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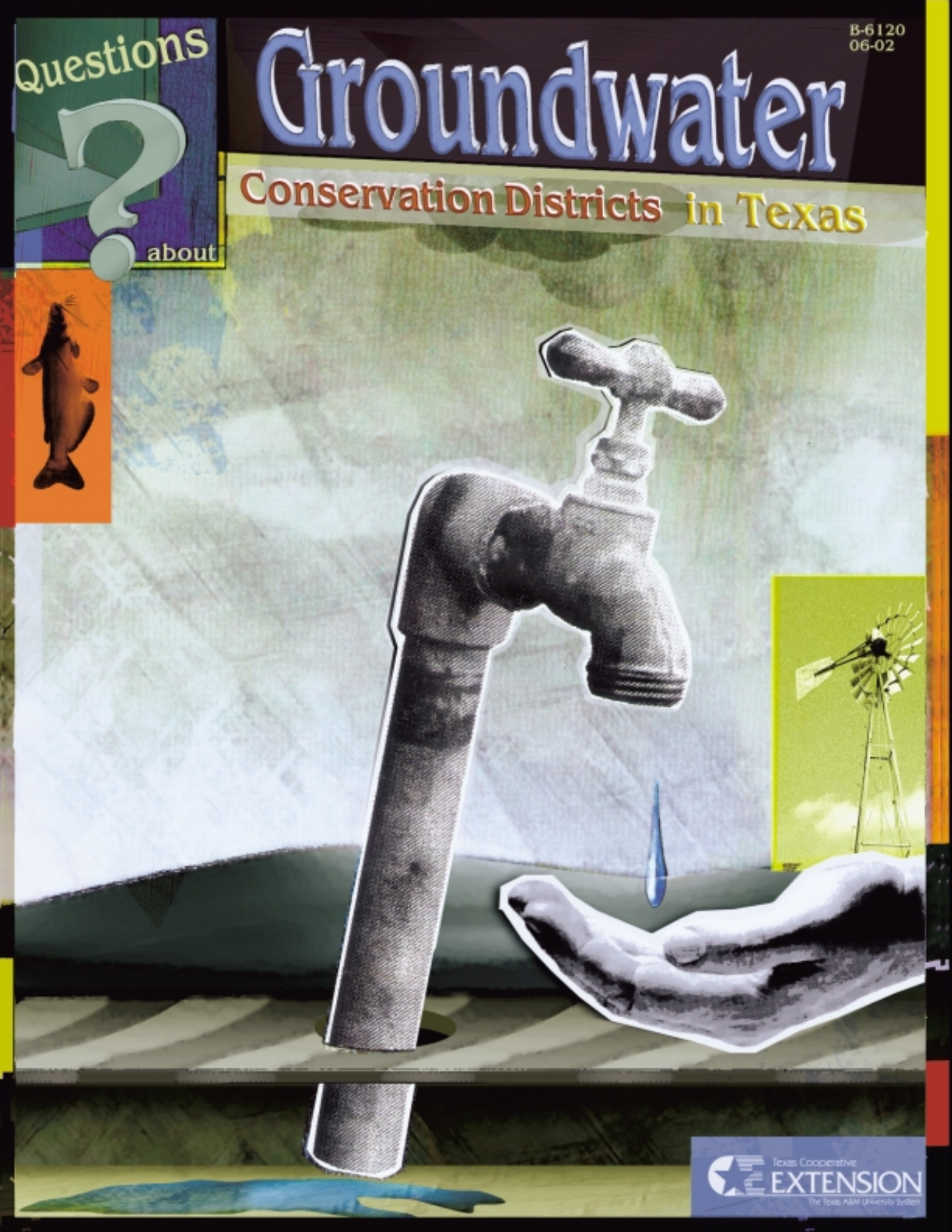
Questions about

Groundwater

Conservation Districts in Texas



Texas Cooperative EXTENSION
The Texas A&M University System

Questions about Groundwater Conservation Districts in Texas

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Disclaimer

The purpose of this publication is to present useful information about Texas groundwater law and groundwater conservation districts. It is not intended to furnish specific legal advice, or to render a legal opinion. If you are seeking specific legal advice, please consult with an attorney.

Contents

23 GCD administration and management

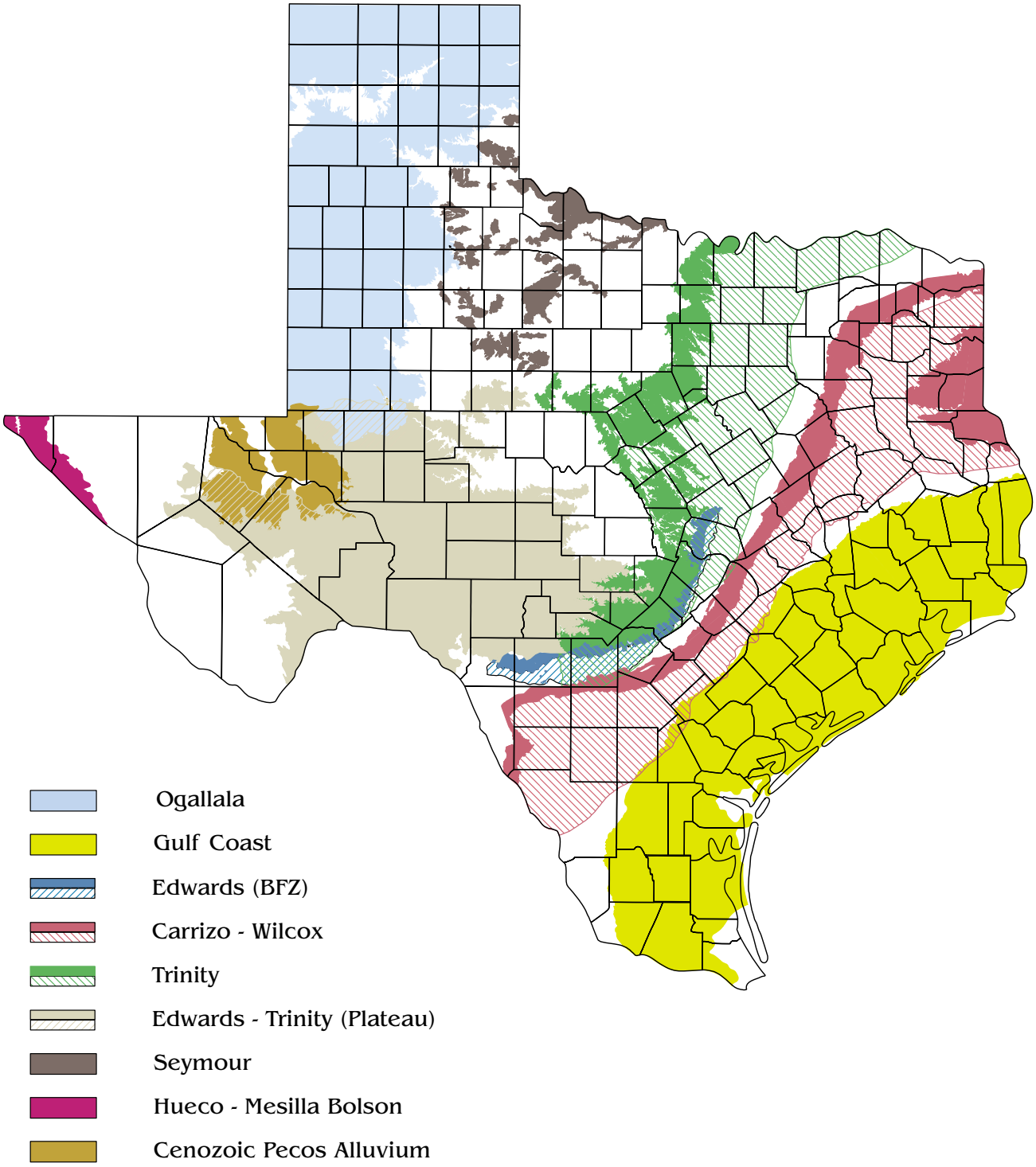

Figure 1. In Texas there are nine major aquifers, which account for 96.3 percent of all groundwater withdrawals in the state.

