General Information

NMOCD District:	District 1	Incident ID:	NRM2026231125
Landowner:	State	RP Reference:	N/A
Client:	Tap Rock Operating	Site Location:	Zeus SWD Line
Date:	April 4, 2024	Project #:	24E-00851
Client Contact:	Bill Ramsey	Phone #:	720.238.2787
Vertex PM:	Chance Dixon	Phone #:	575.988.1472

Objective

The objective of this environmental remediation work plan is to identify exceedances found during past site assessment activity completed by CDH Consulting (CDH) and propose an appropriate remediation technique to address the open release for Zeus SWD Line (hereafter referred to as Zeus) for Tap Rock Operating (Tap Rock). The incident was due to equipment failure from a leak at a weld on an aboveground produced water poly transfer line. Areas of environmental concern identified and delineated include the flow line rupture area. The C-141 Report for the release is included in Attachment 1. Closure criteria has been selected as per New Mexico Administrative Code (NMAC) 19.15.29. All applicable research as it pertains to closure criteria selection is presented in Attachment 3. The closure criteria for the site is presented below.

Table 1. Closure Criteria for Soils Impacted by a Release DTGW <50 feet bgs

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

DTGW – depth to groundwater
bgs – below ground surface
TDS – total dissolved solids
TPH – total petroleum hydrocarbons, GRO – gas range organics, DRO – diesel range organics, MRO – motor oil range organics
BTEX – benzene, toluene, ethylbenzene and xylenes

Site Assessment

Site characterization was completed by CDH on November 18, 2020. Sample points were established in an excavation, and samples were collected for field screening and laboratory analysis. Samples at 2 to 4 feet below ground surface (bgs) were submitted to Origins Laboratory Inc. and Eurofins Xenco for analysis. The sample locations are presented on Figure 1 of CDH's previous closure report for the release (Attachment 2). A review of the closure report has been completed to determine the appropriate remedial steps to take to obtain remediation approval for the release. Exceedances in situ have been identified from CDH's closure report and compared to the above-noted closure criteria. The site currently falls under the New Mexico Oil Conservation Division's (NMOCD's) most stringent standards.

Remedial Activities

Areas identified with contaminant concentrations above closure criteria will be remediated through excavation. Laboratory results from the previous work completed by CDH have been referenced to estimate both the vertical and horizontal limits of the impacts. The soil will be excavated to the extent of the known contamination that is stated above the selected criteria below based on the data collected

by CDH to a depth of 4 feet bgs. Composite sampling will be conducted for the soil that was used to backfill the previous excavation. Sampling stipulations for the backfill stockpile will be determined with NMOCD when Vertex Resource Services Inc. (Vertex) determines how much material is stockpiled. Removed soil from this process will be stored on a nearby adjacent Tap Rock pad. Soil that is sampled and proven to be below the strictest criteria per NMAC 19.25.29 will be used in the backfilling process. Soil that has been proven to be above the strictest criteria will be safely and properly disposed of at a nearby facility. Field screening will be utilized to confirm the removal of contaminated soil below the applicable closure criteria. Contaminated soils will be stored on a 30 mil liner before disposal at an approved facility. Confirmatory samples will be collected and laboratory analysis completed to confirm closure criteria guidelines are met while the excavation is taking place. Extra backfill that may be required will be sourced locally.

Sample Point	Excavation Depth	Remediation Method
S1	4'	Backhoe
S2	4'	Backhoe
S3	4'	backhoe
S4	4'	Backhoe
S5	4'	Backhoe
S6	4'	Backhoe
S7	4'	Backhoe
S8	2'	Backhoe
S9	4'	Backhoe
S10	4'	Backhoe
S11	4'	Backhoe
S12	4'	Backhoe
S13	2'	Backhoe
S14	4'	Backhoe
S15	4'	Backhoe
S16	4'	Backhoe
S17	4'	Backhoe

Depth to Groundwater Exploratory Borehole

Zeus does not currently have accurate or reliable data to depict the depth of groundwater. Vertex will establish an exploratory borehole permitted by the New Mexico Office of the State Engineer within 0.5 miles of the site. The borehole will be advanced to 105 feet bgs to determine if groundwater is present at that depth. If water is not present at 101 feet bgs, the closure criteria for off-pad locations at Zeus will be adjusted to NMOCD's criteria for locations with depth to groundwater >100 feet bgs, with the top 4 feet meeting the most stringent closure criteria. Reclamation of the top 4 feet will be immediately obtained and seeded with the appropriate NMSLO loamy seed mixture. If no groundwater is encountered to 105 feet bgs, closure criteria for the site will then be associated with the following constituent concentration limits as presented in Table 2.

Table 2. Closure Criteria for Soils to Remediation & Reclamation Standards		
	Constituent	**Limit**
0-4 feet bgs (19.15.29.13)	Chloride	600 mg/kg
	TPH (GRO+DRO+MRO)	100 mg/kg
DTGW > 100 feet (19.15.29.12)	Chloride	20,000 mg/kg
	TPH (GRO+DRO+MRO)	2,500 mg/kg
	GRO+DRO	1,000 mg/kg
	BTEX	50 mg/kg
	Benzene	10 mg/kg

DTGW – depth to groundwater
bgs – below ground surface
TPH – total petroleum hydrocarbons, GRO – gas range organics, DRO – diesel range organics, MRO – motor oil range organics
BTEX – benzene, toluene, ethylbenzene and xylenes

Variance Request

Vertex and Tap Rock would like to request a variance for confirmation sampling due to the square footage of the proposed excavation area. If depth to groundwater is proven to be greater than 51 feet bgs, the variance request will consist of five-point composite samples for every 400 square feet for the base of the excavation. The walls and excavation areas greater than 4 feet bgs will utilize five-point composite samples that are representative of no more than 200 square feet.

Should you have any questions or concerns, please do not hesitate to contact Chance Dixon at 575.988.1472 or cdixon@vertex.ca.

_____ _____

Wyatt Wadleigh, B.Sc. Date
ENVIRONMENTAL TECHNICIAN, REPORTING

_____ _____

Chance Dixon, B.Sc. Date
PROJECT MANAGER, REPORT REVIEW

Attachments

Attachment 1. NMOCD C-141 Report
Attachment 2. CDH Consulting Tables and Figures
Attachment 3. Closure Criteria Research

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	NRM2026231125
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Tap Rock Operating LLC	OGRID 37243
Contact Name Brad Morton	Contact Telephone (720) 460-3518
Contact email bmorton@taprk.com	Incident # *(assigned by OCD)* NRM2026231125
Contact mailing address 523 Park Point Dr #200, Golden, CO, 80401	

Location of Release Source

Latitude 32.224671 Longitude -103.574627
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Zeus SWD Line	Site Type Above Ground Transfer Line
Date Release Discovered 9/3/20	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
O	9	24S	33E	Lea

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

Nature and Volume of Release

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

☐ Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
☑ Produced Water	Volume Released (bbls) 20	Volume Recovered (bbls) 5
	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 Equipment failure, leak at weld on above-ground produced water poly transfer line		

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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: Christian Combs
Title: Regulatory & EHS Manager
Signature: CCC
Date: 9/11/2020
email: ccombs@taprk.com
Telephone: 720-360-4028

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

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Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	53.17 (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.***

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

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

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

Printed Name: Brad Morton Title: Production Manager

Signature: _____ Date: _____

email: bmorton@taprk.com Telephone: 720.460.3518

OCD Only

Received by: _____ Date: _____

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Application ID	

Closure

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

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

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

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

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

☒ Description of remediation activities

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

Printed Name: Brad Morton Title: Production Manager

Signature: _____ Date: _____

email: bmorton@taprk.com Telephone: 720.460.3518

OCD Only

Received by: _____ Date: _____

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

Closure Approved by: _____ Date: _____

Printed Name: _____ Title: _____

Attachment 2

Zeus SWD Line Release, NMOCD Incident #NRM2026231125
Initial Excavation Extent & Sample Location Map

CDH CONSULTING

- Sidewall Sample
- Pothole Sample
- Background Sample
- Groundwater Monitoring Well
- Soil Borings
- Composite Sample
- Pipeline

Date Created: 6/18/2022

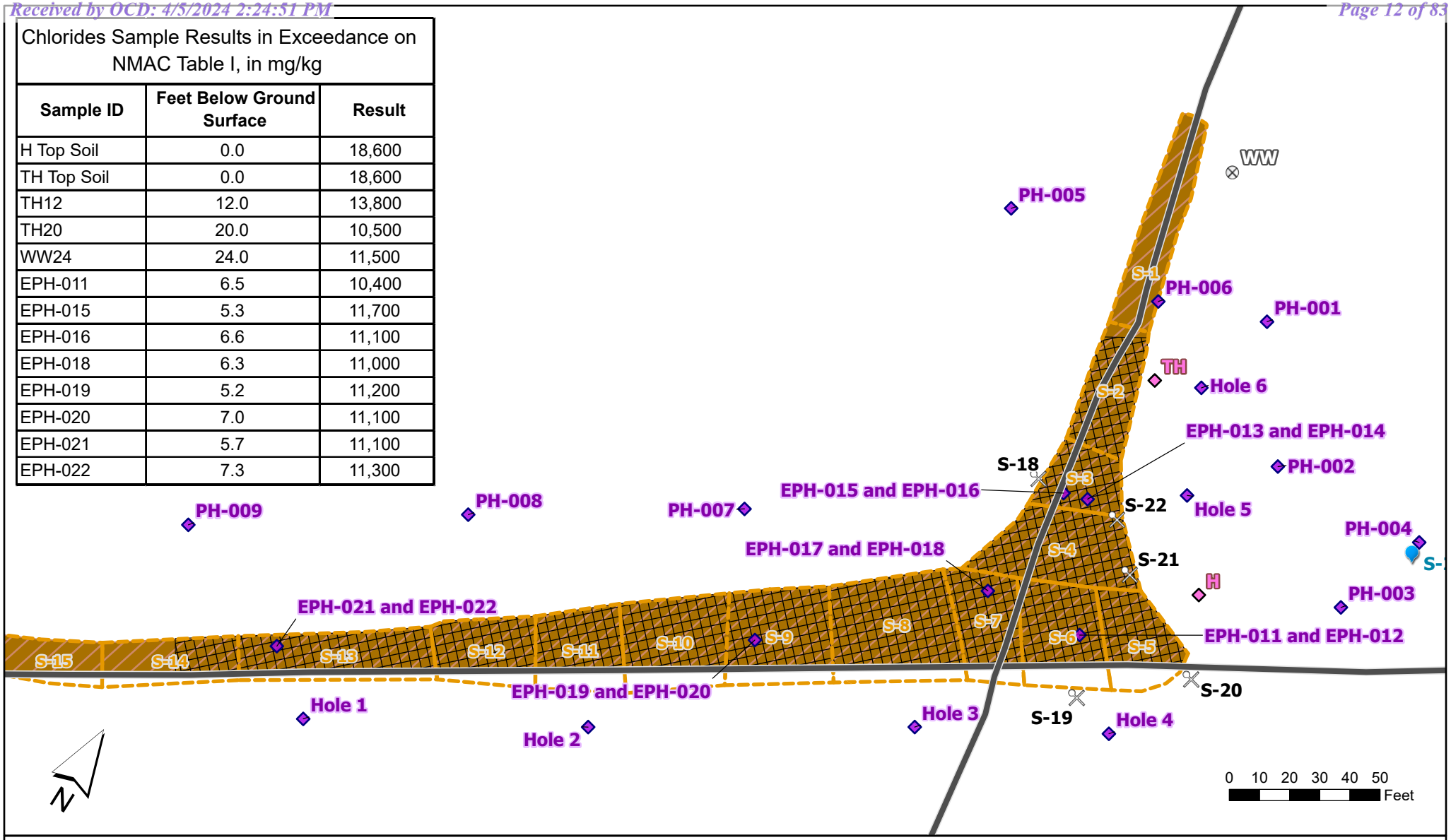
Location: T24S R33E S16 NWNE, Lea County, NM

Figure 1

Note:
All locations approximate unless otherwiste noted

TAP ROCK

Chlorides Sample Results in Exceedance on NMAC Table I, in mg/kg		
Sample ID	**Feet Below Ground Surface**	**Result**
H Top Soil	0.0	18,600
TH Top Soil	0.0	18,600
TH12	12.0	13,800
TH20	20.0	10,500
WW24	24.0	11,500
EPH-011	6.5	10,400
EPH-015	5.3	11,700
EPH-016	6.6	11,100
EPH-018	6.3	11,000
EPH-019	5.2	11,200
EPH-020	7.0	11,100
EPH-021	5.7	11,100
EPH-022	7.3	11,300



Zeus SWD Line Release, NMOCD Incident #NRM2026231125
Liner Installation Construction Map

CDH CONSULTING

- Sidewall Sample
- Pothole Sample
- Background Sample
- Groundwater Monitoring Well
- Soil Borings
- Initial Excavation
- Current Excavated Area
- Pipeline
- Liner Location

Date Created: 6/18/2022

Location: T24S R33E S16 NWNE, Lea County, NM

Figure 2

Note:
All locations approximate unless otherwise noted.

