

# Professional Hydrogeologists • Water Resources Specialists March 17, 2024

Mr. Alan M. Day, General Manager Brazos Valley Groundwater Conservation District 112 West 3<sup>rd</sup> Street Hearne, Texas 77859 (via e-mail: aday@brazosvalleygcd.org)

Re: Transport Permit Application with Modified and Supplemented Documentation for Simsboro Aquifer Groundwater - Submitted to the Brazos Valley Groundwater Conservation District On Behalf of Clifford A. Skiles III and UWBVF (Co-Applicants) Robertson County, Texas

Dear Mr. Day:

As requested, Thornhill Group, Inc. (TGI) submits to you and the Members of the Board of the Brazos Valley Groundwater Conservation District (BVGCD), a link to a digital document compiling the appropriate components of the original application with all modifications and supplements to the Transport Permit Application package submitted on January 14, 2024. The document is available for download at the link provided in the accompanying e-mail and includes:

- Attachment A BVGCD Transport Permit Application Forms
- Attachment B Well Locations and Information
- Attachment C Section IV Plans and Supplemental Information Per BVGCD Rules Adopted on September 14, 2023
- Attachment D Affidavits of Legal Rights
- Attachment E Hydrogeologic Evaluation Report

TGI, on behalf of Co-Applicants, respectfully requests that the staff and Board of Directors of the BVGCD review and approve the Transport Permit Application, as modified. If you have any questions, please contact me by telephone at (512) 244-2172 or via e-mail at <a href="mailto:mthornhill@tgi-water.com">mthornhill@tgi-water.com</a>. Thank you very much for your consideration.



The seal appearing on this document was authorized by Michael R. Thornhill, P.G. on March 17, 2024.

Attachments

Sincerely, THORNHILL GROUP, INC.

Nhehal R. Swalil

Michael R. Thornhill, P.G. President



# Attachment A – BVGCD Transport Permit Application Form

BRAZOS VALLEY GROUNDWATER CONSERVATION DISTRICT P.O. Box 528 · Hearne, TX 77859 · (979)279-9350 · Fax: (979)279-0035 WWW BRAZOSVALLEYGCD ORG
WWW.BRAZOSVALLEYGCD.ORG

# **Transport Permit Application**

For District Use Only:

Application Date

Temporary Permit Number

#### SECTION I – APPLICANT

Clifford A. Skiles III
Name of Applicant:

Contact Person:	Clifford A. Skiles III
	C/O Robertson County Veterinary Services

Mailing Address: <u>3206 State Hwy 6 South</u>

City	Hearne	State	TX	Zip	77859

Phone Number (<u>979</u>) <u>279-9201</u>

### SECTION II – NATURE AND PURPOSE FOR GROUNDWATER USAGE

State the proposed nature and purpose and list proposed usage of groundwater produced from wells and the amount of usage

Nature and purpose:		
Use See Attachment C		achment C_acre-feet/year
Use	Amount Used	acre-feet/year
Use	Amount Used	acre-feet/year
Total A	Amount to be used	acre-feet/year
Location of Water Usage See Attachment C		
Total Proposed Amount of Water to Be Transported A	Annually: <u>4,800</u>	acre feet



#### SECTION III - WELL INFORMATION

Please provide information for each well which will be used to provide groundwater for this permit. If more entries are needed please attach an amendment sheet to this form.

BVGCD Well Num	ber: BVDO-0317	
Landowner Name_	Clifford A. Skiles III	
	c/o robertson County Veterinary Services, 3206 State Hwy 6 South	
CityHearne	<b>State</b> Tx <b>Zip</b> 77859	
Location of well: L	Latitude See Table A Longitude See Table A	
Description of phy	sical location	
Date Drilled: TBD	Driller's Name & Lic. #:	
What is the known	n or proposed total depth of the well? See Table A fee	et
What is the known	n or proposed screened interval of the well? <u>TBD</u> fee	et
What is the known	n or proposed capacity of the well? <u>See Table A</u> gp	om
What aquifer will	the well be producing from?	
Request for Well to	to be Aggregate with other wells? Yes $\times$ No If yes, list wells:	
WELL #1 PERM	MIT BVDO-0108 / WELL #2 PERMIT BVDO-0317	



# **SECTION IV – PLANS**

Indicate the anticipated time within which any proposed construction or alteration of the transport facilities is to begin: From See Attachment C to

Description of the facilities to be used for transportation of water: <u>See Attachment C</u>

State the presently anticipated duration for the proposed transport of groundwater:

From _	See Attachment C	<u>t</u>	to
--------	------------------	----------	----

Availability of feasible and practicable alternative supplies to the applicant <u>See Attachment C</u>

The projected effect of the proposed groundwater transport on aquifer conditions, depletion, subsidence, or effects on existing permit holders or other groundwater users within the District, including the Rule 8.4 information and studies and any proposed plan of the applicant to mitigate adverse hydrogeological impacts of the proposed transport of water from the District.

See Attachment C

Indicate the following items (Rule 8.4) are attached: Groundwater Conservation Plan	Yes
OR X I declare that I will comply with t	the District's Management Plan
Drought Contingency Plan	Yes
OR <u>X</u> I declare that I will comply with	n the District's Drought Contingency Plan
Well Closure Plan	Yes
OR X I declare that I will comply w	vith the District's Well Plugging Guidelines
Evidence Providing Leagal Authority to Produce G	Groundwater Yes <u>X</u> No
Evaluation Report	Yes_XNo



### **SECTION V – DECLARATIONS**

The Applicant agrees to the following conditions:

- X I agree to avoid waste and achieve water conservation.
- X I agree that reasonable diligence will be used to protect groundwater quality
- X I agree that well plugging guidelines will be followed at the time of well closure

SECTION VI – AFFIRMATION AND EXECU	TION
I certify that all statements and information in this ap	plication are true and correct.
Ch	Ma
	Signature of Applicant
THE STATE OF TEXAS COUNTY OF Lobertson	
This instrument was acknowledged before me on (	(date) 1 12 24
By (applicant) <u>Clifford</u> Alcie	Skiles II.
DAVID HOANG Notary Public, State of Texas Comm. Expires 09-23-2026	Notary Signature

Can be notarized in the presence of any Notary of your choice. We have a Notary at the BVGCD Office.

#### Applicant Certification

I certify on behalf of Applicant **Clifford A. Skiles III**, that Applicant is requesting the modification of its transport permit application per the attached package, including the addition of UW Brazos Valley Farm LLC as Co-Applicant to be co-permittee, specifying that the application is to transport such groundwater as part of the UWBVF Project (as defined in Attachment C), and specifying the aggregate proposed amount of water to be transported annually as 100,000 acre-feet per year.

**Clifford A. Skiles III** Signed Skiles Clifford SWORN AND SUBSCRIBED to before me on this the DEE DEE COOKS Notary Public, State of Texas Comm. Expires 01-18-2028 Notary Public in and for the S Notary ID 6767625 **My Commission Expires** 



# **Transport Permit Application**

For District Use Only:

Application Date

Addition of Co-Applicant and Modification of Aggregate Proposed Amount of Water to Be Transported Annually

**Temporary Permit Number** 

### SECTION I – APPLICANT

Name of Applicant: UW Brazos Valley Farm LLC (Co-Applicant)

Contact Person: David L. Lynch

Mailing Address: 7670 Woodway Drive, Suite 200

City Houston	State Texas	Zip 77063	
-----------------	-------------	-----------	--

Phone Number (<u>646</u>) <u>961-3272</u>

### SECTION II – NATURE AND PURPOSE FOR GROUNDWATER USAGE

State the proposed nature and purpose and list proposed usage of groundwater produced from wells and the amount of usage

Nature and purpose:	See Applicant Form		
Use See Attachment	С	Amount Used	acre-feet/year
Use		Amount Used	acre-feet/year
Use		Amount Used	acre-feet/year
	Total	Amount to be used	acre-feet/year
Location of Water Usa	ge		
Total Proposed Amoun	t of Water to Be Transported	Annually: *	acre feet

\*Up to 4,800 acre-feet per year as part of the UWBVF Project (defined in Att. C). The aggregated total groundwater authorized for transport out of the District from all District-authorized wells included in the UWBVF Project shall be limited to 100,000 acre-feet per year in the aggregate.

1



#### SECTION III - WELL INFORMATION

Please provide information for each well which will be used to provide groundwater for this permit. If more entries are needed please attach an amendment sheet to this form.

BVGCD Well Number:     See Applicant Form
Landowner Name
Mailing Address
CityZip
Location of well: LatitudeLongitude
Description of physical location
Date Drilled:Driller's Name & Lic. #:
What is the known or proposed total depth of the well?
What is the known or proposed screened interval of the well?
What is the known or proposed capacity of the well?
What aquifer will the well be producing from?
Request for Well to be Aggregate with other wells? Yes No If yes, list wells:

BRAZOS VALLEY G CONSERVATION P.O. Box 528 · Hearne, TX 77859 · (979) WWW.BRAZOSVALLE	N DISTRICT )279-9350 · Fax: (979)279-0035
SECTION IV – PLANS See Applicant Form and Appen	ndix C
Indicate the anticipated time within which any proposed construct transport facilities is to begin: Fromto	
Description of the facilities to be used for transportation of water:	:
State the presently anticipated duration for the proposed transpor	t of groundwater:
Fromto	
Availability of feasible and practicable alternative supplies to the a	applicant
The projected effect of the proposed groundwater transport on a subsidence, or effects on existing permit holders or other groundwa including the Rule 8.4 information and studies and any proposed mitigate adverse hydrogeological impacts of the proposed transport	ter users within the District, d plan of the applicant to
Indicate the following items (Rule 8.4) are attached: Groundwater Conservation Plan	Yes
OR <u>×</u> I declare that I will comply with the District's	s Management Plan
Drought Contingency Plan	Yes
OR <u>×</u> I declare that I will comply with the District's	s Drought Contingency Plan
Well Closure Plan	Yes
OR <u> </u>	's Well Plugging Guidelines
Evidence Providing Legal Authority to Produce Groundwater	Yes <u>x</u> No
Evaluation Report	Yes <u>×</u> No



### SECTION V – DECLARATIONS

The Applicant agrees to the following conditions:

- X I agree to avoid waste and achieve water conservation.
- X I agree that reasonable diligence will be used to protect groundwater quality
- X I agree that well plugging guidelines will be followed at the time of well closure

SECTION VI – AFFIRMATION AND EXECUTION				
I certify that all statements and information in this application are true and correct.				
Down Lyne				
Signature of Applicant (Co-Applicant)				
THE STATE OF TEXAS COUNTY OF Harris				
This instrument was acknowledged before me on (date) March 13, 2024				
By (applicant) David L. Lynch				
JULIE GEIGER My Notary ID # 129957297 Expires September 15, 2026 (NOTARY SEAL)				

Can be notarized in the presence of any Notary of your choice. We have a Notary at the BVGCD Office.



# Attachment B – Well Locations and Information

Table A						
	Pumping Rate	Annual Permit			Total Depth	Depth to Screen
Well	(gpm)	Allocation (Acre-Feet)	Latitude DMS	Longitude DMS	(Approx. ft BGL)	(Approx. Ft BGL)
BVDO-0108	2,100	2,700	30.851042°N	96.635889°W	1,242	1,142
BVDO-0317	1,600	2,100	30.854431°N	96.628822°W	~1,400	~1,000
Total		4,800				



Attachment C – Section IV Plans and Supplemental Information Per BVGCD Rules Adopted on September 13, 2023



# ATTACHMENT C

# SUPPLEMENTAL INFORMATION FOR SECTION IV – PLANS

### Summary

UW Brazos Valley Farm LLC (UWBVF or Co-Applicant) intends to transport from as many as two (2) of Clifford A. Skiles III (Skiles' or Applicant's) authorized wells up to 4,800 acre-feet per year of its permitted Simsboro Aquifer groundwater to Williamson, Bell, Milam, and/or Travis Counties. This application is to transport such groundwater as part of the UWBVF Project (as defined below) and the aggregated total groundwater authorized for transport out of the District from all District-authorized wells included in the UWBVF Project shall be limited to 100,000 acre-feet per year in the aggregate.

Upon UWBVF's exercise of the Option Agreement (as desired and anticipated), UWBVF will have the right to include the Applicant's Simsboro Operating Permits and the permit that is the subject of this related pending transport permit application in a collective project that UWBVF will develop. Seven local landowners, including Applicant, who hold existing operating permits issued by the District for a combined total maximum production of 57,718 acre-feet per year (collectively, the Optioned Groundwater) have entered Option Agreements with UWBVF: Cula d'Brazos; Ely Family Partnership L.P.; Fazzino Investments; LP, L. Wiese Moore, LLC; RH2O, LLC; James Brien; and Clifford A. Skiles III (collectively, the Optioned Owners). Consistent with the terms thereof, UWBVF will have the right to produce and transport the Optioned Groundwater using the wells subject to the Groundwater Leases, a gathering network and a transmission system to be developed by UWBVF to the requested western receiving area. UWBVF, also a local landowner, holds existing transport and related production permits issued by the District for 49,999 acre-feet per year from its Goodland Farms property. Optioned Groundwater will be combined with the rights of the Goodland Farms property to support UWBVF's proposed project (this intended collective project is referred to as the UWBVF Project). There will be a hub for the UWBVF Project's connection of the gathering system to the transmission system to the western receiving area. The hub is likely to be located on the Goodland Farms property.

UWBVF will produce for transport from the District no more than 100,000 acre-feet per year in the aggregate from District-authorized wells over which UWBVF has production and transport rights. The transport permit aggregate authorization of 100,000 acre-feet coupled with the *authorized* production of greater than 100,000 acre-feet in total allows for the dispersed well locations across the UWBVF Project to be managed taking into consideration the Simsboro aquifer response as test wells are evaluated and further as the pumping profile is developed over time. The potential variation in production across the well locations will support a carefully managed project that will provide long-term sustainable water supply critical to the region and the State, consistent with good stewardship of the resource for the local community and the region.



Based on ongoing project development, it is anticipated that the transport may be primarily to the City of Georgetown (City) in Williamson County; however, other municipalities, public water suppliers, or other end users in Williamson County, Bell County, Milam County, and Travis County may elect to participate in a regional project with Georgetown or otherwise contract for such water supply, if available. The proximity of significant growth areas and, in some cases, existing or planned infrastructure, located within service areas of multiple water providers make a cooperative regional project viable.

Water supply for three of these four counties is a critical need, and well documented in the Regional and State Water Plans, as discussed further below. The largest growth across this receiving area is in municipal water demand (inclusive of commercial developments); new industrial developments also continue to focus on potential locations in Central Texas. These significant demands to the west of Robertson County demonstrate that groundwater supply is and will be in high demand. Accordingly, the production of groundwater in accordance with the existing, issued operating permits would be transported to this requested four County receiving area, supporting regional and state economic development. Appendix A provides a map illustrating the producing and receiving areas and the well locations of currently Optioned Groundwater.

As one example, the City of Georgetown conducted muti-year water planning and its detailed study identified a "gap" of as much as 99,000 acre-feet per year between its currently available water supplies and its 2070 water demands (see the Georgetown City Council Presentation of December 12, 2023). Based on its Integrated Water Resources Plan (IWRP) completed in December of 2022, the City noted "unprecedented water demand growth" and stated that the City will continue its practice of conjunctive use of surface water and groundwater, and the City will also employ conservation measures and look to other alternatives such reclaimed water to meet its water needs (see the City's web site).

Accordingly, the City has entered into a reservation agreement with EPCOR to negotiate a publicprivate partnership and a Water Supply Agreement for Georgetown to import between 39,399 and 70,000 acre-feet per year from Robertson County, Texas (see City presentation from December 12, 2023). Co-Applicant has entered an agreement with EPCOR. As the potential to supply water to the City contemplated in the reservation agreement moves forward, it is possible that other municipalities, public water suppliers, or other end users will participate in that or another regional project. Negotiations with a second municipality in Williamson County to import Simsboro Aquifer groundwater from Robertson County are also in an advanced stage.

The Skiles wells will be completed at the locations specified in its Drilling/Production Permits and in accordance with all applicable State of Texas and BVGCD rules. The alignment and size of the main transmission line, the sizes and locations of collection lines, the number of storage facilities, and other appurtenances are not yet known. When the water is firmly contracted, additional

details of the customers' systems can be provided, and those systems will comply with applicable rules, regulations, and guidance set forth by the Texas Commission on Environmental Quality (TCEQ) and State of Texas Public Utilities Commission (PUC). It is anticipated, based on negotiations to date, that the end users will be regulated public water systems through or in addition to the City. Notably, the City of Georgetown has included water conservation as one of its multiple water strategies, and is targeting a 10 percent reduction in the City annual demand through conservation measures (IWRP).

The Well Assistance Agreement voluntarily developed and funded by UWBVF in conjunction with and agreed to by BVGCD on October 22, 2022, would be available in connection with Skiles's already-authorized production associated with this transport permit to mitigate Simsboro wells in a manner consistent with the program described in Section 16 of the rules.

The following sections provide information for the subsections in BVGCD Rule 10.3. Please note that the version of the rules currently posted on the BVGCD web site contains an error in denoting the subsections; subsection (c) is listed twice. We have taken the liberty herein to redesignate the subsection paragraphs with consecutive letters from (a) through (g).

# Rule 10.3 (a) – Availability of Water in the District and in Proposed Receiving Area

The current BVGCD Management Plan reported that the total groundwater use in Robertson County was 74,761 acre-feet during 2016, of which 63,188 acre-feet was used for irrigation (BVGCD Management Plan, May 2019, Appendix B1). The reported total municipal water use in Robertson County was 2,199 acre-feet in 2016 (BVGCD Management Plan, May 2019, Appendix B1). Based on the 2021 Brazos G Regional Water Plan (Brazos G RWP) the water needs (i.e., deficit based on current supplies) for Robertson County starting in 2070 will be 76,138 acre-feet per year; of that amount 99 percent of the additional water needed will be for agricultural irrigation (44,445 acre-feet per year), mining (12,735 acre-feet per year), and steam electric/power (18,478 acre-feet per year). The draft BVGCD Management Plan pending approval from the Texas Water Development Board (TWDB) states that even should steam electric demands increase as projected, "Groundwater and surface water are readily available and likely sources of water to remedy any long-term needs" (BVGCD Management Plan DRAFT, October 2023). Irrigation pumping in Robertson County is primarily from the Brazos River Alluvium Aquifer. While not delineating between irrigation and non-irrigation pumping, the TWDB reports that pumping for the Brazos River Alluvium for 2020 was 68,005 acre-feet. Most of that pumping is likely for agricultural irrigation purposes (BVGCD, email data transfer, December 29, 2023). By comparison the reported Simsboro pumping for 2020 was 19,758 acre-feet and, based on groundwater usage for 2016 reported by the TWDB, it is likely that about half of the Simsboro usage was for nonirrigation purposes (BVGCD, Personal Communication and email data transmittal, December 29, 2023 and BVGCD Management Plan, 2019). Based on prohibitive depths and associated costs, it is anticipated that future irrigation pumping will be derived predominantly from the Brazos River Alluvium Aquifer and, in southern Robertson County, by formations overlying the Simsboro. The Brazos G RWP reports that only one municipal water supplier will have a water need in 2070



totaling 526 acre-feet per year (Brazos G RWP, 2020). The Simsboro Aquifer is not heavily tapped in Robertson with reported pumping in 2022 of 19,236 acre-feet (BVGCD Personal Communication and email data transmittal, December 29, 2023. The current modeled available groundwater (MAG) value for the Simsboro in Robertson County is 82,824 acre-feet per year in 2070 (TWDB, 2023).

Note that the Applicant (i.e., Skiles) has no alternative source of water that would allow participation in the UWBVF's (or any other sponsor) groundwater project. Similarly, the current RWP and State Water Plan demonstrate that the water needs are so substantial that the likely end users of water from the subject transport of Robertson County water have explored multiple alternative water supply strategies. The end users in the receiving area will use the water for beneficial uses which will primarily include municipal or public water supply but uses could also include any other beneficial use as defined by Chapter 36 of the Texas Water Code including industrial/manufacturing, irrigation, recreational uses, and others.

The current Brazos G RWP projects that the municipal water demands alone for Williamson County will increase from 97,248 acre-feet per year in 2020 to 244,045 acre-feet per year in 2070 (Brazos G RWP, October 2020, p. 2-54). Similarly, the municipal water demands in Bell County are projected to increase from 64,087 acre-feet per year in 2020 to 112,347 acre-feet per year in 2070. The 2021 Region K Regional Water Plan (Region K RWP) projects that Travis County municipal water demands will increase from 235,239 acre-feet per year in 2020 to 393,494 acre-feet per year in 2070 (Region K RWP, October 2020). Much of the population and resulting water demand growth in Williamson, Bell, and Travis counties results in projected water shortages and the areas are geographically distributed such that water suppliers in each of those counties could benefit from water available from a regional water project supplying water from Robertson County. Water demands in Milam County are projected to increase by about 831 acre-feet per year from 2020 to 2070; however, a regional project from Robertson County to the high-growth areas along Texas State Highway 130 and Interstate 35 could provide water to communities in Milam County.

As noted, negotiations are ongoing with the City of Georgetown to supply water from Robertson County. The City "...is projected to have a (water) shortage from 2030 through the year 2070" with shortages estimated to be 28,300 acre-feet per year by 2040 and 66,632 acre-feet per year by 2070, according to the Brazos G 2021 RWP (Brazos G RWP, October 2020, p. 5.36-1. The Brazos G RWP projects shortages for other municipalities in the receiving area by at least 2040, if not sooner. The City of Georgetown commissioned its own independent water planning study, the Integrated Water Resources Plan (IWRP), which was completed by CDM Smith in May of 2023. The IWRP projected that the City has a "gap" between its existing available supplies and future demands of up to 99,000 acre-feet per year by 2070 (CDM Smith, 2023). The IWRP shows that the City will continue its conjunctive use of local groundwater and surface water available from the Brazos River Authority (BRA), but also will implement other water supply strategies including conservation and water reclamation. The IWRP concluded that the City needs additional supply to be on line by 2030 and that the new groundwater and reclaimed water options provide the

best supply reliability. Based on the City's multi-year planning and the feasibility results in their IWRP regarding existing and future water supplies, the City has entered into a reservation agreement with EPCOR to negotiate a public-private partnership and a Water Supply Agreement for Georgetown to import between 39,399 and 70,000 acre-feet per year of Simsboro Aquifer groundwater from Robertson County (see City of Georgetown City Council Presentation of December 12, 2023). UWBVF has entered agreements with EPCOR to pursue the project and secure the groundwater resources, including from its own permits and other landowners in Robertson County, to provide the water for the project. Appendix A provides maps illustrating the producing and receiving areas, including a map illustrating the City as an anticipated receiver within that broader geographic area, pending ongoing negotiations.

## Rule 10.3 (b) – Projected Effect of the Proposed Groundwater Transport on Aquifer Conditions

The projected effects of permitted pumping of 4,800 acre-feet per year from the Simsboro Aquifer were presented in the Aquifer Evaluation Report submitted with the Skiles Drilling/Operating Permit Application package (see Thornhill Group, Inc., February 8, 2023). Additionally, the BVGCD's consultants and staff evaluated and reviewed potential impacts. Subsequently, the BVGCD approved and enacted revised rules with some additional requirements for evaluating impacts (BVGCD, September 14, 2023). In accordance with revised BVGCD Rule 8.4(b)(B)(3), Appendix B provides maps illustrating drawdown contours with respect to existing or proposed (i.e., permitted) Simsboro wells based on modeling of the Skiles pumping 4,800 acre-feet per year for pumping durations of one (1), 10, and 20 years. Additionally, Appendix B provides tabulations of modeled drawdown on registered and permitted Simsboro wells. The following tables summarize ranges of the modeled effects (i.e., reduction in artesian pressure or drawdown) on Simsboro Aquifer wells near the Skiles property and proposed wells:

### GAM Run Estimates

Distance from	Ranges in Drawdown per Modeled Duration of Pumping			
Skiles Wells	1 Year	10 Years	20 Years	
1 Mile	17 to 28	21 to 31	27 to 37	
5 Miles	3 to 28	6 to 31	10 to 37	
10 Miles	0 to 28	1 to 31	2 to 37	

Analytical Modeling Estimates

Distance from	<b>Ranges in Drawdown per Modeled Duration of Pumping</b>				
Skiles Wells	1 Year	10 Years	20 Years		
1 Mile	33 to 43	42 to 53	51 to 73		
5 Miles	20 to 43	29 to 53	36 to 73		
10 Miles	14 to 43	23 to 53	29 to 73		

THORNHILL GROUP, INC.

