EOG Resources, Inc.
Artesia Division Office
104 S. 4th Street
Artesia, N. M. 88210

REJECTED

-Characterization and Remediation Plan package was incomplete. Appendix 5 - 10 are missing. CE

EOG Resources, Inc.

Characterization & Remediation Plan

Empanada 6 Federal Com #1

30-025-36919

Section 6, T13S-R35E

Lea County, New Mexico

December 17, 2019

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Site Assessment/Characterization

I. Location

From Tatum, NM travel south on Highway 206 to Sartin Road (CR149), between MM17 & MM 18. Turn right (west) onto Sartin Road, continue for approximately 7.5 miles, then turn left (south) onto access road, through cattle guard for approximately 0.15 miles to the location. Appendix 1 contains the Site/Tops map.

II. Background

On November 11, 2019, EOG Resources, Inc. submitted to the NMOCD District I office a Form C-141, Release Notification for the release of 103 B/Produced Water with 25 B/Produced Water recovered. The affected area is approximately 4,075 square feet within the primary berm of the battery, the east edge of the production pad and an area of the production pad between the well and the battery. The release was caused by a drain valve on the back of the water tank that froze and failed, which caused the release. A vacuum truck was called and recovered the remaining produced water from the tank and what remained within the battery. A backhoe was dispatched and excavated contaminated soils from inside the bermed battery and the surface of the pad, contaminated soils were disposed at an NMOCD approved facility. This excavated area was approximately 60' X 34' (Battery area, green), 55' X 6' (Pad are, blue) and 40' X 50' (Pad area, yellow), Appendix 5. These soils will be taken to an approved NMOCD facility. The excavation depth was approximately 12" or 40 yards of contaminated soils (Appendix 6).

III. Surface and Ground Water

Area surface geology is Ogallala with alluvial and piedmont deposits. Based on information regarding this location (Section 6, T13S-R35E), the New Mexico Office of the State Engineer (NMOSE) Point of Diversion Summary indicates the depth to groundwater as follows: (NMOSE-L03635, Depth to Water: 40', Log File Date: 8/1957, Distance from Location: 1.9 miles & NMOSE-L06960, Depth to Water: 36', Log File Date: 7/1972, Distance from Location: 1.4 miles), the United States Geological Survey National Water Information System, indicates the depth to groundwater as follows: (USGS #331347103271901, Depth to Water: 33.1', Field groundwater-level measurements: 1991, Distance from Location: 0.4 miles & USGS #331406103253101, Depth to Water: 19.75', Field groundwater-level measurements: 1991, Distance from Location: 1.45 miles). Appendix 2 contains the Depth to groundwater diagram and the Wellhead protection area.

Watercourses in the area are dry except for infrequent flows in response to major precipitation events, with the nearest body of surface water being the House Lake (10 miles, southeast of the location). Appendix 3 contains the Distance to nearest significant watercourse diagram.

There are no unstable areas (karst geology) in or around the location (Appendix 4, information per the Bureau of Land Management, Carlsbad Field Office). The location is not within a 100-year floodplain (Appendix 4, Nation Flood Hazard Layer/FEMA).

IV. NMOCD Table I Criteria

Depth to ground water	< 50'
Wellhead Protection Area	> 1000'
Distance to significant watercourse	> 1000'

Depth	Constituent	Method	Limit
>100'	Chloride	EPA 300.0 or SM4500 Cl B	600 mg/kg
	TPH (GRO+DRO+MRO)	EPA SW-846 Method 8015M	100 mg/kg
	BTEX	EPA SW-846 Method 8021B or 8260B	50 mg/kg
	Benzene	EPA SW-846 Method 8021B or 8260B	10 mg/kg

V. Site Delineation Status

After excavation, initial sampling was conducted on November 11, 2019, with samples collected at the following depths. Samples were analyzed for the below constituents/methods as described in Section V. EOG will test the remediated areas for contamination with representative five-point composite samples. The samples will be analyzed for the constituents listed in Table I of 19.15.29.12 NMAC.

S-1. 12" (12" BGL)

These samples were sent to an NMOCD approved laboratory and analysis for the following constituents/methods.

Chlorides:	EPA 300.0
TPH (GRO+DRO+MRO):	Method 8015M
BTEX:	Method 8015B
Benzene:	Method 8015B

Appendix 5 contains the Field Data/Sample Data.

Appendix 6 contains Laboratory Data and COC.

Remediation Plan

VI. Scope of Work

EOG Resources, Inc. will have a contractor further excavate soils and dispose at an approved facility from the following areas: S-1.PBL, S-1.PV, S-1.PO, S-1.BY, S-1.BBL & S-1.BP (Appendix 9) which were above Table I, Closure Criteria for <50 feet groundwater levels. EOG will sample the six (6) areas listed in the Scope of Work to confirm that the area impacted by the release are below limits listed in Table I, Closure Criteria for <50 feet groundwater levels.

