CHAPTER 4 COMPARISON OF WATER DEMANDS WITH WATER SUPPLIES TO DETERMINE NEEDS

4.1 Introduction

In this section, the demand projections from Chapter 2 and the supply projections from Chapter 3 are brought together to estimate projected water needs in the Brazos G Area through year 2087~~7~~0.

4.2 Water Needs Projected for Water User Groups

If projected demands exceed projected supplies for a water user group, the difference or shortage, is identified as a "water need." This section contains a summary of the water needs (shortages) for WUGs located in the Brazos G Area. A table in the Executive Summary Appendix presents the water needs for each WUG by county as "Region G Water User Group (WUG) Needs/Surplus."

Secondary, or Second-Tier, water needs are those water needs that would remain after implementation of recommended water conservation and reuse strategies. Secondary water needs are presented in the Executive Summary Appendix as "Region G Water User Group (WUG) Second-Tier Identified Water Needs" and "Region G Water User Group (WUG) Second-Tier Identified Water Needs Summary."

4.2.1 Projected Municipal Needs

Water shortages projected for municipal WUGs are listed in Table 4.1, along with the projected year 2054~~4~~0 and 2087~~7~~0 shortages, and the approximate decade that shortages are expected to begin. WUGs located in multiple counties are indicated with (P) in Table 4.1, and the shortages identified are for the portion of the WUG located in the county identified. Shortages for portions of WUGs in counties outside of Brazos G for which Brazos G is the primary planning area are shown. For municipal WUGs that are also wholesale water providers (WWPs), supplies are first assigned to contractual customers and remaining supplies are then assigned to the WUGs' own municipal demands. The shortages shown are for the WUGs' internal municipal demands and not shortages for any wholesale customers. Additional contractual demands associated with strategies recommended for WUGs and WWPs that are recommended to purchase additional water are shown in Chapter 5.

~~Thirty-six of the~~All 37 counties in the Brazos G Area are projected to have at least one municipal WUG shortage. The County-Other category includes water supply corporations, water districts, privately owned utilities, and small towns that generally supply less than 100 acft of water, in addition to private domestic water use that is not served by a water utility. The County-Other category is projected to experience shortages in 17~~2~~ counties: Brazos, ~~Bell,~~ Comanche, ~~Coryell,~~ Erath, Falls, Fisher, Grimes, Hill, Hood, Jones, Kent, Lee, McLennan, Milam, Palo Pinto, Robertson, ~~Somervell, Taylor, and~~ Williamson, and Young.

Table 4.1 Municipal WUGs with Projected Water Needs (acre-feet/year)

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2050	Year 2080	
439 WSC	BELL	-383	-811	2040
BELL COUNTY WCID 1	BELL	-98	-98	2030
BELTON	BELL	483	-3,394	2060
CENTRAL TEXAS COLLEGE DISTRICT (P)	BELL	-160	-160	2030
ELM CREEK WSC (P)	BELL	-114	-181	2030
GEORGETOWN (P)	BELL	-951	-1,053	2030
HARKER HEIGHTS	BELL	-1,203	-1,587	2040
KEMPNER WSC (P)	BELL	-214	-281	2030
KILLEEN	BELL	-3,154	-7,352	2030
SALADO WSC	BELL	-900	-2,163	2030
TEMPLE	BELL	-15,188	-21,240	2030
THE GROVE WSC (P)	BELL	-4	-49	2050
CORIX UTILITIES TEXAS INC (P)	BLANCO	-33	-35	2030
CLIFTON	BOSQUE	-98	-380	2040
HIGHLAND PARK WSC (P)	BOSQUE	-36	-24	2030
HILCO UNITED SERVICES (P)	BOSQUE	-257	-331	2030
HOG CREEK WSC (P)	BOSQUE	-74	-65	2030
BRYAN	BRAZOS	-12,507	-35,740	2030
COLLEGE STATION	BRAZOS	-14,816	-19,152	2030
COUNTY-OTHER, BRAZOS	BRAZOS	17	-109	2030
TEXAS A&M UNIVERSITY	BRAZOS	-3,988	-3,988	2030
WELLBORN SUD (P)	BRAZOS	-1,140	-6,016	2040
WICKSON CREEK SUD (P)	BRAZOS	-326	-2,718	2050
CADE LAKES WSC	BURLESON	-110	-107	2030
SOUTHWEST MILAM WSC (P)	BURLESON	-73	-102	2030
CORIX UTILITIES TEXAS INC (P)	BURNET	-283	-520	2030
GEORGETOWN (P)	BURNET	-43	-54	2030
BAIRD	CALLAHAN	-269	-294	2030
CALLAHAN COUNTY WSC	CALLAHAN	-195	-205	2030
CLYDE	CALLAHAN	-220	-419	2050
EULA WSC	CALLAHAN	-238	-292	2030
HAMBY WSC (P)	CALLAHAN	-17	-35	2050
POTOSI WSC (P)	CALLAHAN	-31	-33	2030
WESTBOUND WSC (P)	CALLAHAN	-13	-13	2030
CORIX UTILITIES TEXAS INC (P)	COLORADO	-11	0	2030

