

CHAPTER 4
IDENTIFICATION OF
WATER NEEDS

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4 IDENTIFICATION OF WATER NEEDS

Chapter 4 provides projections (Table 4-1) of water supply surpluses or deficits by decade based on a comparison of projected water demands by decade for each water-use entity from Chapter 2 with water supplies available to meet those demands from Chapter 3. Entities are then identified that, in any decade within the 50-year planning period, develop a water-supply need (deficit) that is greater than that entity's ability to provide a supply to meet that need. A water-supply deficit may develop for individual water-use entities for numerous reasons including supply availability limits, infrastructure limitations, or legal limits. Table 4-2 provides the WUG's needs/surpluses analyses by category of use. Tables 4-3 and 4-4 provide a similar analysis by Major Water Providers (Del Rio Utilities Commission) and by category of use by the Major Water Provider.

Municipal water supply deficits are identified for ~~Bandera County FWSD +~~ Rocksprings, Kerrville, Kerrville South Water, Camp Wood, ~~City of~~ Del Rio Utilities, Laughlin Air Force Base, ~~Rocksprings and County-Other (rural) in Bandera and Kerr Counties~~ County. Irrigation shortages are shown in ~~Bandera, Edwards, and Kerr Counties~~ County; mining shortages in Edwards, Kerr, and Val Verde Counties; ~~and~~ livestock shortages in Bandera, Edwards, and Kerr ~~and Kinney~~ Counties; ~~and manufacturing shortages in Real County~~. Water management strategies developed for this *Plan* are intended to meet all projected water supply shortages.

A second-tier water needs analysis for all water user groups and major water providers for which conservation or direct reuse water management strategies are recommended, is provided in the TWDB ~~Database 22-Database 27~~ tables in the Executive Summary Appendix (WUG Second-Tier Identified Water Needs). This second-tier water needs analysis calculates the water needs that would remain after assuming all recommended conservation and reuse water management strategies are fully implemented. Del Rio Utilities Commission is listed in these tables as both a WUG and MWP and is therefore listed in the above TWDB table in the Executive Summary. Unmet needs resulting from insufficient supplies to meet certain strategies is also included in the TWDB tables in the Executive Summary.

Water-supply strategy recommendations are then made in Chapter 5 for those water users that have projected water-supply deficits based on the comparison between demand and supply. In addition, strategies are also developed for specific entities that although they are not projected to have future shortages, they do have anticipated water-supply projects that deserve to be recognized in the *Regional Plan*. A socioeconomic impact of unmet water needs analysis prepared by the Texas Water Development Board is provided in Appendix 6A.

It is important to note that the methodology used to estimate water needs/surpluses for county-other use depicts water supply available to county-other, as a whole. ~~except in portions of counties where sub-WUGs have been identified~~. The methodology assumes that all county-other water supply is available to satisfy demand, whereas, in reality, county-other population and water demand are often concentrated in smaller areas of the county such as unincorporated communities, subdivisions and mobile home parks which cannot access water supply available in other areas of the county. The reflected surplus depicted in the tables may or may not be an accurate estimate depending on population densities. Increasing population density, increases water demand by straining available local water supply resources, though the county-other (as a whole) reflects adequate supply.

