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CHAPTER 4.0: IDENTIFICATION OF WATER NEEDS

4.1 IDENTIFICATION OF WATER NEEDS

The comparison of water demands for each water user group (WUG) to the water supplies available to each WUG within the Lower Colorado Regional Water Planning Area (LCRWPA) is a simple mathematical comparison of the estimates developed in Chapters 2 and 3 of this report. This comparison was completed and summarized in three different ways. First, a comparison of water demands and supplies was completed on a county-by-county basis. Second, the comparison was completed and summarized for each of the six river basins that are in Region K. Finally, a comparison of the water demands and supplies for the two designated wholesale water providers within the LCRWPA was also completed.

Region-wide, the comparison of available water supplies and water demands identified 75 separate WUGs that have projected water supply shortages, or “needs,” by the year 2040, and an additional 15 WUGs with projected water supply shortages before the year 2070. **Note that throughout this chapter, the word “need” is consistently used to indicate a water supply shortage.** The estimated water need is approximately 387,000 acre-feet per year (ac-ft/yr) in 2040 and 512,000 ac-ft/yr in 2070. This identified shortage is based on conservative water availability estimates, which assume (1) only water that is available during a repeat of the historical drought of record (DOR), (2) that all water rights in the basin are being fully and simultaneously utilized, (3) excludes both water available from the Lower Colorado River Authority (LCRA) on an interruptible basis and water projected to potentially be available, for planning purposes, as a result of municipal return flows to the Colorado River, and (4) groundwater availability is limited to the modeled available groundwater (MAG) based on desired future conditions (DFC). Based upon the assumptions above, water needs have been identified in all of the six water use categories. *Figure 4.1* contains an illustration of the distribution, by use category, of the number of WUGs with identified water needs in the years 2040 and 2070. *Figure 4.2* contains an illustration of the magnitude of the identified needs, by use category, for the years 2040 and 2070.

Figure 4.1: Number of WUGs With Identified Water Needs in the LCRWPA

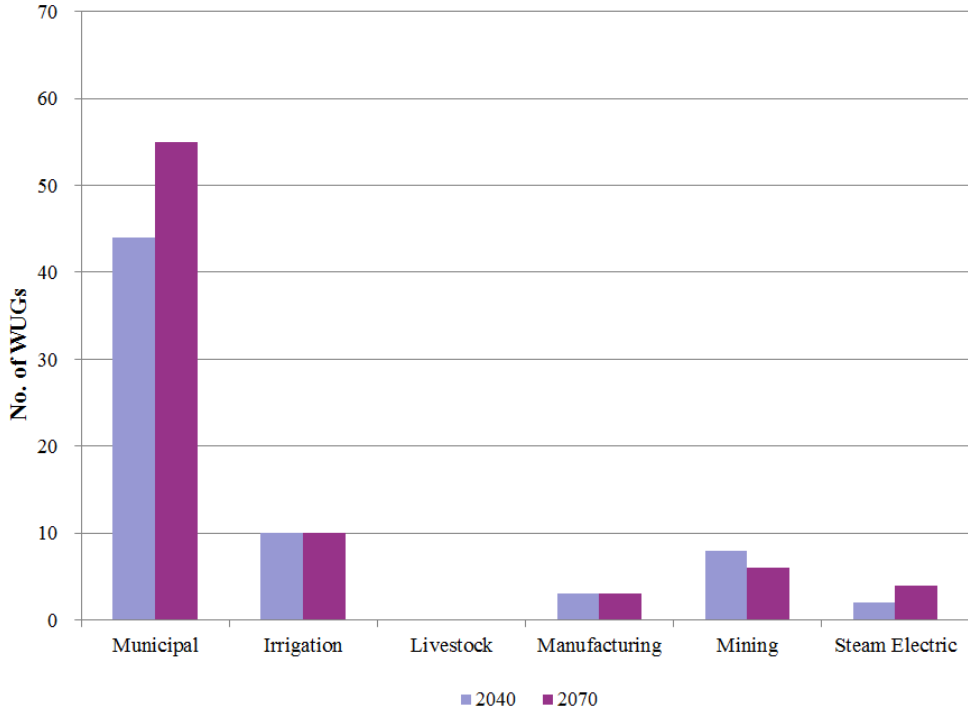
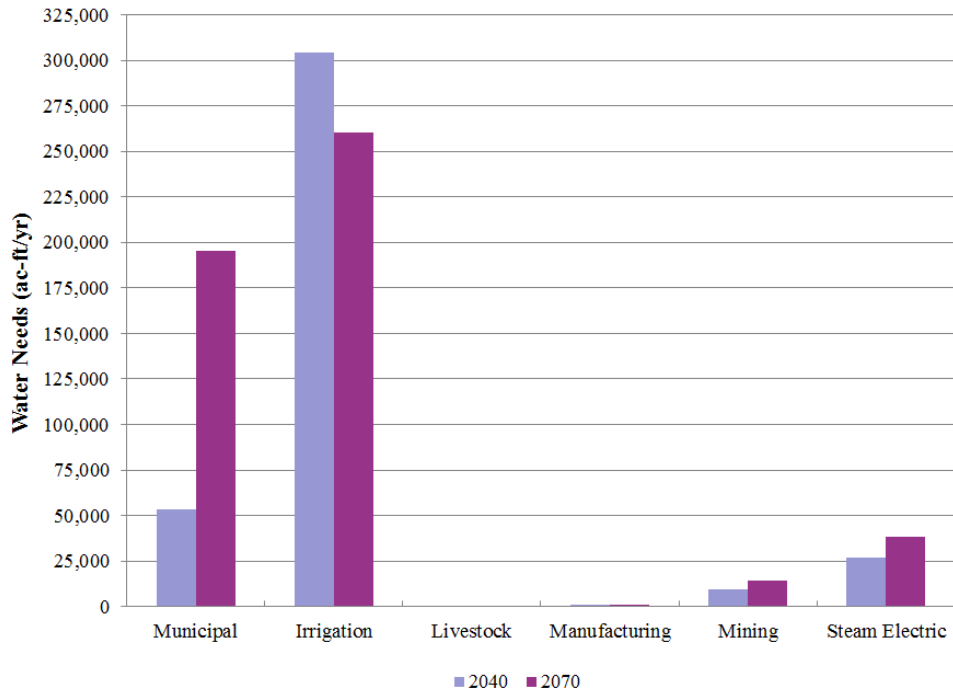