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2050	Year 2080	
COUNTY-OTHER, COMANCHE	COMANCHE	-292	-234	2030
COPPERAS COVE (P)	CORYELL	-1,023	-5,267	2050
ELM CREEK WSC (P)	CORYELL	-24	-22	2030
FLAT WSC	CORYELL	-99	-94	2030
FORT GATES WSC	CORYELL	-375	-364	2030
GATESVILLE	CORYELL	-1,629	-2,046	2030
KEMPNER WSC (P)	CORYELL	-307	-233	2030
MULTI COUNTY WSC (P)	CORYELL	-128	-116	2030
THE GROVE WSC	CORYELL	-1	-7	2050
STAFF WSC (P)	EASTLAND	0	-1	2080
WESTBOUND WSC	EASTLAND	-177	-182	2030
HILCO UNITED SERVICES (P)	ELLIS	-112	-144	2030
COUNTY-OTHER, ERATH	ERATH	417	-559	2070
GORDON (P)	ERATH	-2	-2	2030
STEPHENVILLE	ERATH	829	-1,260	2070
BRUCEVILLE EDDY (P)	FALLS	29	-109	2060
CEGO-DURANGO WSC	FALLS	-58	-167	2040
COUNTY-OTHER, FALLS	FALLS	-366	4	2030
LEVI WSC (P)	FALLS	-166	-230	2030
LITTLE ELM VALLEY WSC	FALLS	12	-2	2080
COUNTY-OTHER, FISHER	FISHER	-18	-13	2030
ROTAN	FISHER	-98	-118	2030
S U N WSC (P)	FISHER	-2	-1	2030
THE BITTER CREEK WSC (P)	FISHER	-53	-50	2030
COUNTY-OTHER, GRIMES	GRIMES	-297	-312	2030
NAVASOTA	GRIMES	-1,564	-1,773	2030
WICKSON CREEK SUD (P)	GRIMES	150	-177	2070
CORYELL CITY WATER SUPPLY DISTRICT (P)	HAMILTON	-48	-48	2030
MULTI COUNTY WSC (P)	HAMILTON	-10	-14	2030
HASKELL	HASKELL	-564	-562	2030
BRANDON IRENE WSC (P)	HILL	-120	-180	2030
CHATT WSC	HILL	-143	-162	2030
COUNTY-OTHER, HILL	HILL	-331	-390	2030
DOUBLE DIAMOND UTILITIES (P)	HILL	-1,606	-1,709	2030
FILES VALLEY WSC	HILL	106	-93	2070
HILCO UNITED SERVICES	HILL	-853	-923	2030

