Permit Hearing - Item #7b
Bjorn Dahl

**Clearwater Underground Water Conservation District**
*P.O. Box 1989, Belton, TX 76513*
*Phone: 254/933-0120 Fax: 254/933-8396*

# APPLICATION FOR PERMIT
## NON-EXEMPT WELLS
## Classification 1

A **NON-EXEMPT WELL, CLASSIFICATION 1**, is a well that satisfies the following conditions:

A water well used for **domestic purposes or for watering livestock or poultry** that is drilled, equipped or completed so that it is incapable of producing more than 25,000 gallons per day, and is located on a tract of land consisting of less than 10 acres and great than or equal to 2 acres as of March 1, 2004.

Any water well used for other purposes or that is capable of producing more than 25,000 gallons per day, is a Non-Exempt Well, Classification 2. Applicant must complete a different form—*Application for Permit, Non-Exempt Wells, Classification 2*.

Check one of the following:

**COMBINATION DRILLING / OPERATING PERMIT**
(Complete Sections all sections)
X New Well — NI-21-0018
___ Replacement Well

** Per Rule District Rule 9.3 and State Law TDLR all *State of Texas Well Reports* are due to the District within 60 days of well completion.

*** NEW Per District Rule 9.3.3 at completion of all wells Water Quality Assessment is required by the Pump Installer and/or Well Driller. District Staff will provide screen test, sample bottles, and coordinate with Pump Installer or Driller to retrieve the sample within 45 days of the well completion. Temporary pump to purge the well is required should the well not have pump permanently installed in first 45 days

**PERMIT AMENDMENT**
___ Modify Drilling Permit (Complete Sections 1, 2, 3, 4 & 6)
___ Modify Operating Permit (Complete Sections 1, 5 & 6)
___ Change in Well Ownership (Complete Sections 1 & 6)
___ Other
Explain: _____

See **Permit Terms, Spacing/Acreage Requirements,** and **Notice Requirements** on the back side of this form.

1. **Owner Information**
**Note: If well owner is different from property owner, provide documentation from property owner authorizing well construction and operation.**

bjorn@newhtgaragedoors.com

Well Owner: Bjorn Dahl Telephone No.: 254-733-5591

Address: 13115 State Highway 317 (Street or P.O. Box) Temple (City) TX (State) 76504 (Zip Code)

Contact Person (if other than owner): JT Kelly Telephone No.: 254-939-1133
JTKelley.jtswoodworks@gmail.com

If ownership of well has changed, name of previous owner _____ State Well No. _____

2. **Property Location and Proposed Well Location**

Owner of property (if different from well owner): _____

Property is located _____ (Number) miles _____ (N. S. E. W) of _____ (Nearest City or Town) on _____ (Name of Road)

Acreage: 6.6 Bell CAD Property ID#: 501566 Latitude: 31.17488 Longitude: -97.41298

3. **Well Description**

a. Proposed use of well and estimated amount of water to be used for each purpose:
X *Domestic; X Livestock; _____ Poultry.
*Total number of houses to be serviced by the well _____.

b. Estimated distance from nearest:
200' N / S Property Line; 200' E / W Property Line; N/A Existing Septic Leach Field;
N/A River, Stream or Lake; N/A Existing Water Well; N/A Livestock Enclosure;
N/A Other Source of Contamination (cemetery, pesticide mixing/loading, petroleum storage tank, etc.

c. Estimated rate of withdrawal 15 gpm

d. Is property subject to flooding: Yes / (No)

e. Is there another well on the property? Yes / (No)
If yes, how many wells? _____

f. Is the well part of a multi-well aggregate system? Yes / (No)
List State Well No.: _____

g. Attach the following:
- tax plat map indicating the location of the proposed well or the existing well to be modified, the subject property, and adjacent owners' physical addresses and mailing addresses. (BellCAD maps are sufficient if current and accurate)
- Indicate the location of the proposed well or the existing well to be modified with a circle and dot, and the distance to the well from property lines.

**NOTE:** If this is a replacement well, indicate location of well that is being replaced and distance from the proposed well. **Abandoned well must be properly capped or plugged in accordance with state law and the rules of the District.**

**Required: Pump Installer / Well Driller Information (Required by Law)**

Name: Tom Lovelace — TDLR Pump Installer License Number: 4920

Address: _____ (Street or P.O. Box) — TDLR Well Drillers License Number: 4920

Comments/notes: _____

_____ (City) (State) (Zip Code)

254-760-1600 (Phone #) _____ (Fax #) _____ (E-mail address)

4. **Completion Information**

Provide the following information to the extent known and available at the time of application.
**NOTE: Provide the complete driller's log and any mechanical log, or chemical analysis, within 60 days of completion of well. Well must be drilled within 30 feet of the location specified and not closer to any existing well or authorized well site than the District's minimum spacing rule requires.**

If amending existing permit, explain requested amendment and reason for amendment: _____

**Latitude**: 31.17488 N; **Longitude**: -97.41298 W; **Elevation**: _____ feet (ft) above msl.

**Completion Date**: _____; **Driller**: Tom Lovelace; **License No.**: 4920.

**Total Depth of Well**: 1050 ft; Borehole Diameter (Dia) 12 inches (in) from 0 to 60; Dia. (2) 8 in. from 60 to 1050

**Casing**: Material PVC; Inside Diameter (ID) 5 inches (in); Welded / Threaded / Bell Joint; Depth 1050 ft.

**Screen**: (Yes)/No; Screen Type .032 mill; Screen Dia. 5 in from 1000 to 1050 ft; Packing Yes/(No); Type _____

**Pump Type**: Submersible ✓; Other _____. **Power**: Electric ✓; Other _____

**Pump**: Horsepower Rating 5; Diameter 4 in; Depth: 747 ft; Discharge Rate: 15 gpm;

Column Pipe ID: 1¼ in; Discharge Pipe ID: 1¼ in.

**Water Level**: _____ ft; Measured from _____ ft above ground level (GL); Date _____

**Pumping Level** _____ ft; Measured from _____ ft above GL; after pumping _____ hours/minutes; Date _____

**Water Bearing Formation**: Middle Trinity; **Water Quality Analysis**? Yes / No Date: _____

5. **Annual Production**

NOTE: If requesting operating permits or permit renewals for multiple wells, please attach a separate sheet with the information requested below for each well.