Figure 4.2: Identified Amount of Water Needs in the LCRWPA



The majority of the identified water supply shortages fall into three main categories. The first shortage is associated with rice irrigation demands in the lower three counties of Colorado, Matagorda and Wharton. It is estimated that irrigators in these three counties would experience a water supply shortage of approximately 335,000 ac-ft/yr under the existing demand conditions (year 2020 scenario), should a repeat of the driest year during the DOR occur. This shortage is estimated to decrease to 304,000 ac-ft/yr in 2040 (9 percent decrease) and to 260,000 ac-ft/yr in 2070 (22 percent decrease) due to projected declining rice irrigation acreage.

These estimated shortfalls are based on the available supply determined in Chapter 3. In accordance with Texas Water Development Board (TWDB) rules, the available supply of water for irrigation was estimated based on the available run-of-river (ROR) water rights and groundwater supplies in the area. The interruptible supply of water provided by the LCRA and municipal return flows were not considered in these calculations.

The second category of major identified shortages includes WUGs that purchase water from one of the two wholesale water providers within the LCRWPA - the COA and the LCRA. The renewal of these current wholesale water contracts is assumed and shown as a continued supply, while amendments to these contracts to increase supply will be considered as a water management strategy. However, the COA's current policy is that much of its water currently being supplied under contract to wholesale customers may need to be provided under new contracts with LCRA as Austin wholesale customer contracts, identified in *Table 3.28*, reach their expiration or renewal dates. The COA is planning to continue to treat and transport this water from the supply source to the wholesale customer.

LCRA is the major water supplier for the Lower Colorado Region. The COA also supplies a major portion of the municipal needs. LCRA holds water rights to use annually about 2.1 million acre-feet (ac-ft) of water and provides water to approximately 125 entities under long-term contracts for municipal, industrial, irrigation, recreational, and other purposes. LCRA also provides water to about 4,000 domestic lakeside contract holders and to environmental uses.

The third category of major identified shortages includes steam-electric demands. This is a water usage type that is expected to expand over the future decades, as electrical demand increases due to population growth. The majority of the steam-electric water demands in the LCRWPA are currently in Matagorda County, but water demands in Travis County continue to increase to approximately match that of Matagorda County by year 2070.

4.2 COUNTY SUMMARIES OF WATER NEEDS

The following sections provide summaries of the needs identified for each county within the LCRWPA. The tables presented in these sections provide a listing of individual WUGs with identified water supply needs (negative numbers in the tables indicate a water supply shortage). Following the information for the individual WUGs with water supply needs is a summation of the total needs identified within the county. This information is also included in the TWDB online database, DB17. The TWDB DB17 report entitled *WUG Needs Report*, can be found in *Appendix 4A*.

4.2.1 Bastrop County

The primary sources of water for Bastrop County are the Carrizo-Wilcox and Queen City aquifers. Surface water supplies are primarily associated with power generation and are supplied by firm water from the Highland Lakes. Local surface water supplies are available to irrigation and livestock users. Municipal water needs is about 80% of the total water needs in Bastrop County. Mining accounts for approximately 17% of the total needs. A summary of the estimated water shortages identified for Bastrop County is presented in *Table 4.1*.

