5.17 Johnson County Water Supply Plan

Table 5.17-1 lists each water user group in Johnson 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 5.17-1. Johnson County Surplus/(Shortage)

Water User Group	Surplus/(Shortage)		Comment
	2040 (acft/yr)	2070 (acft/yr)	
Acton MUD			See Hood County
City of Alvarado	1,912	1,728	Projected surplus
Bethany WSC	1,003	852	Projected surplus
Bethesda WSC	(751)	(2,255)	Projected shortage - see plan below.
City of Burleson	(2,037)	(5,204)	Projected shortage - see plan below.
City of Cleburne	(1,097)	(7,324)	Projected shortage - see plan below.
City of Crowley	(5)	(21)	Projected shortage - see plan below.
Double Diamond Utilities			See Hill County
City of Forth Worth	0	(949)	Projected shortage - see plan below.
City of Godley	(22)	(65)	Projected shortage - see plan below.
City of Grandview	156	82	Projected surplus
Johnson County SUD	1,477	(1,491)	Projected shortage - see plan below.
City of Keene	785	477	Projected surplus
City of Mansfield	(507)	(1,375)	Projected shortage - see plan below.
Mountain Peak SUD	(523)	(1,397)	Projected shortage - see plan below.
Parker WSC	123	(145)	Projected shortage - see plan below.
City of Rio Vista	120	4	Projected surplus
City of Venus	(411)	(654)	Projected shortage - see plan below.
County-Other	1,155	1,365	Projected surplus
Manufacturing	1,438	2,518	Projected surplus
Steam-Electric	(571)	(571)	Projected shortage - see plan below.
Mining	(68)	107	Projected surplus - see plan below.
Irrigation	(269)	(269)	Projected shortage - see plan below.
Livestock	0	0	No projected surplus or shortage

5.17.1 City of Alvarado

The City of Alvarado obtains its water supply from the Trinity Aquifer at 196 acft/yr and treated surface water from Johnson County SUD at 2,241 acft/yr. No shortages are projected for the City of Alvarado 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.

5.17.2 Bethany WSC

Bethany WSC obtains its water supply from the Trinity Aquifer at 309 to 308 acft/yr and treated surface water from Johnson County SUD at 1,120 acft/yr. No shortages are projected for Bethany WSC 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.

5.17.3 Bethesda WSC

Description of Supply

Bethesda WSC is located in Johnson and Tarrant (Region C) counties and obtains its water supply from the Trinity Aquifer at 2,333 acft/yr and surface water from Tarrant Regional Water District (TRWD) through the Fort Worth System at 3,703 to 7,912 acft/yr. Bethesda WSC is projected to have a shortage from 2030 to 2070. Balance and strategies represented in the table below are for the portion of the WSC in Brazos G.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and in coordination with Region C, the following water management strategies are recommended to meet the projected water shortage for Bethesda WSC. Conservation is recommended to reduce usage to a goal of 140 gpcd.

a. Conservation in Brazos G
    - Cost Source: Volume II
    - Date to be Implemented: before 2030
    - Unit Cost: $560/acft
    - Annual Cost: maximum of $1,248,493 in 2070
b. Purchase Additional Supplies from Fort Worth
    - Cost Source: 2021 Region C Water Plan
    - Date to be Implemented: 2020
    - Project Cost: none
    - Unit Cost: $531/acft ($1.63/1,000 gal)

Table 5.17-2. Recommended Plan Costs by Decade for Bethesda WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*(359)*	*(751)*	*(1,188)*	*(1,645)*	*(2,255)*
Conservation						
Supply From Plan Element (acft/yr)	0	327	735	1,190	1,331	1,487
Annual Cost ($/yr)	$0	$183,000	$412,000	$666,000	$745,000	$833,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*0*	*(32)*	*(16)*	*2*	*(314)*	*(768)*
Purchase additional supplies from Fort Worth						
Supply From Plan Element (acft/yr)	–	260	646	1,060	1,509	2,109
Annual Cost ($/yr)	–	$138,000	$343,000	$563,000	$801,000	$1,120,000
Unit Cost ($/acft)	–	$531	$531	$531	$531	$531

5.17.4 City of Burleson

Description of Supply

The City of Burleson obtains its water supply from Tarrant Regional Water District (TRWD) through the Fort Worth System, which ranges from 6,466 to 6,917 acft/yr. Burleson is projected to have a shortage from 2030 to 2070. Balance and strategies represented in the table below are for the entire city in both counties and regions.

