



---

December 4, 2025

EMNRD – Oil Conservation Division  
506 W. Texas  
Artesia, New Mexico 88210

SUBJECT: Liner Inspection and Closure Report for Todd 8 Booster Station – October 22, 2025 Site Visit

Incident ID: nAPP2526936424

Lease ID (Name): NMNM106386741 (TODD 8 BOOSTER STATION)

Facility Location: Unit E of Section 18, Township 23 South, Range 32 East, Lea County, New Mexico

Facility GPS Coordinates: 32.306672, -103.722309

### ***Introduction***

KLJ Engineering (KLJ) has prepared this report on behalf of Devon Energy Production Company, LP (Devon) to detail the recent liner inspection conducted at the Todd 8 Booster Station (Site) on October 22, 2025. The inspection followed the release of produced water that occurred on September 23, 2025.

### ***Site Information and Background***

The Site is located approximately 21.43 miles east of Loving, New Mexico, on Bureau of Land Management (BLM) property. The Site lies within Unit E, Section 18, Township 23 South, Range 32 East, in Lea County. KLJ conducted a liner inspection and associated site characterization in accordance with 19.15.29.11 and 19.15.29.12 of the New Mexico Administrative Code (NMAC) to assess the integrity of the containment system and evaluate any potential environmental impacts resulting from a release.

### ***Release Descriptions and Immediate Response***

On September 23, 2025, a Devon lease operator discovered that a pump seal had failed, resulting in the release of approximately 6 barrels (bbls) of produced water into secondary containment. On September 26, 2025, Devon Energy submitted the initial Notice of Release (NOR) to the New Mexico Energy, Minerals, and Natural Resources Department – Oil Conservation Division (NMOCD) via the Operator's Electronic Permitting and Payment Portal. Subsequently, a Form C-141 was submitted on September 29, 2025.

The September 23, 2025, release was less than 25 bbls and therefore does not meet the criteria for a major release as defined under 19.15.29.7 (A)(1) NMAC. Accordingly, enhanced notification procedures outlined in 19.15.29.10(A) NMAC were not applicable to this incident.

### ***Site Characterization Summary***

The Site lies within eolian sand deposits. Terrain for the Site and immediate surrounding area includes plains, uplands, dunes, interdunal areas, and fan piedmonts at elevations ranging from 2,800 to 5,000 feet above mean sea level (amsl). Parent material consists of mixed alluvium and or eolian sands derived from sedimentary rock, with 8 to 13 inches of average annual precipitation. Soil within the Site tends to be well-drained, with negligible runoff potential and low water-holding capacity.

The USDA – Web Soil Survey (WSS) identifies the predominant soil type at the Site as the Maljamar and Palomas fine sands that are moderately deep to very deep, with surface textures ranging from loamy fine sand, fine sandy loam, loamy very fine sand, or gravelly sandy loam. Subsurface consists of 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 includes a fine sandy loam or gravelly fine sandy loam with less than 15 percent gravel and less than 40 percent calcium carbonate. Layers high in lime or with caliche fragments may occur at depths of 20 to 30 inches.

Vegetation reflects a grassland background including black grama, dropseeds, and bluestems, with scattered occurrences of shinney oak, mesquite, and sand sage. Ground cover consists of perennial and annual forbs, grasses, and bare ground, with composition varying based on precipitation. Vegetation changes are influenced by factors such as heavy grazing, drought, erosion, bare patches, and historical fire suppression, which promote shrub encroachment and reduce grass cover, leading to increased erosion potential and a competitive advantage for shrubs over grasses.

No surface water features were identified within 300 feet of the Site. The nearest significant watercourse is 2.61 miles northwest, and the closest playa and wetland is 3.59 miles northwest. These distances comply with the requirements of 19.15.29.12(C)(4) NMAC.

According to the New Mexico Office of the State Engineer (NMOSE) Points of Diversion (POD) database, the nearest groundwater well to the Site is POD C-04704-POD1, located approximately 0.30 miles northwest of the Site. The NMOSE database identifies this POD as a monitoring well that served as a temporary borehole for determining depth-to-groundwater (DTGW) and was subsequently plugged following completion of groundwater monitoring activities. Records indicate that the borehole was advanced to a total depth of 55 feet below ground surface (bgs), and no groundwater was encountered. Based on this data, the DTGW in the vicinity of the Site is interpreted to be greater than 55 feet bgs. The nearest water source, a domestic well used for stock watering purposes, is POD C-02348, located 3.02 miles southwest of the Site.

Karst potential for the Site is identified as non-karst, with the nearest area of medium karst potential located 5.23 miles to the west. The Site is in a FEMA flood hazard area identified as FEMA Zone D (undetermined hazard); the nearest identified FEMA flood hazard area, classified as Zone A, is 11.3 miles to the west.

Additional information detailing the results of the Site characterization findings can be found in **Appendix B**.

#### ***Closure Criteria***

Table 1 summarizes key Site and incident information relevant to closure evaluation, as required under 19.15.29.12 NMAC. This includes details such as release source, location, containment status, and site-specific features that may influence closure requirements. While contamination thresholds, sampling depths, and applicable concentration limits are not listed in this table, the information provided supports regulatory assessment of whether the release meets criteria for closure. In accordance with NMAC 19.15.29.11(A)(5)(b), if the release occurred within lined, impermeable secondary containment with no evidence of escape, it may qualify for reduced remediation requirements or a No Further Action (NFA) determination.

| Table 1: Release Information and Closure Criteria Limits |   |                           |  |
|--|---|---------------------------|--|
| Depth to Ground Water Determination: 51-100 feet bgs     |   |                           |  |
| Site Name  | Todd 8 Booster Station  | Company                   | Devon Energy Production Company, LP    |
| Facility ID  | N/A   | ULSTR GPS                 | E-18-23S-32E<br>32.306672, -103.722309 |
| Lease ID   | NMMN106386741   | Land Status               | BLM (Federal)                          |
| Incident ID(s)   | nAPP2526936424  | Date Of Release(s)        | 9/23/2025                              |
| Source of Release  | Pump seal failure   | Volume Released/Recovered | 6 bbls/6 bbls pw                       |
| Specific Features  | DTGW Monitor Well: depth 55 bgs; No groundwater encountered; POD 0.30 miles from facility; No karst potential; No surface water within proximity; FEMA Zone D |                           |  |

### ***Liner Inspection Activities***

A notification of the October 22, 2025 inspection was submitted to Devon via email on October 20, 2025, with official notification submitted through the Operator's Electronic Permitting and Payment Portal on October 20, 2025, in accordance with 19.15.29.11(A)(5)(a)(iii) NMAC. A copy of the notification is included in **Appendix C**.

During the visit on October 22, 2025, KLJ personnel conducted a visual inspection of the secondary containment to verify liner integrity. Observations included checks for perforations, tears, cuts, or weathering that could compromise containment performance. The liner was confirmed to be intact, with no observed integrity issues or conditions requiring repair or replacement. Photographic documentation is included in the Liner Inspection Field Notes & Photolog Report (**Appendix A**).

### ***Conclusion***

Based on the findings of the liner inspection, KLJ concludes that liner integrity is adequate to contain fluids and there are no further actions required in relation to incident nAPP2526936424.

Based on the site assessment and activities conducted, Devon Energy respectfully requests closure of incident nAPP2526936424 with a No Further Action (NFA) determination.

Submitted and prepared by:

KLJ Engineering

Written By

Name: Monica Peppin

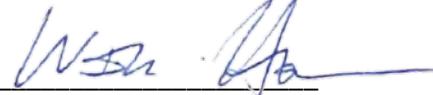
Title: Environmental Specialist II

Reviewed By

Name: Will Harmon, P.G.

Title: Environmental Project Manager

Signature: 

Signature: 

### ***Included Appendices***

Appendix A – LINER INSPECTION FIELD NOTES & PHOTOLOG REPORT

Appendix B – CLOSURE CRITERIA RESEARCH

Appendix C – CORRESPONDENCE



---

## APPENDIX A

### LINER INSPECTION FIELD NOTES & PHOTLOG REPORT

# Environmental Liner Inspection

## Field Notes & Photolog Report



### Site & Incident Information

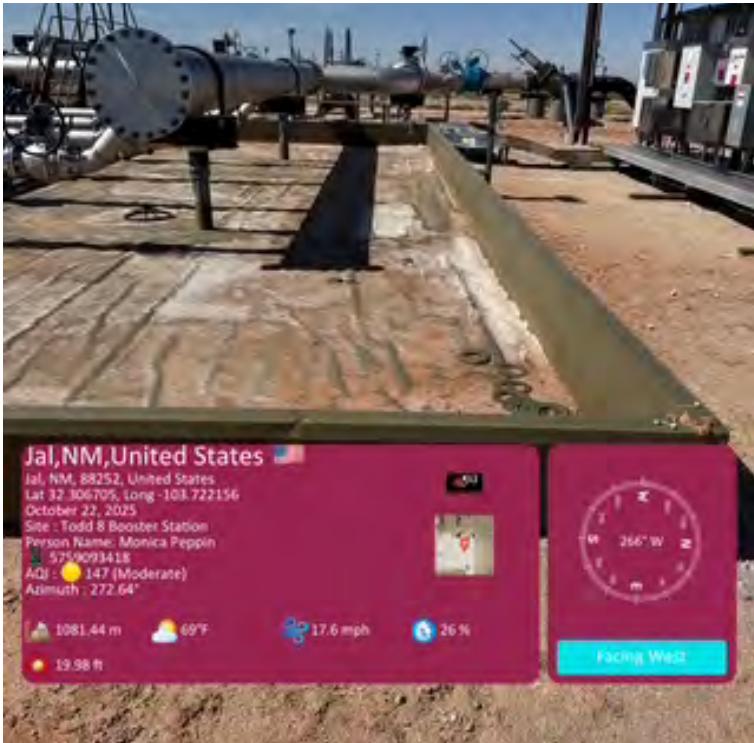
|                        |                        |                          |                      |
|------------------------|------------------------|--------------------------|----------------------|
| <b>Client:</b>         | Devon Energy           | <b>Date:</b>             | 10/22/2025           |
| <b>Site:</b>           | Todd 8 Booster Station | <b>Arrival Time:</b>     | 10:15 AM             |
| <b>Incident ID:</b>    | nAPP2526936424         | <b>Cause of Release:</b> | Seal on Pump failed. |
| <b>Client Contact:</b> | Jim Raley              |                          |                      |
| <b>Land Status:</b>    | BLM                    |                          |                      |
| <b>County:</b>         | Lea                    |                          |                      |
| <b>Lease ID:</b>       | NMNM106386741          |                          |                      |
| <b>ULSTR:</b>          | E-18-23S-32E           |                          |                      |
| 32.306672, -103.722309 |                        |                          |                      |

### Observations and Field Notes

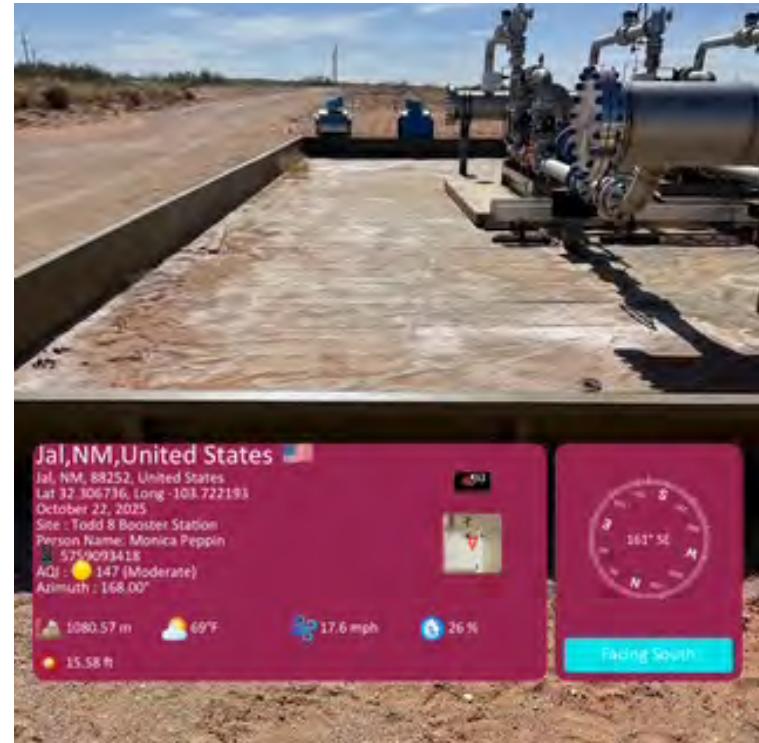
- 10:18 AM - Arrive on site, complete JHA, and check surroundings for any potential hazards.
- 10:20 AM - Begin inspection of secondary containment.
- 10:21 AM - Inspect walls, base, and seams for any apparent damage or signs of weathering that would make liner brittle.
- 10:24 AM - Photographs collected from all cardinal directions and angles for documentation of liner.
- 10:26 AM - No signs of any fluids or residue on liner surface, clean and ready for inspection.
- 10:30 AM - Inspection complete and liner integrity confirmed.



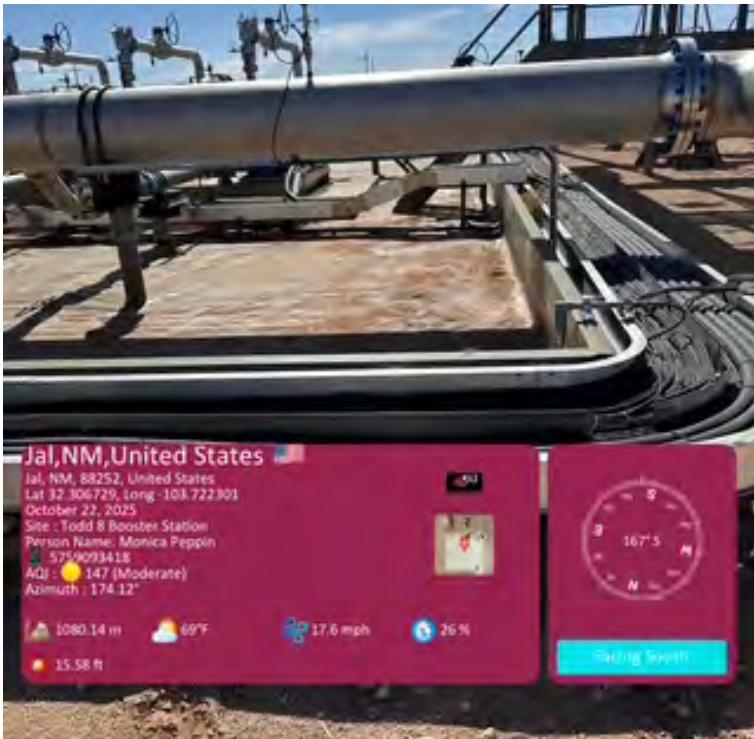
## Photolog



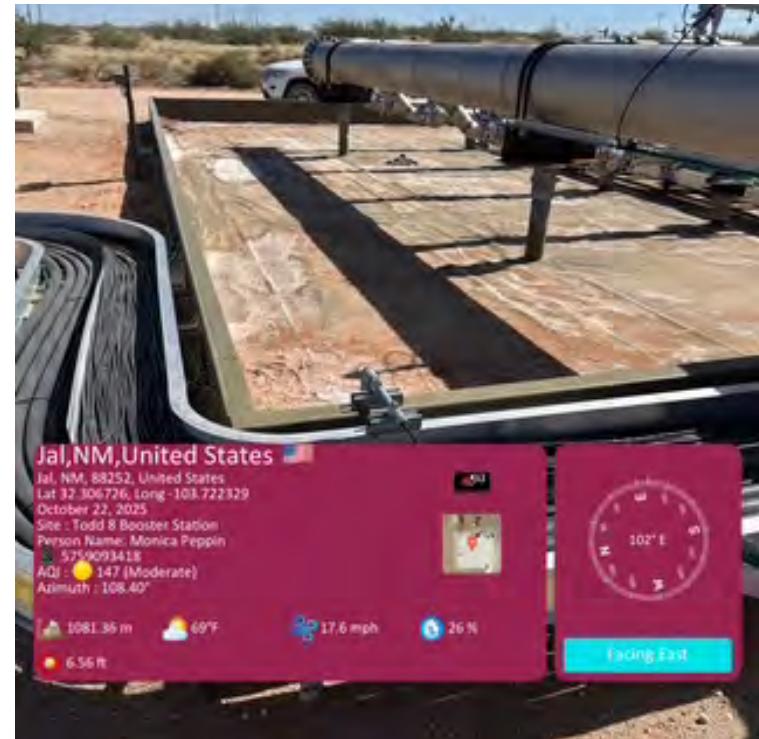
North wall on east side facing west.



East wall from north side facing south.



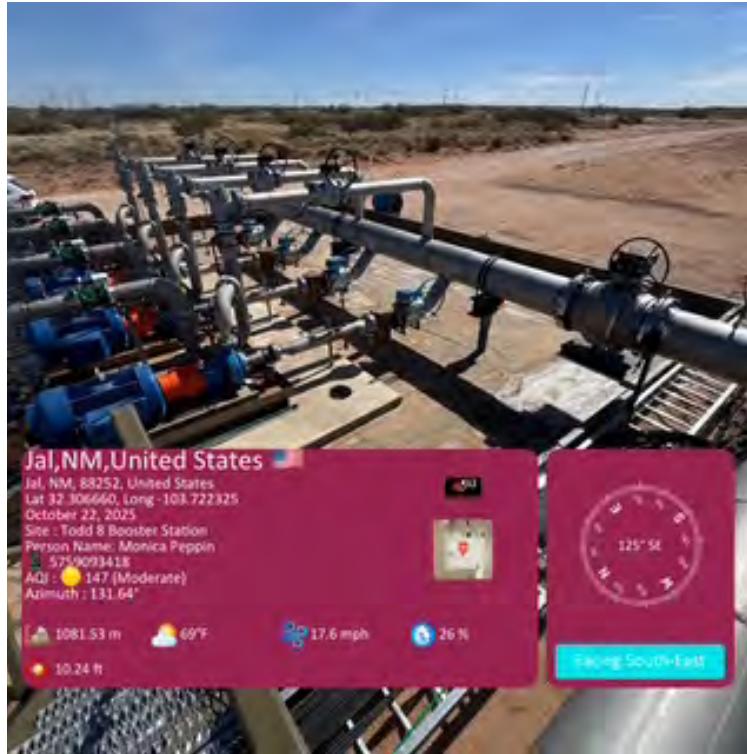
South view of liner on west side.



