

Clearwater Source

Clearwater Underground Water Conservation District

www.cuwcd.org

2018 Annual Newsletter

| October 2018

| Volume 14, Issue 1

PIONEERS OF THE DISTRICT RETIRE

Clearwater UWCD has been governed by elected men and woman from across the county since 2002. Their guiding principles have been to "Protect the groundwater across Bell County so that it is available to future generations, while at the same time protecting property rights". To accomplish this, citizens have historically elected board members who understand the county, foster accountability of the staff, invest their time in knowledge and are committed to making the hard decisions. Two of those long-term directors have recently resigned from the board for two different reasons.

Wallace Biskup, Director Precinct 3, has served on the board for 20 years.

He was first appointed by the Bell County Commissioners Court in June of 1999. He has been elected and subsequently re-elected to the board by the citizens of Precinct 3 for 5 consecutive terms. He served as the board secretary from 1999 to 2002, then elected by the other board members to be Vice President starting in 2002. He has held that position up until his recent resignation on October 10, 2018. Wallace Biskup has a storied history of serving the northeast area of Bell County and the City of Troy with distinction since the early 1960's. He served on the Troy City Council for 20 years

and was appointed City Judge in 1981. His water expertise and leadership skills were first fostered by him serving as a director on the Elm Creek Watershed Authority for 16 years as their secretary. Wallace has owned Biskup Blacksmith and Welding Service in the Seaton Community of East Bell County, first with his father and now his son Wallace Biskup Jr.



Wallace Biskup, Director 1999-2018, Conservationist, Gentleman, Statesman.

Judy Parker, Director Precinct 4, has served on the board for 16 years. She was first elected in 2002 for four consecutive 4-year terms of office. Prior to that she served as an advisor to the initial board of directors. Judy has served as board secretary since 2011 as well as represented Bell County on the Groundwater Management Area 8 and the Brazos Region G State Water Planning Committee. She is known for her conservative mindset and property rights protections as she stood up for groundwater management.



Judy Parker, Director 2002 - 2018, teaching youth about groundwater management is her greatest passion.

Board President, Leland Gersbach, stated "We the Directors and staff of Clearwater will sincerely miss the passion, understanding and discernment of complex groundwater issues by both Wallace Biskup and Judy Parker. They are truly statesmen and peace makers in protecting property rights and our precious resource in Bell County. Their role in establishing Clearwater as a model single county district cannot be overlooked."

These storied leaders will be formally recognized at the upcoming 18th Annual Bell County Water Symposium in Killeen on November 15, 2018.

"BELL COUNTY, WE HAVE A PROBLEM..."

As the newest Director on your Board, I wanted to explain why I ran for this position, and in doing so, I hope to bring to light a problem that is growing urgent in Bell County. First, my story...

In late 2008, my wife, Stefanie, and I purchased a recently-built home on a little piece of property near Youngsfort. Being a rural property, our water source is a private well. One day in early August 2012, Stefanie turned the kitchen faucet on to get some water, and nothing came out! Our well was dry. Our well driller was consulted, and it was determined that the water level in our well had dropped below the pump. In fact, in the 5 years since our well was drilled, the level of water had dropped an astonishing 88 feet!

Thus, began my long trip down the road that led me to run for the Precinct 4 Director position. My "regular job" is as the Director of Engineering for a civil engineering firm in Killeen, and in that role, I've dealt with water wells for many years and have interacted with Clearwater staff on various projects over the years.

In the six years since lowering our well pump, I've read technical documents, talked to several groundwater experts, and attended numerous events in order to learn everything I can about groundwater. As a side note, I highly recommend the upcoming Bell County Water Symposium, having attended several in previous years. All this research revealed that the availability of groundwater in my neck of the woods (southwestern Bell County) is going to disappear for many residents in coming years if actions are not taken to better share this valuable resource.

Many groundwater experts believe that a big factor in the dropping well level is unlimited pumping from the aquifers in neighboring counties where there are no entities to monitor and limit pumping to sustainable rates. We on the District Board will be investigating ways to continue to protect this valuable resource as the explosive population growth in central Texas continues, and we need the help of all well owners in the District.



How can you, a well owner, help us? Your Board has invested wisely in scientific data collection for many years. Data is needed in order to make good decisions – bad (or lack of) data leads to bad decisions! We need data on wells affected by the falling water levels in order to determine how bad the problem is, and how rapidly it is worsening. If you've had to lower your well pump or dig a deeper well in recent years, we'd like to hear from you. If you know a neighbor who's had similar issues, encourage them to let us know. Please call the District office and share your story with our excellent staff. By gathering data on affected wells, we hope to manage a growing problem before it's too late. Thanks for your help and may the water in your well rise up to greet you!

Scott Brooks, P.E., Director, Pct. 4
Clearwater UWCD

BOARD OF DIRECTORS

Leland Gersbach - Precinct 1
2013-2018 (President)

Wallace Biskup - Precinct 3
2013-2018 (Vice President)

Gary Young - Precinct 2
2014-2018 (Director)

Scott Brooks - Precinct 4
2018 (Director)

David Cole - At large
2013-2018 (Director)

MISSION STATEMENT

To implement an efficient, economical, and environmentally sound groundwater management program to protect and enhance the water resources of the District.