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 Burleson. Conservation was considered in Brazos G but the current per capita use is below the targeted gpcd of 140. However, Region C has recommended conservation as a water management strategy.

a. Conservation in Region C
   - See the 2021 Region C Water Plan

b. Increase Delivery Infrastructure from Fort Worth
   - Cost Source: 2021 Region C Water Plan
   - Date to be Implemented: 2020
   - Project Cost: $4,688,000 (cost of delivery infrastructure)
   - Unit Cost: $162/acft

Table 5.17-3. Recommended Plan Costs by Decade for the City of Burleson

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(3)*	*(1,045)*	*(2,037)*	*(3,066)*	*(4,112)*	*(5,204)*
Conservation in Region C						
Supply From Plan Element (acft/yr)	48	54	57	87	118	141
Projected Surplus/(Shortage) after Conservation (acft/yr)	*45*	*(991)*	*(1,980)*	*(2,979)*	*(3,994)*	*(5,063)*
Purchase from Fort Worth						
Supply From Plan Element (acft/yr)	0	991	1,980	2,984	4,080	5,192
Annual Cost ($/yr)	–	$161,000	$321,000	$110,000	$151,000	$192,000
Unit Cost ($/acft)	–	$162	$162	$37	$37	$37

5.17.5 City of Cleburne

The City of Cleburne is projected to have a shortage beginning in 2040. The City of Cleburne obtains its water supply from direct reuse at 1,344 acft/yr, Pat Cleburne Reservoir 5,040 to 4,680 acft/yr, Trinity Aquifer 789 acft/yr and a contract with BRA that ranges from 2,971 to 885 acft/yr at 2020 to 2070, respectively. The City of Cleburne has contracted for 5,300 acft/yr of surface water supplies from the Brazos River Authority, which can supply 5,300 acft/yr in 2020 and 5,067 acft/yr in 2070, based on water availability analyses prescribed under water planning guidelines. Cleburne is projected to have a shortage from 2040 to 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 the projected water shortage for the City of Cleburne. Conservation is recommended to reduce the City's gallons per capita per day (gpcd) to a goal of 140 gpcd.

a. Conservation
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Capital Cost: $729,070
   - Unit Cost: $560/acft

b. City of Cleburne West Loop Reuse Phase 1
   - Cost Source: City of Cleburne Water Supply and Reuse Integration Plan
   - Date to be Implemented: 202
   - Project Cost: $10,203,000
   - Unit Cost: $316/acft

c. City of Cleburne West Loop Reuse Phase 2
   - Cost Source: City of Cleburne Water Supply and Reuse Integration Plan
   - Date to be Implemented: 2030
   - Project Cost: $21,117,000
   - Unit Cost: $422/acft

d. Trinity Basin Purchase (Tarrant Regional Water District) Phase 1
   - Cost Source: City of Cleburne Water Supply and Reuse Integration Plan
   - Date to be Implemented: 2040
   - Project Cost: $68,993,000
   - Unit Cost: $1,665/acft

e. Trinity Basin Purchase (Tarrant Regional Water District) Phase 2
   - Cost Source: City of Cleburne Water Supply and Reuse Integration Plan
   - Date to be Implemented: 2050
   - Project Cost: $7,566,000
   - Unit Cost: $815/acft

f. Lake Whitney Desalination Phase 1
   - Cost Source: City of Cleburne Water Supply and Reuse Integration Plan
   - Date to be Implemented: 2060
   - Project Cost: $89,369,000
   - Unit Cost: $2,499/acft