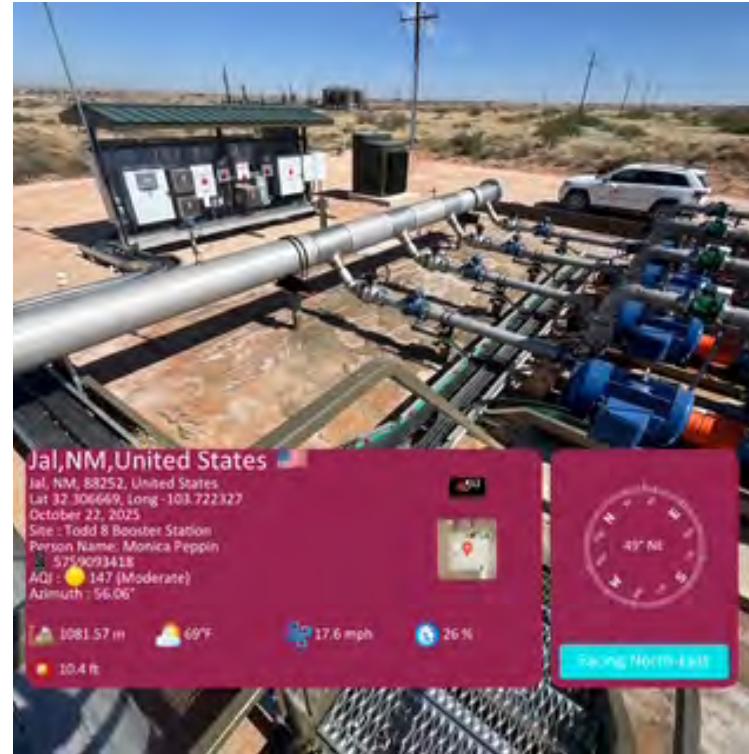
Facing east from northwest corner.



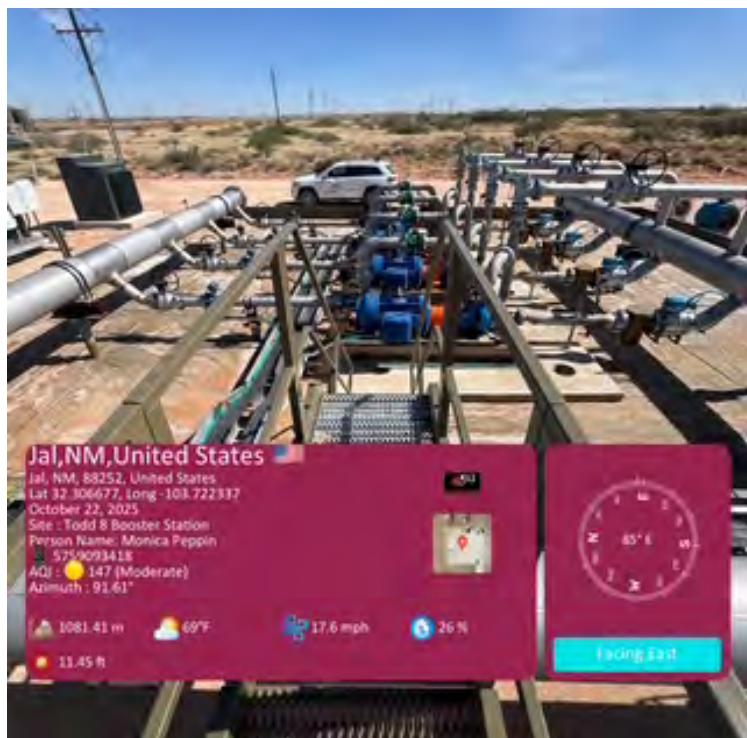
## Photolog



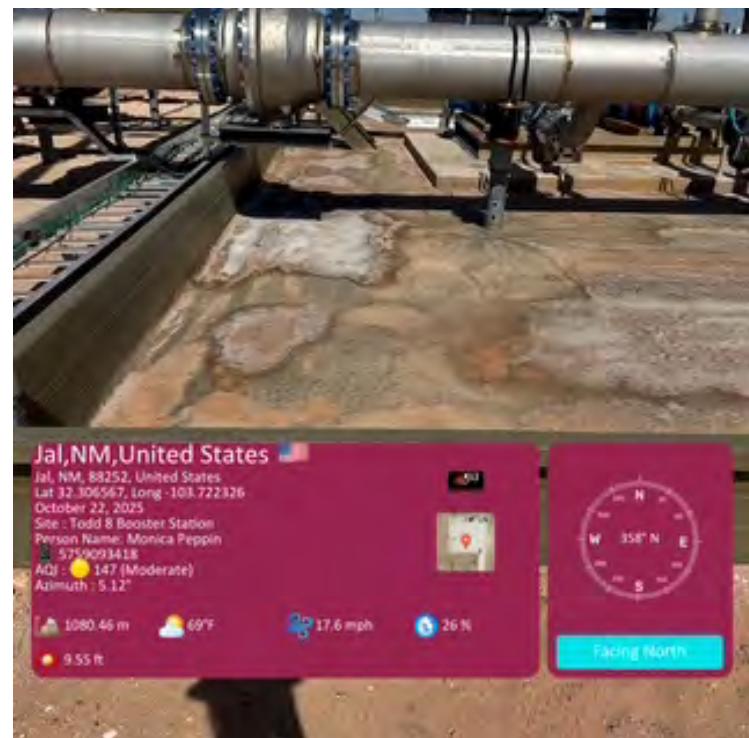
View from steps facing southeast.



North area from steps.



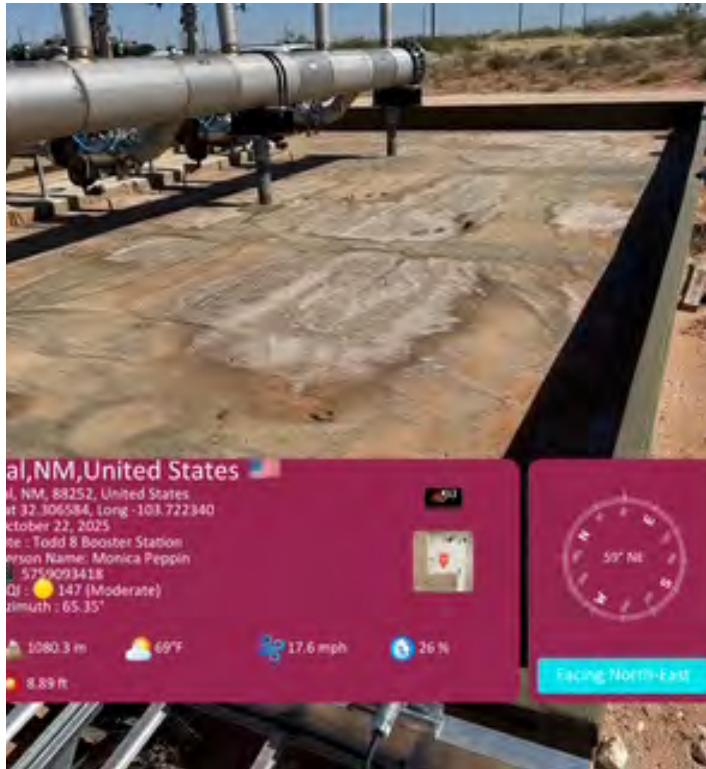
Facing east from west side on steps.



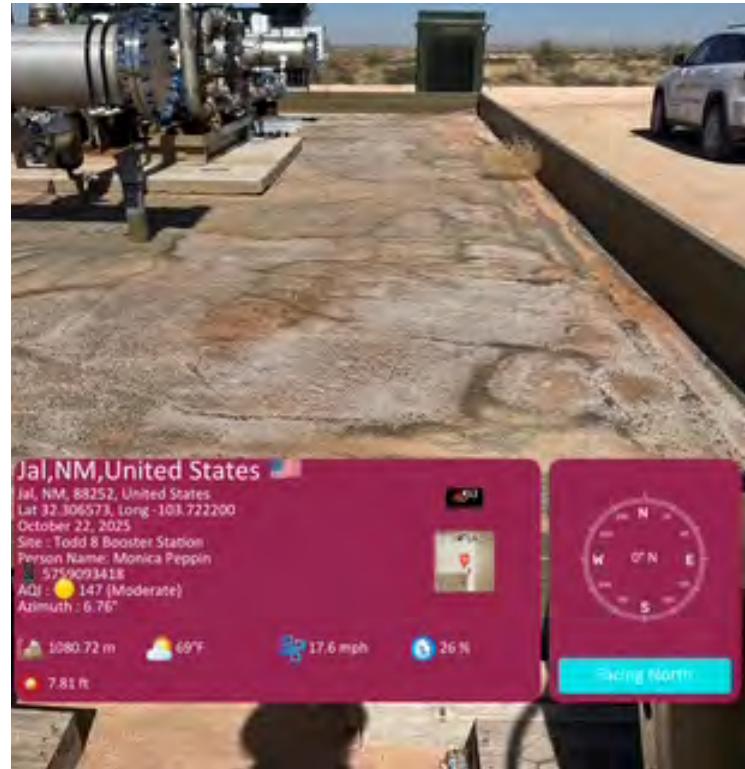
Liner on north wall from west side facing east.



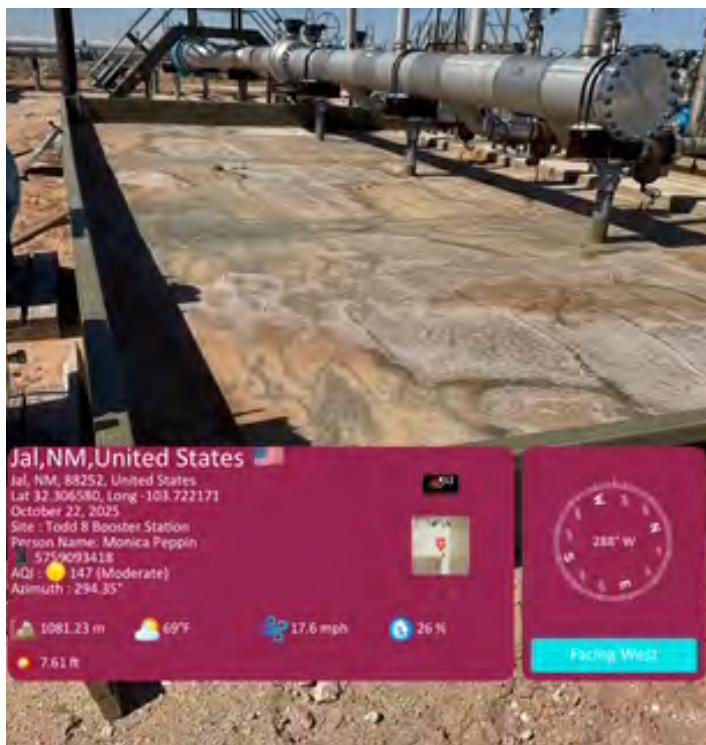
## Photolog



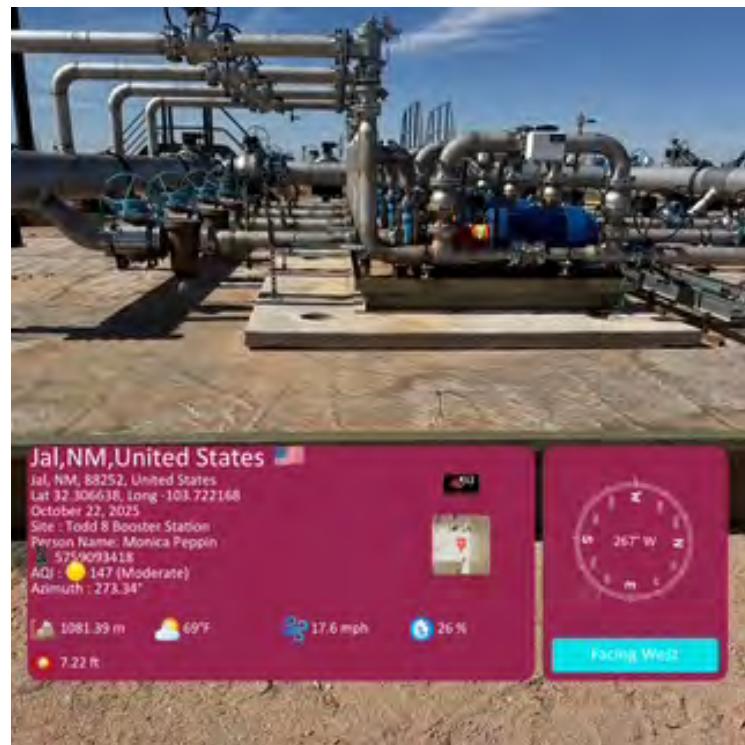
Liner on west side facing south.



Liner on east side facing north.



Northwest view from southeast wall.



West view from east side.

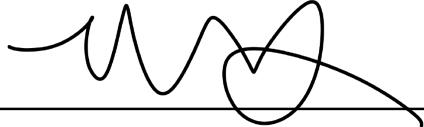
## Additional Notes & Recommendations

- Finish uploading photos and notes.
- Complete closure report.
- Submit for approval of closure.
- No further actions needed. Liner passes inspection.

## Acknowledgement & Signature

Technician: Monica Peppin

Date: October 22, 2025

Signature: 

Departure  
Time: 10:48 AM



---

## APPENDIX B

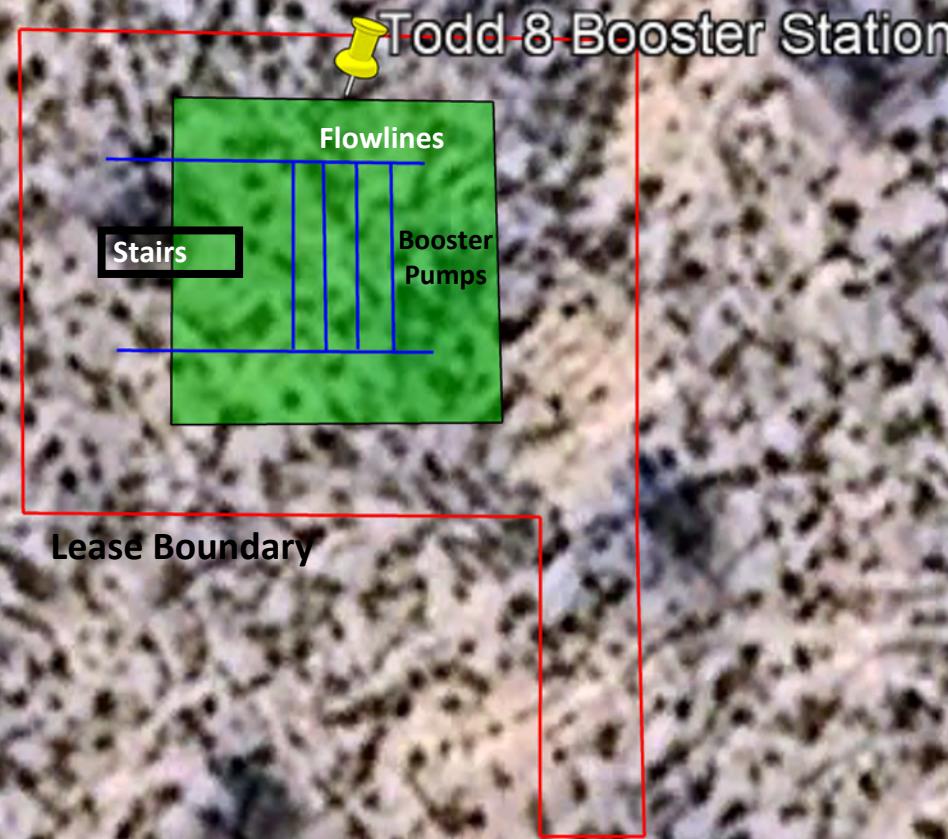
### CLOSURE CRITERIA RESEARCH

# Todd 8 Booster Station

Incident ID: nAPP2526936424  
Coordinates: 32.306672, -103.722309  
Containment Area: Apprx. 1,600 sq ft  
No storage tanks within containment only  
Centrifugal Booster Pumps

## Legend

- Containment
- Lease Boundary and Entrance
- Todd 8 Booster Station



Google Earth

N

80 ft

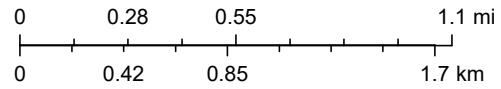
## 0.5-mile Radius/Nearest Domestic Well for Livestock



10/21/2025, 12:11:33 PM

**Pod C-4707-POD1**

1:36,614



- Override 1
- GIS WATERS PODs
- Pending
- Active
- Plugged
- Unknown
- OSE District Boundary
- New Mexico State Trust Lands
- Subsurface Estate
- Both Estates

**Monitor Well****Distance**

0.30 miles

**Pod C-02348****Livestock Pod****Distance**

3.02 miles

Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community, Maxar

Online web user

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

File No. C-4704

## NEW MEXICO OFFICE OF THE STATE ENGINEER



## WR-07 APPLICATION FOR PERMIT TO DRILL

## A WELL WITH NO WATER RIGHT



(check applicable box):

For fees, see State Engineer website: <http://www.ose.state.nm.us/>

|   |  |  |
|---|--|--|
| Purpose:  | <input type="checkbox"/> Pollution Control And/Or Recovery         | <input type="checkbox"/> Ground Source Heat Pump                               |
| <input type="checkbox"/> Exploratory Well*(Pump test) | <input type="checkbox"/> Construction Site/Public Works Dewatering | <input checked="" type="checkbox"/> Other(Describe): Groundwater Determination |
| <input type="checkbox"/> Monitoring Well              | <input type="checkbox"/> Mine Dewatering                           |  |

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

\*New Mexico Environment Department-Drinking Water Bureau (NMED-DWB) will be notified if a proposed exploratory well is used for public water supply.

|  |                     |
|--|---------------------|
| <input type="checkbox"/> Temporary Request - Requested Start Date:   | Requested End Date: |
| Plugging Plan of Operations Submitted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |                     |

## 1. APPLICANT(S)

|  |  |
|--|--|
| Name:<br>Devon Energy                      | Name:  |
| Contact or Agent:<br>Dale Woodall          | check here if Agent <input type="checkbox"/> |
| Contact or Agent:<br>Dale Woodall          | check here if Agent <input type="checkbox"/> |
| Mailing Address:<br>6488 7 Rivers Hwy      | Mailing Address:                             |
| City:<br>Artesia                           | City:  |
| State:<br>NM                               | Zip Code:<br>88210                           |
| Phone: 575-748-1838<br>Phone (Work):       | Phone:<br>Phone (Work):                      |
| E-mail (optional):<br>Dale.Woodall@dvn.com | E-mail (optional):                           |

OSE DT FEB 6 2023 AM 11:20

FOR OSE INTERNAL USE

Application for Permit, Form WR-07, Rev 07/12/22

|                                   |        |                             |        |              |         |
|-----------------------------------|--------|-----------------------------|--------|--------------|---------|
| File No.:                         | C-4704 | Trn. No.:                   | 748173 | Receipt No.: | 2-45439 |
| Trans Description (optional): MON |        |                             |        |              |         |
| Sub-Basin:                        | CUB    | PCW/LOG Due Date: 2/19/2024 |        |              |         |

Page 1 of 3

## 2. WELL(S) Describe the well(s) applicable to this application.

**Location Required:** Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).

**District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.**

|  |   |  |
|--|---|--|
| <input type="checkbox"/> NM State Plane (NAD83) (Feet) | <input type="checkbox"/> UTM (NAD83) (Meters) | <input checked="" type="checkbox"/> Lat/Long (WGS84) (to the nearest 1/10 <sup>th</sup> of second) |
| <input type="checkbox"/> NM West Zone                  | <input type="checkbox"/> Zone 12N             |  |
| <input type="checkbox"/> NM East Zone                  | <input type="checkbox"/> Zone 13N             |  |
| <input type="checkbox"/> NM Central Zone               |   |  |

| Well Number (if known): | X or Easting or Longitude: | Y or Northing or Latitude: | Provide if known:<br>-Public Land Survey System (PLSS)<br>(Quarters or Halves, Section, Township, Range) OR<br>- Hydrographic Survey Map & Tract; OR<br>- Lot, Block & Subdivision; OR<br>- Land Grant Name |
|-------------------------|----------------------------|----------------------------|---|
| C- POD1(TW-1)           | 103°43'36.7"               | 32°18'31.26"               | SW NE NE Sec.13 T23S R31E NMPM  |
|                         |                            |                            |   |
|                         |                            |                            |   |
|                         |                            |                            |   |
|                         |                            |                            |   |
|                         |                            |                            |   |

**NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)**

**Additional well descriptions are attached:  Yes  No If yes, how many \_\_\_\_\_**

Other description relating well to common landmarks, streets, or other:

Tomb Raider 12 CTB 1

Well is on land owned by: Bureau of Land Management

**Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached?  Yes  No  
If yes, how many \_\_\_\_\_**

|                                      |   |
|--------------------------------------|---|
| Approximate depth of well (feet): 55 | Outside diameter of well casing (inches): 6.5" boring |
| Driller Name: Jackie D. Atkins       | Driller License Number: 1249                          |

## 3. ADDITIONAL STATEMENTS OR EXPLANATIONS

A Soil Boring to determine depth up to 55 feet. Temporary PVC well material will be placed to total depth and secured at surface. Temporary well will be in place for minimum of 72 hours. If ground water is encountered the boring will be plugged immediately using augers as tremie to land a slurry of Portland TYPE I/II Neat cement less than 6.0 gallons of water per 94 lb. sack. If no water is encountered then drill cuttings will be used to (10) ten feet of land surface and plugged using hydrated bentonite.

