

4B.2 Water User Group Plans by County

The proposed plan to meet the specific needs of municipal, industrial, steam-electric power, and mining water user groups located within the region is to implement water conservation programs to reduce water demands to the extent possible, and develop additional groundwater and surface water supplies located as near as possible to each respective water user to the extent that supplies are available. As local supply development potentials for each respective user group are exhausted, water management strategies located at greater distances from the water users are recommended.

In the case of the irrigation water user group, the South Central Texas Regional Water Planning Group found that, at the present time, it is not economically feasible to meet all of the projected irrigation water need (shortage). However, the proposed plan includes the Irrigation Water Conservation strategy to meet as much as possible of the projected irrigation needs of the region. Therefore, each individual irrigation water user will need to install Low Energy Precision Application (LEPA), or other efficient irrigation systems which will result in irrigation water savings due to lower irrigation water application requirements.

In the case of “Rural Area Residential and Commercial” (individual households and business establishments) water users, the projections have included local surface and groundwater quantities to meet projected needs. However, no specific plans have been formulated to supply the projected quantities of water needed. Instead, it is presumed that those individual households and businesses that are located in rural areas, and rural and investor owned water supply districts, authorities, and companies (those that supplied less than 280 acft or had populations less than 500 in year 2000) that operate public water supply systems to serve rural areas will meet these needs either from locally available supplies, or through arrangements to obtain water from other water utilities. Plans are included for all public water suppliers (cities and water supply districts and authorities) that provided 280 acft or more and/or had populations of 500 or more in year 2000.

Water management strategies recommended for implementation to meet projected needs or shortages in each of the 21 counties within the South Central Texas Region are summarized in a series of figures and tables included as Appendix D. These figures and tables illustrate the phased implementation of water management strategies within each county to meet the needs of WUGs located within the county. Counties are presented in alphabetical order from Atascosa

County to Zavala County. The counties having the greatest combined municipal, industrial, steam-electric, and mining needs and, hence, needing the greatest quantities of new water supply are Bexar, Comal, Hays, and Victoria. Particular attention to the notes in each county table is encouraged. More detailed information regarding allocation of new water supplies to specific cities and other water user groups within each county may be found in the detailed plans for each of the 21 counties of the South Central Texas Planning Region, which are presented in alphabetic order in the following subsections. In each county plan, each water user group of the county is listed, and water conservation has been included in the plan for each municipal water user and the irrigation user group, where appropriate. In addition, if the water user group has a need (shortage) during the planning horizon, one or more water management strategies are recommended to meet the need.

The total unit costs of potable water (surface water treated to regulatory standards for public supply and/or groundwater that meets regulatory standards for public supply), delivered to the water user groups' retail distribution systems were computed as follows. For water user groups whose needs can be met from a single local source by an individual water management strategy that can be scheduled and sized to meet that particular need, such as local groundwater for the City of Floresville, annual and unit costs in September 2008 prices are presented for additional wells to be added at the time of the projected need. Costs were calculated in accordance with TWDB guidance and are presented in Volume II and the following county tables. In this case, and in many cases described herein, water treatment and associated facilities were sized to meet peak day demands, which are approximately twice average day demands. Both debt service and operation and maintenance costs are calculated accordingly.

For water user groups that do not have the potential to implement readily available individual water management strategies using local sources of supply to meet their individual needs at the time these needs are projected to occur, such as utilities of Bexar, Caldwell, Comal, Guadalupe, and Hays Counties, large-scale water management strategies to meet regional needs involving two or more water user groups are recommended by the SCTRWPG in the regional water plan. In the latter cases, total and unit costs (September 2008 prices) are calculated to obtain, convey, treat, and deliver potable water (surface and/or groundwater that meets regulatory standards for public supply) to the respective water user groups' retail distribution systems. As was the case for individual local systems, the costs are computed according to

TWDB guidance and are reported in Volume II and are tabulated in the respective county tables on the following pages.

It was necessary to allocate the costs of large-scale, regional water management strategies among the water user groups they are intended to serve. The allocation procedure was to prorate the total annual costs to each water user group to be supplied from a water management strategy based on the water user group's proportion or share of quantity obtained from that strategy in each decade. In this way, a unit cost representative of the strategy in full operation is shown for all participating water user groups. Water user groups may actually be required to begin paying their pro-rata share of annual debt service at the time the strategy is implemented based on their ultimate share of the new supply whether or not they have begun taking water. The basis for this principle of dividing debt service among water user groups is to facilitate the development of a strategy to its relevant size, and to assure that those user groups who need the water will have invested in and thereby reserved their respective shares so that water will be there when needed. In the case of the South Central Texas Region, many water user groups will need the water as soon as the water management strategy can be implemented. It is important to note that individual water user groups could participate in the development of a water management strategy in the cost sharing manner outlined here, and then lease part or all of their respective shares to others until they have grown enough to fully utilize them. Therefore, few, if any user groups would be paying debt service for idle capacity.

In the case of water to meet the projected needs of the large number of water user groups in Bexar County, it has been assumed that one or more wholesale water providers will implement the large-scale, distantly located water management strategies recommended in the Regional Plan, and since these supplies are needed as soon as possible, the water user groups (customers) will begin paying debt service and operation and maintenance costs on the basis of their pro-rata share of the quantities of water taken. For example, if SAWS implements a strategy, SAWS and its customers will use the water and pay all the costs. If some other supplier implements a strategy, the costs would be prorated among the users on the basis of the proportion of the quantity taken.

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4B.2.1 Atascosa County Water Supply Plan

Table 4B.2.1-1 lists each water user group in Atascosa County and its corresponding management supply or shortage in 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.1-1.
Atascosa County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
Benton City WSC	495	-885	Projected shortage (2030 through 2060)
Bexar Metropolitan Water District			See Bexar County
City of Charlotte	296	241	No projected shortage
City of Jourdanton	-112	-338	Projected shortage (2010 through 2060)
City of Lytle	-141	-188	Projected shortage (2010 through 2060)
McCoy WSC	412	-812	Projected shortage (2030 through 2060)
City of Pleasanton	747	499	No projected shortage
City of Poteet	298	280	No projected shortage
Rural Area Residential and Commercial	188	540	No projected shortage
Industrial	0	0	No projected shortage
Steam-Electric Power	-263	-942	Projected shortage (2010, 2050, 2060)
Mining	31	33	No projected shortage
Irrigation	-6,095	249	Projected shortage (2010 through 2050)
Livestock	2	2	No projected shortage

4B.2.1.1 Benton City WSC

Current water supply for Benton City WSC is obtained from the Carrizo Aquifer. Benton City WSC is projected to need additional water supplies prior to 2030. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Benton City WSC implement the following water supply plan to meet their projected needs (Table 4B.2.1-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 24 acft/yr by 2040, increasing to 153 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Carrizo) development to be implemented prior to 2030. This strategy can provide an additional 807 acft/yr from 2030 to 2050 and 1,613 acft/yr in 2060. Information received from Benton City WSC indicates that they are currently seeking permits to drill two new wells in the Carrizo Aquifer.

Table 4B.2.1-2.
Recommended Water Supply Plan for Benton City WSC

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	198	454	696	885
Recommended Plan						
Municipal Water Conservation	—	—	—	24	85	153
Local Groundwater Supplies (Carrizo)	—	—	807	807	807	1,613
Total New Supply	—	—	807	831	892	1,766

Estimated costs of the recommended plan to meet Benton City WSC's projected needs are shown in Table 4B.2.1-3.

Table 4B.2.1-3.
Recommended Plan Costs by Decade for Benton City WSC

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	\$18,286	\$65,146	\$117,506
Unit Cost (\$/acft)	—	—	—	\$762	\$766	\$768
Local Groundwater Supplies (Carrizo)						
Annual Cost (\$/yr)	—	—	\$320,500	\$320,500	\$129,914	\$450,414
Unit Cost (\$/acft)	—	—	\$397	\$397	\$161	\$279

In addition, Benton City WSC is a potential participant with BMWD in the Medina Lake Firm-Up (ASR) water management strategy.

4B.2.1.2 City of Charlotte

The City of Charlotte is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Charlotte implement the following water supply plan (Table 4B.2.1-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 20 acft/yr by 2010, increasing to 43 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 15 acft/yr by 2010.
- Facilities Expansions (System Interconnects)

An alternative water management strategy identified by City of Charlotte is the Local Groundwater Supplies (Carrizo).