Per BVGCD Rule 8.4(b)(B), an evaluation of the effects of the proposed Skiles well pumping of 4,800 acre-feet per year on the applicable desired future conditions (DFC) is provided herein, considering the current modeled available groundwater (MAG) determined by the TWDB, the TWDB's estimate of current and future exempt pumping, and the amount of groundwater authorized under permits previously granted by the District. The adopted DFC for the Simsboro Aquifer is currently defined as average drawdown of 262 feet within the BVGCD boundaries during the period from 2000 to 2070. (Note that the previously approved DFC was an average drawdown of 295 feet for the Simsboro Aquifer within BVGCD). Modeling using the current GAM was conducted to simulate the possible effects on the current DFC based on the following pumping scenarios:

- ✓ Skiles well pumping 4,800 acre-feet per year through 2070;
- ✓ Skiles well pumping 4,800 acre-feet per year as an incremental part of the combined pumping of all landowners who hold Simsboro permits based on an assumption that all permits in the District are pumped continuously (i.e., 100 percent of the time). Please note that this appears to be required by Rule 8.4(b)(7)(B)(4)(c), but it is not a scenario that is reflective of historic or anticipated usage patterns and accordingly does not represent a realistic scenario or projection; and,
- ✓ Based on a request from the District, rather than a requirement of the rules, an approximation of two pumping scenarios that assume hypothetical yet potentially "realistic" transport scenarios utilizing the dispersed well locations available to the UWBVF Project to meet demands in the receiving area. The two "project" simulations include:
  - Pumping and transporting approximately 75,000 acre-feet per year from wells permitted on landowners' properties that have signed with UWBVF; and,
  - Pumping and transporting approximately 100,000 acre-feet per year from the same landowners' permitted wells.

The modeling simulations were conducted for the purpose of comparing the impacts of pumping to the currently established DFC for the Simsboro Aquifer within the boundaries of the BVGCD; the DFC is 262 feet of average drawdown based on Run S-19 adopted by BVGCD and GMA 12. The modeling scenarios are summarized in the following table:

		Average Drawdown
Pumping Scenario	Total Simulated Pumping	<u>from 2000 to 2070</u>
S-19 (DFC Run)	147,245 acre-feet/year (MAG)	262 feet**
S-19 Plus Skiles	154,778 acre-feet/year*	270 feet
S-19 Plus 75,941 AFY	225,919 acre-feet/year*	373 feet
S-19 Plus 99,924 AFY	249,902 acre-feet/year*	399 feet
S-19 Plus All Permits	355,165 acre-feet/year	558 feet

The asterisk (\*) indicates that the total pumping includes an addition 2,733 acre-feet per year from small permits granted to small public water suppliers; however, the pumping does not include the new permits granted to the City of Bryan, the City of College Station, or others.

THORNHILL GROUP, INC.

The double asterisk (\*\*) indicates that the current DFC is derived by BVGCD and GMA 12 allowing for a 10 percent buffer. Also, note that the previously adopted DFC for BVGCD was 295 feet.

GAM modeling of the Simsboro Aquifer within GMA 12 has historically shown that, even at high pumping rates, the depletion of the amount of groundwater stored in the Simsboro Aquifer will be a very small percentage. Therefore, the Simsboro Aquifer will remain essentially full in 2070 and long beyond.

Historically, subsidence has only been considered a limiting factor in Texas with respect to groundwater production along the Gulf Coast. Also, Gulf Coast formations are geologically much younger and contain much more clay than the Simsboro Member of the Wilcox Group. Its geologic age and clay content make the Gulf Coast geologic units much more susceptible to subsidence than the Simsboro. While the Calvert Bluff Formation contains thick sections of clay, the pressure reductions in the Simsboro will not cause large pressure reductions and associated dewatering and compaction of the clays of the Calvert Bluff. Theoretical modeling conducted utilizing the TWDB's analytical subsidence model indicate that some compaction within the Carrizo-Wilcox is possible; however, subsidence is not a concern within GMA 12.

The Well Assistance Agreement voluntarily developed and funded by UWBVF in conjunction with and agreed to by BVGCD on October 22, 2022, would be available in connection with Skiles's already-authorized production associated with this transport permit. The UWBVF Well Assistance Agreement is set in place to effectively mitigate Simsboro wells in a manner consistent with the program described in Section 16 of the rules. The subject Well Assistance Agreement provides for funding to support the District's execution of a phased program to proactively take steps to address Simsboro Aquifer responses to future pumping on existing Simsboro wells.

# Rule 10.3 (c) – Brazos Region G Regional Water Plan and District Management Plan

As stated in previous sections of this Attachment C, the 2021 Brazos G RWP (and subsequent 2022 State Water Plan) and the 2019 BVGCD Management Plan demonstrate that Robertson County will not face a groundwater shortage with respect to the Simsboro Aquifer and that Williamson County, including the City of Georgetown and others, will face severe water shortages (see response to Rule 10.3(a) above). Similarly, water providers in Bell County and Travis County will face large water-demand increases and resulting significant water shortages. The high-growth areas within Bell, Travis, and Williamson counties are geographically situated such that many of the water users in those counties could benefit from a regional water project. The water demands in Milam County will not increase substantially; however, some key municipalities and municipal water suppliers may benefit from a transmission line extending from Robertson County. The current Brazos G RWP notes that the Carrizo-Wilcox aquifer is "prodigious" and "prolific" (Brazos G Regional Water Plan, 2020, pp. ES-4 and ES-11).

THORNHILL GROUP, INC.

While the anticipated project for the City of Georgetown (and other potential participants or end users) to import Simsboro Aquifer groundwater from Robertson County is not currently expressly included in the Brazos G RWP or the State Water Plan, the City's detailed internal water planning efforts showed the groundwater import from Robertson County is a feasible and favorable strategy (IWRP, CDM Smith, May 2023). Negotiations with a second municipality in Williamson County to import Simsboro Aquifer groundwater from Robertson County are also in an advanced stage. Groundwater alternatives for Williamson County and the City of Georgetown have included groundwater supplies from the Brazos River Alluvium aquifer in Milam and Robertson counties (including the UWBVF project area) and Simsboro groundwater from the adjacent county. While the proposed EPCOR/UWBVF project does not require funding from the State of Texas, the project entities may proceed with ensuring the project is included in the next round of regional water planning.

# Rule 10.3 (d) – Technical Description of Proposed Facilities and Construction Schedule

Generally, the Skiles wells will be completed per State and BVGCD regulations at the permitted locations and are anticipated to be connected via collection pipelines to the main transmission line that will extend from Robertson County to the receiving areas. Pending final negotiations, the likely route will extend from the Robertson County well fields through Milam County into Williamson County. The sizing and alignment of collection and transmission pipelines have not yet been finalized. When the water is firmly contracted, additional details of the needed systems can be provided; and those systems will comply with applicable law, including TCEQ and PUC rules. To support the expected project, all water wells, storage tanks, collection lines, valving, transmission lines, and other appurtenances will be designed, constructed, and operated in accordance with applicable rules, requirements, and guidelines of the TCEQ as set forth in Title 30 Texas Administrative Code (30 TAC), specifically within Chapter 290 and Subchapter D.

As described, negotiations with end users are ongoing and this transport permit appropriately requests the four-county receiving area. Based on negotiations to date, it is anticipated that the City of Georgetown and other municipalities in Williamson County likely will be the primary receiving customers. Accordingly, please note that during their city council meeting on December 12, 2023, the City of Georgetown laid out a project schedule for the development, construction, and operation of the proposed project to import between 39,399 acre-feet to 70,000 acre-feet of groundwater from Robertson County. The City's schedule shows project development including preliminary engineering design, securing easements, and obtaining construction permitting beginning in mid-2025 and construction beginning in early 2027. Delivery of groundwater would begin in late 2029.

Per District Rule 10.4(d)(2) and Texas Water Code Section 36.122, the initial Transport Permit should be at least three years if construction of a conveyance system has not been initiated prior to the issuance of the permit; or at least 30 years if construction of a conveyance system has been initiated prior to the issuance of the permit.

# Rule 10.3 (e) – Anticipated Duration for Proposed Transport of Groundwater

The duration of transport is expected to be at least 30 to 60 years, and to likely begin in 2029. Probably, the Transport Permits would be renewed, and the project continued for longer than 60 years.

In connection with the reservation agreement and ongoing development of the anticipated project, the City of Georgetown's schedule for importing Simsboro groundwater from Robertson County indicates that between 8,000 and 20,000 acre-feet per year would be pumped from 2029 to 2033. Incremental increases would result in production of 70,000 acre-feet per year by as early as 2044, after which the production of 70,000 acre-feet per year would continue until 2060 or 2090 (see City of Georgetown Presentation, December 12, 2023). However, it is likely that the groundwater transport from Robertson County to the City of Georgetown and other end users in the receiving area will continue for longer than the 60-year period.

## Rule 10.3 (f) – Applicant Water Conservation Measures

Co-Applicant and Applicant will, per its declarations in the accompanying Transport Permit Application forms, comply with the BVGCD's Management Plan, Drought Contingency Plan, and Well Plugging Guidelines. Water will be transported by pipeline in accordance with sound engineering practices. The project will involve a program of leak detection, repair, and water loss accounting for the water transmission, delivery, and distribution system.

The City of Georgetown and other likely end users would implement conservation and drought contingency plans per the standard operating procedures of their water utility department or in accordance with applicable regulations. For example, the City of Georgetown's Water Conservation Plan is available here: https://gus.georgetown.org/wp-content/uploads/sites/47/2019/08/City-of-Georgetown-Water-Conservation-Plan.pdf. In addition, the City stated in its IWRP that it will employ conservation as one of its water supply strategies, targeting a 10 percent reduction in annual demand through conservation measures.

### Rule 10.3 (g) – Additional Information Related to Sale of Water

As noted earlier, Co-Applicant and Applicant have declared that they will comply with the BVGCD's Management Plan, Drought Contingency Plan, and Well Plugging Guidelines. Also, Skiles will install flowmeters in accordance with BVGCD's technical requirements and will meter and report the permitted production in accordance with the District's rules.

As described above, the project receiving area is Williamson, Bell, Travis, and Milam counties. Under Skiles's permits, water would be produced and transported to customers in the receiving area who would distribute water to their service areas (unless using the water itself). One or more



end users likely have certificated service areas (i.e., CCNs) in the receiving area (See map in Appendix C). The end users in the receiving area will employ metering, leak detection, and repair programs for their water storage, delivery and distribution systems and such water operation measures will be in accordance with sound engineering practices and applicable law, such as public water system regulations. Also, as required by 31 TAC 358.6 (Water Loss Audits) and summarized by the TWDB, "Currently, all retail public water systems with more than 3,300 connections or a financial obligation to TWDB are required to complete and submit a Water Loss Audit annually. All other retail public water suppliers are required to submit a Water Loss Audit to the agency every five years." (see <a href="https://www.twdb.texas.gov/conservation/resources/waterloss-resources.asp#:~:text=Currently%2C%20all%20retail%20public%20water,the%20agency%20every%20five%20years">https://www.twdb.texas.gov/conservation/resources/waterloss-resources.asp#:~:text=Currently%2C%20all%20retail%20public%20water,the%20agency%20every%20five%20years.) The water will be transported by pipeline, not bed and banks. Drought and emergency water management plans will be considered in the context of final designs based on ultimate end users when contracts for sale of water are in place.

The Counties and significant water users therein are participants in the regional and state water planning process. Thus, the water demands of potential customers in the receiving area and strategies that have been evaluated for meeting their needs are set out in the Region G and K Water Plans, shown in summary form as follows and more extensively in the full Regional and State Plans. These planning efforts included evaluation of population, use, existing and anticipated supply, and various alternatives to meet need, including conservation and conjunctive use. The following are available per the planning process:

- ✓ Population projections are shown at:
  - <u>https://brazosgwater.org/Portals/6/Documents/2021-Water-</u> <u>Plan/Final/Volume-I/2021 BrazosG Chapter%202%20-</u> %20Population%20and%20Water%20Demands.pdf and
  - <u>https://www.twdb.texas.gov/waterplanning/rwp/plans/2021/L/RegionL\_20</u> 21RWP\_V1.pdf?d=4631.899999991059 –



2021 Brazos G Regional Water Plan | Volume I Projected Population and Water Demands

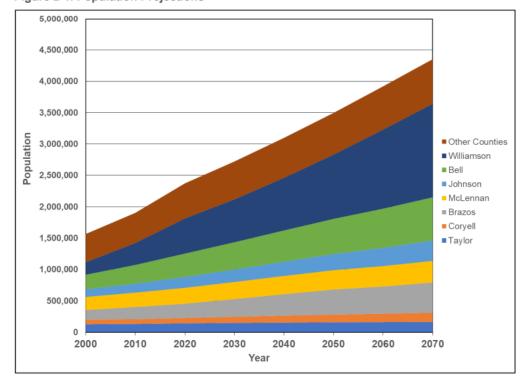
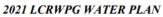


Figure 2-1. Population Projections





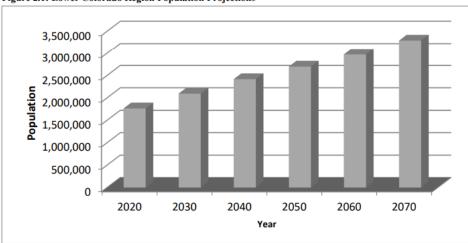


Figure 2.1: Lower Colorado Region Population Projections



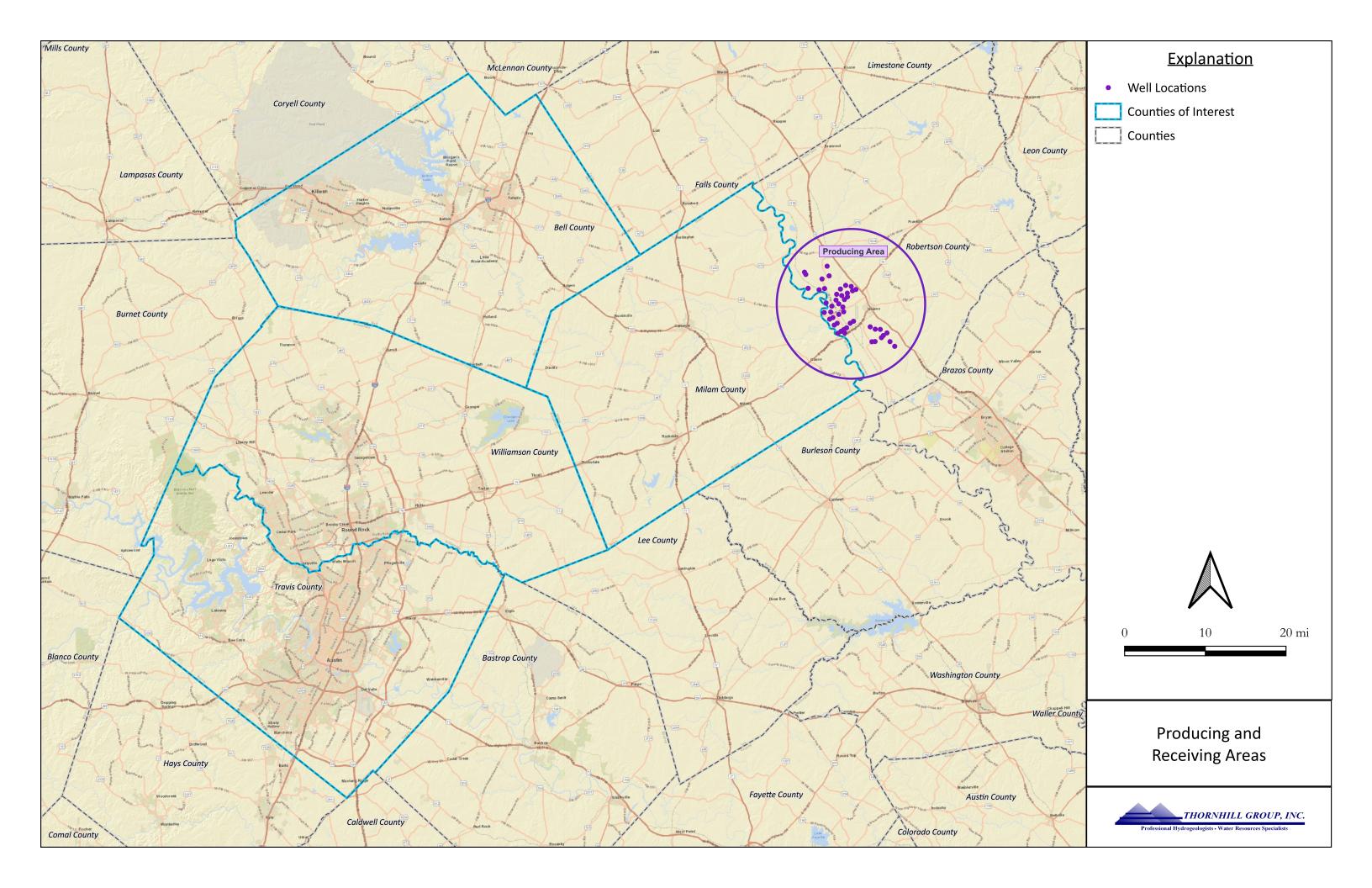
- ✓ County-level Water Supply Plan Summaries are shown at:
  - Williamson County
    - <u>https://brazosgwater.org/Portals/6/Documents/2021-Water-Plan/Final/Volume-I/Chapter-5-County-and-WWP-Plans/2021\_BrazosG\_5.36%20-%20Williamson.pdf</u>
  - o Bell County
    - <u>https://brazosgwater.org/Portals/6/Documents/2021-Water-</u> <u>Plan/Final/Volume-I/Chapter-5-County-and-WWP-</u> Plans/2021 BrazosG 5.1%20-%20Bell.pdf
  - Milam County
    - <u>https://brazosgwater.org/Portals/6/Documents/2021-Water-Plan/Final/Volume-I/Chapter-5-County-and-WWP-Plans/2021\_BrazosG\_5.25%20-%20Milam.pdf</u>
  - Travis County
    - <u>https://www.twdb.texas.gov/waterplanning/rwp/plans/2021/K/RegionK\_2021RWP\_V2.pdf?d=4631.899999991059</u> (See Chapter 5).
- ✓ Water conservation is often a recommended strategy, where appropriate as set forth in the Region G and K Water Conservation Recommendations:
  - <u>https://brazosgwater.org/Portals/6/Documents/2021-Water-</u> <u>Plan/Final/Volume-I/Chapter-5-County-and-WWP-</u> <u>Plans/2021 BrazosG 5.39%20-%20Conservation%20Recommendations.pdf</u>
  - Chapter 5, Section 5.2.2 discussing conservation as water management strategy -<u>https://www.twdb.texas.gov/waterplanning/rwp/plans/2021/K/RegionK 20</u> 21RWP V2.pdf?d=4631.899999991059.
- ✓ Where end users are subject to TCEQ or TWDB requirements for Water Conservation Plans, those plans would be in place and would generally be expected to accommodate appropriate integration of the groundwater supplies.
- As it is currently anticipated that the City of Georgetown will purchase water, the following information is appropriately considered. The City's extensive evaluation and planning in its IWRP reflects its close evaluation of population, demand, and potential supplies, including conservation.
  - https://gus.georgetown.org/wpcontent/uploads/sites/47/2023/08/Georgetown-IWRP\_Executive-Summary\_FINAL-2.pdf.



- The City's current Water Conservation Plan is available here. This plan addresses best management practices, metering, and leak detection and repair, among its many conservation requirements and initiatives.
  - <u>https://gus.georgetown.org/wp-</u> content/uploads/sites/47/2019/08/City-of-Georgetown-Water-Conservation-Plan.pdf.
- ✓ Notably, the City has indicated in its IWRP that additional conservation measures are targeted to achieve a 10 percent reduction in the City annual demand.

