

# THE CLEARWATER SOURCE

2008 Annual Newsletter

## MAY 2008 CLEARWATER ELECTION CANCELLED

INSIDE THIS ISSUE:

<i>Production Report</i>	2
<i>GMA 8</i>	2
<i>Rainfall &amp; Related Data</i>	3
<i>President's Message</i>	4
<i>Insert—Conservation</i>	

### UPCOMING EVENTS

- **Bell County Water Symposium**  
November 6, 2008  
CTCOG Bldg., Belton
- **GMA 8 Meeting**  
September 17, 2008  
Goldthwaite (Mills Co.)
- **Well Plugging Demo**  
December 3, 2008  
Riggs Road, southeast of Temple

### Clearwater Mission Statement

The District's mission is to implement an efficient, economical, and environmentally sound groundwater management program to protect and enhance the water resources of the District.

### ???Did You Know???

The outcrop of an aquifer is the part of an aquifer that appears at the land surface—this is where most recharge occurs.

The downdip portion of an aquifer dips below other rock layers and is not found at the land surface.

Clearwater was able to cancel the May 2008 election due to unopposed candidates. Incumbent directors Leland Gersbach (precinct 1) and Wallace Biskup (precinct 3) ran unopposed and were reelected to serve another four year term on the Clearwater Board.

Other Board members include Horace Grace (precinct 2), Judy Parker (precinct 4), and John Mayer (at-large). Their seats will be up for election in 2010.

The Clearwater directors serve four year terms that are staggered every two years with the terms for precincts 1 and 3 coinciding and the terms for precincts 2, 4 and at-large coinciding. The Clearwater precinct boundaries follow the same geographic areas as the Bell County Commissioners.

The Clearwater Board typically meets once a month and sets policies and rules by which the District operates, considers permits for non-exempt wells which are

generally capable of producing more than 25,000 gallons of water a day, and authorizes activities and studies to acquire more knowledge about Bell County's aquifers enabling the Board to effectively carry out its mission.

The District adopts a management plan every five years and publishes an annual report to monitor District

progress in meeting the management goals. Clearwater recently adopted a strategic plan to prioritize its goals and activities.

The Clearwater meetings are open to the public and the agendas are posted at the County Clerk's office, the District office, and on the District website at [www.clearwaterdistrict.org](http://www.clearwaterdistrict.org).

2008-2010 Board Members



Front Row: Horace Grace, Judy Parker, John Mayer  
Back Row: Wallace Biskup, Leland Gersbach

## CLEARWATER ACTIVITIES

### Drought Management Plan

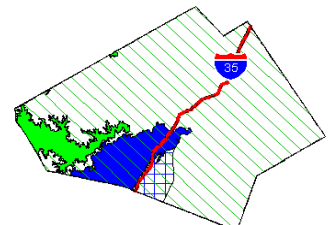
Clearwater has begun development of a drought management plan for the Edwards BFZ aquifer. The purpose of the plan is to ensure that adequate groundwater is available during drought conditions, in accordance with the District's management plan.

The District's management plan, drought management plan, and desired future condition statement for the Edwards BFZ aquifer all reference maintaining a minimum spring flow of 100 acre-feet/month during

a repeat of the 1950's drought of record. A reduction in pumping by permitted wells would be needed in order to maintain the minimum spring flow.

The drought management plan will establish certain trigger levels to allow an orderly and gradual reduction in pumping. Clearwater is in the process of collecting data on stream/spring flow and monitoring wells and will incorporate this data in the drought management plan. The development of a drought management plan for the Trinity aquifer

