

Permit Hearing - Item #6  
UMHB Golf Course

**NOTICE OF PERMIT HEARING OF THE  
CLEARWATER UNDERGROUND WATER CONSERVATION DISTRICT**

Notice is hereby given that the Board of Directors for the Clearwater Underground Water Conservation District will conduct a hearing on one Application for Permit as described below at 1:30 p.m. on Wednesday, May 14, 2025, in the Clearwater UWCD Board Room located at 640 Kennedy Court, Belton, Texas, in compliance with the Texas Open Meetings Act.

The hearing will be conducted on the following applications:

Applicant's File Number/Name	Permit Applicant/Holder and Landowner	Location of Well	Proposed Annual Groundwater Withdrawal Amount & Purpose of Use
Operating Permit  Well # N3-23-005P	University of Mary Hardin Baylor c/o Dr. Steve Theodore 900 College Street Belton, TX 76513  (254) 295-4519	The existing well is completed to the Lower Trinity aquifer (Hosston) in the Belton Lake management zone and equipped with a maximum 4-inch column pipe. The well is located on a 28.12-acre tract at the N.W. corner of W. Martin Luther King Junior Ave and Nolan Creek in Belton, Texas.  Latitude 31.069169° Longitude -97.472680°	The applicant requests an operating permit on existing well N3-23-005P to authorize groundwater withdrawal for golf course irrigation at a proposed annual quantity not-to-exceed 37.1 acre-feet or 12,089,072 gallons per year, at a maximum pumping rate of 270 gallons per minute.

The application for an operating permit for an existing exempt well would authorize the applicant to operate within the Clearwater Underground Water Conservation District, in accordance with the terms and conditions specified in the application, subject to board deliberation and approval with potential limits and special provisions. A person wishing to submit a Contested Case Hearing Request, as it relates to the proposed Operating Permit, under District Rule 6.10.15(d), who is unable to appear at the hearing on the date and time set forth above, must also file a motion for continuance with CUWCD demonstrating good cause for the inability to not appear.

The Applications for Permit and Permit Amendments, if granted, would authorize the permit holder to operate wells within the Clearwater Underground Water Conservation District according to the terms and conditions set forth in the permit. A person wishing to submit a Contested Case Hearing Request under District Rule 6.10.15(d) who is unable to appear at the hearing on the date and time set forth above must also file a motion for continuance with CUWCD demonstrating good cause for the inability to not appear.

For additional information about this application or the permitting process, or to request information on the legal requirements on what must be included for a Contested Case Hearing Request to be valid, please contact CUWCD at 700 Kennedy Court (PO Box 1989) Belton, Texas, 76513, 254-933-0120.

ISSUED this 2<sup>nd</sup> day of May 2025 in Belton, Texas, on the recommendation of the General Manager.

I, the undersigned authority, do hereby certify that the above NOTICE OF PERMIT HEARING of the Board of Directors of the Clearwater Underground Water Conservation District is a true and correct copy of said Notice. I have posted a true and correct copy of said Notice at the District office located in Belton, Texas, and said Notice was posted on May 2, 2025, and remained posted continuously for at least 10 (ten) days immediately preceding the day of said hearing; a true and correct copy of said Notice was furnished to the Bell County Clerk, in which the above-named political subdivision is located.

Dated: 5/2/2025

Clearwater Underground Water Conservation District

By:   
Dirk Aaron, General Manager

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# CUWCD Executive Summary

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**Executive Summary**  
**Application for Operating Permit**  
**N3-23-005P**



**Applicant/Owner:** University of Mary Hardin-Baylor  
c/o Hunter King, P.E., Collier Consulting  
900 College St.  
Belton, TX 76513  
Phone: (512) 851-8740

**Location of Well:**

*Location description:* 28.12-acre tract at the N.W. corner of W. Martin Luther King Junior Ave and Nolan Creek in Belton, Texas

Latitude 31.069169° Longitude -97.472680°

*Management Zone:* Belton Lake Management Zone

<b>Proposed Annual Withdrawal:</b>	<b>Proposed Beneficial Use:</b>	<b>Source Aquifer:</b>	<b>Nearest Registered &amp; Existing Wells:</b>
<b>Proposed Production:</b> Not-to-exceed 37.1 acre-feet or 12,089,072 gallons per year  <b>Maximum Pumping Rate:</b> 270-gpm  <b>Column Pipe:</b> 4-inch  <b>Horsepower Rating:</b> TBD	Irrigation Use Permit  For the University Practice Golf Course	Lower Trinity Aquifer – Hosston	<b><u>Well #N3-23-005P P</u></b> has 7 wells within ½ mile.  4-Edwards BFZ 2-Lower Trinity (Hensell) 1-Alluvial 0-Lower Trinity (Hosston)

**General Information**

The University of Mary Hardin Baylor (UMHB) practice golf course is located just west of the UMHB in Belton along Martin Luther King Blvd. and Nolan Creek, Texas.

UMHB received a drilling permit from the District on August 9<sup>th</sup>, 2023. The well was drilled by Hydro Resources on October 25, 2024, and is located on the southwest side of the 3-hole practice golf course. The well is completed to the Lower Trinity (Hosston) aquifer, with a 4-inch column pipe. A 24-hour pumping test and water quality assessment was conducted starting on December 19, 2024, as required by our District rules.

The applicant has submitted an application for an operating permit. This permit, if approved, will authorize groundwater withdrawal from well #N3-23-005P in the Belton Lake Management Zone described in District Rule 7.1. The well will produce groundwater for golf course irrigation at a proposed annual quantity not-to-exceed 37.1 acre-feet or 12,089,072 gallons per year total at a maximum pumping rate of 270 gallons per minute.

Special provisions of the applicant's drilling permit state that upon submission of the operating permit application, the applicant's representative will provide more clarification on the stated needs assessment for groundwater production and account for the discrepancies with the District's calculations.

On April 8, 2025, the applicant amended their operating permit application to reduce their projected water usage from 64.4 acre-feet per year to 37.1 acre-feet per year. The letter stated that although the initial estimate was based on a "grow in" design, the turf has now been established and the new estimate of 12,090,976 gallons per year has been based on actual 2024 water usage of 10,991,796 gallons per year with a 10% buffer to account for differing weather conditions.

If approved, Well N3-23-005P will be considered a *Non-Exempt Well, Classification 3 (N3)*. All N3 wells are required to have a meter and report monthly production. To ensure compliance and conservation, special provisions may be discussed with the Board should the permit be approved. The permit will be renewed annually by staff, unless the applicant's designated use changes, if the applicant fails to report monthly use, or if the condition of the well deteriorates and aquifer conditions change.

In addition, the applicant has agreed to participate in the District's continuous water level monitoring program and agreed to said installation, by the District with an Eno-Scientific Well Watch 700 device equipped with the SignalFire wireless telemetry cloud based data delivery.

CUWCD consulting hydrogeologist, Mike Keester, KT Groundwater, has reviewed the application and conducted the required drawdown analysis per District rules based on the proposed production in the application.

#### **Per Rules 6.9 and 6.10**

In deciding whether or not to issue a permit, the Board must consider the following:

- 1) **Does the application contain all the information requested, is the application accurate? Does it meet spacing and production limitations identified by District Rules, and does it conform to all application requirements which include public notification and accompanied by the prescribed fees? TWC 36.116(a)(1), TWC 36.113(d)(1), Rule 6.9.1(a)(b)(1)(2), Rule 6.9.2(a)-(f), Rule 6.10.24(a)(b), and Rule 9.5.1-2.**

The application has been deemed administratively complete and the requested information necessary to proceed is as follows:

- The existing well meets the tract size requirements of 20-acres and minimum well spacing of 1,320-feet for a maximum 4-inch column pipe associated with District Rule 9.5.2 for the Lower Trinity aquifer.
- The application fee of \$1,788.00 for the Operating Permit has been received.
- The applicant and their representative have conducted all notification requirements in a proper manner per District Rules.

- 2) **Is the proposed use of water dedicated to a beneficial use? (TWC 36.113(d)(3), District Rule 6.10.24(d), and District Rule 9.5.2 authority to serve as a public water supply per PUC and TCEQ requirements.**

The proposed production of groundwater is for irrigation of 14.5 acres of irrigated turfgrass at UMHB's "The Mac" practice golf course which does qualify as beneficial use.

- 3) **Has the applicant agreed to avoid waste and achieve water conservation? (TWC 36.113(d)(6) and Rule 6.10.24(f)**

The applicant should testify that by signing the application form, they understand, per District Rule 6.10.24(f), that they will comply with the District's Management Plan and District Rules, effective October 11, 2023. The applicant or his representative should testify to the importance of water conservation measures.

- 4) **Has the applicant agreed that reasonable diligence will be used to protect groundwater quality and that the applicant will follow well plugging guidelines at the time of well closure? (TWC 36.113(d)(7) and Rule 6.10.24(g)) and Rule 9.3.**

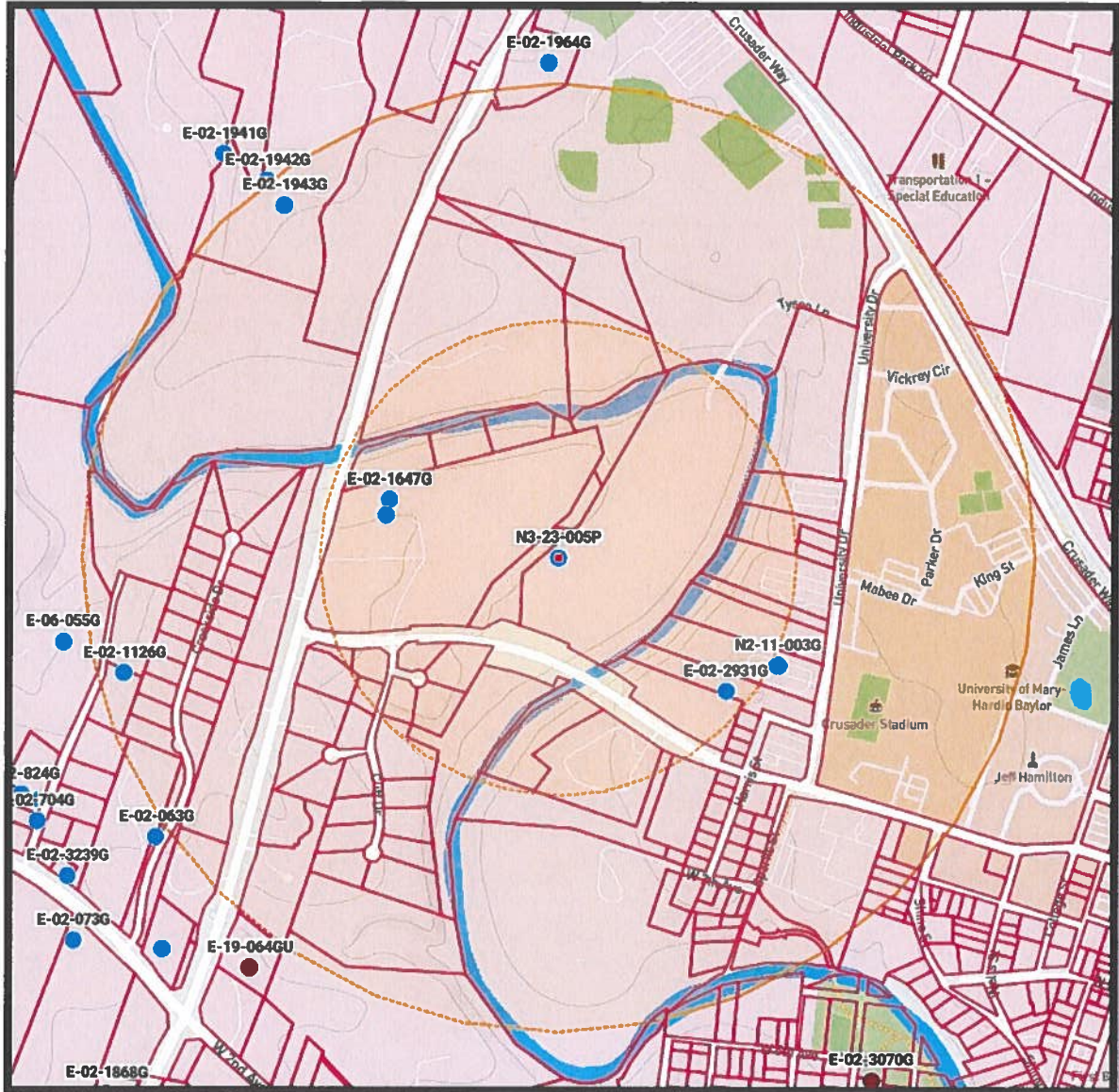
The applicant should testify that by signing the application form, they understand if the well deteriorates over time or becomes damaged in such a way that the well is inoperable, state law and District rules require such a well to be plugged before a replacement well can be drilled.

- 5) **Will the proposed water well comply with the spacing and production limitations identified in our rules? (TWC 36.116(a)(1-2), TWC 36.116(c)&(d) and Rule 6.10.24(b)), Rule 7.1 and Rule 9.5.2.**

The well is located in the Belton Lake Management Zone described in District Rule 7.1 and will have a maximum column pipe size not to exceed 4-inches as declared in the application. Based on this column pipe size, a minimum size tract of 20-acres is required, with a 1,320-foot spacing requirement from other wells.

The District's rules require that we impose a production limit based on acre-feet per year and described gallons per year. If the proposed future operating permits cause an unacceptable level of decline in the water quality of the aquifer and/or artesian pressure, then the board may require production at levels necessary to reduce said depletion or degradation of the aquifer. In addition, the Board may reduce production necessary to prevent waste and achieve water conservation, minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure, lessen interference between wells, or control and prevent subsidence.

Figure 1 illustrates the well location with 7 registered wells within a ½-mile radius and no Lower Trinity wells within 1,320-feet.



More specifically these issues are considered in items 6 & 7 below and with staff recommendations to address potential concerns of adjacent property owners and well owners within the potential radius of influence from future production.

6) **Will the proposed use of water unreasonably affect existing groundwater and surface water resources or existing permit holders?**

Based on our best available information, Well #N3-25-001P has 7 wells within ½ mile.

- 4-Edwards BFZ
- 2-Lower Trinity (Hensell)
- 1-Alluvial
- 0-Lower Trinity (Hosston)

Mike Keester, KT Groundwater, has reviewed the application, determined the anticipated drawdown, and provided the attached report.

Keester states in his conclusions and recommendations the following:

*"The applicant originally applied for 64.4 acre-feet per year of production from the Lower Trinity Aquifer but reduced the request to 37.1 acre-feet per year based on projected demand. The information provided in the well completion report indicates the well can produce more than the requested 270 gpm.*

*Measured water levels in the area suggest water level decline of 4 feet per year or more. The adopted DFC for Lower Trinity Aquifer in the District is 375 feet of average drawdown over a 71-year period which is equivalent to about 5.28 feet per year. Within the Belton Lake Management Zone the median water level decline is about 4.5 feet per year based on four CUWCD monitoring wells within the management zone.*

*Based on the modeling results, Lower Trinity wells within 1 mile are estimated to experience less than one foot of additional drawdown from the annual proposed production. The additional drawdown does not include regional water level declines. Rather, the drawdown is in addition to any water level declines which may occur. Additional water-level monitoring will aid in assessing the long-term effects of cumulative groundwater production in the area and in informing local users of the groundwater availability."*

Additionally, the District, to the extent possible, must issue permits up to the point the total volume of exempt and permitted groundwater production will achieve the applicable Desired Future Condition (DFC) per **TWC 36.1132(a)(b) and Rule 6.10.25(a)(b)(c)(d)(e)**.

**7) Is the proposed use of groundwater consistent with the District's Groundwater Water Management Plan related to the approved DFC and the defined available groundwater for permitting?**

The District's Groundwater Management Plan reflects a groundwater availability figure in the Lower Trinity (Hosston) aquifer of 7,900 ac-ft/year Modeled Available Groundwater (minus the reserve 178 ac-ft/year for exempt well use) therefore 7,722 ac-ft/year is the Managed Available Groundwater for permitting established by the District.

The Board, per the District Management Plan, has evaluated groundwater available for permitting the Lower Trinity Aquifer and most recently evaluated the available groundwater for permitting, consistent with the management plan.

The requested permit amount relative to the modeled available groundwater MAG determined by the Texas Water Development Board (TWDB) based on the desired future conditions (DFCs) established by the District for the Lower Trinity Aquifer was set by CUWCD based on 330-ft of drawdown over 60-years. This was reviewed and again approved by the board in January 2022. To achieve this DFC, the TWDB used a model that indicated the MAG was equal to 7,900 ac-ft/year from the Lower Trinity.

HEUP & OP Permit Analysis and Exempt Well Reservations for the Lower Trinity, per District Report, illustrates current Lower Trinity Aquifer permits total 4,508.89 ac-ft/year. Currently, the District has 1,119.7 ac-ft/year in pending permits, thus 3,213.11 ac-ft/year is available for permitting. See attached Trinity Aquifer Status Report, April 9, 2025.

- 8) **What are the Modeled Available Groundwater calculations determined by the Executive Administrator of the Texas Water Development Board?**

Refer to #7 above. The modeled available groundwater will not be exceeded by granting this permit. See attached Trinity Aquifer Status Report, April 9, 2025.

- 9) **What has the Executive Administrator of the Texas Water Development Board's estimate of the current and projected amount of groundwater produced under the exemptions in District Rule 6.3?**

Refer to #7 above. Reservation of Modeled available groundwater for exempt well use will not be exceeded by granting this permit. The exempt well reserve for the Lower Trinity is 178 ac-ft/year compared to 60 ac-ft/year estimated to be used annually from the Lower Trinity. See 2024 District Exempt Well Use Summary.

- 10) **What is the amount of groundwater authorized under permits previously issued by the District?**

Refer to #7 above. Existing permits do not exceed the managed available groundwater (*Modeled Available Groundwater – Reserved Exempt Well Use = Managed Available Groundwater*) for the Lower Trinity Aquifer which is 7,900 ac-ft per year.

- 11) **What is the reasonable estimate of the amount of groundwater that is produced annually under existing non-exempt permits issued by the District?**

The total permitted amounts for non-exempt wells in the Lower Trinity Aquifer in 2024 was 4,508.89 ac-feet/year and the actual production in 2024 was 1,662.97 ac-ft/year (36.88%) of the permitted amount. *Figures are based upon monthly production reports submitted to Clearwater by the permit holders in 2024.*

- 12) **Yearly precipitation and production patterns.**

Clearwater is currently in no drought management stage based on the PDI system (average running total annual rainfall). The PDI for the Trinity Aquifer in the District is currently at 30.243-inches of rain received in the last 365 days (*as of 05/07/2025*) calculated at 91.65% of annual expected rainfall of 33 inches. The Trinity Aquifer permit holders in all of 2024 used 33.80% of the total permitted amounts in the Aquifer. Permit holders did not exceed their total permitted amounts in 2020, 2021, 2022, and 2023.

### **Conclusions and Recommendations:**

- 1) District GM recommends that the Board approve the operating permit not-to-exceed 37.1 acre-feet or 12,089,072 gallons per year.

- 2) District GM recommends that the well be equipped with a meter for monthly recording of production in accordance with District Rule. As previously stated in the drilling permit, the applicant has agreed to participate in the District's continuous water level monitoring program and agreed to said installation, by the District with an Eno-Scientific Well Watch 700 device equipped with the SignalFire wireless telemetry cloud based data delivery.