g. Lake Whitney Desalination Phase 2
   - Cost Source: City of Cleburne Water Supply and Reuse Integration Plan
   - Date to be Implemented: 2070
   - Project Cost: $32,898,000
   - Unit Cost: $2,066/acft

h. Alternative Johnson County SUD Connection
   - Cost Source: City of Cleburne Water Supply and Reuse Integration Plan
   - Date to be Implemented: 2060
   - Project Cost: $6,902,000
   - Unit Cost: $1,597/acft

i. Alternative Lake Aquila Reallocation

- Cost Source: City of Cleburne Water Supply and Reuse Integration Plan
- See BRA Wholesale Water Provider

Table 5.17-4.Recommended Plan Costs by Decade for the City of Cleburne

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*1,831*	*763*	*(1,097)*	*(2,988)*	*(5,195)*	*(7,324)*
Conservation						
Supply From Plan Element (acft/yr)	0	561	942	1,018	1,171	1,302
Annual Cost ($/yr)	$0	$314,170	$527,611	$569,977	$655,741	$729,070
Projected Surplus/(Shortage) after Conservation (acft/yr)	*1,831*	*1,324*	*(155)*	*(1,970)*	*(4,024)*	*(6,022)*
Additional Demands from Recommended Strategies from Others						
Increase Reuse Amount to Johnson County Steam Electric (acft/yr)	571	571	571	571	571	571
Increase Reuse Amount to Johnson County Mining (acft/yr)	2,555	1,206	–	–	–	–
Total Surplus/(Shortage) Including Recommended Strategies	*(1,295)*	*(453)*	*(726)*	*(2,541)*	*(4,595)*	*(6,593)*
City of Cleburne West Loop Reuse: Phase 1						
Supply From Plan Element (acft/yr)	2,240	2,240	2,240	2,240	2,240	2,240
Annual Cost ($/yr)	$707,840	$707,840	$152,320	$152,320	$152,320	$152,320
Unit Cost ($/acft)	$316	$316	$68	$68	$68	$68
City of Cleburne West Loop Reuse: Phase 2						
Supply From Plan Element (acft/yr)	5,377	5,377	5,377	5,377	5,377	5,377
Annual Cost ($/yr)	$2,270,000	$2,270,000	$2,270,000	$785,042	$785,042	$785,042
Unit Cost ($/acft)	$422	$422	$146	$146	$146	$146
Trinity Basin Purchase Phase 1						
Supply From Plan Element (acft/yr)	–	–	5,601	5,601	5,601	5,601
Annual Cost ($/yr)	–	–	$9,325,665	$9,325,665	$4,469,598	$4,469,598
Unit Cost ($/acft)	–	–	$1,665	$1,665	$798	$798
Trinity Basin Purchase Phase 2						
Supply From Plan Element (acft/yr)	–	–	–	5,601	5,601	5,601
Annual Cost ($/yr)	–	–	–	$4,564,815	$4,564,815	$4,032,720

Table 5.17-4.Recommended Plan Costs by Decade for the City of Cleburne

Plan Element	2020	2030	2040	2050	2060	2070
Unit Cost ($/acft)	–	–	–	$815	$815	$720
Lake Whitney Desalination Phase 1						
Supply From Plan Element (acft/yr)	–	–	–	–	4,300	4,300
Annual Cost ($/yr)	–	–	–	–	$10,745,700	$10,745,700
Unit Cost ($/acft)	–	–	–	–	$2,499	$2,499
Lake Whitney Desalination Phase 2						
Supply From Plan Element (acft/yr)	–	–	–	–	–	3,100
Annual Cost ($/yr)	–	–	–	–	–	$6,404,600
Unit Cost ($/acft)	–	–	–	–	–	$2,066
Alternative: Johnson County SUD Connection						
Supply From Plan Element (acft/yr)	–	–	–	–	–	3,360
Annual Cost ($/yr)	–	–	–	–	–	$5,365,920
Unit Cost ($/acft)	–	–	–	–	–	$1,597
Alternative: Lake Aquilla Reallocation						

5.17.6 City of Crowley

Description of Supply

The City of Crowley is mostly located in Tarrant County; however, a portion of the city limits is within Johnson County. The City obtains its water from Fort Worth and is projected to have a shortage in Johnson County.

