VERTEX

January 18, 2022

Vertex Project #: 21E-00087-020

Spill Closure Report: Colonel R Howard 2 (Section 23, Township 23 South, Range 27 East)
API: 30-015-42272
County: Eddy
Incident Report: nAPP2131555241

Prepared For: **Matador Production Company**
5400 Lyndon B. Johnson Freeway
Dallas, Texas 75240

New Mexico Oil Conservation Division - District 2
811 South 1st Street
Artesia, New Mexico 88210

Matador Production Company (Matador) retained Vertex Resource Services Inc. (Vertex) to conduct a Spill Assessment for a release of crude oil into the secondary containment when a firetube on a heater treater failed at Colonel R Howard 2, API 30-015-42272, Incident nAPP2131555241 (hereafter referred to as "Colonel Howard"). Matador provided spill notification to New Mexico Oil Conservation Division (NMOCD) District 2 and the private landowner, who owns the property, via submission of an initial C-141 Release Notification (Attachment 1) on November 10, 2021. This letter provides a description of the Spill Assessment and includes a request for Spill Closure. The spill area is located at N 32.29347, W -104.16846.

Background

The site is located approximately 4.29 miles west-northwest of Loving, New Mexico. The legal location for the site is Section 23, Township 23 South and Range 27 East in Eddy County, New Mexico. This location is within the Permian Basin in southeast New Mexico and has been historically used for oil and gas exploration and production.

The Geological Map of New Mexico (New Mexico Bureau of Geology and Mineral Resources, 2022) indicates the site's surface geology is comprised primarily of Qp – Piedmont alluvial deposits (Holocene to lower Pleistocene). The Natural Resources Conservation Service Web Soil Survey characterizes the predominant soil texture on the site is karro loam and reeves loam. It tends to be well drained with medium runoff and high available moisture levels in the soil profile (United States Department of Agriculture, Natural Resources Conservation Service, 2022).

The surrounding landscape is associated with ridges, plains, hills and alluvial fans at elevations of 1,250 to 5,300 feet above sea level. The climate is semi-arid, with average annual precipitation ranging between 10 to 25 inches. Historically, the plant community is dominated by western wheatgrass and predominant vegetation consists of sideoats grama, New Mexico feathergrass, needle and thread, blue grama, galleta and black grama. Other species of forbs and brushes consist of fourwing saltbrush, Bigelow sagebrush, rabbitbrush, spineless horsebrush, cholla and yucca.

Incident Description

The spill occurred on November 10, 2021, due to a firetube on the heater treater leaking and involved the release of approximately 20 barrels (bbl.) of produced oil into the secondary lined containment. All fluids were contained with the lined Spill Prevention Control and Countermeasures (SPCC) containment and no oil was released into undisturbed areas or waterways. Approximately 20 bbl. of free fluid was removed during initial spill clean-up. The NMOCD C-141 Report: nAPP2131555241 is included in Attachment 1. The Daily Field Report (DFR) and site photographs are included in Attachment 2.

Closure Criteria Determination

The depth to groundwater was determined using information from Oil and Gas Drilling records and the New Mexico Office of the State Engineer Water Column/Average Depth to Water report. A 0.5-mile search radius was used to determine groundwater depth. The closest recorded depth to groundwater was determined to be 122 feet below ground surface (bgs) and 0.17 miles from the site. Documentation used in Closure Criteria Determination research is included in Attachment 3.

Closure Criteria Worksheet			
Site Name: Colonel R Howard 2			
Spill Coordinates:		**X: 32.29347**	**Y: -104.16846**
Site Specific Conditions		**Value**	**Unit**
1	Depth to Groundwater	**122**	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	22,379	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	42,913	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	855	feet
5	i) Within 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, **or**	911	feet
	ii) Within 1000 feet of any fresh water well or spring	**911**	feet
6	Within incorporated municipal boundaries or within a defined municipal fresh water field covered under a municipal ordinance adopted pursuant to Section 3-27-3 NMSA 1978 as amended, unless the municipality specifically approves	No	(Y/N)
7	Within 300 feet of a wetland	13,675	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
9	Within an unstable area (Karst Map)	Medium	Critical High Medium Low
10	Within a 100-year Floodplain	500	year
11	Soil Type	Kr, Rl	
12	Ecological Classification	Limy	
13	Geology	Qp	

NMAC 19.15.29.12 E (Table 1) Closure Criteria	<50	<50' 51-100' >100'

The closure criteria determined for the site are associated with the following constituent concentration limits as presented in Table 1.

Table 1. Closure Criteria for Soils Impacted by a Release

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

Remedial Actions Taken

An initial site inspection of the spill area was completed on January 7, 2022, which identified the area of the spill specified in the initial C-141 Report. The DFR associated with the site inspection is included in Attachment 2.

Notification that a liner inspection was scheduled to be completed was provided to the NMOCD on January 5, 2022, as required by Subparagraph (a) of Paragraph (5) of Subsection A 19.15.29.11 NMAC. Visual observation of the liner was completed on all sides and the base of the containment, around equipment, and of all seams in the liner and was completed on January 7, 2022. As evidenced in the DFR (Attachment 2) liner integrity was confirmed, and the Liner Inspection Notification email is presented in Attachment 4.

Closure Request

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

Vertex requests that incident nAPP2131555241 be closed as all closure requirements set forth in Subsection E of 19.15.29.12 NMAC have been met. Matador certifies that all information in this report and the attachments is correct, and that they have complied with all applicable closure requirements and conditions specified in Division rules and directives to meet NMOCD requirements to obtain closure on the open release at Colonel Howard.

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

Monica Peppin
SR. ENVIRONMENTAL TECHNICIAN, REPORTING

01/18/2022
Date

Dhugal Hamilton, B.Sc., SR/WA, P. Biol
VICE PRESIDENT, REPORT REVIEW

01/21/2022
Date

Attachments

Attachment 1. NMOCD C-141 Report
Attachment 2. Daily Field Report with Pictures
Attachment 3. Closure Criteria Research
Attachment 4. Required 48 Hour Liner Inspection Notification

References

Water Column/Average Depth to Water Report. New Mexico Water Rights Reporting System, (2019). Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/waterColumn.html

Assessed and Impaired Waters of New Mexico. New Mexico Department of Surface Water Quality Bureau, (2019). Retrieved from https://gis.web.env.nm.gov/oem/?map=swqb

Interactive Geologic Map. New Mexico Bureau of Geology and Mineral Resources, (2022). Retrieved from http://geoinfo.nmt.edu

Measured Distance from the Subject Site to Residence. Google Earth Pro, (2019). Retrieved from https://earth.google.com

Point of Diversion Location Report. New Mexico Water Rights Reporting System, (2019). Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/wellSurfaceDiversion.html

Measured Distance from the Subject Site to Municipal Boundaries. Google Earth Pro, (2021). Retrieved from https://earth.google.com

National Wetland Inventory Surface Waters and Wetland. United State Fish and Wildlife Service, (2021). Retrieved from https://www.fws.gov/wetlands/data/mapper.html

Coal Mine Resources in New Mexico. NM Mining and Minerals Division, (2021). Retrieved from http://www.emnrd.state.nm.us/MMD/gismapminedata.html

New Mexico Cave/Karsts. United States Department of the Interior, Bureau of Land Management, (2019) Retrieved from https://www.blm.gov/programs/recreation/recreation-programs/caves/new-mexico

Flood Map Number 35015C1875D. United States Department of Homeland Security, FEMA Flood Map Service Center, (2010). Retrieved from https://msc.fema.gov/portal/search?AddressQuery=malaga%20new%20mexico#searchresultsanchor

Well Log/Meter Information Report. NM Office of the State Engineer, New Mexico Water Rights Reporting System. (2019). Retrieved from http://nmwrrs.ose.state.nm.us/nmwrrs/meterReport.html

Natural Resources and Wildlife Oil and Gas Releases. New Mexico Oil Conservation Division, (2019). Santa Fe, New Mexico.