OSE ON FEB 6 2023 at 11:20

**4. SPECIFIC REQUIREMENTS:** The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

|  |  |   |   |
|--|--|---|---|
| <b>Exploratory:</b><br>Is proposed well a future public water supply well?<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> NO<br>If Yes, an application must be filed with NMED-DWB, concurrently.<br><input type="checkbox"/> Include a description of the requested pump test if applicable. | <b>Pollution Control and/or Recovery:</b><br><input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following:<br><input type="checkbox"/> A description of the need for the pollution control or recovery operation.<br><input type="checkbox"/> The estimated maximum period of time for completion of the operation.<br><input type="checkbox"/> The annual diversion amount.<br><input type="checkbox"/> The annual consumptive use amount.<br><input type="checkbox"/> The maximum amount of water to be diverted and injected for the duration of the operation.<br><input type="checkbox"/> The method and place of discharge.<br><input type="checkbox"/> The method of measurement of water produced and discharged.<br><input type="checkbox"/> The source of water to be injected.<br><input type="checkbox"/> The method of measurement of water injected.<br><input type="checkbox"/> The characteristics of the aquifer.<br><input type="checkbox"/> The method of determining the resulting annual consumptive use of water and depletion from any related stream system.<br><input type="checkbox"/> Proof of any permit required from the New Mexico Environment Department.<br><input type="checkbox"/> An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located. | <b>Construction De-Watering:</b><br><input type="checkbox"/> Include a description of the proposed dewatering operation.<br><input type="checkbox"/> The estimated duration of the operation.<br><input type="checkbox"/> The maximum amount of water to be diverted.<br><input type="checkbox"/> A description of the need for the dewatering operation, and,<br><input type="checkbox"/> A description of how the diverted water will be disposed of. | <b>Mine De-Watering:</b><br><input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following:<br><input type="checkbox"/> A description of the need for mine dewatering.<br><input type="checkbox"/> The estimated maximum period of time for completion of the operation.<br><input type="checkbox"/> The source(s) of the water to be diverted.<br><input type="checkbox"/> The geohydrologic characteristics of the aquifer(s).<br><input type="checkbox"/> The maximum amount of water to be diverted per annum.<br><input type="checkbox"/> The maximum amount of water to be diverted for the duration of the operation.<br><input type="checkbox"/> The quality of the water.<br><input type="checkbox"/> The method of measurement of water diverted.<br><input type="checkbox"/> The recharge of water to the aquifer.<br><input type="checkbox"/> Description of the estimated area of hydrologic effect of the project.<br><input type="checkbox"/> The method and place of discharge.<br><input type="checkbox"/> An estimation of the effects on surface water rights and underground water rights from the mine dewatering project.<br><input type="checkbox"/> A description of the methods employed to estimate effects on surface water rights and underground water rights.<br><input type="checkbox"/> Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect. |
| <b>Monitoring</b><br><input type="checkbox"/> The reason and duration of the monitoring is required.   | <b>Ground Source Heat Pump:</b><br><input type="checkbox"/> Include a description of the geothermal heat exchange project,<br><input type="checkbox"/> The number of boreholes for the completed project and required depths.<br><input type="checkbox"/> The time frame for constructing the geothermal heat exchange project, and,<br><input type="checkbox"/> The duration of the project.<br><input type="checkbox"/> Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.   |   |   |

#### ACKNOWLEDGEMENT

I, We (name of applicant(s)), Dale Woodall (Devon Energy)

Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Dale Woodall

Date Woodall Jan 11, 2023 09:54 MST

Applicant Signature

Applicant Signature

#### ACTION OF THE STATE ENGINEER

This application is:

approved  partially approved  denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 9th day of February 2023, for the State Engineer,

Mike A. Hamman P.E., State Engineer

OSE DT FEB 6 2023 09:11:20

By: K. Parekh  
Signature

Kashyap Parekh  
Print

Title: Water Resources Manager I  
Print

FOR OSE INTERNAL USE

Application for Permit, Form WR-07 Version 07/12/22

File No.: C-4704

Trn No.: 742173

Page 3 of 3

**NEW MEXICO STATE ENGINEER OFFICE  
PERMIT TO EXPLORE**

**SPECIFIC CONDITIONS OF APPROVAL**

17-16 Construction of a water well by anyone without a valid New Mexico Well Driller License is illegal, and the landowner shall bear the cost of plugging the well by a licensed New Mexico well driller. This does not apply to driven wells, the casing of which does not exceed two and three-eighths inches outside diameter.

17-1A Depth of the well shall not exceed the thickness of the valley fill.

17-4 No water shall be appropriated and beneficially used under this permit.

17-6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternative plugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. To plug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the sealant throughout the entire sealing process; other placement methods may be acceptable and approved by the state engineer. The well shall be plugged with an office of the state engineer approved sealant for use in the plugging of non-artesian wells. The well driller shall cut the casing off at least four (4) feet below ground surface and fill the open hole with at least two vertical feet of approved sealant. The driller must fill or cover any open annulus with sealant. Once the sealant has cured, the well driller or well owner may cover the seal with soil. A Plugging Report for said well shall be filed with the Office of the State Engineer in a District Office within 30 days of completion of the plugging.

Trn Desc: C 04704 POD1File Number: C 04704Trn Number: 742173

page: 1

**NEW MEXICO STATE ENGINEER OFFICE  
PERMIT TO EXPLORE**

**SPECIFIC CONDITIONS OF APPROVAL (Continued)**

- 17-7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.
- 17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.
- 17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record.  
The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.
- 17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.
- 17-Q The State Engineer retains jurisdiction over this permit.
- 17-R Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, including access to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.

NEW MEXICO STATE ENGINEER OFFICE  
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion C 04704 POD1 must be completed and the Well Log filed on or before 02/09/2024.

IT IS THE PERMITTEE'S RESPONSIBILITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd: Date Rcvd. Corrected:  
Formal Application Rcvd: 02/06/2023 Pub. of Notice Ordered:  
Date Returned - Correction: Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 09 day of Feb A.D., 2023

Mike A. Hamman, P.E., State Engineer

By: K. Parekh  
KASHYAP PAREKH

Trn Desc: C 04704 POD1

File Number: C 04704  
Trn Number: 742173

page: 3



## United States Department of the Interior

### BUREAU OF LAND MANAGEMENT

Carlsbad Field Office  
620 E. Greene St.  
Carlsbad, NM 88220-6292

In Reply Refer To:  
3162.4 (NM-080)  
NMNM-22080

January 26, 2023

NM Office of the State Engineer  
1900 W. Second St.  
Roswell, NM 88201

Re: Tomb Raider 12 CTB 1  
Section 13, T23S-R31E  
30-015-44854  
Eddy County, New Mexico

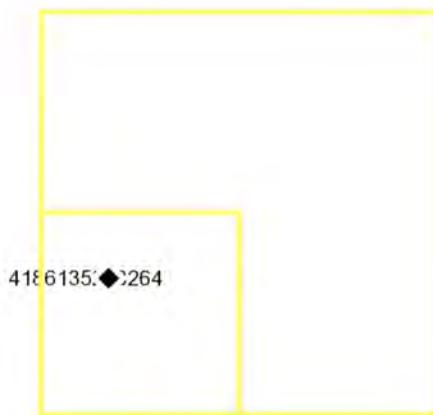
To Whom It May Concern:

The above well location and the immediate area mentioned above requires advanced soil boring to take place at approximately 55 feet below ground surface. The boring will be secured and left open for 72 hours at which time Devon Energy Production Company will assess for the presence or absence of groundwater. Temporary PVC well material will be placed to total depth of the boring and secured at the surface. If water is encountered at any point during the boring, installation of the soil boring will be plugged using Portland Type I/II neat cement less than 6.0 gallons of water per 94lb sack. If no water is encountered, then the soil boring will be plugged. The Bureau of Land Management (landowner) authorizes the access of the area to accomplish depth to groundwater determination of this site.

If you have any questions contact Crisha Morgan, at 575-234-5987.

Sincerely,

Crisha A. Morgan  
Certified Environmental Protection Specialist



Larry Brotman, Esri, HERE, Garmin, (c) OpenStreetMap contributors, U.S. Department of Energy Office of Legacy Management

#### Coordinates

UTM - NAD 83 (m) - Zone 13

Easting 619855.273

Northing 3575362.955

State Plane - NAD 83 (f) - Zone E

Easting 728708.431

Northing 476559.506

Degrees Minutes Seconds

Latitude 32 : 18 : 31.260000

Longitude -103 : 43 : 36.700000

Location pulled from Coordinate Search

#### NEW MEXICO OFFICE OF THE STATE ENGINEER

1:4,514

0 90 180 360

N

2/9/2023



These maps have been made by the New Mexico Office of the State Engineer (OSE) to verify the location of the property line and to provide the information used in their administration. It is the intent of the OSE to enhance all maps, and these maps are not intended to be used for survey, construction, modification, positional surveying, the display of hydrologic, interpretation of source data, and other applications. These maps are distributed "as is" without warranty of any kind.

#### Parcel Information

UPC/DocNum: 4186135263264

Parcel Owner: Bureau Of Land

Address: N Of 135 Red Road Loving  
88256

**Legal:** Quarter: Ne S: 13 T: 23S R: 31E Quarter: Nw S: 13 T: 23S R: 31E Quarter: Sw S: 13 T: 23S R: 31E Quarter: Se S: 13 T: 23S R: 31E All

#### Spatial Information

County: Eddy

Groundwater Basin: Carlsbad

Abstract Area: Carlsbad 72-12-1

Land Grant: ~~Carlsbad~~ Underground Basin

Restrictions:

NA

PLSS Description

SWSWNENE Qtr of Sec 13 of 023S 031E

Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

#### POD Information

Owner:

File Number:

POD Status: NoData

Permit Status: NoData

Permit Use: NoData

Purpose:

|                                |                          |                              |                          |                               |                          |                                |                          |                                |                          |                                |                                     |                              |
|--------------------------------|--------------------------|------------------------------|--------------------------|-------------------------------|--------------------------|--------------------------------|--------------------------|--------------------------------|--------------------------|--------------------------------|-------------------------------------|------------------------------|
| Calculated PLSS                | <input type="checkbox"/> | Cibola County Parcels 2022   | <input type="checkbox"/> | Grant County Parcels 2022     | <input type="checkbox"/> | Los Alamos County Parcels 2022 | <input type="checkbox"/> | Rio Arriba County Parcels 2022 | <input type="checkbox"/> | Santa Fe County Parcels 2022   | <input type="checkbox"/>            | Valencia County Parcels 2022 |
| ◆ Coord Search Location        | <input type="checkbox"/> | Colfax County Parcels 2022   | <input type="checkbox"/> | Harding County Parcels 2022   | <input type="checkbox"/> | Luna County Parcels 2022       | <input type="checkbox"/> | Roosevelt County Parcels 2022  | <input type="checkbox"/> | Sierra County Parcels 2022     | <input checked="" type="checkbox"/> | SiteBoundaries               |
| OSE District Boundary          | <input type="checkbox"/> | Curry County Parcels 2022    | <input type="checkbox"/> | Hidalgo County Parcels 2022   | <input type="checkbox"/> | McKinley County Parcels 2022   | <input type="checkbox"/> | Sandoval County Parcels 2022   | <input type="checkbox"/> | Socorro County Parcels 2022    | <input type="checkbox"/>            |                              |
| Bernalillo County Parcels 2022 | <input type="checkbox"/> | De Baca County Parcels 2022  | <input type="checkbox"/> | Guadalupe County Parcels 2022 | <input type="checkbox"/> | Mora County Parcels 2022       | <input type="checkbox"/> | San Juan County Parcels 2022   | <input type="checkbox"/> | Taos County Parcels 2022       | <input type="checkbox"/>            |                              |
| Catron County Parcels 2022     | <input type="checkbox"/> | Doña Ana County Parcels 2022 | <input type="checkbox"/> | Lea County Parcels 2022       | <input type="checkbox"/> | Otero County Parcels 2022      | <input type="checkbox"/> | Otero County Parcels 2022      | <input type="checkbox"/> | Torrance County Parcels 2022   | <input type="checkbox"/>            |                              |
| Chaves County Parcels 2022     | <input type="checkbox"/> | Eddy County Parcels 2022     | <input type="checkbox"/> | Lincoln County Parcels 2022   | <input type="checkbox"/> | Quay County Parcels 2022       | <input type="checkbox"/> | Quay County Parcels 2022       | <input type="checkbox"/> | San Miguel County Parcels 2022 | <input type="checkbox"/>            | Union County Parcels 2022    |

Mike A. Hamman, P.E.  
State Engineer



Roswell Office  
1900 WEST SECOND STREET  
ROSWELL, NM 88201

STATE OF NEW MEXICO  
OFFICE OF THE STATE ENGINEER

Trn Nbr: 742173  
File Nbr: C 04704

Feb. 09, 2023

DALE WOODALL  
DEVON ENERGY  
6488 7 RIVERS HWY  
ARTESIA, NM 88210

Greetings:

Your approved copy of the above numbered permit to drill a well for non-consumptive purposes is enclosed. You must obtain an additional permit if you intend to use the water. It is your responsibility to provide the contracted well driller with a copy of the permit that must be made available during well drilling activities.

Carefully review the attached conditions of approval for all specific permit requirements.

- \* If use of this well is temporary in nature and the well will be plugged at the end of the well usage, the OSE must initially approve of the plugging. If plugging approval is not conditioned in this permit, the applicant must submit a Plugging Plan of Operations for approval prior to the well being plugged. The Plugging Record must be properly completed and submitted to the OSE within 30 days of the well plugging.
- \* If the final intended purpose and condition requires a well ID tag and meter installation, the applicant must immediately send a completed meter report form to this office.
- \* The well record and log must be submitted within 30 days of the completion of the well or if the attempt was a dry hole.
- \* This permit expires and will be cancelled if no well is drilled and/or a well log is not received by the date set forth in the conditions of approval.

Appropriate forms can be downloaded from the OSE website [www.ose.state.nm.us](http://www.ose.state.nm.us).

Sincerely,

*Vanessa Clements*

Vanessa Clements  
(575) 622-6521

Enclosure

explore



2904 W 2nd St  
Roswell, NM 88201  
voice: 575.624.2420  
fax: 575.624.2421  
[www.atkinseng.com](http://www.atkinseng.com)

February 6, 2023

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

*Hand Delivered to the DII Office of the State Engineer*

Re: Application to Drill a Well with No Water Right for Groundwater Determination

To whom it may concern:

Atkins Engineering Associates, Inc. (AEA) has been contracted to install one (1) Soil boring/temporary monitoring well at 32.308684 -103.72686 at Tomb Raider 12 CTB 1 in Eddy County, NM.

Please find, in triplicate, an *Application to Drill a Well with No Water Right and Plugging Plan of Operation*

A check is attached for \$5.00 to process the application.

If you, have any questions, please contact me at 575.499.9244 or [luca@atkinseng.com](mailto:luca@atkinseng.com).

Sincerely,

A handwritten signature in black ink, appearing to read "Lucas Middleton".

Lucas Middleton  
[luca@atkinseng.com](mailto:luca@atkinseng.com)

Enclosures: As noted above.

QSC 01/23/2023 4:11:20



## WELL PLUGGING PLAN OF OPERATIONS



**NOTE:** A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging. This form may be used to plug a single well, or if you are plugging multiple monitoring wells on the same site using the same plugging methodology.

**Alert!** Your well may be eligible to participate in the Aquifer Mapping Program (AMP)-NM Bureau of Geology [geoinfo.nmt.edu/resources/water/egmn/](http://geoinfo.nmt.edu/resources/water/egmn/) if within an area of interest and meets the minimum construction requirements, such as there is still water in your well, and the well construction reflected in a well record and log is not compromised, contact AMP at 575-835-5038 or -6951, or by email [nmbg-waterlevels@nmt.edu](mailto:nmbg-waterlevels@nmt.edu), prior to completing this prior form. Showing proof to the OSE that your well was accepted in this program, may delay the plugging of your well until a later date.

**I. FILING FEE:** There is no filing fee for this form.

**II. GENERAL / WELL OWNERSHIP:**  Check here if proposing one plan for multiple monitoring wells on the same site and attaching WD-08m

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: C-4704- (POD-1)

Name of well owner: Devon Energy

Mailing address: 6488 7 Rivers Hwy County: Eddy

City: Artesia State: NM Zip code: 88210

Phone number: 575-748-1838 E-mail: Dale.Woodall@dvn.com

**III. WELL DRILLER INFORMATION:**

Well Driller contracted to provide plugging services: Jackie D. Atkins ( Atkins Engineering Associates)

New Mexico Well Driller License No.: 1249 Expiration Date: 04/30/2023

**IV. WELL INFORMATION:**  Check here if this plan describes method for plugging multiple monitoring wells on the same site and attach supplemental form WD-08m and skip to #2 in this section.

