5B.24 McLennan County Water Supply Plan

Table 5B.24-1 lists each water user group in McLennan County and their corresponding surplus or shortage in years 2030 and 2050. For each water user group with a projected shortage, a water supply plan has been developed and is presented in the following subsections. Water supply plans are also presented for some entities that need pumping/conveyance facilities to utilize their existing water resources, or to become a regional provider.

Table 5B.24-1.
McLennan County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)[1]		Comment
	2030 (acft/yr)	2050 (acft/yr)	
City of Bellmead	137	137	Projected surplus
City of Beverly Hills	0	0	Projected surplus
City of Bruceville-Eddy	33	33	Projected surplus
City of Crawford	93	109	Projected surplus
City of Gholson	24	29	Projected surplus
City of Hewitt	136	136	Projected surplus
City of Lacy-Lakeview	65	65	Projected surplus
City of Lorena	602	508	Projected surplus
City of Mart	37	0	Projected surplus
City of McGregor	(313)	(360)	Projected shortage – see plan below
City of Moody	232	233	Projected surplus
City of Northcrest	24	24	Projected surplus
City of Riesel	21	39	Projected surplus
City of Robinson	(551)	(615)	Projected shortage – see plan below
City of Valley Mills	1	1	Projected surplus
City of Waco	25,434	19,194	Projected surplus; possible regional provider – see plan below
City of West	(399)	(378)	Projected shortage – see plan below
City of Woodway	233	233	Projected surplus
County-Other	(4,029)	(3,785)	Projected shortage – see plan below
Manufacturing	(4,384)	(5,617)	Projected shortage – see plan below
Steam-Electric	0	0	No Projected Needs
Mining	(1,071)	(1,322)	Projected shortage – see plan below
Irrigation	22,267	22,267	Projected surplus
Livestock	0	0	No Projected Needs

[1] From Tables 4-24 and 4-48, Section 4 – Comparison of Water Demands with Water Supplies to Determine Needs.

5B.24.1 City of Bellmead

The City of Bellmead obtains its water supply from groundwater from the Trinity Aquifer. The city owns and operates four wells that serve as the city's primary supply. The City of Bellmead also has contracted with the City of Waco for supplemental surface water supply from Lake Waco. No shortages are projected for the City of Bellmead and no changes in water supply are recommended.

5B.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 changes in water supply are recommended.

5B.24.3 City of Bruceville-Eddy

The City of Bruceville-Eddy obtains its water supply from groundwater from the Trinity Aquifer. The city owns and operates three wells that serve as the primary supply. The City of Bruceville-Eddy also has contracted for surface water from Lake Belton from Bluebonnet WSC. No shortages are projected for the City of Bruceville-Eddy and no changes in water supply are recommended.

5B.24.4 City of Crawford

The City of Crawford obtains its water supply from groundwater from the Trinity Aquifer. The city owns and operates two wells that serve as the city's sole source supply. No shortages are projected for the City of Crawford and no changes in water supply are recommended.

5B.24.5 City of Gholson

The City of Gholson obtains its water supply from groundwater from the Trinity Aquifer. The city owns and operates two wells that serve as the city's sole source supply. No shortages are projected for the City of Gholson and no changes in water supply are recommended.

5B.24.6 City of Hewitt

The City of Hewitt obtains its water supply from groundwater from the Trinity Aquifer. The City owns and operates five wells that serve as the City's primary supply. The City of Hewitt also has contracted with the City of Waco for supplemental surface water supply from Lake Waco. No shortages are projected for the City of Hewitt and no changes in water supply are recommended.

5B.24.7 City of Lacy-Lakeview

The City of Lacy-Lakeview obtains its water supply from groundwater from the Trinity Aquifer and from surface water from Lake Waco. The City owns and operates one well and has contracted with the City of Waco for supplemental surface water supply from Lake Waco. No shortages are projected for the City of Bellmead and no changes in water supply are recommended.

5B.24.8 City of Lorena

The City of Lorena obtains its water supply from groundwater from the Trinity Aquifer. The City owns and operates two wells that serve as the City's sole source supply. No shortages are projected for the City of Lorena and no changes in water supply are recommended.

5B.24.9 City of Mart

The City of Mart obtains its water supply from groundwater from the Trinity Aquifer and from surface water from Lake Mart. The City owns and operates one well and treats and distributes water from Lake Mart to meet peak demands. No shortage is projected for the City of Mart and no changes in water supply are recommended.