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2050	Year 2080	
HILLSBORO	HILL	7	-390	2060
ITASCA	HILL	-40	-54	2030
PARKER WSC (P)	HILL	-8	-17	2040
POST OAK SUD (P)	HILL	-147	-205	2030
RIO VISTA (P)	HILL	-1	-1	2030
WHITNEY	HILL	-21	-35	2040
WOODROW OSCEOLA WSC	HILL	-469	-506	2030
ACTON MUD (P)	HOOD	1,501	-439	2070
COUNTY-OTHER, HOOD	HOOD	-4,234	-4,938	2030
GRANBURY	HOOD	-1,630	-3,259	2030
LIPAN	HOOD	2	-43	2060
TOLAR	HOOD	-20	-130	2050
BETHESDA WSC (P)	JOHNSON	-3,213	-6,353	2030
CLEBURNE	JOHNSON	-2,729	-6,735	2040
DOUBLE DIAMOND UTILITIES (P)	JOHNSON	-1,057	-1,739	2030
GODLEY	JOHNSON	-91	-166	2030
GRANDVIEW	JOHNSON	-6	-128	2050
JOHNSON COUNTY SUD (P)	JOHNSON	-5,997	-10,456	2030
RIO VISTA	JOHNSON	37	-77	2070
VENUS	JOHNSON	76	210	2030
COUNTY-OTHER, JONES	JONES	-477	-289	2030
HAMBY WSC (P)	JONES	-11	-11	2050
HAWLEY WSC (P)	JONES	-203	-342	2030
S U N WSC (P)	JONES	-139	-224	2030
COUNTY-OTHER, KENT	KENT	-13	-17	2030
JAYTON	KENT	-100	-109	2030
BENJAMIN	KNOX	-51	-38	2030
KNOX CITY	KNOX	-240	-241	2030
MUNDAY	KNOX	-231	-253	2030
COPPERAS COVE	LAMPASAS	-39	-243	2050
CORIX UTILITIES TEXAS INC (P)	LAMPASAS	-613	-633	2030
KEMPNER WSC	LAMPASAS	-827	-803	2030
LAMPASAS	LAMPASAS	-778	-977	2030
MULTI COUNTY WSC	LAMPASAS	-5	-4	2030
COUNTY-OTHER, LEE	LEE	-94	-33	2030
SOUTHWEST MILAM WSC (P)	LEE	-78	-98	2030

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2050	Year 2080	
BISTONE MUNICIPAL WATER SUPPLY DISTRICT	LIMESTONE	-208	-192	2030
GROESBECK	LIMESTONE	-551	-499	2030
MEXIA	LIMESTONE	-792	-697	2030
POST OAK SUD (P)	LIMESTONE	-17	-22	2030
PRAIRIE HILL WSC (P)	LIMESTONE	-83	-57	2030
SLC WSC	LIMESTONE	-93	-81	2030
CORIX UTILITIES TEXAS INC (P)	LLANO	-290	-340	2030
AXTELL WSC	MCLENNAN	-151	-228	2030
BRUCEVILLE EDDY	MCLENNAN	-602	-912	2030
CHALK BLUFF WSC	MCLENNAN	-31	-270	2050
CHILDRESS CREEK WSC	MCLENNAN	-17	-30	2030
COUNTY-OTHER, MCLENNAN	MCLENNAN	54	-108	2070
CRAWFORD	MCLENNAN	-130	-220	2030
CROSS COUNTRY WSC	MCLENNAN	-182	-443	2030
EAST CRAWFORD WSC	MCLENNAN	-148	-197	2030
ELM CREEK WSC	MCLENNAN	-8	-68	2050
GHOLSON WSC	MCLENNAN	-49	-287	2050
HEWITT	MCLENNAN	-729	-729	2030
HIGHLAND PARK WSC	MCLENNAN	-26	-28	2030
HOG CREEK WSC	MCLENNAN	-324	-319	2030
LACY LAKEVIEW	MCLENNAN	-42	-277	2050
LEVI WSC	MCLENNAN	-14	-73	2050
MART	MCLENNAN	-217	-98	2030
MCGREGOR	MCLENNAN	-558	-1,011	2030
NORTH BOSQUE WSC	MCLENNAN	-196	-524	2030
PRAIRIE HILL WSC	MCLENNAN	-147	-215	2030
ROBINSON	MCLENNAN	-2,756	-4,632	2030
SPRING VALLEY WSC	MCLENNAN	-95	-298	2040
TEXAS STATE TECHNICAL COLLEGE	MCLENNAN	-942	-822	2030
WACO	MCLENNAN	-13,987	-26,900	2030
WOODWAY	MCLENNAN	-82	411	2030
COUNTY-OTHER, MILAM	MILAM	-8,960	-14,277	2030
ROCKDALE	MILAM	-473	-508	2030
SOUTHWEST MILAM WSC (P)	MILAM	-247	-139	2030
THORNDALE	MILAM	-97	-158	2030
CORIX UTILITIES TEXAS INC (P)	MILLS	-53	-43	2030

