CHAPTER 6
REGIONAL WATER PLAN IMPACTS AND CONSISTENCY WITH PROTECTION OF WATER, AGRICULTURAL AND NATURAL RESOURCES
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6 REGIONAL WATER PLAN IMPACTS AND CONSISTENCY WITH PROTECTION OF WATER, AGRICULTURAL AND NATURAL RESOURCES

Chapter 6 describes how this 2021 Plan is consistent with the long-term protection of water resources, agricultural resources, and natural resources that are important to the Plateau Region. All planning analyses applied and recommendations made in the development of this Plan honor all existing water rights, contracts, and option agreements; and have no impact on navigation on any of the Region’s surface water streams and rivers. Third-party social and economic impacts resulting from voluntary redistributions of water, including impacts of moving water from rural and agricultural areas were considered; however, no strategies were recommended that resulted in moving water from such areas.

The socioeconomic impact of not meeting water supply needs within the Region is discussed in an analysis report prepared by the Texas Water Development Board and presented in Appendix 6A at the end of this chapter. Based on projected water demands and existing water supplies, the Region identified water needs (potential shortages) that could occur under a repeat of the drought of record for five water use categories (irrigation, livestock, manufacturing, mining and municipal). The TWDB then estimated the annual socioeconomic impacts of those needs—if they are not met—for each water use category and as an aggregate for the region.

The report describes that the Plateau Region generated more than $4.5 billion in gross domestic product (2018 dollars) and supported roughly 68,000 jobs in 2016. It is estimated that not meeting the identified water needs in the Plateau Region would result in an annually combined lost income impact of approximately $233 million in 2020, increasing to $257 million in 2070. In 2020, the Region would lose approximately 2,300 jobs, and by 2070 job losses would increase to approximately 3,000 if anticipated needs are not mitigated.
6.1 PROTECTION OF WATER RESOURCES

Water resources in the Plateau Region as described in Chapter 3 include groundwater in numerous aquifers and surface water occurring in five rivers and their tributaries. The numerous springs, which represent an inter-relational transition point between groundwater and surface water, are also recognized in Chapter 1, Section 1.4.3 and Chapter 3, Section 3.3 for their major importance.

The first step in achieving long-term water resources protection was in the process of estimating each source’s availability. Surface water estimates are developed through a water availability model process (WAM) and are based on the quantity of surface water available to meet existing water rights during a drought-of-record.

Groundwater availability estimates are based on the Modeled Available Groundwater (MAG) volumes that may be produced on an average annual basis to achieve a Desired Future Condition (DFC) as adopted by Groundwater Management Areas (GMAs). Establishing conservative levels of water source availability, thus results in less potential of over exploiting the supply.

The next step in establishing the long-term protection of water resources occurs in the water management strategies developed in Chapter 5 to meet potential water supply shortages. Each strategy was evaluated for potential threats to water resources in terms of source depletion (reliability), quality degradation, and impact to environmental habitat.

Key parameters of water quality are discussed in Chapter 1 Section 1.4.5. The potential for surface water contamination resulting from urban runoff in rapidly growing population centers is of concern in the Plateau Region. Groundwater contamination most often results from old, poorly constructed or new improperly constructed water wells. In both surface water and groundwater concerns, this Plan attempts to (1) provide the reader with information pertaining to best practices to prevent water contamination, (2) recognize local organizational (river authorities, ground water districts, etc.) practices and programs intended to prevent water contamination, and (3) present recommended water management strategies that do not result in potential contamination issues. It is the specific intent of the PWPG that Utilities and WUGs use all necessary precautions and follow all mandated guidelines in the construction of recommended water management strategies. In the analysis of potential water quality impact, no recommended strategies were determined to result in an anticipated water quality degradation.

Water conservation strategies are also recommended for each entity with a supply deficit. Conservation reduces the impact on water supplies by reducing the actual water demand for the supply. Table 5-2 and 5-4 in Chapter 5 provides an overview of these impact evaluations.

