

## Attachment E – Hydrogeologic Evaluation Report



## **THORNHILL GROUP, INC.**

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Professional Hydrogeologists • Water Resources Specialists

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July 28, 2023

Mr. Mark Hoelscher  
Cula D'Brazos, LLC  
1108 Kinney Avenue  
Austin, Texas 78704

Re: Aquifer Evaluation Report –  
Drilling/Production Permit Applications for Seven (7) New Simsboro Wells to be  
Completed on Cula D'Brazos, LLC Properties, Robertson County, Texas

Dear Mr. Hoelscher:

Per your request and in compliance with the rules of the Brazos Valley Groundwater Conservation District (BVGCD), Thornhill Group, Inc. (TGI) provides herein an evaluation of the projected effect of Cula D'Brazos, LLC, herein referenced as Cula D'Brazos or Hoelscher Family, completing seven (7) new wells into the Simsboro Aquifer underlying two (2) separate properties in Robertson County, Texas to produce an annual allocation of groundwater of 12,000 acre-feet per year. Figure 1 illustrates the locations of the individual Hoelscher properties. The Hoelscher properties are located west and southwest of the City of Hearne between Farm Road 1644 (FM 1644) and the Brazos River (east to west) and between FM 485 and United States Highway 190/79 (US 190/79) (north to south). The nearest boundary to Hearne for the northern property (Property 1) is about 4.25 miles west from the intersection of US 190/79 and US 190/State Highway 6 (SH 6). The nearest boundary for the southern property (Property 2) to the City of Hearne is about 3.65 miles west-southwest from the highway intersections in the City. The northern boundary of Property 1 is along FM 485 and the eastern boundary is slightly less than one-half mile west of FM 1644. The western boundary of Hoelscher's Property 1 is the Brazos River. Property 2 is in an area known as Valley Junction and the property is bounded on the west by the Brazos River and on the east by FM 1644, except between 110 and 115 acres at the northeast boundary lie on the east side of FM 1644. The southern property boundary for Property 2 is along US 190/79. The total acreage for the properties is approximately 1,352.5 acres based on geographic information system (GIS) mapping. Requested production is equivalent to that allowed by the BVGCD Rules for well spacing and allocation on a property-by-property basis.

TGI conducted its evaluations and prepared this report in compliance with the rules and guidelines provided by the BVGCD, specifically in Rule 8.4(b)(7)(B) for wells (and multiple wells) capable of producing 800 or more acre-feet per year. TGI's evaluations focused on

assessing local aquifer conditions and parameters, and the extent to which production from the subject wells may influence other groundwater users in the BVGCD. TGI's evaluations are based on previous investigations conducted in the District, including permit applications and field-testing associated with several local landowners. Additionally, TGI relied upon reported data, published reports, the applicable groundwater availability model (GAM), and TGI's extensive experience with and knowledge of the Simsboro Aquifer in Central Texas, within the BVGCD, and particularly in Robertson County. Specifically, TGI's work was conducted to accomplish the following goals:

- ❖ Assessing the local hydrogeologic setting, focusing on the physical characteristics and hydraulic parameters of the local Simsboro Aquifer;
- ❖ Estimating and calculating the potential short-term and long-term drawdown at each of the wells, including interference drawdown between wells;
- ❖ Evaluating potential interference drawdown from other pumpage in the area and predicting long-term water levels in the proposed well-field area;
- ❖ Establishing a target maximum proposed pumping rate for each well and for the aggregated well field;
- ❖ Modeling to assess the feasibility of the targeted pumping rate and the potential impacts (e.g., artesian pressure reduction) to the aquifer and other nearby well owners (e.g., drawdown); and,
- ❖ Providing this Hydrogeological Evaluation Report in compliance with District rules.

For convenience, applicable illustrations and supporting documentation are included in the following attachments:

- Attachment 1 – Figures
- Attachment 2 – Tables
- Attachment 3 – Reference Materials
- Attachment 4 – Selected References

## Proposed Pumping Locations and Permit Pumping Rates

Figure 1 illustrates the locations for the proposed Simsboro wells on each of the two (2) Hoelscher properties. Proposed well identifications, coordinates, and estimated land-surface elevations in feet above mean sea level (MSL) as estimated from Google Earth are as provided in the following tabulation:

<b>Well Identification</b>	<b>Latitude*</b>	<b>Longitude*</b>	<b>Est. Land Surface Elevation</b>
No. 1	30°51’43.89”N	96°40’17.45”W	273 feet AMSL
No. 2	30°51’34.60”N	96°40’42.46”W	271 feet AMSL
No. 3	30°50’34.78”N	96°38’37.34”W	272 feet AMSL
No. 4	30°50’23.69”N	96°38’59.56”W	270 feet AMSL
No. 5	30°50’13.70”N	96°39’19.99”W	268 feet AMSL
No. 6	30°50’01.62”N	96°39’42.96”W	267 feet AMSL
No. 7	30°50’02.16”N	96°38’53.17”W	272 feet AMSL

\*Coordinate system is NAD83 State Plane Texas Central (feet)

The proposed production capacities in gallons per minute (gpm) and requested permit allocations in acre-feet per year are as follows:

<b>Property Identification And Acreage</b>	<b>Well Identification</b>	<b>Maximum Pumping Rate</b>	<b>Annual Allocation</b>
1 (946 acres)	No. 1	2,200 gpm	2,839 acre-feet
	No. 2	2,300 gpm	2,968 acre-feet
2 (406.6 acres*)	No. 3	1,000 gpm	1,290 acre-feet
	No. 4	950 gpm	1,226 acre-feet
	No. 5	900 gpm	1,161 acre-feet
	No. 6	900 gpm	1,161 acre-feet
	No. 7	1,050 gpm	1,355 acre-feet
<b>Total Annual Allocation</b>			<b>12,000 acre-feet</b>

The radii attributed to the pumping rates for each of the wells lie within each of the Hoelscher property boundaries. The Cula D’Brazos property has one Simsboro domestic Simsboro well located in the northeastern corner of Property 1. The Hoelscher Simsboro well has been assigned as TWDB Well No. 59-11-204 and BVGCD registration number BVR-1506. The nearest known existing wells completed into the Simsboro Aquifer are historic use wells owned by Upwell/Brazos Valley Farms and are along the northern property line of Property 1. Otherwise, the nearest wells to proposed Hoelscher wells for Property 1 are more than one mile from the proposed Simsboro wells. Well BVR-1506 is 1,250 feet deep and is not within the pumping rate spacing radii of either of the proposed Property 1 wells. Otherwise, there are three (3) wells within one mile of the proposed Property 1 wells; each of the wells has a historic use permit and they are owned by UW/Brazos Valley Farms. There are two (2) registered or permitted Simsboro wells located between 3,700 and 4,450 feet east of proposed Well No. 3 (Property 2). The proposed overlap of well radii for Well No. 1 and Well No. 2 (Property 1) complies with the requirements of the District and is similar to overlaps in previous permit applications. As will be discussed later in this report, the overlap is reasonable based on local hydrogeological conditions, will result in minimal effects on interference drawdown between the proposed Cula D’Brazos wells, and will not significantly

change impacts on surrounding wells. The proposed well locations comply with the BVGCD rules regarding spacing between wells and allocation of acreage per well.

## Hydrogeologic Conditions and Aquifer Characteristics

### Geologic Setting

Figure 2 illustrates the locations of each of the Hoelscher properties and wells with respect to the Major Aquifers as delineated by the TWDB. Figure 3 shows the extents of the Minor Aquifers delineated by TWDB in relation to the Cula D’Brazos properties and wells. Figure 4 provides a Surface Geology Map. The following provides aquifer and geologic summaries for each of the Hoelscher properties:

- Northern Property (Property 1) – the extent of Property 1 overlies downdip portions of the Carrizo-Wilcox Aquifer, which is the only Major Aquifer beneath the property. The northern property also lies atop the Brazos River Alluvium Aquifer which is the only Minor Aquifer underlying Property 1. The Reklaw likely subcrops the alluvial deposits across the entirety of Property 1, although it is possible that the Carrizo subcrops the Brazos River Alluvium under far northwestern parts of the property. Essentially, the entire local thicknesses of the Carrizo, Calvert Bluff, Simsboro, and Hooper are present beneath Property 1; the Carrizo may be relatively shallow and thin.

The TWDB/BEG map a known fault between 6 and 7 miles west-southwest of the Hoelscher properties. Land surface elevation generally ranges from 270 to 285 feet above mean sea level (MSL) across the northern tract. Geologic dip is generally to the south-southeast and it gets steeper with depth in the stratigraphic section and in a downdip direction. The local dip on the base of the Wilcox is estimated to be 95 feet per mile beneath Property 1 (see Attachment 3). Elevations, depths, and thicknesses of key formations are provided in the table below:

Layer	Elevation	Depth	Thickness
Land Surface	270 to 285 feet AMSL	Not Applicable	Not Applicable
Base of Alluvium	210 to 220 feet AMSL	50 to 75 feet BGL	50 to 75 feet
Base of Reklaw	160 to 175 feet AMSL	95 to 125 feet BGL	20 to 75 feet
Base of Carrizo	100 to 140 feet AMSL	130 to 185 feet BGL	5 to 90 feet
Base of Calvert Bluff	550 to 715 feet BMSL	820 to 1,000 feet BGL	635 to 870 feet
Base of Simsboro	995 to 1,190 feet BMSL	1,265 to 1,475 feet BGL	265 to 655 feet
Base of Hooper	1,510 to 1,750 feet BMSL	1,780 to 2,035 feet BGL	305 to 560 feet

- Southern Property (Property 2) – the Cula D’Brazos Property 2 lies atop downdip portions of the Carrizo-Wilcox Aquifer and is completely within the boundaries of the Brazos River

Alluvium Aquifer. TWDB/BEG surface geology maps and GAM files indicate that the Brazos River Alluvium deposits on the Hoelscher southern property are directly (unconformably) underlain by the Reklaw Formation. If the Queen City is present, it is very thin. Herein, TGI considers the Queen City absent beneath Property 2. The complete local thicknesses of the Carrizo, Calvert Bluff, Simsboro, and Hooper occur beneath the Cula D’Brazos southern property.

- Land surface elevation generally ranges from 260 to 275 feet AMSL across Property 2. As stated earlier, known faults are mapped between 6 and 7 miles west-southwest of the subject property. The local dip of the base of the Wilcox ranges from 100 to 110 feet per mile. The table below provides estimates for elevations, depths, and thicknesses of formations beneath the two properties located atop the alluvial deposits:

Layer	Elevation	Depth	Thickness
Land Surface	260 to 275 feet AMSL	Not Applicable	Not Applicable
Base of Alluvium	205 to 225 feet AMSL	35 to 70 feet BGL	35 to 70 feet
Base of Reklaw	95 to 170 feet AMSL	90 to 180 feet BGL	20 to 145 feet
Base of Carrizo	+40 to -35 feet MSL	220 to 310 feet BGL	40 to 220 feet
Base of Calvert Bluff	795 to 880 feet BMSL	1,055 to 1,155 feet BGL	745 to 935 feet
Base of Simsboro	1,290 to 1,390 feet BMSL	1,550 to 1,665 feet BGL	395 to 610 feet
Base of Hooper	1,870 to 2,010 feet BMSL	2,130 to 2,285 feet BGL	465 to 735 feet

### Aquifer Conditions and Hydraulic Parameters

This report focuses on proposed permitted production from the Simsboro Aquifer. The top of the Simsboro Formation and well depths are estimated to be in the following depth ranges:

Property Identification	Depth – Top of Simsboro	Depth – Simsboro Wells
Property 1	900 to 920 feet BGL	1,360 to 1,400 feet BGL
Property 2	1,050 to 1,200 feet BGL	1,450 to 1,650 feet BGL

Figure 5 illustrates locations for registered and permitted Simsboro wells within five (5) miles of the proposed Hoelscher Simsboro wells. Attachment 4 provides available well records for selected nearby Simsboro wells. Figure 6 shows locations for registered and permitted Simsboro wells within one (1) mile of the proposed Cula D’Brazos well locations. Figure 6a, Figure 6b, Figure 6c, and Figure 6d provide the locations for Simsboro wells within one (1) mile of the proposed well locations on maps with a scale of 1”=1,000 feet per BVGCD Rules.

Net sand thicknesses for the Simsboro, as mapped by the BEG (see Attachment 3), range as follows:

- Property 1 – 210 to 400 feet
- Property 2 – 350 to 400 feet

TGI extracted hydraulic data for the subject property and nearby areas from the currently-used version of the groundwater availability model (GAM) for the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifers (Young, et al., 2018). Note that the hydraulic units are: gallons per day per square foot (gpd/ft<sup>2</sup>) for hydraulic conductivity; gallons per day per foot (gpd/ft) for transmissivity; and, dimensionless for storage coefficient. The following table provides a summary of estimated parameters extracted from the GAM datasets to those derived by TGI for the local Carrizo and Simsboro aquifers across the Hoelscher properties:

<u>Property I.D.</u>	<u>Parameter</u>	<u>GAM Estimate Range</u>	<u>TGI Estimate Range</u>
Property 1	Thickness	460 feet	250 to 400 feet
	Hydraulic Conductivity	100 to 105 gpd/ft <sup>2</sup>	150 to 175 gpd/ft <sup>2</sup>
	Transmissivity	45,000 to 48,000 gpd/ft	37,500 to 70,000 gpd/ft
	Storage Coefficient*	0.000152	0.0001 (0.001)
Property 2	Thickness	490 to 510 feet	350 to 40feet
	Hydraulic Conductivity	150 to 180 gpd/ft <sup>2</sup>	150 to 200 gpd/ft <sup>2</sup>
	Transmissivity	75,000 to 91,230 gpd/ft	52,500 to 80,000 gpd/ft
	Storage Coefficient*	0.000148	0.0001 (0.0005)

The asterisk (\*) indicates that TGI used a slightly higher storage coefficient for the 10-year analytical model to represent leakage and recharge conditions.

Figure 7 provides two hydrographs illustrating water-level measurements collected for Texas Water Development Board (TWDB) and/or BVGCD Simsboro monitoring wells: the first chart illustrates data for TWDB Well No. 59-04-701 (BVHU-0013) which is the City of Hearne Well #4, also known as the POW well, which is 3.7 miles east-northeast from the center of the Hoelscher Property 1 and 3.9 miles northeast from the center of Cula D’Brazos Property 2; and, the second wells is TWDB Well No. 59-11-703 which is a City of Gause well located in Milam County and is 5.7 miles southwest of the center of the northern Hoelscher property and is 5.1 miles west-southwest from the center of the Hoelscher Property 2. Water levels declined from 1979 to 1999 by approximately 70 feet in the Hearne POW Well. Additionally, Advanced Groundwater Solutions (AGS) reported that water-levels (i.e., Simsboro artesian pressures) declined between 1999 and 2023 by 85 feet in the Gause Well and by 81 feet in Hearne’s POW well (see AGS, May 11, 2023). AGS mapped water-level declines in the Simsboro of between 65 and 75 feet in vicinity of the both of the Hoelscher properties from 1999 to 2023 (AGS, May 11, 2023). Based on the updated data provided by AGS, current depths to water on the subject property will likely range from 150 to 250 feet BGL. Therefore, water levels will probably rise between 650 and 770 feet above the top of the Simsboro aquifer in new wells on Property 1 and artesian head will be likely be between 850 and 1,050 feet in Simsboro wells on the Hoelscher Property 2. The water levels verify that the local Simsboro is under artesian or confined conditions with hundreds of feet of artesian head.

## Projected Effects of Proposed Pumping

The immediate impacts from production will be artesian head decline (i.e., drawdown) at the pumping wells. As the wells pump, artesian pressure or potentiometric head around the wells will decline forming a cone of depression. As production continues the cone of depression will extend radially from the well field until an aquifer boundary is reached or the production rate reaches equilibrium with the captured groundwater flows. Due to the distance of the proposed wells from the outcrop of the aquifer, reduction in artesian pressure is the only anticipated measurable effect from the proposed pumping. The aquifer will remain completely full and there will be only an infinitesimal reduction in storage. Pumping from the Simsboro aquifers will cause some vertical leakage from overlying and underlying zones. While leakage can serve to dampen drawdown due to boundary effects and inflows, the leakage will likely not result in any identifiable water-level changes or water-quality variations in any of the overlying or underlying zones.

### Drawdown Simulations Using the GAM

TGI utilized the recently released revision and update of the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifers GAM to calculate drawdown due to the proposed pumping for continuous pumping periods of one (1) year and 10 years from the Simsboro Aquifer. Cula D’Brazos, LLC has requested a permit allocation for the Simsboro Aquifer of 12,000 acre-feet per year. Figure 8 and Figure 9 provide maps showing modeled drawdown contours after one (1) year and 10 years of pumping at the maximum authorized annual rate, respectively. Table 1 and Table 2 provide modeled drawdown at specific registered and permitted Simsboro well sites after one (1) year and 10 years of continuous pumping, respectively. The GAM predicts Simsboro artesian pressure declines as follows:

<b>Distance from Property</b>	<b>Property 1</b>	<b>Property 2</b>
<i>GAM Drawdown – 1 Year of Pumping*</i>		
Adjacent	65 feet	55 feet
One (1) Mile	40 to 55 feet	38 to 52 feet
Five (5) Miles	7 to 20 feet	15 to 18 feet
<i>GAM Drawdown – 10 Years of Pumping*</i>		
Adjacent	71 feet	65 feet
One (1) Mile	47 to 65 feet	45 to 62 feet
Five (5) Miles	9 to 30 feet	25 to 30 feet

The asterisk (\*) indicates that direct interference between properties was not directly accounted for the five (5) mile radii.

Based on the geologic structure, estimates of current artesian head, and drawdown calculated from the GAM simulations, the Simsboro aquifer will remain full and under



artesian conditions in the well-field areas and within the five-mile radii. Note that due to the depth of the local Simsboro and the prolific transmissivity of the aquifer, the overlap of well radii on the Hoelscher Property 1 will not cause adverse interference drawdown effects on the Cula D’Brazos wells or on other local wells.

### Drawdown Simulations Using Analytical Modeling

Due to the scale and configuration of the GAM grid, the GAM probably does not provide accurate drawdown calculations for the specific well sites and areas in the immediate vicinity of the proposed well field. Therefore, for comparison purposes and per the BVGCD rules TGI used an analytical modeling program based on the Theis non-equilibrium equation to calculate theoretical potentiometric head declines at and surrounding the proposed production wells. TGI has used the Theis model for several previous submittals to the BVGCD as well as for evaluations and submittals to numerous districts across the State of Texas. The Theis model incorporates many assumptions, most of which are sufficiently satisfied in the local Simsboro aquifer. However, the Theis model assumes an aquifer that is uniform over an infinite area. To account for recharge boundaries and possible inter-aquifer leakage into the producing aquifers, TGI modeled long-term pumping (i.e., from one to 10 years) by incorporating a leaky artesian storage coefficient. However, it is likely that, while the Theis model likely provides more reliable results within and near the well field, it probably overstates drawdown at distance from the pumping center. Also, the Theis model is more accurate for shorter pumping durations; therefore, the 10-year calculation likely overestimates drawdown from the well fields.

Figure 10 and Figure 11 provide drawdown contours from Theis calculations due to pumping the Simsboro wells proposed after one (1) and 10 years, respectively. Table 1 and Table 2 provide drawdown values at specific well locations. The analytical calculations predict Simsboro artesian pressure declines as follows:

<b>Distance from Property</b>	<b>Property 1</b>	<b>Property 2</b>
<i>Analytical Drawdown – 1 Year of Pumping*</i>		
Adjacent	98 feet	94 feet
One (1) Mile	81 to 92 feet	78 to 92 feet
Five (5) Miles	53 to 60 feet	52 to 60 feet
<i>Analytical Drawdown – 10 Years of Pumping*</i>		
Adjacent	105 feet	102 feet
One (1) Mile	90 to 102 feet	86 to 102 feet
Five (5) Miles	62 to 70 feet	60 to 70 feet

The asterisk (\*) indicates that direct interference between properties was not accounted for the five (5) mile radii.

## Conclusions

Based on our review of the BVGCD rules and the work conducted as described herein, TGI concludes the following:

- ❖ The proposed wells and pumping amounts for the Cula D'Brazos properties can be completed and produced in accordance with the well spacing and production-based acreage (i.e., allocation) rules set forth by the BVGCD;
- ❖ The predicted drawdown derived from the Theis analytical model are more accurate than the GAM predictions for the proposed well sites and areas near the well field;
- ❖ GAM-predicted drawdown probably provides a more reasonable estimate of future impacts at greater distances from the proposed well field and for longer time periods. The updated GAM predicts significantly less drawdown regionally than the previous version of the GAM; and,
- ❖ Production from the proposed pumping will cause only infinitesimal reduction in aquifer storage as the local Simsboro Aquifer will stay completely full and groundwater in the formation will remain under considerable artesian pressure within the well-field areas and the five-mile study radius.

We very much appreciate the opportunity to again assist you in our specialty. If you have any questions, please call.



Sincerely,  
**THORNHILL GROUP, INC.**



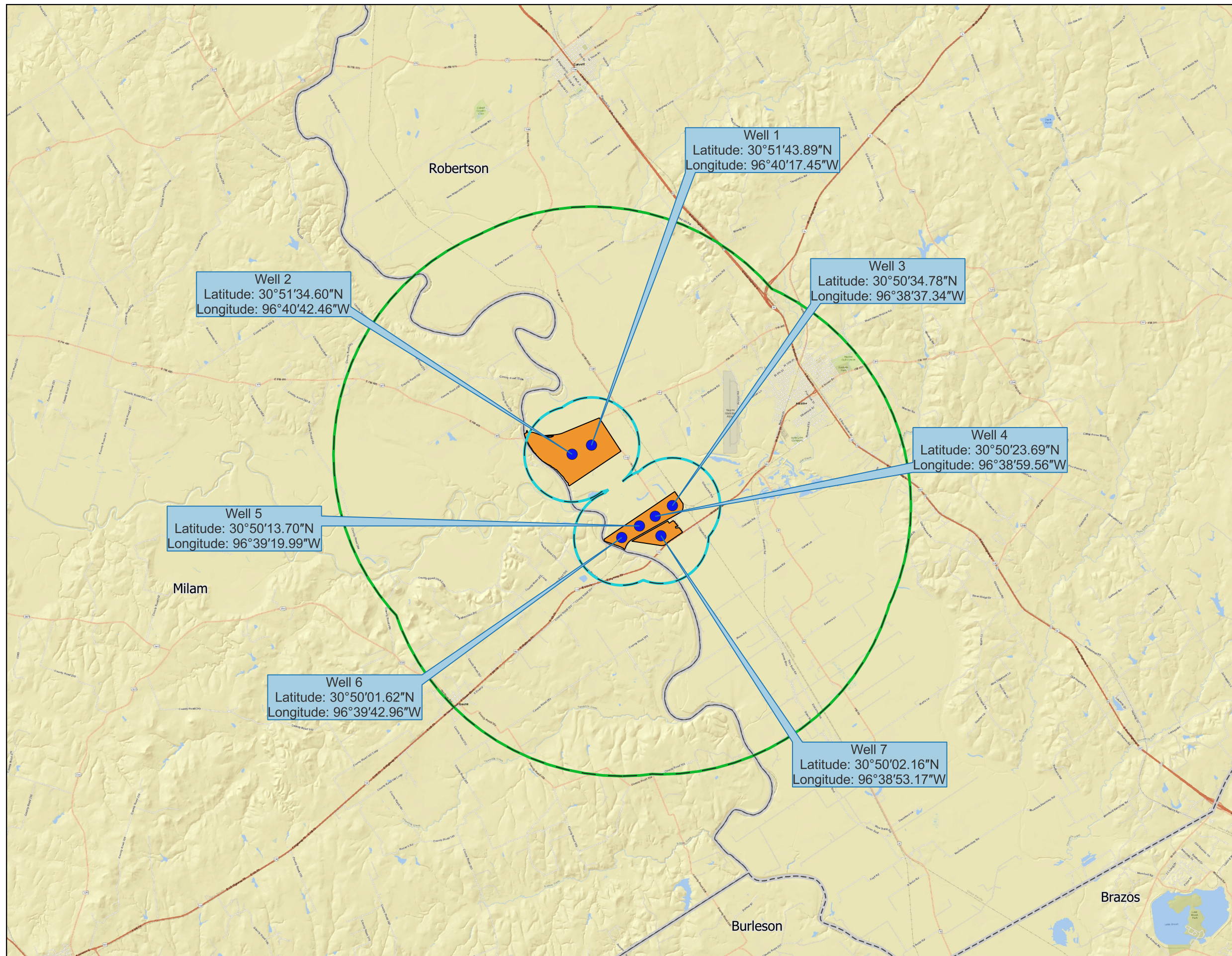
Michael R. Thornhill, P.G.  
President

The seal appearing on this document was authorized  
by Michael R. Thornhill, P.G. on July 28, 2023

Attachments

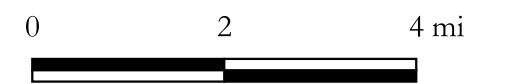
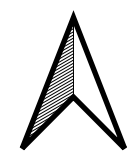


ATTACHMENT 1 –  
FIGURES



**Explanation**

- Proposed Wells
- 1 Mile Radius from Well Locations
- 5 Mile Radius from Well Locations
- Cula d'Brazos Property
- Counties