Introduction

Groundwater is and will continue to be a major source of water for Texans. However, in many parts of the state, more groundwater is being used than is being replenished through natural means. If this practice continues, Texas water costs will rise, land could subside, water quality could decline and people in some areas could run out of water.

To address this problem, the Texas Legislature has provided a way for groundwater resources to be managed and protected locally, through the creation of groundwater conservation districts (GCDs). **A GCD is a local unit of government authorized by the Texas Legislature and ratified at the local level to manage and protect groundwater.**

Although local groundwater conservation districts have existed in Texas for more than 50 years, the idea of forming a new GCD is novel for citizens in some regions of the state. To make informed decisions about this issue, these citizens need to understand their options in managing their groundwater resources.

Public meetings have been held about this issue across the state. At those meetings, citizens have asked questions about groundwater, aquifers, water laws and groundwater conservation districts. Addressed below are the questions asked most often in those meetings. Also included is a general overview of groundwater management issues.

Water use in Texas

Texas Water Code §11.021

Although the amount varies somewhat from year to year because of rain and drought conditions, Texans use about 16.5 million acre-feet of water annually. An acre-foot is a common measure used to explain water volume and usage. One acre-foot is enough water to cover 1 acre of land to a depth of 1 foot; it is equivalent to 325,851 gallons of water.

The water we use comes from two main sources: groundwater and surface water. Groundwater is water percolating below the surface of the earth. Surface water is generally that found in ponds, lakes, rivers, streams and bays. It is defined by the Texas Water Code as:

"the ordinary flow, underflow, and tides of every flowing river, natural stream and lake and of every bay or arm of the Gulf of Mexico, and the storm water, floodwater and rainwater of every river, natural stream, canyon, ravine, depression and watershed in the state."

Of all the water we use in Texas, about 60 percent is groundwater; the other 40 percent is surface water.

Groundwater

Most of the groundwater used in Texas is used for agriculture. Although the percentages vary slightly from year to year, about 80 percent of all groundwater used in our state is for irrigating crops. Texas has about 6.3 million acres of irrigated agricultural land.

Groundwater is also an important water source for several cities. For example, Amarillo, Bryan-College Station, El Paso, Lubbock, Houston and San Antonio use groundwater to supply water for homes, businesses and industry.

Statewide, groundwater comes from some 32 Texas aquifers. According to the Texas Water Development Board (TWDB), nine aquifers supply about 97 percent of the groundwater we use.

The water from some Texas aquifers is readily replenished by rainfall, a process known as recharging. Other aquifers are not easily recharged. For example, the Ogallala aquifer, which underlies most of the High Plains of West Texas, is not easily replenished, yet it yields about two-thirds of all the groundwater we use in the state.

Texas aquifers vary in their ability to be replenished by rainfall and in the pumping demands being placed on them, causing many observers, experts and citizens to ask whether aquifers should be managed on a sustainable basis or on the basis of eventual depletion. This discussion is central to the future use of some aquifers and is an important policy question for the Legislature and for groundwater conservation districts.

Surface water

Surface water comes from rainfall, which feeds the 191,228 miles of rivers and streams in 23 river basins in Texas. Some of the water from these rivers and streams is captured and stored by dams and reservoirs. Texas has an estimated 6,700 dams and reservoirs, which flood about 6,690 square miles of land.

Texas reservoirs vary in size and storage capacity. However, about 97 percent of the surface water we use each year is drawn from only 190 of these 6,700 reservoirs. These 190 major reservoirs hold about 11 million acre-feet of dependable yield; of this amount, we use only about 65 percent. The water usage is low in part because many reservoirs are located far from cities and there are no pipelines or other infrastructure to move the water.

Unlike groundwater, which is used mostly for irrigated agriculture, most of Texas' surface water is used for cities and industry. Agriculture uses a much smaller proportion of surface water than groundwater for irrigation.

As Texas continues to grow, the amount and proportion of surface water and groundwater used for agricultural, municipal and industrial purposes will shift dramatically. According to the TWDB, the amount of surface water and groundwater used for irrigation will decline, while municipal and industrial water use will increase.

In the next 25 years, the fastest growing users of water are projected to be cities and industry. By the 2040s, the TWDB projects that more water will be used by cities and industry than by agriculture.

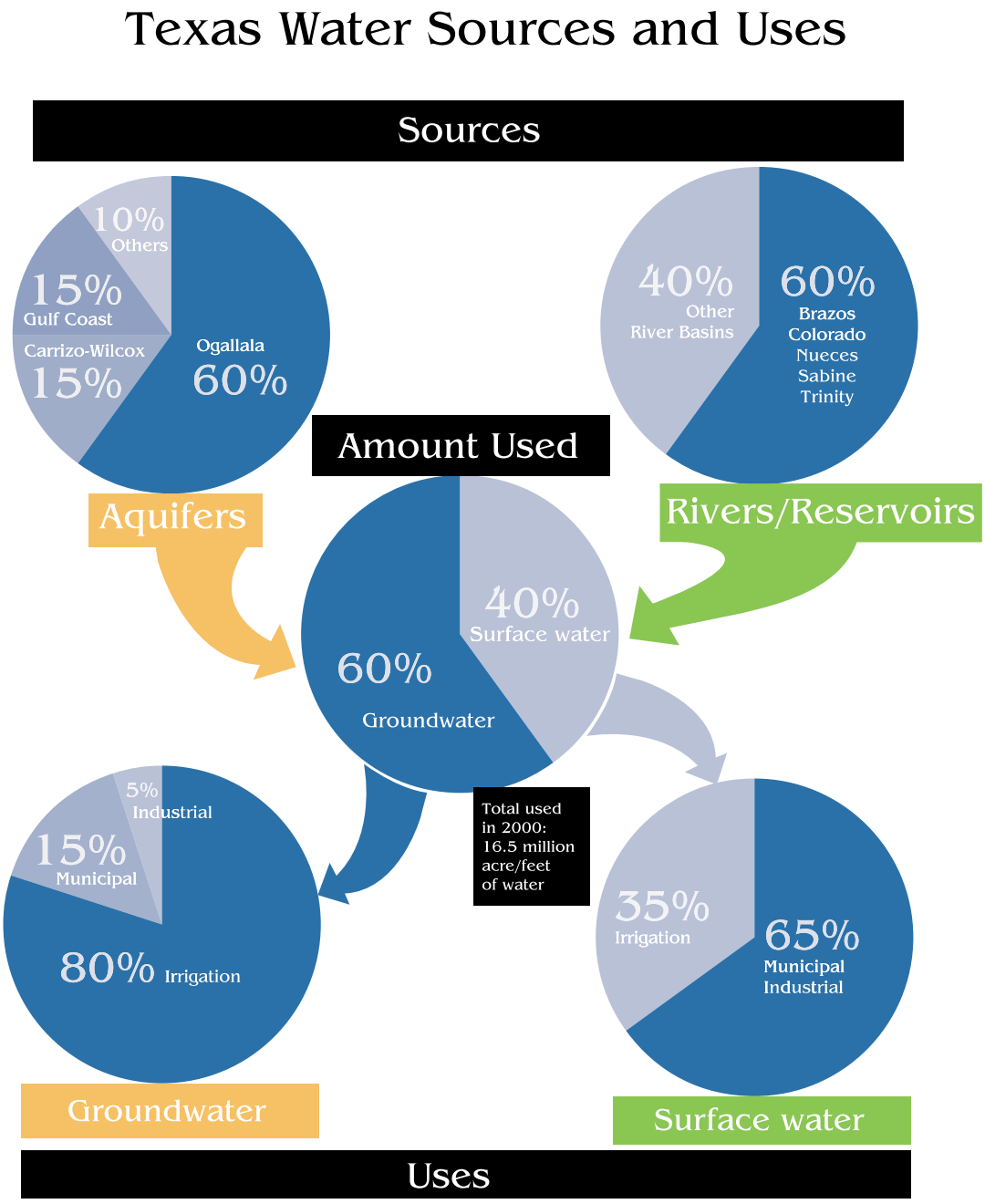

Figure 2. Texas water uses and sources in 2000. Estimated from 1997 and 2002 Texas State Water Plan. Percentages could vary by + or - 5 percent.