WATER QUALITY SCREENING

The District's in-house lab offers registered well owners free screening for common constituents and bacteria. Annual screening is recommended.

BAYLOR UNIVERSITY STUDENT RESEARCH CONFIRMS DISTRICT MANAGEMENT STRATEGY

A Middle Trinity aquifer study by Baylor University student, Jim Tucker, provided evidence to support well completion strategies presently applied by the Clearwater Underground Water Conservation District (CUWCD) to protect water quality. The Middle Trinity aquifer is an important water resource in Bell County that is under stress from population growth and industrial use within the region. In addition, the Middle Trinity aquifer has variable water quality in parts of Bell County (see Figure 1, right).

Jim focused his study on the Hensell formation of the Middle Trinity aquifer and potential influences from the overlying Glen Rose Formation. The Hensell, a sandy formation, is the major water bearing unit in the aquifer. The Glen Rose Formation, a limestone unit that contains water in fractures, lies above the Hensell

Formation. Reviewing historical data from the Texas Water Development Board (TWDB), Jim found that water quality differed between the two for-

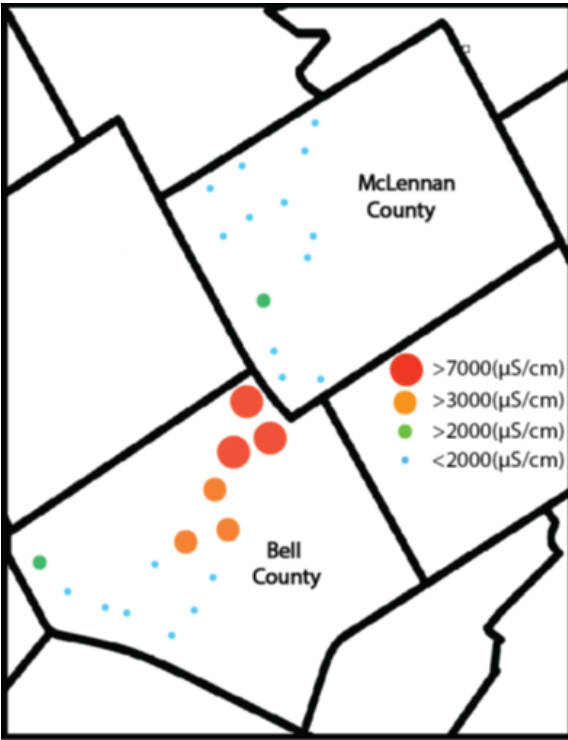


Figure 1. Specific conductance levels in Middle Trinity aquifer wells sampled in Bell and McLennan Counties, showing levels of concern in North-Central Bell County. The specific conductance is an indicator of the total dissolved solids (TDS) in the water and a general indicator of salinity (Tucker, 2018).

mations with the total dissolved solids (TDS) increasing upward from the Hensell to the Glen Rose. Jim also sampled wells during his study which supported the TWDB data. The best water quality (lowest TDS) occurred in wells screened only in the Hensell Formation and effectively sealed off from the overlying Glen Rose Formation. Wells screened in both the Hensell and the Glen Rose formation typically contained water of intermediate TDS levels suggesting a blend between the Glen Rose and Hensell water quality (see Figure 2 below.).

The CUWCD currently has specific well completion requirements for the Middle Trinity aquifer in the area of concern and research results confirmed the need for special well completion techniques in North-Central Bell County. The CUWCD rules appear well placed to protect the water quality.

The primary constituent contributing to the increased TDS content is sulfate (SO₄) and is probably related to gypsum minerals in the Glen Rose formation, but reasoning for the localized area of high concentrations is not completely understood. Higher head pressures occur in the Glen Rose formation, and differential pressures appear to be greater in the area of poorer water quality possibly causing water to migrate down from the Glen Rose toward the Hensell. One proposed hypothesis involves increased head pressure through leakage from the local reservoirs (Belton and Stillhouse) over the last 50 years. The increased head pressures make it difficult to seal wells effectively requiring special rules to protect the aquifer quality. To further answer some of these questions, Baylor University is currently undertaking a new study examining reservoir effects on the Edwards aquifer. This study is on track to be completed by the end of the 2018 and may provide insight into similar situations in the Middle Trinity aquifer. For more information on the research conducted by Jim Tucker, a summary slide presentation and a copy of his thesis are available on the CUWCD website.

Tucker, James J., IV, 2018, A hydrologic assessment of water chemistry and aquifer properties in the Middle Trinity aquifer in Bell and McLennan Counties in Texas, Unpublished master's thesis, Baylor University, Waco, Texas, 68 p.

