5.24 McLennan County Water Supply Plan

Table 5.24-1 lists each water user group in McLennan 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 5.24-1. McLennan County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
City of Bellmead	206	45	Projected surplus
City of Beverly Hills	0	0	Demand equals supply
City of Bruceville-Eddy	1,040	929	Projected surplus
Chalk Bluff WSC	466	471	Projected surplus
Coryell City Water Supply District			See Coryell County
City of Crawford	(3)	(7)	Projected shortage – see plan below
Cross Country WSC	109	(138)	Projected shortage – see plan below
Elm Creek WSC			See Bell County
City of Gholson	749	709	Projected surplus
City of Golinda			See Falls County
City of Hallsburg	0	0	Projected surplus
City of Hewitt	(211)	(231)	Projected shortage – see plan below
City of Lacy-Lakeview	261	95	Projected surplus
City of Lorena	95	1	Projected surplus
City of Mart	(182)	(245)	Projected shortage – see plan below
City of McGregor	2,004	1,759	Projected surplus
City of Moody	404	347	Projected surplus
North Bosque WSC	(265)	(628)	Projected shortage – see plan below
City of Riesel	(11)	(19)	Projected shortage – see plan below
City of Robinson	(720)	(1,909)	Projected shortage – see plan below
Tri-County SUD			See Falls County
Valley Mills			See Bosque County
City of Waco	12,925	9,827	Projected surplus – see Chapter 5.38
City of West	888	850	Projected surplus
West Brazos WSC			See Falls County
Western Hills WS	306	270	Projected surplus
City of Woodway	(20)	(103)	Projected shortage – see plan below
County-Other	301	340	Projected surplus

Table 5.24-1. McLennan County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Manufacturing	(2,204)	(2,834)	Projected shortage – see plan below
Steam-Electric	20,224	17,129	Projected surplus
Mining	(2,786)	(3,942)	Projected shortage – see plan below
Irrigation	(2,325)	(2,363)	Projected shortage – see plan below
Livestock	0	0	Demand equals supply

1 – From Tables C-47 and C-48, Appendix C – Comparison of Water Demands with Water Supplies to Determine Needs.

5.24.1 City of Bellmead

Description of Supply

The City of Bellmead obtains its water supply from the Trinity Aquifer. The City of Bellmead also has contracted with the City of Waco for supplemental surface water supply from Lake Waco, but has no plans to utilize the contract. No shortages are projected for the City of Bellmead; however, the City of Waco and the City of Bellmead are considering alternate water supply in order to reduce Bellmead's dependence on Trinity Aquifer groundwater. The purchase of supplemental reuse water from WMARSS is recommended to reduce demands on Trinity Aquifer.

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 Bellmead.

a. Purchase reuse water from WMARSS (Bellmead/Lacy-Lakeview Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers.

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: by 2020
- Project Cost:$2,884,000 (City's portion)
- Unit Cost: $324/acft

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.24-2. Recommended Plan Costs by Decade for City of Bellmead

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*261*	*233*	*206*	*163*	*105*	*45*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*261*	*233*	*206*	*163*	*105*	*45*
WMARSS Bellmead/Lacy Lakeview Reuse						
Supply From Plan Element (acft/yr)	1,120	1,120	1,120	1,120	1,120	1,120
Annual Cost ($/yr)	$362,500	$362,500	$121,000	$121,000	$121,000	$121,000
Unit Cost ($/acft)	$324	$324	$108	$108	$108	$108
Projected Surplus/(Shortage) after Reuse (acft/yr)	*1,381*	*1,353*	*1,326*	*1,283*	*1,225*	*1,165*

5.24.2 City of Beverly Hills

The City of Beverly Hills obtains its water supply from surface water from the City of Waco. No shortages are projected for the City of Beverly Hills and no change in water supply is recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.3 City of Bruceville-Eddy