**Cula d'Brazos, LLC.**

Figure 1:  
Location Map

Well 1  
Latitude: 30°51'43.89"N  
Longitude: 96°40'17.45"W

Well 2  
Latitude: 30°51'34.60"N  
Longitude: 96°40'42.46"W

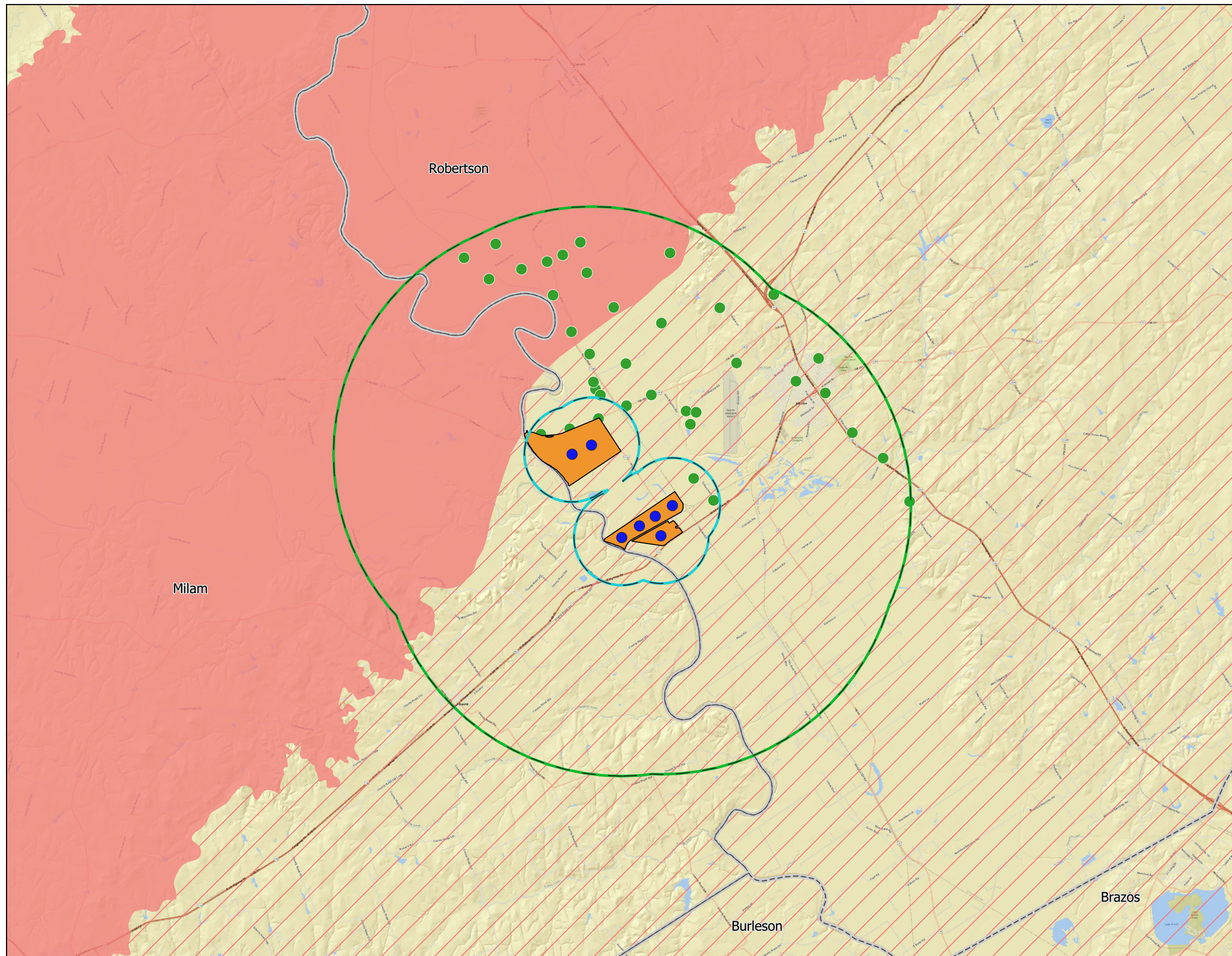
Well 3  
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Longitude: 96°38'37.34"W

Well 4  
Latitude: 30°50'23.69"N  
Longitude: 96°38'59.56"W

Well 5  
Latitude: 30°50'13.70"N  
Longitude: 96°39'19.99"W

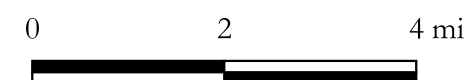
Well 6  
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Well 7  
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Longitude: 96°38'53.17"W



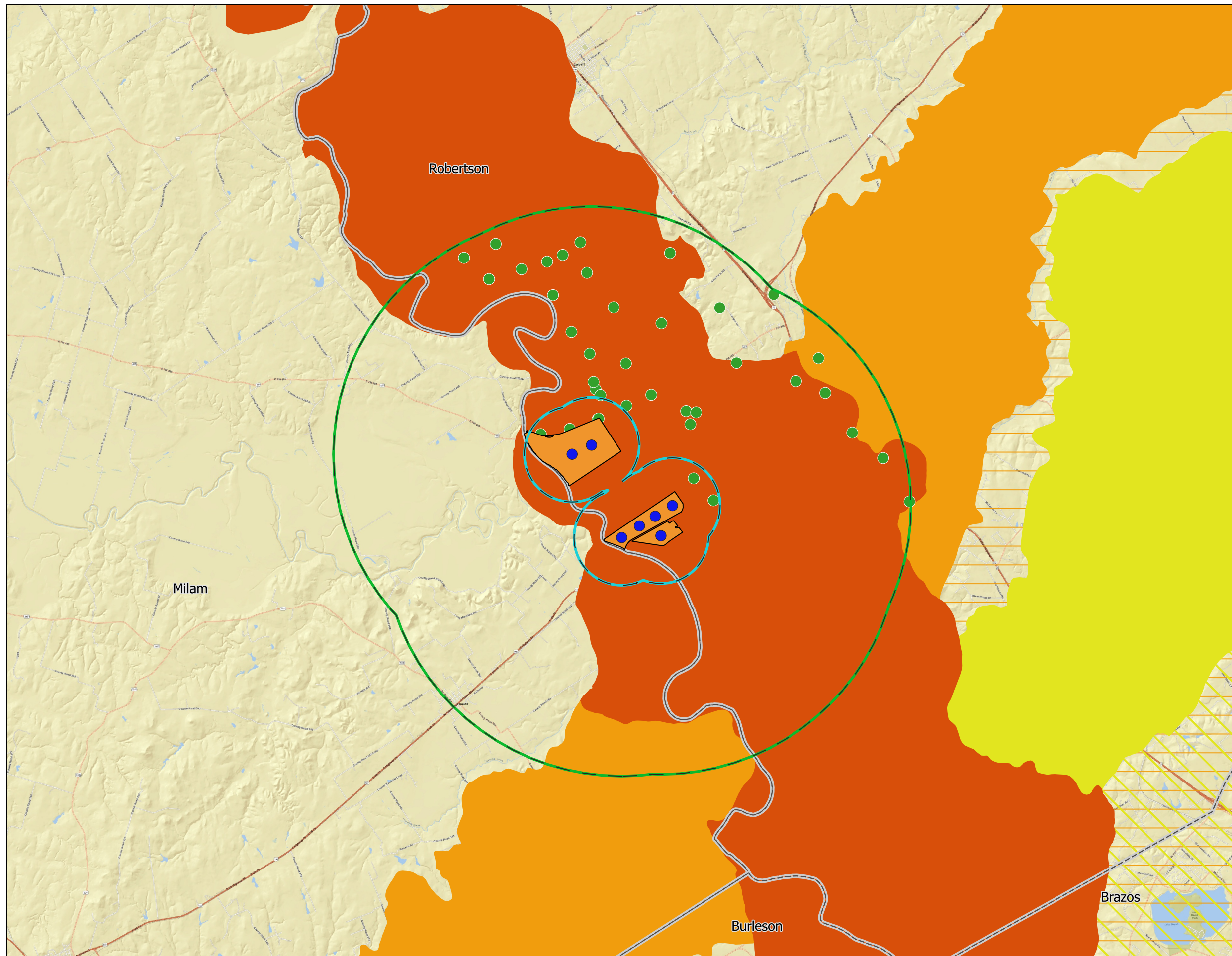
**Explanation**

- Proposed Wells
  - 1 Mile Radius from Well Locations
  - 5 Mile Radius from Well Locations
  - Cula d'Brazos Property
  - ▭ Counties
- Major Aquifers**
- Carrizo - Wilcox (outcrop)
  - ▨ Carrizo - Wilcox (subcrop)
- BVGCD Reported Wells w/in 5 Miles**
- Simsboro



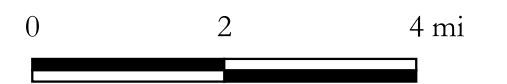
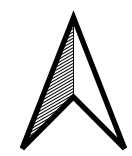
**Cula d'Brazos, LLC.**

Figure 2:  
Major Aquifers



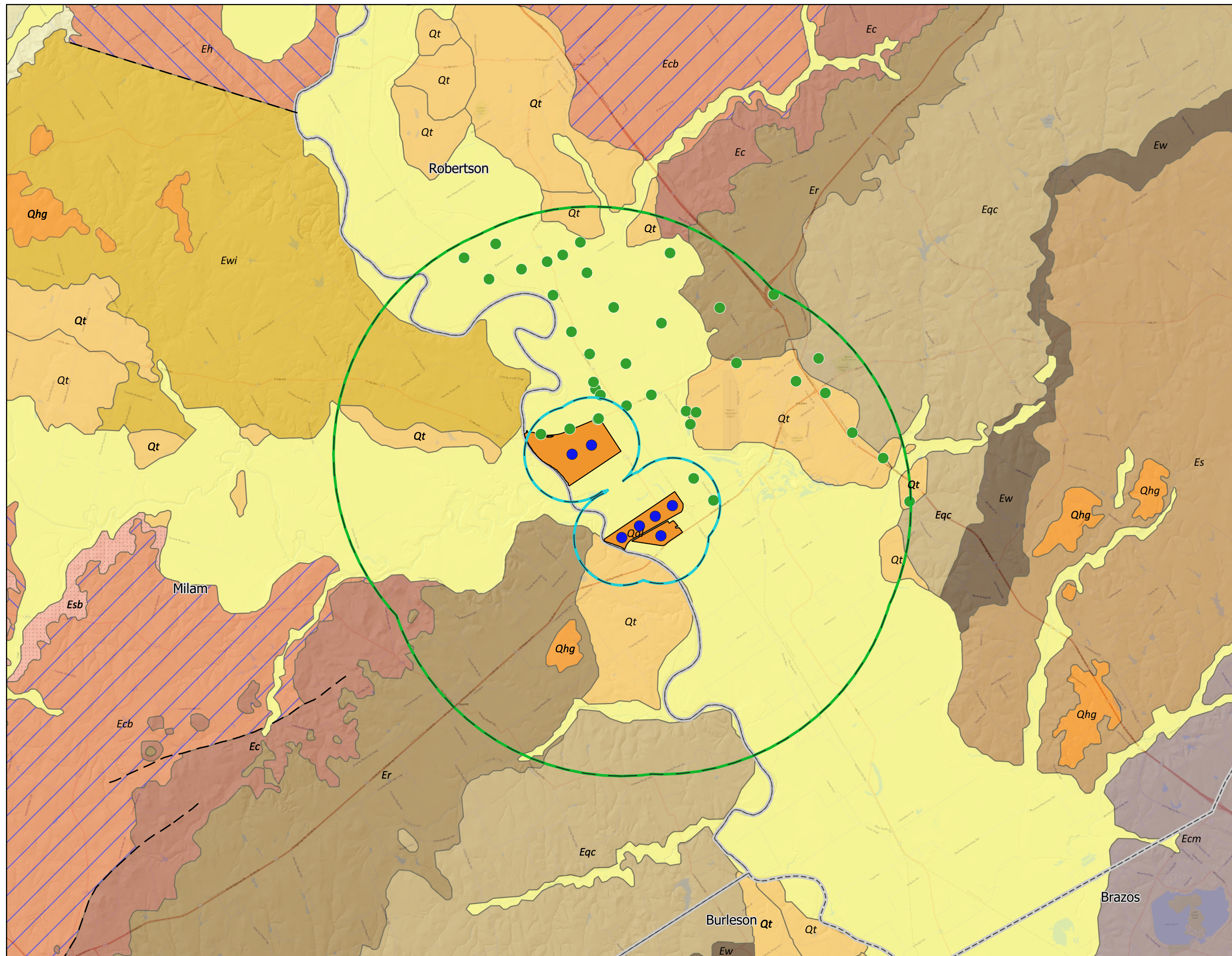
**Explanation**

- Proposed Wells
- 1 Mile Radius from Well Locations
- 5 Mile Radius from Well Locations
- Cula d'Brazos Property
- ▭ Counties
- Minor Aquifers**
- Brazos River Alluvium
- Queen City (outcrop)
- Queen City (subcrop)
- Sparta (outcrop)
- Sparta (subcrop)
- BVGCD Reported Wells w/in 5 Miles**
- Simsboro



**Cula d'Brazos, LLC.**

Figure 3:  
Minor Aquifers

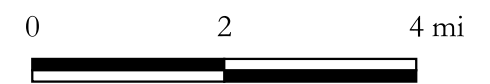
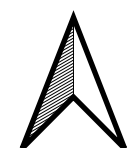


**Explanation**

- Proposed Wells
  - 1 Mile Radius from Well Locations
  - 5 Mile Radius from Well Locations
  - Cula d'Brazos Property
  - Fault
  - Counties
- Surface Geology**
- Qal - Alluvium
  - Qt - Fluvial terrace deposits
  - Qhg - High gravel deposits
  - Ecm - Cook Mountain Formation
  - Es - Sparta Sand
  - Ew - Weches Formation
  - Eqc - Queen City Sand
  - Er - Reklaw Formation
  - Ec - Carrizo Sand
  - Ewi - Wilcox Group
  - Ecb - Calvert Bluff Formation
  - Esb - Simsboro Formation
  - Eh - Hooper Formation

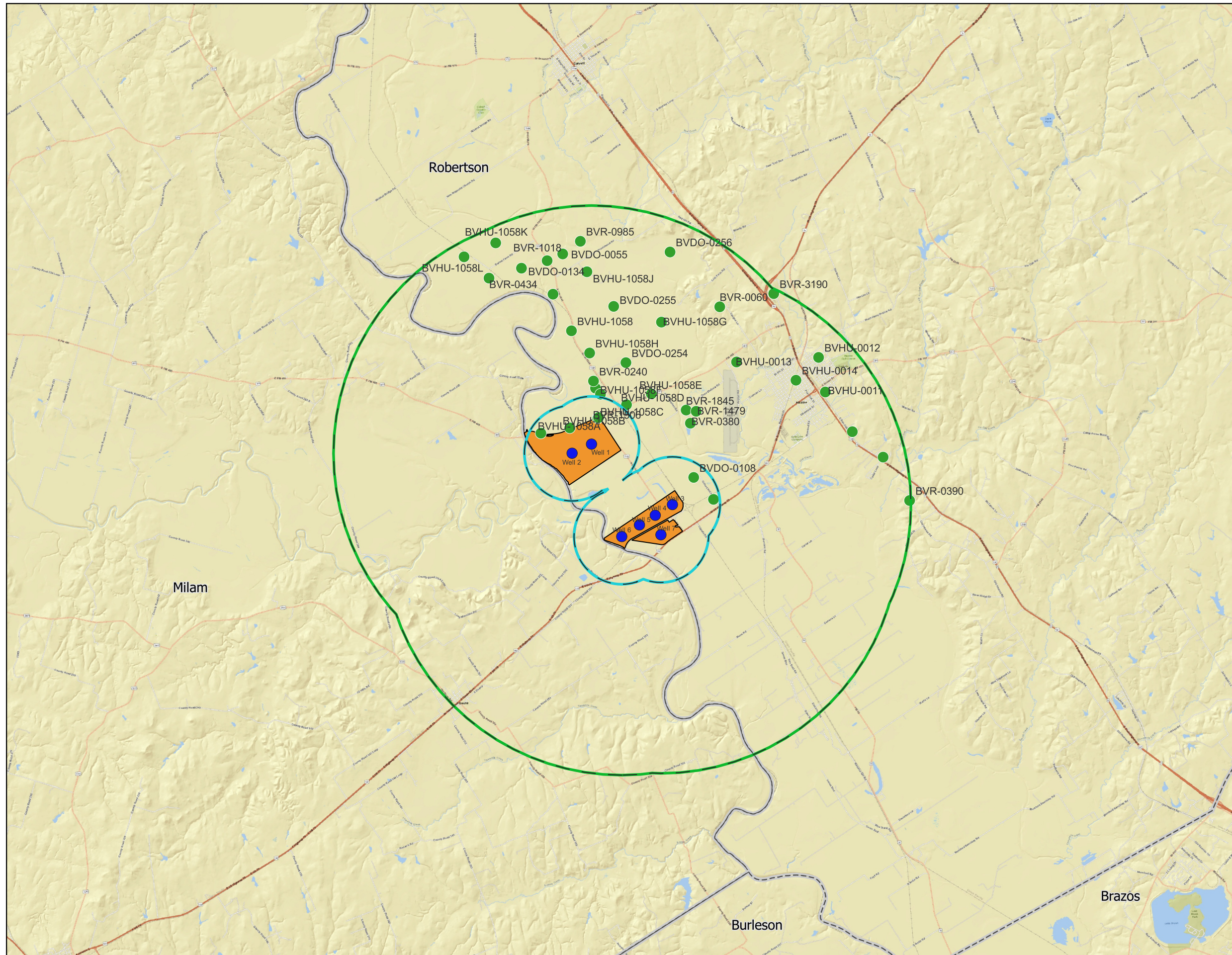
**BVGCD Reported Wells w/in 5 Miles**

- Simsboro

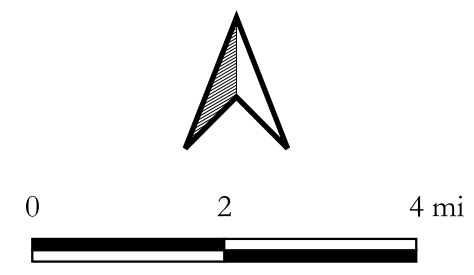


**Cula d'Brazos, LLC.**

Figure 4:  
Surface Geology



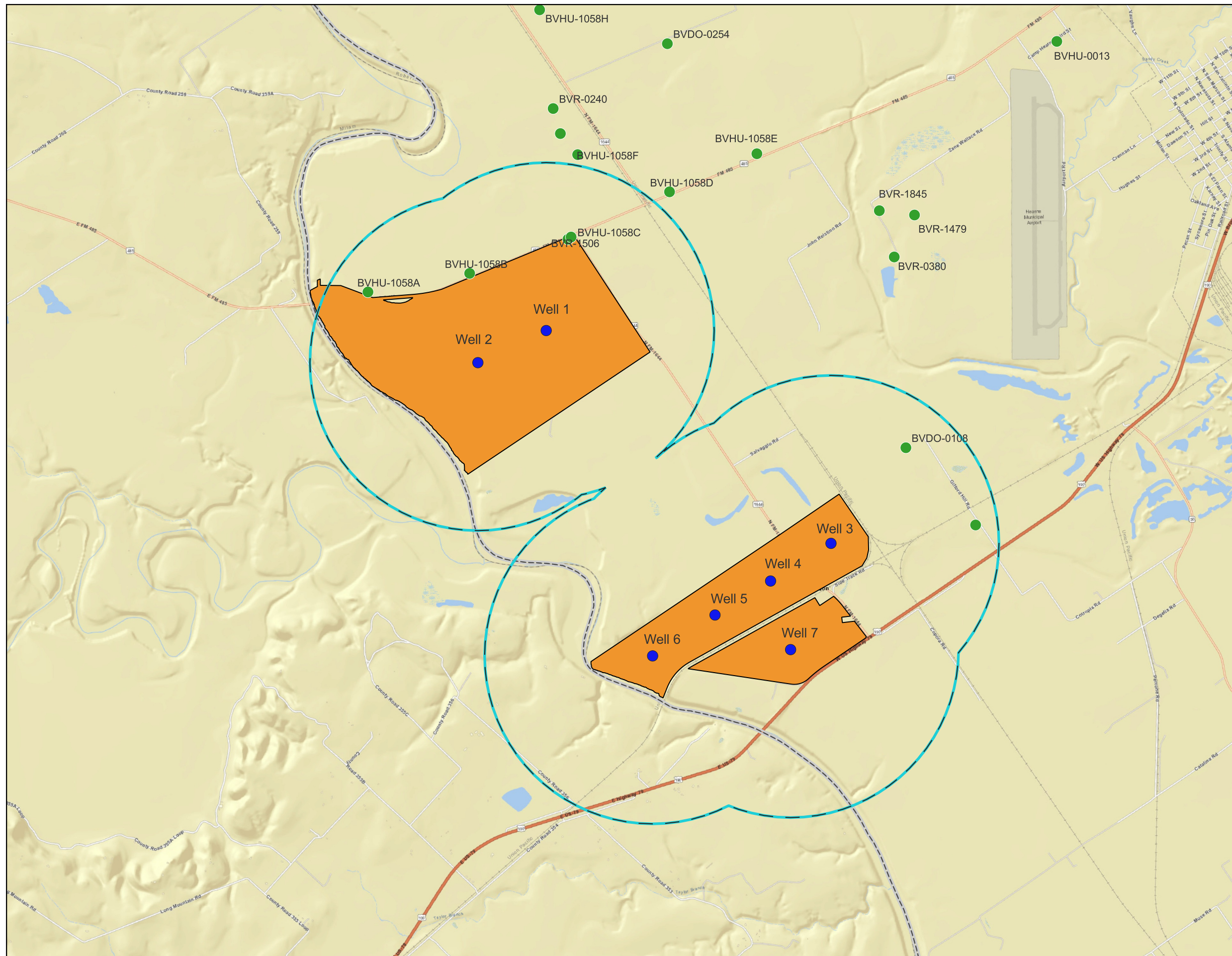
- Explanation**
- Proposed Wells
  - 1 Mile Radius from Well Locations
  - 5 Mile Radius from Well Locations
  - Cula d'Brazos Property
  - ▭ Counties
- BVGCD Reported Wells w/in 5 Miles**
- Simsboro



**Cula d'Brazos, LLC.**

Figure 5: Well Locations w/in 5 Miles of Proposed Wells





**Explanation**

- Proposed Wells
- 1 Mile Radius from Well Locations
- Cula d'Brazos Property
- Counties
- BVGCD Reported Wells w/in 5 Miles**
- Simsboro

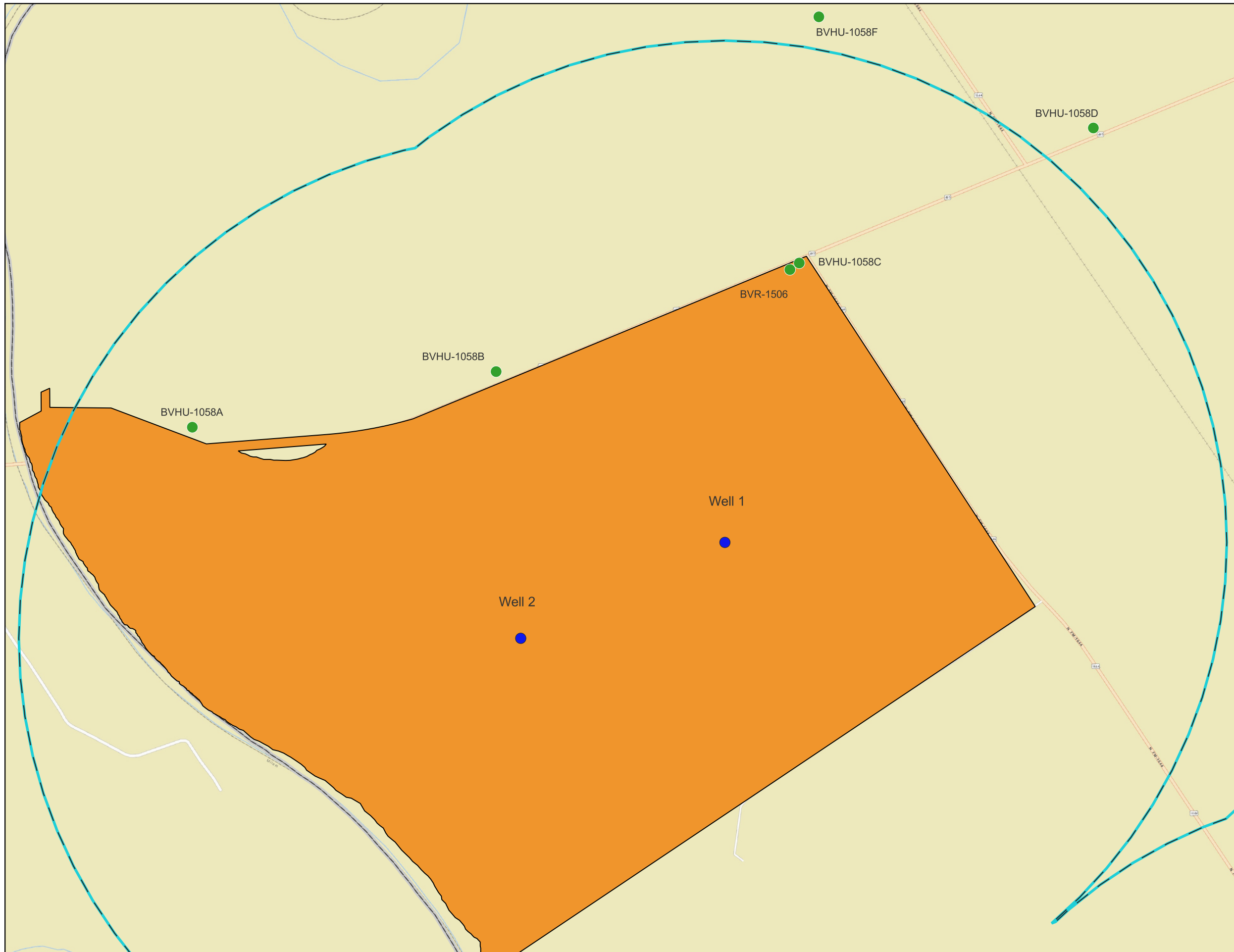


0 3,000 6,000 ft

**Cula d'Brazos, LLC.**

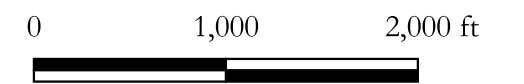
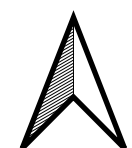
Figure 6: Well Locations w/in 1 Mile of Proposed Wells