5B.24.10 City of McGregor

5B.24.10.1 Description of Supply

The City of McGregor obtains its water supply from the Trinity Aquifer and from surface water from Lake Belton. The City owns and operates three wells and purchases water from Lake Belton through Bluebonnet WSC. The City of McGregor has also contracted with the City of Waco for supplemental surface water supply from Lake Waco. The City of McGregor has contracted for adequate supply of raw water from Lake Belton, however, the surface water

supply is limited by the infrastructure capacity to deliver water from Lake Belton to the City of McGregor.

5B.24.10.2 Options Considered

The City of McGregor has a shortage of 313 acft per year in 2030, which is about 28 percent of demand. Table 5B.24-2 lists the water management strategies, references to the report section discussing the strategy, total project cost, and unit costs that were considered for meeting the City of McGregor shortage.

Table 5B.24-2.
Water Management Strategies Considered for the City of McGregor

Option	Yield (acft/yr)	Approximate Cost[1]	
		Total	Unit ($/acft)
Additional Water Conservation (Section 5A.2)	56	$32,402/year	$574[2]
Infrastructure Capacity Expansion	360	$103,000[3]	$28[3]
No Action	-	$10,949,000*	$46,394*

[1] Unless otherwise noted, costs are Total Project Cost and Unit Cost ($/acft per year) for treated water delivered to the water supply entity or entities. Unit cost is for full utilization of project capacity.
[2] Source of Cost Estimate: Section 5A.2.
[3] Source of Cost Estimate: New estimate infrastructure expansion.
* Economic impact of not meeting shortage (i.e., "no action" alternative) in 2030 as estimated by TWDB.

5B.24.10.3 Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected shortages through 2050 of the City of McGregor:

- Infrastructure expansion to supply an additional 360 acft/yr. Expansion includes a pump station expansion.

5B.24.10.4 Costs

Costs of the recommended plan for the City of McGregor to meet 2050 shortages are:

a. Infrastructure expansion:
   - Cost Source: New cost estimate for infrastructure expansion
   - Date to be Implemented: By 2005
   - Total Project Cost: $103,000

- Annual Cost: $10,000

  The Cost Estimate includes a 1,000 gpm pump station expansion.

Table 5B.24-3.
Recommended Plan Costs by Decade for the City of McGregor

Plan Element	*2000*	*2010*	*2020*	*2030*	*2040*	*2050*
Infrastructure Expansion						
Projected Shortage (acft/yr)	(273)	(308)	(290)	(313)	(329)	(360)
Supply From Plan Element (acft/yr)	-	308	290	313	329	360
Annual Cost ($/yr)	-	$10,000	$10,000	$10,000	$2,000	$2,000
Unit Cost ($/acft)	-	$32	$34	$32	$6	$6

5B.24.11 City of Moody

The City of Moody obtains its water supply from groundwater from the Trinity Aquifer and from surface water from Lake Belton. The city owns and operates one well and purchases surface water from Lake Belton through Bluebonnet WSC. No shortages are projected for the City of Moody and no changes in water supply are recommended.

5B.24.12 City of Northcrest

The City of Northcrest obtains its water supply from groundwater from the Trinity Aquifer and from surface water from the City of Waco. No shortages are projected for the City of Northcrest and no changes in water supply are recommended.

5B.24.13 City of Riesel

The City of Riesel obtains its water supply from groundwater from the Trinity Aquifer through RMS WSC. No shortages are projected for the City of Riesel and no changes in water supply are recommended.

5B.24.14 City of Robinson

The City of Robinson obtains its water supply from groundwater from the Trinity Aquifer and from surface water from the Brazos River. The City owns and operates six wells and diverts and treats water from the Brazos River utilizing water rights acquired by the City. The City has constructed a portion of the total waters supply project that is permitted from the Brazos River

and the current surface water supply is limited by the infrastructure capacity to store water to provide sufficient firm yield.

5B.24.14.2 Options Considered

The City of Robinson has a shortage of 551 acft per year in 2030, which is about 45 percent of demand. Table 5B.24-4 lists the water management strategies, references to the report section discussing the strategy, total project cost, and unit costs that were considered for meeting the City of Robinson shortage.

Table 5B.24-4.
Water Management Strategies Considered for the City of Robinson

Option	Yield (acft/yr)	Approximate Cost[1]	
		Total	Unit ($/acft)
Additional Water Conservation (Section 5A.2)	61	$35,000/year	$574[2]
Infrastructure Capacity Expansion	615	$3,421,000	$405[3]
No Action	-	N/A*	N/A*

[1] Unless otherwise noted, costs are Total Project Cost and Unit Cost ($/acft per year) for treated water delivered to the water supply entity or entities. Unit cost is for full utilization of project capacity.
[2] Source of Cost Estimate: Section 5A.2.
[3] Source of Cost Estimate: New estimate infrastructure expansion.
* Economic impact of not meeting shortage (i.e., "no action" alternative) not available.