### Bell County Major Aquifers



TRINITY	EDWARDS (BFZ)
OUTCROP	OUTCROP
DOWNDIP	DOWNDIP

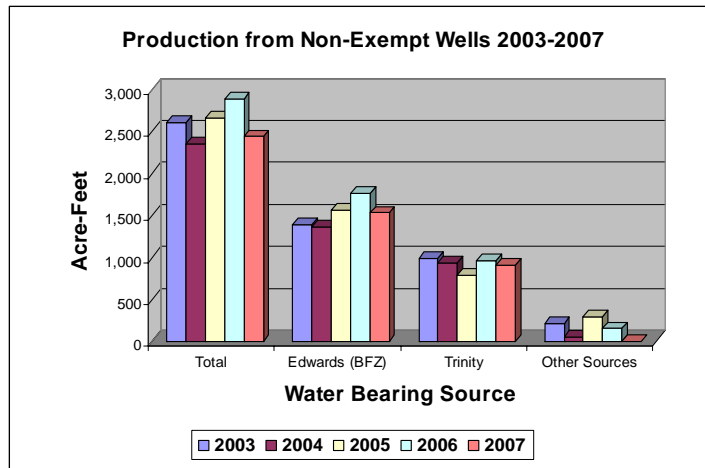
will begin after the Edwards plan is completed.

Continued on Page 3

# WELL REGISTRATION/PRODUCTION REPORT

**Registration:** Since the District's opening in 2002, a total of 4,549 wells have been registered through December 2007. 111 of these wells were non-exempt and 4,438 exempt. Non-exempt wells are capable of producing a large volume of groundwater (over 17 gallons per minute), located on less than 10 acres, or are used for purposes other than Domestic, Livestock, or Poultry. Well registration for 2008 through June is reported at 35.

**Production:** During 2007, the District issued operating or historic use permits for 86 non-exempt wells and required monthly production reports from those wells. Production for 2007 totaled 2,442 ac-ft. Of these wells, 40 are producing from the Edwards BFZ, 34 from the Trinity aquifer, and 12 from other mi-



nor aquifers. With regard to production in 2008, permitted wells produced 1,342 acre-feet of water during the first six months of 2008.

Annual production figures from exempt wells have been

estimated based on well registrations received through 2007 and are as follows:

Edwards BFZ	433 ac-ft
Trinity	1,205 ac-ft
Other Aquifers	1,262 ac-ft

**Production from Permitted Wells**

**Edwards BFZ:**

2005:	1,569 ac-ft
2006:	1,767 ac-ft
2007:	1,533 ac-ft
*2008:	810 ac-ft

**Trinity:**

2005:	778 ac-ft
2006:	967 ac-ft
2007:	908 ac-ft
*2008:	414 ac-ft

**Other Aquifers:**

2005:	294 ac-ft
2006:	157 ac-ft
2007:	< 1 ac-ft
*2008:	118 ac-ft

\*Reporting January–June

Notes: An acre-foot of water will cover 1 acre of land to a depth of 1 foot (325,851 gallons). That is roughly the amount of water used by 5 people in 1 year.

## GROUNDWATER MANAGEMENT AREA 8 MOVING FORWARD

Groundwater Management Area (GMA) 8 is one of 16 GMAs created by the state. The GMA boundaries roughly follow the boundaries of the major and minor aquifers. The groundwater conservation districts (GCD) within a GMA are required to conduct joint planning to determine the desired future conditions (DFC) of the major and minor aquifers within the GMA. This process must be completed by September 2010.

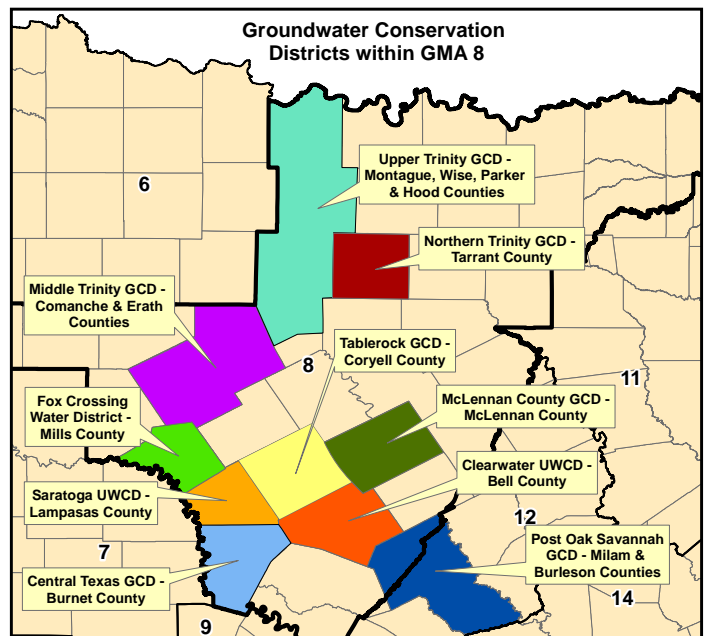
GMA 8 covers an area consisting of 45 counties, 14 of which are protected by a GCD. There are a total of 10 GCDs in GMA 8. Major aquifers in GMA 8 include the Edwards BFZ and the Trinity aquifer. The seven minor aquifers in GMA 8 are as follows: Blossom, Brazos River Alluvium, Ellenburger-San Saba, Hickory, Marble Falls, Nacatoch, and Woodbine.

