

**IN THE UNITED STATES DISTRICT COURT  
FOR THE WESTERN DISTRICT OF TEXAS  
WACO DIVISION**

**FAZZINO INVESTMENTS, LP,  
for itself and all others similarly situated,**

**PLAINTIFFS**

**V.**

**BRAZOS VALLEY GROUNDWATER  
CONSERVATION DISTRICT,**

**DEFENDANT**

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**CASE NO. 6:25-cv -00001-ADA-DTG**

**EXPERT REPORT OF MICHAEL R. THORNHILL**

1. My name is Michael R. Thornhill. I have been retained by Plaintiff’s counsel to issue this report. The opinions expressed herein are based on my education, knowledge, and experience, and expressed to a reasonable degree of scientific certainty and probability.

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 work focused on specializing in hydrogeology. I am registered with the Texas Board of Professional Geoscientists (TBPG),

License No. 858, and certified by the American Institute of Professional Geologists (AIPG), CPG No. 9545.

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) million gallons per day (MGD) to more than 100 MGD, provided groundwater resource assessments for litigation, assisted numerous project engineers in well and wellfield design, and directed projects involving well evaluation and rehabilitation. 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, 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 Carrizo-Wilcox Aquifer, and particularly the Simsboro Aquifer, within the Brazos Valley Groundwater Conservation District (“BVGCD” or the “District”), within Groundwater Management Area 12 (GMA 12), and all the other groundwater conservation districts within GMA 12. These consulting assignments include the following:

- a. From 1989 through 1997 and while 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 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 from 1990 through 1997, I designed and supervised field investigations, well completion, and monitoring programs for the Walnut Creek Mining Company (WCMC) Calvert Mine in Robertson County, Texas. I also 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 to 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 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 first three (3) wells from the Texas Commission on Environmental Quality (TCEQ). TGI also provided comprehensive field services including inspecting the completion to date for three (3) large-capacity wells with permitted pumping rates of up to 3,500 gallons per minute (GPM) for each well. 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 to 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 maintain safe and efficient mining operations. Subsequently, TGI (and Legacy Groundwater) 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 to 2023, TGI represented End Op, LP (now owned by Recharge Water, LP) in conducting hydrogeologic studies and providing expert witness services in permit hearings and other matters 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 wells in the Simsboro Aquifer to be completed in Bastrop and Lee Counties, Texas. Additionally, TGI provided expert witness services in other permit hearings before SOAH in which Recharge Water had party status. 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. TGI also 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 (the upper 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 additional to previous permits Dr. Skiles had obtained for existing Simsboro Aquifer irrigation wells.
- g. Since 2021, TGI (and Legacy Groundwater) have 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 UW Brazos Valley Farms, LLC in obtaining drilling and production permits. Additionally, TGI assisted UW Brazos Valley Farm, LLC in securing a transport permit from the BVGCD for 49,999 acre-feet per year. TGI also assisted numerous private landowners in successfully obtaining drilling and production permits to produce their groundwater. With the Upwell permits, TGI conducted all hydrogeologic studies and assisted with permit submittals

to acquire a total combined (rounded to the nearest one thousand) 182,000 acre-feet per year of groundwater from the Simsboro Aquifer within Robertson County. Legacy Groundwater continues to provide hydrogeologic and expert services to Upwell and other permit holders within the BVGCD. Through this work and other previous work within BVGCD, I have become knowledgeable about the amounts of groundwater production subject to 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 knowledgeable about the economics of drilling public water system (PWS) and large-capacity irrigation and industrial wells in the Simsboro Aquifer within Robertson and Brazos Counties, and I am knowledgeable about the amount of groundwater production needed from a well and well fields to make drilling and equipping the well(s) economically practicable.
- i. I am also knowledgeable about the value of groundwater rights in Robertson and Brazos counties, as well as other areas within GMA 12 and across Texas.
- 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, 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, drainage, 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, DFCs, value of groundwater, and groundwater conditions with respect to property rights and fair share for groundwater owners.

6. I have been asked to render expert opinions in connection with the above-referenced lawsuit. In undertaking that task, I have reviewed the following data, information, and facts:

- a. The current BVGCD Rules.
- b. The BVGCD Rules as they existed prior to September 14, 2023.
- c. Plaintiffs' Original Class Action Complaint.
- d. The deposition of Mr. Alan Day, the BVGCD corporate representative, in this case.
- e. My previous declarations submitted in this case, including the attachments.
- f. Declaration of Charles Fazzino in Support of Plaintiff's Motion for Class Certification.
- g. My expert report in *Stratta v. Roe*; Case No. 6:18-cv-00114-JCM (W.D. Tex.).