Soil Survey, New Mexico. United States Department of Agriculture, Soil Conservation Service in Cooperation with New Mexico Agricultural Experiment Station. (1971). Retrieved from http://www.wipp.energy.gov/library/Information_Repository_A/Supplemental_Information/Chugg%20et%20al%201971%20w-map.pdf

Limitations

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

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

ATTACHMENT 1

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

State of New Mexico
Energy Minerals and Natural Resources Department

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

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

Incident ID	nAPP2131555241
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party: Matador Production Company	OGRID: 228937
Contact Name: Arsenio Jones	Contact Telephone:575-361-4333
Contact email: Arsenio.jones@matadorresources.com	Incident # *(assigned by OCD)* nAPP2131555241
Contact mailing address: 5400 LBJ Freeway, Suite 1500 Dallas Tx 75240	

Location of Release Source

Latitude 32.29347 Longitude -104.16846
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Colonel R Howard 2	Site Type: Oil
Date Release Discovered: 11-10-2021	API# 3001542272

Unit Letter	Section	Township	Range	County
E	23	23S	27E	Eddy

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

Nature and Volume of Release

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

☒ Crude Oil	Volume Released (bbls) 20	Volume Recovered (bbls) 20
☐ Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☐ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: Heater Treater leak Fire tube failure all fluids were in containment and 100% were recovered.

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State of New Mexico
Oil Conservation Division

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District RP	
Facility ID	
Application ID	

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

Initial Response

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

☒ The source of the release has been stopped.
☒ The impacted area has been secured to protect human health and the environment.
☒ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☒ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

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

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

Printed Name: Arsenio Jones Title: RES Specailist

Signature: Date: 1/26/22

email: arsenio.jones@matadorresources.com Telephone: 575-361-4333

OCD Only

Received by: Date:

Form C-141
Page 3

State of New Mexico
Oil Conservation Division

Incident ID	nAPP2131555241
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

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

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

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

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Page 4

State of New Mexico
Oil Conservation Division

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District RP	
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Application ID	

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

Printed Name: Arsenio Jones Title: RES Specialist

Signature: Date: 1/26/22

email: arsenio.jones@matadorresources.com Telephone: 575-361-4333

OCD Only

Received by: Date:

State of New Mexico
Oil Conservation Division

Incident ID	nAPP2131555241
District RP	
Facility ID	
Application ID	

Closure

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

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

☒ N/A A scaled site and sampling diagram as described in 19.15.29.11 NMAC

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

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

☒ N/A Description of remediation activities

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

Printed Name: Arsenio Jones Title: RES Specialist

Signature: Date: 1/26/22

email: arsenio.jones@matadorresources.com Telephone: 575-361-4333

OCD Only

Received by: Date:

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

Closure Approved by: Jennifer Nobui Date: 01/31/2022

Printed Name: Jennifer Nobui Title: Environmental Specialist A

ATTACHMENT 2

Daily Site Visit Report

VERTEX

Client:	Matador Resources	Inspection Date:	1/7/2022
Site Location Name:	Colonel R Howard 2	Report Run Date:	1/7/2022 6:09 PM
Client Contact Name:	Arsenio Jones	API #:	
Client Contact Phone #:	(575)361-4333		
Unique Project ID		Project Owner:	
Project Reference #		Project Manager:	Monica Peppin

Summary of Times

Arrived at Site	1/7/2022 9:47 AM
Departed Site	1/7/2022 10:45 AM

Field Notes

9:51 Conduct a liner inspection

10:45 Upon completion of the liner inspection, no tears or imperfections where found.

Next Steps & Recommendations

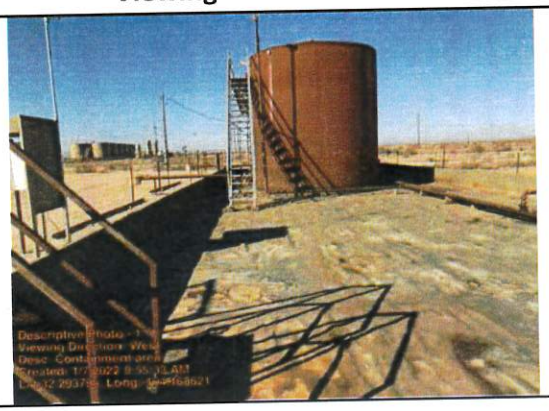
1

Daily Site Visit Report

VERTEX

Site Photos

Viewing Direction: West



Containment area

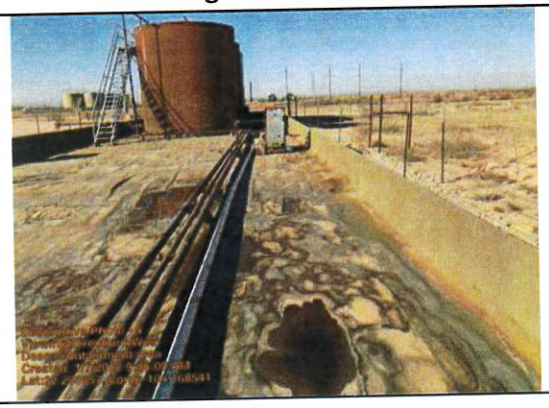
Viewing Direction: East

Containment area

Viewing Direction: East

Containment area

Viewing Direction: West



Containment area

Daily Site Visit Report

VERTEX

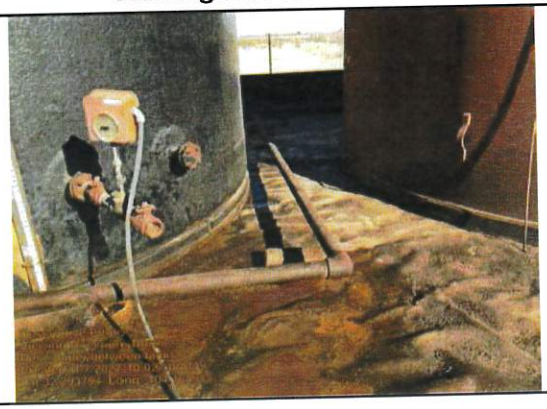
Viewing Direction: West

Containment area

Viewing Direction: South

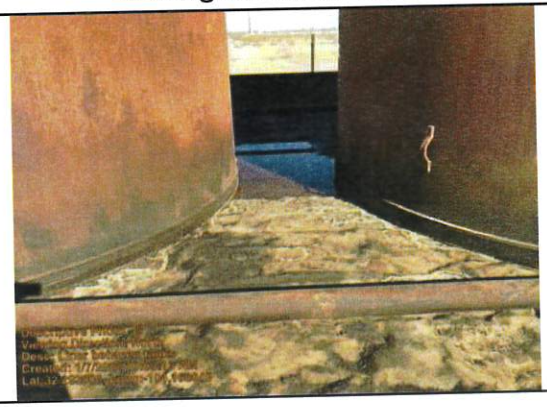
Containment area

Viewing Direction: North



Liner between tanks

Viewing Direction: North



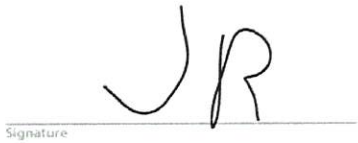
Liner between tanks

Daily Site Visit Report

VERTEX

Daily Site Visit Signature

Inspector: John Ramirez

Signature: 
Signature

ATTACHMENT 3

Colonel R Howard 2 DTGW and Nearest Well

1/13/2022, 2:54:02 PM

Override 1

GIS WATERS PODs

Active

Pending

OSE District Boundary

New Mexico State Trust Lands

Both Estates

Conveyances

Ditch

SiteBoundaries

1:4,514

0 0.05 0.1 0.19 mi

0 0.07 0.15 0.3 km

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

Unofficial Online Map

These maps are distributed "as is" without warranty of any kind.

Colonel R Howard 2 0.5 mile Radius

1/13/2022, 2:47:32 PM

GIS WATERS PODs
- Active
- Pending
- Plugged

OSE District Boundary

Water Right Regulations
- Negative Easement Area

New Mexico State Trust Lands
- Both Estates

Conveyances
- Canal
- Ditch
- SiteBoundaries

1:18,056

0 0.17 0.35 0.7 mi

0 0.3 0.6 1.2 km

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

Unofficial Online Map
These maps are distributed "as is" without warranty of any kind.

New Mexico Office of the State Engineer
Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Twn	Rng	(NAD83 UTM in meters) X	Y
	C 03488 POD1	4	3	1	23	23S	27E	578430	3573023

Driller License: 1348 **Driller Company:** TAYLOR WATER WELL SERVICE

Driller Name: TAYLOR, CLINTON E.

