General Information

NMOCD District:	District 2	Incident #:	NRM2014054256
Landowner:	Federal		
Client:	Mack Energy Corporation	Site Location:	Nosler 12 Federal #6H
Date:	September 10, 2020	Project #:	20E-00239-002
Client Contact:	Matt Buckles	Phone #:	(575) 748-1288
Vertex PM:	Natalie Gordon	Phone #:	(505) 506-0040

Objective

The objective of this environmental remediation work plan is to identify areas of exceedance for constituents of concern found during spill assessment and site characterization activities and propose appropriate remediation techniques to address the open release at Nosler 12 Federal #6H (hereafter referred to as "Nosler"). This incident occurred when a 2-inch hose fitting on the casing failed, releasing approximately 35 barrels (bbls) of crude oil onto the well pad. The release produced some overspray which impacted portions of the wellpad as well as adjacent pasture land to the north. The location and boundaries of this release are identified on Figure 1 (Attachment 1). Areas of concern identified and delineated include nearby equipment.

Initial site research and characterization has been completed and a closure criteria determination worksheet and applicable research as it pertains to closure criteria selection is included in Attachment 2. The release at Nosler is not subject to the requirements of Paragraph (4) of Subsection C of 19.15.29.12 *New Mexico Administrative Code* (NMAC). As there is no recent groundwater data from within 0.5 miles of the release location, the depth to groundwater cannot be accurately determined and the closure criteria for the site are determined to be associated with the following constituent concentration limits.

Table 1. Closure Criteria for Soils Impacted by a Release

Minimum depth below any point within the horizontal boundary of the release to groundwater less than 10,000 mg/L TDS[1]	Constituent	Limit
<50 feet	Chloride	600 mg/kg
	TPH[2] (GRO + DRO + MRO)	100 mg/kg
	BTEX[3]	50 mg/kg
	Benzene	10 mg/kg

[1]Total Dissolved Solids (TDS)
[2]Total petroleum hydrocarbons (TPH) = gasoline range organics (GRO) + diesel range organics (DRO) + motor oil range organics (MRO)
[3]Benzene, toluene, ethyl benzene and xylenes (BTEX)

In addition to the Closure Criteria established in Table 1, restoration and reclamation activities will be required for off-pad portions of the release to meet restoration requirements associated with releases off-lease. The New Mexico Oil Conservation Division (NM OCD) currently requires a minimum of four feet of non-waste containing, uncontaminated, earthen material with chloride concentrations of less than 600 mg/kg, and levels of other contaminants that meet the most protective concentrations contained in 19.15.29.12 NMAC as shown in Table 1.

Site Assessment/Characterization

The Nosler release characterization was completed on August 5, 2020. A total of 17 sample points were established across the release area as shown on Figure 1 (Attachment 1) and soil samples were collected from these locations at various depths.

Each soil sample was field screened, using an electrical conductivity (EC) meter to estimate the level of chlorides in the soil, a photoionization detector to detect the presence of volatile organics and the PetroFLAG unit to estimate levels of petroleum hydrocarbons. The results were used to determine the horizontal and vertical extents of the release as shown on Figure 1 (Attachment 1). A selection of these characterization samples were submitted to a laboratory for full analysis to support the in-field findings. Data from the field screening and laboratory analyses have been compared to the above-noted closure criteria results to establish the appropriate level of remediation required. Complete characterization field screening and laboratory data results are presented in Table 2 (Attachment 3) and exceedances are identified in the table as bold with a grey background.

Proposed Remedial Activities

Vertex proposes areas identified with contaminant concentrations approaching, or above, closure criteria be remediated in-situ through treatment with Micro-Blaze®, or a similar microbial product. Remediation should include treatment of the liquid release area of approximately 6,146 square feet to a depth of 1 foot below ground surface (bgs) and treatment of the remaining overspray footprint of approximately 52,787 square feet, to a depth of approximately six inches bgs.

A Vertex environmental technician will be onsite during remediation fieldwork activities utlilizing field screening methods to confirm the final extents of the treatment area. Approximately 1,320 cubic yards of contaminated soil are projected to be remediated in-situ by the chosen microbial product. Following the requisite treatment period, five-point composite confirmatory samples will be collected from the base and sidewalls of the treatment area in accordance with the sample plan detailed in Attachment 4. The sampling plan is based on a non-parametric statistical sampling design, using the methods developed by Hahn and Meeker (1991), and was designed through the Visual Sample Plan (VSP) program. Sampling using VSP meets the Environmental Protection Agency's data quality assessment standards (DQAs) for composite sampling. This type of sampling approach is a variance from the alternative 200 square foot rule as described in Subparagraph (c) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC. Please let this workplan serve as a formal variance request to the above-mentioned sampling method per the variance process outlined in Subsection A of 19.15.29.14 NMAC.

The need for a variance to the 200 square foot sampling method is based on an effort to decrease potential impacts to the off-lease portions of the spill. Using the VSP program to design a statistical sampling plan allows for a sampling approach that provides high statistical confidence in proving that no contaminants of concern above the closure and remediation requirements shown in Table 1 remain in the release area, while minimizing ground disturbing activities and potential damage to existing vegetation via foot and/or vehicle traffic. Statistically, the high level of confidence obtained by following the VSP sampling method in Attachment 4 is not significantly increased by collecting additional samples. For each additional sample collected over the VSP-recommended number, the incremental increase in confidence gets smaller but the risk of additional unnecessary impact to the remediation area and surrounding landscape increases due to the presence of technicians conducting sampling.

All confirmatory samples will be placed into laboratory-provided containers, preserved on ice and submitted to a National Environmental Laboratory Accreditation Program -approved laboratory for chemical analysis. Laboratory analyses will include Method 300.0 for chlorides, Method 8021B for volatile organics, including benzene and BTEX, and EPA Method 8015 for TPH, including MRO, DRO and GRO.

A GeoExplorer 7000 Series Trimble global positioning system (GPS) unit, or equivalent, will be used to map the approximate center of each of the five-point composite samples.

As in-situ treatment of the off-pad portions of the release will eliminate the need for excavation of existing soil, provided all closure and reclamation criteria shown in Table 1 are met, no backfill or grading will be necessary and the native seedbank will be intact to aid in re-establishment of vegetation per reclamation guidelines outlined in 19.15.29.13 NMAC.

Timeline for Completion

Remediation activities, as outlined in this workplan, are projected to be completed within 120 days of receiving NM OCD notice of approval of this workplan and alternate sampling plan.

If there are any questions regarding this report, please contact the undersigned at 505-506-0040.

