

Section 6
Water Conservation and
Drought Management Recommendations
[31 TAC §357.7(a)(11)]

The 2006 Coastal Bend Regional Water Plan (2006 Plan) includes water conservation and drought management recommendations pursuant to 31 Texas Administrative Code 357.7(a)11 and Texas Water Code 11.085. The guidelines require water user groups that obtain water from inter-basin transfers consider conservation as a water management strategy. The City of Corpus Christi (City) benefits from an interbasin transfer and contract with the Lavaca-Navidad River Authority (LNRA) to divert up to 53,840 acft/yr from Lake Texana in the Lavaca-Navidad River Basin, which includes a base contract of 41,840 acft/year and 12,000 acft/year on an interruptible basis. Although not considered as a current water supply, the City has a permit to divert up to 35,000 acft/year from the Colorado River Basin according to a purchase agreement with the Garwood Irrigation Company. The City's Water Conservation Plan (1999) addresses their goals and plan to conserve water. The City's Drought Contingency Plan (2001) identifies factors used to initiate a drought response and actions to be taken as part of the response (Table 3-9). Both City Plans are included in Appendix E, along with the Coastal Bend Region Water Conservation Plan (from 2001 Plan).

The TCEQ provides guidance for Water Conservation and Drought Contingency Plans in 30 Texas Administrative Code Chapter 288, which requires entities applying for new water rights or an amendment to existing water right to prepare and implement a water conservation/drought contingency plan to be submitted with their application. Furthermore, 30 TAC Chapter 288, requires "specific, quantified five and ten year targets for water savings to be included in all water conservation plans to be submitted to the TCEQ no later than May 1, 2005." Due to timing constraints, the water conservation target savings for entities in the Coastal Bend Region will not be included in the 2006 Plan. These targets should be included in future water planning efforts.

6.1 Water Conservation

The Coastal Bend Region has considered water conservation and drought management measures for each water user group with a need (projected water shortage) in accordance with

Regional Water Planning Guidelines. The Coastal Bend Region recommends water conservation for municipal and non-municipal entities.

6.1.1 Municipal Water Conservation

The City of Corpus Christi, largest municipal water user in the Coastal Bend Region, has demonstrated significant water savings attributable to water conservation efforts over the last decade. The City of Corpus Christi currently uses less water than comparable cities in the Central Texas region and is currently among the lowest in the state, for all climatological regions. The City's municipal water use was nearly 220 gallons per capita per day (gpcd) in 1990 and was reduced to 179 gpcd by 2000, a decrease of 41 gpcd in 10 years (or 19 percent). According to TWDB water use projections, the City of Corpus Christi water use is anticipated to decline to 165 gpcd by 2060.

The Coastal Bend Region encourages all municipal entities in the Coastal Bend Region to conserve water, regardless of per capita consumption. In September 2004, the Coastal Bend Region recommended that water entities, with and without shortages, exceeding 165 gallons per capita per day reduce consumption by 15 percent by 2060 by using Best Management Practices (BMPs) provided by the Water Conservation Implementation Task Force. By reducing water use by 15 percent in addition to anticipated savings built into the TWDB projections for replacement of existing plumbing fixtures, the Coastal Bend Region is expected to reduce average consumption from 155 gpcd in 2000 to 137 gpcd by 2060 (a decrease of 12 percent). Assuming 100 percent participation in water conservation efforts for entities with greater than 165 gpcd, the anticipated regional savings is expected to increase from 104 acft/yr in Year 2010 to 2,415 acft/yr by Year 2060. A discussion of municipal conservation water savings, program costs, and unit costs for the Coastal Bend Region are included in Section 4C.1.

6.1.2 Non-municipal Water Conservation

In March 2005, the Coastal Bend Region recommended water conservation for industrial (manufacturing/mining) and irrigation users. The Coastal Bend Region recommended that manufacturing users continue to pursue opportunities to improve water quality, thereby reducing water consumption. Manufacturing entities can improve water quality through outlet works and intake modifications to reduce total dissolved solids as described in Section 4C.3. The Planning Group also recommended a 15 percent reduction in water demand for irrigation and mining

entities with projected water needs that may be achieved using Best Management Practices (BMPs) identified by the Water Conservation Implementation Task Force.

There are four counties within the Coastal Bend Region with projected irrigation needs: Brooks, Duval, Jim Wells, and Live Oak. The total water savings for these four counties after 15 percent water demand reduction is 1,214 acft/yr, as shown in Table 6-1. There are multiple irrigation BMPs that irrigators can select from to attain this water savings, including furrow diking, low elevation spray applications (LESA), and low energy precision application (LEPA). The costs of these BMPs range from \$50 to \$530 per acft water saved with a savings potential of 1,300 to 3,320 acft with 100 percent participation. A more detailed description of irrigation BMPs, costs, and water savings for the Coastal Bend Region are included in Section 4C.2.

