TREC Continuing Education Provider License: #10614

Groundwater & Wells in Texas: What Realtors Should Know

Instructor: Jill Garcia

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Course Outline

Course Duration:
4 Hours + breaks (1 credit per hour)

Course Topics

- 1. **Aquifers & Water Wells** (50 minutes)
  - Section 1 Review Questions
  - Break
- 2. **Agency Overviews & Water Law** (50 minutes)
  - Section 2 Review Questions
  - Break
- 3. **GCD/Realtor Resources & District Rules** (50 minutes)
  - Section 3 Review Questions
  - Break
- 4. **Water Quality & Conservation Resources** (50 minutes)
  - Section 4 Review Questions
  - Course Wrap-up & Exam

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Navigating Course Resources

PowerPoint

- screen images of websites
- Additional notes under slides for history and scope

Folder Zip Drive

- Full documents of district rules, state rules, and larger files (in case you don't have internet access while trying to read through outlines ☺)

Course Outline

- Contains links and QR codes for every document & resources discussed throughout course

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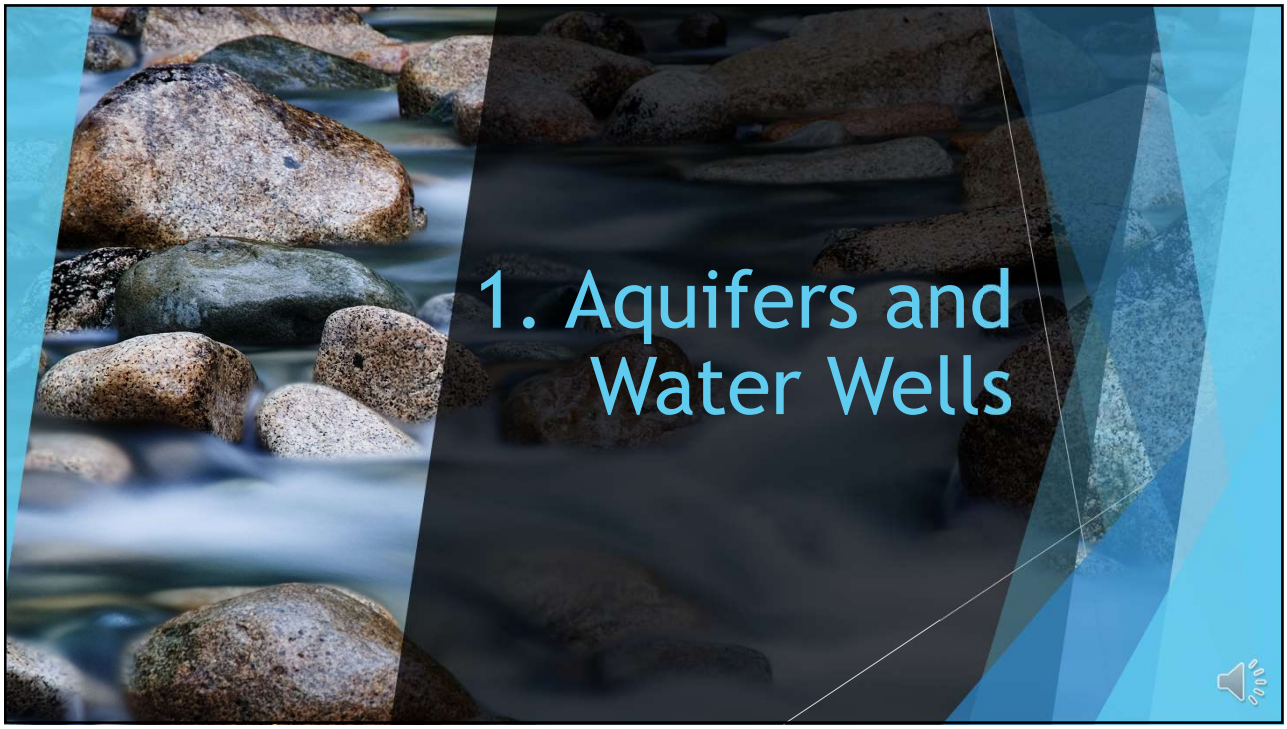

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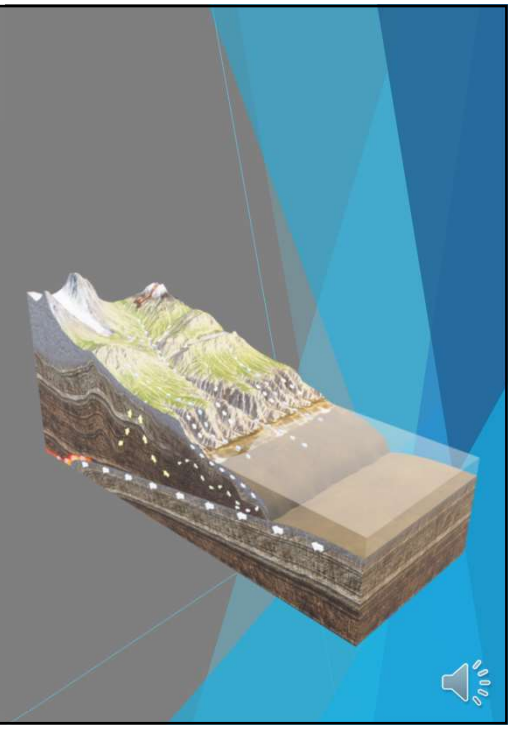
Before we dive in….

- Use the notecards on your table to take a moment and write down 2-3 questions you've received from landowners on anything regarding groundwater, water, or wells in Texas.
- Or questions you've had before as an agent that you've wondered about.
- We're going to visit these questions later in the course to see how we're doing. ☺
- Our plan today is you all have the answers to all of your questions, or at least know where to find the information.



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Instructor Information

- Bachelor of Science in Geology: Tarleton State University
- Master of Science in Geology: Sedimentology & Stratigraphy, Texas Tech University
- Professional Geoscientist License: 15370

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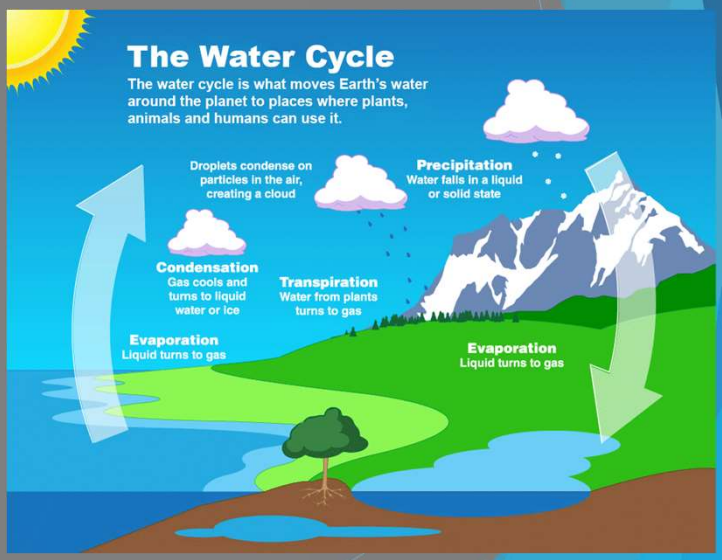
1. Water Wells & Aquifers

- <u>The Water Cycle</u>
- Although groundwater exists beneath our feet, every action on the surface of the Earth impacts groundwater quality and quantity.
- Weather, development, and land use all impact groundwater systems across the world.



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1. Water Wells & Aquifers

- <u>What is an aquifer?</u>
- A geologic body that houses or transmits groundwater and are classified by their size and volume production into minor and major labels (or principal aquifers).

Unconfined Aquifers

- Rock formation below soil – recharged by precipitation percolating through soil.
- Sensitive to contamination, drought and flooding.

Confined Aquifers

- Under pressure due to confining layer of rock/clay above unit.
- Recharge takes longer, water levels above actual levels due to compression.

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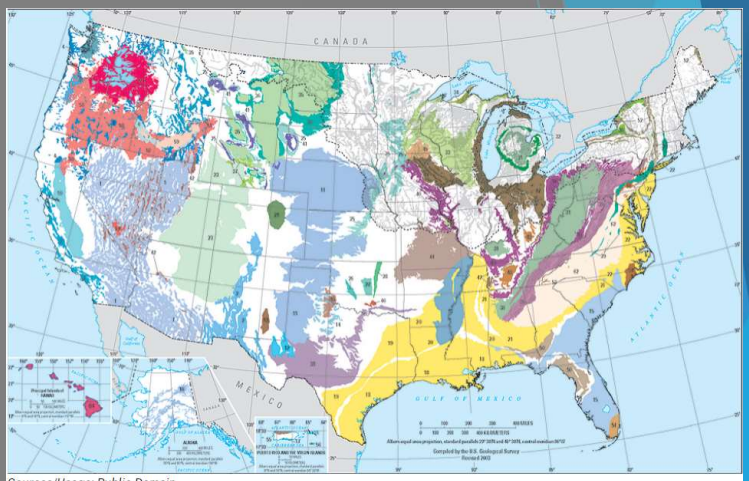
1. Aquifers and Water Wells

- This map, which was derived from **Ground Water Atlas of the United States** data (published as part of the National Atlas in 1998, revised 2003) indicates the areal extent of the uppermost principal aquifers on a national scale.
- Of the 17 million acre-feet of water used by Texans each year, 60% (approximately 10.2 million acre-feet) is groundwater.
- Of the groundwater used, 80% (approximately 8.16 million acre-feet) of the water is used for agricultural irrigation for approximately 6.3 million acres of irrigated agricultural land.
- Another 15% (1.53 million acre-feet) is used by municipalities.



Sources/Usage: Public Domain.

This principal aquifers map is available for download as a wall-map-sized PDF (14.4 MB), a printable PDF (1.7 MB), or available for purchase from the USGS Store.

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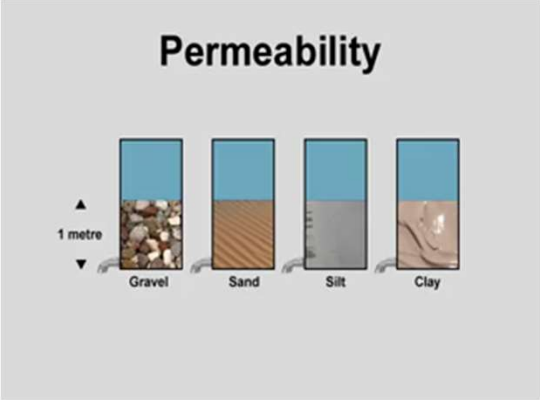
1. Water Wells & Aquifers

- How does water move under the ground?
- Groundwater sits below the *water table* of an aquifer, between rock and soil particles.
- Pumping pulls the water molecules from between soil and dirt, and as such creates void space in the formation.



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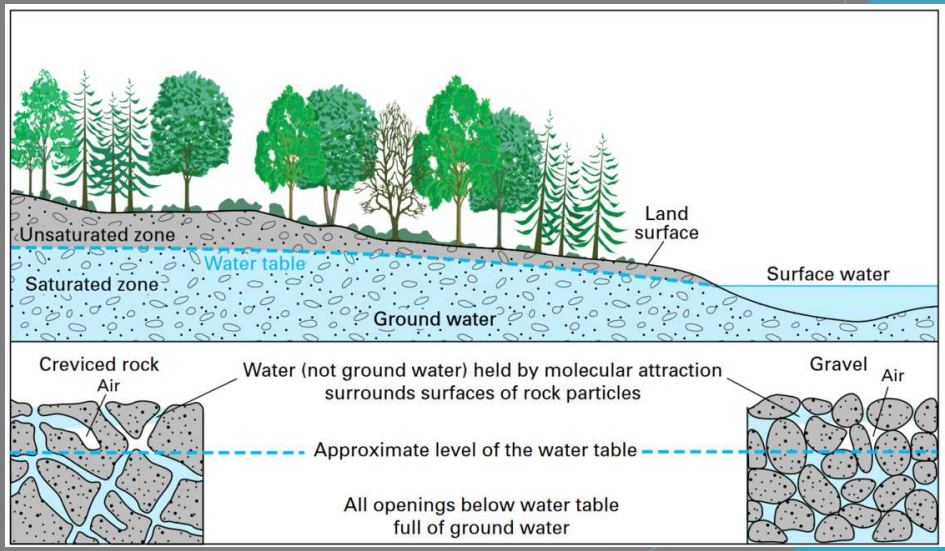
1. Water Wells & Aquifers



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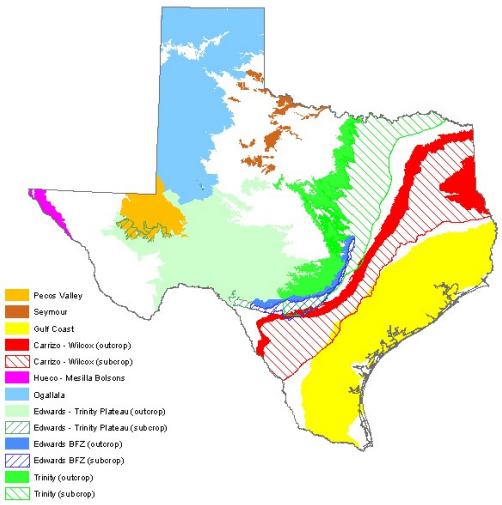
1. Aquifers and Water Wells

- Major aquifer systems in Texas
- This includes;
  - The Trinity Aquifer
  - The Carrizo Wilcox Aquifer
  - The Gulf Coast Aquifer
  - The Ogallala Aquifer



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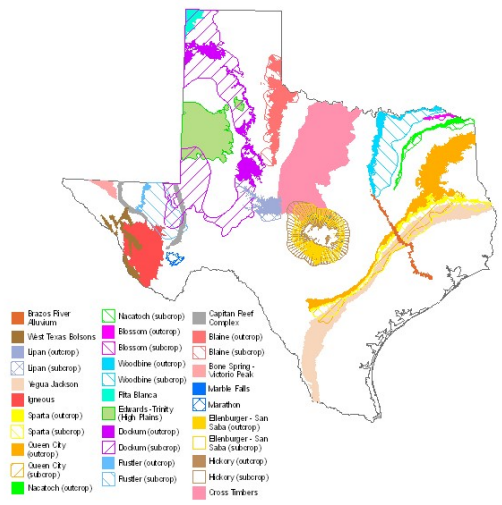
1. Aquifers and Water Wells

- The adjacent map features all minor aquifer systems in Texas.
- This includes;
  - The Woodbine Aquifer
  - The Cross Timbers Aquifer



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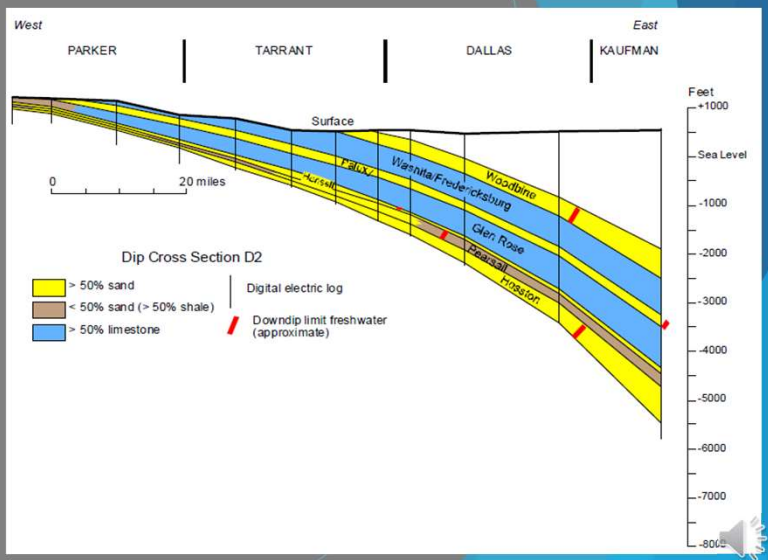
1. Aquifers and Water Wells

- The orientation of the geologic units below Texas dictates how much aquifer formation is available under a given property or community.
- Note the eastward dipping trend with the Woodbine and Paluxy units.
- County featured: Parker



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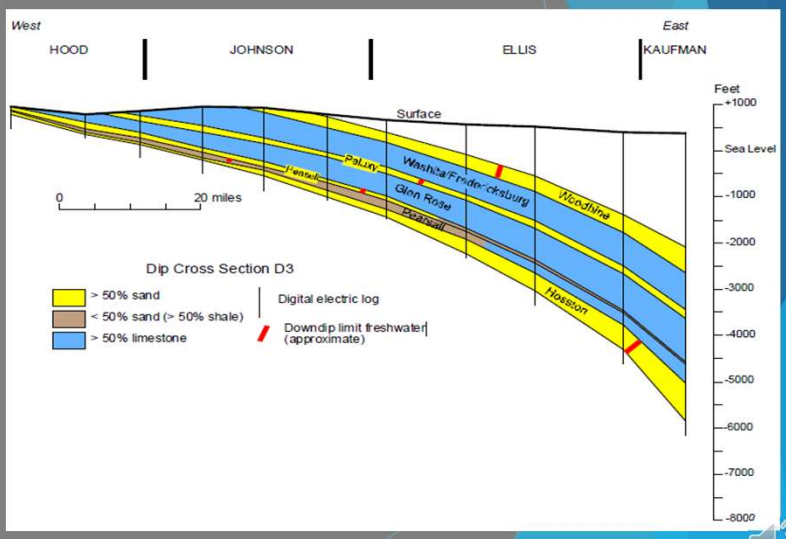
1. Aquifers and Water Wells

- The orientation of the geologic units below Texas dictates how much aquifer formation is available under a given property or community.
- Note the eastward dipping trend with the Woodbine and Paluxy units.
- County featured: Hood



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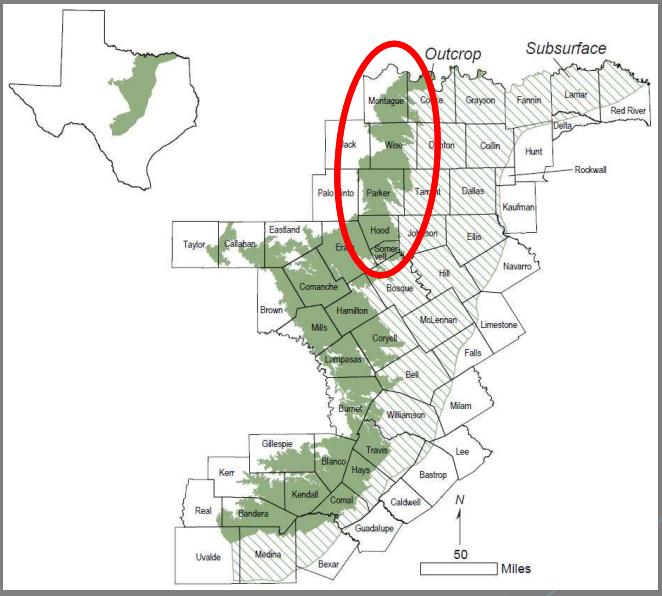
1. Aquifers and Water Wells



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1. Aquifers and Water Wells

- The orientation of the geologic units below north Texas dictates how much aquifer formation is under a given property or community.
- Note the eastward dipping trend with the Woodbine and Paluxy units.

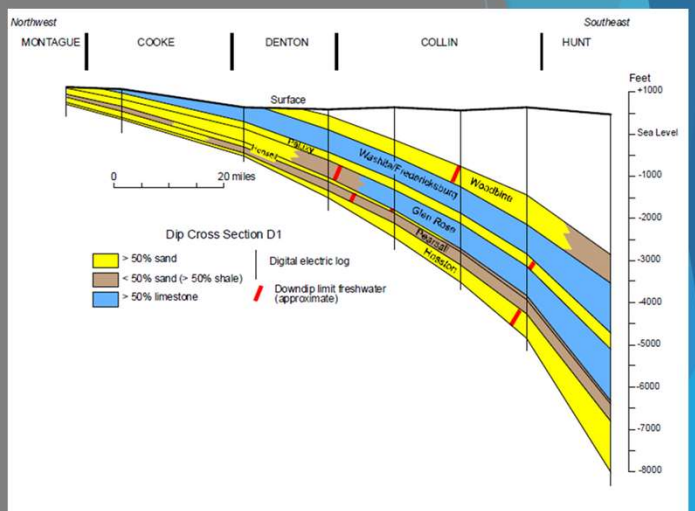

Figure 4.1.31 Dip-oriented cross section D1 showing stratigraphic boundaries, dominant lithologies, depths in feet, and downdip limits of freshwater in sandstone and shale layers.

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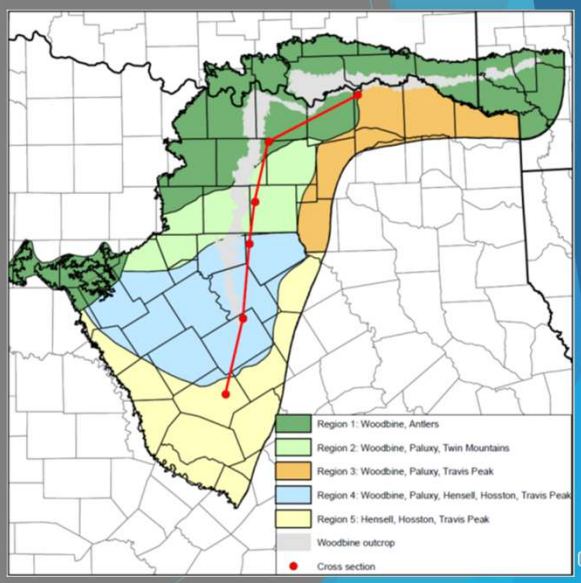
1. Aquifers and Water Wells

- How do aquifers behave in various regions of Texas?
- The Upper Trinity GCD has three different regions of aquifers within a four-county perimeter.
- Aquifer production is dictated by lithology, stratigraphy, recharge area exposure, and current water usage.



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1. Aquifers and Water Wells

Model Terminology	Region 1	Region 2	Region 3	Region 4	Region 5
Woodbine Aquifer	Woodbine	Woodbine	Woodbine	Woodbine	Woodbine (no sand)
Washita/ Fredericksburg Groups	Washita/ Fredericksburg	Washita/ Fredericksburg	Washita/ Fredericksburg	Washita/ Fredericksburg	Washita/ Fredericksburg
Paluxy Aquifer	Antlers	Paluxy	Paluxy	Paluxy	Paluxy (no sand)
Glen Rose Formation	Antlers	Glen Rose	Glen Rose	Glen Rose	Glen Rose
Hensell Aquifer	Antlers	Twin Mountains	Travis Peak	Hensell/ Travis Peak	Hensell/ Travis Peak
Pearsall Formation	Antlers	Twin Mountains	Travis Peak	Pearsall/ Sligo	Pearsall/ Sligo
Hosston Aquifer	Antlers	Twin Mountains	Travis Peak	Hosston/ Travis Peak	Hosston/ Travis Peak

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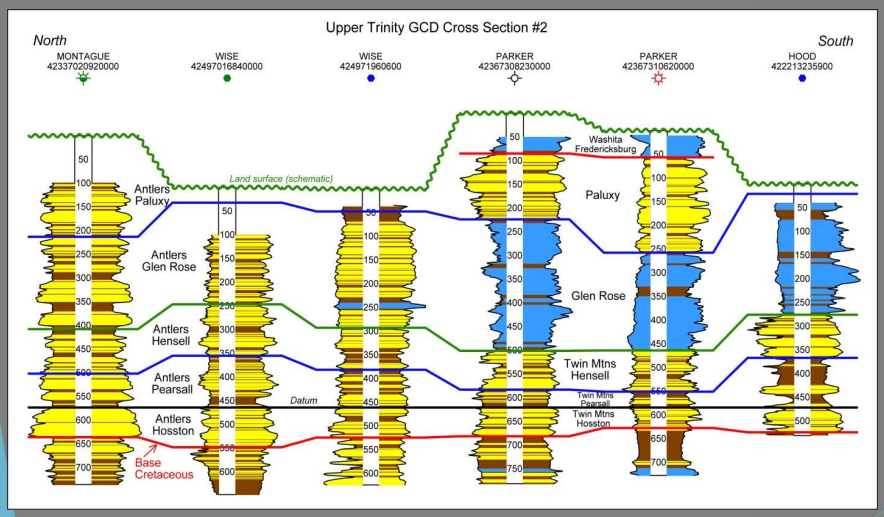
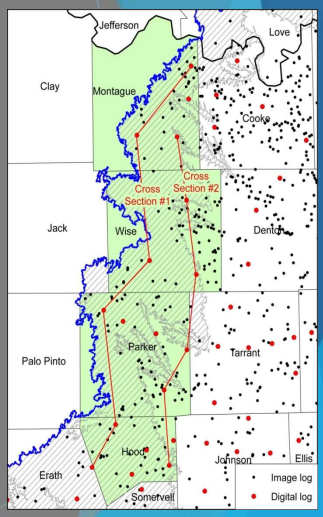
1. Aquifers and Water Wells





- Yellow = Sandstone --- Blue = Limestone --- Brown = Shale

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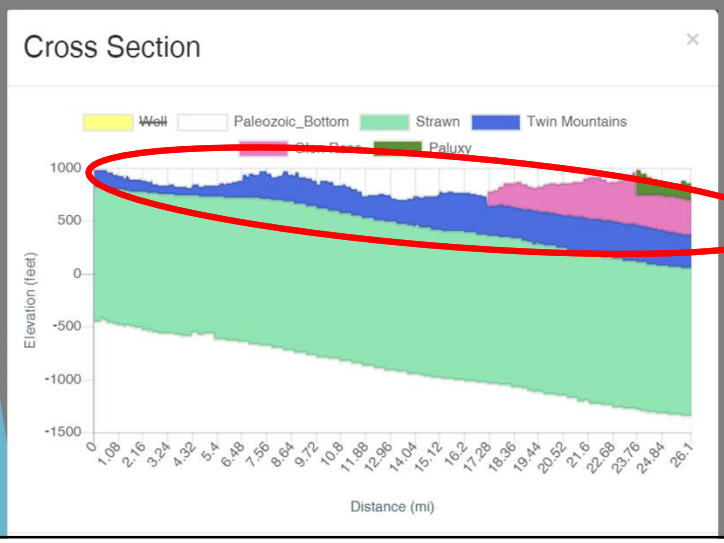
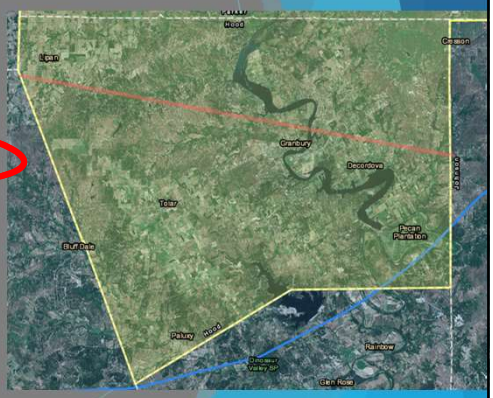
1. Aquifers and Water Wells





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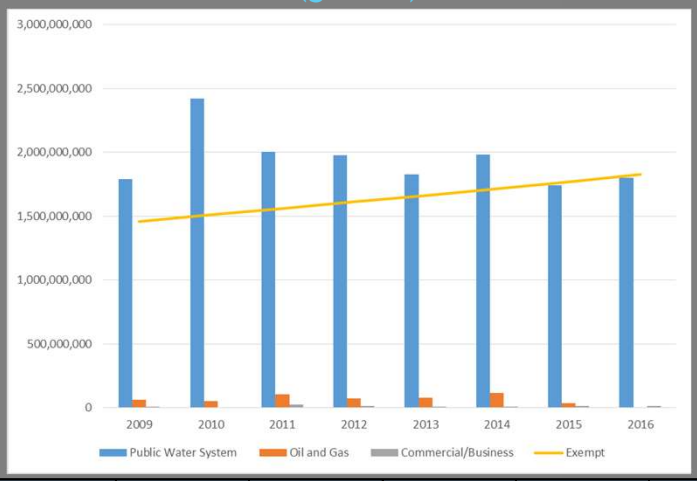
Groundwater Use In Hood County
(gallons)



	2009	2010	2011	2012	2013	2014	2015	2016
Public Water System	1,790,295,116	2,420,292,197	2,002,168,891	1,977,716,600	1,827,573,445	1,980,733,757	1,744,502,563	1,798,671,211
Oil and Gas	64,349,556	53,218,068	104,998,893	71,947,878	80,266,359	113,618,296	35,975,543	341,477
Commercial/Business	8,555,245	1,973,770	26,783,189	15,629,484	8,484,903	10,488,758	13,715,608	12,165,995
Exempt	1,458,183,225	1,509,667,683	1,561,152,141	1,612,636,599	1,664,121,057	1,715,605,515	1,767,089,973	1,827,698,259

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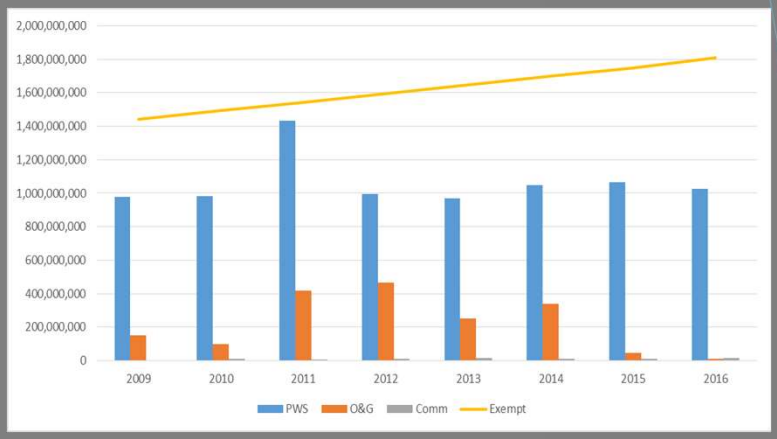
Groundwater Use In Parker County
(gallons)



	2009	2010	2011	2012	2013	2014	2015	2016
PWS	977,314,507	980,204,871	1,434,078,091	997,396,656	968,300,518	1,049,312,224	1,065,510,019	1,023,991,375
O&G	151,356,599	100,258,075	418,170,316	467,686,178	253,484,474	339,047,767	47,051,395	11,812,465
Comm	4,101,000	12,858,600	6,253,900	10,973,900	14,680,900	10,943,600	10,356,600	17,531,056
Exempt	1,440,913,122	1,492,397,580	1,543,882,038	1,595,366,496	1,646,850,954	1,698,335,412	1,749,819,870	1,809,124,752

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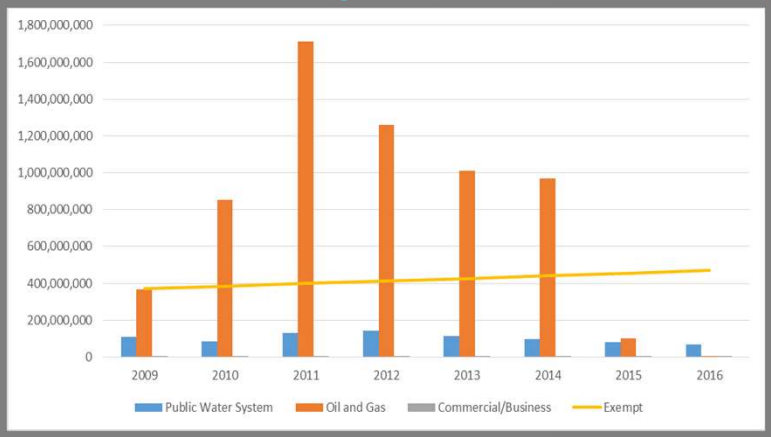
Groundwater Use In Montague County
(gallons)



	2009	2010	2011	2012	2013	2014	2015	2016
Public Water System	107,872,730	84,557,880	128,749,130	142,507,748	114,980,020	97,244,815	81,605,118	66,364,379
Oil and Gas	366,714,528	851,730,235	1,713,191,572	1,259,956,606	1,011,429,778	967,943,532	99,653,792	833,284
Commercial/Business	763,140	922,010	977,930	871,330	1,040,713	3,442,057	2,310,400	1,833,565
Exempt	370,818,438	384,830,031	398,841,624	412,853,217	426,864,810	440,876,403	454,887,996	469,225,440

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1. Aquifers and Water Wells

Aquifer Unit: Paluxy Formation

- Known for high permeability, porosity, and lack of clay.
- Clean, well sorted sandstone.