EOG will notify the appropriate division district office two business days prior to conducting final sampling. Separate representative wall and base 5-point composite samples will be collected to show horizontal and vertical remediation. Each composite sample must not be representative of more than 200 ft^2.

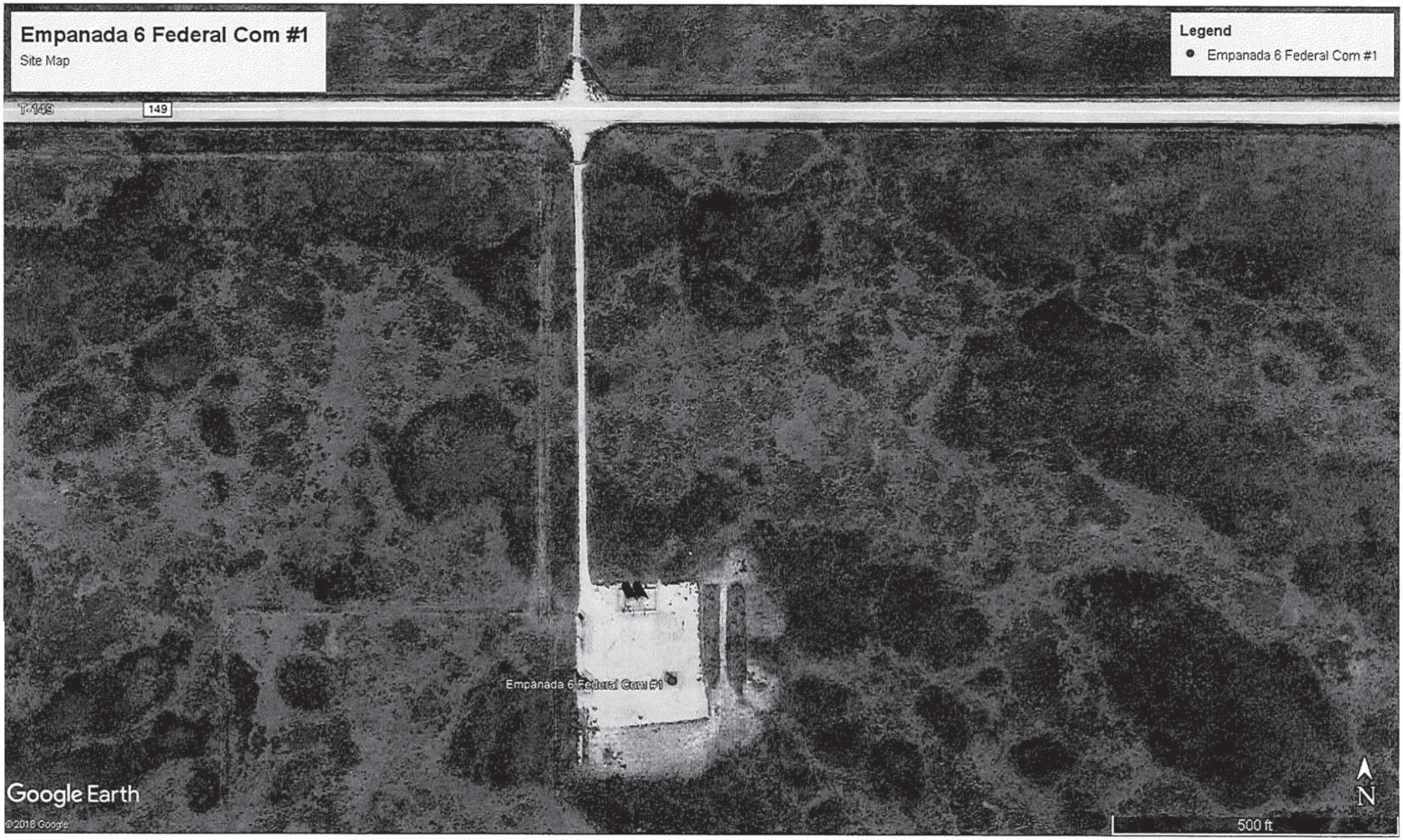
If all composite and grab sample concentrations are less than or equal to the parameters listed in Table I or any conditions of approval, then EOG will proceed to backfill any excavated areas with like, clean soils at a slightly greater amount that was excavated to allow for settling and compaction.