Description of Supply

The City of Bruceville-Eddy obtains its water supply from the Trinity Aquifer and has a contract for surface water from Lake Belton from Bluebonnet WSC for supplemental water supplies. No shortages are projected for the City of Bruceville-Eddy. This WUG is located in multiple counties (McLennan and Falls). The surpluses shown in Table 5-24.1 represent the cumulative totals for the City of Bruceville-Eddy.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategy is recommended for Bruceville-Eddy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Unit Cost: $474/acft
- Annual Cost: maximum of $18,486 in 2070

b. Water Supply from Bluebonnet WSC

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2030
- Project Cost: assumes infrastructure in place to deliver supply
- Unit Cost: $500/acft (wholesale water rate from Bluebonnet WSC)

Table 5.24-3. Recommended Plan Costs by Decade for City of Bruceville-Eddy

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,084*	*1,064*	*1,040*	*999*	*968*	*929*
Conservation						
Supply From Plan Element (acft/yr)	11	33	38	36	38	40
Annual Cost ($/yr)	$5,214	$15,168	$17,538	$17,064	$17,538	$18,486
Projected Surplus/(Shortage) after Conservation	*1,095*	*1,097*	*1,078*	*1,035*	*1,006*	*969*
Water Supply from Bluebonnet WSC						
Supply From Plan Element (acft/yr)	—	5	14	39	51	71
Annual Cost ($/yr)	—	$2,500	$7,000	$19,500	$25,500	$35,500
Unit Cost ($/acft)	—	$500	$500	$500	$500	$500

5.24.4 Chalk Bluff WSC

Chalk Bluff WSC obtains its water supply from the Trinity Aquifer. No shortages are projected for the Chalk Bluff WSC. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.5 City of Crawford

Description of Supply

The City of Crawford obtains its water supply from the Trinity Aquifer and run-of-the-river diversion from Tonk Creek into Rock Quarry Lake. A small shortage is projected beginning in 2020.

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 Crawford.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $13,746 in 2070
- Unit Cost: $474/acft

Table 5.24-4. Recommended Plan Costs by Decade for City of Crawford

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(5)*	*(3)*	*(3)*	*(3)*	*(5)*	*(7)*
Conservation						
Supply From Plan Element (acft/yr)	7	16	27	28	28	29
Annual Cost ($/yr)	$3,318	$7,584	$12,798	$13,272	$13,272	$13,746
Projected Surplus/(Shortage) after Conservation	*2*	*13*	*24*	*25*	*23*	*22*

5.24.6 Cross Country WSC

Description of Supply

Cross Country WSC obtains its water supply from groundwater from the Trinity Aquifer. Based on the available groundwater supply, Cross Country WSC is projected to have a shortage from 2050 through the year 2070. This WUG is located in multiple counties (McLennan and Bosque). The surplus/shortages shown in Table 5.24-1 represent the cumulative totals for Cross Country WSC.

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 Cross Country WSC.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $14,000 in 2070
- Unit Cost: $474/acft

b. Purchase water from City of Waco

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: before 2050
- Project Cost: $2,579,000
- Unit Cost: assumed unit cost of $3,273/acft ($10.15/1,000 gallons) for wholesale treated water, including transmission costs

Table 5.24-5. Recommended Plan Costs by Decade for Cross Country WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*114*	*109*	*109*	*(127)*	*(132)*	*(138)*
Conservation						
Supply From Plan Element (acft/yr)	20	24	14	10	8	8
Annual Cost ($/yr)	$9,759	$11,954	$6,820	$5,178	$4,157	$4,100
Projected Surplus/(Shortage) after Conservation	*133*	*133*	*122*	*(117)*	*(124)*	*(130)*
Purchase from Waco						
Supply From Plan Element (acft/yr)	—	—	—	150	150	150
Annual Cost ($/yr)	—	—	—	$491,000	$491,000	$275,000
Unit Cost ($/yr)	—	—	—	$3,273	$3,273	$1,833

5.24.7 City of Gholson

The City of Gholson obtains its water supply from groundwater from the Trinity Aquifer through Gholson WSC. A surplus is projected through the year 2070; and, there are no changes recommended to the water supply. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.8 City of Hallsburg

The City of Hallsburg obtains its water supply from groundwater from the Trinity Aquifer through H&H WSC. The WSC has sufficient supplies to meet the city's projected demands.

