Souder, Miller & Associates♦201 S. Halagueno St.♦Carlsbad, NM 88220

March 28, 2022

#5E31016

NMOCD District 2
811 S. First Street
Artesia, New Mexico 88210

SUBJECT: Variance Request from OCD Guidelines on Depth to Groundwater Determination for the Gissler B 3-1 Release (nAPP2204058110), Eddy County, New Mexico

To Whom it May Concern:

On behalf of MR NM Operating LLC, Souder, Miller & Associates (SMA) has prepared this request for a variance of depth to groundwater determination for a release of liquids related to oil and gas production activities at the Gissler B 3-1 site. The site is located in Unit B, Section 11, Township 17S, Range 30E, Eddy County, New Mexico, on Federal land managed by the Bureau of Land Management (BLM). Figure 1 illustrates the vicinity and site location on a USGS 7.5-minute quadrangle map.

Table 1, summarizes information regarding the release.

Table 1: Release Information and Closure Criteria

Name	Gissler B 3-1	Company	MR NM Operating LLC
API Number	N/A	Location	32.8543457, -103.9400186
Tracking Number	nAPP2204058110		
Date of Release	2/8/2022	Date Reported to NMOCD	2/9/2022
Land Owner	BLM	Reported To	NMOCD District 2, BLM
Source of Release	Flowline		
Released Volume	90 bbls	Released Material	Crude Oil
Recovered Volume	75 bbls	Net Release Volume	15 bbls
Proposed NMOCD Closure Criteria	>100 feet to groundwater		

1.0 Background

On February 8, 2022, a crude oil release was discovered within a bermed area at the site attributed to corrosion of a production flowline associated with the LACT unit. Initial response activities were conducted by the operator and included source elimination activities. An initial site assessment has been performed by SMA and remedial activities are being planned pending the results of this variance request.

2.0 Site Information and Closure Criteria

The Gissler B 3-1 is an active storage facility located approximately 27 miles east of Artesia, New Mexico on Federal (BLM) land at an elevation of approximately 3,753 feet above mean sea level (ft AMSL).

2.1 Reasonable Determination of Depth to Groundwater

SMA has developed a reasonable determination of the depth to groundwater (DTW) at the Gissler B 3-1 release site in accordance with Paragraph (2) of Subsection A of 19.15.29.11 New Mexico Administrative Code (NMAC). To encourage uniform implementation of 19.15.29 NMAC across the district offices, the New Mexico Oil Conservation Division (OCD) utilizes the interoffice document *Procedures for Implementation of the Spill Rule (19.15.29 NMAC)*, dated September 6, 2019, also known as the OCD Guidelines. With the exception of the preference for DTW data to be from wells located within 0.5 miles of the release location, this DTW determination is also compliant with the OCD Guidelines. Section 2.3 of this remediation plan is a variance request from OCD Guidelines Section IX.a.

SMA has determined that the DTW at the site is greater than 100 feet below ground surface (bgs) based upon nearby test well data further supported by local USGS groundwater well monitoring data and regional geology. Boring logs for two nearby test wells at the Gissler B #59 and Jackson B #59 indicate that groundwater was not encountered at depths of 105 feet bgs and 125 feet bgs, respectively. Both boring logs demonstrate that the test wells were constructed and monitored using the methodology recommended by the OCD using air rotary style drilling and left open for 72 hours prior to measuring for groundwater. The test wells, however, are located outside of the preferred 0.5-mile horizontal distance from the release location as described in the OCD Guidelines at 0.78 miles and 0.64 miles, respectively.

A review of local geology supports the use of the test well's data. Structurally, the relatively undisturbed, uniform formations in the area dip gently to the east[1] as part of an eastward plunging anticline[2] resulting in similar hydrologic conditions across the larger area. A generalized geologic section of the area[3] illustrates that the undifferentiated alluvium and Triassic age sediments extend from the surface to roughly 245 feet in depth where an unconfined aquifer would be expected to be present given sufficient groundwater availability. Groundwater monitoring data from two USGS wells located approximately 1.8 miles northwest of the site support this conclusion reporting depths to groundwater of 361 and 362 feet and are completed in the Triassic age Santa Rosa formation.