**Table 4B.2.1-4.
Recommended Water Supply Plan for the City of Charlotte**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	20	23	25	26	34	43
Drought Management	15	—	—	—	—	—
Facilities Expansions	—	—	—	—	—	—
Total New Supply	35	23	25	26	34	43

Estimated costs of the recommended plan for the City of Charlotte are shown in Table 4B.2.1-5.

**Table 4B.2.1-5.
Recommended Plan Costs by Decade for the City of Charlotte**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$15,490	\$17,386	\$17,409	\$16,460	\$20,298	\$24,754
Unit Cost (\$/acft)	\$775	\$756	\$696	\$633	\$597	\$576
<i>Drought Management¹</i>						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
<i>Facilities Expansion</i>						
Annual Cost (\$/yr)	\$3,586,000	\$3,586,000	\$242,000	\$242,000	\$242,000	\$242,000
Unit Cost (\$/acft)	—	—	—	—	—	—
¹ Costs not available due to lack of relevant data.						

In addition, City of Charlotte is a potential participant with BMWD in the Medina Lake Firm-Up (ASR) water management strategy.

4B.2.1.3 City of Jourdanton

Current water supply for City of Jourdanton is obtained from the Carrizo Aquifer. The City of Jourdanton is projected to have a shortage in water supplies throughout the planning period, from 2010 through 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Jourdanton implement the following water supply plan (Table 4B.2.1-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 60 acft/yr by 2010, increasing to 222 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 40 acft/yr by 2010.
- Local Groundwater Supplies (Carrizo) development to be implemented prior to 2010. This strategy can provide an additional 403 acft/yr from 2010 to 2060.

**Table 4B.2.1-6.
Recommended Water Supply Plan for the City of Jourdanton**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	112	172	225	267	306	338
Recommended Plan						
Municipal Water Conservation	60	123	156	173	195	222
Drought Management	40	—	—	—	—	—
Local Groundwater Supplies (Carrizo)	403	403	403	403	403	403
Total New Supply	503	526	559	576	598	625
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan for the City of Jourdanton are shown in Table 4B.2.1-7.

**Table 4B.2.1-7.
Recommended Plan Costs by Decade for the City of Jourdanton**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$46,083	\$77,232	\$91,153	\$97,895	\$108,361	\$122,564
Unit Cost (\$/acft)	\$768	\$628	\$584	\$566	\$556	\$552
Drought Management						
Annual Cost (\$/yr)	\$65,320	—	—	—	—	—
Unit Cost (\$/acft)	\$1,633	—	—	—	—	—
Local Groundwater Supplies (Carrizo)						
Annual Cost (\$/yr)	\$349,000	\$349,000	\$136,181	\$136,181	\$136,181	\$136,181
Unit Cost (\$/acft)	\$865	\$865	\$338	\$338	\$338	\$338

4B.2.1.4 City of Lytle

Current water supply for the City of Lytle is obtained from the Edwards Aquifer. Lytle is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Lytle implement the following water supply plan to meet the projected needs for the city (Table 4B.2.1-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 38 acft/yr by 2010, increasing to 108 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 125 acft/yr by 2010, increasing to 176 acft/yr by 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 24 acft/yr by 2010.

**Table 4B.2.1-8.
Recommended Water Supply Plan for the City of Lytle**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	141	152	162	169	179	188
Recommended Plan						
Municipal Water Conservation	38	72	82	86	96	108
Edwards Transfers	141	152	162	169	179	188
Drought Management	24	—	—	—	—	—
Total New Supply	203	224	244	255	275	296
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet the City of Lytle’s projected needs are shown in Table 4B.2.1-9.

**Table 4B.2.1-9.
Recommended Plan Costs by Decade for the City of Lytle**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$26,007	\$43,028	\$46,879	\$47,483	\$52,075	\$58,584
Unit Cost (\$/acft)	\$684	\$598	\$572	\$552	\$542	\$542
Edwards Transfers						
Annual Cost (\$/yr)	\$64,014	\$69,008	\$73,548	\$76,726	\$81,266	\$85,352
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Drought Management						
Annual Cost (\$/yr)	\$14,520	—	—	—	—	—
Unit Cost (\$/acft)	\$605	—	—	—	—	—

In addition, City of Lytle is a potential participant with BMWD in the Medina Lake Firm-Up (ASR) water management strategy.

4B.2.1.5 McCoy WSC

Current water supply for McCoy WSC is obtained from the Carrizo Aquifer. McCoy WSC is projected to need additional water supplies by 2020. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that McCoy WSC implement the following water supply plan to meet their projected needs (Table 4B.2.1-10).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 13 acft/yr by 2040, increasing to 129 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Carrizo) development to be implemented prior to 2020. This strategy can provide an additional 807 acft/yr by 2020, increasing to 1,613 acft/yr of supply in 2060.

**Table 4B.2.1-10.
Recommended Water Supply Plan for McCoy WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	12	208	436	650	812
Recommended Plan						
Municipal Water Conservation	—	—	—	13	68	129
Local Groundwater Supplies (Carrizo)	—	807	807	807	807	1,613
Total New Supply	—	807	807	820	875	1,742

Estimated costs of the recommended plan to meet McCoy WSC’s projected needs are shown in Table 4B.2.1-11.

**Table 4B.2.1-11.
Recommended Plan Costs by Decade for McCoy WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	\$10,182	\$52,244	\$99,091
Unit Cost (\$/acft)	—	—	—	\$783	\$768	\$768
Local Groundwater Supplies (Carrizo)						
Annual Cost (\$/yr)	—	\$389,000	\$389,000	\$136,033	\$136,033	\$525,033
Unit Cost (\$/acft)	—	\$482	\$482	\$169	\$169	\$325

4B.2.1.6 City of Pleasanton

The City of Pleasanton is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Pleasanton implement the following water supply plan (Table 4B.2.1-12).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 156 acft/yr by 2010, increasing to 615 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Facilities Expansions (System Upgrades)

**Table 4B.2.1-12.
Recommended Water Supply Plan for the City of Pleasanton**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	156	300	448	523	565	615
Total New Supply	156	300	448	523	565	615
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan for the City of Pleasanton are shown in Table 4B.2.1-13.

**Table 4B.2.1-13.
Recommended Plan Costs by Decade for the City of Pleasanton**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$104,645	\$174,786	\$248,190	\$282,846	\$303,440	\$329,849
Unit Cost (\$/acft)	\$671	\$583	\$554	\$541	\$537	\$536

In addition, the City of Pleasanton is considering the addition of Local Groundwater Supplies (Carrizo) from two new wells and the addition of two elevated storage tanks.

4B.2.1.7 City of Poteet

The City of Poteet is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Poteet implement the following water supply plan (Table 4B.2.1-14).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 60 acft/yr by 2010, increasing to 213 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.1-14.
Recommended Water Supply Plan for the City of Poteet**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	0	0	0	0	0	0
<i>Recommended Plan</i>						
Municipal Water Conservation	60	116	163	185	198	213
Total New Supply	60	116	163	185	198	213

Estimated costs of the recommended plan for the City of Poteet are shown in Table 4B.2.1-15.

**Table 4B.2.1-15.
Recommended Plan Costs by Decade for the City of Poteet**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation						
Annual Cost (\$/yr)	\$45,430	\$72,170	\$93,416	\$102,042	\$107,518	\$115,685
Unit Cost (\$/acft)	\$757	\$622	\$573	\$552	\$543	\$543

4B.2.1.8 Rural Area Residential and Commercial

Rural areas are projected to have adequate water supplies available from the Carrizo and Sparta Aquifers to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.1-16).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 11 acft/yr by 2010, decreasing to 0 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.1-16.
Recommended Water Supply Plan for Rural Areas**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)*	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	11	17	11	1	—	—
Total New Supply	11	17	11	1	—	—
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.1-17.

**Table 4B.2.1-17.
Recommended Plan Costs by Decade for Rural Areas**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$8,554	\$12,806	\$8,532	\$1,061	—	—
Unit Cost (\$/acft)	\$778	\$753	\$776	\$1,061	—	—

4B.2.1.9 Industrial

Industrial is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.1.10 Steam-Electric Power

Current water supply for steam-electric power is obtained from the Carrizo Aquifer. Steam-electric power is projected to need additional water supplies in the year 2010, 2050, and 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that individual steam-electric power operations implement the following water supply plan to meet the projected needs for steam-electric power (Table 4B.2.1-18).

- Local Groundwater Supplies (Carrizo) to be implemented in 2010. This strategy can provide an additional 807 acft/yr of supply in 2010 increasing to 1,613 acft/yr in 2060.