7. I am knowledgeable about the BVGCD Rules, 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 am knowledgeable about BVGCD Rules 6.1 and 7.1 as they existed prior to September 14, 2023 (Old Rule 6.1 and Rule 7.1). Old Rule 6.1(b)(1) required that each Simsboro Aquifer well be spaced one-half foot per GPM of average pumping from the nearest property line. Under Old Rule 6.1(b)(2), all new wells drilled within the District and completed into the Simsboro Aquifer were required to be separated from the nearest permitted or registered Simsboro by only one (1) foot of land per one GPM of average annual production rate or capacity. The one-foot distance forms a radius used in the Rules. 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 separated from the nearest (off-property) Simsboro well 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:

$$\frac{\left( \begin{array}{c} \text{Average Annual} \\ \text{Production Rate} \\ \text{in Gallons/Minute} \end{array} \times \begin{array}{c} \text{District Spacing} \\ \text{Requirement} \\ \text{Between Wells} \end{array} \right)^2 \times \pi}{43,560} = \begin{array}{l} \text{Total number of} \\ \text{contiguous acres} \\ \text{required to be assigned} \\ \text{to the well site} \end{array}$$

8. 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 Simsboro Aquifer 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. In fact, the new property line spacing rule (New Rule 6.1(b)(1)) also results in the landowner

needing at least four (4) times more property than the landowner covered under the old Rules to produce the same amount of water.

9. 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 for selling water to public water systems (other than localized small systems), for industrial purposes, and/or for large-scale irrigation purposes must be able to 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 (at least) 75 percent. In some instances, such a burden may cause a complete loss of an otherwise viable market.

10. Individuals or companies that are putting groundwater projects together to meet the needs of Austin, Round Rock, Georgetown, Taylor, Hutto, and/ or other cities or industries (such as the Samsung microchip factory near the City of Taylor in Williamson 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 (i.e., pumping rates for individual wells of less than 700 GPM). 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. Even considerably larger tracts may be eliminated from consideration of the contiguous acreage assigned to a well is on a property with non-regular shapes. In terms of economics, project developers prefer wells that can produce 1,500 GPM or more, which the Simsboro Aquifer will easily support across most of

Robertson County and a large part of northern Brazos County, as pumping rates in existing wells are routinely equal to the maximum allowed by BVGCD (*i.e.*, 3,300 GPM).

11. I am specifically knowledgeable about 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 also knowledgeable about and worked extensively with David Lynch of UW Brazos Valley Farms, LLC 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 will not, based on economic considerations, buy or lease groundwater rights today if the parcel size will not support a well capable of producing at least 700 GPM.

12. 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. The neighbor with a well or wells permitted under the Old Rules can produce at twice the instantaneous pumping rate (based on the property line requirement in Old Rule 6.1) of the landowner with a permit under the New Rules. Assuming identical radii for both wells, the neighbor can produce four (4) times as much water per acre owned as the landowner under the New Rules (based on Rule 7.1). Due to the nature of the Simsboro Aquifer, the neighbor that is permitted to pump at a higher rate and from a smaller area is producing water that would otherwise remain under the landowner's land.

13. 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. All things being equal, the magnitude of drawdown is directly proportional to pumping rate. If neighboring owners are not allowed to pump groundwater at the same rate, then the disparate pumping rates cause unequal cones of depression resulting in movement of water (also known as drainage) from one tract to the next across the entire Simsboro Aquifer. 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 deeper than the cone of depression caused by the well owned by the New Rule landowner. Drawdown in an aquifer is additive. While individual cones of depression are generally circular in vast artesian aquifers such as the Simsboro Aquifer, when two cones of depression intersect the shape changes as the two separate cones of depression merge causing “interference drawdown.” Interference drawdown between wells is additive. Where the Old Rule landowner pumps at a higher 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” (*i.e.*, artesian head or pressure decline) 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, a flow divide forms 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. In other words, there is no regulatorily-forced competitive advantage to either landowner. Exhibit 1 and Exhibit 2 provide schematic cross sections illustrating drawdown and

interference drawdown the different pumping scenarios described above. The drawdown amounts are based on standard calculations utilizing the Theis equation. Utilizing the Theis equation to calculate drawdown is a long-is a longstanding and generally accepted practice of groundwater professionals. Those calculations are based on identical hydraulic properties in the aquifer in the area of both wells shown, which is a reasonable assumption based on the nature of the Simsboro Aquifer. The figures illustrate the advantage the Old Rule pumper has over the New Rule pumper and the equal opportunity if both users operate under the Old Rules.