5B.24.14.3 Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected shortages through 2050 of the City of Robinson:

- Infrastructure expansion to supply an additional 615 acft/yr. Expansion includes additional off-channel reservoir storage.

5B.24.14.4 Costs

Costs of the recommended plan for the City of Robinson to meet 2050 shortages are:

a. Infrastructure expansion:
   - Cost Source: New cost estimate for infrastructure expansion
   - Date to be Implemented: By 2005
   - Total Project Cost: $3,421,000

- Annual Cost: $249,000

Table 5B.24-5.
Recommended Plan Costs by Decade for the City of Robinson

Plan Element	*2000*	*2010*	*2020*	*2030*	*2040*	*2050*
Infrastructure Expansion						
Projected Shortage (acft/yr)	(481)	(526)	(517)	(551)	(571)	(615)
Supply From Plan Element (acft/yr)	-	615	615	615	615	615
Annual Cost ($/yr)	-	$254,000	$254,000	$254,000	$5,000	$5,000
Unit Cost ($/acft)	-	$413	$413	$413	$8	$8

5B.24.15 City of Valley Mills

The City of Valley Mills obtains its water supply from groundwater from the Trinity Aquifer. The City lies primarily in Bosque County and a plan for water supply is included in the Bosque County section of this report.

5B.24.16 City of Waco

The City of Waco obtains its water supply from surface water from Lake Waco. The City of Waco owns water rights for Lake Waco and is participating in a project with the Brazos River Authority to enlarge the lake. The City supplies several neighboring communities and has sufficient water supply to meet its needs and the regional needs. No shortages are projected for the City of Waco and no changes in water supply are recommended.

5B.24.17 City of West

The City of West obtains its water supply from groundwater from the Trinity Aquifer. The City owns and operates four wells that serve as the City's primary supply. The City is considering an interconnection with the City of Waco for a supplemental supply.

5B.24.17.2 Options Considered

The City of West has a shortage of 399 acft per year in 2030. Table 5B.24-6 lists the water management strategies, references to the report section discussing the strategy, total project cost, and unit costs that were considered for meeting the City of West shortage.

Table 5B.24-6.
Water Management Strategies Considered for the City of West

Option	Yield (acft/yr)	Approximate Cost[1]	
		Total	Unit ($/acft)
Additional Water Conservation (Section 5A.2)	23	$13,000/year	$574[2]
Infrastructure Capacity Expansion – City of Waco Interconnection	451	$560,000[3]	$740[3]
No Action	-	N/A*	N/A*

[1] Unless otherwise noted, costs are Total Project Cost and Unit Cost ($/acft per year) for treated water delivered to the water supply entity or entities. Unit cost is for full utilization of project capacity.
[2] Source of Cost Estimate: Section 5A.2.
[3] Source of Cost Estimate: New estimate infrastructure expansion.
* Economic impact of not meeting shortage (i.e., "no action" alternative) not available.

5B.24.17.3 Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected shortages through 2050 of the City of West:

- Infrastructure expansion to supply an additional 451 acft/yr. Expansion includes a 6-inch pipeline to interconnect to the City of Waco.

5B.24.17.4 Costs

Costs of the recommended plan for the City of West to meet 2050 shortages are:

a. Infrastructure expansion:
   - Cost Source: New cost estimate for infrastructure expansion
   - Date to be Implemented: By 2005
   - Total Project Cost: $560,000
   - Annual Cost: $334,000

     The Cost Estimate includes 7.5 miles of 6-inch pipeline and purchase of treated water from the City of Waco at $650 per acft.

Table 5B.24-7.
Recommended Plan Costs by Decade for the City of West

Plan Element	*2000*	*2010*	*2020*	*2030*	*2040*	*2050*
Infrastructure Expansion						
Projected Shortage (acft/yr)	(469)	(451)	(419)	(399)	(385)	(378)
Supply From Plan Element (acft/yr)	-	451	451	451	451	451
Annual Cost ($/yr)	-	$334,000	$334,000	$334,000	$292,000	$292,000
Unit Cost ($/acft)	-	$740	$740	$740	$647	$647

5B.24.18 City of Woodway

The City of Woodway obtains its water supply from groundwater from the Trinity Aquifer and from surface water from Lake Belton. The City owns and operates six wells and purchases treated water from Lake Belton from the Bluebonnet WSC. The City of Woodway has also contracted with the City of Waco for supplemental surface water supply from Lake Waco. No shortage is projected for the City of Woodway and no changes in water supply are recommended.