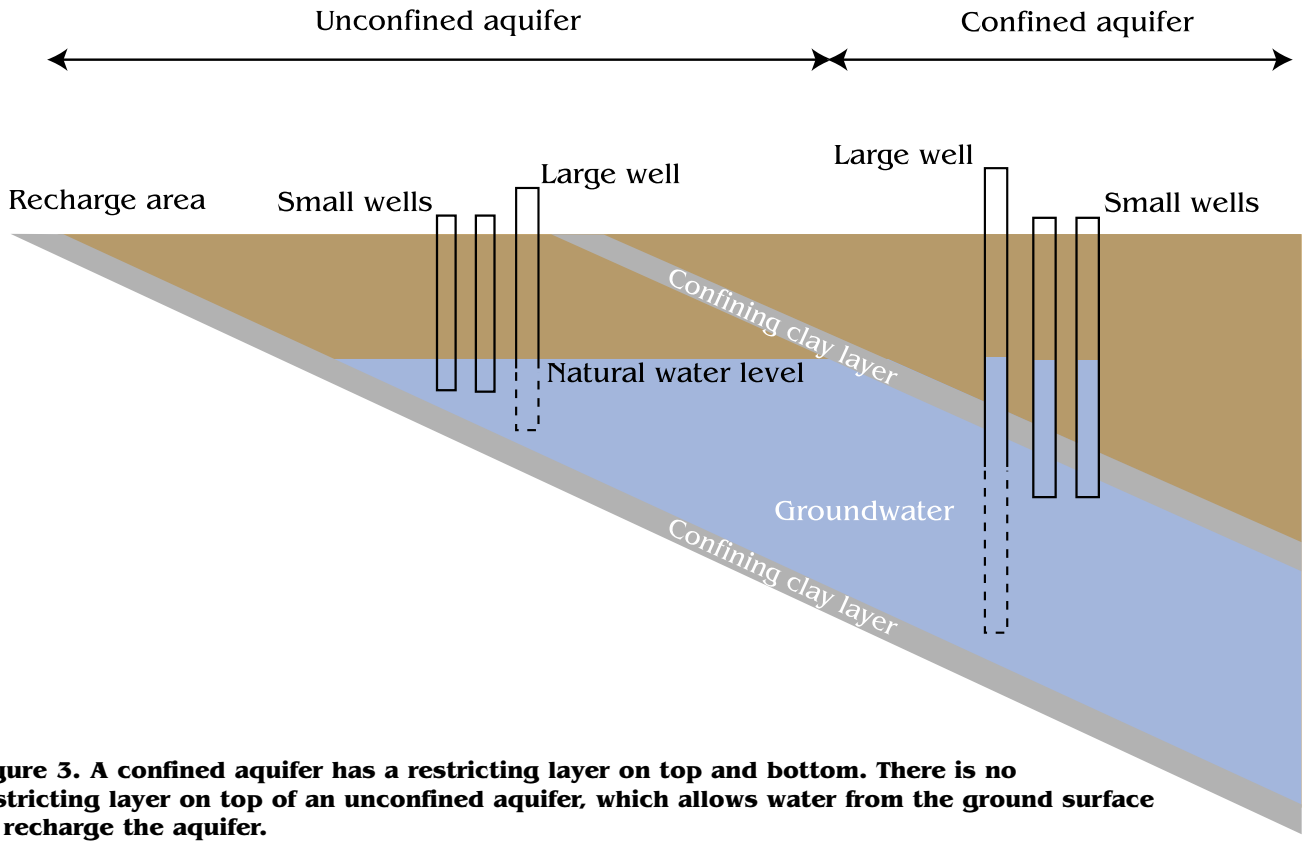

Figure 3. A confined aquifer has a restricting layer on top and bottom. There is no restricting layer on top of an unconfined aquifer, which allows water from the ground surface to recharge the aquifer.

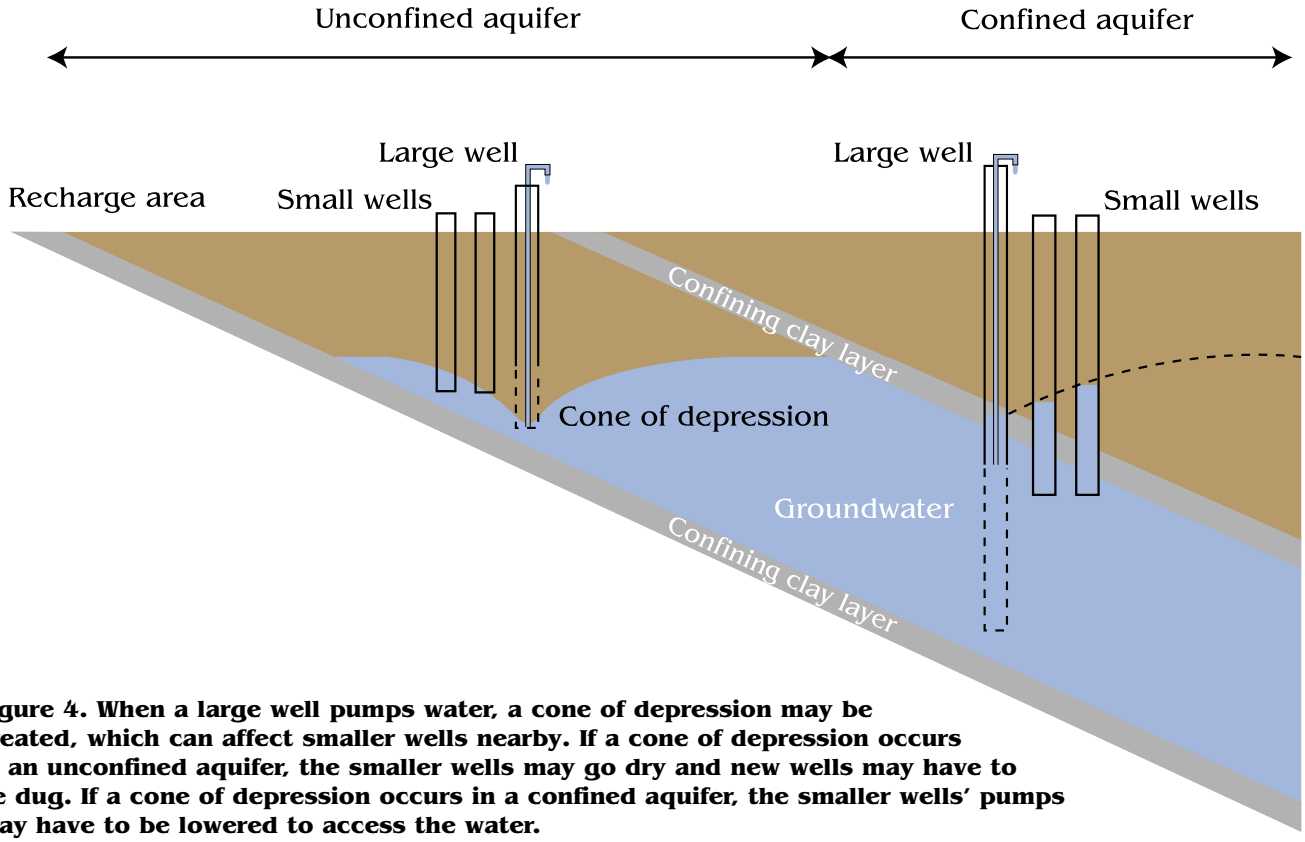

Figure 4. When a large well pumps water, a cone of depression may be created, which can affect smaller wells nearby. If a cone of depression occurs in an unconfined aquifer, the smaller wells may go dry and new wells may have to be dug. If a cone of depression occurs in a confined aquifer, the smaller wells' pumps may have to be lowered to access the water.

Movement of groundwater in aquifers

Aquifers are geological formations that can store, transmit and yield water to a well or spring. There are two basic types of aquifers: confined and unconfined. The two kinds of aquifers respond differently to pumping.