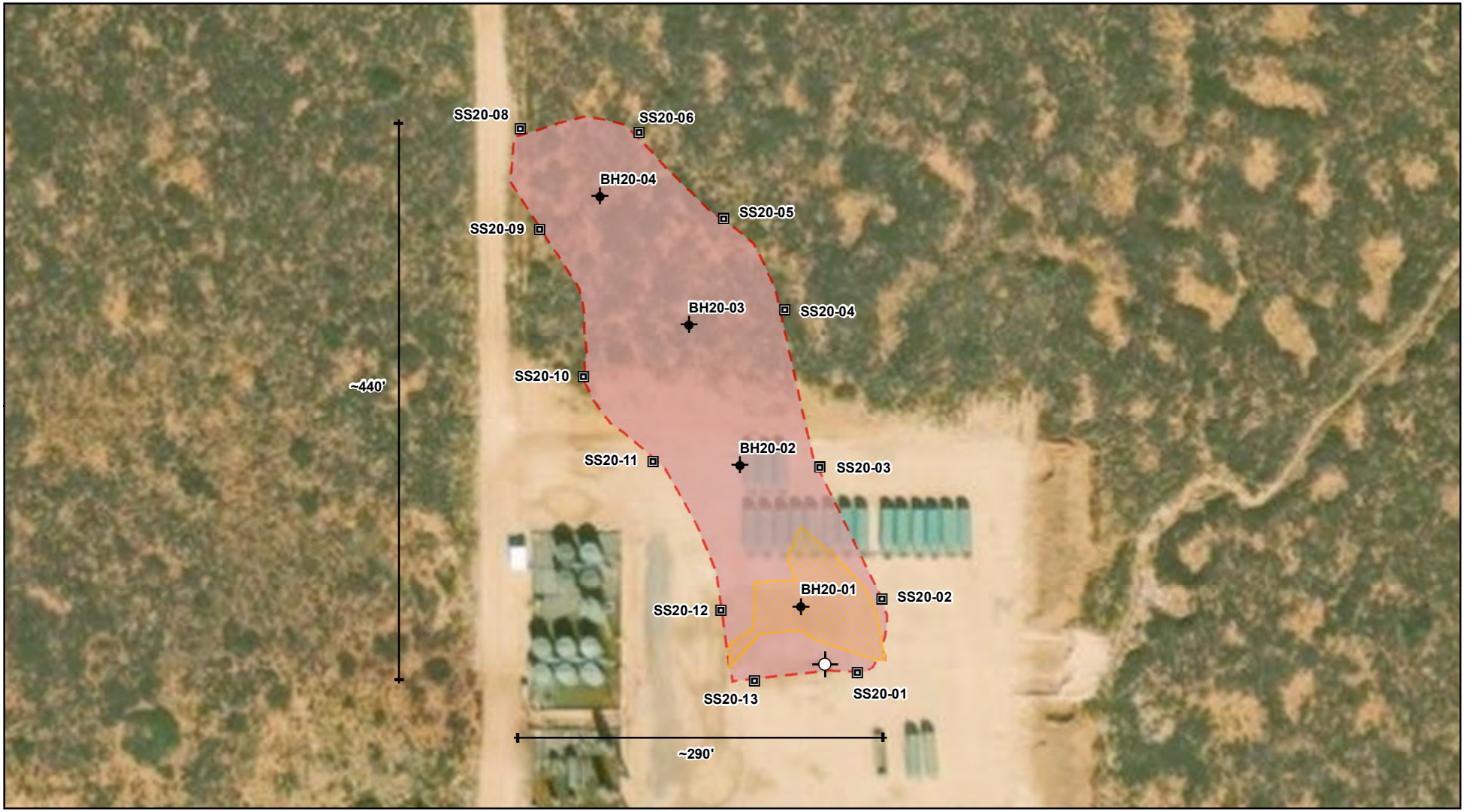
Sincerely,

Natalie Gordon
PROJECT MANAGER

Attachments

Attachment 1: Figure 1 – Release Area and Characterization Sampling Points
Attachment 2: Closure Criteria Determination Worksheet and Documentation
Attachment 3: Table 2 – Release Characterization Sampling – Field Screening and Laboratory Data
Attachment 4: Sampling to Compute a Nonparametric One-Sided Upper Tolerance Limit to Test that a Large Portion of a Room Surface Does Not Contain Contamination

ATTACHMENT 1



Borehole
Soil Sample (US)
Wellhead
Spill/Overspray Extent (~ 58,933 sq. ft.)
Stained area (~ 6,146 sq. ft.)

VERTEX

0 30 60 120 ft

Map Center:
Lat/Long: 32.852033, -103.832923

NAD 1983 UTM Zone 13N
Date: Aug 13/20

N

Initial Characterization Sampling and Site Schematic
Nosler 12 Federal 6H

FIGURE:
1

MACK Energy Corporation

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

Note: Imagery from ESRI, 2016.

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Mack Energy\20E-017555\002 - Nosler 12 Federal 6H\Figure 1 Initial Characterization Nosler 12 Federal 6H.mxd

ATTACHMENT 2

Closure Criteria Determination			
Site Name: Nosler 12 Federal #6H			
Spill Coordinates: 32.85148, -103.83269		X:	Y:
Site Specific Conditions		Value	Unit
1	Depth to Groundwater	**<50**	feet
2	Within 300 feet of any continuously flowing watercourse or any other significant watercourse	150,480	feet
3	Within 200 feet of any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark)	26,032	feet
4	Within 300 feet from an occupied residence, school, hospital, institution or church	20,962	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**	11,352	feet
	ii) Within 1000 feet of any fresh water well or spring	11,352	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	10,280	feet
8	Within the area overlying a subsurface mine	No	(Y/N)
9	Within an unstable area (Karst Map)	Low	Critical High Medium Low
10	Within a 100-year Floodplain	>500	year
NMAC 19.15.29.12 E (Table 1) Closure Criteria		<50'	<50' 51-100' >100'

National Water Information System: Web Interface

USGS Water Resources

Data Category: Site Information | Geographic Area: United States | GO

Click to hideNews Bulletins

- Introducing The Next Generation of USGS Water Data for the Nation
- **NOTICE 09-08-2020: The NWIS Mapper is experiencing intermittent issues. Developers are looking into the problem. Thank you for your patience.**
- Full News

USGS 325347103494901 16S.31E.23.444321

SUMMARY OF ALL AVAILABLE DATA | GO

Well Site

DESCRIPTION:

Latitude 32°53'47", Longitude 103°49'49" NAD27
Eddy County, New Mexico , Hydrologic Unit 13060011
Well depth: 167 feet
Land surface altitude: 4,240 feet above NAVD88.
Well completed in "Ogallala Formation" (121OGLL) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1961-03-16	1996-01-30	8
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center
Email questions about this site to New Mexico Water Science Center Water-Data Inquiries

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

Accessibility FOIA Privacy Policies and Notices

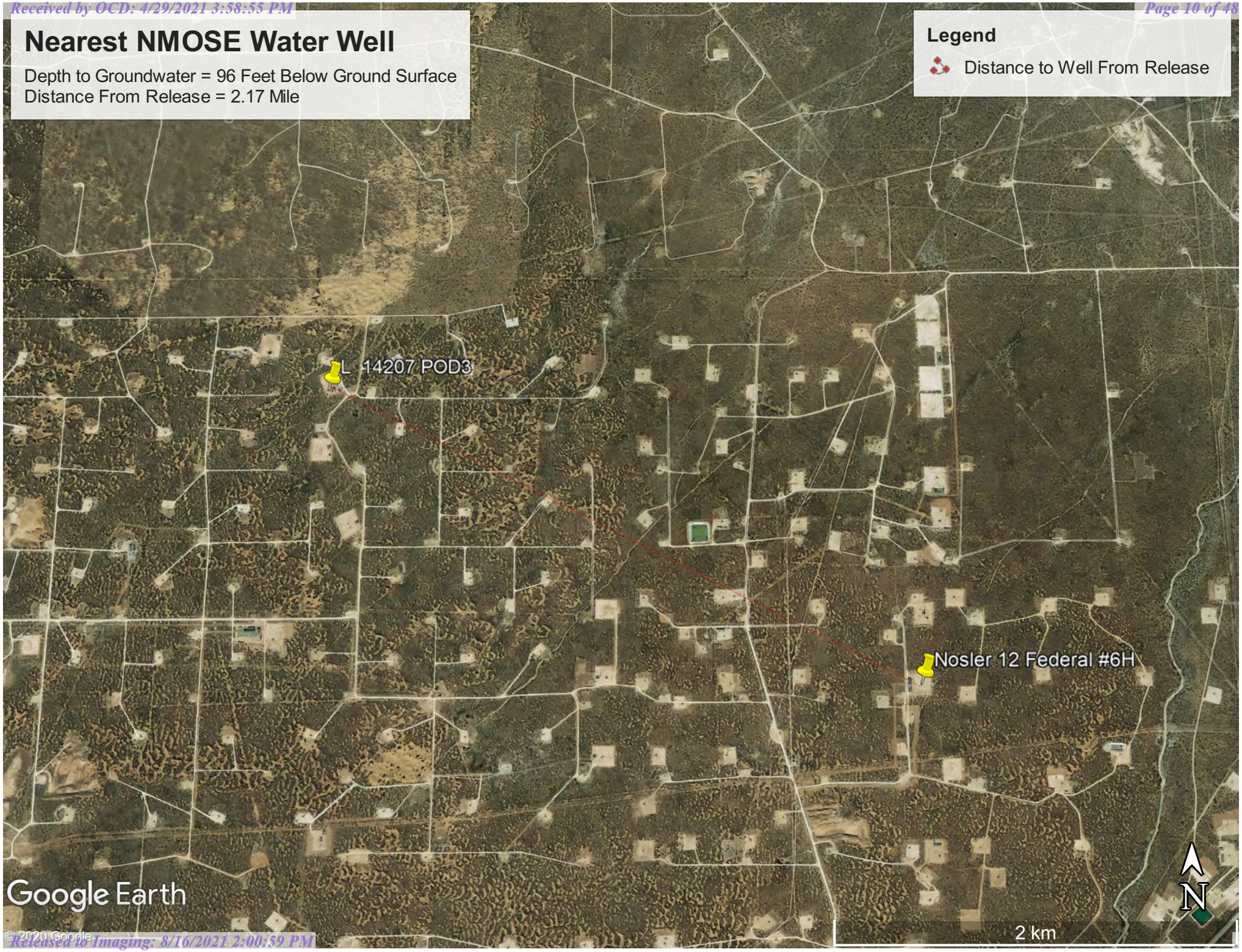
U.S. Department of the Interior | U.S. Geological Survey