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1. Aquifers and Water Wells

Confining Unit: Glen Rose Limestone

- Known for placing confining pressure on lower aquifer units, characteristic fossils and high calcium carbonate amounts.
- Fossiliferous limestone with high levels of clay.

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1. Aquifers and Water Wells

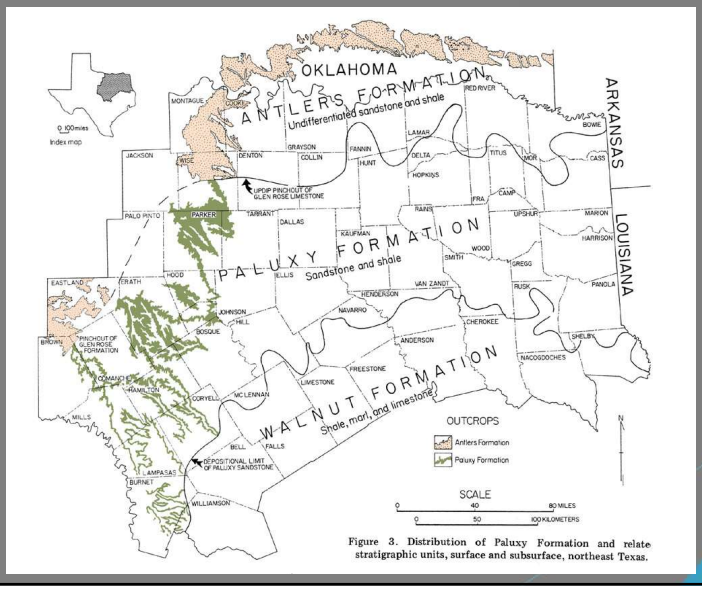

Figure 3. Distribution of Paluxy Formation and relate stratigraphic units, surface and subsurface, northeast Texas.

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1. Aquifers and Water Wells

- District residents frequently ask about underground rivers and cave systems.
- North Texas does not have significant volumes of karst limestone present.
- Subsequently, cave systems and cave aquifers are found in Central and South Texas.

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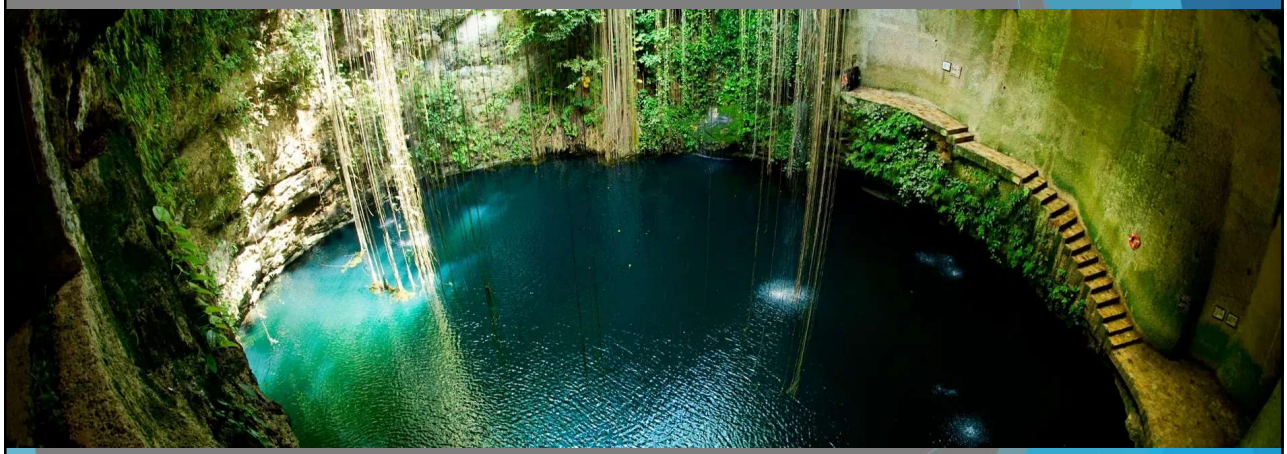
1. Aquifers and Water Wells



Cenotes are exposed sinkholes that contain groundwater and are accessible from the surface. These types of features are common in degraded limestone, or karst habitats. Those types of aquifers are found in central Texas and Mexico

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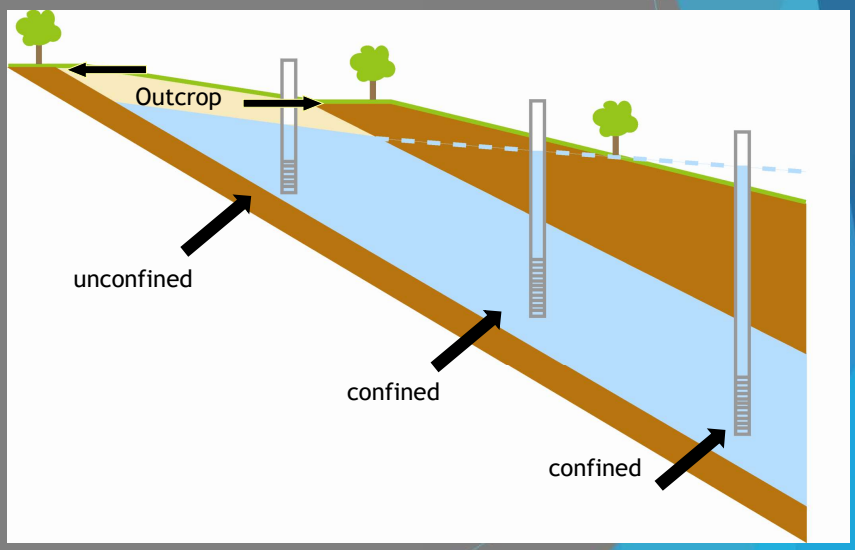
1. Aquifers and Water Wells

Confined aquifers exist under pressure from overlying geological units.

How does that influence well water levels?



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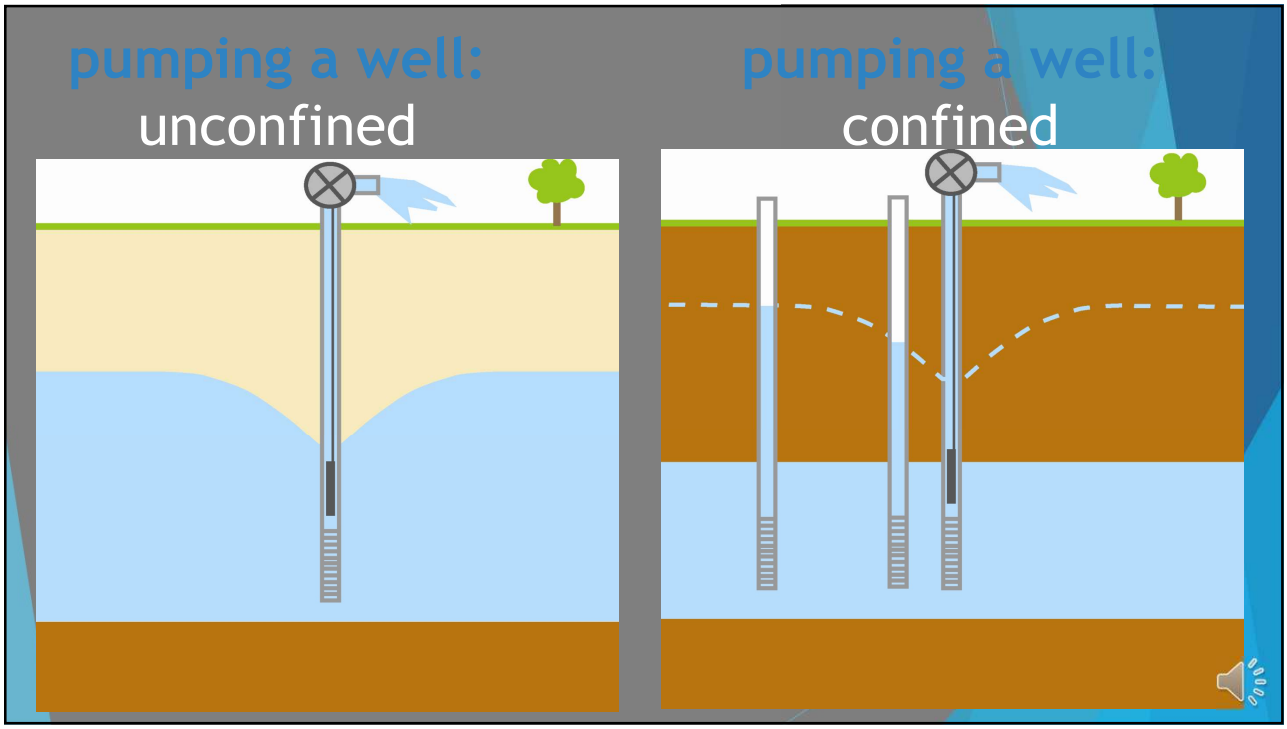
pumping a well:
unconfined
pumping a well:
confined

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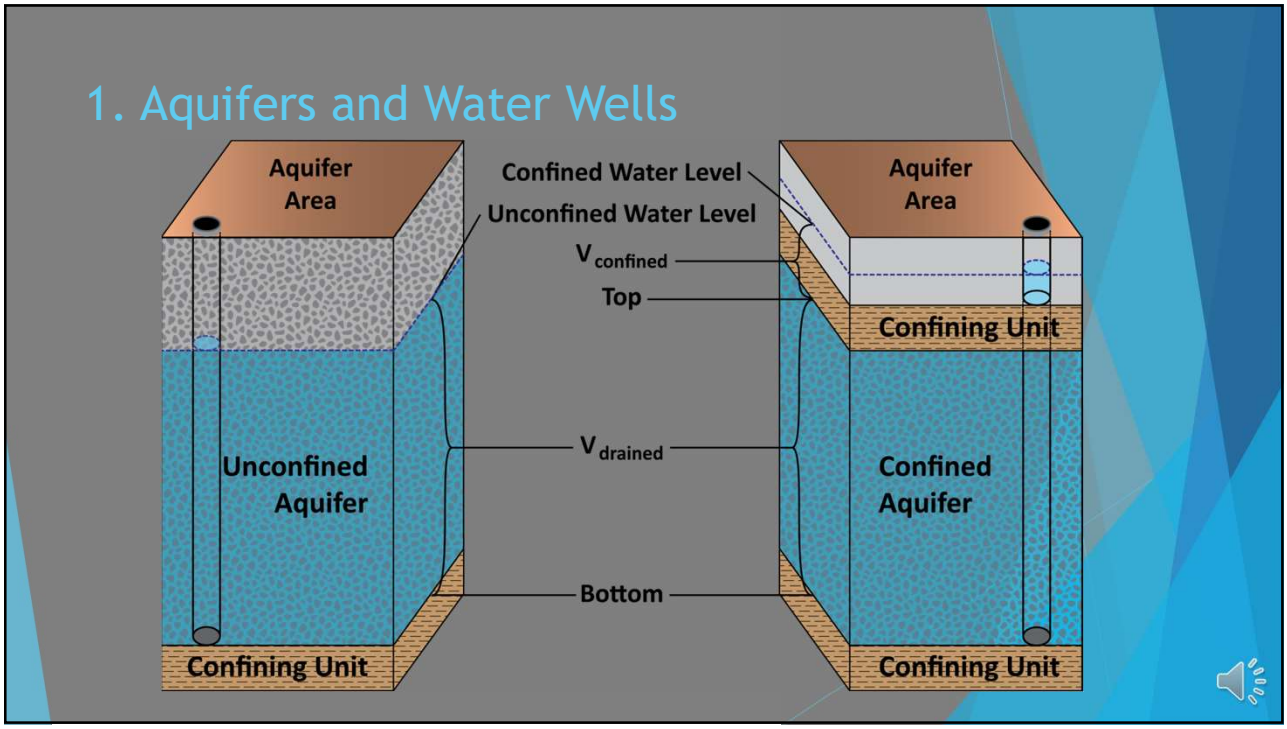
1. Aquifers and Water Wells
Aquifer Area
Confined Water Level
Unconfined Water Level
$V_{confined}$
Top
Aquifer Area
Confining Unit
Unconfined Aquifer
$V_{drained}$
Confined Aquifer
Bottom
Confining Unit
Confining Unit

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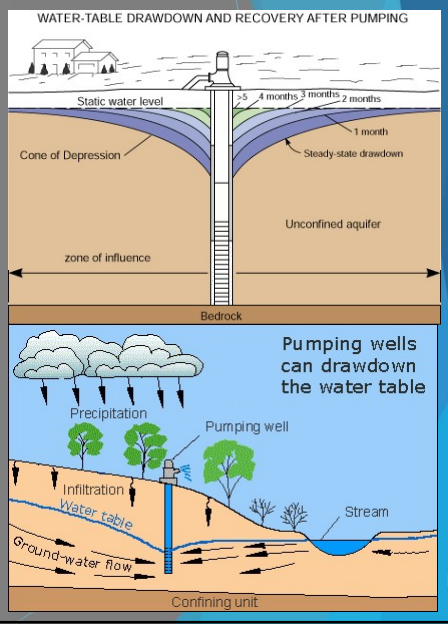
1. Aquifers and Water Wells

What happens to aquifer water table levels over time?

- Cones of depression can form as the result of groundwater usage and create depressed water levels around the well. The well pump may have to work harder to compensate for lower water levels.
- If the aquifer system is confined, the cone can spread for miles in every direction due to the pressure on the water table.
- If a well is proximal to a surface water body, it may even start to divert volumes from streams and river recharge.



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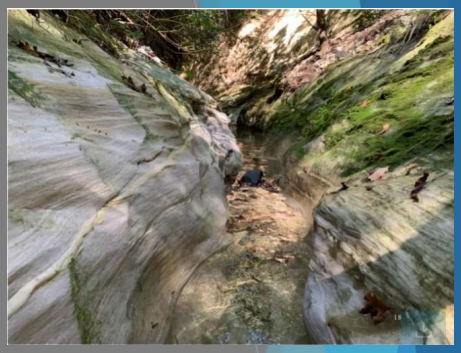
1. Water Wells & Texas Aquifers

- Impacts of groundwater over-usage
  - Subsidence
  - Soil degradation
  - Water table reduction
  - Contamination dispersal
  - Natural spring reduction
  - Loss of land values
  - Surface water body recharge impacts



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1. Aquifers and Water Wells

What is a water well?

- A well is a hole drilled into the ground to access water contained in an aquifer. A pump is used to pull water out of the ground, and a screen filters out unwanted particles that could clog the pipe.
- Wells vary in shapes and sizes, depending on the type of material the well is drilled into and how much water is being pumped out.
- More than 42 million people in the United States use individual or private wells to supply water for their families.

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1. Water Wells & Texas Aquifers

- Types of water wells (3 kinds)
- Bored or shallow wells are usually established into an unconfined water source, generally found at depths of 100 feet or less.
- Consolidated or rock wells are drilled into a formation consisting entirely of a natural rock formation that contains no soil and does not collapse. Their average depth is about 250 feet.
- Unconsolidated or sand wells are drilled into a formation consisting of soil, sand, gravel or clay material that collapses upon itself.

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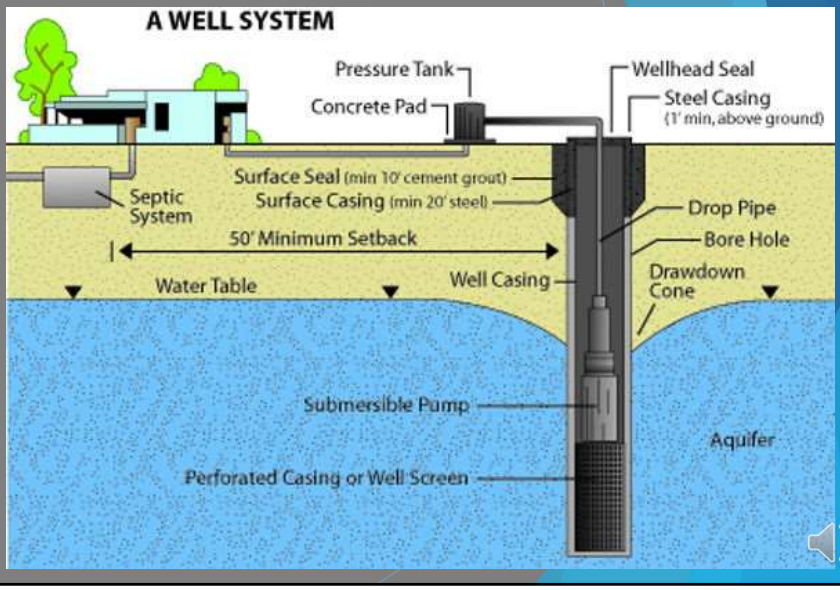
1. Water Wells & Texas Aquifers

- Well components
  - Borehole
  - Surface seal
  - Surface casing
  - Well screen
  - Drop pipe
  - Submersible pump
- Some older wells feature PVC pipes that end at the ground surface, this increase the likelihood of fertilizer or septic contamination.



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1. Water Wells & Texas Aquifers

- Water wells completed in the several years should resemble one of the following examples.
- These provide a visual comparison to decide if the well should be serviced on a property or might need additional attention from a licensed driller.
- Reach out to Texas Department of Licensing & Registration with additional inquiries.

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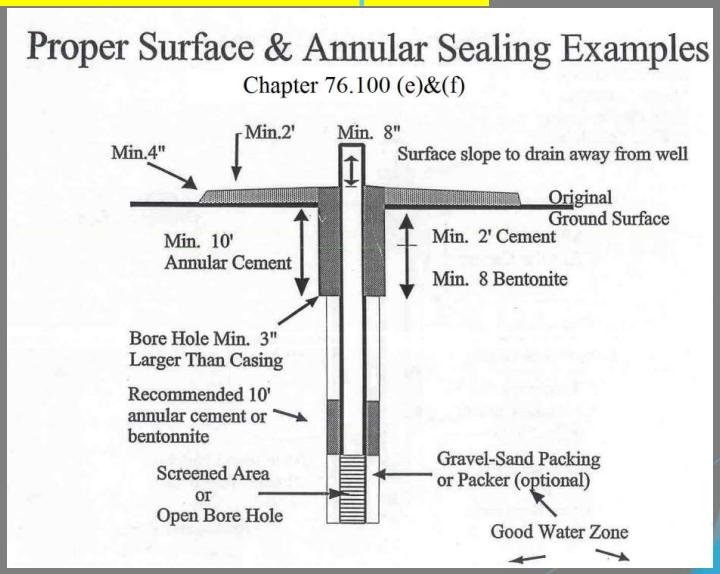
1. Water Wells & Texas Aquifers



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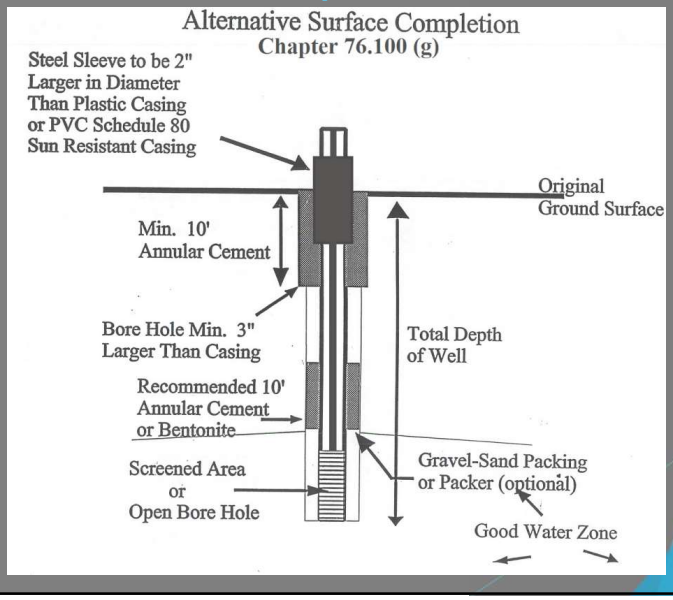
1. Water Wells & Texas Aquifers



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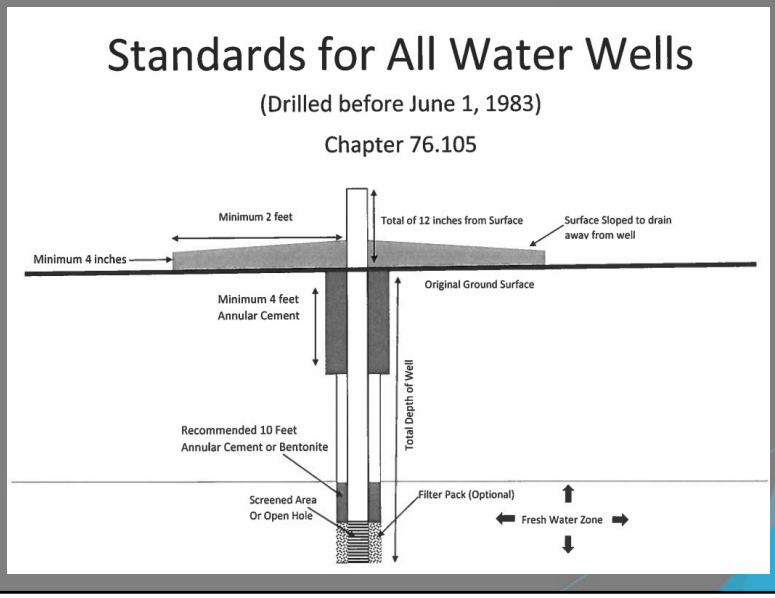
1. Water Wells & Texas Aquifers



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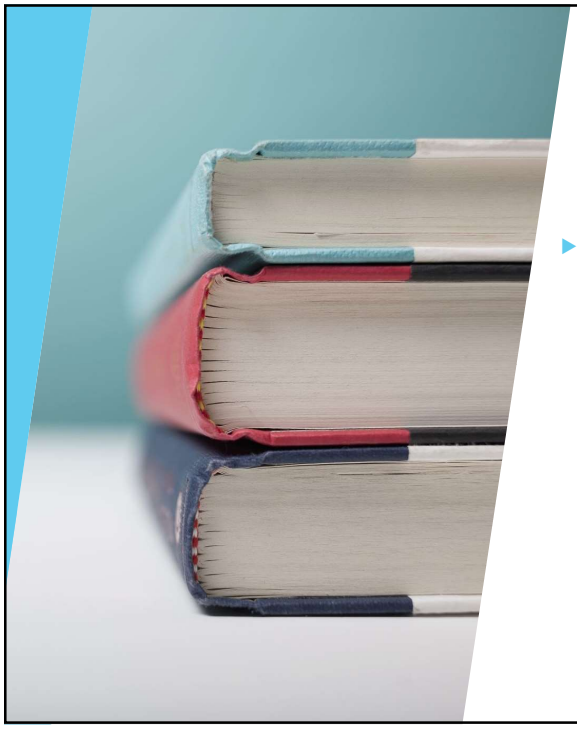

1. Water Wells & Texas Aquifers

- All wells must be completed in accordance with the well completion standards set forth under the Texas Water Well Drillers and Pump Installers Administrative Rules, Title 16, Part 4, Chapter 76, Texas Administrative Code, and under these rules. (b) All new wells must be completed, screened, and equipped at a depth such that, at the time that well completion and equipping has concluded, there is either: (1) a minimum depth of 50 feet of groundwater in the well bore over the pump; or (2) the well fully penetrates the aquifer or layer of the aquifer in which the well is screened and the pump is placed at the lowest practicable location in the well.

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1. Water Wells & Texas Aquifers

- Water well construction & compliance
  - Who is apart of the regulation process of water wells in Texas?
    - Texas Commission on Environmental Quality
    - Texas Department of Licensing and Registration
    - County Commissioner Court's and Judges
    - Cities and municipalities

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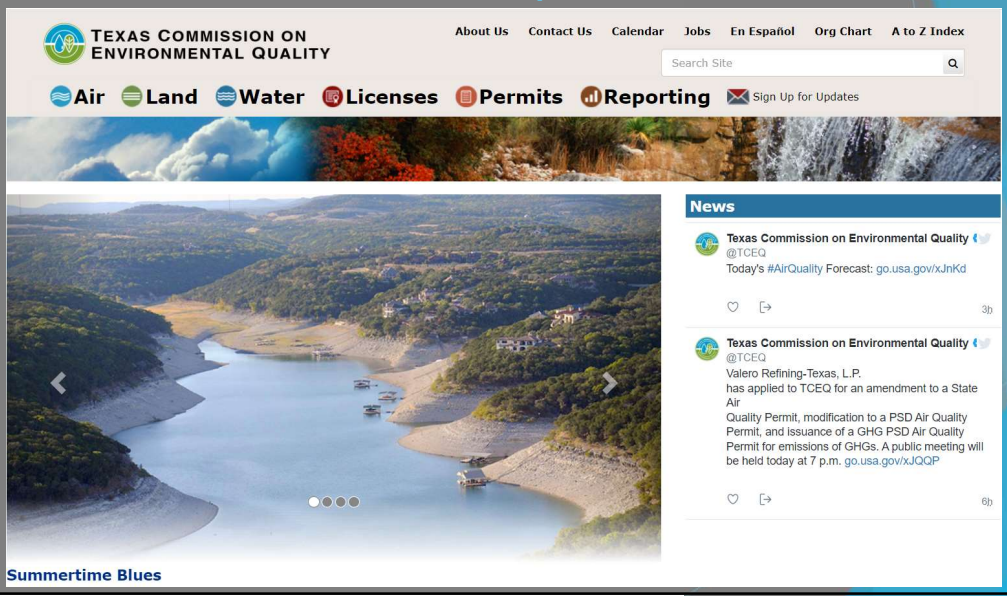
1. Water Wells & Texas Aquifers



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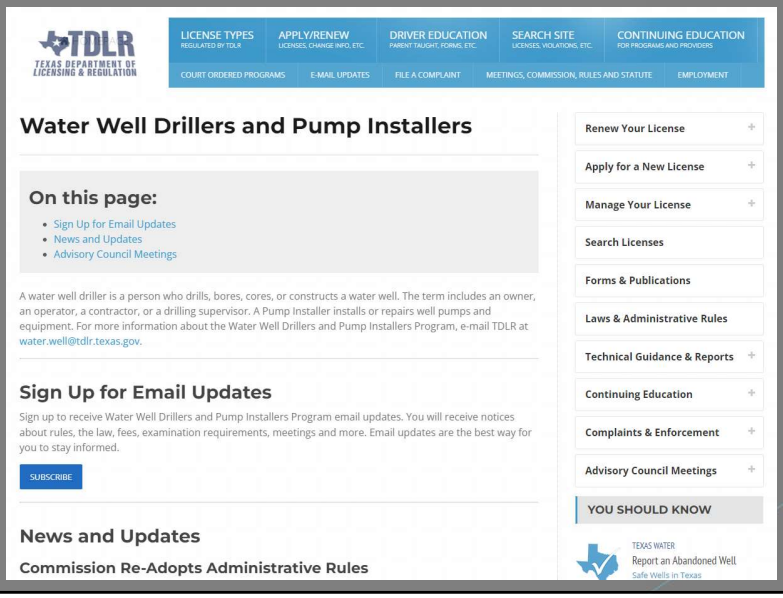
1. Water Wells & Texas Aquifers



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1. Water Wells & Texas Aquifers

- Well Data for realtors
  - State Agencies
    - Water Well Report Viewer – TWDB (wells after 2003)
    - SDR Database – TWDB (wells before 2003)
  - Regional Agencies
    - GCD Index Database – TAGD
  - Local Drilling Companies