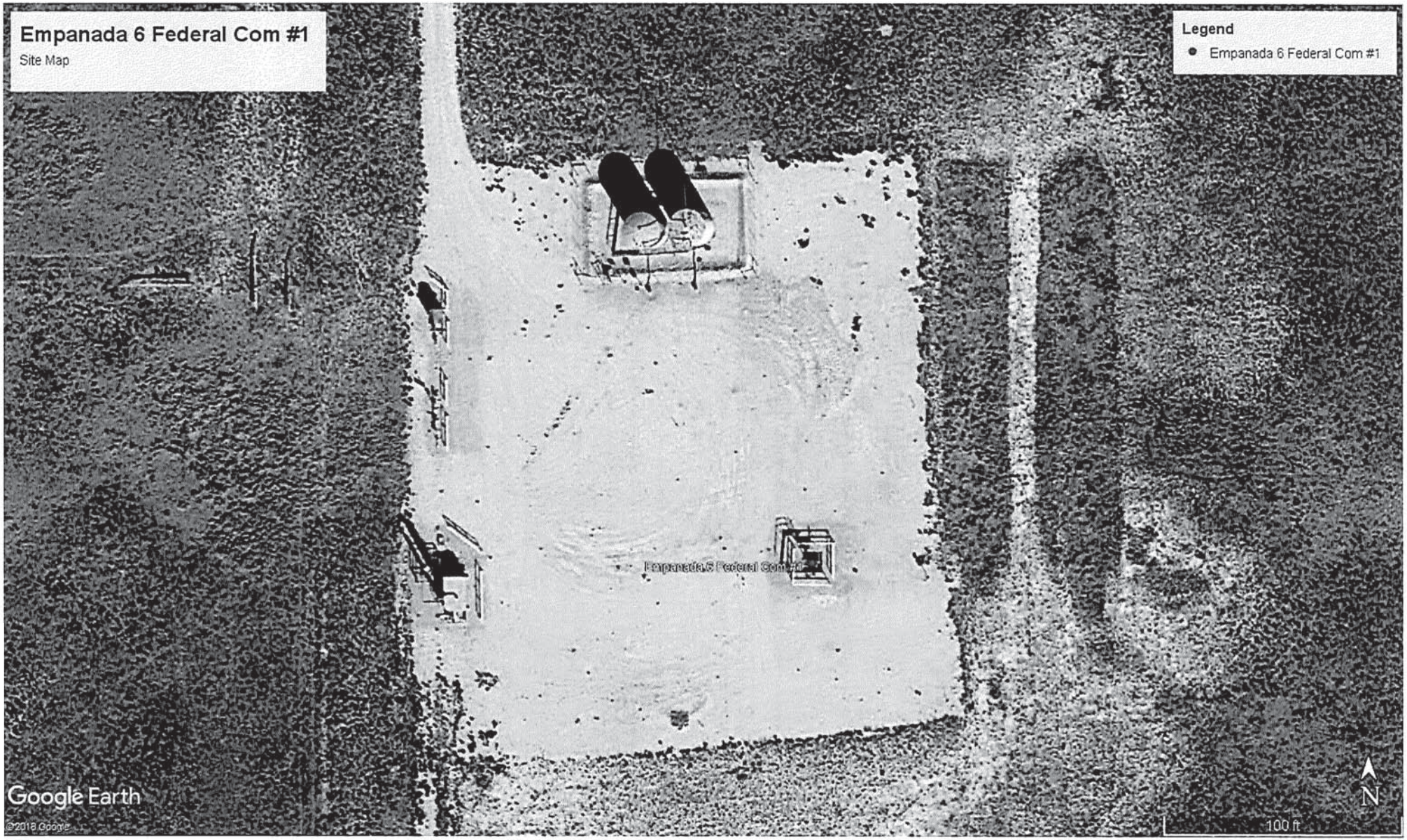
VII. Site Closure

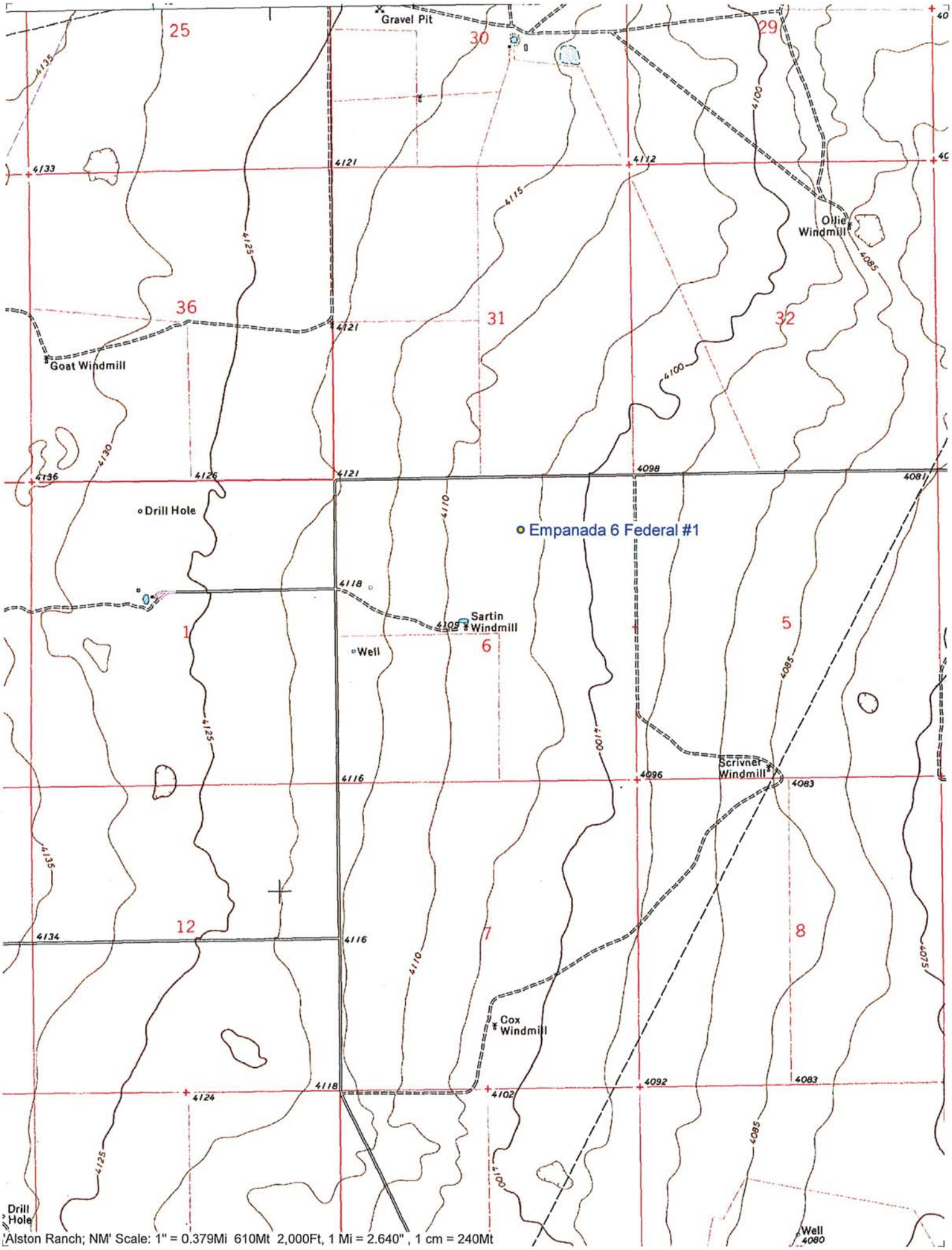
Upon completion of the remedial and backfilling activities, EOG Resources, Inc. will submit a Form C-141 to the NMOCD, and site closure requested.

Appendix 1

Site/Topo Map






Gravel Pit
25
30
29
36
31
32
Goat Windmill
Ollie Windmill
Drill Hole
Empanada 6 Federal #1
1
6
5
Well
Sartin Windmill
Scrivner Windmill
12
7
8
Cox Windmill
Drill Hole
Well
'Alston Ranch; NM' Scale: 1" = 0.379Mi 610Mt 2,000Ft, 1 Mi = 2.640" , 1 cm = 240Mt

Appendix 2

Depth to Water Determination/ Wellhead Protection Area

New Mexico Office of the State Engineer
Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	L 03635	3	2	1	01	13S	34E	642815	3677304*

Driller License:	116	**Driller Company:**	MATTHEWS DRILLING CO.		
Driller Name:	JAMES WILLIAM MATTHEWS				
Drill Start Date:	08/05/1957	**Drill Finish Date:**	08/08/1957	**Plug Date:**	
Log File Date:	08/12/1957	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:	7.00	**Depth Well:**	115 feet	**Depth Water:**	40 feet

Water Bearing Stratifications:	Top	Bottom	Description
	80	115	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	75	115

*UTM location was derived from PLSS - see Help

New Mexico Office of the State Engineer
Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) Q64	Q16	Q4	Sec	Tws	Rng	(NAD83 UTM in meters) X	Y
	L 06960	4	3		01	13S	34E	642932	3676198*

Driller License:	322	**Driller Company:**	BACKUS, GRADY		
Driller Name:	BACKUS, GRADY				
Drill Start Date:	07/08/1972	**Drill Finish Date:**	07/10/1972	**Plug Date:**	
Log File Date:	07/24/1972	**PCW Rcv Date:**		**Source:**	Shallow
Pump Type:		**Pipe Discharge Size:**		**Estimated Yield:**	
Casing Size:		**Depth Well:**	51 feet	**Depth Water:**	36 feet

Water Bearing Stratifications:	Top	Bottom	Description
	36	51	Sandstone/Gravel/Conglomerate

*UTM location was derived from PLSS - see Help

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USGS 331347103271901 12S.34E.36.422222

Available data for this site: SUMMARY OF ALL AVAILABLE DATA | GO

Well Site

DESCRIPTION:

Latitude 33°14'06", Longitude 103°27'19" NAD27
Lea County, New Mexico , Hydrologic Unit 12080004
Well depth: not determined.
Land surface altitude: 4,120.30 feet above NGVD29.
Well completed in "Ogallala Formation" (121OGLL) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1961-02-07	1990-12-19	7
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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URL: https://waterdata.usgs.gov/nwis/inventory?agency_code=USGS&site_no=331347103271901

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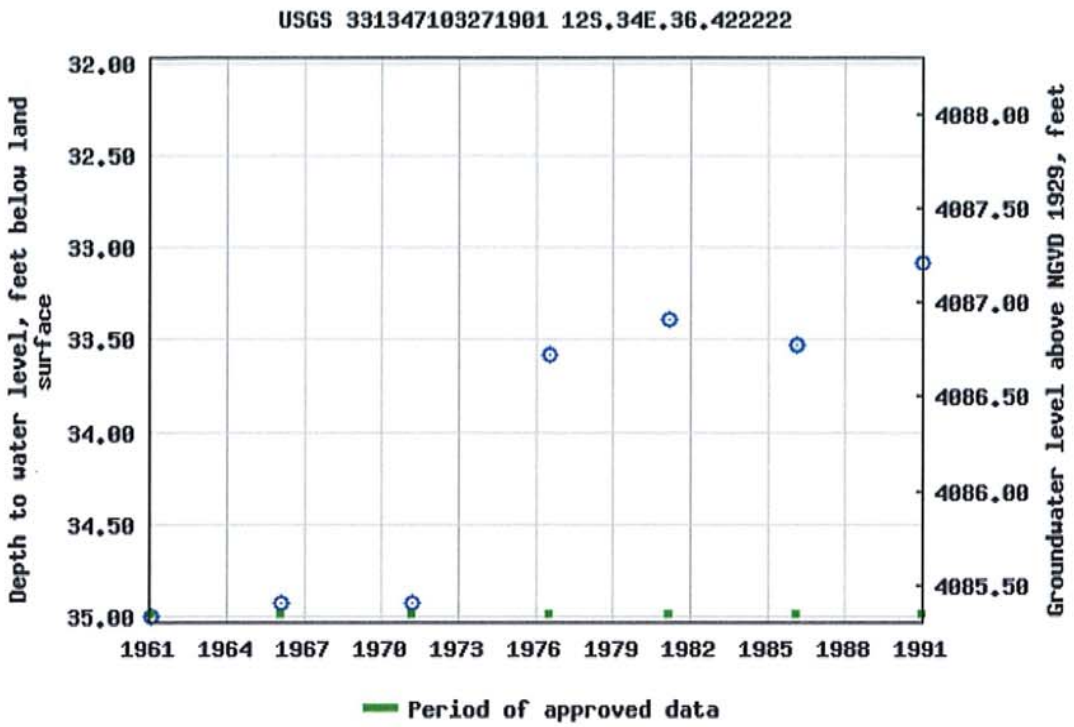
Available data for this site Groundwater: Field measurements | GO

Lea County, New Mexico
Hydrologic Unit Code 12080004
Latitude 33°14'06", Longitude 103°27'19" NAD27
Land-surface elevation 4,120.30 feet above NGVD29
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

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



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USGS 331406103253101 12S.35E.32.214421

Available data for this site: SUMMARY OF ALL AVAILABLE DATA | GO

Well Site

DESCRIPTION:

Latitude 33°14'22", Longitude 103°25'32" NAD27
Lea County, New Mexico , Hydrologic Unit 12080006
Well depth: 40 feet
Land surface altitude: 4,084.30 feet above NGVD29.
Well completed in "Ogallala Formation" (121OGLL) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1961-02-15	1990-12-19	6
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

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Minimum number of levels = 1

