbol             | Map Unit Name   | Acres in AOI | Percent of AOI |
|-----------------------------|---|--------------|----------------|
| PA                          | Pajarito loamy fine sand, 0 to 3 percent slopes, eroded | 2.4          | 100.0%         |
| Totals for Area of Interest |   | 2.4          | 100.0%         |



# Eddy Area, New Mexico

# PA—Pajarito loamy fine sand, 0 to 3 percent slopes, eroded

#### **Map Unit Setting**

National map unit symbol: 1w54 Elevation: 2,700 to 5,500 feet Mean annual precipitation: 5 to 15 inches Mean annual air temperature: 57 to 70 degrees F Frost-free period: 180 to 250 days Farmland classification: Not prime farmland

#### **Map Unit Composition**

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

#### **Description of Pajarito**

#### Setting

Landform: Plains, interdunes, dunes Landform position (three-dimensional): Side slope Down-slope shape: Convex, linear Across-slope shape: Linear, convex Parent material: Mixed alluvium and/or eolian sands

#### **Typical profile**

*H1 - 0 to 13 inches:* loamy fine sand *H2 - 13 to 36 inches:* fine sandy loam *H3 - 36 to 60 inches:* fine sandy loam

#### **Properties and qualities**

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

#### Interpretive groups

Land capability classification (irrigated): 2e Land capability classification (nonirrigated): 7e

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*Hydrologic Soil Group:* A *Ecological site:* R070BD003NM - Loamy Sand *Hydric soil rating:* No

# **Minor Components**

#### Berino

Percent of map unit: 1 percent Ecological site: R070BD003NM - Loamy Sand Hydric soil rating: No

#### Wink

Percent of map unit: 1 percent Ecological site: R070BD003NM - Loamy Sand Hydric soil rating: No

# **Data Source Information**

Soil Survey Area: Eddy Area, New Mexico Survey Area Data: Version 18, Sep 8, 2022



**Conservation Service** 

# Ecological site R070BD003NM Loamy Sand

Accessed: 03/27/2023

# **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 | <b>Sandy</b><br>Sandy         |
|-------------|-------------------------------|
| R070BD005NM | <b>Deep Sand</b><br>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 | <ul><li>(1) Fan piedmont</li><li>(2) Alluvial fan</li><li>(3) Dune</li></ul> |
|-----------|--|
| 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      | <ul><li>(1) Fine sand</li><li>(2) Fine sandy loam</li><li>(3) Loamy fine sand</li></ul> |
|----------------------|---|
| Family particle size | (1) Sandy   |
| Drainage class       | Well drained to somewhat excessively drained  |
| Permeability class   | Moderate to moderately rapid  |

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|--|--------------|
| 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<br>(0-40in)                      | 02           |
| Soil reaction (1:1 water)<br>(0-40in)                    | 6.6–8.4      |
| Subsurface fragment volume <=3"<br>(Depth not specified) | 4–12%        |
|  |              |

0%

# **Ecological dynamics**

(Depth not specified)

Subsurface fragment volume >3"

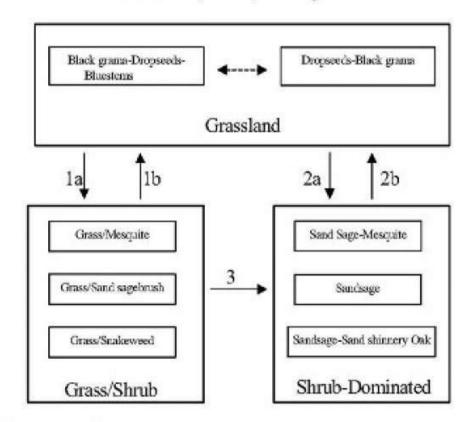
Overview

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

MLRA-42, SD-3, Loamy Sand



1a. Drought, over grazing, fire suppression.

1b. Brush control, prescribed grazing

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

3. Continued loss of grass cover, erosion.

# State 1 Historic Climax Plant Community

# Community 1.1 Historic Climax Plant Community

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

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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<br>(Lb/Acre) | Representative Value<br>(Lb/Acre) | High<br>(Lb/Acre) |
|-----------------|------------------|-----------------------------------|-------------------|
| Grass/Grasslike | 442              | 833                               | 1224              |
| Forb            | 110              | 208                               | 306               |
| Shrub/Vine      | 98               | 184                               | 270               |
| Total           | 650              | 1225                              | 1800              |

#### Table 6. Ground cover

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

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

| Jan | Feb | Mar | Apr | Мау | 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



Black grans/Merquite community, with some dropseeds, threesoms, and scattered sand shinnery oak Orass 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 • Bare patch expansion • Bare patch expansion • Bare patch expansion to a grassland-dominated state.