*Attachments are as follows:*

<i>KT Groundwater Technical Memorandum</i>	<i>05/06/2025</i>
<i>CUWCD Lower Trinity Aquifer Status Report</i>	<i>04/09/2025</i>
<i>CUWCD 2024 Exempt Well Estimate of Use Report</i>	<i>02/03/2025</i>
<i>Applications, Fees, and Notification Affidavits</i>	<i>See Attached</i>
<i>CUWCD Site Map</i>	<i>See Attached</i>
<i>Applications, fees, and Notification Affidavit</i>	<i>See Attached</i>

## Trinity Aquifer Status Report – April 2025

<u>DFC Analysis Over Time</u> (2000-Present) <i>Modeled Available Groundwater</i>			<u>HEUP and OP Permit Analysis</u> <i>Relative to the Modeled Available Groundwater</i>			<u>2025 YTD</u> <u>Total Prod.</u> Jan - Mar 393.61 ac-ft 7.69%		<u>Pending Applications</u>		<u>Exempt Well Reservations</u>		
<b>Trinity Aquifer</b> (by layer)	<b>DFC Adopted *</b> Average Drawdown (by layer)	<b>MAG **</b> Ac-ft	<b>HEUP Ac-ft</b> (by layer)	<b>OP Ac-ft</b> (by layer)	<b>Total Permitted Ac-ft</b> (by layer)	<b>2025 YTD Prod.</b> (by layer)	<b>2024 YTD Prod.</b> (by layer)	<b>Available for Permitting Ac-ft</b> (by layer)	<b>Pending Applications Ac-ft</b> (by layer)	<b>Exempt Well Reserve Ac-ft</b> (by layer)	<b>2024 Exempt Well Use Estimate Ac-ft</b> (by layer)	<b>Available Exempt Use Ac-ft</b> (by layer)
		Current										
Pawluxy	NA	0	0	0	0	0	0	0	0			0
Glen Rose (upper)	-1.38 ft/yr -83 ft/60 yrs	275	61.9	72.73	134.63	16.82	21.13	0	0	140.37	190	0
Hensell (middle)	-2.28 ft/yr -137 ft/60 yrs	1100	259.3	214.44	473.34	9.64	44.28	81.66	0	548	542	6
Hosston (lower)	-5.50 ft/yr -330 ft/60 yrs	7900	1181.4	3327.49	4508.89	367.15	1662.97	3213.11	***1119.7	178	60	118
Total		9275	1502.6	3614.66	5117.26	393.61 (7.69%)	1728.38 (33.80%)	3294.77	1119.7	866.37	784	132

\*Desired Future Conditions (DFC) is the description of how the aquifer should look in the future (60 years).

\*\*The Modeled Available Groundwater (MAG) is the estimated amount of water available for permitting assigned to Clearwater UWCD by the Executive Administrator of TWDB.

\*\*\*Pending applications

City of Temple N3-23-004P (239 ac-ft/yr)

UMHB N3-23-005P (37.1 ac-ft/yr)

Mustang Springs N3-23-010P & N3-23-011P (249.8 ac-ft/yr)

Lake Thomas RV Resort N3-24-002P (16.8 ac-ft/yr)

Jarrell Schwertner WSC N3-24-008P (577 ac-ft/yr)



## CUWCD Exempt Well Use Summary

As of: 2/3/2025

Aquifer	Total Active Registered Exempt Wells <sup>3</sup>	Registered Domestic Wells	Estimated Domestic Use Gallons/Day <sup>1,2</sup>	Estimated Domestic Use Ac-ft/Year <sup>1,2</sup>	Registered Stock Wells	Estimated Stock Use Gallons/Day <sup>4</sup>	Estimated Stock Use Ac-ft/Year <sup>4</sup>	Total Estimated Use Gallons/Day <sup>7</sup>	Total Estimated Exempt Well Use Ac-ft/Year <sup>7</sup>	MAG Reserved Exempt Well Use
Glen Rose (Upper Trinity)	424	346	101,226	113	78	67,392	75	168,618	189	
Hensell (Middle Trinity)	1,022	962	432,367	494	60	51,840	58	484,207	542	
Hosston (Lower Trinity)	171	161	47,102	53	10	8,640	10	55,742	62	
Trinity (Total) <sup>5</sup>	1,617	1,469	580,695	650	148	127,872	143	708,567	794	866
Edwards BFZ	855	728	212,984	239	127	109,728	123	322,712	361	825
Edwards Equivalent	471	374	109,417	123	97	83,808	94	193,225	216	
Buda	28	15	4,388	5	13	11,232	13	15,620	17	
Lake Waco	8	3	878	1	5	4,320	5	5,198	6	
Austin Chalk	224	139	40,666	46	85	73,440	82	114,106	128	
Ozan	159	114	33,352	37	45	38,880	44	72,232	81	
Pecan Gap	66	44	12,873	14	22	19,008	21	31,881	36	
Kemp	15	11	3,218	4	4	3,456	4	6,674	7	
Alluvium	582	375	109,710	123	207	178,848	200	288,558	323	
Other <sup>5</sup>	1,553	1,075	314,502	352	478	412,992	463	727,494	815	
<b>CUWCD Total Active</b>	<b>4,025</b>	<b>3,272</b>	<b>1,108,180</b>	<b>1,241</b>	<b>753</b>	<b>650,592</b>	<b>729</b>	<b>1,758,772</b>	<b>1,970</b>	

1. Domestic use estimate assumes 106 gallons/person per day (USGS estimate of domestic use outside of a municipal water system) and 2.76 persons/household (U.S. Census Bureau, Population Estimates Program (PEP) July 1, 2019)

2. Benjamin G. Wherley, Ph.D. Associate Professor- Turfgrass Science & Ecology Dept. of Soil and Crop Sciences Texas A&M University estimate of 2,000ft<sup>2</sup> warm season turfgrass requires 38,855gal/yr/lawn or 106gal/day/lawn; "Ranchette" Avg. lawn size is 13,042ft<sup>2</sup>, 6.5X larger; 6.5 X 106gal/day/lawn= 689gal/day/lawn; ~217 "Ranchette" Middle Trinity Wells; 689 X 217=an additional 150,924gal/day/lawn; **490ac-ft/yr or an 89% increase in Middle Trinity exempt well use from the 2018 estimate of 258ac-ft/yr.**

3. Exempt well use estimate factors out all plugged, capped, monitor and inactive wells in the database.

4. Source of stock water estimates is Texas Agrilife Extension @ 18 gallons water per day per cow. Livestock water use estimates are based on the 2017 Census of Agriculture, USDA National Agricultural Statistics Service. 36,868 cows / 771 stock wells= 48 cows/stock well; 48\* 18gpd= 846 gal/day/stock well, **747ac-ft/yr or a 34% increase in annual stock use from the 2018 estimate of 556ac-ft/yr.**

5. The "Other" designation is the total of minor aquifer and alluvium source designation of the exempt wells.

6. Trinity Aquifer wells registered with unknown depth are assigned to the Middle Trinity per Board decision.

7. All estimates of groundwater use by exempt well owners is based on assumptions and scientific data, but by no means are they to be interpreted as recommended practices by CUWCD.

# KT Groundwater Technical Memo



## Technical Memorandum

**To:** Mr. Dirk Aaron, General Manager –  
Clearwater Underground Water Conservation District

**From:** Michael R. Keester, P.G.

**Date:** May 6, 2025

**Subject:** Hydrogeologic Evaluation of the University of Mary Hardin-Baylor  
Well (N3-23-005P) Operating Permit Application

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**Well ID:** *N3-23-005P*

**Well Owner Name:** *University of Mary Hardin-Baylor*

**Tract Size:** *28.12 Acres*

**Column Pipe Size:** *4 inch*

**Aquifer:** *Lower Trinity*

**Management Zone:** *Belton Lake*

**Proposed Annual Production:** *37.1 Acre-Feet (12,089,072 Gallons)*

**Proposed Instantaneous Pumping Rate:** *270 Gallons per Minute per Well*

According to information provided in the permit application, the proposed production is to supply water for irrigation use on the applicant's three-hole practice golf course located on the west side of Belton. The application initially requested 64.4 acre-feet per year of production but later reduced the request to 37.1 acre-feet (12,090,976 gallons) per year. This projected water demand is based on the applicant's anticipated irrigation demand now that the turf is established.

Well N3-23-005P is completed and produces groundwater from the Lower Trinity Aquifer in the Belton Lake Management Zone. The well completion report notes that the well is screened from 1,065 to 1,165 feet below ground level. The CUWCD virtual bore indicates the Lower Trinity is about 1,010 feet below ground level and



about 140 feet thick which is not consistent with the completion interval and may need to be updated in the future.

The applicant conducted a pumping test with the Lower Trinity well. As part of the hydrogeologic evaluation, we estimated transmissivity from the pumping test data. We used the transmissivity from the pumping test along with the Clearwater Groundwater Management Model to estimate the effects of the proposed pumping at nearby Lower Trinity wells.

## Pumping Test

The applicant conducted a 24-hour pumping tests using the Lower Trinity well reportedly pumping approximately 350 gallons per minute (“gpm”). The pumping period started on December 19, 2024 at 08:13 and ended on December 20, 2024 at 08:30. No observation well was monitored during the pumping test. Following completion of the pumping period the applicant recorded water levels until 09:19.

The static water level in the pumping well was reported as 329.6 feet on December 18, 2024. The pumping water level was 472 feet at the end of the pumping period and 358 feet at the end of the recovery period. Overall, there was about 142.4 feet of drawdown after 24 hours of pumping for a specific capacity of about 2.46 gallons per minute per foot of drawdown (“gpm/ft”).

We used the Cooper-Jacob (Cooper and Jacob, 1946) method to determine aquifer transmissivity using the pumping test data. The evaluation indicated a local transmissivity value of about 7,000 gallons per day per foot (“gpd/ft”). The pumping test results are a reasonable estimate of the local hydraulic conditions. The pumping well data did not indicate any positive or negative flow barriers within the area of influence during the pumping period.

We compared the calculated local aquifer properties to the values in the Clearwater Groundwater Management Model (“CGMM”). For the Lower Trinity layer, the CGMM has a transmissivity of 17,000 gpd/ft and a storage coefficient of  $4.7 \times 10^{-4}$  at the well location (Keester and others, 2023). The CGMM transmissivity value is higher than the pumping test results indicate for the Lower Trinity which may be a reflection of the formation being about 40 feet thinner than predicted using the CUWCD virtual bore.

## Regional Drawdown

Based on data collected during the pumping test, the depth to water in the Lower Trinity is currently about 330 feet below ground level. Based on monitoring well M-13-007G the Lower Trinity water level has been declining by about 4 feet per year since 2014 (Figure 1). Based on the top of the screen at 1,065 feet below ground level, there is currently more than 700 feet of water above the top of the screen with about 40 feet of regional water level decline per decade.

The adopted desired future condition (“DFC”) for the Lower Trinity Aquifer is 375 feet of average drawdown across the District. For evaluation of compliance with the adopted DFC the District considers the average annual decline over the 71-year DFC period or 5.28 feet per year of average water level decline. Based on CUWCD’s monitoring well data and aquifer analysis tool (Keester and Pedrazas, 2020), the current average and median trend in measured water levels is 4.7 and 4.5 feet per year of decline, respectively. Within the Belton Lake Management Zone, the average decline trend is 5.7 feet per year with a median value of 5.8 feet per year based on four CUWCD monitoring wells.

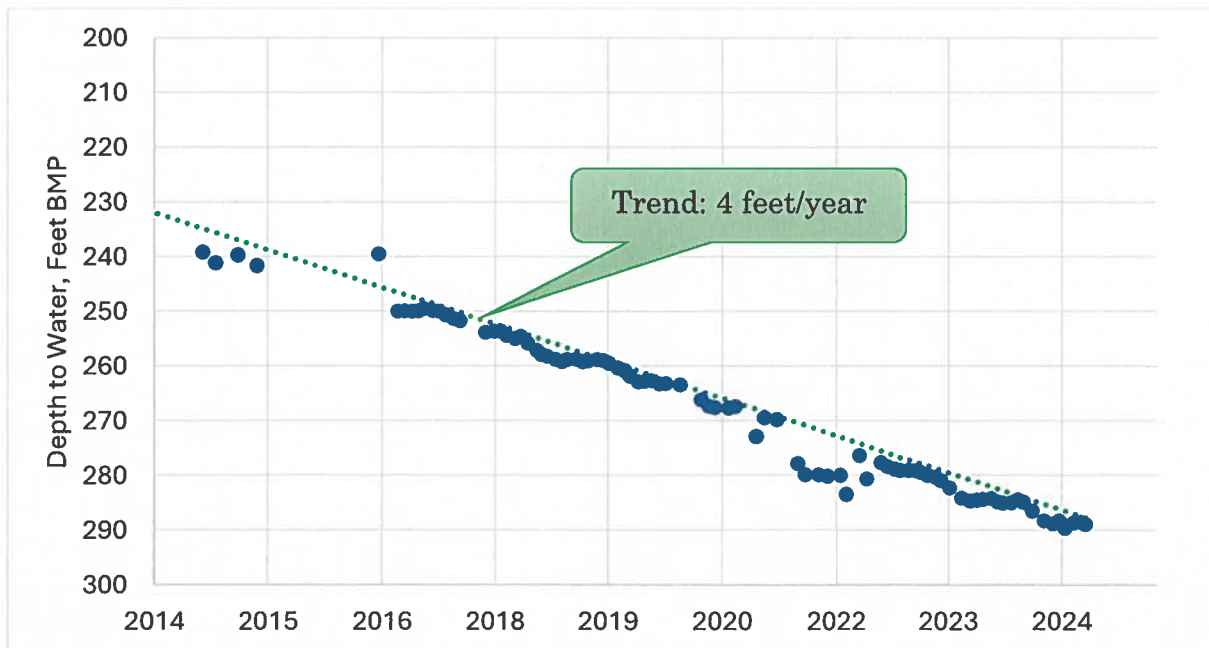


Figure 1. Lower Trinity CUWCD monitoring well M-13-007G. The well location is shown in Figure 2.

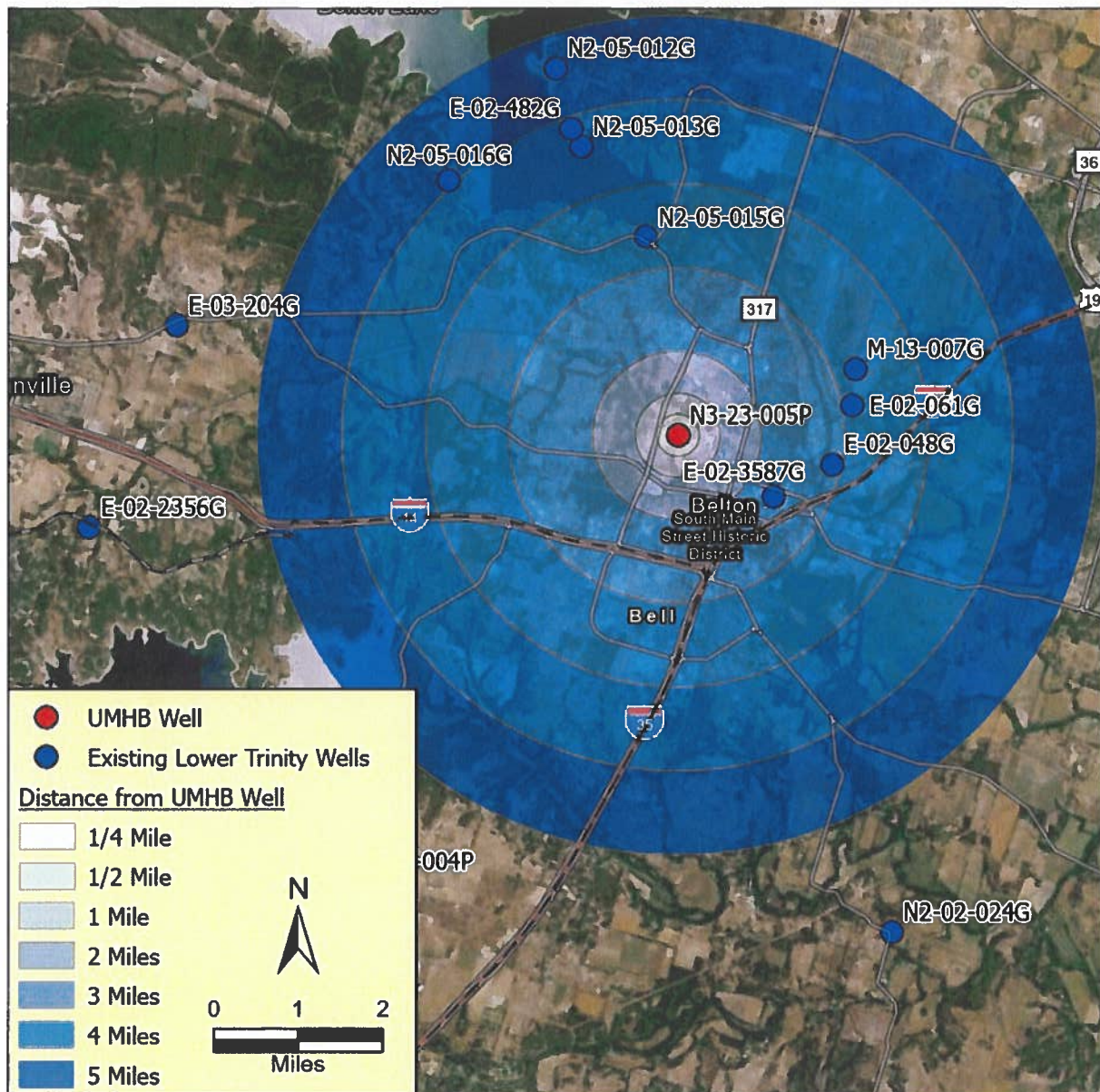
## Projected Effect on Existing Wells

We estimated the potential effects of the proposed permit on local water levels in the Lower Trinity Aquifer using the Theis (1935) equation and the CGMM. For the Theis equation, we used a transmissivity value of 7,000 gpd/ft based on the results of the pumping test. For the aquifer storativity value, we used the value of  $4.7 \times 10^{-4}$  from the CGMM.

The Theis equation relates water level decline (that is, drawdown) to the pumping rate of a well and properties of the aquifer. While the equation does not account for aquifer conditions which may affect the calculation of long-term water level declines (for example: aquifer recharge, faulting, or changes in aquifer structure), it does provide a very good, reliable, and straightforward method for estimating relatively short-term drawdown in and near a well due to pumping. To assess the potential effects from the proposed production, the equation uses values representative of the pumping test results. We used these values to assess the potential drawdown at the UMHB well and at existing Lower Trinity wells located within five miles of the well (Figure 2).

Table 1 presents the calculated drawdown at the proposed permit and nearby wells completed in the same aquifer. For 1-Day Drawdown, we applied the proposed instantaneous pumping rate for a period of 24 hours. For 30-Day Drawdown, we assumed peak pumping during the summer of about 15 percent more than the average monthly amount (that is, the proposed annual production rate divided by 12 then multiplied by 1.15). For 1-Year Drawdown, we used the proposed annual production amount.

The predicted drawdown presented in Table 1 is based on our current understanding of the aquifer hydraulic properties and simulated production from the well. The predicted drawdown values presented do not include the effects from other wells pumping near the well. Predicted drawdown of one foot or less is considered negligible for analysis purposes due to inherent uncertainty in the aquifer hydraulic characteristics, modeling limitations, and limited effect the drawdown would have on existing groundwater users.