Current permitted annual production: _____ Requested increase/decrease: _____

Include statement/documentation explaining requested production: _____

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

Total annual production requested: _____ acre-feet or _____ gallons

(Note: 1 acre-foot = 325,851 gallons)

6. **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.*

Bjorn Dahl per tom lovelace — 3/24/22

Owner Signature — Date

**PERMIT TERMS:** ***Drilling Permits***—effective for 365 days from the date the permit application is approved by the Board. ***Combination Drilling / Operating Permits***—effective until the end of the calendar year in which it is issued. Permits may be renewed by the General Manager, subject to any changes necessary under proportional adjustment regulations, District Rules, or the District Management Plan.
**SPACING/ACREAGE REQUIREMENTS:** Refer to District Rules, Section 9.5. For a well with a column pipe size of 2" or less, a minimum tract size of 2 acres is required, with a 100' setback from other well sites, and a 50' setback from property lines. Acreage and setbacks increase with larger column pipe size.
**NOTICE REQUIREMENTS:** Permit applicants must provide notice of filing as follows: 1) publication in a newspaper of general circulation in the District; and 2) certified mail, return receipt requested, to all adjacent property owners and owners of wells located within ¼ mile radius of the existing well or proposed well that is the subject of the application. The District will provide the appropriate forms for notification. Applicant must provide 1) proof of publication of public notice; and 2) proof of receipt by certified mail of the public notice to property owners as described above 12 days prior to the proposed public hearing date.

# Estimate of Water Use/Needs:

Applicant name: Proposed CUWCD Well #: **Bjorn Dahl N1-22-001P**

**Declare Usage Needs: Determined for each proposed non-exempt well**

*1)* *Domestic: 3 # of people per household x 1 home x 116 g/day/person = 348 x 365 days/325851 = 0.389 ac-ft/yr

2) **Landscape Use (suggest that landscape watering be limited to 1500 square feet)

_____gpm/zone x _____ minutes each zone runs = _____ gallons/zone

_____gallons/zone X _____ number of zones = _____ gallons/day

_____gallons/day x _____days/wk system runs = _____ gallons/wk

_____gallons/wk x _____ number of wks/year = _____ gallons/year

**117,632** gallons per year / 325851 = **0.361** acre feet per year requested.

* Landscape will be watered by hose.

Total needs: Household: **126,756** gallons per year
Landscape: **117,632** gallons per year

Proposed Annual Production Amount: **244,388** gallons and/or **0.75** ac-ft/year

The above estimate is for groundwater needs for a well on a tract of land less than 10 acres and greater than 2 acres subdivided after March 1, 2004.

**includes average household use for indoors and lawn irrigation.*

*** is estimate of groundwater needs (annually) for just outside landscape use for an N1 well when the home is provided public water supply.*

# CUWCD Executive Summary

**Staff Report**

# Application for Combination Drilling/Operating Permit N1-22-001P

| | | | |
|---|---|---|---|
| **Applicant/Owner:** | Bjorn Dahl<br>13115 State Highway 317<br>Temple TX 76504 | | |
| **Location of Well:**<br>6.00-acre tract located at 13115 State Highway<br>Latitude 31.17488°/Longitude -97.41298° | | | |
| **Proposed Annual Withdrawal:**<br><br>**Initial Rate :** 15-gpm<br>**Column Pipe**: 1¼ inch<br><br>**Withdrawal**:<br>Proposed annual quantity not to exceed 0.75 acre-feet or 244,388 gallons per year | **Proposed Use**<br><br>Domestic Use for home, landscape and garden | **Aquifer:**<br><br>Middle Trinity | **Nearest Existing Wells:**<br>0 @ 1/4 mile<br>1 @ 1/2 mile<br><br>Note: The well within ½ mile is completed in the Upper Trinity (Glen Rose Layer) |

## General Information

Bjorn Dahl has submitted an application to the Clearwater Underground Water Conservation District (CUWCD) on March 24, 2022, for a combination drilling and operating permit to authorize drilling and withdrawal from a proposed new well.

This permit will authorize the withdrawal from a new well completed in the Middle Trinity Aquifer with a 1 ¼ inch column pipe on a 6.00-acre tract located at 13115 State Highway 317, Temple, Texas, Latitude 31.17488°/Longitude -97.41298° (well# N1-22-001P), to produce water for domestic use in a proposed annual quantity not to exceed 0.75 acre-feet or 244,388 gallons per year total.

This property lies within the Pendleton WSC CCN # 10003 (certificate of convenience and necessity). The property also lies within the Extraterritorial Jurisdiction of the City of Temple. The applicant has investigated with the Pendleton WSC for the possibility of public water supply delivery and *will testify* that public water is currently either not available or unaffordable, thus the need to pursue groundwater rather than public water supply for the purpose of domestic use for a new home.

**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 conformed to all application requirements which include public notification and accompanied by the prescribed fees? (Rule 6.10.24(a)(b), TWC 36.116(a)(1), TWC 36.113(d)(1) and Rule 6.9.1(b)(1)(2)**

   The application is complete—all requested information has been provided. The application conforms to said rules with all required application fees. In addition, the applicant has met 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) and District Rule 6.10.24 (d).**

   The groundwater produced for this well for domestic use for a new home, landscape, and garden plot.

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 they understand per District Rules that by signing the application form the applicant agrees to state compliance with the District's Management Plan

   Applicant should testify to the importance of water conservation measures and that options for outside water conservation are very limited and vital to the sustainability of the aquifer. The District hopes that the applicant states in testimony they do not intend to utilize the groundwater for extensive landscape purposes.

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))**

   The applicant (*by signing the application form*) should offer testimony that if the well deteriorates over time or becomes damaged in such a way that the well is inoperable that 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 spacing and production limitations identified in our rules? (TWC 36.116(a)(1) and Rule 6.10.24(b)) and Rule 9.5.2**

   The proposed well will have a column pipe size not to exceed 1 ¼-inch. Based on this column pipe size, a minimum size tract of 2 acres is required, with a 100-foot spacing requirement from other wells. The 50-foot setback requirement from adjacent property lines be met for this proposed well and the possible future property lines. Testimony

per District Rule 9.5 Spacing Requirements that the applicant will adhere all spacing requirements.

The District rules do not impose production limitations other than those determined applicable in the review of today's permit request for a well to conduct the study. The applicant and/or their representative needs to understand that the operating permit for production must not cause an unacceptable level of decline in water quality of the aquifer, or as may be 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.

These issues are considered in Items 6 & 7 below and with staff recommendations to address potential concerns of adjacent property owners.

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

Based upon available information, there are the following number of wells as defined for domestic use and completed, and active from the Middle Trinity Aquifer.