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 supply plan is recommended to meet water needs for the portion of the city within Johnson County (Brazos G). The full water plan for City of Crowley is discussed in the 2021 Region C Water Plan. Conservation was also considered; however, the entity's usage is below the selected goal of 140 gpcd in Brazos G. Needs and supplies from strategies are for the Brazos G portion of Crowley only.

a. Purchase additional supplies from Fort Worth
   - Cost Source: 2020 Region C Water Plan
   - Date to be Implemented: 2030
   - Project Cost: none
   - Unit Cost: $531/acft (weighted average of Region C strategies)

Table 5.17-5. Recommended Plan Costs by Decade for the City of Crowley

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*(2)*	*(5)*	*(9)*	*(15)*	*(21)*
Conservation (Region C strategy applied to Brazos G portion)						
Supply From Plan Element (acft/yr)	–	1	2	3	1	3
Annual Cost ($/yr)	–	–	–	–	–	–
Projected Surplus/(Shortage) after Conservation (acft/yr)	*0*	*(1)*	*(3)*	*(6)*	*(14)*	*(18)*
Purchase from Fort Worth						
Supply From Plan Element (acft/yr)	–	1	3	6	14	18
Annual Cost ($/yr)	–	$531	$1,600	$3,200	$7,400	$9,600
Unit Cost ($/acft)	–	$531	$531	$531	$531	$531

5.17.7 City of Fort Worth

Description of Supply

The City of Fort Worth is a wholesale water provider in Region C in Tarrant County; however, a portion of the city limits is within Johnson County in Brazos G. The City obtains its water supply from surface water supplies located in Region C and is projected to have a shortage in Johnson County.

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 to meet water needs for the portion of the city within Johnson County and Brazos G. The full water plan for City of Fort Worth is discussed in the 2021 Region C Water Plan.

a. Conservation
   - Cost Source: Volume II
   - Date to be Implemented: 2060
   - Unit Cost: $560/acft
   - Annual Cost: maximum of $186,204 in 2070

b. Purchase additional supplies from Tarrant Regional Water District
   - Cost Source: 2021 Region C Water Plan
   - Date to be Implemented: 2050
   - Project Cost: $0 Existing infrastructure assumed sufficient
   - Unit Cost: $978/acft

Table 5.17-6. Recommended Plan Costs by Decade for the City of Fort Worth

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*0*	*0*	*0*	*(391)*	*(695)*	*(949)*
Conservation						
Supply From Plan Element (acft/yr)	–	–	–	67	98	107
Annual Cost ($/yr)	–	–	–	$181,000	$334,000	$472,000
Projected Surplus/(Shortage) after Conservation (acft/yr)	*0*	*0*	*0*	*(324)*	*(597)*	*(842)*
Purchase from Tarrant Regional Water District						
Supply From Plan Element (acft/yr)	–	–	–	324	597	842
Annual Cost ($/yr)	–	–	–	$317,000	$584,000	$823,000
Unit Cost ($/acft)	–	–	–	$978	$978	$978

5.17.8 City of Godley

Description of Supply

The City of Godley obtains its water supply from groundwater from the Trinity Aquifer at 99 acft/yr. Based on the available groundwater supply, the City of Godley is projected to have shortages throughout the planning period.