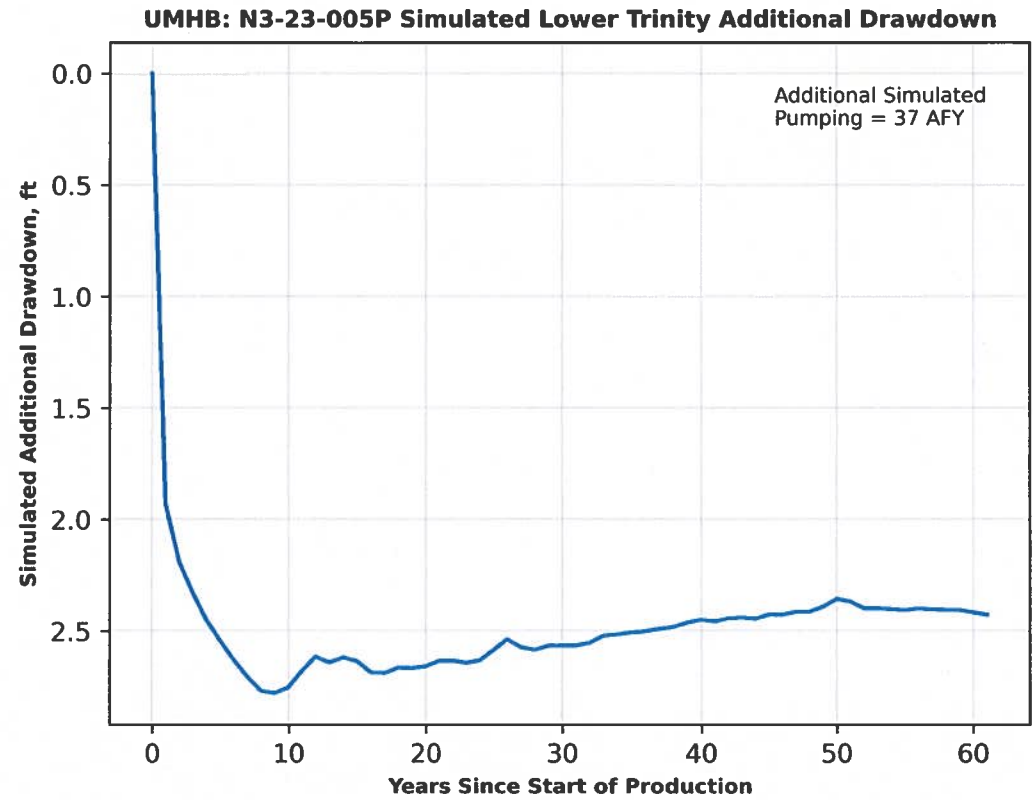
**Figure 2.** The UMHB well and existing CUWCD active Lower Trinity wells.

**Table 1. Calculated drawdown at the UMHB and nearby Lower Trinity wells based on an instantaneous production of 270 gallons per minute and annual production rate of 37.1 acre-feet.**

CUWCD Well ID	Distance from Proposed Well (miles)*	1-Day Drawdown (feet)	30-Day Drawdown (feet)	1-Year Drawdown (feet)
<b>N3-23-005P UMHB Well</b>	—	68	24	8
E-02-3587G	1.4	<i>Negligible</i>	<i>Negligible</i>	<i>Negligible</i>
E-02-048G	1.9	<i>Negligible</i>	<i>Negligible</i>	<i>Negligible</i>
E-02-061G	2.1	<i>Negligible</i>	<i>Negligible</i>	<i>Negligible</i>
M-13-007G	2.3	<i>Negligible</i>	<i>Negligible</i>	<i>Negligible</i>
N2-05-015G	2.4	<i>Negligible</i>	<i>Negligible</i>	<i>Negligible</i>
N2-05-013G	3.6	<i>Negligible</i>	<i>Negligible</i>	<i>Negligible</i>
E-02-482G	3.9	<i>Negligible</i>	<i>Negligible</i>	<i>Negligible</i>
N2-05-016G	4.1	<i>Negligible</i>	<i>Negligible</i>	<i>Negligible</i>
N2-05-012G	4.6	<i>Negligible</i>	<i>Negligible</i>	<i>Negligible</i>

\*distance calculated from coordinates for the well as stored in the CUWCD database and are not necessarily the exact distance from the pumping well.

To reduce our uncertainty in the results, we also conducted a simulation with the CGMM. As shown in Figure 2, we anticipate less than three feet of additional long-term drawdown at the UMHB well. However, the CGMM may be under predicting the additional drawdown due to the model transmissivity being greater than the pumping test results. Nonetheless, based on the Theis model and CGMM results we anticipate the additional production will cause less than 10 feet of additional drawdown at the well site.



**Figure 3.** CGMM simulated additional drawdown at the UMHB well due to the proposed pumping.

## Conclusions

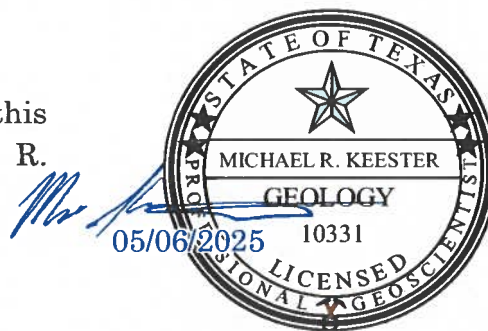
The applicant originally applied for 64.4 acre-feet per year of production from the Lower Trinity Aquifer but reduced the request to 37.1 acre-feet per year based on projected demand. The information provided in the well completion report indicates the well can produce more than the requested 270 gpm.

Measured water levels in the area suggest water level decline of 4 feet per year or more. The adopted DFC for Lower Trinity Aquifer in the District is 375 feet of average drawdown over a 71-year period which is equivalent to about 5.28 feet per year. Within the Belton Lake Management Zone the median water level decline is about 4.5 feet per year based on four CUWCD monitoring wells within the management zone.

Based on the modeling results, Lower Trinity wells within 1 mile are estimated to experience less than one foot of additional drawdown from the annual proposed production. The additional drawdown does not include regional water level declines. Rather, the drawdown is in addition to any water level declines which may occur. Additional water-level monitoring will aid in assessing the long-term effects of cumulative groundwater production in the area and in informing local users of the groundwater availability.

## Geoscientist Seal

The signature and seal appearing on this document was authorized by Michael R. Keester, P.G. on May 6, 2025.



# UMHB Application



April 8, 2025

Clearwater Underground Water Conservation District (CUWCD)  
c/o Mr. Dirk Aaron, General Manager  
700 Kennedy Court  
Belton, Texas 76513

To Whom It May Concern:

The purpose of this letter is to amend our operating permit and to address your response to an Operating Permit Application from the University of Mary Hardin-Baylor (UMHB), wherein you requested UMHB “provide more clarification on the stated needs assessment of the groundwater production and account for the discrepancies with the District’s calculations when submitting the final operating permit application.” Of note, CUWCD’s consultant, R.W. Harden & Associates, estimated 11,421,963 gallons of water per year of usage. Ultimately, the following information provides data to amend projected water usage from UMHB permit application’s 64.4 acre-feet to 37.1 acre-feet.

The 14.5 acres of irrigated turfgrass at UMHB’s “The Mac” practice golf course were predicted to use 20,872,481 gallons per year by Larry Rodgers Design. This estimate was based on a “grow-in” situation. Now that the turf is established, the estimated water needs have been reduced to 12,090,976 gallons, based on actual 2024 water usage of 10,991,796 gallons and adding a 10% buffer, which accounts for differing weather conditions. Irrigation for tees, fairways, and roughs are set to replace 60-70% of evapotranspiration, which is measured by an onsite weather station integrated into the irrigation control. For optimum health, a United States Golf Association specification-built putting green requires more water than turf grown on native soil due to a high infiltration rate and limited holding capacity; therefore, they are irrigated based on moisture sensor data and observation by trained turfgrass professionals.

The attached spreadsheet shows that in the months of April and May, 2024, when higher than typical rainfall was received, UMHB needed to increase irrigation to establish the new sod because it was planted in late 2023; accordingly, there was little time to build a sufficient root system prior to going dormant for the winter. Established turf will require far less water in general. The spreadsheet also shows data from January through March of 2025. January had a higher usage than the prior “grow-in” year, but that was due to two hard freeze events that put irrigation infrastructure at risk to freeze damage; therefore, more water was applied to keep water moving in the system and to prevent desiccation and turf loss during dry, windy, and cold weather events. As stated earlier, irrigation demands are predicted to be roughly 12,090,976 gallons per year, with peak usage in July and August, as these are generally the hottest and driest months in Central Texas.

Of note, due to higher stresses than a typical Bermuda grass lawn, such as lower mowing heights, higher traffic, abiotic damage (such as divot openings), and substantial mechanical cultivation, the water requirement for golf turf is generally higher than for home lawns. The injection of a soil conditioner into the irrigation system assists by keeping the soil flocculated and aiding in water movement through the soil profile. After testing the water quality of the irrigation well, some issues were noted and discussed with

**CAMPUS PLANNING & SUPPORT SERVICES**  
254.295.4524 • 254.295.8642  
UMHB Box 8441 • 900 College Street • Belton, Texas 76513  
umhb.edu

other industry professionals. The Sodium Adsorption Ratio (SAR) of this water was outside of the optimal range, with sodium (Na) levels being extremely high compared to levels of calcium (Ca) and magnesium (Mg). Also noted was a high level of boron (B). To effectively irrigate golf course turf and to keep manageable levels of sodium and boron in both the soil and the plant, UMHB will be injecting a product consisting of UAN 32-0-0 liquid nitrogen fertilizer solution, humic acid, and a soil penetrant. The humic acid will bind to the sodium and the penetrant will aid in pushing the sodium through to lower levels of the soil profile and out of the rooting area, thereby creating less of an issue for optimal turfgrass conditioning. Gypsum applications will add extra calcium to the soil to bind with the sodium, also assisting in flushing the sodium. Soil and tissue testing will aid in timing applications of gypsum or any other products to manage levels of nutrients within the soil and the plant. Water tests will be performed multiple times throughout the year to assess changes in water quality so that mitigation procedures can be fine-tuned to the actual water quality present.

Should you have any questions, please feel free to contact Matthew George, the UMHB Golf Superintendent, at (254) 295-5026/mgeorge@umhb.edu, or me at (254) 295-8620/mee@umhb.edu. Thank you for your consideration.

Sincerely



Marvin T. Ee  
Vice President for Campus Planning and Support Services

Attachment:  
UMHB Water Use Clarification Spreadsheet

Month	Gallons Used	ET for month	Inches of Rainfall	Inches of Irrigation Applied	Effective Irrigation 85% Application Efficiency
Jan-24	102,970	2.13	3.68	0.26	0.22
Feb-24	198,540	2.62	1.49	0.5	0.43
Mar-24	456,511	4.03	1.31	1.16	0.99
Apr-24	614,576	3.8589	10.29	1.56	1.33
May-24	196,266	4.0939	11.47	0.5	0.43
Jun-24	1,117,344	5.8496	5.6	2.84	2.41
Jul-24	2,216,963	5.8996	2.54	5.63	4.79
Aug-24	2,359,450	6.0678	2.65	5.99	5.09
Sep-24	1,491,344	4.9665	1.08	3.79	3.22
Oct-24	1,463,006	5.0621	0.1	3.72	3.16
Nov-24	605,430	3.1059	2.6	1.54	1.31
Dec-24	169,396	2.3738	1.62	0.43	0.37
<u>2024 Total</u>	10,991,796				
Jan-25	433,476	2.2679	3.19	1.1	0.94
Feb-25	135,099	2.5612	0.6	0.34	0.29
Mar-25	422,222	5.201	2.14	1.07	0.91

NOTE 1: Weather Station Installed March 2024.

NOTE 2: ET data pulled from Texas ET Network Waco station.

NOTE 3: Rainfall data pulled from Weather Underground Killeen-Fort Hood Regional Airport weather station.

## Application for Non-Exempt Well Classification 3

<p>Check one of the following:</p> <p><input type="radio"/> COMBINATION PERMIT</p> <p><input type="radio"/> DRILLING PERMIT</p> <p><input checked="" type="radio"/> OPERATING PERMIT</p> <p><input type="radio"/> PERMIT AMENDMENT</p>	<p>Answer the following:</p> <table style="width: 100%;"> <tr> <td style="width: 70%;">Is this for a New Well?</td> <td style="width: 15%;"><input checked="" type="radio"/> Yes</td> <td style="width: 15%;"><input type="radio"/> No</td> </tr> <tr> <td>Is this for a Replacement Well?</td> <td><input type="radio"/> Yes</td> <td><input checked="" type="radio"/> No</td> </tr> <tr> <td>Do you plan to Export Water Outside District?</td> <td><input type="radio"/> Yes</td> <td><input checked="" type="radio"/> No</td> </tr> <tr> <td>Are you modifying a Drilling Permit?</td> <td><input type="radio"/> Yes</td> <td><input checked="" type="radio"/> No</td> </tr> <tr> <td>Are you modifying an Operating Permit?</td> <td><input type="radio"/> Yes</td> <td><input checked="" type="radio"/> No</td> </tr> </table>	Is this for a New Well?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	Is this for a Replacement Well?	<input type="radio"/> Yes	<input checked="" type="radio"/> No	Do you plan to Export Water Outside District?	<input type="radio"/> Yes	<input checked="" type="radio"/> No	Are you modifying a Drilling Permit?	<input type="radio"/> Yes	<input checked="" type="radio"/> No	Are you modifying an Operating Permit?	<input type="radio"/> Yes	<input checked="" type="radio"/> No
Is this for a New Well?	<input checked="" type="radio"/> Yes	<input type="radio"/> No														
Is this for a Replacement Well?	<input type="radio"/> Yes	<input checked="" type="radio"/> No														
Do you plan to Export Water Outside District?	<input type="radio"/> Yes	<input checked="" type="radio"/> No														
Are you modifying a Drilling Permit?	<input type="radio"/> Yes	<input checked="" type="radio"/> No														
Are you modifying an Operating Permit?	<input type="radio"/> Yes	<input checked="" type="radio"/> No														

### 1. Owner Information

Well Owner: Univ of Mary Hardin-Baylor Email: stheodore@umhb.edu Telephone: 254-295-4519  
 Address (Street/P.O. Box, City, State, ZIP): 900 College St. Belton, Texas, 76513  
 Contact Person (if other than owner): Dr. Steve Theodore, SVP and COO Telephone: 254-295-4519  
 If ownership of Well has changed, name the previous owner: \_\_\_\_\_ State Well #: \_\_\_\_\_

### 2. Property Location & Proposed Well Location

Owner of Property (if different from Well Owner): University of Mary Hardin-Baylor  
 The well is located in Management Zone: Belton Lake  
 Acreage: 28.12 Bell CAD Property ID #: 484634 Latitude: 31.069169 Longitude: -97.472689

### 3. Well Description (Submit if State of Texas Well Report is Available)

- a. Proposed use of well and estimated amount of water, in acre-feet, to be used for each purpose:
- |                         |                                      |                                |
|-------------------------|--------------------------------------|--------------------------------|
| _____ *Domestic;        | _____ Livestock/Poultry; <u>64.4</u> | _____ Agricultural/Irrigation; |
| _____ ** Public Supply; | _____ Industrial                     | _____ Other                    |
- \*Total number of houses to be serviced by the well \_\_\_\_\_.
- \*\* Applicant is required to give notice to TCEQ to obtain or modify a Certificate of Convenience and Necessity to provide water or wastewater service with water obtained pursuant to the requested permit.
- b. Estimated distance, in feet, from the nearest:
- |  |                            |                                   |
|--|----------------------------|-----------------------------------|
| _____ 212 N / S Property Line;   | _____ E / W Property Line; | _____ Existing Septic Leach Field |
| _____ River, Stream, or Lake;  | _____ Existing Water Well; | _____ Livestock Enclosure;        |
| _____ Other Source of Contamination (cemetery, pesticide mixing/loading, petroleum storage tank, etc.) |                            |                                   |
- c. Estimated Rate of Withdrawal (GPM): 270
- d. Is the Property subject to flooding? No
- e. Is there another well on the property? No ; If YES, how many wells? \_\_\_\_\_
- f. Is the well part of a multi-well aggregate system? No  
 If YES, list the State or District Well Numbers: \_\_\_\_\_

### REQUIRED BY LAW: Pump Installer / Well Driller Information

Name: <u>Joshua Buse, Hydro Resources</u>	Street Address: <u>11536 Old Lockhart Rd</u>
TDLR Pump Installer License #: <u>61375</u>	City, State, ZIP: <u>Creedmoor, Texas, 78610</u>
TDLR Well Driller License #: <u>61375</u>	Phone: <u>512-858-4375</u> Fax: _____
Email: <u>jbuse@hydroresources.com</u>	

Name of Consultant preparing Application (if applicable): Hunter King  
 Con. Phone: 512-851-8740 Con. Fax: \_\_\_\_\_ Con. Email: hking@collierconsulting.com

#### 4. Completion Information

Provide the following information to the extent known and available at the time of application:

**Proposed Total Depth of Well:** 1165 ft;

Borehole Diameter (Dia): 13.75 inches (in) from 0 to 1165;

Dia (2) \_\_\_\_\_ in from \_\_\_\_\_ to \_\_\_\_\_;

Casing Material: Carbon Steel; Inside Diameter (ID): \_\_\_\_\_ in;

Screen Type: Stainless Steel; Screen Dia. 10 in from 1065 to 1155; # of Packers: \_\_\_\_\_

**Pump Type:** Submersible; **Power:** Electric; **Horsepower Rating:** 75;

**Pump Depth:** 567; **Column Pipe ID:** 4 in.

**Date Completed:** N/A

**Proposed Water Bearing Formation:** Lower Trinity; **Management Zone:** Belton Lake

#### 5. Operating Permit

Number of contiguous acres owned or leased on which water is to be produced: 28.12 acres

Total annual production requested with this operating permit: 64.4 acre-feet

If exporting water, what is the annual volume requested for export out of the District: \_\_\_\_\_ Gallons

What is the annual volume requested for export as a % of total pumpage: \_\_\_\_\_ %

If modifying an operating permit, what is the current, permitted annual production: \_\_\_\_\_ ac-ft

What is the requested amount of annual production: \_\_\_\_\_ ac-ft

#### 6. Attachments

Include a statement/documentation explaining your requested production.

If amending an existing permit, explain the requested amendment and the reason for the amendment in a signed and dated letter, attached to this application.

If requesting operating permits or permit renewals for multiple wells, please attach a separate sheet with the information requested in Section 5 for each well.

If applicant plans to export water outside the District, address the following in an attachment and provide documents relevant to these issues:

- The availability of water in the District and in the proposed receiving area during the period requested
- The projected effect of the proposed export on aquifer conditions, depletion, subsidence, or effects on existing permit holders or other groundwater users within the District
- How the proposed export is consistent with the approved regional water plan and certified District Management Plan

For more attachments that may be needed, please see the *Full Summary of the Permit Application Process* document.