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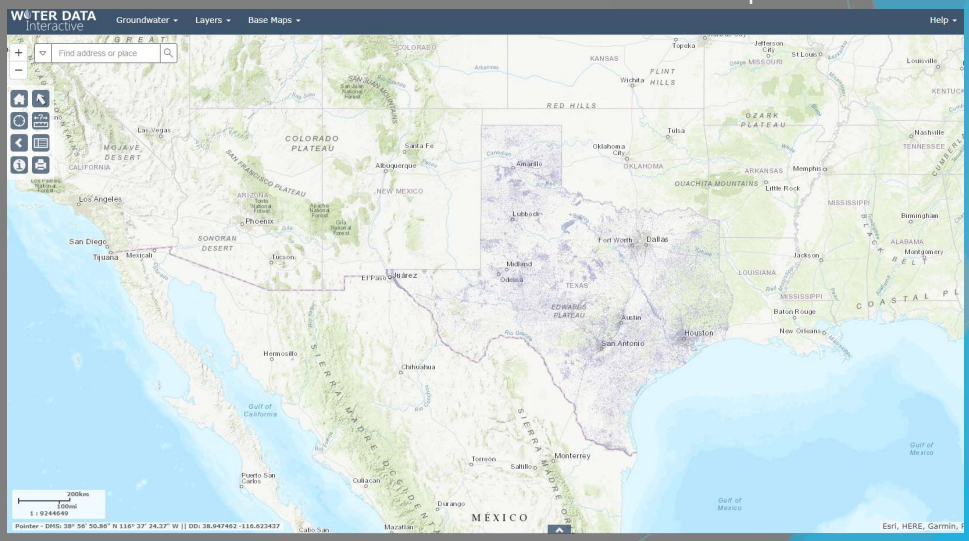
1. Water Wells & Texas Aquifers

Water Well Report Viewer - TWDB



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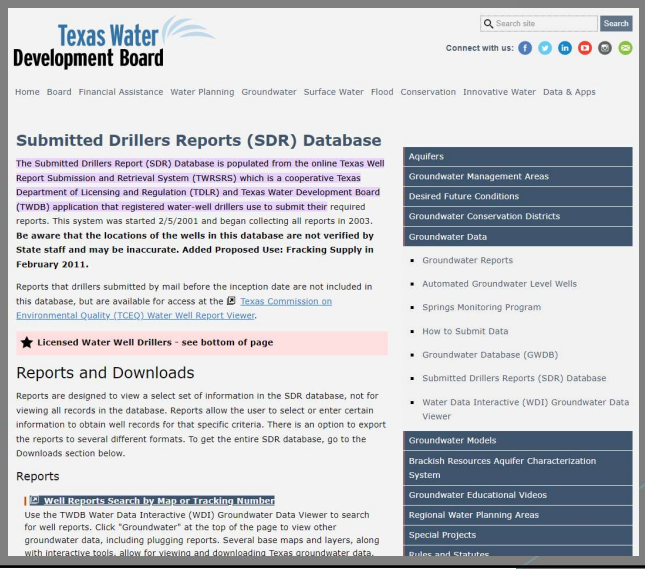
1. Water Wells & Texas Aquifers

SDR Database - TWDB



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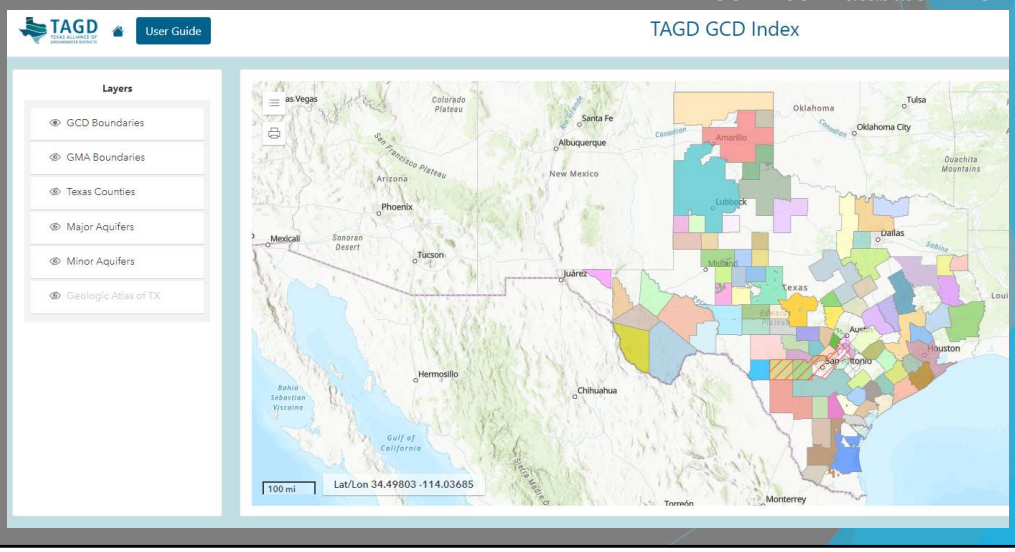
1. Water Wells & Texas Aquifers

GCD Index Database - TAGD



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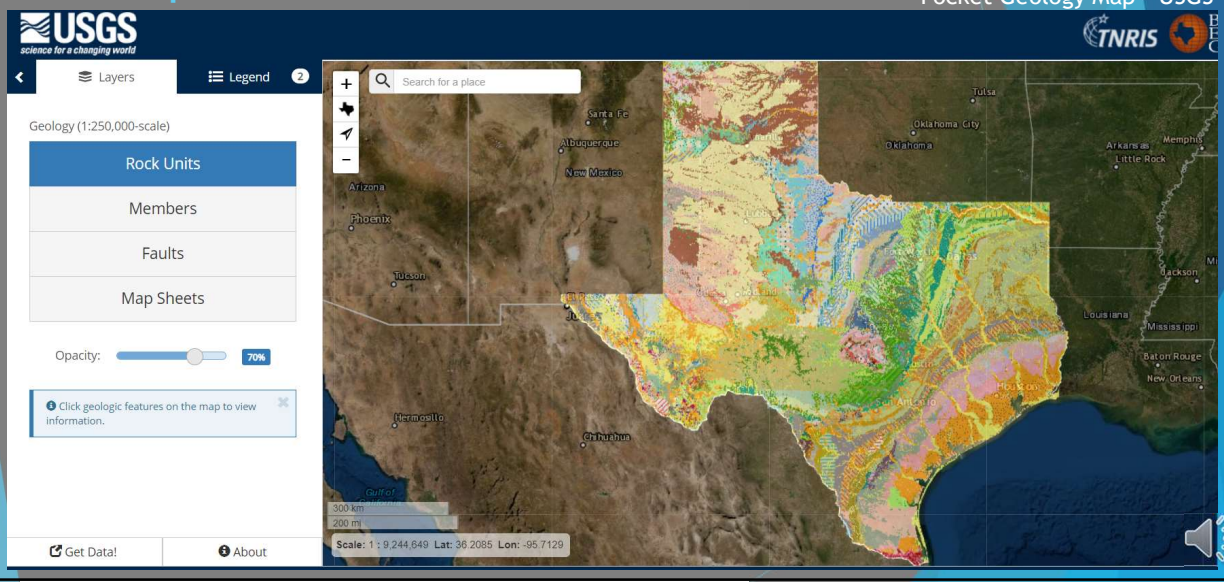
1. Aquifers and Water Wells

Pocket Geology Map - USGS



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1. Water Wells & Texas Aquifers

- Abandoned Wells
  - A well that is no longer in use or production, yet still maintains existing equipment, or is open to the ground surface.
  - May have originally produced water, oil, or natural gas.
  - Production issues may have caused the well to be abandoned, or the changing of property hands.
  - Abandoned oil and gas wells fall under the purview of TDLR & RRC (see next image).
  - Abandoned water wells fall under the purview of TDLR &TCEQ.
  - Potential risks
    - Contamination conduit (fertilizer and bacteria)
    - Ground hazard for both livestock and humans
    - Agriculture equipment damage

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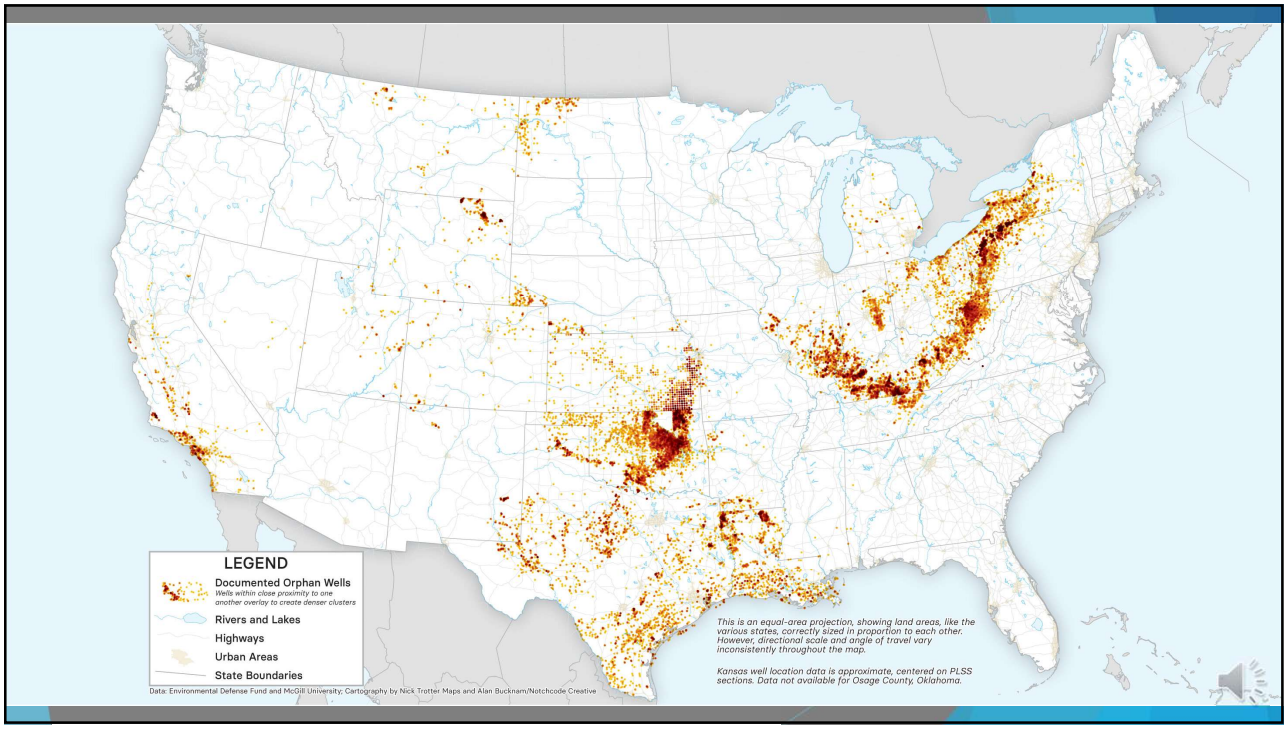

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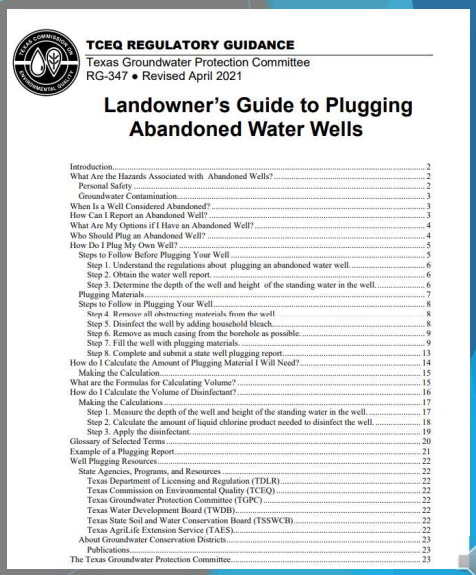
A. Water Wells & Texas Aquifers

Report an abandoned well here: →



TCEQ REGULATORY GUIDANCE
Texas Groundwater Protection Committee
RG-347 • Revised April 2021

Landowner's Guide to Plugging Abandoned Water Wells

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Personal Safety 2
Groundwater Contamination 3
When Is a Well Considered Abandoned? 3
How Can I Report an Abandoned Well? 3
What Are My Options if I Have an Abandoned Well? 4
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Step 5. Disinfect the well by adding household bleach. 8
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Step 7. Fill the well with plugging materials. 9
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1. Water Wells & Texas Aquifers

- TDLR estimated as of April 2022 there are 150,000 abandoned wells across the state .
- TDLR requires wells that are abandoned and deteriorating to be plugged or brought into compliance within 180 days of the landowner being informed the well is on their property and thus under their responsibility.
- Abandoned wells can be plugged by the landowner of the property, or by a licensed well driller/pump installer. Refer to the text for how to plug a well yourself.

Top Left: Large diameter/hand dug abandoned well, Top Right: Abandoned well open hole, Bottom Left: Abandoned well covered with plywood, Bottom Right: Abandoned well with casing and pump. (Texas Department of Licensing and Regulation)

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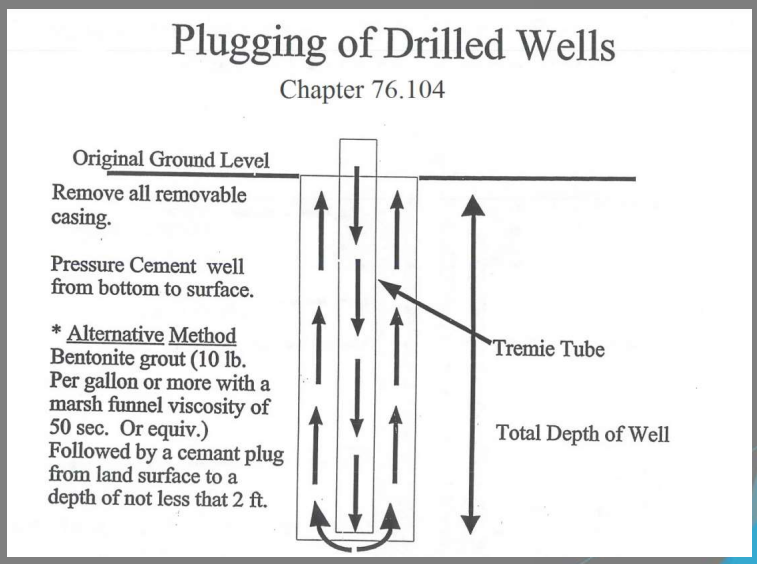
1. Water Wells & Texas Aquifers



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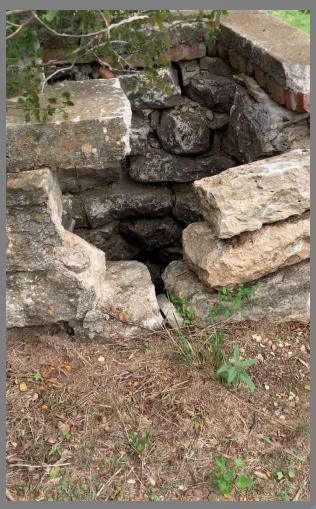
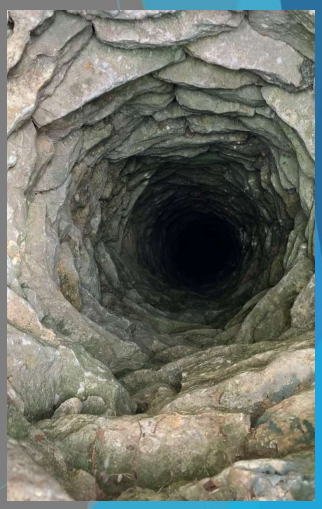
1. Water Wells & Texas Aquifers

- Hand-dug wells
  - Many historical dug wells exist in Texas. If you or a client discover a historic well on a property and would like district staff to conduct a site visit, contact our office.
  - Dug wells are typically as deep as the workers could complete until the water table volumes in the hole exceeded their rate bail.
  - Dug wells, due to their shallow completion, are the most susceptible to contamination.
  - Make sure if you use a hand dug well to install a concrete curb and cap 1 ft. above the surface.





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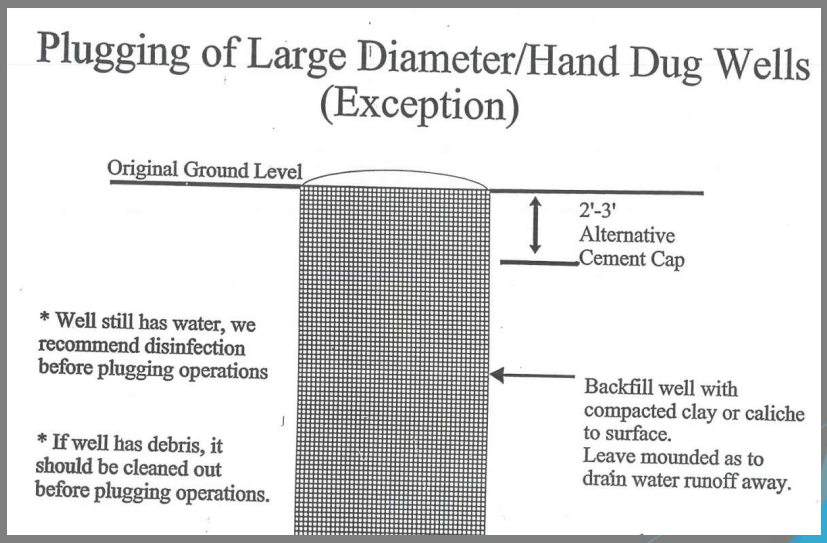
1. Water Wells & Texas Aquifers



TDLR
TEXAS DEPARTMENT OF LICENSING & REGULATION

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1. Water Wells & Texas Aquifers

Abandoned Water Well Plugging Demonstration coordinated with Clearwater UWCD (Bell County), June 2009 (left to right) Justin Mechell (AgriLife Extension), Ryan Gerlich (AgriLife Extension), and Dirk Aaron (Clearwater UWCD); photo courtesy of Dirk Aaron (Clearwater UWCD)

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1. Water Wells & Texas Aquifers

- Septic Systems
  - 20% of all new home developments in Texas feature OSSF systems, or On-Site sewer facilities.
  - Soil analysis relevant since some soil combinations have difficulty absorbing effluent from the systems, so alternative methods may be necessary in rural communities.
  - OSSF systems require a permit before any construction, repair, extension, or alteration that takes into account multiple factors including;
    - State requirements - Authorized agents for TCEQ assist in construction plans for OSSF's.

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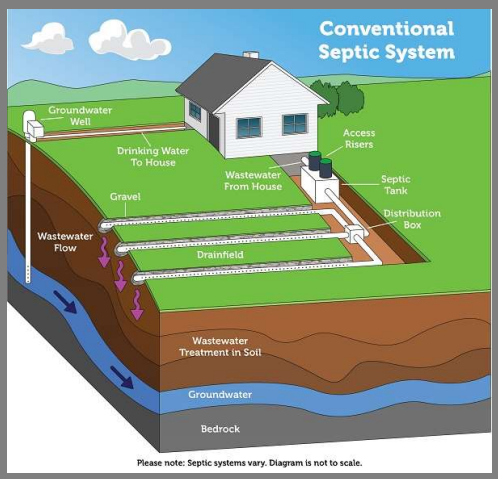
1. Water Wells & Texas Aquifers



Septic System User Guide

Available through the Texas Waters Resource Institute

SCAN ME

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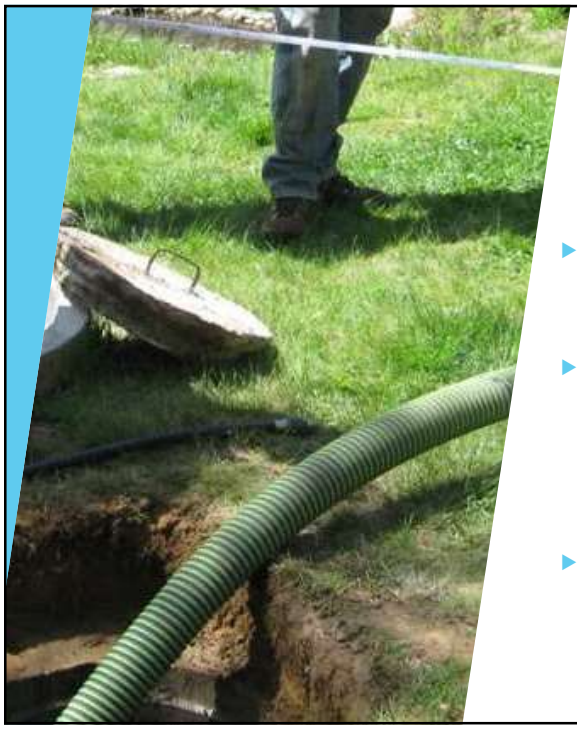

1. Water Wells & Texas Aquifers

- A typical septic system consists of two main parts: a septic tank and a soil absorption system, also known as a drainfield, leachfield, or disposal field. Underground pipes connect the entire system.
- The septic tank is a buried, watertight container usually made of concrete, fiberglass, or polyethylene. It holds the wastewater long enough to allow the solids to settle out and the fats, oil, and grease to float to the surface. It also allows partial decomposition of the solid materials. Effluent from the middle layer flows out to the drainfield for further treatment in the soil.
- Septic systems can contribute to source water contamination for various reasons including improper location of the system, poor design, faulty construction, incorrect operation, and poor or no maintenance of the system.

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1. Water Wells & Texas Aquifers

Septic system maintenance benefits

- Save money on costly, larger repairs in the future.
- Avoid costly health issues and nearby contamination.

Neglecting your septic system

- Bacteria and viruses from human waste can cause dysentery, hepatitis, and typhoid fever and the cumulative effect of numerous failing septic systems can become a major source of pollution.
- The more polluted the source water, the more costly it is to clean for human consumption.
- Septic system leachfields work poorly in terrain with high clay content.

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1. Water Wells & Texas Aquifers

- Practicing water conservation principles helps prolong the life of your septic system.
  - Utilizing a dishwasher as opposed to hand washing. Dishwashers use 2-3 gallons of water for a full cycle, where as handwashing uses 3-4 gallons per minute.
  - Running a dishwasher or clothes washer only when completely full reduces water usage.
  - Repairing and replacing leaky fixtures will save money through both lower utility bills, and less stress on your septic system.

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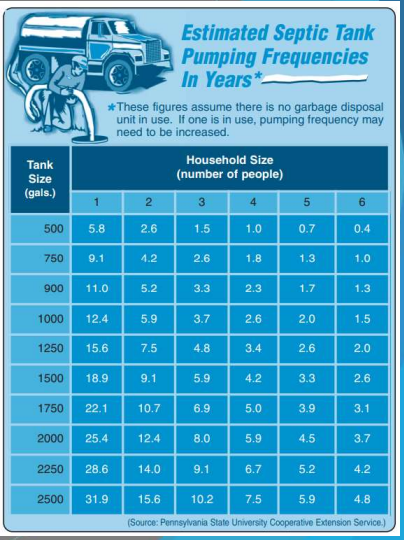
County O.S.S.F. Permitting Processes

- Hood County
  - No minimum acreage listed online
  - Copy of deed or plat
- Parker County
  - No minimum acreage listed online
  - Copy of deed or plat
- Wise County
  - Minimum lot size: 1 acre with public water OR 2 acres with Private well per single family residence
  - Copy of deed or plat
- Montague County
  - Minimum lot size: 1 acre with public water OR 2 acres with Private well per single family residence
  - Copy of deed or plat



Estimated Septic Tank Pumping Frequencies In Years*

*These figures assume there is no garbage disposal unit in use. If one is in use, pumping frequency may need to be increased.

Tank Size (gals.)	Household Size (number of people)					
	1	2	3	4	5	6
500	5.8	2.6	1.5	1.0	0.7	0.4
750	9.1	4.2	2.6	1.8	1.3	1.0
900	11.0	5.2	3.3	2.3	1.7	1.3
1000	12.4	5.9	3.7	2.6	2.0	1.5
1250	15.6	7.5	4.8	3.4	2.6	2.0
1500	18.9	9.1	5.9	4.2	3.3	2.6
1750	22.1	10.7	6.9	5.0	3.9	3.1
2000	25.4	12.4	8.0	5.9	4.5	3.7
2250	28.6	14.0	9.1	6.7	5.2	4.2
2500	31.9	15.6	10.2	7.5	5.9	4.8

(Source: Pennsylvania State University Cooperative Extension Service.)

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Section 1: Content Review Questions

1. Does a confined water well show the true water level below ground surface? Why or why not?
2. Of the three construction methods of wells (bored, driven, drilled) which type is most observed in Texas homes?
3. What aquifers systems are present in the District region? (Parker, Montague, Hood, Wise)
4. Why are abandoned water wells a hazard?
5. What are the consequences of a poorly maintained septic system?
6. The "Groundwater Data Viewer" database is managed by which state entity?
7. Where are karst aquifers and cave formations found in Texas?

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End of Section 1 – Break Time

- Questions? Graphics you'd like to re-visit?
- Otherwise re-fill on coffee and stretch your legs ☺
- We will start on section 2 after a break

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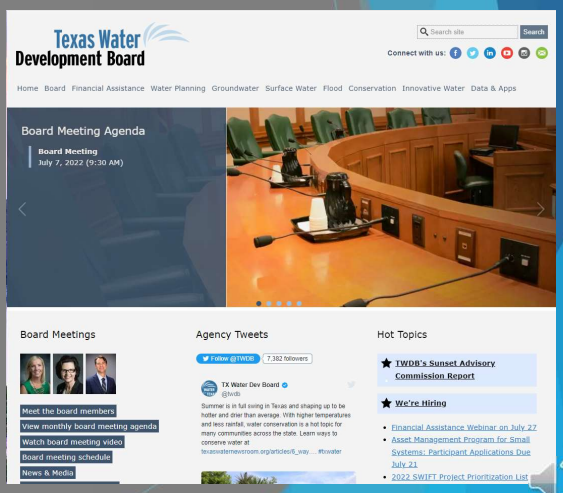
2. Agency Overview & Water Law

Texas Water Development Board

- The **Texas Water Development Board** (TWDB) was created in 1957.
- The mission of the Texas Water Development Board (TWDB) is to lead the state's efforts in ensuring a secure water future for Texas and its citizens. Our mission is a vital part of Texas' overall vision and the state's mission and goals that relate to maintaining the viability of the state's natural resources, health, and economic development.
- To accomplish our goals of planning for the state's water resources and providing affordable water and wastewater services, the TWDB provides water planning, data collection and dissemination, financial assistance, and technical assistance services to the citizens of Texas. The tremendous population growth that the state continues to experience and the recurrent threat of severe drought only intensify the need for the TWDB to accomplish its goals in an effective and efficient manner.



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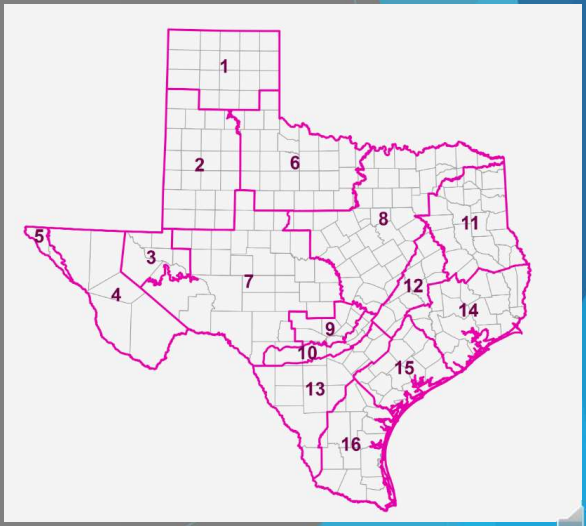
2. Agency Overview & Water Law

TWDB & Groundwater Management Areas (GMA's)

- A groundwater management area (GMA) is a geographic area suitable for the management of groundwater resources.
- TWDB designated 16 GMAs across the state that include all major and minor aquifers.
- The boundaries of the GMAs generally coincide with the hydrologic features of the state's major aquifers.



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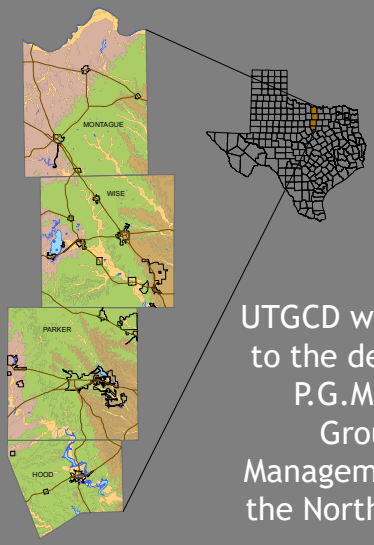
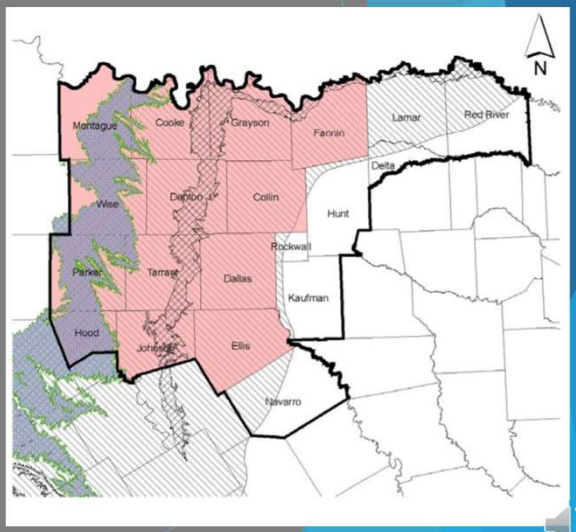
2. Agency Overview & Water Law



UTGCD was created due to the designation of a P.G.M.A. (Priority Groundwater Management Area) over the North Texas region.