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2050	Year 2080	
POST OAK SUD	NAVARRO	-63	-65	2030
ROSCOE	NOLAN	-92	-83	2030
SWEETWATER	NOLAN	-91	-1	2030
THE BITTER CREEK WSC	NOLAN	-102	-149	2030
COUNTY-OTHER, PALO PINTO	PALO PINTO	-178	-173	2030
DOUBLE DIAMOND UTILITIES	PALO PINTO	-1,069	-1,051	2030
GORDON	PALO PINTO	-162	-159	2030
MINERAL WELLS (P)	PALO PINTO	-1,431	-2,030	2030
STRAWN	PALO PINTO	-12	-10	2030
MINERAL WELLS	PARKER	-152	-216	2030
NORTH RURAL WSC	PARKER	-110	-234	2030
SANTO SUD	PARKER	-16	-32	2030
STURDIVANT PROGRESS WSC	PARKER	-2	-1	2030
COUNTY-OTHER, ROBERTSON	ROBERTSON	-17	52	2030
CORIX UTILITIES TEXAS INC (P)	SAN SABA	-9	-7	2030
HAMBY WSC (P)	SHACKELFORD	-37	-74	2050
GLEN ROSE	SOMERVELL	-237	-226	2030
FORT BELKNAP WSC (P)	STEPHENS	-5	-9	2030
FORT GRIFFIN SUD (P)	STEPHENS	-11	-2	2040
STAFF WSC	STEPHENS	25	-25	2070
STEPHENS REGIONAL SUD (P)	STEPHENS	-123	-199	2030
ASPERMONT	STONEWALL	-19	18	2030
BETHESDA WSC	TARRANT	-29	-50	2030
JOHNSON COUNTY SUD	TARRANT	-85	-160	2030
ABILENE	TAYLOR	0	-10,721	2060
HAMBY WSC	TAYLOR	-45	-130	2050
HAWLEY WSC	TAYLOR	-7	-31	2040
LAWN	TAYLOR	-19	-21	2050
MERKEL	TAYLOR	-167	-259	2050
POTOSI WSC	TAYLOR	-1,282	-1,956	2030
S U N WSC	TAYLOR	-138	-129	2030
STEAMBOAT MOUNTAIN WSC	TAYLOR	-1,267	-2,258	2030
TYE	TAYLOR	-66	-53	2050
VIEW CAPS WSC	TAYLOR	-271	-437	2030
FORT BELKNAP WSC (P)	THROCKMORTON	-2	-3	2030
FORT GRIFFIN SUD	THROCKMORTON	-9	-4	2030

WUG	County	Projected Shortages (acft/yr)		Decade of Need
		Year 2050	Year 2080	
STEPHENS REGIONAL SUD	THROCKMORTON	-20	-13	2030
THROCKMORTON	THROCKMORTON	-107	-105	2030
CEDAR PARK (P)	TRAVIS	-723	-724	2030
LEANDER (P)	TRAVIS	-4,260	-3,919	2030
ROUND ROCK (P)	TRAVIS	-45	-173	2040
BRENHAM	WASHINGTON	-614	-627	2030
CENTRAL WASHINGTON COUNTY WSC	WASHINGTON	-24	-136	2030
LEE COUNTY WSC	WASHINGTON	-19	-23	2030
BARTLETT	WILLIAMSON	-33	-50	2030
BRUSHY CREEK MUD	WILLIAMSON	-845	-899	2030
CEDAR PARK	WILLIAMSON	-5,521	-5,520	2030
COUNTY-OTHER, WILLIAMSON	WILLIAMSON	-13,968	-31,043	2030
FERN BLUFF MUD	WILLIAMSON	-107	-111	2030
FLORENCE	WILLIAMSON	-144	-209	2030
GEORGETOWN	WILLIAMSON	-98,862	-185,479	2030
GRANGER	WILLIAMSON	29	-26	2070
HUTTO	WILLIAMSON	-3,771	-12,465	2030
JARRELL-SCHWERTNER	WILLIAMSON	-7,787	-9,245	2030
JONAH WATER SUD	WILLIAMSON	-4,953	-14,089	2030
LEANDER	WILLIAMSON	-20,576	-20,933	2030
LIBERTY HILL	WILLIAMSON	-1,205	-2,551	2030
NOACK WSC	WILLIAMSON	-160	-175	2030
PALOMA LAKE MUD 1	WILLIAMSON	-137	-138	2030
PALOMA LAKE MUD 2	WILLIAMSON	-110	-111	2030
ROUND ROCK	WILLIAMSON	-12,526	-16,083	2030
SONTERRA MUD	WILLIAMSON	-2,197	-7,977	2040
SOUTHWEST MILAM WSC	WILLIAMSON	-122	-455	2030
TAYLOR	WILLIAMSON	-3,304	-8,080	2030
WILLIAMSON COUNTY MUD 11	WILLIAMSON	-974	-2,714	2030
WILLIAMSON COUNTY WSID 3	WILLIAMSON	-507	-1,768	2040
COUNTY-OTHER, YOUNG	YOUNG	-172	-203	2030
FORT BELKNAP WSC	YOUNG	-180	-263	2030
GRAHAM	YOUNG	-1,338	-1,450	2030
(P) Indicates WUG is in multiple counties.				