Joe C. Yelderman Jr. Ph. D., P.G. #2941—Hydrogeology Professor, Baylor University

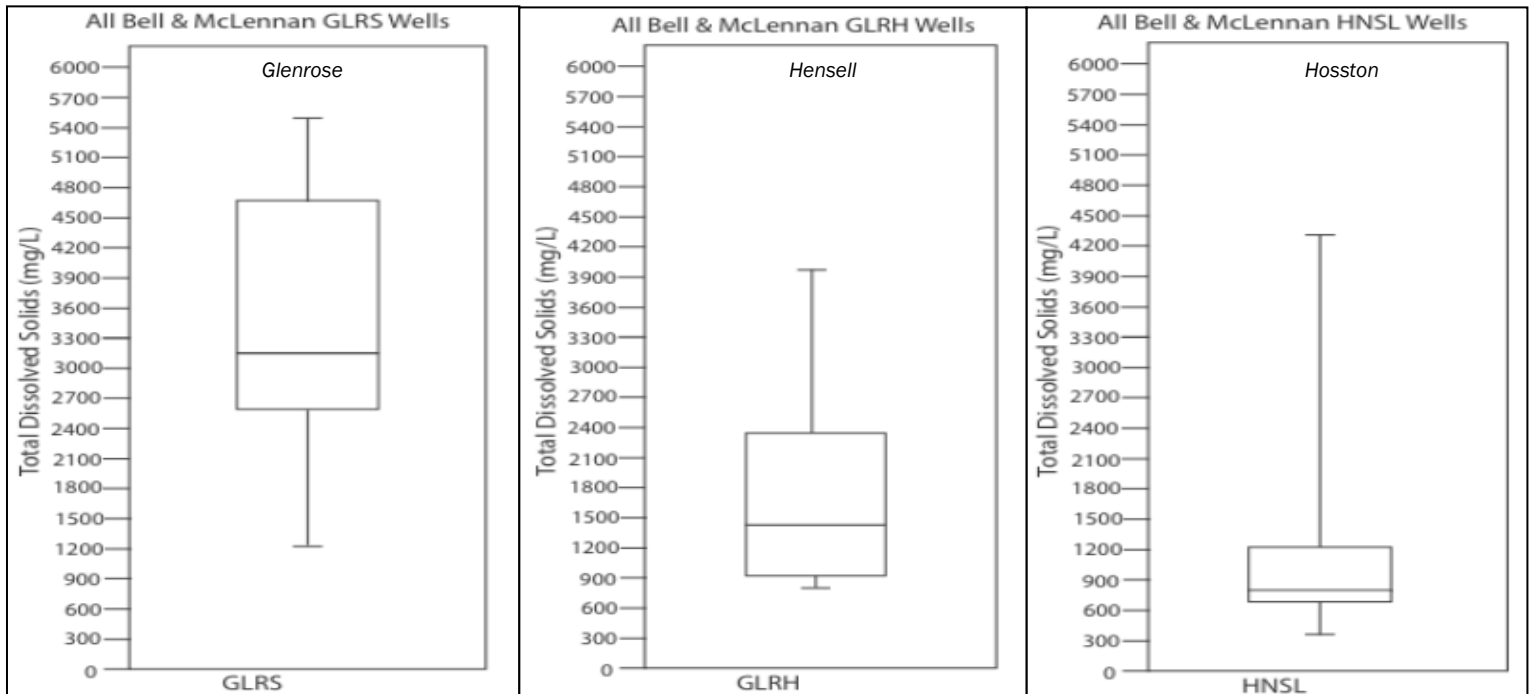


Figure 2. Mean total dissolved solids (TDS) values are highest in wells screened solely in the Glen Rose (GLRS) shown on the left. Intermediate levels occur in wells screened in both formations (GLRH) and the lowest values shown on the right occur in wells screened only in the Hensell (HNSL) (Tucker, 2018).

IN-DEPTH REVIEW OF GROUNDWATER CONDITIONS IN SOUTHWEST REGION OF BELL AND WILLIAMSON COUNTIES

Amidst citizen outcries and concerns related to groundwater drawdowns in southern Bell County and northern Williamson County, Clearwater UWCD has funded a repeat study petitioned by the district in 2014. The previous study and current study were based on a diligent effort to understand aquifer conditions of the Hensell Layer of the Trinity Aquifer, which underlies both Bell and Williamson Counties. Both studies followed serious drought conditions and a perception that well owners don't understand the fragile nature of the Trinity Aquifer. This layer of the aquifer is a valuable resource key to the rural areas of both counties yet managed in Bell and not Williamson County.

Recently in response to proposed mining operations in northern Williamson County, several landowners in both counties reached out to the District to better understand Trinity Aquifer conditions and how the pumping by the mine operators may affect their wells. To assess the current conditions of the aquifer, LRE Water, LLC, was hired by Clearwater to analyze changes in water levels in the Hensell Layer (Middle) of the Trinity Aquifer. In addition, LRE was asked to expand the evaluation to include an assessment of the water level conditions for the Hosston Layer (Lower) of the Trinity Aquifer.

To say the least, the analysis and formal report document the alarming conditions that are impacting groundwater's future in both Counties. Mike Keester, Professional Geoscientist with LRE Water, LLC, conducted the analysis while previously working for LBG-Guyton & Associates and now with LRE Water, LLC. He has provided a formal report with maps to Clearwater in early October of this year. His findings and conclusions can be found on CUWCD's website at <http://www.cuwcd.org/aquifer-science/trinity-aquifer/>.

