

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

A secondary water needs analysis by all water user groups and by category of use for which conservation or direct reuse water management strategies are recommended is provided in Table 4-5 and 4-6. This secondary water needs analysis calculates the water needs that would remain after assuming all recommended conservation and reuse water management strategies are fully implemented. Table 4-7 provides similar data by Major Water Providers. Del Rio Utilities Commission is listed in these tables as both a WUG and MWP.

Unmet needs resulting from insufficient supplies to meet certain strategies is 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. 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)

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

	2030	2040	2050	2060	2070	2080
Kinney County						
<i>Nueces Basin</i>						
County-Other	3	3	3	3	3	4
Livestock	28	28	28	28	28	28
Irrigation	0	0	0	0	0	0
<i>Rio Grande Basin</i>						
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						
<i>Colorado Basin</i>						
County-Other	6	6	7	7	7	8
Irrigation	3	3	3	3	3	3
<i>Nueces Basin</i>						
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						
<i>Rio Grande Basin</i>						
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

**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	(4,813)	(4,843)	(4,906)	(4,948)	(4,991)	(5,034)
	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

**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	(5,516)	(5,524)	(5,556)	(5,587)	(5,618)	(5,649)
			Laughlin AFB	111	113	113	113	113	113
			County-Other	592	568	537	526	514	502

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

County	Basin	Major Water Provider	Receiving Entity	2030	2040	2050	2060	2070	2080
Val Verde	Rio Grande	Del Rio Utilities	Municipal	(4,813)	(4,843)	(4,906)	(4,948)	(4,991)	(5,034)
			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

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

	2030	2040	2050	2060	2070	2080
Bandera County						
<i>Guadalupe Basin</i>						
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
<i>Nueces Basin</i>						
County-Other	0	0	0	0	0	0
Mining	0	0	0	0	0	0
Livestock	(7)	(7)	(7)	(7)	(7)	(7)
Irrigation	0	0	0	0	0	0
<i>San Antonio Basin</i>						
Bandera	0	0	0	0	0	0
Bandera County FWSD #1	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Mining	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Edwards County						
<i>Colorado Basin</i>						
Rocksprings	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0

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

	2030	2040	2050	2060	2070	2080
Edwards County						
<i>Colorado Basin</i>						
Irrigation	0	0	0	0	0	0
<i>Nueces Basin</i>						
Rocksprings	(59)	(46)	(35)	(29)	(23)	(16)
County-Other	0	0	0	0	0	0
Mining	(6)	(6)	(6)	(6)	(6)	(6)
Livestock	(2)	(2)	(2)	(2)	(2)	(2)
Irrigation	0	0	0	0	0	0
<i>Rio Grande Basin</i>						
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	(2)	(2)	(2)	(2)	(2)	(2)
Kerr County						
<i>Colorado Basin</i>						
County-Other	(79)	(83)	(86)	(91)	(96)	(101)
Livestock	(22)	(22)	(22)	(22)	(22)	(22)
Irrigation	(82)	(82)	(82)	(82)	(82)	(82)
<i>Guadalupe Basin</i>						
Kerrville	(1,403)	(1,738)	(1,990)	(2,393)	(2,800)	(3,189)
Kerrville South Water	(70)	(88)	(103)	(126)	(150)	(173)
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Mining	(45)	(45)	(45)	(45)	(45)	(45)
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
<i>Nueces Basin</i>						
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
<i>San Antonio Basin</i>						
County-Other	0	0	0	0	0	0
Livestock	(32)	(32)	(32)	(32)	(32)	(32)
Irrigation	0	0	0	0	0	0
Kinney County						
<i>Nueces Basin</i>						
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
<i>Rio Grande Basin</i>						
Brackettville	0	0	0	0	0	0
Fort Clark Springs MUD	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Livestock	0	0	0	0	0	0

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

	2030	2040	2050	2060	2070	2080
Kinney County						
<i>Rio Grande Basin</i>						
Irrigation	0	0	0	0	0	0
Real County						
<i>Colorado Basin</i>						
County-Other	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
<i>Nueces Basin</i>						
Camp Wood	(146)	(123)	(105)	(91)	(77)	(63)
Leakey	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	(1)	(1)	(1)	(1)	(1)	(1)
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0
Val Verde County						
<i>Rio Grande Basin</i>						
Del Rio Utilities Commission	(4,885)	(4,893)	(4,925)	(4,956)	(4,987)	(5,018)
Laughlin Air Force Base	0	0	0	0	0	0
County-Other	0	0	0	0	0	0
Manufacturing	0	0	0	0	0	0
Mining	0	0	0	(5)	(11)	(17)
Livestock	0	0	0	0	0	0
Irrigation	0	0	0	0	0	0

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

WUG County	WUG Category	WUG Water (Needs) 2030	WUG Water (Needs) 2040	WUG Water (Needs) 2050	WUG Water (Needs) 2060	WUG Water (Needs) 2070	WUG Water (Needs) 2080
Bandera	Municipal	0	0	0	0	0	0
	Mining	0	0	0	0	0	0
	Livestock	(7)	(7)	(7)	(7)	(7)	(7)
	Irrigation	0	0	0	0	0	0
Edwards	Municipal	(59)	(46)	(35)	(29)	(23)	(16)
	Mining	(6)	(6)	(6)	(6)	(6)	(6)
	Livestock	(2)	(2)	(2)	(2)	(2)	(2)
	Irrigation	(2)	(2)	(2)	(2)	(2)	(2)
Kerr	Municipal	(1,552)	(1,909)	(2,179)	(2,610)	(3,046)	(3,463)
	Manufacturing	0	0	0	0	0	0
	Mining	(45)	(45)	(45)	(45)	(45)	(45)
	Livestock	(55)	(55)	(55)	(55)	(55)	(55)
	Irrigation	(82)	(82)	(82)	(82)	(82)	(82)

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

WUG County	WUG Category	WUG Water (Needs) 2030	WUG Water (Needs) 2040	WUG Water (Needs) 2050	WUG Water (Needs) 2060	WUG Water (Needs) 2070	WUG Water (Needs) 2080
Kinney	Municipal	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Irrigation	0	0	0	0	0	0
Real	Municipal	(146)	(123)	(105)	(91)	(77)	(63)
	Manufacturing	(1)	(1)	(1)	(1)	(1)	(1)
	Livestock	0	0	0	0	0	0
	Irrigation	0	0	0	0	0	0
Val Verde	Municipal	(4,885)	(4,893)	(4,925)	(4,956)	(4,987)	(5,018)
	Manufacturing	0	0	0	0	0	0
	Mining	0	0	0	(5)	(11)	(17)
	Livestock	0	0	0	0	0	0
	Irrigation	0	0	0	0	0	0

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

County	Basin	Major Water Provider	2030	2040	2050	2060	2070	2080
Val Verde	Rio Grande	Del Rio Utilities	(4,885)	(4,893)	(4,925)	(4,956)	(4,987)	(5,018)