



## 5.38 Wholesale Water Provider Supply Plans

Table 5.38-1 lists each wholesale water provider in the Brazos G Area and its corresponding surplus or shortage in years 2040 and 2070. A brief summary of the wholesale water provider (WWP) and the plan for the selected WWPs are presented in the following sub chapters. For each wholesale water provider with a projected shortage, a water supply plan has been developed and is presented in the following sub chapters. **Note that shortages shown reflect full contractual commitments compared to existing supplies.**

**Table 5.38-1. Wholesale Water Provider Surplus/(Shortage)**

Wholesale Water Provider	Surplus/(Shortage) <sup>1,2</sup>		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Brazos River Authority (Lake Aquilla System)	1,426	696	Projected shortage – see plan below
Brazos River Authority (Little River System)	(67,791)	(95,859)	Projected shortage – see plan below
Brazos River Authority (Main Stem System) <sup>3</sup>	(109,174)	(139,428)	Projected shortage – see plan below
Aquilla Water Supply District	1	1	Projected surplus
Bell County WCID No. 1	(988)	(6,951)	Projected shortage – see plan below
Bistone MWSO	(2,792)	(3,112)	Projected shortage – see plan below
Bluebonnet WSC	(103)	(536)	Projected shortage – see plan below
Central Texas WSC	787	13	Projected surplus
Eastland County WSD	346	232	Projected surplus
Heart of Texas	(5,593)	(5,593)	Projected shortage – see plan below
North Central Texas MWA	(937)	(1,597)	Projected shortage – see plan below
Palo Pinto County MWD No. 1	(4,562)	(5,174)	Projected shortage – see plan below
Upper Leon MWD	(75)	(458)	Projected shortage – see plan below
West Central Texas MWD	(1,167)	(1,583)	Projected shortage – see plan below
City of Abilene	(27,176)	(27,206)	Projected shortage – see plan below
City of Anson	633	606	Projected surplus
City of Bryan	(5,533)	(26,578)	Projected shortage – see plan below
City of Cedar Park	(4,082)	(4,348)	Projected shortage – see plan below
City of Cleburne	(1,314)	(4,625)	Projected shortage – see plan below
City of Gatesville	(1,405)	(4,510)	Projected shortage – see plan below
Johnson County SUD	7,019	1,966	Projected surplus
Kempner WSC	(1,076)	(1,868)	Projected shortage – see plan below
City of Mineral Wells	0	0	Projected surplus
City of Round Rock	(14,028)	(46,089)	Projected shortage – see plan below
City of Stamford	2,099	1,845	Projected surplus

**Table 5.38-1. Wholesale Water Provider Surplus/(Shortage)**

Wholesale Water Provider	Surplus/(Shortage) <sup>1,2</sup>		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Sweetwater	(2,544)	(3,184)	Projected shortage – see plan below
City of Temple	(4,554)	(13,518)	Projected shortage – see plan below
City of Waco	6,114	(2,730)	Projected surplus

1 - From Chapter 4.3 – Water Needs for Wholesale Water Providers

2 - Shortages shown above often include shortages from other WWPs. The shortages shown for individual WWPs should not be summed to a regional total.

3 - Includes demands from Region H.

### 5.38.1 Brazos River Authority (Lake Aquilla System)

#### Description of Supply

The Brazos River Authority (Lake Aquilla System) obtains water supply from Lake Aquilla. Based on the available surface water supply, the Lake Aquilla System is projected to have a surplus of 1,912 acft/yr in the year 2020 decreasing to 696 acft/yr by year 2070. Table 3.1-3 in Chapter 3 includes additional information on contracts and water supplies for the Lake Aquilla System. Due to the estimated reliable supply, surpluses are expected through 2070.

#### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG, the following water supply plan is recommended for the Lake Aquilla System:

- a. Lake Aquilla Reallocation (Volume II, Chapter 7.6)
  - Cost Source: Volume II, Chapter 7.6
  - Date to be Implemented: Before 2020
  - Total Project Cost: \$21,887,000
  - Unit Cost: Max of \$865/acft

**Table 5.38-2. Recommended Plan Costs by Decade for BRA Lake Aquilla System**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	1,912	1,669	1,426	1,182	939	696
<b>Lake Aquilla Reallocation (Volume II, Chapter 7.6)</b>						
Supply From Plan Element (acft/yr)	2,400	2,400	2,400	2,400	2,400	2,400
Annual Cost (\$/yr)	\$2,075,000	\$2,075,000	\$244,800	\$244,800	\$244,800	\$244,800
Unit Cost (\$/yr)	\$865	\$865	\$102	\$102	\$102	\$102

## 5.38.2 Brazos River Authority (Little River System)

### Description of Supply

The Brazos River Authority Little River System obtains its water supply from Lake Proctor, Lake Belton, Stillhouse Hollow Reservoir, Lake Georgetown, and Lake Granger. Based on the available surface water supply and recommended water management strategies, the Brazos River Authority Little River System is projected to have a shortage of 90,223 acft/yr in the year 2040 and 123,386 acft/yr in the year 2070. Shortages for the BRA Little River System are based on a comparison of supplies and current contractual commitments, not projected demands for those entities holding contracts with the BRA. In addition, the shortages projected include other demands over and above current contractual commitments totaling approximately 50,285 acft/yr in year 2070.

Supplies from Lake Granger are allocated to meet BRA system demands, except for 13,015 acft/yr specifically allocated to the East Williamson County Water Treatment Plant (EWCWTP), which supplies water to the City of Taylor and is intended to supply other entities in eastern Williamson County and Bell County. Currently, 7,003 acft/yr of that supply is allocated to meet the City of Taylor's projected demands, with the remaining 6,012 acft/yr from the EWCWTP available for other users as a water management strategy. Table 3.1-3 in Chapter 3 includes additional information on contracts and water supplies for the Little River System.

Note that the shortages shown are based on full contractual supplies. Actual full use of those contracts is unlikely to occur until later years of the planning period and the shortages shown are more likely to occur later than shown here. The BRA has an existing System Order that allows BRA to divert from each individual reservoir an annual amount greater than the reservoir's authorized diversion and assign the difference to another reservoir in the system. While this does not increase the authorized supply from the BRA system, it provides operational flexibility within the BRA's system.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG, the following water supply plan is recommended to meet the projected shortages for BRA's Little River System:

- a. Lake Granger Augmentation
  - Cost Source: Volume II, Chapter 7.7
  - Date to be Implemented: 2020
  - Total Project Cost: \$722,227,000

This strategy is recommended with a zero supply because the groundwater supply necessary to develop the project is not available under the MAG. Should additional MAG become available; this supply can be updated accordingly.

- b. Little River OCR
  - Cost Source: Volume II, Chapter 4.8
  - Date to be Implemented: Before 2030

- Total Project Cost: \$248,761,000 (Reservoir Only)
- Unit Cost: Max of \$413 / acft in 2020

During the Brazos G regional water planning process, water management strategies such as additional development of Carrizo-Wilcox Aquifer groundwater and the Lake Granger Augmentation Project were preferred options to include in the 2016 Brazos G Regional Water Plan. When confronted by the Modeled Available Groundwater (MAG) limitations of these two options, the BGRWPG has little alternative but to make the Little River Off-Channel Reservoir a recommended or alternative strategy.

c. BRA System Operation

- Cost Source: Volume II, Chapter 7.11
- Date to be Implemented: by 2020
- Total Project Cost: \$23,581,674. Includes, engineering and legal costs necessary to obtain the water right permit and environmental studies.
- Unit Cost: \$20/acft

d. Lake Granger ASR

- Cost Source: Volume II, Chapter 10.4
- Date to be Implemented: before 2020
- Total Project Cost: \$99,820,000 (sum of 3 phases)
- Unit Cost: Max of \$1,291/acft in 2030

e. Belton to Stillhouse Pipeline – this strategy is for operational purposes and does not provide additional supply

- Cost Source: Volume II, Chapter 7.1
- Date to be Implemented: Before 2020
- Total Project Cost: \$38,069,000
- Unit Cost: not applicable

f. Alternative: Lake Granger Augmentation Phase 1

- Cost Source: Volume II, Chapter 7.7
- Date to be Implemented: before 2020
- Total Project Cost: \$85,170,000
- Unit Cost: Max of \$584 / acft in 2020

g. Alternative: Lake Granger Augmentation Phase 2

- Cost Source: Volume II, Chapter 7.7
- Date to be Implemented: Sometime in the 2020 decade
- Total Project Cost: \$637,057,000
- Unit Cost: Max of \$1,611/ acft in 2020



- h. Alternative: Storage Reallocation of Federal Reservoirs (Granger)
  - Cost Source: Volume II, Chapter 7.7
  - Date to be Implemented: Sometime in the 2020 decade
  - Total Project Cost: \$28,710,000
  - Unit Cost: Max of \$1,552 / acft in 2020
- i. Alternative: Storage Reallocation of Federal Reservoirs (Stillhouse Hollow)
  - Cost Source: Volume II, Chapter 7.8
  - Date to be Implemented: 2020
  - Total Project Cost: \$36,553,000
  - Unit Cost: Max of \$1,177/ acft in 2020
- j. Alternative: Sediment Reduction Program
  - Cost Source: Volume II, Chapter 7.10
  - Date to be Implemented: Sometime in the 2020 decade
  - Total Project Cost: not determined for Little River Watershed
  - Unit Cost: Not determined