TAP ROCK

TABLE 1.0

SOIL SCREENING RESULTS

ZEUS SWD LINE
OCD INCIDENT #NRM2026231125
LEA COUNTY, NEW MEXICO

TAP ROCK OPERATING LLC.

Sample ID	Sample Date	Sample Depth (ft. bgs)	PID Reading (PPM)
S-1	9/23/2020	2.0	0.2
S-2	9/23/2020	2.0	0.2
S-3	9/23/2020	2.5	0.2
S-4	9/23/2020	4.0	0.2
S-5	9/23/2020	4.7	0.3
S-6	9/23/2020	4.7	0.3
S-7	9/23/2020	4.7	0.2
S-8	9/23/2020	2.0	0.3
S-9	9/23/2020	2.0	0.3
S-10	9/23/2020	2.0	0.4
S-11	9/23/2020	2.0	0.2
S-12	9/23/2020	2.0	0.5
S-13	9/23/2020	2.0	0.2
S-14	9/23/2020	2.0	0.3
S-15	9/23/2020	2.0	0.2
S-16	9/23/2020	2.0	0.2
S-17	9/23/2020	2.0	0.2
S-18	9/23/2020	SW 2.0	0.5
S-19	9/23/2020	SW 2.0	0.4
S-20	9/23/2020	SW 2.0	0.4
S-21	9/23/2020	SW 2.0	0.5
S-22	9/23/2020	SW 2.0	0.5
S-23	9/23/2020	BG 1	0.3
S-24	9/23/2020	BG 2	0.3

Notes:
ft. bgs = Feet below ground surface
PID = Photoionization Detector
PPM = Parts per million
BG = Background
SW = Sidewall

TABLE 2.0

SOIL ANALYTICAL RESULTS
ORGANIC COMPOUNDS

ZEUS SWD LINE
OCD INCIDENT #NRM2026231125
LEA COUNTY, NEW MEXICO

TAP ROCK OPERATING LLC.

Sample ID	Sample Date	Sample Depth (ft. bgs)	TPH (mg/kg)	Total BTEX (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)
NMOCD Table I Soil Standard (mg/kg)			**100**	**50**	**10**			
S-1	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-2	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-3	9/23/2020	2.5	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-4	9/23/2020	4.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-5	9/23/2020	4.7	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-6	9/23/2020	4.7	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-7	9/23/2020	4.7	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-8	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-9	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-10	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-11	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-12	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-13	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-14	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-15	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-16	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-17	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-18	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-19	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-20	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-21	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-22	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-23	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002
S-24	9/23/2020	2.0	< 50	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002

Notes:
Standards for soil are taken from 19.15.29.12(C)(4) NMAC, Table I,
TPH = Total Petroleum Hydrocarbons (Gasoline Range Organics [GRO], Diesel Range Organics [DRO], Motor Oil Range Organics [MRO])
NMOCD = New Mexico Oil Conservation Divison
NMAC = New Mexico Administrative Code
< = Analytical result is less than the indicated laboratory reporting limit
BTEX = Benzene, Toluene, Ethlybenzene, and Total Xylenes
mg/kg = Milligrams per kilogram
ft. bgs. = Feet below ground surface

TABLE 3.0

SOIL ANALYTICAL RESULTS
CHLORIDES

ZEUS SWD LINE
OCD INCIDENT #NRM2026231125
LEA COUNTY, NEW MEXICO

TAP ROCK OPERATING LLC.

Sample ID	Sample Date	Sample Depth (ft. bgs)	Chlorides (mg/kg)
NMOCD Table I Soil Standard (mg/kg)			**10,000**
S-1	9/23/2020	2.0	2,490
S-2	9/23/2020	2.0	8,010
S-3	9/23/2020	2.5	**11,000**
S-4	9/23/2020	4.0	7,250
S-5	9/23/2020	4.7	5,160
S-6	9/23/2020	4.7	6,230
S-7	9/23/2020	4.7	6,060
S-8	9/23/2020	2.0	442
S-9	9/23/2020	2.0	5,810
S-10	9/23/2020	2.0	6,210
S-11	9/23/2020	2.0	6,570
S-12	9/23/2020	2.0	2,070
S-13	9/23/2020	2.0	174
S-14	9/23/2020	2.0	1,250
S-15	9/23/2020	2.0	4,540
S-16	9/23/2020	2.0	2,880
S-17	9/23/2020	2.0	4,450
S-18	9/23/2020	2.0	6,940
S-19	9/23/2020	2.0	6,980
S-20	9/23/2020	2.0	7,390
S-21	9/23/2020	2.0	407
S-22	9/23/2020	2.0	5,050
S-23	9/23/2020	2.0	4.82
S-24	9/23/2020	2.0	4.76
PH-001	10/26/2020	5.7	< 10.1
PH-002	10/26/2020	4.8	12.6
PH-003	10/26/2020	5.4	< 10.0
PH-004	10/26/2020	5.2	< 9.98
PH-005	10/26/2020	4.2	20.4
PH-006	10/26/2020	5.0	10.1
PH-007	10/26/2020	5.4	45.0
PH-008	10/26/2020	5.0	12.4
PH-009	10/26/2020	6.6	< 9.98

TABLE 3.0

SOIL ANALYTICAL RESULTS
CHLORIDES

ZEUS SWD LINE
OCD INCIDENT #NRM2026231125
LEA COUNTY, NEW MEXICO

TAP ROCK OPERATING LLC.

Sample ID	Sample Date	Sample Depth (ft. bgs)	Chlorides (mg/kg)
NMOCD Table I Soil Standard (mg/kg)			**10,000**
PH-010	10/26/2020	6.3	< 10.1
EPH-011	10/26/2020	6.5	**10,400**
EPH-012	10/26/2020	10.7	9,540
EPH-013	10/26/2020	6.5	7,600
EPH-014	10/26/2020	10.7	8,000
EPH-015	10/26/2020	5.3	**11,700**
EPH-016	10/26/2020	6.6	**11,100**
EPH-017	10/26/2020	5.7	9,220
EPH-018	10/26/2020	6.3	**11,000**
EPH-019	10/26/2020	5.2	**11,200**
EPH-020	10/26/2020	7.0	**11,100**
EPH-021	10/26/2020	5.7	**11,100**
EPH-022	10/26/2020	7.3	**11,300**
EPH-023	10/26/2020	6.1	9,320
EPH-024	10/26/2020	6.5	8,390
H Top Soil	11/18/2020	0.0	**18,600**
H2	11/18/2020	2.0	7,350
H4	11/18/2020	4.0	3,990
H6	11/18/2020	6.0	2,600
H8	11/18/2020	8.0	3,130
H10	11/18/2020	10.0	3,650
H12	11/18/2020	12.0	7,680
H14	11/18/2020	14.0	6,280
H16	11/18/2020	16.0	8,290
H18	11/18/2020	18.0	9,010
H20	11/18/2020	20.0	9,210
H22	11/18/2020	22.0	9,670
H24	11/18/2020	24.0	8,060
H26	11/18/2020	26.0	1,610
H28	11/18/2020	28.0	844
H30	11/18/2020	30.0	544
H32	11/18/2020	32.0	1,570
H34	11/18/2020	34.0	1,060

TABLE 3.0

SOIL ANALYTICAL RESULTS
CHLORIDES

ZEUS SWD LINE
OCD INCIDENT #NRM2026231125
LEA COUNTY, NEW MEXICO

TAP ROCK OPERATING LLC.

Sample ID	Sample Date	Sample Depth (ft. bgs)	Chlorides (mg/kg)
NMOCD Table I Soil Standard (mg/kg)			**10,000**
SH Top Soil	11/18/2020	0.0	1,240
SH2	11/18/2020	2.0	173
SH4	11/18/2020	4.0	19.7
SH6	11/18/2020	6.0	36.2
SH8	11/18/2020	8.0	126
SH10	11/18/2020	10.0	137
SH12	11/18/2020	12.0	136
SH14	11/18/2020	14.0	248
SH16	11/18/2020	16.0	327
SH18	11/18/2020	18.0	271
SH20	11/18/2020	20.0	229
SH22	11/18/2020	22.0	174
SH24	11/18/2020	24.0	108
SH26	11/18/2020	26.0	89.1
SH28	11/18/2020	28.0	225
SH30	11/18/2020	30.0	237
TH Top Soil	11/18/2020	0.0	**10,700**
TH2	11/18/2020	2.0	27.7
TH4	11/18/2020	4.0	24.4
TH6	11/18/2020	6.0	25.5
TH8	11/18/2020	8.0	299
TH10	11/18/2020	10.0	7,150
TH12	11/18/2020	12.0	**13,800**
TH14	11/18/2020	14.0	8,590
TH16	11/18/2020	16.0	9,740
TH18	11/18/2020	18.0	9,790
TH20	11/18/2020	20.0	**10,500**
TH22	11/18/2020	22.0	9,470
TH24	11/18/2020	24.0	6,620
TH26	11/18/2020	26.0	7,800
TH28	11/18/2020	28.0	6,670
TH30	11/18/2020	30.0	5,500
WW Top Soil	11/18/2020	0.0	7,820

TABLE 3.0

SOIL ANALYTICAL RESULTS
CHLORIDES

ZEUS SWD LINE
OCD INCIDENT #NRM2026231125
LEA COUNTY, NEW MEXICO

TAP ROCK OPERATING LLC.

Sample ID	Sample Date	Sample Depth (ft. bgs)	Chlorides (mg/kg)
NMOCD Table I Soil Standard (mg/kg)			**10,000**
WW2	11/18/2020	2.0	11.3
WW4	11/18/2020	4.0	363
WW6	11/18/2020	6.0	501
WW8	11/18/2020	8.0	786
WW10	11/18/2020	10.0	255
WW12	11/18/2020	12.0	1,110
WW14	11/18/2020	14.0	785
WW16	11/18/2020	16.0	5,250
WW18	11/18/2020	18.0	8,660
WW20	11/18/2020	20.0	9,690
WW22	11/18/2020	22.0	9,340
WW24	11/18/2020	24.0	**11,500**
WW26	11/18/2020	26.0	5,990
WW28	11/18/2020	28.0	198
WW30	11/18/2020	30.0	704
WW32	11/18/2020	32.0	516
WW34	11/18/2020	34.0	336
WW36	11/18/2020	36.0	322
WW38	11/18/2020	38.0	198
WW40	11/18/2020	40.0	802
WW42	11/18/2020	42.0	159
WW44	11/18/2020	44.0	258
WW46	11/18/2020	46.0	179
WW48	11/18/2020	48.0	156
WW50	11/18/2020	50.0	199
WW52	11/18/2020	52.0	206
WW54	11/18/2020	54.0	151
WW55	11/18/2020	55.0	163
Hole 1 Top Soil	3/3/2021	0.0	< 5.02
Hole 1 SB-1	3/3/2021	2.0	< 4.99
Hole 1 SB-2	3/3/2021	4.0	< 4.96
Hole 1 SB-3	3/3/2021	6.0	17.8
Hole 1 SB-4	3/3/2021	8.0	44.4

TABLE 3.0

SOIL ANALYTICAL RESULTS
CHLORIDES

ZEUS SWD LINE
OCD INCIDENT #NRM2026231125
LEA COUNTY, NEW MEXICO

TAP ROCK OPERATING LLC.