#### 7. Certification

*I hereby certify that the information contained herein is true and correct to the best of my knowledge and belief. I certify to abide by the terms of the District Rules, the District Management Plan, and orders of the Board of Directors. I agree to comply with all District well plugging and capping guidelines as stated in the District Rules.*

Typed Name of the Owner or Designee: Dr. Steve Theodore

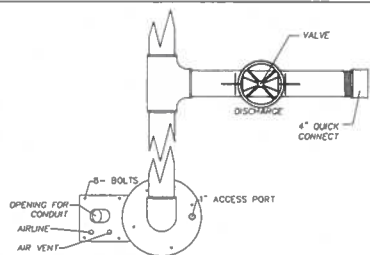
Signature: Steve Theodore

Digitally signed by Steve Theodore

Date: 2025.03.25 14:17:50 -05'00'

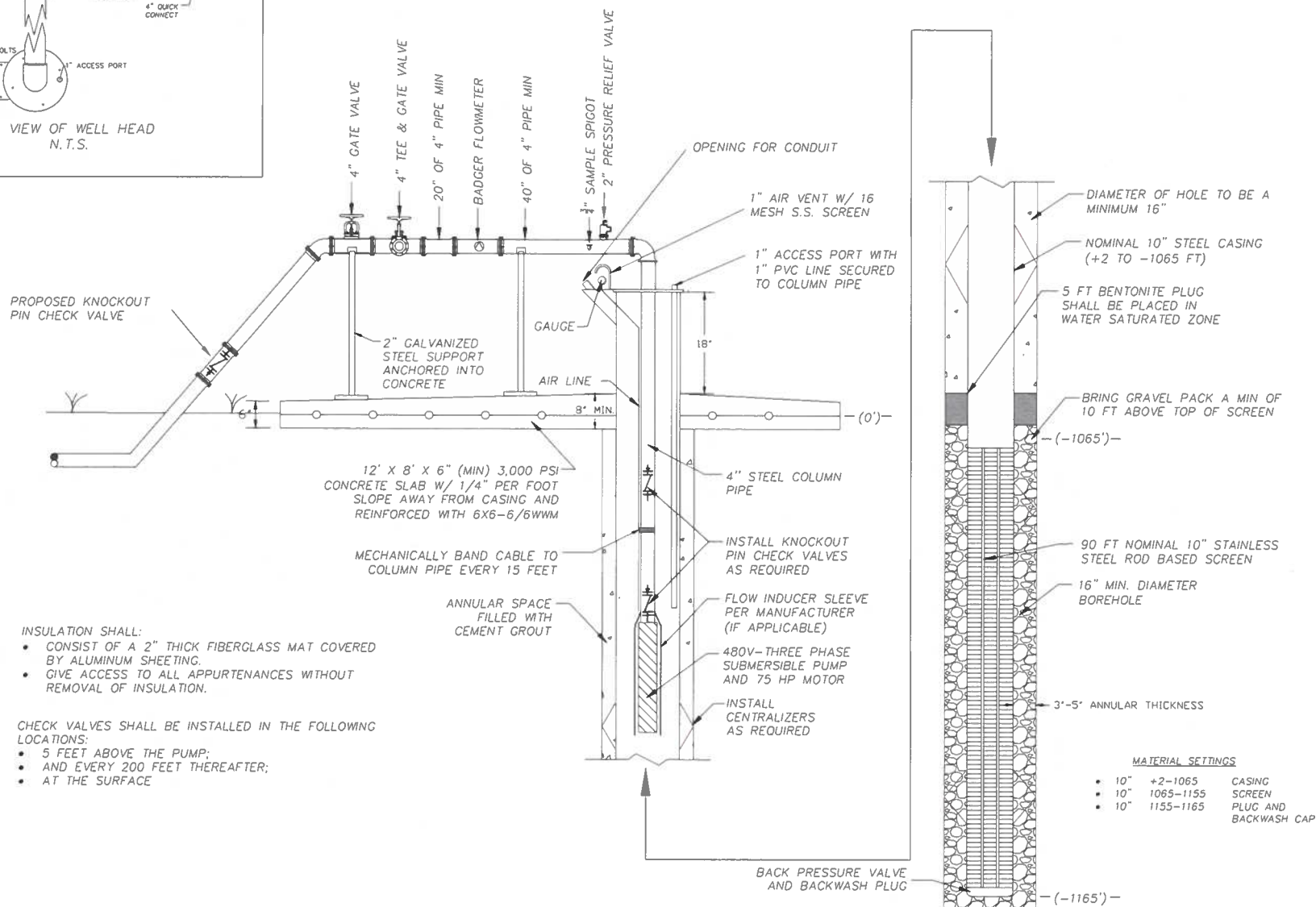
Date: 3/25/25

# AS-BUILT WELL DIAGRAM



TOP VIEW OF WELL HEAD  
N.T.S.

NOT TO SCALE



INSULATION SHALL:

- CONSIST OF A 2\" THICK FIBERGLASS MAT COVERED BY ALUMINUM SHEETING.
- GIVE ACCESS TO ALL APPURTENANCES WITHOUT REMOVAL OF INSULATION.

CHECK VALVES SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS:

- 5 FEET ABOVE THE PUMP;
- AND EVERY 200 FEET THEREAFTER;
- AT THE SURFACE

NO.	REVISION	DATE

ROUND ROCK, TX  
(512) 851-8740



Hydrologists • Geologists • Engineers  
F-8170

UNIVERSITY OF MARY HARDIN-BAYLOR  
IRRIGATION WELL 1  
BELL COUNTY  
TEXAS

FILE NAME	WELL AS-BUILT
DESIGNED	H. KING
DRAWN	R. CREDEUR
CHECKED	H. KING
DATE	02/06/2025

# LITHOLOGY LOG

## UMHB Irrigation Well Lithology

Top Depth (ft)	Bottom Depth (ft)	Description	Notes
40	50	white limestone, unconsolidated, fine to med grain, well sorted	no visible fossil fragments, transported grains of limestone; Edwards Formation
50	60	light gray silty limestone, fine to med grain, well sorted, gray marl	marl is equivalent to calcareous clay; contact with Comanche Peak is gradational at 60 feet
60	70	gray silty limestone, fine grain, consolidated (cemented)	
70	80	light gray limestone (mudstone)	mudstone, wackestone, packstone, and grainstone from <b>Dunham (1962)</b> classification of limestones
80	90	light gray limestone (mudstone)	
90	100	light gray limestone (mudstone)	
100	110	light gray to cream silty limestone, consolidated	
110	120	light gray to cream silty limestone (mudstone), cemented with calcite	
120	130	light gray limestone (mudstone), some wackestone, some quartz silt (?), marl	fine grain fossil fragments, difficult to determine if silt sized particle are quartz
130	140	gray limestone (wackestone), fine grain, dark brown to black fossil fragments, gray marl	
140	150	mostly gray marl, some very fine-grain limestone (wackestone)	
150	160	mostly gray marl, some very fine-grain limestone (wackestone)	base of Comanche Peak at about 160 feet
160	170	light gray marl	every interval had a strong reaction to acid; start of Glen Rose Formation
170	180	dark gray clay; tan limestone	
180	190	light gray limestone, possible shell fragments; minor amounts of mud	
190	200	gray marl	
200	210	dark gray mudstone, some laminations; marl	
210	220	dark gray limestone; gray marl	
220	230	dark gray limestone; gray marl	

# UMHB Irrigation Well Lithology

230	240	gray to tan limestone	
240	250	gray to tan limestone	
250	260	dark gray mud; minor light gray limestone or marl	
260	270	gray limestone, crystalline; gray marl	
270	280	limestone, crystalline, shell fragments; marl	
280	290	gray to tan marl	
290	300	gray limestone; tan marl	
300	310	limestone, some crystalline, some grainstone?; dark gray mud	
310	320	tan marl; dark gray mud	
320	330	gray limestone	
330	340	gray limestone; some marl	
340	350	gray limestone; tan marl; minor dark gray clay	
350	360	silty tan marl; gray limestone, grainy	
360	370	dark gray limestone	
370	380	gray marl; minor dark gray limestone	
380	390	gray to tan marl	
390	400	gray to tan marl	
400	410	silty tan marl; limestone, crystalline	
410	420	tan marl; minor dark gray mudstone	
420	430	dark gray limestone; tan marl	
430	440	gray to tan marl, iron oxide spots	
440	450	light gray marl	

### UMHB Irrigation Well Lithology

450	460	light gray marl; minor dark gray mudstone	
460	470	gray limestone; light gray marl	
470	480	gray limestone; light gray marl	
480	490	dark gray limestone; light gray marl; light gray silty marl	
490	500	light gray silty marl	
500	510	dark gray mudstone; dark gray clay; gray marl	
510	520	gray marl; gray limestone;	
520	530	light gray clay with iron oxide spots; light gray marl; minor limestone	
530	540	silty to sandy (fine), gray clay; minor limestone or marl; minor iron oxide spots	
540	550	light gray limestone and marl	
550	560	light gray clay; light gray limestone; marl	
560	570	light gray, fine to med grain, partially cemented limestone (wackestone to packstone), gray marl	abundant black particles, could be fossil fragments or pieces of chert
570	580	light gray, med grain, partially cemented limestone (wackestone to packstone), gray marl	
580	590	light gray to cream limestone (packstone and grainstone), partially cemented, gray marl	grains resemble fossil particles that have been rounded and are fine to med grain, some possible quartz grains
590	600	light gray to cream limestone (packstone and grainstone), partially cemented, gray marl	grains resemble fossil particles that have been rounded and are fine to med grain, some possible quartz grains
600	610	light gray to cream limestone (packstone), gray marl	abundant chert fragments
610	620	light gray to cream limestone (wackestone), gray marl	chert fragments, black fossil fragments
620	630	light gray limestone (mudstone), abundant gray marl	
630	640	light gray limestone (packstone) to gray limestone (mudstone), light gray marl	brown to black fossil fragments with chert
640	650	light gray limestone (mudstone to packstone), gray marl	
650	660	light gray to cream limestone (packstone), gray marl	common fine grain black fragments (chert and/or fossils)

# UMHB Irrigation Well Lithology

660	670	gray limestone (packstone), gray marl	
670	680	gray limestone (mudstone) and gray marl, some packstone to grainstone	
680	690	light gray limestone (packstone), cement is white to cream colored	abundant light brown chert (?)
690	700	light gray limestone (mudstone to wackestone)	
700	710	gray limestone (mudstone)	abundant brown chert (?)
710	720	gray limestone (mudstone to wackestone), not well cemented, gray marl	
720	730	gray limestone (mudstone to wackestone), not well cemented, gray marl	
730	740	gray limestone (mudstone to wackestone), not well cemented, gray marl	
740	750	cream limestone (packstone)	abundant calcite crystals
750	760	gray limestone (mudstone)	
760	770	gray marl; light gray clay	
770	780	tan to gray, marl/limestone	
780	790	tan to gray, marl/limestone	
790	800	gray limestone; tan marl; light gray clay	
800	810	light gray clay; tan limestone	
810	820	tan clay; gray limestone; calcite crystals	
820	830	gray limestone; tan marl	
830	840	tan limestone and marl	
840	850	gray to tan limestone; minor clay	
850	860	silty, tan marl	
860	870	silty, tan marl; silt to fine sand; gray clay	

### UMHB Irrigation Well Lithology

870	880	sand, fine grained, subrounded to subangular, well sorted, mostly quartz	likely in Hensell Member of the Travis Peak Formation
880	890	sand, very fine, well sorted, subrounded	
890	900	sand, very fine to fine, subrounded	
900	910	fine sand; marl	near base of Hensell Member
910	920	black clay	near top of Pearsall Member
920	930	gray clay; gray marl	
930	940	gray to tan marl	
940	950	gray limestone and marl	
950	960	gray marl	
960	970	dark gray marl	
970	980	gray marl; gray clay	
980	990	gray calcareous siltstone, some clay	slight reaction to acid
990	1000	gray silty clay	slight reaction to acid
1000	1010	gray silty clay	slight reaction to acid
1010	1020	tan siltstone to very fine-grain sandstone, some gray calcareous siltstone	siltstone reacts slightly to acid, consolidated, very well rounded
1020	1030	tan siltstone to very fine-grain sandstone, some gray calcareous siltstone	siltstone reacts slightly to acid, consolidated, very well rounded
1030	1040	tan siltstone to very fine-grain sandstone, some gray calcareous siltstone, gray clay	siltstone reacts slightly to acid, consolidated, very well rounded
1040	1050	tan siltstone, very well rounded, gray calcareous siltstone, gray clay	
1050	1060	tan very fine-grain sandstone, moderately sorted, some grain siltstone	gray clay and marl with some; near top of Hosston Member

### UMHB Irrigation Well Lithology

1060	1070	light gray siltstone, moderately well sorted, cemented	
1070	1080	unconsolidated, well rounded, well sorted, fine grain sands	silica sand grains are mostly clear
1080	1090	unconsolidated, well rounded, well sorted, fine grain sands	some cemented sandstone
1090	1100	very fine grain, well sorted sandstone to siltstone, light gray, some black shale fragments	sandstone/siltstone is semi-consolidated
1100	1110	med to very coarse sand, clear to light tan, abundant fragments of black shale	
1110	1120	med to very coarse sand, clear to light tan, abundant fragments of black shale	some cementation
1120	1130	gray, very coarse grain sand, variety of grain types	grain types include feldspar, quartz, gray metamorphics
1130	1140	coarse grain, light gray sand to gravel (1/8" to 3/4" grain sizes)	this is the base of the Hosston formation; grain types include white and pink quartz, gray metamorphics, red and green shale
1140	1150	green clay with some scattered rock fragments	in Pennsylvanian age units below ~1,140
1150	1160	medium red clay with some scattered rock fragments	
1160	1170	red clay	
1170	1180	dark red clay	
1180	1190	dark gray clay	
1190	1200	dark gray clay with some loose quartz sand	
1200	1210	missing sample bag	
1210	1220	dark gray clay	

# GEOPHYSICAL LOG



Borehole: UMHB IRRIGATION WELL

Logs: GAMMA, RESISTIVITY, SP  
CALIPER

**Water Well Logging & Video Recording Services**

Geo Cam, Inc. 17118 Classen rd. San Antonio, TX 78247 877-495-9121

Project: UMHB IRRIGATION WELL

Date: 10/25/2024

Client: HYDRO RESOURCES

County: BELL

Location: N 31° 04' 10.9" W 97° 28' 21.2"

State: TX

BOREHOLE DATA

Drilling Contractor: HYDRO RESOURCES

Driller T.D. (ft) : 1220

Elevation: 560 FT (GPS)

Logger T.D. (ft) : 1231

Depth Ref: KB (GL+9.3FT)

Date Drilled: 10/25/2024

**BIT RECORD**

**CASING RECORD**

RUN	BIT SIZE (in)	FROM (ft)	TO (ft)	SIZE/WGT/THK	FROM (ft)	TO (ft)
1	12.25	49	TD	20"	GL	49
2						
3						

Drill Method: MUD ROTARY Weight:

Fluid Level (ft) : FULL

Hole Medium:

Mud Type: WBM

Time Since Circ: 2 HRS

Viscosity:

Rm: 4.5 OHMS at: 84

Deg F

GENERAL DATA

Logged by: M. RYAN

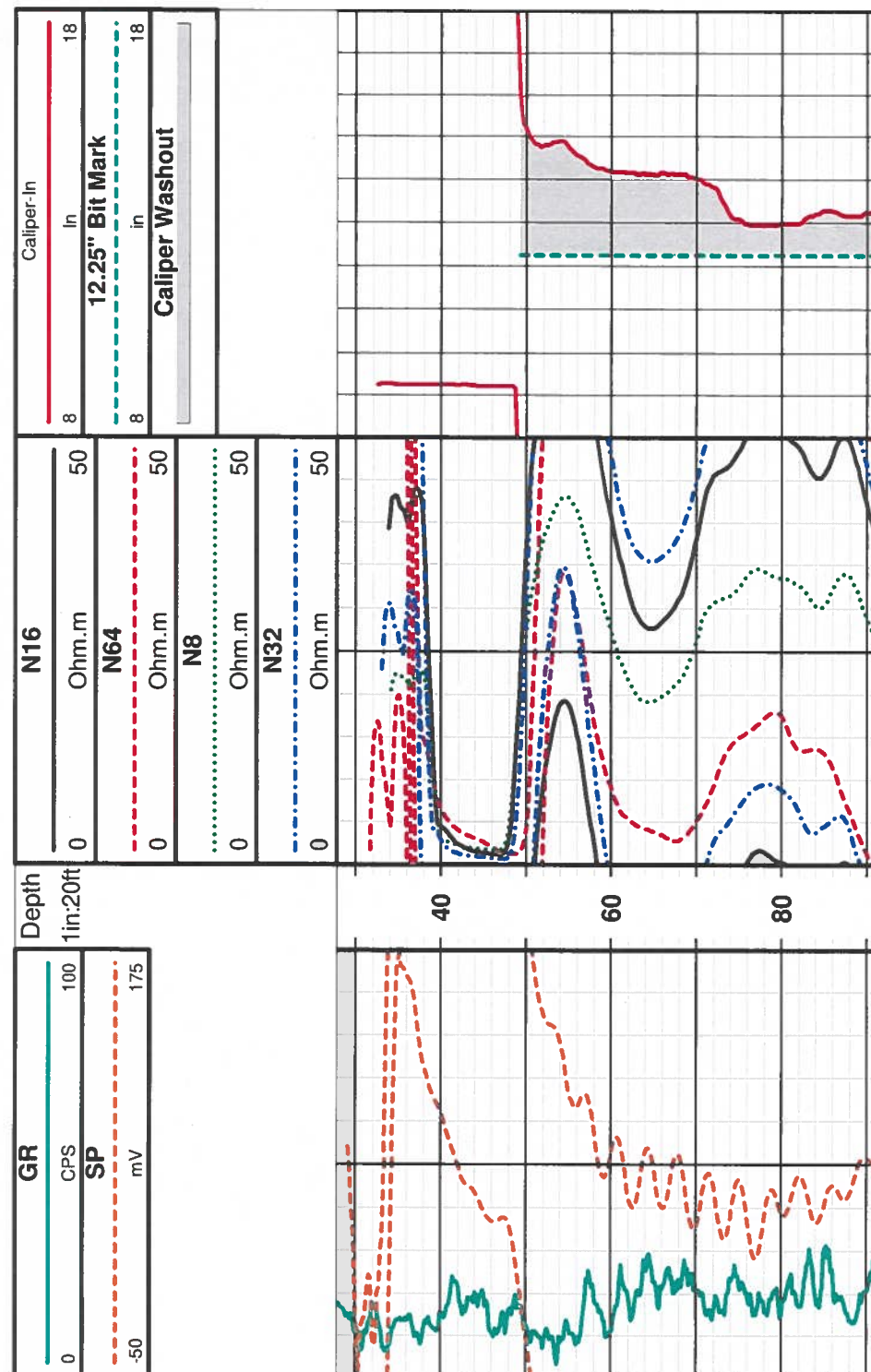
Unit/Truck: 09

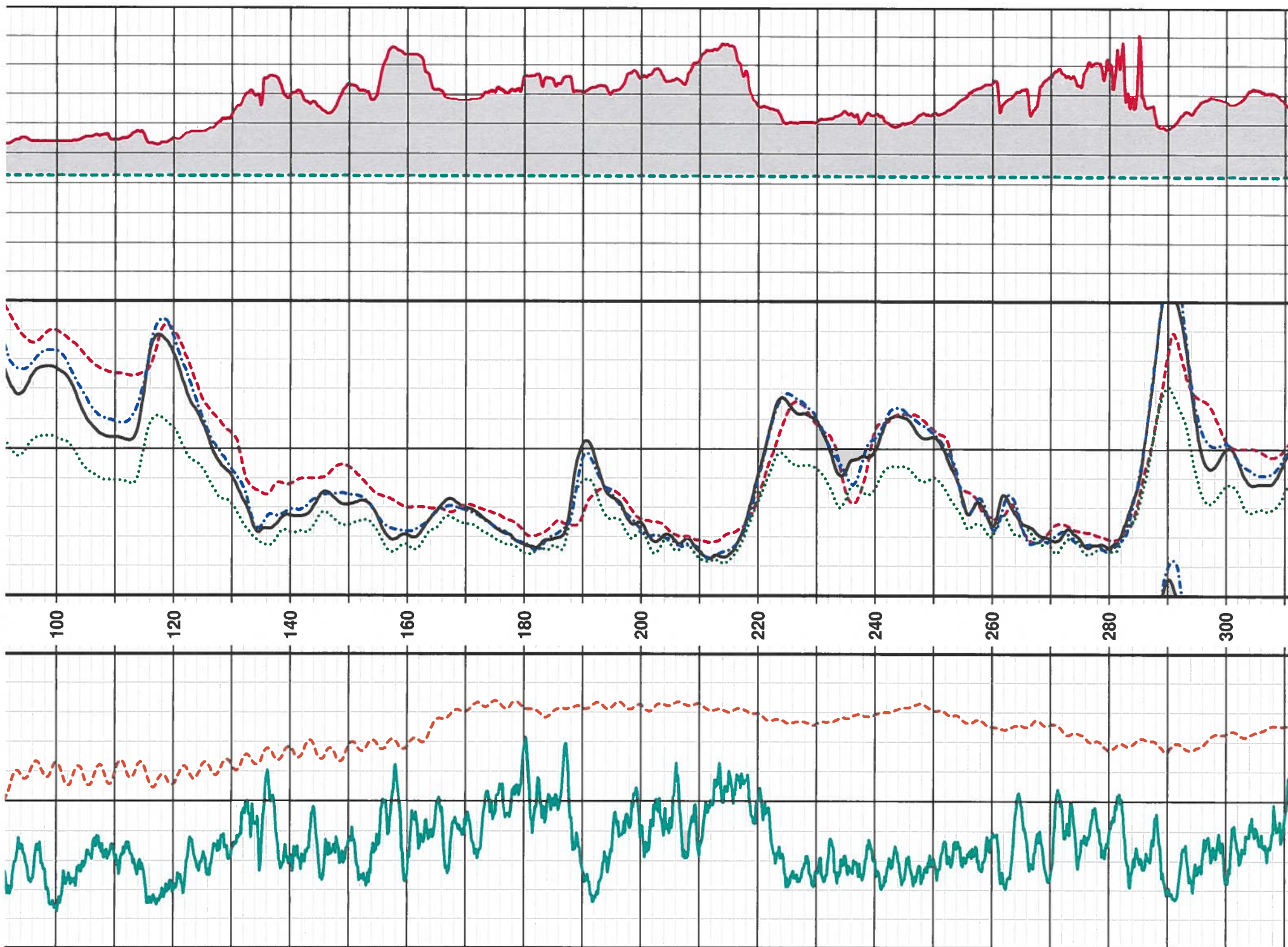
Witness: B. CROSS

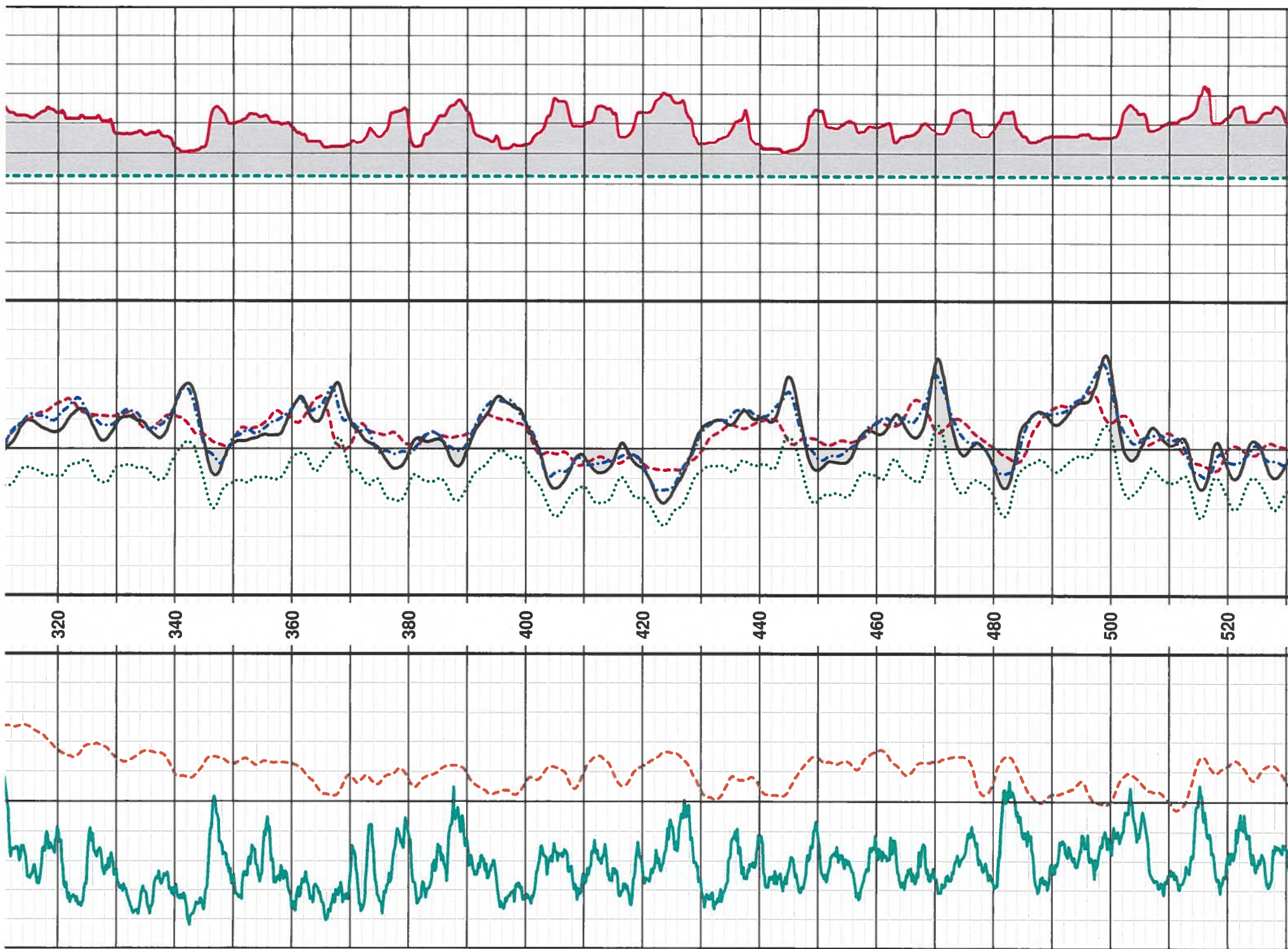
LOG TYPE	RUN NO	SPEED (ft/min)	FROM (ft)	TO (ft)	FT./ IN.
GAMMA	2	30	27.9	1220.9	20
RESISTIVITY, SP	2	30	34.1	1227.2	20
CALIPER	1	30	32.6	1229.4	20

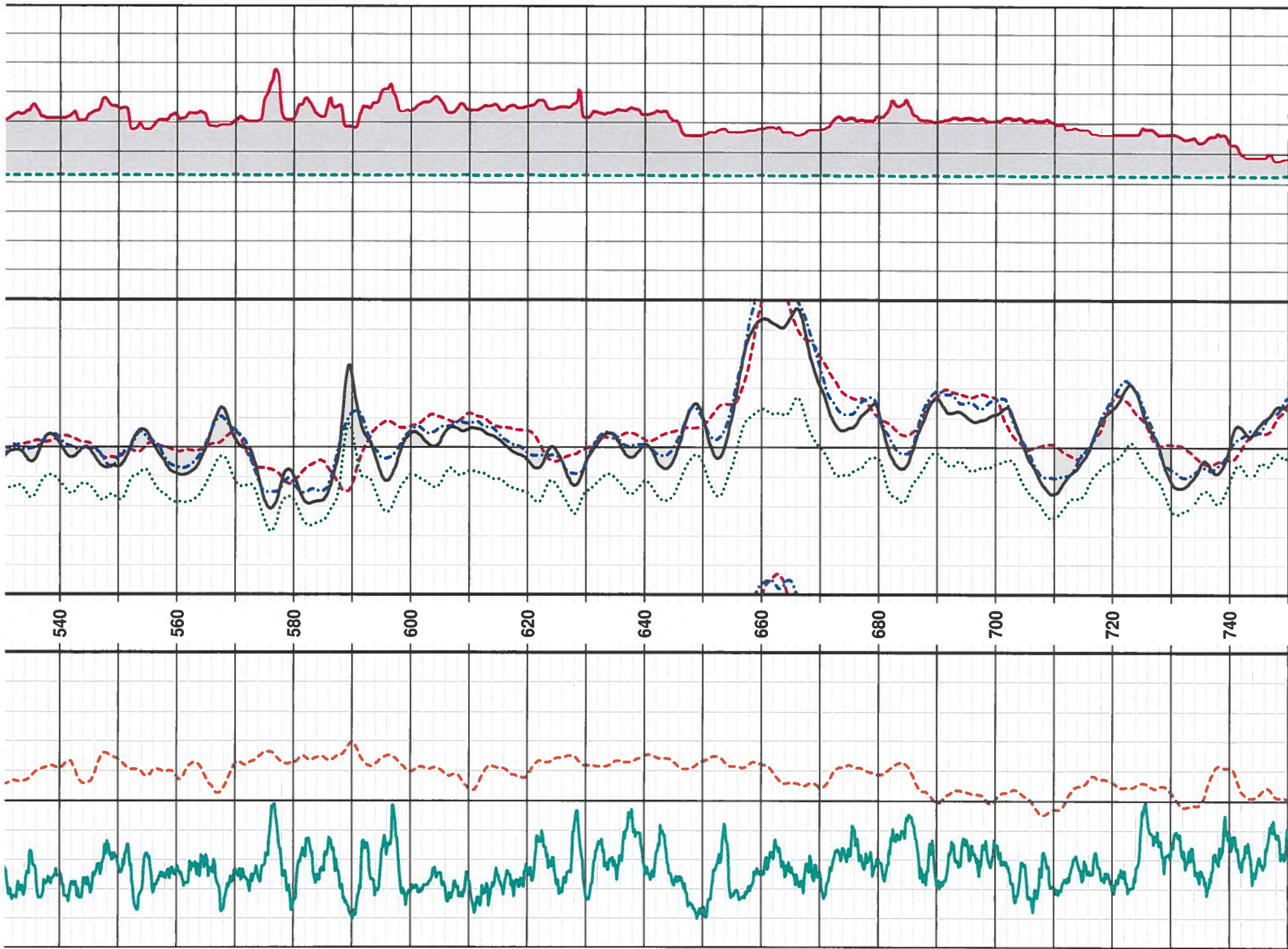
**Tool Serial No.** GAMMA (4998) RESISTIVITY (7165) CALIPER (5800)

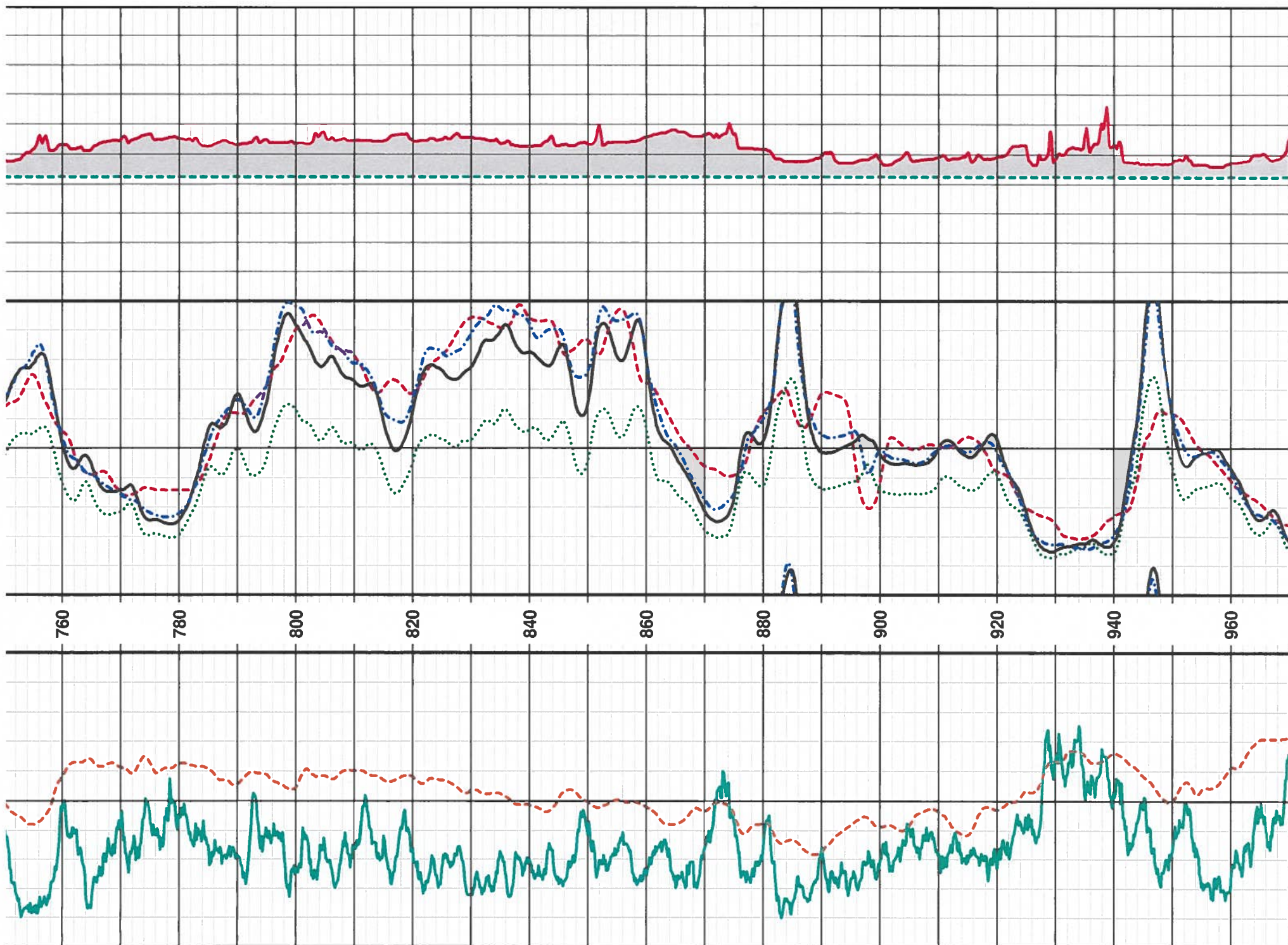
Comments: ALL MEASUREMENTS WERE TAKEN FROM KELLY BUSHING = ( 9.3 FT ABOVE GROUND LEVEL

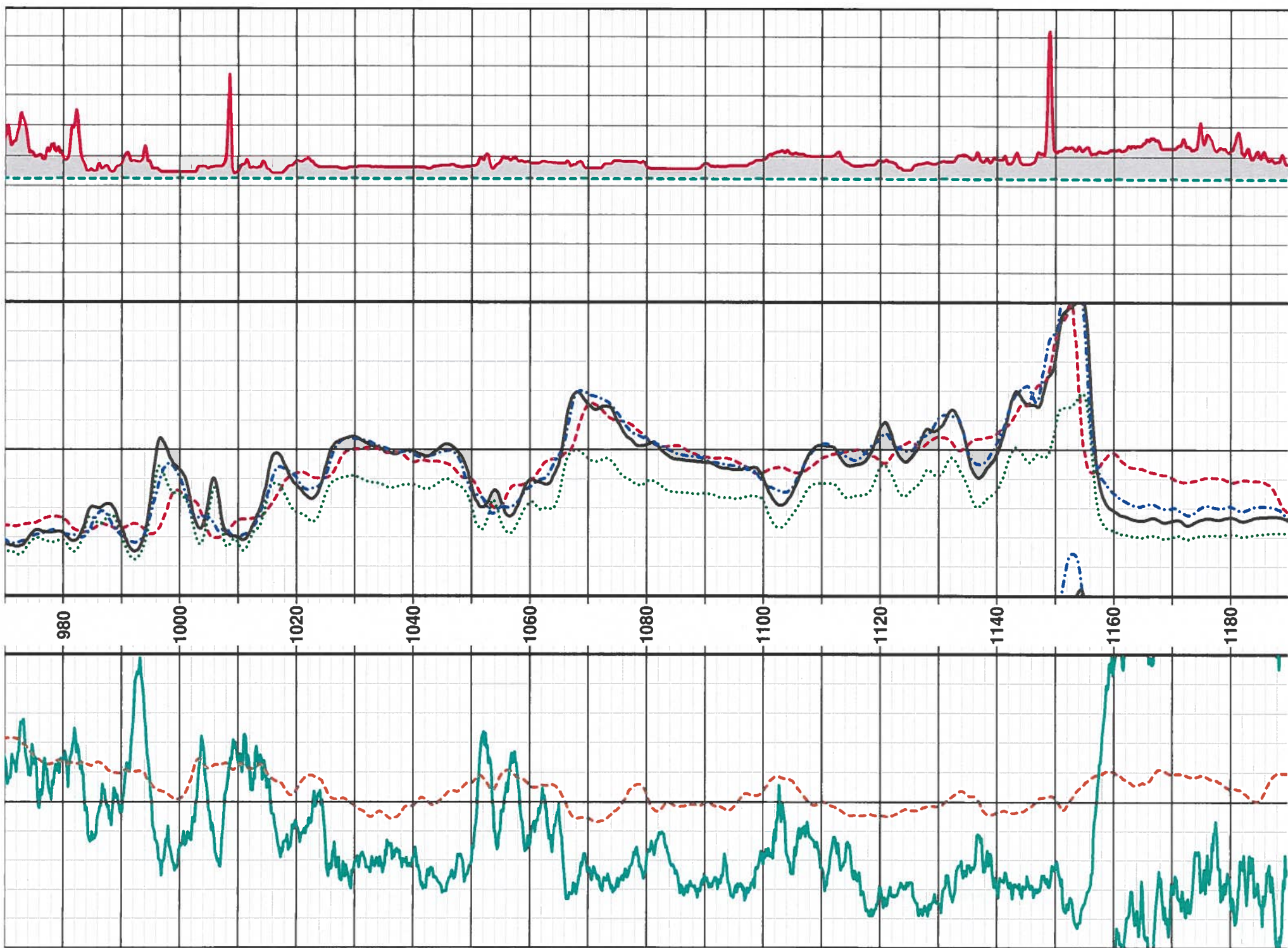


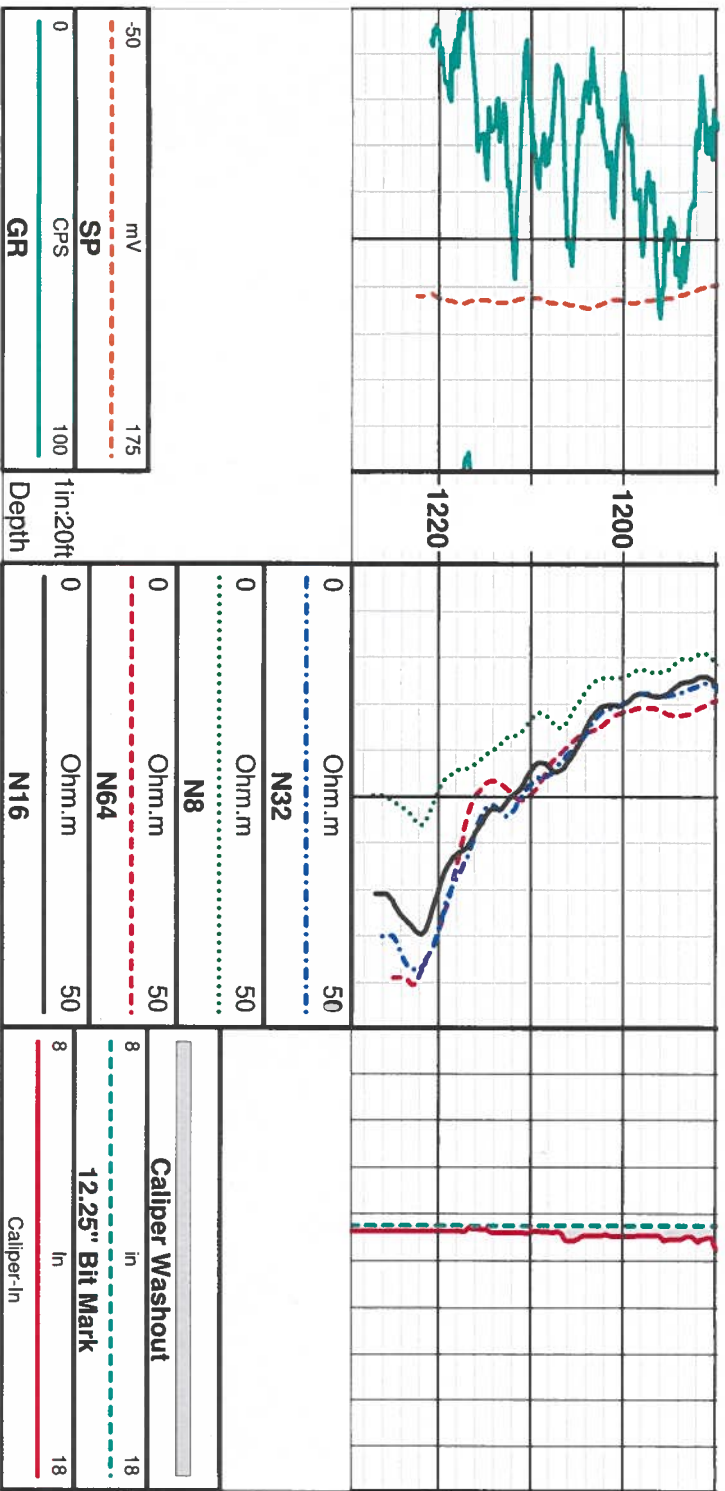












# Pump Specifications

Company: HYDRO RESOURCES  
Name: MHB  
Date: 02/04/2025



**Pump:**

Size: FW7LC (stages: 7)  
Type: Vertical Turbine  
Synch Speed: 3600 rpm  
Dia: 5.4375 in  
Curve: FT6207LC0  
Impeller Style: Enclosed