**Table 5.38-3. Recommended Plan Costs by Decade for the BRA Little River System**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(60,385)	(64,943)	(67,791)	(75,115)	(95,314)	(95,859)
<b>Lake Granger Augmentation (Volume II, Chapter 7.7)</b>						
Supply From Plan Element (acft/yr)	0	0	0	0	0	0
Annual Cost (\$/yr)	\$79,502,171	\$79,336,899	\$79,172,211	\$79,006,939	\$23,439,965	\$23,353,650
Unit Cost (\$/yr)	ND	ND	ND	ND	ND	ND
<b>Little River OCR (Volume II, Chapter 4.7)</b>						
Supply From Plan Element (acft/yr)	—	56,150	56,150	56,150	56,150	56,150
Annual Cost (\$/yr)	—	\$23,189,950	\$23,189,950	\$23,189,950	\$23,189,950	\$4,548,150
Unit Cost (\$/yr)	—	\$413	\$413	\$413	\$413	\$81
<b>BRA System Operations (Volume II, Chapter 7.11)</b>						
Supply From Plan Element (acft/yr)	10,260	12,413	12,519	11,146	13,638	14,853
Annual Cost (\$/yr)	\$205,200	\$248,260	\$251,820	\$229,920	\$272,760	\$297,060
Unit Cost (\$/yr)	\$20	\$20	\$20	\$20	\$20	\$20
<b>Lake Granger ASR (Volume II, Chapter 10.4)</b>						
Supply From Plan Element (acft/yr)	9,050	9,050	9,050	9,050	9,050	9,050
Annual Cost (\$/yr)	\$7,874,000	\$11,686,000	\$11,686,000	\$3,334,000	\$3,334,000	\$3,334,000
Unit Cost (\$/yr)	\$870	\$1,291	\$1,291	\$368	\$368	\$368

**Table 5.38-3. Recommended Plan Costs by Decade for the BRA Little River System**

Plan Element	2020	2030	2040	2050	2060	2070
<b>Belton to Stillhouse Pipeline (Volume II, Chapter 7.1)</b>						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost (\$/yr)	\$4,620,000	\$4,620,000	\$1,428,000	\$1,428,000	\$1,428,000	\$1,428,000
Unit Cost (\$/yr)	—	—	—	—	—	—
<b>Alternative: Lake Granger Augmentation Phase 1 (Volume II, Chapter 7.7)</b>						
Supply From Plan Element (acft/yr)	8,509	8,226	7,944	7,661	7,379	7,096
Annual Cost (\$/yr)	\$4,969,256	\$4,803,984	\$4,639,296	\$4,474,024	\$2,250,595	\$2,164,280
Unit Cost (\$/yr)	\$584	\$584	\$584	\$584	\$305	\$305
<b>Alternative: Lake Granger Augmentation Phase 2</b>						
Supply From Plan Element (acft/yr)	46,265	46,265	46,265	46,265	46,265	46,265
Annual Cost (\$/yr)	\$74,532,915	\$74,532,915	\$74,532,915	\$74,532,915	\$21,189,370	\$21,189,370
Unit Cost (\$/yr)	\$1,611	\$1,611	\$1,611	\$1,611	\$458	\$458
<b>Alternative: Storage Reallocation of Federal Reservoirs (Granger)</b>						
Supply From Plan Element (acft/yr)	1,940	1,940	1,940	1,940	1,940	1,940
Annual Cost (\$/yr)	\$3,011,000	\$3,011,000	\$609,000	\$609,000	\$609,000	\$609,000
Unit Cost (\$/yr)	\$1,552	\$1,552	\$314	\$314	\$314	\$314
<b>Alternative: Storage Reallocation of Federal Reservoirs (Lake Stillhouse Hollow)</b>						
Supply From Plan Element (acft/yr)	2,643	2,643	2,643	2,643	2,643	2,643
Annual Cost (\$/yr)	\$3,110,000	\$3,110,000	\$51,000	\$51,000	\$51,000	\$51,000
Unit Cost (\$/yr)	\$1,177	\$1,177	\$19	\$19	\$19	\$19
<b>Alternative: Sediment Reduction Program</b>						
Supply From Plan Element (acft/yr)	Not Determined for Little River Watershed Reservoirs					
Annual Cost (\$/yr)						
Unit Cost (\$/yr)						

### 5.38.3 Brazos River Authority (Main Stem/Lower Basin System)

#### Description of Supply

The Brazos River Authority (Main Stem/Lower Basin System) obtains water supply from Possum Kingdom Reservoir, Lake Granbury, Lake Whitney, Lake Somerville, and Lake Limestone. Based on the available surface water supply, the Brazos River Authority Main Stem/Lower Basin System is projected to have a shortage of 96,417 acft/yr in the year 2040 and 141,083 acft/yr in the year 2070, including the projected demands on the BRA Main Stem/Lower Basin System from Region H and supplies to Region C. Table 3.1-3 in Chapter 3 includes additional information on contracts and water supplies for the Main Stem/Lower Basin System.

Note that the shortages shown are based on full contractual supplies. Actual full use of those contracts is unlikely to occur until later years of the planning period and the shortages shown are more likely to occur later than shown here. The BRA has an existing System Order that allows BRA to divert from each individual reservoir an annual amount greater than the reservoir's authorized diversion and assign the difference to another reservoir in the system. While this does not increase the authorized supply from the BRA system, it provides operational flexibility within the BRA's system.

## Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG, the following water supply plan is recommended to meet the projected shortages for the Main Stem System:

- a. BRA System Operation
  - Cost Source: Volume II, Chapter 7.11
  - Date to be Implemented: by 2020
  - Total Project Cost: \$23,581,674. Includes, engineering and legal costs necessary to obtain the water right permit and environmental studies.
  - Unit Cost: \$20/acft
- b. Chloride Control Project
  - Cost Source: Volume II, Chapter 7.3
  - Date to be Implemented: before 2030
  - Total Project Cost: \$172,652,000
  - Unit Cost: Not determined. Cost benefits result from reduced treatment costs downstream. Cost benefits range from \$115/acft in the upper basin to \$45/acft in the lower basin. Estimated total annual treatment cost reduction across the basin for 11,202 acft/yr of municipal use is \$25,653,000.
- c. Alternative: Storage Reallocation of Federal Reservoirs (Whitney)
  - Cost Source: Volume II, Chapter 7.9
  - Date to be Implemented: Sometime in the 2020 decade
  - Total Project Cost: \$89,948,000
  - Unit Cost: Max of \$361 / acft in 2020
- d. Alternative: Sediment Reduction Program (Lake Limestone watershed)
  - Cost Source: Volume II, Chapter 7.10
  - Date to be Implemented: before 2020
  - Total Project Cost: \$1,075,000
  - Annual Cost: Max of \$288,000 in 2020
  - Unit Cost: Max of \$324/acft in 2030

**Table 5.38-4. Recommended Plan Costs by Decade for the BRA Main Stem System**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(95,223)	(101,871)	(109,174)	(118,902)	(128,990)	(139,428)
<b>BRA System Operations (Volume II, Chapter 7.11)<sup>1</sup></b>						
Supply From Plan Element (acft/yr)	118,264	117,241	119,213	122,010	125,267	129,803
Annual Cost (\$/yr)	\$1,904,460	\$2,037,420	\$21,834,480	—	—	—
Unit Cost (\$/yr)	\$20	\$20	\$20	\$20	\$20	\$20
<b>Chloride Control Project (Volume II, Chapter 7.3)</b>						
Supply From Plan Element (acft/yr)	—	2,475	2,475	2,475	2,475	2,475
Annual Cost (\$/yr) <sup>2</sup>	—	\$14,447,000	\$14,447,000	\$0	\$0	\$0
Unit Cost (\$/yr)	—	N/A	N/A	N/A	N/A	N/A
<b>Alternative: Storage Reallocation of Federal Reservoirs (Whitney)</b>						
Supply From Plan Element (acft/yr)	20,842	20,842	20,842	20,842	20,842	20,842
Annual Cost (\$/yr)	\$7,527,000	\$7,527,000	\$79,000	\$79,000	\$79,000	\$79,000
Unit Cost (\$/yr)	\$361	\$361	\$4	\$4	\$4	\$4
<b>Alternative: Sediment Reduction Program</b>						
Supply From Plan Element (acft/yr)	0	177	355	532	710	888
Annual Cost (\$/yr)	\$288,000	\$288,000	\$148,000	\$148,000	\$148,000	\$148,000
Unit Cost (\$/yr)	N/A	\$1,627	\$417	\$278	\$208	\$167

1 – Includes supply to be made available for Region G and Region H needs.

2 – Project consultants have prepared a pro forma analysis indicating that revenue from salt sales would cover all O&M costs.

### 5.38.4 Aquilla Water Supply District

#### Description of Supply

Aquilla WSD obtains raw water from Lake Aquilla through a contract with the BRA. The district supplies treated water to five wholesale customers. Table 4.3-2 in Chapter 4 includes additional information on contracts and water supplies for Aquilla WSD. A shortage is projected in 2020 for the District due to a short term contract with Hillsboro.

#### 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 Aquilla WSD.

a. Lake Aquilla Augmentation (Volume II, Chapter 5.1)

- Cost Source: Volume II, Chapter 5.1
- Date to be Implemented: Before 2020





- Total Project Cost: \$5,714,856
- Unit Cost: Max of \$926/acft

**Table 5.38-5. Recommended Plan Costs by Decade for Aquilla WSD**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(559)	1	1	1	1	1
Lake Aquilla Augmentation (Volume II, Chapter 5.1)						
Supply From Plan Element (acft/yr)	750	750	750	750	750	750
Annual Cost (\$/yr)	\$695,000	\$695,000	\$695,000	\$695,000	\$695,000	\$695,000
Unit Cost (\$/yr)	\$926	\$926	\$926	\$926	\$926	\$926

### 5.38.5 Bell County WCID No. 1

#### Description of Supply

Bell County WCID No. 1 obtains its water supply from Lake Belton through BRA contracts (62,509 acft/yr). The district’s fresh water customers have year 2070 projected demands of 62,509 acft/yr, compared to the district’s total supply from the BRA of 56,634 acft/yr (the full 62,509 acft/yr is not currently firm). Table 4.3-3 in Chapter 4 includes additional information on contracts and water supplies for Bell County WCID No.1. Therefore, the district has needs projected for its customers starting in 2030. BRA strategies for the Little River System will firm up contracts to provide the full amount of supply during drought of record conditions.

Bell County WCID is pursuing TCEQ Reclaimed Water Type I permits to utilize treated wastewater from wastewater treatment plants (WWTP) 1 and 2 and the South WWTP. The District has evaluated several wastewater reuse options as part of its Master Plan update. The reuse portion of the Master Plan identifies both near-term potential customers as well as other future customers that would utilize the total available reuse supply generated through the District’s regional wastewater system.