**Table 4-1. Identified Water (Needs)/Surpluses
(Acre Feet per Year)**

	2030	2040	2050	2060	2070	2080
Bandera County						
<i>Guadalupe Basin</i>						
County-Other	19	19	18	18	18	18
Livestock	8	8	8	8	8	8
<i>Nueces Basin</i>						
County-Other	176	174	172	169	167	165
Mining	0	0	0	0	0	0
Livestock	(20)	(20)	(20)	(20)	(20)	(20)
Irrigation	14	14	14	14	14	14
<i>San Antonio Basin</i>						
Bandera	149	143	136	129	122	114
Bandera County FWSD #1	97	91	84	76	69	62
County-Other	2,967	2,939	2,901	2,862	2,822	2,781
Mining	1	1	0	0	0	0
Livestock	11	11	11	11	11	11
Irrigation	(157)	(157)	(157)	(157)	(157)	(157)
Edwards County						
<i>Colorado Basin</i>						
Rocksprings	697	719	736	747	757	767
County-Other	21	24	27	28	29	31
Livestock	53	53	53	53	53	53
Irrigation	0	0	0	0	0	0
<i>Nueces Basin</i>						
Rocksprings	(66)	(53)	(42)	(36)	(30)	(23)
County-Other	51	59	63	68	71	74
Mining	(8)	(8)	(8)	(8)	(8)	(8)
Livestock	(53)	(53)	(53)	(53)	(53)	(53)
Irrigation	75	75	75	75	75	75
<i>Rio Grande Basin</i>						
County-Other	10	11	13	13	14	15
Livestock	34	34	34	34	34	34
Irrigation	(15)	(15)	(15)	(15)	(15)	(15)
Kerr County						
<i>Colorado Basin</i>						
County-Other	(79)	(83)	(86)	(91)	(96)	(101)
Livestock	(28)	(28)	(28)	(28)	(28)	(28)
Irrigation	(97)	(97)	(97)	(97)	(97)	(97)
<i>Guadalupe Basin</i>						
Kerrville	(1,445)	(1,780)	(2,032)	(2,435)	(2,842)	(3,231)
Kerrville South Water	(70)	(88)	(103)	(126)	(150)	(173)
County-Other	2,324	2,192	2,088	1,925	1,759	1,601
Manufacturing	70	69	68	67	66	65
Mining	(75)	(75)	(75)	(75)	(75)	(75)
Livestock	15	15	15	15	15	15
Irrigation	682	682	671	655	655	655
<i>Nueces Basin</i>						
County-Other	1	1	1	0	0	0
Livestock	0	0	0	0	0	0
<i>San Antonio Basin</i>						
County-Other	28	26	25	23	21	19
Livestock	(41)	(41)	(41)	(41)	(41)	(41)
Irrigation	(3)	(3)	(3)	(3)	(3)	(3)
Kinney County						

Nueces Basin						
County-Other	3	3	3	3	3	4
Livestock	28	28	28	28	28	28
Irrigation	0	0	0	0	0	0
Rio Grande Basin						
Brackettville	117	146	164	175	186	198
Fort Clark Springs MUD	644	683	708	724	739	755
County-Other	69	73	75	77	78	78
Livestock	10	10	10	10	10	10
Irrigation	1,035	1,035	1,035	1,035	1,035	1,035
Real County						
Colorado Basin						
County-Other	6	6	7	7	7	8
Irrigation	3	3	3	3	3	3
Nueces Basin						
Camp Wood	(147)	(124)	(106)	(92)	(78)	(64)
Leakey	434	456	473	487	500	515
County-Other	319	352	378	398	418	437
Manufacturing	(2)	(2)	(2)	(2)	(2)	(2)
Livestock	0	0	0	0	0	0
Irrigation	1,636	1,636	1,636	1,636	1,636	1,636
Val Verde County						
Rio Grande Basin						
Del Rio Utilities Commission	(5,516)	(5,524)	(5,556)	(5,587)	(5,618)	(5,649)
Laughlin Air Force Base	111	113	113	113	113	113
County-Other	592	568	537	526	514	502
Manufacturing	0	0	0	0	0	0
Mining	2	(6)	(15)	(23)	(30)	(38)
Livestock	0	0	0	0	0	0
Irrigation	143	143	143	143	143	143