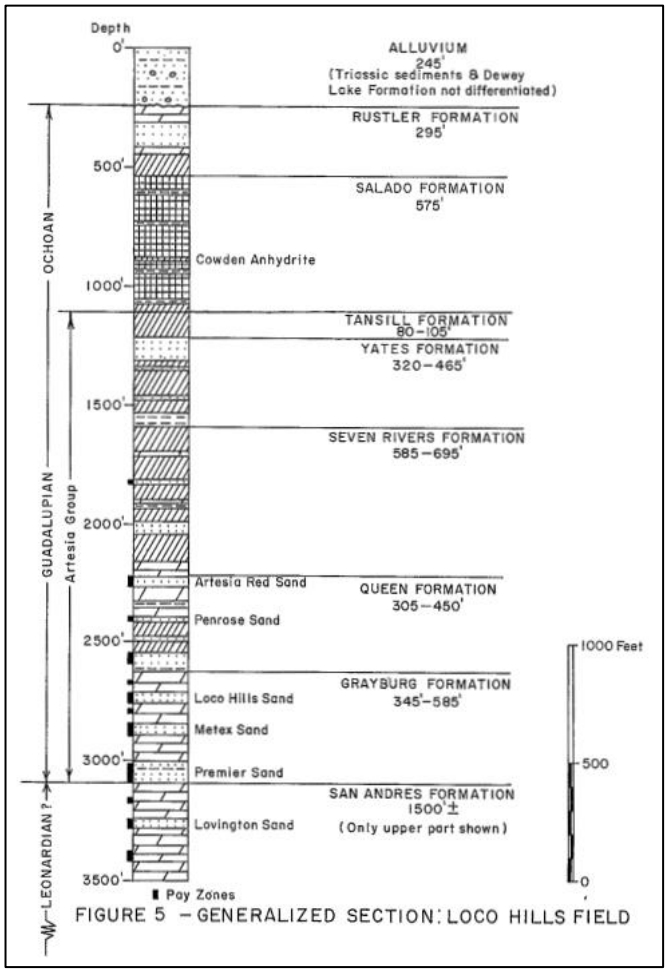


Illustration 1. Generalized section of local stratigraphy, adapted from Foster 1976.

[1] McCraw and Williams, 2011.
[2] Barnett and Soyster, 1945.
[3] Foster, 1976.

These measurements were obtained in 1986, which is outside of NMOCD Guideline recommendations of groundwater measurements being less than 25-years old. However, even with expected fluctuations in water table elevations over time within the unconfined aquifer, these measurements support the DTW determination that groundwater is greater than 100 feet bgs.

The test well boring logs and USGS water well data are included in Appendix A. The locations of the USGS wells and test wells relative the site is illustrated on Figures 1 and 3, respectively.

2.2 Additional Closure Criteria Determination Information

The nearest significant watercourse is an unnamed playa, located approximately 0.95 miles to the northeast as illustrated on Figure 2.

There are no known water sources within 0.5 miles of the location, according to the New Mexico Office of the State Engineer (NMOSE) online water well database as shown on Figure 1.

The site is located within an area of low karst potential as shown on Figure 1.

Based on the information presented herein and pending OCD concurrence with the DTW determination, the applicable NMOCD Closure Criteria for this site is for a groundwater depth of greater than 100 feet bgs.

2.3 Request for Variance from OCD Guidelines

For the Gissler B 3-1 release, SMA requests that OCD grant a variance from OCD Guidelines Section IX.a. This section addresses determination of the DTW at oil and gas operation release sites. The depth to groundwater at these release sites is a critical factor in determining the risk-based site closure contaminant concentration standards pursuant to Paragraph (2) of Subsection A of 19.15.29.11 NMAC. The site-specific standards drive the depth to which remediation must be completed and, subsequently, the selection of an appropriate remedial approach to achieve regulatory closure of the site.

OCD Guidelines Section IX.a states that if nearby water wells are used to determine the depth to groundwater, it is a *preference* that the wells be located within 0.5 miles of the release location. This preference is not defined by 19.15.29 NMAC, which states that the responsible party for the release must provide a *reasonable determination of probable ground water depth* (emphasis added) using data from a number of potential sources. The list of data sources includes the simply stated “water well data”. No restriction on the distance from the release site to the water well data point(s) is stipulated by 19.15.29 NMAC. SMA maintains that hydrogeologically supported DTW data from wells beyond the OCD Guidelines preference of 0.5 miles is consistent with the governing statute, 19.15.29 NMAC.

SMA considers water well data to be acceptable to determine the DTW beneath a release site if it meets the following criteria:

1. Depth to groundwater data is less than 25 years old, or is otherwise defensible, pursuant to OCD Guidelines Section IX.a
2. There is a well log with measured depth to groundwater and wellhead ground surface elevation data on file at a publicly accessible location such as the NMOSE.
3. The well location is completed in the same geologic terrain and formations, and the same hydrologic conditions that underlie the release site.
4. There are no major hydrologic or geologic features between the well and the release site that would change the depth to groundwater (rivers, faults, etc.).