**0 wells within 1/4 mile and 0 wells within 1/2 mile = 0 total**

Mike Keester, RW Harden & Associates, has reviewed the application and has determined the anticipated drawdown, and has provided the *attached MK report*.

His conclusions and recommendations state that the proposed well will primarily be impacted by short-term production. He adds "that the nearest existing well may experience less than one foot (that is, negligible) drawdown due to the annual production. The Middle Trinity in the area has approximately 400 feet of artesian pressure and with a negligible amount of long- term drawdown, the proposed well should be able to produce the proposed amount without significant impact on water levels. Continued water level monitoring will aid in assessing the long-term effects of cumulative groundwater production in the area.

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 water is consistent with the District's Groundwater Water Management Plan related to the approved DFC and the defined available groundwater for permitting?**

The District's Management Plan reflects a groundwater availability figure in the Middle Trinity Aquifer of **1099 ac-ft/year Modeled Available Groundwater** (then reserve 548 ac-ft/year for exempt well use) thus **551 ac-ft/year is the Managed Available Groundwater for permitting.**

The Board, per the District Management Plan, has evaluated groundwater available for permitting the Middle Trinity Aquifer and most recently evaluated the available groundwater for permitting (*consistent with the management plan as stated on pages 9-10*).

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 Middle Trinity Aquifer was set by CUWCD based on 137-ft of drawdown over 60 yrs. This was reviewed and again approved by the board in January 2019. To achieve this DFC, the TWDB used a model that indicated the MAG was equal to 1099 acre-feet per year from the Middle Trinity.

A summary of YTD 2022 permit production, HEUP & OP Permit Analysis, pending applications, and *Exempt Well Reservations for the Middle Trinity, per District Report illustrates current Middle Trinity Aquifer permits total 471.669 ac-ft/year. Currently, the District has a pending permit of 23.75 ac-ft/year, thus available for permitting is only 79.72 acre-feet/year. *(see attached Middle Trinity Aquifer Status Report, April 2022).*

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 Middle Trinity Aquifer Status Report, April 2022).*

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 8.3?**

Refer to #7 above. Reservation of Modeled available groundwater for **exempt well** use will not be exceeded by granting this permit. 548 ac-ft/year vs 512 ac-ft estimated to be used annually in the Middle Trinity. *(see 2021 district exempt use report)*

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 – exempt well use = Managed Available Groundwater)* for the Middle Trinity Aquifer which is 551 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 Middle Trinity Aquifer in 2021 was **471.669 ac-feet/yr** and the actual production in 2020 was **67.37 ac-ft/yr (14.28%)** of the permitted amount. (*Figures are based upon monthly production reports submitted to Clearwater by the permit holders in 2021*).

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

Clearwater is currently in no drought management stage based on the PDI system (average running total annual rainfall) over the Aquifer in the District, is currently at **31.959** inches of rain received in the last 365 days (5-6-2022) thus 98.85% of annual expected rainfall of 33 inches. The Middle Trinity permit holders in all of 2021 have used only 14.28% of the total permitted amounts in the Aquifer. Permit holders did not exceed their total permitted amounts in 2020 or 2021.

The gravity of the current drought is reminiscent of the epic drought of 2011-2013, the significant drought in 2018, and again in the summer of 2020. The current drought trends do necessitate the need for all permit applications to be evaluated based on conservative needs and usage that are not contradicted by the current voluntary drought contingency plan stage.

**Conclusions and Recommendations:**

1) District GM recommends that the Board approve the permit for the one well for the purpose of the domestic use but discuss the amount of groundwater requested for landscape and gardening.
2) District GM concurs with Keester that the following conditions for the well's construction and for limiting this application permit necessary for the following:

- To assess actual changes in water levels due to pumping from the proposed well and regional water level declines, the pump installer shall install a measuring tube alongside the column pipe to allow for measurement of the water level using an e-line or other direct measurement method.
- The pump installer shall install a metering device for monthly online reporting of production to confirm the applicant does not exceed the approved amount of production.

*Attachments are as follows:*

| | |
|---|---|
| *Keester PG Technical Memorandum* | *05/05/2022* |
| *CUWCD Trinity Aquifer Status Report* | *04/13/2022* |
| *CUWCD 2021 Exempt Well Estimate of Use Report* | *12/31/2021* |
| *CUWCD Site Map* | *See Attached* |
| *Applications, fees and Notification Affidavit* | *See Attached* |

# Trinity Aquifer Status Report – April 2022

| *DFC Analysis Over Time (2000-Present)* Modeled Available Groundwater | | | *HEUP and OP Permit Analysis* Relative to the Modeled Available Groundwater | | | *2022 YTD Total Prod.* Jan - Mar 498.65 Ac-ft 10.51% | | *Pending Applications* | | *Exempt Well Reservations* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Trinity Aquifer** (by layer) | **DFC Adopted** * **Average Drawdown** (by layer) | **MAG** ** Ac-ft Current | **HEUP Ac-ft** (by layer) | **OP Ac-ft** (by layer) | **Total Permitted Ac-ft** (by layer) | **2021 YTD Prod.** (by layer) | **2022 YTD Prod.** (by layer) | **Available for Permitting Ac-ft** (by layer) | **Pending Applications Ac-ft** (by layer) | **Exempt Well Reserve Ac-ft** (by layer) | **2021 Exempt Well Use Estimate Ac-ft** (by layer) | **Available Exempt Use Ac-ft** (by layer) |
| Pawluxy | NA | 0 | 0 | 0 | **0** | 0 | 0 | 0 | 0 | | | 0 |
| Glen Rose (upper) | **-1.38 ft/yr** -83 ft/60 yrs | 974 | 61.9 | 72.14 | **134.04** | 18.70 | 1.14 | 146.96 | 0 | 693 | 221 | 472 |
| Hensell (middle) | **-2.28 ft/yr** -137 ft/60 yrs | 1099 | 259.3 | 212.369 | **471.669** | 67.37 | 12.39 | 79.72 | ***5.00 | 548 | 516 | 32 |
| Hosston (lower) | **-5.50 ft/yr** -330 ft/60 yrs | 7193 | 1181.4 | 2957.62 | **4139.02** | 1619.53 | 485.12 | 2875.98 | 0 | 178 | 56 | 122 |
| Total | | **9266** | 1502.6 | 3242.129 | **4744.729** | 1705.6 (35.95%) | 498.65 (10.51%) | 3102.66 | **5.00** | 1419 | 793 | 626 |

*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

Rancho Vista Phase 2 N2-21-008P (5.00 ac-ft/yr)