5B.24.19 County-Other

5B.24.19.1 Description of Supply

McLennan County-Other obtains its water supply from groundwater from the Trinity Aquifer and from surface water supplied from the City of Waco to rural water supply corporations. A shortage of 4,029 acft is projected for County-Other in the year 2030.

5B.24.19.2 Options Considered

McLennan County-Other has a shortage of 4,029 acft per year in 2030. Table 5B.24-8 lists the water management strategies, references to the report section discussing the strategy, total project cost, and unit costs that were considered for meeting the McLennan County-Other shortage.

Table 5B.24-8.
Water Management Strategies Considered for County-Other

Option	Yield (acft/yr)	Approximate Cost[1]	
		Total	Unit ($/acft)
Additional Water Conservation (Section 5A.2)	298	$171,000/year	$574[2]
Water Supply from City of Waco	4,029	$2,724,000[3]	$736[3]
No Action	-	$17,158,000[4]	$18,080[4]

[1] Unless otherwise noted, costs are Total Project Cost and Unit Cost ($/acft per year) for treated water delivered to the water supply entity or entities. Unit cost is for full utilization of project capacity.
[2] Source of Cost Estimate: Section 5A.2.
[3] Source of Cost Estimate: New estimate for transmission line expansion.
[4] Economic impact of not meeting shortage (i.e., "no action") in 2030 as estimated by TWDB.

5B.24.19.3 Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected shortages through 2050 of County-Other:

- Water supply from City of Waco.

5B.24.19.4 Costs

Costs of the recommended plan for County–Other to meet 2050 shortages are:

a. Water supply from City of Waco:
   - Cost Source: New Cost Estimate for Infrastructure Expansion
   - Date to be Implemented: By Year 2005
   - Total Project Cost: $2,724,000
   - Annual Cost: $962,000

     The Cost Estimate includes 6-miles of 10-inch diameter pipeline, a pump station, and the cost of purchasing the water at a wholesale water rate of $650 per acft.

Table 5B.24-9.
Recommended Plan Costs by Decade for County-Other

Plan Element	*2000*	*2010*	*2020*	*2030*	*2040*	*2050*
Water Supply From City of Waco						
Projected Shortage (acft/yr)	(3,441)	(3,480)	(3,465)	(4,029)	(3,912)	(3,785)
Supply From Plan Element (acft/yr)	-	4,029	4,029	4,029	4,029	4,029
Annual Cost ($/yr)	-	$2,964,000	$2,964,000	$2,964,000	$2,717,000	$2,717,000
Unit Cost ($/acft)	-	$736	$736	$736	$674	$674

5B.24.20 Manufacturing

5B.24.20.1 Description of Supply

Water supply for Manufacturing in McLennan County is obtained by purchase from a city or water supply corporation or from private wells operated by the Manufacturing entity. Each of the cities and the rural area outside of the cities in McLennan County has the ability to supply the Manufacturing demand from surplus supplies available in the county. Although Manufacturing demand is shown to have a current shortage and through the year 2050, existing municipal supplies are and will continue to supply the needs of Manufacturing through the planning period, with surplus supplies from the City of Waco expected to provide the largest quantity of supply.

5B.24.20.2 Options Considered

McLennan County Manufacturing has a shortage of 4,384 acft per year in 2030. Table 5B.24-10 lists the water management strategies, references to the report section discussing the strategy, total project cost, and unit costs that were considered for meeting the McLennan County Manufacturing shortage.

Table 5B.24-10.
Water Management Strategies Considered for Manufacturing

Option	Yield (acft/yr)	Approximate Cost[1]	
		Total	Unit ($/acft)
Additional Water Conservation (Section 5A.2)	221	$127,000/year	$574[2]
Wastewater Reuse	3,462	$13,991,000	$326[3]
Water Supply from City of Waco	19,914	$2,858,000/year	$652[4]
No Action	-	$260,364,000*	$123,806*

[1] Unless otherwise noted, costs are Total Project Cost and Unit Cost ($/acft per year) for treated water delivered to the water supply entity or entities. Unit cost is for full utilization of project capacity.
[2] Source of Cost Estimate: Section 5A.2.
[3] Source of Cost Estimate: Unit Cost of Wastewater Reuse.
[4] Source of Cost Estimate: Estimated wholesale purchase price from the City of Waco.
* Economic impact of not meeting shortage (i.e., "no action" alternative) in 2030 as estimated by TWDB.