A ***confined aquifer***, also called an artesian aquifer, is basically a layer of water that is under pressure and is held between two layers of clay. The recharge area is limited to the land surface where the aquifer's geologic material is exposed to the land surface.

When a well is drilled into a confined aquifer, the water that is under pressure in it will rise in the well casing and may reach the surface. Wells with water flowing to the surface are often called free-flowing artesian wells. In most cases, wells drilled in artesian aquifers do not flow.

An ***unconfined aquifer*** is a layer of water that has a confining layer on the bottom and a layer of permeable soil above it. The recharge area is all of the land area above the unconfined aquifer. The water level in wells drilled into an unconfined aquifer will be at the same elevation as the water table. The water table will rise or fall in response to recharge and pumping.

Are all Texas aquifers alike?

No. Texas aquifers are remarkably diverse in geologic structure, the amount of water they store, the amount of the water taken from them that can be replenished and the rate at which water moves through the aquifer.

The Ogallala Aquifer, for example, is a huge aquifer underlying most of the Texas High Plains. It receives little, if any, natural recharge from rain or snow. More water is pumped from the Ogallala Aquifer than from all the other Texas aquifers combined.

In contrast, the Edwards Aquifer is highly rechargeable. It can quickly be replenished by rainfall. However, if much water is pumped from it, especially during drought, the water level in the aquifer can drop quickly.

How much water do Texas aquifers provide each year?

According to the TWDB, nine aquifers supply about 97 percent of the groundwater used in Texas. The major aquifers have different annual pumping rates, recharge rates and projected safe annual availability rates (Table 1). The other 3 percent is drawn from 20 minor aquifers.

Some aquifers are being mined; that is, more water is pumped from the aquifer than will be replaced by the natural recharge process. Such mining can have long-term economic, environmental and social implications for the regions served by the aquifers. For example, in some areas of the Ogallala, farms have changed from irrigation to dryland farming because the remaining water is not a reliable supply and because it is not economical to use as an irrigation water source.

Table 1. Water extraction and recharge rates from major aquifers in Texas in million acre-feet.

	1990 Pump Rates	1995 Pump Rates	Annual Recharge[1]	Projected Safe Annual Yield[2]
Ogallala	5.55	6.22	0.30	3.81
Edwards (Balcones)	0.53	0.47	0.44	0.44
Edwards-Trinity	0.19	0.25	0.78	0.78
Carrizo-Wilcox	0.45	0.49	0.64	0.85
Trinity	0.19	0.19	0.10	0.11
Gulf Coast	1.23	1.15	1.23	1.23
Others[3]	0.32	0.39	0.43	0.97
TOTAL	8.56	9.16	3.92	8.19

[1] Annual recharge rate = amount of precipitation and infiltration of surface water added to the aquifer each year.

[2] Projected safe annual yield = annual recharge plus additional stored water that can be pumped without causing undue water quality and subsidence. Aquifers that have no storage can provide only the annual recharge rate.

[3] Includes the Seymour, Hueco-Mesilla Bolson and Cenozoic-Pecos Alluvium aquifers.

Source: Mary Sager and Cyrus Reed, Texas Environmental Almanac, 2nd ed. 11 (Texas Center for Policy Studies, 2000).

How does water get into an aquifer? How is an aquifer replenished?

Generally, water percolates from the ground surface through an aquifer's recharge area. Surface water may come from rain or other precipitation. This water enters the aquifer by percolating down from the soil surface or through the permeable soil in the stream or river bed.

The rate at which an aquifer recharges varies greatly, depending on the size of soil and rocks that are on and under the ground surface. Recharge also depends on the amount of rainfall and other precipitation in and near the area.

The Ogallala Aquifer has a limited recharge because of the area's lower rainfall and the clay soils that impede water percolation there. The Edwards Aquifer recharges more quickly because the area receives more rain and the karst limestone formations there allow rainfall to percolate down.

Does water discharge from an aquifer naturally?

Yes. Groundwater rises to the surface in seeps and springs and is often the base flow for rivers and streams.

If aquifers recharge, why is there a problem with pumping?

Sometimes more water is pumped out than is replenished; the rate of pumping can also cause problems. If more water is being pumped than is being recharged, or if the water is being pumped out faster than it is moving into the well area, you and your neighbor's wells can be affected by a lower water table in an unconfined aquifer or a decrease in well water levels in a confined aquifer.

Problems can be caused by pumping from a single high-capacity well or by pumping from many wells in a small area. These problems can have short- and long-term effects and can create havoc for you, your neighbors or the entire aquifer. Overpumping also affects springs and spring flows into natural areas.

Three issues are involved: the creation of a cone of depression, well interference, and aquifer overdrafting or mining.

What is a cone of depression?

A cone of depression is an area of decreased water pressure (called drawdown), that occurs when more water is withdrawn from an area than is recharged to that particular area and, therefore, groundwater levels are lowered. A cone of depression may be caused by pumping more water than is immediately available or pumping faster than the water can flow back into the area.

If a cone of depression occurs in an unconfined aquifer, part of the aquifer material (sand and gravel) around the well casing goes dry. You may have to drill a new, deeper well to get more water.

If the cone of depression occurs in a confined aquifer, the water level in the well is lowered. You can still use the same well, but you must lower your pump to draw water.

What is well interference?

Well interference occurs when pumping from one well lowers the water level in other wells nearby. Most well interference problems arise when high-capacity commercial, irrigation and municipal wells are located near lower capacity domestic wells.

Well interference may be temporary or permanent:

- It may be temporary if the well interference is caused by a cone of depression created by the intermittent operation of the high-capacity well.

- It can be longer lasting if the high-capacity well is operated more frequently.

If pumping exceeds recharge, well interference can also lower the water level overall in an aquifer.

What is aquifer overdrafting or mining?

Overdrafting occurs when water is withdrawn from an aquifer faster than it is recharged. It is a significant problem in Texas.

The consequences of overdrafting include progressively higher water costs, land subsidence, water quality degradation and possible water depletion. Overdrafting also can harm springs and in-stream flows.

If overdrafting continues for long, or if the aquifer has limited or little recharge, the process is called mining. Mining has caused land subsidence in the Houston area and has allowed saline water to intrude on the layers of fresh water near El Paso.

Texas water law

In Texas, water rights depend on whether the water is groundwater or surface water.

Generally, Texas groundwater belongs to the landowner. Groundwater is governed by the rule of capture, which grants landowners the right to capture the water beneath their property. The landowners do not own the water, but have a right only to pump and capture whatever water is available, regardless of the effects of that pumping on neighboring wells.

Surface water, on the other hand, belongs to the state of Texas. It can be used by a landowner only with the state's permission.

What rights do landowners have to use groundwater?

From an ownership perspective, Texas groundwater law is simple and straightforward: Groundwater is the private property of the owner of the overlying land. The owners of the land have the right to capture the groundwater beneath their land.

However, the adjoining landowners have the same right to pump water from beneath their properties. Pumping water sometimes causes the groundwater beneath one property to move to an adjoining property and cause the nearby landowner's wells to go dry.

The rule of capture was adopted by the Texas Supreme Court in 1904 in *Houston & T.C. Ry. Co. v. East*, 81 S.W. 279 (Texas 1904). This rule allows landowners to pump as much water as they choose, without liability to surrounding landowners who might claim that the pumping has depleted their wells. The rule of capture has been followed by the courts ever since that 1904 decision.

Texas groundwater law has often been called the "law of the biggest pump." This means that the deepest well and the biggest pump gets the water and the shallower well goes dry.

What is the latest word from the Texas Supreme Court on the rule of capture?

Some 95 years after the *East* decision, the Texas Supreme Court reviewed the rule in *Sipriano v. Great Spring Waters of America, et al., 1 SW3d 75* (Texas 1999) [Ozarka]. The Ozarka case involved a claim by a domestic well owner that Ozarka's nearby pumping had dried up his well.

The landowner asked the court to protect his private-property interest in groundwater by imposing liability on Ozarka.

Many observers thought that the Texas Supreme Court would modify the capture rule to protect rural homeowners and domestic users of water. They were wrong. The court

unanimously affirmed the rule of capture. However, it suggested that it might change the rule in the future if the Texas Legislature did not adequately address groundwater overpumping.

