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## **7 DESCRIPTION OF HOW THE REGIONAL WATER PLAN IS CONSISTENT WITH LONG-TERM PROTECTION OF THE STATE'S WATER RESOURCES, AGRICULTURAL RESOURCES, AND NATURAL RESOURCES**

### **7.1 Introduction**

The development of viable strategies to meet the demand for water is the primary focus of regional water planning. However, another important goal of water planning is the long-term protection of resources that contribute to water availability, and to the quality of life in the state. The purpose of this chapter is to describe how the 2006 update to the Region F Water Plan is consistent with the long-term protection of the state's water resources, agricultural resources, and natural resources. The requirement to evaluate the consistency of the regional water plan with protection of resources is found in 31 TAC Chapter 357.14(2)(C)<sup>1</sup>, which states, in part:

“The regional water plan is consistent with the guidance principles if it is developed in accordance with §358.3 of this title (relating to Guidelines), §357.5 of this title (relating to Guidelines for Development of Regional Water Plans), §357.7 of this title (relating to Regional Water Plan Development), §357.8 of this title (relating to Ecologically Unique River and Stream Segments), and §357.9 of this title (relating to Unique Sites for Reservoir Construction).”

Chapter 7 addresses this issue by providing general descriptions of how the plan is consistent with protection of water resources, agricultural resources, and natural resources. Additionally, the chapter will specifically address consistency of the 2006 Region F Water Plan with the state's water planning requirements. To demonstrate compliance with the state's requirements, a matrix has been developed and will be addressed in this chapter.

### **7.2 Consistency with the Protection of Water Resources**

The water resources in Region F include three river basins providing surface water, and 11 aquifers providing groundwater. Most of Region F is located in the upper portion of the

Colorado River basin and in the Pecos portion of the Rio Grande River basin. A small portion of the region is located in the Brazos River basin. Figure 1.1-1 shows the major streams in Region F, including the Colorado River, Concho River, Pecan Bayou, San Saba River, Llano River, and Pecos River.

Figure 1.2-1 shows the major aquifers in Region F, and Figure 1.2-2 shows the minor aquifers. There are a total of 11 aquifers that supply water to the 32 counties in Region F. The major aquifers are the Edwards-Trinity Plateau, Ogallala, Cenozoic Pecos Alluvium, and a small portion of the Trinity. The minor aquifers are Dockum, Hickory, Lipan, Ellenburger-San Saba, Marble Falls, Rustler, and the Capitan Reef Complex. The Edwards-Trinity High Plains is used only on a limited basis. More detailed information on these aquifers is presented in Chapter 3.

The source of most of the region's surface water supply is the upper Colorado River basin and the Pecos portion of the Rio Grande basin, which supply much of the municipal, industrial, mining and irrigation needs in the region. Major reservoirs in Region F include Red Bluff Reservoir, Lake J.B. Thomas, E.V. Spence Reservoir, O.C. Fisher Lake, Twin Buttes Reservoir, O.H. Ivie Reservoir, and Lake Brownwood.

The Edwards-Trinity Plateau, Cenozoic Pecos Alluvium, and Ogallala aquifers are the largest sources of groundwater in Region F, providing 37 percent, 27 percent, and 15 percent of the total groundwater pumped in 1997, respectively. The Lipan aquifer provided almost 12 percent of the 1997 totals, with all other aquifers contributing less than 9 percent.

To be consistent with the long-term protection of water resources, the plan must recommend strategies that minimize threats to the region's sources of water over the planning period. The water management strategies identified in Chapter 4 were evaluated for threats to water resources. The recommended strategies represent a comprehensive plan for meeting the needs of the region while effectively minimizing threats to water resources. Descriptions of the major strategies and the ways in which they minimize threats include the following:

- *Subordination of Downstream Water Rights.* The Colorado WAM makes many assumptions that are contrary to the way the Colorado Basin has historically operated, showing that most surface water sources in the region have no supply. The assumptions used in the Colorado WAM are discussed in Appendix 3C. In conjunction with the

Lower Colorado Region (Region K), a subordination strategy was developed that protects the supply of Region F water rights. This strategy is described in Chapter 4.

- *Water Conservation.* Strategies for water conservation have been recommended that will reduce the demand for water, thereby reducing the impact on the region's groundwater and surface water sources. Water conservation practices are expected to save approximately 6,800 acre-feet of water annually by 2010, reducing impacts on both groundwater and surface water resources. The proposed plan also assumes an additional 115,600 acre-feet per year in savings by 2060.
- *Wastewater Reuse.* This strategy will provide high quality treated wastewater effluent for municipal water needs in the region. This strategy will decrease the future demands on surface and groundwater sources and will not have a major impact on key water quality parameters.
- *New or Expanded Use of Groundwater.* This strategy is recommended for entities with limited alternative sources and sufficient groundwater supplies to meet needs. Groundwater availability reported in the plan is the long-term sustainability of each aquifer, and is based on aquifer recharge capacity.
- *Voluntary Redistribution.* Under this strategy, water rights holders with surplus water supplies will provide water to areas with current or projected demands. This strategy is proposed for users in Andrews, Brown, Concho, Ector, Kimble, McCulloch, Midland, Runnels, and Tom Green Counties. As proposed, this strategy will only use water that is available on a sustainable basis and will not significantly impact key water quality parameters.
- *Desalination.* The City of San Angelo, in association with the RWPG and Upper Colorado River Authority (UCRA), has developed a conceptual design for a regional desalination facility to be located northwest of the City of San Angelo. As proposed, the phased-in facility will have an initial capacity of 5 MGD to provide water to the city from a currently unused water source. This will reduce the demands on other water sources in the region. In addition, the facility could potentially provide treated water to other areas

in the region with supply needs. Desalination is also a recommended long-term strategy for CRMWD and the City of Andrews.