5B.24.20.3 Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected shortages through 2050 of Manufacturing:

- Water supply from City of Waco.

5B.24.20.4 Costs

Costs of the recommended plan for Manufacturing to meet 2050 shortages are:

a. Water supply from City of Waco:
   - Cost Source: Estimated wholesale purchase price for treated City of Waco water
   - Date to be Implemented: By Year 2005
   - Annual Cost: $2,858,000

Table 5B.24-11.
Recommended Plan Costs by Decade for McLennan County Manufacturing

Plan Element	2000	2010	2020	2030	2040	2050
Water Supply From City of Waco						
Projected Shortage (acft/yr)	(3,071)	(3,518)	(3,950)	(4,384)	(4,932)	(5,617)
Supply From Plan Element (acft/yr)	-	4,384	4,384	4,384	5,617	5,617
Annual Cost ($/yr)	-	$2,858,000	$2,858,000	$2,858,000	$3,662,000	$3,662,000
Unit Cost ($/acft)	-	$652	$652	$652	$652	$652

5B.24.21 Steam-Electric

Steam-Electric demand in McLennan County is associated with the Lake Creek and Tradinghouse Creek Power Plants owned and operated by Texas Utilities Company (TXU). The Lake Creek Power Plant is supplied by water from Lake Creek Reservoir that impounds runoff from the small upstream watershed and diversions from the Brazos River. Tradinghouse Creek Power Plant is supplied by water from Tradinghouse Creek Reservoir that impounds runoff from the Tradinghouse Creek watershed and also from diversions from the Brazos River. In addition to existing water rights on the Brazos River associated with each of the two projects, TXU has also contracted with the Brazos River Authority for water supply from the BRA System. No shortages are projected for Steam-Electric demands in McLennan County and no changes in water supply are recommended.

5B.24.22 Mining

5B.24.22.1 Description of Supply

Mining obtains its water supply from various sources including groundwater and surface water. There are sufficient supplies in McLennan County to meet Mining demands from the county-wide surplus.

5B.24.22.2 Options Considered

McLennan County Mining has a shortage of 1,071 acft per year in 2030, which is 100 percent of demand. Table 5B.24-12 lists the water management strategies, references to the report section discussing the strategy, total project cost, and unit costs that were considered for meeting the McLennan County Mining shortage.

Table 5B.24-12.
Water Management Strategies Considered for McLennan County Mining

Option	Yield (acft/yr)	Approximate Cost[1]	
		Total	Unit ($/acft)
Water Supply from City of Waco	19,914	$862,000/year	$652[2]
No Action	-	$3,506,000*	$3,273*

[1] Unless otherwise noted, costs are Total Project Cost and Unit Cost ($/acft per year) for treated water delivered to the water supply entity or entities. Unit cost is for full utilization of project capacity.

[2] Source of Cost Estimate: Estimated wholesale purchase price from the City of Waco.

* Economic impact of not meeting shortage (i.e., "no action" alternative) in 2030 as estimated by TWDB.

5B.24.22.3 Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, the following water supply plan is recommended to meet the projected shortages through 2050 of Mining:

- Water supply from City of Waco.

5B.24.22.4 Costs

Costs of the recommended plan for Mining to meet 2050 shortages are:

a. Water supply from City of Waco:
   - Cost Source: Estimated wholesale purchase price for treated City of Waco water
   - Date to be Implemented: By Year 2005
   - Annual Cost: $862,000

Table 5B.24-13.
Recommended Plan Costs by Decade for Mining

Plan Element	*2000*	*2010*	*2020*	*2030*	*2040*	*2050*
Water Supply From City of Waco						
Projected Shortage (acft/yr)	(750)	(833)	(952)	(1,071)	(1,190)	(1,322)
Supply From Plan Element (acft/yr)	-	1,071	1,071	1,071	1,322	1,322
Annual Cost ($/yr)	-	$862,000	$862,000	$862,000	$862,000	$862,000
Unit Cost ($/acft)	-	$652	$652	$652	$652	$652

5B.24.23 Irrigation

No shortage is projected for McLennan County Irrigation and no changes in water supply are recommended. Additional supply may be available for Irrigation use through implementation of the Big Creek Watershed Project.

5B.24.24 Livestock

No shortage is projected for McLennan County Livestock and no changes in water supply are recommended. Additional supply may be available for Livestock use through implementation of the Big Creek Watershed Project.