5.2 Bosque County Water Supply Plan

Table 5.2-1 lists each water user group in Bosque 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 5.2-1. Bosque County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1] 2040 (acft/yr)	Surplus/(Shortage)[1] 2070 (acft/yr)	Comment
Childress Creek WSC	139	124	Projected surplus
City of Clifton	59	(70)	Projected shortage - see plan below.
Cross Country WSC			See McLennan County
Highland Park WSC	(102)	(116)	Projected shortage - see plan below.
HILCO United Services			See Hill County
City of Meridian	228	167	Projected surplus
Mustang Valley WSC	(30)	(52)	Projected shortage - see plan below.
Smith Bend WSC	108	130	Projected surplus
City of Valley Mills	28	11	Projected surplus
County-Other	39	0	Demand equals supply
Manufacturing	235	235	Projected surplus
Steam-Electric	3,621	3,621	Projected surplus
Mining	(726)	(655)	Projected shortage - see plan below.
Irrigation	(1,366)	(1,366)	Projected shortage - see plan below.
Livestock	0	0	Demand equals supply

1 – From Tables C-3 and C-4, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.2.1 Childress Creek WSC

Description of Supply

Childress Creek WSC obtains its water supply from groundwater from the Trinity Aquifer. No shortages are projected for the Childress Creek 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 additional regional needs. Associated Childress Creek WSC costs are included for the Bosque County Regional Project. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Bosque County Regional Project

- Cost Source: Volume II
- Date to be Implemented: before 2030
- Project Cost: $8,030,000 for Childress Creek WSC portion
- Unit Cost: $3,488/acft

Table 5.2-2. Recommended Plan Costs by Decade for Childress Creek WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*169*	*147*	*139*	*133*	*128*	*124*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*169*	*147*	*139*	*133*	*128*	*124*
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	203	203	203	203	203	203
Annual Cost ($/yr)	$708,000	$708,000	$333,000	$333,000	$207,000	$207,000
Unit Cost ($/acft)	$3,488	$3,488	$1,640	$1,640	$1,020	$1,020

5.2.2 City of Clifton

Description of Supply

The City of Clifton obtains its water supply from groundwater from the Trinity Aquifer and from surface water from the North Bosque River. The City of Clifton owns water rights on the North Bosque River and diverts water into a 500 acft off-channel reservoir. Based on the estimated availability of groundwater and surface water to the City, shortages are projected for the City beginning in 2060.

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 County-Other entities. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II
- Date to be Implemented: before 2030
- Annual Cost: maximum of $42,731 in 2040; Unit cost of $560/acft

b. Bosque County Regional Project – includes expansion of the Clifton OCR and WTP

- Cost Source: Volume II

- Date to be Implemented: before 2030
- Project Cost:$10,852,000 for the City's portion
- Unit Cost: $2,567/acft

Table 5.2-3. Recommended Plan Costs by Decade for City of Clifton

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*214*	*120*	*59*	*13*	*(30)*	*(70)*
Conservation						
Supply From Plan Element (acft/yr)	0	53	76	71	71	71
Annual Cost ($/yr)	$0	$29,445	$42,731	$39,912	$39,749	$39,805
Projected Surplus/(Shortage) after Conservation	*214*	*120*	*59*	*13*	*41*	*1*
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	397	397	397	397	397	397
Annual Cost ($/yr)	$1,019,000	$1,019,000	$512,000	$512,000	$341,000	$341,000
Unit Cost ($/acft)	$2,567	$2,567	$1,290	$1,290	$859	$859

5.2.3 Highland Park WSC

Description of Supply

Highland Park WSC obtains its water supply from groundwater from the Trinity Aquifer, and has a projected shortage from 2020 through 2070.

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 projected water supply shortages. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Annual Cost: $42,011 in 2070; Unit Cost of $560/acft

b. Groundwater Development – Trinity Aquifer
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Project Cost: $1,160,000
   - Unit Cost: $1,232/acft

Table 5.2-4. Recommended Plan Costs by Decade for Highland Park WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(82)*	*(95)*	*(102)*	*(108)*	*(112)*	*(116)*
Conservation						
Supply From Plan Element (acft/yr)	0	15	31	47	61	75
Annual Cost ($/yr)	$0	$8,553	$17,210	$26,063	$34,072	$42,011
Projected Surplus/(Shortage) after Conservation	*(82)*	*(80)*	*(71)*	*(61)*	*(51)*	*(41)*
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	82	82	82	82	82	82
Annual Cost ($/yr)	$101,000	$101,000	$19,000	$19,000	$19,000	$19,000
Unit Cost ($/acft)	$1,232	$1,232	$232	$232	$232	$232

5.2.4 City of Meridian

Description of Supply

The City of Meridian obtains its water supply from groundwater from the Trinity Aquifer and has a contract to purchase treated water from the City of Clifton. No shortages are projected for the City of Meridian.