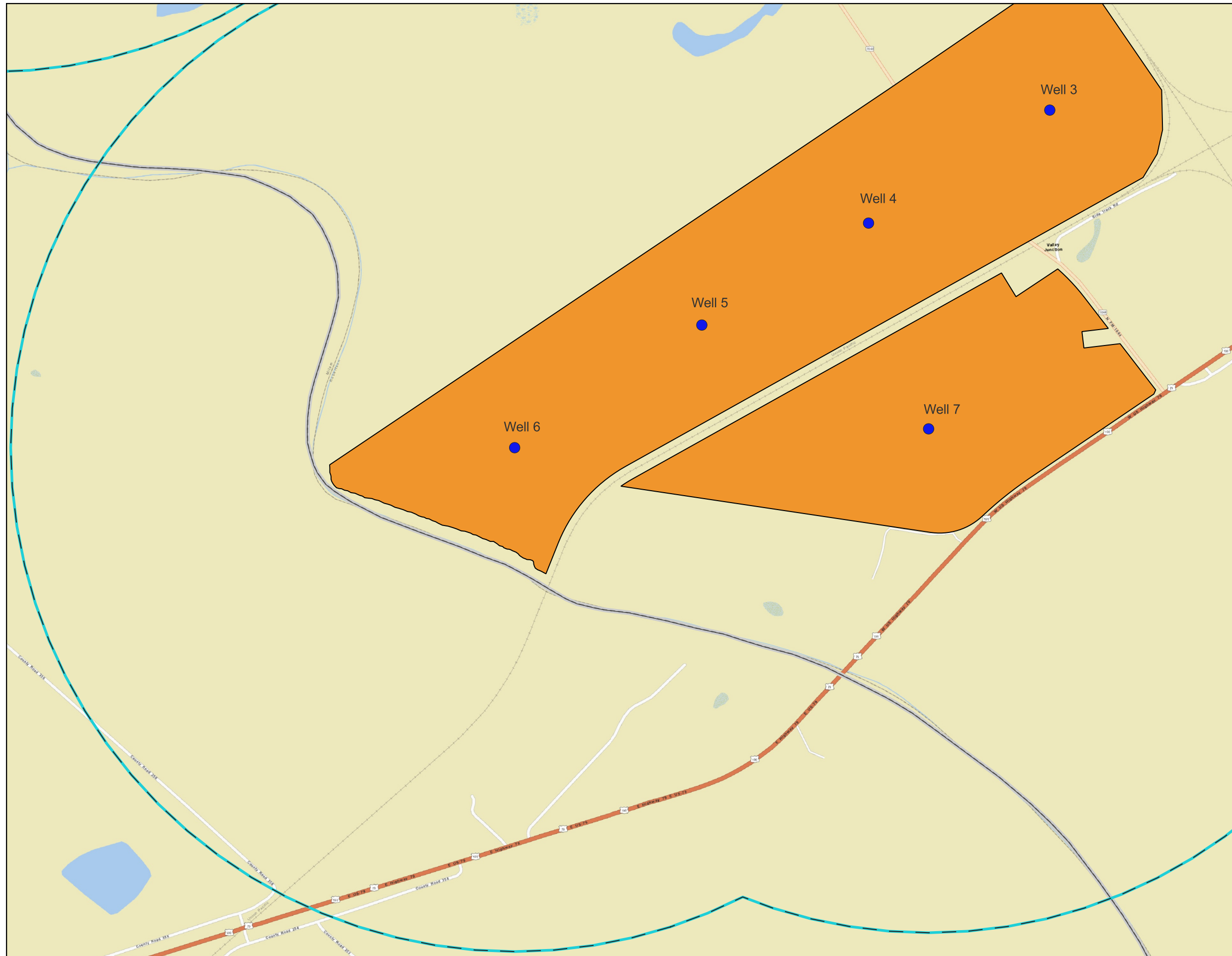
**Explanation**

- Proposed Wells
- 1 Mile Radius from Well Locations
- Cula d'Brazos Property
- Counties
- BVGCD Reported Wells w/in 5 Miles**
- Simsboro



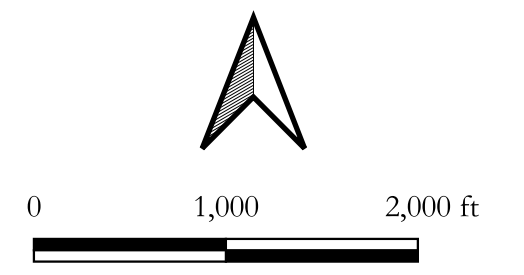
**Cula d'Brazos, LLC.**

Figure 6a: Well Locations w/in 1 Mile of Proposed Wells



**Explanation**

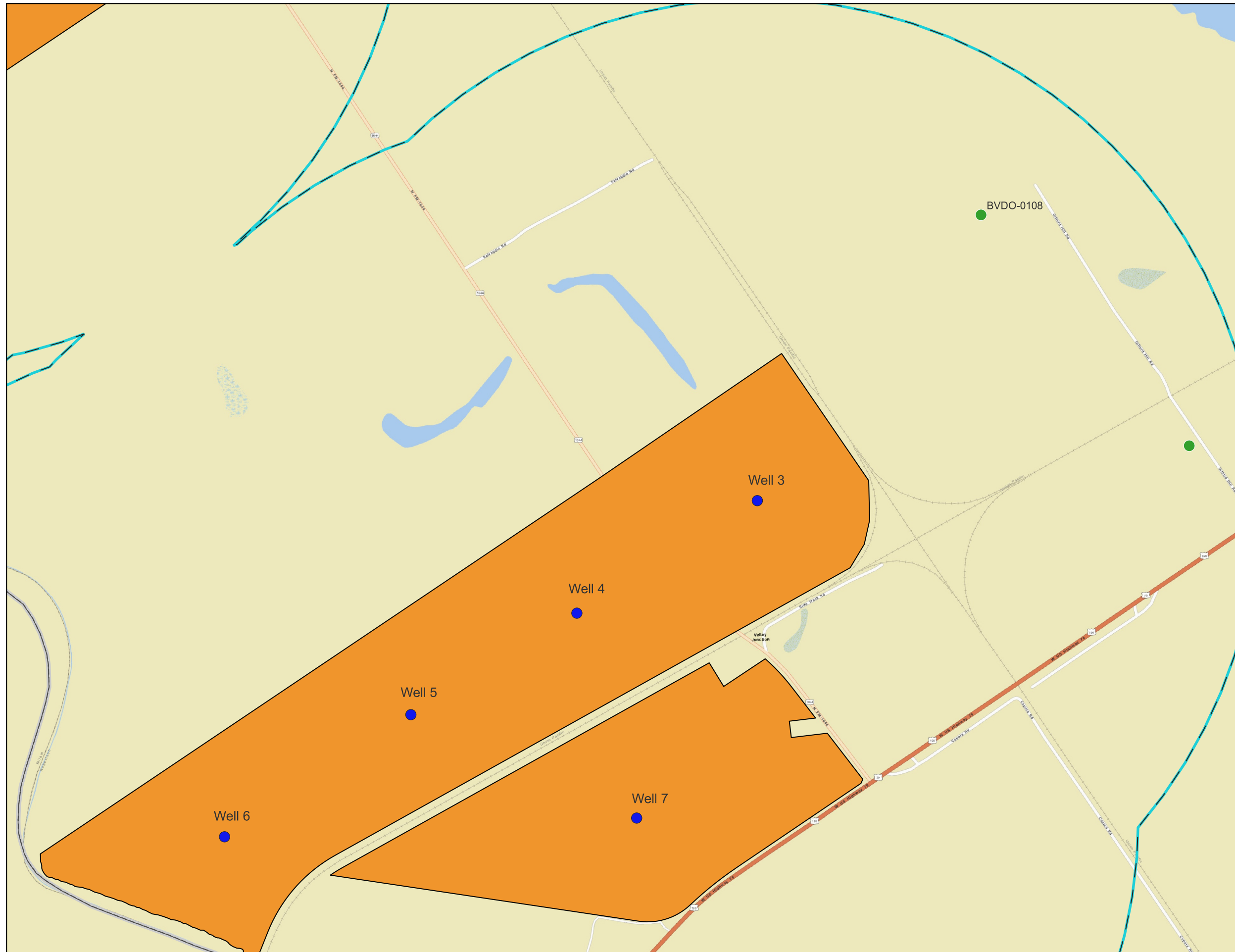
- Proposed Wells
- 1 Mile Radius from Well Locations
- Cula d'Brazos Property
- Counties



**Cula d'Brazos, LLC.**

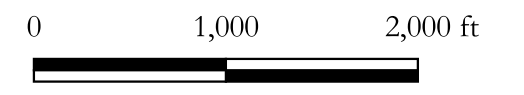
Figure 6b: Well Locations w/in 1 Mile of Proposed Wells





**Explanation**

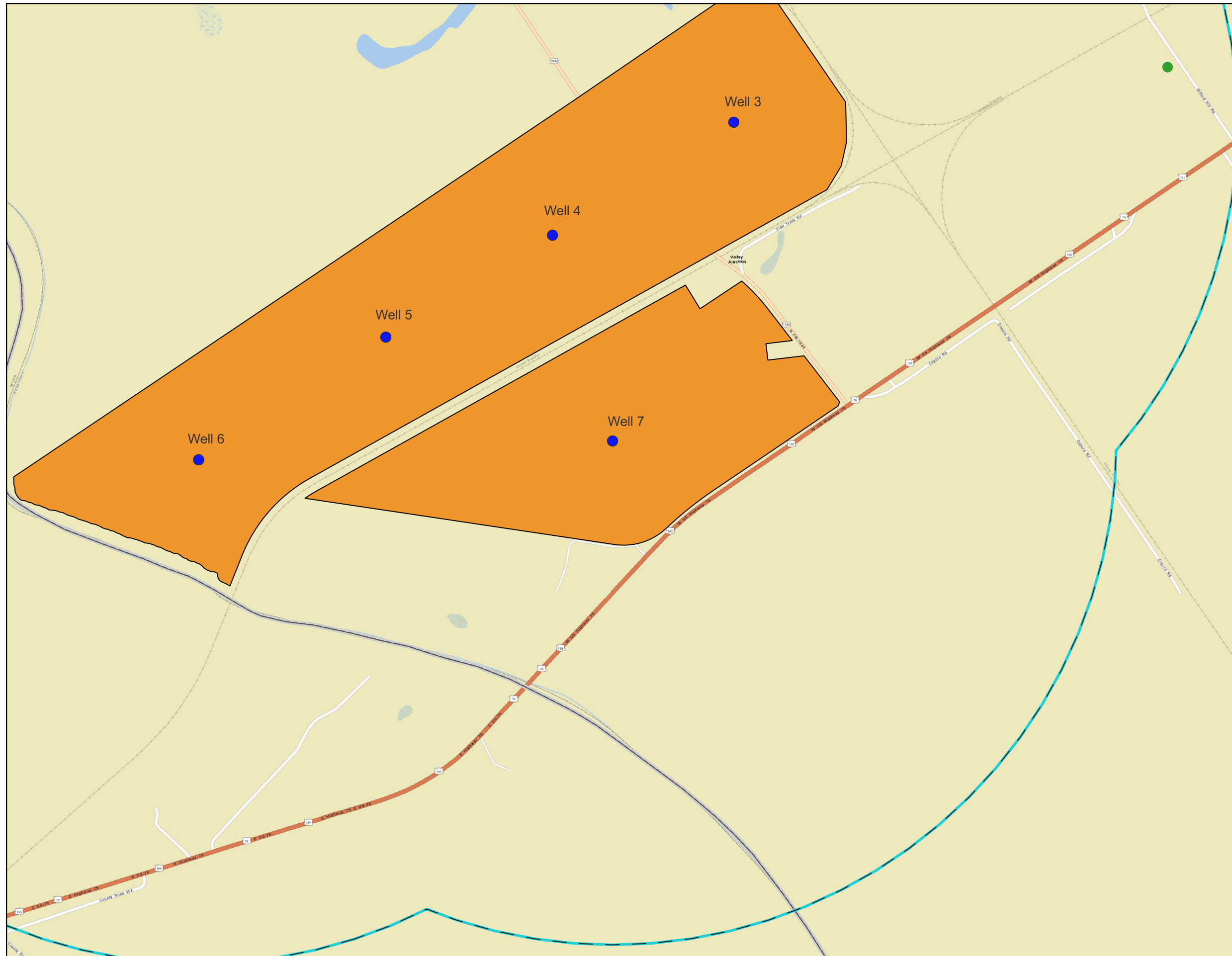
- Proposed Wells
- 1 Mile Radius from Well Locations
- Cula d'Brazos Property
- ▭ Counties
- BVGCD Reported Wells w/in 5 Miles**
- Simsboro



**Cula d'Brazos, LLC.**

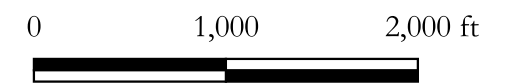
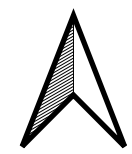
Figure 6c: Well Locations w/in 1 Mile of Proposed Wells





**Explanation**

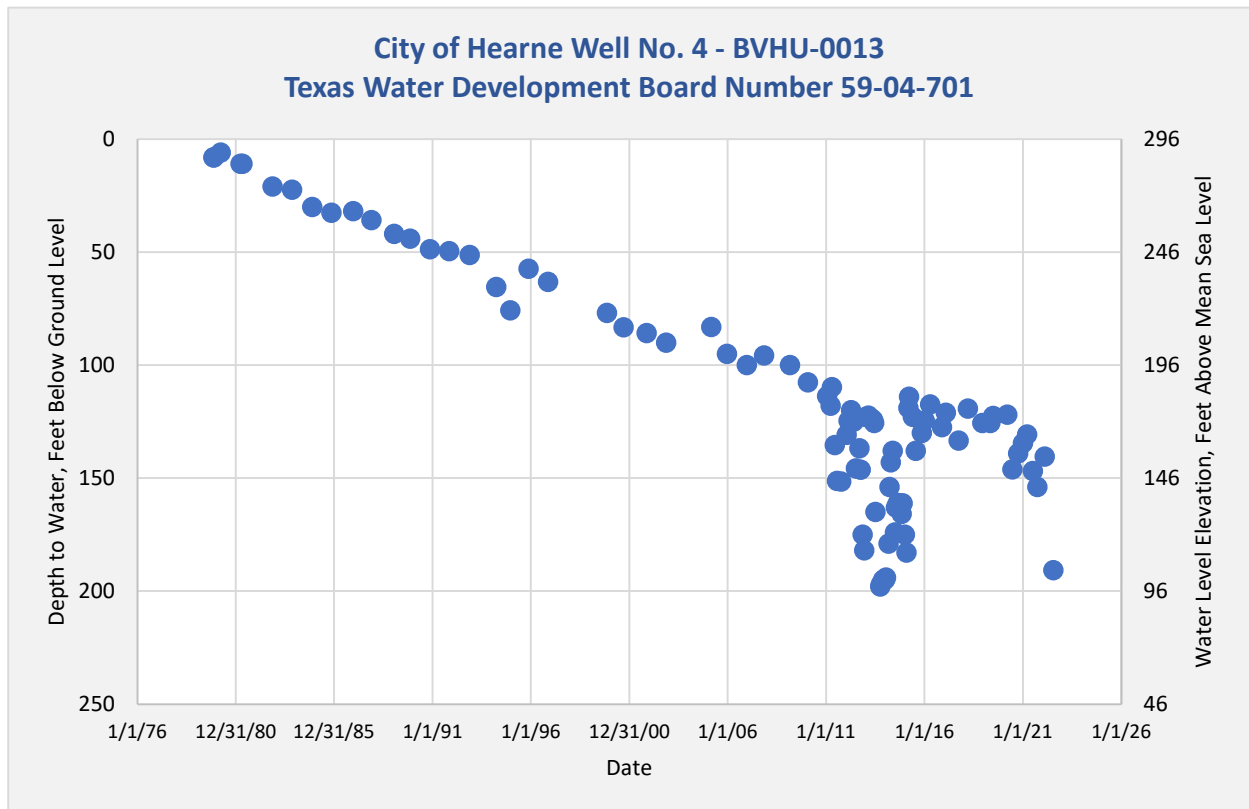
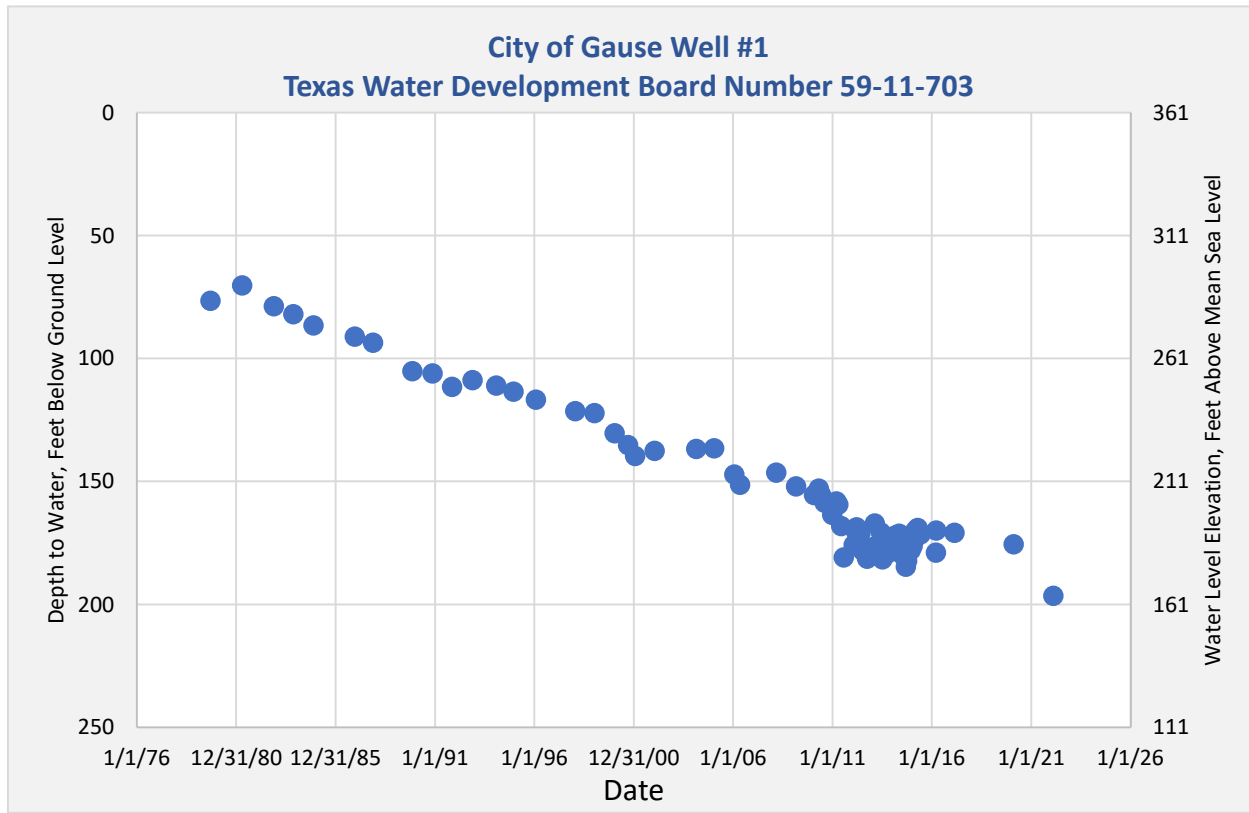
- Proposed Wells
- 1 Mile Radius from Well Locations
- Cula d'Brazos Property
- - - Counties
- BVGCD Reported Wells w/in 5 Miles**
- Simsboro

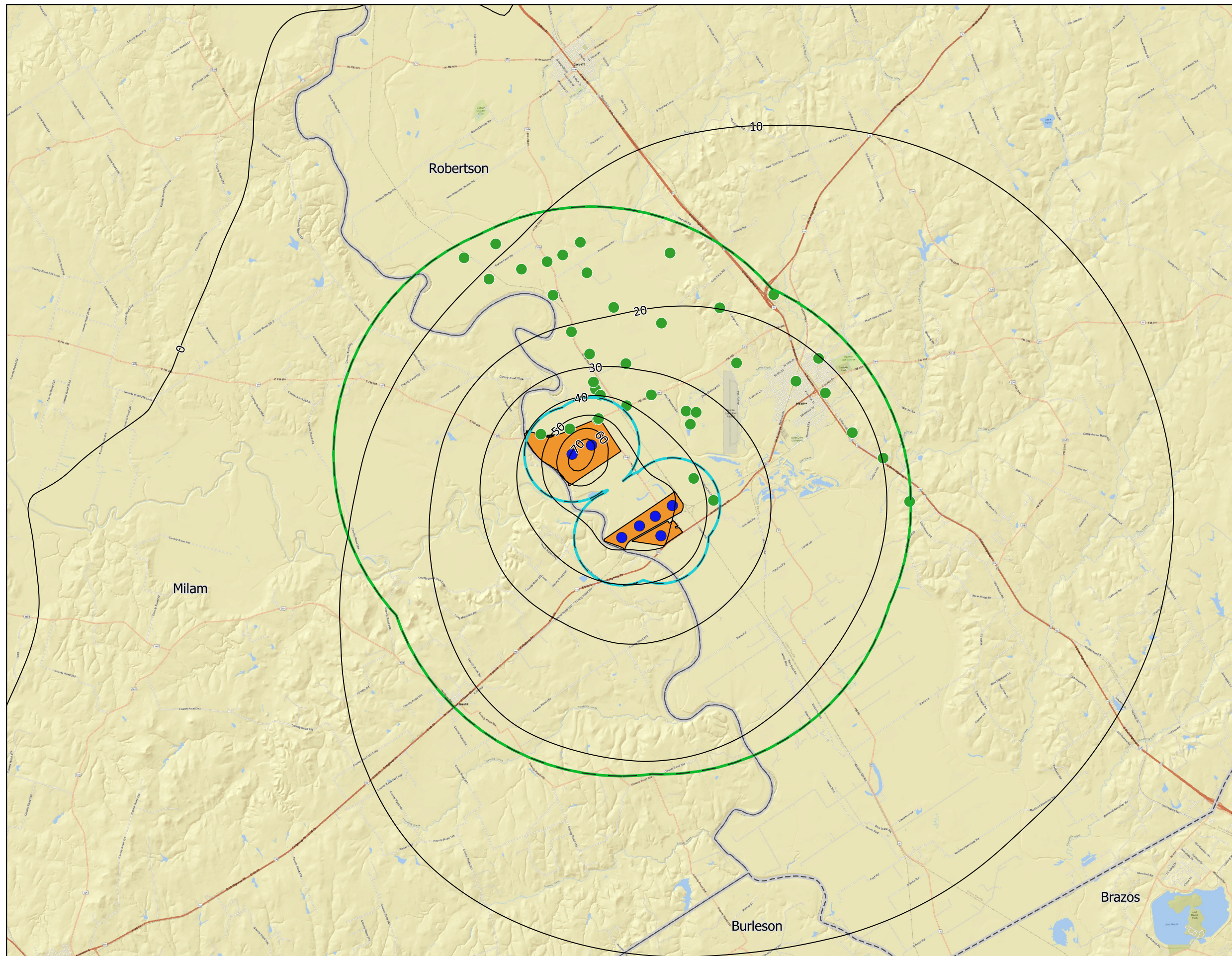


**Cula d'Brazos, LLC.**

Figure 6d: Well Locations w/in 1 Mile of Proposed Wells

Figure 7



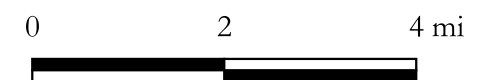
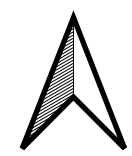


**Explanation**

- Proposed Wells
- 1 Mile Radius from Well Locations
- 5 Mile Radius from Well Locations
- 1-Year Modeled Drawdown - GAM  
Contour Interval = 10 feet
- Cula d'Brazos Property
- ▭ Counties

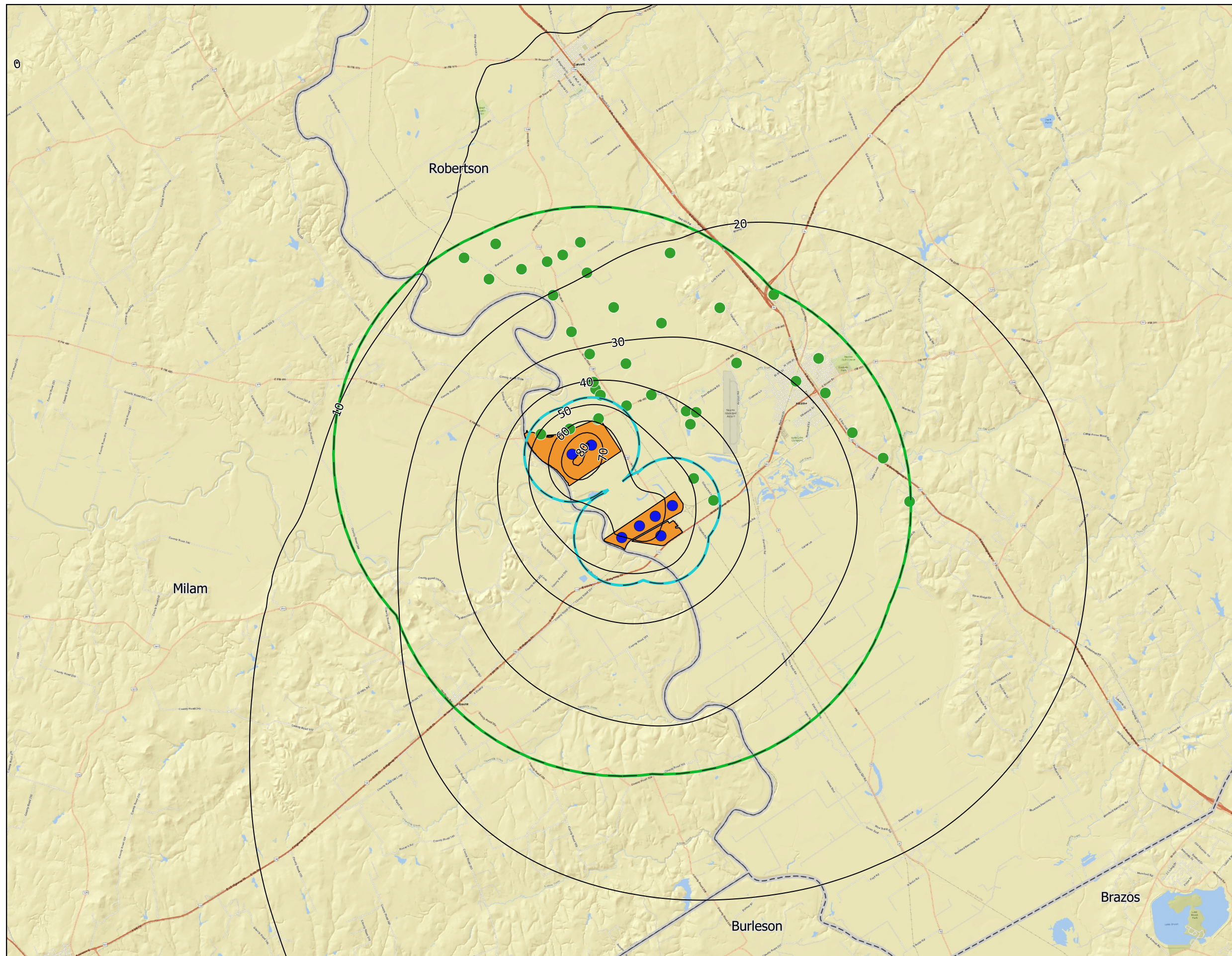
**BVGCD Reported Wells w/in 5 Miles**

- Simsboro



**Cula d'Brazos, LLC.**

Figure 8: 1-Year GAM  
Drawdown Contours

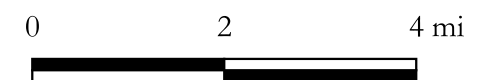
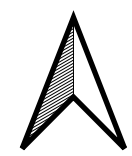