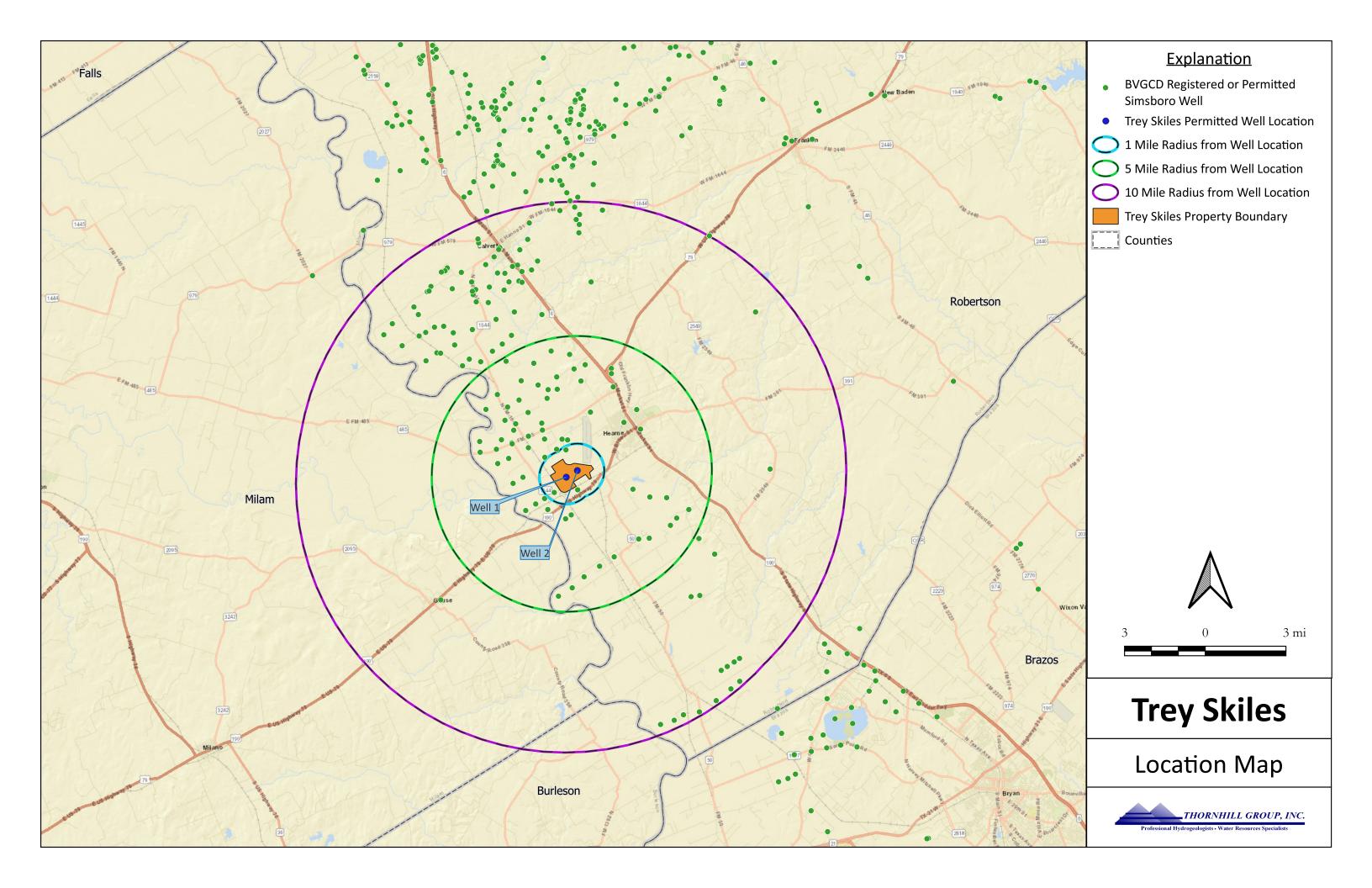


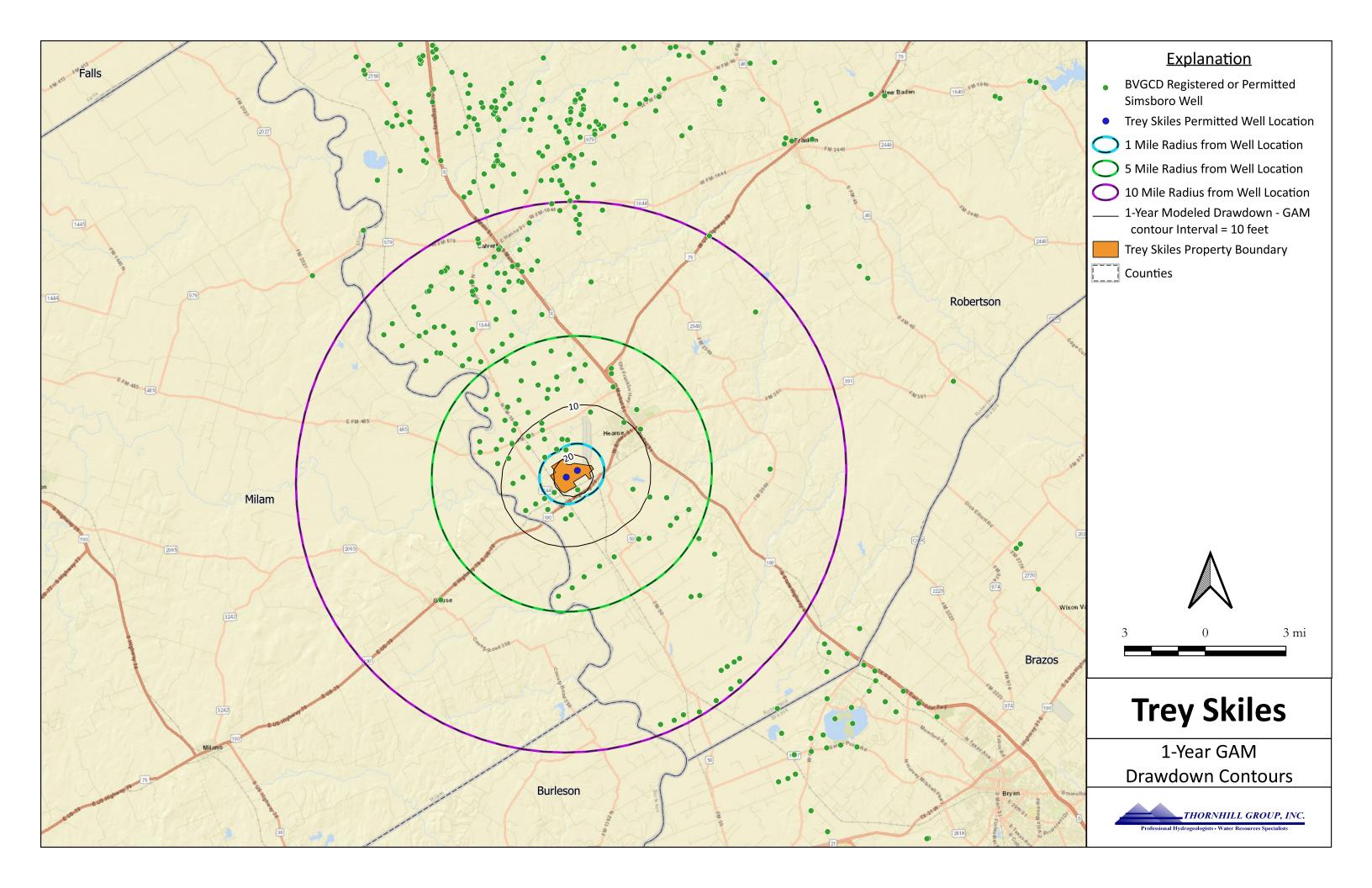
APPENDIX A

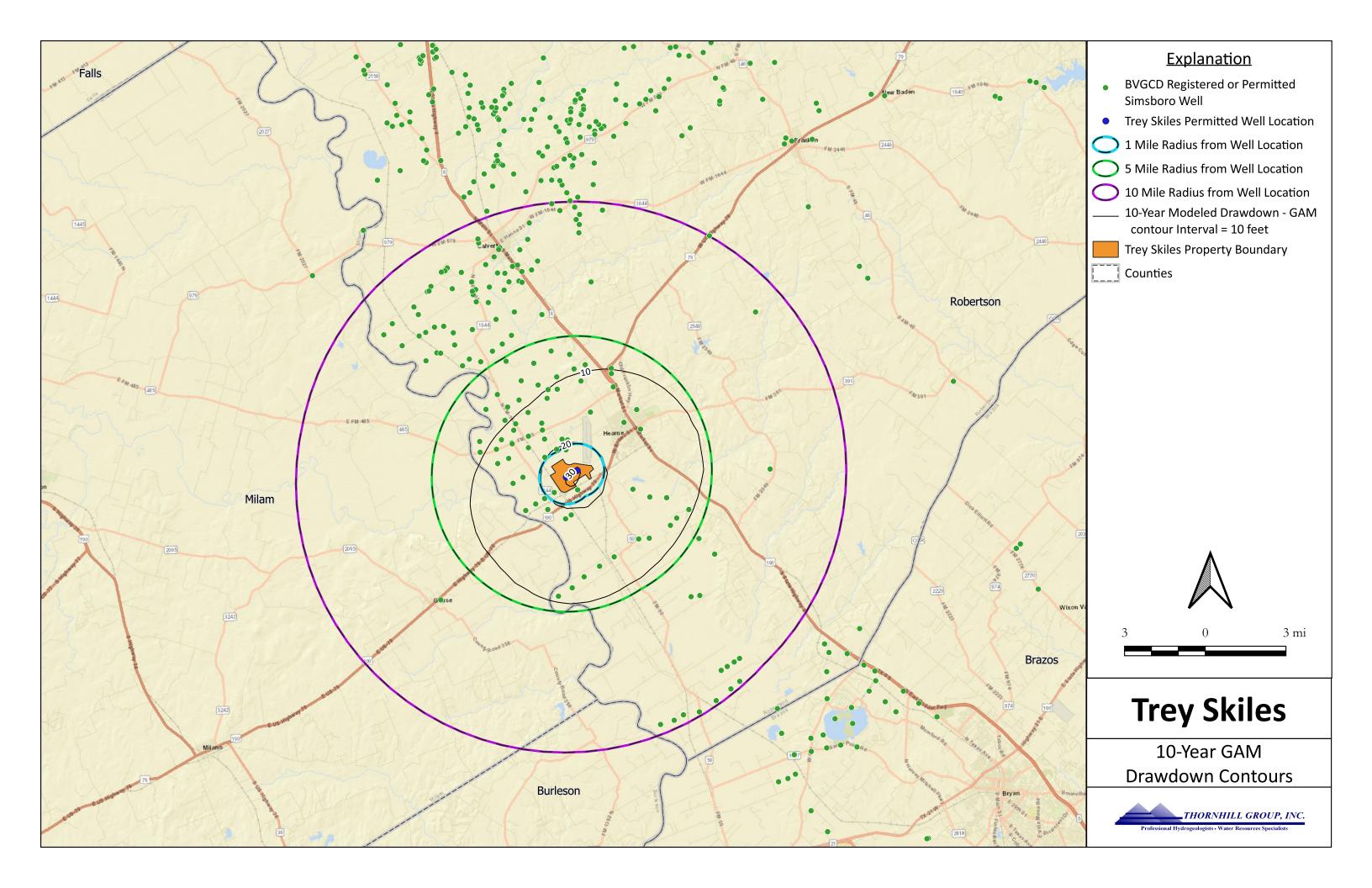


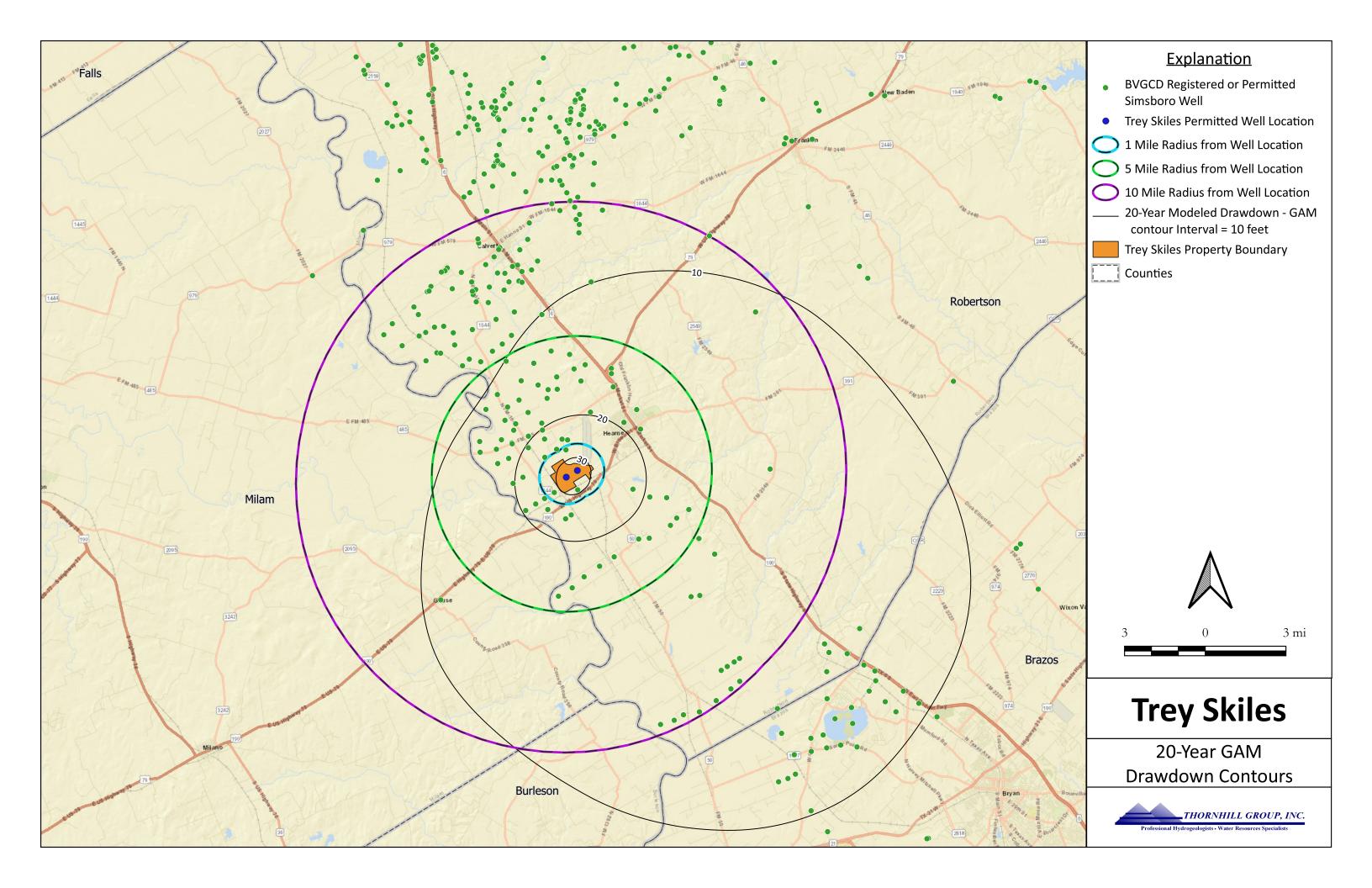


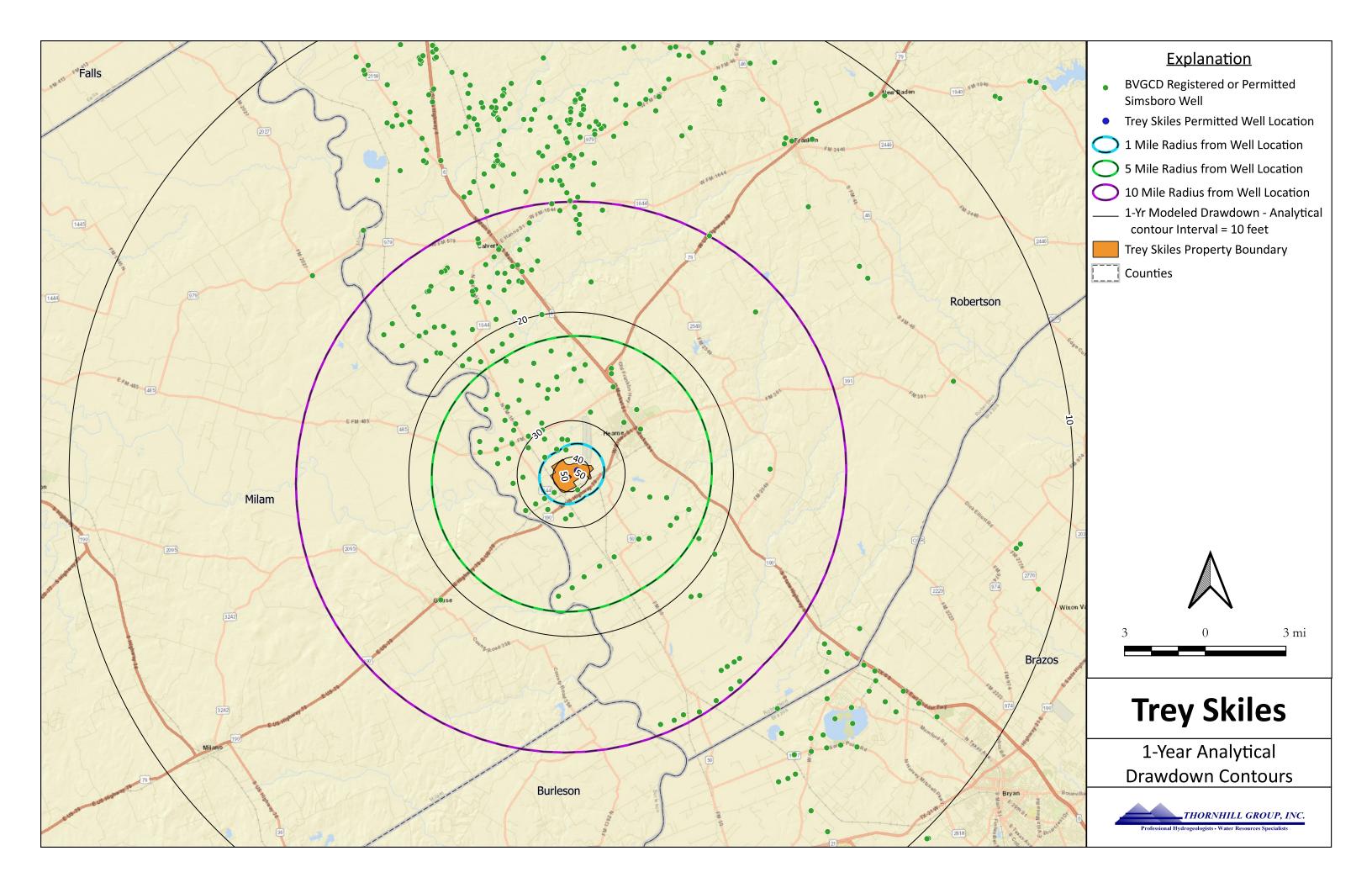
**APPENDIX B** 

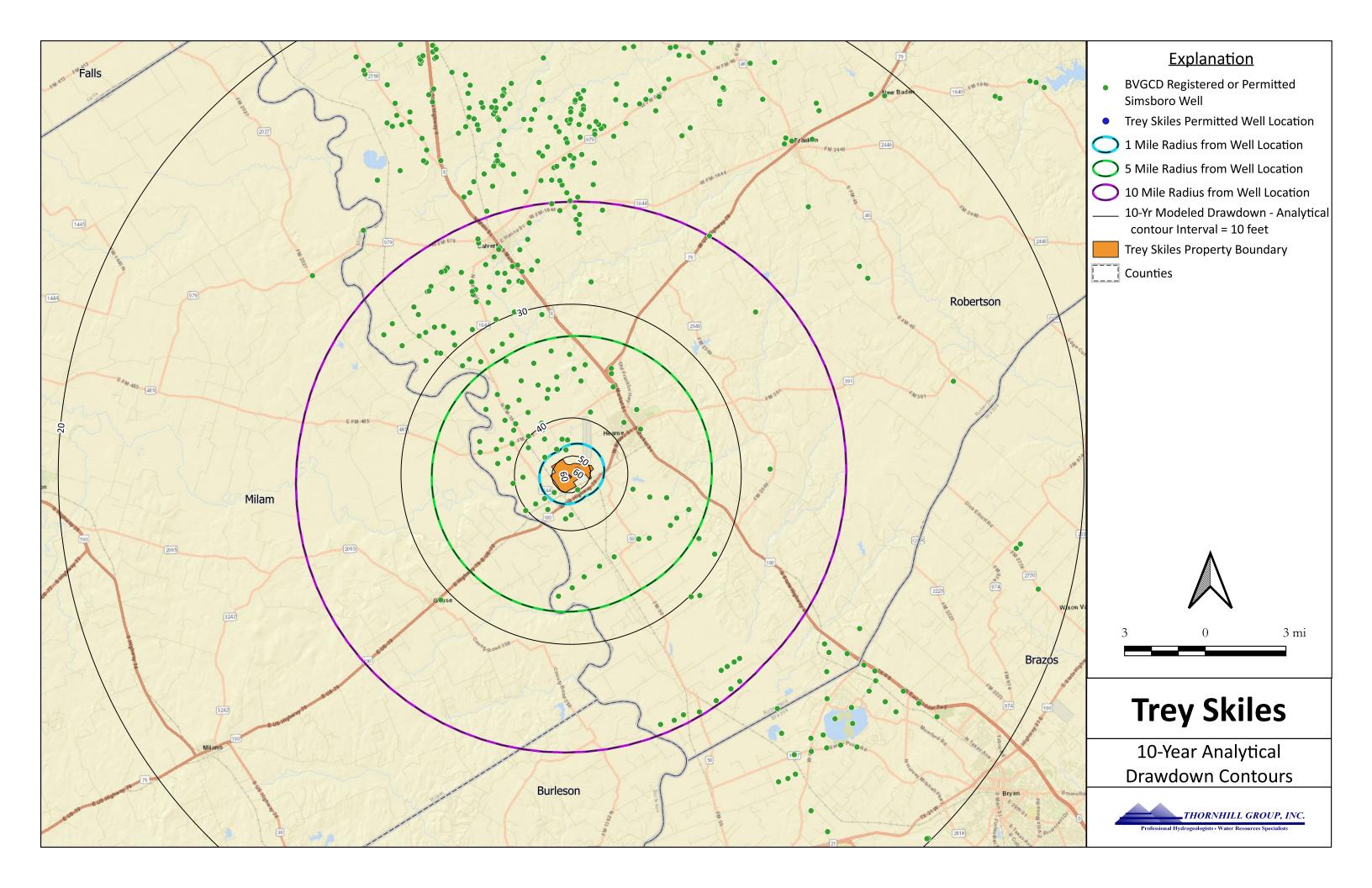


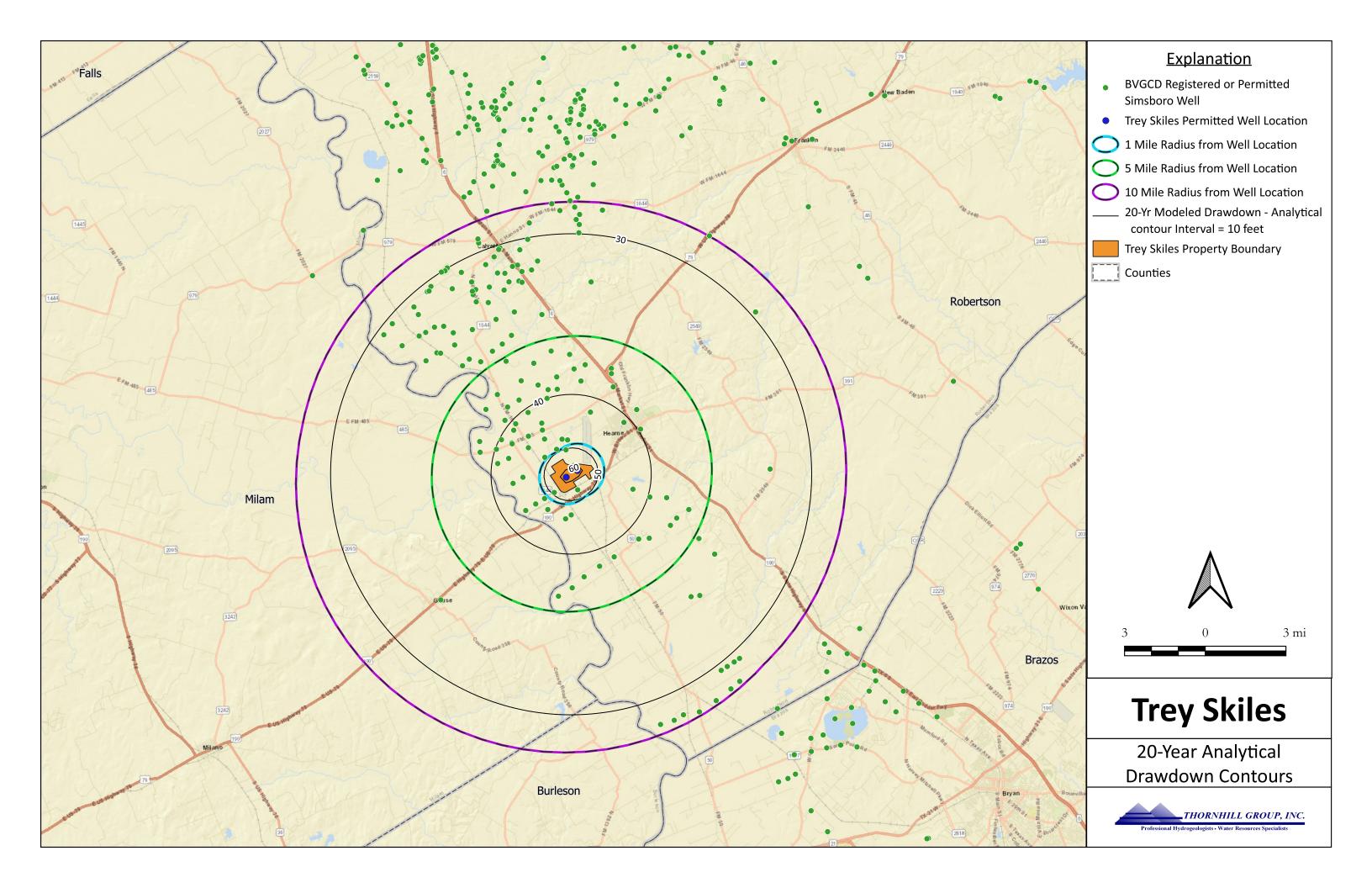


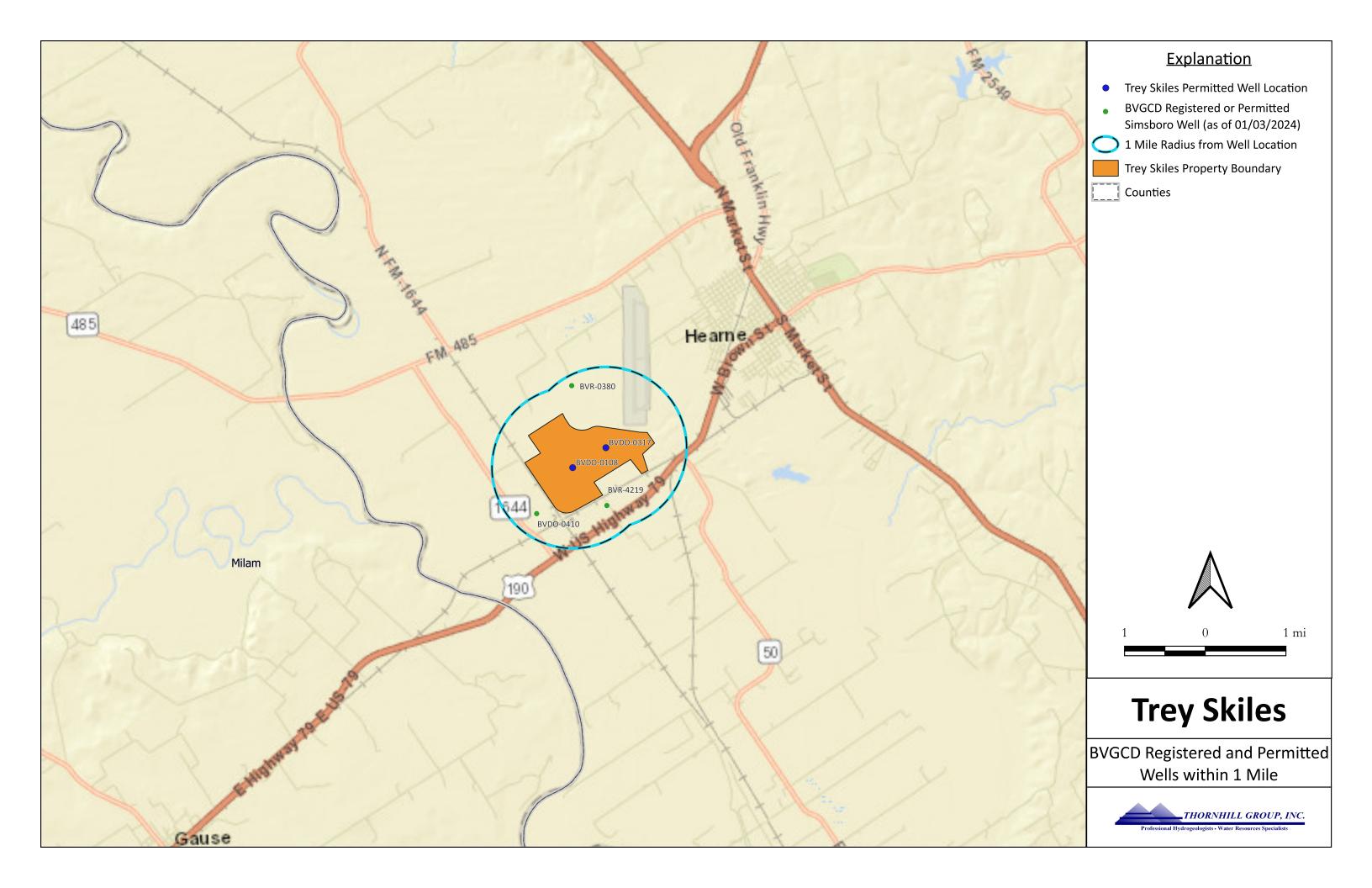


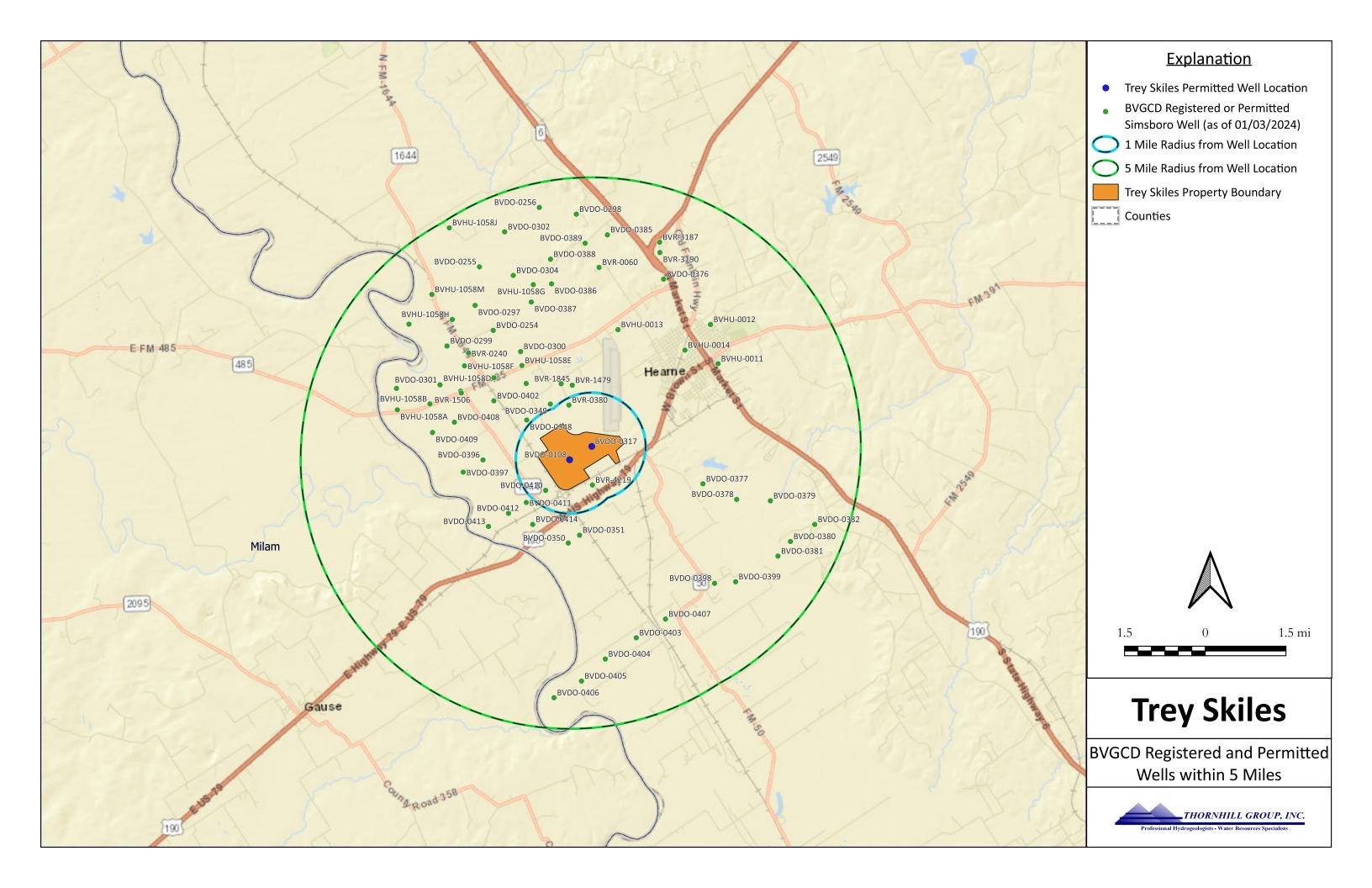


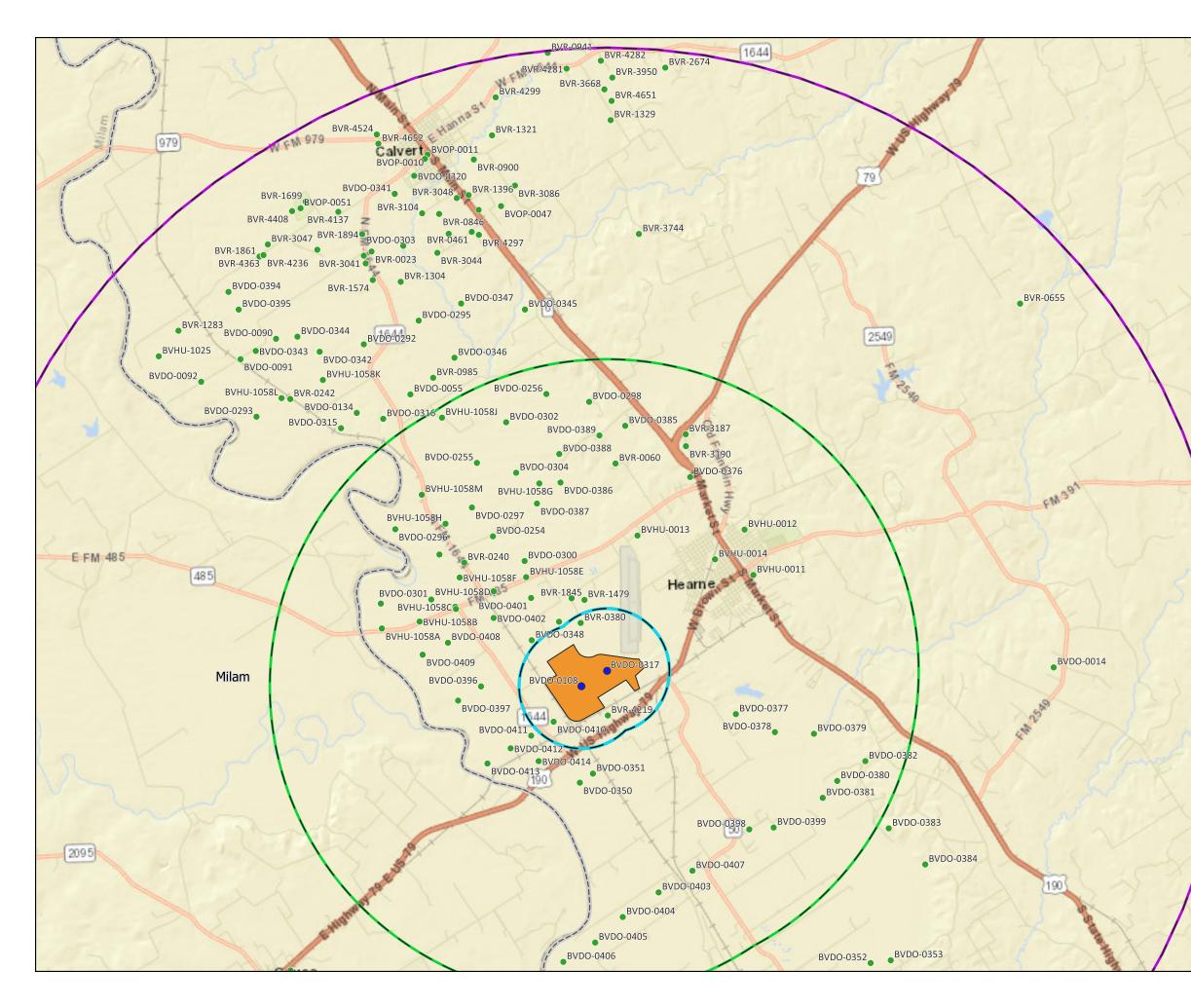


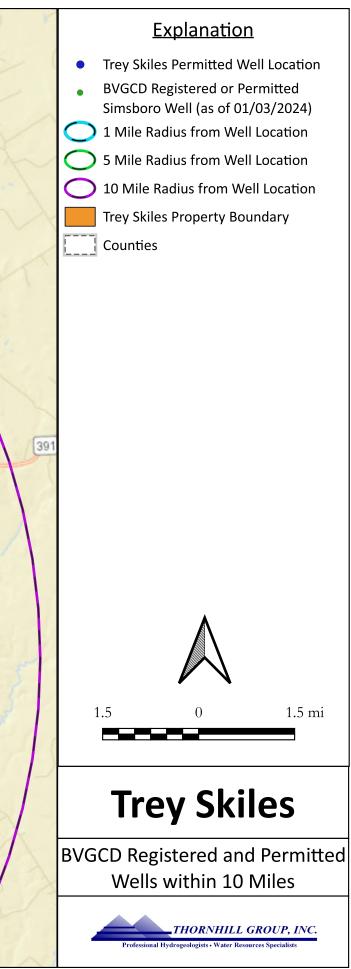


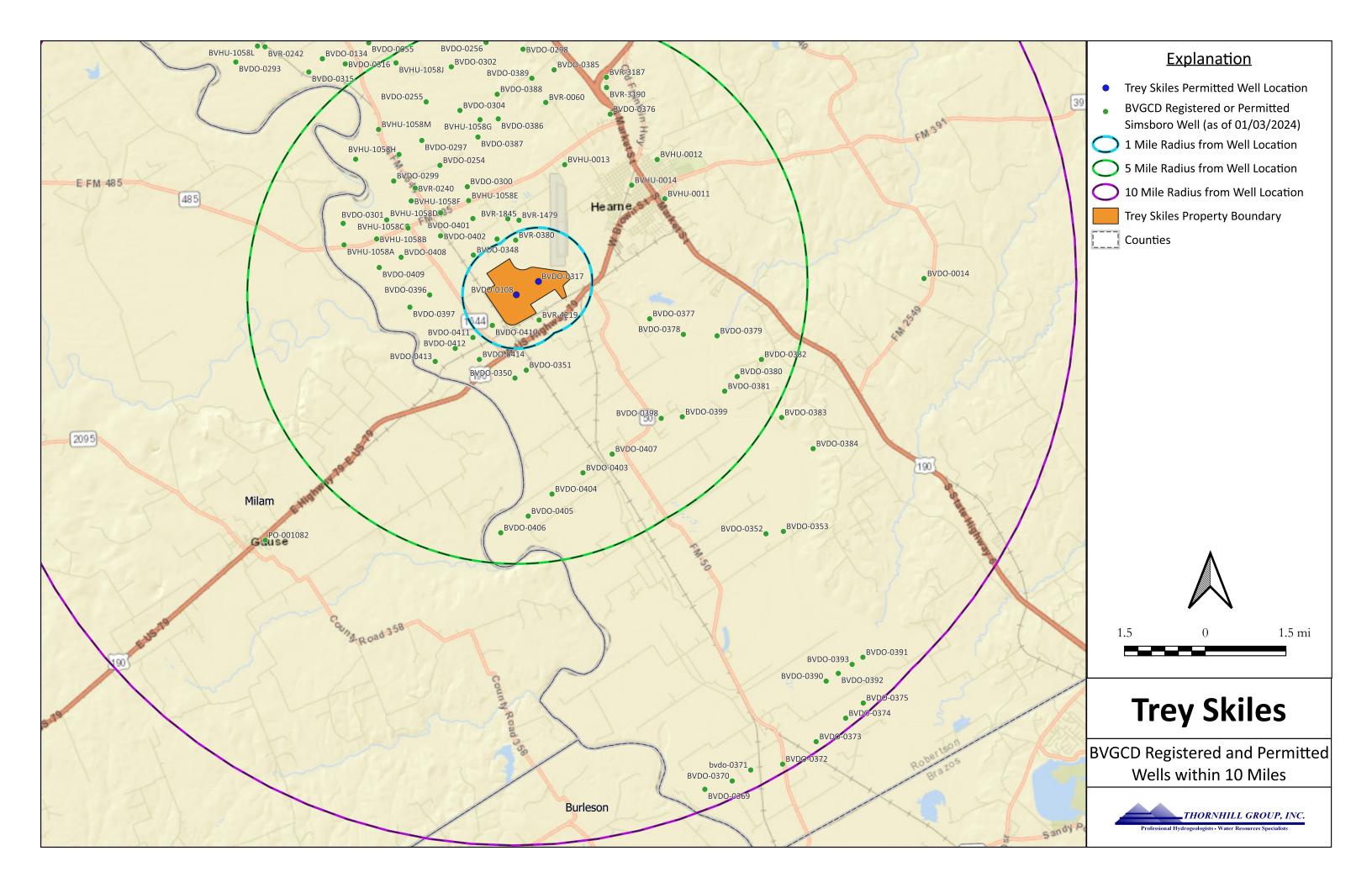












Owner	<b>Registration or</b>	Latitude	Longitudo	Wall Dopth	Aquifor	Casing Diameter (in)	1 Year Analytical	10 Year Analytical	20 Year Analytical	1 Year GAM	10 Year GAM	20 Year GAM
Owner	Permit Number	Latitude	Longitude	weir Deptii	Aquiler	Casing Diameter (iii)	Drawdon, ft.	Drawdown, ft.	Drawdown, ft.	Drawdown, ft.	Drawdown, ft.	Drawdown, ft.
Cula d'Brazos, LLC	BVDO-0410	30.842994	-96.643706		Simsboro		35	45	51	18	21	28
Ryan, Sandra & Melvin	BVR-0380	30.865784	-96.635523	1,100	Simsboro	4	33	42	51	17	21	27
Skiles, Clifford III	BVDO-0108	30.851042	-96.635889	1,242	Simsboro	16	42	51	73	26	30	35
Skiles, Clifford III	BVDO-0317	30.854431	-96.628822		Simsboro		43	53	66	28	31	37
Cangemi, Sammy	BVR-4219	30.844030	-96.629023	1,142	Simsboro	4	37	46	53	22	26	31

#### 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 Drawdon, ft.	10 Year Analytical Drawdown, ft.	20 Year Analytical Drawdown, ft.	1 Year GAM Drawdown, ft.	10 Year GAM Drawdown, ft.	20 Year GAM Drawdown, ft.
Cula d'Brazos, LLC	BVDO-0408	30.862192	-96.671514		Simsboro		26	35	42	10	13	18
Cula d'Brazos, LLC	BVDO-0410	30.842994	-96.643706		Simsboro		35	45	51	18	21	28
UW Brazos Valley Farm, LLC	BVDO-0297	30.893501	-96.663845		Simsboro		23	32	39	6	9	14
UW Brazos Valley Farm, LLC	BVDO-0299	30.882803	-96.673047		Simsboro		23	32	39	7	9	14
UW Brazos Valley Farm, LLC	BVDO-0301	30.872396	-96.675639		Simsboro		24	33	40	8	11	16
UW Brazos Valley Farm, LLC	BVDO-0298	30.917196	-96.631244		Simsboro		21	30	36	5	8	13
UW Brazos Valley Farm, LLC	BVDO-0300	30.880632	-96.650098		Simsboro		26	36	43	11	14	19
UW Brazos Valley Farm, LLC	BVDO-0302	30.913084	-96.653847		Simsboro		21	30	36	4	7	12
UW Brazos Valley Farm, LLC	BVHU-1058F	30.877300	-96.667783	1,065	Simsboro	16	25	34	41	9	12	16
UW Brazos Valley Farm, LLC	BVDO-0304	30.901250	-96.651604		Simsboro		23	32	39	6	9	14
UW Brazos Valley Farm, LLC	BVDO-0254	30.886626	-96.658433	1,205	Simsboro	18	24	34	41	8	11	16
UW Brazos Valley Farm, LLC	BVDO-0255	30.903856	-96.662094	1,240	Simsboro	18	22	31	37	4	7	12
UW Brazos Valley Farm, LLC	BVDO-0256	30.919348	-96.642734	1,225	Simsboro	18	20	29	36	4	7	12
UW Brazos Valley Farm, LLC	BVDO-0294	30.871826	-96.689291		Simsboro		22	31	38	6	9	13
UW Brazos Valley Farm, LLC	BVDO-0296	30.889026	-96.684725		Simsboro		21	31	37	5	7	11
UW Brazos Valley Farm, LLC	BVHU-1058B	30.867349	-96.678991	1,090	Simsboro	16	24	33	40	8	11	16
UW Brazos Valley Farm, LLC	BVHU-1058D	30.873824	-96.658706	1,131	Simsboro	16	27	36	43	11	14	20
UW Brazos Valley Farm, LLC	BVHU-1058J	30.914647	-96.671122	875	Simsboro	16	20	29	36	3	6	10
UW Brazos Valley Farm, LLC	BVHU-1058A	30.866028	-96.689233	1,095	Simsboro	16	23	32	39	7	9	14
UW Brazos Valley Farm, LLC	BVHU-1058C	30.870527	-96.669211	1,100	Simsboro	16	26	35	42	9	12	17
UW Brazos Valley Farm, LLC	BVHU-1058E	30.876867	-96.649833	1,175	Simsboro	16	27	36	44	12	15	20
UW Brazos Valley Farm, LLC	BVHU-1058F	30.877300	-96.667783	1,065	Simsboro	16	25	34	41	9	12	16
UW Brazos Valley Farm, LLC	BVHU-1058G	30.898588	-96.645434	964	Simsboro	16	23	32	39	7	10	15
UW Brazos Valley Farm, LLC	BVHU-1058H	30.889917	-96.671117	979	Simsboro	16	23	32	39	6	8	13
UW Brazos Valley Farm, LLC	BVHU-1058M	30.896850	-96.677267	930	Simsboro	16	21	31	37	4	7	11
Cula d'Brazos, LLC	BVDO-0412	30.837139	-96.655553		Simsboro		29	38	45	13	17	22

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