Whereas the groundwater measurements for the two USGS wells are more than 25 years old, SMA relies on the evidence of the depth to groundwater being greater than 100 feet on the test well boring logs with

the USGS water well measurements serving to support that observation. With this exception, the remaining criteria have been met for water wells used to make a *reasonable determination of probable groundwater* depth at the Gissler B 3-1 release site. Therefore, SMA asserts that a variance from OCD Guidelines Section IX.a is justified and should be granted. While this is not a regulatory variance, SMA respectfully requests that a hydrogeologist experienced with Permian Basin groundwater conditions review this DTW determination and OCD Guidelines variance request and, if denied, provide reasons for denial pursuant to Subsection B of 19.15.29.14 NMAC.

3.0 Scope and Limitations

The scope of our services included: assessment sampling; verifying release stabilization, regulatory liaison, and preparing this variance request. All work has been performed in accordance with generally accepted professional environmental consulting practices for oil and gas releases in the Permian Basin in New Mexico.

If there are any questions regarding this report, please contact either Heather Woods at 505-716-2787 or Reid Allan at 505-325-7535.

Submitted by:
SOUDER, MILLER & ASSOCIATES

Heather M. Woods

Heather M. Woods, P.G.
Project Scientist

Reviewed by:

Reid S. Allan, P.G.
Principal Scientist

REFERENCES:

Barnett, J. A. and Soyster, M. H., 1945, Engineering report on the Grayburg Cooperative and unit area, Eddy County, New Mexico: U.S. Geological Survey, Open-File Report 45-41, p. 4.

Foster, R. W., 1976, Geology of the Loco Hills Sand, Loco Hills Field, Eddy County, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-File Report 67, p. 151.

McCraw, D. J. and Williams, S., 2011, Geologic map of the Artesia quadrangle, Eddy County, New Mexico: New Mexico Bureau of Geology and Mineral Resources, Open-File Geologic Map 169, 1:24,000.

ATTACHMENTS:

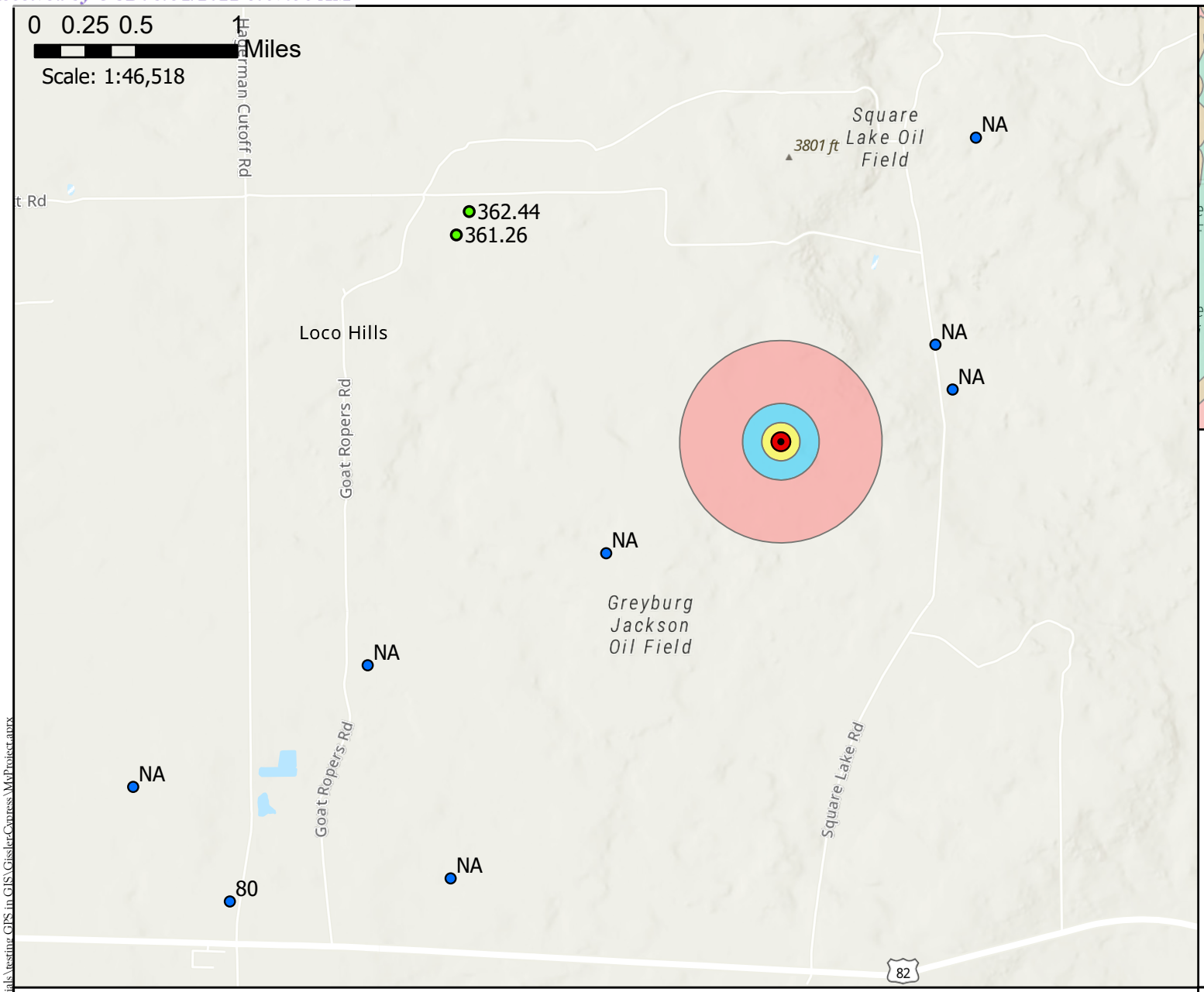
Figures:

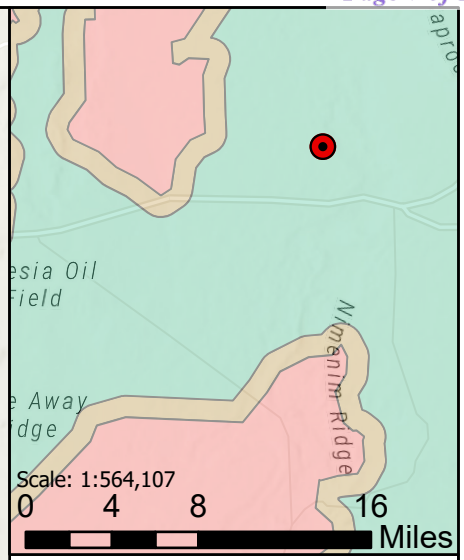
Figure 1: Site Map
Figure 2: Surface Water Protection Map
Figure 3: Groundwater Test Well Site Map

Appendices:

Appendix A: Test Well Boring Logs and USGS Well Data

FIGURES





Legend

- USGS - GW Wells
- OSE - GW Wells
- Point of Release

Buffer Distance

- 500 feet
- 1000 feet
- 0.5 mile

Karst Potential

- High
- Low
- Medium

N

NOTE:
GW Wells - depth to GW in feet below grade

Point of Release Coordinates:
-103.9401186W 32.8543457N

Site Map
Gissler B 3-1 Battery - Cypress
UL: B S: 11 T: 17S R: 30E, Eddy County, New Mexico

Figure 1

Revisions
By: Date: Descr:
By: Date: Descr:

Date Saved: 3/18/2022

Drawn Sarahmay Schlea
Date 3/18/2022
Checked
Approved

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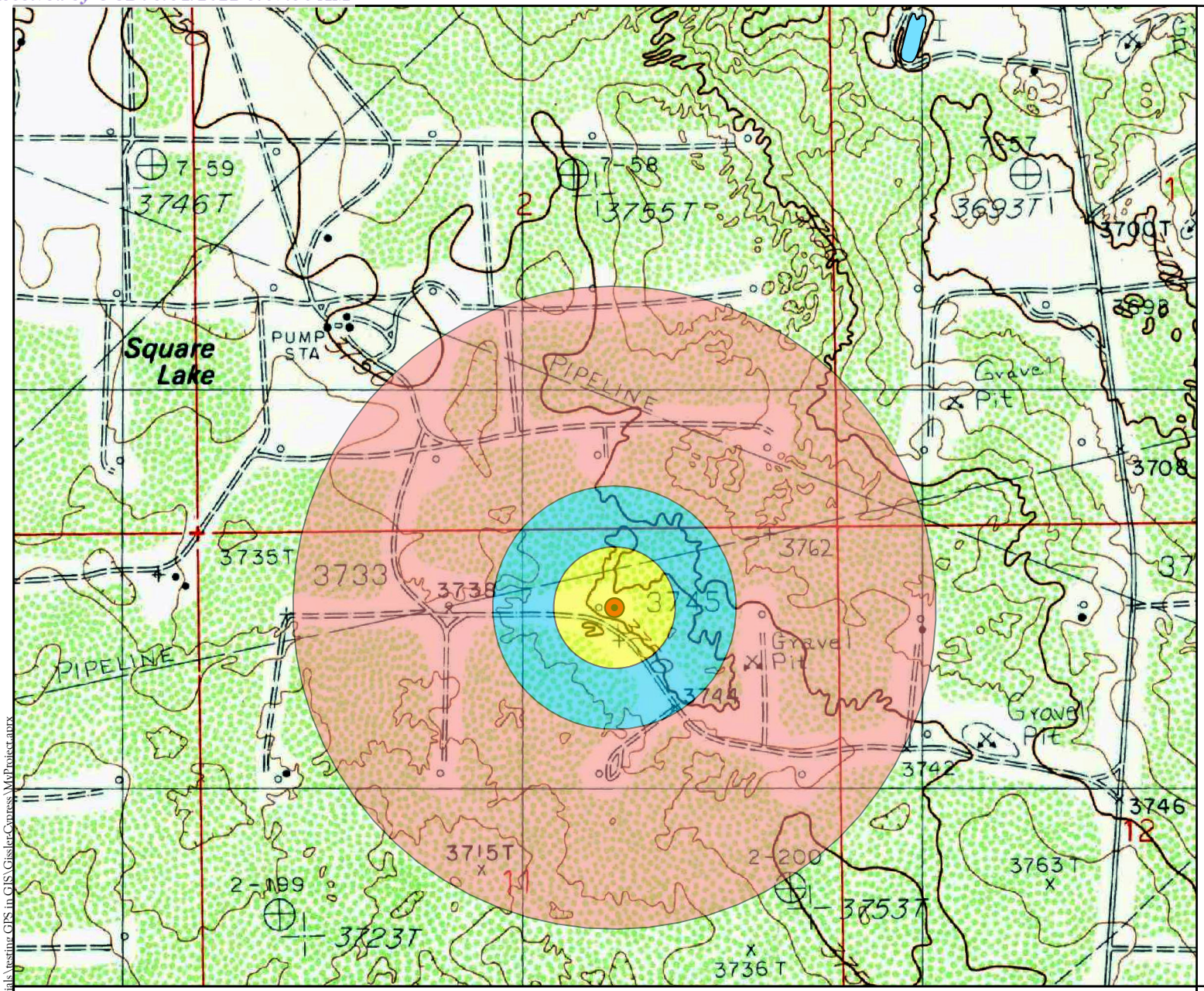
C:\Users\ss\Desktop\Training Materials\testing GIS in GIS\GisslerCypress\MyProject.aprx



Legend

- Lakes/Playas
- Point of Release

Buffer Distance

- 500 feet
- 1000 feet
- 0.5 mile

N

Scale: 1:14,633

0 500 1,000 2,000

Feet

Point of Release Coordinates:
-103.9401186W 32.8543457N

Surface Water Protection Map
Gissler B 3-1 Battery - Cypress
UL: B S: 11 T: 17S R: 30E, Eddy County, New Mexico

Figure 2

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Date Saved: 3/18/2022

Revisions
By:_____ Date:_____ Descr:_____
By:_____ Date:_____ Descr:_____

Drawn Sarahmay Schlea
Date 3/18/2022
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Approved