**Explanation**

- Proposed Wells
- 1 Mile Radius from Well Locations
- 5 Mile Radius from Well Locations
- 10-Year Modeled Drawdown - GAM  
Contour Interval = 10 feet
- Cula d'Brazos Property
- Counties

**BVGCD Reported Wells w/in 5 Miles**

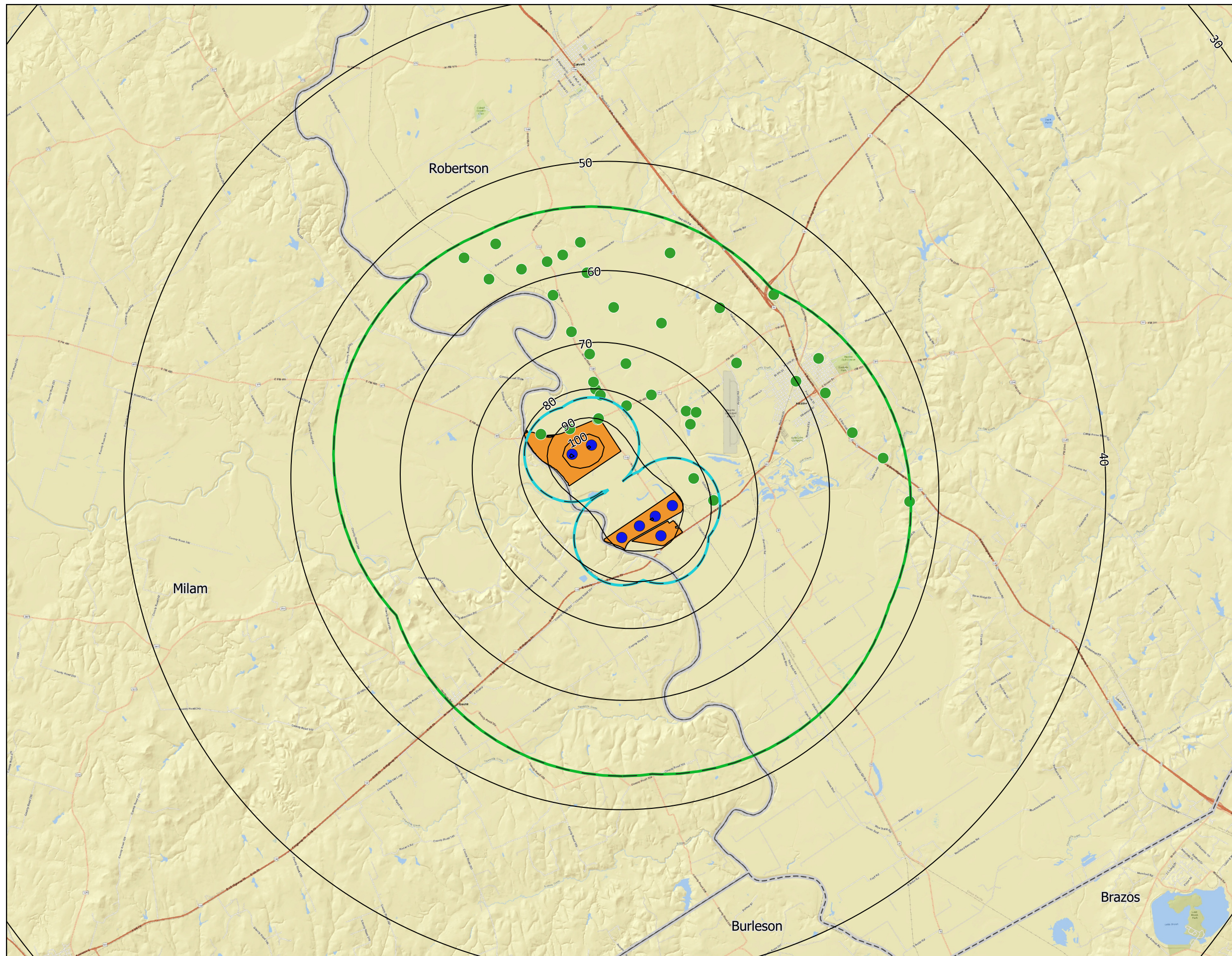
- Simsboro



**Cula d'Brazos, LLC.**

Figure 9: 10-Year GAM Drawdown Contours



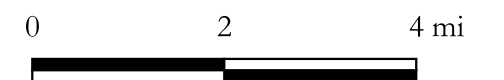
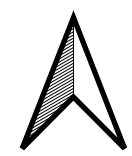


**Explanation**

- Proposed Wells
- 1 Mile Radius from Well Locations
- 5 Mile Radius from Well Locations
- 1-Yr Modeled Drawdown - Analytical Contour Interval = 10 feet
- Cula d'Brazos Property
- ▭ Counties

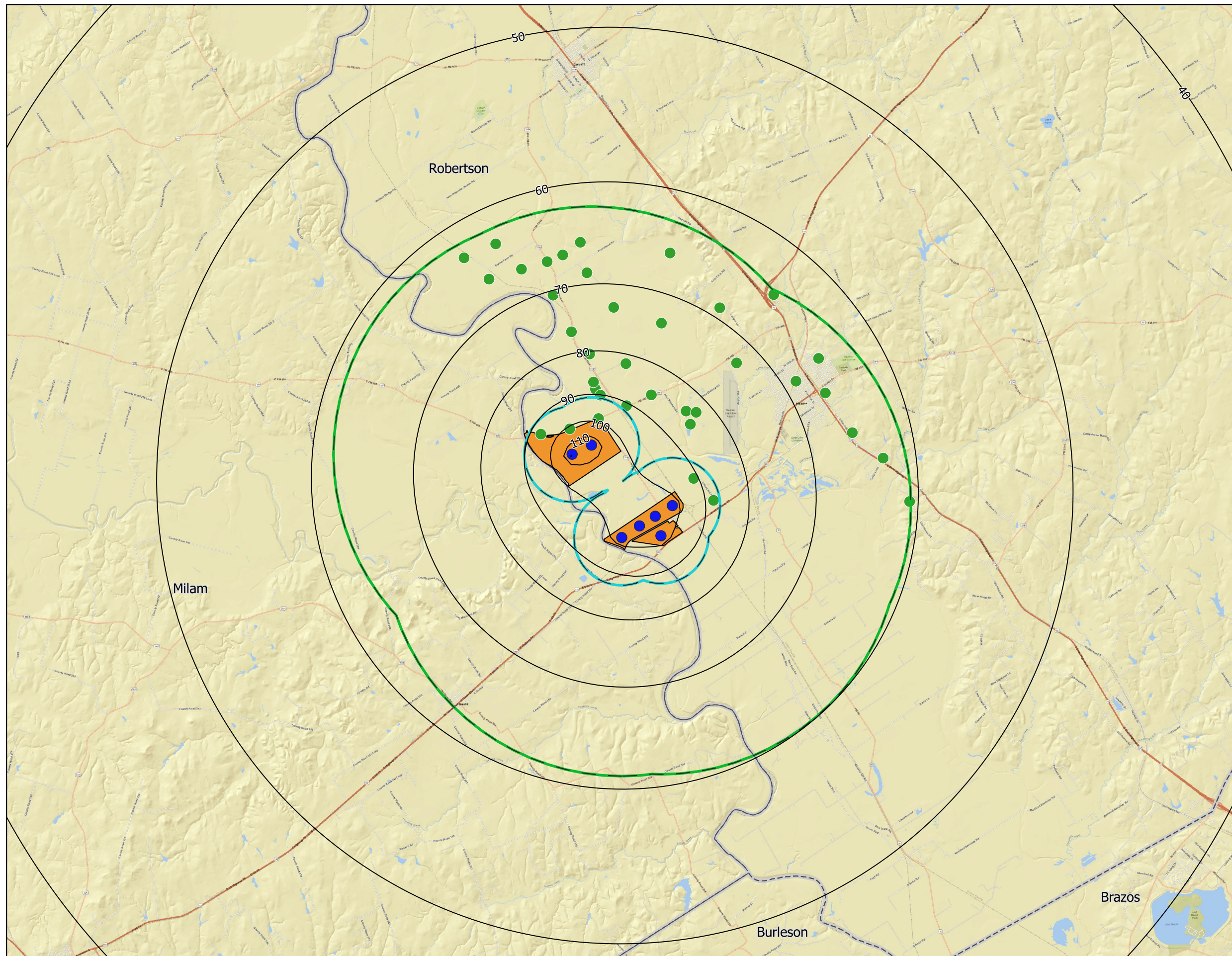
**BVGCD Reported Wells w/in 5 Miles**

- Simsboro



**Cula d'Brazos, LLC.**

Figure 10: 1-Year Analytical Drawdown Contours

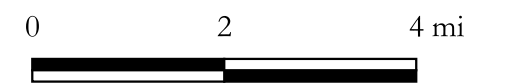
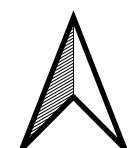


**Explanation**

- Proposed Wells
- 1 Mile Radius from Well Locations
- 5 Mile Radius from Well Locations
- 10-Yr Modeled Drawdown-Analytical Contour Interval =10 feet
- Cula d'Brazos Property
- Counties

**BVGCD Reported Wells w/in 5 Miles**

- Simsboro



**Cula d'Brazos, LLC.**

Figure 11: 10-Year Analytical Drawdown Contours



ATTACHMENT 2 –  
TABLES

Table 1. Simulated Drawdown at Registered and Permitted Simsboro Wells Within a 1-Mile Radius

Owner	Registration or Permit Number	Latitude	Longitude	Well Depth	Aquifer	Casing Diameter (in)	1 Year Analytical Drawdown, ft.	10 Year Analytical Drawdown, ft.	1 Year GAM Drawdown, ft.	10 Year GAM Drawdown, ft.
Skiles, Clifford III	BVDO-0108	30.851042	-96.635889	1,242	Simsboro	30 , 16	83	91	42	49
CA Skiles Family Partnership, Ltd.	BVHU-1058A	30.866028	-96.689233	1,095	Simsboro	30 , 16	85	93	45	51
CA Skiles Family Partnership, Ltd.	BVHU-1058B	30.867349	-96.678991	1,090	Simsboro	30 , 16	93	101	55	61
CA Skiles Family Partnership, Ltd.	BVHU-1058C	30.870200	-96.668713	1,100	Simsboro	30 , 16	90	98	51	57
Cula D'Brazos, LLC	BVR-1506	30.870019	-96.669033	1,250	Simsboro	2	90	99	52	58
Sammy Cangemi	BVR-4219	30.844167	-96.629167	1,142	Simsboro	4 , 2	79	88	38	46

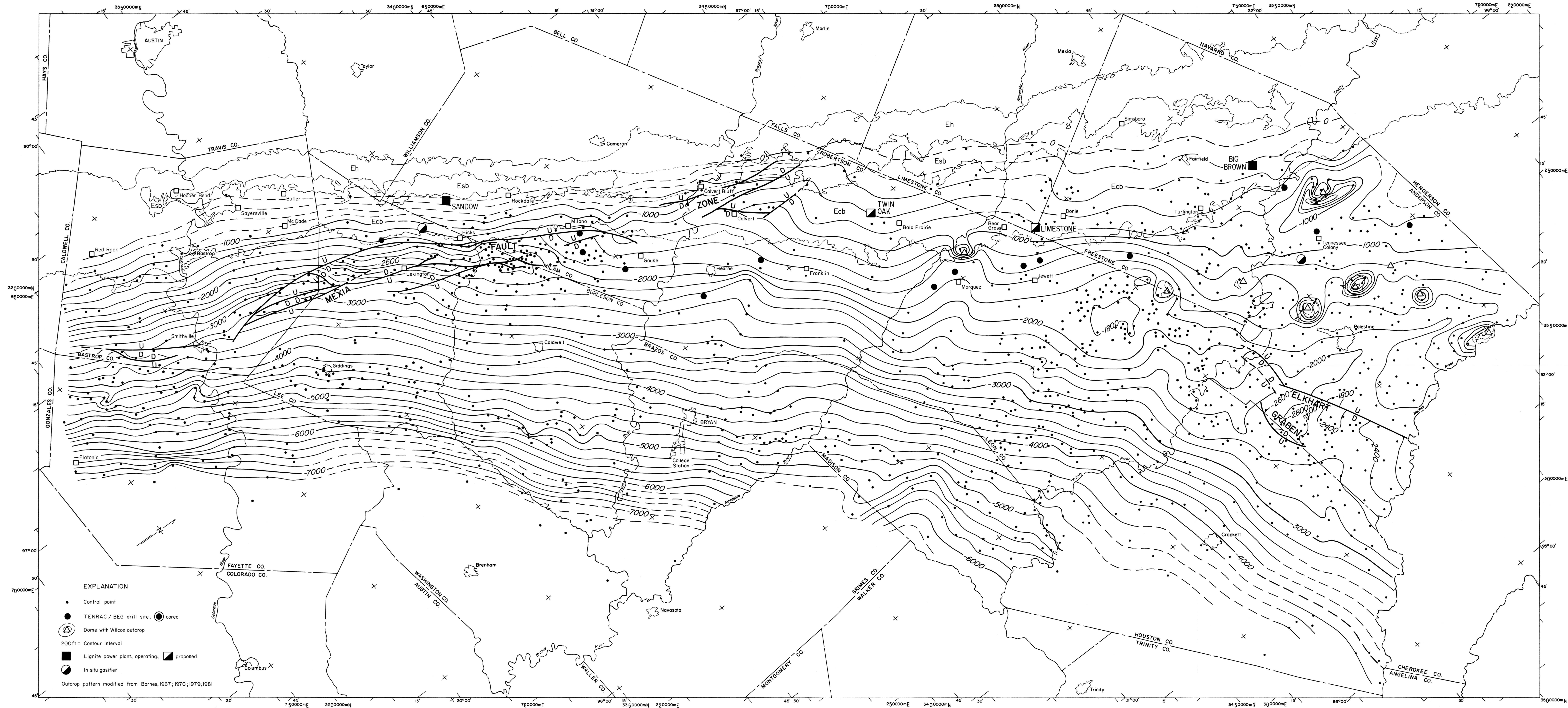
Table 2. Simulated Drawdown at Registered and Permitted Simsboro Wells Within a 5-Mile Radius

Owner	Registration or Permit Number	Latitude	Longitude	Well Depth	Aquifer	Casing Diameter (in)	1 Year Analytical Drawdown, ft.	10 Year Analytical Drawdown, ft.	1 Year GAM Drawdown, ft.	10 Year GAM Drawdown, ft.
Sandra Ryan & Bernadette Sloat	BVDO-0055	30.920306	-96.679457	840	Simsboro	30 , 16	58	66	13	17
Skiles, Clifford III	BVDO-0108	30.851042	-96.635889	1,242	Simsboro	30 , 16	83	91	42	49
Brien, James & Ellen	BVDO-0134	30.916389	-96.694167	778	Simsboro	30 , 16	58	66	16	12
CA Skiles Family Partnership, Ltd.	BVDO-0254	30.886626	-96.658433	1,205	Simsboro	30 , 18	73	82	29	35
CA Skiles Family Partnership, Ltd.	BVDO-0255	30.903856	-96.662094	1,240	Simsboro	30 , 18	65	73	19	24
CA Skiles Family Partnership, Ltd.	BVDO-0256	30.919825	-96.641585	1,225	Simsboro	30 , 18	57	66	15	21
City of Hearne	BVHU-0011	30.875673	-96.588479	1,433	Simsboro	14 , 8 5/8	58	66	22	27
City of Hearne	BVHU-0012	30.886263	-96.590453	1,430	Simsboro	12 , 6	57	65	20	27
City of Hearne	BVHU-0013	30.885707	-96.619201	1,441	Simsboro	10 , 8 , 6	64	73	25	31
City of Hearne	BVHU-0014	30.879554	-96.598692	1,275	Simsboro	12 , 10 , 8 , 7	60	68	23	30
CA Skiles Family Partnership, Ltd.	BVHU-1058	30.896850	-96.677267	930	Simsboro	16	68	76	21	26
CA Skiles Family Partnership, Ltd.	BVHU-1058A	30.866028	-96.689233	1,095	Simsboro	30 , 16	85	93	45	51
CA Skiles Family Partnership, Ltd.	BVHU-1058B	30.867349	-96.678991	1,090	Simsboro	30 , 16	93	101	55	61
CA Skiles Family Partnership, Ltd.	BVHU-1058C	30.870200	-96.668713	1,100	Simsboro	30 , 16	90	98	51	57
CA Skiles Family Partnership, Ltd.	BVHU-1058D	30.873824	-96.658706	1,131	Simsboro	30 , 16	82	91	41	47
CA Skiles Family Partnership, Ltd.	BVHU-1058E	30.876867	-96.649833	1,175	Simsboro	30 , 16	77	86	35	41
CA Skiles Family Partnership, Ltd.	BVHU-1058F	30.877300	-96.667783	1,065	Simsboro	30 , 16	82	90	39	45
CA Skiles Family Partnership, Ltd.	BVHU-1058G	30.898588	-96.645434	964	Simsboro	30 , 16	65	74	22	28
CA Skiles Family Partnership, Ltd.	BVHU-1058H	30.889917	-96.671117	979	Simsboro	30 , 16	72	81	26	32
CA Skiles Family Partnership, Ltd.	BVHU-1058J	30.914647	-96.671122	875	Simsboro	30 , 16	60	69	15	30
CA Skiles Family Partnership, Ltd.	BVHU-1058K	30.924333	-96.702966	720	Simsboro	30 , 16	55	63	9	13

Owner	Registration or Permit Number	Latitude	Longitude	Well Depth	Aquifer	Casing Diameter (in)	1 Year Analytical Drawdon, ft.	10 Year Analytical Drawdown, ft.	1 Year GAM Drawdown, ft.	10 Year GAM Drawdown, ft.
CA Skiles Family Partnership, Ltd.	BVHU-1058L	30.920417	-96.714283	691	Simsboro	30 , 16	55	63	8	12
Bishop, Doris & Others	BVR-0060	30.902652	-96.624694	1,193	Simsboro	4 , 2	60	69	20	26
CA Skiles Family Partnership, Ltd.	BVR-0240	30.881350	-96.670083	1,065	Simsboro	4	78	87	35	41
Ryan, Melvin & Sandra	BVR-0380	30.867554	-96.636420	1,100	Simsboro	4 , 2	76	85	35	42
Boswell, Irene Couch	BVR-0390	30.841812	-96.560074	800	Simsboro	3	52	61	18	26
Manterola, Jane	BVR-0434	30.913686	-96.705731	400	Simsboro	UNKN	58	66	11	15
Ryan, Sandra & Sloat, Bernadette	BVR-0985	30.923989	-96.673093	735	Simsboro	4 , 2	57	65	13	18
Brien, James & Ellen	BVR-1018	30.918418	-96.685023	UNKN	Simsboro	4	58	67	13	17
Zeig, Joey	BVR-1479	30.871121	-96.634251	1,080	Simsboro	8 , 4 , 2	74	83	33	40
Cula D'Brazos	BVR-1506	30.870019	-96.669033	1,250	Simsboro	2	90	99	52	58
Wallace, Zane & Virginia	BVR-1845	30.871595	-96.637759	1,100	Simsboro	4 , 2	75	84	34	41
Swaner, Ronald D.	BVR-3190	30.906117	-96.605510	1,225	Simsboro	4 , 2	56	64	18	24
Sammy Cangemi	BVR-4219	30.844167	-96.629167	1,142	Simsboro	4 , 2	79	88	38	46
UW-BVF	BV-10769	30.879167	-96.669444	900	Simsboro	4	80	88	37	43
UNKN	BV-10967	30.863333	-96.579444	1,411	Simsboro	4, 2	57	65	21	29
UNKN	BV-10971	30.855278	-96.568889	1,405	Simsboro	6, 4	54	63	20	27
TAP Farm, LLC	UNKN	30.908166	-96.683342	978	Simsboro	4	62	71	16	20



ATTACHMENT 3 –  
REFERENCE MATERIALS



- EXPLANATION**
- Control point
  - TENRAC / BEG drill site; ● cored
  - ⊙ Dome with Wilcox outcrop
  - 200ft = Contour interval
  - Lignite power plant, operating; ▨ proposed
  - ⊙ In situ gasifier
- Outcrop pattern modified from Barnes, 1967, 1970, 1979, 1981

- Ecb Calvert Bluff Formation
- Esb Simsboro Formation
- Eh Hooper Formation

Base map adapted from Army Map Service base maps, 10,000-meter Universal Transverse Mercator grid, zones 14 and 15. Cartography by John T. Ames under the supervision of Richard L. Dillon.

by W. B. Ayers, Jr., and Amy H. Lewis

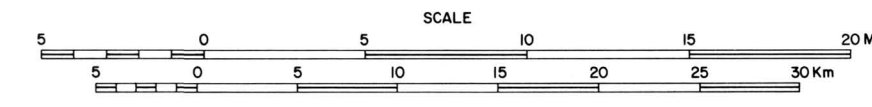
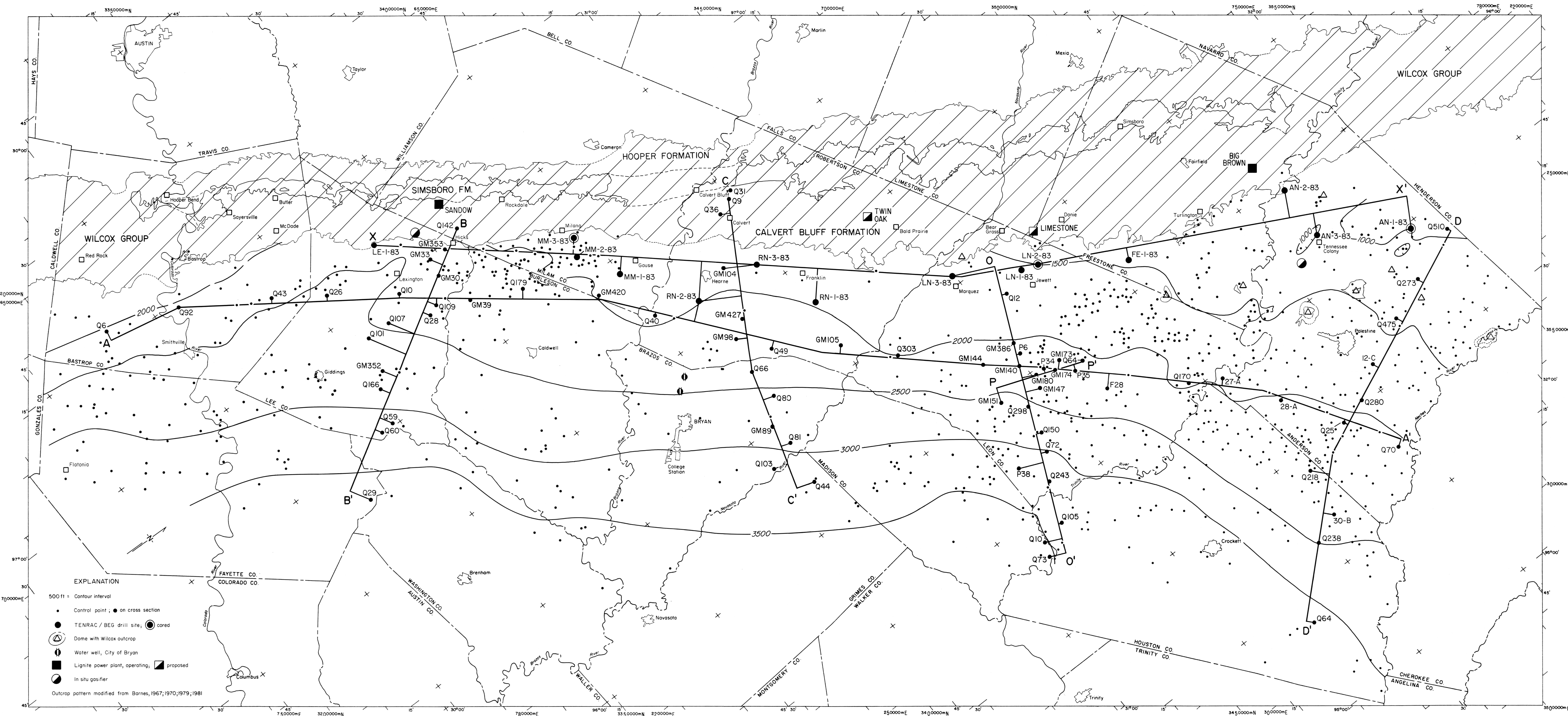


PLATE 2. WILCOX STRUCTURE MAP

1985

Generalized structure map drawn on the base of the Wilcox Group (sea-level datum) shows regional dip to the southeast. The angle of dip increases from the northeast (1/2°) to the southwest (2°). Major structural elements are the Mexia Fault Zone, the Elkhart Graben, salt structures in Anderson and Freestone Counties, and the East Texas Basin (fig. 2).





- EXPLANATION**
- 500 ft = Contour interval
  - Control point; ● on cross section
  - TENRAC / BEG drill site; ● cored
  - ⊙ Dome with Wilcox outcrop
  - ⊕ Water well, City of Bryan
  - Lignite power plant, operating; ▣ proposed
  - ⊙ In situ gasifier
- Outcrop pattern modified from Barnes, 1967; 1970; 1979; 1981

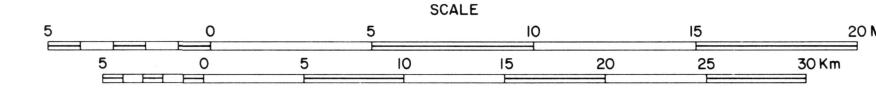


PLATE 3. WILCOX ISOPACH MAP AND LOCATIONS OF CROSS SECTIONS

1985

Base map adapted from Army Map Service base maps. 10,000-meter Universal Transverse Mercator grid, zones 14 and 15. Cartography by John T. Ames under the supervision of Richard L. Dillon.

by W. B. Ayers, Jr., and Amy H. Lewis

The Wilcox Group thickens from less than 1,000 ft (305 m) on the north to more than 3,500 ft (1,065 m) at the basinward margin of the study area. The local increase in thickness in central Lee County is attributed to syndepositional movement along the Mexia Fault Zone (fig. 2 and pl. 2).