Note: A copy of the existing Well Record for the well(s) to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 18 min, 31.26 sec  
Longitude: 103 deg, 43 min, 36.7 sec, NAD 83

2) Reason(s) for plugging well(s):

Soil boring to determine groundwater level

04/07/2023 11:21

3) Was well used for any type of monitoring program? NO If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? N/A If yes, provide additional detail, including analytical results and/or laboratory report(s):

5) Static water level: Unknown feet below land surface / feet above land surface (circle one)

6) Depth of the well: 55 feet

7) Inside diameter of innermost casing: 6.5 boring inches.

8) Casing material: 2" Temporary PVC Sch 40 to be removed prior to plugging

9) The well was constructed with:  
 an open-hole production interval, state the open interval: \_\_\_\_\_  
 a well screen or perforated pipe, state the screened interval(s): \_\_\_\_\_

10) What annular interval surrounding the artesian casing of this well is cement-grouted? N/A

11) Was the well built with surface casing? \_\_\_\_\_ If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? \_\_\_\_\_ If yes, please describe:

12) Has all pumping equipment and associated piping been removed from the well? \_\_\_\_\_ If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

**V. DESCRIPTION OF PLANNED WELL PLUGGING:**  If plugging method differs between multiple wells on same site, a separate form must be completed for each method.

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal. Attach a copy of any signed OSE variance to this plugging plan.

Also, if this planned plugging plan requires a variance to 19.27.4 NMAC, attach a detailed variance request signed by the applicant.

1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:

The temporary well material will be removed. Tremied from bottom to land Neat Cement in lifts

2) Will well head be cut-off below land surface after plugging? N/A

**VI. PLUGGING AND SEALING MATERIALS:**

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant. Attach a copy of the batch mix recipe from the cement company and/or product description for specialty cement mixes or any sealant that deviates from the list of OSE approved sealants.

1) For plugging intervals that employ cement grout, complete and attach Table A.

2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.

3) Theoretical volume of grout required to plug the well to land surface: 87

4) Type of Cement proposed: Type I/II Neat Cement

5) Proposed cement grout mix: <6.0 gallons of water per 94 pound sack of Portland cement.

6) Will the grout be: batch-mixed and delivered to the site  
 mixed on site

2020-01-22 10:20:20 AM 11:21

7) Grout additives requested, and percent by dry weight relative to cement:

N/A

8) Additional notes and calculations:

N/A

**VII. ADDITIONAL INFORMATION:** List additional information below, or on separate sheet(s):

The temporary well material will be removed. If no water is encountered then drill cuttings will be used to (10) ten feet of land surface and plugged using hydrated bentonite. If ground water is encountered the boring will be plugged tremie from bottom to a slurry of Portland TYPE I/II Neat cement in lifts. A 6.5" borehole will be plugged.

**VIII. SIGNATURE:**

I, Dale Woodall, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

Dale Woodall  
Dale Woodall (Jan 11, 2023 09:55 MST)

1/11/2023

Signature of Applicant

Date

**IX. ACTION OF THE STATE ENGINEER:**

This Well Plugging Plan of Operations is:

Approved subject to the attached conditions.  
 Not approved for the reasons provided on the attached letter.

QSC 017 FEB 6 2023 AM 11:02

Witness my hand and official seal this 7<sup>th</sup> day of February, 2023



Mike A. Mamman P.E., New Mexico State Engineer

By: K. Parekh

KASHYAP PAREKH

W. R. M. I

WD-08 Well Plugging Plan  
Version: March 07, 2022  
Page 3 of 5

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

|   | Interval 1 – deepest | Interval 2 | Interval 3 – most shallow  |
|---|----------------------|------------|--|
|   |                      |            | Note: if the well is non-artesian and breaches only one aquifer, use only this column. |
| Top of proposed interval of grout placement (ft bgl)                          | N/A                  | N/A        | 0  |
| Bottom of proposed interval of grout placement (ft bgl)                       | N/A                  | N/A        | 55   |
| Theoretical volume of grout required per interval (gallons)                   | N/A                  | N/A        | 87   |
| Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement | N/A                  | N/A        | <6.0   |
| Mixed on-site or batch-mixed and delivered?                                   | N/A                  | N/A        | On-Site  |
| Grout additive 1 requested  | N/A                  | N/A        | N/A  |
| Additive 1 percent by dry weight relative to cement                           | N/A                  | N/A        | N/A  |
| Grout additive 2 requested  | N/A                  | N/A        | N/A  |
| Additive 2 percent by dry weight relative to cement                           | N/A                  | N/A        | N/A<br>USE DRAFT FEB 6 2023 at 11:22   |

**TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.**

|   | <b>Interval 1 – deepest</b> | <b>Interval 2</b> | <b>Interval 3 – most shallow</b>   |
|---|-----------------------------|-------------------|--|
|   |                             |                   | Note: if the well is non-artesian and breaches only one aquifer, use only this column. |
| Top of proposed interval of sealant placement (ft bgl)        | N/A                         | N/A               | 0  |
| Bottom of proposed sealant or grout placement (ft bgl)        | N/A                         | N/A               | 10   |
| Theoretical volume of sealant required per interval (gallons) | N/A                         | N/A               | 15   |
| Proposed abandonment sealant (manufacturer and trade name)    | N/A                         | N/A               | Bariod Hole Plug   |

DSE ON FEB 6 2023 AM11:22



STATE OF NEW MEXICO  
OFFICE OF THE STATE ENGINEER  
ROSWELL

1900 West Second St.  
Roswell, New Mexico 88201  
Phone: (575) 622-6521  
Fax: (575) 623- 8559

Applicant has identified wells, listed below, to be plugged. Jackie D. Atkins (Atkins Engineering Associates Inc.) (WD-1249) will perform the plugging.

Permittee: Devon Energy  
NMOSE Permit Number: C-4704-POD1

| NMOSE File  | Casing diameter (inches) | Well depth (feet bgl) | Approximate static water level (feet bgl) | Latitude       | Longitude      |
|-------------|--------------------------|-----------------------|---|----------------|----------------|
| C-4704-POD1 | 6.5<br>(Soil Boring)     | 55                    | Unknown                                   | 32° 18' 31.26" | 103° 43' 36.7" |

**Specific Plugging Conditions of Approval for Well located in Eddy County, New Mexico.**

1. Water well drilling and well drilling activities, including well plugging, are regulated under 19.27.4 NMAC, which requires any person engaged in the business of well drilling within New Mexico to obtain a Well Driller License issued by the New Mexico Office of the State Engineer (NMOSE). Therefore, the firm of a New Mexico licensed Well Driller shall perform the well plugging.

**2. Ground Water encountered:** The total Theoretical volume of sealant required for abandonment of soil boring well is approximately 95.0 gallons. Total minimum volume of necessary sealant shall be calculated upon sounding the actual pluggable depth of well, which is estimated at 55 feet.

**3. Dry Hole:** The total Theoretical volume of sealant required for abandonment of soil boring well is approximately 17.2 gallons. Total minimum volume of necessary sealant shall be calculated upon sounding the actual pluggable depth of well, which is estimated at 10 feet.

**4. Ground Water encountered:** Type I/II Portland cement mixed with 5.2 to 6.0 gallons of fresh water per 94-lb sack of cement is approved for the plugging the well.

**5. Dry Hole:** (a) Drill cuttings up to ten feet of land surface. (b) 10 feet to 0 feet – Hydrated bentonite. The bentonite shall be hydrated separately with its required increments of water prior to being mixed into the cement slurry.

6. Sealant shall be placed by pumping through a tremie pipe extended to near well bottom and kept below top of the slurry column as the well is plugged from bottom-upwards in a manner that displaces

the standing water column upwards from below. Tremie pipe may be pulled as necessary to retain minimal submergence in the advancing column of sealant.

7. Should cement "shrinks-back" occur in the well, use of a tremie for topping off is required for cement placement deeper than 20 feet below land surface or if water is present in the casing. The approved sealant for topping off is identified in condition 3. and 4. of these Specific Conditions of Approval.

8. Any open annulus encountered surrounding the casing shall also be sealed by the placement of the approved sealant. When plugging shallow wells with no construction or environmental concerns, and if the well record on a well to be plugged shows a proper 20-foot annular seal, a plugging plan can propose the use of clean fill material to a nominal 30 feet bgs, then placing an OSE approved sealant to surface. Lacking that information, we would require an excavation of at least 2-feet which shall then be filled in its entirety with sealant to surface.

9. Should the NMED, or another regulatory agency sharing jurisdiction of the project authorize, or by regulation require a more stringent well plugging procedure than herein acknowledged, the more-stringent procedure should be followed. This, in part, includes provisions regarding pre-authorization to proceed, contaminant remediation, inspection, pulling/perforating of casing, or prohibition of free discharge of any fluid from the borehole during or related to the plugging process.

10. NMOSE witnessing of the plugging of the soil boring will not be required.

11. Any deviation from this plan must obtain an approved variance from this office prior to implementation.

12. A Well Plugging Record itemizing actual abandonment process and materials used shall be filed with the State Engineer within 30 days after completion of well plugging. For the plugging record, please resurvey coordinate location for well and note coordinate system for GPS unit. Please attach a copy of these plugging conditions.

The NMOSE Well Plugging Plan of Operations is hereby approved with the aforesaid conditions applied.

Witness my hand and seal this 7<sup>th</sup> day of February 2023

Mike A. Hamman, P.E. State Engineer

By: K. Parekh

Kashyap Parekh  
Water Resources Manager I





**STATE OF NEW MEXICO**  
OFFICE OF THE STATE ENGINEER  
ROSWELL

**Mike A. Hamman, P.E.**  
State Engineer

**DISTRICT II**

1900 West Second St.  
Roswell, New Mexico 88201  
Phone: (575) 622-6521  
Fax: (575) 623-8559

February 7, 2023

Devon Energy  
6488 7 Rivers Highway  
Artesia, NM 88210

RE: Well Plugging Plan of Operations for well no. C-4704-POD1

Greetings:

Enclosed is your copy of the Well Plugging Plan of Operations for the above referenced well subject to the attached Conditions of Approval. The proposed method of operation is found to be acceptable and in accordance with the Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells 19.27.4 NMAC adopted June 30, 2017 by the State Engineer, subject to the attached Conditions of Approval.

Within 30 days after the well is plugged, the well driller is required to file a complete plugging record with the OSE and the permit holder.

Sincerely,

A handwritten signature in black ink that reads "K. Parekh".

Kashyap Parekh  
Water Resources Manager I



# PLUGGING RECORD

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

## I. GENERAL / WELL OWNERSHIP:

State Engineer Well Number: C-4704 POD-1  
 Well owner: Devon Energy Phone No.: 575-748-1838  
 Mailing address: 6488 7 Rivers Hwy  
 City: Artesia State: New Mexico Zip code: 88210

## II. WELL PLUGGING INFORMATION:

- 1) Name of well drilling company that plugged well: Jackie D. Atkins ( Atkins Engineering Associates Inc.)
- 2) New Mexico Well Driller License No.: 1249 Expiration Date: 04/30/25
- 3) Well plugging activities were supervised by the following well driller(s)/rig supervisor(s): Shane Eldridge, Cameron Pruitt
- 4) Date well plugging began: 4/18/23 Date well plugging concluded: 4/18/23
- 5) GPS Well Location:      Latitude: 32 deg, 18 min, 31.26 sec  
                                   Longitude: 103 deg, 43 min, 36.7 sec, WGS 84
- 6) Depth of well confirmed at initiation of plugging as: 55 ft below ground level (bgl),  
   by the following manner: weighted tape
- 7) Static water level measured at initiation of plugging: n/a ft bgl
- 8) Date well plugging plan of operations was approved by the State Engineer: 2/9/23
- 9) Were all plugging activities consistent with an approved plugging plan? Yes If not, please describe differences between the approved plugging plan and the well as it was plugged (attach additional pages as needed):

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

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

| <u>Depth</u><br>(ft bgl) | <u>Plugging<br/>Material Used</u><br>(include any additives used) | <u>Volume of<br/>Material Placed</u><br>(gallons) | <u>Theoretical Volume<br/>of Borehole/ Casing</u><br>(gallons) | <u>Placement<br/>Method</u><br>(tremie pipe,<br>other) | <u>Comments</u><br>("casing perforated first", "open<br>annular space also plugged", etc.) |
|--------------------------|---|---|--|--|--|
| 0-10'                    | Hydrated Bentonite  | Approx. 15 gallons                                | 15 gallons   | Augers   |  |
| 10'-55'                  | Drill Cuttings  | Approx. 71 gallons                                | 71 gallons   | Boring   |  |

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

**III. SIGNATURE:**

I, Jackie D. Atkins

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

*Jack Atkins*

4/27/23

Signature of Well Driller

Date



# WELL RECORD & LOG

## OFFICE OF THE STATE ENGINEER

[www.ose.state.nm.us](http://www.ose.state.nm.us)

|                                  |   |                     |  |   |   |  |   |                                      |                          |
|----------------------------------|---|---------------------|--|---|---|--|---|--------------------------------------|--------------------------|
| 1. GENERAL AND WELL LOCATION     | OSE POD NO. (WELL NO.)<br>POD 1 (TW-1)  |                     |  | WELL TAG ID NO.<br>N/A  |   | OSE FILE NO(S).<br>C-4704  |   |                                      |                          |
|                                  | WELL OWNER NAME(S)<br>Devon Energy  |                     |  | PHONE (OPTIONAL)<br>575-748-1838  |   |  |   |                                      |                          |
|                                  | WELL OWNER MAILING ADDRESS<br>6488 7 Rivers Hwy   |                     |  | CITY<br>Artesia   |   | STATE<br>NM  | ZIP<br>88210  |                                      |                          |
|                                  | WELL<br>LOCATION<br>(FROM GPS)  | DEGREES<br>LATITUDE | 32   | MINUTES<br>18   | 31.26   | N  | * ACCURACY REQUIRED: ONE TENTH OF A SECOND                          |                                      |                          |
|                                  |   | LONGITUDE           | 103  | 43  | 36.7  | W  | * DATUM REQUIRED: WGS 84  |                                      |                          |
|                                  | DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE<br>SW NE NE Sec.13 T23S R31E NMPM                               |                     |  |   |   |  |   |                                      |                          |
| 2. DRILLING & CASING INFORMATION | LICENSE NO.<br>1249   |                     | NAME OF LICENSED DRILLER<br>Jackie D. Atkins |   |   | NAME OF WELL DRILLING COMPANY<br>Atkins Engineering Associates, Inc. |   |                                      |                          |
|                                  | DRILLING STARTED<br>4/11/23   |                     | DRILLING ENDED<br>4/11/23                    | DEPTH OF COMPLETED WELL (FT)<br>Temporary Well Material   | BORE HOLE DEPTH (FT)<br>±55                     |  | DEPTH WATER FIRST ENCOUNTERED (FT)<br>N/A                           |                                      |                          |
|                                  | COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)   |                     |  |   | STATIC WATER LEVEL<br>IN COMPLETED WELL<br>(FT) |  | N/A   | DATE STATIC MEASURED<br>4/18/23      |                          |
|                                  | DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES – SPECIFY:  |                     |  |   |   |  |   |                                      |                          |
|                                  | DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER – SPECIFY: Hollow Stem Auger |                     |  |   |   |  | CHECK HERE IF PITLESS ADAPTER IS <input type="checkbox"/> INSTALLED |                                      |                          |
|                                  | DEPTH (feet bgl)  |                     | BORE HOLE<br>DIAM<br>(inches)                | CASING MATERIAL AND/OR<br>GRADE<br>(include each casing string, and<br>note sections of screen) |   | CASING<br>CONNECTION<br>TYPE<br>(add coupling diameter)              | CASING<br>INSIDE DIAM.<br>(inches)                                  | CASING WALL<br>THICKNESS<br>(inches) | SLOT<br>SIZE<br>(inches) |
|                                  | FROM  | TO                  |  |   |   |  |   |                                      |                          |
|                                  | 0   | 55                  | ±6.25  | Soil Boring   |   | --   | --  | --                                   | --                       |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
| 3. ANNULAR MATERIAL              | DEPTH (feet bgl)  |                     | BORE HOLE<br>DIAM. (inches)                  | LIST ANNULAR SEAL MATERIAL AND<br>GRAVEL PACK SIZE-RANGE BY INTERVAL                            |   |  | AMOUNT<br>(cubic feet)  | METHOD OF<br>PLACEMENT               |                          |
|                                  | FROM  | TO                  |  | N/A   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |
|                                  |   |                     |  |   |   |  |   |                                      |                          |

FOR OSE INTERNAL USE

WR-20 WELL RECORD &amp; LOG (Version 01/28/2022)

|                                   |                  |                       |
|-----------------------------------|------------------|-----------------------|
| FILE NO. <u>C-04704</u>           | POD NO. <u>1</u> | TRN NO. <u>742173</u> |
| LOCATION <u>23S. 31E. 13. 32Z</u> | WELL TAG ID NO.  | PAGE 1 OF 2           |

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 01/28/2022)

FILE NO. C-04704

POD NO.

TRN NO. 747173

4/27/23

SIGNATURE OF DRILLER / PRINT SIGNEE NAME

DATE

LOCATION 235.31E. 13.322

WELL TAG ID NO.

PAGE 2 OF 2

File No.:

C-2348



## NEW MEXICO OFFICE OF THE STATE ENGINEER

CHANGE OF OWNERSHIP OF 72-12-1 PERMIT FOR (check one):



|  |   |
|--|---|
| <input type="checkbox"/> Individual              | <input checked="" type="checkbox"/> Corporation |
| <input type="checkbox"/> Trustee                 | <input type="checkbox"/> Partnership            |
| <input type="checkbox"/> Estate                  | <input type="checkbox"/> Limited Liability Co.  |
| <input type="checkbox"/> Tribes, Pueblos, Nation | <input type="checkbox"/> Governmental Entity    |

## 1. OWNER OF RECORD (Seller)

|  |  |               |
|--|--|---------------|
| Name: NGL Water Solutions Permian, LLC                             | Name:  |               |
| Phone: <input type="checkbox"/> Home <input type="checkbox"/> Cell | Phone: <input type="checkbox"/> Home <input type="checkbox"/> Cell |               |
| Phone (Work): (720) 213-1521                                       | Phone (Work):  |               |
| a. Owner of Record File No.:<br>C-02348                            | b. Sub-file No.:   | c. Cause No.: |

2. NEW OWNER (Buyer) Note: If more owners need to be listed, attach a separate sheet. Attached?  Yes

|  |  |  |
|--|--|--|
| Name: NGL North Ranch, LLC, a Texas Limited Liability Company      | Name:  |  |
| Contact or Agent: <input type="checkbox"/> check here if Agent     | Contact or Agent: <input type="checkbox"/> check here if Agent     |  |
| Jim Winter   |  |  |
| Mailing Address: 865 North Albion Street, Suite 400                | Mailing Address:   |  |
| City: Denver   | City: 000 DUE JAN 31 2024 PM 0142                                  |  |
| State: CO Zip Code: 80220  | State: Zip Code:   |  |
| Phone: <input type="checkbox"/> Home <input type="checkbox"/> Cell | Phone: <input type="checkbox"/> Home <input type="checkbox"/> Cell |  |
| Phone (Work): (720) 213-1521                                       | Phone (Work):  |  |
| E-mail (optional): Jim.Winter@nglep.com                            | E-mail (optional):   |  |

Required: Submit warranty deed(s) or other instrument(s) of conveyance properly recorded with the county clerk's office.