Once the DFC statements are developed, they are provided to the Texas Water Development Board to calculate "managed available groundwater" (MAG)

figures. These numbers must be included in future Regional and State Water Plans and be used by groundwater districts for their permitting process.

With assistance from consulting firm TCB, Inc., the GMA 8 committee has developed DFCs for all of the aquifers except the Trinity. TWDB has provided managed available groundwater figures for three of the aquifers with the remaining MAGs to be provided before the end of 2008. It is the goal of GMA 8 to develop a DFC for the Trinity aquifer before the end of 2008 as well.

Clearwater's desired future condition for the Edwards BFZ is to maintain a minimum spring flow of 100 ac-ft/month during a repeat of the 1950's drought of record. For confined portions of the Trinity aquifer, Clearwater is proposing a DFC that will maintain 50% of the available drawdown (artesian head) after 50 years, while the objective for unconfined portions is to leave 95% of the saturated thickness



of the aquifer after 50 years.

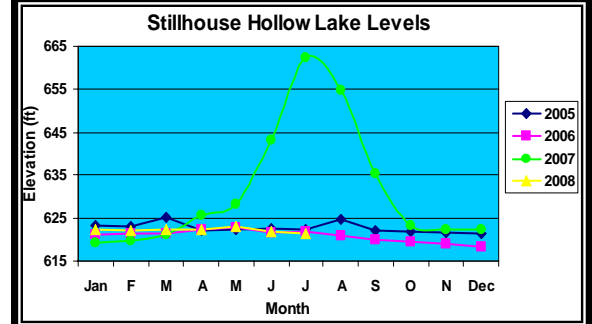
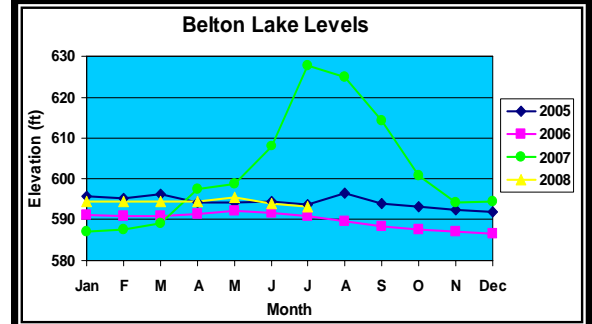
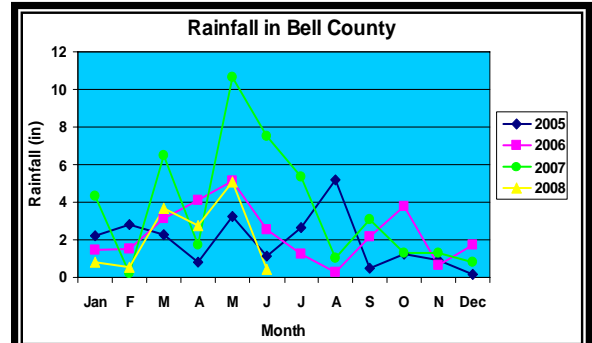
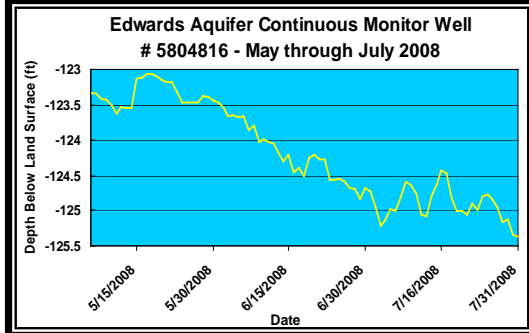
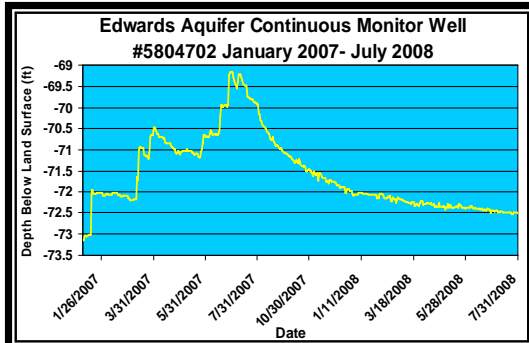
Visit the GMA 8 website at [www.gma8.org](http://www.gma8.org) to view the DFCs, MAGs, and groundwater availability model (GAM) runs used to help develop the DFCs.

