

5.3 Brazos County Water Supply Plan

Table 5.3-1 lists each water user group in Brazos 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 5.3-1. Brazos County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Bryan	(4,578)	(19,650)	Projected shortage - see plan below.
City of College Station	(8,874)	(13,360)	Projected shortage - see plan below.
Texas A&M University	104	124	Projected shortage - see plan below.
Wellborn SUD	1,785	(434)	Projected shortage - see plan below.
Wickson Creek SUD	1,201	64	Projected surplus
County-Other	40	46	Projected surplus
Manufacturing	1,078	1,078	Projected surplus
Steam-Electric	20	20	Projected shortage in 2020 – see plan below.
Mining	207	826	Projected surplus
Irrigation	6,336	6,336	Projected surplus
Livestock	0	0	No projected surplus or shortage

5.3.1 City of Bryan

Description of Supply

The City of Bryan obtains its water supply from groundwater from the Carrizo-Wilcox and Sparta Aquifers. The city also provides water supply for Brazos County Manufacturing, Brazos County Steam-Electric, Wellborn SUD, and Wickson Creek SUD. Shortages are projected beginning in year 2030 for the City of Bryan.

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 Bryan. Associated costs are included for each strategy. Conservation is recommended to reduce usage to a goal of 140 gpcd.

- a. Conservation
 - Cost Source: Volume II
 - Date to be Implemented: by 2030

- Annual Cost: maximum of \$1,393,972 in 2070
- Unit Cost: \$560/acft
- b. Wellfield Expansion in Brazos County – Carrizo-Wilcox Aquifer
 - Cost Source: Volume II
 - Date to be Implemented: by 2030
 - Project Cost: \$34,718,000
 - Unit Cost: \$471/acft
- c. Bryan ASR – Carrizo-Wilcox Aquifer
 - Cost Source: Volume II
 - Date to be Implemented: 2030
 - Project Cost: \$72,404,000
 - Unit Cost: \$445/acft
- d. Direct Non-Potable Reuse – Option 1
 - Cost Source: Volume II
 - Date to be Implemented: 2030
 - Project Cost: \$11,092,000
 - Unit Cost: \$2,450/acft
- e. Alternative: Indirect Potable Reuse – Option 2
 - Cost Source: Volume II
 - Date to be Implemented: 2030
 - Project Cost: \$41,105,000
 - Unit Cost: \$2,439/acft
- f. Alternative: Wellfield Expansion in Robertson County – Carrizo-Wilcox Aquifer
 - Cost Source: Volume II
 - Date to be Implemented: by 2030
 - Project Cost: \$51,281,000
 - Unit Cost: \$523/acft

Table 5.3-2. Recommended Plan Costs by Decade for City of Bryan

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	215	(1,896)	(4,578)	(8,034)	(12,323)	(19,650)
Conservation						
Supply From Plan Element (acft/yr)	0	1,311	1,606	1,719	1,988	2,489
Annual Cost (\$/yr)	\$0	\$734,000	\$899,000	\$963,000	\$1,113,000	\$1,394,000
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	215	(585)	(2,972)	(6,315)	(10,335)	(17,161)
Wellfield Expansion in Brazos County – Carrizo-Wilcox Aquifer						
Supply From Plan Element (acft/yr)	–	7,501	7,501	7,501	7,501	7,501
Annual Cost (\$/yr)	–	\$3,536,000	\$3,536,000	\$1,093,000	\$1,093,000	\$1,093,000
Unit Cost (\$/acft)	–	\$471	\$471	\$146	\$146	\$146
Bryan ASR – Carrizo-Wilcox Aquifer						
Supply From Plan Element (acft/yr)	–	6,000	6,000	6,000	8,500	10,500
Annual Cost (\$/yr)	–	\$6,515,000	\$6,515,000	\$1,421,000	\$1,421,000	\$1,421,000
Unit Cost (\$/acft)	–	\$445	\$445	\$97	\$97	\$97
Indirect Potable Reuse – Option 2						
Supply From Plan Element (acft/yr)	–	2,419	2,419	2,419	2,419	2,419
Annual Cost (\$/yr)	–	\$5,899,000	\$5,899,000	\$3,007,000	\$3,007,000	\$3,007,000
Unit Cost (\$/acft)	–	\$2,439	\$2,439	\$1,243	\$1,243	\$1,243
Alternative: Wellfield Expansion in Robertson County – Carrizo-Wilcox Aquifer						
Supply From Plan Element (acft/yr)	–	9,973	9,973	9,973	9,973	9,973
Annual Cost (\$/yr)	–	\$5,217,000	\$5,217,000	\$1,609,000	\$1,609,000	\$1,609,000
Unit Cost (\$/acft)	–	\$523	\$523	\$161	\$161	\$161

5.3.2 City of College Station

Description of Supply

The City of College Station obtains its water supply from groundwater from the Carrizo-Wilcox and Sparta Aquifers. The city provides water supply for Brazos County Manufacturing. Shortages are projected beginning in year 2030 for the City of College Station.