## 3. PURPOSE OF USE &amp; AMOUNT CONVEYED

|  |  |
|--|--|
| Check all that apply:  | Amount of Water (acre-feet per annum): |
| <input type="checkbox"/> Domestic <input checked="" type="checkbox"/> Livestock <input type="checkbox"/> Multiple House <input type="checkbox"/> Drinking & Sanitary | 3                                      |

## 4. LIST ALL KNOWN WELLS (POD) FOR THE 72-12-1 PERMIT CONVEYED

| OSE POD No.: | Well Tag ID No.:<br>(if applicable) | Subdivision          | Section or X<br>(Easting or<br>Longitude) | Township or Y<br>(Northing or<br>Latitude) | Range | County |
|--------------|-------------------------------------|----------------------|---|--|-------|--------|
| C-02348      |                                     | NW 1/4 SE 1/4 SW 1/4 | 26  | 23S  | 31E   | Eddy   |
|              |                                     |                      |   |  |       |        |
|              |                                     |                      |   |  |       |        |

5. CHECK HERE IF WELL IS SHARED BY MULTIPLE HOUSEHOLDS: 

Note: Attach an updated list of lots served and owner contact information.

FOR OSE INTERNAL USE

Change of Ownership, Form wr-02d, Rev 08/24/22

|                                |                  |                                  |
|--------------------------------|------------------|----------------------------------|
| File No.: C-2348               | Trn. No.: 755955 | Well Tag ID No. (if applicable): |
| Trans Desc. (optional): County | Sub-Basin: C     | Receipt No.: 2-46577             |

Page 1 of 2

**6. ADDITIONAL STATEMENTS OR EXPLANATIONS**

Attached is a copy of the recorded Quit Claim deed from NGL Water Solutions Permian, LLC to NGL North Ranch, <sup>LLC</sup>~~Inc.~~.

**ACKNOWLEDGEMENT FOR INDIVIDUAL**

I, We (name of owner(s)), \_\_\_\_\_  
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Signature \_\_\_\_\_

Signature \_\_\_\_\_

State of \_\_\_\_\_ )  
ss.  
County of \_\_\_\_\_ )

This instrument was acknowledged before me this \_\_\_\_\_ day of \_\_\_\_\_ A.D., 20 \_\_\_\_\_, by (name of owner(s)):

Notary Public:

My commission expires:

**ACKNOWLEDGEMENT FOR CORPORATION**

I, We (name of owner(s)), <sup>LLC</sup>NGL North Ranch, Inc., a Texas Limited Liability Company by Doug White  
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Officer Signature \_\_\_\_\_

Officer Signature \_\_\_\_\_

OSE Q1 JAN 31 2024 PM 2:43

State of Colorado \_\_\_\_\_ )  
ss.  
County of Denver \_\_\_\_\_ )

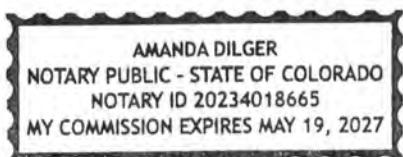
This instrument was acknowledged before me this 12 day of January A.D., 20 24, by the following on behalf of said corporation.

Name of Officer: Doug White

Title of Officer: Executive Vice President

Name of Corporation Acknowledging: <sup>LLC</sup>NGL North Ranch, Inc., a Texas Limited Liability Company

State of Corporation: Texas



Notary Public:

My commission expires:

Amanda Dilger  
May 19, 2027

FOR OSE INTERNAL USE

Change of Ownership, Form wr-02d, Rev 08/24/22

|  |                         |  |  |
|--|-------------------------|--|--|
| File No.: <u>C-2348</u>                | Trn. No.: <u>755955</u> | Well Tag ID No. (if applicable): _____ |  |
| Trans Desc. (optional): <u>Crown F</u> | Sub-Basin: <u>C</u>     | Receipt No.: <u>246577</u>             |  |

Page 2 of 2

EA COUNTY, NM  
KE....MANES, COUNTY CLERK  
45624  
Book 2220 Page 18  
1 of 2  
01/30/2024 01:45 PM  
BY ANGIE BEAUCHAMP

**CORRECTIVE QUITCLAIM DEED**

This Corrective Quitclaim Deed is submitted to correct a typographical error in the name of the Grantee in the Quitclaim Deed recorded on January 18, 2024, Document No. 45121, Book 2219, Page 507, in Lea County, New Mexico. NGL Water Solutions Permian, LLC, ("Grantor"), quitclaims to NGL North Ranch, LLC, a Texas Limited Liability Company, whose address is 865 North Albion Street, Suite 400, Denver Colorado, 80220 ("Grantee"), Grantor's right, title, and interest in and to all water rights described in Office of the State Engineer File Number C-03555.

*Remainder of Page Intentionally Left Blank*

*Signature Page to Follow*

OCD 01 JAN 31 2024 PM4:07

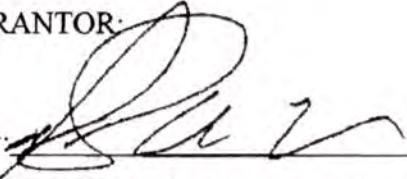
Deed to be recorded in Lea County

LEA COUNTY, NM  
H MANES, COUNTY CLERK  
45624  
Book 2220 Page 18  
2 of 2  
01/30/2024 01:45 PM  
BY ANGIE BEAUCHAMP

WITNESS my hand and seal this 26 day of January, 2024.

GRANTOR:

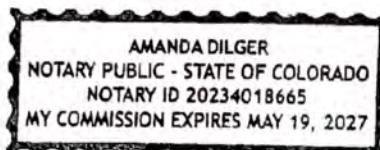
By:

  
NGL Water Solutions Permian, LLC

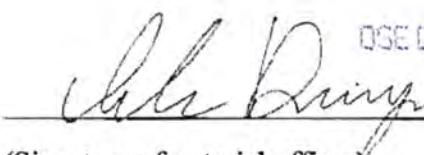
State of Colorado

County of Denver

The foregoing instrument was acknowledged before me on January 26, 2024, by Douglas W. White, in his capacity as Executive Vice President of NGL Water Solutions Permian, LLC.



(Seal/Stamp)

  
OGE DIT JAN 31 2024 PM4:07

(Signature of notarial officer)

Title of office: Notary Public

Commission #: 20234018665

My commission expires: May 19, 2027

Mike A. Hamman, P.E.  
State Engineer



swell Office  
1900 WEST SECOND STREET  
ROSWELL, NM 88201

**STATE OF NEW MEXICO  
OFFICE OF THE STATE ENGINEER**

Trn Nbr: 755955  
File Nbr: C 02348

Jan. 31, 2024

JIM WINTER  
NGL NORTH RANCH LLC A TEXAS LIMITED LIABILITY CO  
865 NORTH ALBION ST STE 400  
DENVER, CO 80220

Greetings:

Enclosed is one original copy of a Change of Ownership of a Water Right submitted to this office for filing. This Change of Ownership is accepted for filing in accordance with Section 72-1-2.1, NMSA 1978 (1996 Supp.), effective May 15, 1996. The acceptance by the State Engineer Office does not constitute validation of the right claimed.

According to Section 72-1-2.1, NMSA 1978 (1996 Supp.), you must record this Change of Ownership with the clerk of the county in which the water is located. The filing shall be public notice of the existence and contents of the instruments so recorded.

Sincerely,

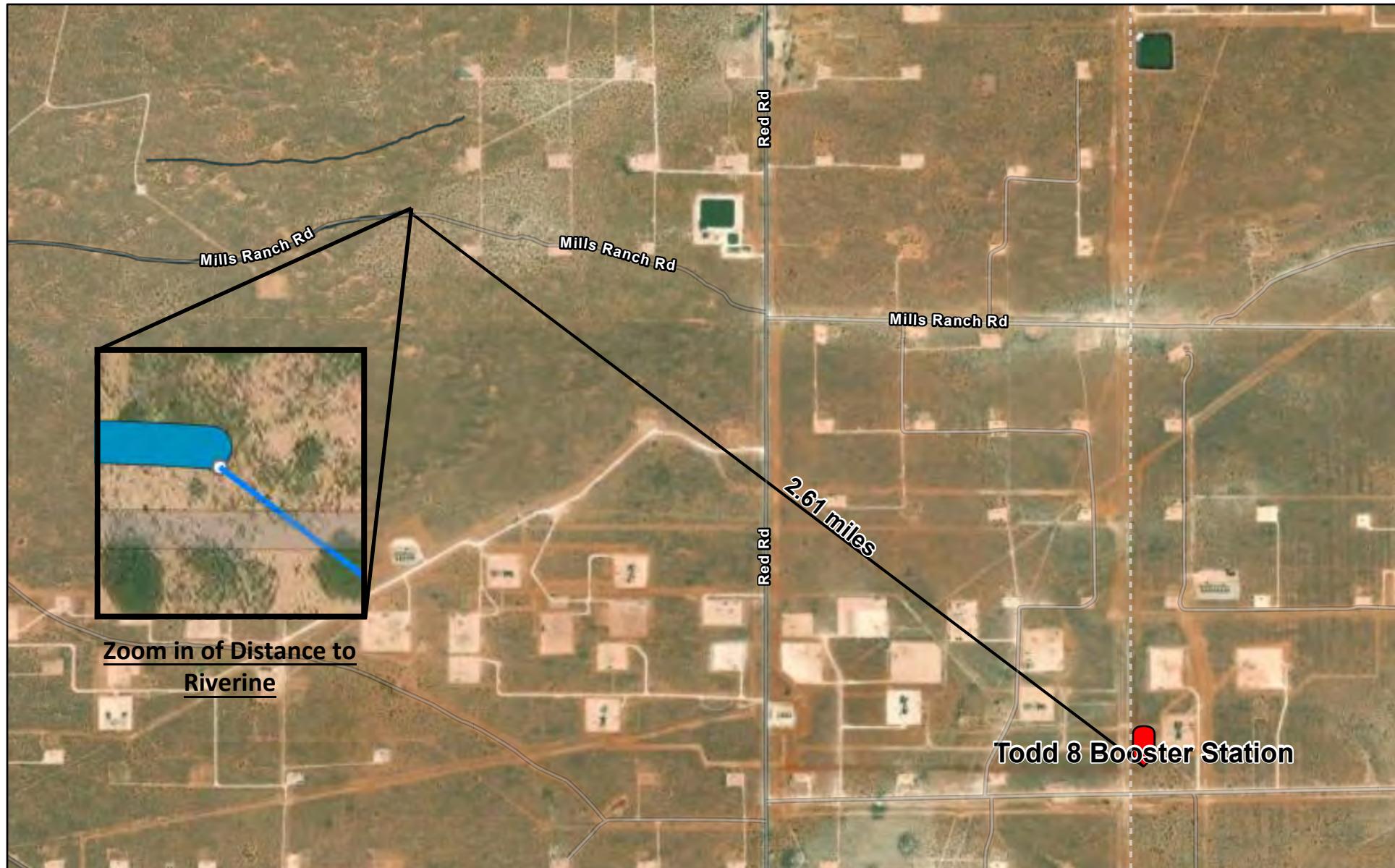
A handwritten signature in black ink that appears to read "Maret Thompson".