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 any unforeseen water needs that may arise. Associated costs are included for each strategy. Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Bosque County Regional Project – includes expansion of the Clifton OCR and WTP
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Project Cost: $6,407,000 for the City's portion
   - Unit Cost: $2,665/acft

Table 5.2-5. Recommended Plan Costs by Decade for City of Meridian

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/ (Shortage) (acft/yr)	*265*	*253*	*249*	*246*	*243*	*241*
Conservation						

Table 5.2-5. Recommended Plan Costs by Decade for City of Meridian

Plan Element	2020	2030	2040	2050	2060	2070
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/ (Shortage) after Conservation	*265*	*253*	*249*	*246*	*243*	*241*
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	224	224	224	224	224	224
Annual Cost ($/yr)	$597,000	$597,000	$298,000	$298,000	$197,000	$197,000
Unit Cost ($/acft)	$2,665	$2,665	$1,221	$1,221	$879	$879

5.2.5 Mustang Valley WSC

Description of Supply

The Mustang Valley WSC service area is primarily in Bosque County but also serves a small portion of Coryell County. The WSC obtains all of its water supply from Trinity Aquifer groundwater. Based on the groundwater supply available, the City of Valley Mills is projected to have a shortage beginning in year 2030 and increasing throughout the planning period. The surplus/shortages shown in Table 5.2-6 represent the cumulative totals for Mustang Valley WSC.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, conservation is the recommended water management strategy to meet water needs for Mustang Valley WSC. Associated costs are included below.

a. Conservation

- Cost Source: Volume II
- Date to be Implemented: before 2030
- Annual Cost: maximum of $78,318 in 2070; Unit Cost of $560/acft

Table 5.2-6. Recommended Plan Costs by Decade for Mustang Valley WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*19*	*(14)*	*(30)*	*(38)*	*(47)*	*(52)*
Conservation						
Supply From Plan Element (acft/yr)	0	39	81	122	139	140
Annual Cost ($/yr)	$0	$21,650	$45,275	$68,117	$77,714	$78,318
Projected Surplus/(Shortage) after Conservation	*19*	*25*	*51*	*83*	*92*	*88*

5.2.6 Smith Bend WSC

Description of Supply

Smith Bend WSC obtains all of its water supply from Trinity Aquifer groundwater. No shortages are projected for the WSC throughout the planning period.

Water Supply Plan

Due to the lack of needs, no water management strategies are currently recommended for Smith Bend WSC. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.2.7 City of Valley Mills

Description of Supply

The City of Valley Mills service area is primarily in Bosque County but also serves a small portion of McLennan County. The City obtains all of its water supply from groundwater from the Trinity Aquifer. No shortages are projected for the City of Valley Mills throughout the planning period. The surpluses shown in Table 5.2-7 represent the cumulative totals for the City of Valley Mills (including Bosque and McLennan Counties).

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended to improve the City's water system reliability. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Annual Cost: maximum of $27,173 in 2070; Unit Cost of $560/acft

b. Bosque County Regional Project
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Project Cost:$7,923,000 for the City's portion
   - Unit Cost: $3,753/acft

Table 5.2-7. Recommended Plan Costs by Decade for City of Valley Mills

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*57*	*37*	*28*	*21*	*16*	*11*
Conservation						

Table 5.2-7. Recommended Plan Costs by Decade for City of Valley Mills

Plan Element	2020	2030	2040	2050	2060	2070
Supply From Plan Element (acft/yr)	0	22	45	48	47	49
Annual Cost ($/yr)	$0	$12,492	$25,058	$26,755	$26,569	$27,173
Projected Surplus/(Shortage) after Conservation	*57*	*37*	*28*	*21*	*16*	*11*
Bosque County Regional Project						
Supply From Plan Element (acft/yr)	182	182	182	182	182	182
Annual Cost ($/yr)	$683,000	$683,000	$313,000	$313,000	$188,000	$188,000
Unit Cost ($/acft)	$3,753	$3,753	$1,720	$1,720	$1,033	$1,033