Table 4.1 Bastrop County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
AQUA WSC	(2,534)	(4,656)	(7,145)	(11,210)	(17,667)	(26,269)
BASTROP	(30)	(671)	(1,519)	(2,685)	(4,274)	(6,390)
BASTROP COUNTY WCID #2	0	0	0	0	(93)	(644)
COUNTY-OTHER	(361)	(519)	(739)	(907)	(1,158)	(1,490)
CREEDMOOR-MAHA WSC	0	0	0	0	0	0
ELGIN	(472)	(732)	(1,013)	(1,533)	(2,432)	(3,631)
LEE COUNTY WSC ¹	0	0	0	0	0	0
POLONIA WSC ²	0	0	0	0	0	0
SMITHVILLE	0	0	0	0	0	(721)
IRRIGATION	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	(55)	(87)	(120)	(151)	(174)	(199)
MINING	(732)	(4,662)	(5,347)	(6,110)	(6,932)	(7,843)
STEAM-ELECTRIC	0	0	0	0	0	0
BASTROP COUNTY TOTAL NEEDS	(4,184)	(11,327)	(15,883)	(22,596)	(32,730)	(47,187)

¹ Primary region for this WUG is Region G. Please refer to the Region G Plan for additional information.

² Primary region for this WUG is Region L. Please refer to the Region L Plan for additional information.

4.2.2 Blanco County

Groundwater is available to users in Blanco County from the Ellenburger-San Saba, Trinity, Edwards-Trinity Plateau, and Hickory aquifers. Surface water supplies in the county are available from the City of Blanco's reservoirs and other local supplies. Municipal water needs account for all of the total water needs in Blanco County. A summary of the estimated water shortages identified for Blanco County is presented in *Table 4.2*.

Table 4.2 Blanco County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
BLANCO	0	0	0	0	0	0
CANYON LAKE WSC ¹	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	(24)	(42)	(55)
JOHNSON CITY	(48)	(105)	(138)	(155)	(167)	(175)
IRRIGATION	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
STEAM-ELECTRIC	0	0	0	0	0	0
BLANCO COUNTY TOTAL NEEDS	(48)	(105)	(138)	(179)	(209)	(230)

¹ Primary region for this WUG is Region L. Please refer to the Region L Plan for additional information.

4.2.3 Burnet County

Groundwater is available to users in Burnet County from the Ellenburger-San Saba, Trinity, Marble Falls, and Hickory aquifers. Surface water supplies in the county are available from the Highland Lakes through contracts with the LCRA and other local supplies. Mining water needs account for 40 to 75% of total water needs in Burnet County, with municipal water needs accounting for the remaining water needs. A summary of the estimated water shortages identified for Burnet County is presented in *Table 4.3*.

Table 4.3 Burnet County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
BERTRAM	(40)	(118)	(184)	(249)	(307)	(358)
BURNET	0	0	0	0	0	0
CHISHOLM TRAIL SUD ¹	0	0	0	0	0	0
COTTONWOOD SHORES	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	(158)	(318)	(460)
GRANITE SHOALS	0	0	(38)	(137)	(226)	(306)
HORSESHOE BAY	0	(201)	(454)	(697)	(912)	(1,098)
KEMPNER WSC ¹	0	0	0	0	0	0
KINGSLAND WSC	0	0	0	0	0	0
MARBLE FALLS	0	0	(1,089)	(1,859)	(2,377)	(2,636)
MEADOWLAKES	(207)	(379)	(525)	(665)	(788)	(896)
IRRIGATION	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	(1,011)	(1,703)	(2,428)	(3,085)	(3,841)	(4,703)
STEAM-ELECTRIC	0	0	0	0	0	0
BURNET COUNTY TOTAL NEEDS	(1,258)	(2,401)	(4,718)	(6,850)	(8,769)	(10,457)

¹ Primary region for this WUG is Region G. Please refer to the Region G Plan for additional information.

4.2.4 Colorado County

The primary source of groundwater in Colorado County is the Gulf Coast aquifer. Surface water supplies are available pursuant to LCRA's ROR rights, presently being used within LCRA's Lakeside and Garwood Irrigation Divisions, as well as other local supply sources. Irrigation water needs in Colorado County represent over 98% of the water needs in the county, with the municipal needs making the remaining 2% water needs. A summary of the estimated water shortages identified for Colorado County is presented in *Table 4.4*.

Table 4.4 Colorado County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
COLUMBUS	0	(15)	(36)	(80)	(122)	(163)
COUNTY-OTHER	(121)	(127)	(130)	(158)	(191)	(226)
EAGLE LAKE	0	0	0	0	0	0
WEIMAR	0	0	0	0	0	0
IRRIGATION	(58,954)	(54,493)	(50,152)	(45,927)	(41,817)	(37,816)
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
STEAM-ELECTRIC	0	0	0	0	0	0
COLORADO COUNTY TOTAL NEEDS	(59,075)	(54,635)	(50,318)	(46,165)	(42,130)	(38,205)

4.2.5 Fayette County

Groundwater supplies in Fayette County are available from the Carrizo-Wilcox, Gulf Coast, Sparta, Queen City, and Yegua-Jackson aquifers. Surface water is available for steam electric generation through the LCRA and the COA. Currently in year 2020, mining water needs account for about 80% of total water needs in the Fayette County, but this need drops near zero by year 2070. Conversely, the water needs for steam electric generation continues to increase to account for approximately 85% of total water needs in the county by year 2070. The estimated water shortages identified for Fayette are presented in *Table 4.5*.