#### 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 Bell County WCID No.1.

- a. Firm up Supplies through BRA Little River System Strategies-See Section 5.38.2
  - Cost Source: Section 5.38.2
  - Date to be Implemented: 2020
  - Total Project Cost: borne by BRA
  - Unit Cost: already contracted supplies
- b. Voluntary Redistribution from Killeen’s Contract

Projections indicate that Killeen will have a surplus of supply under their current contract with Bell County WCID No.1. This recommended strategy would reduce the contracted amount to Killeen, while still providing a surplus of supply to Killeen and would enable Bell County WCID No. 1 to provide this supply to Bell County-Other entities. This strategy would require that Killeen be willing to restructure their contract with Bell County WCID No. 1.

- Cost Source: No Cost
- Date to be Implemented: 2040
- Total Project Cost: N/A
- Unit Cost: N/A

**Table 5.38-6. Recommended Plan Costs by Decade for Bell County WCID No.1**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	0	(307)	(931)	(4,556)	(5,617)	(7,140)
Firm up Supplies through BRA Little River System Strategies-See Section 5.38.2						
Supply From Plan Element (acft/yr)	—	307	908	4,089	4,886	6,145
Annual Cost (\$/yr)	—	\$0	\$0	\$0	\$0	\$0
Unit Cost (\$/yr)	—	\$0	\$0	\$0	\$0	\$0
Voluntary Redistribution from Killeen Contract						
Supply From Plan Element (acft/yr)	0	0	23	467	731	995
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/yr)	—	—	—	—	—	—

### Reuse Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected reuse water shortage for Bell County WCID No.1:

- a. North Reuse
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: 2020
  - Total Project Cost: \$12,146,000
  - Unit Cost: Max of \$765 / acft in 2020
- b. South Reuse
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: 2020
  - Total Project Cost: \$6,529,000
  - Unit Cost: Max of \$930 / acft in 2020



**Table 5.38-7. Recommended Plan Costs by Decade for Bell County WCID No. 1 for Reuse Supplies**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(3,173)	(3,173)	(3,173)	(3,173)	(3,173)	(3,193)
<b>Bell County WCID #1-North Reuse (Volume II, Chapter 3)</b>						
Supply From Plan Element (acft/yr)	1,945	1,945	1,945	1,945	1,945	1,945
Annual Cost (\$/yr)	\$1,472,625	\$1,472,625	\$456,225	\$456,225	\$456,225	\$456,225
Unit Cost (\$/yr)	\$765	\$765	\$237	\$237	\$237	\$237
<b>Bell County WCID #1-South Reuse (Volume II, Chapter 3)</b>						
Supply From Plan Element (acft/yr)	748	748	748	748	748	748
Annual Cost (\$/yr)	\$696,000	\$696,000	\$150,000	\$150,000	\$150,000	\$150,000
Unit Cost (\$/yr)	\$930	\$930	\$201	\$201	\$201	\$201

### 5.38.6 Bistone Municipal Water Supply District

#### Description of Supply

Bistone MWSD obtains its water supply from groundwater from the Carrizo-Wilcox Aquifer and surface water from Lake Mexia. Bistone MWSD has contracts to provide 5,259 acft/yr to nearby water user groups and is projected to have supply shortages through 2070. Table 4.3-4 in Chapter 4 includes additional information on contracts and water supplies for Bistone MWSD.

#### 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 shortages for Bistone MWSD:

- a. Additional Carrizo Groundwater Development
  - Cost Source: (Volume II, Chapter 12)
  - Date to be Implemented: before 2020
  - Total Project Cost: Max of \$817/yr in 2020
  - Unit Cost: Max of \$2.50/acft in 2020

**Table 5.38-8. Recommended Plan Costs by Decade for Bistone MWSD**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(2,582)	(2,687)	(2,792)	(2,898)	(3,005)	(3,112)
Carrizo Groundwater Development (Volume II, Chapter 12)						
Supply From Plan Element (acft/yr)	2,582	2,687	2,792	2,898	3,005	3,112
Annual Cost (\$/yr)	\$817	\$817	\$244	\$244	\$244	\$244
Unit Cost	\$2.51	\$2.51	\$0.75	\$0.75	\$0.75	\$0.75

### 5.38.7 Bluebonnet Water Supply Corporation

#### Description of Supply

Bluebonnet Water Supply Corporation (WSC) obtains raw water from Lake Belton through contracts with the BRA totaling 8,301 acft; however the firm supply of those contracts is 7,365 in 2020 and decrease over the planning period. The WSC has projected shortages starting in 2030. BRA strategies for the Little River System will firm up contracts to provide the full amount of supply during drought of record conditions. Table 4.3-5 in Chapter 4 includes additional information on contracts and water supplies for Bluebonnet 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 shortages for Bluebonnet WSC:

- a. Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2
  - Cost Source: Section 5.38.2
  - Date to be Implemented: 2020
  - Total Project Cost: borne by BRA
  - Unit Cost: already contracted supplies

**Table 5.38-9. Recommended Plan Costs by Decade for Bluebonnet WSC**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	240	(35)	(103)	(296)	(389)	(536)
Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2						
Supply From Plan Element (acft/yr)	—	35	103	296	389	536
Annual Cost (\$/yr)	—	\$0	\$0	\$0	\$0	\$0
Unit Cost (\$/yr)	—	\$0	\$0	\$0	\$0	\$0

## 5.38.8 Central Texas Water Supply Corporation

### Description of Supply

Central Texas WSC obtains its water supply from Lake Stillhouse Hollow through contracts with the BRA totaling 12,045 acft; however the firm supply of those contracts is 9,645 in 2020 and decrease over the planning period. Central Texas WSC also has recently constructed two wells in the Trinity Aquifer in Bell County that are counted as current supply as they will be online prior to 2020. Based on the available surface water and groundwater supply, currently contracted supplies, and projected demands for its current customers, Central Texas WSC is not projected to have shortages through 2070, assuming that all demands can be treated and delivered through current infrastructure. Table 4.3-6 in Chapter 4 includes additional information on contracts and water supplies for Central Texas WSC.

BRA strategies for the Little River System will firm up contracts to provide full amount of supply during drought of record.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for Central Texas WSC.

- a. Pipeline to EWCRWTS
  - Cost Source: Volume II, Chapter 8.2
  - Date to be Implemented: 2020 although the project can be delayed until projected demands for customers approaches the current reliable BRA supply.
  - Total Project Cost: \$42,127,000 (Total Cost for all Participating Entities)
  - Unit Cost: Max of \$1,173 in 2020
- b. Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2
  - Cost Source: Section 5.38.2
  - Date to be Implemented: 2020
  - Total Project Cost: borne by BRA
  - Unit Cost: already contracted supplies

**Table 5.38-10. Recommended Plan Costs by Decade for Central Texas WSC**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	1,825	1,376	787	317	199	13
<b>East Williamson County Water Project</b>						
Supply From Plan Element (acft/yr)	2,240	2,240	2,240	2,240	2,240	2,240
Annual Cost (\$/yr)	\$2,627,520	\$2,627,520	\$1,688,960	\$1,688,960	\$1,688,960	\$1,688,960
Unit Cost (\$/yr)	\$1,173	\$1,173	\$754	\$754	\$754	\$754
<b>Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2</b>						
Supply From Plan Element (acft/yr)	2,401	2,850	2,939	3,409	3,527	3,713
Annual Cost (\$/yr)	\$0	\$0	\$0	\$0	\$0	\$0
Unit Cost (\$/yr)	\$0	\$0	\$0	\$0	\$0	\$0

### 5.38.9 Eastland County WSC

Eastland County WSD obtains its water supply from Lake Leon and a run-of-the-river right. No shortages are projected for Eastland County WSD and no changes in water supply are recommended. Table 4.3-7 in Chapter 4 includes additional information on contracts and water supplies for Eastland County WSD.

### 5.38.10 Heart of Texas Water Suppliers, LLC

#### Description of Supply

Heart of Texas has a contract to provide 5,600 acft/yr to the City of Hutto. Heart of Texas has a well field in the Carrizo-Wilcox Aquifer (Hooper formation) in Williamson County; however, the current MAG for the Carrizo-Wilcox in Williamson County is only 7 acft/yr. Heart of Texas also holds permits with the Lost Pines Groundwater Conservation District in Lee County for 3,300 acft/yr. A well has been constructed in Lee County, but it has not yet been brought online and is not counted as a current source of supply.

Table 4.3-8 in Chapter 4 includes additional information on contracts and water supplies for Heart of Texas.

#### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortages for Heart of Texas.

##### a. Lee County Well Field

Utilize existing permits in Lee County, and assume additional permits can be obtained to meet needs for City of Hutto.

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020



- Total Project Cost: \$127,086,000
- Unit Cost: \$1,619/acft

**Table 5.38-11. Recommended Plan Costs by Decade for Heart of Texas Suppliers, LLC**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(5,593)	(5,593)	(5,593)	(5,593)	(5,593)	(5,593)
<b>Carrizo-Wilcox (Lee County)</b>						
Supply From Plan Element (acft/yr)	5,593	5,593	5,593	7,503	9,710	11,994
Annual Cost (\$/yr)	\$9,055,000	\$9,055,000	\$4,094,000	\$5,492,000	\$7,108,000	\$8,780,000
Unit Cost (\$/yr)	\$1,619	\$1,619	\$732	\$732	\$732	\$732

### 5.38.11 North Central Texas Municipal Water Authority

#### Description of Supply

North Central Texas MWA owns and obtains its water supply from Millers Creek Reservoir. Based on the available surface water supply, shortages are expected through 2070. Table 4.3-9 in Chapter 4 includes additional information on contracts and water supplies for North Central Texas Municipal Water Authority.

#### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for the North Central Texas MWA.