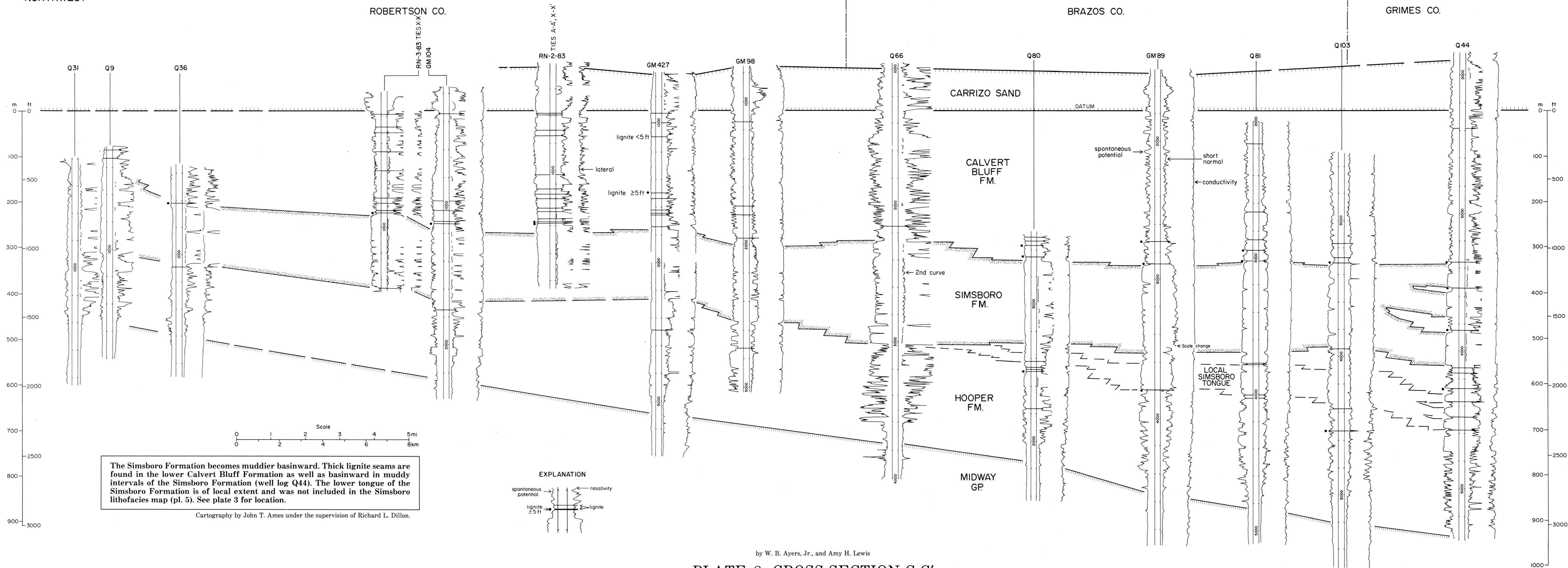


C

NORTHWEST

C'

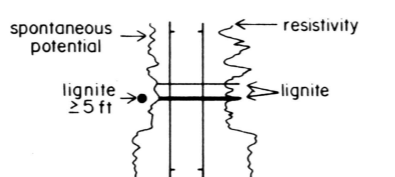
SOUTHEAST



The Simsboro Formation becomes muddier basinward. Thick lignite seams are found in the lower Calvert Bluff Formation as well as basinward in muddy intervals of the Simsboro Formation (well log Q44). The lower tongue of the Simsboro Formation is of local extent and was not included in the Simsboro lithofacies map (pl. 5). See plate 3 for location.

Cartography by John T. Ames under the supervision of Richard L. Dillon.

EXPLANATION

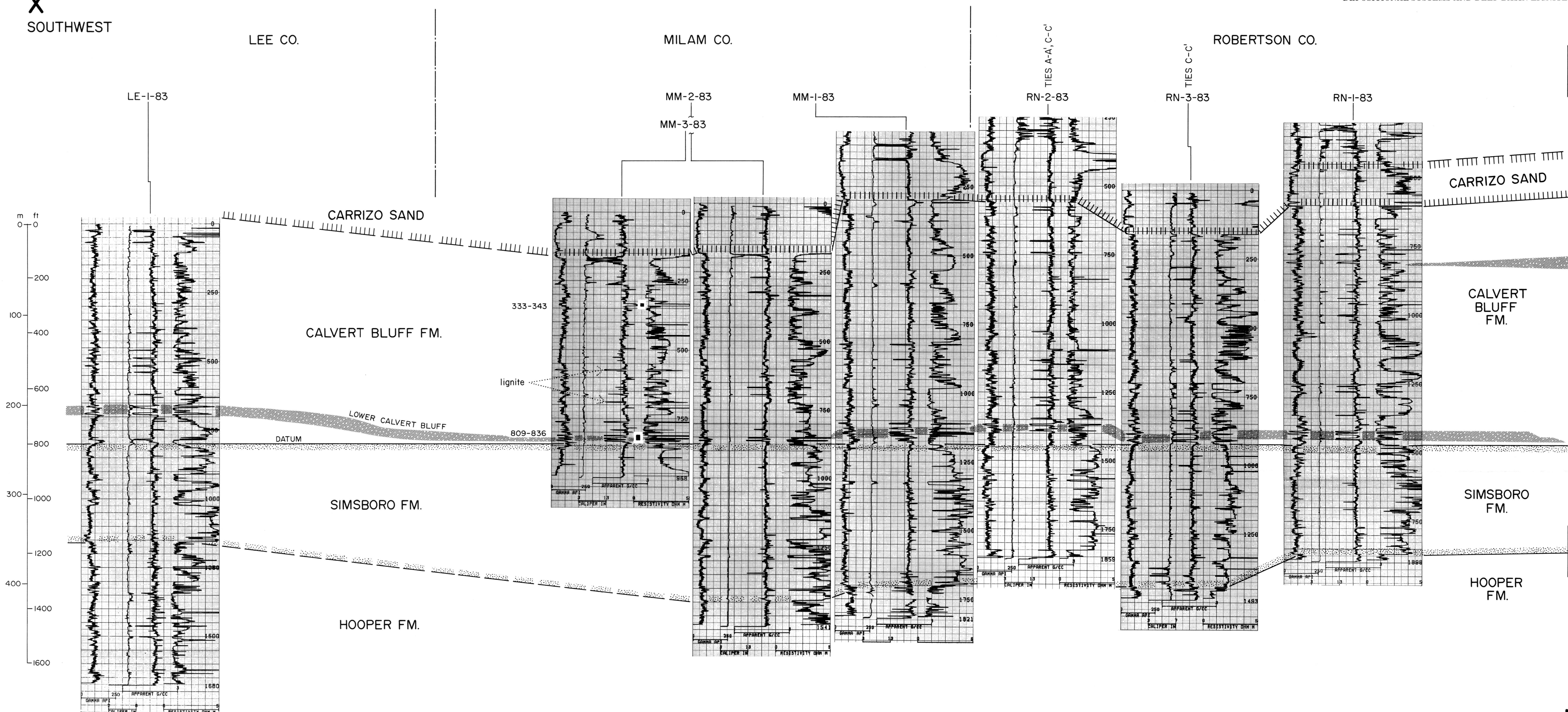


by W. B. Ayers, Jr., and Amy H. Lewis

PLATE 8. CROSS SECTION C-C'

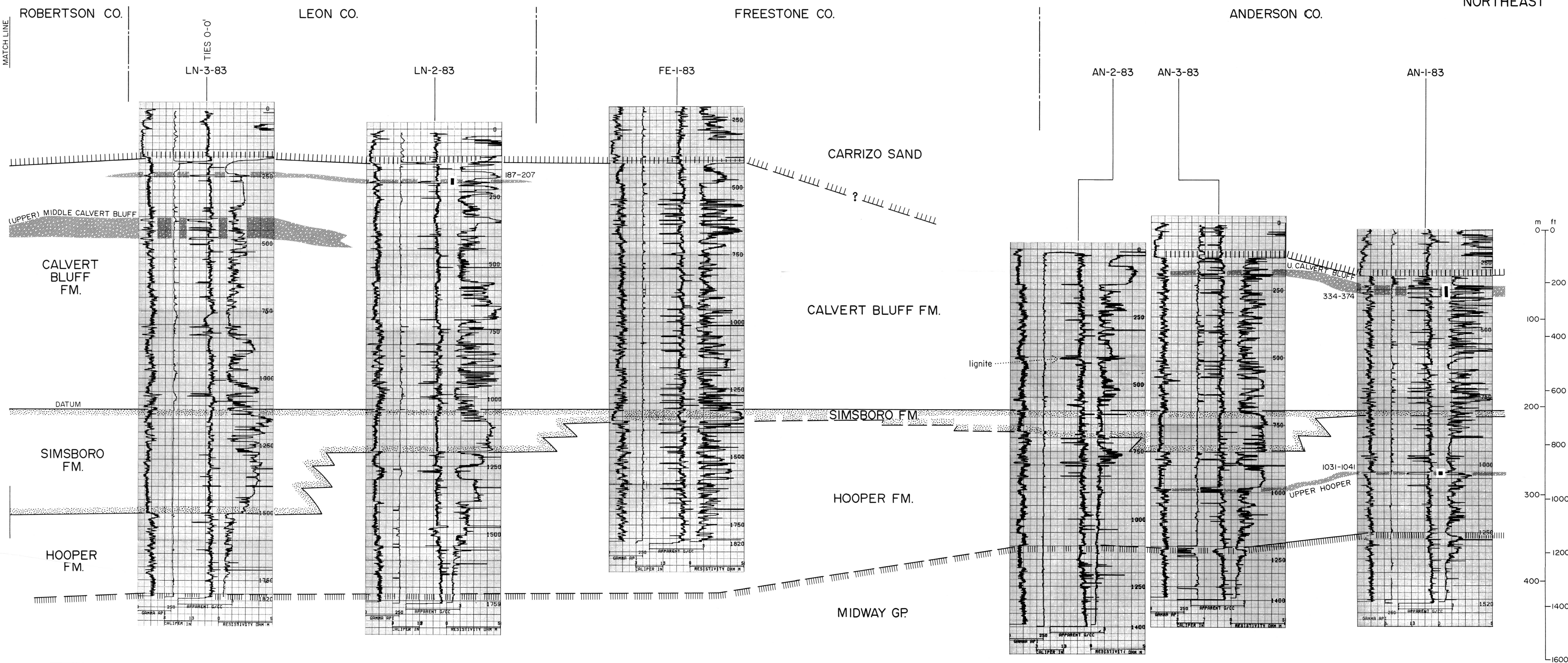
1985

X  
SOUTHWEST



MATCH LINE

X'  
NORTHEAST



Geophysical logs from Texas Energy and Natural Resources Advisory Council/Bureau of Economic Geology wells show the stratigraphic occurrence of deep lignite (200 to 2,000 ft [61 to 610 m]) in east-central Texas. Thick lignite seams (seams 5 ft [1.5 m] or thicker) are found in the (a) upper Hooper Formation on the northeast, (b) lower Calvert Bluff Formation on the southwest, and (c) upper Calvert Bluff Formation on the northeast. Lateral continuity of individual lignite seams within the zones is neither implied nor true; wells were drilled in low-sand (floodbasin) areas between major-sand axes, which limit seam continuity. See plate 3 for location. Full-scale geophysical well logs are available from the Bureau of Economic Geology.

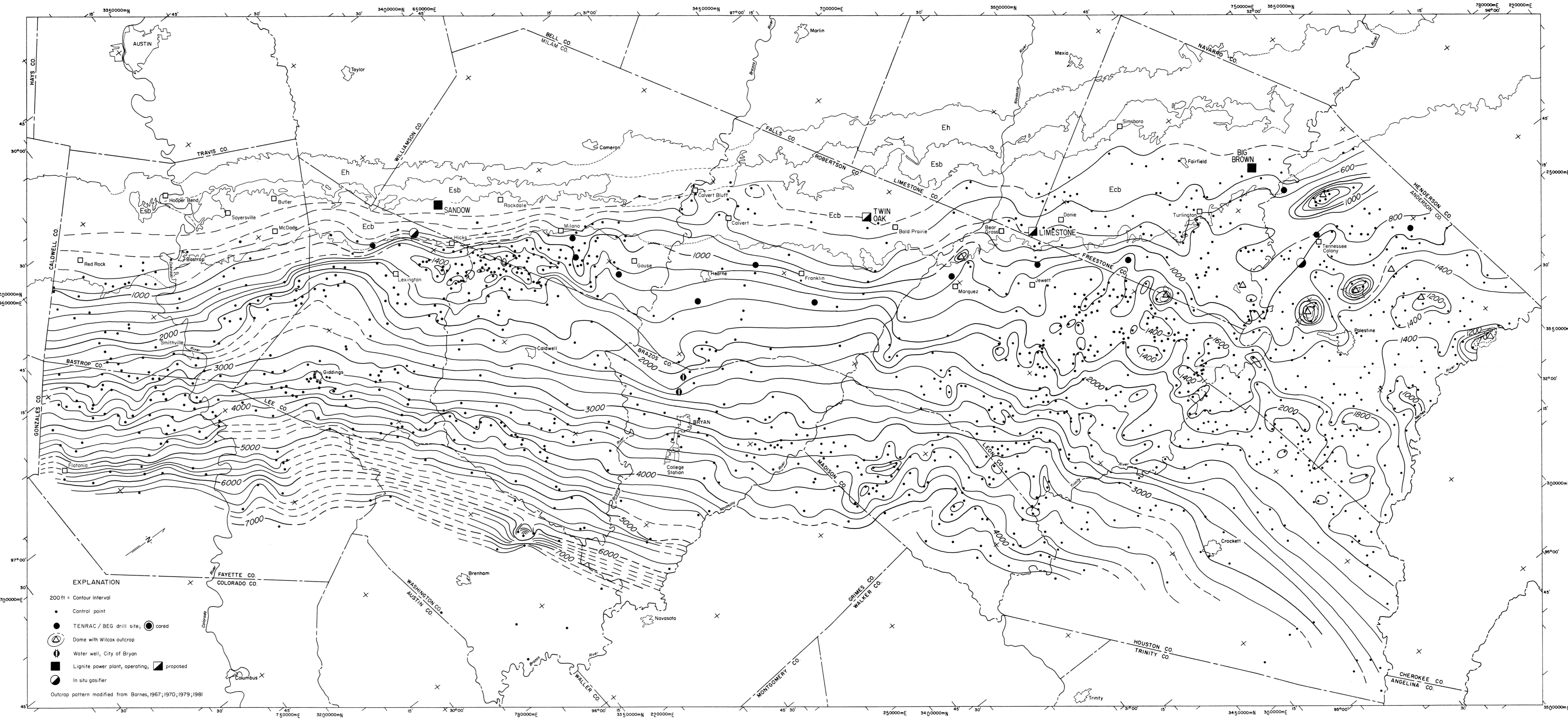
by W. B. Ayers, Jr., and Amy H. Lewis

PLATE 22. LIGNITE CROSS SECTION X-X'  
1985

Scale 0 5 10 15 mi  
0 5 10 15 km

EXPLANATION  
 Zone of thick lignite (1 or more seams ≥5 ft [1.5 m])  
 Cored interval

Cartography by John T. Ames under the supervision of Richard L. Dillon.

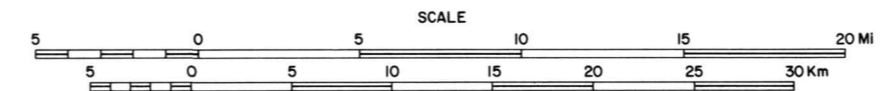


- EXPLANATION**
- 200 ft = Contour interval
  - Control point
  - TENRAC / BEG drill site; ● cored
  - ⊙ Dome with Wilcox outcrop
  - ⊕ Water well, City of Bryan
  - Lignite power plant, operating; ▣ proposed
  - ⊙ In situ gasifier
- Outcrop pattern modified from Barnes, 1967; 1970; 1979; 1981

- Ecb Calvert Bluff Formation
- Esb Simsboro Formation
- Eh Hooper Formation

Base map adapted from Army Map Service base maps, 10,000-meter Universal Transverse Mercator grid, zones 14 and 15. Cartography by John T. Ames under the supervision of Richard L. Dillon.

by W. B. Ayers, Jr., and Amy H. Lewis



**PLATE 28. SIMSBORO OVERBURDEN MAP**

1985

The depth to the top of the Simsboro (Simsboro overburden) provides an estimate of the depth required to test the entire lignite-bearing Calvert Bluff Formation.

04E1984-28

[GWDB Reports and Downloads](#)

**Well Basic Details**

[Scanned Documents](#)

State Well Number	5903437
County	Robertson
River Basin	Brazos
Groundwater Management Area	12
Regional Water Planning Area	G - Brazos G
Groundwater Conservation District	Brazos Valley GCD
Latitude (decimal degrees)	30.938611
Latitude (degrees minutes seconds)	30° 56' 19" N
Longitude (decimal degrees)	-96.741667
Longitude (degrees minutes seconds)	096° 44' 30" W
Coordinate Source	+/- 1 Second
Aquifer Code	124SMBR - Simsboro Sand Member of Rockdale Formation
Aquifer	Carrizo-Wilcox
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	290
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	460
Well Depth Source	Owner
Drilling Start Date	
Drilling End Date	0/0/1975
Drilling Method	
Borehole Completion	

Well Type	Withdrawal of Water
Well Use	Domestic
Water Level Observation	GCD Current Site Visit
Water Quality Available	Yes
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	Lee Fazzino Sr.
Driller	G. P. Brien
Other Data Available	
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	
Groundwater Conservation District Well Number	
Owner Well Number	
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	11/12/1992
Last Update Date	9/5/2014

Remarks Historical observation well.

<b>Casing</b>						
Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
4	Blank				0	160
2	Screen				450	460

**Well Tests - No Data**

**Lithology - No Data**

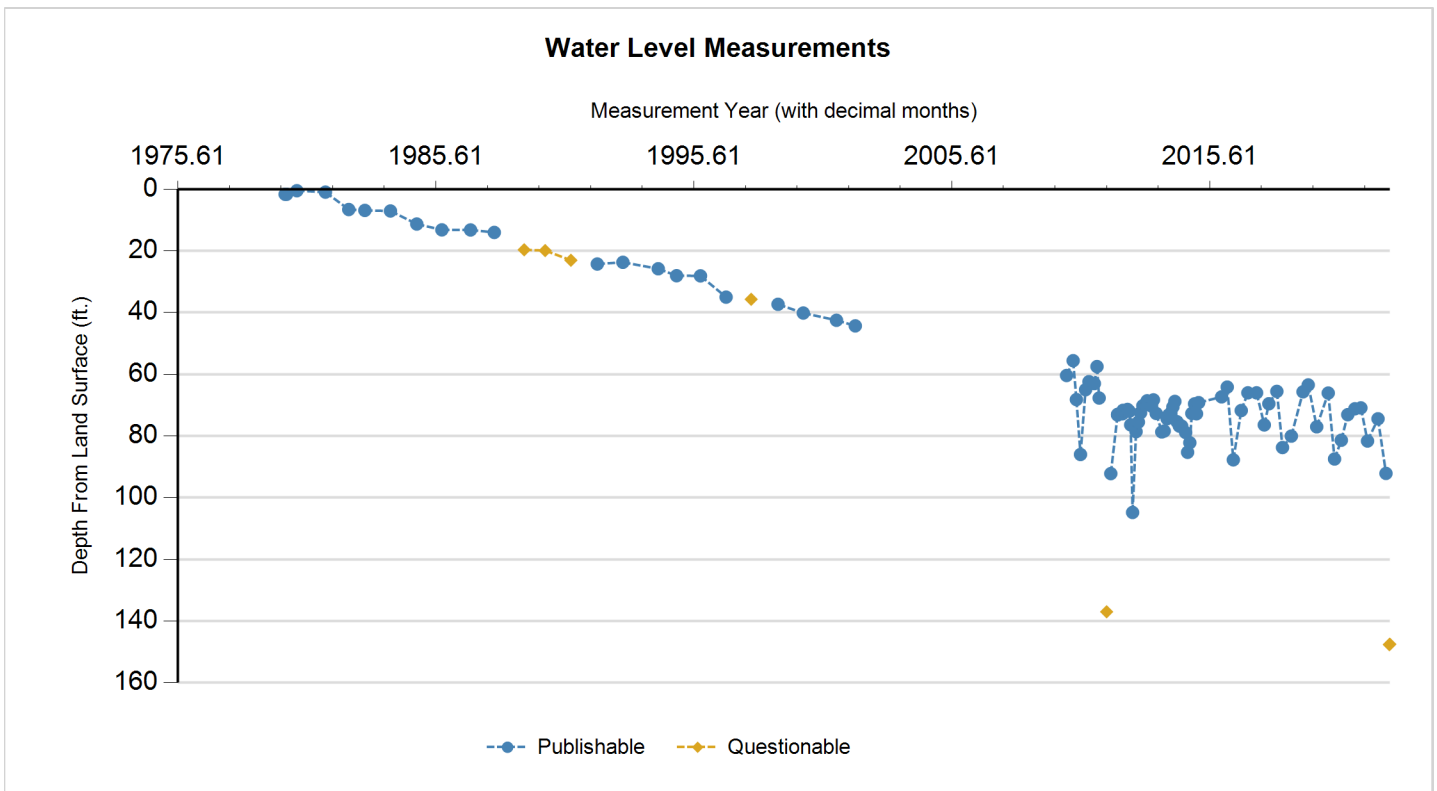
**Annular Seal Range - No Data**

**Borehole - No Data**

**Plugged Back - No Data**

**Filter Pack - No Data**

**Packers - No Data**



Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
X	8/12/1975					1	Registered Water Well Driller		27	
P	10/9/1979		1.65		288.35	1	Other or Source of Measurement Unknown	Unknown		
P	10/29/1979		1.65	0.00	288.35	1	Texas Water Development Board	Steel Tape		
P	3/20/1980		0.5	(1.15)	289.5	1	Texas Water Development Board	Steel Tape		
P	4/29/1981		0.95	0.45	289.05	1	Texas Water Development Board	Steel Tape		
P	3/24/1982		6.6	5.65	283.4	1	Texas Water Development Board	Steel Tape		
P	11/12/1982		6.88	0.28	283.12	1	Texas Water Development Board	Steel Tape		
P	11/9/1983		7.07	0.19	282.93	1	Texas Water Development Board	Steel Tape		
P	11/16/1984		11.3	4.23	278.7	1	Texas Water Development Board	Steel Tape		
P	11/6/1985		13.19	1.89	276.81	1	Texas Water Development Board	Steel Tape		
P	12/17/1986		13.22	0.03	276.78	1	Texas Water Development Board	Steel Tape		
P	11/18/1987		14.02	0.80	275.98	1	Texas Water Development Board	Steel Tape		
Q	1/11/1989		19.65	5.63	270.35	1	Texas Water Development Board	Steel Tape	2	
Q	11/8/1989		19.9	0.25	270.1	1	Texas Water Development Board	Steel Tape	2	
Q	11/7/1990		23.05	3.15	266.95	1	Texas Water Development Board	Steel Tape	2	
P	11/15/1991		24.26	1.21	265.74	1	Texas Water Development Board	Steel Tape		
P	11/12/1992		23.7	(0.56)	266.3	1	Texas Water Development Board	Steel Tape		
P	3/22/1994		25.8	2.10	264.2	1	Texas Water Development Board	Steel Tape		
P	12/12/1994		28.05	2.25	261.95	1	Texas Water Development Board	Steel Tape		
P	11/15/1995		28.1	0.05	261.9	1	Texas Water Development Board	Steel Tape		
P	11/12/1996		35	6.90	255	1	Texas Water Development Board	Steel Tape		

**Texas Water Development Board (TWDB)  
Groundwater Database (GWDB)  
Well Information Report for State Well Number  
59-03-437**

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
Q	11/3/1997		35.7	0.70	254.3	1	Texas Water Development Board	Steel Tape	2	
P	11/17/1998		37.32	1.62	252.68	1	Texas Water Development Board	Steel Tape		
P	11/9/1999		40.15	2.83	249.85	1	Texas Water Development Board	Steel Tape		
P	2/19/2001		42.5	2.35	247.5	1	Texas Water Development Board	Steel Tape		
P	11/15/2001		44.31	1.81	245.69	1	Texas Water Development Board	Steel Tape		
X	11/11/2002					1	Texas Water Development Board		30	
X	10/9/2003					1	Texas Water Development Board		30	
X	2/26/2005					1	Texas Water Development Board		30	
X	12/14/2005					1	Texas Water Development Board		30	
P	1/19/2010		60.4		229.6	1	Groundwater Conservation District	Sonic/Laser Device		
P	4/22/2010		55.6	(4.80)	234.4	1	Groundwater Conservation District	Sonic/Laser Device		
P	6/8/2010		68.2	12.60	221.8	1	Groundwater Conservation District	Sonic/Laser Device		
P	8/6/2010		86	17.80	204	1	Groundwater Conservation District	Sonic/Laser Device		
P	10/18/2010		65	(21.00)	225	1	Groundwater Conservation District	Sonic/Laser Device		
P	12/6/2010		62.4	(2.60)	227.6	1	Groundwater Conservation District	Sonic/Laser Device		
P	2/17/2011		63	0.60	227	1	Groundwater Conservation District	Sonic/Laser Device		
P	3/24/2011		57.5	(5.50)	232.5	1	Groundwater Conservation District	Sonic/Laser Device		
P	4/25/2011		67.7	10.20	222.3	1	Groundwater Conservation District	Sonic/Laser Device		
Q	8/11/2011		137	69.30	153	1	Groundwater Conservation District	Sonic/Laser Device	12	
P	10/10/2011		92.2	(44.80)	197.8	1	Groundwater Conservation District	Sonic/Laser Device		
P	1/10/2012		73.2	(19.00)	216.8	1	Groundwater Conservation District	Sonic/Laser Device		
P	1/11/2012		73	(0.20)	217	1	Groundwater Conservation District	Sonic/Laser Device		
P	3/20/2012		72.8	(0.20)	217.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	3/27/2012		71.7	(1.10)	218.3	1	Groundwater Conservation District	Sonic/Laser Device		
P	5/31/2012		71.4	(0.30)	218.6	1	Groundwater Conservation District	Sonic/Laser Device		
P	6/26/2012		72	0.60	218	1	Groundwater Conservation District	Sonic/Laser Device		
P	7/16/2012		76.4	4.40	213.6	1	Groundwater Conservation District	Sonic/Laser Device		
P	8/13/2012		104.8	28.40	185.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	10/2/2012		78.6	(26.20)	211.4	1	Groundwater Conservation District	Sonic/Laser Device		
P	11/5/2012		75.5	(3.10)	214.5	1	Groundwater Conservation District	Sonic/Laser Device		
P	12/6/2012		72.5	(3.00)	217.5	1	Groundwater Conservation District	Sonic/Laser Device		



