

DECLARATION OF MICHAEL R. THORNHILL

Pursuant to 28 U.S.C. § 1746, I, Michael R. Thornhill, declare as follows:

1. My name is Michael R. Thornhill. I am over the age of 21, am competent to make this affidavit and have personal knowledge of the statements contained herein and that they are both true and correct. The opinions expressed herein are based on my education, knowledge, and experience. My opinions herein are expressed to a reasonable degree of scientific certainty and probability. I submit this declaration in support of Plaintiff's Motion for Class Certification.

2. I am a licensed professional geoscientist (geology) in the State of Texas. Since March of 2025 I have been the CEO of Legacy Groundwater, LLC, into which my previous company and entire staff were integrated. Prior to the formation of Legacy Groundwater, I was the President of Thornhill Group, Inc. (TGI), a professional hydrogeology and water resources specialty firm that I established and headed for 27 years. Through TGI and Legacy Groundwater, I continue to specialize in conducting studies and investigations involving groundwater resource assessment and rights evaluations. I have been a practicing hydrogeologist in the water resource consulting business in Texas for more than 36 years.

3. I have a Bachelor of Science degree in geology and a Master of Science degree in geology from Oklahoma State University. My graduate degree work was focused on specializing in hydrogeology. I am registered with the Texas Board of Professional Geoscientists (TBPG) and certified by the American Institute of Professional Geologists (AIPG).

4. Through my consulting practice, I have represented numerous private, commercial, and governmental entities, providing various planning, design, analysis, and valuation services for a wide range of groundwater projects. I have conducted and supervised investigations for developing large groundwater supplies ranging from less than five (5) to more than 100 million

gallons per day (MGD), provided groundwater resource assessments for litigation, assisted numerous project engineers in well and wellfield design, and have directed projects involving well evaluation and rehabilitation. In addition, I have conducted or directed well-siting and wellfield construction and installation projects for more than 80 public water supply wells, including wells supplying brackish water to desalination plants. My clients include municipalities, law firms, mines and quarries, municipal utility districts, engineering firms, developers, industries, bottled water companies, groundwater conservation districts, water marketers, and private landowners.

5. I have extensive experience with water-related projects and issues in the Simsboro Aquifer, with the Brazos Valley Groundwater Conservation District (“BVGCD” or the “District”), and with Groundwater Management Area 12 (GMA 12) and other groundwater conservation districts within GMA 12. These consulting assignments include the following:

- a. From 1989 through 1997 and while being employed as a consulting hydrogeologist for R.W. Harden & Associates, Inc. (RWH&A), I conducted and participated in well design, well completion, aquifer testing, monitoring, and modeling in order to permit, implement, and assess depressurization of the Simsboro Aquifer at the Aluminum Company of America (ALCOA) Sandow Mine in Milam County. Similarly, while at RWH&A and during the 1990 to 1997 timeframe, I designed and supervised field investigations, well completion, and monitoring programs for the Walnut Creek Mining Company (WCMC) Calvert Mine in Robertson County, Texas. Additionally, I conducted groundwater flow modeling and prepared subsequent reports, including reports summarizing hydrogeologic conditions and probable hydrologic impacts related to mining operations and groundwater pumping as required for Railroad Commission of Texas (RRC) permit submittals;

- b. From 1999 until the present, TGI (and Legacy Groundwater) has represented GateHouse Water, LLC. (and predecessor owners including Water Texas, Sustainable Water Resources (SWR), and the Forestar Group, Inc.) in conducting hydrogeologic studies and acquiring permits from the Lost Pines Groundwater Conservation District (LPGCD) to produce up to 45,000 acre-feet per year from the Simsboro Aquifer from 10 wells to be completed within Lee County, Texas. Later, Forestar agreed to a lesser amount of pumping (28,500 acre-feet per year) and GateHouse has recently agreed to a permit amount of 18,500 acre-feet per year. TGI assisted project engineers in designing the 10 wells and obtaining approval to construct the wells from the Texas Commission on Environmental Quality (TCEQ). TGI provided comprehensive field services including inspecting the completion to date of three (3) large-capacity wells with permitted pumping rates of up to 3,500 gallon per minute (GPM). TGI conducted aquifer (i.e., pumping) tests on the three (3) wells with testing rates ranging from 2,500 to 5,000 gpm. Additionally, TGI performed analytical and numerical modeling for the project, and represented GateHouse in desired future conditions (DFC) matters before GMA 12;
- c. From approximately 2000 until the present, TGI and Legacy Groundwater have represented the WCMC and its mining operations located in Robertson County. TGI has conducted hydrogeologic studies, groundwater modeling, well design and well-field placement studies, and drilling and well completion inspection to assist WCMC in acquiring RRC permits to depressurize the Simsboro Aquifer to allow for maintaining safe and efficient mining operations. Subsequently, TGI (and Legacy Groundwater) has prepared all sections of RRC permit applications pertaining to the