- a. Millers Creek Augmentation (Option 4)
  - Cost Source: Volume II, Chapter 7.5
    - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
  - Date to be Implemented: 2020
  - Total Project Cost: \$99,896,000
  - Unit Cost: Max of \$2,958/ acft in 2020
- b. Alternative: Lake Creek Reservoir
  - Cost Source: Volume II, Chapter 4.10
    - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
  - Date to be Implemented: 2020
  - Total Project Cost: \$193,524,000
  - Unit Cost: \$1,308 / acft

**Table 5.38-12. Recommended Plan Costs by Decade for North Central Texas MWA**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(497)	(717)	(937)	(1,157)	(1,377)	(1,597)
<b>Millers Creek Augmentation (Volume II, Chapter 7.5)</b>						
Supply From Plan Element (acft/yr)	2,425	2,425	2,425	2,425	2,425	2,425
Annual Cost (\$/yr)	\$1,135,872	\$1,135,872	\$1,135,872	\$1,135,872	\$931,200	\$931,200
Unit Cost (\$/yr)	\$2,958	\$2,958	\$2,958	\$2,958	\$384	\$384
<b>Alternative: Lake Creek Reservoir (Volume II, Chapter 4.10)</b>						
Supply From Plan Element (acft/yr)	14,500	14,500	14,500	14,500	14,500	14,500
Annual Cost (\$/yr)	\$18,961,000	\$18,961,000	\$9,716,000	\$9,716,000	\$4,541,000	\$4,541,000
Unit Cost (\$/yr)	\$1,308	\$1,308	\$670	\$670	\$313	\$313

### 5.38.12 Palo Pinto County Municipal Water District No. 1

#### Description of Supply

Palo Pinto County Municipal Water District owns and operates Lake Palo Pinto, which is used to supply water to entities in Palo Pinto and Parker Counties. A portion of its supply is used in Region C. The district has rights to 18,500 acft/yr for municipal and steam electric power uses. Treated water is supplied to the City of Mineral Wells (and its customers) and Lake Palo Pinto Area Water Supply Corporation. Projected demands indicate shortages through 2070. Table 4.3-10 in Chapter 4 includes additional information on contracts and water supplies for Palo Pinto County MWD No.1.

#### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for the Palo Pinto County Municipal Water District No.1.

- a. Lake Palo Pinto Expansion (Turkey Peak Dam)
  - Cost Source: Volume II, Chapter 4.13
  - Date to be Implemented: 2020
  - Total Project Cost: \$83,363,000
  - Unit Cost: Max of \$749 / acft in 2020
- b. Alternative: Lake Palo Pinto Off-Channel Reservoir
  - Cost Source: Volume II, Chapter 4.6
  - Date to be Implemented: 2020
  - Total Project Cost: \$34,685,000
  - Unit Cost: \$980/ acft





**Table 5.38-13. Recommended Plan Costs by Decade for Palo Pinto County Municipal Water District No.1**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(4,253)	(4,426)	(4,562)	(4,768)	(4,975)	(5,174)
Turkey Peak Reservoir (Volume II, Chapter 4.13)						
Supply From Plan Element (acft/yr)	8,100	8,100	8,100	8,100	8,100	8,100
Annual Cost (\$/yr)	\$6,065,000	\$6,065,000	\$4,989,000	\$4,989,000	\$595,000	\$595,000
Unit Cost (\$/yr)	\$749	\$749	\$616	\$616	\$73	\$73
Alternative: Lake Palo Pinto OCR (Volume II, Chapter 4.6)						
Supply From Plan Element (acft/yr)	3,110	3,110	3,110	3,110	3,110	3,110
Annual Cost (\$/yr)	\$3,048,000	\$3,048,000	\$1,641,000	\$1,641,000	\$527,000	\$527,000
Unit Cost (\$/yr)	\$980	\$980	\$528	\$528	\$169	\$169

### 5.38.13 Upper Leon Municipal Water District

#### Description of Supply

Upper Leon MWD obtains its water supply through a contract with the Brazos River Authority for 6,437 acft/yr of water from Lake Proctor; however the firm supply of those contracts is 4,980 in 2020 and decreases over the planning period. The WSC has projected shortages starting in 2030. BRA strategies for the Little River System will firm up contracts to provide the full amount of supply during drought of record conditions. Table 4.3-11 in Chapter 4 includes additional information on contracts and water supplies for Upper Leon MWD.

#### 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 Upper Leon MWD.

- a. Firm up Supplies through BRA Little River System Strategies – see Section 5.38.2
  - Cost Source: Section 5.38.2
  - Date to be Implemented: 2020
  - Total Project Cost: borne by BRA
  - Unit Cost: already contracted supplies
- b. Trinity Groundwater from Pecan Orchard
  - Cost Source: Intended Use Plan Budget submitted to TWDB in support of DWSRF Application
  - Date to be Implemented: 2020
  - Total Project Cost: \$5,347,000

- Unit Cost: \$319/acft

**Table 5.38-14. Recommended Plan Costs by Decade for Upper Leon MWD**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	408	(31)	(75)	(308)	(366)	(458)
Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2						
Supply From Plan Element (acft/yr)	1,457	1,896	1,940	2,173	2,231	2,323
Annual Cost (\$/yr)	\$0	\$0	\$0	\$0	\$0	\$0
Unit Cost (\$/yr)	\$0	\$0	\$0	\$0	\$0	\$0
Trinity Groundwater from Pecan Orchard						
Supply From Plan Element (acft/yr)	2,040	2,040	2,040	2,040	2,040	2,040
Annual Cost (\$/yr)	\$447,433	\$447,433	\$203,327	\$203,327	\$203,327	\$203,327
Unit Cost (\$/yr)	\$319	\$319	\$100	\$100	\$100	\$100

### 5.38.14 West Central Texas Municipal Water District

#### Description of Supply

West Central Texas MWD owns and obtains its water supply from Hubbard Creek Reservoir. Based on the available surface water supply constrained to a 2-year safe yield estimate, West Central Texas MWD is projected to have shortages throughout the planning period. Table 4.3-12 in Chapter 4 includes additional information on contracts and water supplies for West Central Texas MWD.

#### 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 shortages for West Central Texas MWD

##### a. Voluntary Redistribution

The District's shortages have been applied to reduce the City of Abilene supply from Hubbard Creek Reservoir to less than its currently contracted amount, while retaining the supplies available to the other member cities at full contracted volumes. The recommended water supply plan for the West Central Texas Municipal Water District is to restructure its existing contract with the City of Abilene to reduce its contractual obligations to eliminate the apparent supply shortage. The various strategies in the water supply plan for the City of Abilene will accommodate these small shortages.

- Cost Source: No Cost
- Date to be Implemented: before 2020
- Total Project Cost: N/A
- Unit Cost: N/A



**Table 5.38-15. Recommended Plan Costs by Decade for West Central Texas MWD**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(890)	(1,028)	(1,167)	(1,306)	(1,444)	(1,583)
Voluntary Redistribution from Abilene's Contract						
Supply From Plan Element (acft/yr)	890	1,028	167	1,306	1,444	1,583
Annual Cost (\$/yr)	\$0	\$0	\$0	\$0	\$0	\$0
Unit Cost (\$/yr)	\$0	\$0	\$0	\$0	\$0	\$0

### 5.38.15 City of Abilene

#### Description of Supply

The City of Abilene obtains its water supply from several surface water sources. The City owns water rights in Fort Phantom Hill Reservoir. The City has contracted for water in Hubbard Creek and O.H. Ivie Reservoirs with the West Central Texas Municipal Water District. Abilene also has a wastewater reuse system for non-potable use. The City supplies several neighboring communities and projected demands indicate shortages through 2070. Abilene is located in multiple counties (Taylor and Jones). Table 4.3-13 in Chapter 4 includes additional information on contracts and water supplies for City of Abilene.

Cedar Ridge Reservoir is the primary WMS selected to meet the bulk of the City's needs into the future. The City is also anticipating a treatment plant to go offline around the 2020 decade, which will be replaced by a new treatment plant with additional capacity.

#### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortages for the City of Abilene.

- a. Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: 2020
  - Unit Cost: \$474 / acft
- b. Water Treatment Plant Expansion – this will affect the City's treated water projected shortage but does not provide new supply.
  - Cost Source: Volume II, Chapter 12
  - Date to be Implemented: 2020
  - Total Project Cost: \$48,257,000
  - Unit Cost: \$577 / acft
- c. Cedar Ridge Reservoir

- Cost Source: Volume II, Chapter 4.2
  - Date to be Implemented: 2020
  - Total Project Cost: \$290,868,000
  - Unit Cost: \$1,031 / acft
- d. Brush Control (Fort Phantom Hill Reservoir watershed)
- Cost Source: Volume II, Chapter 13
  - Date to be Implemented: 2020
  - Total Project Cost: \$7,532,000
  - Unit Cost: Not applicable – firm supply zero during drought of record conditions
- e. Alternative: Possum Kingdom Supply
- Cost Source: Volume II, Chapter 5.2
    - Supply dependent on BRA obtaining the System Operations permit from TCEQ
  - Date to be Implemented: 2020
  - Total Project Cost: \$269,334,000
  - Unit Cost: \$2,586 / acft

**Table 5.38-16. Recommended Plan Costs by Decade for the City of Abilene**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(7,081)	(28,345)	(28,821)	(28,620)	(28,615)	(28,642)
<b>Conservation(Volume II, Chapter 2)</b>						
Supply From Plan Element (acft/yr)	710	2,331	2,246	2,045	2,040	2,067
Annual Cost (\$/yr)	\$336,540	\$1,104,894	\$1,064,604	\$969,330	\$966,960	\$979,758
<i>Projected Surplus/(Shortage) after Conservation</i>	(6,471)	(26,114)	(26,575)	(26,575)	(26,575)	(26,575)
<b>Water Treatment Plant Expansion(Volume II, Chapter 12)</b>						
Supply From Plan Element (acft/yr)	12,992	12,992	12,992	12,992	12,992	12,992
Annual Cost (\$/yr)	\$7,492,000	\$7,492,000	\$3,454,000	\$3,454,000	\$3,454,000	\$3,454,000
Unit Cost (\$/yr)	\$577	\$577	\$266	\$266	\$266	\$266
<b>Cedar Ridge Reservoir(Volume II, Chapter 4.2)</b>						
Supply From Plan Element (acft/yr)	26,575	26,575	26,575	26,575	26,575	26,575
Annual Cost (\$/yr)	\$27,383,000	\$27,383,000	\$15,818,000	\$15,818,000	\$6,314,000	\$6,314,000
Unit Cost (\$/yr)	\$1,031	\$1,031	\$595	\$595	\$238	\$238
<b>Brush Control – Fort Phantom Hill Reservoir Watershed (Volume II, Chapter 13)</b>						
Supply From Plan Element (acft/yr)	0	0	0	0	0	0
Annual Cost (\$/yr)	\$999,295	\$999,295	\$999,295	\$999,295	\$999,295	\$999,295



**Table 5.38-16. Recommended Plan Costs by Decade for the City of Abilene**

Plan Element	2020	2030	2040	2050	2060	2070
Unit Cost (\$/yr)	—	—	—	—	—	—
Alternative: Possum Kingdom Supply (Volume II, Chapter 5.2)						
Supply From Plan Element (acft/yr)	14,800	14,800	14,800	14,800	14,800	14,800
Annual Cost (\$/yr)	\$38,271,000	\$38,271,000	\$15,733,000	\$15,733,000	\$15,733,000	\$15,733,000
Unit Cost (\$/yr)	\$2,586	\$2,586	\$1,063	\$1,063	\$1,063	\$1,063

### 5.38.16 City of Anson

The City of Anson receives surface water supplies from West Central Texas MWD and Lake Anson North. The City has a 1.8 MGD WTP for its own demand. Anson sells supply to Hawley WSC and City of Hamlin and contracts with Abilene to provide treatment for these supplies. Table 4.3-14 in Chapter 4 includes additional information on contracts and water supplies for the City of Anson. A surplus of supply is projected for the planning period. Conservation was considered; however, the entity’s current per capita use rate is below the selected target rate of 140 gpcd.