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 College Station. Associated costs are included for each strategy. Conservation is recommended to reduce usage to a goal of 140 gpcd. This goal is reached after 2030.

- a. Conservation
 - Cost Source: Volume II
 - Date to be Implemented: by 2030
 - Annual Cost: \$131,155
 - Unit Cost: \$560/acft
- b. College Station ASR
 - Cost Source: Volume II
 - Date to be Implemented: by 2030
 - Project Cost: \$86,514,000
 - Unit Cost: \$3,216/acft
- c. Groundwater Development – Carrizo-Wilcox Aquifer
 - Cost Source: Volume II
 - Date to be Implemented: by 2040
 - Project Cost: \$43,914,000
 - Unit Cost: \$513/acft
- d. Direct Potable Reuse
 - Cost Source: Volume II
 - Date to be Implemented: by 2030
 - Project Cost: \$84,177,000
 - Unit Cost: \$1,325

Table 5.3-3. Recommended Plan Costs by Decade for City of College Station

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	413	(3,492)	(8,874)	(13,436)	(13,379)	(13,360)
Conservation						
Supply From Plan Element (acft/yr)	–	234	–	–	–	–
Annual Cost (\$/yr)	–	\$131,000	–	–	–	–

Table 5.3-3. Recommended Plan Costs by Decade for City of College Station

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	413	(3,258)	(8,874)	(13,436)	(13,379)	(13,360)
College Station ASR						
Supply From Plan Element (acft/yr)	–	3,640	3,640	3,640	3,640	3,640
Annual Cost (\$/yr)	–	\$11,705,000	\$11,705,000	\$5,618,000	\$5,618,000	\$4,222,000
Unit Cost (\$/acft)	–	\$3,216	\$3,216	\$1,543	\$1,543	\$1,160
Groundwater Development: Carrizo-Wilcox						
Supply From Plan Element (acft/yr)	–	–	5,234	9,695	9,796	9,796
Annual Cost (\$/yr)	–	–	\$5,030,000	\$4,974,000	\$1,940,000	\$1,940,000
Unit Cost (\$/acft)	–	–	\$961	\$513	\$198	\$198
Direct Potable Reuse						
Supply From Plan Element (acft/yr)	–	8,232	8,232	8,232	8,232	8,232
Annual Cost (\$/yr)	–	\$10,909,000	\$10,909,000	\$4,986,000	\$4,986,000	\$4,986,000
Unit Cost (\$/acft)	–	\$1,325	\$1,325	\$606	\$606	\$606

5.3.3 Texas A&M University

Description of Supply

Texas A&M University obtains its water supply from groundwater from the Sparta and Carrizo-Wilcox Aquifers. A shortage is projected only for 2020. This need will remain unmet in the plan. Needs remain unmet in 2020. While not a strategy recommended by the Brazos G RWPG, the impacts of the unmet needs can be mitigated through demand management in the event of a supply shortage prior to the recommended water management strategies coming online.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Texas A&M University. Associated costs are included. Conservation is recommended to reduce usage to a goal of 140 gpcd.

a. Conservation

- Cost Source: Volume II
- Date to be Implemented: by 2030
- Annual Cost: maximum of \$1,352,435 in 2070
- Unit Cost: \$560/acft

b. Groundwater Development - Sparta Aquifer

- Cost Source: Volume II
- Date to be Implemented: by 2040
- Project Cost: \$4,931,000
- Unit Cost: \$768/acft

Table 5.3-4. Recommended Plan Costs by Decade for Texas A&M University

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(99)	43	104	120	124	124
Conservation						
Supply From Plan Element (acft/yr)	0	560	1,072	1,557	2,006	2,415
Annual Cost (\$/yr)	\$0	\$314,000	\$600,000	\$872,000	\$1,123,000	\$1,352,000
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(99)	603	1,176	1,677	2,130	2,539
Groundwater Development – Sparta Aquifer						
Supply From Plan Element (acft/yr)	–	–	638	638	638	638
Annual Cost (\$/yr)	–	–	\$490,000	\$490,000	\$143,000	\$143,000
Unit Cost (\$/acft)	–	–	\$768	\$768	\$224	\$224