Table 4.5 Fayette County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
AQUA WSC	0	0	0	0	0	0
COUNTY-OTHER	(272)	(385)	(456)	(523)	(587)	(639)
FAYETTE WSC	0	0	0	0	0	0
FLATONIA	0	0	0	0	0	0
LA GRANGE	0	0	0	0	0	0
LEE COUNTY WSC ¹	0	0	0	0	0	0
SCHULENBURG	0	(85)	(142)	(191)	(234)	(267)
IRRIGATION	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	(206)	(243)	(279)	(310)	(349)	(391)
MINING	(1,986)	(1,492)	(925)	(393)	(40)	(39)
STEAM ELECTRIC POWER ²	0	0	0	0	(2,614)	(7,414)
FAYETTE COUNTY TOTAL NEEDS	(2,464)	(2,205)	(1,802)	(1,417)	(3,824)	(8,750)

¹ Primary region for this WUG is Region G. Please refer to the Region G Plan for additional information.

² Steam-electric needs shown are overall for the County, which take into consideration surpluses for LCRA. Please refer to *Table 4.19* for steam-electric needs specifically related to the City of Austin.

4.2.6 Gillespie County

Groundwater supplies in Gillespie County are available from the Ellenburger-San Saba, Edwards-Trinity, Trinity, and Hickory aquifers. Surface water is available from local sources. Manufacturing water needs represents 75% to all of the total water demand in the county between planning years 2020 thru 2070.

Table 4.6 Gillespie County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
COUNTY-OTHER	0	0	0	0	0	0
FREDERICKSBURG	0	0	0	0	(30)	(222)
IRRIGATION	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	(309)	(362)	(411)	(452)	(536)	(626)
MINING	0	0	0	0	0	0
STEAM ELECTRIC POWER	0	0	0	0	0	0
GILLESPIE COUNTY TOTAL NEEDS	(309)	(362)	(411)	(452)	(566)	(848)

4.2.7 Hays County

Groundwater supplies in Hays County are available from the Edwards-Balcones Fault Zone (BFZ) and Trinity aquifers. Surface water is available from the Highland Lakes System and COA ROR rights. Municipal need represents over 70 percent of the total needs in the county and represents the majority of supply shortages identified for Hays County, as presented in *Table 4.7*.

Table 4.7 Hays County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
AUSTIN	0	0	0	0	0	0
BUDA	0	(667)	(1,690)	(2,974)	(4,429)	(6,088)
CIMARRON PARK WATER COMPANY	0	0	0	0	0	0
COUNTY-OTHER	0	0	(530)	(1,587)	(2,489)	(3,382)
DRIPPING SPRINGS	0	(31)	(104)	(198)	(307)	(432)
DRIPPING SPRINGS WSC	0	0	0	0	0	(126)
GOFORTH WSC ¹	0	0	0	0	0	0
MOUNTAIN CITY	0	0	0	0	0	0
PLUM CREEK WATER COMPANY ¹	0	0	0	0	0	0
WEST TRAVIS COUNTY PUA	0	(937)	(2,974)	(5,522)	(8,405)	(11,687)
IRRIGATION	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	(531)	(761)	(1,047)	(1,131)	(1,340)	(1,579)
STEAM ELECTRIC POWER	0	0	0	0	0	0
HAYS COUNTY TOTAL NEEDS	(531)	(2,396)	(6,345)	(11,412)	(16,970)	(23,294)

¹ Primary region for this WUG is Region L. Please refer to the Region L Plan for additional information.

4.2.8 Llano County

Groundwater supplies in Llano County are available from the Hickory and Ellenburger-San Saba aquifers. Surface water is available from the City of Llano Reservoir, the Highland Lakes, and local sources. Municipal needs account for all of total needs in the county and all of the identified water supply shortage. A summary of the estimated water shortages identified for Llano County is presented in *Table 4.8*.

Table 4.8 Llano County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
COUNTY-OTHER	0	0	0	0	0	0
HORSESHOE BAY	0	(50)	(41)	(4)	(67)	(133)
KINGSLAND WSC	0	0	0	0	0	0
LLANO	(445)	(475)	(461)	(439)	(467)	(496)
SUNRISE BEACH VILLAGE	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
STEAM ELECTRIC POWER	0	0	0	0	0	0
LLANO COUNTY TOTAL NEEDS	(445)	(525)	(502)	(443)	(534)	(629)

4.2.9 Matagorda County

The primary source of groundwater in Matagorda County is the Gulf Coast aquifer. Surface water supplies are available pursuant to LCRA's ROR rights, presently being used within LCRA's Gulf Coast Irrigation Division, and the LCRA-STPNOC water right, STPNOC's contract with LCRA for backup firm water, as well as LCRA firm water contracts for other industrial needs and other local supply sources. Irrigation water needs in Matagorda County represent over 85 percent of the water need in the county with steam electric generation accounting for the remainder of the water needs. A summary of the estimated water shortages identified for Matagorda County is presented in *Table 4.9*.