Drill Start Date:	05/08/2011	**Drill Finish Date:**	05/10/2011	**Plug Date:**	
Log File Date:	05/31/2011	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:	SUBMER	**Pipe Discharge Size:**		**Estimated Yield:**	100 GPM
Casing Size:	4.50	**Depth Well:**	217 feet	**Depth Water:**	122 feet

Water Bearing Stratifications:	Top	Bottom	Description
	202	207	Limestone/Dolomite/Chalk
	210	217	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	197	217

U.S. Fish and Wildlife Service

National Wetlands Inventory

Colonel R Howard 2 Watercourse

January 13, 2022

Wetlands

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

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

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

U.S. Fish and Wildlife Service

National Wetlands Inventory

Colonel R Howard 2 Lakebed

January 13, 2022

Wetlands

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

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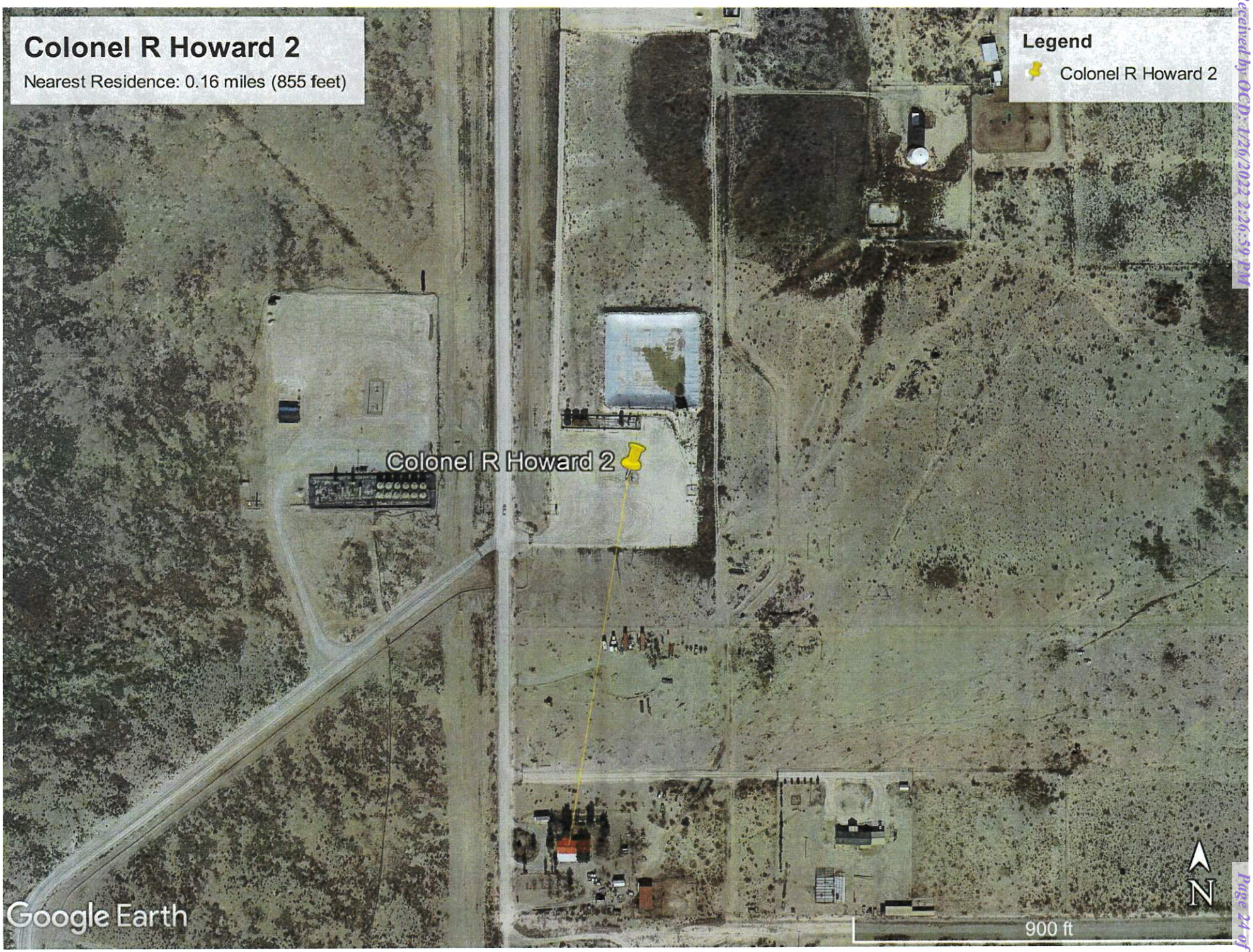
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper



Colonel R Howard 2 DTGW and Nearest Well

1/13/2022, 2:54:02 PM

Override 1

GIS WATERS PODs

Active

Pending

OSE District Boundary

New Mexico State Trust Lands

Both Estates

Conveyances

Ditch

SiteBoundaries

1:4,514

0 0.05 0.1 0.19 mi

0 0.07 0.15 0.3 km

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

Unofficial Online Map

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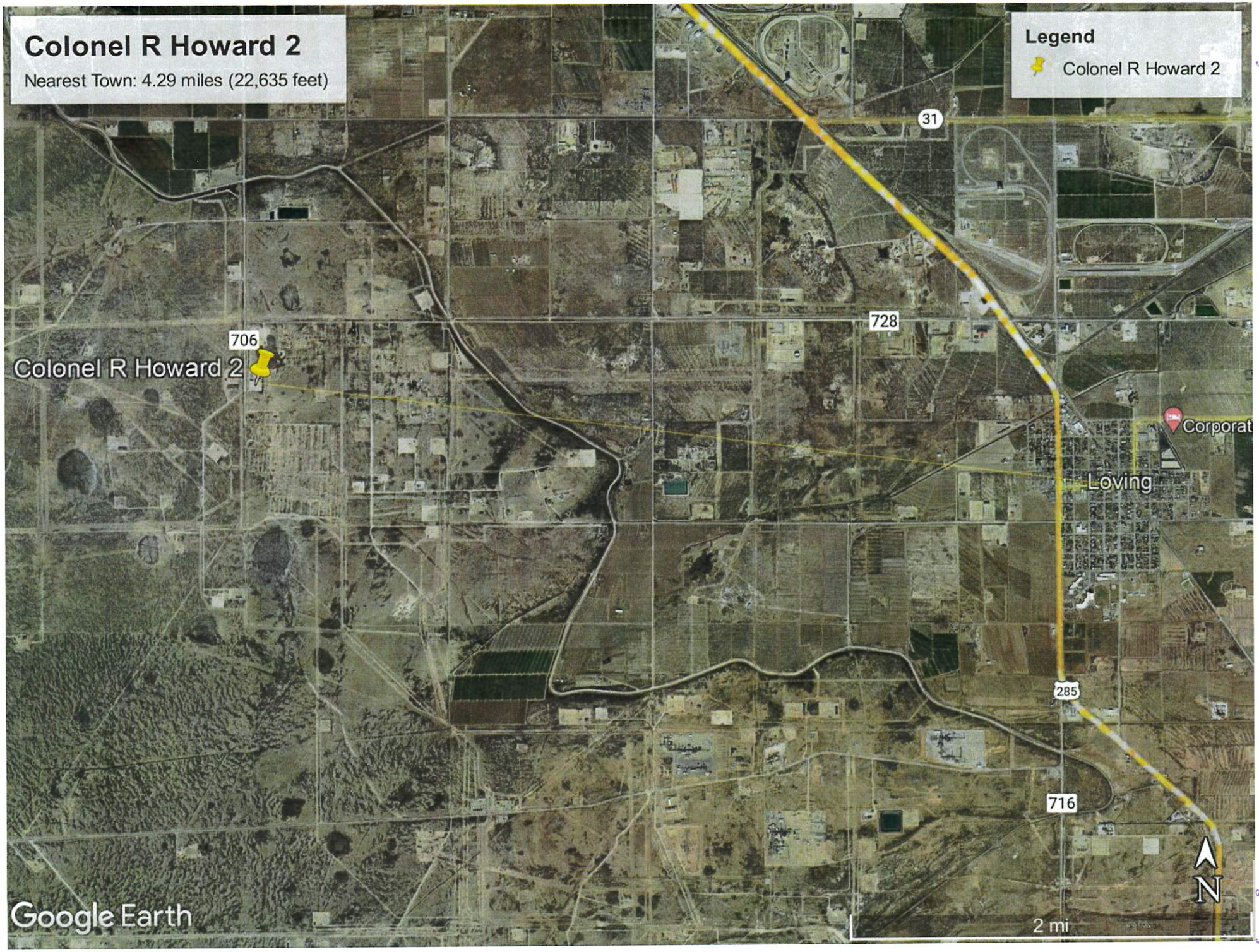
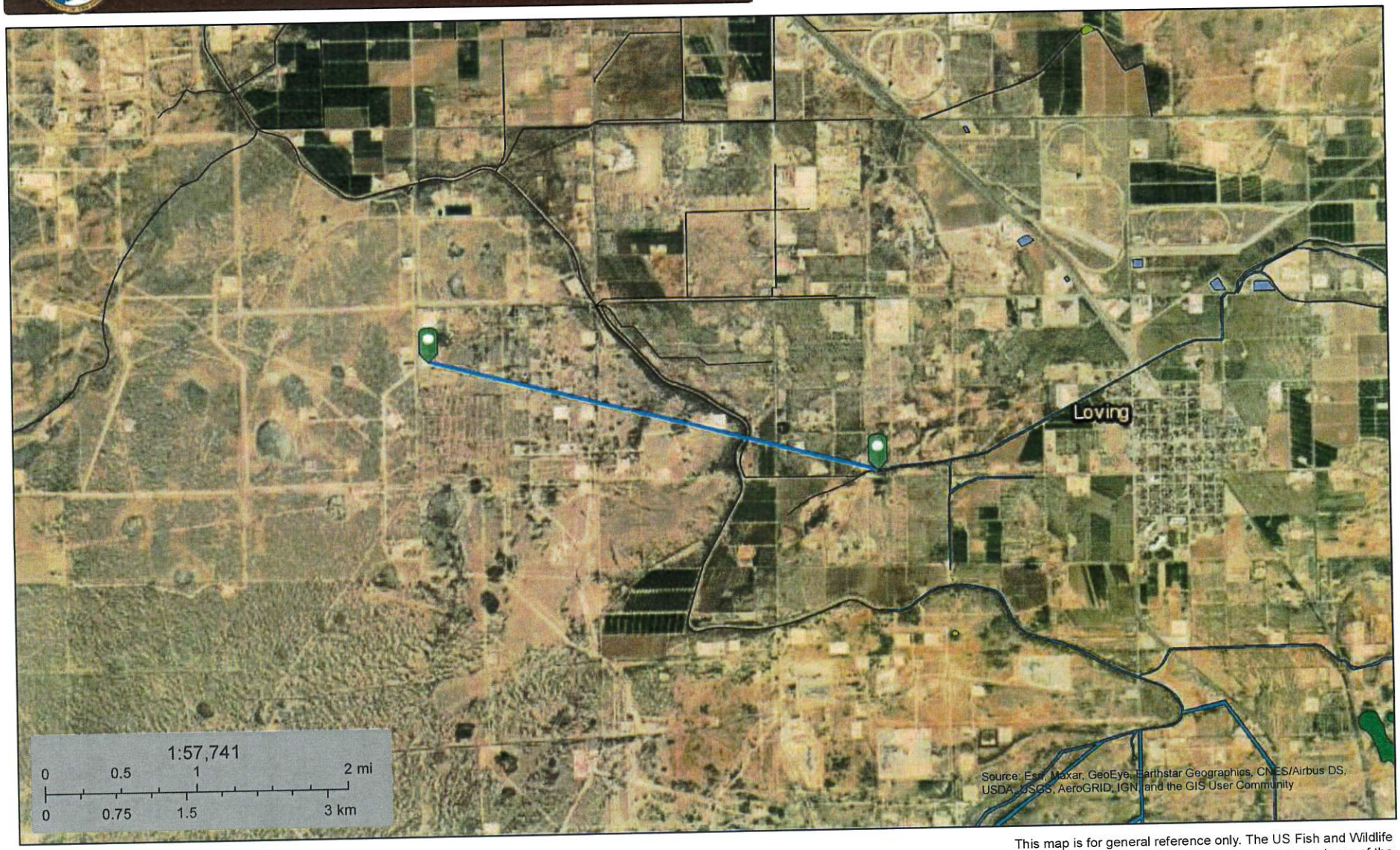


U.S. Fish and Wildlife Service

National Wetlands Inventory

Colonel R Howard 2 Wetlands



January 13, 2022

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

Wetlands

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

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

Colonel R Howard 2

1/13/2022, 2:22:08 PM

1:9,028

0 0.05 0.1 0.2 mi

0 0.1 0.2 0.4 km

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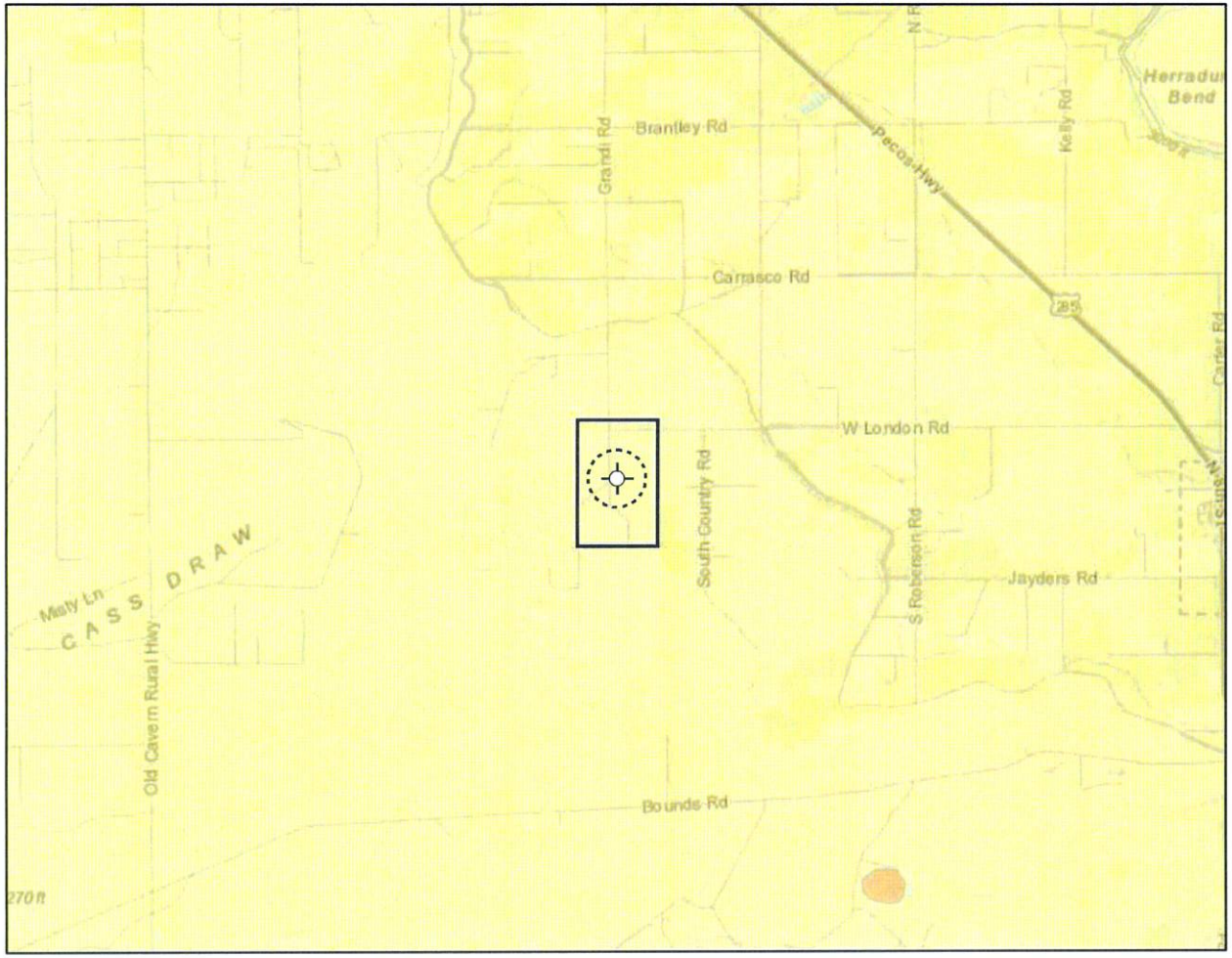
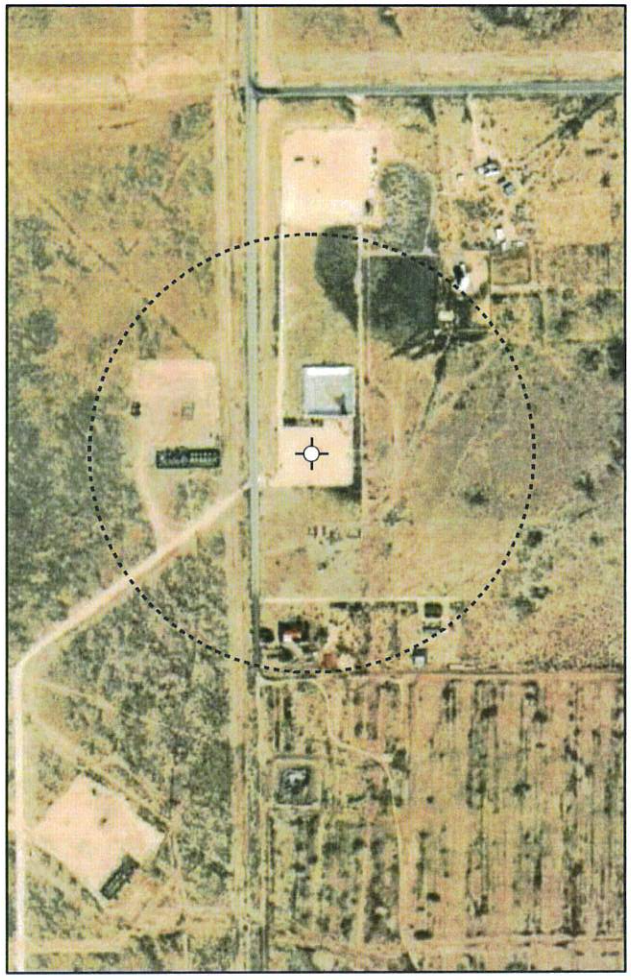
EMNRD MMD GIS Coordinator