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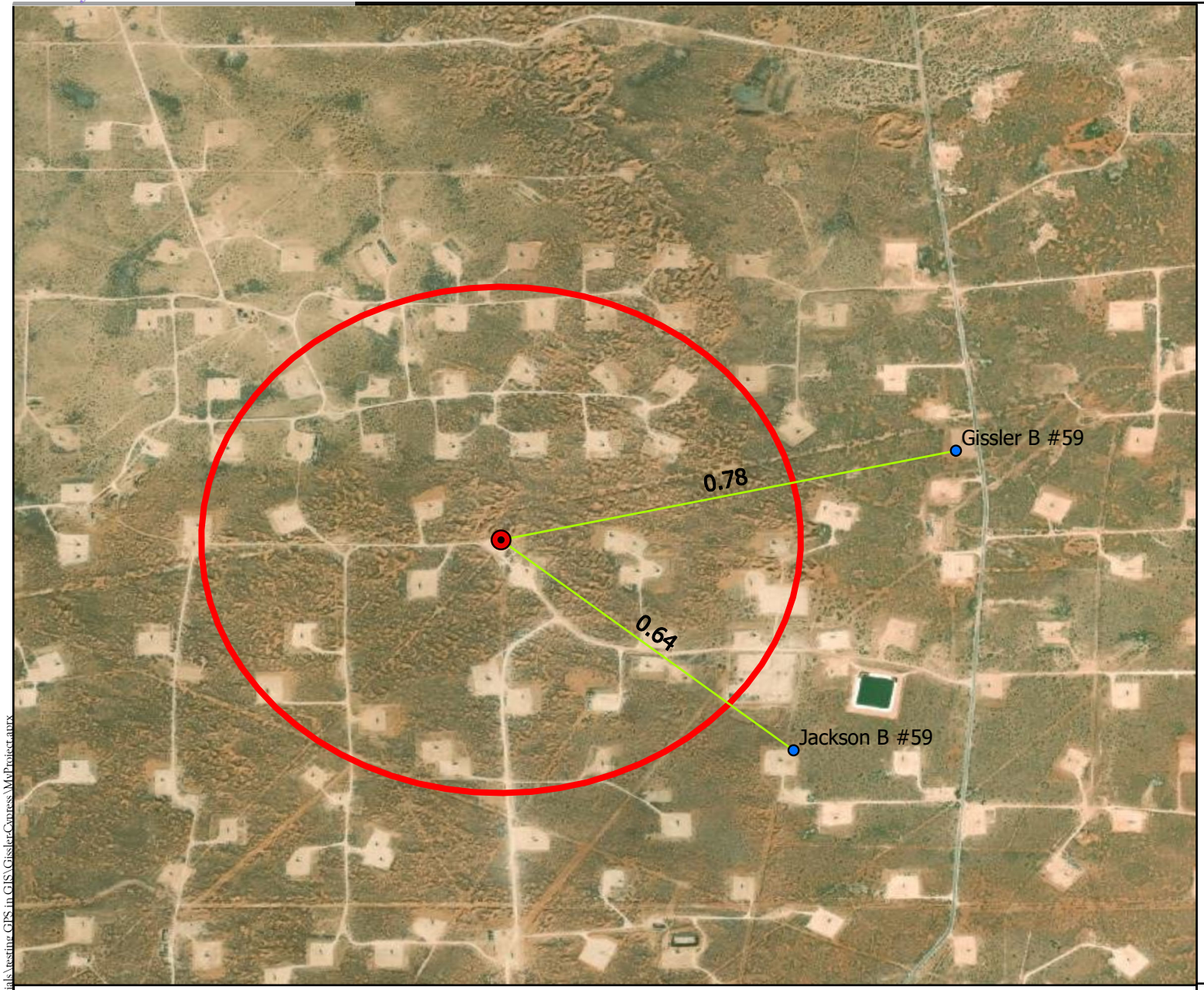

Legend

- Point of Release
- GW Test Wells
- 0.5 mile Buffer
- Distance (mi)

0 1,000 2,000

Feet

Scale: 1:18,665

N

Coordinates for Test Wells:
-103.92703W 32.85697N
-103.931751W 32.848420N

Point of Release Coordinates:
-103.9401186W 32.8543457N

Groundwater Test Well Site Map
Gissler B 3-1 Battery - Cypress
UL: B S: 11 T: 17S R: 30E, Eddy County, New Mexico

Figure 3

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Date Saved: 3/18/2022

Revisions
By: Date: Descr:
By: Date: Descr:

Drawn Sarahmay Schlea
Date 3/18/2022
Checked
Approved

SMA

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APPENDIX A

TEST WELL BORING LOGS AND USGS WELL DATA

BORING LOG

Project No.: 700438.238.01

Site Name: Jackson B #59

Location: Eddy County, New Mexico

Date: 5/18/2021

Boring Number: B-1

Weather: Clear, Temp.: 75°F

Logger: D. Adkins

Field Instrument: NA

Latitude: 32.85697 N

Longitude: -103.92703 W

Driller: D. Londagin

Rig Type: Reich Drill

Bit Size: 5-7/8”

Drilling Method: Air Rotary

Sample Retrieval Method: Drill Cuttings

Time	Lab Sample Collected	Sample Interval (ft)	Sample Recovery (ft)	USCS	Composition (%)	**Sample Material/Comments** Include composition, color, grain size, moisture, hardness, plasticity, density	Hydrocarbon Odor	PID (ppm)
	☐	0-30’				Red/brown fine Sand (SP)	**None** Slight Mod. Strong	
	☐	30-40’				Red/brown fine Sand (SP) with varying amounts of silt and caliche	**None** Slight Mod. Strong	
	☐	40-80’				Dry, dark red/brown sandy Silts (SM)	**None** Slight Mod. Strong	
	☐	80-125’				Red/brown fine Sand (SP)	**None** Slight Mod. Strong	
	☐					__ TD 125’__	None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	

Surface Elevation: _____

Notes: Groundwater Not Encountered @ 125’ BGS – 72 hr.