Cula d'Brazos, LLC	BVDO-0413	30.833783	-96.661933		Simsboro		27	37	43	12	15	21
Cula d'Brazos, LLC	BVDO-0414	30.833933	-96.648103		Simsboro		30	39	46	14	18	23
Cula d'Brazos, LLC	BVDO-0409	30.859611	-96.678461		Simsboro		24	34	40	9	12	17
Cula d'Brazos, LLC	BVDO-0411	30.839914	-96.649878		Simsboro		32	42	48	16	20	24
Cula d'Brazos, LLC	BVR-1506	30.870004	-96.669059	1,250	Simsboro	2	26	35	42	10	13	18
Bishop, Robert	BVR-0060	30.902642	-96.624684	1,193	Simsboro	4	23	32	39	7	11	16
Ryan, Sandra & Melvin	BVR-0380	30.865784	-96.635523	1,100	Simsboro	4	33	42	51	17	21	27
UW Brazos Valley Farm, LLC	BVR-0240	30.880729	-96.666403	1,065	Simsboro	4	24	34	41	8	11	16
City Of Hearne	BVHU-0011	30.875602	-96.588473	1,433	Simsboro	14	23	33	39	10	13	19
City Of Hearne	BVDO-0376	30.898904	-96.604637		Simsboro		22	32	38	8	11	16
City Of Hearne	BVHU-0012	30.886238	-96.590434	1,430	Simsboro	12	23	32	39	9	12	17
City Of Hearne	BVHU-0013	30.885689	-96.619408	1,441	Simsboro	10	25	35	42	11	14	19
City Of Hearne	BVHU-0014	30.879554	-96.598692	1,450	Simsboro	12	24	34	41	10	14	19
Skiles, Clifford III	BVDO-0108	30.851042	-96.635889	1,242	Simsboro	16	42	51	73	26	30	35
Skiles, Clifford III	BVDO-0317	30.854431	-96.628822	,	Simsboro		43	53	66	28	31	37
Zeig, Joseph & Marian	BVR-1479	30.871119	-96.634288	1,080	Simsboro	4	30	39	47	15	19	24
Burnside Investments,				,						-		
Inc.	BVDO-0403	30.802439	-96.616914		Simsboro		23	32	38	8	12	18
Burnside Investments, Inc.	BVDO-0404	30.796989	-96.626811		Simsboro		22	31	37	7	11	17
Burnside Investments, Inc.	BVDO-0405	30.791261	-96.634472		Simsboro		22	31	37	7	11	16
Burnside Investments, Inc.	BVDO-0406	30.787008	-96.643233		Simsboro		21	30	36	6	10	16
Burnside Investments, Inc.	BVDO-0407	30.807222	-96.607594		Simsboro		23	32	38	8	12	18
L. Wiese Moore, LLC	BVDO-0401	30.871983	-96.648675		Simsboro		29	38	46	13	17	22
L. Wiese Moore, LLC	BVDO-0402	30.867614	-96.658967		Simsboro		27	36	44	12	16	21
Cangemi, Sammy	BVR-4219	30.844030	-96.629023	1,142	Simsboro	4	37	46	53	22	26	31
Zeig, Larry J.	BVR-3187	30.908888	-96.605462	1,270	Simsboro	4	21	30	37	6	10	15
Ely Family Partnership	BVDO-0377	30.843353	-96.594456		Simsboro		25	35	42	12	16	21
Ely Family Partnership	BVDO-0378	30.838847	-96.584083		Simsboro		24	33	40	10	14	19
Ely Family Partnership	BVDO-0379	30.838158	-96.573567		Simsboro		22	32	38	8	12	18
Ely Family Partnership	BVDO-0381	30.823175	-96.571783		Simsboro		21	31	37	7	11	17
Ely Family Partnership	BVDO-0380	30.827000	-96.567717		Simsboro		21	31	37	6	11	17
Ely Family Partnership	BVDO-0382	30.831378	-96.559953		Simsboro		21	30	36	6	10	16
Wallace, Virginia	BVR-1845	30.871602	-96.637746	1,100	Simsboro	4	30	39	47	15	19	24
Corpora Farms	BVDO-0348	30.862142	-96.648896		Simsboro		31	41	49	16	20	25
Corpora Farms	BVDO-0350	30.828601	-96.637179		Simsboro		29	38	45	14	18	23
Corpora Farms	BVDO-0349	30.866236	-96.641341		Simsboro		32	42	50	17	20	26
Corpora Farms	BVDO-0351	30.830612	-96.633565		Simsboro		30	39	46	15	19	24
Swaner, Ronald & Elizabeth	BVR-3190	30.906117	-96.605510	1,225	Simsboro	4	21	31	37	7	10	15
RH2O LLC	BVDO-0389	30.909286	-96.628772	1,441	Simsboro	16	22	31	37	6	10	14
RH2O LLC	BVDO-0385	30.911344	-96.621725	1,450	Simsboro	12	21	30	37	6	9	14
RH2O LLC	BVDO-0386	30.898639	-96.639708	1,242	Simsboro	16	23	32	39	8	11	16
RH2O LLC	BVDO-0387	30.893919	-96.646250	420	Simsboro	4	24	33	40	8	11	16
RH20 LLC	BVDO-0388	30.905286	-96.639786		Simsboro		22	31	38	6	9	14
Fazzino Investments LP	BVDO-0396	30.851775	-96.662976	735	Simsboro	4	28	37	44	13	16	22
Fazzino Investments LP	BVDO-0398	30.816412	-96.591883	656	Simsboro	16	23	32	39	8	12	18
Fazzino Investments LP	BVDO-0397	30.848652	-96.669293	565	Simsboro	16	27	36	43	11	15	20
Fazzino Investments LP	BVDO-0399	30.816641	-96.585293	840	Simsboro	16	22	31	38	7	12	17
1 G22110 Investments LF	5400 0355	30.010041	30.303233	040	511150010	10	22	51	50	,	14	1/