NM Energy, Minerals and Natural Resources Department (http://nm-emnrd.maps.arcgis.com/apps/webappbuilder/index.html?id=7ebfa3c432db42978d66c99a9cc8311a)





Karst Potential

- Critical
- High
- Medium
- Low

Site Location

Site Buffer (1,000 ft.)

Overview Map

0 0.25 0.5 1 mi

Detail Map

0 150 300 600 ft.

VERTEX

Map Center:
Lat/Long: 32.293000, -104.168460

NAD 1983 UTM Zone 13N
Date: Jan 18/22

N

Karst Potential
Colonel R Howard 2

FIGURE:
X

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

Note: Inset Map, ESRI 2020; Overview Map: ESRI World Topographic

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Matador Resources\21E-00087\020 - Colonel R Howard 2\Figure X Karst Potential Map (21E-00087).mxd

National Flood Hazard Layer FIRMette

FEMA

104°10'25"W 32°17'52"N

104°9'48"W 32°17'21"N

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

1:6,000

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

Legend

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

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

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

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

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

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

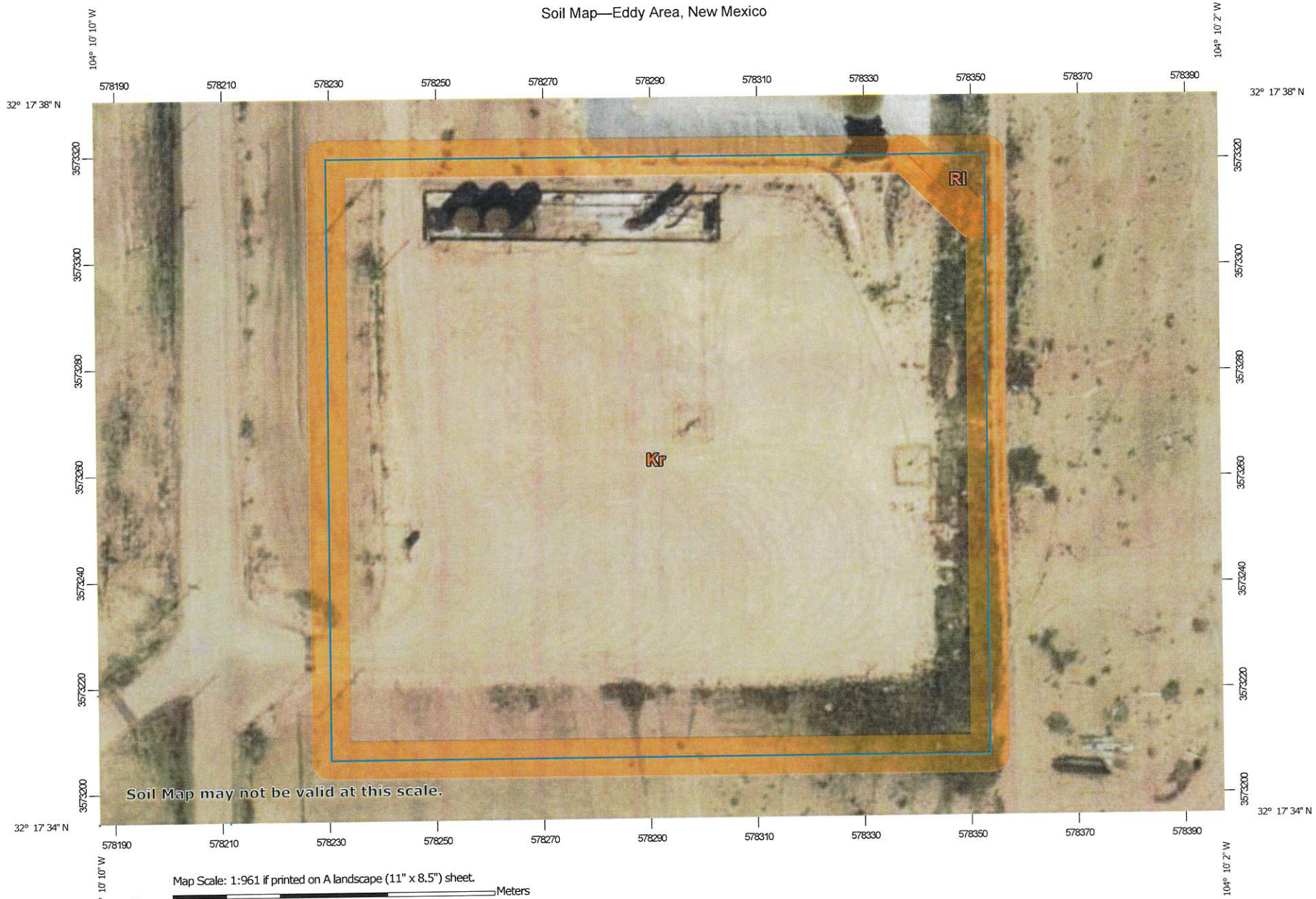
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/13/2022 at 3:53 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—Eddy Area, New Mexico



Map Scale: 1:961 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 10 20 40 60

Feet: 0 45 90 180 270

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 17, Sep 12, 2021

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

Date(s) aerial images were photographed: Feb 27, 2020—Feb 28, 2020

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Kr	Karro loam, 0 to 1 percent slopes	3.4	99.3%
Rl	Reeves loam, 0 to 1 percent slopes	0.0	0.7%
Totals for Area of Interest		**3.5**	**100.0%**

Eddy Area, New Mexico

Kr—Karro loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 1w4v
Elevation: 2,500 to 5,300 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 57 to 64 degrees F
Frost-free period: 200 to 230 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Karro and similar soils: 99 percent
Minor components: 1 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Karro

Setting

Landform: Plains, alluvial fans
Landform position (three-dimensional): Riser, talf, rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 90 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water supply, 0 to 60 inches: High (about 10.5 inches)

Interpretive groups

Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: R042XC030NM - Limy

Hydric soil rating: No

Minor Components

Reeves

Percent of map unit: 1 percent
Ecological site: R042XC007NM - Loamy
Hydric soil rating: No