Table 4.9 Matagorda County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
BAY CITY	0	0	0	0	0	0
COUNTY-OTHER	0	0	0	0	0	0
PALACIOS	0	0	0	0	0	0
IRRIGATION	(166,548)	(160,843)	(155,291)	(149,889)	(144,632)	(139,516)
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
STEAM ELECTRIC POWER	(25,363)	(25,377)	(25,401)	(25,431)	(25,461)	(25,483)
MATAGORDA COUNTY TOTAL NEEDS	(191,911)	(186,220)	(180,692)	(175,320)	(170,093)	(164,999)

4.2.10 Mills County

The primary source of groundwater in Mills County is the Trinity aquifer. Surface water supplies are available through the City of Goldthwaite Reservoir and other local supply sources. Irrigation needs in Mills County represent over 55 percent of the water needs in the county with most of the remainder of the demand being municipal need. A summary of the estimated water shortages identified for Mills County is presented in *Table 4.10*.

Table 4.10 Mills County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
BROOKSMITH SUD ¹	0	0	0	0	0	0
COUNTY-OTHER	(16)	(15)	(14)	(18)	(23)	(29)
GOLDTHWAITE	(48)	(51)	(53)	(64)	(77)	(94)
IRRIGATION	(605)	(575)	(545)	(516)	(487)	(460)
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
STEAM ELECTRIC POWER	0	0	0	0	0	0
MILLS COUNTY TOTAL NEEDS	(669)	(641)	(612)	(598)	(587)	(583)

¹ Primary region for this WUG is Region F. Please refer to the Region F Plan for additional information.

4.2.11 San Saba County

Groundwater supplies in San Saba County are available from the Ellenburger-San Saba, Marble Falls, and Hickory aquifers. Surface water availability is primarily limited to local sources. Municipal needs account for all of water needs San Saba County. The water needs for San Saba County are listed in *Table 4.11*.

Table 4.11 San Saba County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
COUNTY-OTHER	0	0	0	0	0	0
RICHLAND SUD ¹	0	0	0	0	0	0
SAN SABA	(88)	(128)	(124)	(99)	(125)	(152)
IRRIGATION	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
STEAM ELECTRIC POWER	0	0	0	0	0	0
SAN SABA COUNTY TOTAL NEEDS	(88)	(128)	(124)	(99)	(125)	(152)

¹ Primary region for this WUG is Region F. Please refer to the Region F Plan for additional information.

4.2.12 Travis County

Groundwater supplies in Travis County are available from the Edwards-BFZ and Trinity aquifers. Surface water is available through the LCRA and COA ROR water rights. Municipal water needs represent well over 80 percent of the total needs in the county. Steam electric generation accounts for the remaining needs. A summary of the estimated water shortages identified for Travis County is presented in *Table 4.12*.

Table 4.12 Travis County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
AQUA WSC	0	0	0	0	0	0
AUSTIN	0	0	0	(1,231)	(29,821)	(63,194)
BARTON CREEK WEST WSC	0	0	0	0	0	0
BEE CAVE VILLAGE	(225)	(491)	(745)	(1,030)	(1,282)	(1,518)
BRIARCLIFF VILLAGE	0	0	0	0	(3)	(36)
CEDAR PARK ¹	(505)	(941)	(1,121)	(987)	(1,084)	(1,194)
COUNTY-OTHER	0	0	0	0	0	0
CREEDMOOR-MAHA WSC	0	0	(43)	(171)	(309)	(445)
ELGIN	0	(101)	(196)	(305)	(402)	(493)
GOFORTH WSC ²	0	0	0	0	0	0
JONESTOWN	(93)	(113)	(133)	(158)	(182)	(206)
LAGO VISTA	0	0	0	0	0	0
LAKEWAY	(1,469)	(3,607)	(3,585)	(3,573)	(3,568)	(3,567)
LEANDER ¹	0	(1,224)	(3,282)	(4,153)	(4,544)	(4,937)
LOOP 360 WSC	0	0	(14)	(66)	(113)	(157)
LOST CREEK MUD	0	0	0	0	0	0
MANOR	0	0	0	(94)	(494)	(867)
MANVILLE WSC	0	0	0	(568)	(1,286)	(2,346)
MUSTANG RIDGE	0	0	0	0	0	0
NORTH AUSTIN MUD #1	0	0	0	0	0	0
NORTHTOWN MUD	0	0	0	0	0	0
PFLUGERVILLE	(605)	(4,935)	(9,073)	(13,727)	(17,872)	(21,741)
POINT VENTURE	0	(83)	(174)	(278)	(369)	(455)
ROLLINGWOOD	0	(379)	(376)	(375)	(376)	(378)
ROUND ROCK ¹	0	(60)	(126)	(202)	(265)	(323)
SHADY HOLLOW MUD	0	0	0	0	0	0
SUNSET VALLEY	0	0	0	0	0	0
THE HILLS	0	0	0	0	0	0
TRAVIS COUNTY MUD #4	0	0	0	0	(361)	(710)
TRAVIS COUNTY WCID #10	0	(2,428)	(2,715)	(3,044)	(3,341)	(3,619)
TRAVIS COUNTY WCID #17	(302)	(1,904)	(2,868)	(3,038)	(3,330)	(3,693)
TRAVIS COUNTY WCID #18	0	0	0	0	0	(131)
TRAVIS COUNTY WCID #19	0	0	0	0	0	0
TRAVIS COUNTY WCID #20	0	0	0	0	0	0
VOLENTE	0	(13)	(25)	(40)	(54)	(66)
WELLS BRANCH MUD	0	0	0	0	0	0
WEST LAKE HILLS	0	(1,550)	(1,539)	(1,533)	(1,532)	(1,532)
WEST TRAVIS COUNTY PUA	0	0	(269)	(650)	(986)	(1,300)
WILLIAMSON-TRAVIS COUNTY MUD #1 ¹	0	0	0	0	0	0
IRRIGATION	0	0	0	0	0	0
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
STEAM ELECTRIC POWER	0	(1,374)	(1,374)	(6,543)	(14,043)	(21,530)
TRAVIS COUNTY TOTAL NEEDS	(3,199)	(19,203)	(27,658)	(41,766)	(85,617)	(134,438)