The Legislature's response was to strengthen the laws enabling citizens to manage this problem locally through groundwater conservation districts.

Given the result in the Ozarka case, how does the rule of capture protect private property rights in groundwater?

The rule of capture protects the biggest pump and the deepest well. At present, landowners with shallower wells or smaller pumps cannot prevent the harm caused by the bigger pump.

However, groundwater ownership rights are subject to regulation and control by the courts and the Legislature. To manage and control groundwater pumping, the courts have developed several exceptions to the rule of capture and the Legislature has created groundwater conservation districts.

What are the judicial restrictions to the rule of capture?

Texas courts have upheld the right of a landowner to capture, sell or otherwise make "nonwasteful" use of groundwater since the last century. The courts have imposed only a few judicial limitations on this right. These limitations prohibit:

- Pumping water for the purpose of maliciously harming an adjoining neighbor.
- Pumping water for a wasteful purpose.
- Causing land subsidence on adjoining land from negligent pumping.
- Drilling a slant well that crosses the adjoining property line (trespass).

In theory, these four exceptions seem to be major constraints to landowner abuse. However, as applied by Texas courts, they do not limit wasteful exploitation.

For example, in the *City of Corpus Christi v. City of Pleasanton, 276 SW2d 798* (Texas 1955), the Texas Supreme Court refused to find waste even though 10 million gallons of groundwater was lost per day to evaporation and bank seepage while being transported through surface channels. The fact that very little, if any, of the water was put to beneficial use did not matter to the court.

In *Pecos County Water Control & Improvement Dist. No. 1 v. Williams, 271 SW2d 503* (Texas Civil Appeals, El Paso 1954), the court allowed irrigators to overpump the aquifer and dry up the springs that contributed to surface water flow at Comanche Springs.

What about legislative restrictions?

Texas lawmakers have passed several laws that curtail groundwater pumping. Of those laws, three major restrictions have been imposed to keep landowners from pumping unlimited amounts of groundwater. Found in the Texas Water Code, these restrictions govern:

- Pumping water that comes from the underflow of a river.
- Pumping groundwater from an aquifer within the jurisdiction of a groundwater conservation or subsidence district.
- Pumping groundwater from the Edwards Aquifer within the jurisdiction of the Edwards Aquifer Authority.

The restrictions illustrate the conflicts between the property rights of individual landowners and the right of the state to regulate water for the benefit of all Texans.

The Texas Supreme Court has accepted and affirmed the constitutional right of the Legislature to impose restrictions on groundwater overpumping. In 1996, the Texas Supreme Court in B*arshop v. Medina County Underground Water Conservation District, 925 SW2d 618* (Texas 1996) upheld some legislative restrictions on groundwater in saying that the state has the responsibility under Article 16, Section 59, of the Texas Constitution to preserve and conserve water resources for the benefit of all Texans.

Does the rule of capture allow a landowner to sell groundwater?

Yes. A landowner can sell groundwater or the rights to pump groundwater to anyone. A landowner can sell the water to a neighbor, a corporation or a city.

Under the rule of capture, water can be sold and moved outside the county or even beyond the boundaries of the aquifer. Conversely, this rule means that one landowner cannot restrict or prohibit another landowner from selling water.

Under this rule, many cities, corporations and individuals have bought water from distant rural landowners for the sole purpose of exporting, or piping, water for uses many miles removed from the land. This exportation, called water ranching, has been practiced in Texas for more than 50 years. Water ranching is common on the High Plains of West Texas.

Are surface waters controlled by the same rules?

No. Unlike groundwater, surface water is publicly owned and governed by the "prior appropriation" doctrine. This water can be used only with permission of the Texas Commission on Environmental Quality (TCEQ, formerly the Texas Natural Resource Conservation Commission) under the provisions of the Texas Water Code.

Water imported into Texas and put in natural watercourses is also considered property of the state and is subject to the prior appropriation doctrine.

How can I acquire rights to use surface water?

Before using state water, you must obtain a permit from the TCEQ. The permit does not give you title to the water, just permission to use and enjoy it. The permit also gives you certain protections against termination, loss or infringement of the water rights.

You can acquire surface water rights by:

- Obtaining a new appropriation from the TCEQ.
- Buying and transferring an existing water right within a river basin.
- Buying and transferring an existing water right from another basin.
- Leasing water.

Must I obtain a state permit to build a small stock tank on my property?

No, not if the tank fits the "stock tank exception" as outlined in §11.142 of the Texas Water Code. This exception allows you to build a 200-acre-foot reservoir on your own property without obtaining a permit from the TCEQ, provided the water is used for domestic, livestock, wildlife or fishing purposes.

This 200-acre-foot limit applies only to state water in a natural watercourse. It does not apply to the capture of diffused surface or drainage water. Drainage water does not become state water until it reaches a natural watercourse. Therefore, a landowner may capture and impound more than 200 acre-feet of drainage water because the limitations of the stock tank exceptions do not apply.

Aside from the stock tank exception, in general you may not build a dam on a stream without first getting a permit from the TCEQ.

What rules apply to groundwater when it is pumped to the surface or when it flows from springs?

Springs and artesian wells are considered groundwater if they are captured before they enter a watercourse. Once spring waters become part of the stream, they are governed by surface water rules.

Groundwater becomes surface water and subject to regulation by the TCEQ when it is pumped or flows to the surface from a spring and is allowed to flow into a lake, river, stream, canyon, creek, ravine or other watercourse.

However, a landowner may apply for a TCEQ "bed and banks" permit to transport groundwater in a state watercourse. A "bed and banks" permit allows the permit holder to place groundwater into surface waters for the purpose of conveying the water downstream. The groundwater can then be removed from the surface water without a surface water permit.

Groundwater conservation districts

Groundwater may be managed individually by landowners under the rule of capture, or collectively by landowners and by groundwater conservation districts.

Groundwater conservation districts were first created in Texas in 1949, when the Legislature passed a law creating a process for designating groundwater management areas and authorizing the creation of special underground water conservation districts. In 1951, the High Plains Underground Water Conservation District became the first local district.

In 1985, 1997 and 2001, the Texas Legislature passed additional laws to encourage the establishment of more GCDs. This legislation is codified in Chapter 36 of the Texas Water Code. The water code stresses the importance and responsibility of GCDs in developing and implementing comprehensive management plans to conserve and protect groundwater resources.

All groundwater conservation districts try to maintain a balance between protecting the rights of private landowners and the responsibility to protect the water resource. Most districts direct their efforts toward preventing waste, collecting data, educating people about water conservation and preventing irreparable harm to the aquifer.

The Texas Supreme Court has indicated that it will allow this approach to groundwater management but that it reserves the right to change groundwater law if it does not protect Texas groundwater adequately.

Creation of a groundwater conservation district

Texas Water Code
§36.011, §36.013, §36.151

There are four procedures by which a GCD can be created in Texas. Most districts are created by action of the Texas Legislature.

Registered voters within the proposed district must confirm the creation of the GCD, appoint its directors and set its tax rates in an election, except where noted below.

Action of the Legislature

New GCDs can be formed through special legislation, which is usually introduced by a local senator or representative. The bill usually addresses district financing, names temporary directors and establishes procedures for elections.

The temporary directors are responsible for holding the elections to form the district, electing the board members and authorizing the use of taxes to finance operations if applicable.

Petition by property owners

Local landowners may petition the TCEQ to form a groundwater conservation district. The petition must be signed by a majority of the landowners in the proposed district, or contain at least 50 signatures if the area has more than 50 landowners. The petition must name temporary directors who will be responsible for holding the confirmation election.

To be successful, the petition must include:

- The name of the proposed district.
- The area and boundaries of the proposed districts, including a map of its general boundaries.
- The purpose/purposes of the proposed district.
- A statement about the general nature of any proposed projects to be undertaken by the district, the necessity and feasibility of the work, and the petitioners' estimated cost of any projects to be funded by the issuance of bonds or notes.
- The names of at least five people qualified to serve as temporary directors.
- Financial information, including the projected maintenance tax or production fee rate and a proposed budget of revenues and expenses for the district.