**Table 4B.2.1-18.
Recommended Water Supply Plan for Steam-Electric Power**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	263	0	0	0	604	942
<i>Recommended Plan</i>						
Local Groundwater Supplies (Carrizo)	807	807	807	807	807	1,613
Total New Supply	807	807	807	807	807	1,613

Estimated costs of the recommended plan to meet the steam-electric power projected needs are shown in Table 4B.2.1-19.

**Table 4B.2.1-19.
Recommended Plan Costs by Decade for Steam-Electric Power**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Local Groundwater Supplies (Carrizo)						
Annual Cost (\$/yr)	\$249,500	\$249,500	\$39,907	\$39,907	\$39,907	\$289,407
Unit Cost (\$/acft)	\$309	\$309	\$49	\$49	\$49	\$179

4B.2.1.11 Mining

Mining is projected to have adequate water supplies available from the Carrizo and Queen City Aquifers to meet the water user group’s projected demand during the planning period.

4B.2.1.12 Irrigation

Current water supply for irrigation is obtained from the Edwards, Carrizo, Sparta, and Queen City Aquifers, and run-of-river rights. Irrigation is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWP and the TWDB, it is recommended that individual irrigators implement the following water supply plan to meet the projected needs for irrigation (Table 4B.2.1-20).

- Irrigation water conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 1,961 acft/yr of supply.

**Table 4B.2.1-20.
Recommended Water Supply Plan for Irrigation**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	6,095	4,734	3,413	2,141	924	291
Recommended Plan						
Irrigation Water Conservation	5,369	4,734	3,413	2,141	924	291
Total New Supply	5,369	4,734	3,413	2,141	924	291

Estimated costs of the recommended plan to meet the irrigation projected needs are shown in Table 4B.2.1-21.

**Table 4B.2.1-21.
Recommended Plan Costs by Decade for Irrigation**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Irrigation Water Conservation</i>						
Annual Cost (\$/yr)	\$923,468	\$814,248	\$587,036	\$368,252	\$158,928	\$50,052
Unit Cost (\$/acft)	\$172	\$172	\$172	\$172	\$172	\$172

4B.2.1.13 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group’s projected demand during the planning period.

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4B.2.2 Bexar County Water Supply Plan

Table 4B.2.2-1 lists each water user group in Bexar County and its corresponding management supply or shortage in 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.2-1.
Bexar County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Alamo Heights	-592	-691	Projected shortage (2010 through 2060)
Atascosa Rural WSC	-546	-1218	Projected shortage (2010 through 2060)
City of Balcones Heights	0	0	No projected shortage
Bexar Metropolitan Water District	-3,944	-7,038	Projected shortage (2010 through 2060)
City of Castle Hills	-96	-47	Projected shortage (2010 through 2060)
City of China Grove	0	0	No projected shortage
City of Converse	688	-969	Projected shortage (2030 through 2060)
East Central SUD	1,428	-942	Projected shortage (2030 through 2060)
City of Elmendorf	0	0	No projected shortage
City of Fair Oaks Ranch	660	571	No projected shortage
Green Valley SUD			See Guadalupe County
City of Helotes	0	0	No projected shortage
City of Hill Country Village	-730	-718	Projected shortage (2010 through 2060)
City of Hollywood Park	-1,969	-2,271	Projected shortage (2010 through 2060)
City of Kirby	-335	-364	Projected shortage (2010 through 2060)
Lackland AFB (CDP)	0	0	No projected shortage
City of Leon Valley	91	126	No projected shortage
City of Live Oak	1,183	1,085	No projected shortage
City of Lytle			See Atascosa County
City of Olmos Park	0	0	No projected shortage
City of San Antonio (SAWS)	-68,476	-169,336	Projected shortage (2010 through 2060)
City of San Antonio (BMWD)	-9,023	-24,476	Projected shortage (2010 through 2060)
City of San Antonio (Others)	-284	-416	Projected shortage (2010 through 2060)

Concluded on next page

Table 4B.2.2-1 (Concluded)

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Schertz			See Guadalupe County
City of Selma	189	-749	Projected shortage (2020 through 2060)
City of Shavano Park	-320	-381	Projected shortage (2010 through 2060)
City of Somerset	0	0	No projected shortage
City of St. Hedwig	0	0	No projected shortage
City of Terrell Hills	0	0	No projected shortage
City of Universal City	-113	-606	Projected shortage (2010 through 2060)
Water Service Inc. (Apex)	-911	-2,018	Projected shortage (2010 through 2060)
Windcrest (WC&ID No. 10)	-235	-214	Projected shortage (2010 through 2060)
Rural Area Residential and Commercial	1,212	-620	Projected shortage (2040 through 2060)
Industrial	-1,340	-17,588	Projected shortage (2010 through 2060)
Steam-Electric Power	28,505	9,286	No projected shortage
Mining	0	-1,216	Projected shortage (2030 through 2060)
Irrigation	9,737	11,868	No projected shortage
Livestock	55	50	No projected shortage

4B.2.2.1 City of Alamo Heights

Current water supply for the City of Alamo Heights is obtained from the Edwards Aquifer. Alamo Heights is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Alamo Heights implement the following water supply plan to meet the projected needs for the city (Table 4B.2.2-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 175 acft/yr by 2010, increasing to 865 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional supply of 592 acft/yr by 2010, increasing to 691 acft/yr of additional supply by 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 104 acft/yr by 2010.

**Table 4B.2.2-2.
Recommended Water Supply Plan for the City of Alamo Heights**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	592	655	657	653	667	691
Recommended Plan						
Municipal Water Conservation	175	337	488	625	769	865
Edwards Transfers	592	655	657	653	667	691
Drought Management	104	—	—	—	—	—
Total New Supply	871	992	1,145	1,278	1,436	1,556

Estimated costs of the recommended plan to meet the City of Alamo Heights's projected needs are shown in Table 4B.2.2-3.

**Table 4B.2.2-3.
Recommended Plan Costs by Decade for the City of Alamo Heights**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$111,776	\$192,169	\$267,391	\$334,980	\$408,685	\$459,018
Unit Cost (\$/acft)	\$639	\$570	\$548	\$536	\$531	\$531
Edwards Transfers						
Annual Cost (\$/yr)	\$268,768	\$297,370	\$298,278	\$296,462	\$302,818	\$313,714
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Drought Management						
Annual Cost (\$/yr)	\$208,369	—	—	—	—	—
Unit Cost (\$/acft)	\$2,004	—	—	—	—	—

4B.2.2.2 Atascosa Rural WSC

Current water supply for Atascosa Rural WSC is obtained from the Edwards Aquifer. Atascosa Rural WSC is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Atascosa Rural WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.2-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 22 acft/yr by 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional supply of 546 acft/yr by 2010, increasing to 1,218 acft/yr of additional supply by 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 47 acft/yr by 2010.
- Purchase from Wholesale Water Provider (BMWD) to be implemented prior to 2010. Atascosa Rural WSC is a potential participant with BMWD in the Medina Lake Firm-Up (ASR) water management strategy. This strategy can provide an additional supply of 120 acft/yr by 2010 through 2060.
- Facilities Expansions (System Interconnections)

**Table 4B.2.2-4.
Recommended Water Supply Plan for Atascosa Rural WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	546	717	869	996	1,106	1,218
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	22
Edwards Transfers	546	717	869	996	1,106	1,218
Drought Management	47	—	—	—	—	—
Purchase from WWP (BMWD)	120	120	120	120	120	120
Facilities Expansions	—	—	—	—	—	—
Total New Supply	713	837	989	1,116	1,226	1,338

Estimated costs of the recommended plan to meet Atascosa Rural WSC’s projected needs are shown in Table 4B.2.2-5.

**Table 4B.2.2-5.
Recommended Plan Costs by Decade for Atascosa Rural WSC**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	—	—	—	—	—	\$17,081
Unit Cost (\$/acft)	—	—	—	—	—	\$776
<i>Edwards Transfers</i>						
Annual Cost (\$/yr)	\$247,884	\$325,518	\$394,526	\$452,184	\$502,124	\$552,972
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
<i>Drought Management</i>						
Annual Cost (\$/yr)	\$134,140	—	—	—	—	—
Unit Cost (\$/acft)	\$2,854	—	—	—	—	—
<i>Purchase from WWP (BMWD)</i>						
Annual Cost (\$/yr)	\$126,495	\$125,501	\$69,376	\$55,917	\$46,479	\$46,427
Unit Cost (\$/acft)	\$1,054	\$1,046	\$578	\$466	\$387	\$387
<i>Facilities Expansions</i>						
Annual Cost (\$/yr)	\$6,772,000	\$6,772,000	\$457,000	\$457,000	\$457,000	\$457,000
Unit Cost (\$/acft)	—	—	—	—	—	—

4B.2.2.3 City of Balcones Heights

The City of Balcones Heights is projected to have adequate water supplies available from the Edwards Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Balcones Heights implement the following water supply plan (Table 4B.2.2-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 4 acft/yr by 2010, increasing to 37 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.2-6.
Recommended Water Supply Plan for the City of Balcones Heights**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	4	6	7	9	20	37
Total New Supply	4	6	7	9	20	37

Estimated costs of the recommended plan for the City of Balcones Heights are shown in Table 4B.2.2-7.