Owner	Registration or	Latitude	Longitude	Well Depth	Aquifer	Casing Diameter (in)	1 Year Analytical	10 Year Analytical	20 Year Analytical	1 Year GAM	10 Year GAM	20 Year GAM
	Permit Number PO-001082	30.787104	-96.716877	992	Simsboro		Drawdon, ft. 18	Drawdown, ft. 27	Drawdown, ft. 33	Drawdown, ft. 3	Drawdown, ft. 7	Drawdown, ft. 11
Calvert Country Club	BVR-1699	30.966001	-96.706046	420	Simsboro	4	15	24	30	1	3	6
Calvert Country Club	BVOP-0051	30.964488	-96.707485	440	Simsboro	4	15	24	30	1	3	6
Cula d'Brazos, LLC	BVDO-0408	30.862192	-96.671514		Simsboro		26	35	42	10	13	18
Cula d'Brazos, LLC	BVDO-0410	30.842994	-96.643706		Simsboro		35	45	51	18	21	28
UW Brazos Valley Farm, LLC	BVDO-0292	30.932321	-96.691592		Simsboro		18	27	33	2	4	7
UW Brazos Valley Farm, LLC	BVDO-0297	30.893501	-96.663845		Simsboro		23	32	39	6	9	14
UW Brazos Valley Farm, LLC	BVDO-0299	30.882803	-96.673047		Simsboro		23	32	39	7	9	14
UW Brazos Valley Farm, LLC	BVDO-0301	30.872396	-96.675639		Simsboro		24	33	40	8	11	16
UW Brazos Valley Farm, LLC	BVDO-0298	30.917196	-96.631244		Simsboro		21	30	36	5	8	13
UW Brazos Valley Farm, LLC	BVDO-0300	30.880632	-96.650098		Simsboro		26	36	43	11	14	19
UW Brazos Valley Farm, LLC	BVDO-0302	30.913084	-96.653847		Simsboro		21	30	36	4	7	12
UW Brazos Valley Farm, LLC	BVDO-0303	30.954950	-96.680068		Simsboro		16	26	31	2	4	7
UW Brazos Valley Farm, LLC	BVHU-1058F	30.877300	-96.667783	1,065	Simsboro	16	25	34	41	9	12	16
UW Brazos Valley Farm, LLC	BVDO-0304	30.901250	-96.651604		Simsboro		23	32	39	6	9	14
UW Brazos Valley Farm, LLC	BVDO-0254	30.886626	-96.658433	1,205	Simsboro	18	24	34	41	8	11	16
Perez, John (Landco Investments)	BVR-0461	30.957669	-96.661438	475	Simsboro	4	16	26	32	2	5	8
UW Brazos Valley Farm, LLC	BVDO-0255	30.903856	-96.662094	1,240	Simsboro	18	22	31	37	4	7	12
UW Brazos Valley Farm, LLC	BVDO-0256	30.919348	-96.642734	1,225	Simsboro	18	20	29	36	4	7	12
UW Brazos Valley Farm, LLC	BVDO-0293	30.916287	-96.721219		Simsboro		17	27	32	1	2	5
UW Brazos Valley Farm, LLC	BVDO-0294	30.871826	-96.689291		Simsboro		22	31	38	6	9	13
UW Brazos Valley Farm, LLC	BVDO-0295	30.937420	-96.676560		Simsboro		18	27	33	2	5	8
UW Brazos Valley Farm, LLC	BVDO-0296	30.889026	-96.684725		Simsboro		21	31	37	5	7	11
UW Brazos Valley Farm, LLC	BVHU-1058B	30.867349	-96.678991	1,090	Simsboro	16	24	33	40	8	11	16
UW Brazos Valley Farm, LLC	BVHU-1058D	30.873824	-96.658706	1,131	Simsboro	16	27	36	43	11	14	20
UW Brazos Valley Farm, LLC	BVHU-1058J	30.914647	-96.671122	875	Simsboro	16	20	29	36	3	6	10
UW Brazos Valley Farm, LLC	BVHU-1058L	30.920417	-96.714283	691	Simsboro	16	17	27	33	1	3	6

#### Table 3. Simulated Drawdown at Registered and Permitted Simsboro Wells Within a 10-Mile Radius

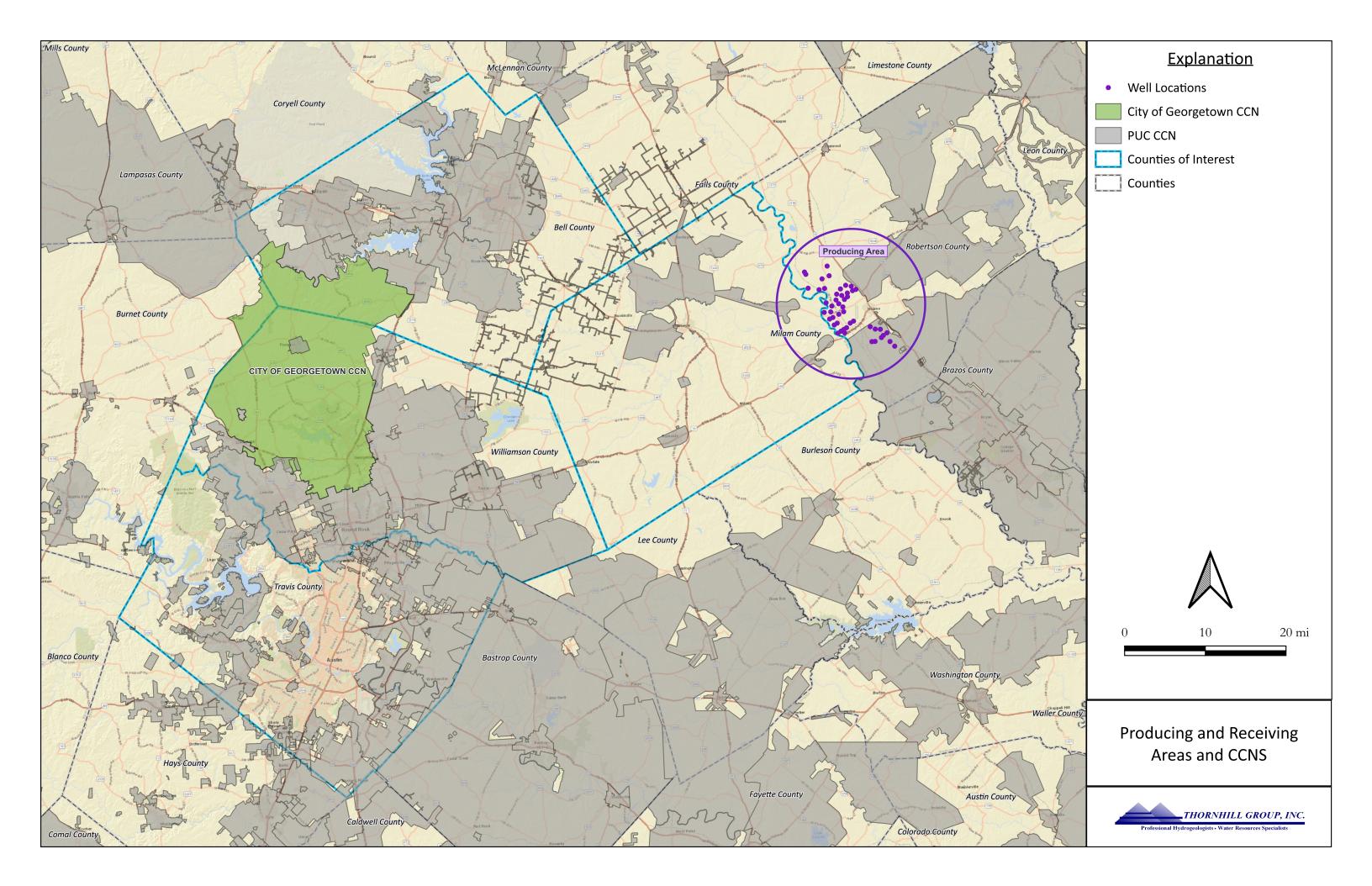
BVHU-1058A	30.866028	-96.689233	1,095	Simsboro	16	23	32	39	7	9	14
BVHU-1058C	30.870527	-96.669211	1,100	Simsboro	16	26	35	42	9	12	17
BVHU-1058K	30.924333	-96.702966	720	Simsboro	16	18	27	33	1	3	6
BVHU-1058E	30.876867	-96.649833	1,175	Simsboro	16	27	36	44	12	15	20
BVHU-1058F	30.877300	-96.667783	1,065	Simsboro	16	25	34	41	9	12	16
BVHU-1058G	30.898588	-96.645434	964	Simsboro	16	23	32	39	7	10	15
BVHU-1058H	30.889917	-96.671117	979	Simsboro	16	23	32	39	6	8	13
BVHU-1058M	30.896850	-96.677267	930	Simsboro	16	21	31	37	4	7	11
BVDO-0092	30.924837	-96.735858	530	Simsboro	16	16	25	31	0	2	4
BVDO-0412	30.837139	-96.655553		Simsboro		29	38	45	13	17	22
											21
						30			14		23
											17
									-		24
			1 250		2						18
			,								8
											16
			,								27
BVR-0380 BVDO-0014	30.851710	-96.508264	2,020	Simsboro	16	17	26	31	3	7	13
BVR-1396	30.966263	-96.661960	660	Simsboro	4	16	25	31	2	4	8
BVOP-0047	30 963447	-96 653288	660	Simshoro	4	16	25	31	2	5	8
BVR-0240	30.880729	-96.666403	1,065	Simsboro	4	24	34	41	8	11	16
BVR-0242	30.920143	-96.711938	610	Simsboro	4	17	27	33	1	3	6
BVR-1283	30.936893	-96.741546	460	Simsboro	4	15	25	30	0	1	3
BVDO-0320	30.971170	-96.676495		Simsboro	12	15	25	30	1	4	7
BVOP-0011	30.975810	-96.672639	738	Simsboro		15	24	30	1	4	7
BVOP-0010	30.976010	-96.672707	683	Simsboro	16	15	24	30	1	4	7
BVOP-0012	30.975021	-96.673458	661	Simsboro	16	15	24	30	1	4	7
BVHU-1025	30.931082	-96.747085	580	Simsboro	16	15	25	30	0	1	2
BVR-3045	30.954697	-96.703322	404	Simsboro	4	16	25	31	1	3	6
BVR-3744		-96.616290	880		4	17	26	32	3	6	10
			510			16			1	4	7
									1		7
											19
			2) 100								16
			1 430		12				-		17
			,								19
			,								19
			,								35
			,								4
BVR-1801 BVDO-0317	30.854431	-96.628822	420	Simsboro	4	43	53	66	28	31	37
				201000		40	55	00	20	21	57
BVR-0985	30.854431	-96.673151	735	Simsboro	4	19	28	34	3	5	9
	BVHU-1058C BVHU-1058C BVHU-1058C BVHU-1058C BVHU-1058C BVHU-1058G BVHU-1058M BVD-0412 BVD-0413 BVD-0413 BVD-0413 BVD-0414 BVD-0413 BVD-0414 BVR-0414 BVR-0414 BVR-0414 BVR-0414 BVR-0414 BVR-0414 BVR-0414 BVR-0414 BVR-0414 BVR-0414 BVR-0414 BVR-0240 BVR-0240 BVR-0242 BVR-1283 BVD-0320 BVD-0320 BVD-0320 BVD-0011 BVOP-0012 BVOP-0012 BVD-0012 BVD-0012 BVD-0012 BVN-1025 BVH-1025	BVHU-1058C         30.870527           BVHU-1058C         30.924333           BVHU-1058E         30.876867           BVHU-1058F         30.877300           BVHU-1058G         30.889858           BVHU-1058G         30.889858           BVHU-1058H         30.898588           BVHU-1058H         30.898588           BVHU-1058H         30.898588           BVD-0412         30.837139           BVD0-0412         30.837139           BVD0-0413         30.839313           BVD0-0413         30.839141           BVD0-0414         30.839131           BVD0-0413         30.859611           BVD0-0414         30.859611           BVD0-0413         30.851710           BVR-0500         30.974503           BVR-0240         30.865784           BVD0-0114         30.850612           BVR-0240         30.860729           BVR-0240         30.966263           BVR-0240         30.966263           BVR-0240         30.966263           BVR-0240         30.966263           BVR-0240         30.966263           BVR-0240         30.976110           BVR-0241         30.976117	BVHU-1058C         30.870527         -96.669211           BVHU-1058K         30.924333         -96.702966           BVHU-1058E         30.876867         -96.649833           BVHU-1058F         30.877300         -96.64783           BVHU-1058G         30.898588         -96.645434           BVHU-1058H         30.898580         -96.671117           BVHU-1058H         30.898580         -96.671117           BVHU-1058H         30.898580         -96.671117           BVD0-0412         30.83733         -96.65133           BVD0-0413         30.83733         -96.651933           BVD0-0414         30.833933         -96.648103           BVD0-0411         30.835911         -96.669059           BVR-1306         30.87004         -96.63523           BVD0-0411         30.83574         -96.63523           BVR-0300         30.974503         -96.661960           BVR-0300         30.966263         -96.651288           BVR-0401         30.885784         -96.653288           BVD-0014         30.936893         -96.711938           BVR-0240         30.936893         -96.711938           BVR-0240         30.9371170         -96.6764951           BVD-031<	BVHU-1058C         30.870527         -96.669211         1,100           BVHU-1058K         30.924333         -96.702966         720           BVHU-1058E         30.876867         -96.649833         1,175           BVHU-1058F         30.877300         -96.667783         1,065           BVHU-1058G         30.898588         -96.645434         964           BVHU-1058H         30.898580         -96.671117         979           BVHU-1058H         30.898580         -96.677267         930           BVD0-0412         30.837139         -96.655533         530           BVD0-0413         30.83783         -96.648103         530           BVD0-0413         30.837934         -96.669595         1,250           BVR-0500         30.974503         -96.66959         1,250           BVR-0500         30.902642         -96.635523         1,100           BVR-0600         30.902642         -96.635523         1,100           BVR-0380         30.865784         -96.635523         1,100           BVR-0380         30.966263         -96.661960         660           BVOP-0014         30.938072         -96.66433         1,065           BVR-0240         30.920143         -	BVHU-1058C         30.870527         -96.669211         1,100         Simsboro           BVHU-1058K         30.924333         -96.702966         720         Simsboro           BVHU-1058E         30.877800         -96.649833         1,175         Simsboro           BVHU-1058F         30.877300         -96.667783         1,065         Simsboro           BVHU-1058G         30.898588         -96.645434         964         Simsboro           BVHU-1058H         30.898580         -96.677267         930         Simsboro           BVD0-0092         30.924837         -96.735858         530         Simsboro           BVD0-0412         30.837139         -96.655533         Simsboro         Simsboro           BVD0-0413         30.839914         -96.678461         Simsboro         Simsboro           BVD0-0413         30.83783         -96.661933         Simsboro         Simsboro           BVD0-0414         30.839914         -96.678461         Simsboro         Simsboro           BVR-0603         30.902642         -96.62428         590         Simsboro           BVR-0603         30.902642         -96.62428         1,193         Simsboro           BVR-1506         30.86774         -96.624684	BVHU-1058C         30.870527         -96.669211         1,100         Simsboro         16           BVHU-1058K         30.924333         -96.702966         720         Simsboro         16           BVHU-1058E         30.876867         -96.649833         1,175         Simsboro         16           BVHU-1058E         30.877300         -96.667783         1,065         Simsboro         16           BVHU-1058B         30.898588         -96.645434         964         Simsboro         16           BVHU-1058H         30.898588         -96.677117         979         Simsboro         16           BVHU-1058H         30.896850         -96.677267         930         Simsboro         16           BVD0-0022         30.924837         -96.65133         Simsboro         16           BVD0-0413         30.833783         -96.661333         Simsboro         2           BVD0-0411         30.833931         -96.648103         Simsboro         2           BVD0-0411         30.83783         -96.661933         Simsboro         4           BVR-0600         30.92642         -96.624684         1,193         Simsboro         4           BVR-0600         30.9365784         -96.635523         1,	BVHU-1058C         30.870527         -96.669211         1.100         Simsboro         16         26           BVHU-1058K         30.924333         -96.702966         720         Simsboro         16         18           BVHU-1058K         30.924333         -96.649833         1.175         Simsboro         16         27           BVHU-1058F         30.876867         -96.649833         1.065         Simsboro         16         23           BVHU-1058G         30.898588         -96.647117         979         Simsboro         16         23           BVHU-1058H         30.898580         -96.677267         930         Simsboro         16         21           BVDO-0092         30.924837         -96.67733         Simsboro         29         9         29         9         29         9         29         9         20         24         29         29         27         28         29         27         28         20         21         24         29         27         28         29         27         28         29         27         26         29         27         26         28         20         26         24         23         23         23	BVHU-1058C         30.870527         -96.669211         1,100         Simsboro         16         26         35           BVHU-1058K         30.924333         -96.702966         720         Simsboro         16         18         27           BVHU-1058K         30.876867         -96.649833         1,175         Simsboro         16         27         36           BVHU-1058F         30.877800         -96.67783         1,065         Simsboro         16         23         32           BVHU-1058K         30.899588         -96.645434         964         Simsboro         16         23         32           BVHU-1058K         30.899589         -96.6771267         930         Simsboro         16         21         31           BVD0-0412         30.83783         -96.655333         Simsboro         27         37           BVD0-4413         30.833931         -96.656393         Simsboro         24         34           BVD0-4413         30.83784         -96.654378         Simsboro         24         34           BVD0-4413         30.83794         -96.654264         Simsboro         2         26         35           BVR-0400         30.9374503         -96.62424 <t< td=""><td>BYHU-1058C         30.870527         -96.669211         1,100         Simsboro         16         26         35         42           BYHU-1058K         30.924333         -96.70296         720         Simsboro         16         18         27         33           BYHU-1058K         30.876867         -96.649833         1,175         Simsboro         16         27         36         44           BYHU-1058F         30.877300         -96.667783         1,065         Simsboro         16         23         32         39           BYHU-1058H         30.88958         -96.645434         964         Simsboro         16         23         32         39           BYHU-1058H         30.88960         -96.677357         930         Simsboro         29         38         36         31         37           BYDO-0041         30.88934         -96.67353         Simsboro         29         38         45         30         39         46           BYDO-0413         30.83333         -96.67353         Simsboro         24         34         40         30         22         26         35         42         48         50         50         50         50         50</td><td>Number         10         Simsboro         16         26         35         42         9           BVHU-1050K         30.37927         96.69211         1100         Simsboro         16         18         27         33         1           BVHU-1050K         30.37867         96.69833         1.175         Simsboro         16         27         36         44         12           BVHU-1050K         30.37300         96.67733         1.065         Simsboro         16         23         32         39         7           BVHU-1050K         30.89588         96.64544         964         Simsboro         16         23         32         39         6           BVHU-1050K         30.89858         96.677367         930         Simsboro         15         16         25         31         0           BVD-0413         30.83739         96.65733         Simsboro         27         37         43         12           BVD-0413         30.33339         96.61933         Simsboro         2         26         35         42         10           BVD-0413         30.33914         96.61933         Simsboro         2         26         35         42</td><td>NHU-1058         0.8.07027         96.669211         1.00         Simsboro         16         26         35         42         9         12           BVHU-1058         0.9.07433         -96.70296         7.0         Simsboro         16         27         36         44         12         15           BVHU-1058         0.8.07667         -96.667783         1.065         Simsboro         16         23         34         41         9         12           BVHU-10584         0.8.98585         -96.67783         1.065         Simsboro         16         23         32         39         6         8           BVHU-10584         0.8.98585         -96.67787         90         Simsboro         16         23         32         39         6         8           BVHU-10584         0.8.98585         -96.67787         90         Simsboro         16         23         32         31         0         2         15           BVHU-0081         30.83939         -96.67283         Simsboro         29         38         44         0         9         12           BVHU-0081         30.83939         -96.67283         Simsboro         2         2         3         &lt;</td></t<>	BYHU-1058C         30.870527         -96.669211         1,100         Simsboro         16         26         35         42           BYHU-1058K         30.924333         -96.70296         720         Simsboro         16         18         27         33           BYHU-1058K         30.876867         -96.649833         1,175         Simsboro         16         27         36         44           BYHU-1058F         30.877300         -96.667783         1,065         Simsboro         16         23         32         39           BYHU-1058H         30.88958         -96.645434         964         Simsboro         16         23         32         39           BYHU-1058H         30.88960         -96.677357         930         Simsboro         29         38         36         31         37           BYDO-0041         30.88934         -96.67353         Simsboro         29         38         45         30         39         46           BYDO-0413         30.83333         -96.67353         Simsboro         24         34         40         30         22         26         35         42         48         50         50         50         50         50	Number         10         Simsboro         16         26         35         42         9           BVHU-1050K         30.37927         96.69211         1100         Simsboro         16         18         27         33         1           BVHU-1050K         30.37867         96.69833         1.175         Simsboro         16         27         36         44         12           BVHU-1050K         30.37300         96.67733         1.065         Simsboro         16         23         32         39         7           BVHU-1050K         30.89588         96.64544         964         Simsboro         16         23         32         39         6           BVHU-1050K         30.89858         96.677367         930         Simsboro         15         16         25         31         0           BVD-0413         30.83739         96.65733         Simsboro         27         37         43         12           BVD-0413         30.33339         96.61933         Simsboro         2         26         35         42         10           BVD-0413         30.33914         96.61933         Simsboro         2         26         35         42	NHU-1058         0.8.07027         96.669211         1.00         Simsboro         16         26         35         42         9         12           BVHU-1058         0.9.07433         -96.70296         7.0         Simsboro         16         27         36         44         12         15           BVHU-1058         0.8.07667         -96.667783         1.065         Simsboro         16         23         34         41         9         12           BVHU-10584         0.8.98585         -96.67783         1.065         Simsboro         16         23         32         39         6         8           BVHU-10584         0.8.98585         -96.67787         90         Simsboro         16         23         32         39         6         8           BVHU-10584         0.8.98585         -96.67787         90         Simsboro         16         23         32         31         0         2         15           BVHU-0081         30.83939         -96.67283         Simsboro         29         38         44         0         9         12           BVHU-0081         30.83939         -96.67283         Simsboro         2         2         3         <