The next meeting of GMA 8 will be held in Mills County in Goldthwaite, hosted by the Fox Crossing GCD on September 17, 2008.

## RAINFALL AND RELATED DATA

Rainfall totals for the first six months of 2008 varied across Bell County ranging from 9.26 inches to 19.75 inches, averaging 13.27 inches. Bell County normally receives about 34 inches of rainfall per year. Rainfall totals in Bell County averaged 23.05 inches in 2005; 27.57 inches in 2006; and 43.80 inches in 2007.

The following charts show changes in rainfall, lake levels, and aquifer levels. The rainfall data was obtained from the National Weather Service and the lake level data was obtained from the US Army Corps of Engineers Fort Worth District.



Aquifer levels represent data obtained from continuous monitoring wells and also manual measurements taken by District staff. The District currently has two Edwards BFZ wells equipped with a continuous monitoring system and is working to equip an additional Edwards well and three Trinity wells for continuous monitoring in the near future.

Continued from Page 1

### Clearwater Activities

#### Salado Creek Stream Flow Gauges

Clearwater has installed two monitoring gauges in Salado Creek: one above Salado Springs and one below. The gauges measure water depth that is converted into stream flow. The increase in stream flow below the Springs versus above the Springs is attributed to spring flow contribution from the Edwards BFZ aquifer.

Clearwater is collecting data from the stream gauges and will use this data in developing the drought management plan and to support groundwater availability figures in the District management plan as well as the joint planning process in Groundwater Management Area 8.

#### Continuous Monitoring Wells

There are currently two monitoring wells in the Edwards BFZ aquifer that are equipped with a continuous monitoring system. One well is located west of Salado along FM 2843 and the other is located along 135 south of Salado. A third well is under consideration as a monitoring site near FM

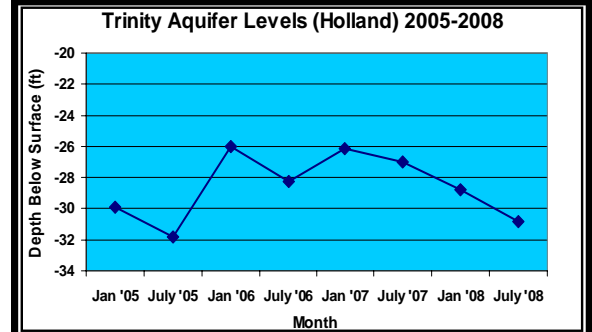
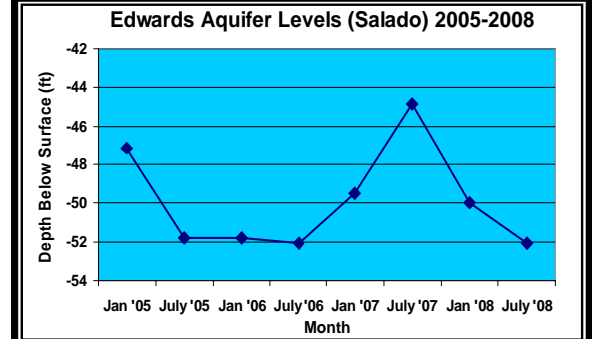
2268. The water level readings are transmitted to the Texas Water Development Board website where they are available for viewing by the public.