¹ Primary region for this WUG is Region G. Please refer to the Region G Plan for additional information.

² Primary region for this WUG is Region L. Please refer to the Region L Plan for additional information.

4.2.13 Wharton County

The primary source of groundwater in Wharton County is the Gulf Coast aquifer. Surface water supplies are available pursuant to LCRA's ROR rights, presently being used within LCRA's Lakeside, Garwood Irrigation Divisions and by Pierce Ranch. In addition, surface water is available from other local supply sources. Irrigation need in Wharton County represent over 99 percent of the water needs in the county with steam electric generation need accounting for the remaining water needs. A summary of the estimated water shortages identified for Wharton County is presented in *Table 4.13*.

Table 4.13 Wharton County Water Supply Needs (ac-ft/yr)

Water User Group Name	2020 Needs	2030 Needs	2040 Needs	2050 Needs	2060 Needs	2070 Needs
COUNTY-OTHER	0	0	0	0	0	0
EAST BERNARD	0	0	0	0	0	0
EL CAMPO ¹	0	0	0	0	0	0
WHARTON	0	0	0	0	0	0
IRRIGATION	(109,382)	(103,673)	(98,118)	(92,712)	(87,451)	(82,332)
LIVESTOCK	0	0	0	0	0	0
MANUFACTURING	0	0	0	0	0	0
MINING	0	0	0	0	0	0
STEAM ELECTRIC POWER	0	0	0	0	(94)	(200)
WHARTON COUNTY TOTAL NEEDS	(109,382)	(103,673)	(98,118)	(92,712)	(87,545)	(82,532)

¹ Primary region for this WUG is Region P. Please refer to the Region P Plan for additional information.

4.2.14 Williamson County

Groundwater supplies in Williamson County are available from the Trinity and Edwards-BFZ aquifers. Surface water is available through the COA and LCRA. There are no water shortages expected for any of the WUGs in Williamson County within the LCRWPA.

4.2.15 County-Wide Surpluses

As part of the 2016 regional water planning process, areas with water supply surpluses were identified as well as areas with water supply needs. This analysis was conducted by comparing the county-wide estimated water supplies with the county-wide estimated water demands. It is important to note that although a particular county may have a county-wide water supply surplus, individual WUGs within that county may have water supply needs because they do not have access to the surplus water. *Table 4.14* contains a summary of the water supply condition within each county. It is also important to note that the regional totals shown in *Table 4.14* are less than the water supply needs identified in *Figure 4.2* due to surpluses in some counties. The fact that the regional totals show water supply needs despite considering the surpluses in some counties indicates that additional strategies must be developed to meet all of the needs in the LCRWPA. Simply moving surplus water from one area to another will not be sufficient to meet the needs of all WUGs in the LCRWPA. Additionally, movement of surplus water can be very costly and requires the consent of the entity with the surplus.