geologic setting, groundwater conditions, and probable hydrologic impacts related to the mining operations including groundwater pumping;

- d. From 2003 until 2023, TGI represented End Op, LP (now owned by Recharge Water, LP) in conducting hydrogeologic studies and permit hearings before the LPGCD and in subsequent hearings before the State Office of Administrative Hearings (SOAH) to acquire permits from the LPGCD to produce up to 46,000 acre-feet per year from the Simsboro Aquifer from wells to be completed in Bastrop and Lee counties, Texas. TGI assisted project engineers in the design and inspected the completion of an initial large-capacity pilot production well which was tested at an average pumping rate of 1,926 GPM during a 23-day aquifer test designed and conducted by TGI. Additionally, TGI performed analytical and numerical groundwater modeling, and represented End Op in DFC matters before GMA 12;
- e. TGI completed in 2005 a study and report entitled *Evaluation of Aquifers within Fayette County Groundwater Conservation District Boundaries*, prepared for the Fayette County Groundwater Conservation District (FCGCD) which is within GMA 12 and included the Carrizo Aquifer (part of the Carrizo-Wilcox Aquifer) and several overlying aquifers;
- f. From 2006 through 2023, TGI represented Dr. Clifford Skiles in permitting matters before the BVGCD, including studies and testimony to assist in securing permits to pump more than 20,000 acre-feet per year from the Simsboro Aquifer; and
- g. Since 2021, TGI (and Legacy Groundwater) has represented UW Brazos Valley Farm, LLC in the acquisition of groundwater through both purchases and leases of groundwater rights in Robertson County, Texas. TGI assisted numerous landowners

in successfully obtaining drilling and production permits to produce a combined (rounded to the nearest one thousand) 182,000 acre-feet per year of groundwater from the Simsboro Aquifer within Robertson County. TGI also assisted UW Brazos Valley Farms, LLC in obtaining a transport permit from the BVGCD for 49,999 acre-feet per year. Through this work and other previous work within BVGCD, I have become familiar with the amounts of groundwater production subject to such leases and purchases as well as the market for groundwater in areas including Austin, Round Rock, Georgetown, Taylor, Hutto, and other locations.

- h. I am familiar with the economics of drilling public water system (PWS) and large-capacity irrigation and industrial wells into the Simsboro Aquifer within Robertson and Brazos counties, and I am familiar with the amount of groundwater production needed from a well and well fields to make drilling and equipping the well(s) economically practicable.
- i. I have also become familiar with the value of groundwater rights in Robertson and Brazos counties as well as other areas within GMA 12.
- j. Through all of my experience dealing with the Brazos Valley region over the past 35 years, I have gained extensive knowledge of the BVGCD area, particularly with regard to hydrogeologic and aquifer conditions within the District and GMA 12, aquifer productivity and well hydraulics, the amount of groundwater in aquifer storage, aquifer responses to well pumping, groundwater budgets and balances, water quality, well design, pumping conditions, costs, and economics of pumping groundwater and producing groundwater supplies. I have also become well-versed with the BVGCD Rules and Management Plan, desired future conditions (DFCs),

value of groundwater, and groundwater conditions with respect to property rights and fair share for groundwater owners.