**Texas Water Development Board (TWDB)  
Groundwater Database (GWDB)  
Well Information Report for State Well Number  
59-03-437**

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	1/3/2013		70.2	(2.30)	219.8	1	Groundwater Conservation District	Sonic/Laser Device		
P	2/7/2013		69.8	(0.40)	220.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	3/4/2013		68.6	(1.20)	221.4	1	Groundwater Conservation District	Sonic/Laser Device		
P	4/2/2013		69.1	0.50	220.9	1	Groundwater Conservation District	Sonic/Laser Device		
P	5/6/2013		70.3	1.20	219.7	1	Groundwater Conservation District	Sonic/Laser Device		
P	6/3/2013		68.3	(2.00)	221.7	1	Groundwater Conservation District	Sonic/Laser Device		
P	7/12/2013		72.7	4.40	217.3	1	Groundwater Conservation District	Sonic/Laser Device		
P	10/1/2013		78.7	6.00	211.3	1	Groundwater Conservation District	Sonic/Laser Device		
P	11/5/2013		78.4	(0.30)	211.6	1	Groundwater Conservation District	Sonic/Laser Device		
P	12/16/2013		74.4	(4.00)	215.6	1	Groundwater Conservation District	Sonic/Laser Device		
P	1/3/2014		73.2	(1.20)	216.8	1	Groundwater Conservation District	Sonic/Laser Device		
P	2/3/2014		72.6	(0.60)	217.4	1	Groundwater Conservation District	Sonic/Laser Device		
P	3/3/2014		70.6	(2.00)	219.4	1	Groundwater Conservation District	Sonic/Laser Device		
P	4/1/2014		68.8	(1.80)	221.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	5/2/2014		75.4	6.60	214.6	1	Groundwater Conservation District	Sonic/Laser Device		
P	6/5/2014		76.8	1.40	213.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	7/7/2014		76.8	0.00	213.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	9/4/2014		78.9	2.10	211.1	1	Groundwater Conservation District	Sonic/Laser Device		
P	10/1/2014		85.3	6.40	204.7	1	Groundwater Conservation District	Sonic/Laser Device		
P	11/3/2014		82.2	(3.10)	207.8	1	Groundwater Conservation District	Sonic/Laser Device		
P	12/1/2014		72.7	(9.50)	217.3	1	Groundwater Conservation District	Sonic/Laser Device		
P	1/5/2015		69.6	(3.10)	220.4	1	Groundwater Conservation District	Sonic/Laser Device		
P	2/2/2015		72.8	3.20	217.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	3/2/2015		69.2	(3.60)	220.8	1	Groundwater Conservation District	Electric Line		
P	1/22/2016		67.33	(1.87)	222.67	1	Groundwater Conservation District	Electric Line		
P	4/12/2016		64.16	(3.17)	225.84	1	Groundwater Conservation District	Electric Line		
P	7/8/2016		87.74	23.58	202.26	1	Groundwater Conservation District	Electric Line		

**Texas Water Development Board (TWDB)  
Groundwater Database (GWDB)  
Well Information Report for State Well Number  
59-03-437**

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	10/30/2016		71.75	(15.99)	218.25	1	Groundwater Conservation District	Electric Line		
P	1/29/2017		66.02	(5.73)	223.98	1	Groundwater Conservation District	Electric Line		
P	6/2/2017		66.02	0.00	223.98	1	Groundwater Conservation District	Electric Line		
P	9/21/2017	13:2	76.42	10.40	213.58	1	Groundwater Conservation District	Electric Line		
P	11/26/2017	17:1	69.56	(6.86)	220.44	1	Groundwater Conservation District	Steel Tape		
P	3/14/2018	10:5	65.55	(4.01)	224.45	1	Groundwater Conservation District	Electric Line		
P	6/4/2018	12:1	83.75	18.20	206.25	1	Groundwater Conservation District	Electric Line		
P	10/9/2018		80.04	(3.71)	209.96	1	Groundwater Conservation District	Electric Line		Static < 24 hrs
P	3/19/2019		65.69	(14.35)	224.31	1	Groundwater Conservation District	Electric Line		Static
P	6/3/2019		63.46	(2.23)	226.54	1	Groundwater Conservation District	Steel Tape		Static
P	10/3/2019		77.04	13.58	212.96	1	Groundwater Conservation District	Steel Tape		Static < 24 hrs
P	3/11/2020		66.09	(10.95)	223.91	1	Groundwater Conservation District	Electric Line		Static
P	6/10/2020		87.47	21.38	202.53	1	Groundwater Conservation District	Steel Tape		Static < 24 hrs
P	9/16/2020		81.38	(6.09)	208.62	1	Groundwater Conservation District	Steel Tape		
P	12/17/2020		73.1	(8.28)	216.9	1	Groundwater Conservation District	Steel Tape		
P	3/22/2021		71.2	(1.90)	218.8	1	Groundwater Conservation District	Steel Tape		
P	6/18/2021		70.89	(0.31)	219.11	1	Groundwater Conservation District	Steel Tape		
P	9/22/2021		81.64	10.75	208.36	1	Groundwater Conservation District	Steel Tape		
P	2/15/2022		74.44	(7.20)	215.56	1	Groundwater Conservation District	Steel Tape		
P	6/8/2022		92.14	17.70	197.86	1	Groundwater Conservation District	Electric Line		
Q	7/26/2022		147.65	55.51	142.35	1	Groundwater Conservation District	Steel Tape	12	Farm Pivot
Q	8/2/2022		147.5	(0.15)	142.5	1	Groundwater Conservation District	Sonic/Laser Device	12	

**Code Descriptions**

Status Code	Status Description
P	Publishable
Q	Questionable
X	No Measurement

Remark ID	Remark Description
2	Pumping-level measurement
12	Uncertain of reason for questionable measurement
27	Well flowing and unable to shut-in
30	Well temporarily inaccessible due to impassable roads, locked gate, etc.

### Water Quality Analysis

**Sample Date:** 3/20/1980    **Sample Time:** 0000    **Sample Number:** 1    **Collection Entity:** Texas Water Development Board  
**Sampled Aquifer:** Simsboro Sand Member of Rockdale Formation  
**Analyzed Lab:** Texas Department of Health    **Reliability:** Collected from pumped well, but not filtered or preserved  
**Collection Remarks:** No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		5	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CaCO3)		318	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		375.87	mg/L	
00910	CALCIUM (MG/L)		4	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		6	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		43	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CaCO3)		12	mg/L	
00920	MAGNESIUM (MG/L)		0.5	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)	<	0.1	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.5	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.12		
00955	SILICA, DISSOLVED (MG/L AS SiO2)		15	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		21.31		
00932	SODIUM, CALCULATED, PERCENT		96	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)		170	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		755	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		2.9	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		23	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		426	mg/L	

### Water Quality Analysis

**Sample Date:** 7/29/1987    **Sample Time:** 0000    **Sample Number:** 1    **Collection Entity:** Texas Water Development Board

**Sampled Aquifer:** Simsboro Sand Member of Rockdale Formation

**Analyzed Lab:** Texas Department of Health

**Reliability:** Reliability unknown or not available

**Collection Remarks:** No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)			5 mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CaCO3)			316 mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)			373.43 mg/L	
00910	CALCIUM (MG/L)			4 mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)			6 mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)			45 mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)			0.4 mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CaCO3)			14 mg/L	
00920	MAGNESIUM (MG/L)			1 mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)			0.04 mg/L	
00400	PH (STANDARD UNITS), FIELD			8.5 SU	
00937	POTASSIUM, TOTAL (MG/L AS K)			1 mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED			6.04	
00955	SILICA, DISSOLVED (MG/L AS SiO2)			15 mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)			19.7	
00932	SODIUM, CALCULATED, PERCENT			96 PCT	
00929	SODIUM, TOTAL (MG/L AS NA)			170 mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)			755 MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)			3 mg/L	
00010	TEMPERATURE, WATER (CELSIUS)			25 C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)			429 mg/L	

\* Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..

**GWDB DISCLAIMER:** Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (<https://www.twdb.texas.gov/groundwater/data/gwdbbrpt.asp>) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at [GroundwaterData@twdb.texas.gov](mailto:GroundwaterData@twdb.texas.gov).

[GWDB Reports and Downloads](#)

**Well Basic Details**

[Scanned Documents](#)

State Well Number	5904701
County	Robertson
River Basin	Brazos
Groundwater Management Area	12
Regional Water Planning Area	G - Brazos G
Groundwater Conservation District	Brazos Valley GCD
Latitude (decimal degrees)	30.885834
Latitude (degrees minutes seconds)	30° 53' 09" N
Longitude (decimal degrees)	-96.619444
Longitude (degrees minutes seconds)	096° 37' 10" W
Coordinate Source	Global Positioning System - GPS
Aquifer Code	124SMBR - Simsboro Sand Member of Rockdale Formation
Aquifer	Carrizo-Wilcox
Aquifer Pick Method	
Land Surface Elevation (feet above sea level)	296
Land Surface Elevation Method	Interpolated From Topo Map
Well Depth (feet below land surface)	1441
Well Depth Source	Driller's Log
Drilling Start Date	
Drilling End Date	11/13/1942
Drilling Method	Mud (Hydraulic) Rotary
Borehole Completion	Gravel Pack w/Screen

Well Type	Withdrawal of Water
Well Use	Public Supply
Water Level Observation	GCD Current Site Visit
Water Quality Available	Yes
Pump	Submersible
Pump Depth (feet below land surface)	
Power Type	Electric Motor
Annular Seal Method	
Surface Completion	
Owner	City of Hearne Well #4 POW Camp
Driller	Layne-Texas Co.
Other Data Available	Drillers Log
Well Report Tracking Number	
Plugging Report Tracking Number	
U.S. Geological Survey Site Number	
Texas Commission on Environmental Quality Source Id	G1980004D
Groundwater Conservation District Well Number	
Owner Well Number	4 POW Camp
Other Well Number	
Previous State Well Number	
Reporting Agency	Texas Water Development Board
Created Date	3/13/1998
Last Update Date	4/19/2017

Remarks

<b>Casing</b>						
Diameter (in.)	Casing Type	Casing Material	Schedule	Gauge	Top Depth (ft.)	Bottom Depth (ft.)
10	Blank	Steel			0	110
8	Blank	Steel			0	1203
6	Blank	Steel			1163	1221
6	Screen	Stainless Steel			1221	1261
6	Screen	Stainless Steel			1276	1316
6	Screen	Stainless Steel			1326	1426

**Well Tests - No Data**

<b>Lithology</b>		
Top Depth (ft.)	Bottom Depth (ft.)	Description
0	40	Yellow Sand
40	46	Shale
46	48	Rock

48	69	Sand
69	73	Shale
73	74	Rock
74	87	Shale
87	264	Sand
264	288	Shale
288	299	Hard Sand
299	300	Rock
300	325	Hard Sand
325	409	Shale and Sand
409	427	Sand
427	493	Shale
493	504	Sandy Shale
504	505	Rock
505	521	Shale
521	522	Rock
522	556	Shale and Sand
556	560	Sand
560	596	Shale and Lignite
596	628	Shale and Sand
628	629	Rock
629	656	Shale
656	678	Sand
678	708	Shale and Sand
708	718	Hard Shale and Sand
718	723	Shale and Sand
723	845	Shale
845	856	Sand
856	901	Shale
901	916	Sand
916	927	Shale
927	943	Gumbo
943	993	Sand
993	1004	Sand and Shale
1004	1045	Shale
1045	1049	Sand and Rock
1049	1062	Sandy Shale
1062	1123	Shale
1123	1190	Sandy Shale
1190	1193	Sandy Shale
1193	1262	Sand
1262	1268	Shale
1268	1315	Sand
1315	1316	Rock
1316	1430	Sand

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1430

1440 Shale

**Annular Seal Range - No Data**

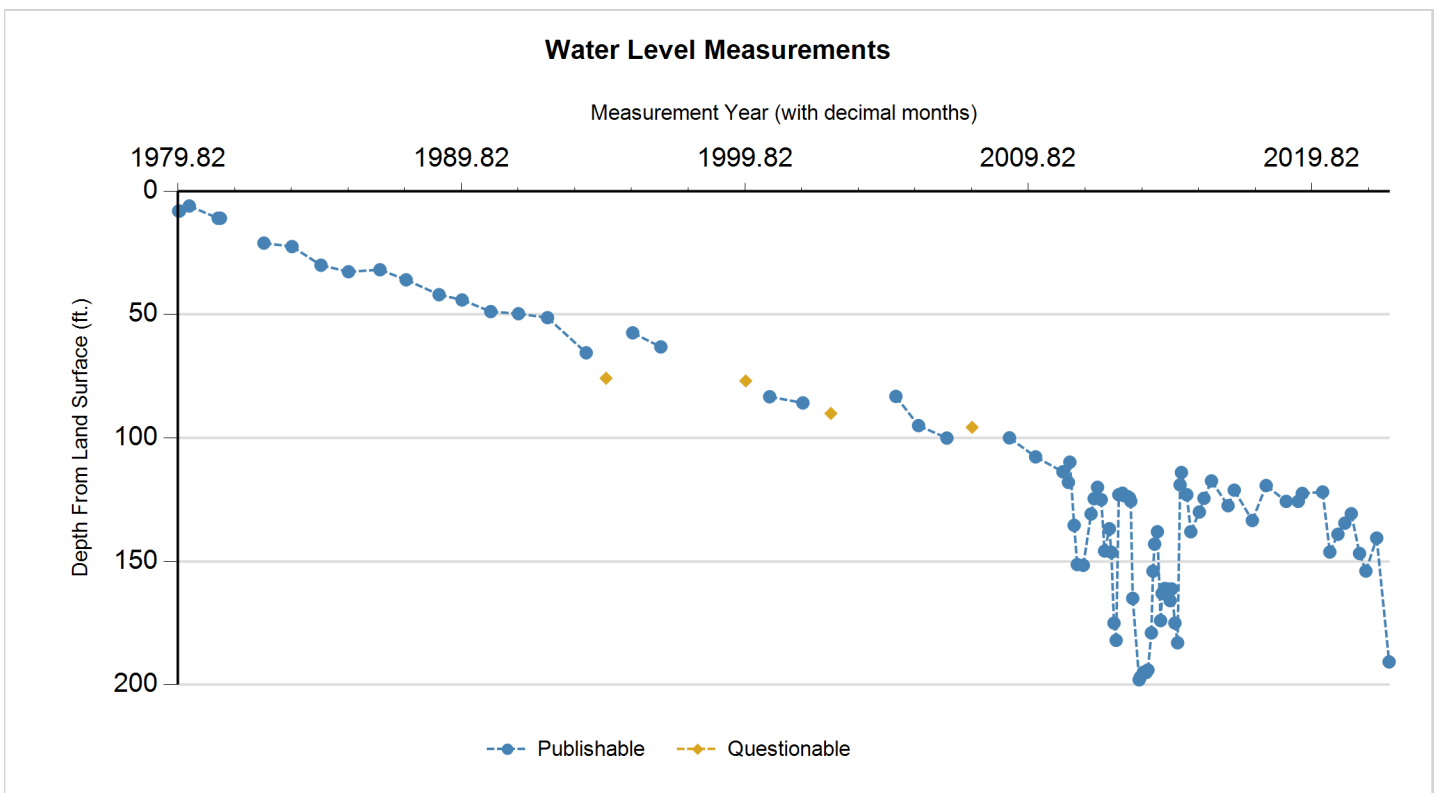
**Borehole - No Data**

**Plugged Back - No Data**

**Filter Pack - No Data**

**Packers - No Data**

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Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/9/1979		8.05		287.95	1	Other or Source of Measurement Unknown	Unknown		
P	11/19/1979		8.05	0.00	287.95	1	Texas Water Development Board	Steel Tape		
P	3/21/1980		6	(2.05)	290	1	Texas Water Development Board	Steel Tape		
P	3/27/1981		10.98	4.98	285.02	1	Other or Source of Measurement Unknown	Unknown		
P	4/27/1981		10.98	0.00	285.02	1	Texas Water Development Board	Steel Tape		
X	3/24/1982					1	Texas Water Development Board		19	
P	11/12/1982		21.04		274.96	1	Texas Water Development Board	Steel Tape		
P	11/9/1983		22.45	1.41	273.55	1	Texas Water Development Board	Steel Tape		
P	11/16/1984		30	7.55	266	1	Texas Water Development Board	Steel Tape		
P	11/6/1985		32.65	2.65	263.35	1	Texas Water Development Board	Steel Tape		
P	12/16/1986		31.84	(0.81)	264.16	1	Texas Water Development Board	Steel Tape		
P	11/18/1987		35.92	4.08	260.08	1	Texas Water Development Board	Steel Tape		
P	1/12/1989		41.95	6.03	254.05	1	Texas Water Development Board	Steel Tape		
P	11/8/1989		44.07	2.12	251.93	1	Texas Water Development Board	Steel Tape		
P	11/12/1990		48.79	4.72	247.21	1	Texas Water Development Board	Steel Tape		
P	11/4/1991		49.66	0.87	246.34	1	Texas Water Development Board	Steel Tape		
P	11/13/1992		51.25	1.59	244.75	1	Texas Water Development Board	Steel Tape		
P	3/21/1994		65.5	14.25	230.5	1	Texas Water Development Board	Steel Tape		
Q	12/8/1994		75.8	10.30	220.2	1	Texas Water Development Board	Steel Tape	2	
P	11/15/1995		57.4	(18.40)	238.6	1	Texas Water Development Board	Steel Tape		



**Texas Water Development Board (TWDB)  
Groundwater Database (GWDB)  
Well Information Report for State Well Number  
59-04-701**

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/12/1996		63.12	5.72	232.88	1	Texas Water Development Board	Steel Tape		
X	11/5/1997					1	Texas Water Development Board		19	
X	11/17/1998					1	Texas Water Development Board		19	
Q	11/10/1999		76.88		219.12	1	Texas Water Development Board	Steel Tape	4	
P	9/13/2000		83.3	6.42	212.7	1	Texas Water Development Board	Steel Tape		
P	11/16/2001		85.79	2.49	210.21	1	Texas Water Development Board	Steel Tape		
Q	11/12/2002		90.06	4.27	205.94	1	Texas Water Development Board	Steel Tape	16	
X	10/10/2003					1	Texas Water Development Board		19	
P	2/23/2005		83.15		212.85	1	Texas Water Development Board	Steel Tape		
P	12/15/2005		95	11.85	201	1	Texas Water Development Board	Steel Tape		
P	12/15/2006		100.04	5.04	195.96	1	Texas Water Development Board	Steel Tape		
Q	11/5/2007		95.7	(4.34)	200.3	1	Texas Water Development Board	Steel Tape	4	
P	2/25/2009		99.96	4.26	196.04	1	Texas Water Development Board	Steel Tape		
P	1/27/2010		107.67	7.71	188.33	1	Texas Water Development Board	Steel Tape		
P	1/13/2011		113.72	6.05	182.28	1	Texas Water Development Board	Steel Tape		
P	3/24/2011		118	4.28	178	1	Groundwater Conservation District	Sonic/Laser Device		
P	4/13/2011		109.8	(8.20)	186.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	6/8/2011		135.4	25.60	160.6	1	Groundwater Conservation District	Sonic/Laser Device		
P	7/18/2011		151.3	15.90	144.7	1	Groundwater Conservation District	Sonic/Laser Device		
P	10/6/2011		151.6	0.30	144.4	1	Groundwater Conservation District	Sonic/Laser Device		
P	1/11/2012		130.8	(20.80)	165.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	2/20/2012		124.6	(6.20)	171.4	1	Groundwater Conservation District	Sonic/Laser Device		
P	4/4/2012		120	(4.60)	176	1	Groundwater Conservation District	Sonic/Laser Device		
P	5/22/2012		125	5.00	171	1	Groundwater Conservation District	Sonic/Laser Device		
P	7/5/2012		145.8	20.80	150.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	9/7/2012		136.8	(9.00)	159.2	1	Groundwater Conservation District	Sonic/Laser Device		
P	10/2/2012		146.3	9.50	149.7	1	Groundwater Conservation District	Sonic/Laser Device		
P	11/6/2012		175	28.70	121	1	Groundwater Conservation District	Air Line		
P	12/4/2012		182	7.00	114	1	Groundwater Conservation District	Air Line		
P	1/3/2013		123	(59.00)	173	1	Groundwater Conservation District	Electric Line		
P	2/20/2013		122.4	(0.60)	173.6	1	Groundwater Conservation District	Sonic/Laser Device		
P	3/13/2013		123.4	1.00	172.6	1	Groundwater Conservation District	Sonic/Laser Device		
P	4/29/2013		123.8	0.40	172.2	1	Groundwater Conservation District	Sonic/Laser Device		

**Texas Water Development Board (TWDB)  
Groundwater Database (GWDB)  
Well Information Report for State Well Number  
59-04-701**

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	5/20/2013		124.3	0.50	171.7	1	Groundwater Conservation District	Sonic/Laser Device		
P	6/7/2013		125.6	1.30	170.4	1	Groundwater Conservation District	Sonic/Laser Device		
P	7/2/2013		165	39.40	131	1	Groundwater Conservation District	Air Line		
P	9/25/2013		198	33.00	98	1	Groundwater Conservation District	Air Line		
P	10/9/2013		197	(1.00)	99	1	Groundwater Conservation District	Air Line		
P	11/19/2013		195	(2.00)	101	1	Groundwater Conservation District	Air Line		
P	12/27/2013		195	0.00	101	1	Groundwater Conservation District	Air Line		
P	1/13/2014		194	(1.00)	102	1	Groundwater Conservation District	Air Line		
P	2/27/2014		179	(15.00)	117	1	Groundwater Conservation District	Air Line		
P	3/18/2014		154	(25.00)	142	1	Groundwater Conservation District	Air Line		
P	4/9/2014		143	(11.00)	153	1	Groundwater Conservation District	Air Line		
P	5/15/2014		138	(5.00)	158	1	Groundwater Conservation District	Air Line		
P	6/26/2014		174	36.00	122	1	Groundwater Conservation District	Sonic/Laser Device		
P	7/16/2014		163	(11.00)	133	1	Groundwater Conservation District	Air Line		
P	8/19/2014		161	(2.00)	135	1	Groundwater Conservation District	Air Line		
P	9/25/2014		161.2	0.20	134.8	1	Groundwater Conservation District	Air Line		
P	10/29/2014		165.9	4.70	130.1	1	Groundwater Conservation District	Air Line		
P	11/19/2014		161.2	(4.70)	134.8	1	Groundwater Conservation District	Air Line		
P	12/31/2014		175	13.80	121	1	Groundwater Conservation District	Air Line		
P	1/30/2015		183	8.00	113	1	Groundwater Conservation District	Air Line		
P	3/2/2015		119	(64.00)	177	1	Groundwater Conservation District	Electric Line		
P	3/19/2015		114	(5.00)	182	1	Groundwater Conservation District	Electric Line		
P	5/28/2015		123	9.00	173	1	Groundwater Conservation District	Electric Line		
P	7/20/2015		138	15.00	158	1	Groundwater Conservation District	Air Line		
P	11/10/2015		130	(8.00)	166	1	Groundwater Conservation District	Electric Line		
P	1/4/2016		124.45	(5.55)	171.55	1	Groundwater Conservation District	Electric Line		
P	4/11/2016		117.42	(7.03)	178.58	1	Groundwater Conservation District	Electric Line		

**Texas Water Development Board (TWDB)  
Groundwater Database (GWDB)  
Well Information Report for State Well Number  
59-04-701**

Status Code	Date	Time	Water Level (ft. below land surface)	Change value in ( ) indicates rise in level	Water Elevation (ft. above sea level)	Meas #	Measuring Agency	Method	Remark ID	Comments
P	11/15/2016		127.45	10.03	168.55	1	Groundwater Conservation District	Electric Line		
P	1/29/2017		121.15	(6.30)	174.85	1	Groundwater Conservation District	Electric Line		
P	9/22/2017	15:4	133.45	12.30	162.55	1	Groundwater Conservation District	Steel Tape		
P	3/15/2018	8:08	119.28	(14.17)	176.72	1	Groundwater Conservation District	Steel Tape		
P	12/4/2018		125.7	6.42	170.3	1	Groundwater Conservation District	Steel Tape		Static
P	5/3/2019		125.69	(0.01)	170.31	1	Groundwater Conservation District	Steel Tape		Static
P	6/25/2019		122.48	(3.21)	173.52	1	Groundwater Conservation District	Steel Tape		Static < 24 hrs
P	3/12/2020		121.9	(0.58)	174.1	1	Groundwater Conservation District	Steel Tape		Static
P	6/15/2020		146.23	24.33	149.77	1	Groundwater Conservation District	Steel Tape		Static
P	9/29/2020		139.03	(7.20)	156.97	1	Groundwater Conservation District	Steel Tape		
P	12/28/2020		134.52	(4.51)	161.48	1	Groundwater Conservation District	Steel Tape		
P	3/16/2021		130.71	(3.81)	165.29	1	Groundwater Conservation District	Steel Tape		
P	7/2/2021		146.81	16.10	149.19	1	Groundwater Conservation District	Steel Tape		
P	9/24/2021		153.94	7.13	142.06	1	Groundwater Conservation District	Steel Tape		
P	2/8/2022		140.56	(13.38)	155.44	1	Groundwater Conservation District	Steel Tape		
P	7/18/2022		190.75	50.19	105.25	1	Groundwater Conservation District	Steel Tape		

**Code Descriptions**

Status Code	Status Description
P	Publishable
Q	Questionable
X	No Measurement

Remark ID	Remark Description
2	Pumping-level measurement
4	Well pumped recently
16	Tape marked with oil or gasoline
19	Well pumping

### Water Quality Analysis

**Sample Date:** 4/6/1943    **Sample Time:** 0000    **Sample Number:** 1    **Collection Entity:** Registered Water Well Driller

**Sampled Aquifer:** Simsboro Sand Member of Rockdale Formation

**Analyzed Lab:** Curtis Lab

**Reliability:** Reliability unknown or not available

**Collection Remarks:** No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		0	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CaCO3)		385.25	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		470.14	mg/L	
00910	CALCIUM (MG/L)		3.6	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		52	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CaCO3)		12	mg/L	
01045	IRON, TOTAL (UG/L AS FE)		200	ug/L	
00920	MAGNESIUM (MG/L)		0.8	mg/L	
00400	PH (STANDARD UNITS), FIELD		8	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		7.46		
00955	SILICA, DISSOLVED (MG/L AS SiO2)		21	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		33.07		
00932	SODIUM, CALCULATED, PERCENT		97	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)	calculate d	208	mg/L	
00945	SULFATE, TOTAL (MG/L AS SO4)		0	mg/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		516	mg/L	