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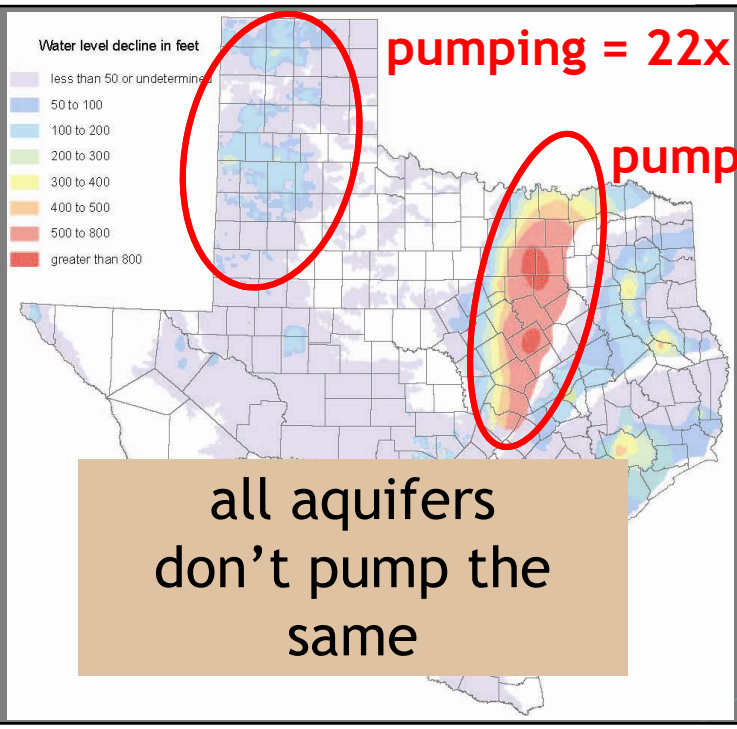

all aquifers don't pump the same

Total water-level declines in the major aquifers

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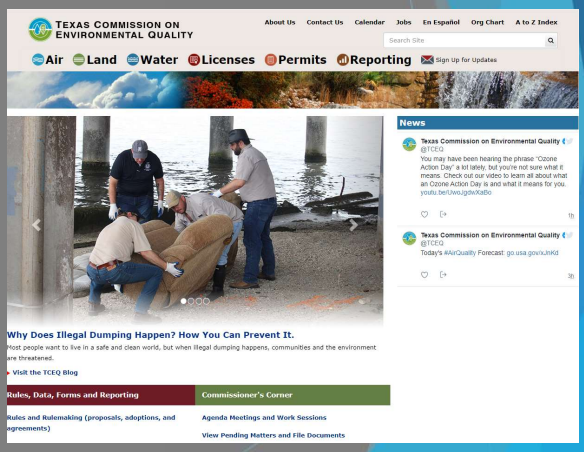
2. Agency Overview & Water Law

- **Texas Commission on Environmental Quality** - Protecting Texas by reducing and preventing pollution since 1993.
- The Texas Commission on Environmental Quality strives to protect our state's public health and natural resources consistent with sustainable economic development. Our goal is clean air, clean water, and the safe management of waste.
- Agency Philosophy - To accomplish our mission, we will: base decisions on the law, common sense, sound science, and fiscal responsibility; ensure that regulations are necessary, effective, and current; apply regulations clearly and consistently ;ensure consistent, just, and timely enforcement when environmental laws are violated; ensure meaningful public participation in the decision-making process; promote and foster voluntary compliance with environmental laws and provide flexibility in achieving environmental goals; and hire, develop, and retain a high-quality, diverse workforce.



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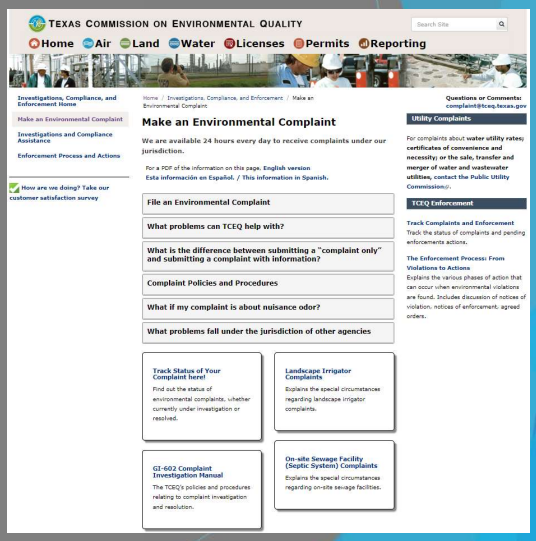
2. Agency Overview & Water Law

- **Agency Scope & Jurisdiction**
  - Land
    - Waste Management & Recycling
    - Remediation (Superfund & Brownfield sites)
    - Petroleum Storage Tanks
    - Agriculture (feed lots, permits and registrations)
  - Air
    - Emissions & Quality Monitoring
    - Air Permitting
  - Water
    - Drinking water
    - Surface Water Rights & Availability
    - River, Lake, Estuary Water Quality
    - Waste & Stormwater
    - Groundwater & Wells



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2. Agency Overview & Water Law

- The **Railroad Commission of Texas** (RRC) was established in 1891 under a constitutional and legislative mandate to prevent discrimination in railroad charges and establish reasonable tariffs.
- It is the oldest regulatory agency in the state and one of the oldest of its kind in the nation. The Railroad Commission of Texas no longer has any jurisdiction or authority over railroads in Texas, a duty which was transferred to other agencies, with the last of the rail functions transferred to the Texas Department of Transportation in 2005.
- The Railroad Commission of Texas (Commission) is the state agency with primary regulatory jurisdiction over the oil and natural gas industry, pipeline transporters, natural gas and hazardous liquid pipeline industry, natural gas utilities, the LP-gas industry, and coal and uranium surface mining operations.
- The Commission exists under provisions of the Texas Constitution and exercises its statutory responsibilities under state and federal laws for regulation and enforcement of the state's energy industries. The Commission also has regulatory and enforcement responsibilities under federal law including the Surface Coal Mining Control and Reclamation Act, Safe Drinking Water Act, Pipeline Safety Acts, Resource Conservation Recovery Act, and Clean Water Act

RRC
LEADING TEXAS ENERGY
OIL & GAS ★ COAL ★ PIPELINES

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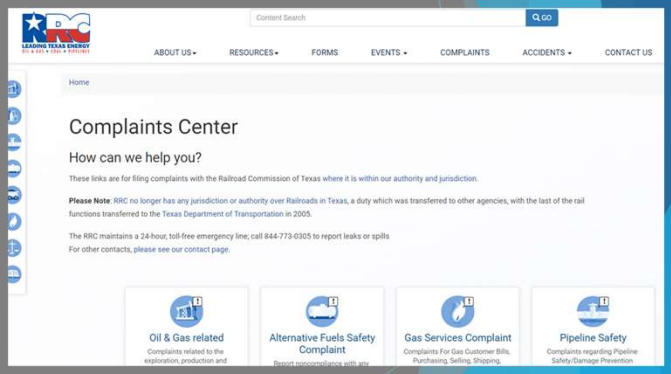
2. Agency Overview & Water Law

- **Agency Scope and Jurisdiction**
  - Petroleum & Natural Gas
    - Monthly price caps
    - Propane distribution system operators
  - Pipeline Data & Safety
    - Safety Training
    - Prevention statistics
  - Alternative Fuels (Liquid/Compressed Natural gas & petroleum)
    - Regulations
    - Registrations, Certifications
  - Surface Mining
    - Uranium & Coal
    - Permitting & Compliance



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2. Agency Overview & Water Law

- Texas courts divide water into unrelated legal classes with different rules of law governing the ownership and use of each class:
  - **Groundwater** – governed by the rule of capture, which grants the landowners the right to capture the water beneath their property.
  - **Surface Water** – owned by the state of Texas and can be used by a landowner only with permission from the State (with some exceptions).

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2. Agency Overview & Water Law

Who owns State Water?

- "Surface water in Texas is owned by the state and held in trust of the citizens of the state. The state grants the right to use this water to different people such as farmers, ranchers, cities, industries, business and other pubic and private interests."

How are water rights prioritized?

- "Water rights have priority dates which indicate the seniority of one water right over another, known as "first in line, first in right". In times of drought, those with earliest date have the right to get water before those with newer dates. Today, priority dates for new appropriations of water are based on the date the application is declared administratively complete."

Do I need a permit to use State Water?

- "Anyone who wants to use surface water in Texas must first get permission from the state, unless they are using the water for one of several "exempt uses" in the Texas Water Code."

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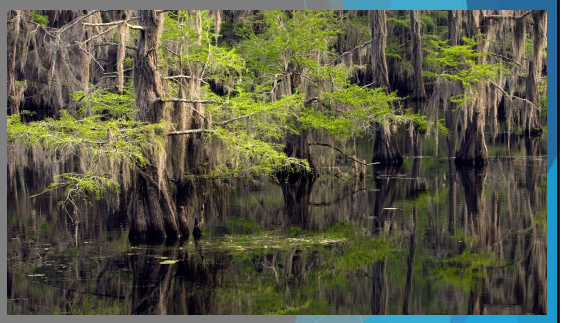
2. Agency Overview & Water Law

- Surface water Ownership & Permitting
- "Surface water includes all of the "water under ordinary flow, underflow and tides of every flowing river, natural stream, lake, bay, arm of the Gulf of Mexico, and stormwater, floodwater or rainwater of every river, natural stream, canyon, ravine, depression, and watershed in the state." Texas Water Code Section 11.021.
- A permit to appropriate water may be granted only if TCEQ finds that: (1) there is unappropriated water available; (2) the permit seeks to put water to beneficial use; (3) the permit does not impair existing water rights; (4) the permit is not detrimental to public welfare; (5) the permit is consistent with the State Water Plan and relevant Regional Water Plans; and (6) reasonable diligence will be used to avoid waste and achieve conservation. *See* Texas Water Code Section 11.134.
- There are several types of permits, each of which may impose its own temporal limitation. The types include: (1) Regular permit (lasting for as long as the use continues); (2) Seasonal permit (limits the use of water to certain days or months); (3) Temporary permit (use up to three years); or (4) Emergency permit (use up to 30 days if the public health, safety, and welfare are threatened)."



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2. Agency Overview & Water Law

Water Masters - Who and Why

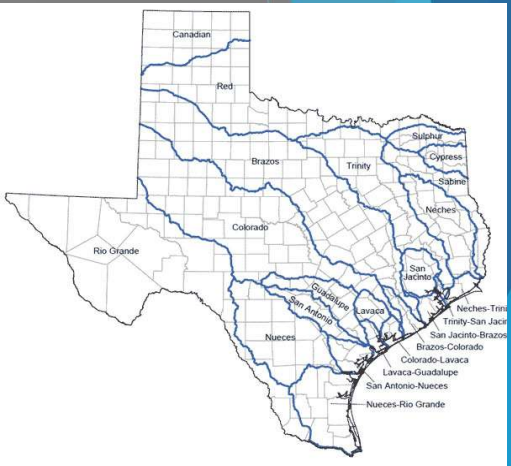
Watermaster programs ensure compliance with water rights within their designated basins. Watermaster programs perform the following functions:

- Monitor streamflows, reservoir levels, and water use.
- Identify and stop illegal diversions.
- Conduct regular inspections.
- Determine if a water right holder can divert water.
  - The watermaster allocates available water among water right holders according to each user's priority date.
  - Before diverting water in any way, water right holders must notify the watermaster of their proposed diversion through a Declaration of Intent and receive approval for the diversion.
  - After receiving a Declaration of Intent, the watermaster determines whether approving the Declaration of Intent would allow a water right holder to divert water that rightfully belongs to another user.
  - The watermaster may notify a user with more junior water rights to reduce or to stop pumping to accommodate a Declaration of Intent from a senior user.

If a water right holder does not comply with a water right or TCEQ's rules, the watermaster may prevent the owner from diverting, taking, or storing water until the issue is corrected.

Holders of storage rights notify the watermaster when they plan to release water for downstream customers. The watermaster can then monitor usage downstream to ensure that the released water reaches the buyer.

They works regularly with water users in the program basin(s) and facilitates communication and cooperation among the water users. Provide technical assistance.



What if I'm in a Watermaster Area?

If you are in the Brazos, Concho, or Rio Grande River basin, or South Texas, see our **Watermasters webpage** for information about water rights in these areas.

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2. Agency Overview & Water Law

- Groundwater: Definition & Ownership
- Chapter 36 of the Texas Water Code defines groundwater as "water percolating below the surface of the earth."
- A landowner in Texas can pump water from under his or her property, but the laws do not explicitly state how much water they are entitled to.
- Several notable legal cases have since defined the limits and interactions of surface versus sub-surface estates.
- See "Accommodation doctrine" in accompanying documents.

In 2016, the Texas Supreme Court ruled that a severed groundwater estate —like a severed mineral estate—is dominant over the surface estate. This ruling is crucial for anyone owning or considering purchasing property with severed groundwater rights. The result of this ruling is that absent an express agreement to the contrary, an owner of a severed groundwater right has the automatic, implied right to use as much of the surface of the land as is reasonably necessary to produce the severed groundwater. This right is limited by the accommodation doctrine, which requires a dominant estate holder to accommodate an existing surface owner if the surface owner can prove

- mineral production substantially interferes with an existing surface use,
- minerals can be produced another way, and
- existing surface use cannot be conducted in another way.

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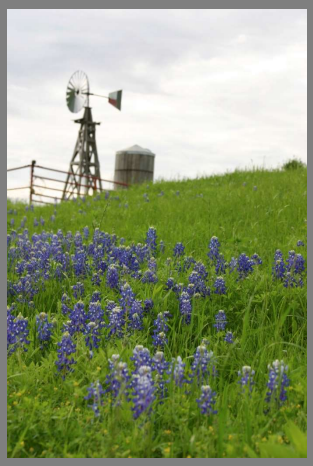
2. Agency Overview & Water Law



- Houston & Texas Central Railroad Co. v. East (1904)
  - The Court was faced with the choice between the rule of capture and the rule of reasonable use; the Court chose the **rule of capture.**
- Conservation Amendment (1917):
  - "The Conservation and development of all of the natural resources of this State…and the preservation and conservation of all such natural resources of the State are each and all hereby declared public rights and duties; and the Legislature shall pass all such laws as may be appropriate thereto."
- In 1949, legislation was passed that allowed for a petition process for designation "underground water reservoir" and for creating groundwater conservation districts (GCDs).
  - Several Acts of the Legislature to refine this process

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2. Agency Overview & Water Law

- Rule of Capture: Definition & Limitations

The Rule of Capture governs groundwater law and provides that a landowner has the right to pump water from beneath his or her property, even at the expense of his or her neighbor. The Texas Supreme Court established this rule in 1904 when it found that a landowner had no legal remedy when a railroad company moved in next door, drilled a bigger, deeper well, and made the landowner's well go dry. The landowner's remedy, explained the Court, was to drill his own bigger, deeper well.

But particular limitations on the Rule of Capture apply—Groundwater Conservation Districts and common law rules. Groundwater Conservation Districts (GCDs) are the "preferred method of groundwater management in Texas." Although the Texas Constitution tasks the Texas Legislature with managing the State's natural resources, the Legislature determined that allowing local control through GCDs would be a better approach to groundwater management. Thus, there are 98 GCDs across the state (see map on page 5). These districts manage groundwater within their bounds by developing plans and implementing rules related to groundwater production. The rules differ by GCD but often include a permitting process for most groundwater wells, some form of reporting requirement, and production rules such as spacing rules, pump size limits, or production limits.

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2. Agency Overview & Water Law

Rule of Capture: Definition & Limitations

- Although a landowner owns the water beneath his or her property, this does not give the landowner the right to capture a specific amount of groundwater, nor does it allow the landowner to commit acts that result in waste or subsidence. *See* Texas Water Code Section 36.002 The limitations fall into two categories: (1) common law exceptions and (2) Legislative exceptions.
- ***Common Law Exceptions:*** There are five common law exceptions to the Rule of Capture that limit a landowner's right to pump groundwater.
  - First, a landowner may not "maliciously take water for the sole purpose of injuring his neighbor."
  - Second, a landowner may not "wantonly and willfully waste" groundwater.
  - Third, a landowner may not negligently drill or pump from a well in a manner that causes subsidence on his neighbor's property.
  - Fourth, a landowner may not pump from a contaminated well.
  - Finally, a landowner my not trespass onto another's land in order to pump groundwater.
- If a landowner's pumping falls within one of these exceptions, he is not protected by the Rule of Capture and may be required to cease pumping or be liable for damages. *(Three of these exceptions were essentially codified in 2011 and are now part of the Texas Water Code. Under the statute, a landowner may not "cause waste, cause malicious drainage, or negligently cause subsidence.") See Texas Water Code Section 36.002.*

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2. Agency Overview & Water Law

1917 & 1949 Legislation regarding conservation & groundwater

- "Due to a Constitutional Amendment in 1917 known as the Conservation Amendment, the Texas Legislature has the duty to preserve and conserve all of Texas' natural resources. This includes the power to regulate the drilling and pumping of groundwater."
- "The Legislature decided that the "preferred method of groundwater management" in Texas is through local Groundwater Conservation Districts. See Texas Water Code Section 36.0015. These GCDs are able to enact rules and regulations, including requiring permits, metering, and limitations on the amount of water that may be withdrawn in their area. See Texas Water Code Section 36.0015. Much of the groundwater in Texas falls under the authority of a GCD."

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2. Agency Overview & Water Law

- Relevant court decisions and emerging groundwater litigation

Coyote Lake Ranch v. City of Lubbock	EAA v. Day & McDaniel
Getty Oil Co. v. Jones	Bragg v. EAA
Strata & Fazzino v. Brazos Valley GCD	Kinney County GCD v. Boulware LP

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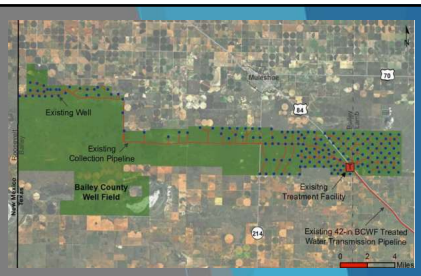
2. Agency Overview & Water Law



- **Coyote Lake Ranch vs. City of Lubbock**
- 1953: The Purtell family, predecessors to the Ranch, conveyed groundwater rights to the City of Lubbock. • Very broad in the rights granted, but very specific in some of the details. • Allowed drilling wells for investigating, exploring, producing and accessing percolating and underground water at any time and any location". • Per the Deed, the City had the right to use all of the Ranch "necessary and incidental to the taking of . . . underground water
- The City began clearing lands for several test wells. • The Ranch sued to enjoin the City from proceeding, claiming that the City had a duty to accommodate the surface owner. • Ranch sued under causes of action for inverse condemnation, breach of contract, negligence, and declaratory judgment. • Ranch stated that proposed drilling plan would increase erosion and injure the surface unnecessarily. • Mowing areas allotted for test wells had already begun, and "blowouts" (dirt blown off the land) had occurred, resulting in a loss of that land for cattle grazing.
- • Issue to the Supreme Court of Texas: Does the accommodation doctrine apply as between a landowner and the owner of a severed groundwater estate?
  - • YES. The Supreme Court of Texas held that a severed groundwater estate is considered a dominant estate and is governed by the accommodation doctrine when not governed by express terms of an agreement between the parties. • NOTE: the ruling remanded the case back to the trial court

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2. Agency Overview & Water Law

- **Getty Oil Co. vs. Jones**
- The mineral estate owner is entitled to make reasonable use of the surface for the production of his minerals. It is not ordinarily contemplated, however, that the utility of the surface for agricultural purposes will be destroyed or substantially impaired. The due regard concept defines more fully what is to be considered in the determination of whether a surface use by the lessee is reasonably necessary. There may be only one manner of use of the surface whereby the minerals can be produced. The lessee has the right to pursue this use, regardless of surface damage. And there may be necessitous temporary use governed by the same principle.
- John H. Jones, respondent, the surface owner of a tract of land in Gaines County, Texas, sued for an injunction to restrain Getty Oil Company, petitioner, an oil and gas lessee, from using vertical space for pumping units that prevent the use by him of an automatic irrigation sprinkler system, and for damages.
- Upon trial, the jury found that it was not reasonably necessary for Getty to install pumps that prevented the operation of the irrigation system; and that by doing so Getty decreased the market value of the land $117,475, and decreased the value of the use of the land from the time of erection of the pumps until the trial by $19,000.
- The trial court granted Getty's Motion for Judgment Non Obstante Veredicto on the ground there was no evidence that Getty used more lateral surface than reasonably necessary. Upon appeal, the court of civil appeals reversed the judgment of the trial court, holding that vertical as well as lateral space was restricted to that which is reasonably necessary.
- • Getty Oil Co. v. Jones (1971), created the accommodation doctrine, which affords the surface owner protection from severed mineral owners operating on the land. • The doctrine is meant to balance the rights of the dominant estate owner and the servient estate owner and has typically been upheld to require a mineral owner to exercise its rights to develop the minerals with "due regard" to the rights of the surface owner in an existing surface use

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2. Agency Overview & Water Law

- **Strata & Fazzino vs. Brazos Valley GCD**
- The 5th Circuit Court of Appeals held that a Board member/public official does not have a First Amendment right to discuss topics that are not posted on a governmental entity's agenda in the same capacity as a member of the public in the public comment portion of an open meeting. Therefore, a Board member/public official cannot bring up topics that are not properly posted on an agenda in any capacity other than to request that an item be placed on a future Board meeting agenda.
- The 5th Circuit reversed the lower court's ruling that dismissed the case based upon immunity, ripeness, *Burford* abstention issues. The case is remanded back to district court for trial on the merits. The decision provided some discussion of considerations that the district court will have to evaluate during the trial on the merits, including groundwater regulation statutes in Chapter 36 of the Texas Water Code and the Texas Supreme Court's decision in *Edwards Aquifer Authority v. Day*.
- On May 29th, 2020, the United States Court of Appeals for the Fifth Circuit issued an opinion in *Stratta/Fazzino v. Brazos Valley GCD*. Appellants Anthony Fazzino and David Stratta are landowners with property within the territorial boundaries of the Brazos Valley Groundwater Conservation District ("BVGCD"), which are coextensive with Robertson and Brazos Counties, Texas. The landowners sued the BVGCD and its Board of Directors in an action before the U.S. District Court for the Western District of Texas. Appellant Fazzino contended that BVGCD had allowed the City of Bryan ("City") to drain groundwater from under his property without compensation, violating the Constitution's Equal Protection and Takings clauses. Appellant Stratta, a Board Member of BVGCD, alleged that the Board deprived him of First Amendment rights by preventing him from speaking at a public meeting. The district court dismissed their claims on the grounds of Eleventh Amendment immunity, ripeness, *Burford* abstention, and qualified immunity. The 5th Circuit found that the district court erred on all grounds except the dismissal of the First Amendment claim, and therefore affirmed in part, reversed in part, and remanded the case for further proceedings on the merits.

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2. Agency Overview & Water Law

EDWARDS AQUIFER AUTHORITY

- **Edwards Aquifer Authority vs. Day & McDaniel**
- In 2012, the *Day* case affirmed the principal that a Texas landowner owns the water in-place under his property. In that case, two farmers owned land south of San Antonio and applied to the Edwards Aquifer Authority (EAA) for a permit for their existing water well seeking to pump 700 acre-feet per year. EAA granted a permit to pump only 14 acre-feet per year.
- The farmers filed suit claiming that the permit denial constituted a taking of private property, asserting an ownership interest in the groundwater beneath their property.
- The Texas Supreme Court sided with the farmers, finding that groundwater in-place is owned by landowners, and, as such, it constitutes a property right for which just compensation must be paid if the regulations constitute a taking.
- This case was the first express recognition by the Texas Supreme Court that landowners owned not only water that they produced from beneath their land, but also water that remains in place beneath their property.

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2. Agency Overview & Water Law

EDWARDS AQUIFER AUTHORITY

- **Bragg vs. Edwards Aquifer Authority**
- The *Bragg v. Edwards Aquifer Authority* case was just decided by the San Antonio Court of Appeals in August 2013 and is essentially a logical extension of the *Day* opinion.
- This case involved a Texas pecan producer who purchased land prior to the creation of EAA. Bragg planted two orchards in the 1980s. The first was irrigated with groundwater, and the second by other means.
- After EAA was created, Bragg sought permits to irrigate both orchards with groundwater by drilling a well for the second orchard and producing more water to irrigate the first. EAA denied the requested permit for the second orchard in its entirety and granted only the amount of water historically used for the first orchard. Bragg filed suit.
- The Court of Appeals found in favor of Bragg and held that the denial of the permits constituted a regulatory taking for which the landowner should be paid just compensation. This case illustrates that if regulations on groundwater owners go too far, a taking may occur, forcing payment to the landowner. EAA has filed a notice of appeal in the Texas Supreme Court seeking further appellate review of this decision.

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2. Agency Overview & Water Law

- **Kinney County GCD v. Boulware LP**
- This case focused on a groundwater dispute which arose when several entities (the "Applicants") filed permit applications with the Kinney County Groundwater Conservation District (the "District") seeking authorization for the withdrawal of groundwater. In August 2004, the District held a preliminary hearing on the applications at which protestants could contest the permit applications. Under the District's rules, a protestant needed to submit a registration form at the preliminary August 2004 hearing in order to protest the applications at a later date.
- Ultimately, the District approved the Applicants' requests, but authorized the use of significantly less groundwater than the Applicants sought. The Applicants were dissatisfied with the decision and filed a lawsuit against the District to contest the decision. The District and the Applicants eventually negotiated a settlement agreement and were preparing to dismiss the lawsuit when suddenly, over two years after the Applicants first filed suit against the District, Prototype Machine Company ("Prototype") sought to intervene in the lawsuit. Prototype attempted to challenge the District's 2005 decision to grant permits to the Applicants. The District and the Applicants filed a joint motion to sever all of Prototype's causes of action into a separate suit, which the trial court granted.
- Prototype's subsequent attempt to prosecute its claims in the new, separate lawsuit failed—the trial court determined "that Prototype's claims were untimely, that Prototype's intervention would unduly complicate the case, and that Prototype lacked standing to bring its claims." Prototype appealed this finding to the Thirteenth Court of Appeals. The court upheld the trial court's determination, stating that "[t]o the extent that Prototype attempts to challenge the 2005 District-issued permits… we conclude that Prototype did not exhaust its administrative remedies as required by the water code to challenge the 2005 [D]istrict-issued permits." The court reasoned that participation in the August 2004 preliminary hearing on the permit applications was a prerequisite to judicially challenging the 2005 District-issued permits. In other words, because Prototype did not administratively challenge the applications as allowed under the District's rules, Prototype failed to exhaust its administrative remedies and lost its right to subsequently challenge the applications or related permits.
- *Two important changes occurred as this case developed. First, the Third Court of Appeals decided the case of Save our Springs Alliance v. City of Kyle at al, holding that a Trial Court does not have authority to order a Groundwater Conservation District to take a specific action on a permit and may only remand the matter for further consideration by the Board of Directors. Second, the Legislature amended Chapter 36 to definitively say that only parties to a contested case hearing may participate in any appeal of that permit decision.*

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2. Agency Overview & Water Law

- **Neches and Trinity Valleys Groundwater Conservation Dist. v. Mountain Pure TX, LLC**
- The dispute in this case arose from the efforts of the Neches and Trinity Valleys GCD (the "District") to enforce its permitting rules against Mountain Pure TX, LLC ("Mountain Pure"). The District's rules stated that generally all persons owning a groundwater well must obtain permits to drill and operate the well. **As a governmental entity, the District was protected by governmental immunity, meaning that the District could not be sued in Texas courts except for in specific circumstances allowed by the State of Texas.** Mountain Pure owned a spring water bottling plant within the District's jurisdiction. *Mountain Pure had never applied for a permit from the District because Mountain Pure contended that it did not own or operate a water well.* Mountain Pure instead argued that the water it bottled and sold came from an "underground formation from which water flow[ed] naturally to the surface of the earth," **and that the District did not have authority to regulate spring water**.
- When the District demanded that Mountain Pure apply for groundwater operating permits and Mountain Pure refused, the District sued Mountain Pure and an affiliated entity, Ice River. Ice River immediately ceased its business with Mountain Pure. Mountain Pure proceeded to file two counterclaims against the District: (1) a claim for tortious interference with the Ice River contract; and (2) a takings claim alleging that the District's regulation of Mountain Pure's property (i.e. groundwater) entitled Mountain Pure to compensation. The trial court determined that the District's governmental immunity protected the District against the claim for tortious interference, but allowed Mountain Pure to continue pursuing its takings claim against the District, reasoning that the Texas Constitution allows for takings claims against governmental entities. The District immediately appealed that decision to the Tyler Court of Appeals.
- **The Tyler Court of Appeals' analysis largely focused on whether Mountain Pure properly asserted a takings claim**. The court explained that a regulatory taking may occur in one of two ways. First, when a governmental agency imposes restrictions denying landowners all economically viable use of their property, rendering the property valueless. Second, when a governmental agency imposes restrictions that unreasonably interfere with landowners' rights to use and enjoy the property. The Court ultimately held that no regulatory taking had occurred because: (1) even after the District's threatened enforcement of its rules, the bottling plant retained a value of $4,090,000, meaning that Mountain Pure retained economically viable uses for the property; (2) Mountain Pure had only alleged economic impacts stemming from future lost profits, which are not generally considered in the takings analysis; and (3) Mountain Pure's investment-backed expectation was "the bottling of spring water" and there was "no showing that the enforcement of the [rules] and accompanying… fee [would] affect production."
- Because Mountain Pure failed to allege facts showing a regulatory taking under Texas law, the court found that the takings claim was not properly asserted and the District retained its governmental immunity insulating it from suit. Accordingly, the court reversed the trial court's decision that had allowed Mountain Pure to maintain its takings claim, and the court dismissed Mountain Pure's takings claim against the District.
- In February of 2020, Mountain Pure filed a petition for review with the Texas Supreme Court. After receiving briefing on the petition, the Texas Supreme Court denied the petition for review on September 3, 2021.

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Section 2: Content Review Questions

1. Which state agency manages oil, gas, and petroleum wells?
2. T/F – The 1917 conservation amendment was introduced into the Texas Legislature due to flooding events.
3. What exceptions exist to the "rule of capture" regarding groundwater acquisition?
4. What year was the Upper Trinity GCD created? *(And subsequently, when do district rules begin to apply for platted properties within our region?)*
5. What state entity requires a permit for use of surface water?
6. Priority Groundwater Management Areas (PGMA's) were designated due to how many feet of water table loss in a region?
7. Does the rule of capture provide a specific amount of water a landowner is owed?

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End of Section 2 – Break Time

- Questions? Graphics you'd like to re-visit?
- Otherwise re-fill on coffee and stretch your legs ☺
- We will start on section 3 after a break

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WATER CODE

TITLE 2. WATER ADMINISTRATION

SUBTITLE E. GROUNDWATER MANAGEMENT

CHAPTER 36. GROUNDWATER CONSERVATION DISTRICTS

SUBCHAPTER A. GENERAL PROVISIONS

Sec. 36.001. DEFINITIONS. In this chapter:

(1) "District" means any district or authority created under Section 52, Article III, or Section 59, Article XVI, Texas Constitution, that has the authority to regulate the spacing of water wells, the production from water wells, or both.