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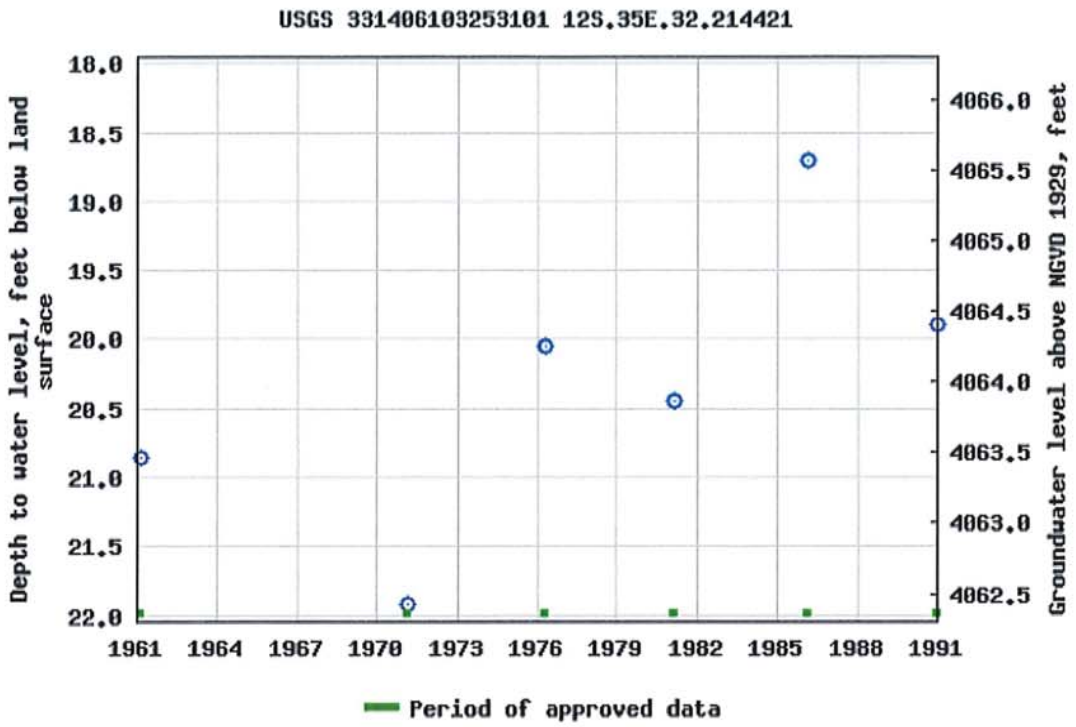
USGS 331406103253101 12S.35E.32.214421

Available data for this site Groundwater: Field measurements | GO

Lea County, New Mexico
Hydrologic Unit Code 12080006
Latitude 33°14'22", Longitude 103°25'32" NAD27
Land-surface elevation 4,084.30 feet above NGVD29
The depth of the well is 40 feet below land surface.
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

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



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USGS 331257103271701 13S.35E.06.311320

Available data for this site: SUMMARY OF ALL AVAILABLE DATA | GO

Well Site

DESCRIPTION:

Latitude 33°13'37.3", Longitude 103°27'19.3" NAD83
Lea County, New Mexico , Hydrologic Unit 12080004
Well depth: 115 feet
Land surface altitude: 4,121 feet above NAVD88.
Well completed in "Ogallala Formation" (121OGLL) local aquifer

AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
Field groundwater-level measurements	1961-02-14	2015-12-19	13
Revisions	Unavailable (site:0) (timeseries:0)		

OPERATION:

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Minimum number of levels = 1

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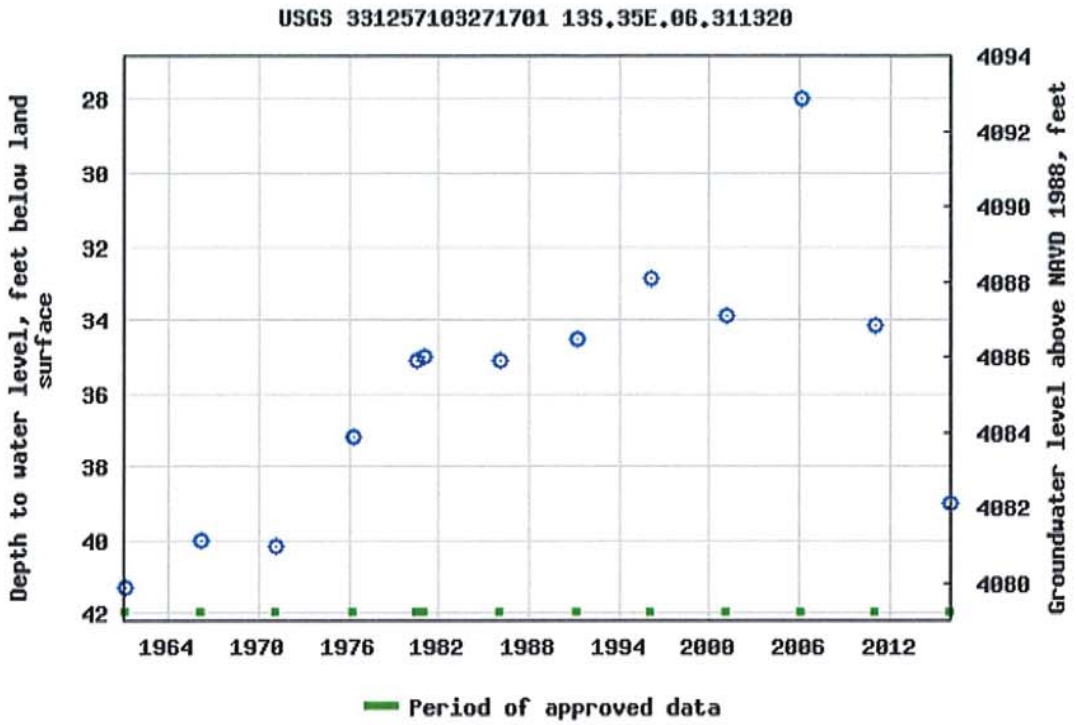
Lea County, New Mexico
Hydrologic Unit Code 12080004
Latitude 33°13'37.3", Longitude 103°27'19.3" NAD83
Land-surface elevation 4,121 feet above NAVD88
The depth of the well is 115 feet below land surface.
This well is completed in the Ogallala Formation (121OGLL) local aquifer.