Dimensions:  
Suction: 6 in  
Discharge: 6 in  
Vertical Turbine:  
Eye Area: 6.44 in<sup>2</sup>  
Bowl Size: 7.13 in  
Max Lateral: 0.5 in  
Thrust K Factor: 3.5 lb/ft

**Fluid:**

Name: Water  
SG: 1  
Density: 62.4 lb/ft<sup>3</sup>  
Viscosity: 1.1 cP  
Temperature: 60 °F

Vapor Pressure: 0.256 psi a  
Atm Pressure: 14.7 psi a  
Margin Ratio: 1

**Pump Limits:**

Temperature: ---  
Wkg Pressure: 415 psi g  
Sphere Size: 0.43 in

**Motor:**

Standard: NEMA  
Enclosure: TEFC  
Frame: 365TS  
Sizing Criteria: Max Power on Design Curve

Size: 75 hp  
Speed: 3600 rpm

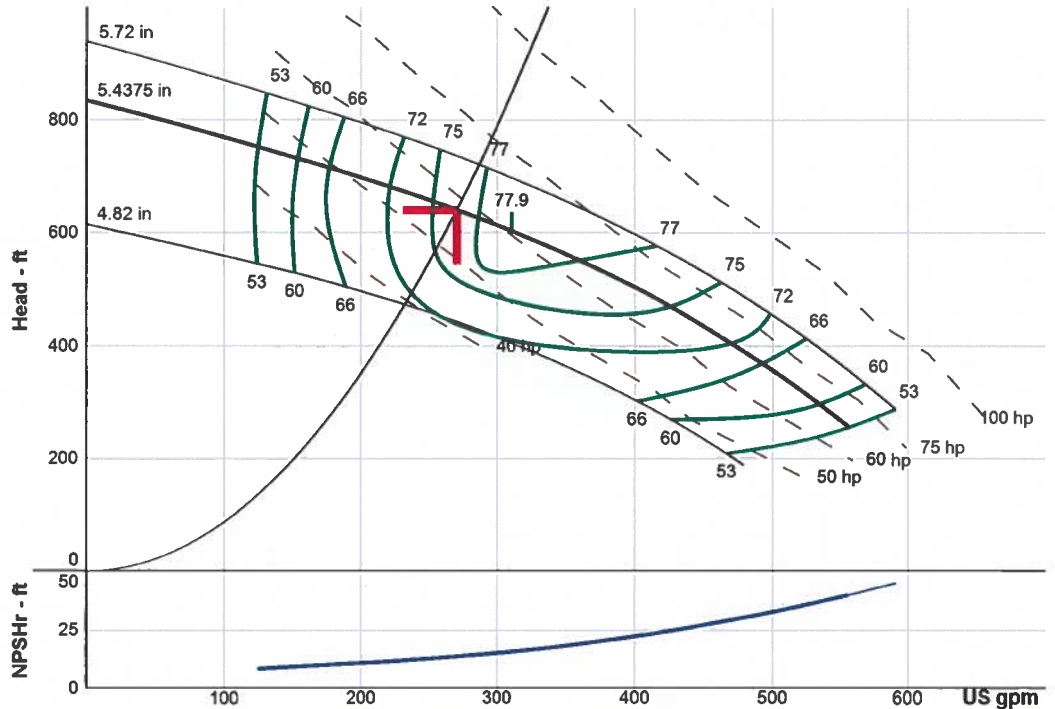
**Search Criteria:**

Flow: 270 US gpm  
Head: 640 ft  
Near Miss: ---  
Static Head: 0 ft

**Pump Selection Warnings:**

None

--- Duty Point ---	
Flow:	270 US gpm
Head:	640 ft
Eff:	76%
Power:	57.4 hp
NPSHr:	13.5 ft
Speed:	3450 rpm
--- Design Curve ---	
Shutoff Head:	834 ft
Shutoff dP:	361 psi
Min Flow:	--- US gpm
BEP:	77.9% @ 311 US gpm
NOL Power:	69.5 hp @ 492 US gpm
--- Max Curve ---	
Max Power:	82.8 hp @ 524 US gpm



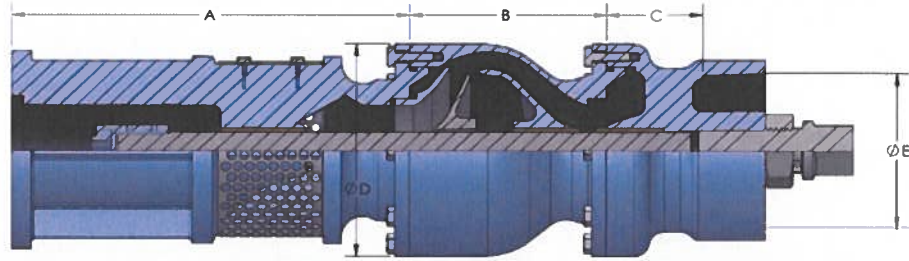
**Performance Evaluation:**

Flow US gpm	Speed rpm	Head ft	Efficiency %	Power hp	NPSHr ft
324	3450	589	77.7	61.9	16.4
270	3450	640	76	57.3	13.5
216	3450	686	71.3	52.4	11.2
162	3450	726	62.2	47.7	9.41
108	3450	763	49	43.2	7.74



# SUBMERSIBLE TURBINE PUMP

## SUBMERSIBLE BOWL ASSEMBLY



### Bowl Dimensions

Model	"A" Motor Bracket Length	"B" Bowl Length	"C" Discharge Length	"D" Bowl Dia.	"E" Discharge Size	"F" Dia. With Guard	"G" Motor Bracket Size	Overall Length
FW7LC	14.56"	6.38"	2.75"	7.13"	6.00"	7.73"	8.00"	59.37"



### Bowl Data

Bowl Shaft Dia.	1.19"
CI Pressure Rating	415 psi
DI Pressure Rating	720 psi
Specific Speed	1996 RPM
Min Submergence	18.00"
Total Bowl Assembly Weight	270 lbs
Bowl Shaft Loading @ Design	28%

### Materials of Construction

Description	Material	Specification
Cap Screw	18-8SS	ASTM A320
Jam Nut	304SS	ASTM A276
Submersible Upthrust Plug	304SS	ASTM A743/744 CF8
Discharge Case	Ductile Iron	ASTM A536 Gr. 65-45-12
Discharge Case Bearing	907LF Bronze	907LF
Impeller (7)	304SS	ASTM A744
Taperlocks	416SS	ASTM A582M
Bowl Shaft	416SS	ASTM A582M-95b
Bowl CI (7)	C.I. Vitreous Enameled	ASTM A48 CL30
Bowl DI (0) *	N/A	
Bowl Bearing	907LF Bronze	907LF
O-Ring	Buna-70-NSF61	ASTM 4926-70
Submersible Motor Bracket	Ductile Iron	ASTM A536 Gr. 65-45-12
Motor Bracket Bearing	907LF Bronze	907LF
Submersible Bracket Screen	304SS	ASTM240
Screen Cap Screw	18-8SS	ASTM A320
Submersible Motor Coupling	416SS	A582M-95b
Bowl Wear Ring	N/A	0.000 in
Impeller Wear Ring	N/A	0.000 in
Coating	Coating On OD Only	Factory Standard

\*DI Bowls may be used in conjunction with cast iron bowls to reach desired bowl pressure rating

Customer: Hydro Resources

Project: MHB

Model: 7LC

Stages: 7

Motor Mfg.: SME USA

HP: 75

Design Point: 270 GPM @ 640 Ft.

NEMA Frame: 8" MTR x 8" MTR BRK

Date: 03/06/2024

Prepared By: Matthew Goynes

RPM: 3450

Volts: 460/3/60

# Submersible Motor



# Flow Meter



**Badger Meter**

## Recordall® Turbo Series Meters

Models 160 (1-1/2"), 200 (2"), 450 (3"), 1000 (4"),  
2000 (6"), 3500 (8"), 5500 (10"), & 6200 (12");  
NSF/ANSI Standards 61 and 372 Certified

### DESCRIPTION

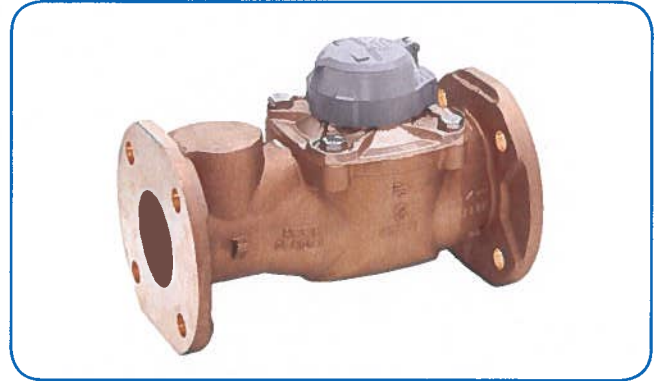
Recordall Turbo Series meters meet or exceed the most recent revision of AWWA Standard C701 Class II Standards and are available in a lead-free bronze alloy for sizes 1-1/2" through 10" and cast iron for 12" meters. Turbo Series meters comply with the lead-free provisions of the Safe Drinking Water Act. Sizes 1-1/2" through 10" meters are also certified to NSF/ANSI Standards 61 and 372 (Trade Designation: Turbo Series LL-NS) and carry the NSF-61 mark on the housing. All components of the lead-free alloy meter (housing, measuring element, seals and so on) comprise the certified system.

**Models 160 through 6200 are designed for 1-1/2" through 12" applications. These meters feature:**

- Direct coupled turbine based on an exclusive "floating rotor" design that reduces bearing friction—and associated wear and tear.
- Low pressure loss for improved system efficiency.
- Exceptional registration accuracy across low flow rate, normal operating flow rate and maximum continuous operation flow.
- Permanently sealed, tamper-resistant register or encoder.
- Integral strainer option for sizes 1-1/2" through 4" help protect your system from damaging debris and related downtime.
- Meters and encoders are compatible with Badger Meter AMR/AMI meter reading systems and other approved reading technologies.

**Applications:** Recordall Turbo Series meters are designed for cold water, commercial and industrial applications where flows are consistent medium to high flows. Applications include hotels, apartment buildings, irrigations centers and manufacturing and processing plants. Turbo Series meters help reduce day-to-day maintenance costs while delivering accurate and efficient performance.

**Operation & Performance:** Direct magnetic drive is achieved when the magnet carrier is driven by a gear train coupled to the rotor. The gear train consists of two sets of gears connected by a vertical transmission shaft. One gear set is at the magnet carrier, the other is a worm gear set at the rotor shaft. When water flows into the Turbo Series meter measuring element, it contacts the multi-vaned rotor. The resulting rotor rotation is then transmitted by magnetic coupling to a sealed register or encoder. The direct magnetic drive is built to provide a reliable meter-to-registration coupling.



**Tamper-Proof Features:** Unauthorized removal of the register or encoder is inhibited by the option of a tamper detection seal wire screw, TORX® tamper-resistant seal screw or the proprietary tamper-resistant keyed seal screw. Each can be installed at the meter site or at the factory.

**Construction:** The Recordall Turbo Series meter is constructed in compliance with ANSI and AWWA C701 standards. It consists of the following basic components: meter housing, interchangeable, unitized measuring element and permanently sealed direct reading registers or encoders.

The measuring element consists of the transmission coupling, rotor, inlet and outlet straightening vanes with nose cones, and calibration ring assembly. The unique inlet and outlet straightening vanes minimize swirl from piping arrangements upstream as well as downstream.

A strainer is recommended to help ensure optimal flow conditioning and protection for the measuring element. An integral strainer is available as an option for 1-1/2" through 4" meter sizes. The stainless steel strainer is built into the inlet end and includes a removable cover plate to permit easy access for routine cleaning. External strainers are available in sizes 2" through 12".

To simplify maintenance, the registers or encoders and measuring elements can be removed without removing the meter housing. Interchangeability of certain parts between meters also minimizes spare parts inventory investment.

**Meter Installation:** The meter is designed for installations where flow is in one direction only. Companion flanges for installation of meters on various pipe types and sizes are available in cast iron or NL bronze as an option. See the Recordall Turbo Series Meters User Manual for specific instructions.

## SPECIFICATIONS

Turbo Series Model	160 1-1/2" (40 mm)	200 2" (50 mm)	450 3" (80 mm)	1000 4" (100 mm)	2000 6" (150 mm)	3500 8" (200 mm)	5500 10" (250 mm)	6200 12" (300 mm)
Meter Flanges AWWA 125 Pound Class	Elliptical	Elliptical or Round	Round	Round	Round	Round	Round	Round AWWA 125 lb class
Typical Operating Range (100% ± 1.5%)	4...200 gpm (0.9...45.4 m³/h)	4...310 gpm (0.9...70.4 m³/h)	5...550 gpm (1.1...124.9 m³/h)	10...1250 gpm (2.3...284 m³/hr)	20...2500 gpm (4.5...568 m³/h)	30...4500 gpm (6.8...1022 m³/h)	50...7000 gpm (11.4...1590 m³/h)	90...8800 gpm (20.5...1998 m³/h)
Typical Low Flow (95% min.)	2.5 gpm (0.6 m³/h)	2.5 gpm (0.6 m³/h)	4 gpm (0.9 m³/h)	6 gpm (1.4 m³/h)	12 gpm (2.7 m³/h)	20 gpm (4.5 m³/h)	30 gpm (6.8 m³/h)	65 gpm (14.8 m³/h)
Max. Continuous Flow	160 gpm (36 m³/h)	200 gpm (45.4 m³/h)	450 gpm (102.2 m³/h)	1000 gpm (227.1 m³/h)	2000 gpm (454 m³/h)	3500 gpm (795 m³/h)	5500 gpm (1250 m³/h)	6200 gpm (1408 m³/h)
Maximum Intermittent Flow	200 gpm (45.4 m³/h)	310 gpm (70.4 m³/h)	550 gpm (124.9 m³/h)	1250 gpm (284 m³/h)	2500 gpm (568 m³/h)	4500 gpm (1022 m³/h)	7000 gpm (1590 m³/h)	8800 gpm (1988 m³/h)
Pressure Loss at Max. Continuous Flow	3.8 psi (0.26 bar)	3.1 psi (0.21 bar)	1.8 psi (0.12 bar)	7.3 psi (0.50 bar)	4.8 psi (0.33 bar)	2.5 psi (0.17 bar)	1.6 psi (0.11 bar)	0.8 psi (0.05 bar)
Pressure Loss at Max. Continuous Flow: With Integral Strainer	9.9 psi (0.68 bar)	8.3 psi (0.57 bar)	5 psi (0.43 bar)	17.8 psi (1.2 bar)	—			
Max. Operating Pressure	150 psi (10 bar)							
Max. Operating Temperature	120° F (49° C)							
Optional Integral Strainer	Built into inlet end. Removable cover plate permits access to strainer for cleaning.				—			
Optional External Strainer	—	Available for Models 200, 450, 1000, 2000, 3500, 5500 and 6200.						
Test Plug	Standard with integral strainer; optional for other models.				Optional for Models 2000 and 3500.		—	

## MATERIALS

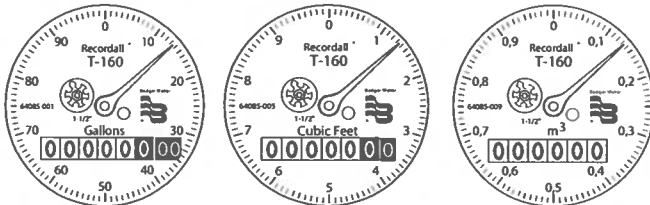
Meter Housing	Lead-free alloy (EXCEPTION: Model 6200 meter housing is blue epoxy-coated cast iron)
Turbo Head	Lead-free alloy
Nose Cone & Straightening Vanes	Thermoplastic
Rotor	Thermoplastic
Rotor Radial Bearings	Lubricated thermoplastic
Rotor Thruster Bearing	Sapphire jewels
Rotor Bearing Pivots	Passivated 316 stainless steel
Calibration Mechanism	Stainless steel & thermoplastic
Magnet	Ceramic
Trim	Stainless steel
Register Housing & Cover	Thermoplastic or bronze
Optional Strainer and Trim	Stainless steel

## REGISTERS / ENCODERS

### Standard—Sweep-Hand Registration

The standard register is a straight-reading, permanently sealed magnetic drive register. Dirt, moisture, tampering and lens fogging problems are eliminated. The register has a six-odometer wheel totalization display, 360° test circle with center sweep hand, and flow finder to detect leaks. Register gearing is made of self-lubricating engineered polymer, which minimizes friction and provides long life. The multi-position register simplifies meter installation and reading. The high-flow register capacity for the 1-1/2", 2", 3" and 4" meters is 100,000,000 gallons (10,000,000 ft<sup>3</sup>, 1,000,000 m<sup>3</sup>). The high-flow register capacity for the 6", 8", and 10" meters is 1,000,000,000 gallons (100,000,000 ft<sup>3</sup>, 10,000,000 m<sup>3</sup>). The high-flow register capacity for the 12" meter is 10,000,000,000 gallons (1,000,000,000 ft<sup>3</sup>, 10,000,000 m<sup>3</sup>).

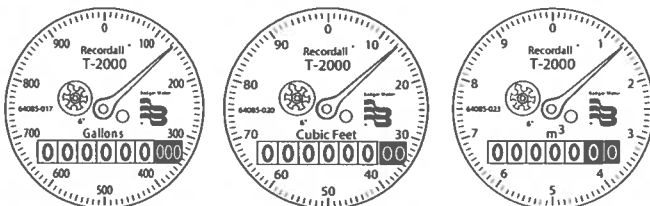
#### Registers for 1-1/2", 2", 3" and 4" Meters



#### Sweep Hand Revolution

Meter Model	Gallon	Cubic Feet	Cubic Meter
160	100	10	1
200	100	10	1
450	100	10	1
1000	100	10	1

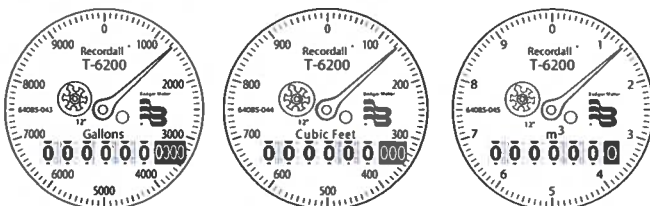
#### Registers for 6", 8" and 10" Meters



#### Sweep Hand Revolution

Meter Model	Gallon	Cubic Feet	Cubic Meter
2000	1000	100	10
3500	1000	100	10
5500	1000	100	10

#### Registers for 12" Meters



#### Sweep Hand Revolution

Meter Model	Gallon	Cubic Feet	Cubic Meter
6200	10000	1000	10

### Optional—Encoders for AMR/AMI Reading Solutions

AMR/AMI solutions are available for all Recordall Disc Series meters. All reading options can be removed from the meter without disrupting water service. Badger Meter encoders provide years of reliable, accurate readings for a variety of applications and are also available pre-wired to Badger Meter approved AMR/AMI solutions. See details at [www.badgermeter.com](http://www.badgermeter.com).