### 5.38.17 City of Bryan

#### Description of Supply

City of Bryan has a total of twelve wells located in the Simsboro and Sparta formations of the Carrizo-Wilcox Aquifer with a production capacity of 43 MGD. The Brazos Valley Groundwater Conservation District has permitted the City to withdraw 33,540 acft/yr. The City supplies several neighboring communities as well as manufacturing and steam-electric entities. Table 4.3-15 in Chapter 4 includes additional information on contracts and water supplies for the City of Bryan. Due to the estimated reliable supply from groundwater of 16,792 acft/yr in 2020, shortages are expected through 2070.

The City of Bryan currently irrigates the Traditions Golf Course with Type 2 treated wastewater effluent from Thompson’s Creek WWTP, a small package treatment plant located near the golf course with a capacity of 2.0 MGD. The City has two other WWTPs, Burton Creek and Still Creek, that produce effluent requiring additional treatment to meet Type 1 reuse water requirements. There are several parks, ball fields, and other green spaces dispersed throughout the City that could be irrigated with reuse water if the wastewater could be treated and distributed economically. The Still Creek WWTP Year 2070 Estimated WWTP Effluent is 3,557 acft/yr (3.17 MGD). The Burton Creek WWTP Year 2070 Estimated WWTP Effluent is 11,561 acft/yr (10.31 MGD). Bryan is considering utilizing these reuse supplies for non-potable demands within the City.

#### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortages for the City of Bryan.

- a. Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: 2020
  - Unit Cost: \$474 / acft
- b. Aquifer Storage and Recovery
  - Cost Source: Volume II, Chapter 10.1
  - Date to be Implemented: 2020
  - Total Project Cost: \$57,328,000
  - Unit Cost: \$385/acft (constant unit cost assumed, since infrastructure will be added each decade)
- c. Groundwater Development - Carrizo-Wilcox Aquifer (Brazos County)
  - Cost Source: Volume II, Chapter 9.1
  - Date to be Implemented: by 2050
  - Total Project Cost: \$24,570,000
  - Unit Cost: Max of \$486 / acft in 2020
- d. Alternative: Groundwater Development – Carrizo-Wilcox Aquifer (Robertson County)
  - Cost Source: Volume II, Chapter 9.1
  - Date to be Implemented: 2020
  - Total Project Cost: \$81,596,000
  - Unit Cost: Max of \$1,006 / acft in 2020

**Table 5.38-17. Recommended Plan Costs by Decade for the City of Bryan**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(3,334)	(1,269)	(5,533)	(11,875)	(18,790)	(26,579)
<b>Conservation(Volume II, Chapter 2)</b>						
Supply From Plan Element (acft/yr)	493	1,573	1,616	1,697	1,899	2,143
Annual Cost (\$/yr)	\$233,851	\$745,799	\$766,035	\$804,443	\$900,310	\$1,015,578
<i>Projected Surplus/(Shortage) after Conservation</i>	(2,841)	304	(3,917)	(10,178)	(16,891)	(24,436)
<b>Aquifer Storage and Recovery (Volume II, Chapter 10.1)</b>						
Supply From Plan Element (acft/yr)	2,841	2,841	3,917	5,581	12,294	19,839
Annual Cost (\$/yr)	\$1,094,000	\$1,094,000	\$1,508,000	\$2,149,000	\$4,733,000	\$7,638,000
Unit Cost (\$/yr)	\$385	\$385	\$385	\$385	\$385	\$385
<b>Groundwater Development - Carrizo Wilcox Aquifer in Brazos County (Volume II, Chapter 9.1)</b>						
Supply From Plan Element (acft/yr)	—	—	—	5,100	5,100	5,100



**Table 5.38-17. Recommended Plan Costs by Decade for the City of Bryan**

Plan Element	2020	2030	2040	2050	2060	2070
Annual Cost (\$/yr)	—	—	—	\$2,479,000	\$2,479,000	\$1,020,000
Unit Cost (\$/yr)	—	—	—	\$486	\$486	\$200
Alternative: Groundwater Development - Carrizo-Wilcox Aquifer in Robertson Co. (Volume II, Chapter 9.1)						
Supply From Plan Element (acft/yr)	3,826	3,826	4,171	5,565	11,826	19,478
Annual Cost (\$/yr)	\$3,850,000	\$3,850,000	\$1,131,000	\$1,603,000	\$3,744,000	\$6,294,000
Unit Cost (\$/yr)	\$1,006	\$1,006	\$271	\$288	\$317	\$323

### Reuse Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected reuse water shortages for the City of Bryan.

- a. Option 1 Reuse for Bryan Utilities Lake Supply
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: 2020
  - Total Project Cost: \$8,989,000
  - Unit Cost: Max of \$1,547 / acft in 2020
- b. Miramont Reuse
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: 2020
  - Total Project Cost: \$2,544,000
  - Unit Cost: Max of \$408/ acft in 2020
- c. Alternative: Option 2 Indirect Potable Reuse
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: 2020
  - Total Project Cost: \$24,206,000
  - Unit Cost: Max of \$1,577/ acft in 2020

**Table 5.38-18. Recommended Plan Costs by Decade for the City of Bryan for Reuse Supplies**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	<i>(1,205)</i>	<i>(1,205)</i>	<i>(1,205)</i>	<i>(1,205)</i>	<i>(1,205)</i>	<i>(1,205)</i>
Option 1 Reuse for Bryan Utilities Lake Supply (Volume II, Chapter 3)						
Supply From Plan Element (acft/yr)	605	605	605	605	605	605
Annual Cost (\$/yr)	\$936,000	\$936,000	\$184,000	\$184,000	\$184,000	\$184,000

**Table 5.38-18. Recommended Plan Costs by Decade for the City of Bryan for Reuse Supplies**

Plan Element	2020	2030	2040	2050	2060	2070
Unit Cost (\$/yr)	\$1,547	\$1,547	\$304	\$304	\$304	\$304
<b>Miramont Reuse (Volume II, Chapter 3)</b>						
Supply From Plan Element (acft/yr)	600	600	600	600	600	600
Annual Cost (\$/yr)	\$245,000	\$245,000	\$32,000	\$32,000	\$32,000	\$32,000
Unit Cost (\$/yr)	\$408	\$408	\$53	\$53	\$53	\$53
<b>Alternative: Option 2 Indirect Potable Reuse for Bryan (Volume II, Chapter 3)</b>						
Supply From Plan Element (acft/yr)	2,419	2,419	2,419	2,419	2,419	2,419
Annual Cost (\$/yr)	\$3,815,000	\$3,815,000	\$1,789,000	\$1,789,000	\$1,789,000	\$1,789,000
Unit Cost (\$/yr)	\$1,577	\$1,577	\$740	\$740	\$740	\$740

### 5.38.18 City of Cedar Park

#### Description of Supply

The City of Cedar Park is located in Williamson County and part of Travis County (Region K) and provides wholesale water to entities in Williamson and Travis Counties. The City has an 18,000 acft/yr contract from LCRA for Highland Lakes supply. Cedar Park is a participant in the Brushy Creek Regional Utility Authority to develop additional supplies from the Highland Lakes in Region K. The project is under construction and remaining phases are anticipated to be completed by 2018. Based on the available surface water supply and contractual commitments to supply water to wholesale customers, the City of Cedar Park is projected to have a shortage through the year 2070. Table 4.3-16 in Chapter 4 includes additional information on contracts and water supplies for the City of Cedar Park.

#### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortage for the City of Cedar Park.

- a. Conservation: Additional advanced conservation was considered and not applied since no shortage remains in later decades after applying conservation.
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: Before 2020
  - Unit Cost: \$470 / acft
- b. Brushy Creek RUA Water Supply Project
  - Cost Source: (Volume II, Chapter 7.2)
  - Date to be Implemented: before 2020
  - Total Project Cost: \$69,666,000 (city's portion of cost)





- Unit Cost: \$836/acft
- c. Voluntary Redistribution through Brushy Creek RUA Water Supply Project
- Cost Source: (Volume II, Chapter 7.2)
  - Date to be Implemented: before 2020
  - Total Project Cost: \$69,666,000 (city's portion of cost)
  - Unit Cost: \$836/acft

**Table 5.38-19. Recommended Plan Costs by Decade for the City of Cedar Park**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(2,075)	(3,854)	(4,082)	(4,159)	(4,244)	(4,348)
<b>Conservation(Volume II, Chapter 2)</b>						
Supply From Plan Element (acft/yr)	875	2,573	3,982	4,438	4,522	4,614
Annual Cost (\$/yr)	\$411,250	\$1,209,310	\$1,871,540	\$2,085,860	\$2,125,340	\$2,309,580
<i>Projected Surplus/(Shortage) after Conservation</i>	(1,200)	(1,281)	(100)	279	278	266
<b>Brushy Creek RUA Water Supply Project (Volume II, Chapter 7.2)<sup>1</sup></b>						
Supply From Plan Element (acft/yr)	0	0	0	0	0	0
Annual Cost (\$/yr)	\$15,048,000	\$15,048,000	\$9,218,000	\$9,218,000	\$9,218,000	\$9,218,000
Unit Cost (\$/acft)	\$836	\$836	\$512	\$512	\$512	\$512
<b>Voluntary Redistribution through Brushy Creek RUA Water Supply Project</b>						
Supply From Plan Element (acft/yr)	1,200	1,281	100	—	—	—
Annual Cost (\$/yr)	\$1,003,200	\$1,070,916	\$51,200	—	—	—
Unit Cost (\$/acft)	\$836	\$836	\$512	—	—	—

1 – The LCRA contract is shown as a current supply to Cedar Park. This strategy provides additional flexibility to take supplies during drought by deep water intake in Lake Travis.