# CUWCD Exempt Well Use Summary

As of: 5/6/2022

| Aquifer | Total Active Registered Exempt Wells[3] | Registered Domestic Wells | Estimated Domestic Use Gallons/Day[1,2] | Estimated Domestic Use Ac-ft/Year[1,2] | Registered Stock Wells | Estimated Stock Use Gallons/Day[4] | Estimated Stock Use Ac-ft/Year[4] | Total Estimated Use Gallons/Day[7] | Total Estimated Exempt Well Use Ac-ft/Year[7] | MAG Reserved Exempt Well Use |
|---|---|---|---|---|---|---|---|---|---|---|
| Glen Rose (Upper Trinity) | *501* | *412* | *120,535* | *135* | *89* | *76,896* | *86* | *197,431* | *221* | |
| Hensell (Middle Trinity) | *944* | *886* | *410,132* | *459* | *58* | *50,112* | *56* | *460,244* | *516* | |
| Hosston (Lower Trinity) | *149* | *138* | *40,373* | *45* | *11* | *9,504* | *11* | *49,877* | *56* | |
| Trinity (Total)[6] | 1,594 | 1,436 | 571,040 | 640 | 158 | 136,512 | 153 | 707,552 | 793 | 1,419 |
| Edwards BFZ | 833 | 704 | 205,962 | 231 | 129 | 111,456 | 125 | 317,418 | 356 | 825 |
| Edwards Equivalent | 489 | 390 | 114,098 | 128 | 99 | 85,536 | 96 | 199,634 | 224 | |
| 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 | 225 | 141 | 41,251 | 46 | 84 | 72,576 | 81 | 113,827 | 128 | |
| Ozan | 162 | 114 | 33,352 | 37 | 48 | 41,472 | 46 | 74,824 | 84 | |
| Pecan Gap | 67 | 44 | 12,873 | 14 | 23 | 19,872 | 22 | 32,745 | 37 | |
| Kemp | 15 | 11 | 3,218 | 4 | 4 | 3,456 | 4 | 6,674 | 7 | |
| Alluvium | 592 | 379 | 110,880 | 124 | 213 | 184,032 | 206 | 294,912 | 330 | |
| Other[5] | 1,586 | 1,097 | 320,938 | 359 | 489 | 422,496 | 473 | 743,434 | 833 | |
| **CUWCD Total Active** | **4,013** | **3,237** | **1,097,941** | **1,230** | **776** | **670,464** | **751** | **1,768,405** | **1,981** | |

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 2,000ft² warm season turfgrass requires 38,855gal/yr/lawn or 106gal/day/lawn; "Ranchette" Avg. lawn size is 13,042ft² , 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.

Mike Keester, P.G. Review

R W HARDEN &ASSOCIATES INC
GROUNDWATER RESOURCE PROFESSIONALS
9009 Mountain Ridge Dr • Suite 100 • Austin Texas 78759 • ph (512) 345-2379 • fax (512) 338-9372

# TECHNICAL MEMORANDUM

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

**From:** Michael R. Keester, PG – R. W. Harden & Associates, Inc.

**Date:** May 5, 2022

**Subject:** Hydrogeologic Evaluation of the Dahl Well (N1-22-001P) Permit Application

**Proposed Well ID:** *N1-22-001P*

**Well Owner Name:** *Bjorn Dahl*

**Tract Size:** *6* Acres

**Column Pipe Size:** 1.25 *Inches*

**Aquifer:** *Middle Trinity*

**Proposed Annual Production:** *0.75 Acre-Feet per Year*

**Proposed Instantaneous Pumping Rate:** *15 Gallons per Minute*

The applicant indicated the proposed well will have a pumping rate of 15 gallons per minute and an annual production amount of 0.75 acre-feet per year. The proposed well is intended to serve as a source for domestic supply at a projected annual usage of 0.389 acre-feet per year and landscape irrigation for an annual usage of 0.361 acre-feet per year. Total projected annual production is 0.75 acre-feet

The identified source for the proposed use is the Middle Trinity Aquifer. According to the District's geologic database, the top of the Middle Trinity is about 980 feet below ground level and about 70 feet thick at the proposed well location. Kelley and others (2014) indicate the Middle Trinity Aquifer transmissivity is about 1,300 gallons per day per foot (gpd/ft) with a storage coefficient of 0.00007 (unitless) based on the thickness of the aquifer. For our analysis of potential drawdown due to the proposed production, we used the transmissivity and storativity values from the groundwater availability model to assess the potential drawdown at existing wells completed in the Middle Trinity Aquifer located up to 2 miles from the proposed well ().

The potential effects of the proposed production on local water levels in the aquifer are calculated using the Theis equation (Theis, 1935), which 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. As the duration of pumping and distance from the well increase, the uncertainty in the calculated drawdown also increases. To assess the potential effects from the proposed production, the equation uses values from the groundwater availability model datasets.