Sample ID	Sample Date	Sample Depth (ft. bgs)	Chlorides (mg/kg)
NMOCD Table I Soil Standard (mg/kg)			**10,000**
Hole 1 SB-5	3/3/2021	10.0	174
Hole 2 Top Soil	3/3/2021	0.0	9.88
Hole 2 SB-1	3/3/2021	2.0	< 5.04
Hole 2 SB-2	3/3/2021	4.0	< 5.00
Hole 2 SB-3	3/3/2021	6.0	8.16
Hole 2 SB-4	3/3/2021	8.0	13.0
Hole 2 SB-5	3/3/2021	10.0	1620
Hole 3 Top Soil	3/3/2021	0.0	26.6
Hole 3 SB-1	3/3/2021	2.0	7.35
Hole 3 SB-2	3/3/2021	4.0	11.4
Hole 3 SB-3	3/3/2021	6.0	59.0
Hole 3 SB-4	3/3/2021	8.0	120
Hole 3 SB-5	3/3/2021	10.0	398
Hole 4 Top Soil	3/3/2021	0.0	114
Hole 4 SB-1	3/3/2021	2.0	37.8
Hole 4 SB-2	3/3/2021	4.0	22.5
Hole 4 SB-3	3/3/2021	6.0	257
Hole 4 SB-3B	3/3/2021	7.0	346
Hole 4 SB-4	3/3/2021	8.0	662
Hole 4 SB-6	3/3/2021	10.0	750
Hole 5 Top Soil	3/3/2021	0.0	326
Hole 5 SB-1	3/3/2021	2.0	< 5.05
Hole 5 SB-2	3/3/2021	4.0	< 5.03
Hole 5 SB-3	3/3/2021	6.0	<4.96
Hole 5 SB-4	3/3/2021	8.0	11.0
Hole 5 SB-5	3/3/2021	10.0	77.2
Hole 6 Top Soil	3/3/2021	0.0	15.1
Hole 6 SB-1	3/3/2021	2.0	8.97
Hole 6 SB-2	3/3/2021	4.0	6.3
Hole 6 SB-3	3/3/2021	6.0	16.2
Hole 6 SB-4	3/3/2021	8.0	72.0
Hole 6 SB-5	3/3/2021	10.0	89.2

Attachment 3

Closure Criteria Determination			
Site Name: Zeus SWD Line			
Spill Coordinates: 32.222241, -103.573974		X: 634376	Y: 3565962
Site Specific Conditions		Value	Unit
1	Depth to Groundwater (nearest reference)	**>1533**	feet
	Distance between release and nearest DTGW reference	**5,685**	feet
		1.08	miles
	Date of nearest DTGW reference measurement	**March 25, 2013**	
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	5,741	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	4,192	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	27,734	feet
5	i) Within 500 feet of a spring or a private, domestic fresh water well used by less than five households for domestic or stock watering purposes, **or**	5,016	feet
	ii) Within 1000 feet of any fresh water well or spring	11,964	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	2,850	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
	Distance between release and nearest registered mine	**105,522**	feet
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
	Distance between release and nearest unstable area	67,738	feet
10	Within a 100-year Floodplain		year
	Distance between release and nearest FEMA Zone A (100-year Floodplain)	70,639	feet
11	Soil Type	BE	
12	Ecological Classification	Loamy Sandy & Sandy	
13	Geology	Qep	
	NMAC 19.15.29.12 E (Table 1) Closure Criteria	<50'	<50' 51-100' >100'

New Mexico Office of the State Engineer
Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
	C 03565 POD3		3	4	08	24S	33E	632763	3566546

Driller License: 331 **Driller Company:** SBQ2, LLC DBA STEWART BROTHERS DRILLING CO.

Driller Name:

Drill Start Date: 09/27/2012 **Drill Finish Date:** 10/21/2012 **Plug Date:**

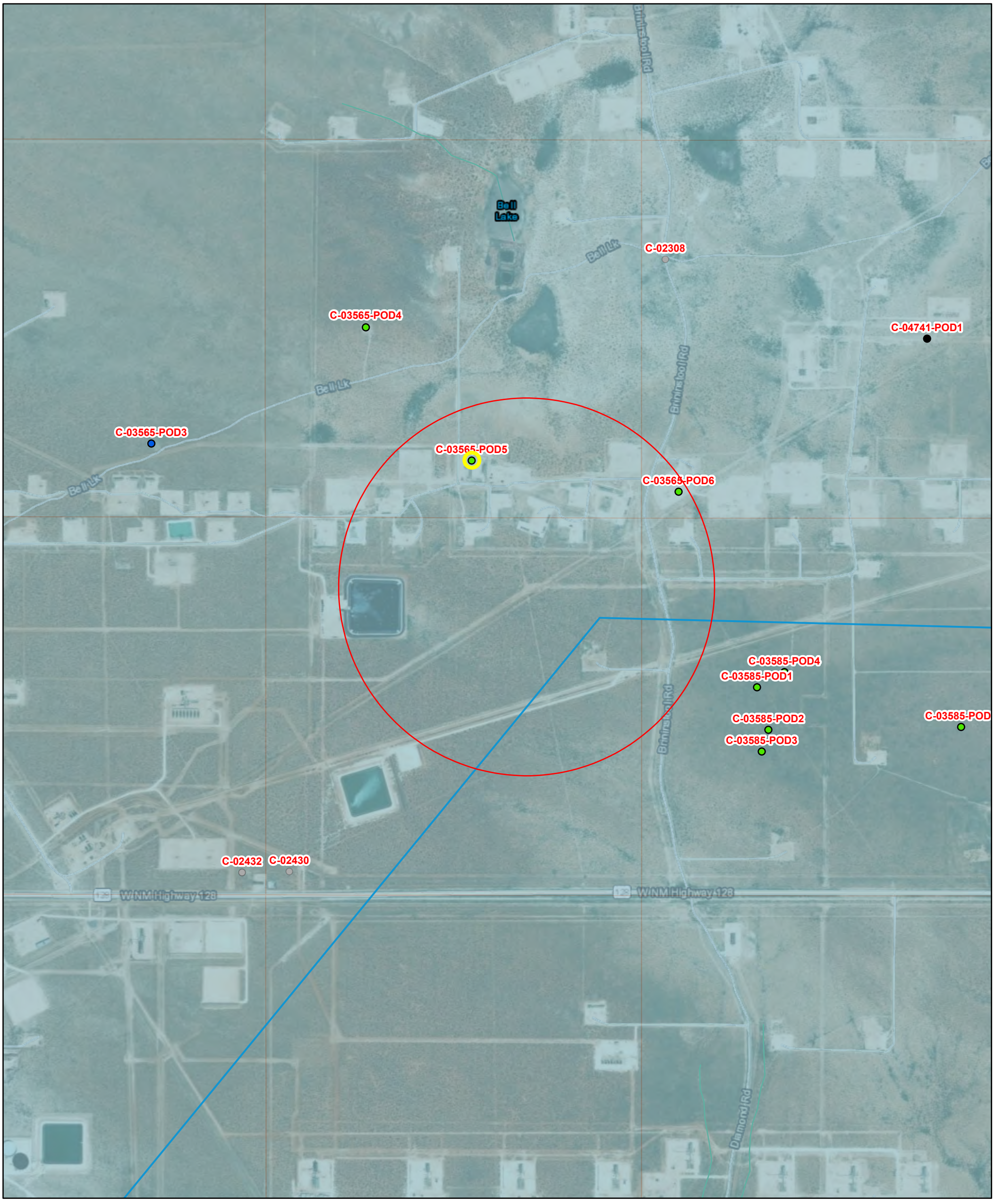
Log File Date: 12/11/2012 **PCW Rcv Date:** **Source:**

Pump Type: **Pipe Discharge Size:** **Estimated Yield:**

Casing Size: 8.90 **Depth Well:** **Depth Water:** 1533 feet

Water Bearing Stratifications:	Top	Bottom	Description
	0	20	Other/Unknown
	20	55	Sandstone/Gravel/Conglomerate
	55	1227	Shale/Mudstone/Siltstone
	1227	1262	Other/Unknown
	1262	1295	Other/Unknown
	1295	1310	Other/Unknown
	1310	1330	Other/Unknown
	1330	1375	Other/Unknown
	1479	1489	Other/Unknown
	1489	1533	Other/Unknown

Zeus SWD Line DTGW Five-Mile Radius



4/2/2024, 11:25:21 AM

GIS WATERS PODs
- Active
- Pending
- Inactive

OSE District Boundary

Water Right Regulations
- Closure Area
- Artesian Planning Area

New Mexico State Trust Lands
- Both Estates

NHD Flowlines
- Artificial Path
- Stream River

1:18,056

0 0.17 0.35 0.7 mi

0 0.28 0.55 1.1 km

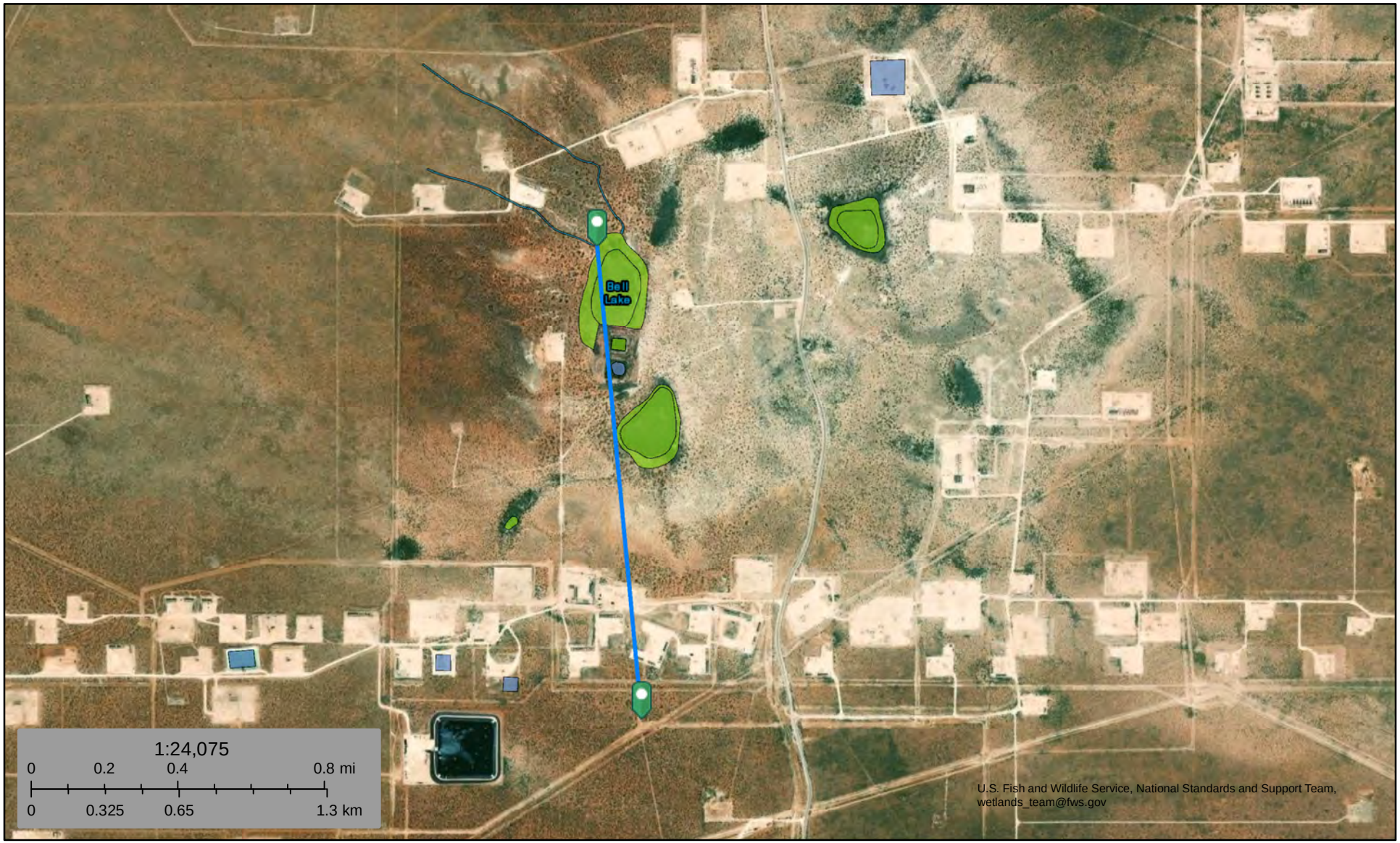
Esri, HERE, iPC, Esri, HERE, Garmin, iPC, Maxar