Title: NWIS Site Information for USA: Site Inventory
URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=325347103494901

Page Contact Information: New Mexico Water Data Support Team
Page Last Modified: 2020-09-10 16:32:45 EDT
0.26 0.24 caww01

Nearest NMOSE Water Well

Depth to Groundwater = 96 Feet Below Ground Surface
Distance From Release = 2.17 Mile



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

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

POD Number	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
L 14207 POD3		L	LE	2	3	3	31	16S	37E	606117	3636977	3478	240	96	144

Average Depth to Water: **96 feet**

Minimum Depth: **96 feet**

Maximum Depth: **96 feet**

Record Count: 1

UTMNAD83 Radius Search (in meters):

Easting (X): 609230.7 **Northing (Y):** 3635425.85 **Radius:** 5000

8/25/20 9:39 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

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	Twn	Rng	X	Y
	L 14207 POD3	2	3	3	31	16S	37E	606117	3636977

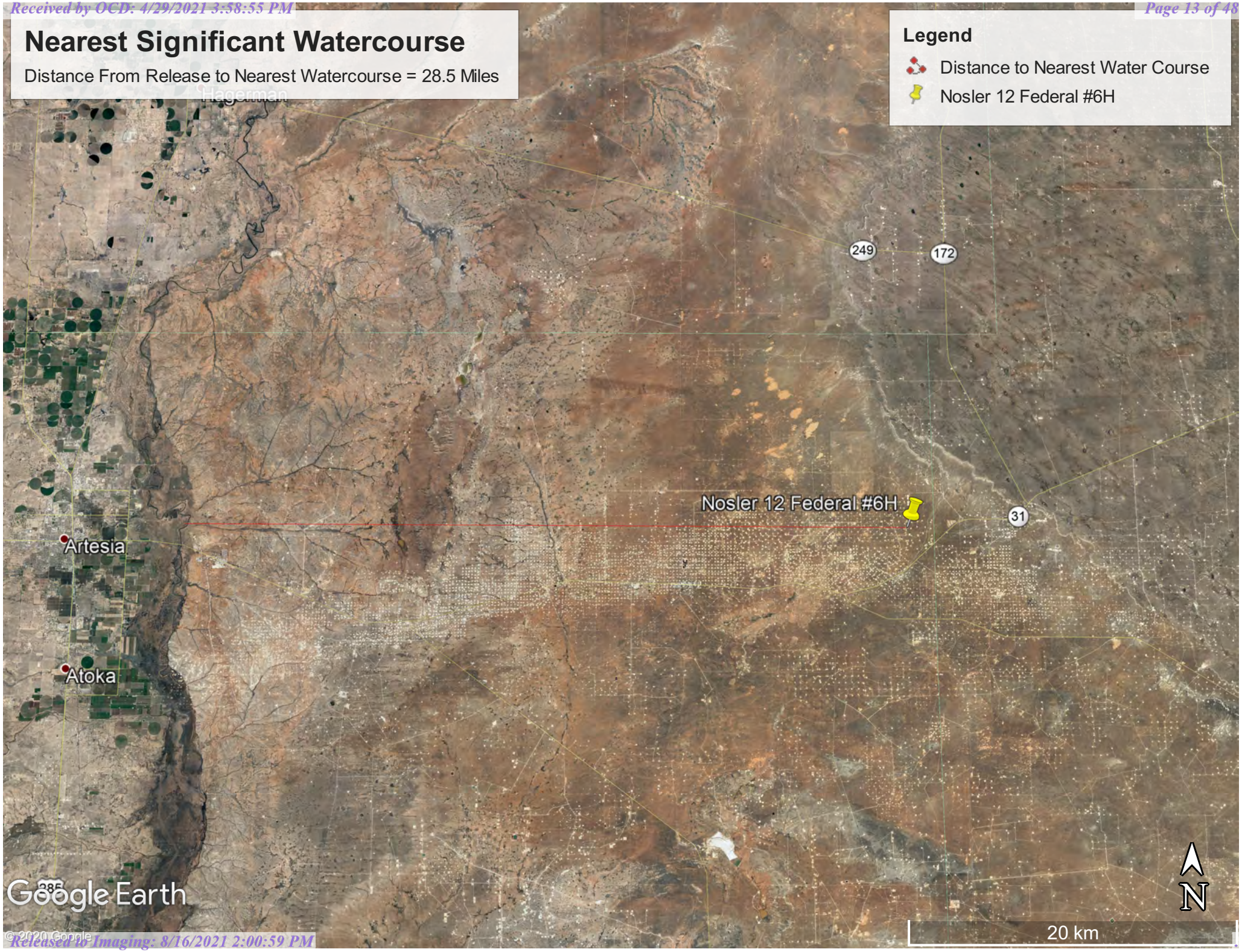
Driller License:	1456	**Driller Company:**	WHITE DRILLING COMPANY		
Driller Name:	WHITE, JOHN W				
Drill Start Date:	10/03/2016	**Drill Finish Date:**	10/12/2016	**Plug Date:**	
Log File Date:	12/12/2016	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	4.00	**Depth Well:**	240 feet	**Depth Water:**	96 feet

Water Bearing Stratifications:	Top	Bottom	Description
	75	140	Sandstone/Gravel/Conglomerate
	140	200	Sandstone/Gravel/Conglomerate
	200	205	Sandstone/Gravel/Conglomerate
	205	218	Sandstone/Gravel/Conglomerate
	218	236	Sandstone/Gravel/Conglomerate
	236	237	Sandstone/Gravel/Conglomerate
	237	240	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	90	220

Nearest Significant Watercourse

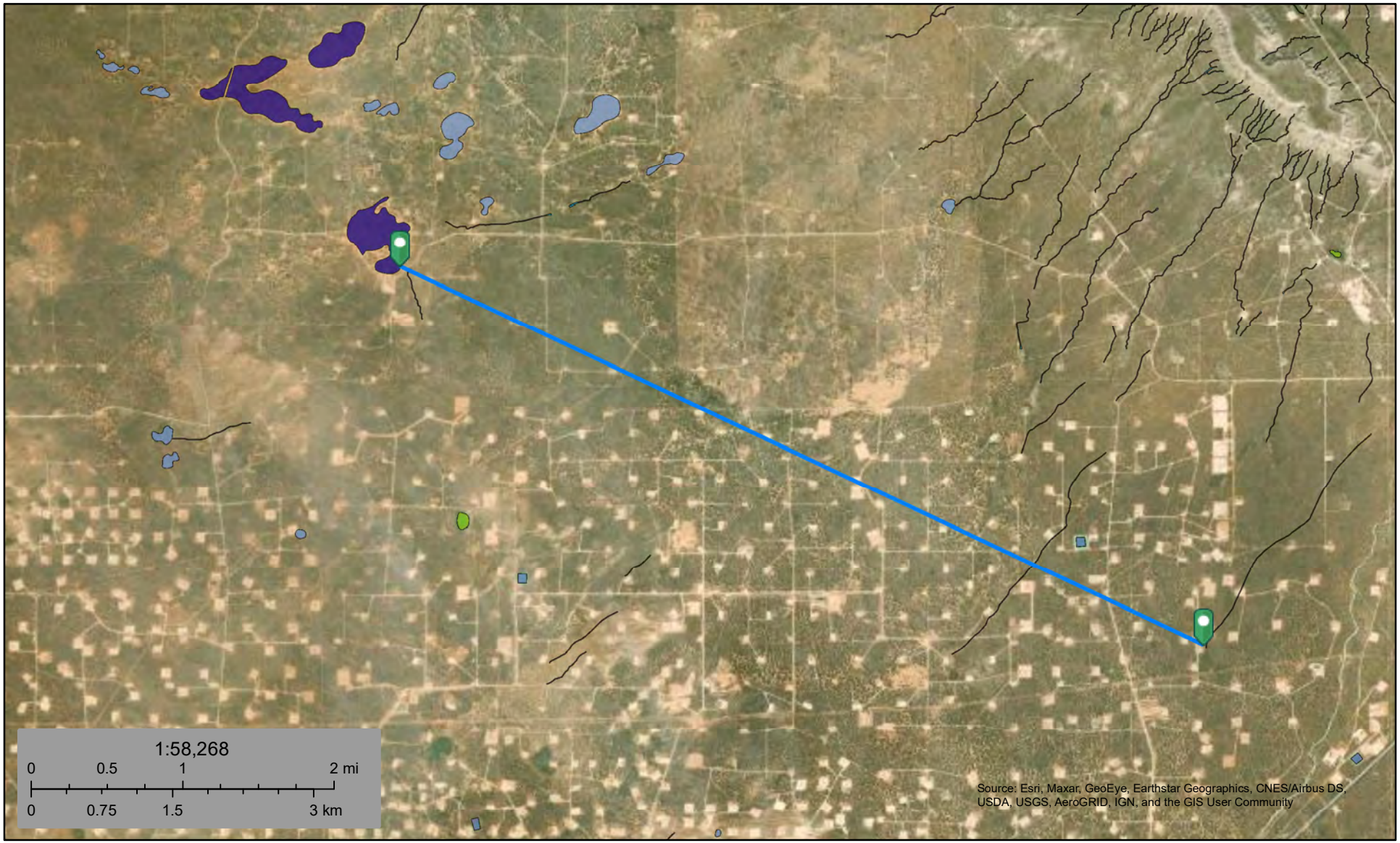
Distance From Release to Nearest Watercourse = 28.5 Miles



U.S. Fish and Wildlife Service

National Wetlands Inventory

Nearest Lake = 26,032 Feet



September 10, 2020

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.