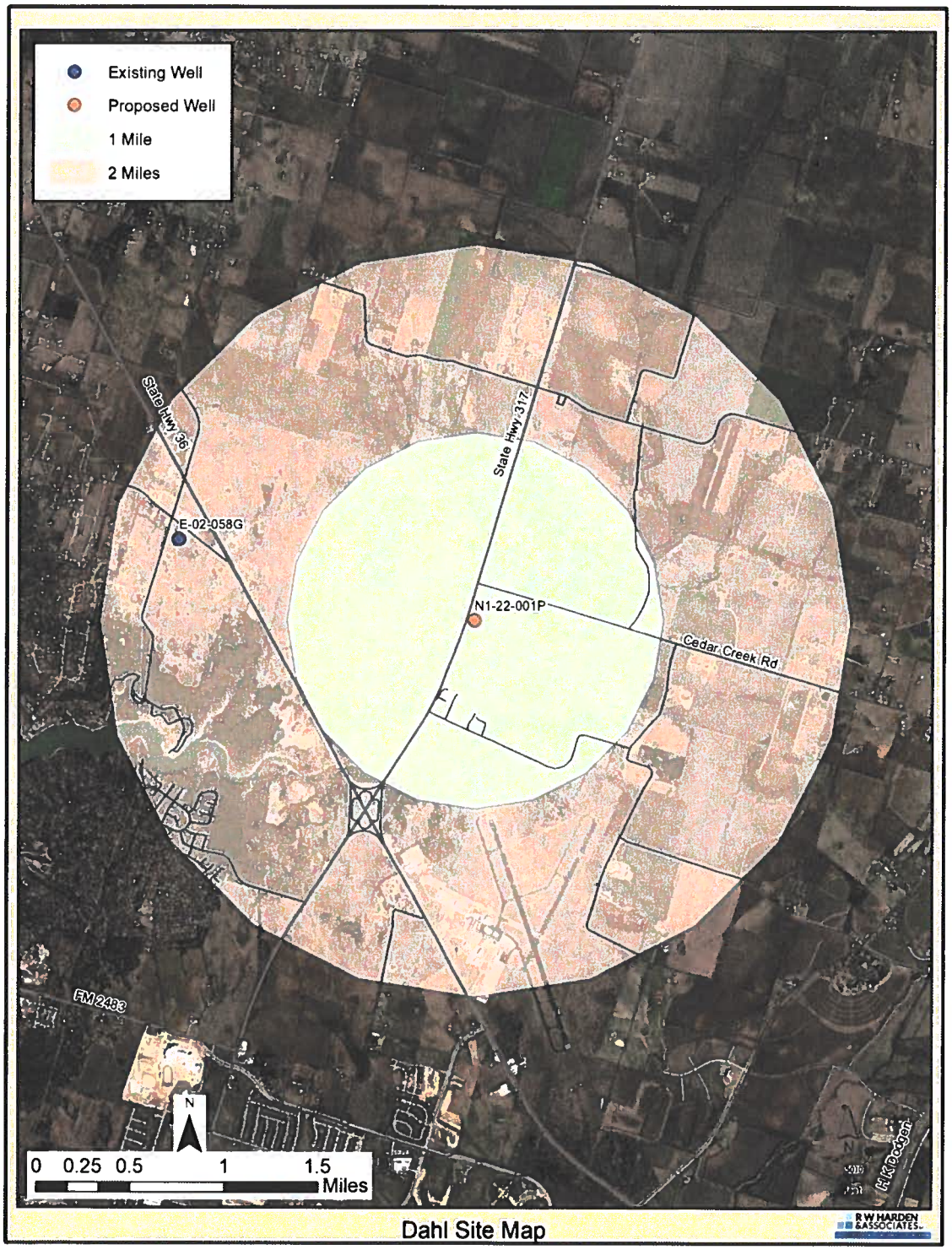



**Figure 1.** **The proposed well and existing Middle Trinity Aquifer wells within 2 miles of the proposed well. Detailed information for each well shown is available through the District's website (https://cuwcd.org/).**

Table 1 presents the calculated drawdown based on the proposed annual production rate of 0.75 acre-feet per year from the proposed well. For *1-Day Drawdown*, we applied the proposed instantaneous pumping rate of 15 gallons per minute 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.

**Table 1. Calculated drawdown at the proposed well and other nearby wells completed in the Middle Trinity Aquifer based on an annual production rate of 0.75 acre-feet from the proposed and simulated wells and instantaneous production of 15 gallons per minute.**

| CUWCD Well ID | Distance from Proposed Well (feet) | 1-Day Drawdown (feet) | 30-Day Drawdown (feet) | 1-Year Drawdown (feet) |
|---|---|---|---|---|
| **N1-22-001P (Dahl Well)** | - | 20 | Negligible | Negligible |
| **E-02-058G** | 8,616 | Negligible | Negligible | Negligible |

The predicted drawdown amounts are based on our current understanding of the aquifer hydraulic properties and the estimated production from the proposed well and simulated wells. The predicted drawdown values presented do not include the effects from other wells pumping near the proposed well. Predicted drawdown of less than one foot is considered negligible for analysis purposes due to inherent uncertainty in the aquifer hydraulic characteristics.

The projected drawdown values using the transmissivity and storativity from the groundwater availability model result in a 1-day drawdown of 20 feet at the proposed well with negligible drawdown at the nearest existing Middle Trinity well. Estimated long-term drawdown at the projected and nearest well is negligible.

CWUCD has collected water level measurements in a nearby Middle Trinity well (N1-09-003P) since 2016 and water levels have declined by about 3 feet per year. It should be noted that, regionally, water levels were higher than normal during that time due to the wet conditions in 2015. Some minor fluctuations in water level in the aquifer will be due to expected wet and dry conditions. Using this water level and the CUWCD geologic database, the Middle Trinity Aquifer in this region has an estimated 400 feet of artesian pressure and the proposed production will not inhibit use of the groundwater resource by others.

## Conclusions and Recommendations

The proposed well will primarily be impacted by the short-term production. The nearest existing well may experience less than one foot (that is, negligible) drawdown due to the annual production. The Middle Trinity in the area has approximately 400 feet of artesian pressure and with a negligible amount of long-term drawdown, the proposed well should be able to produce the proposed amount without significant impact on water levels. Continued water level monitoring will aid in assessing the long-term effects of cumulative groundwater production in the area.

We recommend the following conditions for the well and/or permit:

- To assess actual changes in water levels due to pumping from the proposed well and regional water level declines, the pump installer shall install a measuring tube alongside the column pipe to allow for measurement of the water level using an e-line or other direct measurement method.
- In addition, the pump installer shall install a metering device for monthly on-line reporting of production.
- Work with the District to obtain a geophysical log (at a minimum, gamma ray, spontaneous potential, and resistivity curves) of the open borehole to delineate the subsurface stratigraphy.

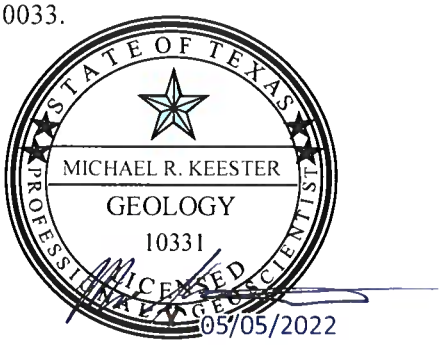
## References

Kelley, V.A., Ewing, J., Jones, T.L., Young, S.C., Deeds, N., and Hamlin, S., eds., 2014, Updated Groundwater Availability Model of the Northern Trinity and Woodbine Aquifers: Vol 1, Austin, Texas, Intera, 990 p.

Theis, C.V., 1935, The Relation Between the Lowering of the Piezometric Surface and the Rate and Duration of Discharge of a Well Using Ground-Water Storage: American Geophysical Union Transactions, v. 16, p. 519-524.