Canadara Durana R												
Sandra Ryan & Bernadette Sloat	BVDO-0091	30.929786	-96.725021	565	Simsboro	16	16	26	31	1	2	5
Sandra Ryan &												
Bernadette Sloat	BVDO-0055	30.920309	-96.679458	840	Simsboro	16	19	28	34	3	5	9
Lopez, Claude & Karen	BVR-3086	30.968125	-96.649345	627	Simsboro	4	16	25	31	2	5	8
Flemings, Nancy	BVR-1894	30.957995	-96.691058	515	Simsboro	4	16	25	31	1	4	7
Bland, Andy	BVR-1304	30.946604	-96.681069	560	Simsboro	4	17	26	32	2	4	8
Zeig, Joseph & Marian	BVR-1479	30.871119	-96.634288	1.080	Simsboro	4	30	39	47	15	19	24
Denena, Leon A. Jr	BVR-1574	30.947221	-96.688598	530	Simsboro	4	17	26	32	2	4	7
Burnside Investments,						•						
Inc.	BVDO-0403	30.802439	-96.616914		Simsboro		23	32	38	8	12	18
Burnside Investments,										_		. –
Inc.	BVDO-0404	30.796989	-96.626811		Simsboro		22	31	37	7	11	17
Burnside Investments,								••		_		
Inc.	BVDO-0405	30.791261	-96.634472		Simsboro		22	31	37	7	11	16
Burnside Investments,	D/D 0 0400	20 707000	0.0.00000		c: 1		24	22	26	<i>c</i>	10	4.5
Inc.	BVDO-0406	30.787008	-96.643233		Simsboro		21	30	36	6	10	16
Burnside Investments,	DV D O 0407	20.007222	00.007504		c: 1		22	22		<u>^</u>	10	40
Inc.	BVDO-0407	30.807222	-96.607594		Simsboro		23	32	38	8	12	18
Triple C Ranch	BVR-0846	30.962101	-96.670091	590	Simsboro	4	16	25	31	2	4	8
Neff, Tim	BVR-0655	30.936669	-96.513962	1,530	Simsboro	4	15	24	30	2	6	11
Brien, James C.	BVDO-0316	30.914826	-96.687016		Simsboro	18	19	29	35	2	5	8
Brien, James C.	BVDO-0315	30.912966	-96.698488		Simsboro	18	19	28	34	2	4	7
Brien, James C.	BVDO-0134	30.916421	-96.694104	778	Simsboro	16	19	28	34	2	4	8
L. Wiese Moore, LLC	BVDO-0401	30.871983	-96.648675		Simsboro		29	38	46	13	17	22
L. Wiese Moore, LLC	BVDO-0402	30.867614	-96.658967		Simsboro		27	36	44	12	16	21
Kuiper, Chris & Linda	BVR-3950	30.992505	-96.622070	600	Simsboro	4	14	24	29	1	4	8
Guild, Joan R.	BVR-2674	30.994412	-96.607663	556	Simsboro	4	14	23	29	1	4	8
Garcia, Maximiliano	BVR-4061	30.951138	-96.690366	450	Simsboro	4	16	25	31	1	4	7
Cangemi, Sammy	BVR-4219	30.844030	-96.629023	1,142	Simsboro	4	37	46	53	22	26	31
Eliot Family Limited	DVD 2047	20.056242	06 746624	405	Circulture	4	45	25	20		2	
Partnership	BVR-3047	30.956312	-96.716631	485	Simsboro	4	15	25	30	1	2	4
Calvert Livestock, Inc.	BVR-3048	30.965672	-96.665187	667	Simsboro	4	16	25	31	2	4	8
Mears, Jeffrey L.	BVR-3049	30.957407	-96.667688	620	Simsboro	4	16	26	31	2	4	8
Zeig, Larry J.	BVR-3187	30.908888	-96.605462	1,270	Simsboro	4	21	30	37	6	10	15
DTB Investments, LP	BVDO-0373	30.727822	-96.546914		Simsboro		14	24	29	0	5	12
DTB Investments, LP	BVDO-0375	30.737800	-96.531799		Simsboro		14	24	29	0	5	12
DTB Investments, LP	BVDO-0372	30.722069	-96.557633		Simsboro		14	24	29	0	5	12
DTB Investments, LP	BVDO-0374	30.733881	-96.537453		Simsboro		14	24	29	0	5	12
DTB Investments, LP	BVDO-0369	30.715994	-96.582161		Simsboro		14	24	29	0	5	12
DTB Investments, LP	BVDO-0370	30.717994	-96.573525		Simsboro		14	24	29	0	5	12
DTB Investments, LP	bvdo-0371	30.720786	-96.567647		Simsboro		15	24	29	0	5	12
Ely Family Partnership	BVDO-0384	30.806858	-96.544747		Simsboro		18	28	34	3	8	14
Ely Family Partnership	BVDO-0377	30.843353	-96.594456		Simsboro		25	35	42	12	16	21
Ely Family Partnership	BVDO-0378	30.838847	-96.584083		Simsboro		24	33	40	10	14	19
Ely Family Partnership	BVDO-0379	30.838158	-96.573567		Simsboro		22	32	38	8	12	18
Ely Family Partnership	BVDO-0381	30.823175	-96.571783		Simsboro		21	31	37	7	11	17
Ely Family Partnership	BVDO-0383	30.815553	-96.554250		Simsboro		19	29	35	4	9	15
Ely Family Partnership	BVDO-0380	30.827000	-96.567717		Simsboro		21	31	37	6	11	17
Ely Family Partnership	BVDO-0382	30.831378	-96.559953		Simsboro		21	30	36	6	10	16
Hamilton, Kurt & Elsa	BVR-3668	30.989828	-96.624315	585	Simsboro	4	15	24	30	1	4	8
Wallace, Virginia	BVR-1845	30.871602	-96.637746	1,100	Simsboro	4	30	39	47	15	19	24
The Bamm Trust	BVR-1321	30.979994	-96.655092	550	Simsboro	4	15	24	30	1	4	8
Ottea, Monica M.	BVR-4363	30.953794	-96.717956		Simsboro	4	15	25	30	0	2	4
Ottea, Monica M.	BVR-4236	30.953857	-96.717906	477	Simsboro	4.5	15	25	30	1	2	4
Morrison, David & Connie	BVR-1329	30.982614	-96.622909	605	Simsboro	4	15	24	30	2	5	8
Grimes, Coylin & Diane	BVR-4297	30.956929	-96.659539	668	Simsboro	4	16	26	32	2	5	8
Amos, David	BVR-1773	30.962742	-96.659380	720	Simsboro	4	16	26	31	2	4	8

New Magnolia Baptist Church	BVR-3041	30.952959	-96.690806	461	Simsboro	4	16	25	31	1	4	7
Pettit, Kenneth R. Sr.	BVR-4652	30.978920	-96.685880	425	Simsboro	4	15	24	30	1	3	7
Corpora Farms	BVDO-0341	30.967123	-96.681905		Simsboro		16	25	31	1	4	7
Corpora Farms	BVDO-0348	30.862142	-96.648896		Simsboro		31	41	49	16	20	25
Corpora Farms	BVDO-0350	30.828601	-96.637179		Simsboro		29	38	45	14	18	23
Corpora Farms	BVDO-0391	30.750161	-96.531417		Simsboro		15	24	30	1	6	12
Corpora Farms	BVDO-0342	30.930936	-96.703584		Simsboro		17	26	32	1	3	6
Corpora Farms	BVDO-0347	30.941075	-96.664942		Simsboro		18	27	33	2	5	9
Corpora Farms	BVDO-0349	30.866236	-96.641341		Simsboro		32	42	50	17	20	26
Corpora Farms	BVDO-0390	30.744050	-96.543139		Simsboro		15	24	30	1	6	12
Corpora Farms	BVDO-0392	30.746025	-96.539278		Simsboro	8	15	24	30	1	6	12
Corpora Farms	BVDO-0393	30.748333	-96.534861		Simsboro		15	24	30	1	6	12
Corpora Farms	BVDO-0351	30.830612	-96.633565		Simsboro		30	39	46	15	19	24
Corpora Farms	BVDO-0352	30.784337	-96.560379		Simsboro		18	27	33	3	8	14
Corpora Farms	BVDO-0353	30.784810	-96.554918		Simsboro		18	27	33	3	8	14
Corpora Farms	BVDO-0343	30.931603	-96.720836		Simsboro		16	26	31	1	2	5
Naranjo, Audencio	BVR-3104	30.962380	-96.674672	460	Simsboro	4	16	25	31	2	4	7
Swaner, Ronald & Elizabeth	BVR-3190	30.906117	-96.605510	1,225	Simsboro	4	21	31	37	7	10	15
Vacek, Charles Lori	BVR-4281	30.994940	-96.634338		Simsboro	4	14	24	29	1	4	7
Howard, Shirley J.	BVR-3044	30.953064	-96.670912	660	Simsboro	4	17	26	32	2	4	8
Corpora Farms	BVDO-0344	30.934607	-96.709457		Simsboro		17	26	32	1	3	6
Corpora Farms	BVDO-0345	30.939189	-96.647752		Simsboro		18	28	34	3	6	10
Corpora Farms	BVDO-0346	30.928505	-96.667226		Simsboro		19	28	34	3	5	9
Salcido, Justen	BVR-4651	30.987086	-96.622479	640	Simsboro	4	15	24	30	1	4	8
RH2O LLC	BVDO-0389	30.909286	-96.628772		Simsboro	16	22	31	37	6	10	14
RH2O LLC	BVDO-0385	30.911344	-96.621725		Simsboro		21	30	37	6	9	14
RH2O LLC	BVDO-0386	30.898639	-96.639708		Simsboro		23	32	39	8	11	16
RH2O LLC	BVDO-0387	30.893919	-96.646250		Simsboro		24	33	40	8	11	16
RH2O LLC	BVDO-0388	30.905286	-96.639786		Simsboro		22	31	38	6	9	14
Aggie Nooks, LLC	BVR-4137	30.963367	-96.697307	485	Simsboro	5	15	25	30	1	3	6
Powers, Linda	BVR-4282	30.996521	-96.625017		Simsboro	4	14	24	29	1	4	8
Hopkins, Jason & Rachel	BVR-4299	30.988807	-96.653770		Simsboro	4	15	24	29	1	4	7
Keyes, Barbara W,	BVR-4408	30.963877	-96.709797	440	Simsboro	4	15	24	30	1	3	5
Wills, Gwendolyn W.	BVR-4524	30.981080	-96.686232	390	Simsboro	4	15	24	30	1	3	7
Fazzino Investments LP	BVDO-0394	30.945554	-96.727687	485	Simsboro	5	15	25	30	0	1	3
Fazzino Investments LP	BVDO-0395	30.941356	-96.725083		Simsboro	4	16	25	31	0	2	4
Fazzino Investments LP	BVDO-0396	30.851775	-96.662976		Simsboro	4	28	37	44	13	16	22
Fazzino Investments LP	BVDO-0398	30.816412	-96.591883	440	Simsboro	4	23	32	39	8	12	18
Fazzino Investments LP	BVDO-0397	30.848652	-96.669293	390	Simsboro	4	27	36	43	11	15	20
Fazzino Investments LP	BVDO-0399	30.816641	-96.585293	-	Simsboro	-	22	31	38	7	12	17



**APPENDIX C** 





Attachment D – Affidavit of Legal Rights

### AFFIDAVIT OF LEGAL RIGHT TO PRODUCE GROUNDWATER

(Individual Form)

**BEFORE ME**, the undersigned authority, on this day personally appeared <u>CLIFFORD A. SKILES III</u>, who being duly sworn on his oath, says and deposes as follows:

"My name is <u>CLIFFORD A SKILES III</u>. I am of sound mind, over eighteen (18) years of age, and have never been convicted of a felony or of a crime involving moral turpitude. My address is <u>3206 SOUTH STATE HWY 6</u>, <u>HEARNE</u>,

TEXAS 77859 . I have personal knowledge of the facts stated herein, and they are true and correct.

- 1. I am submitting to the Brazos Valley Groundwater Conservation District ("District") an application for a drilling and/or operating permit for water well located at AT OR ABOUT THE LOCATION OF N30.854428 W 96.628828
- 2. I have the legal authority to produce the groundwater associated with the land surface and the permit application for the well listed in #1 above, as required by District Rule 7.1(c).
- 3. Exhibit A, attached hereto, is the map that identifies the water rights to be legally controlled by the applicant under District Rule 7.1(c) for the well listed in #1 above.
- 4. I have provided to the District documents that prove my right to own, control, or produce the groundwater rights associated with the permit application for the well listed in #1 above, as required by District Rule 7.1(c).
- 5. I have provided to the District documents, if any, that fully evidence all transfer(s) that right to own, control, or produce the groundwater rights to another person/entity that are associated with the land surface and the permit application, as required by Rule 7.1(c). And I understand that I am required to provide such transfer documents as they occur in the future.
- 6. I understand that a permit may be amended or revoked if the groundwater rights or right to produce, related to a permit under Rule 7.1(c), are legally transferred to another person/entity.

#### FURTHER AFFIANT SAYETH NOT."

Signed /

SWORN AND SUBSCRIBED to before me on this the 31 day of January \_\_\_\_, 2023.

(Notary Seal)

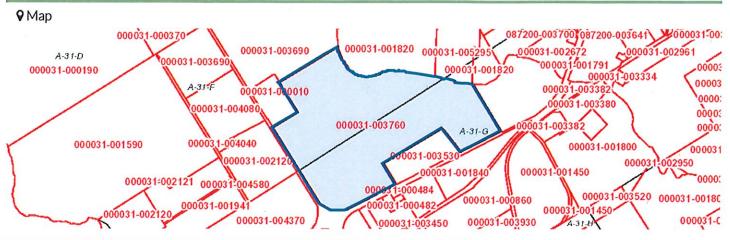


Notary Public in and for the State of Texas

My Commission Expires: 7-2-2026

## Robertson CAD Property Search

### Property ID: 1879 For Year 2022



#### Property Details

Account	, , ,	
Property ID:	1879	
Legal Description:	AB 31 TR 376 G A NIXON 1140/273 1141/7 1143/420 728.876 ACRES	
Geographic ID:	000031-003760	
Agent:		
Туре:	Real	
Location		
Address:		
Map ID:		
Neighborhood CD:		
Owner		
Owner ID:	27494	
Name:	SKILES CLIFFORD A III	
Mailing Address:	PO BOX 369 HEARNE, TX 77859	
% Ownership:	100.0%	
Exemptions:	For privacy reasons not all exemptions are shown online.	

#### Property Values

Improvement Homesite Value:	\$11,41
Improvement Non-Homesite Value:	\$5,58
Land Homesite Value:	\$10,86
Land Non-Homesite Value:	\$
Agricultural Market Valuation:	\$1,264,39
	· · · · · · · · · · · · · · · · · · ·
Market Value:	\$1,292,268
Ag Use Value:	\$92,680
Appraised Value:	\$120,555
Homestead Cap Loss: 0	\$0

#### VALUES DISPLAYED ARE 2022 CERTIFIED VALUES.

Information provided for research purposes only. Legal descriptions and acreage amounts are for appraisal district use only and should be verified prior to using for legal purpose and or documents. Please contact the Appraisal District to verify all information for accuracy.

Proper	ty Taxing Jurisdiction		
Entity	Description	Market Value	Taxable Value
CAD	ROBERTSON CAD	\$1,292,268	\$120,555
CRXX	ROBERTSON COUNTY	\$1,292,268	\$120,555
SH	HEARNE ISD	\$1,292,268	\$120,555
X1	RC EMER SERV DIST	\$1,292,268	\$120,555

#### Property Improvement - Building

#### Type: E1-RFR+ State Code: E1 Living Area: 1,440.00sqft Value: \$11,419

Туре	Description	Class CD	Year Built	SQFT
M1	MAIN 1	RFR+		1,440.00
SP	SCREEN POR	RFR+		80.00

#### Type: D2-BWB1 State Code: D2 Living Area: 0.00sqft Value: \$5,582

Туре	Description	Class CD	Year Built	SQFT
WB1	WDBARN DIRT FLR	BWB1		2,232.00
SSW	WDSHDDIRT	BWB1		280.00

#### Property Land

Туре	Description	Acreage	Sqft	Eff Front	Eff Depth	Market Value	Prod. Value
D1	D1-MKRH	716.376				\$1,243,568	\$88,114
D1	D1-MKRH	12				\$20,831	\$4,572
E1	E1-RHSH	0.5				\$868	\$0
E1	E1-SIMP	0				\$10,000	\$0

#### Property Roll Value History

Assessed	HS Cap Loss	Appraised	Ag Valuation	Land Market	Improvements	Year
N/A	N/A	N/A	N/A	N/A	N/A	2023
\$120,555	\$0	\$120,555	\$92,686	\$1,275,267	\$17,001	2022
\$103,526	\$0	\$103,526	\$81,713	\$1,288,586	\$10,936	2021
\$89,083	\$0	\$89,083	\$66,989	\$1,288,586	\$11,217	2020
\$70,721	\$0	\$70,721	\$50,917	\$1,435,094	\$10,725	2019

### Property Deed History

i i i i i i i i i i i i i i i i i i i	Deed Date	Туре	Description	Grantor	Grantee	Volume	Page	Number
---------------------------------------	-----------	------	-------------	---------	---------	--------	------	--------

### AFFIDAVIT OF LEGAL RIGHT TO GROUNDWATER

**BEFORE ME,** the undersigned authority, on this day personally appeared <u>David Lynch</u>, who being duly sworn on his oath, says and deposes as follows:

"My name is <u>David L. Lynch</u>. I am the <u>Member</u> (*title*) of <u>UW Brazos Valley Farm LLC</u> (*name of entity*) (hereinafter referred to as the "Co-Applicant"). I have been authorized by <u>UW Brazos</u> <u>Valley Farm LLC</u> (*name of entity*) to give this affidavit. I am of sound mind, over eighteen (18) years of age, and have never been convicted of a felony or of a crime involving moral turpitude. My address is <u>7670 Woodway Drive</u>, <u>Suite 200</u>, <u>Houston</u>, <u>Texas 77063</u>. I have personal knowledge of the facts stated herein, and they are true and correct.

- 1. I am submitting to the Brazos Valley Groundwater Conservation District ("District") an application addendum for the transport permit related to previously authorized production from water wells located as specified in **BVDO-0108; BVDO-0317** ("Water Rights").
- 2. Co-Applicant entered into an Exclusive Option to Lease Agreement with **Clifford A. Skiles III** ("Applicant") by which, if the option is exercised, the Co-Applicant will enter into a long-term Groundwater Lease Agreement with Applicant that grants Co-Applicant the rights to produce and transport groundwater under the Water Rights as described in the pending Transport Permit application and a related agreement consenting to submittal of the application addendum ("Co-Applicant Rights").
- 3. Applicant previously submitted an affidavit and documentation of its legal authority to produce the groundwater associated with the land surface and the permit application for the wells covered by the Water Rights, as required by District Rule 7.1(c), and related map figures ("Applicant Affidavit").
- 4. I am attaching to this affidavit a true and correct copy of the Memorandum of Exclusive Option to prove the Co-Applicant Rights with respect to the groundwater rights associated with the permit application for the wells under the Water Rights, which together with the Applicant Affidavit, address the right to own, control, or produce the groundwater rights for the Simsboro groundwater addressed in the Water Rights.
- 5. I have provided to the District documents, if any, that fully evidence all transfer(s) of Co-Applicant's right to own, control, or produce the groundwater rights to another person/entity that are associated with the land surface and the permit application, as required by Rule 7.1(c). And I understand that I am required to provide such transfer documents as they occur in the future.
- 6. I understand that a permit may be amended or revoked in accordance with District Rules if the groundwater rights or right to produce, related to a permit under Rule 7.1(c), are legally transferred to another person/entity.

### FURTHER AFFIANT SAYETH NOT."

Signed Authorized representative of

**Co-Applicant** 

SWORN AND SUBSCRIBED to before me on this the <u>13th</u> day of <u>March</u>, 2024.

(Notary Seal)



Notary Public in and for the State of Texas 526 My Commission Expires:



Attachment E – Hydrogeologic Evaluation Report



#### Professional Hydrogeologists • Water Resources Specialists

February 8, 2023

Mr. Trey Skiles c/o Robertson County Veterinary Services 3206 State Highway 6, South Hearne, TX 77859

Re: Aquifer Evaluation Report –
 Permit Amendment to Add Beneficial Uses and Increase Production Amount to
 Well BVDO-0108 and Drilling and Production Permit Application for Proposed One
 (1) New Well To Be Completed in the Simsboro Aquifer, Robertson County, Texas

Dear Mr. Skiles:

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 producing 2,100 acre-feet of water per year from one (1) proposed new production well to be completed in the Simsboro aquifer on the property identified as 000031-003760 in the Robertson County Central Appraisal District (CAD) database located in western-southwestern Robertson County, and increasing the permitted production amount of existing well BVDO-0108 from 1,400 acre-feet of water per year to 2,700 acre-feet. 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. Additionally, the aquifer evaluation report provides sufficient information to validate your Permit Amendment to add additional beneficial uses to your existing well permitted as BVDO-0108. Pumping from both wells should be aggregated for a total allocation from your 732-acre property of 4,800 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, including permit applications and field-testing associated with other nearby groundwater producers. 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;
- Establishing a target maximum proposed pumping rate for the proposed well;
- 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 Location and Permit Pumping Rates

Figure 1 provides a map showing the location of the proposed and existing wells and the outline of the approximately 732-acre contiguous tract owned by Mr. Skiles. Proposed well identification, coordinates, and estimated land-surface elevation in feet above mean sea level (MSL) as obtained from the National Elevation Dataset (NED) are as follows:

Well			NED Land Surface	
<b>Identification</b>	<u>Latitude*</u>	Longitude*	<b>Elevation</b>	
TreySkiles_1	30.854431° N	96.628822° W	276 feet AMSL	
BVDO-0108	30.851042° N	96.635889° W	274 feet AMSL	
*Coordinate system is NAD83 State Plane Texas Central (feet) (EPSG 32039) converted to NAD 83 (EPSG 4269).				

The proposed wells are located between the Brazos River and State Highway 6 (HW6), approximately 2.6 miles from the center of the City of Hearne and 8.8 miles from the center of the City of Calvert. The proposed production capacity in gallons per minute (gpm) and requested permit allocation in acre-feet per year are presented in the following table:

Well	Maximum	Annual Permit
<b>Identification</b>	Pumping Rate	<b>Allocation</b>
TreySkiles_1	1 <i>,</i> 600 gpm	2,100 acre-feet
BVDO-0108	2,000 gpm	2,700 acre-feet



The proposed and existing wells are spaced 2,537 feet apart, and both wells are sited to comply with the ½ foot per GPM spacing from the subject property line rule, as well as the 1 foot per GPM spacing from other registered Simsboro wells rule. Therefore, the proposed well location complies with the BVGCD rules regarding spacing between wells and distance from property lines based on production, as well as the production based acreage requirement. Figure 2 in the Attachments shows all BVGCD registered wells within 1 (one) mile at a 1-inch to 1,000-foot scale. Figure 3 shows all BVGCD wells within 5 miles of the proposed and existing well.

## Hydrogeologic Conditions and Aquifer Characteristics

### Surface Geologic Setting

Figure 4 shows that the entire tract is located atop the Brazos River Alluvium aquifer, which is designated a Minor Aquifer by the Texas Water Development Board (TWDB). The Brazos River Alluvium was deposited in the ancient and present-day floodplains of the Brazos River and consists of sedimentary deposits of various grain sizes, along with lenses and structures typical of riverine deposits. The geophysical log of CS-1, located approximately 2.7 miles northwest of the subject site, indicates that the alluvium could be as thick as 95 feet.

The Queen City formation, another Minor Aquifer in Texas, would potentially underlie the alluvium at the subject site to a minimal extent were it not for incision of the Brazos River. However, it is unlikely that any Queen City exists in the subsurface across the subject property. Stratigraphically underneath the Queen City is the Reklaw Formation, which is not evident in the geophysical log for CS-1 and may also be completely eroded by the action of the Brazos River at the subject property depending on its thickness. If so, underlying the surficial alluvial aquifer are the formations of the Carrizo-Wilcox Aquifer. Because the property is in the floodplain of the Brazos River and is predominately used for agricultural purposes, the land surface is relatively flat across the property.

While the Carrizo-Wilcox is mapped as a single Major Aquifer by the Texas Water Development Board (TWDB), it does not behave as a single aquifer within the BVGCD boundaries. In fact, it is comprised of four geologic units including, from deeper to shallower (older to younger), the Hooper formation, the Simsboro formation, the Calvert Bluff formation and the Carrizo Sand. Geologic units dip generally from northwest to southeast and dip angles generally increase downdip and with depth. Locally, the dip of the base of the Wilcox Group is approximately 80 feet per mile (see Attachment 3). There are no faults mapped at land surface across the subject property. A representative hydrostratigraphic column for the region follows:



Period	Series	Strata	Hydrogeologic Unit
	Eocene	Jackson Group	Yegua-Jackson Aquifer
		Yegua Fmn.	regua-Jackson Aquirer
		Cook Mountain Fmn.	Confining Unit
		Sparta Sand	Sparta Aquifer
		Weches Fmn.	Confining Unit
Tortion		Queen City Sand	Queen City Aquifer
Tertiary		Reklaw Fmn.	Confining Unit
		Carrizo Sand	
		Calvert Bluff Fmn.	Carrizo-Wilcox Aquifer
		Simsboro Fmn.	
	Paleocene	Hooper Fmn.	
	Paleocene	Miday Fmn.	Confining Unit

The Carrizo Sands comprise the first water bearing unit of the Carrizo-Wilcox Aquifer that underlie the Brazos River Alluvium at the subject property. The Calvert Bluff formation directly underlies the Carrizo and is a thick unit characterized by numerous and alternating relatively thin layers of clay, silt and sandy clays. The Calvert Bluff formation also contains numerous lignite seams ranging in thickness from less than one foot to more than 10 feet. Surface mining operations are ongoing in Robertson County in which lignite seams from the Calvert Bluff are mined to feed power plants. In some areas, the Calvert Bluff includes discontinuous sand channel deposits, with sand layers ranging from a few feet to more than 50 feet in thickness. Generally, the Calvert Bluff formation is considered a confining layer or aquitard between the Carrizo and Simsboro aquifers. However, the intermittent sand layers in the Calvert Bluff can be tapped locally to produce small to moderate quantities of water with variable water quality. Most Calvert Bluff wells are small-capacity wells used for domestic and stock purposes. Probably, most local wells are completed in zones of the Calvert Bluff formation that are under artesian conditions due to the significant stratification of the formation and discontinuity of sand layers.