The following is a shortened summary of the newest analysis from the 2018 report authored by Keester, LRE Water, LLC.

Keester States: "For the Middle Trinity Aquifer, the pattern of the water levels has not changed significantly from previous investigations. To the north of the study area, water levels are lower indicating a cone of depression extending toward McLennan County (see map titled: "Middle Trinity Aquifer Water Level Elevation - 2018"). This pattern is expected due to the historical groundwater production from the Trinity Aquifer north of Bell County.

Review of the drawdown map for the Middle Trinity Aquifer illustrates that though there is a cone of depression north of the study area, the largest recent water level declines are located in the central and southern portions of the study area (see Figure 1 below). Since 2006, water levels in the Middle Trinity have declined by 200 feet or more toward the Sun City area in Williamson County. Near the city of Florence, the water level declines are greater than 100 feet and are more than 140 feet in much of the area. Within Bell County, the Hidden Springs area to the west of Salado has experienced similar water level declines as those observed in northern Williamson County. The declines in these area since 2006 indicate average Middle Trinity Aquifer water level declines in much of the area exceed 10 feet per year.

The final Middle Trinity Aquifer map indicates that in much of the study area the water levels are near the top of the aquifer (see map titled: "Middle Trinity Aquifer Available Drawdown - 2018"). For example, near Florence water levels are less the 100 feet above the top of the aquifer and less than 50 feet above the top toward Sun City. Similar conditions are evident near the Stillman Valley area in Bell County. These low available drawdown levels mean that well owners will have increased difficulty accessing necessary quantities of groundwater."

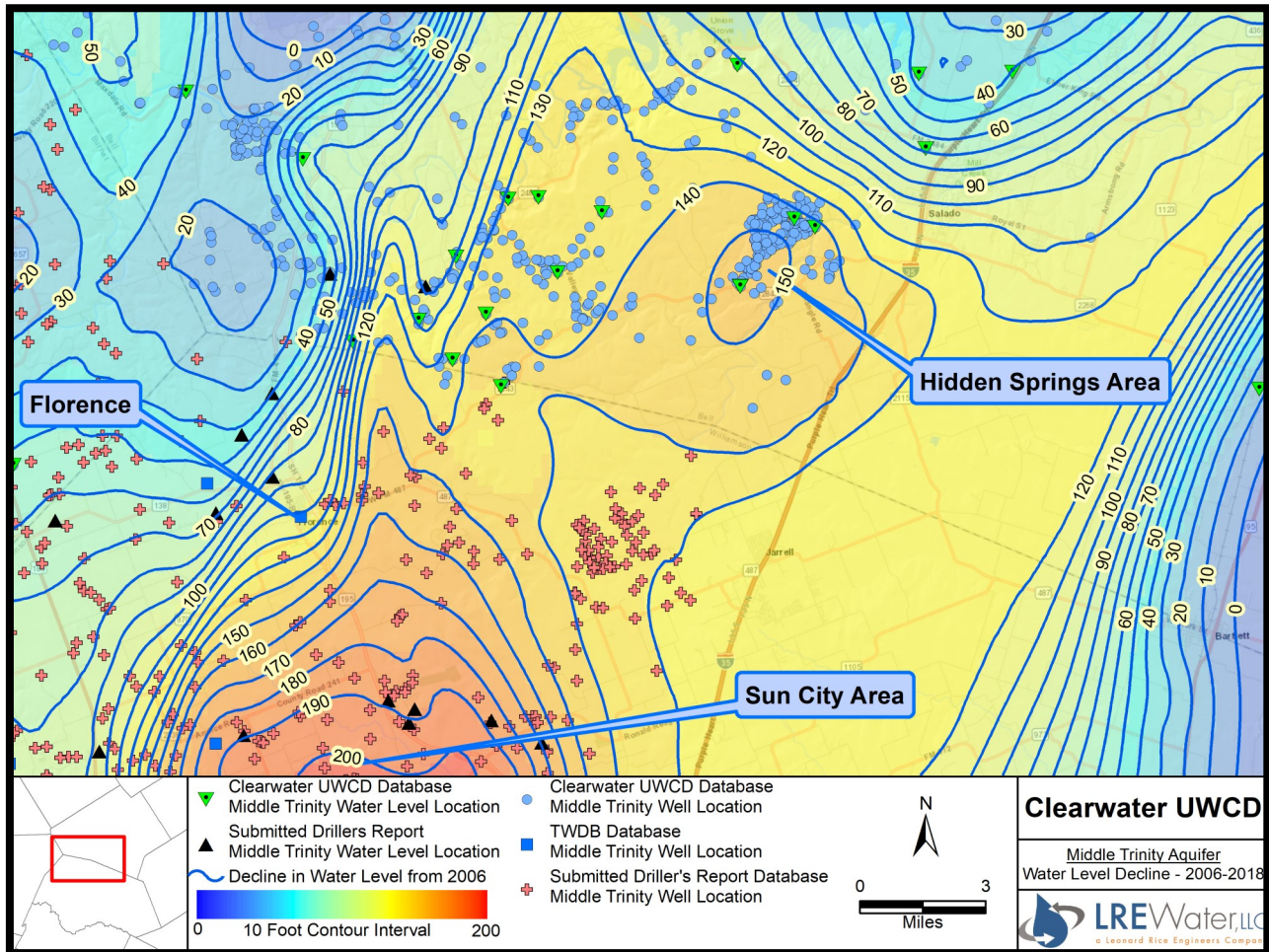


Figure 1: "Middle Trinity Aquifer Water Level Decline - 2006-2018"