(2) "Commission" means the Texas Natural Resource Conservation Commission.

(3) "Executive director" means the executive director of the commission.

(4) "Executive administrator" means the executive administrator of the Texas Water Development Board.

(4-a) "Federal conservation program" means the Conservation Reserve Program of the United States Department of Agriculture, or any successor program.

(5) "Groundwater" means water percolating below the surface of the earth.

(6) "Groundwater reservoir" means a specific subsurface water-bearing reservoir having ascertainable boundaries containing groundwater.

(7) "Subdivision of a groundwater reservoir" means a definable part of a groundwater reservoir in which the groundwater supply will not be appreciably affected by withdrawing water from any other part of the reservoir, as indicated by known geological and hydrological conditions and relationships and on foreseeable economic development at the time the subdivision is designated or altered.

(8) "Waste" means any one or more of the following:

(A) withdrawal of groundwater from a groundwater reservoir at a rate and in an amount that causes or threatens to cause intrusion into the reservoir of water unsuitable for agricultural, gardening, domestic, or stock raising purposes;

(B) the flowing or producing of wells from a groundwater reservoir if the water produced is not used for a beneficial purpose;

(C) escape of groundwater from a groundwater reservoir to any other reservoir or geologic strata that does not contain groundwater;

(D) pollution or harmful alteration of groundwater in a groundwater reservoir by saltwater or by other deleterious matter admitted from another stratum or from the surface of the ground;

3. GCD/Realtor Symbiosis & District Rules

Groundwater Conservation Districts

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- GCD Fact Sheet
  - 100 in the State of Texas so far
  - Largest & oldest: High Plains Water District
  - Management Plans: each district is required to submit a yearly plan for how their aquifers are doing and how they are managing volumes.
  - Desired Future Conditions: what will the aquifer levels look like in five years.
  - Who approves GCD management plans? - the Texas Water Development Board
  - How are GCD's funded? – either through taxes or fees
  - How much do GCD's charge for water volumes? Depends on the district, UTGCD = .22c / 1000 g

3. GCD/Realtor Symbiosis & District Rules

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3. GCD/Realtor Symbiosis & District Rules

- **District Resources**
  - Monitoring Well Database
  - Registered Well Database
  - GAM (Groundwater Availability Model)
  - GCD Index
  - TAGD/TWDB
  - Property Documentation

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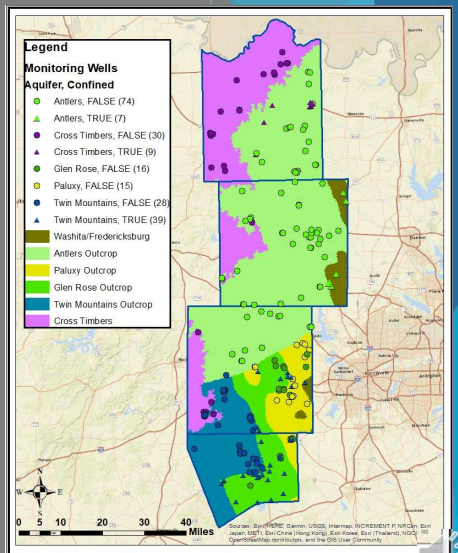
3. GCD/Realtor Symbiosis & District Rules

- District Monitoring Well Program
  - Several hundred wells in the program
  - Free, no cost service
  - Quarterly monitoring updates on well water levels
  - Receive data to form trends on your local groundwater



Monitoring Wells 2021

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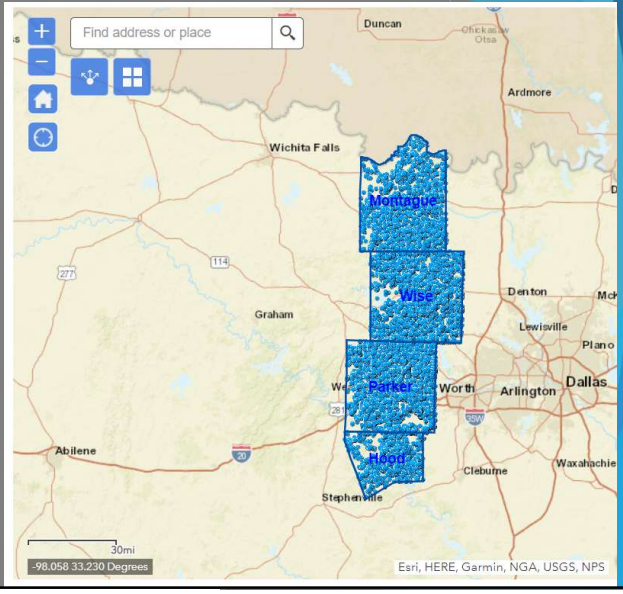
3. GCD/Realtor Symbiosis & District Rules

- **Registered Well Database**
  - Available online @ uppertrinitygcd.com
  - Every registered well in the district boundaries.
    - Groundwater Use
    - Depth
    - GPM
    - Completion date
    - Screen depth
    - Estimated formation



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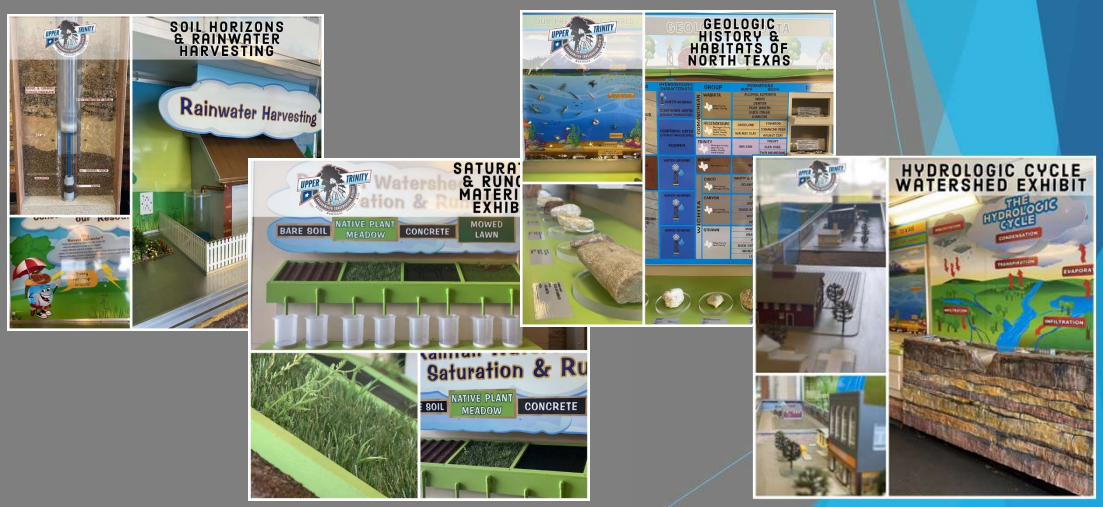
3. GCD/Realtor Symbiosis & District Rules



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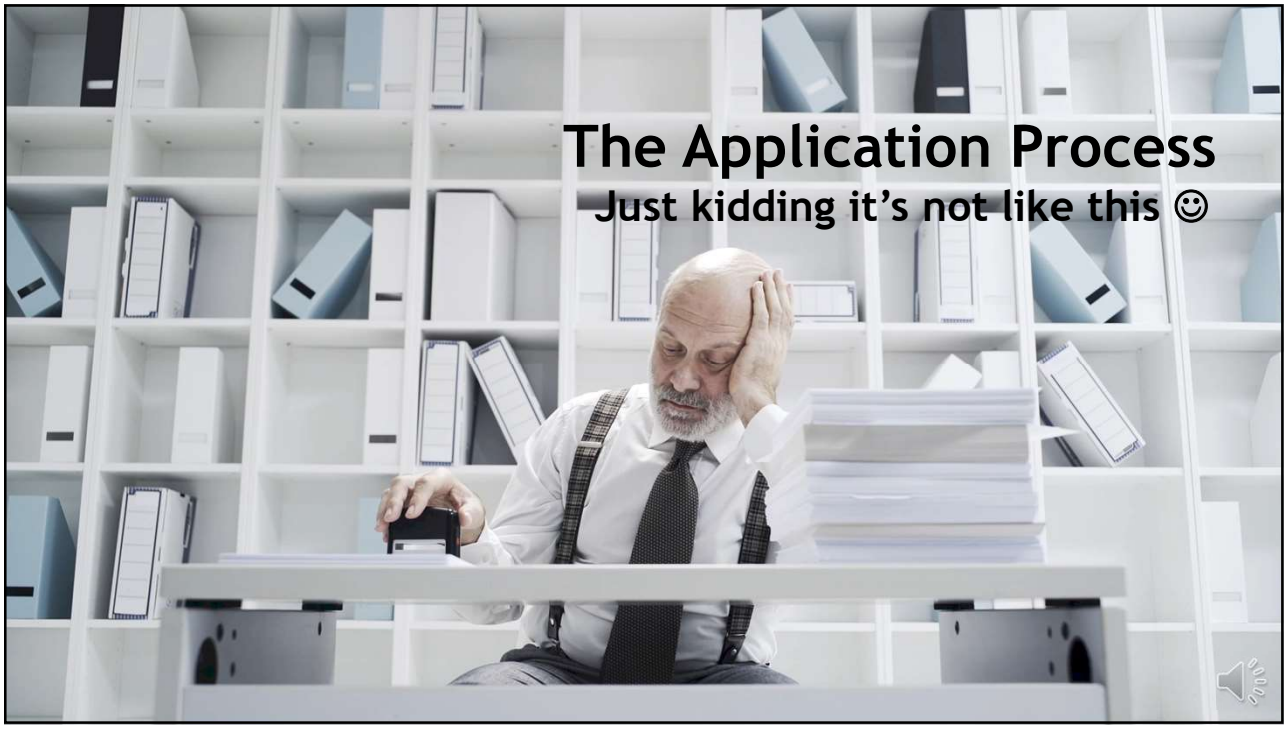

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3. GCD/Realtor Symbiosis & District Rules

District Application Process

1. Water well application submission & Fee submission

2. Verification of requirements prior to application submission
   - Property acreage
   - Water utility location & service area
   - Date of property plat or configuration

3. Documents that will assist application process;
   - Tax card
   - Warranty Deed
   - Survey/Plat
   - Letter of Authorization

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3. GCD/Realtor Symbiosis & District Rules

Spacing Rules

Maximum Allowed Well Production	Minimum Tract Size	Spacing from Other Well Sites	Spacing from Property Line
The maximum amount of groundwater the well can actually produce as equipped in gallons per minute (gpm).	The minimum tract size that may be considered an appropriate site for a well.	The minimum distance, in feet, that a new well or proposed well site may be located from an existing registered or permitted well, existing unregistered well identified by the General Manager under Rule 4.3(b), or approved well site.	The minimum distance, in feet, that a new well or proposed well site may be located from the nearest property line of the tract of land on which it is to be located.
<17.36 gpm		150 ft.	50 ft.
17.36 - 30 gpm		500 ft.	150 ft.
30 - 50 gpm	Minimum Tract Size is 2 acres.	1,000 ft.	250 ft.
50 - 80 gpm		1,750 ft.	500 ft.
80 - 100 gpm		2,500 ft.	750 ft.
>100 gpm		3,250 ft.	1,000 ft.

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3. GCD/Realtor Symbiosis & District Rules

- - $ 600.00 application fee
- - $100.00 refundable driller deposit
  - When the driller submits a completed well report to us to send to the state within 60 days of the well being completed. UTGCD then sends the deposit back to the applicant/whoever paid.
- The application must have:
  - The applicant's signature
  - Proposed well site location
  - Driller signature
  - Payment
- To be administratively complete to be entered into our system.

1. Water Well application submission & fee submission

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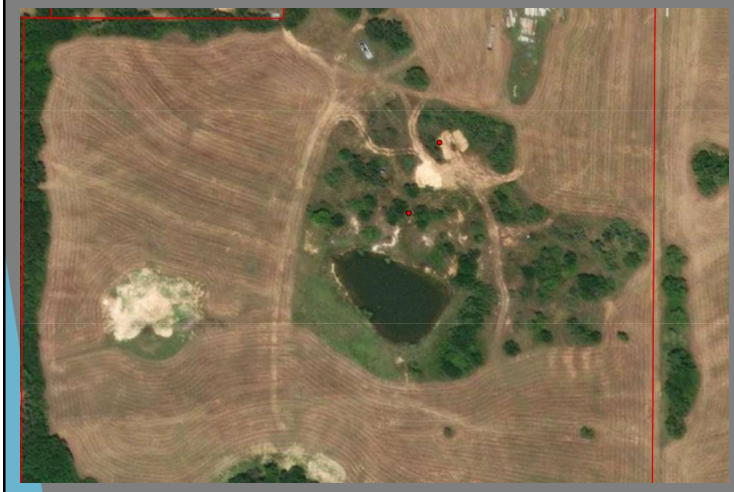
3. GCD/Realtor Symbiosis & District Rules



2. Verification of requirements prior to application submission

-Property acreage

- Water utility location & service area

- Date of property plat or configuration

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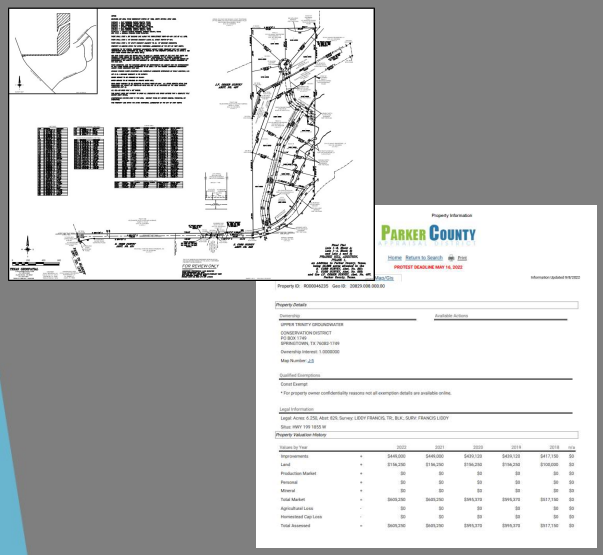
3. GCD/Realtor Symbiosis & District Rules



3. Documents that will assist application process;

- Tax card
- Warranty Deed
-Survey/Plat
- Authorized documentation to sign for a company/group

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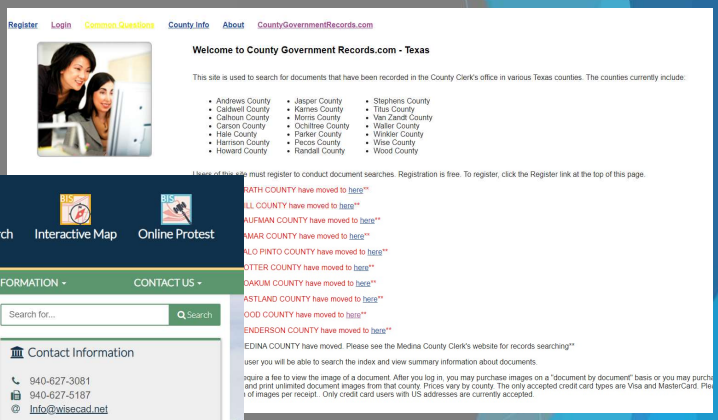
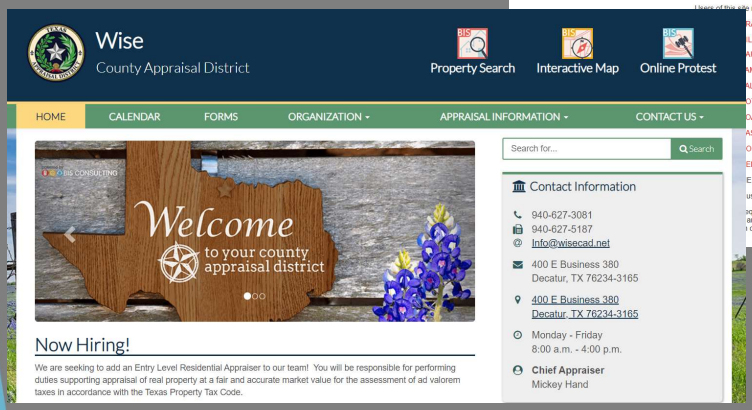
3. GCD/Realtor Symbiosis & District Rules

Where to find helpful documentation: Appraisal District Websites, County Government Records





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3. GCD/Realtor Symbiosis & District Rules

District Application Process

4. Proposed well location on property
- Latitude and longitude (decimal degrees)
- Spacing rules met for proposed site

5. What is Field Verification & is it necessary?
- Property development
- Existing well on property
- Spacing issues
- *Gas/Oil Pipelines

6. Once field verification is completed:
- an approval letter

OR

-request to move proposed well site

OR

-request for additional information will be sent via email.

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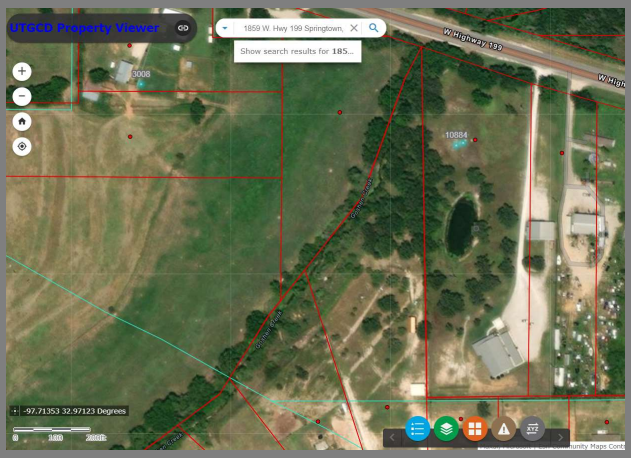
3. GCD/Realtor Symbiosis & District Rules



4. Proposed well location on property
- Latitude and longitude (decimals degrees)
- Spacing rules met for proposed site

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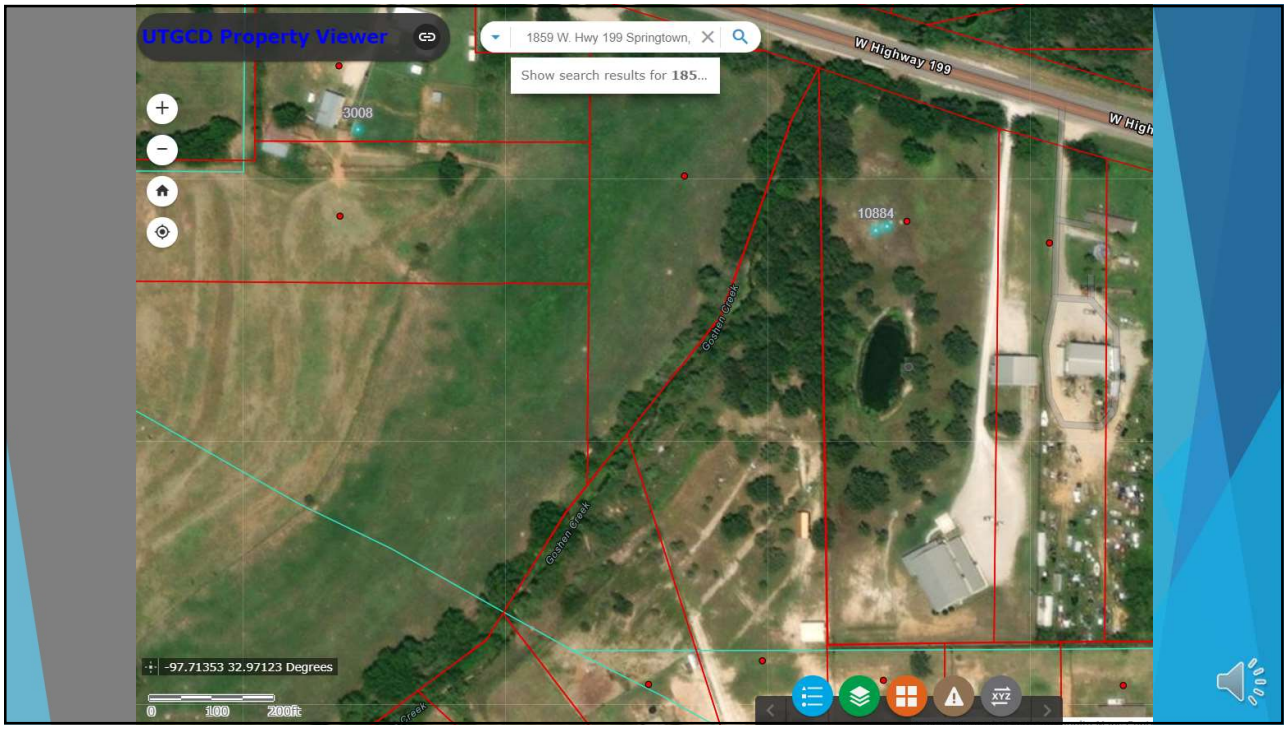

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3. GCD/Realtor Symbiosis & District Rules

5. What is Field Verification & is it necessary?

- Property development
- Existing well on property
- Spacing issues
- *Gas/Oil Pipelines

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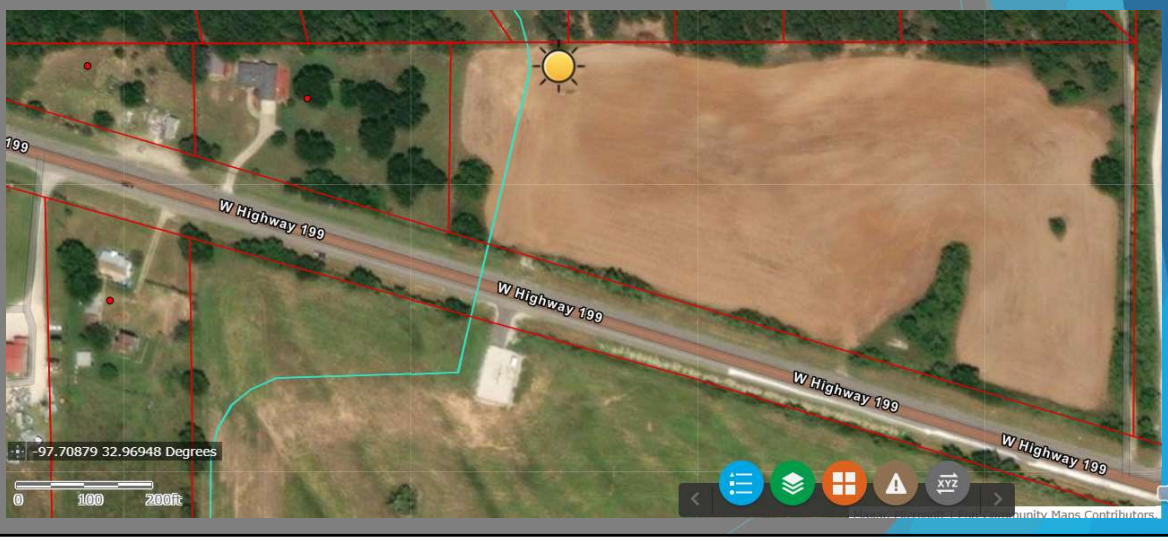
3. GCD/Realtor Symbiosis & District Rules



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3. GCD/Realtor Symbiosis & District Rules

RE: Example of approval letter

Laina Furlong
To Jill Garcia

Reply | Reply All | Forward

Tue 8/16/2022 3:33 PM

You replied to this message on 8/16/2022 3:33 PM.

This is one where the GPS did not change.

On Friday, August 5, 2022, Upper Trinity GM, Doug Shaw, approved the new water well Application for [redacted] **Please note that the gps coordinates and location DID NOT change from what was originally submitted on the application. Let this email be approval to drill. You will receive a signed copy of the application with the approved gps on it in a few days.** Please keep in mind this well must be drilled and completed within 120 days of that approval date or the application will expire. **The 120-day expiration is 12/03/2022.**

Once the well is drilled, the name of the well owner and the state well report ID must be received by the district within 60 days. After the 60th day, the $100 driller's deposit will be forfeited If you have any questions regarding the approved application, please contact us here at the district we will be happy to help.

Please note that if property is ever sold, the part of the land that has the well, must maintain the minimum acreage and minimum spacing requirements set forth in the District Rules.

6. Once field verification is completed:

- an approval letter may be sent

OR

- a request to move proposed well site

OR

- a request for additional information will be sent via email or phone.

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3. GCD/Realtor Symbiosis & District Rules

RE: Example of approval letter

Laina Furlong
To Jill Garcia

Reply | Reply All | Forward

Tue 8/16/2022 3:32 PM

PLEASE NOTE: This well will need to be pressure cemented due to its proximity to a gas line.

On Friday, August 5, 2022, Upper Trinity GM, Doug Shaw, approved the new water well Application for [redacted] **Please note that the gps coordinates and location DID change from what was originally submitted on the application. The new approved gps is 33.21958 & -97.6577. Let this email be approval to drill. You will receive a signed copy of the application with the approved gps on it in a few days.** Please keep in mind this well must be drilled and completed within 120 days of that approval date or the application will expire. **The 120-day expiration is 12/03/2022.**

The GPS and/or location on this application did change. **The approved gps is 33.21958 & -97.6577**

Once the well is drilled, the name of the well owner and the state well report ID must be received by the district within 60 days. After the 60th day, the $100 driller's deposit will be forfeited If you have any questions regarding the approved application, please contact us here at the district we will be happy to help.

Please note that if property is ever sold, the part of the land that has the well, must maintain the minimum acreage and minimum spacing requirements set forth in the District Rules.

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New Wells

- See previous slides
- Well registration paperwork and other resources at uppertrinitygcd.com.
- Should an applicant wish to change drillers, the district requires written confirmation of the switch (email works fine), so that we may adjust it in our database and make sure the drillers are informed.

Replacement Wells

- Usually requested when there is a volume, water quality, or structural issue with original well.
- On the New Well Application, see section III to address whether the well is a replacement.
- Spacing for replacement wells - must be within 50 feet of the original well or it will be considered a new well system.

Existing Wells

- Free (No cost) to register an existing water well on a property
- May have been discovered during closing or transferring of property
- Verify relevant information on well site including:
  - Well Depth
  - Pump Size/Strength
  - Screen Interval
  - *landowner decision may be to plug well - or to get it back to working condition as operational.

3. GCD/Realtor Symbiosis & District Rules

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Frequently asked about: District Rules

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3. GCD/Realtor Symbiosis & District Rules

- **Groundwater ownership rights**
  - Groundwater rights normally are tied to the surface estate.
  - However, severing and re-deeding of groundwater rights is a more frequent issue today than 10 years ago.
  - If the groundwater rights are ever severed, make sure the landowner retains ownership, otherwise they will lose access to their groundwater.

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3. GCD/Realtor Symbiosis & District Rules

Replacement Wells - How and When

- (a) No person may replace an existing well without first having obtained authorization for such work from the District. Authorization for the construction of a replacement well may only be granted following the submission to the District of an application for registration of a replacement well and, if applicable, for amendment of the Historic Use Permit or Operating Permit associated with the original well.
- (b) Each application described in Subsection (a) shall include the information required under Rule 2.2(c) as well as any other information, fees, and deposits required by these rules for the registration of a new well. In addition, information submitted in the application must demonstrate to the satisfaction of the General Manager each of the following:
  - (1) the proposed location of the replacement well is within fifty (50) feet of the location of the well being replaced;
  - (2) the replacement well will be completed and screened at an equal or greater depth than the well being replaced;
  - (3) the replacement well and pump will not be larger in designed production capacity than the well and pump being replaced, unless the maximum designed production capacity is 17.36 gpm or less; and
  - (4) immediately upon commencing operation of the replacement well, the well owner will cease all production from the well being replaced and will begin efforts to plug the well being replaced, which plugging shall be completed within ninety (90) days of commencing operation of the replacement well.

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3. GCD/Realtor Symbiosis & District Rules

Exempt vs. Non-Exempt Usage

- Exempt water well usage defined by District Rules includes;
  - Domestic water use
  - Livestock water use
  - Agriculture water use
- "Non-exempt well" means an existing or new well that does not qualify for exempt well status under the laws of this state or the District Rules.
  - "Public water supply well" means, for purposes of these rules, a well that produces the majority of its water for use by a public water system or by a retail public utility.

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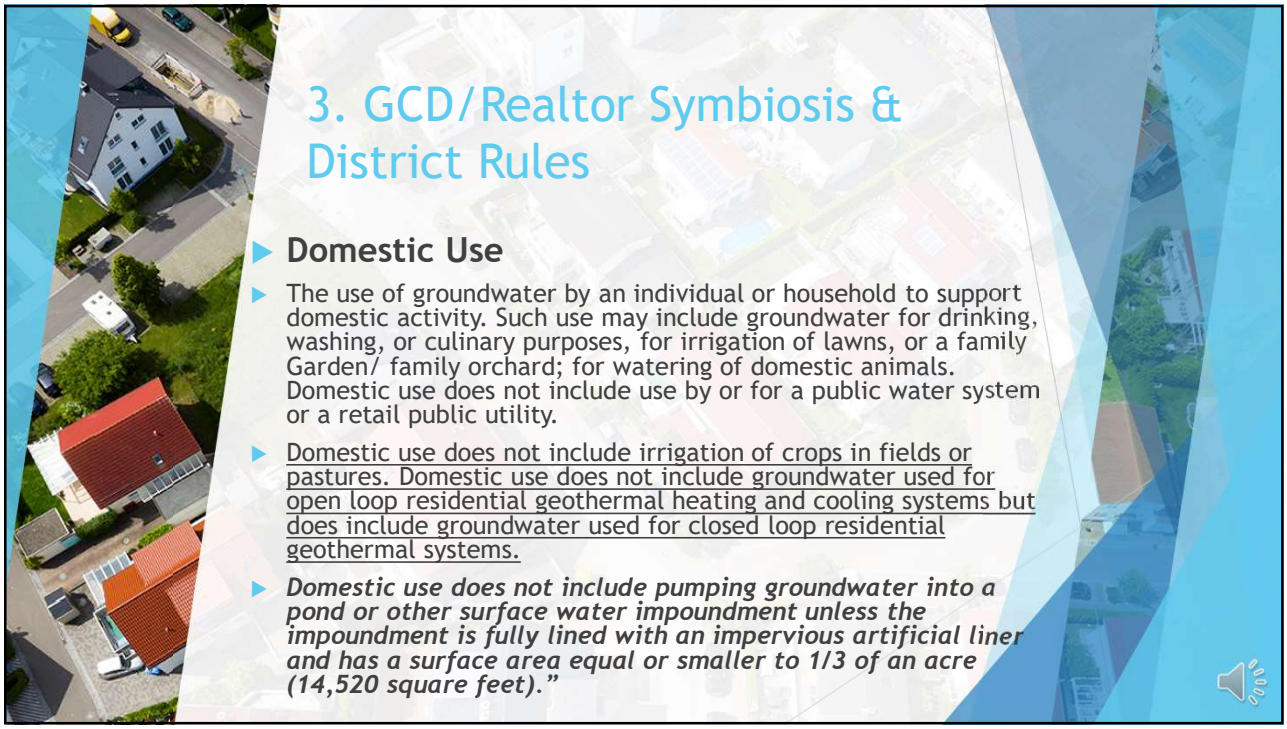
3. GCD/Realtor Symbiosis & District Rules
Domestic Use
The use of groundwater by an individual or household to support domestic activity. Such use may include groundwater for drinking, washing, or culinary purposes, for irrigation of lawns, or a family Garden/ family orchard; for watering of domestic animals. Domestic use does not include use by or for a public water system or a retail public utility.
Domestic use does not include irrigation of crops in fields or pastures. Domestic use does not include groundwater used for open loop residential geothermal heating and cooling systems but does include groundwater used for closed loop residential geothermal systems.
Domestic use does not include pumping groundwater into a pond or other surface water impoundment unless the impoundment is fully lined with an impervious artificial liner and has a surface area equal or smaller to 1/3 of an acre (14,520 square feet)."