4.2.2 Projected Manufacturing Needs

16~~Nine~~ of the 37 counties in the Brazos G Area are projected to have manufacturing shortages. Table 4.2 lists the counties projected to have shortages in the Manufacturing Use category, projected year 2054~~0~~ and 2087~~0~~ shortages, and the approximate decade shortages are projected to begin.

Table 4.2 Counties with Projected Water Needs for Manufacturing Use (acre-feet per year)

WUG	Projected Shortages (acft/yr)		Decade of Need
	Year 2050	Year 2080	
BELL	-540	-661	2030
BURLESON	-38	-56	2030
COMANCHE	2	-1	2080
CORYELL	-1	-1	2030
EASTLAND	490	-15	2080
ERATH	-9	6	2030
HAMILTON	-19	-22	2030
HASKELL	-2	-2	2030
LAMPASAS	-68	-68	2030
LIMESTONE	-245	-273	2030
MCLENNAN	-817	-747	2030
NOLAN	-87	-154	2030
TAYLOR	-775	-865	2030
WASHINGTON	-172	-259	2030
WILLIAMSON	-995	-1,239	2030
YOUNG	-9	-6	2030

4.2.3 Projected Steam-Electric Needs

Table 4.3 lists the seven~~six~~ counties projected to have shortages in the Steam-Electric Use category, projected year 2054~~0~~ and 2087~~0~~ shortages, and the approximate decade shortages are projected begin.

Table 4.3 Counties with Projected Water Needs for Steam-Electric Use (acre-feet per year)

WUG	Projected Shortages (acft/yr)		Decade of Need
	Year 2050	Year 2080	
BRAZOS	-269	-269	2030
GRIMES	-369	-369	2030
JOHNSON	-571	-571	2030
LIMESTONE	-960	-928	2030
ROBERTSON	-1,430	-5,619	2030
SOMERVELL	-37,839	-39,701	2030
YOUNG	-204	-185	2030

4.2.4 Projected Mining Needs

Shortages are projected for mining use in most of the counties. Table 4.4 lists the 1431 counties projected to have shortages in the Mining Use category, projected year 20540 and 20870 shortages, and the approximate decade shortages are projected to begin. Mining water use in Williamson County is primarily associated with dewatering for quarry operations.

Table 4.4 Counties with Projected Water Needs for Mining Use (acre-feet per year)

WUG	Projected Shortages (acft/yr)		Decade of Need
	Year 2050	Year 2080	
BRAZOS	-1,085	-1,159	2030
BURLESON	-3,551	-3,551	2030
EASTLAND	-314	-314	2030
GRIMES	-124	-125	2030
HASKELL	-4	-4	2030
HOOD	-3,685	-4,293	2030
LIMESTONE	-3,120	-2,228	2030
MILAM	-767	-767	2030
NOLAN	-4	-5	2030
PALO PINTO	-27	-29	2030
SOMERVELL	-1,091	-1,244	2030
TAYLOR	-413	-437	2030
THROCKMORTON	-8	-8	2030
WASHINGTON	-650	-650	2030

4.2.5 Projected Irrigation Needs

Table 4.5 lists the 1820 counties projected to have shortages in the Irrigation Use category, projected year 20540 and 20870 shortages, and the approximate decade shortages are projected to begin.