Table 4.14 County and Regional Water Supply Condition Summary (surplus/deficit, ac-ft/yr)

County ¹	2020	2030	2040	2050	2060	2070
Bastrop	1,500	(8,583)	(13,251)	(20,512)	(31,613)	(46,230)
Blanco	1,594	1,324	1,194	1,125	1,072	1,044
Burnet	8,352	5,149	2,027	(679)	(3,233)	(5,611)
Colorado	(57,393)	(53,068)	(48,841)	(44,811)	(40,921)	(37,145)
Fayette	10,724	10,786	8,969	2,965	(1,221)	(6,226)
Gillespie	2,013	1,731	1,497	1,182	817	446
Hays	1,750	(1,763)	(6,242)	(11,483)	(17,247)	(23,686)
Llano	4,090	3,949	4,015	4,134	4,024	3,902
Matagorda	(185,539)	(180,660)	(175,811)	(171,049)	(166,883)	(162,353)
Mills	216	282	348	390	425	450
San Saba	1,197	1,324	1,658	1,902	2,068	2,206
Travis	132,599	74,934	20,380	(25,040)	(68,560)	(116,975)
Wharton	(106,712)	(101,215)	(95,843)	(90,687)	(85,714)	(80,878)
Williamson	0	152	322	519	569	2
Regional Totals²	(185,609)	(245,658)	(299,578)	(352,044)	(406,417)	(471,054)

¹ Overall County Surplus/Deficit = Countywide Water Supply – Countywide Water Demand

² Overall Regional Surplus/Deficit = Summation of County Surplus/Deficit

By comparison, *Table 4.15* shows all of the water supply needs by county in Region K if the surpluses are not taken into account. Region K is tasked with developing water management strategies to meet all of these needs. One potential strategy is to identify the WUGs with surpluses and determine if it is possible for this surplus water to meet the needs of WUGs with shortages.

Table 4.15 County and Regional Water Supply Condition Summary Excluding Surpluses (deficit, ac-ft/yr)

County¹	2020	2030	2040	2050	2060	2070
Bastrop	(4,184)	(11,327)	(15,883)	(22,596)	(32,730)	(47,187)
Blanco	(48)	(105)	(138)	(179)	(209)	(230)
Burnet	(1,258)	(2,401)	(4,718)	(6,850)	(8,769)	(10,457)
Colorado	(59,075)	(54,635)	(50,318)	(46,165)	(42,130)	(38,205)
Fayette	(2,464)	(2,205)	(1,802)	(1,417)	(3,824)	(8,750)
Gillespie	(309)	(362)	(411)	(452)	(566)	(848)
Hays	(531)	(2,396)	(6,345)	(11,412)	(16,970)	(23,294)
Llano	(445)	(525)	(502)	(443)	(534)	(629)
Matagorda	(191,911)	(186,220)	(180,692)	(175,320)	(170,093)	(164,999)
Mills	(669)	(641)	(612)	(598)	(587)	(583)
San Saba	(88)	(128)	(124)	(99)	(125)	(152)
Travis	(3,199)	(19,203)	(27,658)	(41,766)	(85,617)	(134,438)
Wharton	(109,382)	(103,673)	(98,118)	(92,712)	(87,545)	(82,532)
Williamson	0	0	0	0	0	0
Regional Totals²	(373,563)	(383,821)	(387,321)	(400,009)	(449,699)	(512,304)

¹ Overall County Deficit² Overall Regional Deficit = Summation of County Deficit

4.3 WHOLESALE WATER PROVIDER NEEDS

As previously discussed, the LCRA and COA have been identified as wholesale water providers within the LCRWPA. The following sections present a comparison of the water supplies for these two entities and their water supply commitments.

4.3.1 Lower Colorado River Authority

The LCRA has three sources for its water. These sources include the Highland Lakes System and ROR water rights in the lower portion of the basin. The LCRA also has developed groundwater in Bastrop County. The LCRA has commitments to provide water to individual users and cities throughout the LCRWPA. In addition, the LCRA uses water at its electric generating facilities. LCRA also provides water for agricultural irrigation and environmental needs of the river and bay according to the LCRA Water Management Plan. *Table 4.16* contains a comparison of LCRA's supplies and water commitments. *Table 4.17* contains a comparison of LCRA's irrigation water supplies and projected irrigation demands.

Table 4.16 LCRA Firm Water Supply/Commitment Comparison (ac-ft/yr)

LCRA Water Supply	2020	2030	2040	2050	2060	2070
Firm Water Supply	461,559	456,431	451,715	446,140	439,597	433,521
Firm Water Commitments	441,821	441,817	441,803	441,783	441,750	441,684
Water Surplus/Deficit	19,738	14,614	9,912	4,357	(2,153)	(8,163)

Note: The water supply is detailed in *Table 3.25*. The water commitments are detailed in *Tables 2.23* and *3.26*. Commitments include the out-of-basin 25,000 ac-ft/yr demand from Region G in Williamson County under the HB 1437 program and other current, separate out-of-region commitments (Leander, Cedar Park, and others). Environmental commitments are included in this table as part of the firm water commitments, but are not one of the six water uses planned for in the regional planning process.