(continued from page 3)

Keester in the following references his evaluation of the Lower Trinity Aquifer:

“Like the Middle Trinity Aquifer, to the north of the study area, water levels are lower indicating a cone of depression extending toward McLennan County (see map titled: “Lower Trinity Aquifer Water Level Elevation – 2018”). However, for the Lower Trinity, the cone of depression is broader and better defined. This pattern is expected due to the historically high production from the Trinity Aquifer north of Bell County.

Review of the drawdown maps for the Lower Trinity Aquifer illustrates the largest recent water level declines are located in the northern and southern portions of the study area (see Figure 2 below). Since 2006, water levels in the Lower Trinity have declined by 100 feet or more in northern Williamson County and in the northern portion of the study area in Bell County. The declines in Bell County are likely influenced primarily by the groundwater production in McLennan County. The declines in Williamson County are more likely caused by local groundwater production as the smaller declines in southern Bell County suggest that Williamson County is somewhat isolated from the regional water level declines occurring north of the study area.

Looking back at the declines since 2010, we see that near the Sun City area the declines are greater since 2010 than they were from 2006 (see map titled: “Lower Trinity Aquifer Water Level Decline – 2010-2018”). The greater declines over the shorter period of time indicates that water levels were recovering (that is, rising higher) from 2006 to 2010, but groundwater production since 2010 has likely increased causing a rapid decline in water levels. In most other areas, the water level declines appear to have remained fairly consistent or slowed to some extent.

In contrast to the Middle Trinity Aquifer, the available drawdown map for the Lower Trinity Aquifer map indicates water levels are typically well above the top of the aquifer (see map titled: “Lower Trinity Aquifer Available Drawdown – 2018”). The only area where water levels appear to be nearing the top of the aquifer is in the far western portion of the District. However, with the apparent rapid water level declines in Williamson County, the available drawdown values would correspondingly decline which is becoming evident around Florence. For a copy of the full report and maps, go to: <http://www.cuwcd.org/aquifer-science/trinity-aquifer/>.