Data Source Information

Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 17, Sep 12, 2021

Eddy Area, New Mexico

RI—Reeves loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 1w5p
Elevation: 1,250 to 4,800 feet
Mean annual precipitation: 10 to 25 inches
Mean annual air temperature: 57 to 70 degrees F
Frost-free period: 120 to 225 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Reeves

Setting

Landform: Ridges, plains, hills
Landform position (two-dimensional): Shoulder, backslope, footslope, toeslope
Landform position (three-dimensional): Side slope, crest, nose slope, head slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Residuum weathered from gypsum

Typical profile

Ap - 0 to 8 inches: loam
H2 - 8 to 32 inches: clay loam
H3 - 32 to 60 inches: gypsiferous material

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Gypsum, maximum content: 80 percent
Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 4.0
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: B
Ecological site: R042XC007NM - Loamy
Hydric soil rating: No

Minor Components

Cottonwood

Percent of map unit: 1 percent
Ecological site: R042XC006NM - Gyp Upland
Hydric soil rating: No

Karro

Percent of map unit: 1 percent
Ecological site: R042XC030NM - Limy
Hydric soil rating: No

Data Source Information

Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 17, Sep 12, 2021

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

ECOLOGICAL SITE DESCRIPTION

ECOLOGICAL SITE CHARACTERISTICS

Site Type: Rangeland

Site ID: R036XB129NM

Site Name: Limy

Precipitation or Climate Zone: 10-16"

Phase:

PHYSIOGRAPHIC FEATURES

Narrative:

This site occurs on level to undulation piedmont slopes and plains and on the tops of mesas. Slopes average five percent or less although they may range to 10 percent. Elevations range from 5,500 to 7,300 feet. Aspect varies but is not significant.

Land Form:

1. Fan piedmont
2. plains
3. piedmont slopes

Aspect:

1. not significant

	Minimum	Maximum
Elevation (feet)	5500	7300
Slope (percent)	0	10
Water Table Depth (inches)	--	--

Flooding:	Minimum	Maximum
Frequency	--	--
Duration	--	--

Ponding:	Minimum	Maximum
Depth (inches)	--	--
Frequency	--	--
Duration	--	--

Runoff Class:

Medium Hydrologic group B-C

CLIMATIC FEATURES

Narrative:

Average annual precipitation varies from about 10 inches to just over 16 inches. Fluctuations ranging from about 5 inches to 25 inches are not uncommon. The overall climate is characterized by cold dry winters in which winter moisture is less than summer. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than are those of spring.

The average frost-free season is about 120 days and extends from approximately mid-May to early or mid-September. Average annual air temperatures are 50 degrees F or lower, and summer maximums rarely exceed 100 degrees F. Winter minimums typically approach or go below zero. Monthly mean temperatures exceed 70 degrees F for the period of July and August.

Rainfall patterns generally favor warm-season perennial vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on a given range site, which is quite susceptible to disturbance and is at or near its productive potential only when both the natural warm-and cool-season dominants are present.

	Minimum	Maximum
Frost-free period (days):	51	171
Freeze-free period (days):	130	252
Mean annual precipitation (inches):	10	16

Monthly moisture (inches) and temperature (^{0}F) distribution:

	Precip. Min.	Precip. Max.	Temp. Min.	Temp. Max.
January	.40	.91	12.9	47.0
February	.43	.65	16.6	51.2
March	.47	1.10	20.9	57.1
April	.30	.49	26.1	65.3
May	.46	.98	33.4	74.2
June	.51	.57	41.4	84.2
July	2.15	3.45	50.4	85.1
August	2.28	3.03	48.7	82.4
September	1.29	1.68	41.4	77.9
October	.81	1.12	29.4	69.2
November	.38	.71	19.1	57.3
December	.53	.95	13.1	48.9

Climate Stations:

					Period		
Station ID	290640	Location	Augustine 2E	From:	05/01/26	To :	07/31/00
Station ID	296812	Location	Pietown 19NE	From:	09/01/88	To :	07/31/00
					Period		
Station ID	297180	Location	Quemado	From:	08/01/15	To :	07/31/00
					Period		

INFLUENCING WATER FEATURES

Narrative:

This site is not influenced by water from a wetland or stream.

Wetland description:

System	Subsystem	Class
N/A		

If Riverine Wetland System enter Rosgen Stream Type:

N/A

REPRESENTATIVE SOIL FEATURES

Narrative:

The soils of this site are well drained and moderately deep to deep. The surface textures range from loams to clay loams. Water-holding capacity is moderate to high and permeability is moderate. These soils are typically slightly effervescent on the surface with effervescence increasing with depth. There is a calcareous horizon within 20 inches of the surface that may be weakly cemented. This may affect the rooting depth of the vegetation. These soils are highly susceptible to wind and water erosion.

Characteristic taxonomic units are: Harvey loam, Flaco cobbly loam, loam

Parent Material Kind: Eolian and alluvial
Parent Material Origin: basalt

Surface Texture:

1. Clay loam
2. Sandy clay loam, Sandy loam
3. Very fine sandy loam

Surface Texture Modifier:

1. --
2. --
3. --

Subsurface Texture Group: Clay loam
Surface Fragments <=3" (% Volume): --
Surface Fragments >3" (% Volume): --
Subsurface Fragments <=3" (%Volume): 5-19
Subsurface Fragments >=3" (%Volume): 1-3

	Minimum	Maximum
Drainage Class:	well	well
Permeability Class:	slow	Moderately rapid
Depth (inches):	20	>72
Electrical Conductivity (mmhos/cm):	0.00	4.00
Sodium Absorption Ratio:	0.00	5.00
Soil Reaction (1:1 Water):	7.4	8.4
Soil Reaction (0.1M CaCl2):	--	--
Available Water Capacity (inches):	2	5
Calcium Carbonate Equivalent (percent):	--	--

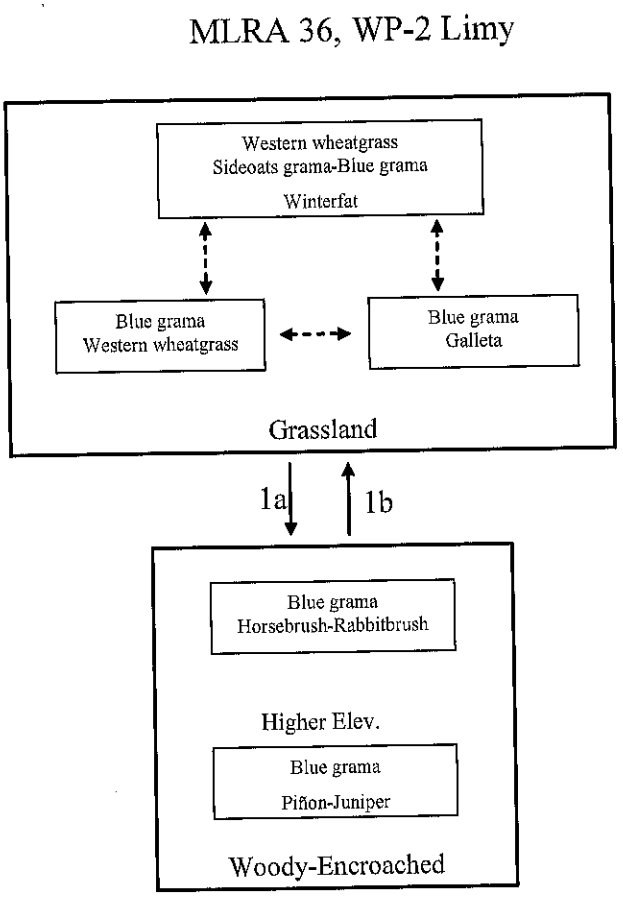
PLANT COMMUNITIES

Ecological Dynamics of the Site:

Overview

This site occurs on piedmont slopes, plains, and mesa tops. The soils are moderately deep to deep with a horizon high in calcium carbonate within twenty inches of the surface. This site is often associated with Loamy and Malpais sites. Loamy sites often occur adjacent to, or as inclusions interspersed within Limy sites. On basalt-capped mesas, Malpais sites are occasionally associated with Limy sites. The historic plant community of the Limy site is a grassland characterized by a mixture of cool-and warm-season grasses with occasional shrubs and forbs. Western wheatgrass is the dominant grass, and winterfat is the key shrub species. Overgrazing can reduce grass cover and effect a change in grass species dominance. The loss of grass cover can reduce the competitive influence of grasses and may facilitate the transition to the Woody-Encroached state.