Water Supply Plan

To reduce demands on the Trinity Aquifer in McLennan County, the following water supply management strategy is an alternative for the City of Hallsburg.

a. Alternative: Purchase reuse water from WMARSS (Waco East Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost: $250,970 (City's portion)
- Unit Cost: $869/acft

Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.24-6. Recommended Plan Costs by Decade for City of Hallsburg

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
Alternative: WMARSS Waco East Reuse						
Supply From Plan Element (acft/yr)	31	31	31	31	31	31
Annual Cost ($/yr)	$26,939	$26,939	$5,921	$5,921	$5,921	$5,921
Unit Cost ($/acft)	$869	$869	$191	$191	$191	$191
Projected Surplus/(Shortage) after Reuse (acft/yr)	*31*	*31*	*31*	*31*	*31*	*31*

5.24.9 City of Hewitt

Description of Supply

The City of Hewitt obtains its water supply from groundwater from the Trinity Aquifer, and has a contract with the City of Waco for a supplemental supply from Lake Waco. Conservation and purchase of supplemental reuse water from WMARSS is recommended to reduce demands on water supplied from the Trinity Aquifer and by the City of Waco. The City of Waco contract is structured to "meet" the water needs of Hewitt. The shortages for Hewitt shown in Table 5.24-7 are artificially created to allow conservation savings to reduce the supplies needed from the City of Waco.

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 Hewitt. Associated costs are included for each strategy.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $112,338 in 2030
- Unit Cost: $474/acft

b. Purchase reuse water from WMARSS (Bulhide Creek Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers.

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost: $4,657,000
- Unit Cost: $381/acft

Table 5.24-7. Recommended Plan Costs by Decade for City of Hewitt

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(87)*	*(237)*	*(211)*	*(204)*	*(216)*	*(231)*
Conservation						
Supply From Plan Element (acft/yr)	87	237	211	204	216	231
Annual Cost ($/yr)	$41,000	$112,000	$100,000	$97,000	$102,000	$109,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*
WMARSS – Bullhide Creek Reuse						
Supply From Plan Element (acft/yr)	1,223	1,223	1,223	1,223	1,223	1,223
Annual Cost ($/yr)	$470,000	$470,000	$183,000	$183,000	$183,000	$183,000
Unit Cost ($/yr)	$381	$381	$149	$149	$149	$149
Projected Surplus/(Shortage) after Reuse (acft/yr)	*1,223*	*1,223*	*1,223*	*1,223*	*1,223*	*1,223*

5.24.10 City of Lacy-Lakeview

Description of Supply

The City of Lacy-Lakeview obtains its water supply from the City of Waco. Based on the current contracted amount, the City of Lacy-Lakeview is projected to have a surplus of supplies. Supplemental reuse water from WMARSS is recommended to reduce demands on water supplied by the City of Waco.

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 Lacy-Lakeview.

a. Purchase reuse water from WMARSS (Bellmead/Lacy-Lakeview Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers.

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: before 2020
- Project Cost:$2,884,000 (City's portion)
- Unit Cost: $324/acft

Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.24-8. Recommended Plan Costs by Decade for the City of Lacy-Lakeview

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*348*	*303*	*261*	*212*	*154*	*95*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*348*	*303*	*261*	*212*	*154*	*95*
WMARSS – Bellmead/Lacy-Lakeview Reuse						
Supply From Plan Element (acft/yr)	1,120	1,120	1,120	1,120	1,120	1,120
Annual Cost ($/yr)	$362,500	$362,500	$121,000	$121,000	$121,000	$121,000
Unit Cost ($/yr)	$324	$324	$108	$108	$108	$108
Projected Surplus/(Shortage) after Reuse (acft/yr)	*1,468*	*1,423*	*1,381*	*1,332*	*1,274*	*1,215*

5.24.11 City of Lorena

Description of Supply

The City of Lorena obtains its water supply from a contract with the Brazos River Authority (treated by the City of Robinson) and the Trinity Aquifer. No shortages are projected for the City of Lorena; however, purchase of supplemental reuse water from WMARSS is recommended to reduce demands on groundwater from the Trinity Aquifer.