5.2.8 County-Other

Description of Supply

Bosque County-Other entities obtain water supply from groundwater from the Trinity Aquifer. No shortages are projected for County-Other throughout the planning period.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the Bosque County Regional Project is the recommended water management strategy to improve County-Other water system reliability. Associated costs are included below. Conservation was considered, however the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Bosque County Regional Project

- Cost Source: Volume II
- Date to be Implemented: before 2030
- Project Cost:$5,573,000 for the County-Other portion
- Unit Cost: $6,984/acft

Table 5.2-8. Recommended Plan Costs by Decade for County-Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*117*	*61*	*39*	*30*	*26*	*0*
Conservation						
Supply From Plan Element (acft/yr)	–	–	–	–	–	–
Annual Cost ($/yr)	–	–	–	–	–	–
Projected Surplus/(Shortage) after Conservation	*117*	*61*	*39*	*30*	*26*	*0*
Bosque County Regional Project						

Table 5.2-8. Recommended Plan Costs by Decade for County-Other

Plan Element	2020	2030	2040	2050	2060	2070
Supply From Plan Element (acft/yr)	64	64	64	64	64	64
Annual Cost ($/yr)	$447,000	$447,000	$187,000	$187,000	$99,000	$99,000
Unit Cost ($/acft)	$6,984	$6,984	$2,922	$2,922	$1,547	$1,547

5.2.9 Manufacturing

Water supply for manufacturing in Bosque County is obtained by purchase from a city or water supply corporation, from private wells operated by the manufacturing entity, or by limited surface water supplies. Childress Creek WSC, the City of Clifton, and the City of Hamilton sell groundwater to Bosque County manufacturing entities. No shortages are projected for manufacturing in Bosque County.

5.2.10 Steam-Electric

The water supply for Steam-Electric use in Bosque County consists of surface water contracts with the Brazos River Authority. No shortages are projected for Steam-Electric from the year 2020 through 2070.

5.2.11 Mining

Description of Supply

Mining operations in Bosque County are supplied by Trinity Groundwater. Shortages are projected for Bosque County-Mining beginning in 2020 through 2070.

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 Bosque County-Mining. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Annual Cost: not determined

b. Leave needs unmet
   - Cost Source: Cost of not meeting needs – see Appendix H
   - Date to be Implemented: before 2030

Table 5.2-9. Recommended Plan Costs by Decade for Bosque County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(806)*	*(905)*	*(726)*	*(706)*	*(667)*	*(655)*
Conservation						
Supply From Plan Element (acft/yr)	59	104	132	131	128	127
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(747)*	*(801)*	*(594)*	*(575)*	*(539)*	*(528)*
Leave Needs Unmet						
Supply From Plan Element (acft/yr)	747	801	594	575	539	528
Annual Cost ($/yr)	—	—	—	—	—	—
Unit Cost ($/acft)	—	—	—	—	—	—

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

5.2.12 Irrigation

Description of Supply

Bosque County Irrigation is supplied by Trinity Groundwater and run of the river water rights. Irrigation is projected to have shortages beginning in 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 Bosque County-Irrigation. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II
- Date to be Implemented: before 2020
- Annual Cost: maximum of 52,283; Unit Cost: $209/acft

b. Groundwater Development – Trinity Aquifer

- Cost Source: Volume II
- Date to be Implemented: before 2030
- Project Cost: $2,560,000
- Unit Cost: $194

Table 5.2-10. Recommended Plan Costs by Decade for Bosque County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,366)*	*(1,366)*	*(1,366)*	*(1,366)*	*(1,366)*	*(1,366)*
Conservation						
Supply From Plan Element (acft/yr)	107	179	250	250	250	250
Annual Cost ($/yr)	$22,407	$37,345	$52,283	$52,283	$52,283	$52,283
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,259)*	*(1,187)*	*(1,116)*	*(1,116)*	*(1,116)*	*(1,116)*
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	1,259	1,259	1,259	1,259	1,259	1,259
Annual Cost ($/yr)	$244,000	$244,000	$64,000	$64,000	$64,000	$64,000
Unit Cost ($/acft)	$194	$194	$51	$51	$51	$51

5.2.13 Livestock

Livestock demand is met by local water supply and is projected to meet needs through 2070. No changes in Bosque County Livestock water supply are recommended.

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