Plant Communities and Transitional Pathways (diagram)



1a. Loss of grass cover, resource competition.
1b. Brush control, prescribed grazing.

Plant Community Name: Historic Climax Plant Community

Plant Community Sequence Number: 1 Narrative Label: HCPC

Plant Community Narrative:

State Containing Historic Plant Community

Grassland: Western wheatgrass is the dominant grass of the historic plant community. Other important grasses that occur in significant amounts include sideoats grama, New Mexico feathergrass, needle and thread, blue grama, galleta, and black grama. At higher elevations (usually greater than 6,800 feet), black grama is typically only a minor component while western wheatgrass and blue grama may increase in percent composition. Winterfat is the key woody species for this site. Other species include fourwing saltbush, Bigelow sagebrush, rabbitbrush, spineless horsebrush, cholla and yucca. Piñon and juniper are typically minor components on this site, but may be found at greater densities at higher elevation within the Land Resource Unit. Overgrazing can cause a decrease in western wheatgrass and other cool-season grasses, sideoats grama, winterfat, and fourwing saltbush. Communities dominated by blue grama with western wheatgrass or galleta as the sub-dominant may result.

Diagnosis: Grass and litter cover are uniform with few large bare areas present. Evidence of erosion such as pedestalling of plants, rills, and gullies are infrequent.

Ground Cover (Average Percent of Surface Area).	
Grasses & Forbs	15-20
Bare ground	45-55
Surface gravel	
Surface cobble and stone	5-20
Litter (percent)	10-15
Litter (average depth in cm.)	2
Surface Gravel (% cover)	

Plant Community Annual Production (by plant type):

	Annual Production (lbs/ac)		
Plant Type	Low	RV	High
Grass/Grasslike	300	530	760
Forb	28	50	71
Tree/Shrub/Vine	47	83	119
Lichen	--	--	--
Moss	--	--	--
Microbiotic Crusts	--	--	--
Totals	375	662.5	950

Plant Community Composition and Group Annual Production:

Plant Type - Grass/Grasslike

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
1	ELLAL PASM	Thickspike wheatgrass Western wheatgrass	66-133	66-133
2	BOGR2 BOHI2	Blue grama Hairy grama	66-99	66-99
3	HENE5 HECO26	NM Feathergrass Needle-and-Thread	66-133	66-133
4	PLJA	Galleta	33-66	33-66
5	SPAI	Alkali sacaton	20-33	20-33
6	ACHY	Indian ricegrass	20-33	20-33
7	ELEL5	Bottlebrush squirreltail	20-33	20-33
8	SPCR SPCO4 LYPH	Sand dropseed Spike dropseed Wolftail	20-33	20-33
9	BOCU	Sideoats grama	66-99	66-99
10	BOER4	Black grama	33-66	33-66

Plant Type - Tree/Shrub/Vine

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production
11	KRLA2	Winterfat	33-66	33-66
12	ATCA2	Fourwing saltbush	7-33	7-33
13	EPHED	Ephedra spp.	7-20	7-20
14	ARBI	Bigelow sagebrush	7-33	7-33
15	ERNAN5 TECA2 GUSA2	Rabbitbrush Spineless horsebrush Broom snakeweed	7-20	7-20
16	PIED JUNIP	Pinyon Juniper	7-20	7-20
17	Various	Other shrubs	20-33	20-33

Plant Type – Forb

18	2PF	Perennial forbs	7-53	7-53
19	2AF	Annual forbs	7-33	7-33

Plant Type - Lichen

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Moss

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Type - Microbiotic Crusts

Group Number	Scientific Plant Symbol	Common Name	Species Annual Production	Group Annual Production

Plant Growth Curves
Growth Curve ID NM 0319
Growth Curve Name: HCPC
Growth Curve Description: WP-2 Limy HCPC

Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
0	0	5	10	10	10	20	25	15	5	0	0

Additional States:

Woody-Encroached: This state is characterized by an increase in woody species, typically spineless horsebrush and or rabbitbrush, and in some instances at higher elevations, piñon and juniper. Blue grama is the dominant grass and galleta and threeawns are sub-dominants. Grass cover decreases as shrub/tree canopy increases.

Diagnosis: Grass production and species composition have decreased relative to the Grassland State. Grass and litter cover range from fairly uniform, to patchy with large bare areas present. Evidence of erosion including pedestalling of grasses, elongated water flow patterns, and rills may be common.

Transition to Woody-Encroached (1a) Loss of grass cover due to overgrazing and the associated reduced competition by grasses may facilitate woody encroachment.[3]

Key indicators of approach to transition:

- Decrease or change in composition or distribution of grass cover, such as dominance by blue grama.
- Increase in size and frequency of bare patches.
- Increase in amount of rabbitbrush, horsebrush, or juniper/piñon seedlings.

Transition back to Grassland (2b) Brush control is necessary to reduce the competitive influence of shrubs. Some positive results have been reported in controlling rabbitbrush with herbicides.[2, 4] Root plowing and other mechanical control methods that sever the plant below the sprouting zone may reduce horsebrush and rabbitbrush densities. Horsebrush and rabbitbrush are fire-adapted species and can quickly increase or occupy a site following fire. Mechanical[1], chemical, or a combination can be effective in reducing piñon/juniper densities. Prescribed grazing will help ensure adequate rest following brush control and will assist in the establishment and maintenance of grass cover.

ECOLOGICAL SITE INTERPRETATIONS

Animal Community:

This range site provides a habitat, which supports a resident animal community characterized by pronghorn antelope, blacktailed jackrabbit, badger, Gunnison's prairie dog, mourning dove, prairie rattlesnake, and American bison. The common raven, prairie falcon, and Mexican eagle hunt over this site. Mule deer feed on the site.

Hydrology Functions:

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

Hydrologic Interpretations	
Soil Series	Hydrologic Group
Harvey	B
Falco	C

Recreational Uses:

This site offers fair to good potential for hiking, horseback riding, nature observation, and photography. Camping is limited due to the lack of water and shade. Hunting for antelope and small game is good. During years of abundant rainfall, the natural beauty is enhanced by an array of colorful wildflowers.

Wood Products:

Under the potential vegetative community, this site has little potential for wood products. However, in areas where pinyon and juniper have increased there is a limited potential for fencing material and fuelwood.

Other Products:

This site is suitable for grazing by all kinds and classes of livestock during all seasons of the year but is poorly suited to continuous yearlong use. Species such as Western wheatgrass, New Mexico feathergrass, Sideoats grama, Winterfat, and Fourwing saltbush will decrease. They will be replaced by blue grama, broom snakeweed, yucca, and cholla. Continued deterioration of the site can cause severe erosion. This site responds best to a system of grazing that rotates the season of use. In some areas, pinyon and juniper have increased on this site and may appear as even-aged, long-lived stands.

Other Information:

Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

Similarity Index	Ac/AUM
100 - 76	3.3-4.6
75 – 51	4.4-6.8
50 – 26	6.5-11.0
25 – 0	11.0+

Plant Preference by Animal Kind:

	Code	Species Preference	Code
Stems	S	None Selected	N/S
Leaves	L	Preferred	P
Flowers	F	Desirable	D
Fruit/Seeds	F/S	Undesirable	U
Entire Plant	EP	Not Consumed	NC
Underground Parts	UP	Emergency	E
		Toxic	T

Animal Kind: Livestock

Animal Type: Cattle

Common Name	Scientific Name	Plant Part	Forage Preferences											
			J	F	M	A	M	J	J	A	S	O	N	D
Western wheatgrass	Pascopyrum smithii	EP	D	D	P	P	P	D	D	D	D	D	D	D
Needle andThread	Hesperostipa comata	EP	D	D	P	P	P	D	D	D	D	D	D	D
NM Feathergrass	Hesperostipa neomexicana	Ep	D	D	P	P	P	D	D	D	D	D	D	D
Indian ricegrass	Achnatherum hymenoides	Ep	P	P	P	P	P	P	P	P	P	P	P	P
Bottlebrush squirreltail	Elymus elymoides	Ep	U	U	D	D	D	U	U	U	D	D	D	U
Bigelow sagebrush	Artemisia bigelovii	Ep	D	D	D	D	D	D	D	D	D	D	D	D
Fourwing saltbush	Atriplex canescens	EP	P	P	P	P	P	D	D	D	D	D	D	P
Winterfat	Krascheninniko via lanata	Ep	D	D	P	P	P	P	P	P	D	D	D	D
Black grama	Bouteloua eriopoda	Ep	P	P	P	D	D	D	D	D	D	D	P	P
Sideoats grama	Bouteloua curtipendula	Ep	D	D	D	D	D	D	D	D	D	D	D	D

Supporting Information

Associated Sites:

Site Name	Site ID	Site Narrative

Similar Sites:

Site Name	Site ID	Site Narrative

State Correlation:
This site has been correlated with the following states:

Inventory Data References:

Data Source	Number of Records	Sample Period	State	County

Type Locality:

Relationship to Other Established Classifications:

Other References:

1. Brockway, D.G., R.G. Gatewood, and R.B. Paris. 2002. Restoring grassland savannas from degraded pinyon-juniper woodlands: effects of mechanical overstory reduction and slash treatment alternatives. Journal of Environmental Management. 64: 179-197.

