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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 2011 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 2011 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, Pecos Valley, 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.

Springs are an important water resource in Region F. They supplement surface water sources and provide water for aquatic and riparian habitat. Region F identified 14 major springs, which are shown on Figure 1.3-6. Lake Balmorhea, Twin Buttes Reservoir, Concho River and San Saba River are just some of the important water supply sources in Region F that rely on spring-fed stream flow.

The Edwards-Trinity Plateau, Pecos Valley, and Ogallala aquifers are the largest sources of groundwater in Region F, providing 36 percent, 25 percent, and 17 percent of the total groundwater pumped in 2003, respectively. The Lipan aquifer provided almost 8 percent of the 2003 totals, with all other aquifers contributing less than 15 percent. (Note: 2003 is the last year that the TWDB provided data on pumpage by aquifer.)

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. In conjunction with the Lower Colorado Region (Region K), a subordination strategy was developed that protects the supply of Region F water rights and the water resources in Region F. 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 3,200 acre-feet of water annually by 2010, reducing impacts on both groundwater and surface water resources. By 2060, the recommended conservation strategies savings (excluding wastewater reuse) total 82,506 acre-feet per year. These savings are in addition to the water savings assumed in the demands. The total projected water savings from conservation for Region F by 2060 (excluding wastewater reuse) is 132,350 acre-feet per year.
- *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. Large transfers of groundwater may have potential impacts to local surface water and springs. Such impacts were considered during the evaluation of the strategies. Where possible, strategies were selected that minimized impacts to surface water.

- *Voluntary Redistribution.* Under this strategy, surface and ground water rights holders with surplus water supplies will provide water to areas with current or projected needs. This strategy is proposed for users in Andrews, Concho, Ector, Martin, McCulloch, Midland, Runnels, Tom Green and Ward 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, City of Andrews and CRMWD have recommended long-term strategies to desalinate brackish groundwater. Desalination represents an important additional source of water that could be used to augment existing freshwater sources.

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: (1) Oak Creek Reservoir, which supplies water to the City of Sweetwater in Brazos G, and (2) 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 eleven species of birds, five mammals, four reptiles, seven fishes and six mussels. 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*

Seven state parks (Lake Brownwood, Big Spring, Lake Colorado City, Monahans Sandhills, San Angelo, Balmorhea and South Llano River) and one state wildlife management area (Mason Mountain) are located in Region F. The state parks and wildlife management area are not expected to be impacted by the recommended strategies. The Subordination Strategy simply

continues the current operations in the basin and will not change lake or stream operations. There are no new surface water strategies to impact stream flows.

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.