Clearwater is in the process of establishing a continuous monitoring well in each of the three layers of the Trinity aquifer—upper, middle, and lower. Potential sites have been identified in the western portion of Bell County and District staff is working to secure approval from the landowners.

Data from the monitoring wells will be used in the development of the drought management plans and to support the District's groundwater availability figures.

#### Water Quality Testing

Last year Clearwater collected samples from 8 water wells and one sample from Salado Creek for testing at a certified lab. Funds were approved by the Board to do so again this year. The testing results are available on the Clearwater website at [www.clearwaterdistrict.org](http://www.clearwaterdistrict.org).



**Clearwater  
Underground Water  
Conservation District**

**CUWCD Directors & Terms:**

**Leland Gersbach**—Precinct 1  
2008-2012 (Director)

**Horace Grace**—Precinct 2  
2006-2010 (President)

**Wallace Biskup**—Precinct 3  
2008-2012 (Vice President)

**Judy Parker**—Precinct 4  
2006-2010 (Secretary)

**John Mayer**—At large  
2006-2010 (Director)

**CUWCD Public Advisory  
Committee:**

**Vince Cortese**—Precinct 1

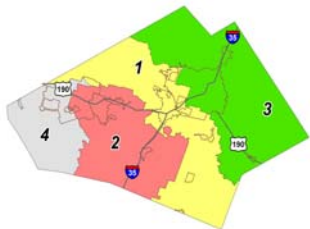
**Vacant**—Precinct 2

**Marvin Green**—Precinct 3  
(Committee chair)

**Henry Bunke**—Precinct 4

**David Cole**—At Large

**Clearwater Precincts**



Clearwater District  
2180 N. Main Street  
Central TX Council of Gov. Bldg.  
P.O. Box 729  
Belton TX 76513

Ph: 254-933-0120/254-770-2370  
Fax: 254-770-2360  
E-mail: cmaxwell@ctcog.org or  
cmaxwell@clearwaterdistrict.org  
www.clearwaterdistrict.org



**A MESSAGE FROM THE PRESIDENT**



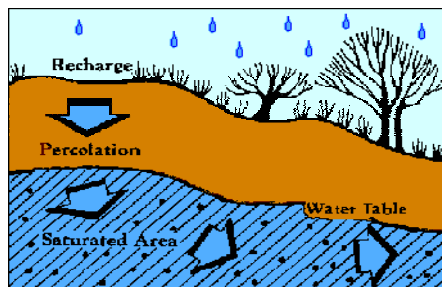
*President Horace Grace*

Dear Friends,

Beginning in 1997 with Senate Bill 1, the Texas Legislature has passed bills promoting a “bottoms-up” planning process granting citizens, landowners and other water users more opportunities than ever to participate in managing water in Texas.

Today I want to discuss managing the two aquifers located in Bell County...the Edwards and Trinity. An aquifer is pretty much like a bank account - if you only make withdrawals and no deposits, you will soon find that you are overdrawn and your account is left empty. Water is withdrawn from an aquifer by pumping water wells or by natural spring discharges. How do you recharge or put water back into an aquifer?

Mother Nature helps us with this task when we receive precipitation. Rainfall, sleet, and snow all have the potential to



percolate into the ground and recharge an aquifer. How effectively this occurs depends on factors such as intensity and duration of rainfall, soil characteristics, soil saturation, land cover, slope, and evapotranspiration. Some factors are beyond our control; however, some, such as land cover, are directly influenced by human activity.

The presence of vegetation can slow down runoff and allow more time for the water to seep into the ground. Impervious surfaces, such as parking lots, roads, and developments provide a quick avenue for this water to run off into storm drains that carry the water directly into streams, rivers, and lakes. Agricultural practices can also change the landscape and affect the infiltration patterns directing water into streams rather than allowing it to infiltrate the soil.

Human activity also impacts the quality of the recharge. As water infiltrates into the groundwater system pollutants can infiltrate the aquifer. In some instances, soils may act as a limited buffer preventing some pollutants from reaching the water table, but in most instances soils do not provide an effective barrier. Pesticides and other chemicals used on yards or crop fields can reach a groundwater system and pollute the water. Once an aquifer becomes contaminated it could take several years for the water quality to improve. In the interim, the water may become unusable.