Logger Initials: DJA

BORING LOG

Project No.: 700438.240.01

Site Name: Gissler B #59

Location: Eddy County, New Mexico

Date: 5/20/2021

Boring Number: B-1

Weather: Clear, Temp.: 80°F

Logger: D. Adkins

Field Instrument: NA

Latitude: 32.848420 N

Longitude: -103.931751 W

Driller: D. Londagin

Rig Type: Reich Drill

Bit Size: 5-7/8”

Drilling Method: Air Rotary

Sample Retrieval Method: Drill Cuttings

Time	Lab Sample Collected	Sample Interval (ft)	Sample Recovery (ft)	USCS	Composition (%)	Sample Material/Comments Include composition, color, grain size, moisture, hardness, plasticity, density	Hydrocarbon Odor	PID (ppm)
	☐	0-20’				Red/Brown fine Sand (SP)	**None** Slight Mod. Strong	
	☐	20-30’				Light red/tan fine Sand (SP) and caliche	**None** Slight Mod. Strong	
	☐	30-105’				Red/brown fine Sand (SP)	**None** Slight Mod. Strong	
	☐					__ TD 105’ __	None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	
	☐						None Slight Mod. Strong	

Surface Elevation: _____

Notes: Groundwater Not Encountered at 105-feet BGS-72 hr.

Logger Initials: DJA

National Water Information System: Web Interface

USGS Water Resources

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

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- Explore the *NEW* USGS National Water Dashboard interactive map to access real-time water data from over 13,500 stations nationwide.
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Groundwater levels for the Nation

Important: Next Generation Monitoring Location Page

Search Results -- 1 sites found

site_no list =

- 325216103575701

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

USGS 325216103575701 16S.30E.33.42443

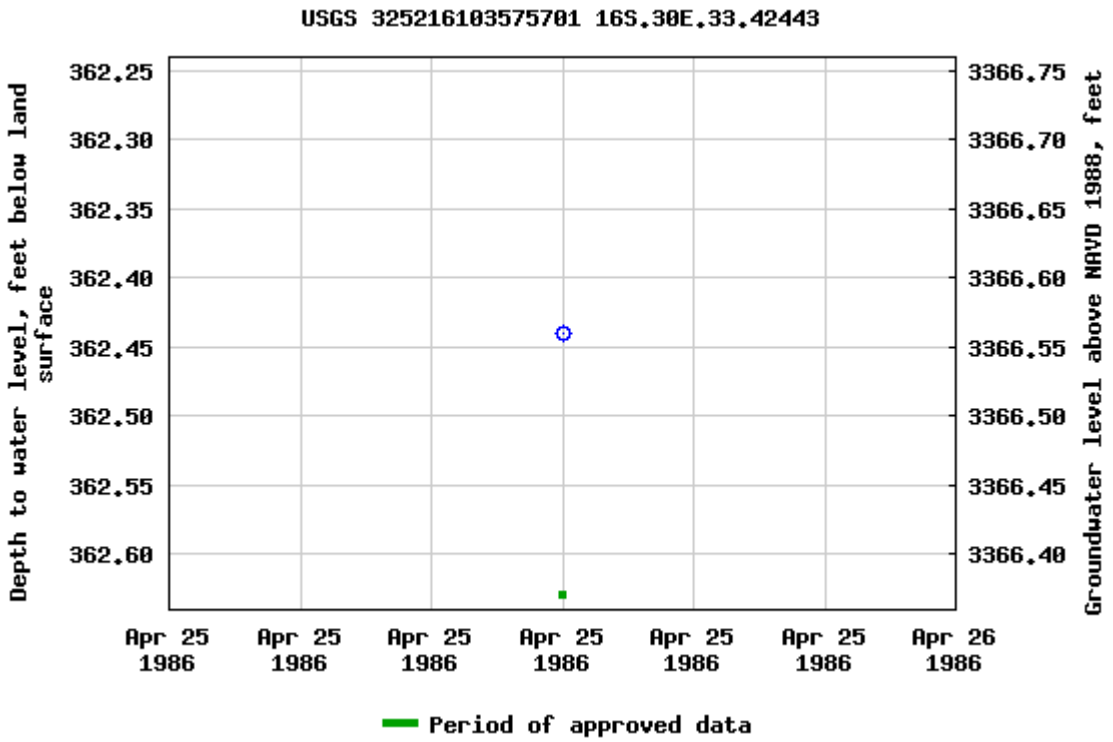
Available data for this site | Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°52'16", Longitude 103°57'57" NAD27
Land-surface elevation 3,729 feet above NAVD88
The depth of the well is 385 feet below land surface.
This well is completed in the Other aquifers (N9999OTHER) national aquifer.