U.S. Fish and Wildlife Service

National Wetlands Inventory

Nearest Wetland Distance = 10,286 Feet

August 25, 2020

Wetlands

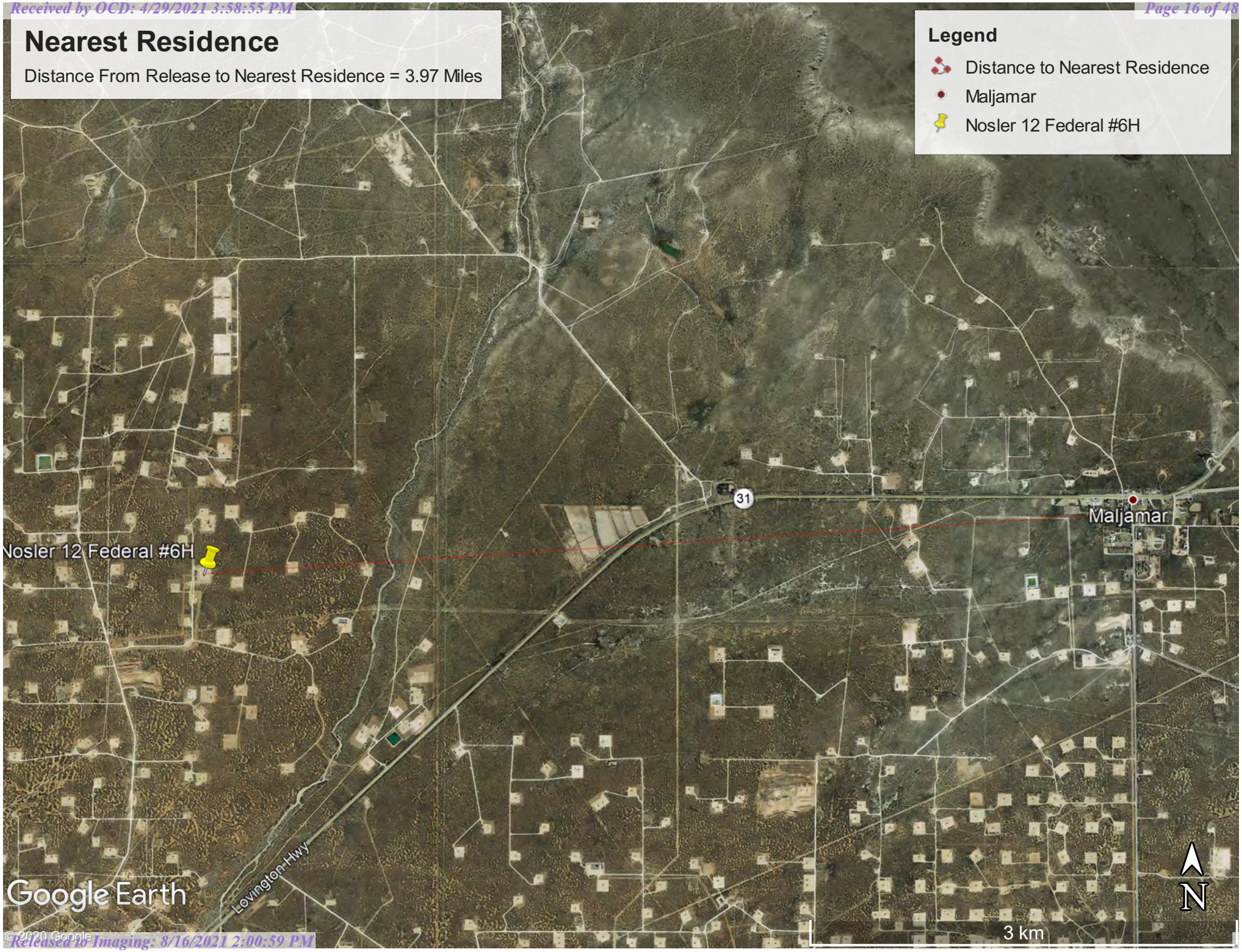
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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

Nearest Residence

Distance From Release to Nearest Residence = 3.97 Miles



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 Eddy Area, New Mexico

September 10, 2020

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.

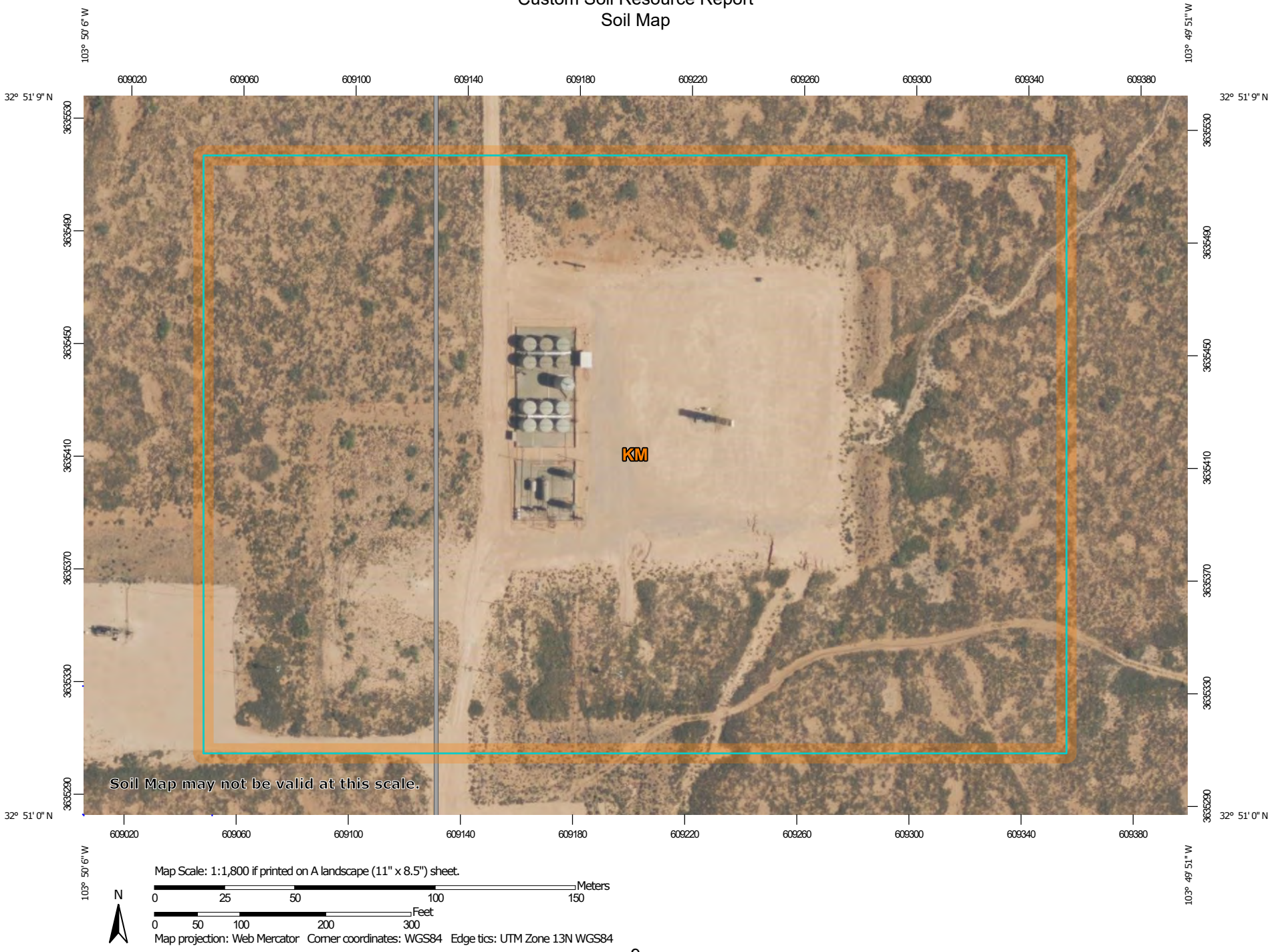
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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



MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Eddy Area, New Mexico
Survey Area Data: Version 16, Jun 8, 2020

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

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

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
KM	Kermit-Berino fine sands, 0 to 3 percent slopes	16.2	100.0%
Totals for Area of Interest		**16.2**	**100.0%**

Map Unit Descriptions

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.