Table 6-1.
Irrigation Water Conservation Savings

Counties with Irrigation Needs	Irrigation Shortages in 2060 (acft/yr)		Water Savings in 2060 (acft/yr)
	Before Conservation	After Conservation (Reducing Demand By 15 Percent)	
Brooks	(4)	0	4
Duval	(3,138)	(2,528)	610
Jim Wells	(379)	(121)	258
Live Oak	(1,597)	(1,255)	342
Total	(5,118)	(3,904)	1,214

There are six counties in the Coastal Bend Region with projected mining needs: Aransas, Brooks, Duval, Jim Wells, Live Oak, and Nueces. The total water savings for these six counties after 15 percent water demand reduction is 2,475 acft/yr as shown in Table 6-2. There are multiple industrial BMPs identified by the Water Conservation Implementation Task Force, however data to quantify savings and costs is unavailable. The Coastal Bend Region recognizes that conservation savings and costs to implement mining BMPs are facility specific and assumes that mining users will implement those strategies that are practical, cost effective, and provide good water savings potential. A more detailed description of suggested mining BMPs for the Coastal Bend Region is included in Section 4C.4.

**Table 6-2.
Mining Water Conservation Savings**

Counties with Mining Needs	Irrigation Shortages in 2060 (acft/yr)		Water Savings in 2060 (acft/yr)
	Before Conservation	After Conservation (Reducing Demand By 15 Percent)	
Aransas	(43)	(21)	22
Brooks	(39)	(11)	22
Duval	(6,745)	(5,462)	1,283
Jim Wells	(126)	(44)	82
Live Oak	(2,944)	(2,143)	801
Nueces	(1,646)	(1,387)	259
Total	(11,543)	(9,068)	2,475

6.2 Drought Management

All water supply entities and some major water right holders are required by Senate Bill 1 regulations to submit for approval to the Texas Commission for Environmental Quality (TCEQ) a Drought Contingency and Water Conservation Plan. These plans must detail the entities' plans to reduce water demand at times when the demand threatens the total capacity of the water supply delivery system or overall supplies are low (like during a drought). In accordance with 31 Texas Administrative Code 357.7(a)1, the 2006 Plan identifies: 1) factors to consider in determining whether to initiate a drought response; and 2) actions to be taken as part of the response, for each water source as summarized in Tables 3-9 and 3-10.

The City's Drought Management Plan considers combined storage of the CCR/LCC System in determining whether to initiate a drought response. The City issues drought response measures based on 50 percent-40 percent-30 percent storage of CCR/LCC System, as described in Table 3-9. Through water purchase agreements, the customers of the City of Corpus Christi (including wholesale water providers) are responsible to impose similar drought measures. Supplies from the CCR/LCC System are determined on the basis of minimum year availability and safe yield, respectively. Hence, the surface water supplies available to the three largest Coastal Bend wholesale water providers (City of Corpus Christi, San Patricio Municipal Water District, and South Texas Water Authority) are dependable during drought and have included

drought provisions in the event that a future drought is greater in severity than the worst drought of record as discussed in Section 7.

Supplies from other surface water sources, such as run-of-river water rights for Nueces County WCID#3, the fourth wholesale water provider, are determined from analyses using TCEQ's Nueces River Water Availability Model and are dependable during drought.

The Nueces River Authority has on file, drought management plans for the following Coastal Bend region entities:

<u>Wholesale Water Providers</u>	<u>Date of Management Plan</u>
City of Corpus Christi	November 2005 (Amended)
San Patricio Municipal Water District	May 2005 (Amended)
South Texas Water Authority	April 2005
<u>Surface Water Users</u>	<u>Date of Management Plan</u>
City of Alice	May 1996
City of Beeville	February 2000
Nueces WCID #3	January 2001 (Amended)
Nueces WSC	September 2000
City of Portland	June 2000
River Acres WSC	November 2000
City of Rockport	April 2002 (Amended)
Copano Heights Water Company	October 2005 (Amended)
<u>Groundwater Users</u>	<u>Date of Management Plan</u>
Aransas County MUD #1	June 2005
Blueberry Hills Water Works, LLC	January 2005
El Oso WCD	March 2000
Escondido Creek Estates	August 2000
Utility Development & Research, Inc.	August 2000
Utility Board of Falfurrias	August 1999
McCoy WSC	August 2000
McMullen County WCID #2	December 2002
City of Orange Grove	September 2000
Pettis MUD	Date not available
San Diego MUD #1	June 2000

<u>Groundwater Users (continued)</u>	<u>Date of Management Plan</u>
Freer WCID	September 2000
<u>Both Groundwater/Surface Water Users</u>	<u>Date of Management Plan</u>
Choke Canyon Water System	August 2000
City of Kingsville	May 2002
Ricardo WSC	August 2000

The Nueces River Authority also has on file, the Lavaca-Navidad River Authority Drought Contingency Plan, revised August 24, 2005.