Maret Thompson  
(575) 622-6521

Enclosure

chngowrc

# Todd 8 Booster Station Nearest Significant Watercourse



10/28/2025

Wetlands

 Riverine

World Imagery

Released to Imaging: 12/22/2025 4:06:22 PM

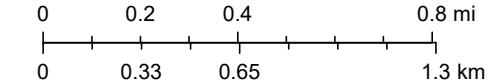
## Nearest Watercourse

Riverine

## Distance

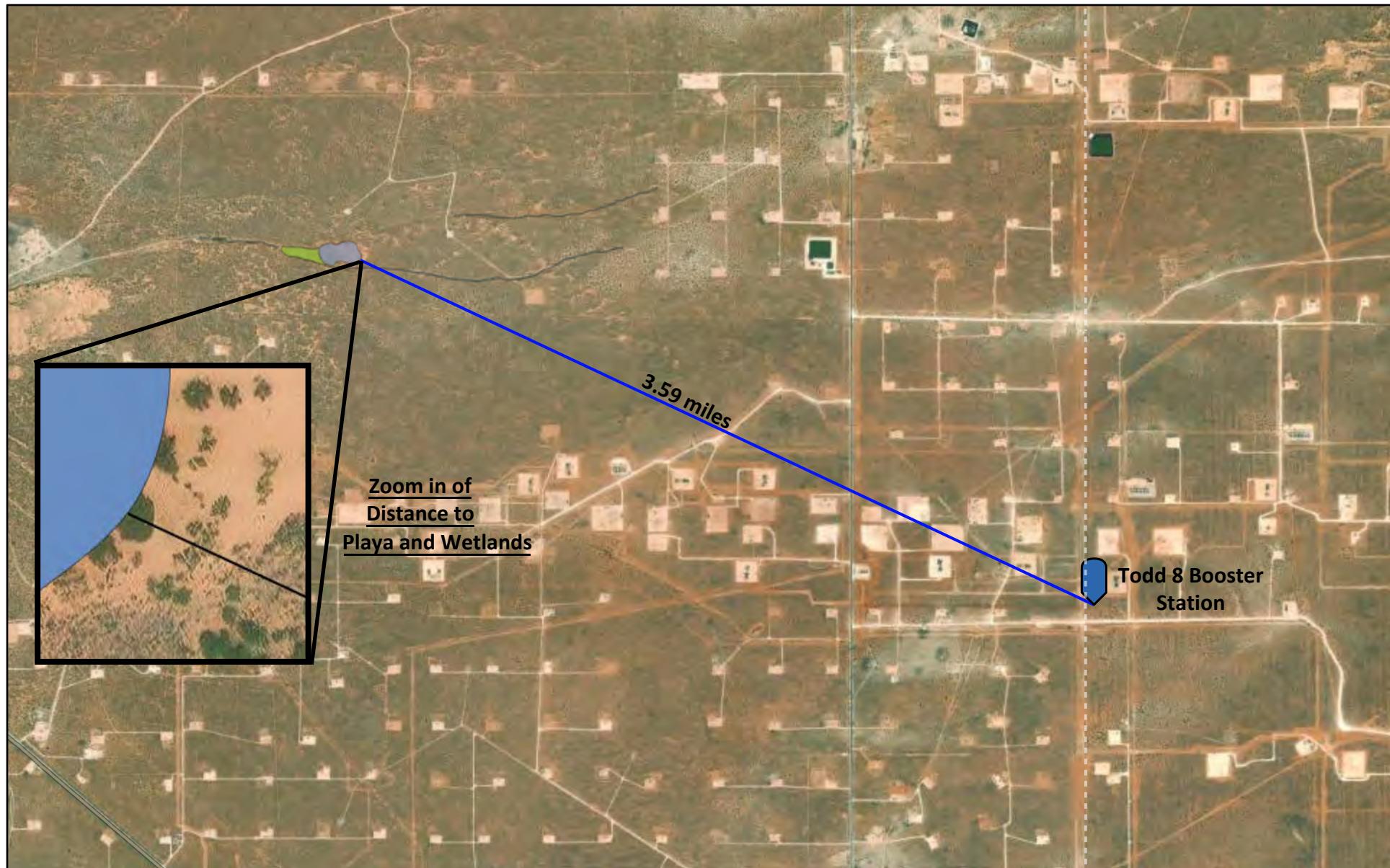
2.61 miles

1:29,589



Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

Distance: 3.59 miles



10/27/2025

Wetlands

Freshwater Emergent Wetland

Freshwater Pond

Riverine

World Imagery

Low Resolution 15m Imagery

High Resolution 60cm Imagery

1:45,907

0 0.33 0.65 1.3 mi  
0 0.5 1 2 km

Vantor, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community

Monica Peppin

Distance to Nearest Residence: 5.35 miles

Legend

Page 42 of 69

 Todd 8 Booster Station



Zoom in of  
Distance to  
Residence

5.35 miles

 Todd 8 Booster Station

N

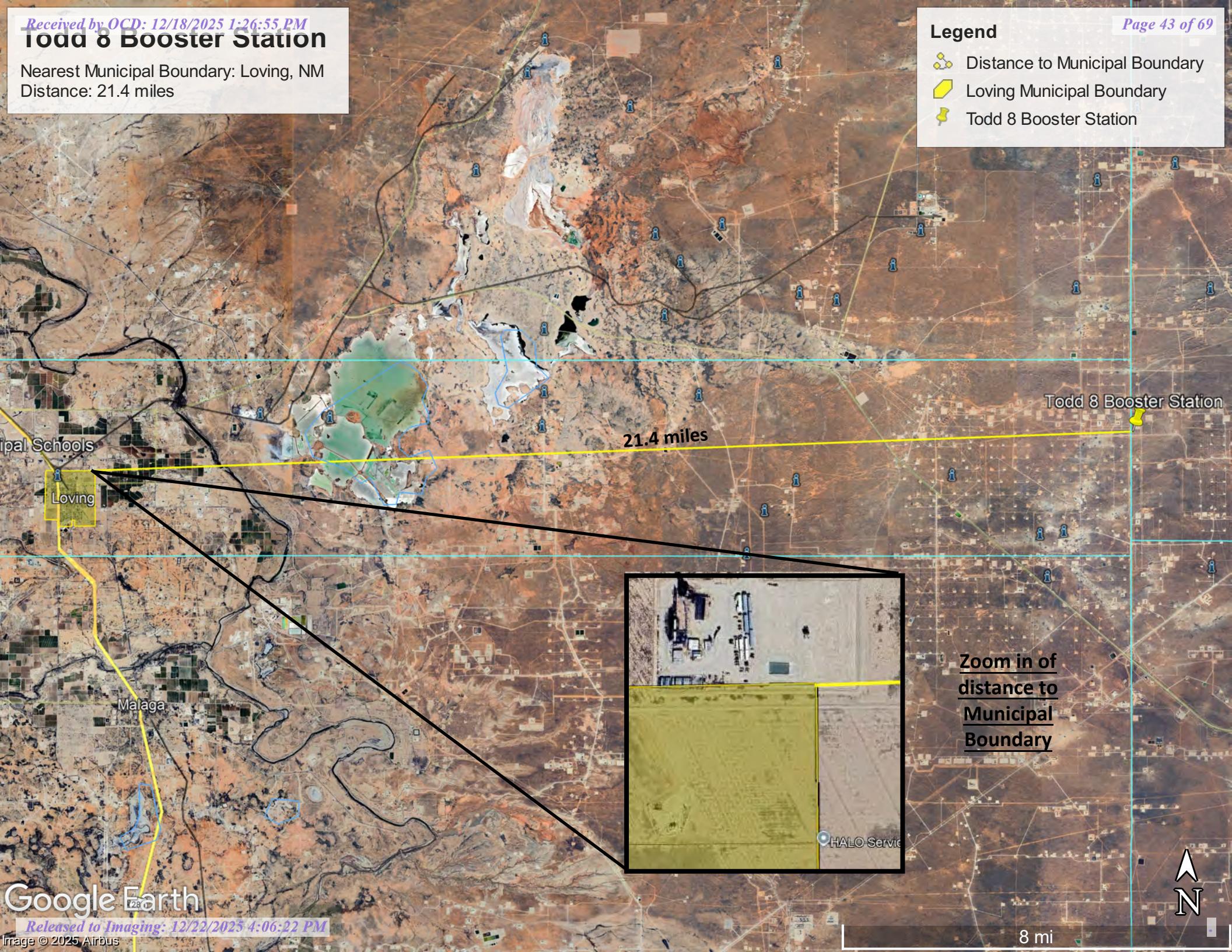
Google Earth

Released to Imaging: 12/22/2025 4:06:22 PM

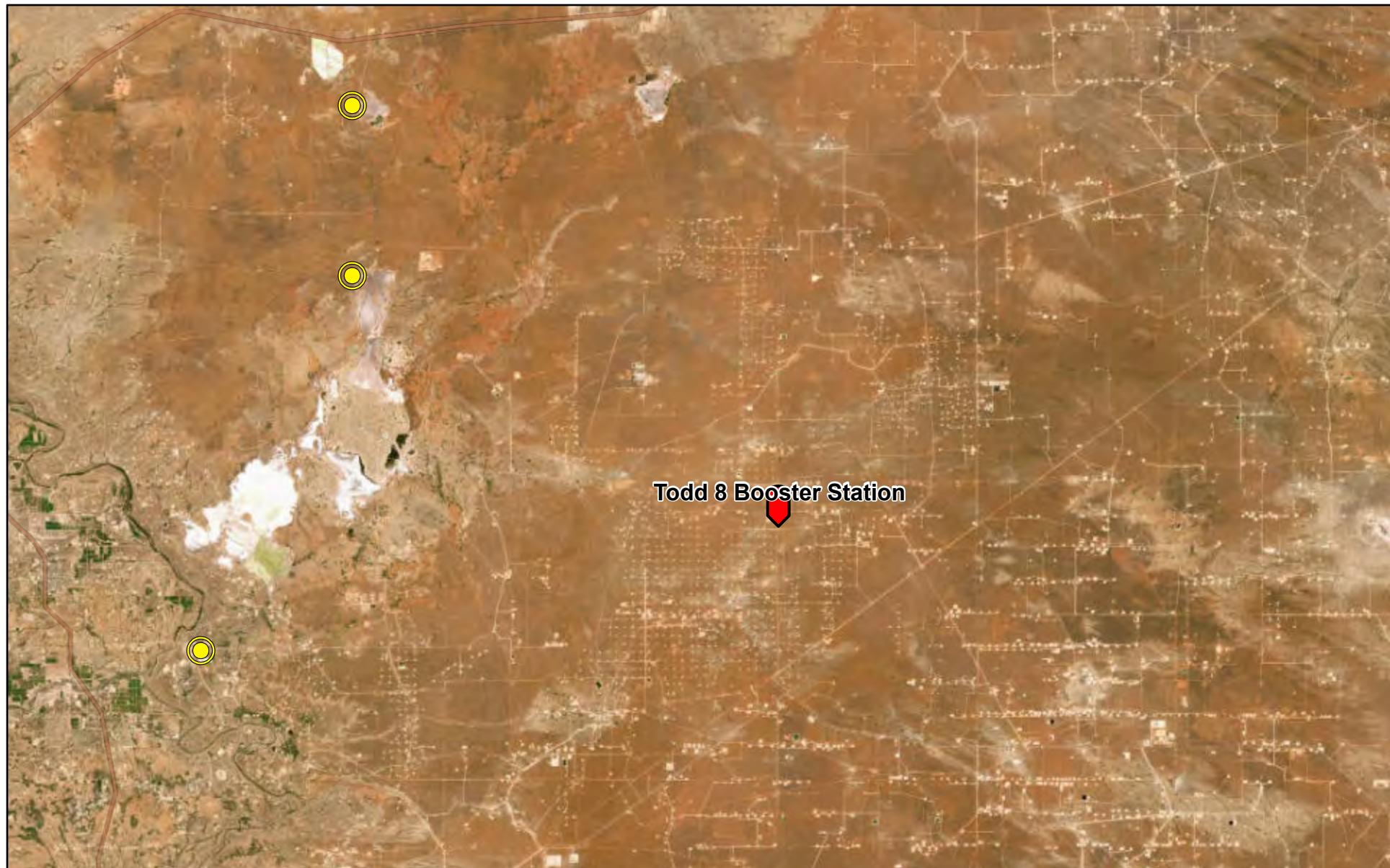
Image © 2025 Airbus

2 mi

Nearest Municipal Boundary: Loving, NM  
Distance: 21.4 miles



## Todd 8 Booster Station Mines Proximity



11/6/2025



Mining Facilities 2024, NMED

World Imagery

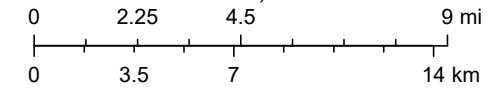
Low Resolution 15m Imagery

High Resolution 60cm Imagery

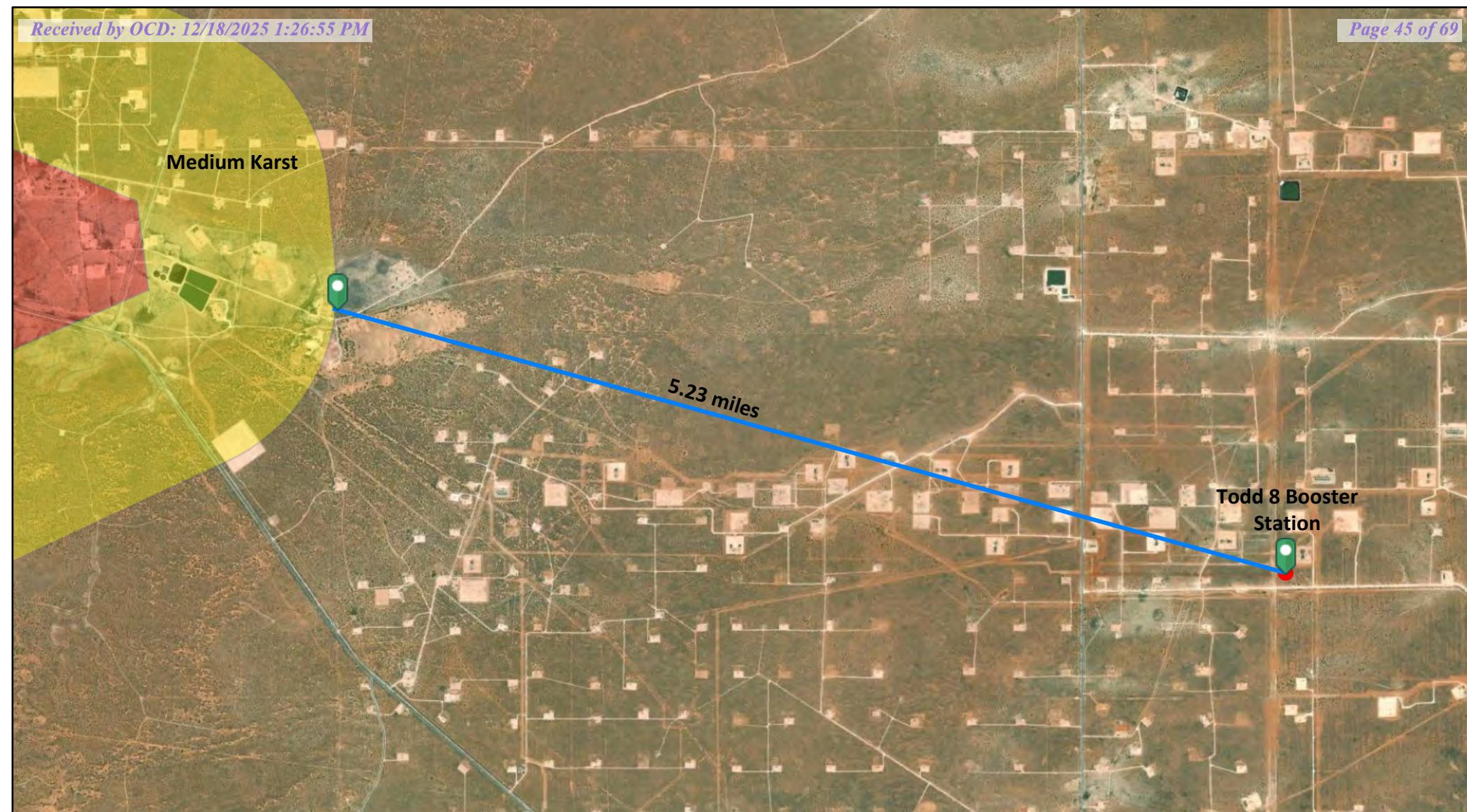
High Resolution 30cm Imagery

Citations

75m Resolution Metadata



Earthstar Geographics, Sources: Esri, TomTom, Garmin, FAO, NOAA, USGS, (c) OpenStreetMap contributors, and the GIS User Community



## Todd 8 Booster Station Karst Potential Map

0 0.3 0.6 1.2 mi



New Mexico State Land Office



### Disclaimer:

The New Mexico State Land Office assumes no responsibility or liability for, or in connection with the accuracy, reliability, or use of the information provided herein with respect to State Land Office data or data from other sources.

Data pertaining to New Mexico State Trust Lands are provisional and subject to revision, and do not constitute an official record of title. Official records may be reviewed at the New Mexico State Land Office in Santa Fe, New Mexico.

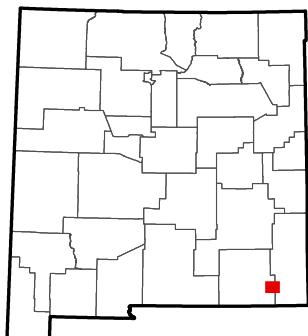
Released to Imaging: 12/22/2025 4:06:22 PM

ivimap Created: 10/22/2025

User drawn points  
 Karst\_Potential\_NM  
 Potential  
 Critical

High  
 Medium

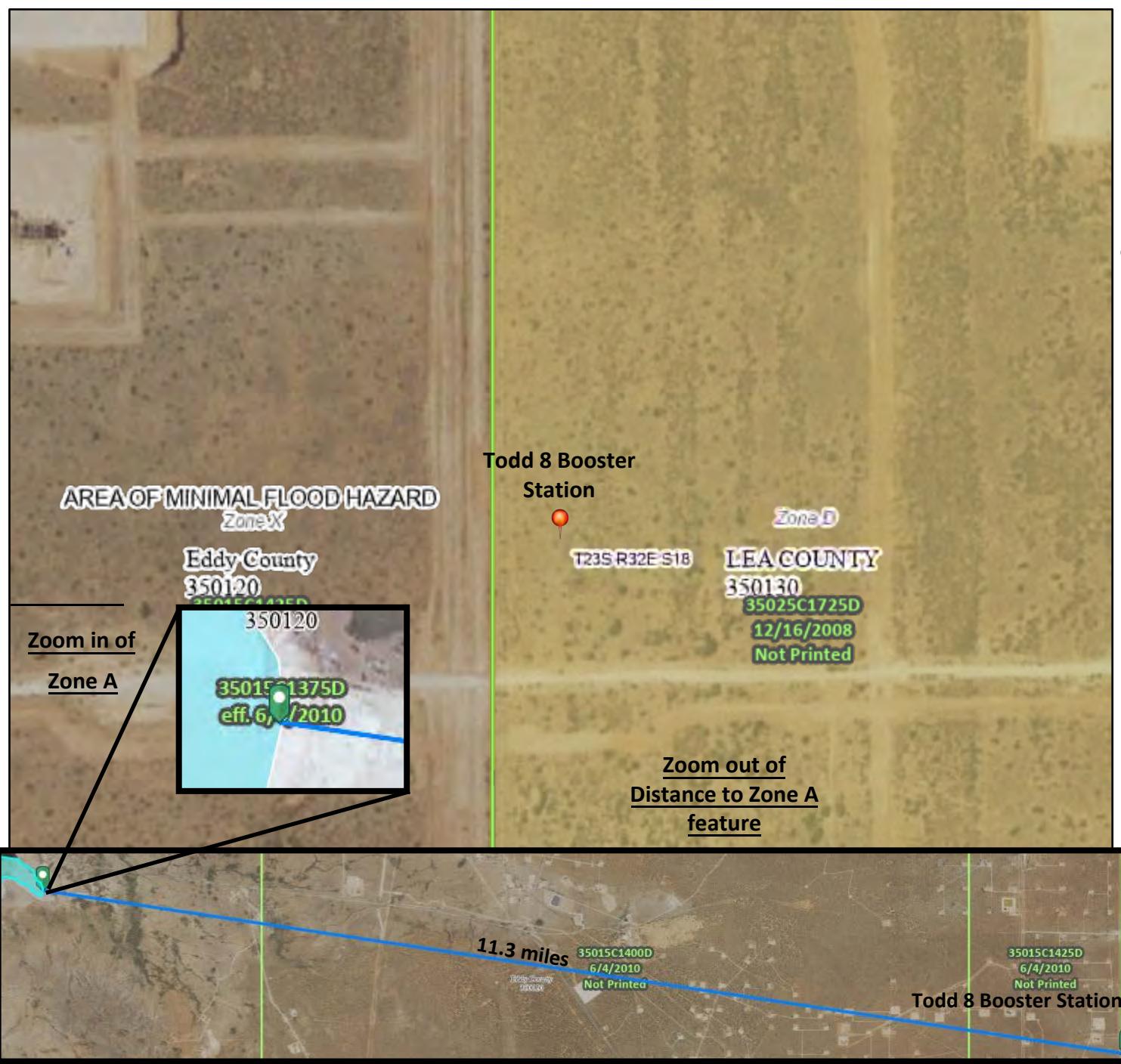
**Karst Potential**  
**Non-karst Zone**  
**Nearest Karst Zone**  
**Medium Potential**  
**Distance**  
**5.23 miles**



## National Flood Hazard Layer FIRMette Todd 8 Booster Station



103°43'39"W 32°18'39"N



## Legend

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

|                                    |   |
|------------------------------------|---|
| <b>SPECIAL FLOOD HAZARD AREAS</b>  | Without Base Flood Elevation (BFE)<br>Zone A, V, A99  |
|                                    | With BFE or Depth Zone AE, AO, AH, VE, AR   |
|                                    | Regulatory Floodway   |
| <b>OTHER AREAS OF FLOOD HAZARD</b> | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X |
|                                    | Future Conditions 1% Annual Chance Flood Hazard Zone X  |
|                                    | Area with Reduced Flood Risk due to Levee. See Notes. Zone X  |
| <b>OTHER AREAS</b>                 | Area with Flood Risk due to Levee Zone D  |
|                                    | NO SCREEN Area of Minimal Flood Hazard Zone X   |
|                                    | Effective LOMRs   |
| <b>GENERAL STRUCTURES</b>          | Area of Undetermined Flood Hazard Zone D  |
|                                    | Channel, Culvert, or Storm Sewer  |
|                                    | Levee, Dike, or Floodwall   |
| <b>OTHER FEATURES</b>              | 20.2 Cross Sections with 1% Annual Chance   |
|                                    | 17.5 Water Surface Elevation  |
|                                    | 8 - - - Coastal Transect  |
| <b>MAP PANELS</b>                  | ~~~~~ Base Flood Elevation Line (BFE)   |
|                                    | Limit of Study  |
|                                    | Jurisdiction Boundary   |
| <b>MAP PANELS</b>                  | Coastal Transect Baseline   |
|                                    | Profile Baseline  |
|                                    | Hydrographic Feature  |
| <b>MAP PANELS</b>                  | Digital Data Available  |
|                                    | No Digital Data Available   |
|                                    | Unmapped  |

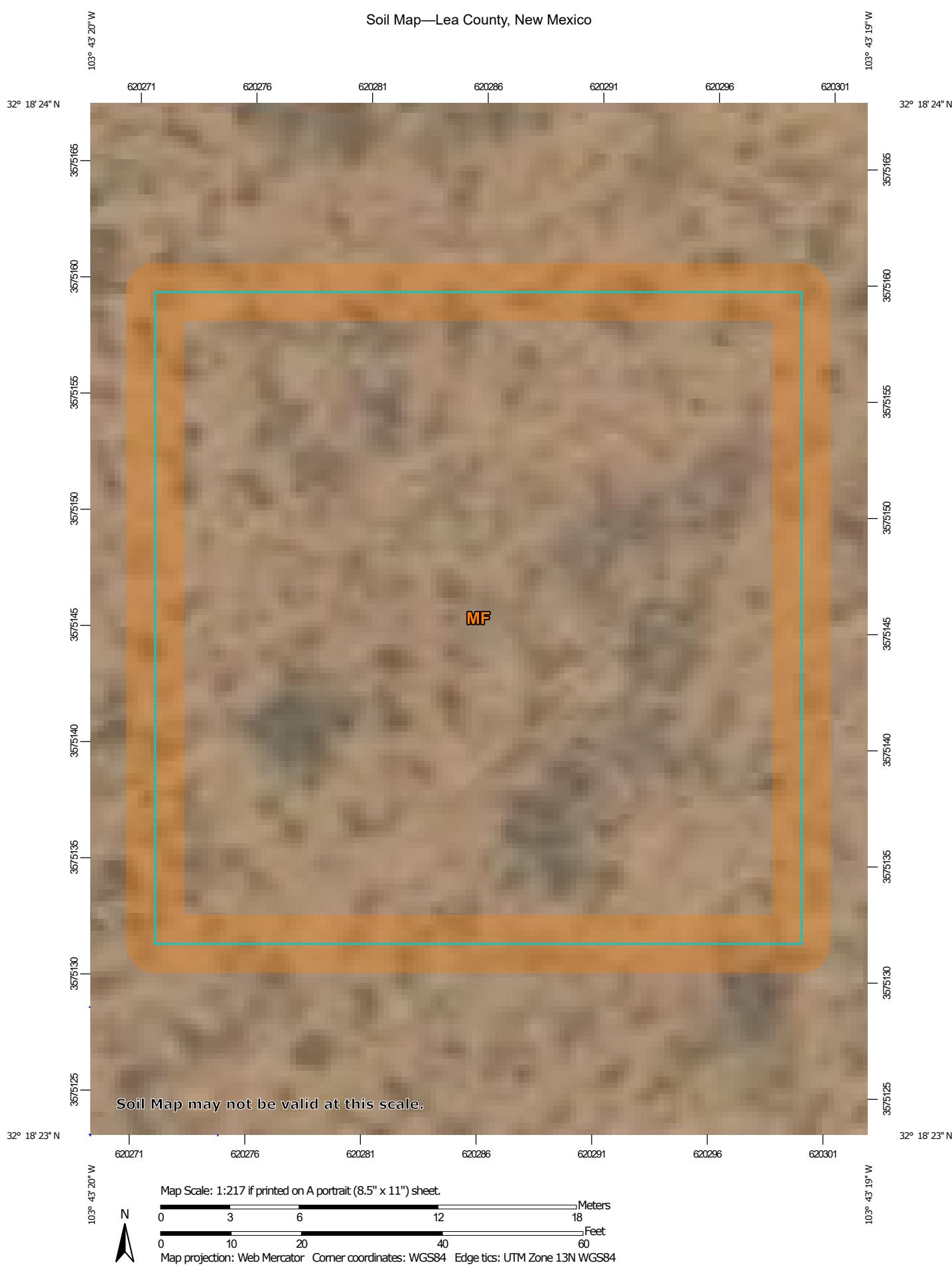


The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/20/2025 at 4:00 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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