	2020	2030	2040	2050	2060	2070
Bandera County						
— Guadalupe Basin	-	-	-	-	-	-
County-Other	21	20	19	19	19	19
Livestock	(2)	(2)	(2)	(2)	(2)	(2)
— Nueces Basin	-	-	-	-	-	-
County-Other	321	308	301	299	297	296
Livestock	(3)	(3)	(3)	(3)	(3)	(3)
Irrigation	102	102	102	102	102	102
— San Antonio Basin	-	-	-	-	-	-
Bandera	192	151	130	121	115	111
Bandera County FWSD †	(66)	(83)	(92)	(96)	(99)	(100)
County-Other † Bandera						
River Ranch †	(28)	(39)	(44)	(46)	(48)	(49)
County-Other † Lake						
Medina Shores	(196)	(225)	(239)	(244)	(248)	(251)
County-Other † Medina						
WSC	(35)	(46)	(51)	(53)	(54)	(55)
County-Other	2,970	2,770	2,669	2,633	2,603	2,586
Livestock	11	11	11	11	11	11
Irrigation	(75)	(75)	(75)	(75)	(75)	(75)
Bandera County Total	3,212	2,889	2,726	2,666	2,618	2,590
Needs/Surplus						
Edwards County						

— Colorado Basin	-	-	-	-	-	-
Rocksprings	673	677	680	681	681	681
County-Other	42	43	43	43	43	43
Mining	(12)	(12)	(12)	(12)	(12)	(12)
Livestock	365	365	365	365	365	365
Irrigation	44	44	44	44	44	44
— Nueces Basin	-	-	-	-	-	-
Rocksprings	(98)	(96)	(94)	(94)	(94)	(94)
County-Other Barksdale WSC	81	82	83	84	84	84
County-Other	120	122	124	124	124	124
Mining	(16)	(16)	(16)	(16)	(16)	(16)
Livestock	14	14	14	14	14	14
Irrigation	114	114	114	114	114	114
— Rio Grande Basin	-	-	-	-	-	-
County-Other	22	22	23	23	23	23
Mining	(31)	(31)	(31)	(31)	(31)	(31)
Livestock	11	11	11	11	11	10
Irrigation	10	10	10	10	10	10
Edwards County Total Needs/Surplus	1,339	1,349	1,358	1,360	1,360	1,360
Kerr County						
— Colorado Basin	-	-	-	-	-	-
County-Other	21	20	20	20	19	18
Mining	(11)	(12)	(15)	(16)	(17)	(19)
Livestock	(119)	(119)	(119)	(119)	(119)	(119)
Irrigation	31	31	31	31	31	31

**Table 4-1. (Continued) Identified Water (Needs)/Surpluses
(Acre Feet per Year)**

	2020	2030	2040	2050	2060	2070
-						
Kerr County						
— Guadalupe Basin	-	-	-	-	-	-
Kerrville	1,551	1,475	1,455	1,396	1,328	1,269
Kerrville South Water	46	41	40	35	29	24
County Other Center Point	(3)	(3)	(3)	(3)	(3)	(4)
County Other Center Point North Water System	1	1	1	1	0	0
County Other Center Point Taylor System	(2)	(2)	(3)	(3)	(4)	(5)
County Other Hills and Dales Estates	1	1	1	0	0	0
County Other Nickerson Farm Water System	5	5	5	5	4	4
County Other Oak Forest South Water	24	23	23	22	21	20
County Other Park Place Subdivision	3	3	3	3	3	2
County Other Pecan Valley	2	1	1	1	1	1
County Other Rustic Hills Water	2	2	2	2	2	2
County Other Verde Park Estates	1	1	1	1	0	0
County Other Westwood Water System	5	5	5	5	4	4
County Other	6,525	6,493	6,489	6,458	6,420	6,387
Manufacturing	28	27	27	27	27	27
Mining	60	57	40	39	31	24
Livestock	(173)	(173)	(173)	(173)	(173)	(173)
Irrigation	421	421	421	421	421	421
— Nueces Basin	-	-	-	-	-	-
County Other	(1)	(1)	(1)	(1)	(1)	(1)
Livestock	(6)	(6)	(6)	(6)	(6)	(6)
— San Antonio Basin	-	-	-	-	-	-
County Other	238	238	237	237	237	236
Livestock	(27)	(27)	(27)	(27)	(27)	(27)
Irrigation	21	21	21	21	21	21
Kerr County Total Needs/Surplus	8,644	8,523	8,476	8,377	8,249	8,137
Kinney County						
— Nueces Basin	-	-	-	-	-	-
County Other	23	23	23	23	24	24
Livestock	(27)	(27)	(27)	(27)	(27)	(27)
Irrigation	1,057	1,057	1,057	1,057	1,057	1,057
— Rio Grande Basin	-	-	-	-	-	-
Brackettville	37	43	51	52	53	53
Fort Clark Springs MUD	753	755	759	761	762	762
County Other	112	113	114	114	114	114
Livestock	197	197	197	197	197	197
Irrigation	5,580	5,580	5,580	5,580	5,580	5,580
Kinney County Needs/Surplus	7,732	7,741	7,754	7,757	7,760	7,760