6. I am familiar with the Rules of the BVGCD, both before and after September 14, 2023, and particularly the Rules relating to spacing of wells and production limitations of wells, which can also be expressed as a property requirement associated with a well allocation. Specifically, I was familiar with BVGCD Rules 6.1 and 7.1 as they existed prior to September 14, 2023 (Old Rule 6.1 and Rule 7.1). Under Old Rule 6.1(b)(2), all new wells drilled within the District and completed into the Simsboro Aquifer were required to be surrounded by only one (1) foot of land per one gallon per minute (GPM) of average annual production rate or capacity. Under New Rule 6.1(b)(2), which became effective on September 14, 2023, all new wells drilled in the District and completed into the Simsboro Aquifer must be surrounded by two (2) feet of land per one GPM of average annual production rate or capacity. The effect of this rule change is seen in the application of BVGCD Rule 7.1 which sets production limits or the amount of acreage that must be assigned to the well allocation (i.e., the “average annual production rate”) based on a formula that utilizes the required spacing of wells as one component of the formula. Under Rule 7.1, a new well’s groundwater production:

. . . [I]s limited by the number of contiguous acres that are legally assigned to the well site. The contiguous acreage assigned to the well bears a reasonable reflection of the cone of depression impact near the pumped well, as based on the best available science and the required production based acreage. The assigned contiguous acreage will be a circle based on the amount of groundwater production determined by the following formula:

$$\left(\frac{\text{Average Annual Production Rate in Gallons/Minute} \times \text{District Spacing Requirement Between Wells}}{\text{District Spacing Requirement Between Wells}} \right)^2 \times \pi = \text{Total number of contiguous acres required to be assigned to the well site}$$

43,560

Per Rule 7.1(c), the “District Spacing Requirement Between Wells” variable in the above formula is the plug-in number from Rule 6.1(b)—one (1) foot of land under Old Rule 6.1(b) and two (2) feet of land under New Rule 6.1(b).

7. Using the “District Spacing Requirement Between Wells” under Old Rule 6.1, a landowner had to own or control enough land to allow for a circle of land around the wellbore with a radius of one (1) foot per GPM of average annual pumping rate. Thus, if a landowner had a 3,000 GPM well, under Old Rule 6.1(b), the landowner had to own or control at least enough land around the wellbore for a circle with a radius of 3,000 feet—or an area of 649 acres. As such, a circular section of land (640 acres) could effectively support a well that can produce an average of right at 3,000 GPM. Under New Rule 6.1, requiring two feet per gallon per minute, the result of the Rule 7.1 formula is that the landowner now must own or control four (4) times as much property to support the same production amount: it now requires 2,596 acres to support a well producing 3,000 GPM.

8. In my experience and for the depths necessary in the most productive areas of the Simsboro Aquifer, the minimum well size to be economically viable selling water to public water systems and industry and for large-scale irrigation purposes will accommodate a pump that could pump at least 700 GPM (although a preferred well capacity would be at least 1,000 GPM). Under Old Rule 6.1, a landowner with circular property of at least 35 acres could produce 700 GPM. Under New Rule 6.1, as applied through the formula in Rule 7.1, a landowner now must have 141 acres to support a 700 GPM well. This effectively means that the landowner’s groundwater rights have been devalued by 75 percent.

9. Individuals or companies that are putting groundwater projects together to meet the needs of Austin, Round Rock, Georgetown, Taylor, Hutto or other cities or industries (such as the Samsung microchip factory in Taylor County) must be able to lease or purchase groundwater rights

sufficient to meet needs while still having economically viable wells. In my experience, project developers likely have little to no interest in leasing or purchasing groundwater rights in tracts less than 35 acres under the Old Rules, or less than 140 acres under the New Rules. Because municipal and industrial uses are the highest and best uses for groundwater in this geographic area, the New Rules effectively remove tracts of less than 140 acres from that specific market. In terms of economics, project developers prefer wells that can produce 1,500 GPM or more, which the Simsboro Aquifer will support across most of Robertson County and a large part of northern Brazos County.

10. I am specifically familiar with the Upwell Brazos Valley Farms holdings in Robertson County, having represented its former owner, Dr. Clifford A. Skiles, and having assisted in the transaction resulting in the sale of that property to Upwell Brazos Valley Farms. I am familiar with and worked extensively with David Lynch of Core Capital in effectuating that transaction, and am aware from that transaction, my personal experience in developing wells in the Simsboro aquifer, and my interactions with Mr. Lynch that Upwell cannot economically buy or lease groundwater rights today if the parcel size will not support a well capable of producing at least 700 GPM.