2. Cluff, G.J., B.A. Roundy, R.A. Evans, and J.A. Young. 1983. Herbicidal control of greasewood (Sarcobatus vermiculatus) and salt rabbitbrush (Chrysothamnus nauseosus ssp. consimilis). Weed Science. 31: 275-279.

3. Johnsen, T.N., Jr. 1962. One-seeded juniper invasion of northern Arizona grasslands. Ecological Monographs. 32:187-207.

4. Whisenant, S.G. 1988. Control of threadleaf rubber rabbitbrush with herbicides. Journal of Range Management. 41: 470-472

Data collection for this site was done in conjunction with the progressive soil surveys within the New Mexico and Arizona Plateaus & Mesas Major Land Resource Area of New Mexico. This site has been mapped and correlated with soils in the following soil surveys: McKinley, Catron, Cibola, Socorro and Sandoval.
Characteristic Soils Are:

Other Soils included are:

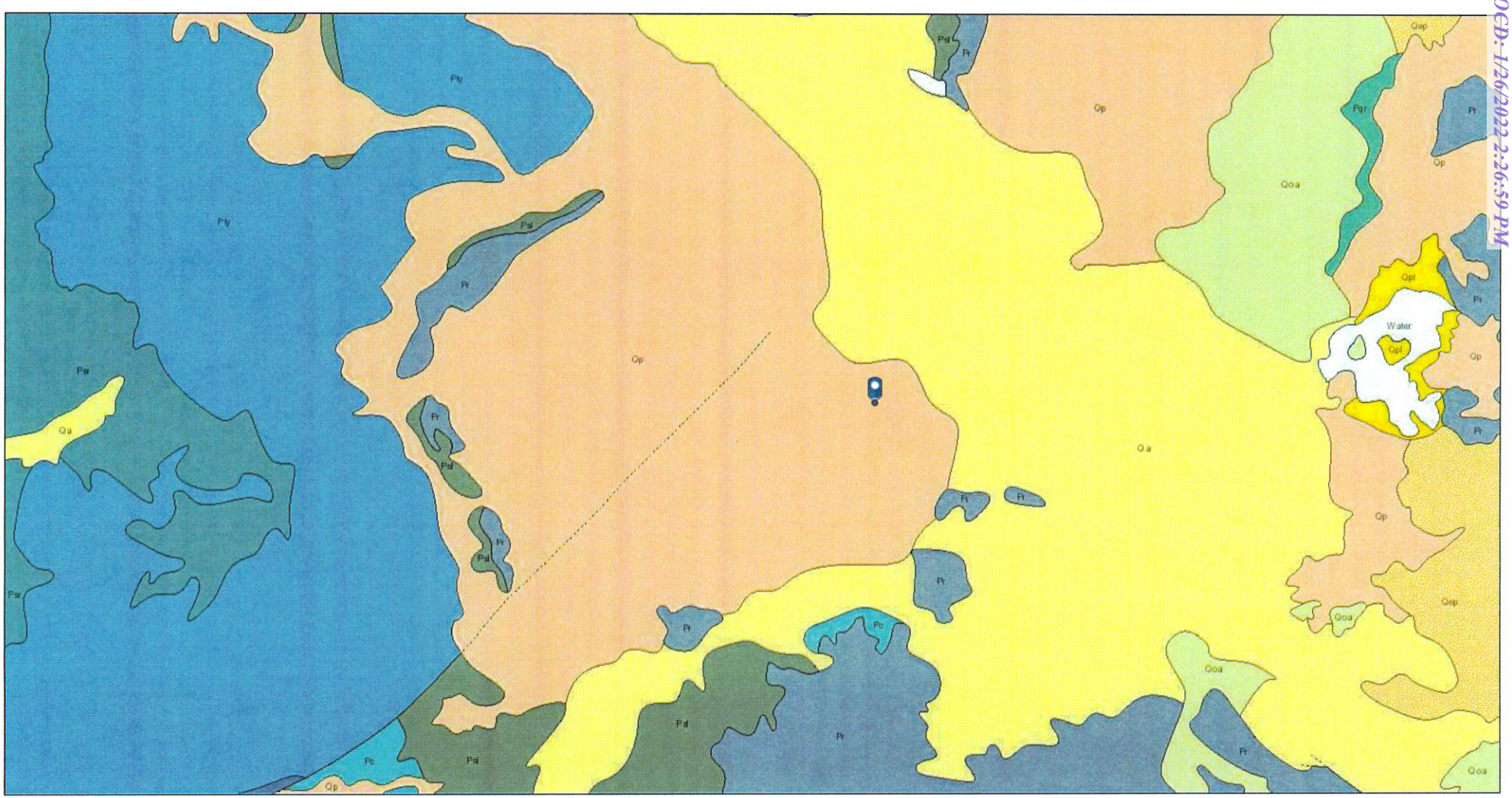
Site Description Approval:

Author	Date	Approval	Date
Don Sylvester	05/15/84	Don Sylvester	05/15/84

Site Description Revision:

Author	Date	Approval	Date
Brenda Simpson	07/23/02	George Chavez	06/10/05
David Trujillo	06/10/05		

Colonel R Howard 2



1/13/2022, 3:02:53 PM

1:144,448

0 1.5 3 6 mi

0 2.5 5 10 km

Lithologic Contacts

- Contact, Exposed
- Contact, Gradational
- Nomenclature change

Map Boundary

Faults

- Fault, Exposed
- Fault, Intermittent
- Fault, Concealed
- Shere Zone

Dikes

- <all other values>
- Dike
- Dike intruding fault
- Volcanic Vents

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, NMBGMR

ATTACHMENT 4

Monica Peppin

From: Dhugal Hanton <vertexresourcegroupusa@gmail.com>
Sent: Wednesday, January 5, 2022 10:37 AM
To: Monica Peppin
Subject: Fwd: 48 Hour Notifification nAPP2131555241 Colonel R Howard 2 Liner Inspection

---------- Forwarded message ---------
From: **Dhugal Hanton** <vertexresourcegroupusa@gmail.com>
Date: Wed, Jan 5, 2022 at 10:33 AM
Subject: 48 Hour Notifification nAPP2131555241 Colonel R Howard 2 Liner Inspection
To: Enviro, OCD, EMNRD <OCD.Enviro@state.nm.us>
Cc: Arsenio Jones <arsenio.jones@matadorresources.com>, <csnow@matadorresources.com>

All,

Please accept this email as 48-hr notification that Vertex Resource Services has scheduled a liner inspection to be conducted at Colonel R Howard 2 for the following releases:

nAPP2131555241 DOR: 11/10/2021

This work will be completed on behalf of Matador Production Company.

On Friday, January 7, 2022 at approximately 9:00 a.m., John Ramirez, will be onsite to conduct a liner inspection. He can be reached at 575-725-1809. If you need directions to the site, please do not hesitate to contact him. If you have any questions or concerns regarding this notification, please give me a call at 575-361-9880.

Thank you,

Monica Peppin
Sr. Environmental Technician

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

P 575.725.5001 Ext. 711
C 575.361.9880
F

www.vertex.ca

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 75604

CONDITIONS

Operator: MATADOR PRODUCTION COMPANY One Lincoln Centre Dallas, TX 75240	OGRID: 228937
	Action Number: 75604
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	None	1/31/2022