**Table 4B.2.2-7.
Recommended Plan Costs by Decade for the City of Balcones Heights**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$2,481	\$3,821	\$4,975	\$5,990	\$13,578	\$22,492
Unit Cost (\$/acft)	\$620	\$637	\$711	\$666	\$679	\$608

4B.2.2.4 Bexar Metropolitan Water District

Current water supply for the Bexar Metropolitan Water District (BMWD) is obtained from the Edwards, Trinity, and Carrizo Aquifers as well as the Medina Lake System and run-of-river water rights. BMWD is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the BMWD implement the following water supply plan to meet the projected needs for the District (Table 4B.2.2-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 293 acft/yr by 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (BMWD) to be implemented prior to 2010. This strategy can provide an additional supply of 3,944 acft/yr by 2010, increasing to 7,038 acft/yr of supply in 2060. See Section 4B.3.3 for a list of recommended water management strategies.

**Table 4B.2.2-8.
Recommended Water Supply Plan for Bexar Metropolitan Water District**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	3,944	4,569	5,357	5,784	6,373	7,038
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	293
Purchase from WWP (BMWD)	3,944	4,569	5,357	5,784	6,373	7,038
Total New Supply	3,944	4,569	5,357	5,784	6,373	7,331
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet BMWD’s projected needs are shown in Table 4B.2.2-9.

**Table 4B.2.2-9.
Recommended Plan Costs by Decade for Bexar Metropolitan Water District**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	—	\$225,525
Unit Cost (\$/acft)	—	—	—	—	—	\$770
Purchase from WWP (BMWD)						
Annual Cost (\$/yr)	\$4,157,453	\$4,778,462	\$3,097,059	\$2,695,192	\$2,468,400	\$2,722,922
Unit Cost (\$/acft)	\$1,054	\$1,046	\$578	\$466	\$387	\$387

4B.2.2.5 City of Castle Hills

Current water supply for the City of Castle Hills is obtained from the Edwards Aquifer through BMWD. Castle Hills is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Castle Hills implement the following water supply plan to meet the projected needs for the city (Table 4B.2.2-10).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 61 acft/yr by 2010, increasing to 166 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 41 acft/yr by 2010.
- Purchase from WWP (BMWD) to be implemented prior to 2010. This strategy can provide an additional 96 acft/yr by 2010, decreasing to 47 acft/yr of additional supply by 2060.

**Table 4B.2.2-10.
Recommended Water Supply Plan for the City of Castle Hills**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	96	83	69	56	47	47
Recommended Plan						
Municipal Water Conservation	61	120	142	144	151	166
Drought Management	41	—	—	—	—	—
Purchase from WWP (BMWD)	96	83	69	56	47	47
Total New Supply	198	203	211	200	198	213

Estimated costs of the recommended plan to meet the City of Castle Hill’s projected needs are shown in Table 4B.2.2-11.

**Table 4B.2.2-11.
Recommended Plan Costs by Decade for the City of Castle Hills**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$41,783	\$70,958	\$80,456	\$79,299	\$81,152	\$89,226
Unit Cost (\$/acft)	\$685	\$591	\$567	\$551	\$537	\$538
Drought Management						
Annual Cost (\$/yr)	\$71,926	—	—	—	—	—
Unit Cost (\$/acft)	\$1,754	—	—	—	—	—
Purchase from WWP (BMWD)						
Annual Cost (\$/yr)	\$101,196	\$86,805	\$39,891	\$26,095	\$18,204	\$18,184
Unit Cost (\$/acft)	\$1,054	\$1,046	\$578	\$466	\$387	\$387

4B.2.2.6 City of China Grove

The City of China Grove is projected to have adequate water supplies available from the Edwards Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of China Grove implement the following water supply plan (Table 4B.2.2-12).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 28 acft/yr by 2010, increasing to 217 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.2-12.
Recommended Water Supply Plan for the City of China Grove**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	28	66	116	166	190	217
Total New Supply	28	66	116	166	190	217

Estimated costs of the recommended plan for the City of China Grove are shown in Table 4B.2.2-13.

**Table 4B.2.2-13.
Recommended Plan Costs by Decade for the City of China Grove**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$18,235	\$37,954	\$63,783	\$89,992	\$102,383	\$116,691
Unit Cost (\$/acft)	\$651	\$575	\$550	\$542	\$539	\$538

4B.2.2.7 City of Converse

Current water supply for the City of Converse is obtained from the Edwards Aquifer. Converse is projected to need additional water supplies prior to 2030. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Converse implement the following water supply plan to meet the projected needs for the city (Table 4B.2.2-14).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 21 acft/yr by 2050, increasing to 110 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (BMWD) to be implemented prior to 2030. This strategy can provide an additional 134 acft/yr of supply by 2030, increasing to 969 by 2060.

**Table 4B.2.2-14.
Recommended Water Supply Plan for the City of Converse**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	134	449	716	969
Recommended Plan						
Municipal Water Conservation	—	—	—	—	21	110
Purchase from WWP (BMWD)	—	—	134	449	716	969
Total New Supply	—	—	134	449	737	1,079

Estimated costs of the recommended plan to meet the City of Converse’s projected needs are shown in Table 4B.2.2-15.

**Table 4B.2.2-15.
Recommended Plan Costs by Decade for the City of Converse**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$14,150	\$74,857
Unit Cost (\$/acft)	—	—	—	—	\$674	\$681
Purchase from WWP (BMWD)						
Annual Cost (\$/yr)	—	—	\$77,470	\$209,222	\$277,322	\$374,895
Unit Cost (\$/acft)	—	—	\$578	\$466	\$387	\$387

4B.2.2.8 East Central SUD

Current water supply for East Central SUD is obtained from the Edwards and Carrizo Aquifers and Canyon Reservoir. East Central SUD is projected to need additional water supplies prior to 2030. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that East Central SUD implement the following water supply plan to meet the projected needs for the SUD (Table 4B.2.2-16).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 32 acft/yr by 2050, increasing to 104 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (SAWS) to be implemented prior to 2010. This strategy can provide an additional 2,240 acft/yr of supply beginning in 2010 and through 2060.
- Purchase from WWP (CRWA) to be implemented prior to 2030. This strategy can provide an additional 251 acft/yr of supply beginning in 2030, increasing to 942 acft/yr of additional supply in 2060.
- Purchase from WWP (BMWD) to be implemented prior to 2010. This strategy can provide an additional 200 acft/yr of supply beginning in 2010 and through 2060

**Table 4B.2.2-16.
Recommended Water Supply Plan for East Central SUD**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	251	495	716	942
Recommended Plan						
Municipal Water Conservation	—	—	—	—	32	104
Purchase from WWP (SAWS)	2,240	2,240	2,240	2,240	2,240	2,240
Purchase from WWP (CRWA)	—	—	251	495	716	942
Purchase from WWP (BMWD)	200	200	200	200	200	200
Total New Supply	2,440	2,440	2,691	2,935	3,188	3,486

Estimated costs of the recommended to meet East Central SUD’s projected needs are shown in Table 4B.2.2-17.

**Table 4B.2.2-17.
Recommended Plan Costs by Decade for East Central SUD**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	—	—	—	—	\$24,845	\$80,163
Unit Cost (\$/acft)	—	—	—	—	\$776	\$771
<i>Purchase from WWP (SAWS)</i>						
Annual Cost (\$/yr)	\$1,222,248	\$1,804,294	\$3,575,516	\$3,119,269	\$1,481,249	\$2,717,313
Unit Cost (\$/acft)	\$546	\$805	\$1,596	\$1,393	\$661	\$1,213
<i>Purchase from WWP (CRWA)</i>						
Annual Cost (\$/yr)	—	—	\$268,065	\$353,108	\$320,901	\$407,418
Unit Cost (\$/acft)	—	—	\$1,068	\$713	\$448	\$433
<i>Purchase from WWP (BMWD)</i>						
Annual Cost (\$/yr)	\$210,824	\$209,169	\$115,627	\$93,195	\$77,464	\$77,378
Unit Cost (\$/acft)	\$1,054	\$1,046	\$578	\$466	\$387	\$387

4B.2.2.9 City of Elmdorf

The City of Elmdorf is projected to have adequate water supplies available from the Edwards Aquifer through the San Antonio Water System (SAWS) to meet the city's projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Elmdorf implement the following water supply plan (Table 4B.2.2-18).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 2 acft/yr by 2050, increasing to 6 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

Table 4B.2.2-18.
Recommended Water Supply Plan for the City of Elmendorf

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	—	—	2	6
Total New Supply	—	—	—	—	2	6

Estimated costs of the recommended plan for the City of Elmendorf are shown in Table 4B.2.2-19.