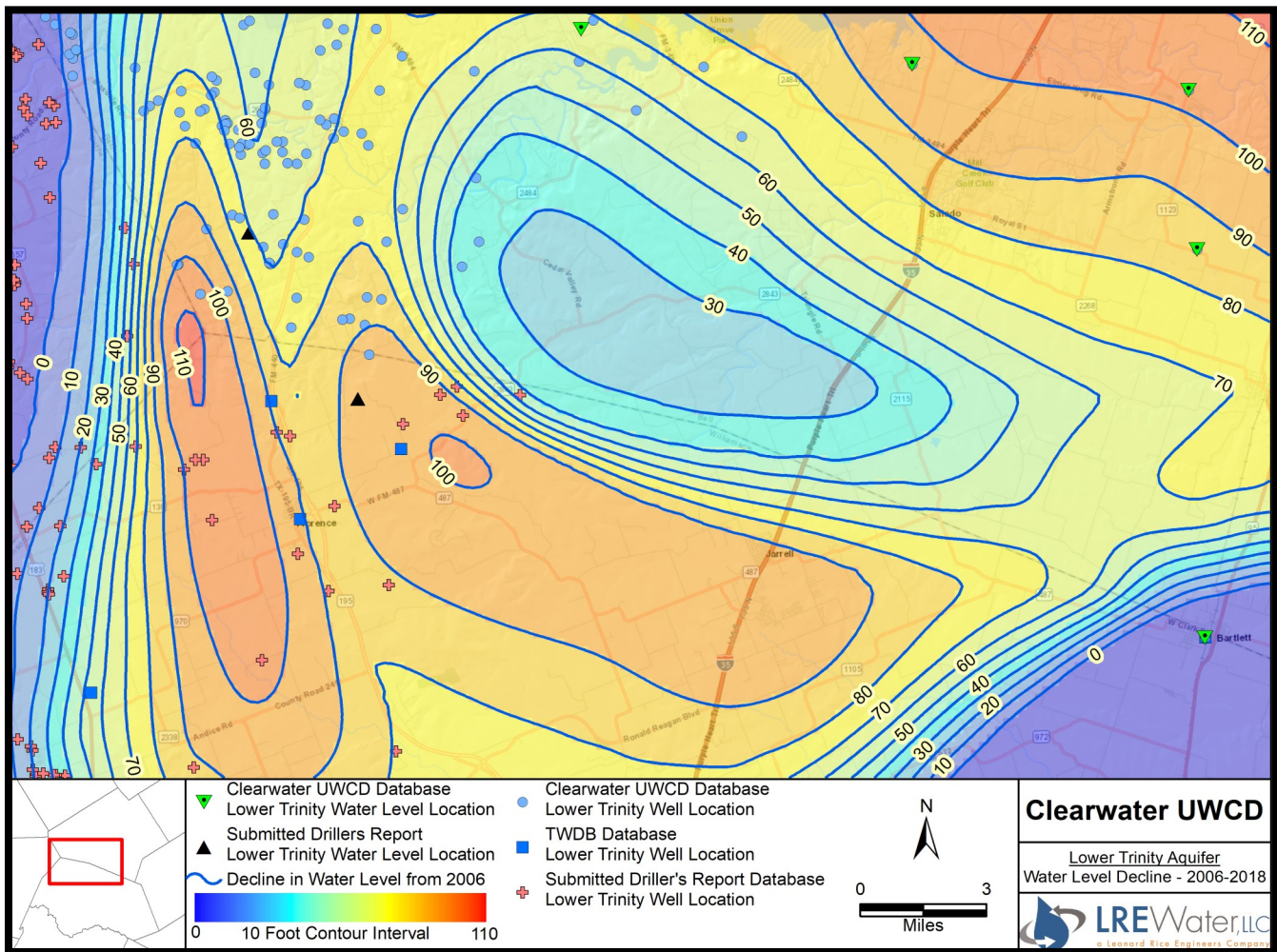


Figure 2: “Lower Trinity Aquifer Water Level Decline – 2006 - 2018”

In closing, Clearwater’s assessment provides insight of the need for the following:

1. Groundwater Management is needed in Williamson County, but an assessment by the Texas Water Development Board of the former “Report 350” due to the rapid pace of developments and groundwater demands.
2. Increase in conservation by rural groundwater users in Bell County is needed based on declines in and around rural communities such as Hidden Springs.
3. Expansion of rural public water supplies is a necessity for growth in Southwest Bell County.
4. Expansion of Rainwater Harvesting and use coupled with inclusion of these options into formal architectural designs of custom homes and businesses.

Groundwater Conservation Districts

FAQs



What is a Groundwater Conservation District?

GCDs are political subdivisions of the state created to protect and balance private groundwater interests with the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and the control of subsidence caused by withdrawal.

What does a GCD do?

- Establish rules for the spacing and drilling of all water wells
- Consider and permit non-exempt water wells
- Maintain records of non-exempt wells in a district
- Submit management plans to Texas Water Development Board for approval
- Collaborate regionally in joint planning for the establishment of DFCs
- Collect water level and water quality data on aquifers
- Educate stakeholders on water conservation
- Work to prevent harm to the aquifer due to pumping or contamination



How do GCDs allocate their budgets?



Education & Outreach



Science & Research



Operations



Conservation



Regional Planning

How many GCDs are there in Texas?

Currently, there are **98** GCDs plus 2 subsidence districts.

What rules must a GCD follow?

GCDs are governed by Chapter 36 of the Texas Water Code. As political subdivisions of the state, they are also subject to Chapter 49 of the Texas Administrative Code. Based on the rules established by the State, each GCD creates policies to accomplish the goals of their District.

Do I have to register my well with my GCD?

Yes, state law requires all wells to be registered with the GCD. This does not mean that all wells require a permit. All domestic wells and livestock wells that produce less than 25,000 gallons per day are exempt from permits. A GCD has the ability to exempt others in their rules.



More GCD FAQs

What is a management plan?

A management plan outlines a GCD's goals and course of action to achieve those goals. The management plan is submitted to TWDB for approval, and rules necessary to implement the management plan are adopted by each district.

What is a Desired Future Condition?

The desired future condition is a metric that is established during the joint planning process by GCDs in a common Groundwater Management Area (GMA). The DFCs provide for consistency in groundwater management in the GMA and a balance between groundwater protection and production.

How are GCDs funded?

GCDs are funded through property taxes, permitting fees and/or usage fees.

Groundwater Terms

Aquifer

An underground geological formation able to store and yield water in useable amounts. Aquifers in Texas can consist of sand, gravel, limestone, granite, and many other rock types that have pores or spaces for water to pass through.

Aquitard

An aquitard, or confining layer, is a zone within the earth that restricts the flow of groundwater.

Total Dissolved Solids (TDS)

TDS refers to the total concentration of dissolved constituents in solution. A TDS level of less than 1000 ppm is often considered freshwater, although many Texans' drinking water has a higher TDS.

Cone of Depression

A cone of depression is a conically shaped area of decreased water level (or pressure) that occurs when water is withdrawn from an aquifer. If wells are too close to each other, these cones may overlap and cause interference resulting in abnormally low water levels in those wells. In areas that withdraw more water than is recharged or flows to that area, a semi-permanent regional cone of depression may occur.

Abandoned Wells & Water Quality

There is a high environmental risk associated with abandoned or deteriorated wells, as they are a direct conduit from the surface to our groundwater resources. Because of this risk, it is highly recommended to have abandoned or deteriorated wells plugged. Some GCDs have established programs to assist landowners in plugging abandoned wells.