Eddy Area, New Mexico

KM—Kermit-Berino fine sands, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 1w4q
Elevation: 3,100 to 4,200 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 60 to 64 degrees F
Frost-free period: 190 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Kermit and similar soils: 50 percent
Berino and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kermit

Setting

Landform: Alluvial fans, plains
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 7 inches: fine sand
H2 - 7 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very high (20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Maximum salinity: Nonsaline (0.0 to 1.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A
Ecological site: R042XC005NM - Deep Sand
Hydric soil rating: No

Description of Berino

Setting

Landform: Fan piedmonts, plains
Landform position (three-dimensional): Riser

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian sands

Typical profile

H1 - 0 to 17 inches: fine sand
H2 - 17 to 50 inches: fine sandy loam
H3 - 50 to 58 inches: loamy sand

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
Maximum salinity: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 1.0
Available water capacity: Moderate (about 7.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Minor Components

Active dune land

Percent of map unit: 15 percent
Hydric soil rating: No

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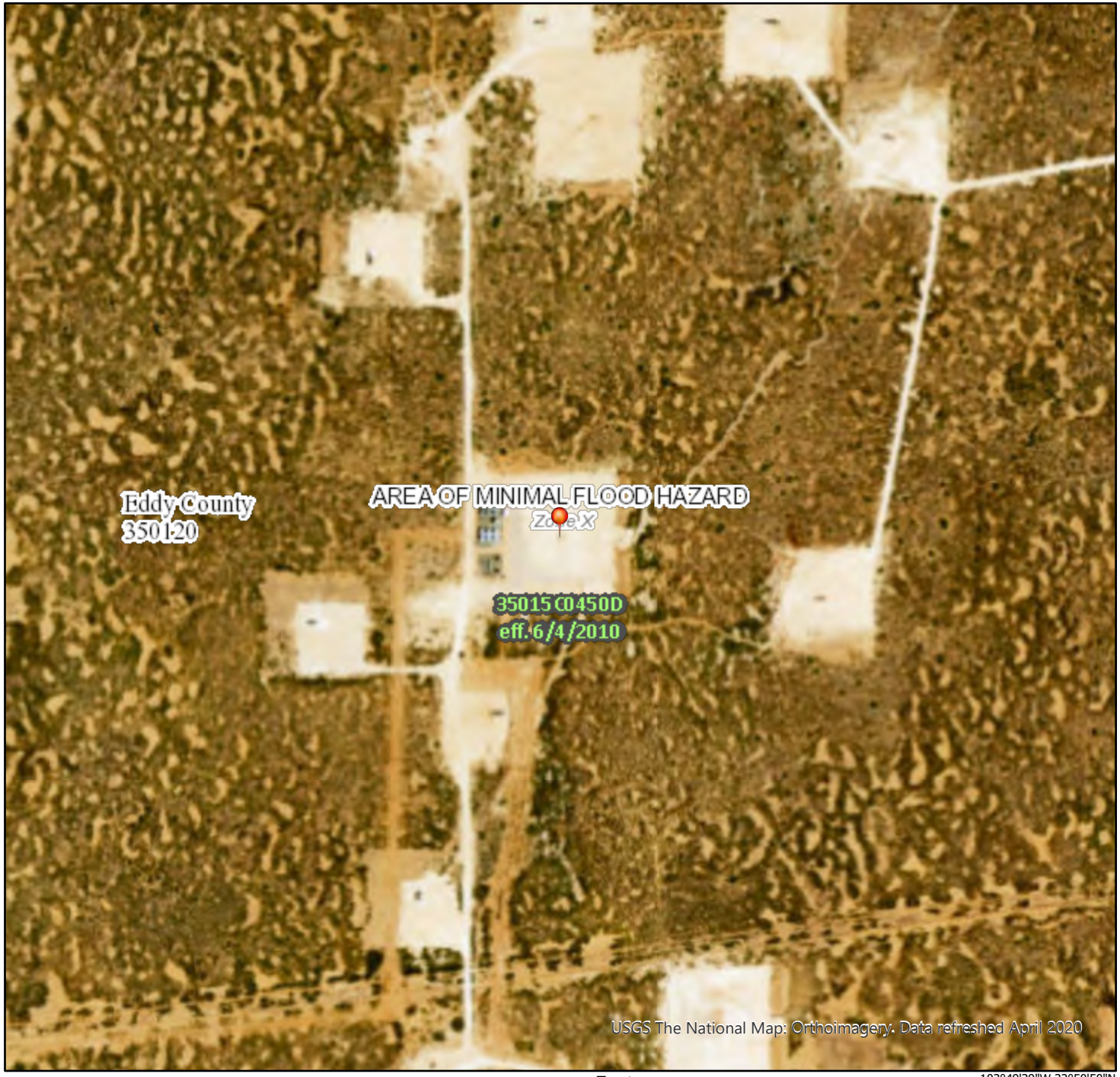
National Flood Hazard Layer FIRMette