The Region F Plan does not have an impact on navigation.

The Region F plan protects existing water contracts and option agreements by reserving the contracted amount for included in those agreements where those amounts were known. In some cases there were insufficient supplies to meet existing contracts. In those cases, water was reduced proportionately for each contract holder.

A special water resource is a major water supply source that is committed to provide water outside of the Region. TWDB has designated two special water resources in Region F: (a) Oak Creek Reservoir, which supplies water to the City of Sweetwater in Brazos G, and (b) Ivie Reservoir, which supplies water to the City of Abilene in Brazos G. Supplies to these entities are included in the Region F plan.

### **7.3 Consistency with Protection of Agricultural Resources**

Agriculture is an important economic and cultural cornerstone in Region F. Given the relatively low rainfall rates, irrigation is a critical aspect of agriculture for the region. The RWPG is recommending advanced irrigation technologies as a strategy to maximize the efficient use of available water supplies and protect current and future agricultural resources in the region. Currently, it is estimated that 42 percent of the region's irrigated crop production uses some form of advanced irrigation technology. The proposed strategy is to increase the adoption of advanced irrigation technologies to 50 percent by 2020, and 100 percent by 2030.

In addition to irrigated agriculture, dry land agriculture and the ranching industry are important economically and culturally to the region. All agricultural enterprises depend on the survival of small rural communities and their assurance of a reliable, affordable water supply. These communities increase the local area's tax base and provide government services, health services, fire protection, education facilities, and businesses where agriculture obtains fuels, crop processing and storage, banking, and general products and supplies. If small rural communities do not have an affordable water supply to sustain themselves and provide for economic stability, agriculture will suffer an increase in the cost of doing business and the loss of services that

contribute to its overall well being and safety. The Governor's Office, the Texas Department of Agriculture and U.S. Department of Agriculture are working to enhance the validity and sustainability of Texas agriculture and small rural communities.

## **7.4 Consistency with Protection of Natural Resources**

Region F contains many natural resources that must be considered in water planning. Natural resources include threatened or endangered species; local, state, and federal parks and public land; and energy/mineral reserves. The Region F Water Plan is consistent with the long-term protection of these resources. Following is a brief discussion of consistency of the plan with protection of natural resources.

### *Threatened/Endangered Species*

A list of threatened or endangered species located within Region F is contained in Table 1.4-1, in Chapter 1. Included are nine species of birds, four mammals, three reptiles, and eight fishes. None of the recommended water management strategies in this plan inherently impact the listed species. However, some strategies may require site-specific studies to verify that threatened or endangered species will not be impacted.

### *Parks and Public Lands*

Six state parks (Lake Brownwood, Big Spring, Lake Colorado City, Monahans Sandhills, San Angelo, and South Llano River) and one state wildlife management area (Mason Mountain) are located in Region F. The Lake Colorado City and San Angelo State Parks may be positively impacted by the subordination strategy because water will be retained in the reservoirs that otherwise would be passed downstream. Lake Brownwood State Park may be adversely impacted because of water that may be retained by upstream reservoirs. Other state parks are not expected to be impacted.

In addition to the state parks, there are a number of city parks, recreational facilities, and public lands located throughout the region. None of the recommended water management strategies evaluated for the Region F Water Plan is expected to adversely impact these facilities or public land.

### *Energy Reserves*

Thousands of producing oil and gas wells are located within Region F, representing an important economic base for the region. None of the recommended water management strategies are expected to significantly impact oil or gas production in the region.

## **7.5 Consistency with State Water Planning Guidelines**

To be considered consistent with long-term protection of the State's water, agricultural, and natural resources, the Region F Water Plan must be determined to be in compliance with the following regulations:

- 31 TAC Chapter 358.3
- 31 TAC Chapter 357.5
- 31 TAC Chapter 357.7
- 31 TAC Chapter 357.8
- 31 TAC Chapter 357.9

The information, data, evaluation, and recommendations included in Chapters 1 through 6 and Chapter 8 of the Region F Water Plan collectively comply with these regulations. To assist with demonstrating compliance, Region F has developed a matrix addressing the specific recommendations contained in the above referenced regulations.

The matrix is a checklist highlighting each pertinent paragraph of the regulations. The content of the Region F Water Plan has been evaluated against this matrix. Appendix 7A contains a completed matrix.

## **7.6 List of References**

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<sup>1</sup> Texas Administrative Code, available on-line at <http://www.sos.state.tx.us/tac/>, downloaded May 2005.