The TCEQ reviews the petition for statutory compliance and issues a "notice" of the petition. Within 60 days of issuing the notice, the TCEQ holds a public meeting within the area of the proposed district. Within 90 days of the public meeting, the TCEQ must certify the petition as administratively complete if the signatures and petition contents meet the statutory requirements.

The TCEQ may not certify a petition if it finds that the proposed GCD cannot be adequately funded, the proposed GCD boundaries do not provide for effective management of groundwater resources, or the proposed GCD is not in a designated groundwater management area.

Initiation by the TCEQ

If local landowners do not take action to create a groundwater conservation district in a priority groundwater management area, the TCEQ can create one. Then an election will be held to confirm directors and taxation. If the tax proposition is not approved, the district will be financed through production fees.

Addition of territory to an existing district

A landowner or group of landowners can petition an existing GCD's board of directors to be annexed into that district. Single landowner requests may be approved by the board; for larger groups or entire counties, the annexation must be approved by the directors, public hearings must be held and the addition must be confirmed by voters.

What relationship does the size of a district have with respect to the land area above the aquifer?

Aquifers have no political boundaries. They are based on geological formations. Groundwater conservation districts are generally based on county lines.

Because most groundwater conservation districts do not cover an entire aquifer, an aquifer may be managed by several GCDs. Each district must plan with the other districts within their common groundwater management areas.

What is the difference between a groundwater management area and a groundwater conservation district?

Texas Water Code
§35.004, §35.005, §35.006

A groundwater management area is a geographical area that is suitable for the management of groundwater resources. It is like a river basin for surface water. Groundwater management areas generally coincide with the boundaries of aquifers.

A groundwater conservation district is a political entity whose boundaries may or may not coincide with aquifer boundaries.

Often more than one GCD is located in a groundwater management area. If a GCD is in a shared groundwater management area, then each district must consider the plans of the other districts.

The GCD may call for joint planning of the other districts in the area.

What is a priority groundwater management area?

Texas Water Code
§35.007, §35.008

Priority groundwater management areas are regions that are experiencing — or that are expected to experience within the next 25 years — critical groundwater problems such as surface or groundwater shortages, land subsidence and contamination of groundwater. These areas are designated as priority groundwater management areas by the TCEQ.

The law calling for PGMAs to be established in Texas was passed in 1997. That year, the Texas Legislature enacted Senate Bill 1, a major water planning and management bill that reconfirmed and strengthened provisions for creating GCDs by state initiative in “critical areas.” These “critical areas” were renamed as priority groundwater management areas (PGMAs).

The law regarding designation of PGMAs is contained in Chapter 35 of the Texas Water Code.

If an area is designated as a PGMA, the citizens living there must form or be annexed into a groundwater conservation district within 2 years.

The district can be established through any one of the four methods described previously.

Before declaring an area to be a PGMA, the Texas Commission on Environmental Quality will conduct a detailed study. According to Senate Bill 2, that agency must make its initial set of PGMA designations in Texas by September 1, 2005.

What does a groundwater conservation district do?

By law, GCDs must develop a groundwater management plan. Although they are not required to regulate groundwater, most districts have implemented some type of groundwater regulation. Chapter 36 of the Texas Water Code distinguishes between mandated or required duties and permissible or optional duties. Mandated duties relate to planning; optional duties relate to regulation.

Most districts work to prevent waste, collect data, educate people about water conservation and prevent irreparable harm to the aquifer.

GCDs are governed by a local board of directors, which develops the management plan for the district with guidance from the TWDB.

The board normally hires a general manager to oversee the management of the district, including hiring employees, keeping records and implementing the management plan.

What is a GCD management plan?

Texas Water Code §36.1071

A management plan outlines the GCD's goals and the steps needed to reach those goals. The plan must be developed in coordination with appropriate surface water management entities.

The goals of a management plan are to:

- Provide for the most efficient use of groundwater.
- Control and prevent waste of groundwater.
- Control and prevent subsidence.
- Address conjunctive surface water issues.
- Address natural resources issues.
- Address drought conditions.
- Address conservation.

To meet these goals, the GCD must:

- Identify performance standards and management objectives.
- Specify the actions, procedures, performance and avoidance necessary to implement the plan.

- Estimate the amount of usable groundwater available, the amount being used, the amount of recharge and the projected water supply and demand.
- Address water supply needs in a way that does not conflict with the approved regional water plan.
- Use the groundwater availability data that is acceptable to the TWDB.
- Adopt the rules needed to implement the plan.

A district must file its plan with the Texas Water Development Board and have it certified for administrative completeness within 2 years of forming the district. The TWDB does not approve or reject any management techniques.

The plan is also filed with those of other GCDs in a common groundwater management area. Some districts may opt to plan jointly with other districts in a common GMA. These plans must be forwarded to the regional water planning group for consideration in its planning process.

What are the mandated duties of a GCD?

Texas Water Code §36.1071, §36.111, §36.113

By law, each GCD must:

- Develop and adopt a management plan and coordinate planning with regional planning groups, state agencies and other GCDs.
- Adopt the rules needed to implement the plan.
- Keep records of drilling, equipping and completing of water wells and the production and use of groundwater.
- Permit and register certain wells.
- Adopt rules for governance and establish administrative and financial procedures. These include operating on the basis of a fiscal year, preparing and approving an annual budget, having an annual audit, holding regular board meetings and submitting records to the appropriate Texas agencies.

All GCD meetings are subject to the Texas open meetings and open records requirements.

What are the other duties of a GCD?

Texas Water Code §36.101

A groundwater conservation district may make and enforce rules — including those limiting groundwater production based on tract size or the spacing of wells — to conserve, preserve, protect and recharge groundwater or a groundwater reservoir. It also may set rules to control subsidence of land, prevent degradation of water quality and prevent waste of groundwater.

When making rules, the board must consider all groundwater uses and needs and develop rules that are fair and impartial.

Texas Water Code §36.104, §36.103, §36.105, §36.106, §36.107, §36.116, §36.117, §36.118, §36.122, §36.201-§36.207

As part of a management plan, a GCD also has the authority to:

- Buy and sell, transport and distribute groundwater or surface water.
- Acquire land by use of eminent domain.
- Conduct surveys, research and monitoring programs.
- Provide for the spacing of water wells and regulate the production of wells.
- Exempt wells from the requirements to obtain a drilling permit or operating permit.
- Require the owner of an uncovered well to keep the well permanently closed or capped.
- Require a person to obtain a permit to transfer groundwater out of the district (with some constraints).
- Engage in projects to recharge aquifers.
- Levy taxes and set fees.

Must a district implement a well permitting program?

Texas Water Code §36.113, §36.117

State law requires GCDs to establish a permitting program for the drilling of wells, the equipping or completion of wells, or for substantially altering the size of wells or well pumps. However, state law also authorizes that a GCD can exempt any and all wells from permit requirements if the exemptions are documented in the management plan and if rules are set forth to implement the plan. State law requires that all water wells must be registered with the district.

What are the exemptions from permitting as stated in the Texas Water Code?

Texas Water Code §36.117

Specific exemptions include wells to be used solely for domestic needs, livestock or poultry on a tract of land larger than 10 acres and unable to produce more than 25,000 gallons of groundwater a day.

However, even wells that produce more than 25,000 gallons a day may be exempt from permitting if the district's management plan includes rules allowing the exemption.

GCD permitting rules do not apply to wells drilled for oil, gas or other purposes under permits by the Texas Railroad Commission.

Can the district place a water meter on my well?

Yes. If the district's management plan provides for metering, GCDs can place meters on wells to monitor production.

Although metering is a local option, most GCDs do not require meters. However, many consumers opt to install meters for business and management purposes.

Can a GCD regulate water production from wells used by municipalities and water supply companies?

Texas Water Code §36.116

The Texas Water Code is not clear on this issue. Generally, municipal wells are regulated the same as other large wells in the GCD. Therefore, if the water is pumped from and used in the GCD, normal rules apply.

Because a GCD can set production limits based on acreage or tract size, a city may be limited to the amount of water it can pump based on the land area covered by the city. Such a limit prevents cities and corporations from buying or leasing a tiny tract of land, drilling a well and taking the water to another part of the groundwater conservation district.