Table 4B.2.2-19.
Recommended Plan Costs by Decade for the City of Elmendorf

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$1,393	\$4,052
Unit Cost (\$/acft)	—	—	—	—	\$697	\$675

4B.2.2.10 City of Fair Oaks Ranch

The City of Fair Oaks Ranch is projected to have adequate water supplies available from the Trinity Aquifer and Canyon Reservoir to meet the city's projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Fair Oaks Ranch implement the following water supply plan (Table 4B.2.2-20).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 125 acft/yr by 2010, increasing to 509 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.2-20.
Recommended Water Supply Plan for the City of Fair Oaks Ranch**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	125	246	358	460	481	509
Total New Supply	125	246	358	460	481	509

Estimated costs of the recommended plan for the City of Fair Oaks Ranch are shown in Table 4B.2.2-21.

**Table 4B.2.2-21.
Recommended Plan Costs by Decade for the City of Fair Oaks Ranch**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$82,638	\$145,582	\$203,141	\$255,541	\$265,435	\$280,497
Unit Cost (\$/acft)	\$661	\$592	\$567	\$556	\$552	\$551

4B.2.2.11 City of Helotes

The City of Helotes is projected to have adequate water supplies available from the Edwards Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Helotes implement the following water supply plan (Table 4B.2.2-22).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 115 acft/yr by 2010, increasing to 993 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Facilities Expansions (System Interconnects)

**Table 4B.2.2-22.
Recommended Water Supply Plan for the City of Helotes**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	115	345	539	674	832	993
Facilities Expansions	—	—	—	—	—	—
Total New Supply	115	345	539	674	832	993

Estimated costs of the recommended plan for the City of Helotes’ are shown in Table 4B.2.2-23.

**Table 4B.2.2-23.
Recommended Plan Costs by Decade for the City of Helotes**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$78,092	\$205,524	\$313,824	\$386,697	\$473,570	\$561,561
Unit Cost (\$/acft)	\$679	\$596	\$582	\$574	\$569	\$566
Facilities Expansions						
Annual Cost (\$/yr)	\$269,000	\$269,000	\$20,000	\$20,000	\$20,000	\$20,000
Unit Cost (\$/acft)	—	—	—	—	—	—

4B.2.2.12 City of Hill Country Village

Current water supply for the City of Hill Country Village is obtained from the Edwards Aquifer. Hill Country Village is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Hill Country Village implement the following water supply plan to meet the projected needs for the city (Table 4B.2.2-24).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 77 acft/yr by 2010, increasing to 365 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

- Purchase from WWP (BMWD) to be implemented prior to 2010. This strategy can provide an additional 730 acft/yr by 2010, decreasing to 718 acft/yr of additional supply by 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 42 acft/yr by 2010.

**Table 4B.2.2-24.
Recommended Water Supply Plan for the City of Hill Country Village**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	730	727	723	720	718	718
Recommended Plan						
Municipal Water Conservation	77	146	209	265	316	365
Purchase from WWP (BMWD)	730	727	723	720	718	718
Drought Management	42	—	—	—	—	—
Total New Supply	849	873	932	985	1,034	1,083

Estimated costs of the recommended plan to meet the City of Hill Country Village’s projected needs are shown in Table 4B.2.2-25.

**Table 4B.2.2-25.
Recommended Plan Costs by Decade for the City of Hill Country Village**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$43,077	\$78,866	\$111,009	\$139,853	\$166,499	\$192,015
Unit Cost (\$/acft)	\$559	\$540	\$531	\$528	\$527	\$526
Purchase from WWP (BMWD)						
Annual Cost (\$/yr)	\$769,508	\$760,329	\$417,990	\$335,501	\$278,097	\$277,786
Unit Cost (\$/acft)	\$1,054	\$1,046	\$578	\$466	\$387	\$387
Drought Management						
Annual Cost (\$/yr)	\$13,312	—	—	—	—	—
Unit Cost (\$/acft)	\$317	—	—	—	—	—

4B.2.2.13 City of Hollywood Park

Current water supply for the City of Hollywood Park is obtained from the Edwards Aquifer. Hollywood Park is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Hollywood Park implement the following water supply plan to meet the projected needs for the city (Table 4B.2.2-26).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 212 acft/yr by 2010, increasing to 1,154 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (BMWD) to be implemented prior to 2010. This strategy can provide an additional 1,969 acft/yr by 2010, increasing to 2,271 acft/yr of additional supply by 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 116 acft/yr by 2010.

**Table 4B.2.2-26.
Recommended Water Supply Plan for the City of Hollywood Park**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	1,969	2,044	2,113	2,166	2,220	2,271
Recommended Plan						
Municipal Water Conservation	212	414	612	798	980	1,154
Purchase from WWP (BMWD)	1,969	2,044	2,113	2,166	2,220	2,271
Drought Management	116	—	—	—	—	—
Total New Supply	2,297	2,458	2,725	2,964	3,200	3,425

Estimated costs of the recommended plan to meet the City of Hollywood Park’s projected needs are shown in Table 4B.2.2-27.

**Table 4B.2.2-27.
Recommended Plan Costs by Decade for the City of Hollywood Park**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$119,187	\$223,380	\$325,464	\$421,117	\$515,971	\$607,281
Unit Cost (\$/acft)	\$562	\$540	\$532	\$528	\$527	\$526
<i>Purchase from WWP (BMWD)</i>						
Annual Cost (\$/yr)	\$2,075,564	\$2,137,706	\$1,221,595	\$1,009,299	\$859,854	\$878,624
Unit Cost (\$/acft)	\$1,054	\$1,046	\$578	\$466	\$387	\$387
<i>Drought Management</i>						
Annual Cost (\$/yr)	\$33,055	—	—	—	—	—
Unit Cost (\$/acft)	\$285	—	—	—	—	—

4B.2.2.14 City of Kirby

Current water supply for the City of Kirby is obtained from the Edwards Aquifer. Kirby is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Kirby implement the following water supply plan to meet the projected needs for the city (Table 4B.2.2-28).

- Municipal Water Conservation
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional supply of 335 acft/yr by 2010, increasing to 364 acft/yr of additional supply by 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional supply of 50 acft/yr by 2010.

**Table 4B.2.2-28.
Recommended Water Supply Plan for the City of Kirby**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	335	334	337	331	343	364
<i>Recommended Plan</i>						
Edwards Transfers	335	334	337	331	343	364
Drought Management	50	—	—	—	—	—
Total New Supply	385	334	337	331	343	364

Estimated costs of the recommended plan to meet the City of Kirby’s projected needs are shown in Table 4B.2.2-29.

**Table 4B.2.2-29.
Recommended Plan Costs by Decade for the City of Kirby**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Edwards Transfers						
Annual Cost (\$/yr)	\$152,090	\$151,636	\$152,998	\$150,274	\$155,722	\$165,256
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Drought Management						
Annual Cost (\$/yr)	\$37,755	—	—	—	—	—
Unit Cost (\$/acft)	\$755	—	—	—	—	—

4B.2.2.15 Lackland AFB (CDP)

Current water supply for Lackland AFB is obtained from the Edwards Aquifer. Lackland AFB is projected to have adequate water supplies available from the Edwards Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Lackland AFB implement the following water supply plan to meet the projected needs for the AFB (Table 4B.2.2-30).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 268 acft/yr by 2010, increasing to 1,300 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.2-30.
Recommended Water Supply Plan for Lackland AFB**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	268	515	736	934	1,119	1,300
Total New Supply	268	515	736	934	1,119	1,300

Estimated costs of the recommended plan for Lackland AFB are shown in Table 4B.2.2-31.