Online web user

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

U.S. Fish and Wildlife Service
National Wetlands Inventory

Zeus SWD Line - Watercourse: 1.09 mi (5741 feet) away



March 15, 2024

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

Zeus SWD Line - Lakebed: 0.79 mi (4192 feet) away

March 15, 2024

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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Zeus SWD Line

Distance to Residence:
5.25 miles (27,734 feet) away

Legend

Distance to Residence

Residence

Xto Rig

Miller Fabrication,LLC

128

128

Google Earth

Image © 2024 Airbus

Image Landsat / Copernicus

SWD

N

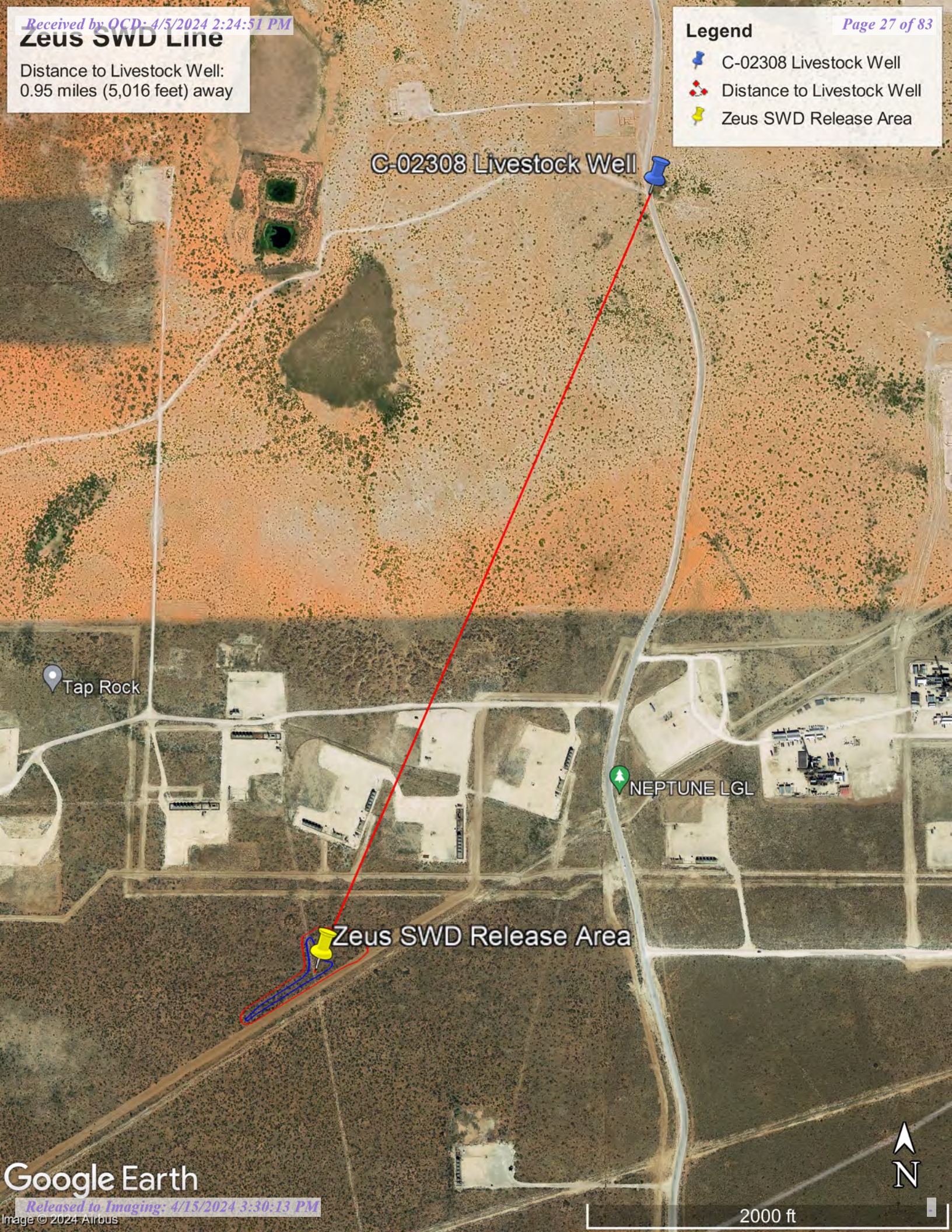
2 mi

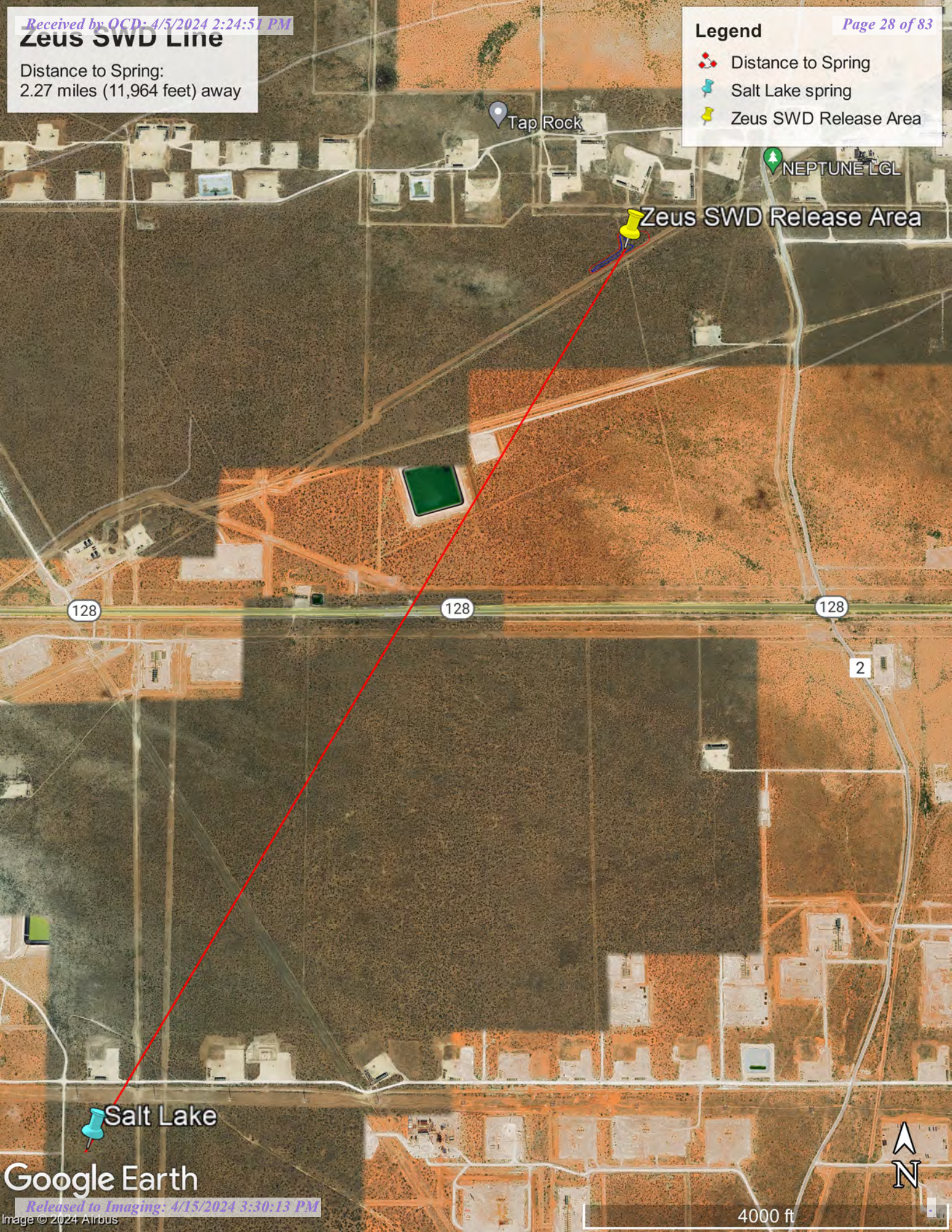
Zeus SWD Line

Distance to Livestock Well:
0.95 miles (5,016 feet) away

Legend

- C-02308 Livestock Well
- Distance to Livestock Well
- Zeus SWD Release Area

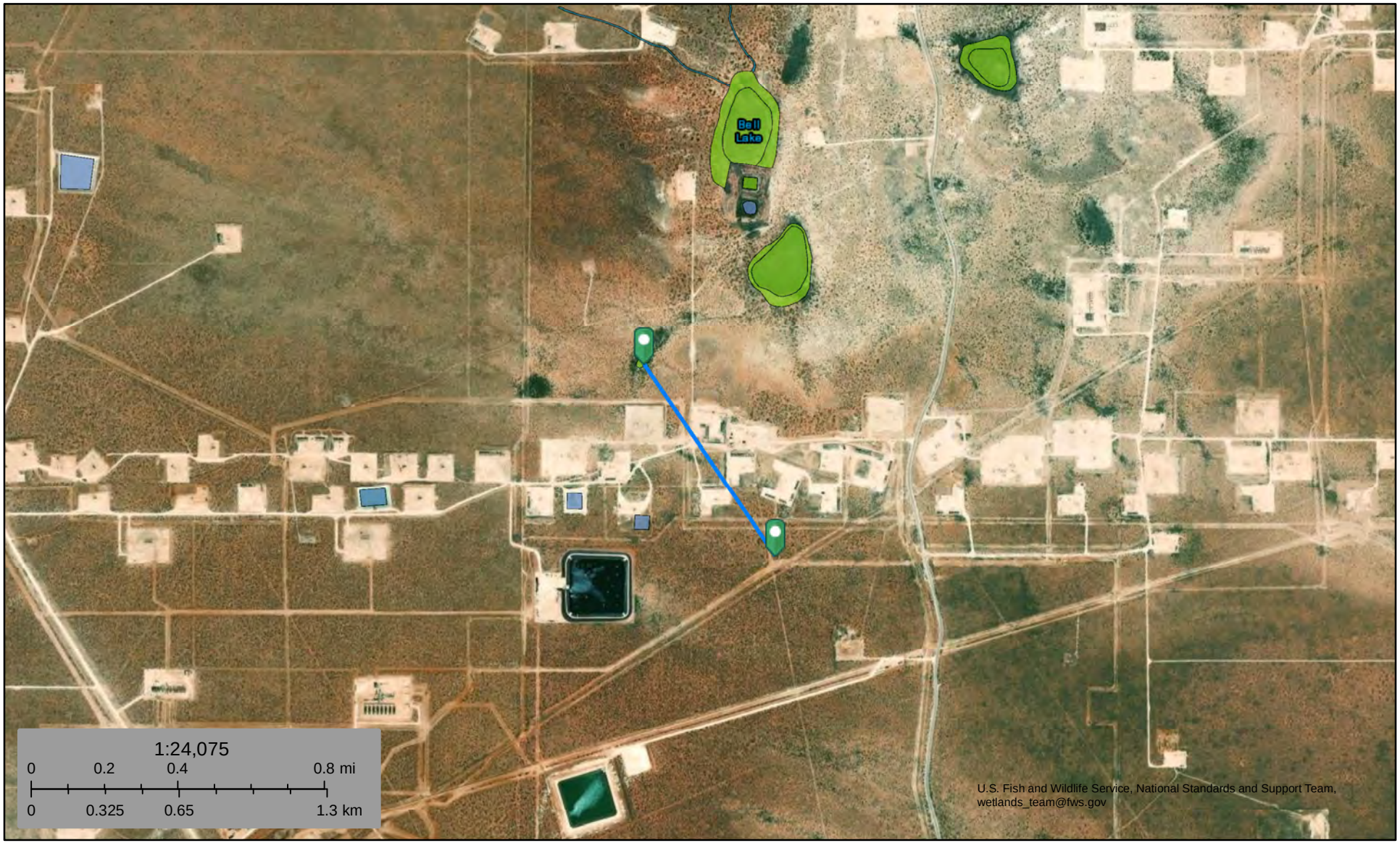





Zeus SWD Line
Distance to Nearest Municipality:
Jal is 23.27 miles,
(122,875 feet) away
Legend
Distance to Municipality
Nearest Municipality
Zeus SWD Release Area
ease Area
128
128
128
18
18
205
Jal
Bennett
Google Earth
Image © 2024 Airbus
Image Landsat / Copernicus
10 mi
N