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

a. Groundwater Development – Trinity Aquifer
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Project Cost: $686,000
   - Unit Cost: $1,423/acft

Table 5.17-7. Recommended Plan Costs by Decade for the City of Godley

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(3)*	*(12)*	*(22)*	*(35)*	*(49)*	*(65)*
Conservation						
Supply From Plan Element (acft/yr)	–	–	–	–	–	–
Annual Cost ($/yr)	–	–	–	–	–	–

Table 5.17-7. Recommended Plan Costs by Decade for the City of Godley

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(3)*	*(12)*	*(22)*	*(35)*	*(49)*	*(65)*
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	3	12	22	35	49	65
Annual Cost ($/yr)	$4,269	$17,076	$5,082	$8,085	$11,319	$15,015
Unit Cost ($/acft)	$1,423	$1,423	$231	$231	$231	$231

5.17.9 City of Grandview

The City of Grandview obtains its water supply from groundwater from the Woodbine Aquifer at 369 acft/yr and is projected to have a surplus of water through the year 2070 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.

5.17.10 Johnson County SUD

Johnson County SUD is projected to have a shortage in 2020, 2060, and 2070, and a surplus in 2030 through 2050. This WUG is located in multiple counties (Johnson, Tarrant (Region C), Ellis (Region C), and Hill). The balance shown in the table below represent the cumulative totals within Brazos G for Johnson County SUD.

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 water needs for Johnson County SUD. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Groundwater Development – Trinity Aquifer
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Project Cost: $9,306,000
   - Unit Cost: $437/acft

b. Increase WTP Capacity (SWATS):
   - Cost Source: Volume II
   - Date to be Implemented: by 2040
   - Project Cost: $8,814,000 (Johnson County SUD portion)
   - Unit Cost: $696/acft

c. Alternative: Trinity Johnson County ASR

- Cost Source: Volume II
- Date to be Implemented: by 2020
- Project Cost: $19,789,000 (Johnson County SUD portion)
- Unit Cost: $634/acft

Table 5.17-8. Recommended Plan Costs by Decade for Johnson County SUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(208)*	*1,432*	*1,477*	*179*	*(737)*	*(1,491)*
Conservation						
Supply From Plan Element (acft/yr)	–	–	–	–	–	–
Annual Cost ($/yr)	–	–	–	–	–	–
Projected Surplus/(Shortage) after Conservation (acft/yr)	*(208)*	*1,432*	*1,477*	*179*	*(737)*	*(1,491)*
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	208	–	–	–	737	1,491
Annual Cost ($/yr)	$90,896	–	–	–	$35,376	$71,568
Unit Cost ($/acft)	$437	–	–	–	$48	$48
WTP Expansion (SWATS)						
Supply From Plan Element (acft/yr)	–	–	1,529	1,529	1,529	1,529
Annual Cost ($/yr)	–	–	$1,065,000	$1,065,000	$445,000	$445,000
Unit Cost ($/acft)	–	–	$696	$696	$291	$291
Alternative: Johnson County ASR						
Supply From Plan Element (acft/yr)		5,739	5,739	5,739	5,739	5,740
Annual Cost ($/yr)		$3,799,200	$3,799,200	$3,799,200	$3,799,200	$3,799,200
Unit Cost ($/acft)		$662	$662	$662	$662	$662

5.17.11 City of Keene

The City of Keene obtains its water supply from groundwater from the Trinity Aquifer at 326-327 acft/yr and a contract with Johnson County SUD at 1,120 acft/yr. The City of Keene is expected to have a surplus 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.

5.17.12 City of Mansfield

Description of Supply

The City of Mansfield is located in Tarrant, Ellis and Johnson counties with a majority of its population and demand in Tarrant County. The City obtains its water supply from

surface water from the Tarrant Regional Water District (TRWD), principally located in Region C. The table includes the balance for the Johnson County (Brazos G) portion only. More information on City of Mansfield is discussed in the 2021 Region C Water Plan. The City of Mansfield is projected to have shortages starting in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB, and in coordination with Region C, the following water management strategy is recommended for the City of Mansfield. Conservation is recommended to reduce usage to a goal of 140 gpcd.

a. Conservation
   - Cost Source: Volume II
   - Date to be Implemented: 2030
   - Unit Cost: $560/acft
   - Annual Cost: maximum of $516,488 in 2070

b. Purchase additional supplies from Tarrant Regional Water District
   - Cost Source: 2021 Region C Water Plan
   - Date to be Implemented: 2020
   - Project Cost: $0 Existing infrastructure assumed sufficient
   - Unit Cost: $978/acft