Water Supply Plan

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

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: before 2020
- Annual Cost: maximum of $5,000 in 2020
- Unit Cost: $474/acft

b. Purchase reuse water from WMARSS (Bullhide Creek Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost:$2,884,000 (City's portion)
- Unit Cost: $324/acft

Table 5.24-9. Recommended Plan Costs by Decade for the City of Lorena

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*153*	*123*	*95*	*66*	*33*	*1*
Conservation						
Supply From Plan Element (acft/yr)	10	3	—	—	—	—
Annual Cost ($/yr)	$4,700	$1,400	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*163*	*126*	*95*	*66*	*33*	*1*
WMARSS – Bullhide Creek Reuse						
Supply From Plan Element (acft/yr)	448	448	448	448	448	448
Annual Cost ($/yr)	$171,000	$171,000	$67,000	$67,000	$67,000	$67,000
Unit Cost ($/yr)	$381	$381	$149	$149	$149	$149
Projected Surplus/(Shortage) after Conservation (acft/yr)	*611*	*574*	*543*	*514*	*481*	*449*

5.24.12 City of Mart

Description of Supply

The City of Mart obtains its water supply from the Trinity Aquifer and Lake Mart. Based on the available groundwater supply and little or no firm yield from Lake Mart, the City of Mart is projected to have a shortage through the year 2070. The City is located in multiple counties (McLennan and Limestone). The surplus/shortages shown in Table 5.24-1 represent the cumulative totals for the City of Mart.

Water Supply Plan

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

a. Purchase Water Supply from City of Waco

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Project Cost: $5,275,000
- Unit Cost: $3,028/acft for wholesale treated water, including transmission costs

b. Alternative: Purchase reuse water from WMARSS (Waco East Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost:$1,085,000 (City's portion)
- Unit Cost: $869/acft

Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.24-10. Recommended Plan Costs by Decade for the City of Mart

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(150)*	*(167)*	*(182)*	*(200)*	*(222)*	*(245)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(150)*	*(167)*	*(182)*	*(200)*	*(222)*	*(245)*
Purchase Water Supply from City of Waco						
Supply From Plan Element (acft/yr)	250	250	250	250	250	250
Annual Cost ($/yr)	$757,000	$757,000	$316,000	$316,000	$316,000	$316,000
Unit Cost ($/yr)	$3,028	$3,028	$1,264	$1,264	$1,264	$1,264
Alternative: WMARSS – Waco East Reuse						
Supply From Plan Element (acft/yr)	134	134	134	134	134	134
Annual Cost ($/yr)	$116,000	$116,000	$26,000	$26,000	$26,000	$26,000
Unit Cost ($/yr)	$869	$869	$191	$191	$191	$191

5.24.13 City of McGregor

The City of McGregor obtains its water supply from the Trinity Aquifer and from surface water from Lake Belton via Bluebonnet WSC. No shortages are projected for the City of McGregor and no changes in water supply are recommended. Conservation was

considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.14 City of Moody

The City of Moody obtains its water supply from the Trinity Aquifer and from surface water from Lake Belton via a contract with the Brazos River Authority. Bluebonnet WSC treats and delivers water to the City from Lake Belton. No shortages are projected for the City of Moody, and no changes in water supply are recommended. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.15 North Bosque WSC

Description of Supply

North Bosque WSC obtains its water supply from the Trinity Aquifer. Based on the available groundwater supply, North Bosque WSC is projected to have a shortage through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for North Bosque WSC. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: maximum of $224,000 in 2070
   - Unit Cost: $474/acft

b. Purchase Water Supply from City of Waco
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: 2020
   - Project Cost: $2,203,000
   - Unit Cost: $2,325/acft for wholesale treated water, including transmission costs