U.S. Fish and Wildlife Service
National Wetlands Inventory

Zeus SWD Line - Wetland: 0.54 (2850 feet) away



March 15, 2024

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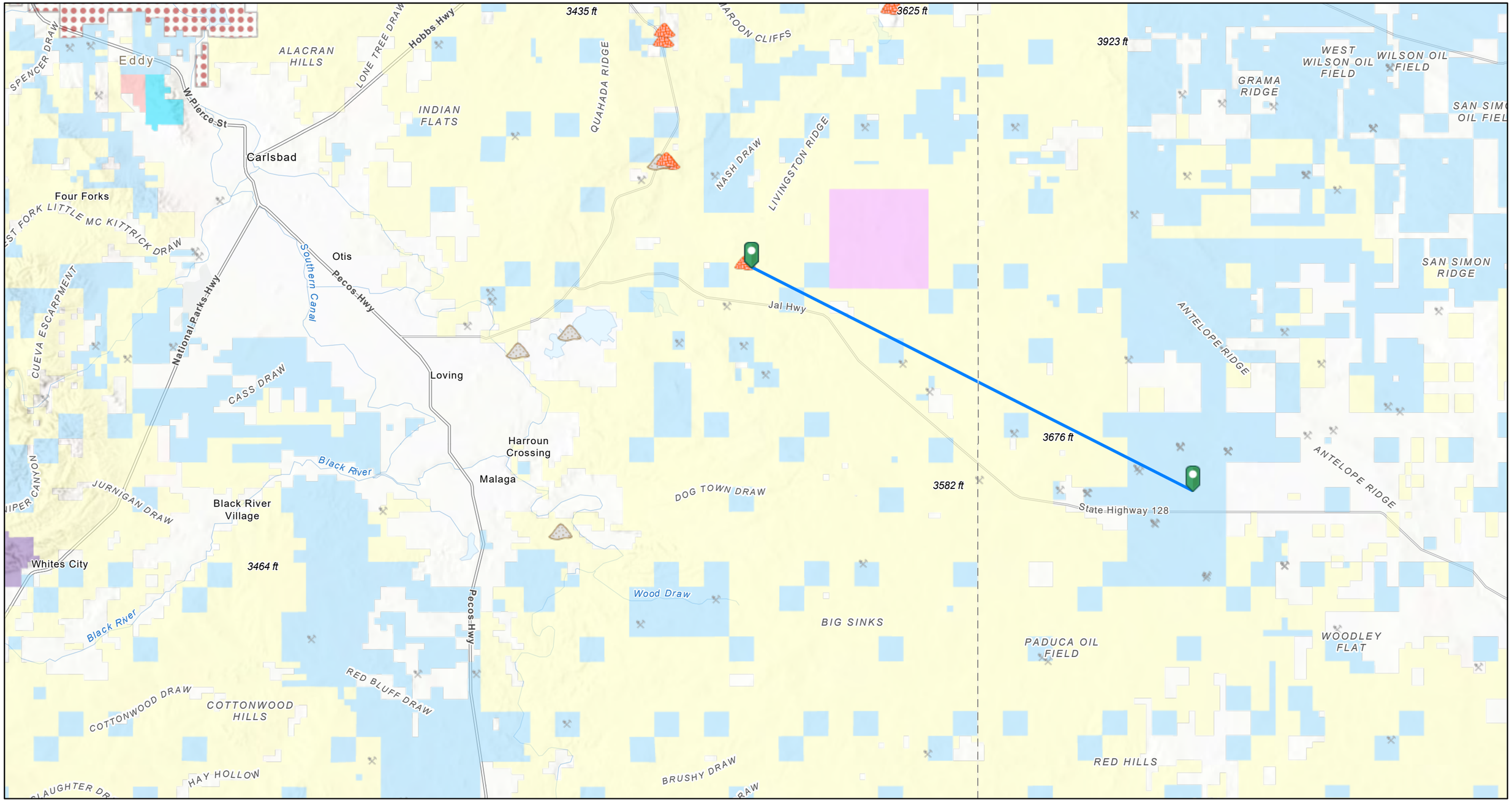
National Wetlands Inventory (NWI)
This page was produced by the NWI mapper

Subsurface Mine: 20 mi (105,522 feet) away



3/15/2024, 12:04:34 PM

1:288,895

0 3 6 12 mi

0 5 10 20 km

Registered Mines

- Aggregate, Stone etc.
- Aggregate, Stone etc.
- Aggregate, Stone etc.
- Potash
- Salt

Land Ownership

- BLM
- BOR
- DOD
- DOE
- NPS
- P
- S
- SP

Texas Parks & Wildlife, CONANP, Esri, TomTom, Garmin, SafeGraph, METI/NASA, USGS, EPA, NPS, USDA, USFWS, U.S. BLM, Esri, NASA, NGA, USGS

EMNRD MMD GIS Coordinator

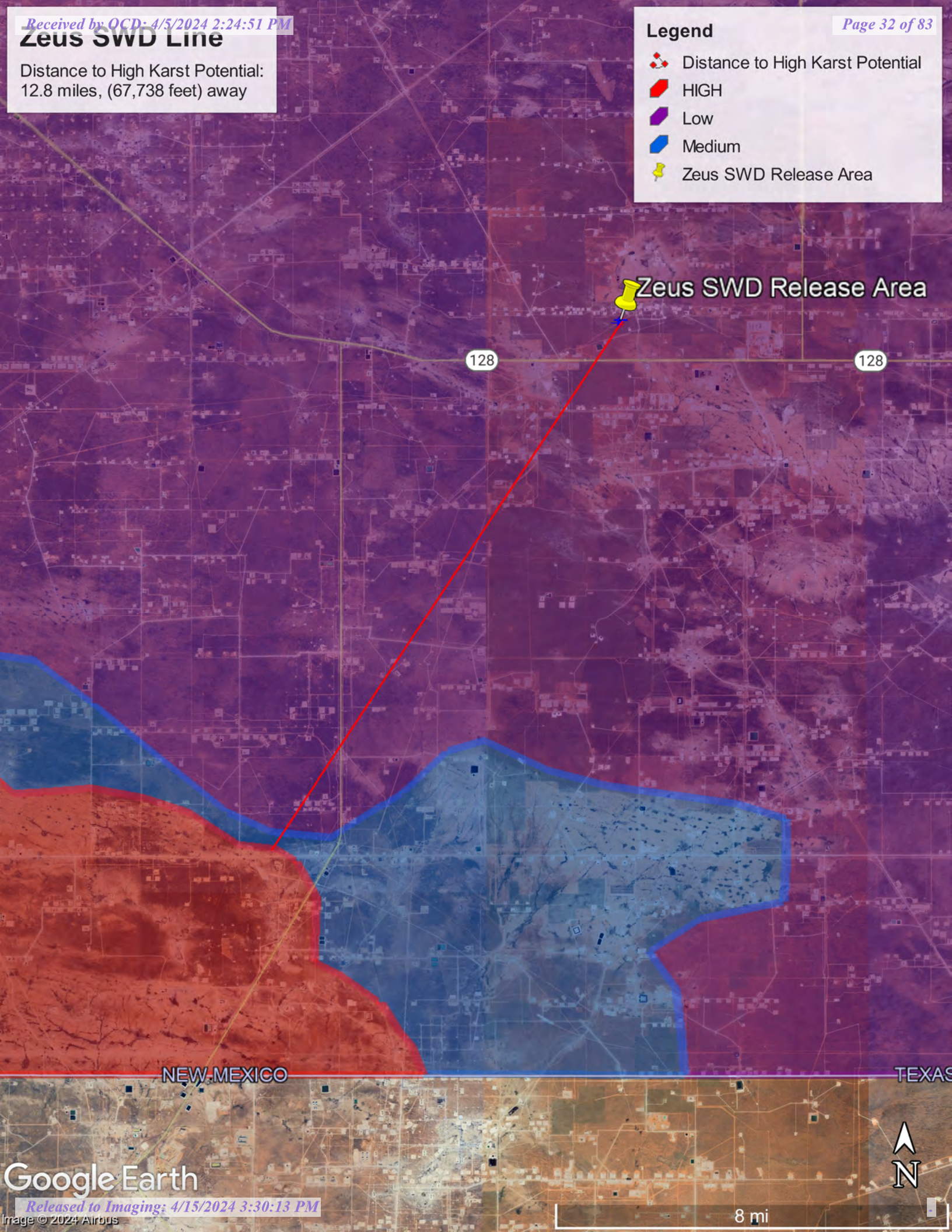
NM Energy, Minerals and Natural Resources Department (http://nm-emnrd.maps.arcgis.com/apps/webappviewer/index.html?id=1b5e577974664d689b47790897ca2795)

