

**5B.6 Comanche County Water Supply Plan**

Table 5B.6-1 lists each water user group in Comanche County and their corresponding surplus or shortage in years 2030 and 2050. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections. Water supply plans are also presented for some entities that need pumping/conveyance facilities to utilize their existing water resources, or to become a regional provider.

**Table 5B.6-1.  
Comanche County Surplus/(Shortage)**

<i>Water User Group</i>	<i>Surplus/(Shortage)<sup>1</sup></i>		<i>Comment</i>
	<i>2030 (acft/yr)</i>	<i>2050 (acft/yr)</i>	
City of Comanche	0	0	No projected needs
City of De Leon	0	0	No projected needs
County-Other	2,072	2,087	Projected surplus
Manufacturing	0	0	No projected needs
Steam-Electric	0	0	No projected needs
Mining	6	0	No projected needs
Irrigation	(13,475)	(12,477)	Projected shortage – see plan below
Livestock	898	898	Projected surplus

<sup>1</sup> From Tables 4-11 and 4-12, Section 4 – Comparison of Water Demands with Water Supplies to Determine Needs.

**5B.6.1 City of Comanche**

The City of Comanche receives its water from the Upper Leon MWD (Lake Proctor Surface Water), which has an agreement to meet Comanche’s water needs. Therefore, no shortage is projected for the City of Comanche and no changes in water supply are recommended.

**5B.6.2 City of DeLeon**

The City of DeLeon receives its water from the Upper Leon MWD (Lake Proctor Surface Water), which has an agreement to meet DeLeon’s water needs. Therefore, no shortage is projected for the City of DeLeon and no changes in water supply are recommended.

**5B.6.3 County-Other**

No shortage is projected for Comanche County-Other entities and no changes in water supply are recommended.

**5B.6.4 Manufacturing**

No shortage is projected for Comanche County Manufacturing and no changes in water supply are recommended.

**5B.6.5 Steam-Electric**

No shortage is projected for Comanche County Steam-Electric and no changes in water supply are recommended.

**5B.6.6 Mining**

No shortage is projected for Comanche County Mining and no changes in water supply are recommended.

**5B.6.7 Irrigation**

**5B.6.7.1 Description of Supply**

Surface water supplies for Comanche County Irrigation are obtained from the Leon River drainage basin, including Lake Proctor. The estimated reliable surface water supplies for irrigation are estimated at 16,274 acft in 2000, decreasing to 15,202 acft in 2010 and remaining at 15,202 acft until 2050. Groundwater supplies are obtained from the Trinity Aquifer. Groundwater supplies are estimated to be 19,890 acft until 2050. As demonstrated in Table 5B.6-1, there is a current and long-term shortage in Irrigation water supplies through the year 2050.

**5B.6.7.2 Options Considered**

Table 5B.6-2 lists the water management strategies that were considered for Comanche County irrigation shortages, and references the report section discussing the strategy, total project cost, and unit costs for meeting the shortage.

**Table 5B.6-2.**  
**Water Management Strategies Considered for Comanche County Irrigation**

Option	Yield (acft/yr)	Approximate Cost	
		Total	Unit (\$/acft)
Irrigation System Conversion <sup>1</sup>	4,600	\$542,800/yr	\$119
Irrigation Scheduling <sup>1</sup>	2,000	\$100,000	\$50
Brush Control	(*)	(*)	(*)
Weather Modification <sup>2</sup>	(*)	\$500,000 to \$850,000/yr	(*)
No Action	-	\$1,946,000 <sup>3</sup>	\$144 <sup>3</sup>
<sup>1</sup> Source of Cost Estimate: Texas Agriculture Experiment Station. <sup>2</sup> Source of Cost Estimate: Section 5B.10. <sup>3</sup> Economic Impact of not meeting shortage (i.e., "no action") in 2030 as estimated by TWDB. * Definitive yield and/or cost cannot be determined.			