Some groundwater districts have adopted

rules that would prohibit certain types of activities from being built over the recharge zones. Solid waste landfills or saltwater disposal tanks associated with the production of oil or geothermal resources are two examples. The point I want to make here is that we do not want to wait for contamination to occur before we do something about it. We need to practice prevention now.

The Edwards BFZ aquifer, in particular, is highly sensitive to recharge. Many landowners in Bell County depend upon the Edwards as their sole source of water supply. The aquifer also feeds Salado Springs and Salado Creek, both economically vital to the Salado area. Clearwater has concerns about the current and impending growth along the I35 corridor and is looking at options to protect the Edwards aquifer recharge zone.

Throughout the world, approximately two billion people will wake up tomorrow to unclean water. We should never allow that to happen in Bell County. It is imperative that you, as citizens of Bell County, educate yourself on issues involving both water quality and quantity. It is important that we do everything possible to ensure our aquifers are not overdrawn and that water, good quality water, continues to flow when we turn on our taps. Adopting practices to protect our aquifers, specifically focusing on recharge, is pertinent if we are to maintain a healthy groundwater system in Bell County.

Thank you for your trust and support.

***Horace Grace***

(POSTAGE STAMP)

(NAME)  
(STREET)  
(CITY)



## Clearwater Underground Water Conservation District

P.O. Box 729, Belton, Texas 76513  
Phone: 254/933-0120 Fax: 254/770-2360  
[www.clearwaterdistrict.org](http://www.clearwaterdistrict.org)

# Water Conservation

September 2008

The Clearwater Underground Water Conservation District is responsible for managing the groundwater in Bell County. This includes major aquifers like the Edwards BFZ and the Trinity, as well as numerous other water bearing formations. Throughout Bell County the groundwater resources interact with the surface water resources. In some areas the groundwater replenishes the surface water, and in others, the surface water replenishes the groundwater. Regardless of the source, it is important for us all to understand the value of water and to conserve this precious resource.

Water Cycle: Here in Bell County we are blessed to have two large lakes and two major aquifers to supply our water needs. However, things are not always what they seem. To understand the water situation here locally, we need to first understand a basic concept that applies globally...the Earth has a limited water supply! Although 75% of the Earth's surface is covered with water, only less than 1% of this water is available for human use. The rest of the water is either salty ocean water or fresh water that cannot be used—it is in ice form or unreachable groundwater. Additionally, the water that is currently on Earth is all that we have. No new water is created; it just gets recycled from one stage to another. This cycle takes time to complete. When more and more water is used, all of the used water is temporarily unavailable for use again until the cycle is completed. Increasing population growth combined with natural weather patterns can result in drought conditions and water shortages.

Water Planning: Texas has had to deal with periods of drought over the years, the most notable being the drought of record that occurred in the 1950s which lasted almost eight years. As a result, in 1997 the state legislature established a new water planning process that involves 16 regional water planning groups. Bell County is part of the Brazos G Regional Water Planning Group. Each of these groups evaluates population projections, water demand projections, and existing water supplies during drought conditions. Then each planning group identifies who will be short of water and recommends strategies and projects that could be implemented to conserve or obtain more water, and estimates the costs and environmental impact of these strategies and projects. These regional water plans are sent to the Texas Water Development Board (TWDB) for approval and are then incorporated into the State Water Plan. This process occurs every five years. The 2007 State Water Plan is available for review at the TWDB website along with the regional water plans.

More recently, another water planning layer has been added to the state planning process. The state legislature created 16 groundwater management areas (GMA) that generally follow the boundaries of the major and minor aquifers in the state. In 2005, the legislature required each GMA to begin developing desired future conditions for each of the major and minor aquifers within their boundary. The desired future conditions are then used to develop managed available groundwater figures, which are included in the regional water plans and groundwater conservation district management plans. This task is to be completed by September 2010, and the managed available groundwater figures will be included in future regional and state water planning cycles.