5.3.4 Wellborn SUD

Description of Supply

Wellborn SUD is located in Brazos and Robertson counties and currently obtains water from the Carrizo-Wilcox Aquifer and through contracts with BRA and the City of Bryan. Wellborn SUD has sufficient supplies but is constrained by its treatment plant capacity resulting in a shortage beginning in 2070. With advanced conservation, however, the projected shortage can be met.

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 Wellborn SUD. Associated costs are included. Conservation is recommended to reduce usage to a goal of 140 gpcd.

a. Conservation

- Cost Source: Volume II
- Date to be Implemented: by 2030
- Annual Cost: \$420,440 in 2070
- Unit Cost: \$560/acft

Table 5.3-5. Recommended Plan Costs by Decade for Wellborn SUD

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	3,883	2,351	1,785	1,121	358	(434)
Conservation						
Supply From Plan Element (acft/yr)	0	424	591	622	683	751
Annual Cost (\$/yr)	—	\$237,000	\$331,000	\$348,000	\$382,000	\$421,000
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	3,883	2,351	1,785	1,121	358	317

5.3.5 Wickson Creek SUD

Wickson Creek SUD is located in multiple counties (Grimes, Robertson, and Brazos). The balances shown in Table 5.3-1 represent the cumulative totals for Wickson Creek SUD. Supplies are obtained from the Sparta, Carrizo, and Yegua-Jackson Aquifers and is purchased from the City of Bryan. The entity also provides supply to Brazos and Grimes County Manufacturing. No shortages are projected for Wickson Creek SUD and no change in water supply is recommended. Conservation was considered; however, the entity’s usage is below the selected goal of 140 gpcd.

5.3.6 County-Other

Brazos County-Other entities obtain water supply from groundwater from the Carrizo and Queen City Aquifers. This supply is projected to be sufficient through the planning period and no change in water supply is recommended. Conservation was considered; however, the entity’s usage is below the selected goal of 140 gpcd.

5.3.7 Manufacturing

Water supply for manufacturing in Brazos County is obtained from nearby WUGs and wells within the Carrizo and Sparta Aquifers. Manufacturing is projected to have a surplus in water supply through the planning period.

5.3.8 Steam-Electric

Description of Supply

Supplies for Steam-Electric demand in Brazos County are obtained through groundwater from the Sparta and the Carrizo Aquifers and from Bryan Utilities Lake. Brazos County Steam-Electric is projected to have a shortage in year 2020.

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 Brazos County Steam-Electric.

Leave Needs Unmet:

- Cost Source: Cost of not meeting needs – see Appendix G
- Date to be Implemented: 2020

Table 5.3-6. Recommended Plan Costs by Decade for Brazos County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	(1)	18	20	20	20	20
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost (\$/yr)	—	—	—	—	—	—
<i>Projected Surplus/(Shortage) after Conservation (acft/yr)</i>	(1)	18	20	20	20	20
Leave Needs Unmet (acft/yr)	(1)	—	—	—	—	—

5.3.9 Mining

Description of Supply

Brazos County Mining operations obtain supply from the Yergua-Jackson Aquifer and are projected to have a surplus throughout the planning period.

5.3.10 Irrigation

Description of Supply

Brazos County Irrigation is supplied by Sparta, Carrizo, Yegua-Jackson, and Brazos River Alluvium groundwater and from run-of-river diversion rights from the Brazos River and contracts with BRA. Surpluses of over 6,000 acft/yr are projected for irrigation beginning in year 2020.

Table 5.3-7. Recommended Plan Costs by Decade for Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
<i>Projected Surplus/(Shortage) (acft/yr)</i>	6,258	6,328	6,336	6,336	6,336	6,336
BRA System Operation Surplus						
Supply From Plan Element (acft/yr)	348	348	348	348	348	348
Annual Cost (\$/yr)	\$26,448	\$26,448	\$26,448	\$26,448	\$26,448	\$26,448
Unit Cost (\$/acft)	\$76	\$76	\$76	\$76	\$76	\$76



5.3.11 Livestock

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

This page intentionally left blank.