Output formats

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



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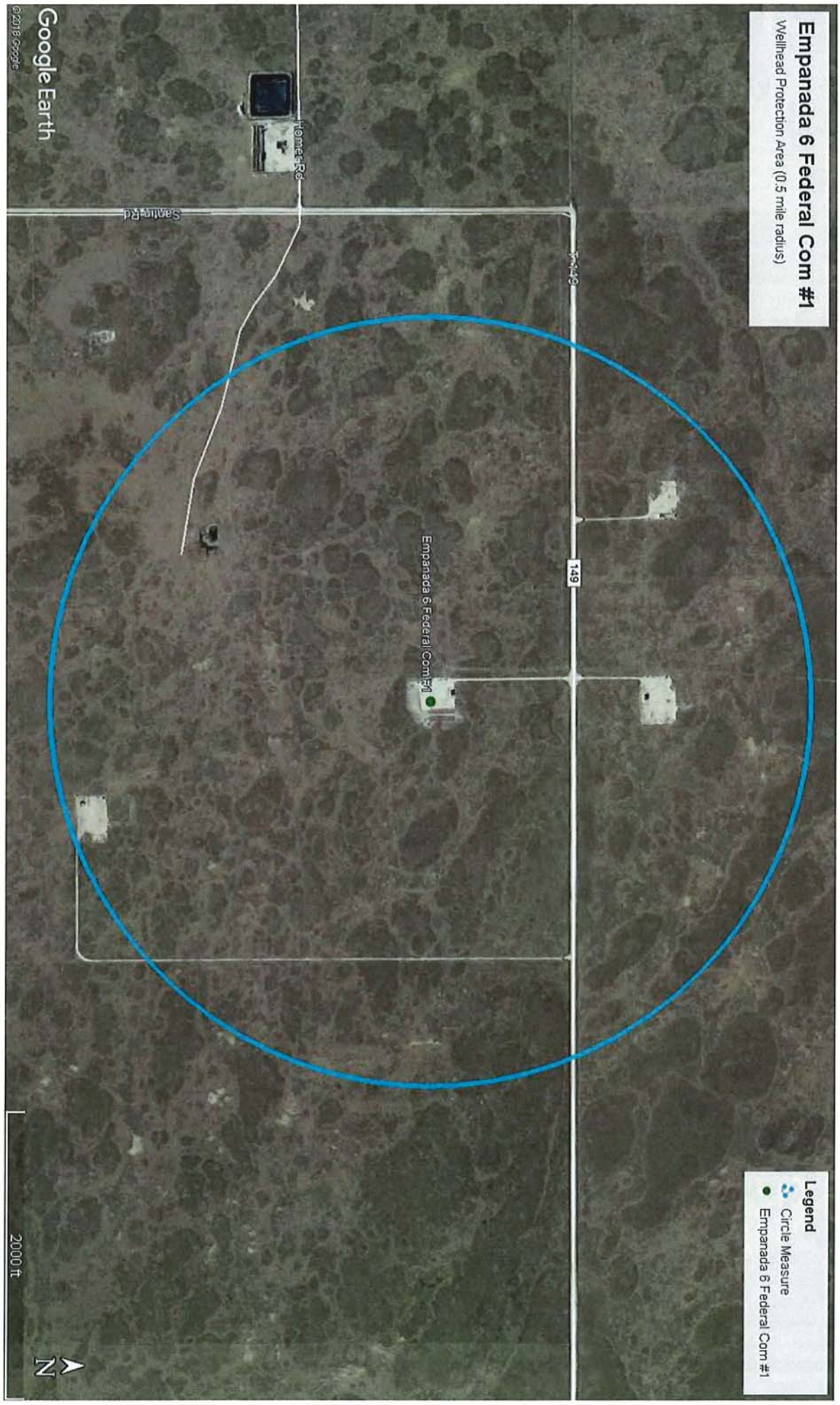
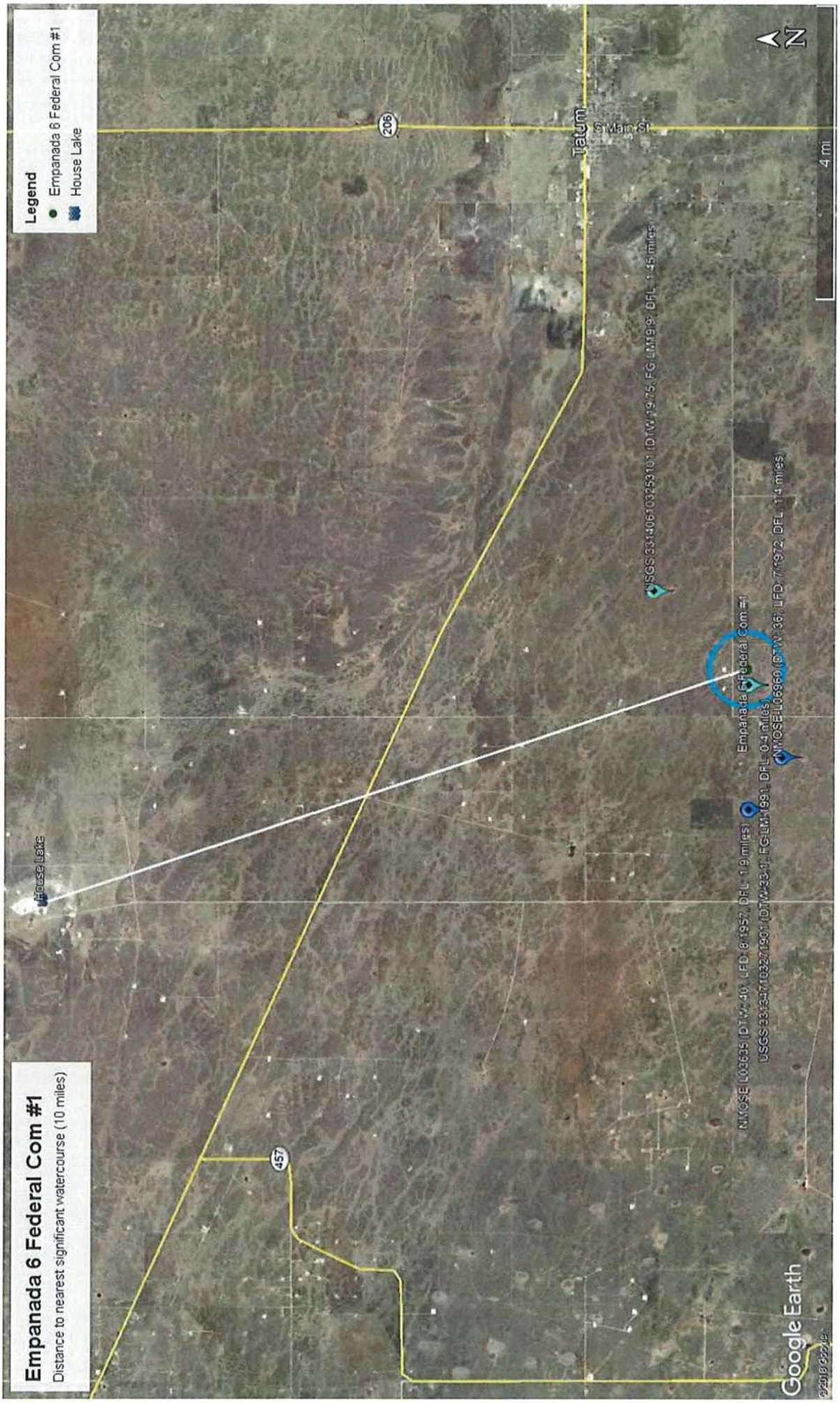

Empanada 6 Federal Com #1
Wellhead Protection Area (0.5 mile radius)
Google Earth
©2018 Google
Homer Rd
Sand Rd
149
Empanada 6 Federal Com #1
Legend
Circle Measure
Empanada 6 Federal Com #1
2000 ft
N

Appendix 3

Distance to Nearest Significant Watercourse


Empanada 6 Federal Com #1
Distance to nearest significant watercourse (10 miles)
Legend
Empanada 6 Federal Com #1
House Lake
N
4 mi
Tatum
S Main St
206
457
House Lake
USGS 331406103253101 (DTW: 175, FG-LM-1999, DFL: 1.45 miles)
Empanada 6 Federal Com #1
NMOSE L06960 (DTW: 36, LFD: 7/1972, DFL: 1.14 miles)
NMOSE L03605 (DTW: 40, LFD: 8/1957, DFL: 1.9 miles)
USGS 331347103271901 (DTW: 33.1, FG-LM-1991, DFL: 0.4 miles)
Google Earth

Appendix 4

Karst Geology/Floodplain

National Flood Hazard Layer FIRMette

FEMA

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, Area of 1% annual chance flood with average depth less than one foot or with drainag areas of less than one square mile *Zone*
- 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*

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

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