**Table 4B.2.2-31.
Recommended Plan Costs by Decade for Lackland AFB**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation						
Annual Cost (\$/yr)	\$148,874	\$276,599	\$390,737	\$492,589	\$588,115	\$683,167
Unit Cost (\$/acft)	\$556	\$537	\$531	\$527	\$526	\$526

4B.2.2.16 City of Leon Valley

The City of Leon Valley is projected to have adequate water supplies available from the Edwards Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Leon Valley implement the following water supply plan (Table 4B.2.2-32).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 12 acft/yr in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.2-32.
Recommended Water Supply Plan for the City of Leon Valley**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	12
Total New Supply	—	—	—	—	—	12

Estimated costs of the recommended plan for the City of Leon Valley are shown in Table 4B.2.2-33.

**Table 4B.2.2-33.
Recommended Plan Costs by Decade for the City of Leon Valley**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	—	—	—	—	—	\$7,962
Unit Cost (\$/acft)	—	—	—	—	—	\$664

4B.2.2.17 City of Live Oak

The City of Live Oak is projected to have adequate water supplies available from the Edwards Aquifer to meet the city’s projected demands during the planning period. However, water demands may be greater than projected due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan. Potentially feasible water management strategies recommended to meet any unprojected needs include:

- Municipal Water Conservation;
- Edwards Transfers; and
- Purchase from WWP (BMWD).

4B.2.2.18 City of Olmos Park

The City of Olmos Park is projected to have adequate water supplies available from the Edwards Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Olmos Park implement the following water supply plan (Table 4B.2.2-34).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 9 acft/yr by 2010, increasing to 33 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.2-34.
Recommended Water Supply Plan for the City of Olmos Park**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	0	0	0	0	0	0
<i>Recommended Plan</i>						
Municipal Water Conservation	9	11	13	14	21	33
Total New Supply	9	11	13	14	21	33

Estimated costs of the recommended plan for the City of Olmos Park are shown in Table 4B.2.2-35.

**Table 4B.2.2-35.
Recommended Plan Costs by Decade for the City of Olmos Park**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$6,343	\$7,676	\$8,877	\$9,863	\$13,461	\$19,748
Unit Cost (\$/acft)	\$705	\$698	\$683	\$705	\$641	\$598

4B.2.2.19 City of San Antonio

Current water supply for the City of San Antonio is obtained from the Edwards, Trinity, and Carrizo Aquifers, Canyon Reservoir, run-of-river rights, and direct reuse. San Antonio is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that San Antonio implement the following water supply plan to meet the projected needs for the city (Table 4B.2.2-36).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 5,752 acft/yr by 2010, increasing to 23,711 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (SAWS) to be implemented prior to 2010. This strategy can provide an additional supply of 68,760 acft/yr by 2010, increasing to 169,752 acft/yr of additional supply by 2060. See Section 4B.3.2 for a list of recommended water management strategies.
- Purchase from WWP (BMWD) to be implemented prior to 2010. This strategy can provide an additional supply of 12,704 acft/yr by 2010, increasing to 28,157 acft/yr of additional supply by 2060. See Section 4B.3.3 for a list of recommended water management strategies.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 1,233 acft/yr from BMWD and 9,883 acft/yr from SAWS by 2010.

**Table 4B.2.2-36.
Recommended Water Supply Plan for the City of San Antonio**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	77,783	109,542	135,796	158,280	176,271	194,228
Recommended Plan						
Municipal Water Conservation	5,752	7,318	8,795	10,490	15,698	23,711
Purchase from WWP (SAWS)	68,477	93,384	116,921	137,353	153,357	169,336
Purchase from WWP (BMWD)	9,023	15,840	18,526	20,556	22,519	24,476
Drought Management (BMWD)	1,233	—	—	—	—	—
Drought Management (SAWS)	37,622	—	—	—	—	—
Total New Supply	122,107	116,542	144,242	168,399	191,574	217,523
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet the City of San Antonio's projected needs are shown in Table 4B.2.2-37.

**Table 4B.2.2-37.
Recommended Plan Costs by Decade for the City of San Antonio**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$3,451,336	\$4,390,988	\$5,276,772	\$6,134,520	\$8,736,963	\$12,965,177
Unit Cost (\$/acft)	\$600	\$600	\$600	\$585	\$557	\$547
Purchase from WWP (SAWS)						
Annual Cost (\$/yr)	\$37,388,442	\$75,174,120	\$186,605,916	\$191,332,729	\$101,368,977	\$205,404,568
Unit Cost (\$/acft)	\$546	\$805	\$1,596	\$1,393	\$661	\$1,213
Purchase from WWP (BMWD)						
Annual Cost (\$/yr)	\$9,510,242	\$16,568,640	\$10,710,495	\$9,578,557	\$8,722,094	\$9,469,487
Unit Cost (\$/acft)	\$1,054	\$1,046	\$578	\$466	\$387	\$387
Drought Management (BMWD)						
Annual Cost (\$/yr)	\$2,272,791	—	—	—	—	—
Unit Cost (\$/acft)	\$1,844	—	—	—	—	—
Drought Management (SAWS)						
Annual Cost (\$/yr)	\$21,632,650	—	—	—	—	—
Unit Cost (\$/acft)	\$575	—	—	—	—	—

4B.2.2.20 City of Selma

Current water supply for the City of Selma is obtained from the Edwards and Carrizo Aquifers. Selma, with nearly 2,000 acft/yr of water supply from its Edwards Permits and SSLGC Contract. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Selma implement the following water supply plan to meet the projected needs for the city (Table 4B.2.2-38).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 135 acft/yr by 2010, increasing to 1,122 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (SSLGC) to be implemented prior to 2020. This strategy can provide an additional 316 acft/yr of supply by 2020, increasing to 749 acft/yr by 2060.

An alternative water management strategy for the City of Selma, if groundwater permits from Gonzales County are unable to be obtained, is Purchase from WWP (SSLGC).

**Table 4B.2.2-38.
Recommended Water Supply Plan for the City of Selma**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	316	762	757	748	749
Recommended Plan						
Municipal Water Conservation	135	344	617	801	966	1,122
Purchase from WWP (SSLGC)	—	316	762	757	748	749
Total New Supply	135	660	1,379	1,558	1,714	1,871

Estimated costs of the recommended plan to meet the City of Selma's projected needs are shown in Table 4B.2.2-39.

**Table 4B.2.2-39.
Recommended Plan Costs by Decade for the City of Selma**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$81,797	\$191,307	\$334,026	\$429,317	\$514,189	\$596,292
Unit Cost (\$/acft)	\$606	\$556	\$541	\$536	\$532	\$531
Purchase from WWP (SSLGC)						
Annual Cost (\$/yr)	—	\$179,488	\$522,180	\$368,366	\$272,392	\$272,756
Unit Cost (\$/acft)	—	\$568	\$685	\$487	\$364	\$364

4B.2.2.21 City of Shavano Park

Current water supply for the City of Shavano Park is obtained from the Edwards Aquifer. Shavano Park is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Shavano Park implement the following water supply plan to meet the projected needs for the city (Table 4B.2.2-40).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 73 acft/yr by 2010, increasing to 382 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 41 acft/yr by 2010.
- Purchase from WWP (SAWS) to be implemented by 2010. This strategy can provide an additional 320 acft/yr by 2010, increasing to 381 acft/yr of supply in 2060.

**Table 4B.2.2-40.
Recommended Water Supply Plan for the City of Shavano Park**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	320	336	348	357	369	381
Recommended Plan						
Municipal Water Conservation	73	142	205	265	324	382
Drought Management	41	—	—	—	—	—
Purchase from WWP (SAWS)	320	336	348	357	369	381
Total New Supply	434	478	553	622	693	763
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet the City of Shavano Park’s projected needs are shown in Table 4B.2.2-41.

**Table 4B.2.2-41.
Recommended Plan Costs by Decade for the City of Shavano Park**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$42,938	\$78,273	\$109,901	\$140,332	\$171,283	\$201,359
Unit Cost (\$/acft)	\$588	\$551	\$536	\$530	\$529	\$527
<i>Drought Management</i>						
Annual Cost (\$/yr)	\$15,109	—	—	—	—	—
Unit Cost (\$/acft)	\$369	—	—	—	—	—
<i>Purchase from WWP (SAWS)</i>						
Annual Cost (\$/yr)	\$174,607	\$270,644	\$555,482	\$497,134	\$244,009	\$462,186
Unit Cost (\$/acft)	\$546	\$805	\$1,596	\$1,393	\$661	\$1,213

4B.2.2.22 City of Somerset

The City of Somerset is projected to have adequate water supplies available from run-of-river rights to meet the city's projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Somerset implement the following water supply plan (Table 4B.2.2-42).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 29 acft/yr by 2010, increasing to 177 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.2-42.
Recommended Water Supply Plan for the City of Somerset**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	0	0	0	0	0	0
<i>Recommended Plan</i>						
Municipal Water Conservation	29	70	110	131	152	177
Total New Supply	29	70	110	131	152	177

Estimated costs of the recommended plan for the City of Somerset are shown in Table 4B.2.2-43.