## Soil Map—Lea County, New Mexico

### MAP LEGEND

|                               |  |                        |
|-------------------------------|--|------------------------|
| <b>Area of Interest (AOI)</b> |  | Area of Interest (AOI) |
| <b>Soils</b>                  |  | Soil Map Unit Polygons |
|                               |  | Soil Map Unit Lines    |
|                               |  | Soil Map Unit Points   |
| <b>Special Point Features</b> |  |                        |
|                               |  | Blowout                |
|                               |  | Borrow Pit             |
|                               |  | Clay Spot              |
|                               |  | Closed Depression      |
|                               |  | Gravel Pit             |
|                               |  | Gravelly Spot          |
|                               |  | Landfill               |
|                               |  | Lava Flow              |
|                               |  | Marsh or swamp         |
|                               |  | Mine or Quarry         |
|                               |  | Miscellaneous Water    |
|                               |  | Perennial Water        |
|                               |  | Rock Outcrop           |
|                               |  | Saline Spot            |
|                               |  | Sandy Spot             |
|                               |  | Severely Eroded Spot   |
|                               |  | Sinkhole               |
|                               |  | Slide or Slip          |
|                               |  | Sodic Spot             |
| <b>Water Features</b>         |  |                        |
|                               |  | Streams and Canals     |
| <b>Transportation</b>         |  |                        |
|                               |  | Rails                  |
|                               |  | Interstate Highways    |
|                               |  | US Routes              |
|                               |  | Major Roads            |
|                               |  | Local Roads            |
| <b>Background</b>             |  |                        |
|                               |  | Aerial Photography     |

### MAP INFORMATION

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

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

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

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: [websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov)  
 Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Lea County, New Mexico  
 Survey Area Data: Version 22, Sep 9, 2025

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

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

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

Soil Map—Lea County, New Mexico

## Map Unit Legend

| Map Unit Symbol                    | Map Unit Name  | Acres in AOI | Percent of AOI |
|------------------------------------|--|--------------|----------------|
| MF                                 | Maljamar and Palomas fine sands, 0 to 3 percent slopes | 0.2          | 100.0%         |
| <b>Totals for Area of Interest</b> |  | <b>0.2</b>   | <b>100.0%</b>  |



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

10/24/2025  
Page 3 of 3

Map Unit Description: Maljamar and Palomas fine sands, 0 to 3 percent slopes---Lea County, New Mexico

## Lea County, New Mexico

### MF—Maljamar and Palomas fine sands, 0 to 3 percent slopes

#### Map Unit Setting

*National map unit symbol:* dmqb

*Elevation:* 3,000 to 3,900 feet

*Mean annual precipitation:* 10 to 15 inches

*Mean annual air temperature:* 60 to 62 degrees F

*Frost-free period:* 190 to 205 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Maljamar and similar soils:* 46 percent

*Palomas and similar soils:* 44 percent

*Minor components:* 10 percent

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

#### Description of Maljamar

##### Setting

*Landform:* Plains

*Landform position (three-dimensional):* Rise

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Sandy eolian deposits derived from sedimentary rock

##### Typical profile

*A - 0 to 24 inches:* fine sand

*Bt - 24 to 50 inches:* sandy clay loam

*Bkm - 50 to 60 inches:* cemented material

##### Properties and qualities

*Slope:* 0 to 3 percent

*Depth to restrictive feature:* 40 to 60 inches to petrocalcic

*Drainage class:* Well drained

*Runoff class:* Very low

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 5 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Sodium adsorption ratio, maximum:* 2.0

*Available water supply, 0 to 60 inches:* Low (about 5.6 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 7e



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

10/24/2025  
Page 1 of 3

Map Unit Description: Maljamar and Palomas fine sands, 0 to 3 percent slopes---Lea County, New Mexico

---

*Land capability classification (nonirrigated): 7e*  
*Hydrologic Soil Group: B*  
*Ecological site: R070BD003NM - Loamy Sand*  
*Hydric soil rating: No*

### Description of Palomas

#### Setting

*Landform: Plains*  
*Landform position (three-dimensional): Rise*  
*Down-slope shape: Linear*  
*Across-slope shape: Linear*  
*Parent material: Alluvium derived from sandstone*

#### Typical profile

*A - 0 to 16 inches: fine sand*  
*Bt - 16 to 60 inches: sandy clay loam*  
*Bk - 60 to 66 inches: sandy loam*

#### Properties and qualities

*Slope: 0 to 3 percent*  
*Depth to restrictive feature: More than 80 inches*  
*Drainage class: Well drained*  
*Runoff class: Low*  
*Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)*  
*Depth to water table: More than 80 inches*  
*Frequency of flooding: None*  
*Frequency of ponding: None*  
*Calcium carbonate, maximum content: 45 percent*  
*Gypsum, maximum content: 1 percent*  
*Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)*  
*Sodium adsorption ratio, maximum: 2.0*  
*Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)*

#### Interpretive groups

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

### Minor Components

#### Kermit

*Percent of map unit: 5 percent*  
*Ecological site: R070BC022NM - Sandhills*  
*Hydric soil rating: No*

#### Wink

*Percent of map unit: 5 percent*  
*Ecological site: R070BD003NM - Loamy Sand*



Map Unit Description: Maljamar and Palomas fine sands, 0 to 3 percent slopes---Lea County, New Mexico

---

*Hydric soil rating:* No

## Data Source Information

Soil Survey Area: Lea County, New Mexico  
Survey Area Data: Version 22, Sep 9, 2025



**Natural Resources  
Conservation Service**

Web Soil Survey  
National Cooperative Soil Survey

10/24/2025  
Page 3 of 3

# Ecological site R070BD003NM

## Loamy Sand

Accessed: 10/24/2025

### 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 interdunal areas. The parent material consists of mixed alluvium and/or eolian sands derived from sedimentary rock. Slope range on this site range from 0 to 9 percent with the average of 5 percent.

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

Table 2. Representative physiographic features

|           |  |
|-----------|--|
| Landforms | (1) Fan piedmont<br>(2) Alluvial fan<br>(3) Dune |
| Elevation | 2,800–5,000 ft                                   |
| Slope     | 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/climsnm.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    |

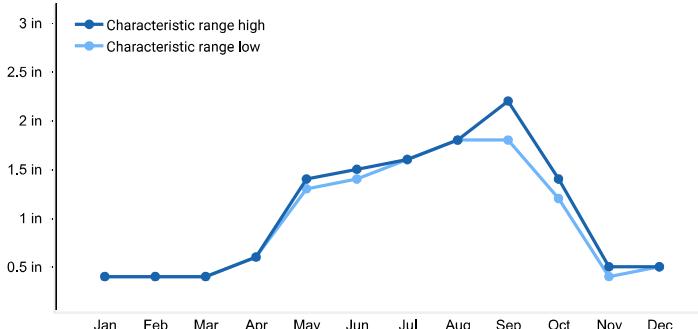


Figure 2. Monthly precipitation range

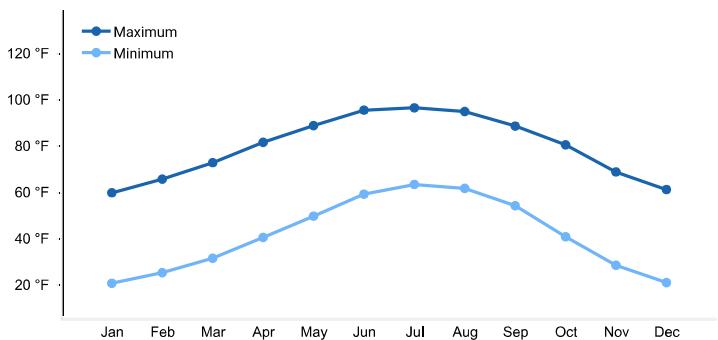


Figure 3. Monthly average minimum and maximum temperature

## Influencing water features

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

## Soil features

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

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

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

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

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

Characteristic soils are:

Maljamar  
Berino  
Parjarito  
Palomas  
Wink  
Pyote

Table 4. Representative soil features

|                      |   |
|----------------------|---|
| Surface texture      | (1) Fine sand<br>(2) Fine sandy loam<br>(3) Loamy fine sand |
| Family particle size | (1) Sandy   |

## Ecological dynamics

### Overview

The Loamy Sand site intergrades with the Deep Sand and Sandy

|   |  |
|---|--|
| Drainage class  | Well drained to somewhat excessively drained |
| Permeability class                                    | Moderate to moderately rapid                 |
| Soil depth  | 40–72 in                                     |
| Surface fragment cover <=3"                           | 10%  |
| Surface fragment cover >3"                            | Not specified                                |
| Available water capacity (0–40in)                     | 5–7 in                                       |
| Calcium carbonate equivalent (0–40in)                 | 3–40%  |
| Electrical conductivity (0–40in)                      | 2–4 mmhos/cm                                 |
| Sodium adsorption ratio (0–40in)                      | 2  |
| Soil reaction (1:1 water) (0–40in)                    | 6.6–8.4                                      |
| Subsurface fragment volume <=3" (Depth not specified) | 4–12%  |
| Subsurface fragment volume >3" (Depth not specified)  | Not specified                                |

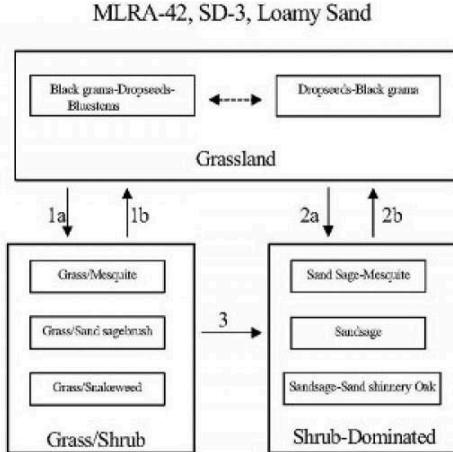
sites (SD-3). These sites can be differentiated by surface soil texture and depth to a textural change. Loamy Sand and Deep Sand sites have coarse textured (sands and loamy sand) surface soils while Sandy sites have moderately coarse textured (sandy loam and fine sandy loam) surfaces. Although Loamy Sand and

Deep Sand sites have similar surface textures, the depth to a textural change is different—Loamy Sand sub-surface textures typically increase in clay at approximately 20 to 30 inches, and Deep Sand sites not until around 40 inches.

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

## State and transition model

Plant Communities and Transitional Pathways (diagram):



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

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

3. Continued loss of grass cover, erosion.

## State 1 Historic Climax Plant Community

### Community 1.1 Historic Climax Plant Community

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

Table 5. Annual production by plant type

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

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% |

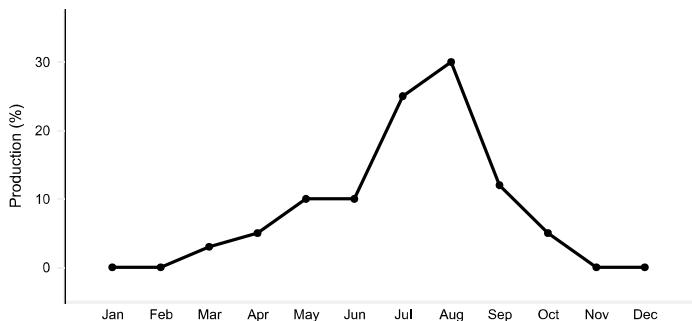


Figure 5. Plant community growth curve (percent production by month). NM2803, R042XC003NM-Loamy Sand-HCPC. SD-3 Loamy Sand - Warm season plant community.

## State 2 Grass/Shrub

### Community 2.1 Grass/Shrub



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

and Wright 1971). Diagnosis: This state is dominated by an increased abundance of communities including grass/mesquite, grass/snakeweed, or grass/sand sage. Dropseeds and threeawns have a patchy distribution. Transition to Grass/Shrub State (1a): The historic plant community begins to shift toward the grass/shrub state as drivers such as drought, fire suppression, interspecific competition, and excessive grazing contribute to alterations in soil properties and herbaceous cover. Cover loss and surface soil erosion are initial indicators of transition followed by a decrease in black grama with a subsequent increase of dropseeds, threeawns, mesquite, and snakeweed. Snakeweed has been documented to outcompete black grama especially under conditions of fire suppression and drought (McDaniel et al. 1984). Key indicators of approach to transition: • Loss of black grama cover • Surface soil erosion • Bare patch expansion • Increased dropseed/threeawn and mesquite, snakeweed, or sand sage abundances Transition to Historic Plant Community (1b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community.

## State 3 Shrub Dominated

### Community 3.1 Shrub Dominated

Shrub-Dominated State: The shrub-dominated state results from a severe loss of grass cover. This state's primary species is sand sage. Shinnery oak and mesquite also occur; however, grass cover is limited to intershrub distribution. Sand sage stabilizes light sandy soils from wind erosion, which enhances protected grass/forb cover (Davis and Bonham 1979). However, shinnery oak also responds to the sandy soils with dense stands due to an aggressive rhizome system. Shinnery oak's extensive root system promotes competitive exclusion of grasses and forbs. Sand sage, shinnery oak, and mesquite can be controlled with herbicide (Herbel et al. 1979, Pettit 1986). Transition to Shrub-Dominated (2a): Severe loss of grass species with increased erosion and fire suppression will result in a transition to a shrub-dominated state with sand sage, shin oak, and honey mesquite directly from the grassland-dominated state. Key indicators of approach to transition: • Severe loss of grass species cover • Surface soil erosion • Bare patch expansion • Increased sand sage, shinnery oak, and mesquite abundance Transition to Historic Plant Community (2b): Brush and grazing management may restore the grassland component and reverse shrub or grass/shrub dominated states back toward the historic plant community. In addition, seeding with native grass species will augment the transition to a grassland-dominated state. Transition to Shrub-Dominated (3): If the grass/shrub site continues to lose grass cover with soil erosion, the site will transition to a shrub-dominated state with sand sage, shinnery oak, and honey mesquite. Key indicators of approach to transition: • Continual loss of dropseeds/threeawns cover • Surface soil erosion • Bare patch expansion • Increased sand sage, shinnery oak, and mesquite/dropseed/threeawn and mesquite/snakeweed abundance

## Additional community tables

Table 7. Community 1.1 plant community composition

| Group                  | Common Name                    | Symbol | Scientific Name                           | Annual Production (Lb/Acre) | Foliar Cover (%) |
|------------------------|--------------------------------|--------|---|-----------------------------|------------------|
| <b>Grass/Grasslike</b> |                                |        |   |                             |                  |
| 1                      | <b>Warm Season</b>             |        |   | 61–123                      |                  |
|                        | little bluestem                | SCSC   | <i>Schizachyrium scoparium</i>            | 61–123                      | —                |
| 2                      | <b>Warm Season</b>             |        |   | 37–61                       |                  |
|                        | sand bluestem                  | ANHA   | <i>Andropogon hallii</i>                  | 37–61                       | —                |
| 3                      | <b>Warm Season</b>             |        |   | 37–61                       |                  |
|                        | cane bluestem                  | BOBA3  | <i>Bothriochloa barbinodis</i>            | 37–61                       | —                |
|                        | silver bluestem                | BOSA   | <i>Bothriochloa saccharoides</i>          | 37–61                       | —                |
| 4                      | <b>Warm Season</b>             |        |   | 123–184                     |                  |
|                        | black grama                    | BOER4  | <i>Bouteloua eriopoda</i>                 | 123–184                     | —                |
|                        | bush muhly                     | MUPO2  | <i>Muhlenbergia porteri</i>               | 123–184                     | —                |
| 5                      | <b>Warm Season</b>             |        |   | 123–184                     |                  |
|                        | thin paspalum                  | PASE5  | <i>Paspalum setaceum</i>                  | 123–184                     | —                |
|                        | plains bristlegrass            | SEVU2  | <i>Setaria vulpiseta</i>                  | 123–184                     | —                |
|                        | fringed signalgrass            | URCI   | <i>Urochloa ciliatissima</i>              | 123–184                     | —                |
| 6                      | <b>Warm Season</b>             |        |   | 123–184                     |                  |
|                        | spike dropseed                 | SPCO4  | <i>Sporobolus contractus</i>              | 123–184                     | —                |
|                        | sand dropseed                  | SPCR   | <i>Sporobolus cryptandrus</i>             | 123–184                     | —                |
|                        | mesa dropseed                  | SPFL2  | <i>Sporobolus flexuosus</i>               | 123–184                     | —                |
| 7                      | <b>Warm Season</b>             |        |   | 61–123                      |                  |
|                        | hooded windmill grass          | CHCU2  | <i>Chloris cucullata</i>                  | 61–123                      | —                |
|                        | Arizona cottontop              | DICA8  | <i>Digitaria californica</i>              | 61–123                      | —                |
| 9                      | <b>Other Perennial Grasses</b> |        |   | 37–61                       |                  |
|                        | Grass, perennial               | 2GP    | Grass, perennial                          | 37–61                       | —                |
| <b>Shrub/Vine</b>      |                                |        |   |                             |                  |
| 8                      | <b>Warm Season</b>             |        |   | 37–61                       |                  |
|                        | New Mexico feathergrass        | HENE5  | <i>Hesperostipa neomexicana</i>           | 37–61                       | —                |
|                        | giant dropseed                 | SPGI   | <i>Sporobolus giganteus</i>               | 37–61                       | —                |
| 10                     | <b>Shrub</b>                   |        |   | 61–123                      |                  |
|                        | sand sagebrush                 | ARFI2  | <i>Artemisia filifolia</i>                | 61–123                      | —                |
|                        | Havard oak                     | QUHA3  | <i>Quercus havardii</i>                   | 61–123                      | —                |
| 11                     | <b>Shrub</b>                   |        |   | 34–61                       |                  |
|                        | fourwing saltbush              | ATCA2  | <i>Atriplex canescens</i>                 | 37–61                       | —                |
|                        | featherplume                   | DAFO   | <i>Dalea formosa</i>                      | 37–61                       | —                |
| 12                     | <b>Shrub</b>                   |        |   | 37–61                       |                  |
|                        | jointfir                       | EPHED  | <i>Ephedra</i>                            | 37–61                       | —                |
|                        | littleleaf ratany              | KRER   | <i>Krameria erecta</i>                    | 37–61                       | —                |
| 13                     | <b>Other Shrubs</b>            |        |   | 37–61                       |                  |
|                        | Shrub (>.5m)                   | 2SHRUB | Shrub (>.5m)                              | 37–61                       | —                |
| <b>Forb</b>            |                                |        |   |                             |                  |
| 14                     | <b>Forb</b>                    |        |   | 61–123                      |                  |
|                        | leatherweed                    | CRPOP  | <i>Croton pottsii</i> var. <i>pottsii</i> | 61–123                      | —                |
|                        | Indian blanket                 | GAPU   | <i>Gaillardia pulchella</i>               | 61–123                      | —                |

|    |   |        |  |        |   |
|----|---|--------|--|--------|---|
|    | globemallow                                 | SPHAE  | Sphaeralcea  | 61–123 | – |
| 15 | <b>Forb</b>                                 |        |  | 12–37  |   |
|    | woolly groundsel                            | PACA15 | <i>Packera cana</i>                                | 12–37  | – |
| 16 | <b>Forb</b>                                 |        |  | 61–123 |   |
|    | touristplant                                | DIWI2  | <i>Dimorphocarpa wislizeni</i>                     | 61–123 | – |
|    | woolly plantain                             | PLPA2  | <i>Plantago patagonica</i>                         | 61–123 | – |
| 17 | <b>Other Forbs</b>                          |        |  | 37–61  |   |
|    | Forb (herbaceous, not grass nor grass-like) | 2FORB  | <i>Forb (herbaceous, not grass nor grass-like)</i> | 37–61  | – |