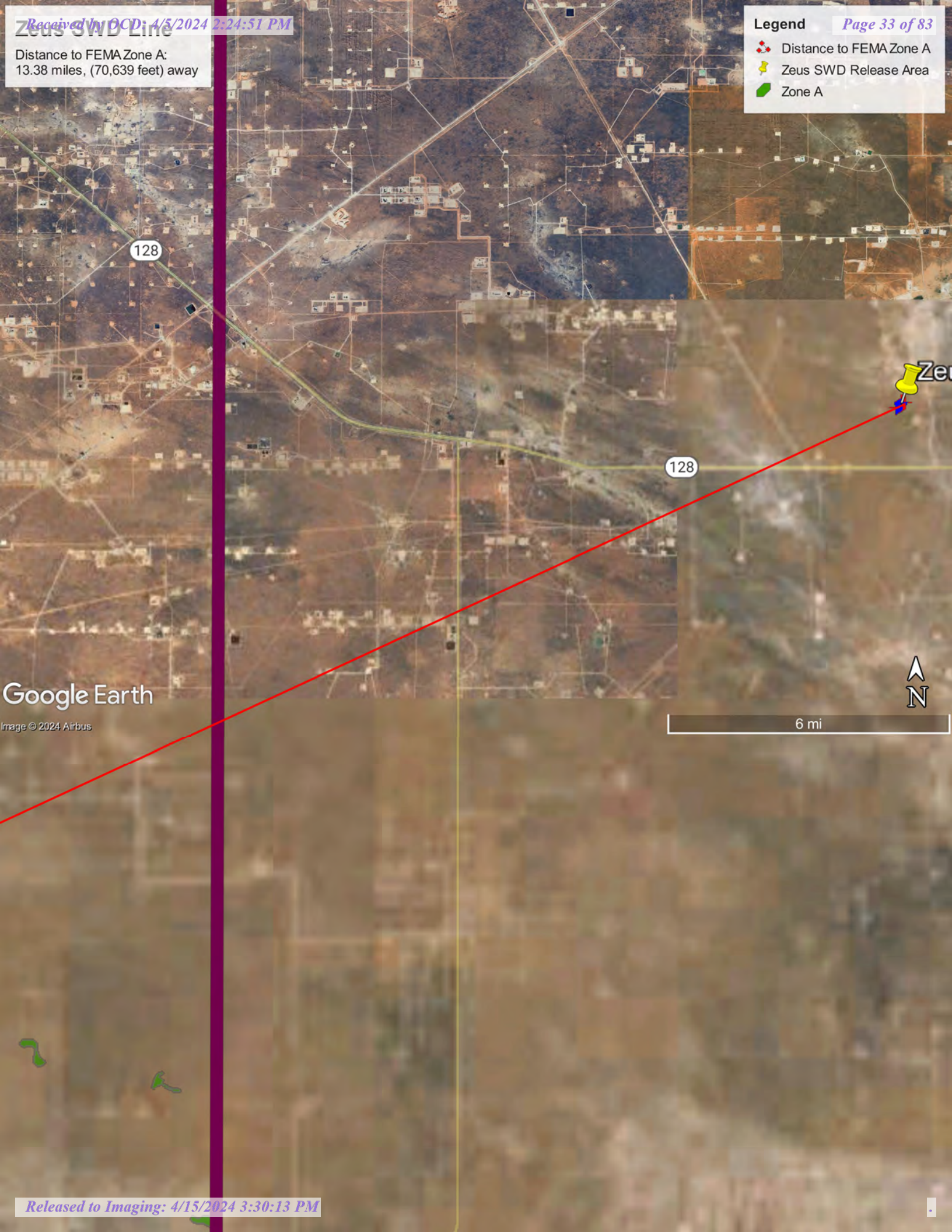
Zeus SWD Line

Distance to High Karst Potential:
12.8 miles, (67,738 feet) away

Legend

- Distance to High Karst Potential
- HIGH
- Low
- Medium
- Zeus SWD Release Area




Zeus SWD Line
Distance to FEMA Zone A:
13.38 miles, (70,639 feet) away
Legend
Distance to FEMA Zone A
Zeus SWD Release Area
Zone A
128
128
Zeu
Google Earth
Image © 2024 Airbus
N
6 mi

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

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

Custom Soil Resource Report for Lea County, New Mexico

Tap Rock: Zeus SWD Line

March 15, 2024

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

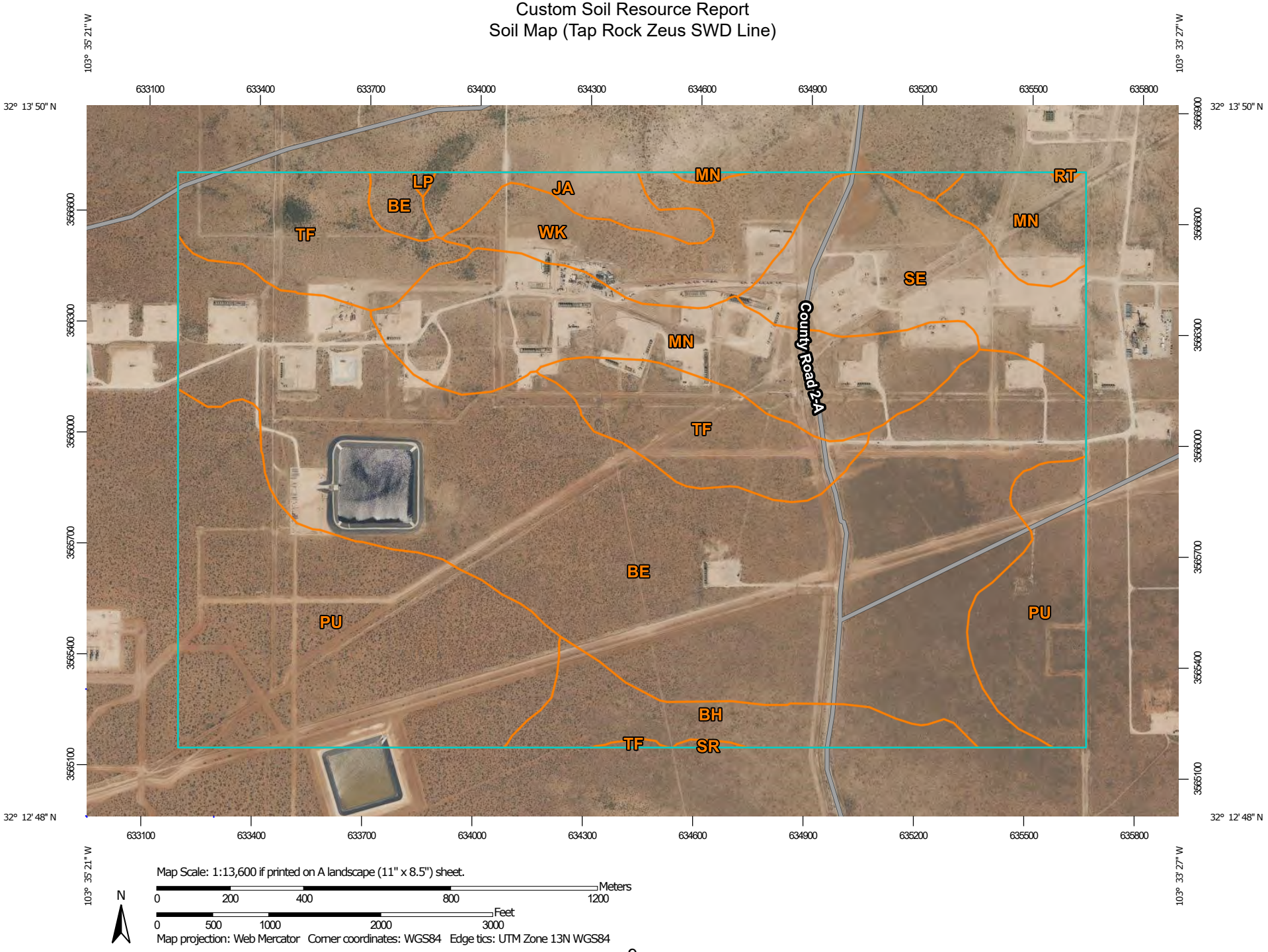
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map (Tap Rock Zeus SWD Line)



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.

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

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

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

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

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 20, Sep 6, 2023

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

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

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

Map Unit Legend (Tap Rock Zeus SWD Line)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BE	Berino-Cacique loamy fine sands association	363.2	38.1%
BH	Berino-Cacique association, hummocky	37.9	4.0%
JA	Jal association	18.8	2.0%
LP	Largo-Pajarito complex, rarely flooded	0.6	0.1%
MN	Ratliff-Wink fine sandy loams	120.1	12.6%
PU	Pyote and Maljamar fine sands	197.4	20.7%
RT	Reeves-Cottonwood association	0.3	0.0%
SE	Simona fine sandy loam, 0 to 3 percent slopes	69.4	7.3%
SR	Simona-Upton association	0.7	0.1%
TF	Tonuco loamy fine sand, 0 to 3 percent slopes	91.1	9.6%
WK	Wink loamy fine sand	53.0	5.6%
Totals for Area of Interest		**952.8**	**100.0%**

Map Unit Descriptions (Tap Rock Zeus SWD Line)

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

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

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called

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

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

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can

be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lea County, New Mexico

BE—Berino-Cacique loamy fine sands association

Map Unit Setting

National map unit symbol: dmpd
Elevation: 3,000 to 3,900 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Berino and similar soils: 50 percent
Cacique and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berino

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 over calcareous sandy alluvium derived from sedimentary rock

Typical profile

A - 0 to 6 inches: loamy fine sand
Btk - 6 to 60 inches: sandy clay 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: 40 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 8.7 inches)

Interpretive groups

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

Description of Cacique

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 12 inches: loamy fine sand
Bt - 12 to 28 inches: sandy clay loam
Bkm - 28 to 38 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic
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: 5 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Minor Components

Maljamar

Percent of map unit: 6 percent
Ecological site: R077CY028TX - Limy Upland 16-21" PZ
Hydric soil rating: No

Palomas

Percent of map unit: 4 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

BH—Berino-Cacique association, hummocky

Map Unit Setting

National map unit symbol: dmpg
Elevation: 3,000 to 4,400 feet
Mean annual precipitation: 10 to 13 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Berino and similar soils: 50 percent
Cacique and similar soils: 40 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Berino

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 over calcareous sandy alluvium derived from sedimentary rock

Typical profile

A - 0 to 10 inches: fine sand
Btk - 10 to 60 inches: sandy clay 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: 40 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 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7c

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

Description of Cacique

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 7 inches: fine sand
Bt - 7 to 28 inches: sandy clay loam
Bkm - 28 to 38 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to petrocalcic
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: 40 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 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Minor Components

Kermit

Percent of map unit: 4 percent
Ecological site: R070BD005NM - Deep Sand
Hydric soil rating: No

Maljamar

Percent of map unit: 3 percent
Ecological site: R077CY028TX - Limy Upland 16-21" PZ
Hydric soil rating: No

Palomas

Percent of map unit: 2 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Dune land
Percent of map unit: 1 percent
Hydric soil rating: No

JA—Jal association

Map Unit Setting
National map unit symbol: dmpt
Elevation: 3,000 to 4,000 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 58 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Jal and similar soils: 55 percent
Drake and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Jal

Setting
Landform: Playa rims
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Concave
Parent material: Calcareous alluvium and/or calcareous lacustrine deposits derived from sedimentary rock

Typical profile
A - 0 to 12 inches: sandy loam
Bk - 12 to 60 inches: 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: 50 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0

Available water supply, 0 to 60 inches: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: R070BC030NM - Limy
Hydric soil rating: No

Description of Drake

Setting

Landform: Playa dunes
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave, linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 9 inches: loamy fine sand
AC - 9 to 30 inches: fine sandy loam
C - 30 to 60 inches: sandy clay loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 50 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 6.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: A
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Minor Components

Midessa

Percent of map unit: 5 percent
Ecological site: R070BC007NM - Loamy
Hydric soil rating: No

Wink

Percent of map unit: 5 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Simona

Percent of map unit: 5 percent
Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

LP—Largo-Pajarito complex, rarely flooded

Map Unit Setting

National map unit symbol: dmq7
Elevation: 3,000 to 3,900 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 190 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Largo and similar soils: 45 percent
Pajarito and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Largo

Setting

Landform: Alluvial fans, plains
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous loamy alluvium derived from sedimentary rock

Typical profile

A - 0 to 13 inches: loam
AC - 13 to 30 inches: silty clay loam
C - 30 to 60 inches: silty clay 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 (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 50 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: High (about 10.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: C
Ecological site: R070BC007NM - Loamy
Hydric soil rating: No

Description of Pajarito

Setting

Landform: Plains, alluvial fans
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous sandy alluvium and/or mixed sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 16 inches: loamy fine sand
Bw - 16 to 48 inches: fine sandy loam
Bk - 48 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 45 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 7.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: A
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Minor Components

Maljamar

Percent of map unit: 8 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Palomas

Percent of map unit: 7 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

MN—Ratliff-Wink fine sandy loams

Map Unit Setting

National map unit symbol: dmqf
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

Ratliff and similar soils: 45 percent
Wink and similar soils: 40 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ratliff

Setting

Landform: Plains
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous alluvium and/or calcareous eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 4 inches: fine sandy loam
Bw - 4 to 22 inches: clay loam
Bk - 22 to 60 inches: clay 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: 50 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 8.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B
Ecological site: R070BC007NM - Loamy
Hydric soil rating: No

Description of Wink

Setting

Landform: Plains
Landform position (three-dimensional): Dip
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous sandy alluvium and/or calcareous sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 12 inches: fine sandy loam
Bk - 12 to 23 inches: sandy loam
BCk - 23 to 60 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: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Minor Components

Kermit

Percent of map unit: 6 percent
Ecological site: R070BC022NM - Sandhills
Hydric soil rating: No

Maljamar

Percent of map unit: 5 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Palomas