### Simsboro Aquifer Conditions and Hydraulic Parameters

The Simsboro formation constitutes the production zone for the existing well on Mr Skiles's property and is also the target for the proposed new well. Based on GAM datasets and geologic maps and cross sections from the University of Texas Bureau of Economic Geology (BEG), the depth to the top of the Simsboro formation at the subject property is approximately 1,050 to 1,150 feet bgl. The net thickness ranges from 370 to over 500 feet within the local area of the subject property, putting the base of the Simsboro at approximately 1,420 to 1,650 feet below land surface.



TGI extracted hydraulic data for the subject property from the most recent version of the groundwater availability model (GAM) for the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifers (Young, et al., 2018) which are presented in the following table. TGI estimates based on recently conducted pumping tests for the neighboring Brazos Valley Farms are also included, which is between 2 and 3 miles updip of the subject property.

		Updated GAM	
	<u>Parameter</u>	Estimates Range	TGI Estimates*
_	Sand Thickness	475 to 525 feet	475 to 525 feet
	Hydraulic Conductivity	150 to 240 gpd/ft <sup>2</sup>	165 to 250 gpd/ft <sup>2</sup>
_	Transmissivity	71,000 to 126,000 gpd/ft	78,000 to 131,000 gpd/ft
_	Storage Coefficient	1.42 x 10 <sup>-4</sup> to 1.59 x 10 <sup>-4</sup>	10-4

The asterisk (\*) in the above table indicates that TGI's estimates are based on and are consistent with previous hydrologic investigations conducted within BVGCD boundaries and include adjustments to local transmissivity values to account for producing from the entire aquifer thickness.

Figure 5 provides a hydrograph illustrating water-level measurements collected for nearby TWDB/BVGCD Simsboro monitoring well (State Well No. 59-04-701) which is located near the City of Hearne and is about 2.2 miles northeast from the proposed well. The water level in 1979 was less than 10 feet below land surface and has declined over 40 years to its current depth at roughly 150 to 175 feet bgl. Nearby well BVR-0380 similarly shows a water level of 194 feet bgl in July of 2022, which is its only reported water level measurement. The depth to water in the Simsboro at the existing and proposed new well on the Skiles property will likely be in general agreement with these nearby wells and is anticipated to be between 150 and 200 feet bgl. Therefore, water levels will probably rise between 850 to 950 feet above the top of the Simsboro formation, verifying that the local aquifer conditions are confined with hundreds of feet of artesian head. Water-level data presented by INTERA indicate that there is a slight cone of depression near Hearne, although the overall gradient is from northwest to southeast.

## Projected Effects of Proposed Pumping

The immediate impacts from production will be 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 until an aquifer boundary is reached or the production rate reaches equilibrium with the captured groundwater flows. Due to the distance 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. There may be some inter-aquifer leakage induced from the overlying Calvert Bluff confining layer, Carrizo aquifer and Brazos River Alluvium aquifer; however, the amount of leakage will serve to lessen the artesian drawdown in the Simsboro and will likely not result in any identifiable



water-level changes in the Calvert Bluff, Carrizo or alluvium due to the stratification in the geologic layers. In order to assess the effects from the pumping of the existing and proposed new well, analytical and numerical models were utilized to quantify drawdowns.

## Drawdown Simulations Using the GAM

TGI utilized the most recent version of the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifers GAM to calculate drawdown due to the proposed pumping for continuous discharge periods of one (1) year and 10 years. Figure 6 and Figure 7 provide maps showing modeled drawdown contours after one (1) year and 10 years of pumping at the maximum authorized rate, respectively. Table 1 provides modeled drawdown at specific registered and permitted Simsboro well sites for the same durations. Table 2 provides casing and screen depth information for registered BVGCD wells within one mile of the proposed wells.

Due to the grid scale (i.e., one mile) and configuration in the model, the GAM does not provide an accurate spatial representation of drawdown at the well sites and in the immediate surrounding area, and the simulation likely predicts less drawdown than will actually occur in the immediate vicinity. The GAM drawdown results at some distance from the proposed wells are probably more representative of the potential effects. For the nearest Simsboro wells located off the subject property, the GAM runs predict approximately 14 feet of drawdown after one (1) year, and 22 feet after 10 years. The GAM simulated approximately 14 feet of drawdown at Hearne and 5 feet of drawdown at Calvert after 10 years.

Note that several of the wells designated by the BVGCD as "Simsboro" wells may not actually be deep enough to penetrate the Simsboro aquifer. TGI did not attempt to verify the completion intervals of those wells, but simply reported the dataset as provided by BVGCD. 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 area and within the five-mile radius.

### Drawdown Simulations Using Analytical Modeling

As stated previously, 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 the immediate vicinity. 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 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 Simsboro, TGI modeled long-term pumping (i.e., from one to 10 years) by incorporating a leaky artesian storage coefficient. However, 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 field. Analytical modelling hydraulic parameters were the same for both wells with a transmissivity of 75,000 gallons per day per foot (gpd/ft), and 1- and 10-year storage coefficients of 0.0001.

Figure 8 and Figure 9 provide the Theis-modeled drawdown contours for pumping periods of one (1) year and 10 years, respectively. Table 1 provides the tabulated drawdown according to the analytical modelling at specific Simsboro well sites, based on the locations and designations of aquifers provided by BVGCD in their database files.

Assuming properly completed and highly efficient production wells, the Theis model predicted drawdown in TreySkiles\_1 and BVDO-0108 of approximately 36 and 43 feet after one (1) year of continuous pumping, respectively, and 43 and 51 feet of drawdown at 10 years. For comparison purposes, the Theis calculation resulted in one-year drawdown of about 20 feet at the City of Hearne and 11 feet at Calvert, increasing to 27 and 19 feet at 10 years. Predicted drawdown at Simsboro wells between one (1) and five (5) miles from the proposed wells will be less than 100 feet. It is worth noting that in both the GAM and analytical modelling, the distribution of pumping is a constant flat rate for the entire duration of interest, which is not realistically how wells or well fields are pumped and the increased down time in reality will result in less drawdown than is calculated here.

## Conclusions

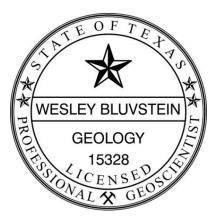
Based on our review of the BVGCD rules and the work conducted as described herein, TGI concludes the following:

- The proposed wells and pumping amounts can be completed and produced in accordance with the well spacing and production-based acreage (i.e., allocation) rules set forth by the BVGCD;
  - Specific capacities determined from existing well records, testing conducted by BVGCD representatives on nearby wells (March 18, 2009), current available drawdown, and predicted drawdown all demonstrate that the wells will be capable of easily sustaining their target rates;
- The predicted drawdown derived from the Theis analytical model are more accurate than the GAM prediction for the proposed well site and immediate vicinity;



- GAM-predicted drawdown probably provides a more reasonable estimate of future impacts at greater distances from the proposed well and for longer time periods; and,
- Production from the proposed pumping will cause only infinitesimal reduction in aquifer storage as the Simsboro will stay completely full and groundwater in the formation will remain under considerable artesian pressure within the well area 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.



The seal appearing on this document was authorized by Wesley Bluvstein, P.G. on February 8, 2023.

Attachments

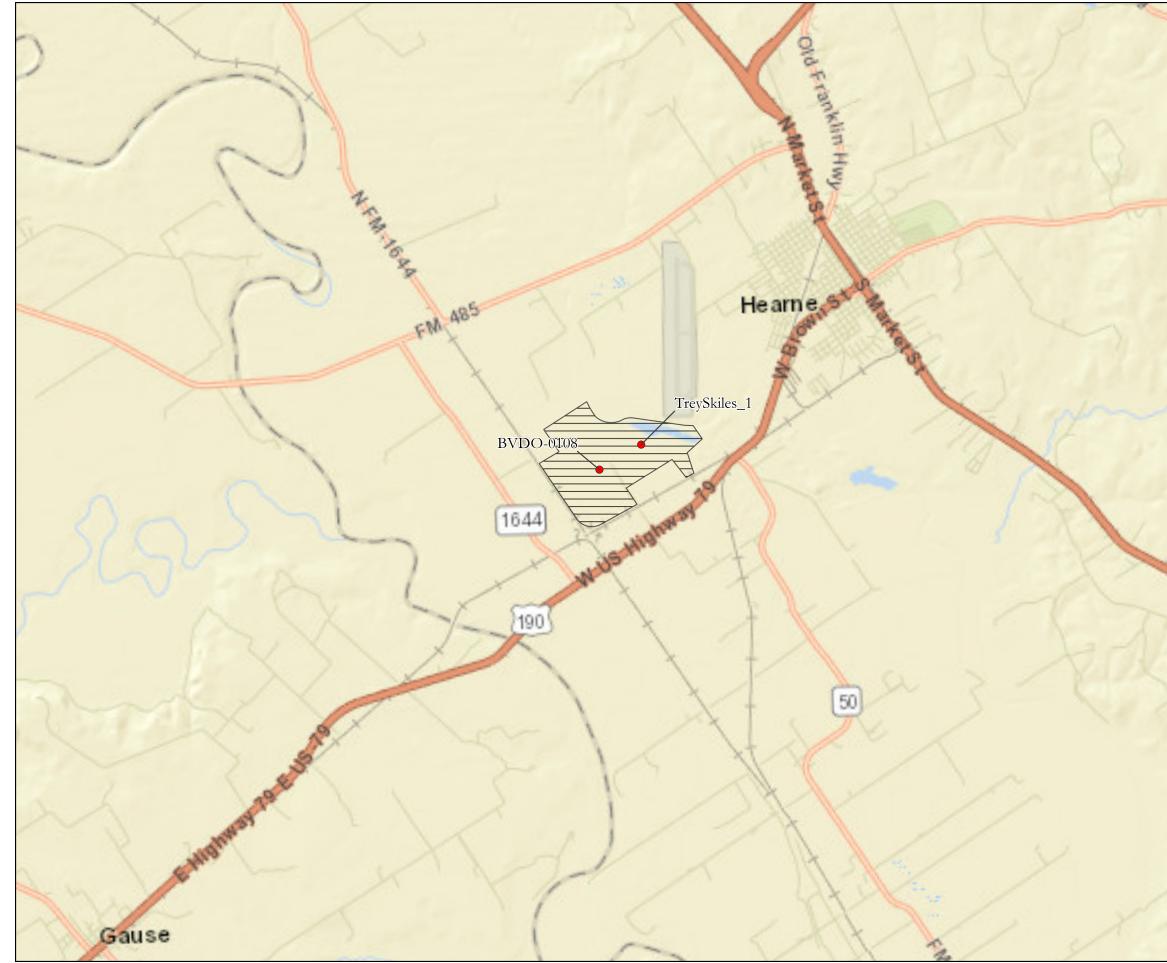
Sincerely, *THORNHILL GROUP, INC.* 

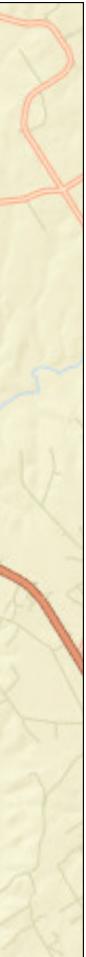
Welly Multi

Wesley Bluvstein, P.G.



# ATTACHMENT 1 – FIGURES





•	Trey Skiles Proposed Well Locations



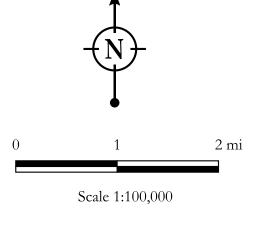
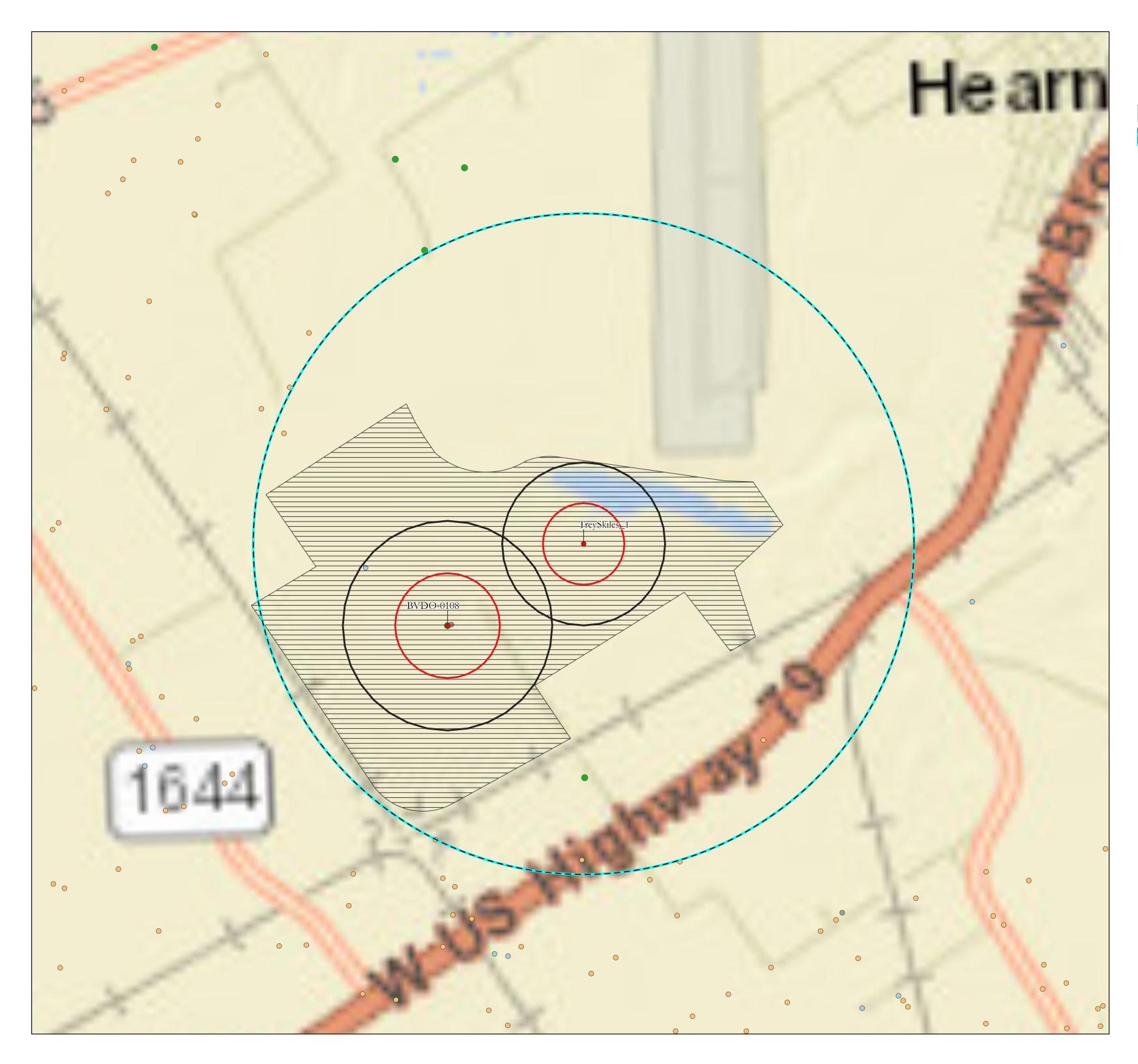


Figure 1: Location Map





 Trey Skiles Proposed Well Locations

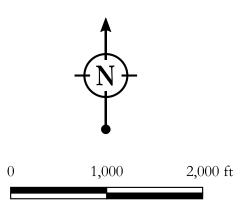
 Red Buffer indicates property boundary spacing requirement
 Black Buffer indicates Simsboro well spacing requirement

Trey Skiles Property Boundary

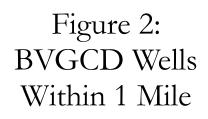
1 Mile Well Buffer

BVGCD Registered Wells

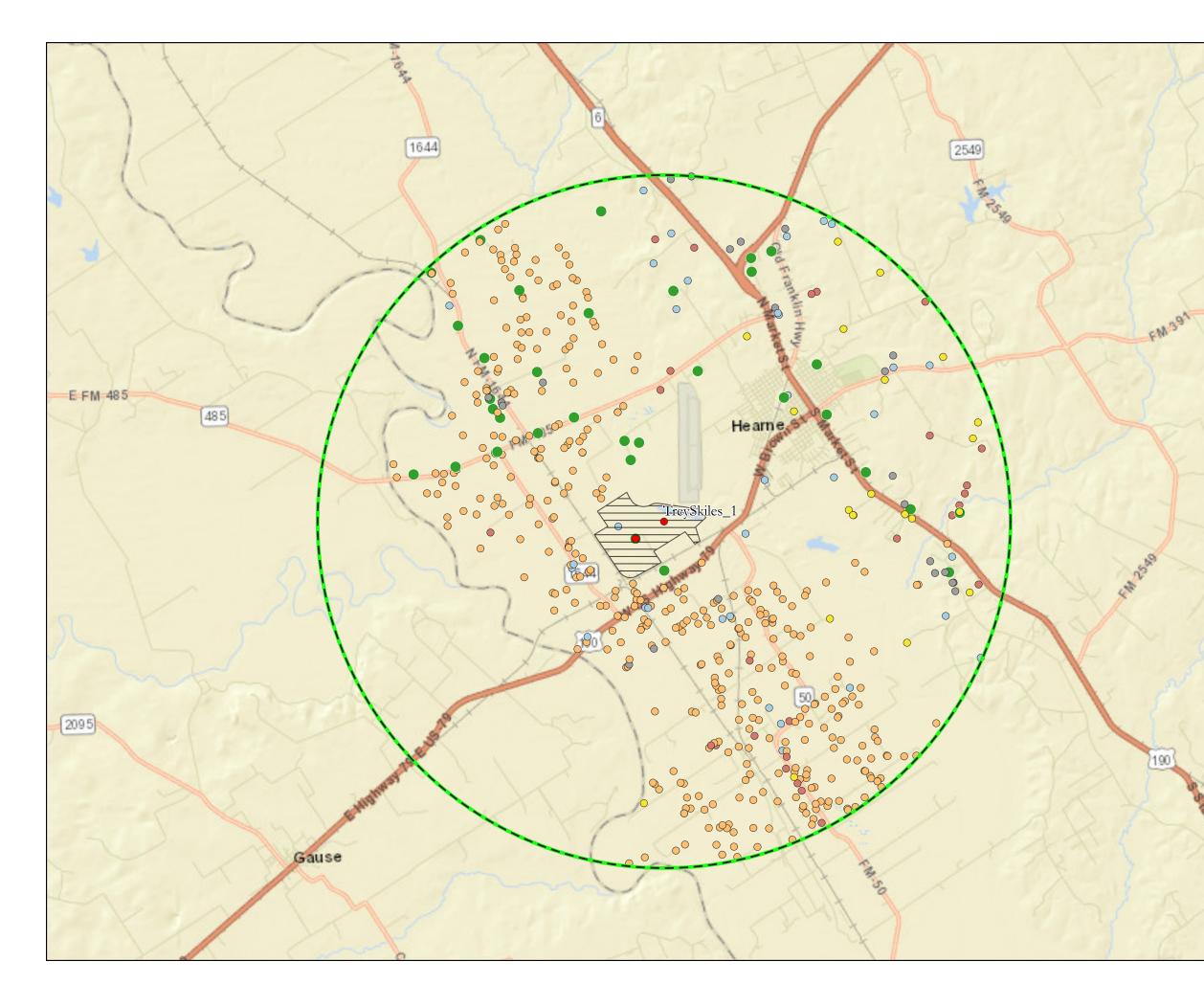
- Brazos River Alluvium
- Calvert Bluff
- Carrizo
- Simsboro
- Unknown



Scale 1:12,000







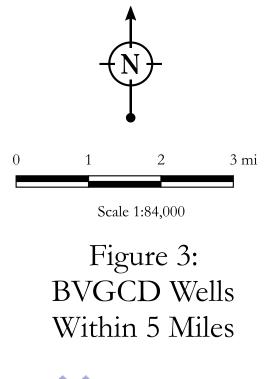


Trey Skiles Property Boundary

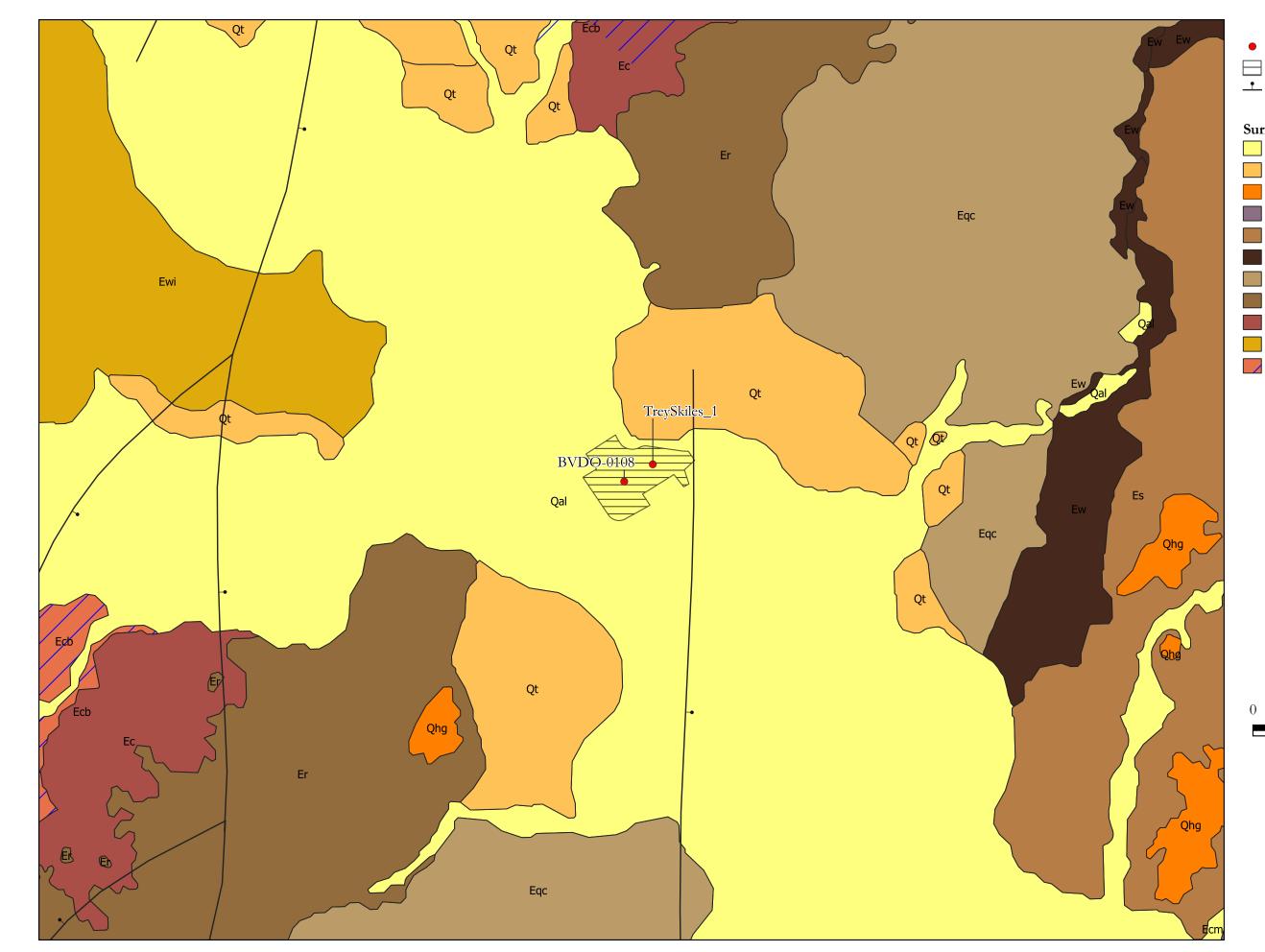
5 Mile Well Buffer

## **BVGCD** Wells Within 5 Miles

- Brazos River Alluvium
- Calvert Bluff
- Carrizo
- Queen City
- Simsboro
- Unknown







- Trey Skiles Proposed Well Locations
- Trey Skiles Property Boundary
- Normal Fault
  - Bar indicates downthrow

## Surface Geology

- Qal Alluvium
- Qt Fluvial Deposits
  - Qhg High Gravel Deposits

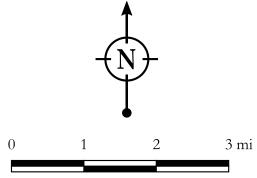
Ecm - Cook Mountain Fmn.