Clearwater's Role: Clearwater is a member of Groundwater Management Area 8 and has been a leader in the joint water planning process. Clearwater's Management Plan establishes groundwater availability figures for the Edwards BFZ and Trinity aquifers. These figures reflect how much groundwater may be permitted from these aquifers and still maintain desired future aquifer conditions. The District has established stream/spring flow monitoring systems in Salado Creek, is in the process of developing a drought management plan and establishing monitoring wells to ensure the desired future conditions are maintained. When aquifer conditions approach a level where the desired future conditions may be compromised, the District will have to address limiting production from permitted wells and possibly denying new permits.

Water Shortages: According to the 2007 State Water Plan, Texas' population is expected to more than double between the years 2000 and 2060 from about 21 million to about 46 million. During this same time period, the demand for water in Texas is expected to increase by 27 percent from almost 17 million acre-feet to 21.6 million acre-feet. An additional 8.8 million acre-feet of water will be needed by year 2060 if new water supplies are not developed. In Bell County alone, seven user groups are projected to have water shortages by the year 2060.

In addition to pressure on water resources as a result of population growth, our water resources are under pressure due to climatic stress. Currently, over half of the state of Texas is in a severe drought. Severe drought conditions existed in 2006 and then relief came with record rainfall in 2007. Here in Texas we can be assured that drought conditions will be a regular part of our lives. There may be periods where we have adequate rainfall, but drought conditions will return again and again.

So what can we do? We all can practice water conservation in our daily lives. This includes changing habits at home as well as at work. Below are some tips for outdoor watering. These are applicable for residences, businesses, schools, municipalities, and any other entity using water for outside irrigation:

- Do not water in the middle of the day when evaporation is at its highest. Instead, water in the early morning or evening hours.
- Do not water on windy days...most of the water will be dispersed into the air and evaporated.
- Only water when needed...when the top 2 inches of soil has dried out.
- Water thoroughly but less frequently. One inch of water applied every five days or more will promote deep root growth which results in more drought tolerant vegetation.
- Use drip irrigation or soaker hoses for non-turf areas such as bedded plants, trees, or shrubs to minimize evaporation.
- Use a low-angle sprinkler that produces large drops of water close to the ground. This will minimize evaporation.
- Use an automatic sprinkler system with a rain-shutoff device or moisture sensors. Adjust run time and frequency monthly to adjust to changing rainfall and temperature conditions. To minimize runoff, adjust the precipitation rate of the sprinkler head so the soil has enough time to absorb the water.
- Do not water when it is raining or has recently rained!
- Do not water the street, driveways and sidewalks or allow the water to run down the street.
- Allow grass to grow 3 inches during the summer. Taller grass holds moisture better, encourages deeper root growth, and is less susceptible to browning.
- Don't bag your clippings but use them as mulch. This helps to hold in moisture, reduce evaporation, moderate temperature, and give nutrients back to the lawn.
- Use lots of mulch around shrubs and young trees.
- Do not over-apply fertilizers which can run off with water and pollute local waterways. Better yet—apply compost for chemical free nutrients.
- Plant water-wise, well-adapted and/or native shrubs and trees. Drought tolerant grasses include bermuda, buffalograss, and zoysia.
- Group plants according to their water needs so you don't overwater one type of plant to meet the needs of another.
- Harvest rainfall whenever possible. Funnel water from gutters into a barrel or cistern for later use.

Many more water saving tips are available in the Clearwater offices. Be sure and visit the TWDB website ([www.twdb.state.tx.us](http://www.twdb.state.tx.us)) for information about their new water awareness program—*Water IQ*. They also have information on Rainwater Harvesting and Best Management Practices for Water Conservation for various user groups. This information is available in our offices as well if you would like to stop by and review the manuals.

We tend to only think about water conservation when we are in a drought, but it is important to conserve this resource at all times. Water is frequently looked upon as a commodity to be bought and sold, but water is so much more; water is life! We cannot live without it! We need to conserve our water resources and protect the water quality for our use and future generations. Each of us can make a difference. Let's all be good stewards of this precious resource.

Sincerely,

Clearwater Underground Water Conservation District Board of Directors

Horace Grace, President  
Wallace Biskup, Vice President  
Judy Parker, Secretary  
Leland Gersbach, Director  
John Mayer, Director