How often should I have my well water tested?

It is recommended that well owners have their water professionally tested annually or when an observed change in water quality occurs.

Who can disinfect my well water?

It is recommend to contact a licensed water well driller or a pump installer to professionally disinfect your well.

SALADO SALAMANDER UPDATE FOR 2018

After three and a half years of monitoring at the springs in the Salado area, we have gathered more information about the Salado salamander, *Eurycea chisholmensis*, than over the last eighteen years since its description. Last year, we were able to get a glimpse of the population dynamics of these salamanders and their habitat associations using a three year data set with observations of over seventy salamanders. Working in collaboration with Dr. Chris Nice from Texas State University, this year we have finalized the collection of genetic material from the known range of this species and will examine the population genetics using the largest data set yet compiled of over 150 Salado salamanders. This study will examine how genes are moving in the system which highlights the degree of population isolation or connectivity, the size of each individual population, and the unique genetic pattern at each site which will aid in conservation. We now know that these salamanders and the ecosystem that they live in thrives in the groundwater of Bell County. So if you see us at the springs, come over and say hello. We may even have a salamander to show you.



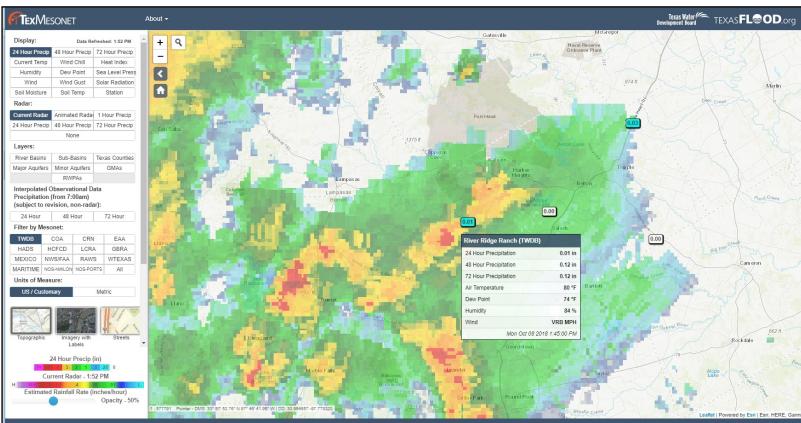
Pete Diaz, Aquatic Biologist
U.S. Fish and Wildlife Service



TEXMESONET IN BELL COUNTY

Clearwater is a key partner with the Texas Water Development Board and the governor's initiative to create a weather system across Texas. Clearwater with the Bell County Commissioners Court will add five new real time weather stations to Bell County. The first four are in place, one is south of Killeen in the Maxdale Community, one is in the City of Troy, one is located on the property of Central Texas Water Supply Corporation at Lake Stillhouse and the most recent is located at the City of Rogers in east Bell County.

The link to the TexMesonet Site is <https://www.texmesonet.org/Overview> This statewide earth observation network, known as TexMesonet, delivers near-real-time, quality data to forecasters, modelers, and the general public while managing quality assurance, quality control and metadata for partner networks. Because of local agreements with cooperators and support from the Bell County Commissioners Court, the state this summer installed the first four advanced weather stations Bell County. To learn more about this project, go to <https://www.texmesonet.org/>



Join the District for the 18th Annual Bell County Water Symposium

November 15, 2018 8:00 A.M. --- 4:00 P.M.
Texas A&M University - Central Texas

****This event is free but requires RSVP by November 9th****

Program at a Glance

“Understanding the Importance of Water in Today’s Future”

Key Note Address

Dr. Charles Porter, Professor at St. Edward’s University, Author, and popular speaker on Texas Water Rights. Dr. Porter provides an energetic persona on Water. He will capture your attention as he expresses his deep appreciation of Texas and our historical dependence on both groundwater and surface water systems. He recently published his newest book “*Sharing the Common Pool: Water Rights in the Everyday Lives of Texans*”.

Legal Experts will Provide

Case Law Updates on Groundwater Issues
Update on the TCEQ PGMA Process
Looking Back at the Legislature while moving forward on Water Issues

Update on the Brazos River Basin in Central Texas

Brad Brunnet, Lower & Central Basin Regional Manager
Brazos River Authority

Update on Groundwater Science, Tools, Uses and Aquifer Conditions in Bell County

Experts from Baylor University, United States Geological Survey, US Fish & Wildlife Service, and Clearwater UWCD.

What is the TexMesonet? Realtime Weather Watching

Dr. Leyon Greene, Hydrologist & Meteorologist, TexMesonet
Texas Water Development Board

Update from TWDB

Larry French, P.G., Texas Water Development Board

Event Sponsors

Clearwater UWCD

LRE Water, LLC

HALFF Associates

Lloyd-Gosselink Attorneys at Law

Bell County Engineers Office

Texas AgriLife Extension Service

Texas A&M University - Central Texas



P.O. Box 1989
Belton, TX 76513



THE MANAGER'S COMMENTS

Clearwater Underground Water Conservation District has set the 18th Annual Water Bell County Water Symposium for November 15, 2018 in Killeen at the campus of Texas A&M University - Central Texas. The theme of this year's event is "Understanding the Importance of Groundwater and Surface Water". We have continued our annual event by focusing our efforts with Texas AgriLife Extension Service in Bell County, the Bell County Engineers Office and the Bell County Commissioners Court.