14. 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, serves to put holders of “new” permits at risk of suffering drainage from their neighbors pumping under the Old Rules. This is literally treating different owners in the same aquifer or groundwater reservoir differently.

15. 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.

16. 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, the BVGCD corporate representative, 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 allow for a large enough pumping rate to support an economically viable 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. Narrow properties are especially susceptible to pumping rate restrictions.

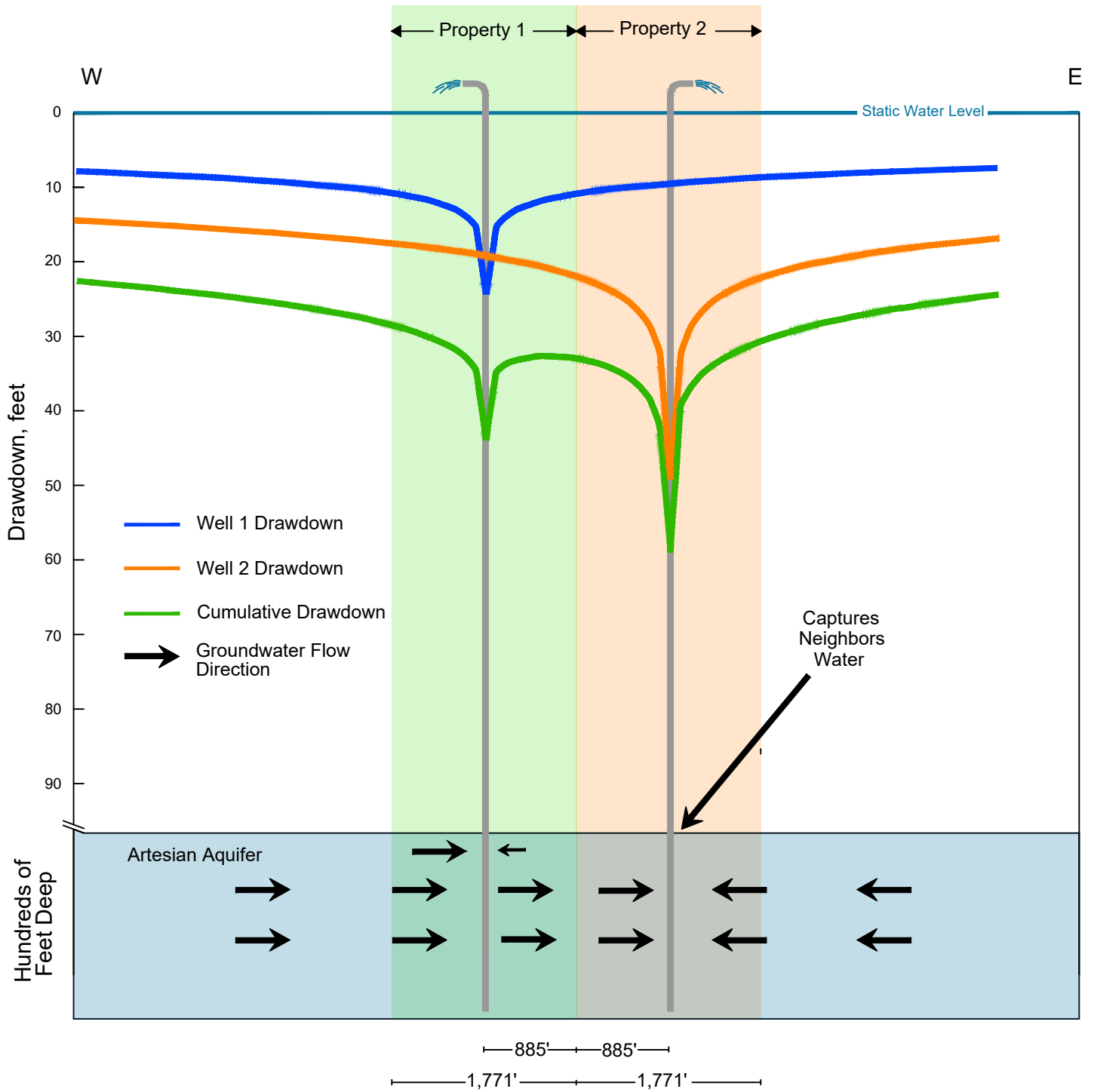
17. My current hourly rate is \$305; however, the rate for work in this case was initiated at \$260 per hour. To date, my firm has charged \$12,002.70 for work pertaining to the litigation. Attached as Exhibit 3 to this Declaration is a list of cases in which I have testified as an expert at trial or have given depositions in the past four years.