**Table 4-1. (Continued) Identified Water (Needs)/Surpluses
(Acre Feet per Year)**

-	2020	2030	2040	2050	2060	2070
Real County						
— Colorado Basin	-	-	-	-	-	-
County Other	11	11	12	12	12	12
Livestock	5	5	5	5	5	5
Irrigation	176	176	176	176	176	176
— Nueces Basin	-	-	-	-	-	-
Camp Wood	(143)	(139)	(136)	(135)	(135)	(135)
Leakey	105	112	118	120	121	121
County Other	352	356	359	361	361	361
Livestock	38	38	38	38	38	38
Irrigation	1,680	1,680	1,680	1,680	1,680	1,680
Real County Total Needs/Surplus	2,224	2,239	2,252	2,257	2,258	2,258
Val Verde County						
— Rio Grande Basin	-	-	-	-	-	-
Del Rio Utilities Commission	(4,423)	(4,918)	(5,419)	(5,995)	(6,598)	(7,191)
Laughlin AFB	(87)	(183)	(284)	(346)	(345)	(345)
County Other	1,388	1,057	727	362	(12)	(377)
Mining	(151)	(210)	(220)	(184)	(153)	(132)
Livestock	96	96	96	96	96	96
Irrigation	4,267	4,267	4,267	4,267	4,267	4,267
Val Verde County Total Needs/Surplus	1,090	109	(833)	(1,800)	(2,745)	(3,682)
Region J Total Needs/Surplus	24,241	22,850	21,733	20,617	19,500	18,423

**Table 4-2. Identified Water (Needs)/Surpluses by Category
(Acre Feet per Year)**

WUG County	WUG Category	WUG Water Supply (Needs) / Surplus 2030	WUG Water Supply (Needs) / Surplus 2040	WUG Water Supply (Needs) / Surplus 2050	WUG Water Supply (Needs) / Surplus 2060	WUG Water Supply (Needs) / Surplus 2070	WUG Water Supply (Needs) / Surplus 2080
Bandera	Municipal	3,408	3,366	3,311	3,254	3,198	3,140
	Mining	1	1	0	0	0	0
	Livestock	(1)	(1)	(1)	(1)	(1)	(1)
	Irrigation	(143)	(143)	(143)	(143)	(143)	(143)
Edwards	Municipal	713	760	797	820	841	864
	Mining	(8)	(8)	(8)	(8)	(8)	(8)
	Livestock	34	34	34	34	34	34
	Irrigation	60	60	60	60	60	60
Kerr	Municipal	759	268	(107)	(704)	(1,308)	(1,885)
	Manufacturing	70	69	68	67	66	65
	Mining	(75)	(75)	(75)	(75)	(75)	(75)
	Livestock	(54)	(54)	(54)	(54)	(54)	(54)
	Irrigation	582	582	571	555	555	555
Kinney	Municipal	833	905	950	979	1,006	1,035
	Livestock	38	38	38	38	38	38
	Irrigation	1,035	1,035	1,035	1,035	1,035	1,035
Real	Municipal	612	690	752	800	847	896
	Manufacturing	(2)	(2)	(2)	(2)	(2)	(2)
	Livestock	0	0	0	0	0	0
	Irrigation	1,639	1,639	1,639	1,639	1,639	1,639
Val Verde	Municipal	(6,288)	(6,318)	(6,381)	(6,423)	(6,466)	(6,509)
	Manufacturing	0	0	0	0	0	0
	Mining	2	(6)	(15)	(23)	(30)	(38)
	Livestock	0	0	0	0	0	0
	Irrigation	2,214	2,214	2,214	2,214	2,214	2,214