Table 4.17 LCRA Irrigation Water Supply and Projected Demands¹ Comparison (ac-ft/yr)

LCRA Water Supply	2020	2030	2040	2050	2060	2070
Irrigation Water Supply	107,703	107,703	107,703	107,703	107,703	107,703
Irrigation Water Projected Demands (Region K)	423,016	411,567	400,426	389,584	379,035	368,768
Irrigation Water Projected Demands (Region P)	16,000	16,000	16,000	16,000	16,000	16,000
Water Surplus/Deficit	(331,313)	(319,864)	(308,723)	(297,881)	(287,332)	(277,065)

Note: The water supply is detailed in *Table 3.25*. The irrigation water projected demands are detailed in *Tables 2.23* and *3.26*. Projected water demands presented in *Table 4.17* include a portion of the rice irrigation demands for Region K (ratio for Colorado, Matagorda and Wharton Counties applied from the 2001 plan: 0.75, 0.87 and 0.55).

As shown in *Table 4.16*, LCRA has sufficient water supply to meet all of its current water commitments under the assumptions being used in this plan through 2050. Beginning in 2060, LCRA shows a water shortage and in 2070 LCRA needs an additional 8,160 ac-ft/yr of supply to meet current commitments. Regarding irrigation, as shown in *Table 4.17*, LCRA does not have sufficient water supply to meet all projected irrigation demands. This analysis does not include interruptible water supplies projected to be available over the planning horizon through the implementation of the Water Management Plan (WMP) or projected municipal return flows. Strategies to meet projected shortages are discussed in Chapter 5.

4.3.2 City of Austin

The COA currently has two major sources for its surface water. These sources include the ROR water rights and a contract with LCRA to receive firm water from any source under the LCRA water rights system. The COA water rights contain separate authorizations for municipal and manufacturing uses and steam electric power generation. *Tables 4.18* and *4.19* contain comparisons of the COA's water supplies to its projected water demands and commitments for these main use types.

¹ The irrigation water commitments discussed here reflect the projected demands within LCRA's Irrigation Divisions and Pierce Ranch which are currently being met by LCRA's ROR water rights and supplemental interruptible stored water from lakes Buchanan and Travis in accordance with LCRA's Water Management Plan on an annual contract basis.

Table 4.18 COA Municipal and Manufacturing Water Supply/Projected Demand and Commitment Comparison (ac-ft/yr)

COA Water Supply	2020	2030	2040	2050	2060	2070
Municipal and Manufacturing Water Supply	325,000	325,000	325,000	325,000	325,000	325,000
Municipal and Manufacturing Projected Demand and Commitments	220,990	254,475	298,804	328,878	358,825	392,252
Water Surplus/Need	104,010	70,525	26,196	(3,878)	(33,825)	(67,252)

Note: The water supply is detailed in *Table 3.26*. The projected water demands and commitments are detailed in *Tables 2.21* and *3.28*. Note that it is anticipated that some current COA wholesale customers will be transferring to new LCRA raw water contracts. COA will continue to treat and transport their potable water supplies.

Based on the information developed through the regional water plan analysis process, this table indicates that the COA has sufficient water to meet its municipal and manufacturing needs through the year 2040. By the year 2050, it is anticipated that the COA will have a deficit of approximately 4,000 ac-ft/yr. By the year 2070, it is anticipated that the COA will have a deficit of approximately 67,000 ac-ft/yr.

It should be noted that the current drought in the Colorado Basin is on-going and historical in proportion. At the time of development of this plan's information, preliminary analysis indicates that system firm yields have been reduced. The City of Austin is working to develop drought response strategies to assure that the City of Austin water supply remains reliable taking into consideration the on-going current drought. These near-term City of Austin drought response strategies and other water management strategies are referenced in Chapter 5.

Table 4.19 COA Steam Electric Water Supply/Projected Demand Comparison (ac-ft/yr)

COA Water Supply	2020	2030	2040	2050	2060	2070
Steam Electric Water Supply	29,013	29,013	29,013	29,013	29,013	29,013
Steam Electric Projected Water Demand	33,202	37,202	37,202	38,202	45,202	49,202
Water Surplus/Need	(4,189)	(8,189)	(8,189)	(9,189)	(16,189)	(20,189)

Note: The water supply is detailed in *Table 3.27*. The projected water demands are detailed in *Tables 2.22* and *3.28*. The water demands presented in *Table 4.19* represent all of the steam electric generating demands for Travis County plus a portion of the Fayette County demands (based on estimated current supply levels and approved projections).

This table indicates that by the year 2020, it is anticipated that the COA will have a 4,000 ac-ft/yr deficit in the steam-electric category of use. By 2030, it is anticipated that the COA will have a deficit of approximately 8,000 ac-ft/yr for steam-electric. By 2070, the COA will have a deficit of approximately 20,000 ac-ft/yr.

APPENDIX 4A

DB17 WUG NEEDS/SURPLUS REPORT

*WWP CONTRACT DEMANDS/NEEDS BY WUG, COUNTY, AND BASIN,
BASED ON DB17 OUTPUT*