FEMA

103°50'16"W 32°51'20"N



103°49'39"W 32°50'50"N

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

1:6,000

Legend

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

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

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

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

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

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

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

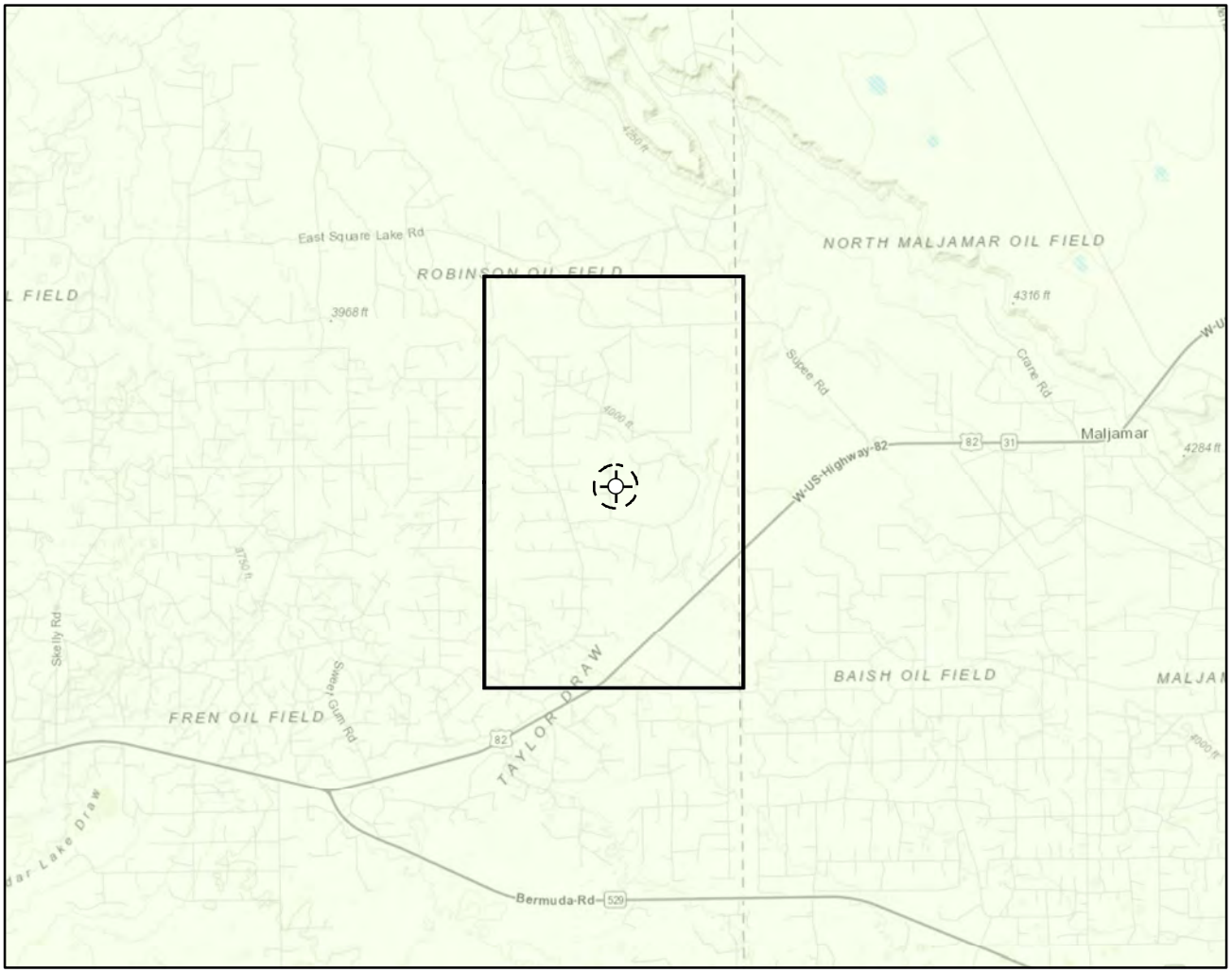
N

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

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

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 9/10/2020 at 3:53 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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



Site

Site Buffer (1,000 ft.)

Critical

High

Medium

Low

Overview Map

0 0.25 0.5 1 mi

Detail Map

0 1,350 2,700 ft.

VERTEX

Map Center:
Lat/Long: 32.851478, -103.832703

NAD 1983 UTM Zone 13N
Date: Aug 13/20

N

Karst Potential Map
Nosler 12 Federal 6H

FIGURE:
X

devon

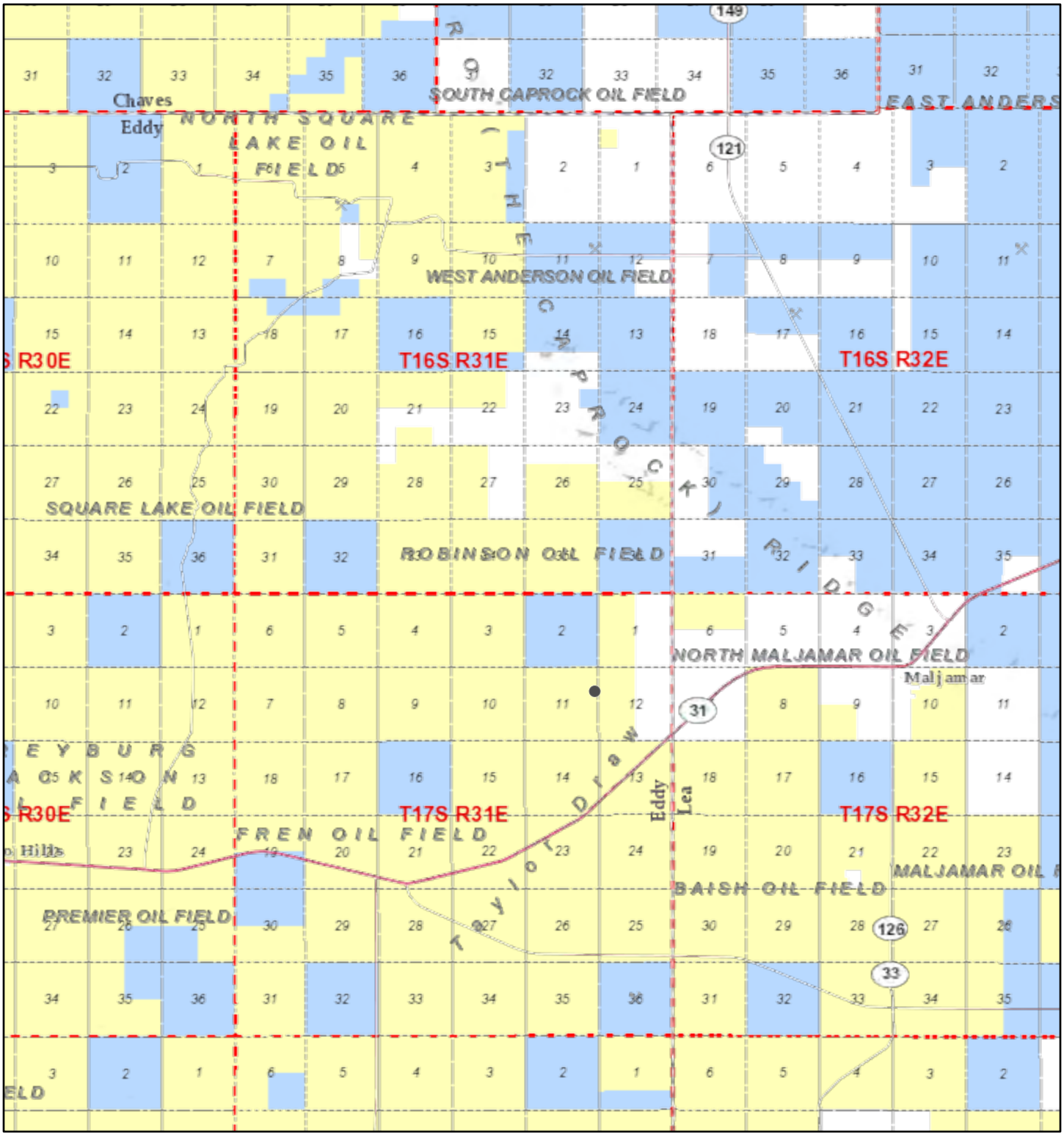
Geospatial data presented in this figure may be derived from external sources and Vertex does not assume any liability for inaccuracies. This figure is intended for reference use only and is not certified for legal, survey, or engineering purposes.

Note: Inset Map - ESRI 2018; Overview Map - ESRI World Topographic

VERSATILITY. EXPERTISE.

Document Path: G:\1-Projects_US PROJECTS\Mack Energy\20E-017555\002 - Nosler 12 Federal 6H\Figure X Nosler 12 Federal 6H Karst.mxd

Active Mines in New Mexico



8/25/2020, 10:37:23 AM

1:144,448

0 1 2 4 mi

0 1.5 3 6 km

Registered Mines

- Aggregate, Stone etc.
- Aggregate, Stone etc.

U.S. Bureau of Land Management - New Mexico State Office, Sources: Esri, USGS, NOAA, Sources: Esri, Garmin, USGS, NPS

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

ATTACHMENT 3

Client Name: Devon Energy Production Company
Site Name: Nosler 12 Federal 6H
NM OCD Tracking #: NRM2014054256
Project #: 20E-01755-002
Lab Report: 2008265

Table 2. Characterization Sampling Field Screen and Laboratory Data - Depth to Groundwater < 50 feet