If the city or corporation buys water to be exported outside of the GCD service area, then export fees, if present, will apply.

Can a GCD condemn property through the power of eminent domain?

Texas Water Code §36.105 b

Yes, if it is for the purposes of the district. However, A GCD cannot condemn property to obtain surface water or groundwater rights.

Can a district prevent me from drilling a well on my property?

It depends on the type of well, the purpose for which it is drilled and the type of regulations that a GCD has adopted.

In general, the GCD cannot prevent you from drilling one well on your property. The well may have to be permitted and a production limit may be set.

The GCD may prevent you from drilling additional wells on your property if well spacing requirements are in place.

Can a GCD control overproduction of groundwater by those who drill multiple wells that are able to produce less than 25,000 gallons a day on their property?

Texas Water Code §36.117

Yes, but only if the wells are located on a tract of land less than 10 acres in size. A district may not require a permit for, nor regulate pumping from, a well used solely for domestic and livestock purposes if it pumps less than 25,000 gallons per day and is located on a tract of land larger than 10 acres.

It would be possible, however, for landowners to drill multiple wells and avoid regulation by dividing their property into 15-acre tracts and drilling a well on each tract, provided that the water is used for domestic and livestock purposes and that the well produces less than 25,000 gallons per day.

What is well spacing and why would a GCD use it?

Texas Water Code §36.116

A GCD may require wells to be spaced a certain distance from property lines or adjoining wells, or it may require wells to be spaced according to production capacity.

These regulations can prevent the drawdown of the water table, which occurs when production from one well reduces the water level of or interferes with other wells in the area. By separating the wells or regulating the amount of water pumped from them, a district may prevent the development of a cone of depression, a reduction in water level or well interference.

Can a GCD limit the amount of groundwater I can pump?

Texas Water Code §36.116 (2)

Yes. Depending on the type of well, a local GCD can limit production of permitted wells based on acreage or limit the maximum amount of water produced. However, a GCD cannot limit production on exempt wells.

The GCD may preserve historic use as it is consistent with the management plan.

Does the size of my property affect the amount of water I can pump?

Texas Water Code §36.116

It can. A local GCD can set production limits based on property area controlled by the well operator (such as: production limit = the acre-feet of water X acreage of land).

It is up to the local board to determine the variables for the production limits. The limits should be consistent with management goals and data on the recharge rates.

Can a GCD prevent me from selling water from my property?

No, it cannot prevent you from selling the water, but it could limit the amount of water you pump to sell.

As part of the management plan, the GCD can limit the amount of water you pump based on the land area under your control. A GCD can impose an export fee if the water is being sold and taken out of the service area.

What are the penalties for noncompliance with GCD rules?

Texas Water Code §36.102

Penalties of up to $10,000 per day per violation can be set by GCD-adopted rules. The rules may be enforced by injunction through the court system.

How can a GCD monitor and protect my groundwater resources?

In developing a management plan, a groundwater conservation district may study and evaluate the aquifer to obtain the necessary data to understand its status. The district may

then develop plans and establish rules to monitor groundwater resources, prevent waste and encourage the conservation, preservation and protection of groundwater.

Through its groundwater monitoring (both quantity and quality) and assessment functions, a GCD can measure groundwater resources, study aquifer characteristics and identify groundwater problems that need to be addressed.

A GCD can establish an overall understanding of groundwater use and production within the district by conducting a water well inventory and through its permitting and registration program. Through these programs, a GCD can measure the effects of pumping on the aquifer.

What other management options are available to GCDs?

A GCD also can help monitor and protect your groundwater by:

- Protecting water quality by regulating water well construction and ensuring proper well closure; actively identifying and closing abandoned wells; and regulating potential sources of contamination.
- Buying, selling, transporting and distributing surface water or groundwater for any reason. However, GCDs are generally ill equipped to serve as a water purveying entity.
- Undertaking cloud-seeding and rain-making projects to enhance natural recharge and to increase groundwater supplies.
- Sponsoring water conservation efforts.
- Educating the public about groundwater.
- Providing assistance to landowners through loan and grant programs.

GCD administration and management

Texas Water Code §36.016, §36.017

A GCD is governed by a local board of directors. In most areas, the board members must be elected to serve on the board.

Before the election, the special law or the TCEQ will provide for the appointment of five or more temporary directors. These temporary directors will serve until the initial directors are elected.

Under the Texas Water Code, the board must have no less than five and no more than 11 directors elected for 4-year terms. Members of a governing body of another political subdivision are ineligible to serve.

Isn't a GCD another layer of government?

Yes. When a groundwater conservation district is formed, another body of newly elected officials is created that can set and enforce regulations and set fees or levy taxes.

On the other hand, the GCD can:

- Protect your groundwater by minimizing well interference conflicts and preventing overpumping of the aquifer.
- Study and assess the current state of groundwater on a local scale.
- Make management plans and rules that are not only based on a local scale, but also use input from local users.

How is public participation in GCDs assured?

Before a GCD is approved through the petition process, a public meeting must be held in a central location within the proposed district. After the meeting, a GCD is created by the TCEQ in response to the petition. Then, the local voters can confirm and authorize the GCD and elect directors.

Once established, a GCD must adhere to all of the rules for Texas state agencies, including the Open Meetings Act. This act ensures that the public is given published notice of meetings and that the meetings are open to the public and are held at least quarterly.

What scrutiny is placed on GCDs?

Texas Water Code §36.016, §36.017

GCDs are required to meet the standards set forth in Chapter 36 of the Texas Water Code. Three state agencies have specific but limited oversight responsibilities:

- The **Texas Commission on Environmental Quality** maintains records on current GCD directors. The agency ensures that the GCD complies with its approved management plan. If the district is not in compliance, the

TCEQ will address how it can come into compliance or remove the directors.

- The **Texas Water Development Board** reviews the management plan and makes sure it is administratively complete every 5 years.
- The **State Auditor's Office** reviews the activities of the GCD and determines if it is implementing its management plan. These audits occur every 5 years.

However, the plans, policies and administration of each GCD are solely the responsibility of the GCD's board of directors.

How does a GCD generate funds?

Texas Water Code §36.201, §36.207

There are two primary ways to finance a GCD:

- Property taxes.
- Well production fees.

A tax-based GCD may levy property taxes if they are approved by voters for budgeted items. GCDs may also charge export fees and administrative fees; solicit grants, gifts and loans; and charge fees for services such as water testing. Well production fees are based on the amount of water a well uses or the capacity of the well.

What are the common ad valorem tax rates for GCDs?

Texas Water Code §36.201

Most GCDs are taxing at less than 5 cents on each $100 assessed valuation. By law, the tax cannot exceed 50 cents on each $100 of assessed valuation. As of 2001, only two (of 52) districts charge more than 25 cents on each $100.

This tax must be approved by a local election.

Can a GCD fund all of its activities with export fees?

Texas Water Code §36.122 (e)

A district cannot fund all of its costs exclusively with export fees.

Production-fee-based districts may use local and export fees to fund all budgeted activities.

What is the minimum usage rate before fees are charged?

Texas Water Code §36.205

If your well is exempt from regulation, you do not pay any fees unless the water is to be exported.

If there is a production fee, which is a local decision, the fee is based on the amount of water withdrawn.

If there is no meter on the well, then you are charged based on your permitted amount. If your well is permitted, there is no minimum usage rate.

Who pays if a GCD is voted in, but the financing is not approved?

If temporary directors are named in the legislation, they are responsible for finding funds and conducting the election for the GCD. The elected or, in some instances, the appointed initial board of directors is responsible for developing a funding mechanism to finance the district after it has been confirmed by the voters. If a tax proposition is not approved, production fees are authorized unless prohibited by the enabling legislation.

A tax proposition may be brought back to the voters at a subsequent election.

Who pays for the GCD organizational expenses?

Texas Water Code §36.157, §36.206

Before an election for a GCD is successfully completed, the temporary board may sell bonds to cover the costs of creating the GCD. The temporary board may also set user fees to fund the creation and initial operation of the GCD until it is confirmed and a permanent board has been elected.