Date: February 27, 2026

  
Michael R. Thornhill

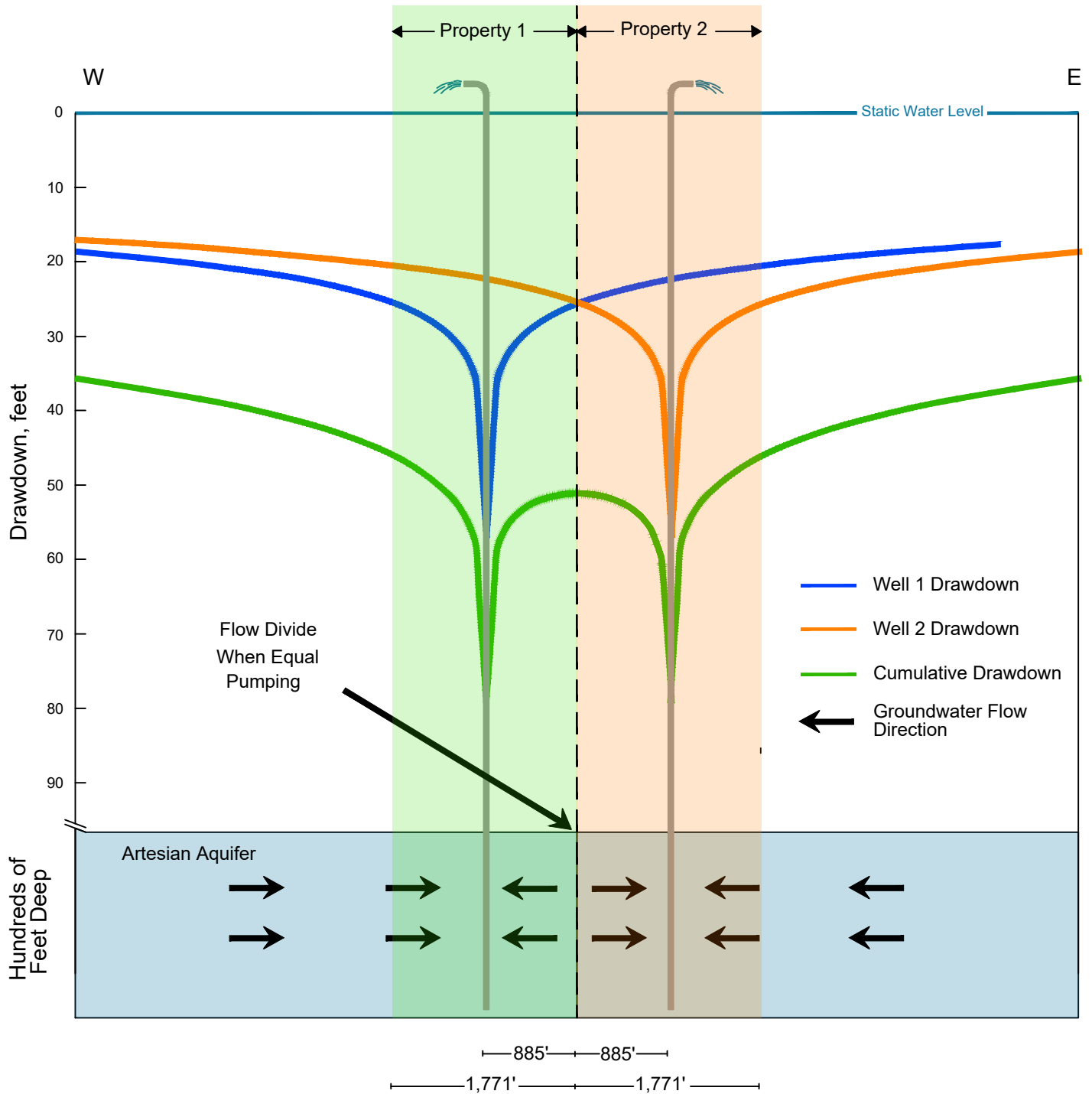
# EXHIBIT 1

# Exhibit 1. Disparate Pumping Opportunity (New Rules)



## EXHIBIT 2

## Exhibit 2. Equal Pumping Opportunity (Old Rules)



## EXHIBIT 3

**Michael R. Thornhill**  
**Four-Year Expert Witness Testimony History as of 02/27/2026**

Client: RR 417, LLC  
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  
Direct Testimony November 2025  
Prefile Direct Testimony 7/3/25

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