## PHYSICAL DIMENSIONS OF METERS WITHOUT STRAINER

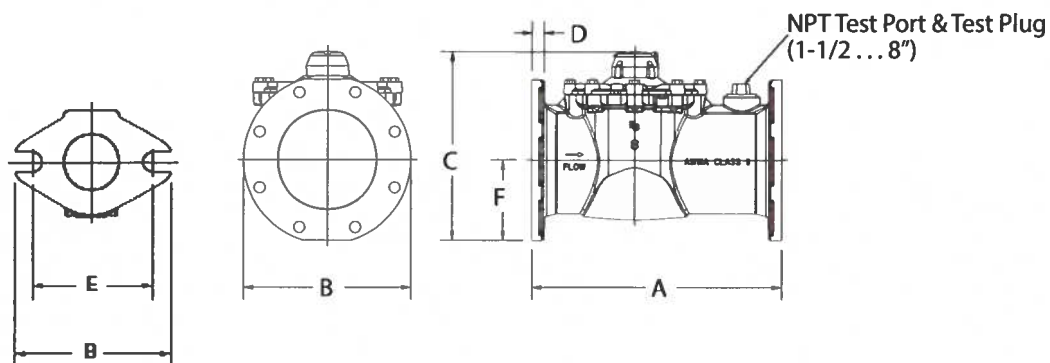


Figure 1: Sample Illustration from 8" Model 3500

<b>Turbo Series Model</b>	<b>160</b>	<b>200</b>	<b>200</b>	<b>450</b>	<b>1000</b>	<b>2000</b>	<b>3500</b>	<b>5500</b>	<b>6200</b>
<b>Meter Flanges</b>	1-1/2" Elliptical	2" Elliptical	2" Round	3" Round	4" Round	6" Round	8" Round	10" Round	12" Round
<b>Meter &amp; Pipe Size</b>	1-1/2" (40 mm)	2" (50 mm)	2" (50 mm)	3" (80 mm)	4" (100 mm)	6" (150 mm)	8" (200 mm)	10" (250 mm)	12" (300 mm)
<b>Net Weight</b>	14.3 lb (6.5 kg)	14.9 lb (6.8 kg)	17.4 lb (7.9 kg)	31 lb (14.1 kg)	40 lb (18.1 kg)	77 lb (35 kg)	123 lb (55.7 kg)	210 lb (95.3 kg)	262 lb (118.8 kg)
<b>Shipping Weight</b>	16.8 lb (7.6 kg)	16.4 lb (7.4 kg)	18.9 lb (8.6 kg)	34 lb (15.4 kg)	45 lb (20.4 kg)	89 lb (40.4 kg)	147 lb (66.6 kg)	235 lb (106.6 kg)	286 lb (129.7 kg)
<b>Qty. of Bolts</b>	2	2	4	4	8	8	8	12	12
<b>NPT Test Port &amp; Test Plug (optional)</b>	1" (25.4 mm)	1-1/2" (40 mm)	1-1/2" (40 mm)	2" (50 mm)	2" (50 mm)	2" (50 mm)	2" (50 mm)	—	—
<b>Length (A)</b>	13" (330 mm)	10" (254 mm)	10" (254 mm)	12" (305 mm)	14" (356 mm)	18" (457 mm)	20" (508 mm)	26" (660.4 mm)	19-11/16" (500 mm)
<b>Width (B)</b>	5-7/32" (133 mm)	5-27/32" (148 mm)	6" (152 mm)	7-1/2" (191 mm)	9" (229 mm)	11" (280 mm)	13-1/2" (343 mm)	16" (406.4 mm)	19" (482 mm)
<b>Height (C)</b>	6-9/32" (159 mm)	6-1/2" (165 mm)	7-3/32" (180 mm)	8-11/16" (220 mm)	9-21/32" (245 mm)	13-5/16" (338 mm)	15-3/16" (385 mm)	17-15/32" (443 mm)	19-11/16" (500 mm)
<b>Flange (D)</b>	51/64" (20 mm)	25/32" (20 mm)	5/8" (16 mm)	3/4" (19 mm)	13/16" (21 mm)	7/8" (22 mm)	1" (25 mm)	1-1/16" (27 mm)	1.26" (32 mm)
<b>Bolt Circle (E)</b>	4" (102 mm)	4-1/2" (114 mm)	4-3/4" (121 mm)	6" (152 mm)	7-1/2" (191 mm)	9-1/2" (241 mm)	11-3/4" (298 mm)	14-1/4" (362 mm)	17" (432 mm)
<b>Centerline (F)</b>	1-27/32" (47 mm)	2-1/16" (52 mm)	2-5/8" (67 mm)	3-11/32" (85 mm)	4-5/16" (109 mm)	5-1/4" (133 mm)	6-3/8" (162 mm)	7-7/8" (199.4 mm)	8-7/8" (226 mm)

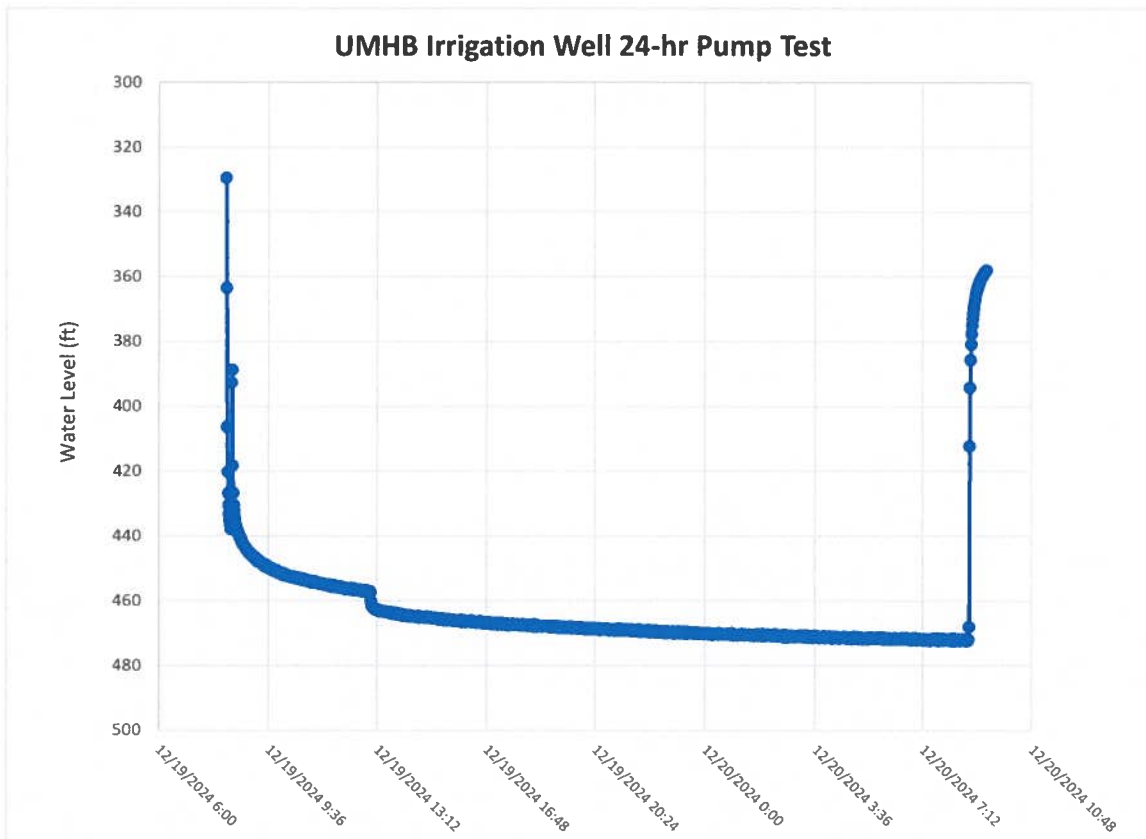
# 24-HR PUMP TEST

**UMHB 24-Hr Pump Test**

Date and Time	Water Level (ft)	Flowmeter Reading (gpm)	Hach Conductivity (µS/cm)	TDS (ppm)	Notes
12/19/2024 8:00	330.1				Static Water level
12/19/2024 8:13	329.6				Pump Test Start
12/19/2024 8:30	434				
12/19/2024 9:00	446				
12/19/2024 9:30	450	344.28	2273	1522.91	
12/19/2024 10:00	451		2380	1594.6	
12/19/2024 10:30	453				
12/19/2024 11:00	454		2319	1553.73	
12/19/2024 11:30	455				
12/19/2024 12:00	456	339.46	2320	1554.4	
12/19/2024 12:30	457				
12/19/2024 13:00	460	337.86	2358	1579.86	
12/19/2024 13:30	464				
12/19/2024 14:00	464	355.16	2282	1528.94	
12/19/2024 14:30	465				
12/19/2024 15:00	465	353.69	2344	1570.48	
12/19/2024 15:30	466				
12/19/2024 16:00	466	353.32	2300	1541	
12/19/2024 16:30	467				
12/19/2024 17:00	467	352.54	2335	1564.45	
12/19/2024 17:30	467				
12/19/2024 18:00	467		2363	1583.21	
12/19/2024 18:30	468				
12/19/2024 19:00	468	351.88	2313	1549.71	
12/19/2024 19:30	468				
12/19/2024 20:00	468	351.39	2391	1601.97	
12/19/2024 20:30	469				
12/19/2024 21:00	469	352.54	2366	1585.22	
12/19/2024 21:30	469	351.15	2403	1610.01	
12/19/2024 22:00	469	349.81	2397	1605.99	
12/19/2024 22:30	470				
12/19/2024 23:00	470	350.22	2398	1606.66	
12/19/2024 23:30	470				
12/20/2024 0:00	470	348.65	2402	1609.34	
12/20/2024 0:30	470				
12/20/2024 1:00	471	349.01	2396	1605.32	
12/20/2024 1:30	471				
12/20/2024 2:00	471	348.24	2407	1612.69	
12/20/2024 2:30	471				
12/20/2024 3:00	471	350.63	2405	1611.35	
12/20/2024 3:30	471				
12/20/2024 4:00	471	349.49	2394	1603.98	
12/20/2024 4:30	472				
12/20/2024 5:00	472	348.9	2397	1605.99	
12/20/2024 5:30	472				
12/20/2024 6:00	472	348.7	2398	1606.66	
12/20/2024 6:30	472				
12/20/2024 7:00	472	349.19	2402	1609.34	

### UMHB 24-Hr Pump Test

12/20/2024 7:30	472				
12/20/2024 8:00	472	347.86	2394	1603.98	Pump Test End
12/20/2024 8:30	472				
12/20/2024 9:00	364				
12/20/2024 9:01	364				
12/20/2024 9:02	363				
12/20/2024 9:03	363				
12/20/2024 9:04	362				
12/20/2024 9:05	362				
12/20/2024 9:06	361				
12/20/2024 9:07	361				
12/20/2024 9:08	361				
12/20/2024 9:09	360				
12/20/2024 9:10	360				
12/20/2024 9:11	360				
12/20/2024 9:12	360				
12/20/2024 9:13	359				
12/20/2024 9:14	359				
12/20/2024 9:15	359				
12/20/2024 9:16	359				
12/20/2024 9:17	359				
12/20/2024 9:18	358				
12/20/2024 9:19	358				Recharge to 92% of SWL



# WATER QUALITY RESULTS



## Water Analysis Report

Soil, Water and Forage Testing Laboratory  
Department of Soil and Crop Sciences  
2610 F&B Road, 2478 TAMU  
College Station, TX 77843-2478  
(979)321-5960

Report generated for:  
Hydro Resources  
11536 Old Lockhart Rd  
CREEDMOOR, TX 78610

Visit our website:  
<http://soiltesting.tamu.edu>

Laboratory #: 35054676  
Customer Sample ID: MHB 1  
Date Processed: 1/7/2025  
Sample from Bell County  
Water Source =Well

Format based on publication SCS-2002-12

Water Use =Irrigation

Parameter analyzed	Results	Units	Method	V. Limiting	Limiting	Acceptable
Calcium (Ca)	6	ppm	ICP			*****
Magnesium (Mg)	3	ppm	ICP			*****
Sodium (Na)	525	ppm	ICP	*****		
Potassium (K)	3	ppm	ICP			*****
Boron (B)	1.53	ppm	ICP		*****	
Carbonate (CO <sub>3</sub> )	0	ppm	Tit.			*****
Bicarbonate (HCO <sub>3</sub> )	444	ppm	Tit.			*****
Sulfate (SO <sub>4</sub> =calculated from total S)	267	ppm	ICP			*****
Chloride (Cl-)	434	ppm	Tit.		*****	
Nitrate-N (NO <sub>3</sub> -N)	0.37	ppm	Cd-red.			*****
Phosphorus (P)	< 0.01	ppm	ICP			*****
pH	7.08		ISE			*****
Conductivity	2210	umhos/cm	Cond.	*****		
Hardness	2	grains CaCO3/gallon	Calc.			*****
Hardness	28	ppm CaCO3	Calc.			*****
Alkalinity	364	ppm CaCO3	Calc.		*****	
Total Dissolved Salts (TDS)	1684	ppm	Calc.	*****		
SAR	42.8		Calc.	*****		
Iron (Fe)	0.08	ppm	ICP			*****
Zinc (Zn)	0.01	ppm	ICP			*****
Copper (Cu)	0.07	ppm	ICP			*****
Manganese (Mn)	0.02	ppm	ICP			*****
Arsenic (As)	< 0.001	ppm	ICP			*****
Barium (Ba)	0.031	ppm	ICP			*****
Nickel (Ni)	< 0.001	ppm	ICP			*****
Cadmium (Cd)	< 0.001	ppm	ICP			*****
Lead (Pb)	< 0.006	ppm	ICP			*****
Chromium (Cr)	< 0.002	ppm	ICP			*****
Fluoride (F)	2.53	ppm	ICP		*****	
Charge Balance (cation/anion*100)	93		Calc.			

ppm=parts per million=milligrams per liter

N/A, not applicable for this water use

Descriptions of each water parameter, potential use issues and target levels are provided in publication SCS-2002-10, Description of Water Analysis Parameters.

ICP, Inductively coupled plasma; Tit., titration; ISE, ion selective electrode; Cd-red., cadmium reduction; cond., conductivity; calc., calculated

# Drilling Permit



Clearwater Underground Water  
Conservation District  
P.O. Box 1989, Belton, TX 76513  
254-933-0120

## Drilling Permit

**Permit No:** D-23-217

**Owner/Permittee:** University of Mary Hardin Baylor  
c/o Dr. Gretchen Miller, Collier Consulting, [gmiller@collierconsulting.com](mailto:gmiller@collierconsulting.com)  
c/o Dr. Steve Theodore, Senior Vice President, [stheodore@umhb.edu](mailto:stheodore@umhb.edu)

**Mailing Address:** 900 College Street, UMHB Box 8441  
Belton, TX 76513

**Well Location:** N. W. Corner of W. Martin Luther King Jr. Ave, Belton, Texas,  
Latitude 31.069169°/Longitude -97.472680°  
Belton Lake Management Zone, 28.12-acre tract

**District Well No:** N3-23-005P

**State Well No:** --

**Terms:** Expires December 31, 2023. Permit can be administratively renewed per District Rules. Failure to abide by District/State rules and agreed upon special provisions of issuance, will subject this agreement to revocation. Must have a meter installed and the prescribed tremie tube, inside the annular space, necessary for the District to measure as needed the monthly static levels and capture water samples for water quality assessments. The applicant's geoscientist will, per Rule 6.9.2(f), provide the full Well Completion Report, at the time the applicant returns to the District for an "Operating Permit" per Rule 6.6.1. The completion report must be submitted within 30-days of final completion per Rule 6.6.3  
See Page 2 for Standard Permit Conditions and Requirements.

**Proposed Production:** Not to exceed 64.0 acre-feet or 20,854,464 gallons per year.

*No production is authorized under this permit other than that associated with the drilling needs and the required minimum 24-hour pumping test associated with the well completion report.*

**Aquifer:** Lower Layer of the Trinity (Hosston)

**Use:** Irrigation Use necessary for a 3-hole golf course.

### Agreed Upon Special Provisions:

- 1) Applicant's representatives provide more clarification on the stated needs assessment of the groundwater production and account for the discrepancies with the District's calculations when submitting the final operating permit application.
- 2) Applicant has agreed to participate in the District's continuous water level monitoring program and agreed to said installation, by the District with an Eno-Scientific Well Watch 700 device equipped with the SignalFire wireless telemetry cloud based data delivery.

This Permit is hereby issued this 9<sup>th</sup> day of August 2023.

By: Digitally signed by Dirk Aaron  
Date: 2023.08.18  
15:38:13 -05'00'  
\_\_\_\_\_, General Manager  
Dirk Aaron

**Permit Conditions and Requirements**  
**Applicable to Drilling & Operating Permits**

All permits are granted subject to the Rules, regulations, orders, special provisions, and other requirements of the Board, and the law of the State of Texas. In addition, each permit issued shall be subject to the following conditions and requirements:

- A. The permit is granted in accordance with the provisions of Chapter 36, Texas Water Code, and the Rules, regulations and orders of the District as may be in effect from time to time, and acceptance of the permit constitutes an acknowledgement and agreement that the permittee will comply with all the terms, provisions, conditions, requirements, limitations, and restrictions embodied in the permit and with the Rules, regulations, and orders of the District.
- B. The permit confers no vested rights in the holder and the permit is transferable only upon compliance with the District's rules governing transfers. Written notice must be given to the District by the permittee prior to any sale or lease of the well covered by the permit. The permit may be revoked or suspended for failure to comply with its terms, which may be modified or amended pursuant to the requirements of State law and any applicable Rules, regulations and orders of the District.
- C. The well shall be located and completed as required in District rules and 16 Texas Administrative Code, Chapter 76.1000. The well shall observe spacing requirements specifically stated in the District rules.
- D. A permit shall be subject to amendment by the District of the amount of water authorized for pumpage based upon a review of the District's groundwater availability model and a determination by the District that an amendment is necessary after considering adequate water levels in water supply wells and degradation of water quality that could result from low water levels and/or low spring discharge.
- E. The drilling and operation of the well for the authorized use shall be conducted in such a manner as to avoid waste, pollution, or harm to the aquifers.
- F. The permittee, unless qualifying for a metering and reporting exception, shall 1) keep accurate records and meter readings, on a monthly basis, of the amount of groundwater withdrawn, the purpose of the withdrawal, and, for any transporting of water outside the District, the amount of water transported and the identity and location of the recipients; 2) report total withdrawals to the District monthly; and 3) make all records available for inspection at the permittee's principal place of business by District representatives. All permittees shall provide immediate written notice to the District in the event a withdrawal or transportation of water exceeds the quantity authorized by the permit or rules. Unless the permittee can present evidence that the pumpage or transport which exceeded the permitted amount is due to an isolated incident that is not likely to be repeated and/or would not result in continued higher demands, the permittee must immediately submit an application to increase the permitted pumpage or transport volume based on the amount of pumpage or transport which exceeded the permitted amount projected for the remainder of the year.
- G. The well site and transport facilities shall be accessible to District representatives for inspection during normal business hours and during emergencies. The permittee agrees to cooperate fully in any reasonable inspection of the well site or transport facilities and related monitoring or sampling by District representatives. The well owner shall provide a twenty-four (24) hour emergency contact to the District.
- H. The application pursuant to which this permit has been issued is incorporated therein, and this permit is granted on the basis of and contingent upon the accuracy of the information supplied in that application and in any amendment thereof. A finding that false information has been supplied shall be grounds for immediate revocation of a permit. In the event of conflict between the provisions of the permit and the contents of the application, the provisions of the permit shall prevail.
- I. Driller's logs must be submitted within sixty (60) days of the drilling of a well. Monitoring of groundwater pumpage is to be accomplished in the manner specified in the District's metering policy and any modifications thereto.
- J. Violation of the permit's terms, conditions, requirements, or special provisions, including pumping amounts in excess of authorized withdrawal or transporting amounts outside of the District in excess of the amount authorized for transport, shall be punishable by civil penalties as provided by State law and the District's Rules.
- K. If special provisions are inconsistent with other provisions or regulations of the District, the special provisions shall prevail.
- L. Permittee will notify the District upon filing an application with TCEQ to obtain or modify CCN to provide water or wastewater services in a service area that lies wholly or partly within the District or for which water shall be supplied from a well located inside the District.