Chapters 5 and 7 contain information and recommendations pertaining to water conservation and drought management practices. When enacted, the conservation practices will diminish water demand, the drought management practices will extend supplies over the stress period, and the land management practices will potentially increase aquifer recharge.
6.2 PROTECTION OF AGRICULTURAL RESOURCES

Agriculture in the Plateau Region, as described in Chapter 1, Sections 1.2.7 and 1.3.3, and Chapter 3, Section 3.1.10 includes the raising of crops and livestock, as well as a multitude of businesses that support this industry. Many of the communities in the Region depend on various forms of the agricultural industry for a significant portion of their economy. It is thus important to the economic health and way of life in these communities to protect water resources that have historically been used in the support of agricultural activities.

TWDB’s socio-economic analysis (Appendix 6A) reports that a projected water shortages in the irrigated agriculture water use category for one or more decades within the water planning horizon (Chapter 4, Table 4-1) only occurs in Bandera County. Per the TWDB’s socio-economic analysis, a negative tax impact was surmised, primarily due to past subsidies from the federal government.

Portions of three of the six counties in the Region (Bandera, Kerr and Kinney) are projected to experience water shortages in the livestock water use category for one or more decades within the water planning horizon (Chapter 4, Table 4-1). Income loss is estimated to be approximately $11 million, which includes approximately 573 job losses per decade (Table 6-1).

The 2021 Plateau Region Water Plan provides irrigation strategy recommendations for minor projected shortages in parts of Bandera County in Chapter 5. Also, non-agricultural strategies provided in Chapter 5 include an analysis of potential impact to agricultural interests.

An interim project was performed in 2010 to evaluate the water use by livestock and game animals in the Plateau Region. This report titled “Water Use by Livestock and Game Animals in the Plateau Regional Water Planning Area” is available on the UGRA web site at [http://www.ugra.org/waterdevelopment.html](http://www.ugra.org/waterdevelopment.html).

| Table 6-1. Impacts of Water Shortages on Irrigation and Livestock |
|----------------------|--------|--------|--------|--------|--------|--------|
| WUG                  | 2020   | 2030   | 2040   | 2050   | 2060   | 2070   |
| Irrigation           | $0     | $0     | $0     | $0     | $0     | $0     |
| Job Losses           | 0      | 0      | 0      | 0      | 0      | 0      |
| Livestock            | $11M   | $11M   | $11M   | $11M   | $11M   | $11M   |
| Job Losses           | 573    | 573    | 573    | 573    | 573    | 573    |

* Year 2018 dollars rounded. Entries denoted by a zero ($0) indicate income losses less than $500,000.
6.3 PROTECTION OF NATURAL RESOURCES

The Plateau Region Water Planning Group has adopted a stance toward the protection of natural resources. Natural resources are defined in Chapter 1, Section 1.2.6 and 1.2.7 as including terrestrial and aquatic habitats that support a diverse environmental community as well as provide recreational and economic opportunities. Environmental and recreational water needs are discussed in Chapter 2, Section 2.3.

The protection of natural resources is closely linked with the protection of water resources as discussed in Section 6.1 above. Where possible, the methodology used to assess groundwater source availability is based on not significantly lowering water levels to a point where spring flows might be impacted. Thus, the intention to protect surface flows is directly related to those natural resources that are dependent on surface water sources or spring flows for their existence.

Environmental impacts were evaluated in the consideration of strategies to meet water-supply deficits. Table 5-4 in Chapter 5 provides a comparative analysis of all selected strategies. Of prime consideration was whether a strategy potentially could diminish the quantity of water currently existing in the natural environment and if a strategy could impact water quality to a level that would be detrimental to animals and plants that naturally inhabit the area under consideration.

Although the Planning Group chooses to respect the privacy of private lands by not recommending “Ecologically Unique River and Stream Segments” in this Water Plan, the Group recognizes and applauds the conservation work that is undertaken on a daily basis by the majority of all landowners in the Region.
APPENDIX 6A
SOCIOECONOMIC IMPACT OF UNMET WATER NEEDS