Our Keynote Address at noon will be by Dr. Charles Porter, Author and Professor and popular speaker on Texas Water Rights. Dr. Porter is a professor St. Edwards University in Austin, Texas and provides an energetic persona on water. He will capture your attention as he expresses his deep appreciation of Texas and our historical dependence on both groundwater and surface water systems. He recently published his newest book "Sharing the Common Pool: Water Rights in the Everyday Lives of Texans".

I found his newest book to be available on Amazon.com. I was intrigued by the online introduction. Dr. Porter says, "If all the people, municipalities, agencies, businesses, power plants, and other entities that think they have a right to the water in Texas actually tried to exercise those rights, there would not be enough water to satisfy all claims, no matter how legitimate". He explains in the simplest possible terms who has rights to the water in Texas, who determines who has those rights, and who benefits or suffers because of it.

Dr. Porter will further explain the origins of Texas Water Law. His book looks at the elements of the state's Spanish, English, and Republic heritages,

that have contributed to the development of our system that defines water by where it sits, flows, or falls and assigns its ownership accordingly. He will frame up a deeper understanding of water and our challenges as population growth abounds!

We also have the following topics planned:

1. Who and What is the Texas Water Development Board?
2. History of Groundwater Conservation Districts.
3. What is the Impact of Groundwater Use in Bell and Williamson Counties?
4. Updates on Recent Case Law Pertaining to Groundwater Permitting.
5. What Should We Expect in the Next Legislative Session on Water?
6. Realtime Weather Stations Installed Across Bell County.
7. What is the Status of Our Aquifer System in Bell County?
8. What is an Aquifer Test and What is the So What?

We will highlight our day with a special recognition of some stakeholders and longtime leaders from across the County who have been significant in our forward progress since the drought of the 1950's and the most recent challenges of the past few years. The Board of Directors of Clearwater UWCD look forward to another year of showcasing the importance of water to our robust economy.



Dirk Aaron, General Manager
Clearwater UWCD

INNOVATIVE PERMITTING FOR BENEFICIAL USE AND AQUIFER MANAGEMENT

In 2014 Central Texas Water Supply Corporation (CTWSC) submitted drilling permit applications for two public water supply wells to be completed in the Lower Trinity Aquifer. Within the applications, CTWSC indicated that the anticipated aggregate operating permit application for the two wells would be for 2,421 acre-feet per year (AFY). While understanding CTWSC's ownership of the groundwater beneath their properties, Clearwater Underground Water Conservation District (CUWCD) also needed to assess the potential operating permit the amount "necessary for beneficial use during the permit term" (District Rule 5.2). CUWCD did not want CTWSC to invest in wells and infrastructure with an unwarranted expectation for an operating permit.

To assess CTWSC's potential demand for beneficial use, the District conducted a needs assessment by considering CTWSC's projected customer demands through the year 2045. The District conducted the assessment through 2045 understanding the realities of long-term planning and financing associated with the investment by CTWSC. However, rather than 2,421 AFY, the District's assessment identified only 1,579 AFY of potential long-term demand.

Following completion of the first production well in 2015, CTWSC applied for 726 AFY of groundwater production. As the amount was less than one-half of the projected long-term demand identified by the District, the CUWCD Board issued the operating permit in September 2015. The issuance of the permit left 853 AFY of identified potential long-term demand remaining.

The District did an excellent job in their role of vetting the initial application to assess the potential beneficial use and convey the expectation to the applicant. CTWSC understood that it was up to them to demonstrate

that the potential groundwater demand from current and potential customers was greater than identified by the District if they desired an aggregated operating permit of 2,421 AFY.

In June 2017, CTWSC submitted additional analyses that were consistent with CUWCD's 2014 analysis, but expanded on potential population growth, per capita water demands, and drought planning criteria. The results showed that for long-term planning CTWSC's groundwater demand ranged from 2,416 to 3,569 AFY by 2050. Tied to population projections, the projected demand increased with increasing population.

Based on their analyses, CTWSC submitted a revised operating permit application for a long-term amount of 2,421 AFY. However, recognizing the District's mandate to manage the groundwater resources in Bell County, CTWSC proposed permit conditions that would allow the amount to increase over time. CUWCD accepted the concept of an operating permit with growth provisions and worked with CTWSC to develop special conditions that tie growth of the permit amount to adoption of and compliance with aquifer desired future conditions.

The permit conditions developed collaboratively with the applicant created an innovative solution benefiting both the District and CTWSC. CTWSC receives the benefit of certainty in an operating permit amount and duration, based on meeting defined aquifer conditions, and the District benefits by being able to effectively manage the groundwater resources in Bell County with permittee engagement. The resulting operating permit is a unique, innovative, and progressive example of long-term permitting based on defined beneficial use and aquifer management.

Mike Keester, Hydrogeologist
LRE Water, LLC