Sample Description			Field Screening			Petroleum Hydrocarbons							Inorganic
						Volatile		Extractable					
Sample ID	Depth (ft)	Sample Date	Volatile Organic Compounds (PID)	Extractable Organic Compounds (Petro Flag)	Inorganics (Quantab - High/Low)	Benzene	BTEX (Total)	Gasoline Range Organics (GRO)	Diesel Range Organics (DRO)	Motor Oil Range Organics (MRO)	(GRO + DRO)	Total Petroleum Hydrocarbons (TPH)	Chloride
			(ppm)	(ppm)	(+/-)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
BH20-01	0	August 5, 2020	-	-	-	<0.024	<0.216	<4.8	8,100	4,900	**8,100**	**13,000**	**8,200**
	0.5	August 5, 2020	-	-	1,084	-	-	-	-	-	-	-	-
	1	August 5, 2020	-	22	26	<0.024	<0.217	<4.8	<9.3	<47	<14.1	<61.1	270
BH20-02	0	August 5, 2020	-	-	<0	<0.025	<0.249	<4.9	640	630	**640**	**1,270**	130
	0.5	August 5, 2020	-	16	<0	<0.024	<0.217	<4.8	<9.6	<48	<14.4	<62.4	81
	1	August 5, 2020	-	-	<0	-	-	-	-	-	-	-	-
BH20-03	0	August 5, 2020	-	-	151	<0.025	<0.221	<4.9	480	1,200	**480**	**1,680**	380
	0.5	August 5, 2020	-	101	<0	<0.024	<0.219	<4.9	17	57	17	74	<60
	1	August 5, 2020	-	-	<0	-	-	-	-	-	-	-	-
BH20-04	0	August 5, 2020	-	-	<0	<0.025	<0.222	<4.9	32	120	32	**152**	60
	0.5	August 5, 2020	-	43	<0	<0.024	<0.219	<4.9	<9.3	<47	<14.2	<61.2	<60
	1	August 5, 2020	-	-	<0	-	-	-	-	-	-	-	-
SS20-01	0-0.5	August 5, 2020	-	15	<0	<0.024	<0.213	<4.7	<9.7	<49	<14.4	<63.4	<60
SS20-02	0-0.5	August 5, 2020	-	-	<0	-	-	-	-	-	-	-	-
SS20-03	0-0.5	August 5, 2020	-	13	<0	-	-	-	-	-	-	-	-
SS20-04	0-0.5	August 5, 2020	-	19	<0	<0.025	<0.222	<4.9	<9.3	<47	<14.2	<61.2	61
SS20-05	0-0.5	August 5, 2020	-	-	<0	-	-	-	-	-	-	-	-
SS20-06	0-0.5	August 5, 2020	-	21	<0	<0.024	<0.216	<4.8	<9.4	<47	<14.2	<61.2	<60
SS20-07	0-0.5	August 5, 2020	-	79	<0	-	-	-	-	-	-	-	-
SS20-08	0-0.5	August 5, 2020	-	74	<0	<0.023	<0.207	<4.6	<9.9	<50	<14.5	<64.5	<60
SS20-09	0-0.5	August 5, 2020	-	47	<0	-	-	-	-	-	-	-	-
SS20-10	0-0.5	August 5, 2020	-	68		<0.023	<0.210	<4.7	<9.4	<47	<14.1	<61.1	<60
SS20-11	0-0.5	August 5, 2020	-	81	205	-	-	-	-	-	-	-	-
SS20-12	0-0.5	August 5, 2020	-	69	<0	-	-	-	-	-	-	-	-
SS20-13	0-0.5	August 5, 2020	-	67	29	<0.024	<0.217	<4.8	<9.7	<49	<14.5	<63.5	130

"-" indicates not assessed/analyzed
Bold and shaded indicates exceedance outside of NM OCD Closure Criteria

ATTACHMENT 4

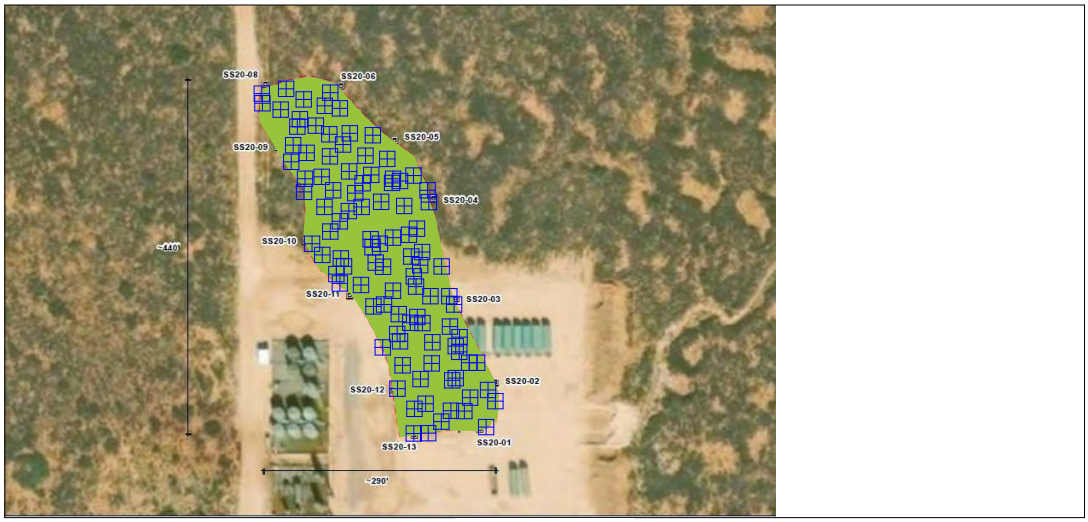
Sampling to Compute a Nonparametric (Distribution-Free) One-Sided Upper Tolerance Limit to Test that a Large Portion of Room Surfaces Does Not Contain Contamination

Summary

This report summarizes the sampling design developed by VSP based on inputs provided by the VSP user. The following table summarizes the sampling design developed by VSP. A figure that shows the sample placement on the map is also provided below.

SUMMARY OF SAMPLING DESIGN	
Primary Objective of Design	Use a nonparametric (distribution-free) one-sided upper tolerance limit (UTL) to test if the true P^{th} percentile of a population exceeds the action level
Required fraction of the population to be less than the action level	0.975 (P=97.5)
Required percent confidence on the decision made using the UTL	92%
Method used to compute the number of samples, *n*	Hahn and Meeker (1991, page 169) (See equations below)
Sample placement method	Random point sampling in grids
Calculated total number of samples	100
Number of samples on map [a]	100
Number of selected sample areas that are not rooms	1
Total sampling surface area [b]	59916.10 ft^2
Total cost of sampling [c]	$13,500.00

[a] This number may differ from the calculated number because of 1) grid edge effects, 2) adding judgment samples, or 3) selecting or unselecting sample areas (rooms).
[b] This is the total surface area of all selected rooms and other selected sample areas on the map of the site.
[c] Including measurement analyses and fixed overhead costs. See the Cost of Sampling section for an explanation of the costs presented here.



Floor Plan Map

Primary Sampling Objective

The primary objective of this sampling effort is to make a decision whether an unacceptably large portion (fraction) of a specified surface area (target population) is contaminated above a specified action level (AL) or is otherwise defective. It is presumed that suitable actions have been identified to be implemented for either way the decision may go.

Population Parameter of Interest
The population parameter of interest is the true P^{th} percentile of the population of contaminant concentrations, where 0 < P < 100, in this case, the 97.5th percentile (P = 97.5). The true P^{th} percentile is the value above which (100 - P)% of the population lies and below which P% of the population lies. The objective is to reject the null hypothesis if the true P^{th} percentile exceeds the specified action level (AL). But, the true P^{th} percentile will never be known with 100% confidence because all possible measurements from the population cannot be obtained. Hence the decision whether to reject the null hypothesis is made using the computed upper tolerance limit (UTL) for the P^{th} percentile, that is, by computing the upper 100(1-α)% confidence limit on the P^{th} percentile (see Decision Rule below). For the current design α is 0.08, which means that the decision will be made using the computed UTL for the 92% confidence limit on the 97.5th percentile.

Hypothesis Being Tested
The null hypothesis (baseline assumption) is as follows:

H_o: The true P^{th} percentile $\leq$ AL
or equivalently,
H_o: Less than P% of the population < AL

The H_o is rejected if UTL < AL, in which case the alternative hypothesis (H_a) is accepted as being true, where:

H_a: More than P% of the population < AL

Sampling Design Options
VSP offers many options to determine the locations at which measurements are made or samples are collected and subsequently measured. For this design, random point sampling in grids was chosen. This option offers a good balance between providing information about the spatial structure of the potential contamination while ensuring all portions of the site are represented (though, not as thoroughly as systematic grid sampling). Knowledge of the spatial structure is useful for geostatistical analysis. This option also has the benefit of placing the exact number of samples required by the design.

Decision Rule and Number of Samples, *n*
The null hypothesis is rejected and the alternative hypothesis is accepted if the nonparametric (distribution-free) UTL for the P^{th} percentile is less than the specified action level (AL). The nonparametric UTL is simply the maximum of the n measurements obtained from the population of interest, where n is computed using the following equation

$$n = \frac{\ln(\alpha)}{\ln(P/100)}$$

(from Hahn and Meeker 1991, page 169). These authors discuss the statistical meaning, use, and computation of nonparametric tolerance limits and the number of samples required (pages 91, 92,169, and 326).

The following table displays the values of the input parameters used for this design:

Parameter	Value
Input	
P	97.5
α	0.08 (8%)
Confidence (1-α)	92%
Output	
n	100

Statistical Assumptions
1. Representative measurements have been obtained from a defined target population using simple random sampling or a systematic grid pattern that has a randomly selected starting location.
2. The n measurements are statistically independent, i.e., there is no spatial correlation (no spatial patterns) of contaminant levels throughout the target population.
3. The maximum of the n measurements is not an invalid value, i.e., it is not a mistake or an unacceptably uncertain value due to faulty sample handling, transport, treatment, storage, or measurement.