#### 5B.6.7.3 Water Supply Plan

The following plan meets the planning criteria established by the Brazos G RWPG. No new water supplies are economically feasible to meet the projected shortage. Water conservation strategies in the form of conversion to irrigation systems with increased efficiency could partially meet the unmet demands. The irrigation systems in Comanche County are relatively efficient. Options are upgrade of side roll systems to center pivots, possibly some renozzling of older center pivots and conversion of hand moved sprinkler systems in pecan irrigation to microirrigation. Cultural practices such as crop selection, deficit irrigation, and conversion to dryland will account for the remainder of the water conserved (i.e., water not used).

As shown in Table 5B.6-3, conservation practices can meet about 6,600 acft/yr of the projected shortage. Apart from the conservation options presented, it is not economically feasible to meet the projected irrigation shortage in Comanche County.

#### 5B.6.7.4 Costs

Costs of the Recommended Plan for irrigation supply are outlined in Table 5B.6-3. Costs for some options, such as brush control and weather modification, can not be directly quantified due to lack of specific data. Costs have been estimated based on generally available data outlined in the corresponding chapter in Section 5B. For irrigation system conversion, an estimated 20,000 acres of the total irrigated acreage would be upgraded to conserve 0.23 acft of

water per acre of irrigated land, at an average annual cost of \$119/acft. This would provide 4,600 acft annually. Irrigation scheduling with scientific methods could save an additional 10 percent of the irrigation water applied (0.1 acft/acre) at an annual cost of \$5/acre for 20,000 acres.

### 5B.6.8 Livestock

No shortages are projected for Comanche County Livestock and no changes in water supply are recommended.

**Table 5B.6-3.  
Recommended Plan Costs by Decade for Comanche County Irrigation<sup>1</sup>**

<i>Plan Element</i>	<i>2000</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>
<b>Irrigation System Conversion<sup>2</sup></b>						
Projected Shortage (acft/yr) <sup>3</sup>	(13,938)	(14,493)	13,981)	(13,475)	(12,973)	(12,477)
Supply from Plan Element (acft/yr)	4,600	4,600	4,600	4,600	4,600	4,600
Annual Cost (\$/yr)	\$542,800	\$542,800	\$542,800	\$542,800	\$542,800	\$542,800
Unit Cost (\$/acft)	\$119	\$119	\$119	\$119	\$119	\$119
<b>Irrigation Scheduling<sup>2</sup></b>						
Supply from Plan Element (acft/yr)	2,000	2,000	2,000	2,000	2,000	2,000
Annual Cost (\$/yr)	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000	\$100,000
Unit Cost (\$/acft)	\$50	\$50	\$50	\$50	\$50	\$50
<b>Weather Modification<sup>4</sup></b>						
Supply from Plan Element (acft/yr)	(*)	(*)	(*)	(*)	(*)	(*)
Annual Cost (\$/yr)	\$500,000 to \$850,000	\$500,000 to \$850,000	\$500,000 to \$850,000	\$500,000 to \$850,000	\$500,000 to \$850,000	\$500,000 to \$850,000
Unit Cost (\$/acft)	(*)	(*)	(*)	(*)	(*)	(*)
<b>Brush Control</b>						
Supply from Plan Element (acft/yr)	(*)	(*)	(*)	(*)	(*)	(*)
Annual Cost (\$/yr)	(*)	(*)	(*)	(*)	(*)	(*)
Unit Cost (\$/acft)	(*)	(*)	(*)	(*)	(*)	(*)
<b>Sum of Supply from Plan Elements (acft/yr)</b>	(6,600)	(6,600)	(6,600)	(6,600)	(6,600)	(6,600)
<b>Unmet Demand (acft/yr)<sup>5</sup></b>	(7,338)	(7,893)	(7,381)	(6,875)	(6,373)	(5,877)
<sup>1</sup> Unless otherwise noted, costs are Total Project Cost and Unit Cost (\$/acft per year) for water conserved through management practices. <sup>2</sup> Source of Cost Estimate: Texas Agriculture Experiment Station. <sup>3</sup> Total projected irrigation shortages are presented. <sup>4</sup> Source of Cost Estimate: Section 5B.10. <sup>5</sup> Apart from the conservation options presented, it is not economically feasible to meet projected irrigation shortage in Comanche County. * Definitive yield and/or cost cannot be determined.						