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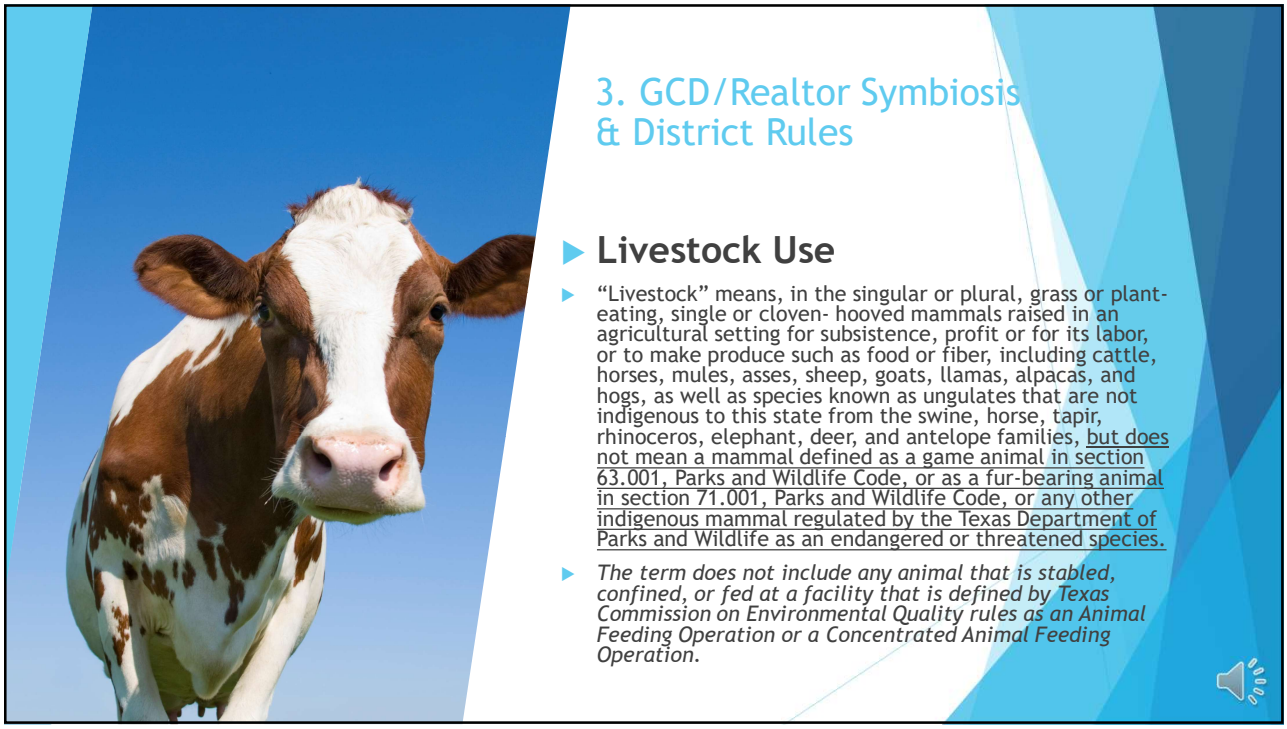
3. GCD/Realtor Symbiosis & District Rules
Livestock Use
"Livestock" means, in the singular or plural, grass or plant-eating, single or cloven- hooved mammals raised in an agricultural setting for subsistence, profit or for its labor, or to make produce such as food or fiber, including cattle, horses, mules, asses, sheep, goats, llamas, alpacas, and hogs, as well as species known as ungulates that are not indigenous to this state from the swine, horse, tapir, rhinoceros, elephant, deer, and antelope families, but does not mean a mammal defined as a game animal in section 63.001, Parks and Wildlife Code, or as a fur-bearing animal in section 71.001, Parks and Wildlife Code, or any other indigenous mammal regulated by the Texas Department of Parks and Wildlife as an endangered or threatened species.
The term does not include any animal that is stabled, confined, or fed at a facility that is defined by Texas Commission on Environmental Quality rules as an Animal Feeding Operation or a Concentrated Animal Feeding Operation.

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3. GCD/Realtor Symbiosis & District Rules

Exceptions

- If a property is on less than two acres AND was platted prior to January 1st, 2009, that landowner may be able to apply for an exception under district rules.
- If the landowner, however, has access to public water, then an exception SHALL not be granted. So, it doesn't help them to try to pay the exception fee or petition the board.
- If the landowner is on less then two acres prior to 2009 and has no access to public water, a potential well site must still try to satisfy as many spacing rules as possible, such as 50 feet from property lines and 150 feet from existing wells.

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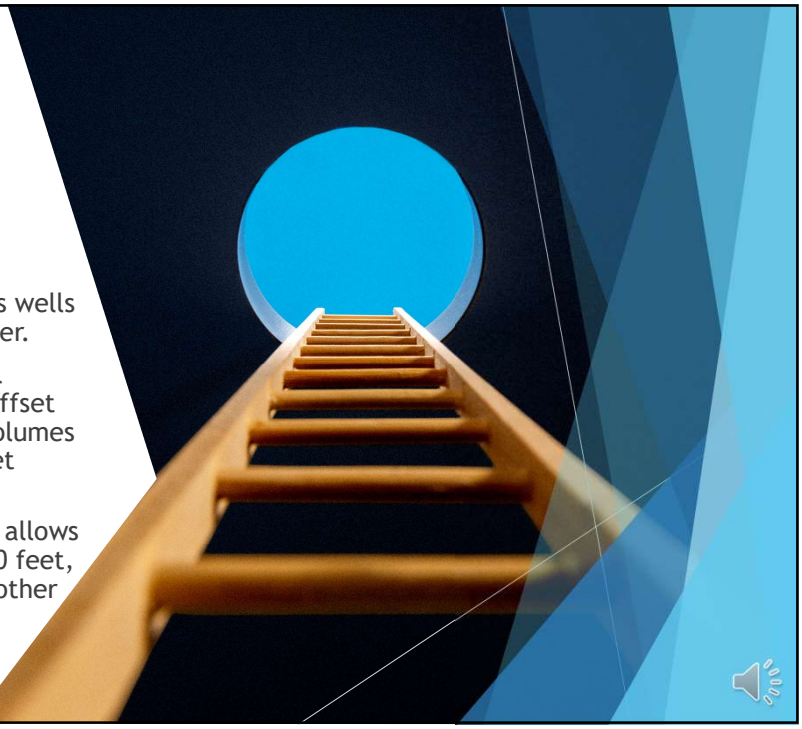
3. GCD/Realtor Symbiosis & District Rules

Vertical Offset

- Sometimes you may come across wells that look too close to one another.
- These wells may be at a vertical offset. District rules define an offset as the wells are pulling water volumes from formations at least 100 feet above or below the other site.
- That minimum vertical distance allows some wells to be closer than 150 feet, as they are not impacting each other volumetrically.



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3. GCD/Realtor Symbiosis & District Rules

- **Multiple Wells on a single tract of land**
  - There shall be no more than one (1) well per two (2) acres on a tract of land, unless the wells are required to obtain a permit under these rules, meet the vertical offset requirements of Subsection (c) with respect to each other, and are located inside the well owner's contiguous controlled acreage.
  - Otherwise, to complete more than one well on any tract of land , each well must individually comply with the minimum spacing distances required under Subsection (a), such that individual wells on one tract must meet the required spacing distances from each other and from the property lines, as well as meet the required spacing distances from wells located on a different tract.

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3. GCD/Realtor Symbiosis & District Rules

- **Groundwater Production Reports**
  - the total amount of groundwater produced by each well and by the well system during the immediately preceding reporting period and during each month of the immediately preceding reporting period; (4) the purposes for which the groundwater was used; (5) for groundwater used at a location other than the property on which the well or well system is located, and that is not used by a fire department or emergency services district for emergency purposes or by a public water system:
  - (A) the location of the use of the groundwater; and (B) if the groundwater was sold on a retail or wholesale basis, the name of the person to whom it was sold and the quantity sold to each person; and (6) for groundwater used by a retail public utility, a description of identified system losses, including:
  - (A) an estimate of the total quantity, reported in gallons or in percentages of total annual production, of groundwater lost to system loss, if known; (B) the sources of system losses reported under Subpart (A); and (C) the methods, if any, employed to address the system losses reported under this subsection;"

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DO NOT STAPLE

UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT

Phone: 817-523-5200| Fax: 817-523-7687| Mailing Address: UTGCD, P.O. Box 1749, Springtown, TX 76082
Office Address: 1859 W. Hwy. 199, Springtown, TX

2022 GROUNDWATER PRODUCTION REPORT

Instructions: **Complete one form for each well**. Sign form and return to Upper Trinity GCD.

***Required Fields.** Any report submitted without all required fields completed correctly will be returned.

*Name of Registrant: _____ *Well ID: _____

*Reporting period beginning meter reading (as displayed on meter): _____ Date: _____

Reporting period ending meter reading (as displayed on meter): _____ Date: _____

Please attach to this report a true and correct copy of the meter log associated with this well. The log shall include, at a minimum, the meter reading on the last business day of each month of the reporting period.

*2022 Groundwater Withdrawal: Report the amount of groundwater withdrawn for each month in gallons.

MONTHLY GROUNDWATER PRODUCTION

JAN:	APR:	JUL:	OCT:
FEB:	MAY:	AUG:	NOV:
MAR:	JUN:	SEPT:	DEC:
Total For Reporting Period (In Gallons)=			

*Water was used for (select one):

☐ Public Water Supply ☐ Oil & Gas Production or Drilling ☐ Commercial/Small Business ☐ Other

***For Non-Public Water Supply wells, please answer the following:**

Location of the use of the water: ☐ Onsite ☐ Offsite w/in District ☐ Outside of District

If the groundwater was sold on a retail or wholesale basis:

Name of person to whom it was sold _____;

Quantity sold to each person _____

(Attach additional sheets as necessary)

***For Public Water Supply wells, please answer the following:**

An estimate of the total quantity of water lost that is attributable to system loss:

Gallons or percentage of total production lost: _____

Sources of system losses: _____

Method(s) employed to address the system losses: _____

*Well ID _____

GROUNDWATER TRANSPORTED

If any groundwater was transported for use outside of the District (Hood, Montague, Parker or Montague counties), please provide and explanation and complete the chart below:

JAN:	APR:	JUL:	OCT:
FEB:	MAY:	AUG:	NOV:
MAR:	JUN:	SEPT:	DEC:
Total For Reporting Period (In Gallons)=			

If any surface water was used/transported, please identify:

Source: _____

Amount: _____

EMERGENCY USE EXEMPTION

Total gallons of groundwater used for Emergency Services _____

AFFIRMATION

I hereby swear or affirm that the information included in this report is true and correct to the best of my knowledge.

*Date: _____ *Signature: _____

*Phone: _____ *Print Name: _____

*E-mail: _____

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3. GCD/Realtor Symbiosis & District Rules

- Please consider adding our District well transfer form to your team's closing paperwork collection.
- This protects the landowner's groundwater rights as whoever holds the title as well applicant potentially has a claim to the groundwater rights.
- Builders and developers sometimes mistakenly leave wells in their LLC's name, and not the landowner.
- Reach out to myself or District staff if there are ever any questions regarding well ownership.

District Use Only:

Received: _____

Approved: _____

By: _____

Well Reg. ID: _____

☐ Exempt

☐ Non-exempt

UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT

Serving Hood, Montague, Parker and Wise Counties
1859 W. Hwy. 199 P.O. Box 1749, Springtown, Texas 76082
Phone: (817) 523-5200 | Fax: (817) 523-7687
www.uppertrinitygcd.com

APPLICATION FOR TRANSFER OF WELL OWNERSHIP

A well which has changed ownership

Applicants are urged to read all the Rules for Water Wells in Hood, Montague, Parker, and Wise Counties, Texas. Rules can be found at www.uppertrinitygcd.com.

***Required fields.**

Part I (A) – Previous Well Owner *(The Transferor)*

*Well Owner: _____

*Phone: _____ *E-Mail: _____ Fax: _____

*Mailing address: _____ *City: _____ *State: ___ *Zip: _____

Contact (If different than owner) _____ Phone: _____

Contact Email: _____ Fax: _____

Date of Change in Ownership: _____

Part I (B) – New Well Owner *(The Transferee)*

*Well Owner: _____

*Phone: _____ *E-Mail: _____ Fax: _____

*Mailing address: _____ *City: _____ *State: ___ *Zip: _____

Contact (If different than owner) _____ Phone: _____

Contact Email: _____ Fax: _____

Part III – Well Information (Please provide all information that may be obtained by reasonable diligence)

*Well Site Address: _____

*City: _____ *County: _____ State: TX *Zip: _____

*Latitude _____ *Longitude _____

Please contact District staff if assistance is needed

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3. GCD/Realtor Symbiosis & District Rules

- Registering existing wells with the district helps protect groundwater rights.
- If the district has knowledge of well owners in an area, if a large development is proposed nearby, District staff will ensure the development's water requests do not infringe upon private property owner's rights and meet proper spacing.
- If the District does not have knowledge of such wells, it is difficult to help protect the interests of those landowners.
- Registering existing wells in the District is free.

UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT
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www.uppertrinitygcd.com

District Use Only:
Received_____
Well Reg. ID._____
☐ Exempt
☐ Non-exempt

APPLICATION FOR WELL REGISTRATION
--EXISTING WELL--

A well that was in existence or for which drilling commenced prior to January 1, 2009.

Applicants are urged to read all of the Rules for Water Wells in Hood, Montague, Parker, and Wise Counties, Texas. Rules can be found at www.uppertrinitygcd.com.

***Required fields.**

Part I – Well Owner Information

*Well Owner:_____

*Phone: _____ *E-Mail: _____ Fax: _____

*Mailing address: _____ *City: _____ *State: ___ *Zip: _____

Contact (If different than owner) _____ Phone: _____

Contact Email: _____ Fax: _____

Part III – Well Information (Please provide all information that may be obtained by reasonable diligence)

*Well Site Address: _____

*City: _____ *County: _____ State: TX *Zip: _____

*Latitude_____ *Longitude_____

Please contact District staff if assistance is needed

Please provide all information that may be obtained by reasonable diligence.

Size of Well casing: _____ Inside *diameter of the pump [discharge] column pipe* _____

Depth of well: _____ feet Maximum designed production capacity: _____ gpm

Method of withdrawal (submersible pump, windmill, etc.): _____

Pump motor size: _____ Depth to first screen: _____ feet

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3. GCD/Realtor Symbiosis & District Rules

- **"What-if?" Scenarios**
  1. If an individual drills a well without an approved application.
  2. If an individual "moves" the well site before construction.
  3. If an application contains incorrect information:
     1. Water usage
     2. Water volumes
     3. Well owner
  4. If an individual/entity doesn't report usage as a non-exempt system:
     a. Late reporting
     b. No reporting
     c. Changing of meters

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3. GCD/Realtor Symbiosis & District Rules

- **Groundwater Availability Studies**
  - Different counties have varying definitions, but it is essentially a study prepared by a licensed engineer to determine the amount or volumes of groundwater available at a site or below a platted subdivision and utilize that information when deciding potential growth tracks in a region.
  - Counties and commissioner courts reserve the right to dismiss and waive groundwater studies if they so choose.

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3. GCD/Realtor Symbiosis & District Rules

- Groundwater Availability Studies
  - **Parker County**
  - Wise County
  - Hood County
  - Montague County

(c) Aquifer testing. Utilizing the information considered under §230.7(b) of this title (relating to General Groundwater Resource Information), an aquifer test shall be conducted to characterize the aquifer(s) underlying the proposed subdivision. The aquifer test must provide sufficient information to allow evaluation of each aquifer that is being considered as a source of residential and non-residential water supply for the proposed subdivision. Appropriate aquifer testing shall be based on typical well completions An aquifer test conducted under this section utilizing established methods shall be reported as specified in §230.3(c) of this title and shall include, but not be limited to, the following items.

(1) Test well and observation well(s). At a minimum, one test well (i.e., pumping well) and one observation well, shall be required to conduct an adequate aquifer test under this section. Additional observation wells shall be used for the aquifer test if it is practical or necessary to confirm production zone as the test well. The location s of the test and observation well(s) shall be shown on the plat required by the municipal or county authority.

(2) Location of wells. The test and observation well(s) must be placed within the proposed subdivision and shall be located by latitude and longitude. The observation well(s) shall be located at a radial distance such that the time-drawdown data collected during the planned pumping period fall on a type curve of unique curvature. In general, observation wells in unconfined aquifers should be placed no farther than 300 feet from the test well, and no farther than 700 feet in thick, confined aquifers. The observation well should also be placed no closer to the test well than two times the thickness of the aquifer's production zone. The optimal location for the observation well(s) can be determined by best professional judgment after completion and evaluation of the test well as provided in paragraph (4) of this subsection.

(3) Lithology and geophysical logs. The test and observation wells shall be lithologically and geophysical logged to map and characterize the geologic formation(s) and the aquifer(s) in which the aquifer test(s) is to be performed.

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3. GCD/Realtor Symbiosis & District Rules

- Groundwater Availability Studies
  - Parker County
  - **Wise County**
  - Hood County
  - Montague County

Section 3.09 Developer's Statement

The Developer shall submit, along with the Preliminary Plat, a statement regarding the plan for providing water, sewer, electric, telephone, and any other necessary utilities to the individual lots located within the subdivision.

In addition, the developer shall also submit a signed statement including, but not limited to, the following:

A. The source of water to be provided to the lots located within the subdivision should be submitted including the results of research performed by the owner or developer to insure the proposed water supply will meet and exceed the anticipated demands based on projected population number and density. If water service is to be provided by a public or private water purveyor, a letter of agreement from said purveyor to provide water service to the proposed subdivision shall accompany the Preliminary Plat submittal. Said letter shall provide the name, address and telephone number of said public or private water purveyor. Should the source of water supply intended for the subdivision be groundwater, the plat application shall have attached to it a statement in accordance with TCEQ Title 30 TAC Chapter 230, that is prepared by an engineer licensed to practice in the State of Texas, certifying that adequate groundwater resources are available for the proposed subdivision in accordance with the criteria set forth by the Texas Commission on Environmental Quality. Groundwater certification, in accordance with TCEQ Title 30 TAC Chapter 230, is not required to be submitted for developments with 10 lots or fewer. However, developments with 10 lots or fewer are required to provide a letter agreement from the water purveyor with the Plat submittal. Regardless of the intended source of water and the number of lots proposed, all developments must comply with the requirements set forth by the Upper Trinity Groundwater Conservation District (UTGCD). This includes, but is not limited to, proper registration applications, tract sizes, spacing, fees, metering, etc. At a minimum, the Plat shall contain a statement notifying potential lot owners that the development lies within the UTGCD and all registration and permitting requirements must be adhered to. All lots served by individual water wells must meet the requirements set forth in TCEQ Title 30 TAC Chapter 285 for On-site Sewage Facilities.

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3. GCD/Realtor Symbiosis & District Rules

- Groundwater Availability Studies
  - Parker County
  - Wise County
  - **Hood County**
  - Montague County

C. Ground water certification. Where the intended source of water to serve a new development is ground water under the land to be developed, whether the development is to be supplied by individual wells or from a centralized water system, no concept plan or site development plan shall be approved unless the application is accompanied by a certification prepared by a

I - DEVELOPMENT PERMIT REGULATIONS Page 55

licensed professional engineer that there is adequate groundwater from the intended source to serve the subdivision. For developments subject to a concept plan, site specific studies to verify the supply of groundwater may be deferred to a later stage in the development process, provided that hydrological data concerning the source of supply must be certified at the time of approval of the concept plan. A site specific study of the groundwater supply must be certified by a professional engineer licensed in the state of Texas and accepted by the County prior to recording the plat or beginning construction.

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3. GCD/Realtor Symbiosis & District Rules

- Groundwater Availability Studies
  - Parker County
  - Wise County
  - Hood County
  - **Montague County**

Requirements for Subdivisions Water Supply

The developer shall submit a signed statement including, but not limited to, the following:

a. The source of water to be provided to the lots located within the subdivision should be submitted including the results of research performed by the owner or developer to ensure the proposed water supply will meet and exceed the anticipated demands based on projected population number and density. If water service is to be provided by a public or private water purveyor, a letter of agreement from said purveyor to provide water service to the proposed subdivision shall accompany the Preliminary Plat submittal. Said letter shall provide the name, address and telephone number of said public or private water purveyor. Should the source of water supply intended for the subdivision be groundwater, the plat application shall have attached to it a statement in accordance with TCEQ Title 30 TAC Chapter 230, that is prepared by an engineer licensed to practice in the State of Texas, certifying that adequate groundwater resources are available for the proposed subdivision in accordance with the criteria set forth by the Texas Commission on Environmental Quality. Groundwater certification, in accordance with TCEQ Title 30 TAC Chapter 230, is not required to be submitted for developments with 10 lots or fewer. However, developments with 10 lots or fewer are required to provide a letter agreement from the water purveyor with the Plat submittal. Regardless of the intended source of water and the number of lots proposed, all developments must comply with the requirements set forth by the Upper Trinity Groundwater Conservation District (UTGCD). This includes, but is not limited to, proper registration applications, tract sizes, spacing, fees, metering, etc. At a minimum, the Plat shall contain a statement notifying potential lot owners that the development lies within the UTGCD and all registration and permitting requirements must be adhered to. All lots served

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by individual water wells must meet the requirements set forth in TCEQ Title 30 TAC Chapter 285 for On- site Sewage Facilities.

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Section 3: Content Review Questions

1. Assuming a piece of property was platted after 2009 within District boundaries (Hood, Parker, Montague, Wise) how much acreage is necessary for one water well?
2. Is UTGCD a fee-based or tax-based district?
3. What is the cost for registering an existing well with the District?
4. How far does a proposed water well location need to be from a neighbor's property line, if the well capacity is 1_.37 GPM?
5. What categories of groundwater usage fall under "exempt-use?"
6. What other documents are required alongside a water well application?
7. Where can realtors find databases of registered wells within the Upper Trinity district?

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End of Section 3 – Break Time

- Questions? Graphics you'd like to re-visit?
- Otherwise re-fill on coffee and stretch your legs ☺
- We will start on section 4 after the break

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4. Water Quality & Conservation Resources

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4. Water Quality & Conservation Resources

Private Water Well Quality

- Not regulated by the State
- Responsibility of quality verification falls to landowner

Public Water Supply Well Quality

- Regulated by the State
- Permitting through TCEQ
- Permit requirements depend on location in state/river basin.

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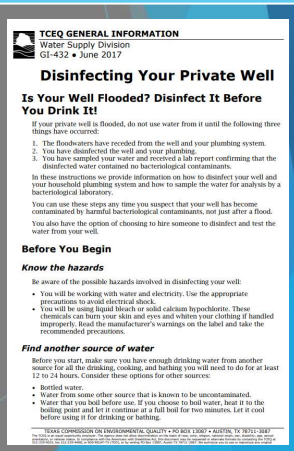
4. Water Quality & Conservation Resources

Private Water Well Quality

- **No state regulation exists for private water well quality.**
- State recommends testing water every 1-5 years (depending on local issues)
- Local, regional, and state testing resources available to landowners.
- During floods and droughts, substances, minerals, and elements not normally found in your well water can make their way into the supply. TCEQ provides resources on how landowners can disinfect their wells on their own.
  - Caveat: Before utilizing bleach or chlorine in your well, make sure this will not cause additional harm to your septic system and resident bacteria.



TCEQ GENERAL INFORMATION
Water Supply Division
GI-432 • June 2017

Disinfecting Your Private Well

Is Your Well Flooded? Disinfect It Before You Drink It!

If your private well is flooded, do not use water from it until the following three things have occurred:

1. The floodwaters have receded from the well and your plumbing system.
2. You have disinfected the well and your plumbing.
3. You have sampled your water and received a lab report confirming that the disinfected water contained no bacteriological contaminants.

In these instructions we provide information on how to disinfect your well and your household plumbing system and how to sample the water for analysis by a bacteriological laboratory.

You can use these steps any time you suspect that your well has become contaminated by harmful bacteriological contaminants, not just after a flood.

You also have the option of choosing to hire someone to disinfect and test the water from your well.

Before You Begin

Know the hazards

Be aware of the possible hazards involved in disinfecting your well:

- You will be working with water and electricity. Use the appropriate precautions to avoid electrical shock.
- You will be using liquid bleach or solid calcium hypochlorite. These chemicals can burn your skin and eyes and whiten your clothing if handled improperly. Read the manufacturer's warnings on the label and take the recommended precautions.

Find another source of water

Before you start, make sure you have enough drinking water from another source for all the drinking, cooking, and bathing you will need to do for at least 12 to 24 hours. Consider these options for other sources:

- Bottled water.
- Water from some other source that is known to be uncontaminated.
- Water that you boil before use. If you choose to boil water, heat it to the boiling point and let it continue at a full boil for two minutes. Let it cool before using it for drinking or bathing.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY • PO BOX 13087 • AUSTIN, TX 78711-3087

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4. Water Quality & Conservation Resources

Public Water Supply Well Quality

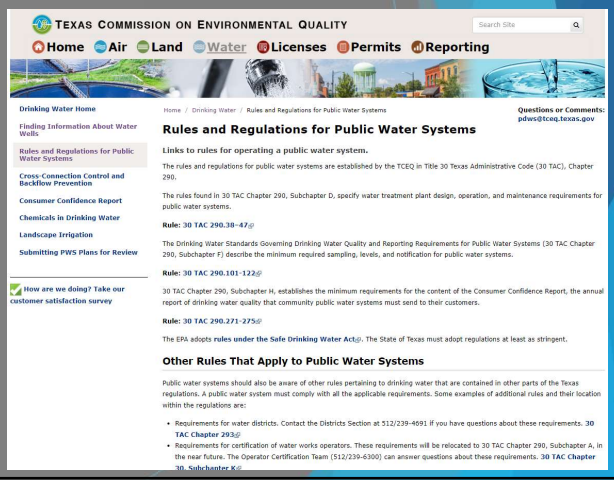
Systems qualify as (PWS) if more than 14 connections are serviced 365 days of the year.

TCEQ regulates and enforces PWS standards and practices.

Water quality standards apply to public water supply systems.

Annual report of drinking water quality to customers.

Rules outline plant design operation, and maintenance requirements.



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4. Water Quality & Conservation Resources

▶Who regulates public drinking water?

- In 1974, the United States Congress passed the Safe Drinking Water Act. This law requires the U.S. Environmental Protection Agency (EPA) to determine the safe levels of chemicals for U.S. drinking water. The EPA conducts research to determine the level of a contaminant in drinking water that is safe for a person to consume over a lifetime and that water systems can reasonably be required to remove from drinking water, given present technology and resources.
- **This safe level is called the maximum contaminant level (MCL).** The MCL for nitrate-nitrogen is 10 milligrams per liter (mg/L), which is commonly referred to as parts per million (ppm). For nitrite nitrogen, the MCL is 1 ppm.
- The EPA's drinking water standards—and the regulations for ensuring that these standards are met—are called the National Primary Drinking Water Regulations. All public water supplies must abide by these regulations and *TCEQ is the state regulatory agency that enforces those standards.*

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4. Water Quality & Conservation Resources

- Although private water wells are not required to meet the national drinking standards, private well owners can use these standards to monitor the quality of their water.
- Just as public water suppliers may not deliver water containing contaminants over the MCL to the public, private well owners should not use water above MCL levels for human consumption.

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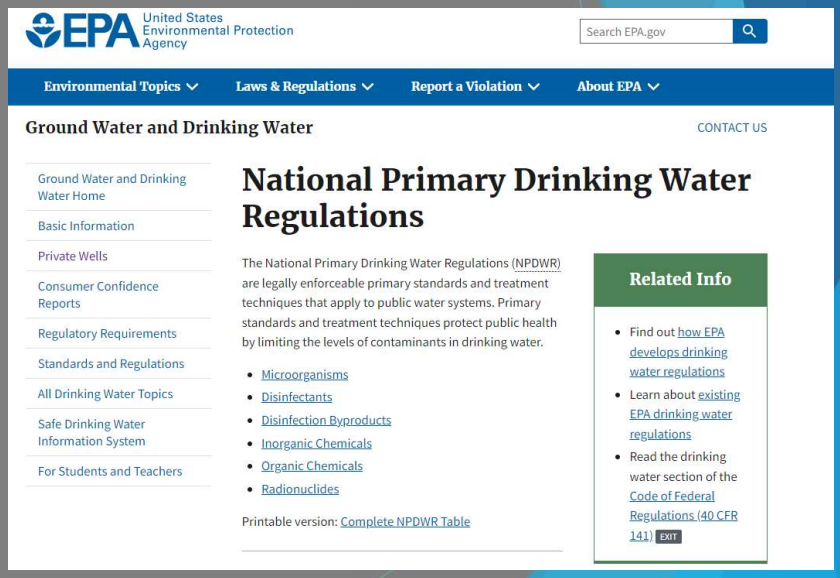
4. Water Quality & Conservation Resources

Is my water "drinkable"?

