# 5.37 Young County Water Supply Plan

Table 5.37-1 lists each water user group in Young County and their corresponding surplus or shortage in years 2040 and 2070. A brief summary of the water user groups and the plan for the selected water user are presented in the following subsections.

**Table 5.37-1. Young County Surplus/(Shortage)**

| Water User Group | Surplus/(Shortage)[1] | | Comment |
|---|---|---|---|
| | 2040 (acft/yr) | 2070 (acft/yr) | |
| Fort Belknapp WSC | (41) | (81) | Projected shortage – see plan below. |
| City of Graham | 379 | 88 | Projected surplus |
| City of Newcastle | 0 | 0 | Demand equals supply |
| County-Other | 82 | 15 | Projected surplus |
| Manufacturing | 0 | 0 | Demand equals supply |
| Steam-Electric | 11,869 | 10,542 | Projected surplus |
| Mining | (196) | (73) | Projected shortage – see plan below. |
| Irrigation | (48) | (44) | Projected shortage – see plan below. |
| Livestock | 0 | 0 | Demand equals supply |

1 – From Tables C-59 and C-60, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

## 5.37.1 Fort Belknapp WSC

### Description of Supply

Fort Belknap WSC obtains water from the City of Graham and shows no projected shortages. This WUG is located in multiple counties (Young, Palo Pinto, Throckmorton, and Stephens). The surplus shown in Table 5.37-1 represents the cumulative totals for Fort Belknap WSC.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended to meet the projected water shortage for Fort Belknapp WSC. Conservation was considered, but the entity's per capita use is less than the target per capita of 140 gpcd.

a. Purchase Additional Water from City of Graham:

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Unit Cost: $880/acft ($2.70/kgal) assumed treated wholesale rate. Existing infrastructure is assumed sufficient for additional supply
- Annual Cost: $74,800

**Table 5.37-2. Recommended Plan Costs by Decade for Fort Belknapp WSC**

| Plan Element | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 |
|---|---|---|---|---|---|---|
| *Projected Surplus/(Shortage) (acft/yr)* | *(27)* | *(36)* | *(41)* | *(51)* | *(66)* | *(81)* |
| Conservation | | | | | | |
| Supply From Plan Element (acft/yr) | — | — | — | — | — | — |
| Annual Cost ($/yr) | — | — | — | — | — | — |
| *Projected Surplus/(Shortage) after Conservation (acft/yr)* | *(27)* | *(36)* | *(41)* | *(51)* | *(66)* | *(81)* |
| Purchase Additional Water from City of Graham | | | | | | |
| Supply From Plan Element (acft/yr) | 85 | 85 | 85 | 85 | 85 | 85 |
| Annual Cost ($/yr) | $74,800 | $74,800 | $74,800 | $74,800 | $74,800 | $74,800 |
| Unit Cost ($/acft) | $880 | $880 | $880 | $880 | $880 | $880 |

## 5.37.2 City of Graham

### Description of Supply

The City of Graham obtains surface water from Lakes Graham and Eddleman and a contract with BRA for 1,000 acft/yr. There is some estimated exempt groundwater pumping within the city limits. The City has contracts to sell treated and raw water supply totaling 848 acft/yr to Newcastle, Bryson, Fort Belknapp WSC, entities in Young County-Other, Young County Manufacturing and Young County Steam-Electric. No future shortages are projected and no changes in water supply are recommended.

### Water Supply Plan

Although the City has sufficient supplies, working within the planning criteria established by the Brazos G RWPG and TWDB, conservation is recommended for the City as the current per capita use rate is above the selected target rate of 140 gpcd.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020 – use rate exceeds 140 gpcd
- Annual Cost: $597,224 in 2070
- Unit Cost: $474/acft

**Table 5.37-3. Recommended Plan Costs by Decade for City of Graham**

| Plan Element | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 |
|---|---|---|---|---|---|---|
| *Projected Surplus/(Shortage) (acft/yr)* | *539* | *444* | *379* | *291* | *190* | *88* |
| Conservation | | | | | | |
| Supply From Plan Element (acft/yr) | 140 | 354 | 568 | 795 | 1,029 | 1,260 |
| Annual Cost ($/yr) | $66,267 | $167,589 | $269,394 | $376,678 | $487,688 | $597,224 |
| *Projected Surplus/(Shortage) after Conservation (acft/yr)* | *679* | *798* | *947* | *1,086* | *1,219* | *1,348* |

## 5.37.3 City of Newcastle

The City of Newcastle receives all of its water supply from the City of Graham. No future shortages are projected for the City of Newcastle and no changes in water supply are recommended. Conservation was considered, but the entity's per capita use is less than the target per capita of 140 gpcd.