11. Further, the New Rules deprive landowners of an equal or fair opportunity to produce a fair share of the groundwater beneath their land. For example, assume a landowner with a permit under the New Rules has a neighbor with a permit issued under the Old Rules. That neighbor that is permitted under the Old Rules, assuming identical radii for both wells, can produce four (4) times as much water per acre owned as the landowner under the New Rules. Due to the nature of the Simsboro Aquifer, the neighbor is producing water that would otherwise remain under the landowner's land. The Simsboro Aquifer is under artesian or confined conditions across most of Robertson and Brazos counties. Therefore, pumping water from a well in the Simsboro Aquifer lowers the pressure in the well casing and creates a low-pressure area that extends outward from the well bore in the shape of

an inverted cone. This “cone of depression” continues to extend outward as the well is pumped over time. If neighboring owners are not allowed to pump groundwater at the same rate, then the unequal cones of depression result in movement of water (which can be considered as drainage) from one tract to the next. Assuming identical land area and that aquifer hydraulic characteristics are the same beneath the two adjacent properties, the cone of depression caused by the Old Rule landowner will be four (4) times deeper than the cone of depression caused by the well owned by the New Rule landowner. While individual cones of depression are generally circular in vast artesian aquifers such as the Simsboro, when two cones of depression intersect the shape changes as the two separate cones of depression merge and interference drawdown between wells is additive. Where the Old Rule landowner pumps four (4) times the rate than the New Rule landowner pumps, the cone of depression would be such that water moves away from the New Rule (i.e., less pumping) landowner’s property toward the Old Rule (i.e., more pumping) landowner’s property. This difference in pumping rates causes disparate “impacts” and, while the storage depletion would be very small in an artesian aquifer, results in the larger pumper draining water from the smaller pumper’s property. Conversely, under the Old Rules where the pumping rates from two wells on two adjacent (and identical) properties are identical (and assuming essentially identical aquifer hydraulic characteristics on the adjacent properties), the two separate cones of depression would be essentially identical and when they merge form a flow divide essentially half-way between the wells. At the flow divide water moves in opposite directions; therefore, neither property appreciably drains the other one – or at least neither property is drained more than the other.

12. Under the Old Rules, where the pumping rates are equal, both parties have an equal or fair opportunity to recover their fair share of the groundwater. However, New Rule 6.1, as applied in the formula in Rule 7.1, causes holders of “new” permits to suffer drainage from their

neighbors pumping under the Old Rules. This is literally treating different owners in the same aquifer differently.

13. BVGCD also changed its Rule 7.1 on September 14, 2023. Before that date, some landowners were allowed to “overlap” the circles surrounding wells on their own properties in such a way as to increase the amount of allowable production they could get from a specific property. As of September 14, 2023, however, BVGCD amended Rule 7.1 to prohibit overlapping circles even on one’s own property. That rule change has the effect of diminishing the amount of groundwater that can be produced from a specific property.

14. As noted above, BVGCD’s production and spacing rules are based on a formula that contemplates a circle around any given wellbore. But as noted in the deposition of Alan Day, there are no tracts in the district that are circular in shape. Most properties are square, rectangular or some other non-circular shape. The practical effect of this is to eliminate all the area outside of the circular shapes from consideration in production allowables. For example, in a perfectly square section of 640 acres, a circle with a radius of 2,640 feet will encompass about 500 acres, leaving 140 acres out of the calculation of production allocations. An owner could drill small wells in the “corners” of the section, but those wells would have to be drilled on much smaller circles that would not be large enough to support a commercial or agricultural well drilled into the Simsboro aquifer. This effect is more pronounced on tracts that are irregular in shape, which is true of most tracts in the District.

15. I have reviewed the transcript of the July 16, 2025 deposition of the corporate representative of Brazos Valley Groundwater Conservation District, Alan Day. In that deposition he described a methodology for identifying individuals or entities who own parcels of land containing 35 acres or more overlying the Simsboro aquifer in Robertson County, Texas who do

not have a pre-September 14, 2023 permit to produce groundwater from that aquifer. The identity of those landowners is ascertainable through the methodology he describes. Specifically, he states that he could determine the precise number of people in the District who own more than 35 acres without pre-September 14, 2023 permits by going to the Robertson County Appraisal District and getting them to give a listing of any parcels with 35 acres or more, then taking that document and going to BVGCD's list of permits issued before September 14, 2023 and determine how many of owners on the Appraisal District's list don't have permits.