Sensitivity Analysis
The sensitivity of the calculation of number of samples was explored by varying the required percent of the population to be less than the action level. and confidence level (1-α) (%). The following table shows the results of this analysis.

Number of Samples					
	CL=96	**CL=94**	**CL=92**	**CL=90**	**CL=88**
P=91	35	30	27	25	23
P=95	63	55	50	45	42
P=99	321	280	252	230	211

P = Required Percent of the Population to be Less Than the Action Level.
CL = Confidence Level (1-α) (%)

Cost of Sampling
The total cost of the completed sampling program depends on several cost inputs, some of which are fixed, and others that are based on the number of samples collected and measured. Based on the numbers of samples determined above, the estimated total cost of sampling and analysis at this site is $13,500.00, which averages out to a per sample cost of $135.00. The following table summarizes the inputs and resulting cost estimates.

COST INFORMATION			
Cost Details	**Per Analysis**	**Per Sample**	**100 Samples**
Field collection costs		$25.00	$2,500.00
Analytical costs (Analyte 1)	$100.00	$100.00	$10,000.00
Sum of Field & Analytical costs		**$125.00**	**$12,500.00**
Fixed planning and validation costs			$1,000.00
Total cost			**$13,500.00**

Recommended Data Analysis Activities
Post data collection activities generally follow those outlined in EPA's Guidance for Data Quality Assessment (EPA, 2000). The data analysts should become familiar with the context of the problem and goals for data collection and assessment. The *n* data should be verified and validated before being used to test the null hypothesis. The VSP user should enter the validated and verified *n* data values into the VSP dialog box and click on appropriate tabs to obtain the following statistical summaries of the data. If there is strong evidence that the *n* data are normally distributed, the VSP user may want to use VSP to determine the number of samples, *n*, required to compute the normal distribution UTL and then use that UTL (rather than the nonparametric UTL) to test the null hypothesis.

Summary statistics: *n*, minimum and maximum of the *n* measurements, range of the *n* data, mean, median, standard deviation, variance, skewness, percentiles, and the interquartile range

Statistical Tests of Normality Assumption: Shapiro-Wilk test (if $n \leq 50$) (Gilbert 1987), Lilliefors test (if $n > 50$) (EPA 2000).

Graphical Displays of the Data: Histogram, box-and-whisker plots and quantile-quantile (probability) plots (EPA 2000).

References

EPA. 2000. *Guidance for Data Quality Assessment, Practical Methods for Data Analysis*, EPA QA/G-9, EPA/600/R-96/084, July 2000, Office of Environmental Information, U.S. Environmental Protection Agency.

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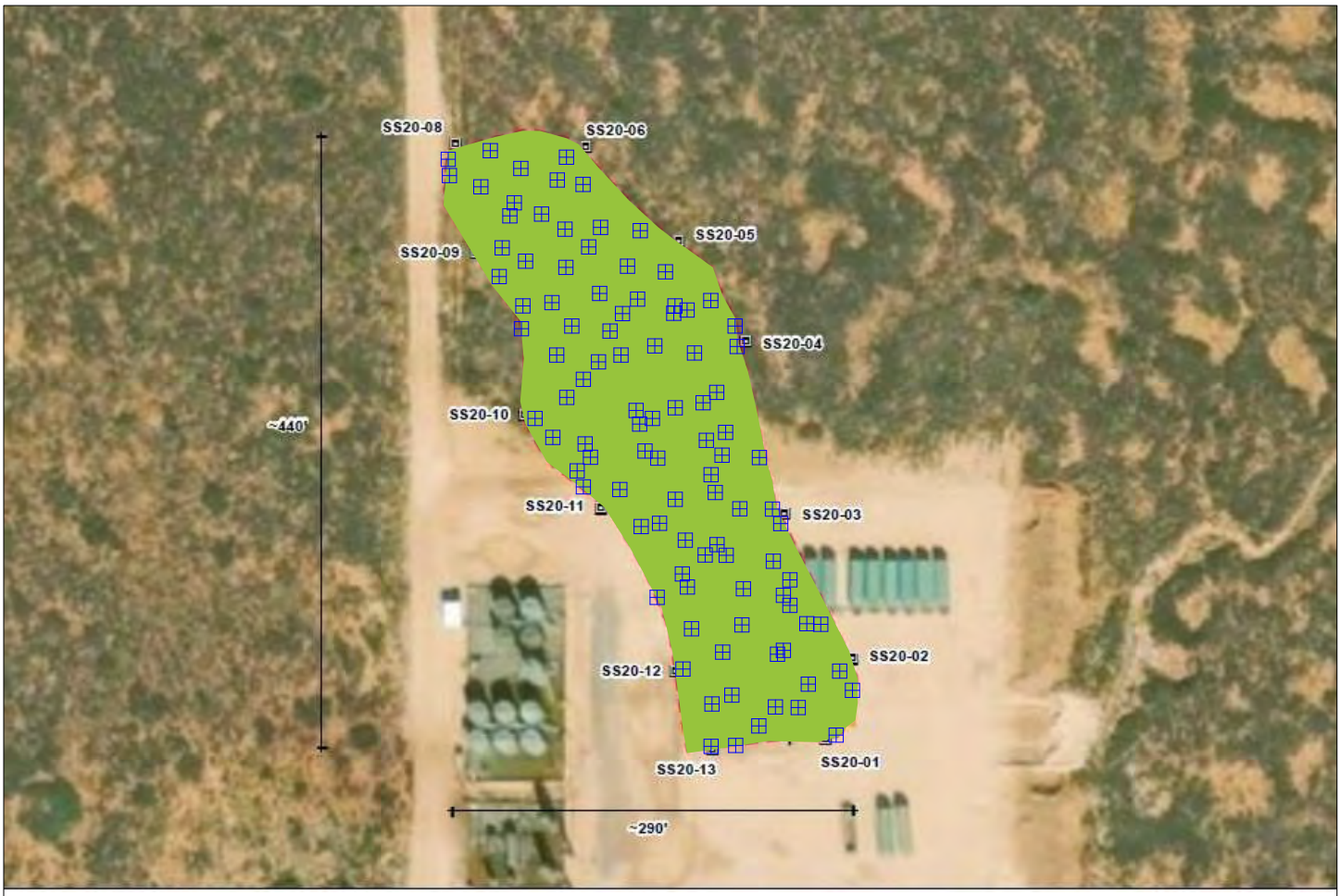
A

This report was automatically produced* by Visual Sample Plan (VSP) software version 7.12a.
This design was last modified 12/8/2020 5:45:51 PM.
Software and documentation available at http://vsp.pnnl.gov

* - The report contents may have been modified or reformatted by end-user of software.


SS20-08
SS20-06
SS20-09
SS20-05
SS20-04
SS20-10
~440'
SS20-11
SS20-03
SS20-02
SS20-12
SS20-13
SS20-01
~290'

Incident ID	NRM2014054256
District RP	2
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

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

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

- ☒ 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.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	NRM2014054256
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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: _____Matt Buckles_____ Title: _____Environmental_____

Signature:_____*Matt Buckles*_____ Date__*12/9/2020*_____

email: ___mattbuckles@mec.com_____ Telephone: _____575-748-1288_____

OCD Only

Received by: _____ Date: _____

Incident ID	NRM2014054256
District RP	2
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Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

☒ Detailed description of proposed remediation technique
☒ Scaled sitemap with GPS coordinates showing delineation points
☒ Estimated volume of material to be remediated
☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete 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: _____Matt Buckles_____ Title: _____Environmental_____

Signature: _____*Matt Buckles*_____ Date: _____12/9/2020_____

email: ___mattbuckles@mec.com_____ Telephone: _____575-748-1288_____

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	NRM2014054256
District RP	2
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Printed Name: Matt Buckles Title: Environmental

Signature: *Matt Buckles* Date: 12/9/2020

email: mattbuckles@mec.com Telephone: 575-748-1288

OCD Only

Received by: Robert Hamlet Date: 8/16/2021

☐ Approved ☒ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: Robert Hamlet Date: 8/16/2021

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

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

CONDITIONS

Action 26353

CONDITIONS

Operator:	OGRID:
MACK ENERGY CORP P.O. Box 960 Artesia, NM 882110960	13837
	Action Number: 26353
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	The Workplan/Remediation Plan is approved with the following conditions: Sidewall/floor samples need to comply with the strictest closure criteria limits 600 mg/kg for Chlorides and 100 mg/kg TPH. In-situ treatment will need to be completed and a closure report uploaded to the OCD payment portal within 90 days of approval of the remediation plan.	8/16/2021