Table 5.17-9. Recommended Plan Costs by Decade for City of Mansfield

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(48)*	*(289)*	*(507)*	*(783)*	*(1,063)*	*(1,375)*
Conservation						
Supply From Plan Element (acft/yr)	0	87	223	407	641	922
Annual Cost ($/yr)	$0	$48,803	$124,900	$228,097	$359,186	$516,488
Projected Surplus/(Shortage) after Conservation	*(48)*	*(202)*	*(284)*	*(376)*	*(422)*	*(453)*
Purchase additional supplies from Tarrant Regional Water District						
Supply from Plan Element (acft/yr)	20	242	447	703	961	1,245
Annual Cost ($/yr)	$19,600	$236,700	$437,200	$687,500	$939,900	$1,217,600
Unit Cost ($/acft)	$978	$978	$978	$978	$978	$978

5.17.13 Mountain Peak SUD

Description of Supply

Mountain Peak SUD is located in Johnson and Ellis counties, with a majority of its population and demand in Ellis County (Region C). The WUG obtains its water supply from the City of Midlothian. A small shortage is projected for 2020, but after conservation a surplus is projected for Mountain Peak SUD through 2070. The Table below includes the balance for the Johnson County (Brazos G) portion only. More information on Mountain Peak SUD is discussed in the 2021 Region C Water Plan.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region C, the following water management strategy is recommended for Mountain Peak SUD. Conservation is recommended to reduce usage to a goal of 140 gpcd.

a. Conservation
   - Cost Source: Volume II
   - Date to be Implemented: 2030
   - Unit Cost: $338/acft (weighted cost of Region C strategy in 2020)
   - Annual Cost: maximum of $2,405,711 in 2070

b. Purchase additional supplies from Midlothian (various Region C strategies)
   - Cost Source: 2020 Region C Water Plan
   - Date to be Implemented: by 2030
   - Project Cost: $0 (existing infrastructure assumed sufficient)
   - Unit Cost: $609/acft (weighted cost of Region C strategies)

Table 5.17-10. Recommended Plan Costs by Decade for Mountain Peak SUD

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(55)*	*(287)*	*(523)*	*(793)*	*(1,081)*	*(1,397)*
Conservation (Region C sponsored strategy)						
Supply From Plan Element (acft/yr)	55	141	155	191	222	252
Annual Cost ($/yr)	$18,600	$47,700	$52,390	$64,600	$75,000	$85,200
Projected Surplus/(Shortage) after Conservation	*0*	*(146)*	*(368)*	*(602)*	*(859)*	*(1,145)*
Purchase additional supplies from Midlothian (various Region C strategies)						
Supply From Plan Element (acft/yr)		146	368	602	859	1,145
Annual Cost ($/yr)		$57,336	$193,246	$358,681	$477,884	$696,997
Unit Cost ($/acft)		$393	$525	$596	$556	$609

5.17.14 Parker WSC

Description of Supply

Parker WSC is located in Hill and Johnson counties and obtains its water supply from the Trinity Aquifer at 274 acft/yr and surface water supplies from Files Valley WSC. Based on the existing supply available from groundwater, a shortage begins in 2060. The surplus/shortages shown in the table below represent the cumulative totals for Parker 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 water needs for Parker WSC. Conservation was considered; however, the entity's current per capita use rate is below the selected target rate of 140 gpcd.

a. Trinity Aquifer Development

- Cost Source: Volume II
- Date to be Implemented: before 2060
- Project Cost: $1,045,000
- Unit Cost: $661/acft