Table 5.24-11. Recommended Plan Costs by Decade for North Bosque WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(14)*	*(146)*	*(265)*	*(385)*	*(507)*	*(628)*
Conservation						
Supply From Plan Element (acft/yr)	33	99	183	280	390	452
Annual Cost ($/yr)	$16,476	$49,108	$90,667	$138,754	$193,295	$224,365
Projected Surplus/(Shortage) after Conservation (acft/yr)	*20*	*(47)*	*(82)*	*(105)*	*(117)*	*(175)*
Purchase Water Supply from City of Waco						
Supply From Plan Element (acft/yr)	—	200	200	200	200	200
Annual Cost ($/yr)	—	$465,000	$465,000	$281,000	$281,000	$281,000
Unit Cost ($/yr)	—	$2,325	$2,325	$1,405	$1,405	$1,405

5.24.16 City of Riesel

Description of Supply

The City of Riesel obtains its water supply from the Trinity Aquifer. Based on the available groundwater supply, the City of Riesel is projected to have a shortage through the year 2070.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Riesel. Associated costs are included for each strategy.

a. Additional Purchase from RMS WSC

- Cost Source: Volume II, Chapter 12
- Date to be Implemented: 2020
- Annual Cost: $19,540
- Unit Cost: $977/acft (RMS WSC wholesale water rate)

b. Alternative: Purchase reuse water from WMARSS (Waco East Reuse). The reuse supply will reduce demands for landscape irrigation at existing or future parks, schools, ball fields, and other green spaces. Reuse water may also potentially supply existing or future industrial customers.

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost:$348,000 (City's portion)
- Unit Cost: $869/acft

Conservation was also considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Table 5.24-12. Recommended Plan Costs by Decade for City of Riesel

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(11)*	*(11)*	*(11)*	*(12)*	*(15)*	*(19)*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*(11)*	*(11)*	*(11)*	*(12)*	*(15)*	*(19)*
Purchase Water Supply from RMS WSC						
Supply From Plan Element (acft/yr)	20	20	20	20	20	20
Annual Cost ($/yr)	$19,540	$19,540	$19,540	$19,540	$19,540	$19,540
Unit Cost ($/yr)	$977	$977	$977	$977	$977	$977
Alternative: WMARSS East Reuse						
Supply From Plan Element (acft/yr)	43	43	43	43	43	43
Annual Cost ($/yr)	$37,000	$37,000	$8,000	$8,000	$8,000	$8,000
Unit Cost ($/yr)	$869	$869	$191	$191	$191	$191

5.24.17 City of Robinson

Description of Supply

The City of Robinson obtains its water supply from the Trinity Aquifer, the Brazos River and the City of Waco. Western Brazos WSC also serves some customers within the city limits of Robinson, which is considered a supply for the City's demand. The city also has a 140 acft/yr contract to provide treated supply to the City of Lorena, which utilizes Lorena's contract with the BRA. Based on the constrained supply amounts, the City of Robinson is projected to have shortages. Although the City has sufficient raw water supply to meet its future needs, the City's water treatment plant has an annual average capacity of 1,125 acft.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for the City of Robinson. Associated costs are included for each strategy.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: 2020
   - Annual Cost: maximum $312,000 in 2070
   - Unit Cost: $474/acft

b. Expand Water Treatment Plant (4 MGD)
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2030
   - Project Cost: $13,153,000
   - Unit Cost: Max of $912/acft

Table 5.24-13. Recommended Plan Costs by Decade for City of Robinson

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*72*	*(346)*	*(720)*	*(1,109)*	*(1,511)*	*(1,909)*
Conservation						
Supply From Plan Element (acft/yr)	91	316	507	549	605	663
Annual Cost ($/yr)	$43,000	$150,000	$240,000	$260,000	$287,000	$314,000
Projected Surplus/(Shortage) after Conservation	*163*	*(30)*	*(213)*	*(560)*	*(907)*	*(1,246)*
Expand WTP (4 MGD)						
Supply From Plan Element (acft/yr)	—	2,240	2,240	2,240	2,240	2,240
Annual Cost ($/yr)	—	$2,042,000	$2,042,000	$941,000	$941,000	$941,000
Unit Cost ($/yr)	—	$912	$912	$420	$420	$420

5.24.18 City of Waco

The City of Waco obtains its water supply from surface water from Lake Waco, for which it owns water rights. The City supplies several neighboring communities with treated water. A portion of the city's treated wastewater is also contracted to irrigation and industrial customers in the County. The City is projected to have a surplus of supplies through the planning period. Refer to Chapter 5.38 for the City's plan as a Wholesale Water Provider.