This well is completed in the Santa Rosa Sandstone (231SNRS) local aquifer.

Output formats

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



Breaks in the plot represent a gap of at least one year between field measurements.
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U.S. Department of the Interior | U.S. Geological Survey
Title: Groundwater for USA: Water Levels
URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2022-03-17 02:26:27 EDT
0.54 0.49 nadww01

National Water Information System: Web Interface

USGS Water Resources

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

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- Full News

Groundwater levels for the Nation

Important: Next Generation Monitoring Location Page

Search Results -- 1 sites found

site_no list =

- 325210103580101

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

USGS 325210103580101 16S.30E.33.44233

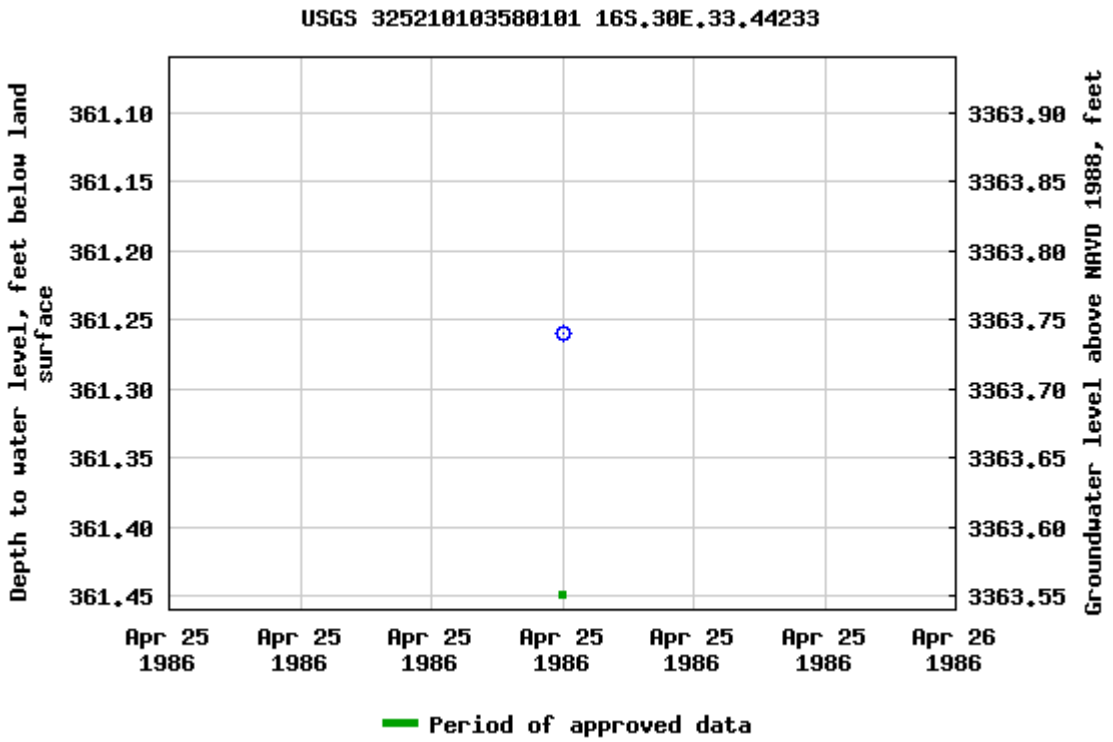
Available data for this site | Groundwater: Field measurements | GO

Eddy County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°52'10", Longitude 103°58'01" NAD27
Land-surface elevation 3,725 feet above NAVD88
The depth of the well is 433 feet below land surface.
This well is completed in the Other aquifers (N9999OTHER) national aquifer.

This well is completed in the Santa Rosa Sandstone (231SNRS) local aquifer.

Output formats

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



Breaks in the plot represent a gap of at least one year between field measurements.
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Title: Groundwater for USA: Water Levels
URL: https://nwis.waterdata.usgs.gov/nwis/gwlevels?

Page Contact Information: USGS Water Data Support Team
Page Last Modified: 2022-03-17 02:24:45 EDT
0.53 0.46 nadww02

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 94672

CONDITIONS

Operator:	OGRID:
MR NM Operating LLC 5950 Berkshire Lane Dallas, TX 75225	330506
	Action Number: 94672
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	The test well logs, section stratigraphic column illustration, and multiple other sources show depth to groundwater in Section 11, Township 17S, Range 30E is greater than 100 feet. The variance for depth to groundwater determination greater than 100 feet is approved. Please include a copy of this variance approval in the remedial and/or closure reports to ensure the document is included in the project file.	5/4/2022