Percent of map unit: 4 percent
Ecological site: R070BD003NM - Loamy Sand

Hydric soil rating: No

PU—Pyote and Maljamar fine sands

Map Unit Setting

National map unit symbol: dmqq
Elevation: 3,000 to 3,900 feet
Mean annual precipitation: 10 to 12 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Pyote and similar soils: 46 percent
Maljamar and similar soils: 44 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pyote

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 30 inches: fine sand
Bt - 30 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 5.1 inches)

Interpretive groups

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

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

Description of Maljamar

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 24 inches: fine sand
Bt - 24 to 50 inches: sandy clay loam
Bkm - 50 to 60 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 40 to 60 inches to petrocalcic
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Minor Components

Kermit

Percent of map unit: 10 percent
Ecological site: R070BC022NM - Sandhills
Hydric soil rating: No

RT—Reeves-Cottonwood association

Map Unit Setting

National map unit symbol: dmqz
Elevation: 3,500 to 4,100 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 58 to 60 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Reeves and similar soils: 70 percent
Cottonwood and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Reeves

Setting

Landform: Playa rims, playa slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from gypsum

Typical profile

A - 0 to 12 inches: loam
Bk - 12 to 16 inches: clay loam
Bky - 16 to 60 inches: gypsiferous material

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 (0.20 to 1.98 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 strongly saline (2.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 7c
Hydrologic Soil Group: B
Ecological site: R070BC007NM - Loamy
Hydric soil rating: No

Description of Cottonwood

Setting

Landform: Playa rims, playa slopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed residuum weathered from gypsum

Typical profile

A - 0 to 8 inches: loam
Cr - 8 to 60 inches: bedrock

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 3 to 12 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 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: 30 percent
Gypsum, maximum content: 80 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: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R070BB006NM - Gyp Upland
Hydric soil rating: No

Minor Components

Arch

Percent of map unit: 5 percent
Ecological site: R077CY035TX - Sandy 16-21" PZ
Hydric soil rating: No

Portales

Percent of map unit: 3 percent
Ecological site: R077CY028TX - Limy Upland 16-21" PZ
Hydric soil rating: No

Mansker

Percent of map unit: 2 percent
Ecological site: R077CY028TX - Limy Upland 16-21" PZ
Hydric soil rating: No

SE—Simona fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: dmr2
Elevation: 3,000 to 4,200 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 58 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Simona and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simona

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Calcareous eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 8 inches: fine sandy loam
Bk - 8 to 16 inches: gravelly fine sandy loam
Bkm - 16 to 26 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 7 to 20 inches to petrocalcic
Drainage class: Well drained
Runoff class: Very 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: 35 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: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

Minor Components

Kimbrough
Percent of map unit: 8 percent
Ecological site: R077CY037TX - Very Shallow 16-21" PZ
Hydric soil rating: No

Lea
Percent of map unit: 7 percent
Ecological site: R077CY028TX - Limy Upland 16-21" PZ
Hydric soil rating: No

SR—Simona-Upton association

Map Unit Setting
National map unit symbol: dmr3
Elevation: 3,000 to 4,400 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 58 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition
Simona and similar soils: 50 percent
Upton and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simona

Setting
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Calcareous eolian deposits derived from sedimentary rock

Typical profile
A - 0 to 8 inches: gravelly fine sandy loam
Bk - 8 to 16 inches: fine sandy loam
Bkm - 16 to 26 inches: cemented material

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: 7 to 20 inches to petrocalcic
Drainage class: Well drained
Runoff class: Very 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: 50 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: Very low (about 1.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

Description of Upton

Setting
Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Calcareous eolian deposits derived from sedimentary rock

Typical profile
A - 0 to 8 inches: gravelly loam
Bkm - 8 to 18 inches: cemented material
BCk - 18 to 60 inches: very gravelly loam

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: 7 to 20 inches to petrocalcic
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 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: 75 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: Very low (about 0.9 inches)

Interpretive groups
Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: R070BC025NM - Shallow
Hydric soil rating: No

Minor Components

Kimbrough

Percent of map unit: 6 percent
Ecological site: R077CY037TX - Very Shallow 16-21" PZ
Hydric soil rating: No

Stegall

Percent of map unit: 5 percent
Ecological site: R077CY028TX - Limy Upland 16-21" PZ
Hydric soil rating: No

Slaughter

Percent of map unit: 4 percent
Ecological site: R077CY028TX - Limy Upland 16-21" PZ
Hydric soil rating: No

TF—Tonuco loamy fine sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 2tw3c
Elevation: 3,280 to 4,460 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 59 to 64 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Tonuco and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tonuco

Setting

Landform: Ridges, plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits

Typical profile

A - 0 to 12 inches: loamy fine sand
Bw - 12 to 17 inches: loamy sand
Bkkm - 17 to 39 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 12 to 20 inches to petrocalcic

Drainage class: Excessively drained
Runoff class: Very 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: 2 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: Very low (about 1.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: R077DY048TX - Shallow 12-17" PZ
Hydric soil rating: No

Minor Components

Simona

Percent of map unit: 15 percent
Landform: Ridges, plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: R070BD002NM - Shallow Sandy
Hydric soil rating: No

Berino

Percent of map unit: 10 percent
Landform: Ridges, plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Cacique

Percent of map unit: 5 percent
Landform: Ridges, plains
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex, linear
Across-slope shape: Linear
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

WK—Wink loamy fine sand

Map Unit Setting

National map unit symbol: dmrm
Elevation: 3,000 to 3,400 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: Not prime farmland

Map Unit Composition

Wink and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wink

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Calcareous sandy alluvium and/or calcareous sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 12 inches: loamy fine sand
Bk - 12 to 23 inches: sandy loam
BCk - 23 to 60 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: Negligible
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e

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

Minor Components

Berino
Percent of map unit: 5 percent
Ecological site: R070BD003NM - Loamy Sand
Hydric soil rating: No

Midessa
Percent of map unit: 4 percent
Ecological site: R070BC007NM - Loamy
Hydric soil rating: No

Jal
Percent of map unit: 4 percent
Ecological site: R070BC030NM - Limy
Hydric soil rating: No

Cacique
Percent of map unit: 2 percent
Ecological site: R070BD004NM - Sandy
Hydric soil rating: No

Soil Information for All Uses

Ecological Sites

Individual soil map unit components can be correlated to a particular ecological site. The Ecological Site Assessment section includes ecological site descriptions, plant growth curves, state and transition models, and selected National Plants database information.

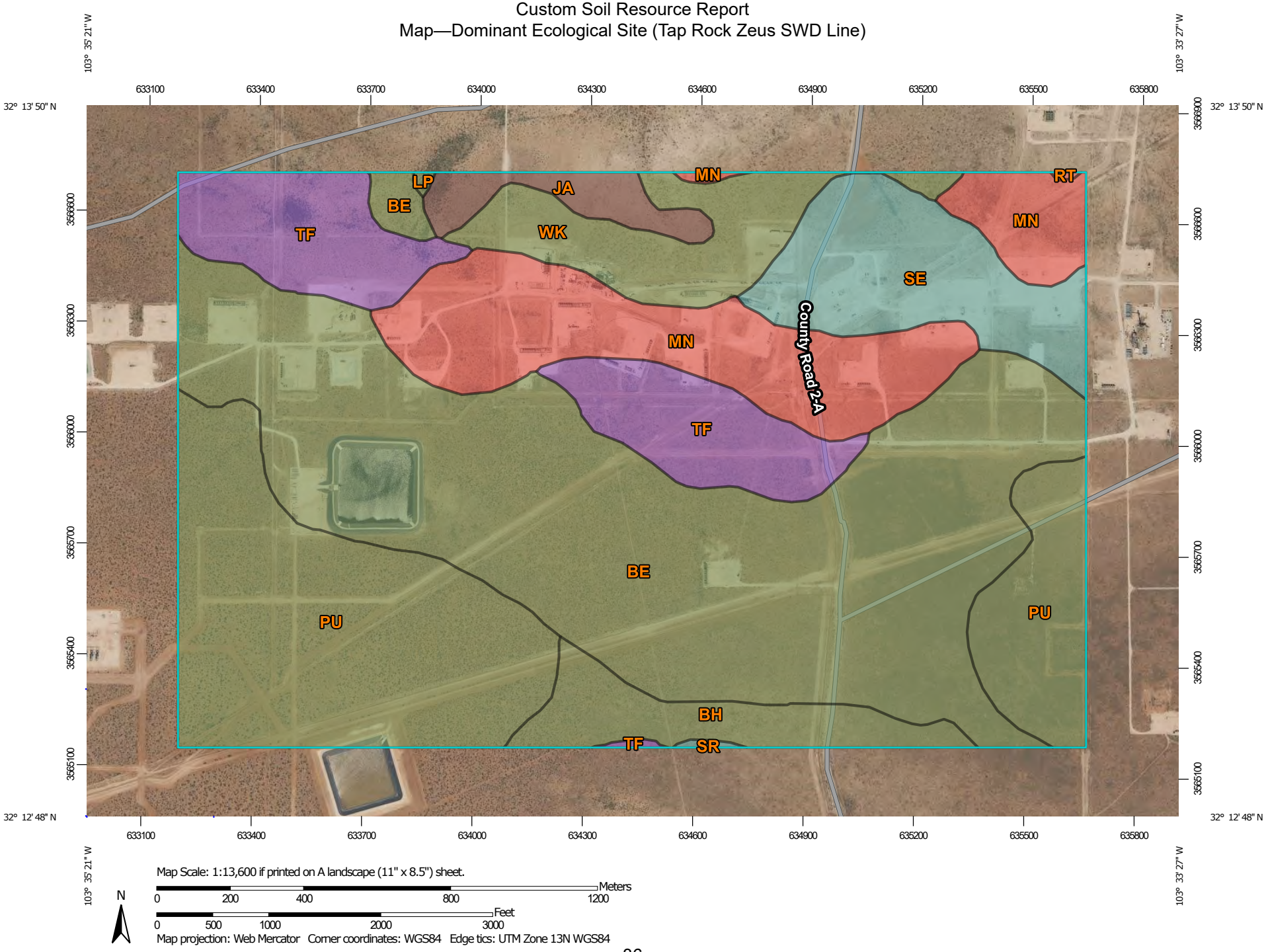
All Ecological Sites — (Tap Rock Zeus SWD Line)

An "ecological site" is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. For example, the hydrology of the site is influenced by development of the soil and plant community. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production.

An ecological site name provides a general description of a particular ecological site. For example, "Loamy Upland" is the name of a rangeland ecological site. An "ecological site ID" is the symbol assigned to a particular ecological site.

The map identifies the dominant ecological site for each map unit, aggregated by dominant condition. Other ecological sites may occur within each map unit. Each map unit typically consists of one or more components (soils and/or miscellaneous areas). Each soil component is associated with an ecological site. Miscellaneous areas, such as rock outcrop, sand dunes, and badlands, have little or no soil material and support little or no vegetation and therefore are not linked to an ecological site. The table below the map lists all of the ecological sites for each map unit component in your area of interest.

Custom Soil Resource Report
Map—Dominant Ecological Site (Tap Rock Zeus SWD Line)



MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- R070BC007NM
- R070BC030NM
- R070BD002NM
- R070BD003NM
- R077DY048TX
- Not rated or not available

Soil Rating Lines

- R070BC007NM
- R070BC030NM
- R070BD002NM
- R070BD003NM
- R077DY048TX
- Not rated or not available

Soil Rating Points

- R070BC007NM
- R070BC030NM
- R070BD002NM
- R070BD003NM
- R077DY048TX
- Not rated or not available

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.

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

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

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

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

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 20, Sep 6, 2023

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.