### 5.38.19 City of Cleburne

#### Description of Supply

City of Cleburne obtains groundwater from the Trinity Aquifer in Johnson County. Surface water supplies include Lake Pat Cleburne, Lake Aquilla, and Lake Whitney, although the city currently does not have the infrastructure to access Lake Whitney supplies. The City supplies fresh water to Johnson County Manufacturing and reuse supplies to Steam-Electric entities. Table 4.3-17 in Chapter 4 includes additional information on contracts and water supplies for the City of Cleburne. Due to the estimated increasing demands throughout the planning period, fresh water shortages are expected before 2050.

The City of Cleburne has embraced the beneficial use of reuse water as a viable water management strategy to meet anticipated future shortages. The City currently supplies 1.2 MGD (1,344 acft/yr) of reuse water directly to a Brazos Electric Power Cooperative

Plant located north of the city for use as cooling water. The City of Cleburne owns and operates the existing reuse water treatment facility located on the City’s wastewater treatment plant site. The city plans to reuse available wastewater supplies to help meet its projected deficit in the year 2070, and has filed a water rights application for 8,440 acre feet (7.5 MGD) with TCEQ to allow reuse of all authorized discharges, which would provide for the city’s needs well beyond the current planning horizon.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortages for the City of Cleburne.

- a. Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: before 2020
  - Unit Cost: \$470/acft
  - Annual Cost: maximum of \$415,010 in 2070
- b. Lake Aquilla Augmentation-Option A
  - Cost Source: Volume II, Chapter 5.1
  - Date to be Implemented:
  - Project Cost: \$73912 ,144
  - Unit Cost: \$926/acft
- c. Alternative: Lake Whitney Diversion to Cleburne
  - Cost Source: Volume II, Chapter 5.1
  - Date to be Implemented: before 2020
  - Unit Cost: \$3,151/acft in 2020

**Table 5.38-20. Recommended Plan Costs by Decade for the City of Cleburne**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(264)	(550)	(1,314)	(2,319)	(3,418)	(4,625)
<b>Conservation(Volume II, Chapter 2)</b>						
Supply From Plan Element (acft/yr)	207	685	736	749	809	883
Annual Cost (\$/yr)	\$97,290	\$321,950	\$345,920	\$352,030	\$380,230	\$415,010
<i>Projected Surplus/(Shortage) after Conservation</i>	(57)	135	(578)	(1,570)	(2,609)	(3,742)
<b>Lake Aquilla Augmentation (Volume II, Chapter 5.1)</b>						
Supply From Plan Element (acft/yr)	9,700	9,700	9,700	9,700	9,700	9,700
Annual Cost (\$/yr)	\$8,982,000	\$8,982,000	\$4,588,000	\$4,588,000	\$4,588,000	\$4,588,000



**Table 5.38-20. Recommended Plan Costs by Decade for the City of Cleburne**

Plan Element	2020	2030	2040	2050	2060	2070
Unit Cost (\$/yr)	\$926	\$926	\$473	\$473	\$473	\$473
Alternative: Lake Whitney Diversion to Cleburne (Volume II, Chapter 5.1)						
Supply From Plan Element (acft/yr)	2,130	2,130	2,130	2,130	2,130	2,130
Annual Cost (\$/yr)	\$6,711,630	\$6,711,630	\$2,803,080	\$2,803,080	\$2,803,080	\$2,803,080
Unit Cost (\$/yr)	\$3,151	\$3,151	\$1,316	\$1,316	\$1,316	\$1,316

### Water Reuse 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 reuse water shortages for the City of Cleburne:

- a. Reuse
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: before 2020
  - Project Cost: \$14,059,000
  - Unit Cost: \$736/acft

**Table 5.38-21. Recommended Plan Costs by Decade for the City of Cleburne for Reuse Supplies**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	<i>(2,031)</i>	<i>(2,031)</i>	<i>(2,031)</i>	<i>(2,031)</i>	<i>(2,031)</i>	<i>(2,031)</i>
City of Cleburne Reuse						
Supply From Plan Element (acft/yr)	2,031	2,031	2,031	2,031	2,031	2,031
Annual Cost (\$/yr)	\$1,495,000	\$1,495,000	\$319,000	\$319,000	\$319,000	\$319,000
Unit Cost (\$/yr)	\$736	\$736	\$157	\$157	\$157	\$157

## 5.38.20 City of Gatesville

### Description of Supply

The City of Gatesville obtains its supply from Lake Belton via a contract with BRA for 5,898 acft/yr. Not all of the supply contracted from the BRA is currently firm, but strategies being pursued by the BRA are intended to firm up the BRA's contractual commitments. This reduced supply from the BRA does not account for all of the City's projected shortages. The City of Gatesville owns and operates a 11 MGD regional treatment plant. Raw water is transferred from a raw water intake at Lake Belton through approximately 8 miles of transmission line to the regional treatment plant from which the water enters the distribution system. Gatesville has contracts to meet Coryell City Water Supply District's demands estimated at 1,543 acft/yr in 2070 in addition to contracts with

entities included in the Coryell County-Other (500 acft/yr) and Coryell County Manufacturing Water User Groups. Table 4.3-18 in Chapter 4 includes additional information on contracts and water supplies for the City of Gatesville.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet the projected water shortages for the City of Gatesville.

- a. Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: before 2020
  - Annual Cost: maximum of \$1,156,913 in 2070
  - Unit Cost: \$470/acft
- b. Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2
  - Cost Source: Section 5.38.2
  - Date to be Implemented: 2020
  - Total Project Cost: borne by BRA
  - Unit Cost: already contracted supplies
- c. Purchase from Multi-County WSC (Coryell County Off-Channel Reservoir)
  - Cost Source: Volume II, Section 4.3
    - Project requires a subordination agreement with the BRA, which is dependent on the BRA obtaining the System Operations permit
  - Date to be Implemented: 2030
  - Unit Cost: \$1,309/acft

**Table 5.38-22. Recommended Plan Costs by Decade for City of Gatesville**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	28	(629)	(1,405)	(2,449)	(3,323)	(4,510)
<b>Conservation</b>						
Supply From Plan Element (acft/yr)	208	610	1,097	1,644	2,261	2,462
Annual Cost (\$/yr)	\$97,958	\$286,723	\$515,682	\$772,806	\$1,062,706	\$1,156,913
<i>Projected Surplus/(Shortage) after Conservation</i>	236	(19)	(308)	(805)	(1,062)	(2,048)
<b>Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2</b>						
Supply From Plan Element (acft/yr)	—	29	86	386	461	580
Annual Cost (\$/yr)	—	\$0	\$0	\$0	\$0	\$0
Unit Cost (\$/yr)	—	\$0	\$0	\$0	\$0	\$0



**Table 5.38-22. Recommended Plan Costs by Decade for City of Gatesville**

Plan Element	2020	2030	2040	2050	2060	2070
Purchase from Multi-County WSC (Coryell County Off-Channel Reservoir)						
Supply From Plan Element (acft/yr)	—	2,835	2,835	2,835	2,835	2,835
Annual Cost (\$/yr)	—	\$3,711,000	\$3,711,000	\$2,889,000	\$2,889,000	\$1,233,000
Unit Cost (\$/yr)	—	\$1,309	\$1,309	\$1,019	\$1,019	\$435

### 5.38.21 Johnson County SUD

#### Description of Supply

Johnson County Special Utility District (SUD) is located in Johnson, Hill, Ellis (Region C) and Tarrant (Region C) counties. The SUD obtains its water supply from groundwater from the Trinity Aquifer, and a contract with the Brazos River Authority for water from Lake Granbury and a contract with the City of Mansfield (10,089 acft/yr) for water from the Tarrant Regional Water District. Supplies from Tarrant have been constrained based on availability from the District. Johnson County SUD also has a contract with Grand Prairie for 6,720 acft/yr, which will be implemented by 2020. The SUD has contracts to supply treated water to eight water user groups.

Table 4.3-19 in Chapter 4 includes additional information on contracts and water supplies for Johnson County SUD.

#### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and through coordination with Region C, the following water management strategies are recommended for Johnson County SUD.