### Water Quality Analysis

**Sample Date:** 12/0/1956    **Sample Time:** 0000    **Sample Number:** 1    **Collection Entity:** Texas Department of Health

**Sampled Aquifer:** Simsboro Sand Member of Rockdale Formation

**Analyzed Lab:** Texas Department of Health

**Reliability:** Reliability unknown or not available

**Collection Remarks:** No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)			0 mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CaCO3)		296.72	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		362.1	mg/L	
00910	CALCIUM (MG/L)		4	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		50	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CaCO3)		18	mg/L	
01045	IRON, TOTAL (UG/L AS FE)		300	ug/L	
00920	MAGNESIUM (MG/L)		2	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)	<	0.4	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.2	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		5.57		
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		19.27		
00932	SODIUM, CALCULATED, PERCENT		95	PCT	
00929	SODIUM, TOTAL (MG/L AS NA)	calculate d	189	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		830	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		27	mg/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		450	mg/L	

### Water Quality Analysis

**Sample Date:** 7/22/1980    **Sample Time:** 0000    **Sample Number:** 1    **Collection Entity:** Texas Water Development Board  
**Sampled Aquifer:** Simsboro Sand Member of Rockdale Formation  
**Analyzed Lab:** Texas Department of Health    **Reliability:** Collected from pumped well, but not filtered or preserved  
**Collection Remarks:** No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		11	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CaCO3)		345	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		394.17	mg/L	
00910	CALCIUM (MG/L)		2.8	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		13.2	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		51	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CaCO3)		9	mg/L	
00920	MAGNESIUM (MG/L)		0.73	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)	<	0.1	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.8	SU	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.7		
00955	SILICA, DISSOLVED (MG/L AS SiO2)		17	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		23.37		
00932	SODIUM, CALCULATED, PERCENT		97	PCT	
00929	SODIUM, TOTAL (MG/L AS Na)		183	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		805	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		1.9	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		21	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		463	mg/L	

### Water Quality Analysis

**Sample Date:** 7/29/1987    **Sample Time:** 0000    **Sample Number:** 1    **Collection Entity:** Texas Water Development Board

**Sampled Aquifer:** Simsboro Sand Member of Rockdale Formation

**Analyzed Lab:** Texas Department of Health

**Reliability:** Reliability unknown or not available

**Collection Remarks:** No Data

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		7	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CaCO3)		339	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		396.61	mg/L	
00910	CALCIUM (MG/L)		3	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		8.4	mg/L	
00940	CHLORIDE, TOTAL (MG/L AS CL)		41	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CaCO3)		11	mg/L	
01045	IRON, TOTAL (UG/L AS FE)		30	ug/L	
00920	MAGNESIUM (MG/L)		1	mg/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)	<	0.04	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.7	SU	
00937	POTASSIUM, TOTAL (MG/L AS K)		1	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.55		
00955	SILICA, DISSOLVED (MG/L AS SiO2)		17	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		23.37		
00932	SODIUM, CALCULATED, PERCENT		97	PCT	
00929	SODIUM, TOTAL (MG/L AS Na)		183	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		800	MICR	
00945	SULFATE, TOTAL (MG/L AS SO4)		6	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		34	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		455	mg/L	



### Water Quality Analysis

**Sample Date:** 7/10/1989    **Sample Time:** 1000    **Sample Number:** 1    **Collection Entity:** Texas Water Development Board

**Sampled Aquifer:** Simsboro Sand Member of Rockdale Formation

**Analyzed Lab:** Texas Department of Health

**Reliability:** Sampled using TWDB protocols

**Collection Remarks:** faucet

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		6	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CaCO3)		327	mg/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		384.41	mg/L	
00915	CALCIUM, DISSOLVED (MG/L AS Ca)		2.8	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		7.2	mg/L	
00941	CHLORIDE, DISSOLVED (MG/L AS CL)		43	mg/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.4	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CaCO3)		9	mg/L	
71865	IODIDE (MG/L AS I)	<	0.1	mg/L	
01046	IRON, DISSOLVED (UG/L AS FE)		46	ug/L	
00925	MAGNESIUM, DISSOLVED (MG/L AS MG)		0.5	mg/L	
01056	MANGANESE, DISSOLVED (UG/L AS MN)	<	20	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)	<	0.04	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.51	SU	
00935	POTASSIUM, DISSOLVED (MG/L AS K)		2.6	mg/L	
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.36		
00955	SILICA, DISSOLVED (MG/L AS SiO2)		17	mg/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		28.06		
00932	SODIUM, CALCULATED, PERCENT		97	PCT	
00930	SODIUM, DISSOLVED (MG/L AS Na)		194	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		755	MICR	
00946	SULFATE, DISSOLVED (MG/L AS SO4)		6	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		33	C	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		462	mg/L	

### Water Quality Analysis

**Sample Date:** 10/7/2009    **Sample Time:** 1400    **Sample Number:** 1    **Collection Entity:** Texas Water Development Board

**Sampled Aquifer:** Simsboro Sand Member of Rockdale Formation

**Analyzed Lab:** LCRA - Lower Colorado River Authority    **Reliability:** Sampled using TWDB protocols

**Collection Remarks:** Lab Calculated Anion/Cation Chg Bal set to TWDB Calculated Value due to an error in the lab calculated formula

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39086	ALKALINITY FIELD DISSOLVED AS CaCO3		344	mg/L	
82244	ALKALINITY PHENOLPHTHALEIN FIELD DATA (MG/L)		2	mg/L	
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)		9	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CaCO3)		332	mg/L	
01503	ALPHA, DISSOLVED (PC/L)		9.2	PC/L	1.9
01106	ALUMINUM, DISSOLVED (UG/L AS AL)	<	4.08	ug/L	
50938	ANION/CATION CHG BAL, PERCENT		-0.54	PCT	
01095	ANTIMONY, DISSOLVED (UG/L AS SB)	<	1.02	ug/L	
01000	ARSENIC, DISSOLVED (UG/L AS AS)	<	2.04	ug/L	
01005	BARIUM, DISSOLVED (UG/L AS BA)		54.9	ug/L	
01010	BERYLLIUM, DISSOLVED (UG/L AS BE)	<	1.02	ug/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		383.18	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		284	ug/L	
71870	BROMIDE, DISSOLVED, (MG/L AS BR)		0.2	mg/L	
01025	CADMIUM, DISSOLVED (UG/L AS CD)	<	1.02	ug/L	
00915	CALCIUM, DISSOLVED (MG/L AS CA)		2.89	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		10.8	mg/L	
00941	CHLORIDE, DISSOLVED (MG/L AS CL)		47	mg/L	
01030	CHROMIUM, DISSOLVED (UG/L AS CR)		1.35	ug/L	
01035	COBALT, DISSOLVED (UG/L AS CO)	<	1.02	ug/L	
01040	COPPER, DISSOLVED (UG/L AS CU)	<	1.02	ug/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.42	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CaCO3)		11	mg/L	
01046	IRON, DISSOLVED (UG/L AS FE)	<	51	ug/L	
01049	LEAD, DISSOLVED (UG/L AS PB)	<	1.02	ug/L	
01130	LITHIUM, DISSOLVED (UG/L AS LI)		17.6	ug/L	
00925	MAGNESIUM, DISSOLVED (MG/L AS MG)		0.78	mg/L	
01056	MANGANESE, DISSOLVED (UG/L AS MN)		8.16	ug/L	
71890	MERCURY, DISSOLVED (UG/L AS HG)	<	0.2	ug/L	
01060	MOLYBDENUM, DISSOLVED (UG/L AS MO)	<	1.02	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)	<	0.02	mg/L	
00631	NITRITE PLUS NITRATE, DISSOLVED (MG/L AS N)	<	0.02	mg/L	
00300	OXYGEN, DISSOLVED (MG/L)		1.3	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.34	SU	
00935	POTASSIUM, DISSOLVED (MG/L AS K)		1.38	mg/L	
09511	RADIUM 226, DISSOLVED, RADON METHOD, PC/L	<	0.2	PC/L	0.12

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Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
81366	RADIUM 228, DISSOLVED (PC/L AS RA-228)	<	1.1	PC/L	0.7
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.43		
01145	SELENIUM, DISSOLVED (UG/L AS SE)	<	4.08	ug/L	
00955	SILICA, DISSOLVED (MG/L AS SI02)		17.1	mg/L	
01075	SILVER, DISSOLVED (UG/L AS AG)	<	1.02	ug/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		23.85		
00932	SODIUM, CALCULATED, PERCENT		97	PCT	
00930	SODIUM, DISSOLVED (MG/L AS NA)		177	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		790	MICR	
01080	STRONTIUM, DISSOLVED (UG/L AS SR)		191	ug/L	
00946	SULFATE, DISSOLVED (MG/L AS SO4)		2.2	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		33.7	C	
01057	THALLIUM, DISSOLVED (UG/L AS TL)	<	1.02	ug/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		448	mg/L	
22703	URANIUM, NATURAL, DISSOLVED (UG/L AS U)	<	1.02	ug/L	
01085	VANADIUM, DISSOLVED (UG/L AS V)	<	1.02	ug/L	
01090	ZINC, DISSOLVED (UG/L AS ZN)	<	4.08	ug/L	

**Water Quality Analysis**

**Sample Date:** 8/6/2014    **Sample Time:** 1112    **Sample Number:** 1    **Collection Entity:** Texas Water Development Board

**Sampled Aquifer:** Simsboro Sand Member of Rockdale Formation

**Analyzed Lab:** LCRA - Lower Colorado River Authority    **Reliability:** Sampled using TWDB protocols

**Collection Remarks:** Lab Calculated Anion/Cation Chg Bal set to TWDB Calculated Value due to an error in the lab calculated formula

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
39086	ALKALINITY FIELD DISSOLVED AS CaCO3		344	mg/L	
00415	ALKALINITY, PHENOLPHTHALEIN (MG/L)	<	20	mg/L	
00410	ALKALINITY, TOTAL (MG/L AS CaCO3)		331	mg/L	
01503	ALPHA, DISSOLVED (PC/L)		4.68	PC/L	3.38
01106	ALUMINUM, DISSOLVED (UG/L AS AL)		4.7	ug/L	
50938	ANION/CATION CHG BAL, PERCENT		-1.92	PCT	
01095	ANTIMONY, DISSOLVED (UG/L AS SB)	<	1	ug/L	
01000	ARSENIC, DISSOLVED (UG/L AS AS)	<	2	ug/L	
01005	BARIUM, DISSOLVED (UG/L AS BA)		57.5	ug/L	
01010	BERYLLIUM, DISSOLVED (UG/L AS BE)	<	1	ug/L	
00440	BICARBONATE ION, CALCULATED (MG/L AS HCO3)		403.93	mg/L	
01020	BORON, DISSOLVED (UG/L AS B)		290	ug/L	
71870	BROMIDE, DISSOLVED, (MG/L AS BR)		0.214	mg/L	
01025	CADMIUM, DISSOLVED (UG/L AS CD)	<	1	ug/L	
00915	CALCIUM, DISSOLVED (MG/L AS CA)		2.95	mg/L	
00445	CARBONATE ION, CALCULATED (MG/L AS CO3)		0	mg/L	
00941	CHLORIDE, DISSOLVED (MG/L AS CL)		47.8	mg/L	
01030	CHROMIUM, DISSOLVED (UG/L AS CR)		1.15	ug/L	
01035	COBALT, DISSOLVED (UG/L AS CO)	<	1	ug/L	
01040	COPPER, DISSOLVED (UG/L AS CU)		1.98	ug/L	
00950	FLUORIDE, DISSOLVED (MG/L AS F)		0.45	mg/L	
00900	HARDNESS, TOTAL, CALCULATED (MG/L AS CaCO3)		11	mg/L	
01046	IRON, DISSOLVED (UG/L AS FE)	<	50	ug/L	
01049	LEAD, DISSOLVED (UG/L AS PB)	<	1	ug/L	
01130	LITHIUM, DISSOLVED (UG/L AS LI)		16.2	ug/L	
00925	MAGNESIUM, DISSOLVED (MG/L AS MG)		0.76	mg/L	
01056	MANGANESE, DISSOLVED (UG/L AS MN)		8.12	ug/L	
71890	MERCURY, DISSOLVED (UG/L AS HG)	<	0.2	ug/L	
01060	MOLYBDENUM, DISSOLVED (UG/L AS MO)	<	1	ug/L	
71851	NITRATE NITROGEN, DISSOLVED, CALCULATED (MG/L AS NO3)	<	0.02	mg/L	
00631	NITRITE PLUS NITRATE, DISSOLVED (MG/L AS N)	<	0.02	mg/L	
00400	PH (STANDARD UNITS), FIELD		8.34	SU	
00666	PHOSPHORUS, DISSOLVED (MG/L AS P)		0.0693	mg/L	
00935	POTASSIUM, DISSOLVED (MG/L AS K)		1.49	mg/L	
09503	RADIUM 226, DISSOLVED, PC/L	<	0.98	PC/L	0.15
81366	RADIUM 228, DISSOLVED (PC/L AS RA-228)	<	0.9	PC/L	0.32

**Texas Water Development Board (TWDB)  
Groundwater Database (GWDB)  
Well Information Report for State Well Number  
59-04-701**

Parameter Code	Parameter Description	Flag	Value*	Units	Plus/Minus
71860	RESIDUAL SODIUM CARBONATE, CALCULATED		6.41		
01145	SELENIUM, DISSOLVED (UG/L AS SE)	<	4	ug/L	
00955	SILICA, DISSOLVED (MG/L AS SI02)		18.3	mg/L	
01075	SILVER, DISSOLVED (UG/L AS AG)	<	1	ug/L	
00931	SODIUM ADSORPTION RATIO, CALCULATED (SAR)		22.96		
00932	SODIUM, CALCULATED, PERCENT		97	PCT	
00930	SODIUM, DISSOLVED (MG/L AS NA)		171	mg/L	
00094	SPECIFIC CONDUCTANCE, FIELD (UMHOS/CM AT 25C)		810	MICR	
01080	STRONTIUM, DISSOLVED (UG/L AS SR)		180	ug/L	
00946	SULFATE, DISSOLVED (MG/L AS SO4)	<	2	mg/L	
00010	TEMPERATURE, WATER (CELSIUS)		34.4	C	
01057	THALLIUM, DISSOLVED (UG/L AS TL)	<	1	ug/L	
70301	TOTAL DISSOLVED SOLIDS , SUM OF CONSTITUENTS (MG/L)		442	mg/L	
22703	URANIUM, NATURAL, DISSOLVED (UG/L AS U)	<	1	ug/L	
01085	VANADIUM, DISSOLVED (UG/L AS V)	<	1	ug/L	
01090	ZINC, DISSOLVED (UG/L AS ZN)	<	4	ug/L	

\* Value may not display all significant digits for parameter in results, check Scanned Documents for laboratory paperwork..

**GWDB DISCLAIMER:** Except where noted, all of the information provided in the Texas Water Development Board (TWDB) Groundwater Database (<https://www.twdb.texas.gov/groundwater/data/gwdb rpt.asp>) is believed to be accurate and reliable; however, the TWDB assumes no responsibility for any errors appearing in rules or otherwise. Further, TWDB assumes no responsibility for the use of the information provided. PLEASE NOTE that users of these data are responsible for checking the accuracy, completeness, currency and/or suitability of all information themselves. TWDB makes no guarantees or warranties as to the accuracy, completeness, currency, or suitability of the information provided via the Groundwater Database (GWDB). TWDB specifically disclaims any and all liability for any claims or damages that may result from providing GWDB data or the information it contains. For additional information or answers to questions concerning the TWDB GWDB, contact the Groundwater Data Team at [GroundwaterData@twdb.texas.gov](mailto:GroundwaterData@twdb.texas.gov).



ATTACHMENT 4 –  
SELECTED REFERENCES

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Ayers, W. B. Jr, Lewis, Amy H., *The Wilcox Group and Carrizo Sand (Paleogene) in East Central Texas : Depositional Systems and Deep-Basin Lignite*, Bureau of Economic Geology, 1985.

Dutton, Alan R., Harden, Bob, Nicot, Jean-Philippe, O'Rourke, David O., Tinker, Scott W., Jackson, John, Jackson, Katherine G., *Groundwater Availability Model for the Central Part of the Carrizo-Wilcox Aquifer in Texas*, Prepared for the Texas Water Development Board, February 2003.

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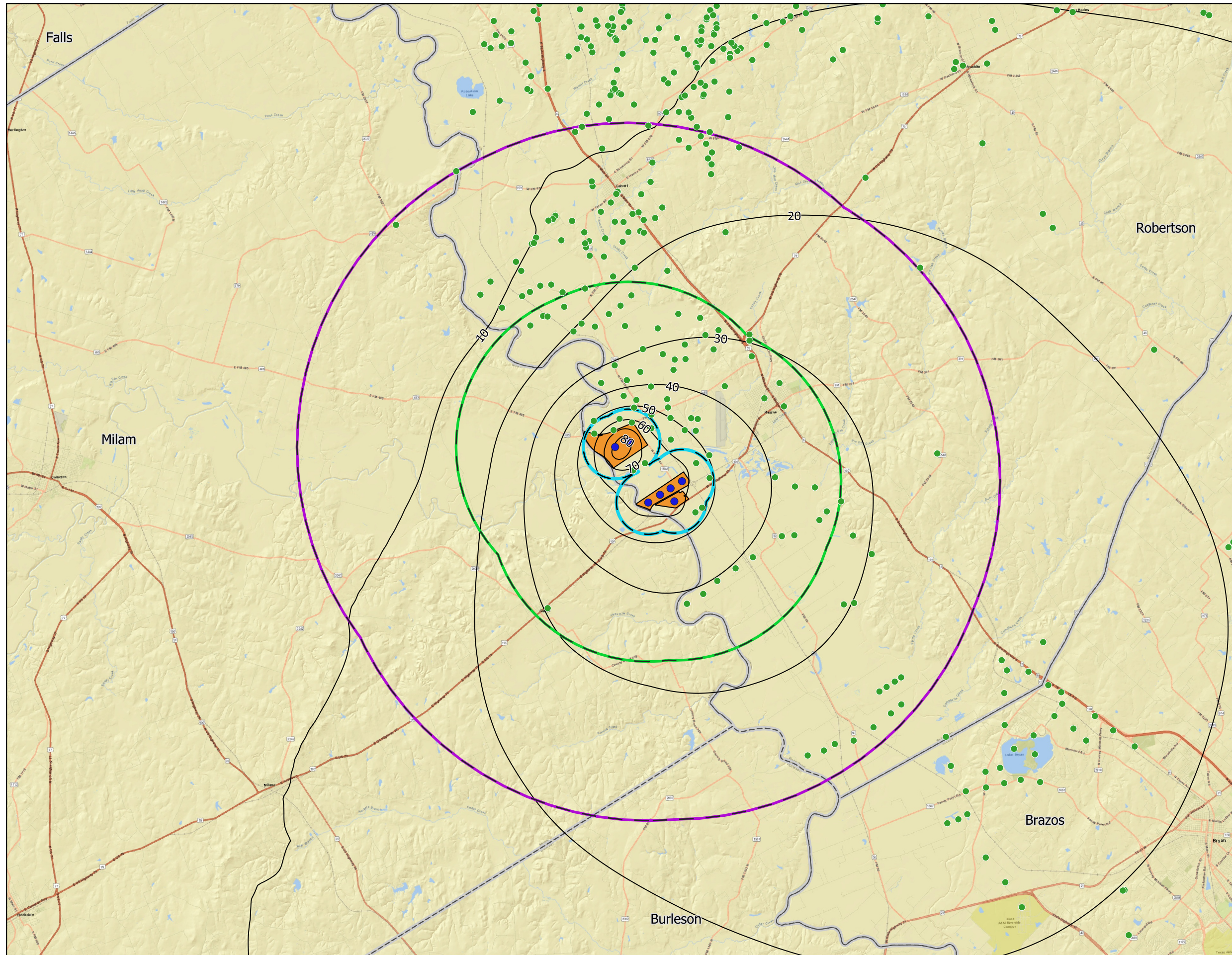
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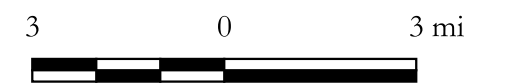
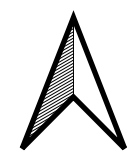
Thornhill Group, Inc. 2006, A Report of Hydrogeologic Evaluation of Projected Effects of Proposed Pumping of 8,300 Acre-Feet Per Year from Four Wells Completed in the Simsboro Aquifer – Dr. Cliff Skiles Farms, Robertson County, Texas, Prepared for Submittal to the Brazos Valley Groundwater Conservation District, December 27, 2006.

Young, Steven, PhD, PE, Jigmond, Marius, Jones, Toya, and Ewing, Tom, PhD, PE, Final Report: Groundwater Availability Model for the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifers, Texas Water Development Board Report ###, September 2018.



**Explanation**

- BVGCD Registered or Permitted Simsboro Well
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- 1 Mile Radius from Well Location
- 5 Mile Radius from Well Location
- 10 Mile Radius from Well Location
- 20-Year Modeled Drawdown - GAM Contour Interval = 10 feet
- Cula d'Brazos Property Boundary
- Counties

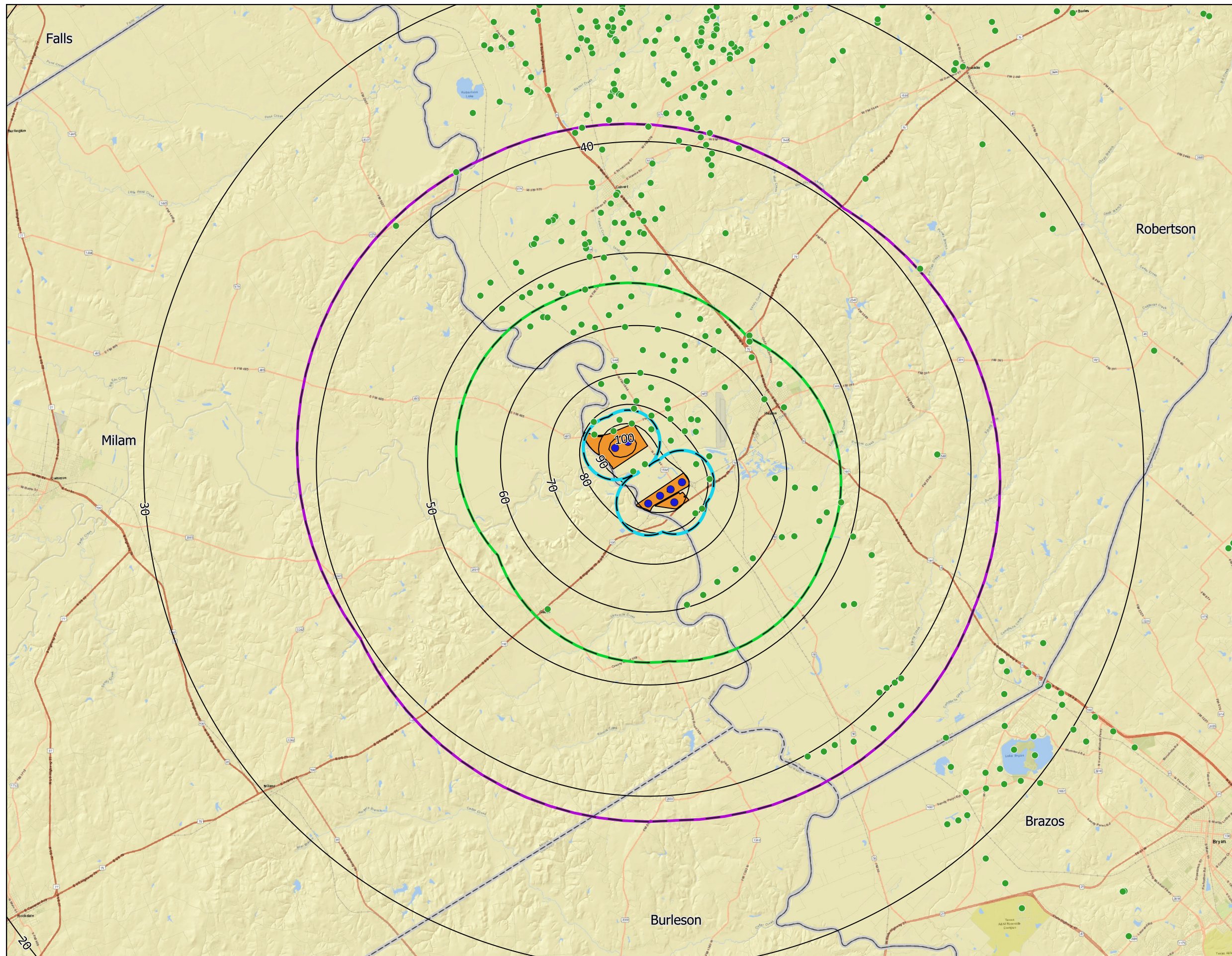


**Cula d'Brazos, LLC.**

20-Year GAM  
Drawdown Contours

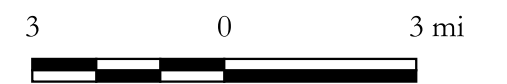
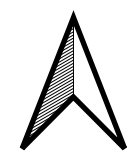