**Table 4B.2.2-43.
Recommended Plan Costs by Decade for the City of Somerset**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation						
Annual Cost (\$/yr)	\$19,446	\$41,130	\$61,277	\$72,051	\$82,673	\$95,795
Unit Cost (\$/acft)	\$671	\$588	\$557	\$550	\$544	\$541

4B.2.2.23 City of St. Hedwig

The City of St. Hedwig is projected to have adequate water supplies available from the Edwards Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of St. Hedwig implement the following water supply plan (Table 4B.2.2-44).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 14 acft/yr in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.2-44.
Recommended Water Supply Plan for the City of St. Hedwig**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	14
Total New Supply	—	—	—	—	—	14

Estimated costs of the recommended plan for the City of St. Hedwig are shown in Table 4B.2.2-45.

**Table 4B.2.2-45.
Recommended Plan Costs by Decade for the City of St. Hedwig**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	—	\$10,763
Unit Cost (\$/acft)	—	—	—	—	—	\$769

4B.2.2.24 City of Terrell Hills

The City of Terrell Hills is projected to have adequate water supplies available from the Edwards Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Terrell Hills implement the following water supply plan (Table 4B.2.2-46).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 14 acft/yr by 2010, increasing to 65 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.2-46.
Recommended Water Supply Plan for the City of Terrell Hills**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	14	18	21	24	39	65
Total New Supply	14	18	21	24	39	65

Estimated costs of the recommended plan for the City of Terrell Hill are shown in Table 4B.2.2-47.

**Table 4B.2.2-47.
Recommended Plan Costs by Decade for the City of Terrell Hills**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$9,495	\$12,125	\$14,510	\$16,484	\$24,216	\$37,910
Unit Cost (\$/acft)	\$678	\$674	\$691	\$687	\$621	\$583

4B.2.2.25 City of Universal City

Current water supply for the City of Universal City is obtained from the Edwards and Carrizo Aquifers. Universal City is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is

recommended that Universal City implement the following water supply plan to meet the projected needs for the city (Table 4B.2.2-48).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 49 acft/yr by 2050, increasing to 148 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional supply of 113 acft/yr by 2010, increasing to 606 acft/yr of additional supply by 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 130 acft/yr by 2010.

Table 4B.2.2-48.
Recommended Water Supply Plan for the City of Universal City

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	113	421	680	630	606	606
Recommended Plan						
Municipal Water Conservation	—	—	—	—	49	148
Edwards Transfers	113	421	680	630	606	606
Drought Management	130	—	—	—	—	—
Total New Supply	243	421	680	630	655	754

Estimated costs of the recommended plan to meet the City of Universal City's projected needs are shown in Table 4B.2.2-49.

Table 4B.2.2-49.
Recommended Plan Costs by Decade for the City of Universal City

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$33,518	\$92,827
Unit Cost (\$/acft)	—	—	—	—	\$684	\$627
Edwards Transfers						
Annual Cost (\$/yr)	\$51,302	\$191,134	\$308,720	\$286,020	\$275,124	\$275,124
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Drought Management						
Annual Cost (\$/yr)	\$116,789	—	—	—	—	—
Unit Cost (\$/acft)	\$898	—	—	—	—	—

4B.2.2.26 Water Service Inc. (Apex)

Current water supply for Water Service Inc. is obtained from the Edwards Aquifer. Water Service Inc. is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Water Service Inc. implement the following water supply plan to meet the projected needs for the entity (Table 4B.2.2-50).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 18 acft/yr by 2040, increasing to 105 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional supply of 587 acft/yr by 2010, increasing to 1,116 acft/yr of additional supply by 2060.
- Purchase from WWP (TWA) to be implemented prior to 2020. This strategy can provide an additional supply of 1,000 acft/yr by 2020, through 2060.
- Purchase from WWP (SSLGC) to be implemented prior to 2010. This strategy can provide an additional supply of 324 acft/yr by 2010, through 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 48 acft/yr by 2010.

Alternative water management strategies for the Water Service, Inc, if groundwater permits from Gonzales County are unable to be obtained, is Purchase from WWP (SAWS) and/or additional Edwards Transfers.

**Table 4B.2.2-50.
Recommended Water Supply Plan for Water Service Inc.**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	911	1,148	1,384	1,599	1,801	2,018
Recommended Plan						
Municipal Water Conservation	—	—	—	18	50	105
Edwards Transfers	587	723	844	945	1,031	1,116
Purchase from WWP (TWA)	—	1,000	1,000	1,000	1,000	1,000
Purchase from WWP (SSLGC)	324	324	324	324	324	324
Drought Management	48	—	—	—	—	—
Total New Supply	959	2,047	2,168	2,287	2,405	2,545

Estimated costs of the recommended plan to meet Water Service Inc.’s projected needs are shown in Table 4B.2.2-51.

**Table 4B.2.2-51.
Recommended Plan Costs by Decade for Water Service Inc.**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	\$13,791	\$38,479	\$81,122
Unit Cost (\$/acft)	—	—	—	\$766	\$770	\$773
Edwards Transfers						
Annual Cost (\$/yr)	\$266,498	\$328,242	\$383,176	\$429,030	\$468,074	\$506,664
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Purchase from WWP (TWA)						
Annual Cost (\$/yr)	—	\$1,523,000	\$1,523,000	\$512,000	\$512,000	\$512,000
Unit Cost (\$/acft)	—	\$1,523	\$1,523	\$512	\$512	\$512
Purchase from WWP (SSLGC)						
Annual Cost (\$/yr)	\$160,380	\$184,032	\$222,029	\$157,663	\$117,988	\$117,988
Unit Cost (\$/acft)	\$495	\$568	\$685	\$487	\$364	\$364
Drought Management						
Annual Cost (\$/yr)	\$21,089	—	—	—	—	—
Unit Cost (\$/acft)	\$459	—	—	—	—	—

4B.2.2.27 City of Windcrest

The City of Windcrest obtains its water supply from the Edwards Aquifer and is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Windcrest implement the following water supply plan (Table 4B.2.2-52).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 99 acft/yr by 2010, increasing to 385 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 235 acft/yr by 2010 through 2060.

**Table 4B.2.2-52.
Recommended Water Supply Plan for the City of Windcrest**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	235	227	219	209	206	214
Recommended Plan						
Municipal Water Conservation	99	189	270	343	362	385
Edwards Transfers	235	235	235	235	235	235
Total New Supply	334	424	505	578	597	620

Estimated costs of the recommended plan to meet the City of Windcrest’s projected needs are shown in Table 4B.2.2-53.

**Table 4B.2.2-53.
Recommended Plan Costs by Decade for the City of Windcrest**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$65,703	\$110,082	\$149,707	\$185,027	\$193,335	\$205,282
Unit Cost (\$/acft)	\$664	\$582	\$554	\$539	\$534	\$533
Edwards Transfers						
Annual Cost (\$/yr)	\$106,690	\$106,690	\$106,690	\$106,690	\$106,690	\$106,690
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454

4B.2.2.28 Rural Area Residential and Commercial

Current water supply for Rural Areas is obtained from the Edwards Aquifer, Trinity Aquifer, and Canyon Reservoir. Rural Areas are projected to need additional water supplies prior to 2040. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.2-54).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 49 acft/yr in 2010, increasing to 505 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

- Purchase from WWP (SAWS) to be implemented prior to 2010. This strategy can provide an additional 127 acft/yr by year 2040, increasing to 655 acft/yr by 2060.

**Table 4B.2.2-54.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	127	403	655
Recommended Plan						
Municipal Water Conservation	49	96	140	191	310	505
Purchase from WWP (SAWS)	—	—	—	127	403	655
Total New Supply	49	96	140	318	713	1,160

Estimated costs of the recommended plan to meet the projected needs of rural areas are shown in Table 4B.2.2-55.

**Table 4B.2.2-55.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$37,759	\$73,618	\$107,959	\$147,203	\$238,677	\$389,088
Unit Cost (\$/acft)	\$771	\$767	\$771	\$771	\$770	\$770
Purchase from WWP (SAWS)						
Annual Cost (\$/yr)	—	—	—	\$176,851	\$266,493	\$794,571
Unit Cost (\$/acft)	—	—	—	\$1,393	\$661	\$1,213

4B.2.2.29 Industrial

Current water supply for industrial is obtained from the Edwards Aquifer, Trinity Aquifer, run-of-river rights, and direct reuse. Industrial is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that individual industrial operations implement the following water supply plan to meet the projected needs for industrial (Table 4B.2.2-56).