- NPDWR's
  - Microorganisms
  - Disinfectants
  - Disinfection Byproducts
  - Inorganic Chemicals
  - Organic Chemicals
  - Radionuclides



EPA United States Environmental Protection Agency

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Ground Water and Drinking Water

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- Private Wells
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- Standards and Regulations
- All Drinking Water Topics
- Safe Drinking Water Information System
- For Students and Teachers

National Primary Drinking Water Regulations

The National Primary Drinking Water Regulations (NPDWR) are legally enforceable primary standards and treatment techniques that apply to public water systems. Primary standards and treatment techniques protect public health by limiting the levels of contaminants in drinking water.

- Microorganisms
- Disinfectants
- Disinfection Byproducts
- Inorganic Chemicals
- Organic Chemicals
- Radionuclides

Printable version: Complete NPDWR Table

Related Info

- Find out how EPA develops drinking water regulations
- Learn about existing EPA drinking water regulations
- Read the drinking water section of the Code of Federal Regulations (40 CFR 141) EXIT

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4. Water Quality & Conservation Resources

- MCL's - Primary/Secondary contamination
- Maximum Contamination Levels (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.
- Treatment Technique (TT) - A required process intended to reduce the level of a contaminant in drinking water.
- Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

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4. Water Quality & Conservation Resources

Common water contaminants

Iron Oxides

Calcium Carbonate/Salts

Hydrocarbons

Bacteria & Microorganisms

Fertilizer & Nitrates

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4. Water Quality & Conservation Resources

- Well Water Quality Testing Resources
  - NELAP Laboratories/Regional health laboratories
    - National Environmental Laboratory Accreditation Program
    - labprgms@tceq.texas.gov
  - Agrilife Extension Offices
  - Groundwater Conservation Districts

Texas Commission on Environmental Quality
12100 Park 35 Circle
Building A
Austin, Texas 78753

The following list contains laboratories accredited by the State of Texas under the National Environmental Laboratory Accreditation Program (NELAP). For a comprehensive list of certified analytes and methods for each laboratory, click on the "Fields of Accreditation" link at the right of the lab's information entry, contact the individual laboratory, or contact the Texas Commission on Environmental Quality (TCEQ) at (512) 239 – 3754.

August 23, 2022

	LABORATORY NAME	DRINKING WATER	NON-POTABLE WATER	BIOLOGICAL TISSUE	SOLID & CHEMICALS	AIR	FIELDS OF ACCREDITATION
001	**A & B Environmental Services, Inc.** 10100 East Freeway, Suite 100 Houston, TX 77029-1971 (713) 453-6060	X	X	X	X	X	A & B Environmental
002	**Abilene-Taylor County Public Health District** 850 North 6th Street Abilene, TX 79601 (325) 692-5600	X					Abilene – Taylor County Public Health District
003	**Accurate Analytical Testing, LLC** 30105 Beverly Road Romulus, MI 48174 (734) 629-8161	X			X		Accurate Analytical Testing
004	**ACZ Laboratories, Inc.** 2773 Downhill Drive Steamboat Springs, CO 80487-5051 (970) 879-6590	X	X	X	X		ACZ Labs

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4. Water Quality & Conservation Resources

- Parker County
  - (817) 598-6168
  - 604 North Main St. Suite 200 Weatherford, TX 76086
- Wise County
  - (940) 627-3341
  - 206 S State St # A, Decatur, TX 76234
- Hood County
  - (817) 579-3280
  - Hood County Annex I, Rm 22 1410 W Pearl St Granbury, TX 76048-1826 U.S.A
- Montague County
  - (940) 894-2831
  - Courthouse, 1st Floor, 266 Franklin Street Montague, TX 76251 U.S.A.

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4. Water Quality & Conservation Resources

- **Groundwater Conservation Districts**
  - **Upper Trinity GCD testing resources**
    - **Water quality testing program**
      - E.coli & coliform (accept samples Monday-Thursday)
  - Regional district resources
    - Prairielands Groundwater Conservation District
      - Educational outreach opportunities
    - Middle Trinity Groundwater Conservation District
      - Well plugging program (exceptions: wells with 100 ft of standing water, and hand dug wells)
      - **Water quality testing program**
    - Northern Trinity Groundwater Conservation District (x)
      - Educational outreach opportunities
    - North Texas Groundwater Conservation District (x)

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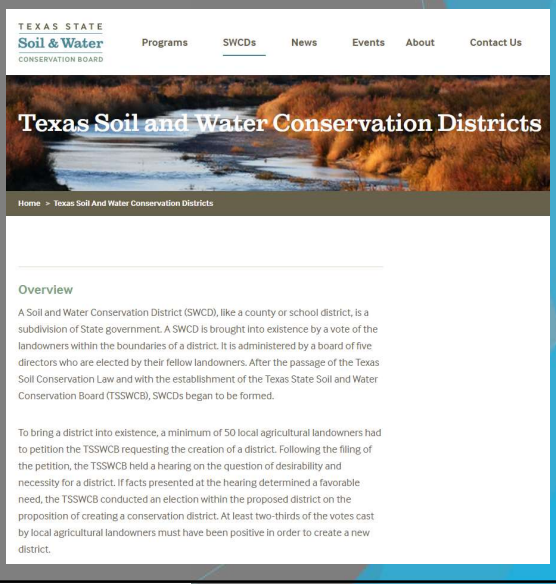
4. Water Quality & Conservation Resources

- Soil & Water Conservation Districts



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4. Water Quality & Conservation Resources

- Master Naturalists & Master Gardener Associations

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- Who Qualifies for Agricultural and Timber Exemptions?

  If you are a farmer, rancher or timber producer engaged in one of the activities listed below, you qualify for tax exemption on the purchase of certain items used to produce your agricultural and timber products for sale.

  All purchasers, including non-Texas residents, must have a valid agricultural and timber registration number (Ag/Timber Number) issued by the Comptroller to claim exemption from Texas tax.

  If you do not have a valid Ag/Timber Number, you must pay tax to retailers on your purchases.

  Your business type must be listed below to qualify for tax exemption on certain items or for an Ag/Timber Number.

- What Activities Qualify?
- What Activities Do Not Qualify?

4. Water Quality & Conservation Resources

Agricultural Exemptions

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4. Water Quality & Conservation Resources

- **Agricultural Exemptions**

▼ What Activities Qualify?

- farming or ranching for the purpose of raising agricultural products for sale;
- production of fiber crops (cotton, hemp, flax, etc.) for sale;
- timber production (including contract logging);
- feedlot operation;
- commercial fish farm operation;
- bee keeping;
- custom harvesting;
- crop dusting (as defined by 14 CFR Section 137.3);
- growing plants for sale in a commercial nursery;
- a veterinary business that makes farm or ranch calls;
- Future Farmers of America or 4-H; or
- teaching an agricultural vocational course.

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▼ What Activities Do Not Qualify?

- home gardening;
- horse (PDF) racing, boarding, training or trail rides;
- rodeos, circuses or zoos;
- florists or similar retailers who maintain plants before sale;
- wildlife management and conservation;
- hunting and fishing operations, including aerial hunting;
- predator control;
- wildlife or livestock surveys;
- commercial fishing;
- companion animal (pet) breeding; and
- kennels or other animal boarding businesses.

4. Water Quality & Conservation Resources

Agricultural Exemptions

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4. Water Quality & Conservation Resources

- **Agricultural Exemptions**

How to Apply for a Texas Agricultural and Timber Registration Number (Ag/Timber Number)

To claim a tax exemption on qualifying items, you must apply for an agricultural and timber registration number (Ag/Timber Number) from the Comptroller. You must include the Ag/Timber Number on the agricultural exemption certificate (PDF) or the timber exemption certificate (PDF) when buying qualifying items.

▼ Ag/Timber Number Expiration Dates

Ag/Timber Numbers must be renewed every four years, regardless of when the number was first issued. Renewed and new Ag/Timber Numbers expire Dec. 31, 2023.

You must enter the expiration date on the exemption certificate you give to retailers on your qualifying purchases. If you already have an exemption certificate on file that includes your Ag/Timber Number, you can add the expiration date to the exemption certificate and initial it for the retailer's records.

▼ What You Need Before You Apply

- Basic information about your business (such as its name, description and address)
- Social Security number (if you do not qualify for a Social Security number, you must apply by mail and include your national identification number and country of origin on the application)
- If your business is registered with the Texas Secretary of State (SOS), your SOS file number (find your file number using our Taxable Entity Search)

▼ Apply Online

If you don't already have an eSystems/Webfile account with us, you will first register to create a secure online profile. Otherwise, log on as a returning user. The application takes about 10 minutes to complete. No signature is required, and we will issue your Ag/Timber Number at the end of the application process.

We will mail you a confirmation letter in five to seven business days after you complete the online application. In the meantime, you can view and print a copy of your confirmation letter (using Adobe Acrobat Reader) upon completing the registration process, or write down your Ag/Timber Number. You can also look up your registration information at any time.

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4. Water Quality & Conservation Resources

- **Native Plants & Xeriscaping**
- When on a water well system, conservation can help extend the life of your well and septic system.
- Consider drought conscious plants and efficient fixtures in the home.

Region-B

North & Central Texas

- Grasses & Lawns (pdf) – Buffalograss, Bermudagrass, Zoysiagrass, Texas Bluegrass, Tall Fescue and more
- Ornamental Grasses – Dwarf Pampas Grass, Chinese Silver Grass, Perennial Fountain Grass
- Groundcover – Eastern Redcedar, Turk's Cap, Rockrose, Coralberry, Asian Jasmine and more
- Herbs – Rosemary
- Topiary (ornamental shapes) – Texas Pistachio, Rocky Mountain Juniper, Eastern Redcedar, Rosemary, and more
- Small Shrubs – Dusty Miller, Engelman's Prickly Pear, Rockrose, Honey Mesquite, Nandina and more
- Medium Shrubs – Tree Cholla, Engelman's Prickly Pear, Sweet Mock Orange, Lantana, American Elderberry, and more
- Large Shrubs – Desert Willow, Chinese Phototinia, Pinyon Pine, Ash Juniper, Mexican Elder and more
- Small Trees – Goldenball Leadtree, Western Soapberry, Chaste Tree, Yucca, Staghorn Sumac, more
- Medium Trees – Pinyon Pine, Slash Pine, Honey Mesquite, Ash Juniper, Southern Magnolia and more
- Large Trees – Slash Pine, Sawtooth Oak, Common Baldcypress, Bur Oak, Chinkapin Oak and more
- Spreading Conifer – Eastern Redcedar, Shore Juniper, Creeping Juniper, Japanese Garden Juniper, Yews and more
- Upright Conifer – Pinyon Pine, Slash Pine, Ash Juniper, Loblolly Pine, Japanese Black Pine and more

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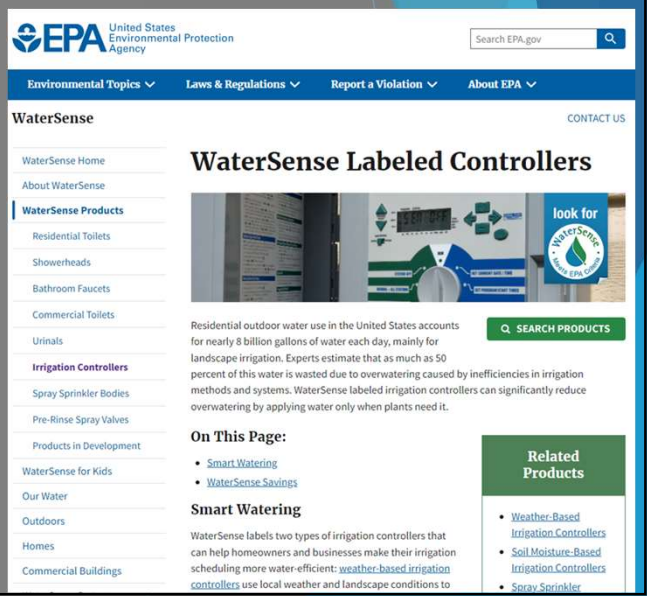
4. Water Quality & Conservation Resources

- EPA provides resources to homeowners on smart irrigation controllers and programs to help reduce waste with traditional sprinkler systems.
- Most water waste in domestic households comes from leaking appliances or sprinkler systems.
- Consider a system that lets you turn it off instantly from your mobile device, or automatically turns off when raining.
- Monitor the area your sprinkler system is covering and adjust accordingly.
  - Concrete sidewalks don't need water to grow. ☺



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4. Water Quality & Conservation Resources

- **Irrigation with water well sources**
- **Water in the evenings** and with soaker hoses to reduce evaporative loss. Traditional sprinkler heads lose 30-50% of water volumes due to evaporation and wind.
- **Monitor your well pump.** If water levels dip too low, pumps have the potential to burn out overcompensating for volumes they can't produce. Burned out pumps cost hundreds of dollars to retrieve and repair and can potentially damage PVC casing by excess heat produced. Broken casing in a well compromises the integrity and can lead to contamination.
- If your well begins to produce large amounts of sediment or bubbles, it is time to let it rest until the water level recovers. Check the water produced by the well in your sinks or bathtubs for a milky color, indicating particulates.

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4. Water Quality & Conservation Resources

- Rainwater Harvesting – Benefits & Resources
  - Reduce erosion & weathering
  - Reduce utility bills/water well usage
  - Reduce runoff & stress on utility services
- Regulation
- Texas Tax Code 151.355 allows for a state sales tax exemption on rainwater harvesting equipment.
- Texas Property Code 202.007 prevents homeowners associations from banning rainwater harvesting installations.
- Texas House Bill 3391 requires rainwater harvesting system technology to be incorporated into the design of new state buildings and allows financial institutions to consider making loans for developments using rainwater as the sole source of water supply.
- ARCSA – American Rainwater Collection Storage Associations

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4. Water Quality & Conservation Resources

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Section 4: Content Review Questions

1. Who regulates private well water quality in the state of Texas?
2. Why do native plants require less water than out of state grass varieties?
3. What certification should a laboratory have to analyze and complete water quality testing?
4. If an RV park services clients 365 days out of the year, how many water connections are qualifies the property as a Public Water Supply? (PWS)
5. What categories of groundwater usage fall under "exempt-use?"
6. What other documents are required alongside a water well application?
7. Is there any legislation in Texas banning the use of rainwater harvesting systems?

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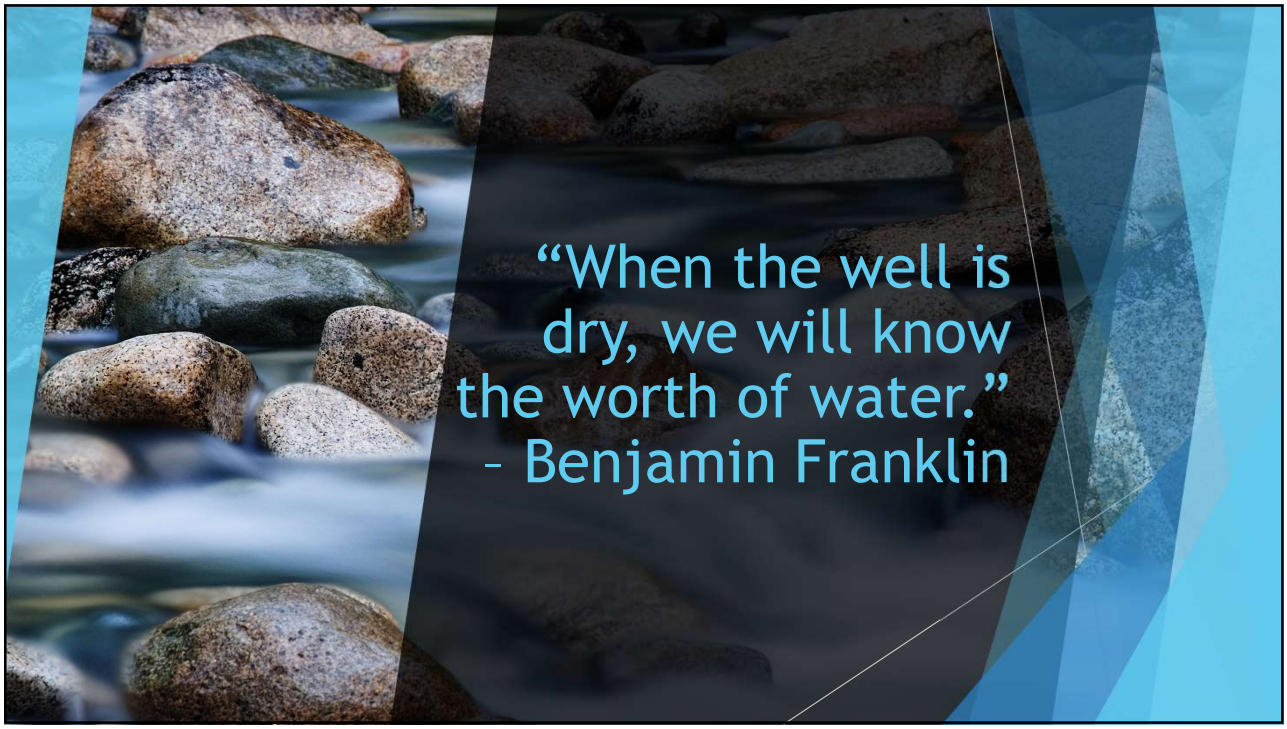

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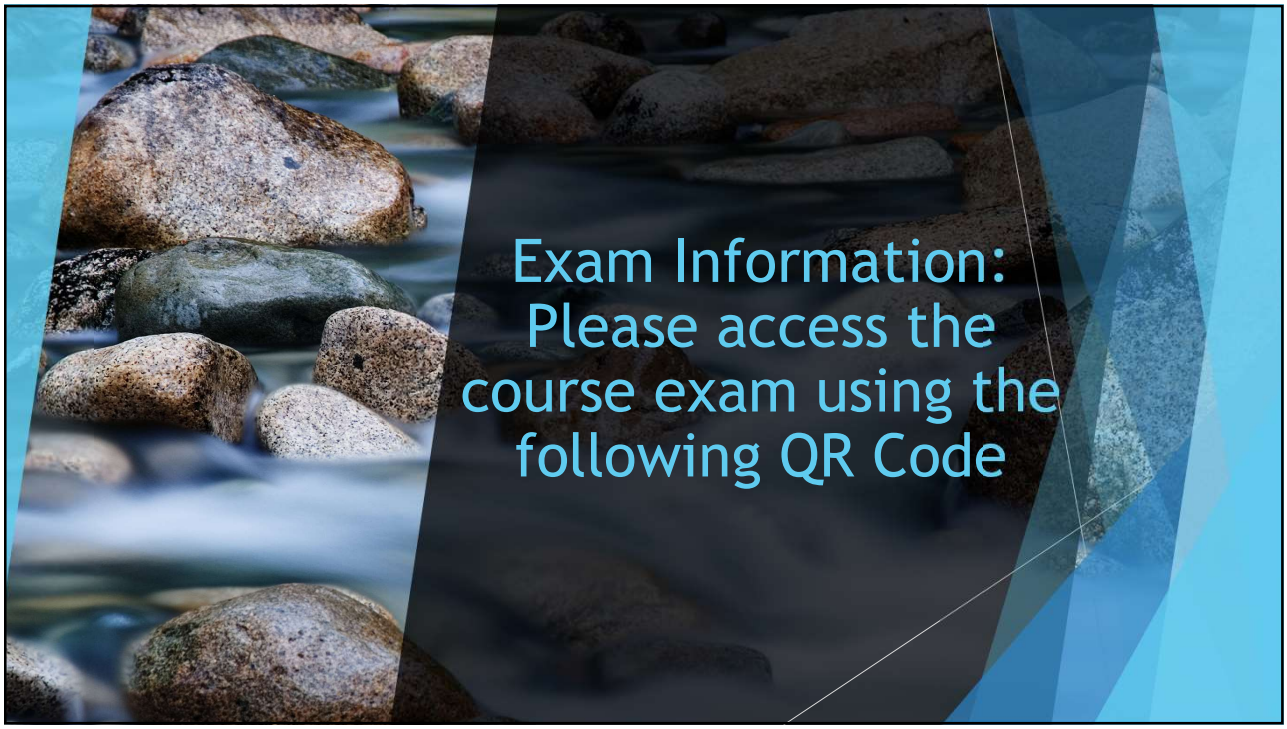
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course exam using the
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Remember to take course materials with you, online attendees have PDF versions of all curriculum available. Please email instructor with any follow-up questions or concerns.