Table—Ecological Sites by Map Unit Component (Tap Rock Zeus SWD Line)

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
BE	Berino-Cacique loamy fine sands association	Berino (50%)	R070BD003NM — Loamy Sand	363.2	38.1%
		Cacique (40%)	R070BD004NM — Sandy		
		Maljamar (6%)	R077CY028TX — Limy Upland 16-21" PZ		
		Palomas (4%)	R070BD003NM — Loamy Sand		
BH	Berino-Cacique association, hummocky	Berino (50%)	R070BD003NM — Loamy Sand	37.9	4.0%
		Cacique (40%)	R070BD004NM — Sandy		
		Kermit (4%)	R070BD005NM — Deep Sand		
		Maljamar (3%)	R077CY028TX — Limy Upland 16-21" PZ		
		Palomas (2%)	R070BD003NM — Loamy Sand		
		Dune land (1%)			
JA	Jal association	Jal (55%)	R070BC030NM — Limy	18.8	2.0%
		Drake (30%)	R070BD004NM — Sandy		
		Midessa (5%)	R070BC007NM — Loamy		
		Simona (5%)	R070BD002NM — Shallow Sandy		
		Wink (5%)	R070BD003NM — Loamy Sand		
LP	Largo-Pajarito complex, rarely flooded	Largo (45%)	R070BC007NM — Loamy	0.6	0.1%
		Pajarito (40%)	R070BD003NM — Loamy Sand		
		Maljamar (8%)	R070BD003NM — Loamy Sand		
		Palomas (7%)	R070BD003NM — Loamy Sand		
MN	Ratliff-Wink fine sandy loams	Ratliff (45%)	R070BC007NM — Loamy	120.1	12.6%
		Wink (40%)	R070BD004NM — Sandy		

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
		Kermit (6%)	R070BC022NM — Sandhills		
		Maljamar (5%)	R070BD003NM — Loamy Sand		
		Palomas (4%)	R070BD003NM — Loamy Sand		
PU	Pyote and Maljamar fine sands	Pyote (46%)	R070BD003NM — Loamy Sand	197.4	20.7%
		Maljamar (44%)	R070BD003NM — Loamy Sand		
		Kermit (10%)	R070BC022NM — Sandhills		
RT	Reeves-Cottonwood association	Reeves (70%)	R070BC007NM — Loamy	0.3	0.0%
		Cottonwood (20%)	R070BB006NM — Gyp Upland		
		Arch (5%)	R077CY035TX — Sandy 16-21" PZ		
		Portales (3%)	R077CY028TX — Limy Upland 16-21" PZ		
		Mansker (2%)	R077CY028TX — Limy Upland 16-21" PZ		
SE	Simona fine sandy loam, 0 to 3 percent slopes	Simona (85%)	R070BD002NM — Shallow Sandy	69.4	7.3%
		Kimbrough (8%)	R077CY037TX — Very Shallow 16-21" PZ		
		Lea (7%)	R077CY028TX — Limy Upland 16-21" PZ		
SR	Simona-Upton association	Simona (50%)	R070BD002NM — Shallow Sandy	0.7	0.1%
		Upton (35%)	R070BC025NM — Shallow		
		Kimbrough (6%)	R077CY037TX — Very Shallow 16-21" PZ		
		Stegall (5%)	R077CY028TX — Limy Upland 16-21" PZ		
		Slaughter (4%)	R077CY028TX — Limy Upland 16-21" PZ		
TF	Tonuco loamy fine sand, 0 to 3 percent slopes	Tonuco (70%)	R077DY048TX — Shallow 12-17" PZ	91.1	9.6%
		Simona (15%)	R070BD002NM — Shallow Sandy		

Custom Soil Resource Report

Map unit symbol	Map unit name	Component name (percent)	Ecological site	Acres in AOI	Percent of AOI
		Berino (10%)	R070BD003NM — Loamy Sand		
		Cacique (5%)	R070BD004NM — Sandy		
WK	Wink loamy fine sand	Wink (85%)	R070BD003NM — Loamy Sand	53.0	5.6%
		Berino (5%)	R070BD003NM — Loamy Sand		
		Jal (4%)	R070BC030NM — Limy		
		Midessa (4%)	R070BC007NM — Loamy		
		Cacique (2%)	R070BD004NM — Sandy		
Totals for Area of Interest				**952.8**	**100.0%**

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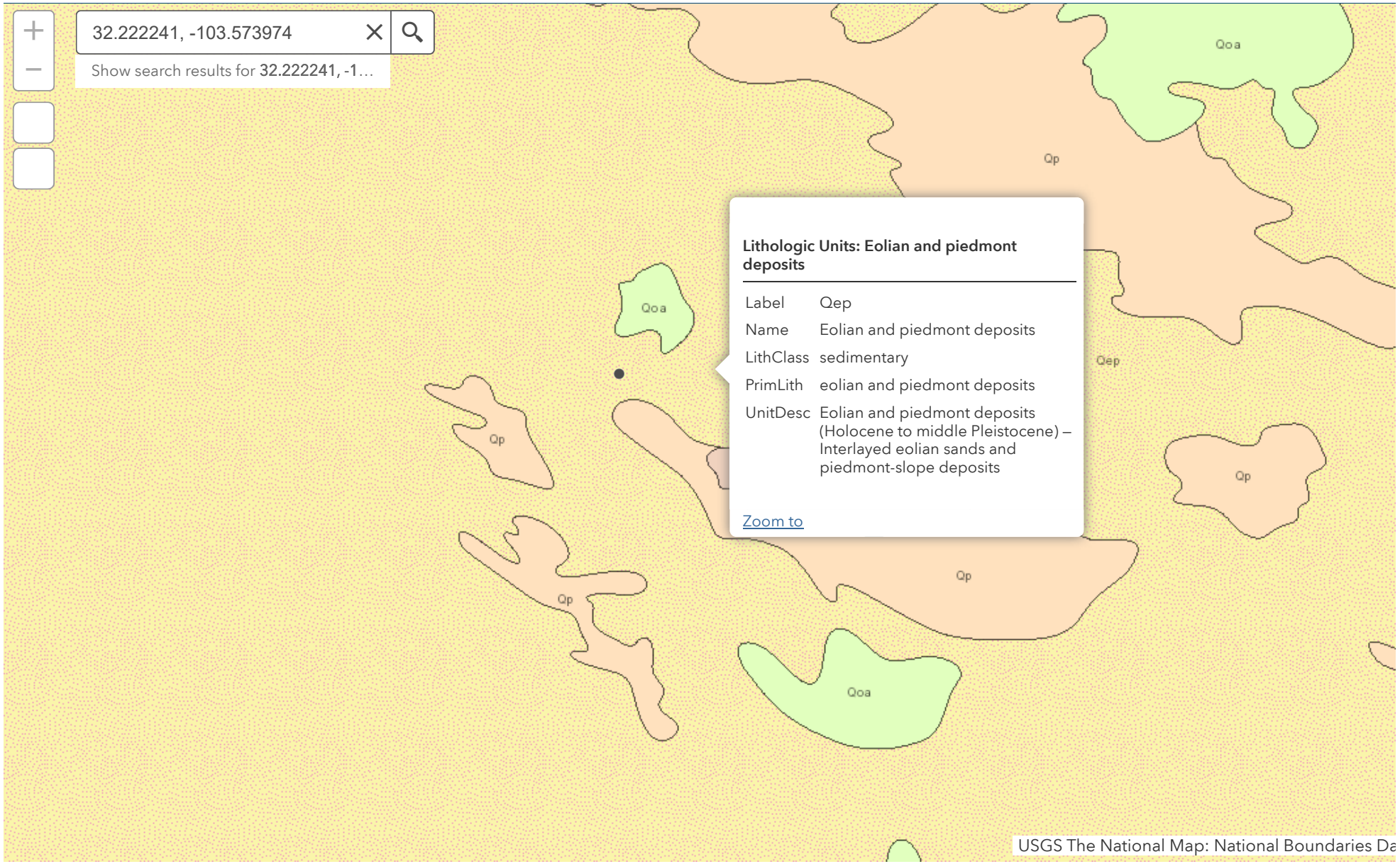
NMBGMR Interactive Resources Map



2mi

-103.430 32.244 Degrees

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

QUESTIONS

Action 330551

QUESTIONS

Operator: TAP ROCK OPERATING, LLC 523 Park Point Drive Golden, CO 80401	OGRID: 372043
	Action Number: 330551
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Prerequisites	
Incident ID (n#)	**nRM2026231125**
Incident Name	**NRM2026231125 ZEUS SWD LINE @ 0**
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	ZEUS SWD LINE
Date Release Discovered	09/03/2020
Surface Owner	State

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	*Not answered.*
Produced Water Released (bbls) Details	Cause: Equipment Failure | Other (Specify) | Produced Water | Released: 20 BBL | Recovered: 5 BBL | Lost: 15 BBL.
Is the concentration of chloride in the produced water >10,000 mg/l	Yes
Condensate Released (bbls) Details	*Not answered.*
Natural Gas Vented (Mcf) Details	*Not answered.*
Natural Gas Flared (Mcf) Details	*Not answered.*
Other Released Details	*Not answered.*
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	*Not answered.*

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QUESTIONS (continued)

Operator: TAP ROCK OPERATING, LLC 523 Park Point Drive Golden, CO 80401	OGRID: 372043
	Action Number: 330551
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	**No, according to supplied volumes this does not appear to be a "gas only" report.**
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	**No**
Reasons why this would be considered a submission for a notification of a major release	*Unavailable.*
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

Initial Response	
The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.	
The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	False
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	Release materials are not longer on site.
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: Chance Dixon Title: Project Manager Email: cdixon@vertex.ca Date: 04/05/2024

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QUESTIONS (continued)

Operator: TAP ROCK OPERATING, LLC 523 Park Point Drive Golden, CO 80401	OGRID: 372043
	Action Number: 330551
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

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)	Less than or equal 25 (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
What is the minimum distance, between the closest lateral extents of the release and the following surface areas:	
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 ½ and 1 (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 ½ and 1 (mi.)
Any other fresh water well or spring	Between 1 and 5 (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Between 1 and 5 (mi.)
A wetland	Between ½ and 1 (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	Low
A 100-year floodplain	Greater than 5 (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	Yes

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
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.	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
Soil Contamination Sampling: (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	18600
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	0
GRO+DRO (EPA SW-846 Method 8015M)	0
BTEX (EPA SW-846 Method 8021B or 8260B)	0
Benzene (EPA SW-846 Method 8021B or 8260B)	0
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.	
On what estimated date will the remediation commence	04/15/2024
On what date will (or did) the final sampling or liner inspection occur	04/15/2024
On what date will (or was) the remediation complete(d)	07/01/2024
What is the estimated surface area (in square feet) that will be reclaimed	28000
What is the estimated volume (in cubic yards) that will be reclaimed	5000
What is the estimated surface area (in square feet) that will be remediated	28000
What is the estimated volume (in cubic yards) that will be remediated	5000
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.	

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QUESTIONS (continued)

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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.)	
(Ex Situ) Excavation and **off-site** disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for **off-site** disposal	*Not answered.*
OR which OCD approved well (API) will be used for **off-site** disposal	30-025-41122 JACKSON UNIT #011H
OR is the **off-site** disposal site, to be used, out-of-state	*Not answered.*
OR is the **off-site** disposal site, to be used, an NMED facility	*Not answered.*
(Ex Situ) Excavation and **on-site** remediation (i.e. On-Site Land Farms)	*Not answered.*
(In Situ) Soil Vapor Extraction	*Not answered.*
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	*Not answered.*
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	*Not answered.*
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	*Not answered.*
Ground Water Abatement pursuant to 19.15.30 NMAC	*Not answered.*
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: Chance Dixon Title: Project Manager Email: cdixon@vertex.ca Date: 04/05/2024
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.	

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QUESTIONS (continued)

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QUESTIONS

Deferral Requests Only	
Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

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QUESTIONS (continued)

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QUESTIONS

Sampling Event Information	
Last sampling notification (C-141N) recorded	***{Unavailable.}***

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	No

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CONDITIONS

Action 330551

CONDITIONS

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	Action Number: 330551
	Action Type: [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Remediation plan is approved as written. Tap Rock has 90-days (July 15, 2024) to submit to OCD its appropriate or final remediation closure report.	4/15/2024