Table 4-2. Identified Water (Needs)/Surpluses by Category

WUG COUNTY	WUG CATEGORY	WUG WATER SUPPLY (NEED)/SURPLUS 2020	WUG WATER SUPPLY (NEED)/SURPLUS 2030	WUG WATER SUPPLY (NEED)/SURPLUS 2040	WUG WATER SUPPLY (NEED)/SURPLUS 2050	WUG WATER SUPPLY (NEED)/SURPLUS 2060	WUG WATER SUPPLY (NEED)/SURPLUS 2070
Bandera	Municipal	3,179	2,856	2,693	2,633	2,585	2,557
	Irrigation	27	27	27	27	27	27
	Livestock	6	6	6	6	6	6
Edwards	Municipal	840	850	859	861	861	861
	Irrigation	168	168	168	168	168	168
	Livestock	390	390	390	390	390	390
	Mining	(59)	(59)	(59)	(59)	(59)	(59)
Kerr	Municipal	8,419	8,303	8,276	8,179	8,060	7,957
	Irrigation	473	473	473	473	473	473
	Livestock	(325)	(325)	(325)	(325)	(325)	(325)
	Manufacturing	28	27	27	27	27	27
	Mining	49	45	25	23	14	5
Kinney	Municipal	925	934	947	950	953	953
	Irrigation	6,637	6,637	6,637	6,637	6,637	6,637
	Livestock	170	170	170	170	170	170
Real	Municipal	325	340	353	358	359	359
	Irrigation	1,856	1,856	1,856	1,856	1,856	1,856
	Livestock	43	43	43	43	43	43
Val Verde	Municipal	(3,122)	(4,044)	(4,976)	(5,979)	(6,955)	(7,913)
	Irrigation	4,267	4,267	4,267	4,267	4,267	4,267
	Livestock	96	96	96	96	96	96
	Mining	-151	-210	-220	-184	-153	-132

**Table 4-3. Del Rio Major Water Provider Identified Water (Needs)/Surpluses
(Acre Feet per Year)**

County	Basin	Major Water Provider	Receiving Entity	2030	2040	2050	2060	2070	2080
Val Verde	Rio Grande	Del Rio Utilities	City of Del Rio	(4,423) (6,842)	(4,918) (6,850)	(5,419) (6,882)	(5,995) (6,913)	(6,598) (6,944)	(7,191) (6,975)
			Laughlin AFB	(87) (38)	(183) (36)	(284) (36)	(346) (36)	(345) (36)	(345) (36)
			County Other	1,388 <u>592</u>	1,057 <u>568</u>	727 <u>537</u>	362 <u>526</u>	(12) <u>514</u>	(377) <u>502</u>

**Table 4-4. Del Rio Major Water Provider Identified Water (Needs)/Surpluses by Category
(Acre Feet per Year)**

County	Basin	Use Category	2020	2030	2040	2050	2060	2070
Val Verde	Rio Grande	Municipal	(3,122) (6,288)	(4,044) (6,318)	(4,976) (6,381)	(5,979) (6,423)	(6,955) (6,466)	(7,913) (6,509)
		Manufacturing	0	0	0	0	0	0
		Mining	0 2	0 (6)	0 (15)	0 (23)	0 (30)	0 (38)
		Livestock	0	0	0	0	0	0
		Irrigation	0 <u>2,214</u>	0 <u>2,214</u>	0 <u>2,214</u>	0 <u>2,214</u>	0 <u>2,214</u>	0 <u>2,214</u>

**Table 4-5. Second Tier Identified Water Needs
(Acre Feet per Year)**

Not yet provided by TWDB

**Table 4-6. Second Tier Identified Water Needs by Category of Use
(Acre-Feet per Year)**

Not yet provided by TWDB

**Table 4-7. Second Tier Identified Water Needs by Major Water Provider
(Acre Feet per Year)**

Not yet provided by TWDB