Table 4.5 Counties with Projected Water Needs for Irrigation Use (acre-feet per year)

WUG	Projected Shortages (acft/yr)		Decade of Need
	Year 2050	Year 2080	
BELL	-949	-965	2030
COMANCHE	-9,377	-9,449	2030
GRIMES	-190	-190	2030
HAMILTON	-281	-286	2030
HASKELL	-8,309	-8,309	2030
JOHNSON	-245	-245	2030
JONES	-64	-64	2030
KNOX	-10,441	-10,204	2030
LAMPASAS	-219	-225	2030
MCLENNAN	-182	-211	2030

WUG	Projected Shortages (acft/yr)		Decade of Need
	Year 2050	Year 2080	
NOLAN	-9,250	-8,847	2030
PALO PINTO	-1,492	-1,492	2030
ROBERTSON	-13,404	-13,886	2030
STEPHENS	-122	-122	2030
TAYLOR	-1,057	-1,057	2030
THROCKMORTON	-71	-71	2030
WILLIAMSON	-224	-224	2030
YOUNG	-614	-614	2030

4.2.6 Projected Livestock Needs

Table 4.6~~Table 4.6~~ lists the 11 counties projected to have shortages in the Livestock Use category, projected year 2050 and 2080 shortages, and the approximate decade shortages are projected to begin.~~There are no livestock shortages projected. As explained in Section 3, livestock demands were assumed to be met from stock tanks and locally occurring groundwater.~~

Table 4.6 Counties with Projected Water Needs for Livestock Use (acre-feet per year)

WUG	Projected Shortages (acft/yr)		Decade of Need
	Year 2050	Year 2080	
COMANCHE	-193	-193	2030
ERATH	-245	-245	2030
FALLS	-71	-71	2030
HAMILTON	-112	-112	2030
JOHNSON	-36	-36	2030
KENT	-16	-16	2030
KNOX	-25	-25	2030
LEE	-26	-26	2030
STONEWALL	-47	-47	2030
THROCKMORTON	-121	-121	2030
WASHINGTON	-196	-196	2030

4.3 Water Needs Projected for Wholesale Water Providers

Needs projected for WWPs that are not also WUGs are shown in Table 4.7. The needs shown are for existing contractual commitments, regardless if the customers' water demands are different from the stated contractual supply. In the case of "needs met" contracts, the contractual demand is assumed to be the customer's water demands, less any other supplies the customer may have available. Additional contractual demands associated with strategies recommended for WUGs and WWPs are shown in Chapter 5.

Table 4.7 Water Needs Projected for Wholesale Water Providers

WWP	Projected Surpluses / (Shortages) (acft/yr)		Decade of Need
	Year 2050	Year 2080	
AQUILLA WSD	0	-262	2070
BELL COUNTY WCID 1	0	-5,045	2060
BLUEBONNET WSC	-317	-454	2030
BRAZOS RIVER AUTHORITY			
Lake Aquilla System	*0*	*-350*	2070
Little River System	*-44,788*	*-48,313*	2030
Main Stem/Lower Basin System[1]	*-362*	*-13,235*	2030
Highland Lakes Supply (HB 1437)[2]	*2,872*	*2,872*	*none*
System Operations Permit[3]	*0*	*-19,350*	2060
CENTRAL TEXAS WSC	-180	-196	2030
EASTLAND COUNTY WSD	-1,080	-1,170	2030
FHLM WSC	0	0	*none*
NORTH CENTRAL TEXAS MUNICIPAL WATER AUTHORITY	-1,724	-1,678	2030
PALO PINTO COUNTY MWD 1	-4,199	-4,880	2030
SALT FORK WATER QUALITY CORPORATION	0	0	*none*
UPPER LEON MWD	0	0	*none*
WEST CENTRAL TEXAS MWD	0	0	2030

Notes:
(1) Includes contract demands in both Brazos G and Region H.
(2) 25,000 acft/yr is available per HB 1763, of which BRA has contracted 1,200 acft/yr (Liberty Hill) and 20,928 acft/yr (Round Rock). Surplus shown represents the remaining uncontracted supply.
(3) Assumes all current and pending contracts for sales of System Operations Supply are firm.

4.4 Water Needs Projected for Major Water Providers

Water needs for MWPs summarized by decade and category of use and secondary water needs are presented in Appendix O. MWP sales to WUGs from all regions are accounted therein. For WWPs which are also WUGs, demands, needs, and surpluses as shown represent their contractual commitments in addition to their own projected uses. A further description of the methods used to calculate secondary needs is included in Chapter 5.

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