# Additional community tables

Table 7. Community 1.1 plant community composition

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

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|      | 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 - 762.3 - 3.5 75 - 513.0 - 4.5 50 - 264.6 - 9.0 25 - 09.1 +

### Inventory data references

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

# Other references

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### Contributors

Don Sylvester Quinn Hodgson

# Rangeland health reference sheet

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

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

# Indicators

- 1. Number and extent of rills:
- 2. Presence of water flow patterns:
- 3. Number and height of erosional pedestals or terracettes:
- 4. Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):
- 5. Number of gullies and erosion associated with gullies:
- 6. Extent of wind scoured, blowouts and/or depositional areas:

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

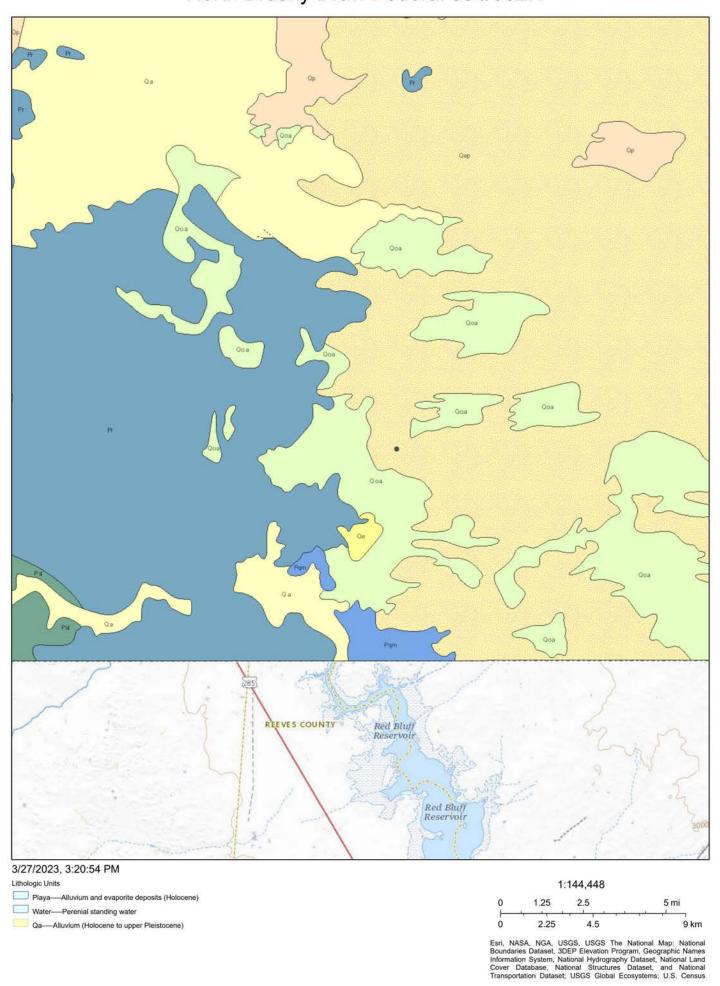
Additional:

- 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 annualproduction):
- 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:

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# Received by OCD: 8/1/2023 2:47:23 PM orth Brushy Draw Federal 35 #002H

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Released to Imaging: 9/13/2023 11:22:10 AM ArcGIS Web AppBuilder USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, Sector Database, National Structures Dataset, National Structures Da

# **ATTACHMENT 4**



# nAPP2314969734 North Brushy 35-2H Liner Inspection Notification

2 messages

Dhugal Hanton <vertexresourcegroupusa@gmail.com>

To: "Enviro, OCD, EMNRD" <OCD.Enviro@emnrd.nm.gov>, "CFO\_Spill, BLM\_NM" <blm\_nm\_cfo\_spill@blm.gov> Cc: "Raley, Jim" <jim.raley@dvn.com>

Tue, Jul 11, 2023 at 9:30 AM

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:

nAPP2314969734 DOR: 05/15/2023 Site Name: North Brushy Draw Federal 35 #002H

This work will be completed on behalf of WPX Energy Permian, LLC

On Friday, July 14, 2023 at approximately 10:30 a.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. 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 F

#### 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.

#### Released to Imaging: 9/13/2023 11:22:10 AM

Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov> To: Dhugal Hanton <vertexresourcegroupusa@gmail.com> Cc: "Bratcher, Michael, EMNRD" <mike.bratcher@emnrd.nm.gov>, "Hamlet, Robert, EMNRD" <Robert.Hamlet@emnrd.nm.gov>

Monica,

The OCD has received your notification. 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: Tuesday, July 11, 2023 9:31 AM To: Enviro, OCD, EMNRD <OCD.Enviro@emnrd.nm.gov>; CFO\_Spill, BLM\_NM <blm\_nm\_cfo\_spill@blm.gov> Cc: Raley, Jim <jim.raley@dvn.com> Subject: [EXTERNAL] nAPP2314969734 North Brushy 35-2H Liner Inspection Notification Tue, Jul 11, 2023 at 3:18 PM

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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 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

| Operator:                 | OGRID:                                    |  |  |  |  |
|---------------------------|---|--|--|--|--|
| WPX Energy Permian, LLC   | 246289                                    |  |  |  |  |
| Devon Energy - Regulatory | Action Number:                            |  |  |  |  |
| Oklahoma City, OK 73102   | 246743                                    |  |  |  |  |
|                           | Action Type:                              |  |  |  |  |
|                           | [C-141] Release Corrective Action (C-141) |  |  |  |  |
| CONDITIONS                |   |  |  |  |  |

Created By Condition

scwells None Page 64 of 64

CONDITIONS

Action 246743

Condition Date

9/13/2023