Table 5.17-11. Recommended Plan Costs by Decade for Parker WSC

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*261*	*194*	*123*	*42*	*(48)*	*(145)*
Conservation						
Supply From Plan Element (acft/yr)	–	–	–	–	–	–
Annual Cost ($/yr)	–	–	–	–	–	–
Projected Surplus/(Shortage) after Conservation	*261*	*194*	*123*	*42*	*(48)*	*(145)*
Groundwater Development – Trinity Aquifer						
Supply From Plan Element (acft/yr)	0	0	0	0	48	145
Annual Cost ($/yr)	–	–	–	–	$31,728	$95,845
Unit Cost ($/acft)	–	–	–	–	$661	$661

5.17.15 City of Rio Vista

Description of Supply

The City of Rio Vista obtains its water supply from groundwater from the Trinity Aquifer at 334 acft/yr. No shortages are projected for the City of Alvarado 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.

5.17.16 City of Venus

Description of Supply

The City of Venus obtains its water supply from the Woodbine Aquifer at 103 acft/yr and surface water from the City of Midlothian in Region C ranges from 200 to 268 acft/yr. The city has a projected shortage starting in 2020.

Water Supply Plan

Working within the planning criteria established by the Brazos G RWPG and TWDB and in coordination with Region C, the following water management strategies are recommended to meet water needs for the City of Venus. Conservation is recommended to reduce usage to a goal of 140 gpcd. Note all shortages and supplies from strategies are totals for Region C and Brazos G.

a. Conservation
   - Cost Source: Volume II
   - Date to be Implemented: 2030
   - Annual Cost: maximum of $91,183 in 2070
   - Unit Cost: $556/acft (weighted average of Brazos G and Region C strategies)

a. Purchase Water from Midlothian (various Region C strategies)
   - Cost Source: 2021 Region C Water Plan
   - Date to be Implemented: 2020
   - Project Cost: N/A
   - Unit Cost: $534/acft (maximum of weighted average of Region C strategies)

Table 5.17-12. Recommended Plan Costs by Decade for City of Venus

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(92)*	*(309)*	*(411)*	*(462)*	*(549)*	*(654)*
Conservation (Brazos G and Region C strategies)						
Supply From Plan Element (acft/yr)	0	62	119	132	148	166
Annual Cost ($/yr)	$0	$34,204	$65,135	$73,366	$81,893	$92,123
Projected Surplus/(Shortage) after Conservation	*(92)*	*(247)*	*(292)*	*(330)*	*(401)*	*(488)*
Purchase Water from Midlothian (various Region C strategies)						
Supply From Plan Element (acft/yr)	92	247	292	330	401	488
Annual Cost ($/yr)	$0	$21,327	$86,433	$151,643	$189,380	$260,683
Unit Cost ($/acft)	$0	$86	$296	$460	$472	$534

5.17.17 County-Other

Entities in Johnson County-Other obtain water supply from the Trinity Aquifer at 7 acft/yr and as well as treated surface water from Johnson County SUD at 1,507 to 2,981 acft/yr and Grand Prairie at 188 to 531 acft/yr. A surplus of supply is projected for Johnson County-Other through 2070. No changes in water supply are recommended. Conservation was also considered; however, the entity's usage is below the selected goal of 140 gpcd

5.17.18 Manufacturing

Johnson County Manufacturing is supplied by the Trinity Aquifer at 194 acft/yr, and the cities of Burleson at 2 acft/yr, Cleburne at 2,239 to 4,182 acft/yr and Hillsboro at 6 to 12 acft/yr. No shortage is projected for Johnson County Manufacturing and no changes in water supply are recommended.

5.17.19 Steam-Electric

Description of Supply

Johnson County Steam-Electric currently receives 1,344 acft/yr of reuse and potable water supplies from the City of Cleburne. Johnson County Steam-Electric is projected to have shortages through year 2070. Conservation for Steam-Electric use is not recommended by the Brazos G RWPG.