Thank you all for your time and joining us for our first ever TREC course! ☺

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Jill Garcia
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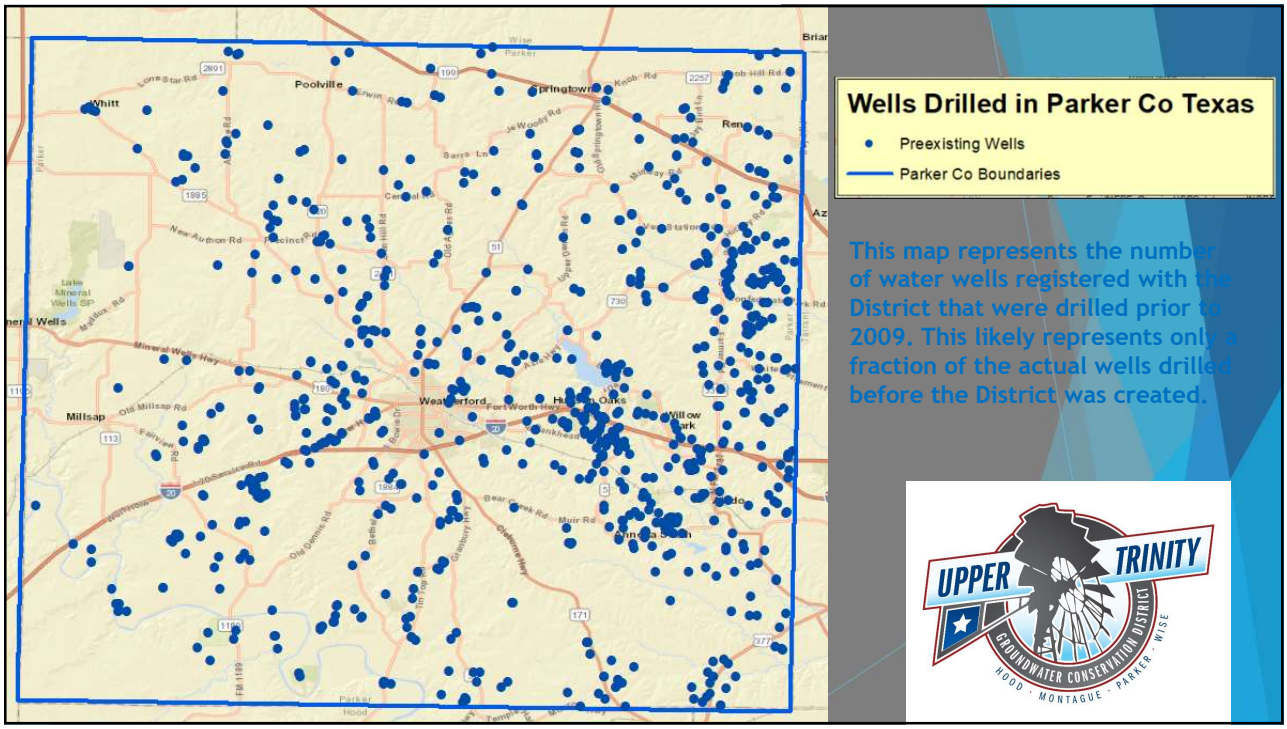
Wells Drilled in Parker Co Texas
Preexisting Wells
Parker Co Boundaries
This map represents the number of water wells registered with the District that were drilled prior to 2009. This likely represents only a fraction of the actual wells drilled before the District was created.
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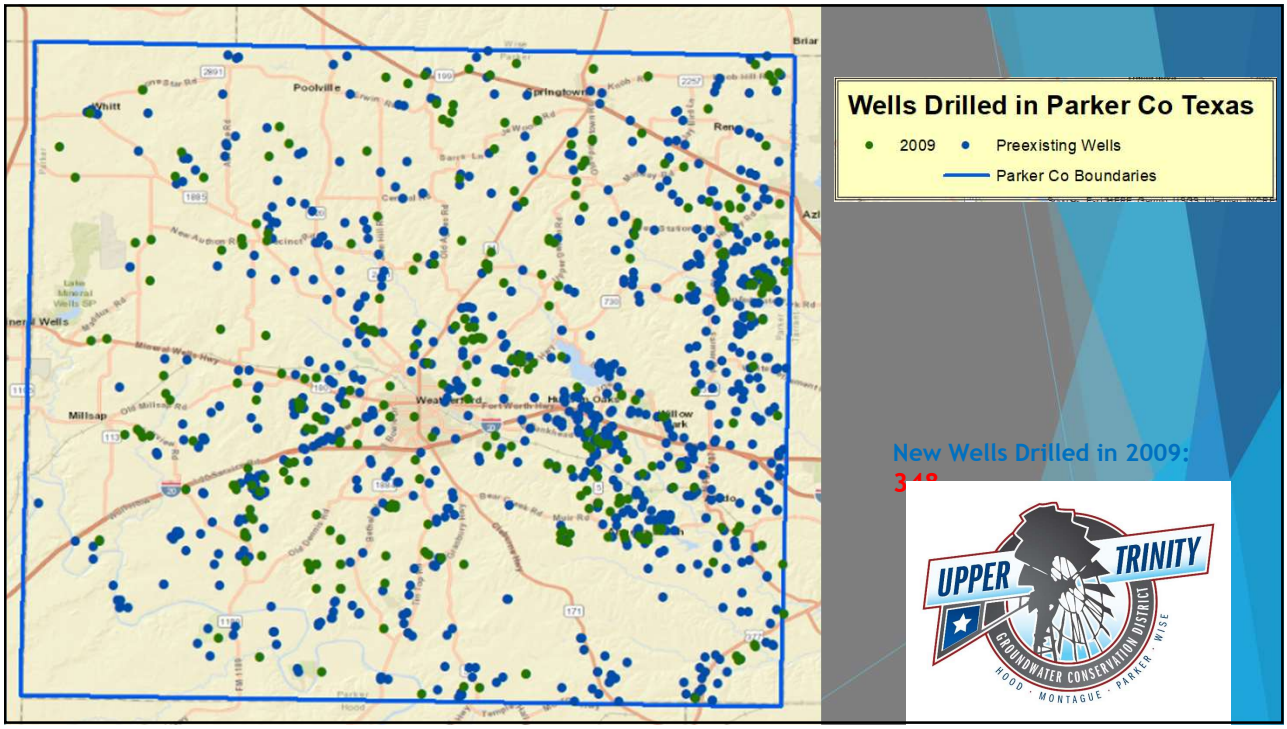
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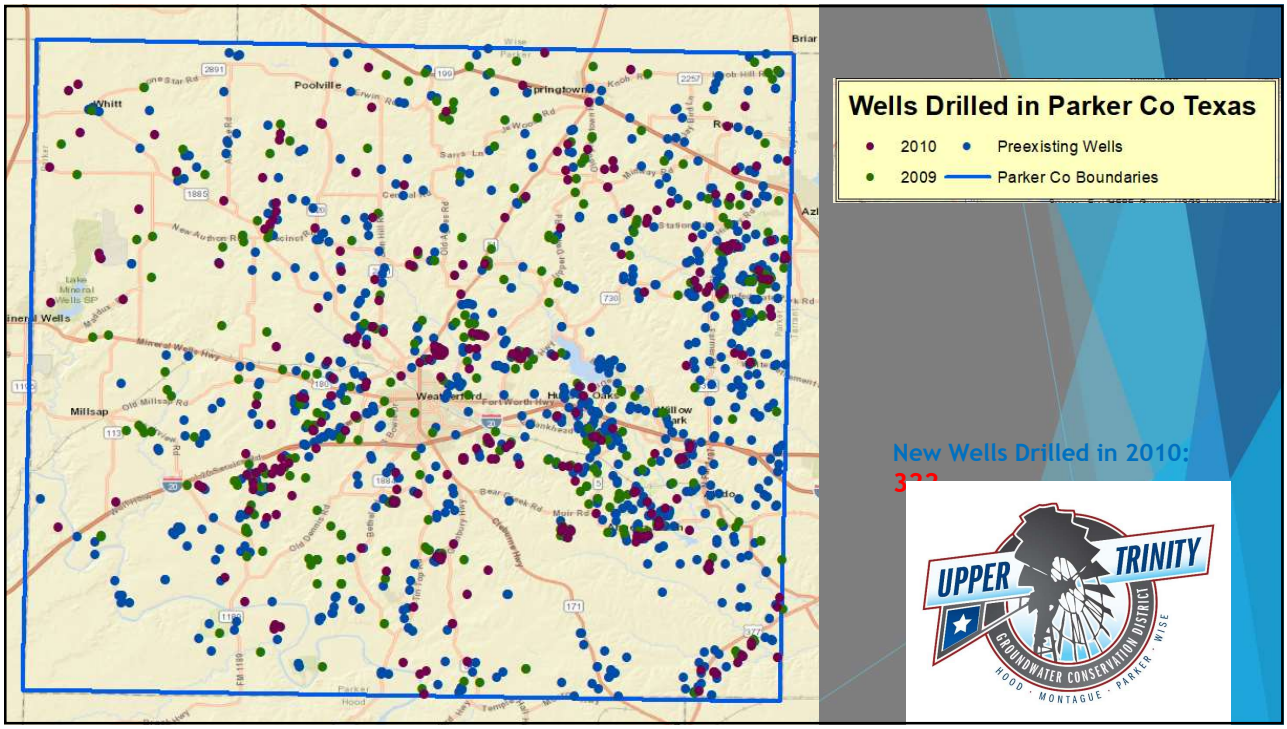
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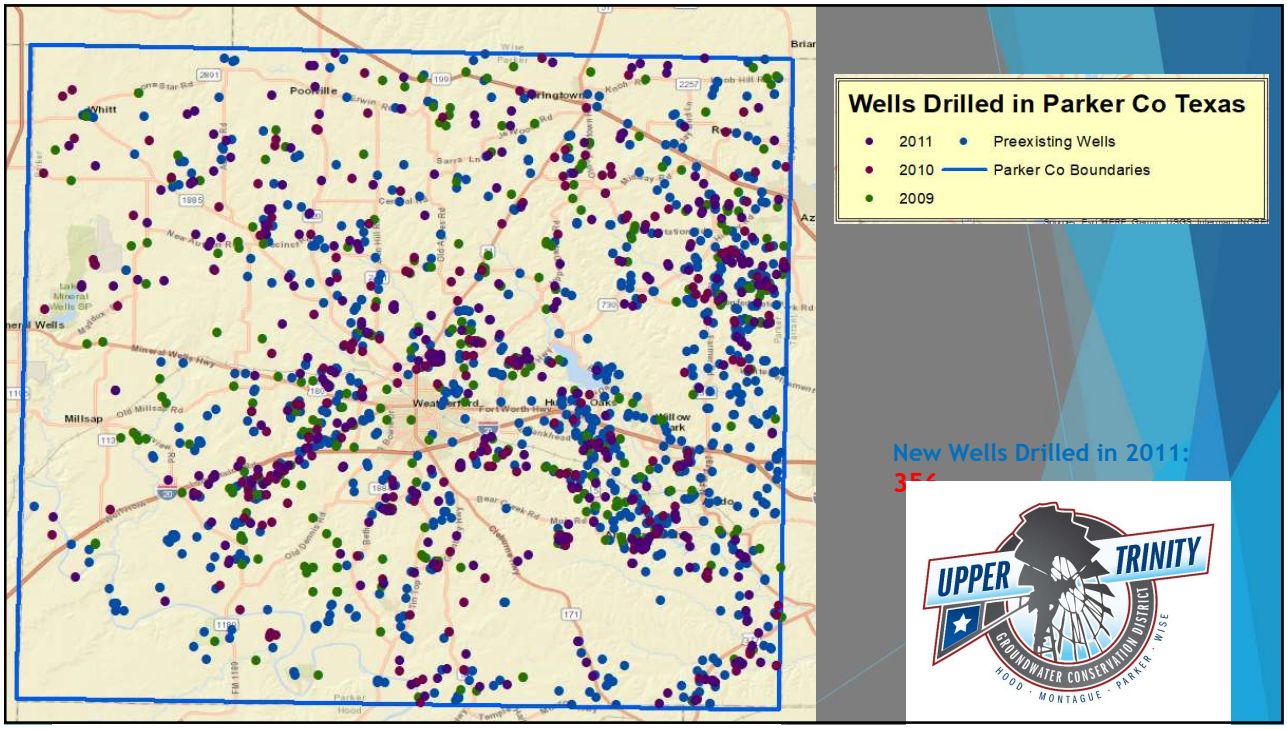
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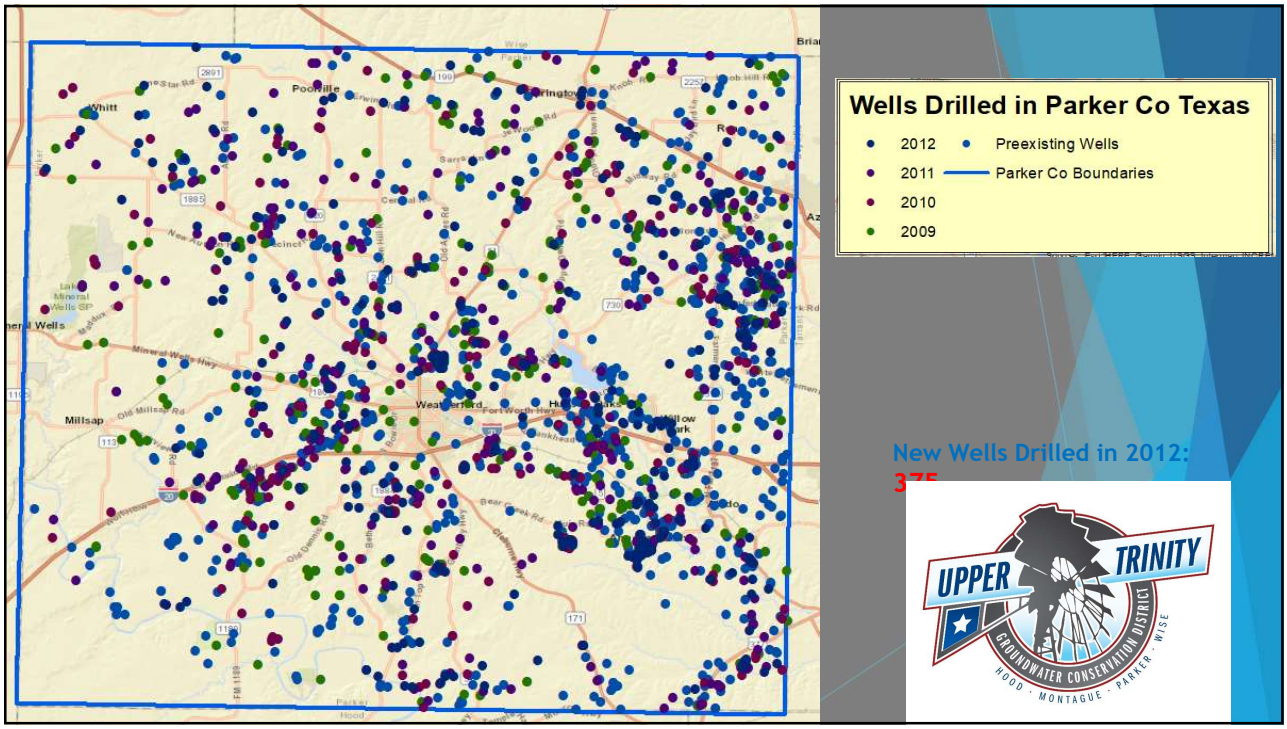
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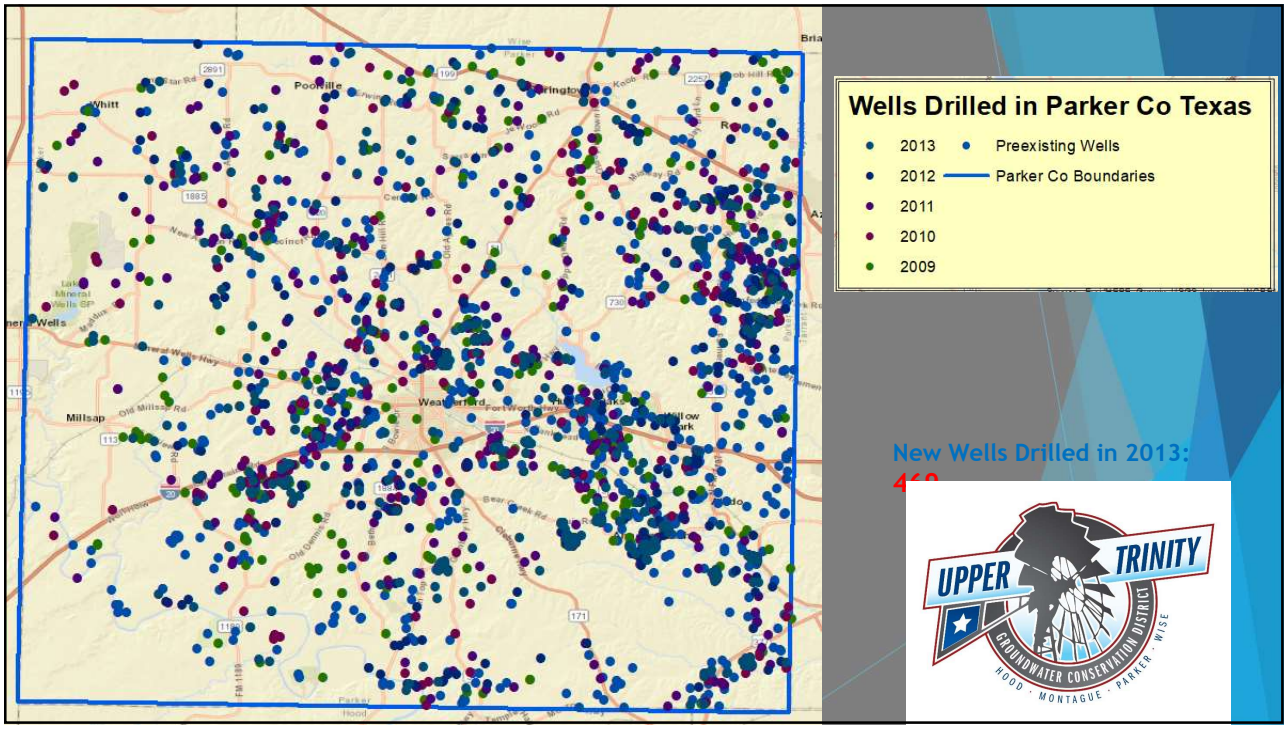
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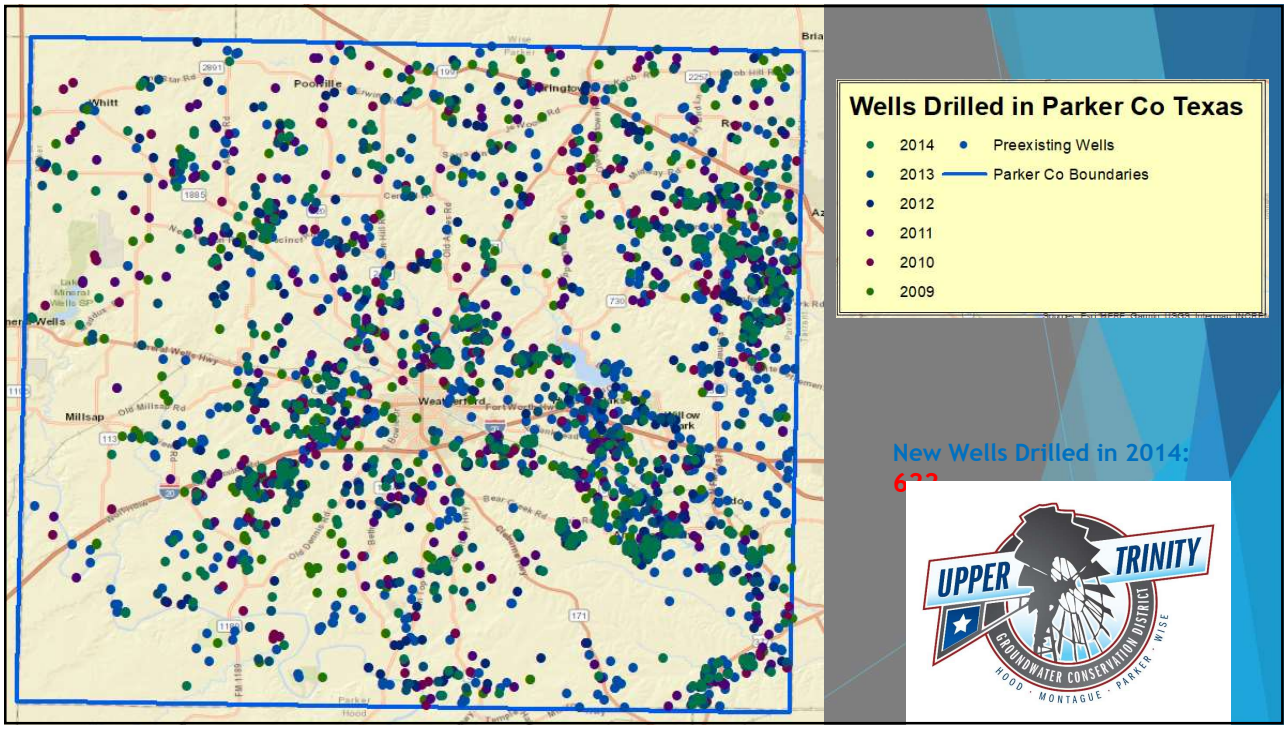
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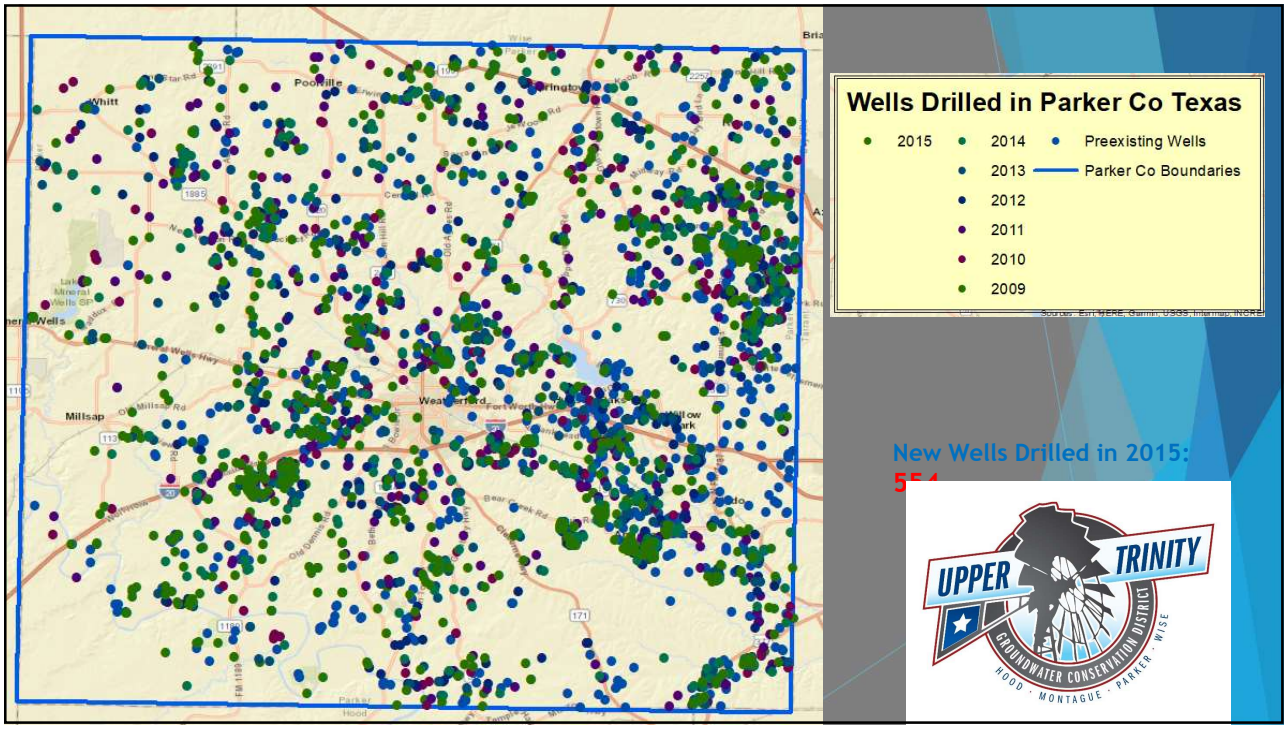
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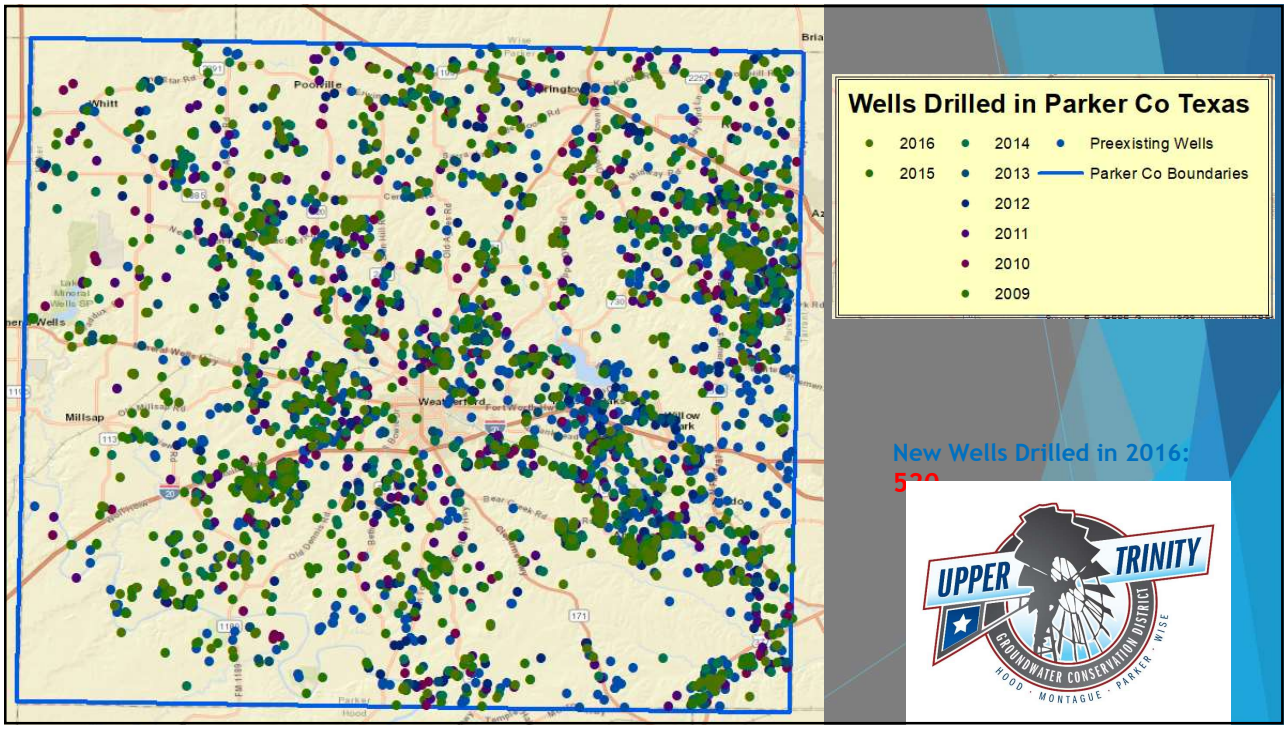
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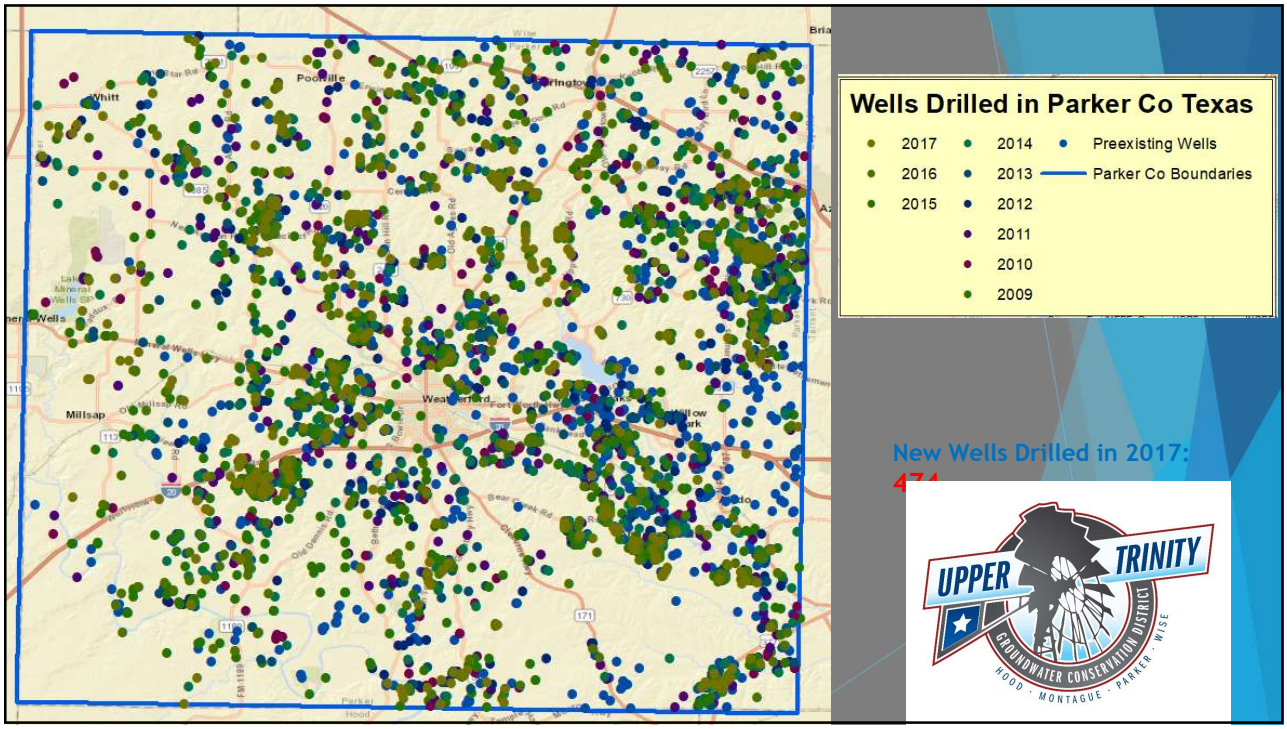
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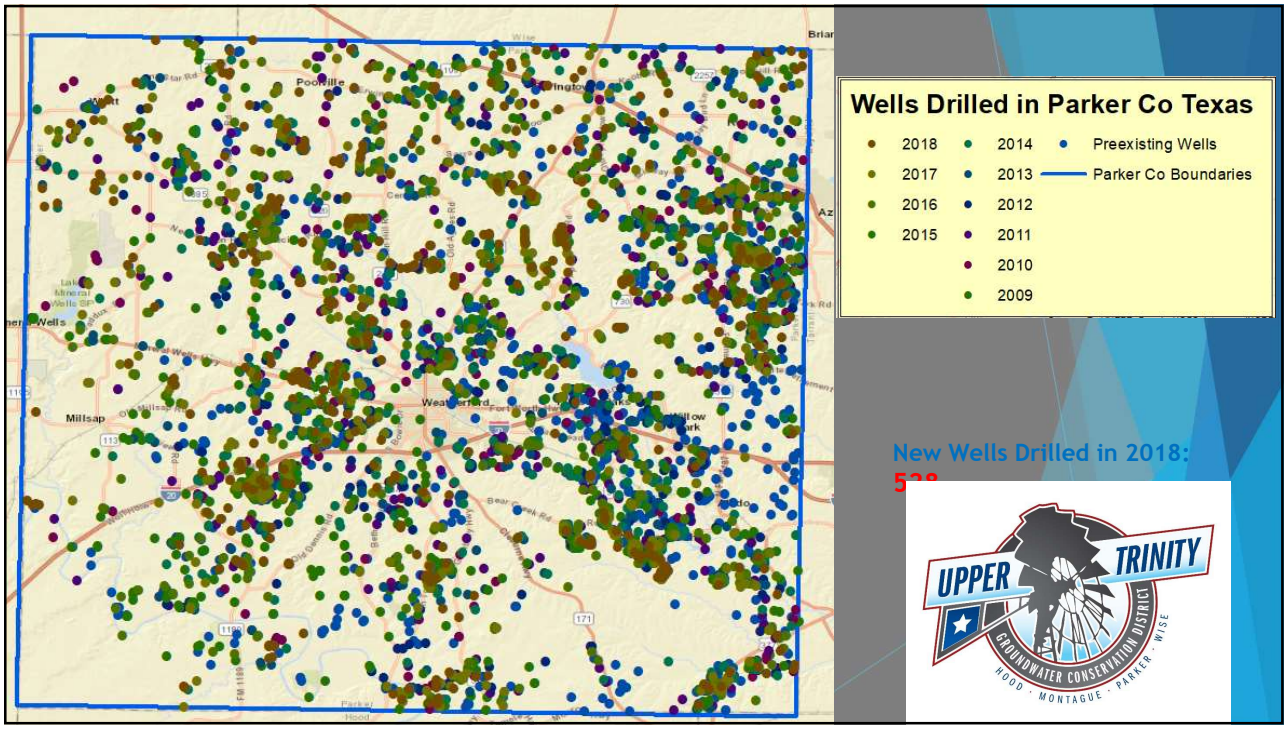
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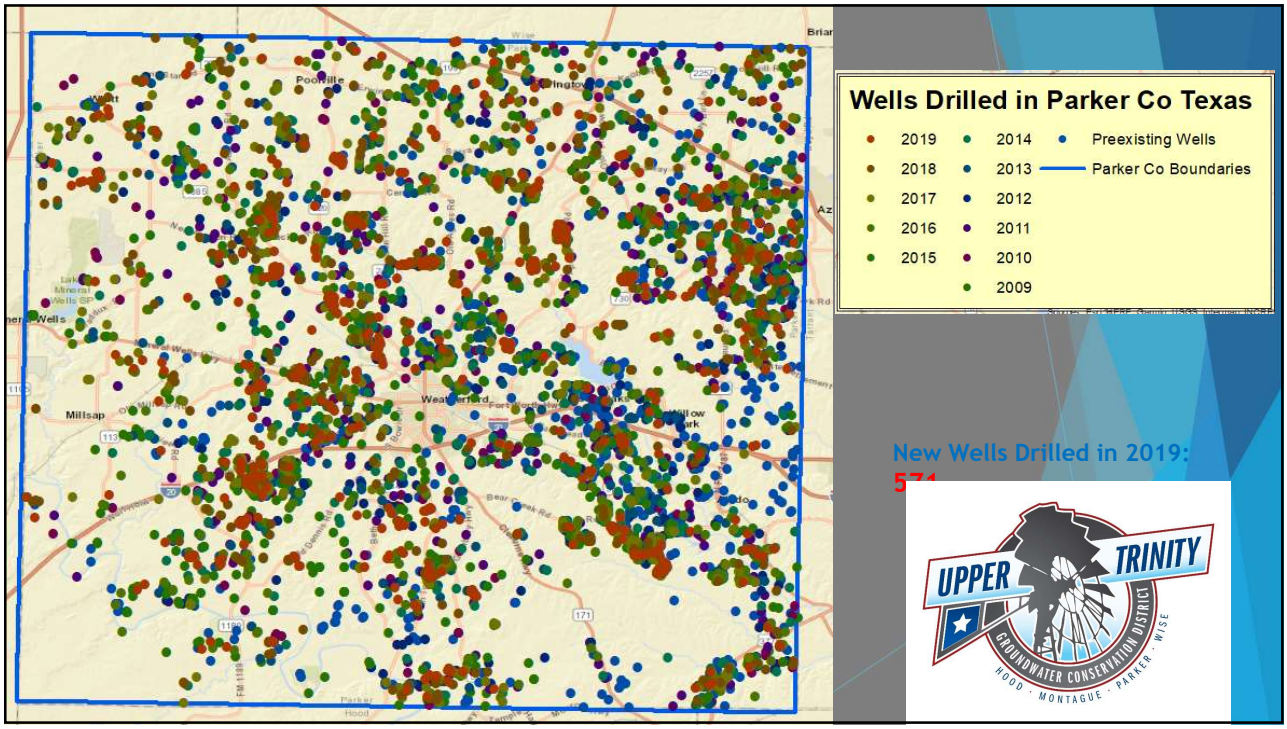
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New Wells Drilled in 2019:
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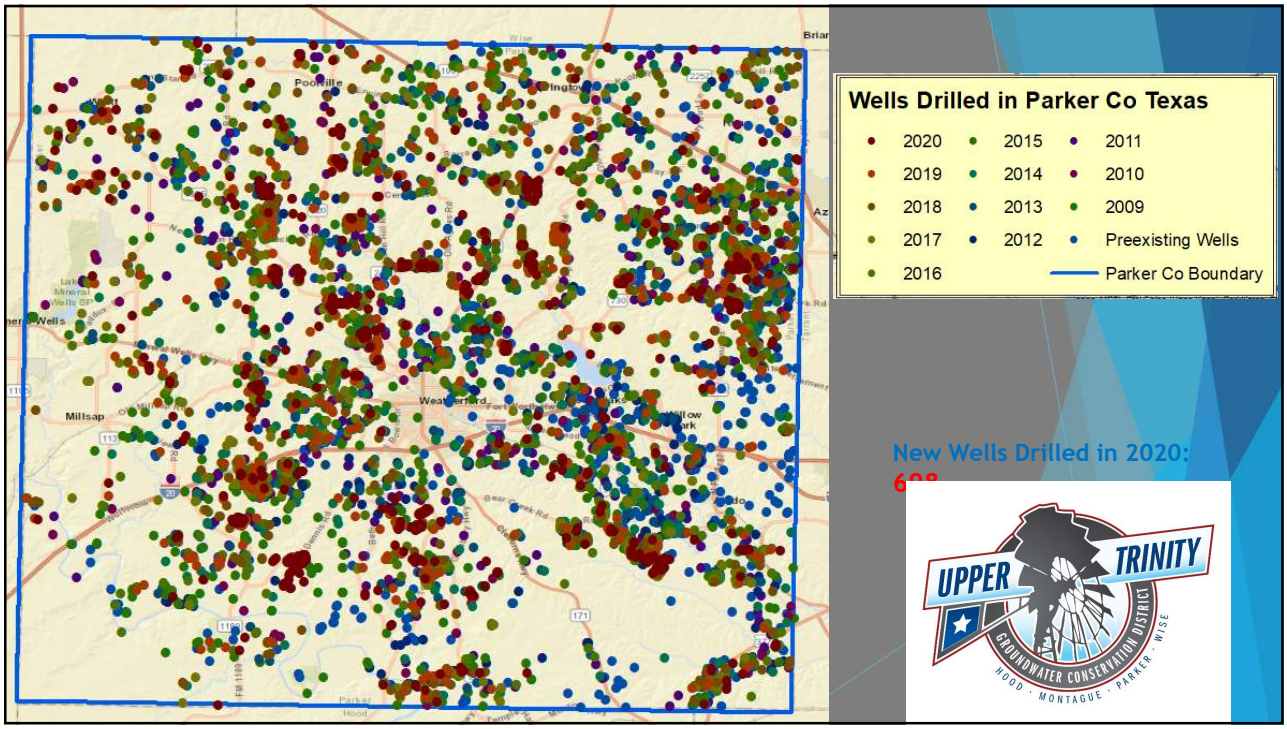

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Questions?

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