- a. Conservation
  - Cost Source: 2016 Region C Water Plan (Appendix K)
  - Date to be Implemented: 2020
  - Project Cost: \$4,470
  - Unit Cost: \$186/acft
- b. Purchase Supplies from Grand Prairie
  - Cost Source: 2016 Region C Water Plan (Appendix K)
  - Date to be Implemented: 2020
  - Project Cost: \$86,140,000
  - Unit Cost: \$2,063/acft
- c. Purchase additional Supplies from Mansfield
  - Cost Source: 2016 Region C Water Plan

- Date to be Implemented: 2020
  - Project Cost: contract in place for 10,089 acft/yr, reduced due to available supplies
  - Unit Cost: wholesale water cost from Mansfield
- d. Alternative: Johnson County ASR
- Cost Source: Volume II, Chapter 10.3
  - Date to be Implemented: 2020
  - Project Cost: \$11,725,000
  - Unit Cost: \$1,131/acft

**Table 5.38-23. Recommended Plan Costs by Decade for Johnson County SUD**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	5,604	4,259	2,757	876	(679)	(2,267)
<b>Conservation (Region C)</b>						
Supply From Plan Element (acft/yr)	2	4	4	5	7	10
Annual Cost (\$/yr)	\$371	\$744	\$744	\$930	\$1,302	\$1,860
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	9,919	8,544	7,023	5,132	3,570	1,976
<b>Purchase Supplies from Grand Prairie (Region C)</b>						
Supply From Plan Element (acft/yr)	—	6,726	6,726	6,726	6,726	6,726
Annual Cost (\$/yr)	—	\$13,873,000	\$13,873,000	\$6,794,000	\$6,794,000	\$6,794,000
Unit Cost (\$/acft)	—	\$2,063	\$2,063	\$1,010	\$1,010	\$1,010
<b>Full Contract Supplies from Mansfield (Region C)</b>						
Supply From Plan Element (acft/yr)	3,196	3,778	4,449	5,363	5,820	6,222
Annual Cost (\$/yr)	\$0	\$0	\$0	\$0	\$0	\$0
Unit Cost (\$/acft)	\$0	\$0	\$0	\$0	\$0	\$0
<b>Alternative: Johnson County ASR</b>						
Supply From Plan Element (acft/yr)	2,000	2,000	2,000	2,000	2,000	2,000
Annual Cost (\$/yr)	\$2,262,000	\$2,262,000	\$1,280,000	\$1,280,000	\$1,280,000	\$1,280,000
Unit Cost (\$/acft)	\$1,131	\$1,131	\$640	\$640	\$640	\$640

### 5.38.22 Kempner WSC

#### Description of Supply

Kempner WSC has service area in portions of Coryell, Bell, Burnet (Region C) and Lampasas Counties. The WSC receives surface water supplies from the Brazos River Authority out of Lake Stillhouse Hollow, totaling 8,900 acft/yr; however the firm supply of those contracts is 4,822 acft/yr in 2020 and decreases over the planning period. Kempner WSC sells supplies to the cities of Kempner, Copperas Cove, Lampasas, as



well as to Salado WSC and Lampasas County-Mining. Shortages are projected for Kempner WSC in 2020. Table 4.3-20 in Chapter 4 includes additional information on contracts and water supplies.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Kempner WSC. Once BRA firms up supplies as shown in Chapter 5.38.2, Kempner WSC will be able to utilize its full contract amount up to 8,900 acft/yr.

- a. Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: 2020
  - Annual Cost: maximum of \$116,560 in 2070
  - Unit Cost: \$470/acft
- b. Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2
  - Cost Source: Section 5.38.2
  - Date to be Implemented: 2020
  - Total Project Cost: borne by BRA
  - Unit Cost: already contracted supplies

**Table 5.38-24. Recommended Plan Costs by Decade for Kempner WSC**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(536)	(814)	(1,076)	(1,344)	(1,612)	(1,868)
<b>Conservation</b>						
Supply From Plan Element (acft/yr)	100	239	225	222	234	248
Annual Cost (\$/yr)	\$47,000	\$112,330	\$105,750	\$104,340	\$109,980	\$116,560
<i>Projected Surplus/(Shortage) after Conservation</i>	(458)	(723)	(1,078)	(1,440)	(1,792)	(2,125)
<b>Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2</b>						
Supply From Plan Element (acft/yr)	4,078	4,206	4,251	4,492	4,552	4,647
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/yr)	—	—	—	—	—	—

### 5.38.23 City of Mineral Wells

#### Description of Supply

City of Mineral Wells obtains raw water from Lake Mineral Wells and additional surface water supplies from Palo Pinto County MWD No. 1 (Lake Palo Pinto). The city supplies treated water to ten water user groups in Palo Pinto County and Parker County (Region

C). The city supplies treated water from Lake Palo Pinto to its customers but does not have a water treatment plant to utilize supplies from Lake Mineral Wells. The City is projected to have enough supply through the planning period. Table 4.3-21 in Chapter 4 includes additional information on contracts and water supplies for Mineral Wells.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for Mineral Wells.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Unit Cost: \$496/acft
- Annual Cost: maximum of \$34,720 in 2020

**Table 5.38-25. Recommended Plan Costs by Decade for Mineral Wells**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	10	4	0	0	0	0
Conservation(Volume II, Chapter 2)						
Supply From Plan Element (acft/yr)	70	31	0	0	0	0
Annual Cost (\$/yr)	\$34,720	\$17,360	0	0	0	0
<i>Projected Surplus/(Shortage) after Conservation</i>	80	35	0	0	0	0

## 5.38.24 City of Round Rock

### Description of Supply

The City of Round Rock obtains its water supply from groundwater from the Edwards-BFZ (Northern Segment) Aquifer and contracts with the Brazos River Authority for water from Lake Georgetown and Stillhouse Hollow Reservoir. In addition the city utilizes reuse supplies and receives out of region supply from LCRA. Based on the available groundwater and surface water supply and existing contractual demand, the City of Round Rock is projected to have a shortage from 2030 through 2070. The shortages shown include projected needs for Williamson County Manufacturing. Table 4.3-22 in Chapter 4 includes additional information on contracts and water supplies for the City of Round Rock.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Round Rock.





- a. Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: before 2020
  - Unit Cost: \$474 / acft
- b. Additional Advanced Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: before 2020
  - Unit Cost: \$474 / acft
- c. Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2
  - Cost Source: Section 5.38.2
  - Date to be Implemented: 2020
  - Total Project Cost: borne by BRA
  - Unit Cost: already contracted supplies
- d. Brushy Creek RUA Water Supply Project
  - Cost Source: Volume II, Chapter 4.1
  - Date to be Implemented: Before 2020
  - Total Project Cost: \$102,995,000 (city's portion)
  - Unit Cost: \$976 / acft
- e. Little River OCR
  - Cost Source: Volume II, Chapter 4.7
    - Strategy could be supplied by the BRA System Operation, dependent on permit approval by TCEQ
  - Date to be Implemented: by 2050
  - Total Project Cost: \$487,611,000
  - Unit Cost: \$1,038/acft
- f. Alternative: Lake Granger ASR
  - Cost Source: Volume II, Chapter 10.4
  - Date to be Implemented: by 2070
  - Total Project Cost: \$99,820,000 (sum of 3 phases)
  - Unit Cost: \$368 acft in 2060

**Table 5.38-26. Recommended Plan Costs by Decade for the City of Round Rock**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	348	(5,702)	(14,028)	(24,227)	(34,874)	(46,089)
<b>Conservation (Volume II, Chapter 2)</b>						
Supply From Plan Element (acft/yr)	520	119	0	0	0	0
Annual Cost (\$/yr)	\$244,400	\$55,930	\$0	\$0	\$0	\$0
<i>Projected Surplus/(Shortage) after Conservation</i>	868	(5,821)	(14,028)	(24,227)	(34,874)	(46,089)
<b>Advanced Conservation (Volume II, Chapter 2)</b>						
Supply From Plan Element (acft/yr)	0	0	1,060	2,825	5,310	8,446
Annual Cost (\$/yr)	\$0	\$0	\$497,240	\$1,324,850	\$2,490,465	\$3,961,318
Projected Surplus/(Shortage) after Additional Advanced Conservation	(1,307)	(7,783)	(12,968)	(21,402)	(29,564)	(37,643)
<b>Firm up Supplies through BRA Little River System Strategies-see Section 5.38.2</b>						
Supply From Plan Element (acft/yr)	—	122	361	1,626	1,943	2,443
Annual Cost (\$/yr)	—	\$0	\$0	\$0	\$0	\$0
Unit Cost (\$/yr)	—	\$0	\$0	\$0	\$0	\$0
<b>Brushy Creek RUA Water Supply Project (Volume II, Chapter 4.1)</b>						
Supply From Plan Element (acft/yr)	24,400	24,400	24,400	24,400	24,400	24,400
Annual Cost (\$/yr)	\$23,819,000	\$23,819,000	\$15,201,000	\$15,201,000	\$15,201,000	\$15,201,000
Unit Cost (\$/yr)	\$976	\$976	\$623	\$623	\$623	\$623
<b>Little River OCR (Volume II, Chapter 4.7)</b>						
Supply From Plan Element (acft/yr)	—	—	—	—	3,300	10,800
Annual Cost (\$/yr)	—	—	—	—	\$3,425,400	\$11,210,400
Unit Cost (\$/yr)	—	—	—	—	\$1,038	\$1,038
<b>Alternative: Lake Granger ASR (Volume II, Chapter 10.4)</b>						
Supply From Plan Element (acft/yr)	—	—	—	—	9,050	9,050
Annual Cost (\$/yr)	—	—	—	—	\$3,334,000	\$3,334,000
Unit Cost (\$/yr)	—	—	—	—	\$368	\$368

### 5.38.25 City of Stamford

#### Description of Supply

The City of Stamford located in Jones and Haskell counties has contracts to provide supply to nearby water user groups including a raw water contact with Haskell County Steam-Electric. The existing supply is constrained by treatment capacity to 1,458 acft/yr, however, the City is projected to have surpluses through 2070. Table 4.3-23 in Chapter 4 includes additional information on contracts and water supplies for the City of Stamford.



## Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for the City of Stamford.

- a. Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: 2020
  - Unit Cost: \$470 / acft

**Table 5.38-27. Recommended Plan Costs by Decade for Stamford**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	2,218	2,067	1,927	1,782	1,640	1,501
<b>Conservation(Volume II, Chapter 5.2)</b>						
Supply From Plan Element (acft/yr)	40	105	172	246	316	344
Annual Cost (\$/yr)	\$18,701	\$49,576	\$80,928	\$115,420	\$148,628	\$161,538
<i>Projected Surplus/(Shortage) after Conservation</i>	2,258	2,172	2,099	2,028	1,956	1,845

### 5.38.26 City of Sweetwater

#### Description of Supply

Groundwater supplies for the City of Sweetwater are obtained from the Dockum Aquifer. Surface water supplies which are considered by the city to be unreliable include Oak Creek Reservoir (Region F, Colorado River Basin), Lake Trammel, and Lake Sweetwater. Firm yield supplies from Oak Creek Reservoir are zero. The long-term, firm annual supply from the City’s Champion Well Field is about 2,540 acft/yr. The City of Sweetwater is projected to have supply shortages through 2070. Table 4.3-24 in Chapter 4 includes additional information on contracts and water supplies for the City of Sweetwater.

## Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Sweetwater.

- a. Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: Before 2020
  - Unit Cost: \$496 / acft
- b. Oak Creek Reservoir Conjunctive Use (Volume 2, Chapter 6.2)
  - Cost Source: 2016 Region F Water Plan

- Date to be Implemented: before 2020
  - Total Project Cost: No cost
  - Unit Cost: none
- c. Purchase from Abilene
- Cost Source: (Volume II, Chapter 12)
  - Date to be Implemented: before 2020
  - Total Project Cost: \$13,036,000 for transmission facilities
  - Unit Cost: \$815/acft assuming wholesale rate plus transmission

**Table 5.38-28. Recommended Plan Costs by Decade for the City of Sweetwater**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(2,188)	(2,381)	(2,544)	(2,762)	(2,969)	(3,184)
<b>Conservation(Volume II, Chapter 2)</b>						
Supply From Plan Element (acft/yr)	39	0	0	0	0	0
Annual Cost (\$/yr)	\$18,330	\$0	\$0	\$0	\$0	\$0
<i>Projected Surplus/(Shortage) after Conservation</i>	(2,149)	(2,381)	(2,544)	(2,762)	(2,969)	(3,184)
<b>Oak Creek Reservoir Conjunctive Use (Volume II, Chapter 6.2)</b>						
Supply From Plan Element (acft/yr)	1,575	1,575	1,575	1,575	1,575	1,575
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/yr)	—	—	—	—	—	—
<b>Purchase from Abilene (Volume II, Chapter 12)</b>						
Supply From Plan Element (acft/yr)	742	974	1,137	1,355	1,562	1,777
Annual Cost (\$/yr)	\$604,730	\$793,810	\$228,537	\$272,355	\$313,962	\$357,177
Unit Cost (\$/yr)	\$815	\$815	\$201	\$201	\$201	\$201

### 5.38.27 City of Temple

#### Description of Supply

The City of Temple has contracts with the Brazos River Authority for 30,453 acft/yr of raw water and an additional 10,100 acft/yr from a run-of-the-river water right (Certificate of Adjudication 12-2938). The BRA contract can yield a reliable supply of 23,542 acft/yr and the City’s water right can provide a reliable supply up to 1,869 acft/yr (supplies from the right increase over time due to sedimentation in the upstream Lake Belton and increased wastewater treatment plant discharges). A few water supply corporations provide water to customers inside the city limits, and these supplies have been accounted for in the supply to the city as a WUG. The City provides supply to the Cities of Little River-Academy, Morgans Point Resort, and Troy. The City’s water treatment plants have an annual average capacity of 27,955 acft. The water supply plan for Little River-Academy includes Temple supplying an additional 180 acft/yr of treated water by



2030. The City has a contract to supply effluent from its wastewater treatment plan to a new generating station owned by Panda Power.

The City of Temple is projected to have supply shortages through 2070. Table 4.3-25 in Chapter 4 includes additional information on contracts and water supplies for the City of Temple.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Temple.

- a. Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: Before 2020
  - Unit Cost: \$474 / acft
- b. Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2
  - Cost Source: Section 5.38.2
  - Date to be Implemented: 2020
  - Total Project Cost: borne by BRA
  - Unit Cost: already contracted supplies

**Table 5.38-29. Recommended Plan Costs by Decade for the City of Temple**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	2,223	(2,084)	(4,554)	(8,448)	(11,780)	(13,518)
<b>Conservation(Volume II, Chapter 2)</b>						
Supply From Plan Element (acft/yr)	914	2,740	5,015	7,724	10,771	11,850
Annual Cost (\$/yr)	\$433,105	\$1,298,837	\$2,376,991	\$3,660,947	\$5,105,344	\$5,616,738
<i>Projected Surplus/(Shortage) after Conservation</i>	3,137	656	461	(724)	(1,009)	(1,668)
<b>Firm up of Supplies through BRA Little River System Strategies-see Section 5.38.2</b>						
Supply From Plan Element (acft/yr)	6,563	8,021	7,497	8,221	8,357	6,929
Annual Cost (\$/yr)	\$0	\$0	\$0	\$0	\$0	\$0
Unit Cost ( \$/acft)	\$0	\$0	\$0	\$0	\$0	\$0

### 5.38.28 City of Waco

#### Description of Supply

The City of Waco obtains its surface water supply from Lake Waco, in which it owns water rights, and from Lake Brazos on the Brazos River. The City supplies several neighboring communities and has sufficient water supply to meet its municipal and regional needs without conservation through 2060. Waco has a projected shortage of

2,730 acft in 2070. Table 4.3-26 in Chapter 4 includes additional information on contracts and water supplies for the City of Waco.

The City has demonstrated a commitment to provide regional water supply in McLennan County, and has plans to extend regional water supplies beyond the 2070 planning horizon by actively pursuing a reuse program. Since the 2011 Brazos G Regional Plan, Waco Metropolitan Area Regional Sewerage System (WMARSS) has constructed the Sandy Creek Energy Associates (SCEA) Project which provides 15,000 acft/yr of treated effluent from the WMARSS Central Wastewater Treatment Plant to the SCEA power plant. WMARSS continues to pursue the development of four wastewater reuse systems to supply reuse water to customers. The Year 2011 effluent from WMARSS was 25,355 acft/yr (22.6 MGD). The Year 2070 estimated effluent available from WMARSS is projected to be 36,370 acft/yr (32.5 MGD), which includes the 15,000 acft/yr of sales to the Sandy Creek Project.

### Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Waco.

- a. Conservation
  - Cost Source: Volume II, Chapter 2
  - Date to be Implemented: Before 2020
  - Unit Cost: \$474 / acft
- b. McLennan County ASR
  - Cost Source: Volume II, Chapter 10.5
  - Date to be Implemented: 2020
  - Total Project Cost: \$43,940,000
  - Unit Cost: \$677/ acft

**Table 5.38-30. Recommended Plan Costs by Decade for the City of Waco**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	11,457	8,661	6,144	3,233	312	(2,730)
<b>Conservation (Volume II, Chapter 2)</b>						
Supply From Plan Element (acft/yr)	1,462	4,033	6,781	9,781	11,940	12,554
Annual Cost (\$/yr)	\$692,979	\$1,911,441	\$3,214,161	\$4,636,431	\$5,659,560	\$5,950,518
<i>Projected Surplus/(Shortage) after Conservation</i>	12,919	12,694	12,925	13,014	12,252	9,824
<b>McLennan County ASR (Volume II, Chapter 10.5)</b>						
Supply From Plan Element (acft/yr)	8,000	8,000	8,000	8,000	8,000	8,000
Annual Cost (\$/yr)	\$5,416,000	\$5,416,000	\$1,744,000	\$1,744,000	\$1,744,000	\$1,744,000
Unit Cost (\$/yr)	\$677	\$677	\$218	\$218	\$218	\$218

## Reuse Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to meet water needs for the City of Waco:

- a. WMARSS- Bullhide Creek Reuse
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: 2020
  - Total Project Cost: \$4,657,000
  - Unit Cost: \$381/acft
- b. WMARSS- Bellmead/Lacy-Lakeview Reuse
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: 2020
  - Total Project Cost: \$ \$5,768,000
  - Unit Cost: \$324/acft
- c. WMARSS- Flat Creek Reuse
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: 2020
  - Total Project Cost: \$9,371,000
  - Unit Cost: \$205/acft
- d. Alternative: WMARSS- North Reuse
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: 2020
  - Total Project Cost: \$21,945,000
  - Unit Cost: \$1,009/acft
- e. Alternative. WMARSS- East Reuse
  - Cost Source: Volume II, Chapter 3
  - Date to be Implemented: 2020
  - Total Project Cost: \$8,970,000
  - Unit Cost: \$869 / acft

**Table 5.38-31. Recommended Plan Costs by Decade for the City of Waco for Reuse Supplies**

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(6,530)	(6,630)	(6,730)	(6,930)	(7,130)	(7,430)
<b>WMARSS-Bullhide Reuse (Volume II, Chapter 3)</b>						
Supply From Plan Element (acft/yr)	1,681	1,671	1,671	1,671	1,671	1,671
Annual Cost (\$/yr)	\$641,000	\$641,000	\$251,000	\$251,000	\$251,000	\$251,000
Unit Cost (\$/yr)	\$381	\$381	\$150	\$150	\$150	\$150
<b>WMARSS-Bellmead/Lacy Lakeview Reuse (Volume II, Chapter 3)</b>						
Supply From Plan Element (acft/yr)	2,240	2,240	2,240	2,240	2,240	2,240
Annual Cost (\$/yr)	\$725,000	\$725,000	\$242,000	\$242,000	\$242,000	\$242,000
Unit Cost (\$/yr)	\$324	\$324	\$108	\$108	\$108	\$108
<b>WMARSS-Flat Creek Reuse (Volume II, Chapter 3)</b>						
Supply From Plan Element (acft/yr)	7,847	7,847	7,847	7,847	7,847	7,847
Annual Cost (\$/yr)	\$1,609,000	\$1,609,000	\$825,000	\$825,000	\$825,000	\$825,000
Unit Cost (\$/yr)	\$205	\$205	\$105	\$105	\$105	\$105
<b>Alternative: WMARSS-North Reuse (Volume II, Chapter 3)</b>						
Supply From Plan Element (acft/yr)	3,360	3,360	3,360	3,360	3,360	3,360
Annual Cost (\$/yr)	\$3,390,000	\$3,390,000	\$1,554,000	\$1,554,000	\$1,554,000	\$1,554,000
Unit Cost (\$/yr)	\$1,009	\$1,009	\$463	\$463	\$463	\$463
<b>Alternative: WMARSS-East Reuse (Volume II, Chapter 3)</b>						
Supply From Plan Element (acft/yr)	208	208	208	208	208	208
Annual Cost (\$/yr)	\$180,752	\$180,752	\$39,728	\$39,728	\$39,728	\$39,728
Unit Cost (\$/yr)	\$869	\$869	\$191	\$191	\$191	\$191