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 Johnson County Steam-Electric.

a. Purchase reuse water from the City of Cleburne
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Project Cost: $30,238,000
   - Unit Cost: $427/acft

Table 5.17-13. Recommended Plan Costs by Decade for Johnson County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(571)*	*(571)*	*(571)*	*(571)*	*(571)*	*(571)*
Conservation						
Supply From Plan Element (acft/yr)	–	–	–	–	–	–
Annual Cost ($/yr)	–	–	–	–	–	–
Projected Surplus/(Shortage) after Conservation	*(571)*	*(571)*	*(571)*	*(571)*	*(571)*	*(571)*
Purchase reuse water from the City of Cleburne						

Table 5.17-13. Recommended Plan Costs by Decade for Johnson County – Steam-Electric

Plan Element	2020	2030	2040	2050	2060	2070
Supply From Plan Element (acft/yr)	571	571	571	571	571	571
Annual Cost ($/yr)	$243,817	$243,817	$84,508	$84,508	$84,508	$84,508
Unit Cost ($/acft)	$427	$427	$148	$148	$148	$148
Projected Surplus/(Shortage) after Reuse (acft/yr)	*0*	*0*	*0*	*0*	*0*	*0*

5.17.20 Mining

Description of Supply

Johnson County Mining obtains its water supply from Cleburne at 1,344 acft/yr. Johnson County Mining is projected to have a shortage in 2020 and 2030,surpluses from 2040 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 Johnson County Mining. Conservation is recommended.

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

b. Purchase reuse water from the City of Cleburne
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Project Cost: $2,099,198
   - Unit Cost: $211/acft

Table 5.17-14. Recommended Plan Costs by Decade for Johnson County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(2,679)*	*(1,345)*	*(68)*	*430*	*286*	*107*
Conservation						
Supply From Plan Element (acft/yr)	124	139	106	71	81	94
Annual Cost ($/yr)	ND	ND	ND	ND	ND	ND
Projected Surplus/(Shortage) after Conservation	*(2,555)*	*(1,206)*	*38*	*430*	*286*	*107*

Table 5.17-14. Recommended Plan Costs by Decade for Johnson County – Mining

Plan Element	2020	2030	2040	2050	2060	2070
Purchase reuse water from the City of Cleburne						
Supply From Plan Element (acft/yr)	2,555	1,206	–	–	–	–
Annual Cost ($/yr)	$539,105	$254,466	–	–	–	–
Unit Cost ($/acft)	$211	$211	–	–	–	–
ND – Not Determined. Costs to implement industrial conservation technologies will vary based on each location						

5.17.21 Irrigation

Johnson County Irrigation obtains its water supply from the Trinity Aquifer at 167 acft/yr and the Woodbine Aquifer at 130 acft/yr. Shortages are projected for Johnson County Irrigation.

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 Johnson County Irrigation. Conservation is recommended.

a. Conservation
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Unit Cost $1,241/acft
   - Annual Cost: maximum of $6,464

b. BRA System Operations (Double Diamond Retreat)
   - Cost Source: Volume II
   - Date to be Implemented: before 2030
   - Project Cost: $95,792,000
   - Unit Cost: $4,497/acft

Table 5.17-15. Recommended Plan Costs by Decade for Johnson County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) (acft/yr)	*(269)*	*(269)*	*(269)*	*(269)*	*(269)*	*(269)*
Conservation						
Supply From Plan Element (acft/yr)	17	28	40	40	40	40
Annual Cost ($/yr)	$21,075	$35,125	$49,175	$49,175	$49,175	$49,175

Table 5.17-15. Recommended Plan Costs by Decade for Johnson County – Irrigation

Plan Element	2020	2030	2040	2050	2060	2070
Projected Surplus/(Shortage) after Conservation	*(252)*	*(241)*	*(229)*	*(229)*	*(229)*	*(229)*
Purchase water through BRA System Operations from Double Diamond Retreat						
Supply From Plan Element (acft/yr)	252	241	229	229	229	229
Annual Cost ($/yr)	$1,133,244	$1,083,777	$318,310	$318,310	$318,310	$318,310
Unit Cost ($/acft)	$4,497	$4,497	$1,390	$1,390	$1,390	$1,390

5.17.22 Livestock

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

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