## Geoscientist Seal

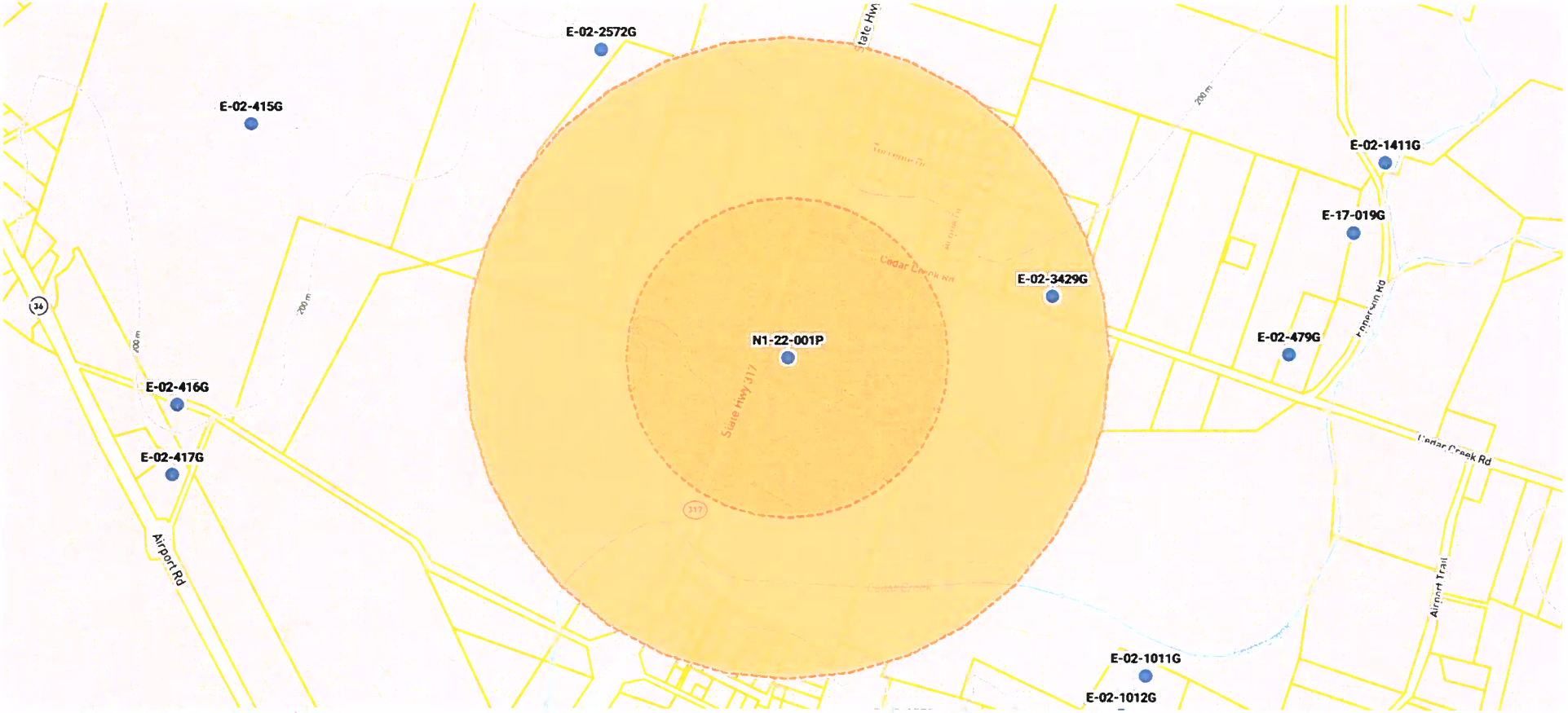
The signature and seal appearing on this document was authorized by Michael R. Keester, P.G. on May 5, 2022. R.W. Harden & Associates Texas Board of Professional Geoscientist Firm Registration Number 50033.



Radius Map
Notification

Clearwater
Underground Water Conservation District
*Every drop counts!*

# CUWCD Map
## N1-22-001P Dahl Radius Map
Created: April 14th 2022, 10:07am



# N1-22-001P Contact List

**Wells 1/4 Mile** No wells in 1/4 mile

| Prop ID | Name | Address | City | State | Zip | Well # | Status | Depth | Aquifer | Use | Distance |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Wells 1/2 Mile** | | | | | | | | | | | |
| 151875 | Sherry & Allen Stewart | 8022 Cedar Creek Rd | Temple | TX | 76504 | E-02-3429G | Active | 1000 | Upper Trinity | Domestic | 2,228 ft |
| **Adjacent Property** | | | | | | | | | | | |
| 475588 | Joel & Kayla Kelley | 10861 W State Highway 36 | Temple | TX | 76502 | | | | | | |
| 36506 | James & Michelle Redden | 8351 Cedar Creek Rd | Temple | TX | 76504 | | | | | | |
| 21473 | James & Michelle Redden | 8351 Cedar Creek Rd | Temple | TX | 76504 | | | | | | |
| 410211 | US Government Bureau of Land Management | | Washington | DC | 20013 | | | | | | |
| 410208 | US Government Bureau of Land Management | | Washington | DC | 20013 | | | | | | |

April 14, 2022

**NOTICE OF APPLICATION FOR DRILLING AND OPERATING PERMIT**

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

**VIA CERTIFIED MAIL**
**RETURN RECEIPT REQUESTED**

RE: Application for a Combination Drilling/Operating Permit

To Whom It May Concern:

I, Bjorn Dahl, have submitted an application to the Clearwater Underground Water Conservation District (CUWCD) on March 24, 2022 for a combination drilling and operating permit on a new well (N1-22-001P) for 0.75 acre-feet or 244,388 gallons per year.