16. I and my employees have performed a similar preliminary analysis using almost the exact same methodology as that described by Mr. Day, except that we did not use the interactive map on the BVGCD website to identify parcels. Instead, we used data from the Robertson County Appraisal District, which Mr. Day identified as the source of the data used in the BVGCD interactive map. We were able to isolate and identify those parcels of land containing 35 acres or more in Robertson County, and we could use that data to identify the present owners according to the Appraisal District. We selected 35 acres as a cutoff point because that is the number of acres that would have supported a 700 GPM well under Rules 6.1 and 7.1 before those Rules were changed in 2023. Based on the selection criteria, we estimate that there are approximately 3,186 tracts of land in Robertson County containing 35 acres or more. Realistically, there are probably fewer tracts than that where a 700 GPM well could be drilled because none of the tracts are circular. That reality will eliminate tracts where you cannot "fit" a circle with a radius of 700 feet inside the boundaries of a 35-acre tract due to its shape. We will be able to further refine the number of tracts and the identity of their owners by applying accepted mathematical formulas to find a final number of tracts. Further, many of the identified tracts are under the same ownership, so that the approximate number of actual landowners will be less than

3,186. Finally, BVGCD has produced a list of all permits to produce groundwater that it currently has issued, approximately 1,062 permits in all. We can cross-tabulate that list against the list we have developed of tracts and owners, subtracting the existing pre-September 14, 2023 permits from the overall list. That will yield about 2,125 tracts of 35 acres or more that do not have existing permits and, again, a smaller number of actual landowners. The changes in Rules 6.1 and 7.1 on September 14, 2023 affect each of these owners in the same way: they are unable to apply for or produce the same amount of groundwater they would have been able to produce under permits issued before the Rules were changed.

17. My current hourly rate is \$280. To date, my firm has charged \$13,725.65 for review of records relating to identity of owners of parcels in the counties in the District, the deposition of Alan Day, and District documents relating to its production limits and spacing.

18. Attached as Exhibit 1 to this Declaration is a list of cases in which I have testified as an expert at trial or have given depositions in the past four years.

I declare under penalty of perjury that this declaration is true and correct to the best of my knowledge.

Dated September 29, 2025.

/s/ Michael R. Thornhill

Michael R. Thornhill

Michael R. Thornhill

Recent (4-year) Expert Witness Testimony as of 09/29/2025

Client: RR 417, LLC

July 2025

SOAH Docket No. 900-25-11236

RR 417, LLC's Application for a Well Permit to Withdraw Groundwater from the Trinity Aquifer and Application to Amend Well Permit No. P-1178 from the Bandera County River Authority and Groundwater District

Prefiled Direct Testimony 07/03/2025

Client: BLF Land, LLC

June 2024

Case No. 2:23-cv-00133

United States District Court for the Northern District of Texas Amarillo Division

BLF Land, LLC and Blaine Larsen Farms, Inc, Plaintiffs, v. Allen French, Mark Howard, Justin Crownover, Harold Grall, Bob Zimmer, Danny Krienke, and Gene Born, in their individual capacities and in their official capacities as directors of the North Plains Groundwater Conservation District, and North Plains Groundwater Conservation District

Affidavit 6/28/24

Client: Vanderpool Management, LP

Cause: 5:2023cv00461

SOAH Docket No. 955-23-21880

Vanderpool Management, LP

Application of Vanderpool Management, LP for Two Well Permits from Bandera County River Authority and Groundwater District

Prefile Direct Testimony 10/27/23

Deposition 2/1/24

Client: Quadvest

July 2023

Cause No. 4:19-CV-4508

Appeal from the United States District Court for the Southern District of Texas USDC

Quadvest and Woodland Oaks Utility vs. San Jacinto River Authority

Deposition 7/18/23.

Client: Anthony Fazzino, Jr.

October 2020

Cause No. 17-02-20199-CV Anthony Fazzino, Plaintiff, v. Brazos Valley Groundwater Conservation District

Amended Permit Application to Produce Groundwater – Impacts Assessment as Related to Implementation of Rules of the Brazos Valley Groundwater Conservation District - Direct Written Testimony