# Invoice / Payment

**PO Box 1989  
Belton, TX 76513**

**Invoice #: 260**  
**Invoice Date: 3/25/2025**  
**Due Date: 3/25/2025**  
**Project:**  
**P.O. Number:**

**Bill To:**  
UMHB  
Attn: Marve Ee

Date	Description	Amount
3/25/2025	Permit Application Fee Operating Permit 64.4 ac-ft	1,788.00

<b>Total</b>	<b>\$1,788.00</b>
<b>Payments/Credits</b>	<b>\$0.00</b>
<b>Balance Due</b>	<b>\$1,788.00</b>

WARNING - THIS CHECK IS PROTECTED BY SPECIAL SECURITY GUARD PROGRAM™ FEATURES



UNIVERSITY OF MARY HARDIN-BAYLOR

BOX 8003 UMHB STATION  
BELTON, TEXAS 76513

CHECK NO. 14615

FIRST TEXAS BANK 88-227/1119  
BELTON, TEXAS

VOID AFTER 180 DAYS

DATE AMOUNT

3/31/2025 \$ \*\*\*\*\*1,788.00

PAY ONE THOUSAND SEVEN HUNDRED EIGHTY EIGHT AND NO/100 DOLLARS

TO Clearwater Underground Water Conservati  
THE P.O. Box 1989  
ORDER Belton, TX 76513  
OF

UNIVERSITY OF MARY HARDIN-BAYLOR  
PLANT FUND

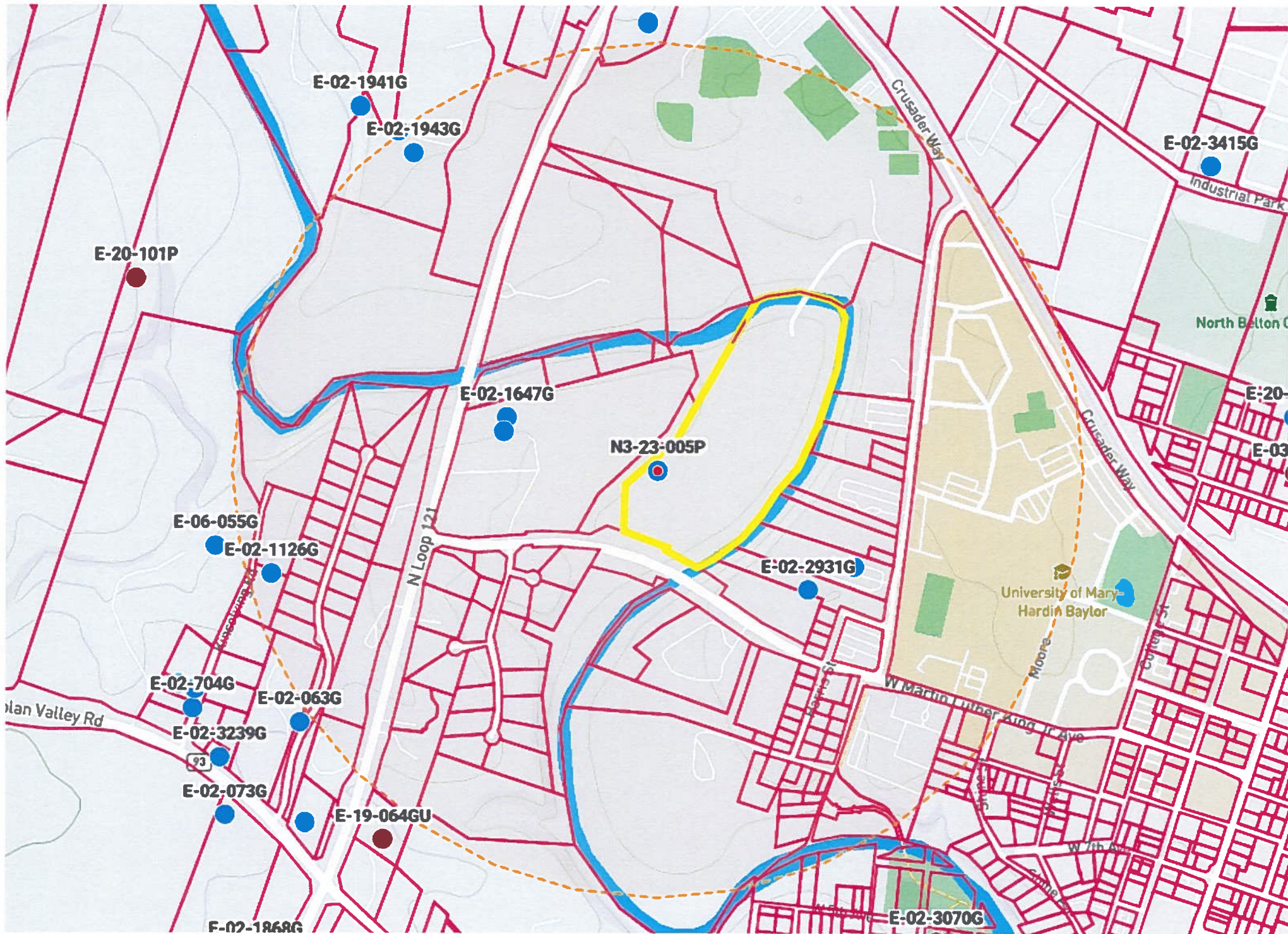


*Randy D'Rear*  
*Clearwater*

THIS CHECK CONTAINS MULTIPLE SECURITY FEATURES - SEE BACK FOR DETAILS

⑈014615⑈ ⑆111923937⑆ 1051334⑈

## Notification



### N3-23-003P Contact List

#### Wells 1/2 Mile

<u>Prop ID</u>	<u>Name</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>Zip</u>	<u>Well #</u>	<u>Status</u>	<u>Depth</u>	<u>Aquifer</u>	<u>Use</u>	<u>Distance</u>
439559	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513	N2-11-003G	Active	960	Middle Trinity	Ag/Irrigation	1,368 ft
129368	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513	E-02-2931G	Active	unknown	Alluvium	Domestic	1,169 ft
44388	First Baptist Church of Belton	506 N Main St	Belton	TX	76513	E-02-1647G	Inactive	150	Edwards Equiv.	Not Used	987 ft
44388	First Baptist Church of Belton	506 N Main St	Belton	TX	76513	E-02-1648G	Inactive	102	Edwards Equiv.	Domestic	974 ft
465511	Creeside Estates Belton Homeowners Association	205 Paloma Dr	Temple	TX	76502	E-02-063G	Active	96	Edwards Equiv.	Domestic	2,563 ft
127795	Dora Olivarez	21116 Cypress Rosehill Rd	Tomball	TX	77377	E-02-1126G	Active	80	Edwards Equiv.	Domestic	2,376 ft
518994	Daryl & Linda Pehl	PO Box 352	Temple	TX	76503	E-02-1943G	Inactive	930	Middle Trinity	Not Used	2,562 ft

#### Adjacent Property

318007	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
44420	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
397311	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
397312	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
484235	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
15328	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
66830	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
66841	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
442111	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
51677	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
112472	Flora Stowers	415 South Pearl St	Belton	TX	76513
30010	Edwin & Welba Dorsey	914 University Dr	Belton	TX	76513
439559	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
129368	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
387584	University of Mary Hardin Baylor	900 College St, UMHB Box 8441	Belton	TX	76513
382851	City of Belton	PO Box 120	Belton	TX	76513
354279	Cliffs of Nolan Creek Home Owners Association	PO Box 1924	Belton	TX	76513

April 16, 2025

**NOTICE OF APPLICATION FOR OPERATING PERMIT**

*Name*  
*Address*  
*City, TX Zip*

**VIA CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

RE: Application for an Operating Permit

To Whom It May Concern:

I, Hunter King, P.E., have submitted an application, on behalf of the University of Mary Hardin-Baylor, to the Clearwater Underground Water Conservation District (CUWCD) on March 25, 2025, for an operating permit to authorize production from an existing well.

This permit, if approved, will authorize groundwater withdrawal from well #N3-23-005P in the Belton Lake Management Zone described in District Rule 7.1. The existing well is completed to the Lower Trinity Aquifer (Hosston Layer), with a maximum 4-inch column pipe on a 28.12-acre tract located at 900 College St., Belton, Texas, Latitude 31.069169°/Longitude -97.472680°. The well will produce groundwater for agricultural irrigation at a proposed annual quantity not-to-exceed 37.1 acre-feet or 12,089,072 gallons per year total at a maximum pumping rate of 270 gallons per minute.

This application will be set for hearing before the CUWCD Board upon notice posted at the Bell County Clerk's Office and at the CUWCD Office. If you would like to support, protest, or provide comments on this application, you must appear at the hearing and comply with District Rule 6.10. For additional information about this application or the permitting process, please contact the CUWCD at 700 Kennedy Court, Belton, Texas 76513, 254-933-0120. The applicant may be contacted at 900 College St, UMHB Box 8441, Belton, TX 76513, or by phone at 254-295-4519. The applicant's representative, Hunter King, P.E., can be contacted at 512-851-8740.

Sincerely,

Hunter King, P.E.  
Collier Consulting

9589 0710 5270 1793 3342 18

U.S. Postal Service™  
**CERTIFIED MAIL® RECEIPT**  
Domestic Mail Only

For delivery information, visit our website at [www.usps.com](http://www.usps.com)™.

Temple, TX 76502

Certified Mail Fee \$4.85

Extra Services & Fees (check box, add fees as appropriate)

<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.73

Total Postage and Fees \$5.58

Sent To  
Creskade Estates Belton Home Owners  
Street and Apt. No., or PO Box No.  
202 Paloma Dr.  
City, State, ZIP+4®  
Temple, TX 76502

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

Official Use Stamp: ROUND ROCK TX 78681 APR 17 2025 USPS

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Belton, TX 76513

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<input type="checkbox"/> Return Receipt (electronic)	\$0.00
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<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.73

Total Postage and Fees \$5.58

Sent To  
First Baptist Church of Belton  
Street and Apt. No., or PO Box No.  
306 N Main St  
City, State, ZIP+4®  
Belton, TX 76513

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

Official Use Stamp: ROUND ROCK TX 78681 APR 17 2025 USPS

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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.73

Total Postage and Fees \$5.58

Sent To  
Edwin and Melba Dorsey  
Street and Apt. No., or PO Box No.  
914 University Drive  
City, State, ZIP+4®  
Belton, TX 76513

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

Official Use Stamp: ROUND ROCK TX 78681 APR 17 2025 USPS

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Belton, TX 76513

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<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.73

Total Postage and Fees \$5.58

Sent To  
Flora Stowers  
Street and Apt. No., or PO Box No.  
415 South Pearl St  
City, State, ZIP+4®  
Belton, TX 76513

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

Official Use Stamp: ROUND ROCK TX 78681 APR 17 2025 USPS

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Belton, TX 76513

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<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.73

Total Postage and Fees \$5.58

Sent To  
Cliff of Nolan Creek Home Owners  
Street and Apt. No., or PO Box No.  
404 Cliff Dr.  
City, State, ZIP+4®  
Belton, TX 76513

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

Official Use Stamp: ROUND ROCK TX 78681 APR 17 2025 USPS

9589 0710 5270 1793 3349 80

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**CERTIFIED MAIL® RECEIPT**  
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Belton, TX 76513

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<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00

Postage \$0.73

Total Postage and Fees \$5.58

Sent To  
City of Belton  
Street and Apt. No., or PO Box No.  
PO Box 120  
City, State, ZIP+4®  
Belton, TX 76513

PS Form 3800, January 2023 PSN 7530-02-000-9047 See Reverse for Instructions

Official Use Stamp: ROUND ROCK TX 78681 APR 17 2025 USPS

**NOTICE OF APPLICATION FOR AN OPERATING PERMIT FROM  
CLEARWATER UNDERGROUND WATER CONSERVATION DISTRICT**

Hunter King, P.E., has submitted an application, on behalf of the University of Mary Hardin-Baylor, to the Clearwater Underground Water Conservation District (CUWCD) on March 25, 2025, for an operating permit to authorize production from an existing well.

This permit, if approved, will authorize groundwater withdrawal from well #N3-23-005P in the Belton Lake Management Zone described in District Rule 7.1. The existing well is completed to the Lower Trinity Aquifer (Hosston Layer), with a maximum 4-inch column pipe on a 28.12-acre tract located at 900 College St., Belton, Texas, Latitude 31.069169°/Longitude -97.472680°. The well will produce groundwater for agricultural irrigation at a proposed annual quantity not-to-exceed 37.1 acre-feet or 12,089,072 gallons per year total at a maximum pumping rate of 270 gallons per minute.

This application will be set for hearing before the CUWCD Board upon notice posted at the Bell County Clerk's Office and at the CUWCD Office. If you would like to support, protest, or provide comments on this application, you must appear at the hearing and comply with District Rule 6.10. For additional information about this application or the permitting process, please contact the CUWCD at 700 Kennedy Court, Belton, Texas 76513, 254-933-0120. The applicant may be contacted at 900 College St, UMHB Box 8441, Belton, TX 76513, or by phone at 254-295-4519. The applicant's representative, Hunter King, P.E., can be contacted at 512-851-8740.

## CROSSWORD

By THOMAS JOSEPH

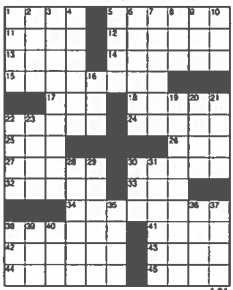
## ACROSS

- 1 Cook's creation  
5 Concur  
11 Cuzco native  
12 Resatful  
13 Rating unit  
14 Chide  
15 DNA testing might reopen one  
17 Zodiac cat  
18 Lab work  
22 Hard to see  
24 Top story  
25 Swelled head  
26 Hoopla  
27 Scout shelters  
30 Parking pro  
32 Useful skill  
33 Poorly  
34 Swimmers of myth  
38 Thick shake  
41 Ticked off  
42 Leave hanging  
43 Be sure  
44 Start a new paragraph  
45 Nile serpents

## DOWN

- 1 Coin, essentially  
2 Wild about  
3 Long-necked onions  
4 Solidify  
5 Fer-  
nando's group  
6 Afternoon break  
7 Parade  
8 Greek vowel  
9 Court divider  
10 Uno plus  
21 Edinburgh native  
22 Goat  
23 A long time  
28 Place  
29 Trample  
30 Lively spirit  
31 Sitka setting  
35 Tenant's fee  
36 Plummet  
37 Uses a needle  
38 G-man's org.  
39 Made a rush  
40 Help out

Yesterday's answer



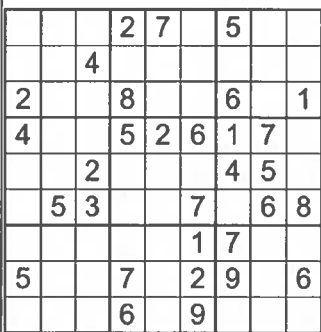
(254) 778-4444

10 South 3rd Street  
Temple, Texas 76501

TEMPLE DAILY TELEGRAM

## sudoku

©Puzzles by Pappocom



Difficulty: ★★

4/24

## How to Play:

Using the numbers provided, complete the grid so that every row, column, and 3x3 square contains the numbers 1-9 without duplications. Find solutions, tips, and computer program at [www.sudoku.com](http://www.sudoku.com)



Yesterday's Solution

## AXYDLBAAXR

## is LONGFELLOW

One letter stands for another. In this sample, A is used for the three L's, X for the two O's, etc. Single letters, apostrophes, the length and formation of the words are all hints. Each day the code letters are different.

4-24 CRYPTOQUOTE

B ORV'S SGBVQ ZVE OZE BD

CRFGS UBPBVX CBSGRKS

SGBVQBVX ZJRKS CGZS ERK'FN

XRBVX SR NZS VNMS ZS ZUU

SBHND. — VRFZ NWGRV

Yesterday's Cryptquote: I AM NO LONGER

ACCEPTING THE THINGS I CANNOT CHANGE. I

AM CHANGING THE THINGS I CANNOT ACCEPT.

— ANGELA DAVIS

# CLASSIFIEDS

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# Publisher's Affidavit

State of Texas  
County of Bell

Before Me, The Undersigned Authority, this day personally appeared Jane Moon after being by me duly sworn, says that she is the Classified Manager, Inside Sales of the Temple Daily Telegram, a newspaper published in Bell County, Texas and that the stated advertisement was published in said newspaper on the following date(s):

April 24, 2025

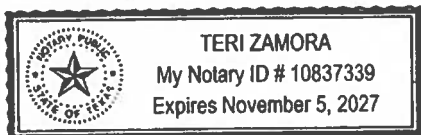
For: Hunter King, P.E.  
Ad #: 16697932  
Cost: \$145.00  
Times Published: 1

Jane Moon  
Jane Moon  
Classified Manager Inside Sales

Subscribed and sworn to before me,  
this day: April 29, 2025

Teri Zamora  
Notary Public in and for  
Bell County, Texas

(Seal)



## NOTICE OF APPLICATION FOR AN OPERATING PERMIT FROM CLEARWATER UNDERGROUND WATER CONSERVATION DISTRICT

Hunter King, P.E., has submitted an application, on behalf of the University of Mary Hardin-Baylor, to the Clearwater Underground Water Conservation District (CUWCD) on March 25, 2025, for an operating permit to authorize production from an existing well.

This permit, if approved, will authorize groundwater withdrawal from well #N3-23-00SP in the Belton Lake Management Zone described in District Rule 7.1. The existing well is completed to the Lower Trinity Aquifer (Houston Layer), with a maximum 4-inch column pipe on a 28.12-acre tract located at 900 College St., Belton, Texas, Latitude 31.0691697/Longitude -97.472680. The well will produce groundwater for agricultural irrigation at a proposed annual quantity not-to-exceed 37.1 acre-feet or 12,069,072 gallons per year total at a maximum pumping rate of 270 gallons per minute.

This application will be set for hearing before the CUWCD Board upon notice posted at the Bell County Clerk's Office and at the CUWCD Office. If you would like to support, protest, or provide comments on this application, you must appear at the hearing and comply with District Rule 6.10. For additional information about this application or the permitting process, please contact the CUWCD at 700 Kennedy Court, Belton, Texas 76513, 254-933-0120. The applicant may be contacted at 900 College St, UMHB Box 8441, Belton, TX 76513, or by phone at 254-295-4519. The applicant's representative, Hunter King, P.E., can be contacted at 512-851-8740.