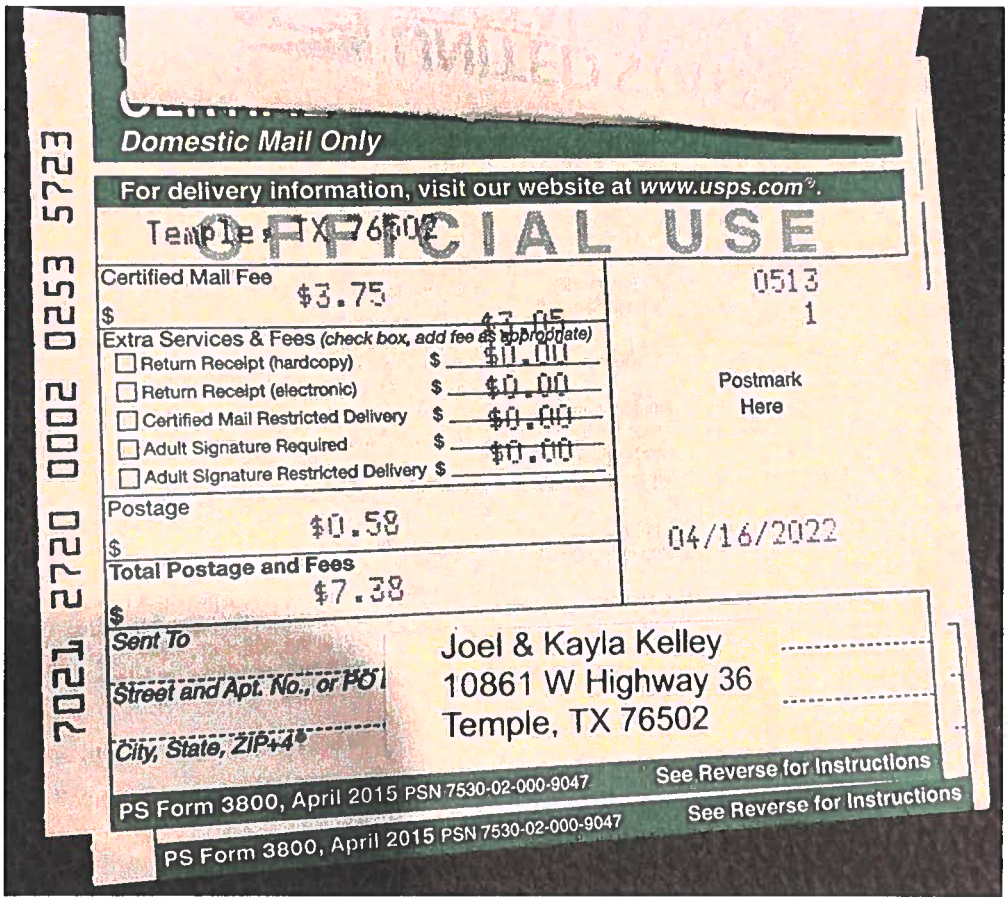
This permit will authorize the withdrawal from a well completed in the Middle Trinity Aquifer with a 1 ¼ inch column pipe on a 6.00 acre tract located at 13115 State Highway 317, Temple, Texas, Latitude 31.17488°/Longitude -97.41298° (well# N1-22-001P), to produce water for domestic use in a proposed annual quantity not to exceed 0.75 acre-feet or 244,388 gallons per year total.

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 13115 State Highway 317, Temple, TX 76504, or by phone at 254-733-5591.

Sincerely,

Bjorn Dahl

**N1-22-001P Bjorn Dahl**
**Certified Mail Receipts**



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- ☐ Return Receipt (electronic) $ $0.00
- ☐ Certified Mail Restricted Delivery $ $0.00
- ☐ Adult Signature Required $ $0.00
- ☐ Adult Signature Restricted Delivery $

Postage $0.58

Total Postage and Fees $7.38

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1

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04/16/2022

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City, State, ZIP+4®
Temple, TX 76502

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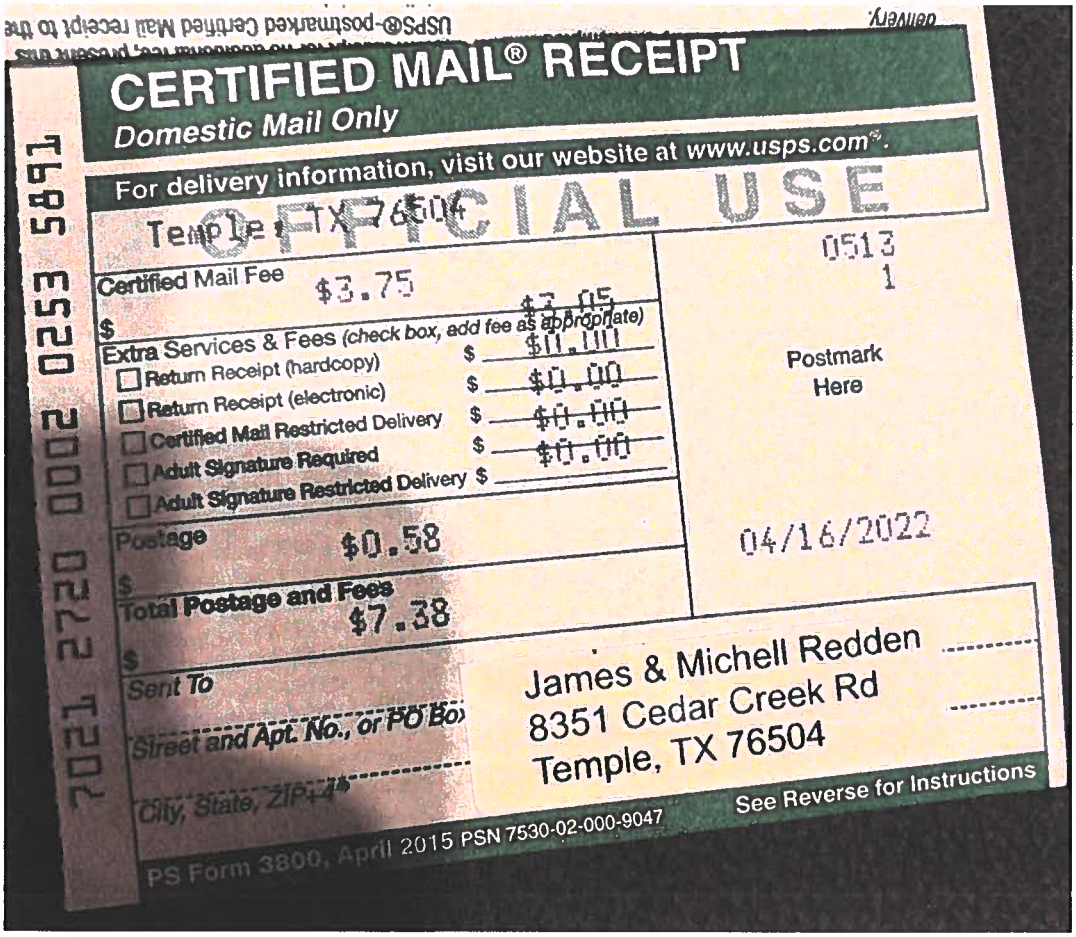

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Postage $0.58

Total Postage and Fees $7.38

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04/16/2022

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City, State, ZIP+4®
Temple, TX 76504

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

# NOTICE OF APPLICATION FOR A COMBINATION DRILLING AND OPERATING PERMIT FROM CLEARWATER UNDERGROUND WATER CONSERVATION DISTRICT

Bjorn Dahl has submitted an application to the Clearwater Underground Water Conservation District (CUWCD) on March 24, 2022 for a combination drilling and operating permit to authorize drilling and withdrawal from a proposed new well.