Es - Sparta Sand

Ew - Weches Fmn.

Eqc - Queen City Sand

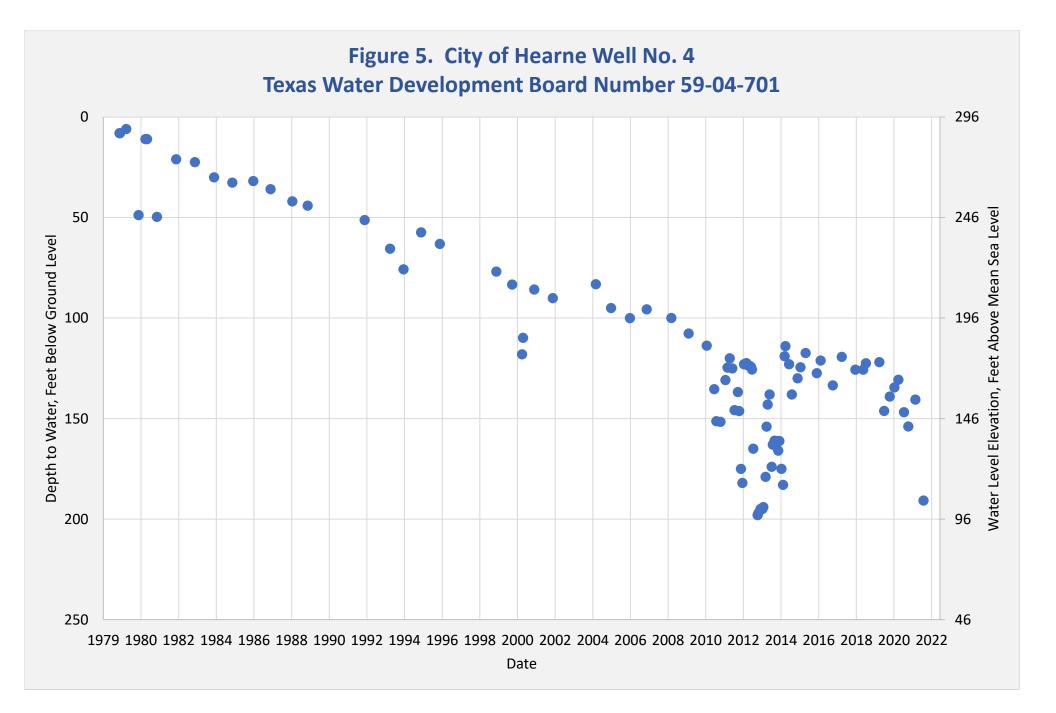
- Er Reklaw Fmn.
- Ec Carrizo Sand
- Ewi Wilcox Group
- Ecb Calvert Bluff Fmn.

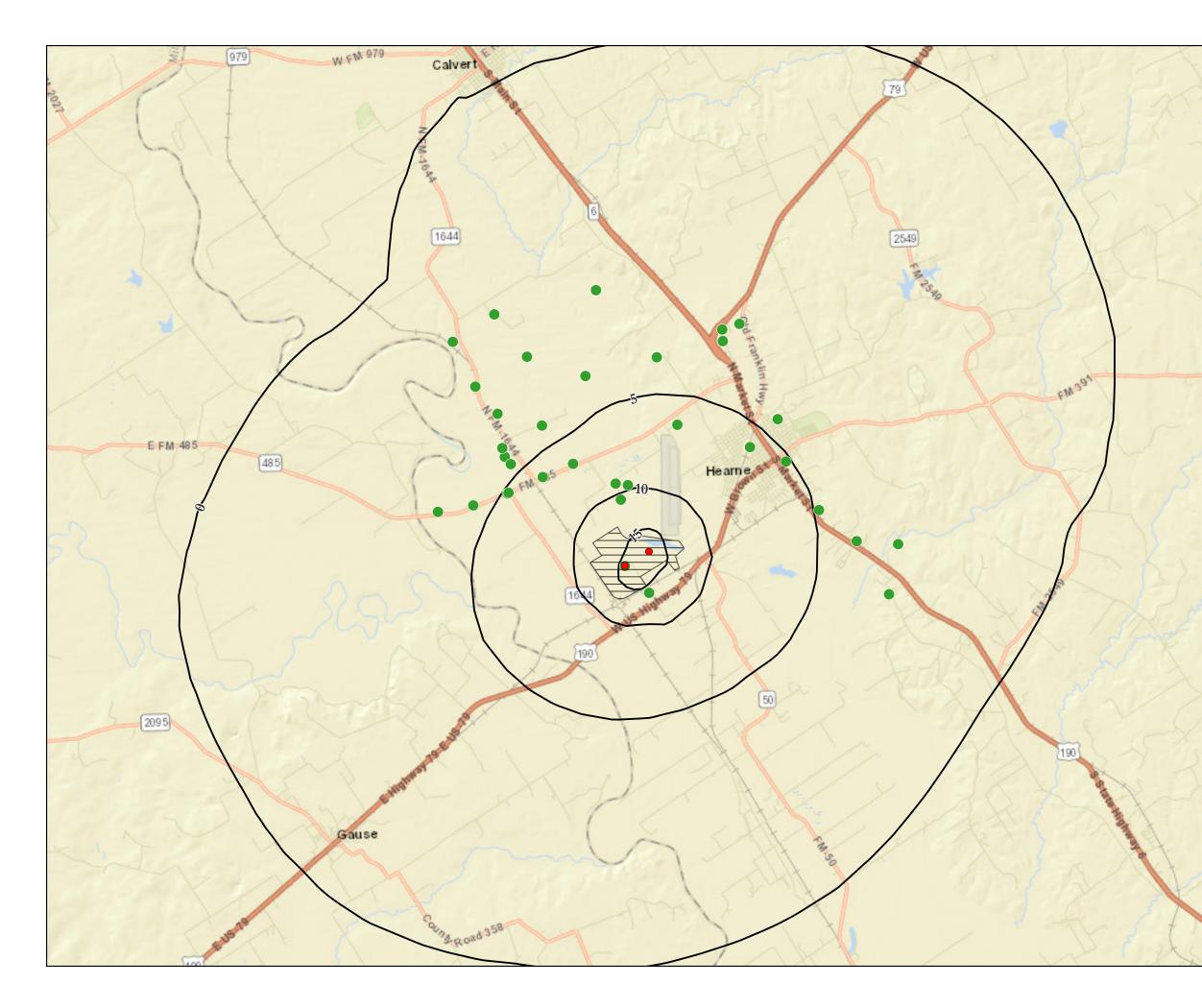


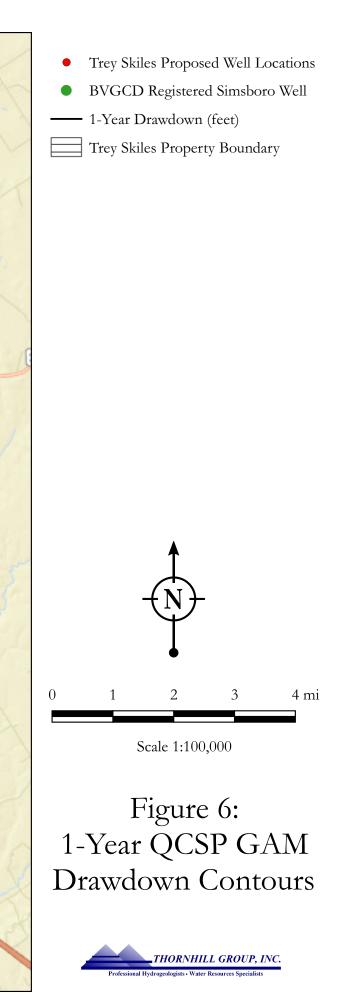
Scale 1:84,000

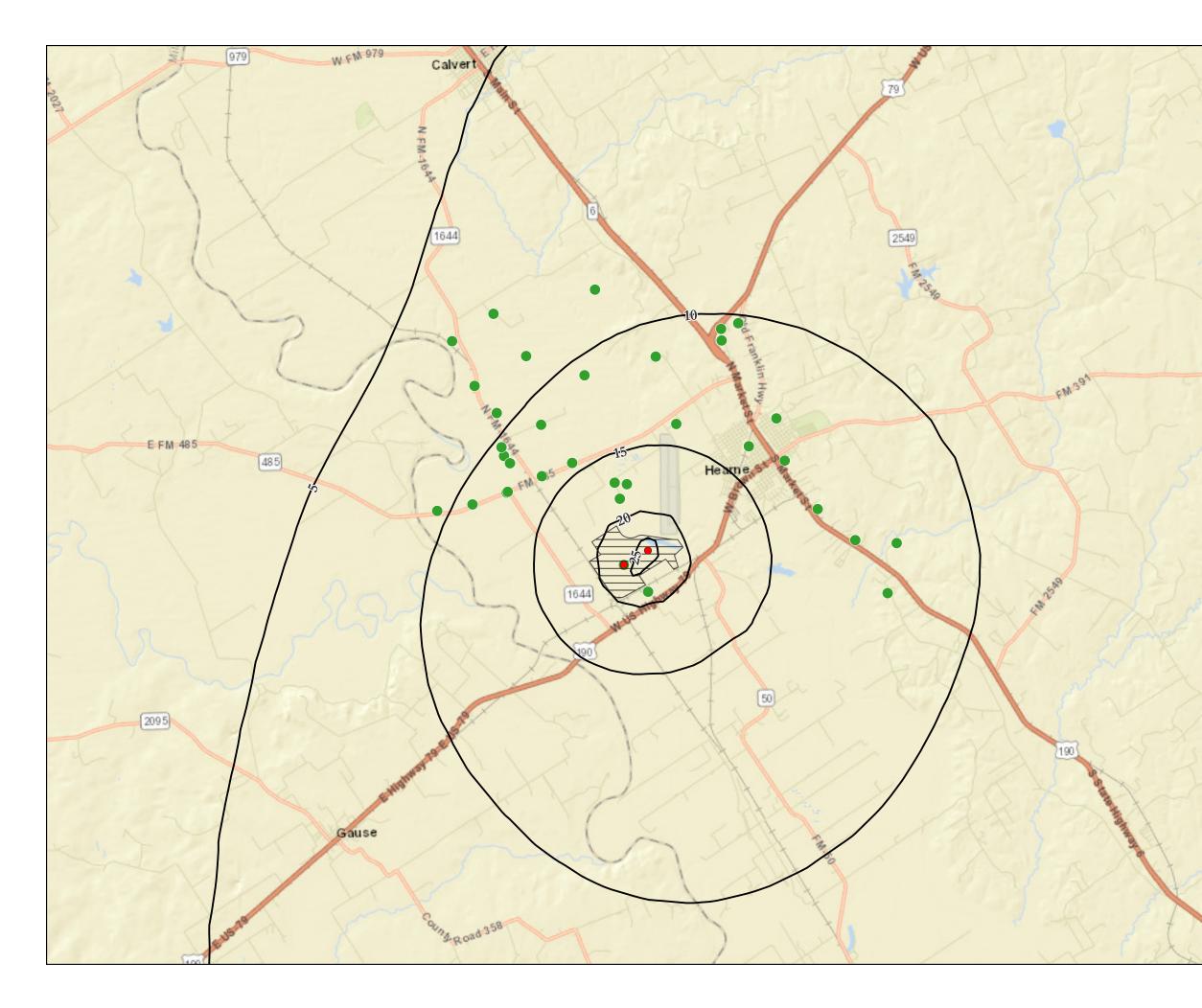
Figure 2: Surface Geology

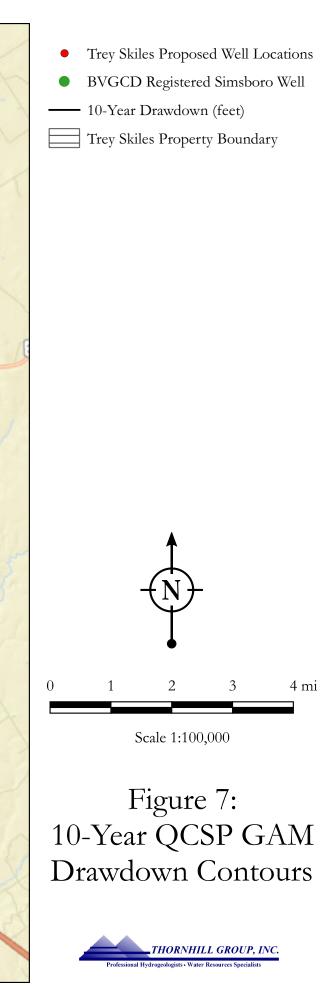


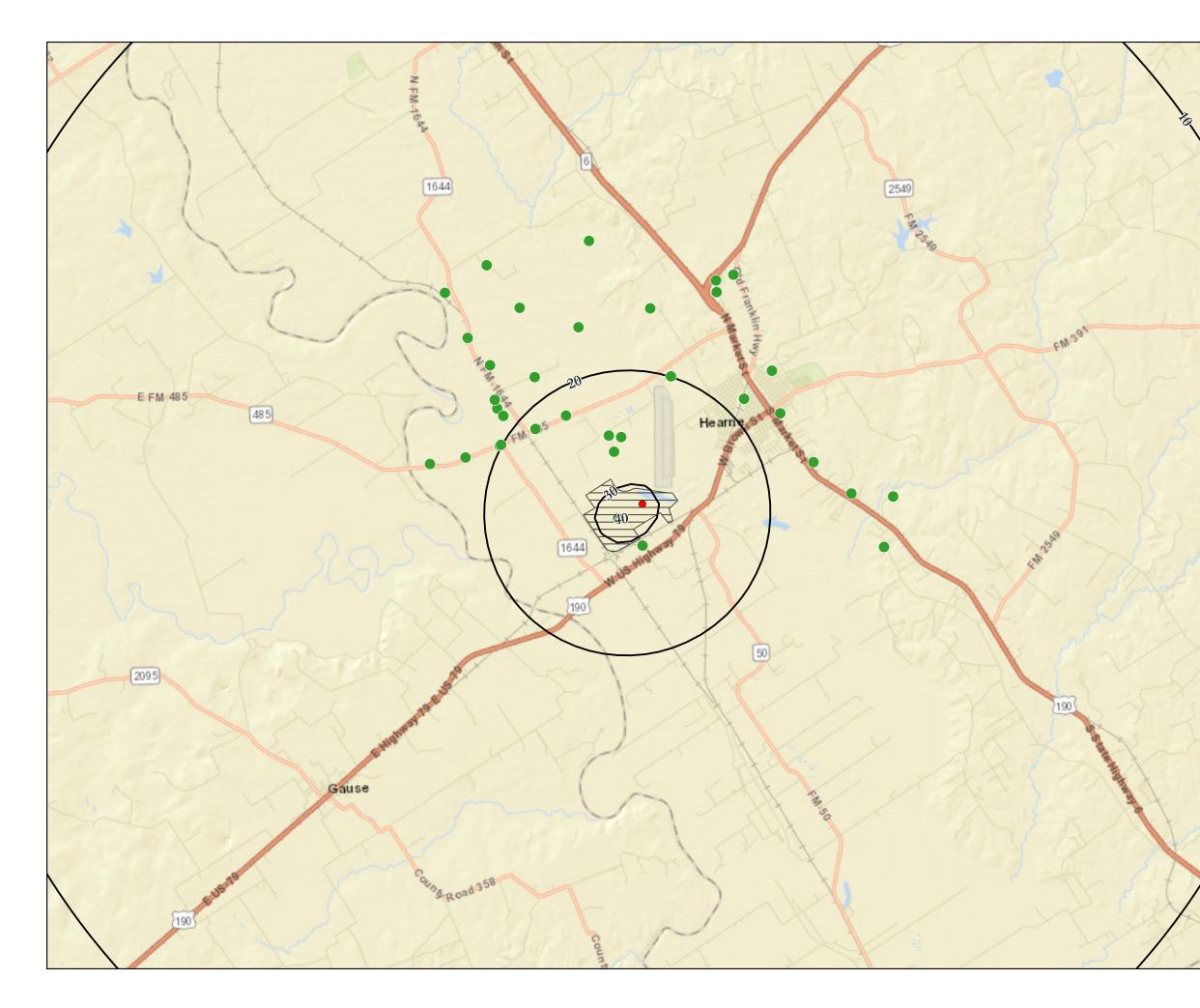


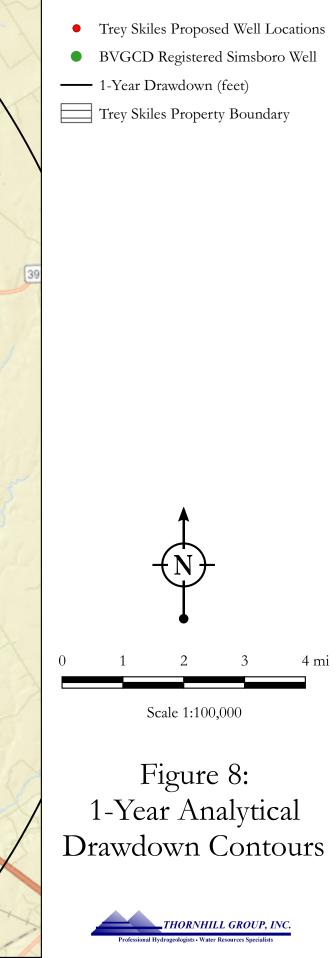


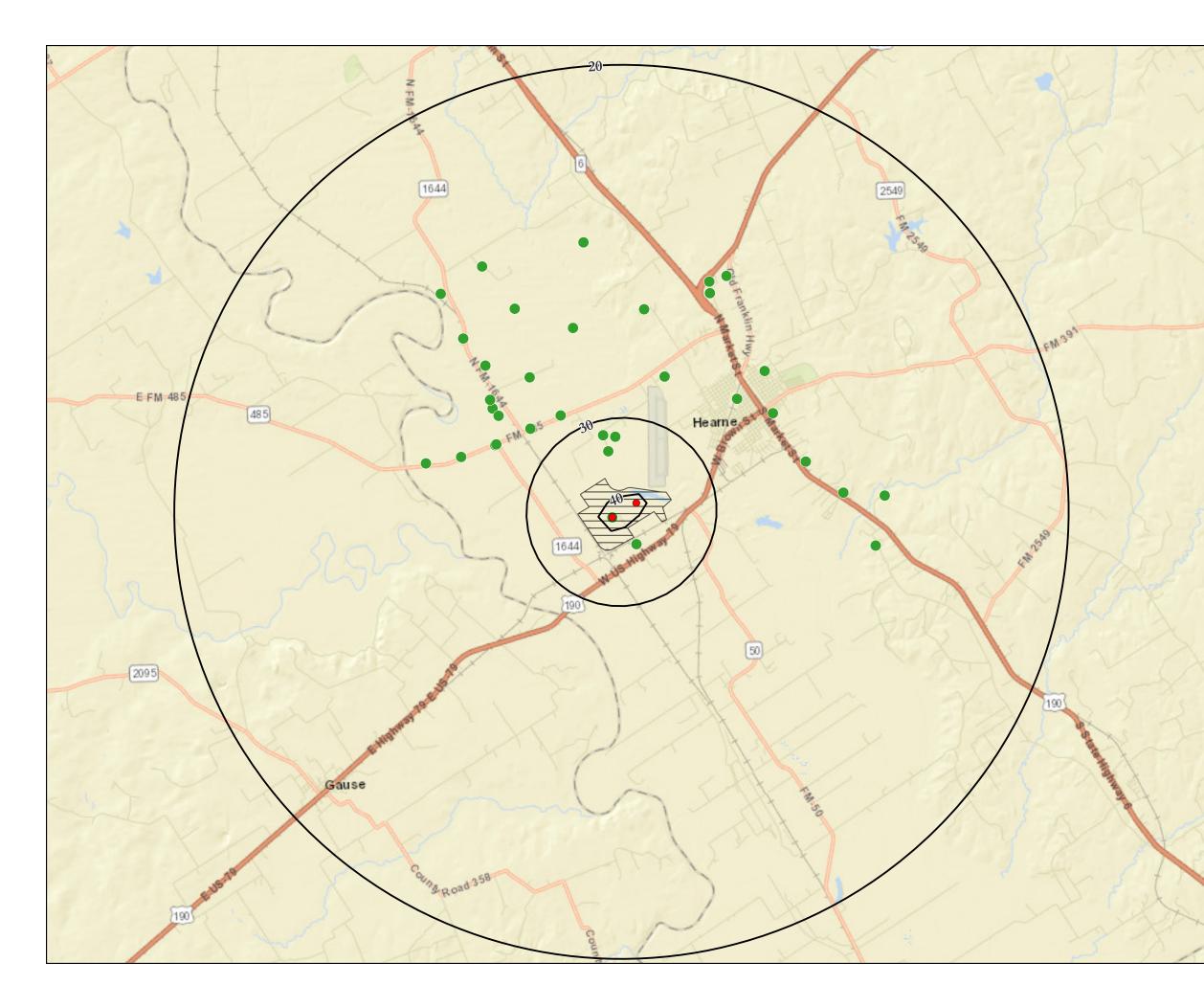


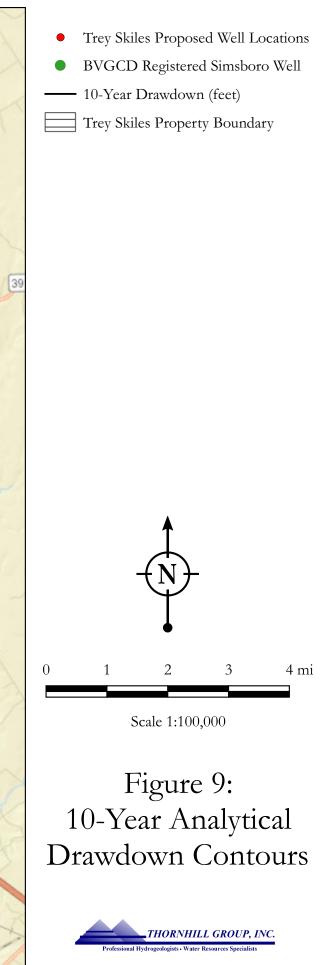














# ATTACHMENT 4 – SELECTED REFERENCES



## SELECTED REFERENCES

- 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.
- Intera, Inc., 2015, Update on Monitoring Program, Presented at the Post Oak Savannah Groundwater Conservation District Offices, PowerPoint Presentation, November 10, 2015.
- Intera, Inc. *Groundwater Availability Models for the Queen City and Sparta Aquifers*. GAM, Austin. Texas, Water Development Board, 2004.
- Texas Water Development Board Groundwater Database, 2019, http://www.twdb.texas.gov/groundwater/data/index.asp
- Theis, C.V., 1935, The Relation Between the Lowering of the Piezometric Surface and the Rate and Duration of Discharge of a Well Using Groundwater Storage: Transactions of the American Geophysical Union, v. 16, p. 519-524.
- Thornhill Group, Inc., 2018, Calvert Mine, Permit No. 27H 2017 Annual Simsboro Depressurization/Drawdown Report, Prepared for Walnut Creek Mining Company for Submittal to the Surface Mining Division of the Texas Railroad Commission, October 19, 2018.
- 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.