5.24.19 City of West

Description of Supply

The City of West obtains its water supply from the Trinity Aquifer and the City of Waco. Surpluses are projected through 2070.

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 West.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum $10,870 in 2030
- Unit Cost: $474/acft

Table 5.24-14. Recommended Plan Costs by Decade for City of West

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*898*	*893*	*888*	*879*	*865*	*850*
Conservation						
Supply From Plan Element (acft/yr)	15	23	13	7	6	6
Annual Cost ($/yr)	$7,110	$10,902	$6,162	$3,318	$2,844	$2,844
Projected Surplus/(Shortage) after Conservation	*913*	*916*	*901*	*886*	*871*	*856*

5.24.20 Western Hills WS

Western Hills WS obtains its water supply from the Trinity Aquifer. Based on the available groundwater supply, Western Hills WS is projected to have a surplus of supply through 2070. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

5.24.21 City of Woodway

Description of Supply

The City of Woodway obtains its water supply from the Trinity Aquifer, from Lake Waco from the City of Waco, and from Lake Belton from Bluebonnet WSC. The City provides 2 acft/yr for McLennan County Manufacturing. The supply contracts are adequate to meet demands; however under drought conditions, Bluebonnet WSC may not be able to provide the full contract amount to all of its customers, including Woodway.

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 Woodway.

a. Conservation

- Cost Source: Volume II, Chapter 2
- Date to be Implemented: 2020
- Annual Cost: maximum $896,000 in 2070
- Unit Cost: $474/acft

b. Water Supply from Bluebonnet WSC

- Cost Source: BRA to firm up water supply
- Date to be Implemented: 2030
- Project Cost: assumes infrastructure in place to deliver supply
- Unit Cost: $500/acft (wholesale water rate from Bluebonnet WSC)

Table 5.24-15. Recommended Plan Costs by Decade for City of Woodway

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*(7)*	*(20)*	*(57)*	*(74)*	*(103)*
Conservation						
Supply From Plan Element (acft/yr)	208	512	832	1,180	1,541	1,906
Annual Cost ($/yr)	$98,592	$242,688	$394,368	$559,320	$730,434	$903,444
Projected Surplus/(Shortage) after Conservation	*208*	*506*	*812*	*1,123*	*1,466*	*1,804*
Water Supply from Bluebonnet WSC						
Supply From Plan Element (acft/yr)	—	7	20	57	74	103
Annual Cost ($/yr)	—	$3,500	$10,000	$28,500	$37,000	$51,500
Unit Cost ($/acft)	—	$500	$500	$500	$500	$500

5.24.22 County-Other

Description of Supply

McLennan County-Other entities obtain water supply from groundwater from the Trinity Aquifer and surface water from Lake Belton and Lake Waco. Entities in County-Other provide additional supply to the cities of Hallsburg and Riesel, and provide supply to industrial customers in McLennan County. Various entities are dealing with elevated levels of arsenic in groundwater supplies and have been pursuing water management strategies through the FHLM WSC. Through a TWDB sponsored study coordinated by FHLM WSC, these entities have considered a regional brackish RO WTP in Limestone County, Carrizo-Wilcox Regional Groundwater in Limestone County, Tehuacana Reservoir, and supplies from City of Marlin (Brushy Creek Reservoir), and City of Waco. The recommended strategy is to provide for arsenic treatment for individual entities. This strategy does not provide new supply. Surpluses are projected through the year 2070.

Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water management strategies are recommended for McLennan County-Other.

a. Upgrade Treatment for Arsenic

Entities within County-Other for which Arsenic treatment is recommended include EOL WSC, LTG WSC, MS WSC, and RMS WSC. This is a treatment strategy and does not increase the supply available to these entities. Total treatment is estimated at 917 acft/yr.

- Cost Source: Volume II, Chapter 12.5
- Date to be Implemented: 2020
- Project Cost: $3,811,000
- Unit Cost: $1,021/acft

Table 5.24-16. Recommended Plan Costs by Decade for the McLennan County – Other

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*84*	*204*	*301*	*344*	*349*	*340*
Conservation						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	—	—	—	—	—	—
Projected Surplus/(Shortage) after Conservation	*84*	*204*	*301*	*344*	*349*	*340*
Upgrade Treatment for Arsenic						
Supply From Plan Element (acft/yr)	—	—	—	—	—	—
Annual Cost ($/yr)	$936,000	$936,000	$617,000	$617,000	$617,000	$617,000
Unit Cost ($/yr)	$1,021	$1,021	$673	$673	$673	$673

5.24.23 Manufacturing

Description of Supply

Water supply for manufacturing in McLennan County is obtained by purchase from a city or water supply corporation, from Trinity Aquifer wells operated by the manufacturing entity, and from run-of-river rights and Lake Waco. McLennan County Manufacturing is projected to have shortages beginning in 2020. However, purchase of supplemental reuse water from WMARSS is recommended to reduce demands on water supplied by the run-of-river rights, Lake Waco and groundwater from the Trinity Aquifer

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 McLennan County Manufacturing.

a. Conservation

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

b. WMARSS Flat Creek Reuse Project

- Cost Source: Volume II, Chapter 3
- Date to be Implemented: 2020
- Project Cost: None. City of Waco is the project sponsor. Entity will purchase from the City.
- Unit Cost: $205/acft

Table 5.24-17. Recommended Plan Costs by Decade for McLennan County – Manufacturing

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(1,664)*	*(1,916)*	*(2,204)*	*(2,417)*	*(2,664)*	*(2,834)*
Conservation						
Supply From Plan Element (acft/yr)	153	286	446	487	527	571
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(1,511)*	*(1,630)*	*(1,758)*	*(1,930)*	*(2,137)*	*(2,263)*
Purchase Reuse Supplies from WMARSS – Flat Creek Project						
Supply From Plan Element (acft/yr)	1,600	1,700	1,800	2,000	2,200	2,500
Annual Cost ($/yr)	$328,000	$349,000	$189,000	$210,000	$231,000	$263,000
Unit Cost ($/acft)	$205	$205	$105	$105	$105	$105
Projected Surplus/(Shortage) after Reuse (acft/yr)	*89*	*70*	*42*	*70*	*63*	*237*

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

5.24.24 Steam-Electric

McLennan County Steam-Electric obtains its water supply from Tradinghouse Reservoir and from WMARSS reuse. No shortage is projected for McLennan County Steam-Electric and no changes in water supply are recommended.

5.24.25 Mining

Description of Supply

Mining operations in McLennan County are supplied by Brazos River Alluvium groundwater. Demands for Mining are projected to increase significantly resulting in 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 McLennan County-Mining. Associated costs are included for each strategy.

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

b. WMARSS Flat Creek Reuse Project
   - Cost Source: Volume II, Chapter 3
   - Date to be Implemented: before 2030
   - Project Cost: None. City of Waco is the project sponsor. Entity will purchase from the City.
   - Unit Cost: $205

c. Brazos River Alluvium Development
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2030
   - Project Cost: $7,185,000
   - Unit Cost: Max of $364/acft (2020)

d. Alternative: BRA System Operation to McLennan County
   - Cost Source: BRA System Operations Supply (Volume II, Chapter 7.11)
     - Supply dependent on BRA obtaining the System Operations permit from TCEQ
   - Date to be Implemented: before 2030
   - Project Cost: Infrastructure assumed sufficient
   - Unit Cost: $65.65/acft