## Rangeland health reference sheet

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

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

## Indicators

### 1. Number and extent of rills:

---

### 2. Presence of water flow patterns:

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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

---

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

Dominant:

Sub-dominant:

Other:

Additional:

---

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

---

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

---

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

---

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

---

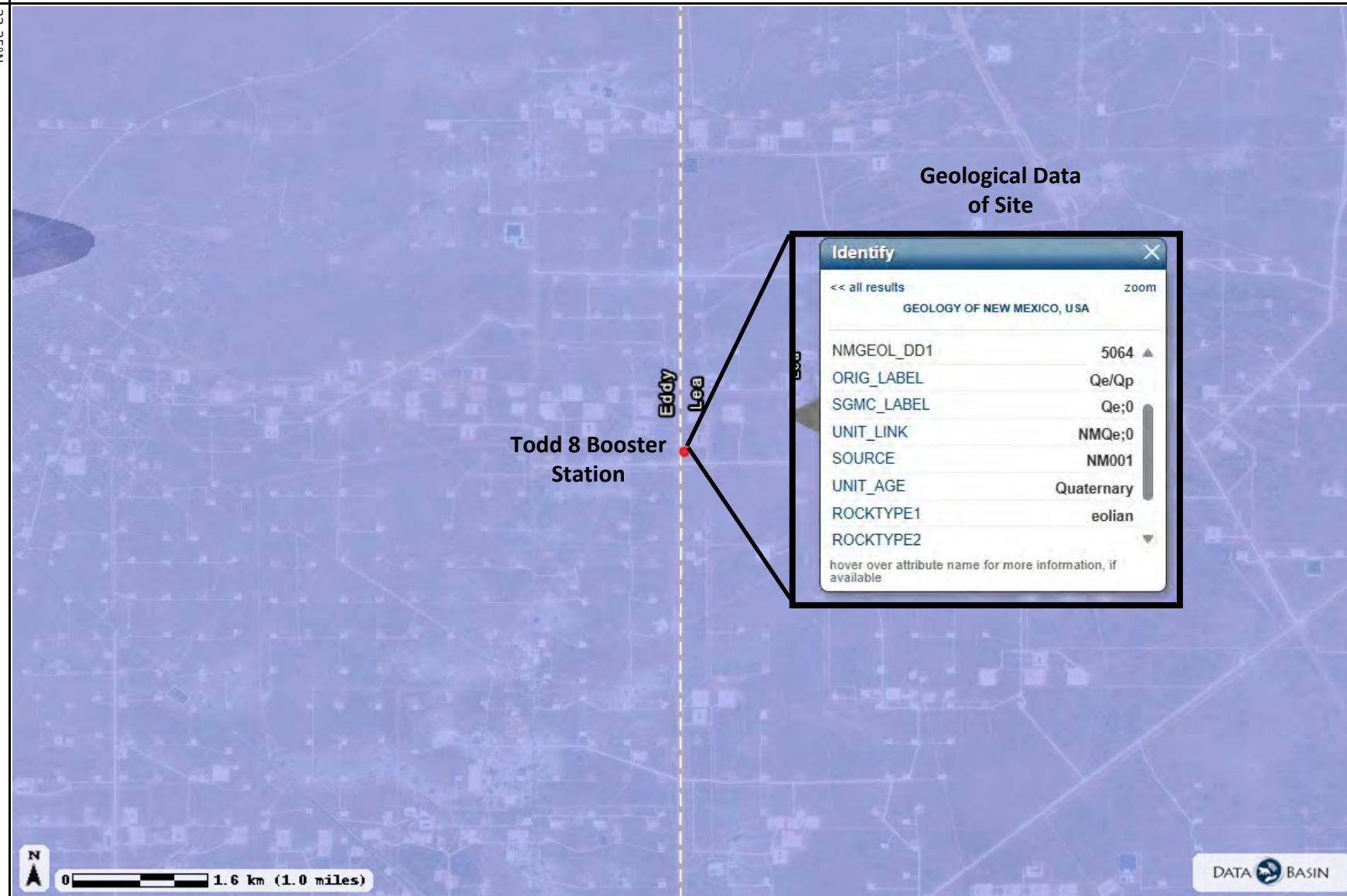
17. Perennial plant reproductive capability:

---

## Todd 8 Booster Station Geological Map

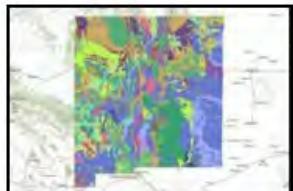
103.80°W

32.35°N



## Map Details

## Datasets



## Geology of New Mexico, USA

<https://databasin.org/datasets/216c664011134afabb351937aff06f6d/>Credits:  
Layers:Douglas B. Stoeser, Gregory N. Green, Laurie C. Morath, William D. Heran, Anna B. Wilson, David W. Moore, Bradley S. Van Gosen  
• Geology of New Mexico, USA-103.7223° Longitude,  
32.30667° Latitude

## Legend (cont.)

## Geology of New Mexico, USA (cont.)

|                            |
|----------------------------|
| playa                      |
| plutonic rock (phaneritic) |
| pyroclastic                |
| quartz monzonite           |
| ryholite                   |
| sandstone                  |
| sedimentary rock           |
| shale                      |
| till                       |
| tuff                       |
| unconsolidated deposit     |
| volcanic rock (aphanitic)  |
| water                      |



---

## APPENDIX C

### CORRESPONDENCE




---

**RE: [EXTERNAL] nAPP2526936424 Todd 8 Booster Station Liner Notification**


---

**From** Raley, Jim <Jim.Raley@dvn.com>  
**Date** Mon 2025-10-20 10:20 AM  
**To** Monica Peppin <Monica.Peppin@kljeng.com>  
**Cc** Will Harmon <will.harmon@kljeng.com>

**CAUTION:** This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Submitted 10/20

Jim Raley | Environmental Professional - Permian Basin  
5315 Buena Vista Dr., Carlsbad, NM 88220  
C: (575)689-7597 | [jim.raley@dvn.com](mailto:jim.raley@dvn.com)




---

**From:** Monica Peppin <Monica.Peppin@kljeng.com>  
**Sent:** Monday, October 20, 2025 10:08 AM  
**To:** Raley, Jim <Jim.Raley@dvn.com>  
**Cc:** Will Harmon <will.harmon@kljeng.com>  
**Subject:** [EXTERNAL] nAPP2526936424 Todd 8 Booster Station Liner Notification

Jim,

Below is the liner notification for Todd 8 Booster Station. Let me know if we need to adjust the time or date.

**Liner Inspection**

|   |                               |
|---|-------------------------------|
| What is the liner inspection surface area in square feet  | 1600                          |
| Have all the impacted materials been removed from the liner   | Yes                           |
| Liner inspection date pursuant to Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC | 10/22/2025                    |
| Time liner inspection will commence   | 1000AM                        |
| Please provide any information necessary for observers to liner inspection                              | Monica Peppin<br>575.909.3418 |
| Please provide any information necessary for navigation to liner inspection site                        | 32.306672,<br>-103.722309     |

Incident

nAPP2526936424

Thank you,  
Monica

Monica Peppin, A.S.  
Environmental Specialist II



575-213-9010 [Direct](#)  
575-909-3418 [Cell](#)  
Carlsbad, NM 88220  
[kljeng.com](http://kljeng.com)

[Book time to meet with me](#)

Confidentiality Warning: This message and any attachments are intended only for the use of the intended recipient(s), are

confidential, and may be privileged. If you are not the intended recipient, you are hereby notified that any review, retransmission, conversion to hard copy, copying, circulation or other use of all or any portion of this message and any attachments is strictly prohibited. If you are not the intended recipient, please notify the sender immediately by return e-mail, and delete this message and any attachments from your system.

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

General Information  
Phone: (505) 629-6116

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

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

QUESTIONS

Action 536232

**QUESTIONS**

|   |   |
|---|---|
| Operator:<br><br>DEVON ENERGY PRODUCTION COMPANY, LP<br>333 West Sheridan Ave.<br>Oklahoma City, OK 73102 | OGRID:<br><br>6137  |
|   | Action Number:<br><br>536232  |
|   | Action Type:<br><br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |
|   |   |

**QUESTIONS**

|                      |  |
|----------------------|--|
| <b>Prerequisites</b> |  |
| Incident ID (n#)     | nAPP2526936424   |
| Incident Name        | NAPP2526936424 TODD 8 BOOSTER STATION @ E-18-23S-32E 511N 230W |
| Incident Type        | Produced Water Release   |
| Incident Status      | Remediation Closure Report Received                            |

**Location of Release Source**

*Please answer all the questions in this group.*

|                         |                        |
|-------------------------|------------------------|
| Site Name               | TODD 8 BOOSTER STATION |
| Date Release Discovered | 09/23/2025             |
| Surface Owner           | Federal                |

**Incident Details**

*Please answer all the questions in this group.*

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

**Nature and Volume of Release**

*Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.*

|  |   |
|--|---|
| Crude Oil Released (bbls) Details  | <i>Not answered.</i>  |
| Produced Water Released (bbls) Details   | <i>Cause: Equipment Failure   Pump   Produced Water   Released: 6 BBL   Recovered: 6 BBL   Lost: 0 BBL.</i> |
| Is the concentration of chloride in the produced water >10,000 mg/l  | <i>Yes</i>  |
| Condensate Released (bbls) Details   | <i>Not answered.</i>  |
| Natural Gas Vented (Mcf) Details   | <i>Not answered.</i>  |
| Natural Gas Flared (Mcf) Details   | <i>Not answered.</i>  |
| Other Released Details   | <i>Not answered.</i>  |
| Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts) | <i>Pump seal allowed produced water to be released to lined secondary containment.</i>                      |

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

General Information  
Phone: (505) 629-6116

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

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

QUESTIONS, Page 2

Action 536232

**QUESTIONS (continued)**

|   |   |
|---|---|
| Operator:<br><br>DEVON ENERGY PRODUCTION COMPANY, LP<br>333 West Sheridan Ave.<br>Oklahoma City, OK 73102 | OGRID:<br><br>6137  |
|   | Action Number:<br><br>536232  |
|   | Action Type:<br><br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |
|   |   |

**QUESTIONS**

|   |   |
|---|---|
| <b>Nature and Volume of Release (continued)</b>   |   |
| Is this a gas only submission (i.e. only significant Mcf values reported)               | No, according to supplied volumes this does not appear to be a "gas only" report. |
| Was this a major release as defined by Subsection A of 19.15.29.7 NMAC                  | No  |
| Reasons why this would be considered a submission for a notification of a major release | <i>Unavailable.</i>   |

*With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.*

|   |                      |
|---|----------------------|
| <b>Initial Response</b>   |                      |
| <i>The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.</i> |                      |
| The source of the release has been stopped  | True                 |
| The impacted area has been secured to protect human health and the environment  | True                 |
| Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices                                  | True                 |
| All free liquids and recoverable materials have been removed and managed appropriately  | True                 |
| If all the actions described above have not been undertaken, explain why  | <i>Not answered.</i> |

*Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.*

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

|  |   |
|--|---|
| I hereby agree and sign off to the above statement | Name: James Raley<br>Title: EHS Professional<br>Email: <a href="mailto:jim.raley@dvn.com">jim.raley@dvn.com</a><br>Date: 12/18/2025 |
|--|---|

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

General Information  
Phone: (505) 629-6116

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

QUESTIONS, Page 3

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

Action 536232

**QUESTIONS (continued)**

|   |   |
|---|---|
| Operator:<br><br>DEVON ENERGY PRODUCTION COMPANY, LP<br>333 West Sheridan Ave.<br>Oklahoma City, OK 73102 | OGRID:<br><br>6137  |
|   | Action Number:<br><br>536232  |
|   | Action Type:<br><br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |
|   |   |

**QUESTIONS****Site Characterization**

*Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.*

|  |                                |
|--|--------------------------------|
| What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs) | Between 51 and 75 (ft.)        |
| What method was used to determine the depth to ground water  | NM OSE iWaters Database Search |
| Did this release impact groundwater or surface water   | No                             |
| <b>What is the minimum distance, between the closest lateral extents of the release and the following surface areas:</b>   |                                |
| A continuously flowing watercourse or any other significant watercourse  | Between 1 and 5 (mi.)          |
| Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)  | Between 1 and 5 (mi.)          |
| An occupied permanent residence, school, hospital, institution, or church  | Greater than 5 (mi.)           |
| A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes  | Between 1 and 5 (mi.)          |
| Any other fresh water well or spring   | Between 1 and 5 (mi.)          |
| Incorporated municipal boundaries or a defined municipal fresh water well field  | Greater than 5 (mi.)           |
| A wetland  | Between 1 and 5 (mi.)          |
| A subsurface mine  | Greater than 5 (mi.)           |
| An (non-karst) unstable area   | Greater than 5 (mi.)           |
| Categorize the risk of this well / site being in a karst geology   | None                           |
| A 100-year floodplain  | Greater than 5 (mi.)           |
| Did the release impact areas not on an exploration, development, production, or storage site                               | No                             |

**Remediation Plan**

*Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.*

|  |            |
|--|------------|
| Requesting a remediation plan approval with this submission  | Yes        |
| <i>Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.</i>   |            |
| Have the lateral and vertical extents of contamination been fully delineated   | Yes        |
| Was this release entirely contained within a lined containment area  | Yes        |
| <i>Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.</i> |            |
| On what estimated date will the remediation commence   | 10/20/2025 |
| On what date will (or did) the final sampling or liner inspection occur  | 10/22/2025 |
| On what date will (or was) the remediation complete(d)   | 10/22/2025 |
| What is the estimated surface area (in square feet) that will be remediated  | 1600       |
| What is the estimated volume (in cubic yards) that will be remediated  | 0          |

*These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.*

*The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.*

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

General Information  
Phone: (505) 629-6116

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

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

QUESTIONS, Page 4

Action 536232

**QUESTIONS (continued)**

|   |   |
|---|---|
| Operator:<br><br>DEVON ENERGY PRODUCTION COMPANY, LP<br>333 West Sheridan Ave.<br>Oklahoma City, OK 73102 | OGRID:<br><br>6137  |
|   | Action Number:<br><br>536232  |
|   | Action Type:<br><br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |

**QUESTIONS**

**Remediation Plan (continued)**

*Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.*

**This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:**

*(Select all answers below that apply.)*

|  |               |
|--|---------------|
| Is (or was) there affected material present needing to be removed              | Yes           |
| Is (or was) there a power wash of the lined containment area (to be) performed | Yes           |
| OTHER (Non-listed remedial process)  | Not answered. |

*Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.*

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

|  |  |
|--|--|
| I hereby agree and sign off to the above statement | Name: James Raley<br>Title: EHS Professional<br>Email: jim.raley@dvn.com<br>Date: 12/18/2025 |
|--|--|

*The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.*

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

General Information  
Phone: (505) 629-6116

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

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

QUESTIONS, Page 6

Action 536232

**QUESTIONS (continued)**

|   |   |
|---|---|
| Operator:<br><br>DEVON ENERGY PRODUCTION COMPANY, LP<br>333 West Sheridan Ave.<br>Oklahoma City, OK 73102 | OGRID:<br><br>6137  |
|   | Action Number:<br><br>536232  |
|   | Action Type:<br><br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |

**QUESTIONS**

| <b>Liner Inspection Information</b>   |            |
|---|------------|
| Last liner inspection notification (C-141L) recorded  | 518020     |
| Liner inspection date pursuant to Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC | 10/22/2025 |
| Was all the impacted materials removed from the liner   | Yes        |
| What was the liner inspection surface area in square feet   | 1600       |

| <b>Remediation Closure Request</b>  |                           |
|---|---------------------------|
| <i>Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.</i> |                           |
| Requesting a remediation closure approval with this submission  | Yes                       |
| Have the lateral and vertical extents of contamination been fully delineated  | Yes                       |
| Was this release entirely contained within a lined containment area   | Yes                       |
| What was the total surface area (in square feet) remediated   | 1600                      |
| What was the total volume (cubic yards) remediated  | 0                         |
| Summarize any additional remediation activities not included by answers (above)   | Liner inspection complete |

*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 (in .pdf format) 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.*

|  |  |
|--|--|
| 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. |  |
| I hereby agree and sign off to the above statement   | Name: James Raley<br>Title: EHS Professional<br>Email: jim.raley@dvn.com<br>Date: 12/18/2025 |

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

General Information  
Phone: (505) 629-6116

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

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

CONDITIONS

Action 536232

**CONDITIONS**

|   |   |
|---|---|
| Operator:<br><br>DEVON ENERGY PRODUCTION COMPANY, LP<br>333 West Sheridan Ave.<br>Oklahoma City, OK 73102 | OGRID:<br><br>6137  |
|   | Action Number:<br><br>536232  |
|   | Action Type:<br><br>[C-141] Remediation Closure Request C-141 (C-141-v-Closure) |

**CONDITIONS**

| Created By       | Condition   | Condition Date |
|------------------|---|----------------|
| michael.buchanan | Liner inspection and remediation closure is approved. Please ensure for future liner inspection that debris and equipment and/or tools are removed before photos are taken. It is noted there is a tumbleweed in the photo on page 8 of the PDF and tools or parts in a pile on page 6. | 12/22/2025     |