## 5.37.4 County-Other

Entities in Young County-Other receive water supply from City of Graham and groundwater. A portion of Young County-Other is located in Region B. No future shortages are projected and no changes in water supply are recommended. Conservation was considered, but the entity's per capita use is less than the target per capita of 140 gpcd.

## 5.37.5 Manufacturing

Young County Manufacturing is supplied by Graham and entities in Young County-Other. No future shortages are projected and no changes in water supply are recommended.

## 5.37.6 Steam-Electric

No future shortages are projected and no changes in water supply are recommended.

## 5.37.7 Mining

### Description of Supply

Mining is projected to have shortages beginning in 2020. No supplies have been allocated to Mining in Young County.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following plan is recommended for Young County Mining. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: not determined

b. Groundwater Development – Undifferentiated "Other" Aquifers

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2020
- Project Cost: $3,089,000
- Unit Cost: Max of $1,048/acft

**Table 5.37-4. Recommended Plan Costs by Decade for Young County – Mining**

| Plan Element | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 |
|---|---|---|---|---|---|---|
| *Projected Surplus/(Shortage) (acft/yr)* | *(187)* | *(276)* | *(196)* | *(151)* | *(105)* | *(73)* |
| Conservation | | | | | | |
| Supply From Plan Element (acft/yr) | 6 | 14 | 14 | 11 | 7 | 5 |
| Annual Cost ($/yr) | ND | ND | ND | ND | ND | ND |
| *Projected Surplus/(Shortage) after Conservation (acft/yr)* | *(181)* | *(262)* | *(182)* | *(140)* | *(98)* | *(68)* |
| Groundwater Development – Undifferentiated "Other" Aquifers | | | | | | |
| Supply From Plan Element (acft/yr) | 270 | 270 | 260 | 260 | 260 | 260 |
| Annual Cost ($/yr) | $282,900 | $282,900 | $22,900 | $22,900 | $22,900 | $22,900 |
| Unit Cost ($/acft) | $1,048 | $1,048 | $85 | $85 | $85 | $85 |

ND – Not determined. Costs to implement industrial conservation technologies will vary based on each location

## 5.37.8 Irrigation

### Description of Supply

An increase of Irrigation demand is projected for Young County, but no supplies are currently allocated and a shortage is projected beginning in 2020.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following plan is recommended for Young County Irrigation. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: $690
   - Unit Cost: $273/acft

b. Groundwater Development – Undifferentiated "Other" Aquifers
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $1,172,000
   - Unit Cost: $2,148/acft

**Table 5.37-5. Recommended Plan Costs by Decade for Young County – Irrigation**

| Plan Element | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 |
|---|---|---|---|---|---|---|
| *Projected Surplus/(Shortage) (acft/yr)* | *(51)* | *(50)* | *(48)* | *(47)* | *(45)* | *(44)* |
| Conservation | | | | | | |
| Supply From Plan Element (acft/yr) | 2 | 3 | 3 | 3 | 3 | 3 |
| Annual Cost ($/yr) | $460 | $690 | $690 | $690 | $690 | $690 |
| *Projected Surplus/(Shortage) after Conservation (acft/yr)* | *(49)* | *(48)* | *(45)* | *(44)* | *(42)* | *(41)* |
| Groundwater Development – Undifferentiated "Other" Aquifers | | | | | | |
| Supply From Plan Element (acft/yr) | 50 | 50 | 50 | 50 | 50 | 50 |
| Annual Cost ($/yr) | $107,418 | $107,418 | $8,418 | $8,418 | $8,418 | $8,418 |
| Unit Cost ($/acft) | $2,148 | $2,148 | $168 | $168 | $168 | $168 |

## 5.37.9 Livestock

Livestock water supply is projected to meet demands through 2070 and no changes in water supply are recommended.

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