Table 5.24-18. Recommended Plan Costs by Decade for McLennan County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,264)*	*(2,726)*	*(2,786)*	*(3,234)*	*(3,558)*	*(3,942)*
Conservation						
Supply From Plan Element (acft/yr)	76	150	214	246	268	295
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(2,188)*	*(2,576)*	*(2,572)*	*(2,989)*	*(3,290)*	*(3,647)*
WMARSS Flat Creek Reuse Project						
Supply From Plan Element (acft/yr)	811	811	811	811	811	811
Annual Cost ($/yr)	$166,000	$166,000	$85,000	$85,000	$85,000	$85,000
Unit Cost ($/acft)	$205	$205	$105	$105	$105	$105
Projected Surplus/(Shortage) after Reuse (acft/yr)	*(1,377)*	*(1,765)*	*(1,761)*	*(2,178)*	*(2,479)*	*(2,836)*
Brazos River Alluvium						
Supply From Plan Element (acft/yr)	1,800	1,800	1,800	2,500	2,500	2,900
Annual Cost ($/yr)	$656,028	$656,028	$53,028	$291,311	$291,311	$708,732
Unit Cost ($/acft)	$364	$364	$29	$117	$117	$244
Alternative: BRA System Operation						
Supply From Plan Element (acft/yr)	—	—	—	1,050	1,050	1,050
Annual Cost ($/yr)	—	—	—	$68,933	$68,933	$68,933
Unit Cost ($/acft)	—	—	—	$65.65	$65.65	$65.65

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

5.24.26 Irrigation

Description of Supply

McLennan County Irrigation is supplied by groundwater from the Trinity Aquifer and the Brazos River Alluvium, 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 McLennan County-Irrigation.

a. Conservation
   - Cost Source: Volume II, Chapter 2
   - Date to be Implemented: before 2020
   - Annual Cost: $230/acft

b. Groundwater Development – Brazos River Alluvium
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: $16,763,000
   - Unit Cost: Max of $696/acft (2020)

c. Alternative – Groundwater Development – Trinity Aquifer
   - Cost Source: Volume II, Chapter 12
   - Date to be Implemented: before 2020
   - Project Cost: $11,477,000
   - Unit Cost: Max of $1,047 (2020)

d. Alternative – BRA System Operation to McLennan County
   - Cost Source: BRA System Operations Supply (Volume II, Chapter 7.11)
     - Supply dependent on BRA obtaining the System Operations permit from TCEQ
   - Date to be Implemented: 2020
   - Project Cost: Infrastructure assumed sufficient
   - Unit Cost: $65.65/ acft

Table 5.24-19. Recommended Plan Costs by Decade for McLennan County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,299)*	*(2,313)*	*(2,325)*	*(2,338)*	*(2,350)*	*(2,363)*
Conservation						
Supply From Plan Element (acft/yr)	146	244	341	341	340	340
Annual Cost ($/yr)	$34,000	$56,000	$78,000	$78,000	$78,000	$78,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(2,152)*	*(2,069)*	*(1,984)*	*(1,997)*	*(2,010)*	*(2,023)*
Groundwater Development – Brazos River Alluvium						
Supply From Plan Element (acft/yr)	2,200	2,200	2,200	2,200	2,200	2,200
Annual Cost ($/yr)	$1,531,732	$1,531,732	$123,732	$123,732	$123,732	$123,732
Unit Cost ($/acft)	$696	$696	$56	$56	$56	$56

Table 5.24-19. Recommended Plan Costs by Decade for McLennan County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Alternative: Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	1,000	1,000	1,000	1,000	1,000	1,000
Annual Cost ($/yr)	$1,047,405	$1,047,405	$86,405	$86,405	$86,405	$86,405
Unit Cost ($/acft)	$1,047	$1,047	$86	$86	$86	$86
Alternative: BRA System Operations						
Supply From Plan Element (acft/yr)	1,200	1,200	1,200	1,200	1,200	1,200
Annual Cost ($/yr)	$78,780	$78,780	$78,780	$78,780	$78,780	$78,780
Unit Cost ($/acft)	$65.65	$65.65	$65.65	$65.65	$65.65	$65.65

5.24.27 Livestock

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

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