The rate of fees set for agricultural uses may be no greater than 20 percent of the rate applied to municipalities.

Are directors paid for their position?

Texas Water Code §36.060

Directors are entitled to receive fees of no more than $150 a day for work actually performed for the district. They are also entitled to receive reimbursement for actual expenses incurred. Currently, most directors file only for reimbursement of expenses.

Will the county commissioners court or other governmental body have access to the tax money collected for the GCD?

No. The taxes collected for the GCD may be used only at the direction of the GCD board of directors to pay for operations and maintenance expenses.

Can a GCD be dissolved?

Yes. The implementation of each GCD's management plan is subject to review by the state auditor with technical assistance from the Texas Water Development Board and the TCEQ.

The State Auditor's Office must conduct audits to determine whether a district is actively engaged in achieving the objectives of its management plan. The audits are conducted 1 year after certification of the management plan by the TWDB and every 5 years afterward.

Under what circumstances may a GCD be dissolved?

Texas Water Code §36.108, §36.301, §36.302

Action may be taken if a GCD:

- Fails to plan jointly with other GCDs in a common management area.
- Fails to obtain a certified management plan.
- Is not operational, as determined by the State Auditor's Office.

If a district is determined to be not operational, the TCEQ may:

- Order that certain actions be taken to correct the problems.
- Remove and replace the directors.
- Order the GCD to refrain from taking certain actions.
- Dissolve the GCD.
- Request that the attorney general's office place the GCD into receivership.

If the TCEQ decides to dissolve the district, it may do so if the district has no outstanding bonded debts. A public hearing must be held if a GCD is to be dissolved.

Water exporting and marketing

Can a GCD prevent water from being sold and exported beyond district boundaries?

Texas Water Code §36.122 c, §36.122 e

No, it cannot prevent such a sale and export. However, a GCD may create rules requiring a permit to transfer groundwater out of the district.

Some GCDs have specific authority outside of the Texas Water Code Chapter 36 that allows them more authority regarding export restrictions. These districts may impose a fee for processing the permit.

The permit issuance can be based upon the availability of water in the district, the feasibility of alternatives, the amount and purposes of use in the proposed area, the effect on the aquifer and existing users, the approved regional water plan and the GCD management plan.

The district can also limit the amount of water to be transferred beyond district boundaries. But the limit can be no greater than the one in place for other users in the GCD.

Can a GCD prevent a city from moving water from a rural area to an urban area?

No, but it could limit the amount of water moved, provided that certain conditions are satisfied. Before a district can place any conditions on a person transporting water outside the district, the district must consider:

- The availability of water in the district and in the proposed receiving areas.
- The projected effects of the transfer on aquifer conditions, depletion, subsidence or existing users within the district.
- Provisions in the regional water plan and in the district's management plan.

The district may not impose conditions that are more restrictive on transporters than on existing in-district users.

Can the GCD impose a fee for water exportation?

Texas Water Code §36.122, §36.205

Yes, if fees for exportation are provided for in the management plan, they can be imposed.

The fees are calculated differently for the various types of export, and specific districts may have different enabling legislation. The export fees are directly related to the tax rate or production fees.

Export fees are capped at the rate of production fees plus one-half of the production fee.

Tax-based districts can levy an export fee at a rate not to exceed the equivalent of the district's tax rate for 1,000 gallons of exported water or 2.5 cents per 1,000 gallons if the tax rate is lower. If the tax rate is reduced or removed, the export fee is also reduced or removed.

GCD alternatives

What happens if we don't form a GCD?

The rule of capture remains in effect if you choose not to form a GCD. In fact, the rule of capture may remain in effect if a district does not regulate well spacing or set pumping limits. The rule of capture can still be used by landowners to pump groundwater.

Can we form a GCD later?

Yes. If you choose not to create a GCD now, you are not precluded from forming a district in the future. You can always seek to form a groundwater district later by requesting new enabling legislative authorization or by petitioning the TCEQ.

If action is not taken locally, the TCEQ has the authority to create a groundwater conservation district in an area that has been designated a priority groundwater management area. If you are in a PGMA, and no local action is taken to establish a GCD in 2 years, the TCEQ will charge the commissioners court(s) to appoint a temporary board of directors and designate an election for the board and tax rate. If the tax proposition fails, then the GCD becomes a production-fee-based district.

Under what circumstances can or will the state regulate groundwater production and use?

The Legislature has the authority under the Texas Constitution to regulate groundwater. It has indicated that its preferred method for regulating groundwater is through the creation of GCDs. Under current law, no state agency has authority to regulate groundwater production that is not associated with the underflow of a river.

Are there other ways to manage groundwater?

It may be possible for landowners to sign legally binding contractual agreements to manage the joint ownership of their groundwater.

What are the advantages and disadvantages of forming a GCD?

The advantages or disadvantages depend on local circumstances. It is up to local citizens to decide. Some of the most often stated advantages include:

- Compared to the rule of capture, a GCD can protect your water availability.
- The adoption, election of the board of directors and administration of the district are all locally controlled.
- The local board is the closest to the issues of evaluation and monitoring water use. This level of scrutiny is unavailable elsewhere.
- There is local management of administrative tasks.
- The GCD can offer local services unavailable elsewhere.
- A GCD can regulate but not prohibit groundwater exportation.

Often-cited disadvantages include:

- Some people prefer the rule of capture.
- A GCD creates another layer of government.
- Taxes may be imposed.
- Water usage may be limited.
- Additional regulations may be adopted.
- A GCD cannot prevent water from being exported outside the boundaries of the district.

Water planning

What are the planning requirements for GCDs?

Texas Water Code §36.1071, §36.108

Each GCD must develop a management plan that outlines the goals of the district and the rules or steps to implement those goals. This plan must be developed in coordination with the appropriate surface water management entities.

The management plan must be filed with the Texas Water Development Board and certified for administrative completeness. The plan will be filed with other districts in a common groundwater management area and with the regional water planning group. A district in a GMA may call for joint planning with other districts in the management area.

If a GCD believes that this process has not resulted in adequate planning or management, the GCD may petition the TCEQ to request an inquiry.

How often are these plans updated?

Texas Water Code §36.1072e

The GCD management plan must be reviewed and readopted, with or without changes, every 5 years.

Who pays for implementing these plans?

The GCD pays for the plan either by fees or taxes. To develop an initial plan, funds may be granted by local governments or the TWDB.

How do GCD plans relate to the Texas State Water Plan?

Texas Water Code §36.1071b, §36.1072g

Senate Bill 1, 1997, altered the way that the State Water Plan is created. The Texas Water Development Board was authorized to form regions, designate representatives to create the plan, and provide technical assistance to these regions to create regional water plans.

The TWDB divided the state into 16 regions. Each region began with at least 11 representatives from legislatively named interest groups. These regional representatives were commissioned to publicize the new rules and create a regional water plan for surface and groundwater. The first set of 16 regional water plans have been incorporated into the 2002 State Water Plan.

A GCD must submit its management plan to the regional water planning group covering the area for consideration in the regional planning process. The district plan must also be submitted to other GCDs in the groundwater management area.

If there is inconsistency or conflict among the plans, the TWDB will help the parties resolve the conflict. If the conflict remains, the TWDB will resolve it.

Appendix

Contacts

Texas Alliance of Groundwater Districts TAGD:
http/www.texasgroundwater.org

Texas Commission on Environmental Quality TCEQ as of September 1, 2002 (formerly Texas Natural Resource Conservation Commission TNRCC):
http://www.tnrcc.state.tx.us/

Texas Department of Agriculture TDA:
http://www.agr.state.tx.us/

Texas Parks & Wildlife Department TPWD:
http://www.tpwd.state.tx.us/

Texas Water Code Chapter 35 and 36:
http://www.capitol.state.tx.us/statutes/watoc.html

Texas Water Development Board TWDB:
http://www.twdb.state.tx.us/

Texas Cooperative Extension
http://texaswater.tamu.edu

Texas Water Resources Institute
http://twri.tamu.edu

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Texas Commission for Environmental Quality, formerly Texas Natural Resource Conservation Commission

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Texas Water Resources Institute

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