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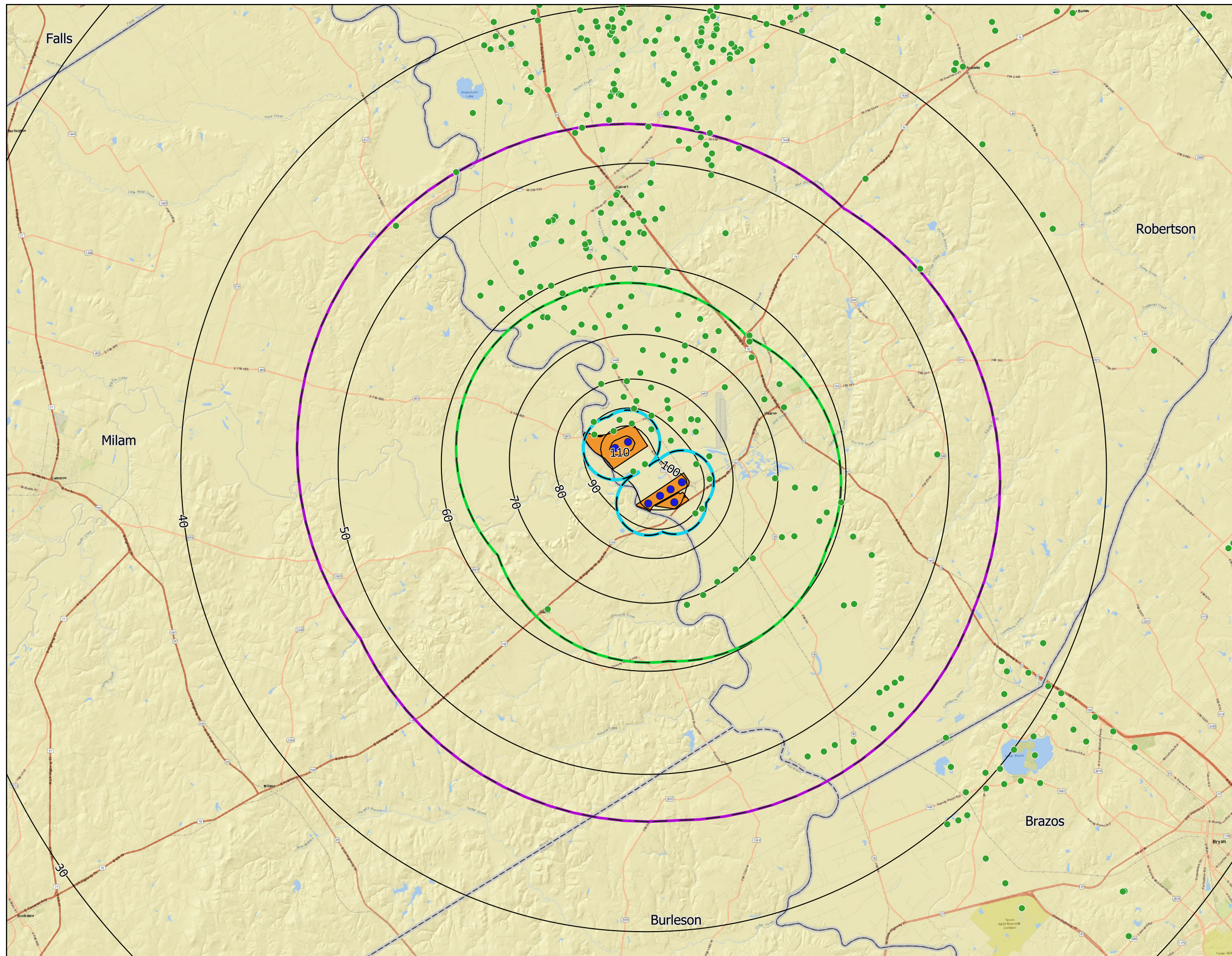
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**Cula d'Brazos, LLC.**

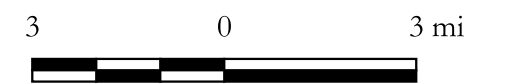
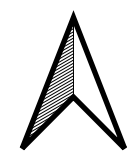
1-Year Analytical Drawdown Contours





**Explanation**

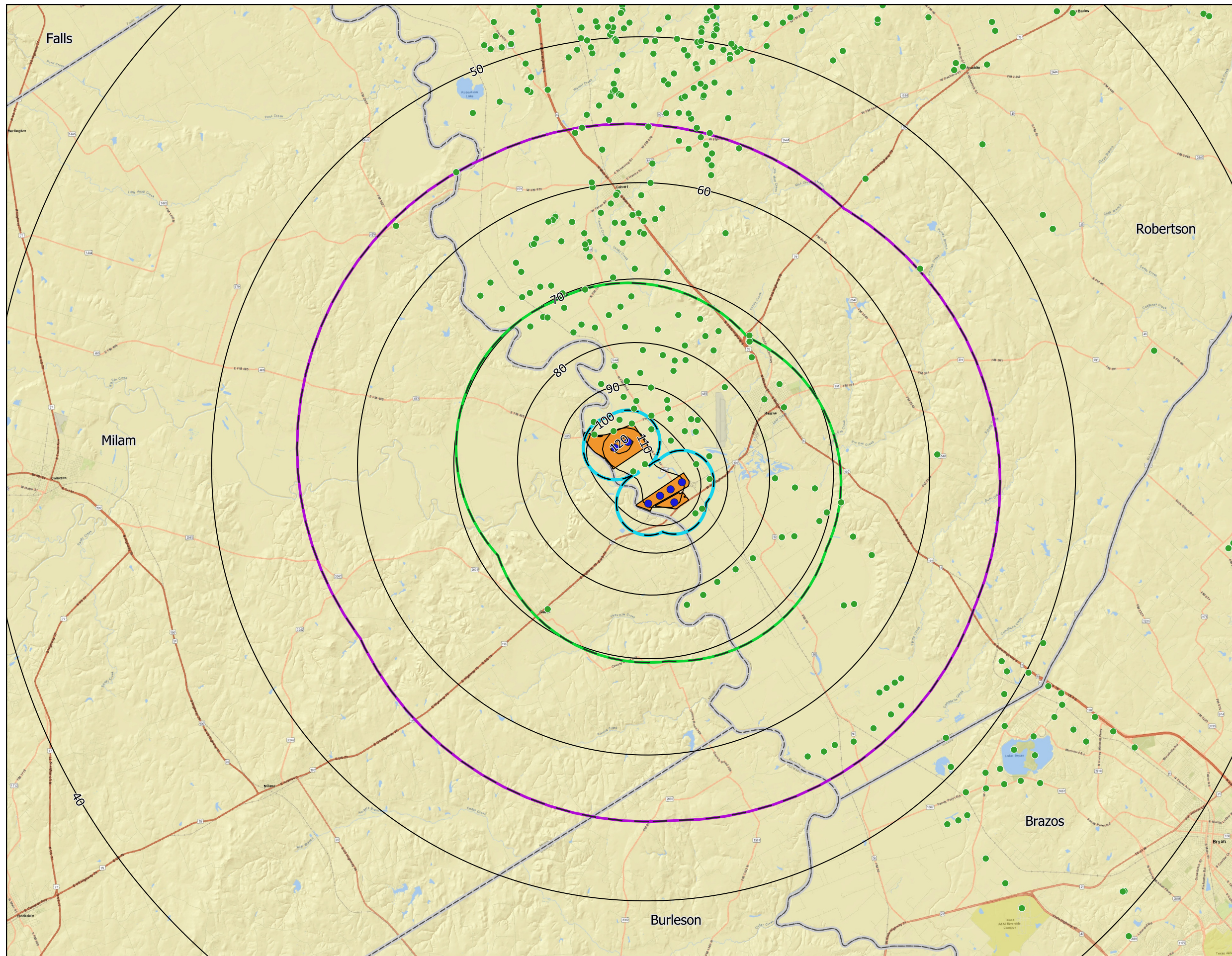
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**Cula d'Brazos, LLC.**

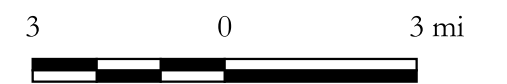
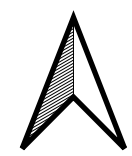
10-Year Analytical Drawdown Contours





**Explanation**

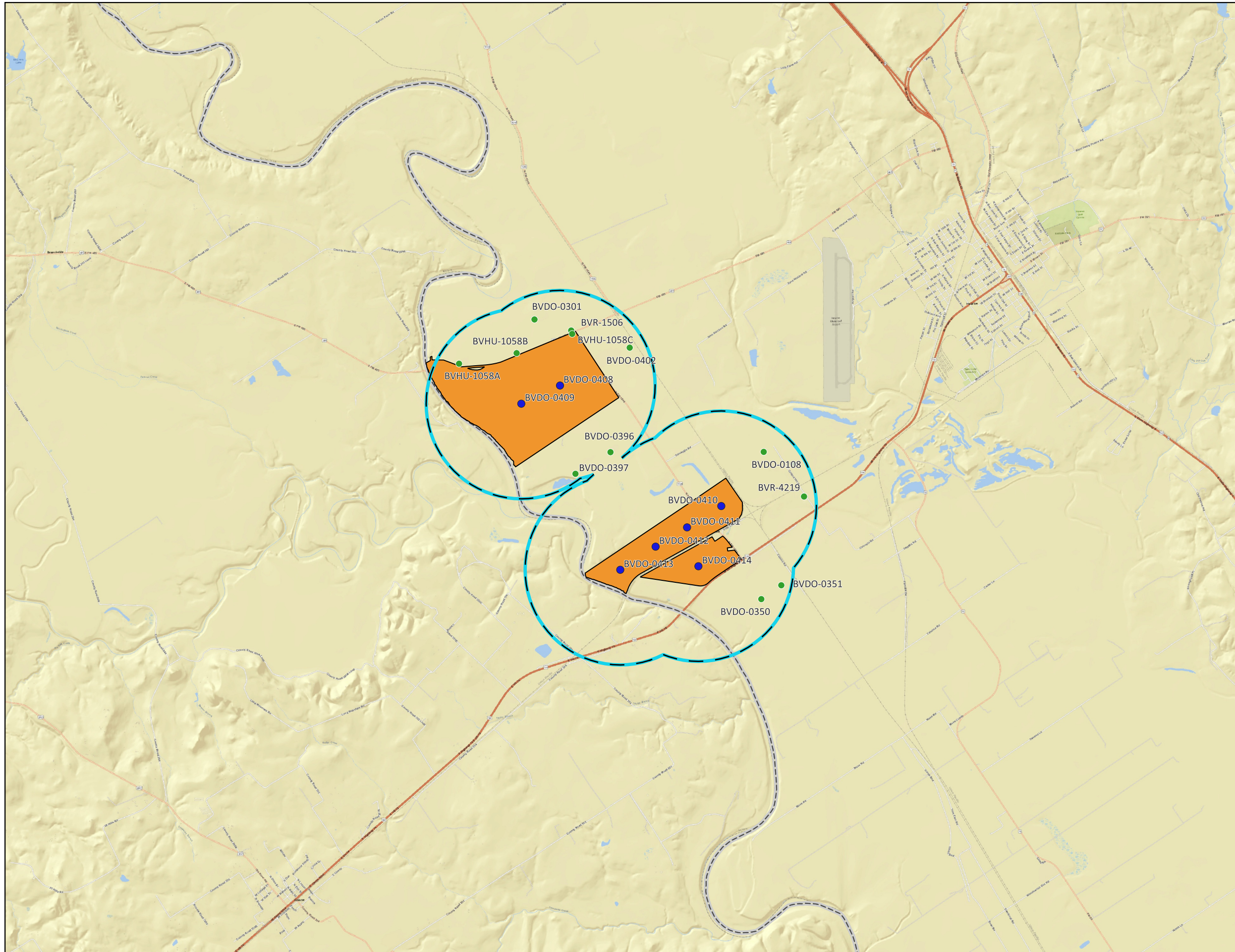
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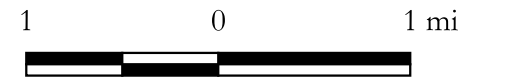
20-Year Analytical Drawdown Contours





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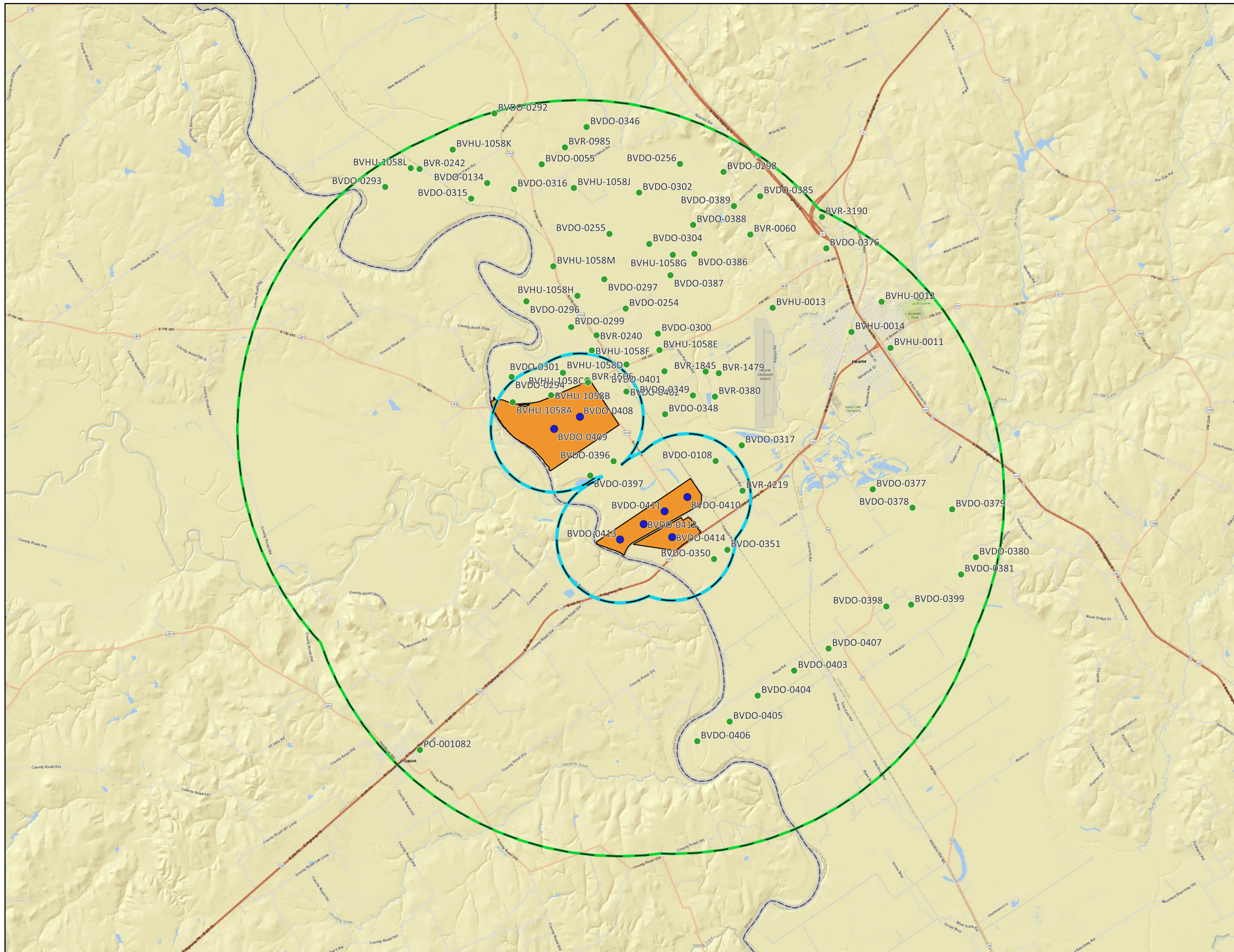
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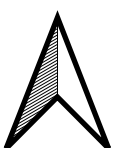
BVGCD Registered and Permitted  
Wells within 1 Mile





**Explanation**

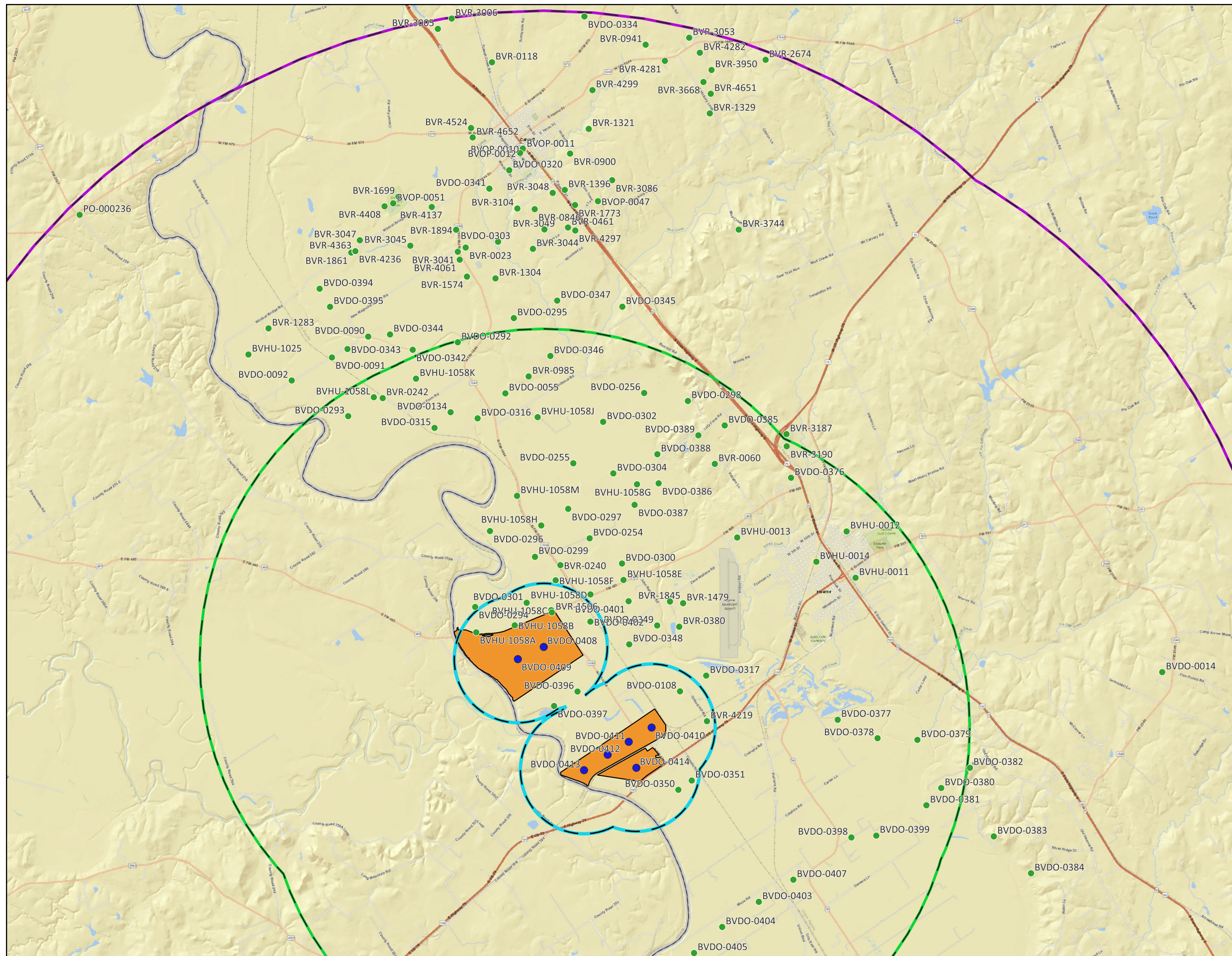
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**Cula d'Brazos, LLC.**

BVGCD Registered and Permitted Wells within 5 Miles





### Explanation

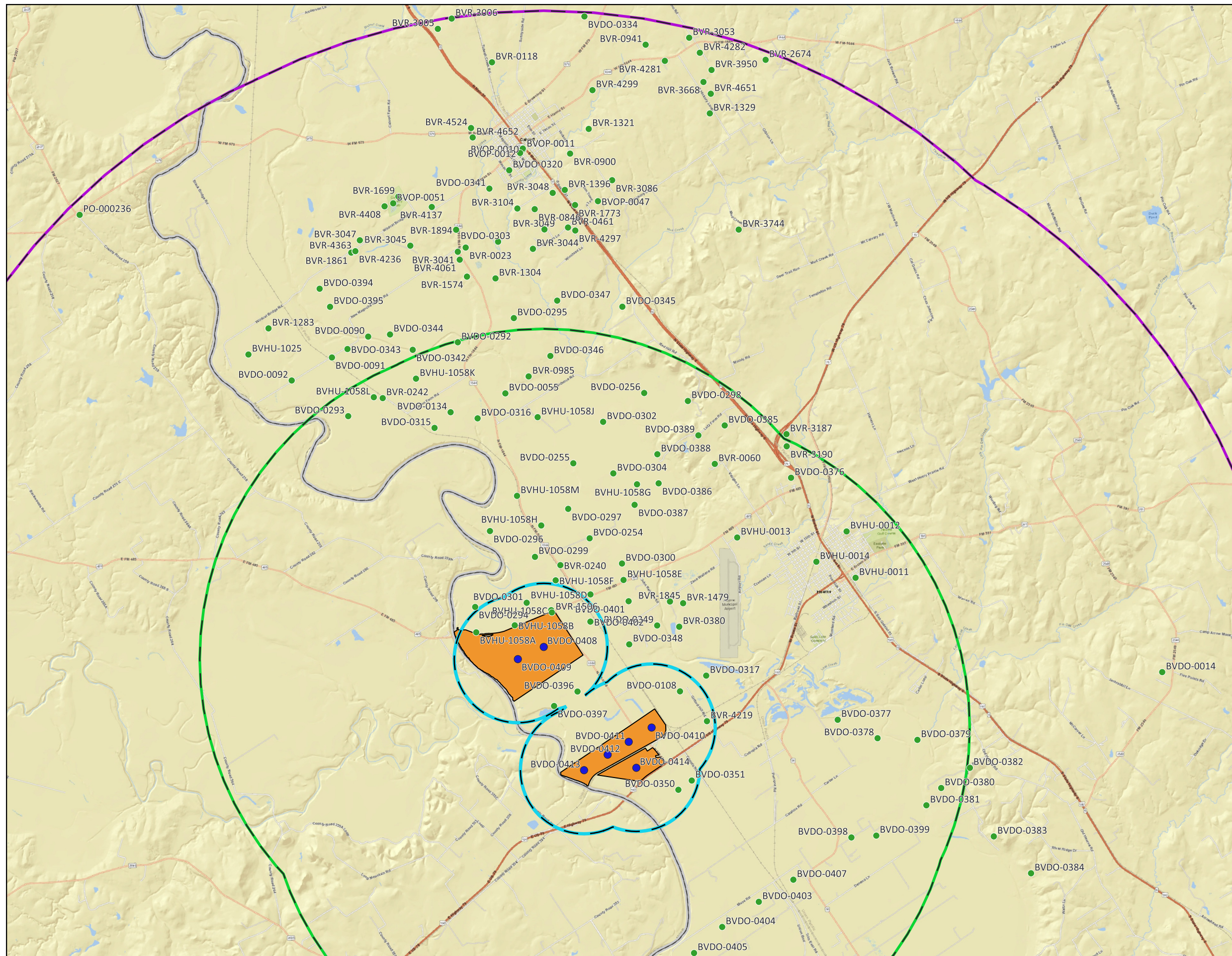
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## Cula d'Brazos, LLC.

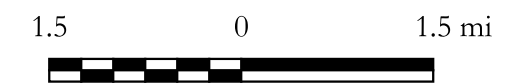
BVGCD Registered and Permitted  
Wells within 10 Miles





**Explanation**

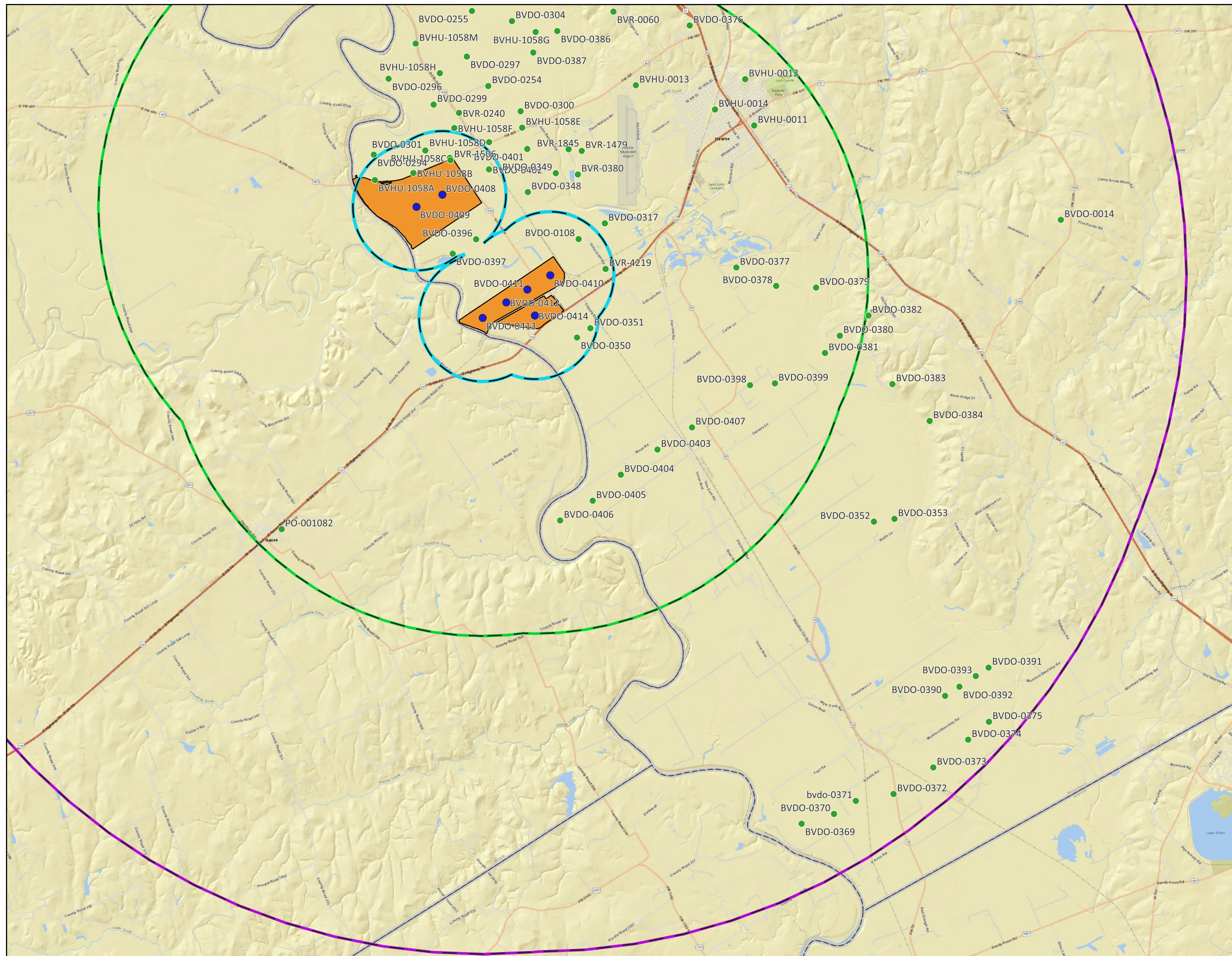
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**Cula d'Brazos, LLC.**

BVGCD Registered and Permitted Wells within 10 Miles





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BVGCD Registered and Permitted Wells within 10 Miles