This permit will authorize the withdrawal from a new well completed in the Middle Trinity Aquifer with a 1 1/4 inch column pipe on a 6.00 acre tract located at 13115 State Highway 317, Temple, Texas, Latitude 31.17488°/Longitude -97.41298° (well# N1-22-001P), to produce water for domestic use in a proposed annual quantity not to exceed 0.75 acre-feet or 244,388 gallons per year total.

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 13115 State Highway 317, Temple, TX 76504, or by phone at 254-733-5591.

# 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 20, 2022

For: Bjorn Dahl
Ad #: 16675732
Ad cost: $125.80
Times Published: 1

Jane Moon
Classified Manager Inside Sales

Subscribed and sworn to before me,
this day: April 22, 2022

Sherry McWhirter
Notary Public in and for
Bell County, Texas

(Seal)

SHERRY MARIE MCWHIRTER
Notary Public, State of Texas
Comm. Expires 03-18-2025
Notary ID 13298183-4

**NOTICE OF APPLICATION FOR A COMBINATION DRILLING AND OPERATING PERMIT FROM CLEARWATER UNDERGROUND WATER CONSERVATION DISTRICT**

Bjorn Dahl has submitted an application to the Clearwater Underground Water Conservation District (CUWCD) on March 24, 2022, for a combination drilling and operating permit to authorize drilling and withdrawal from a proposed new well.

This permit will authorize the withdrawal from a new well completed in the Middle Trinity Aquifer with a 1 1/4-inch column pipe on a 6.00 acre tract located at 13115 State Highway 317, Temple, Texas. Latitude 31.174833°/Longitude -97.412958° (well: 51-22-601P). to produce water for domestic use in a proposed annual quantity not to exceed 0.75 acre-feet or 244,311 gallons per year total.

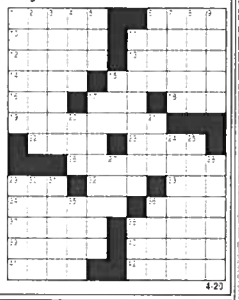
This application will be set for hearing before the CUWCD Board upon notice posted at the Bell County Clerk's Office and at the CUWCD Office. If you would like to support, protest, or provide comments on this application, you must appear at the hearing and comply with District Rule 6.10. For additional information about this application or the permitting process, please contact the CUWCD at 720 Kennedy Court, Belton, Texas 76513, 254-933-0120. The applicant may be contacted at 13115 State Highway 317, Temple, TX 76504, or by phone at 254-733-5591.

## CROSSWORD
By THOMAS JOSEPH

**ACROSS**
1 Check marks
6 Ticket half
10 Extreme pain
11 Like new pennies
12 Enticed
13 Words to a hitcher
14 Citizen —
15 Magic word
16 Binary digit
17 Hot blood
18 Evergreen shrub
19 Collapse
22 Thick slice
23 Blocks
26 Debutante's wear
29 Storage spot
32 Calendar box
33 Role for Keanu
34 Vim
36 ERA or RBI
37 Concur
38 Personal record
39 Exploding stars
40 Bert's buddy
41 Dance unit
42 Intended

**DOWN**
1 Discuss
2 Big lizards
3 Ithaca school
4 Pants part
5 Barrett of Pink Floyd
6 Oxford, e.g.
7 Slightly drunk
8 Bring together
9 Already
11 With cunning
15 Old hand
17 Security clip-ons
20 Research setting
21 Pester
24 Big Sky setting
25 Give the oath of office to
27 Put down
28 Procrastinator's words
29 Succotash half
30 Silver bar
31 Audacity
35 Take in
36 Royal address
38 Rep.'s rival

Yesterday's answer


4-23



# sudoku
©Puzzles by Pappocom

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 6 | | | | 3 | | | | |
| 5 | 7 | 8 | 6 | 9 | | | 4 | |
| 2 | | | | 4 | | | | 5 |
| 1 | | | | 7 | | | | 2 |
| | 2 | 3 | 4 | | 8 | 5 | | 6 |
| | | 7 | | | | | 1 | |
| | | 6 | | | | | | 9 |
| | | 2 | | | | | | 3 |
| | 1 | 9 | 2 | 6 | 3 | 7 | 5 | 4 |

Difficulty Level ★★★ 4-20

### 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 programs at www.sudoku.com

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2 | 9 | 8 | 7 | 1 | 5 | 6 | 3 | 4 |
| 7 | 5 | 3 | 4 | 6 | 9 | 8 | 1 | 2 |
| 1 | 4 | 6 | 3 | 8 | 2 | 9 | 5 | 7 |
| 3 | 1 | 9 | 2 | 5 | 7 | 4 | 8 | 5 |
| 4 | 6 | 2 | 1 | 3 | 8 | 7 | 9 | 5 |
| 8 | 7 | 5 | 6 | 9 | 4 | 1 | 2 | 3 |
| 5 | 2 | 1 | 8 | 7 | 6 | 3 | 4 | 9 |
| 9 | 3 | 7 | 5 | 4 | 1 | 2 | 6 | 8 |
| 6 | 8 | 4 | 9 | 2 | 3 | 5 | 7 | 1 |

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.

4-20 CRYPTOQUOTE

SZT URTOPTYS DOV JCSH SZT QCJXTPYT JY SZPHQBZ O LHPTYS DJRKTPCTYY. — FHZC EQJP

**Yesterday's Cryptoquote:** IT'S DIFFICULT TO THINK ANYTHING BUT PLEASANT THOUGHTS WHILE EATING A HOMEGROWN TOMATO. — LEWIS GRIZZARD

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NOTICE OF CONSTABLE SALE THE STATE OF TEXAS COUNTY OF BELL

NOTICE

## Notices

NOTICE OF APPLICATION FOR A COMBINATION DRILLING AND OPERATING PERMIT FROM CLEARWATER UNDERGROUND WATER CONSERVATION DISTRICT

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TEMPLE DAILY TELEGRAM

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TDT

The Temple Daily Telegram, the Temple-Belton area's #1 source for local news and information, has an opening for a business-to-business marketing consultant to join our team. This position will take over an established territory of Temple area businesses. If you have a great attitude and energy, we want to talk to you. Sales experience preferred, but we will train the right candidate.

Our account executives are sales professionals with excellent customer service skills and the drive to succeed. They work with local businesses, offering leading print and digital marketing solutions that will help grow their businesses and thrive.

This position includes servicing and selling an established customer base, as well as developing and maintaining relationships with new and future customers.

This position includes a base salary, commissions and competitive benefits including company-paid health insurance.

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