- Purchase from WWP (SAWS) to be implemented prior to 2010. This strategy can provide an additional 12,000 acft/yr of supply in 2010, increasing to

30,000 acft/yr of additional supply in 2060. See Section 4B.3.2 for an individual project list.

- Recycled Water is to be implemented prior to 2010. This strategy can provide an additional 1,340 acft/yr of supply in 2010, increasing to 17,588 acft/yr of additional supply in 2060, capable of meeting the entire needs.

**Table 4B.2.2-56.
Recommended Water Supply Plan for Industrial**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	1,340	4,886	8,240	11,537	14,438	17,588
Recommended Plan						
Purchase from WWP (SAWS)	4,240	8,240	18,000	22,000	30,000	30,000
Recycled Water	1,340	4,886	8,240	11,537	14,438	17,588
Total New Supply	5,580	13,126	26,240	33,537	44,438	47,588

Estimated costs of the recommended plan to meet the Industrial projected needs are shown in Table 4B.2.2-57.

**Table 4B.2.2-57.
Recommended Plan Costs by Decade for Industrial**

Plan Element	2010	2020	2030	2040	2050	2060
Purchase from WWP (SAWS)						
Annual Cost (\$/yr)	\$2,315,040	\$6,633,200	\$28,731,827	\$30,635,681	\$19,838,157	\$36,392,585
Unit Cost (\$/acft)	\$546	\$805	\$1,596	\$1,393	\$661	\$1,213
Recycled Water						
Annual Cost (\$/yr)	\$777,200	\$2,833,880	\$807,520	\$10,164,097	\$12,719,878	\$3,605,540
Unit Cost (\$/acft)	\$580	\$580	\$98	\$881	\$881	\$205

4B.2.2.30 Steam-Electric Power

Steam-electric power is projected to have adequate water supplies available from Victor Braunig Lake and Calaveras Lake to meet the water user group’s projected demand during the planning period.

4B.2.2.31 Mining

Current water supply for mining is obtained from the Carrizo Aquifer. Mining is projected to need additional water supplies prior to 2030. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that individual mining operations implement the following water supply plan to meet the projected needs for mining (Table 4B.2.2-58).

- Mining Water Conservation to be implemented prior to 2010.

**Table 4B.2.2-58.
Recommended Water Supply Plan for Mining**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	921	1,020	1,122	1,216
Recommended Plan						
Mining Water Conservation	—	—	921	1,020	1,122	1,216
Total New Supply	—	—	921	1,020	1,122	1,216

Estimated costs of the recommended plan to meet the Mining projected needs are shown in Table 4B.2.2-59.

**Table 4B.2.2-59.
Recommended Plan Costs by Decade for Mining**

Plan Element	2010	2020	2030	2040	2050	2060
Mining Water Conservation						
Annual Cost (\$/yr)	—	—	N/A	N/A	N/A	N/A
Unit Cost (\$/acft)	—	—	N/A	N/A	N/A	N/A
*Costs not available due to lack of relevant data.						

4B.2.2.32 Irrigation

Current water supply for irrigation is obtained from the Edwards Aquifer, Carrizo Aquifer, and run-of-river rights. Irrigation is projected to have adequate water supplies available.

4B.2.2.33 Livestock

Current water supply for livestock is obtained from the Edwards, Carrizo, and Trinity Aquifers and local sources. Livestock is projected to have adequate water supplies available.

4B.2.3 Caldwell County Water Supply Plan

Table 4B.2.3-1 lists each water user group in Caldwell County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.3-1.
Caldwell County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
Aqua WSC	-49	-362	Projected shortage (2010 through 2060)
County Line WSC			See Hays County
Creedmoor-Maha WSC	-108	-447	Projected shortage (2010 through 2060)
Goforth WSC			See Hays County
Gonzales County WSC			See Gonzales County
City of Lockhart	322	-2,512	Projected shortage (2020 through 2060)
City of Luling	21	-506	Projected shortage (2020 through 2060)
City Martindale	34	1	No projected shortage
Martindale WSC	-42	-182	Projected shortage (2010 through 2060)
Maxwell WSC	384	-689	Projected shortage (2030 through 2060)
City of Mustang Ridge	-19	-213	Projected shortage (2010 through 2060)
City of Niederwald			See Hays County
Polonia WSC	723	-265	Projected shortage (2050 through 2060)
Rural Area Residential and Commercial	500	594	No projected shortage
Industrial	14	0	No projected shortage
Steam-Electric Power	0	0	No projected demand
Mining	5	1	No projected shortage
Irrigation	0	466	No projected shortage
Livestock	0	0	No projected shortage

4B.2.3.1 Aqua WSC

Current water supply for Aqua WSC is obtained from the Carrizo Aquifer. Aqua WSC is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Aqua WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.3-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 6 acft/yr by 2050, increasing to 19 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Carrizo) to be implemented prior to 2010. This strategy can provide an additional 403 acft/yr by 2010, continuing through 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 13 acft/yr by 2010.

**Table 4B.2.3-2.
Recommended Water Supply Plan for Aqua WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	49	121	178	240	300	362
Recommended Plan						
Municipal Water Conservation	—	—	—	—	6	19
Local Groundwater Supplies (Carrizo)	403	403	403	403	403	403
Drought Management	13	—	—	—	—	—
Total New Supply	416	403	403	403	409	422

Estimated costs of the recommended plan to meet Aqua WSC’s projected needs are shown in Table 4B.2.3-3.

**Table 4B.2.3-3.
Recommended Plan Costs by Decade for Aqua WSC**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$4,655	\$14,729
Unit Cost (\$/acft)	—	—	—	—	\$776	\$775
Local Groundwater Supplies (Carrizo)						
Annual Cost (\$/yr)	\$303,000	\$303,000	\$303,000	\$130,025	\$130,025	\$130,025
Unit Cost (\$/acft)	\$751	\$751	\$751	\$322	\$322	\$322
Drought Management						
Annual Cost (\$/yr)	\$383,813	—	—	—	—	—
Unit Cost (\$/acft)	\$2,952	—	—	—	—	—

4B.2.3.2 Creedmoor-Maha WSC

Current water supplies for Creedmoor-Maha WSC are obtained from the Edwards (Barton Springs) Aquifer. Creedmoor-Maha WSC is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Creedmoor-Maha WSC implement the following water supply plan (Table 4B.2.3-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 11 acft/yr by 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (GBRA) to be implemented prior to 2010. This strategy can provide an additional 108 acft/yr by 2010, increasing to 447 acft/yr in 2060.

**Table 4B.2.3-4.
Recommended Water Supply Plan for Creedmoor-Maha WSC**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	108	180	246	312	378	447
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	11
Purchase from WWP (GBRA)	108	180	246	312	378	447
Total New Supply	108	180	246	312	378	458

Estimated costs of the recommended plan for Creedmoor-Maha WSC are shown in Table 4B.2.3-5.

**Table 4B.2.3-5.
Recommended Plan Costs by Decade for Creedmoor-Maha WSC**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	—	—	—	—	—	\$8,700
Unit Cost (\$/acft)	—	—	—	—	—	\$791
<i>Purchase from WWP (GBRA)</i>						
Annual Cost (\$/yr)	\$105,592	\$250,020	\$341,694	\$158,808	\$192,402	\$175,224
Unit Cost (\$/acft)	\$978	\$1,389	\$1,389	\$509	\$509	\$392

4B.2.3.3 City of Lockhart

Current water supply for the City of Lockhart is obtained from the Carrizo Aquifer and Guadalupe-Blanco River Authority run-of-river rights. Lockhart is projected to need additional water supplies prior to 2020. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Lockhart implement the following water supply plan to meet the projected needs for the city (Table 4B.2.3-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 28 acft/yr by 2030, increasing to 333 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Carrizo) to be implemented prior to 2020. This strategy can provide an additional 403 acft/yr by 2020, increasing to 2,823 acft/yr by 2060.
- Purchase from WWP (GBRA) to be implemented prior to 2020. This strategy can provide an additional 1,120 acft/yr from 2020 through 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 123 acft/yr by 2010.

**Table 4B.2.3-6.
Recommended Water Supply Plan for the City of Lockhart**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	321	856	1,407	1,952	2,512
Recommended Plan						
Municipal Water Conservation	—	—	28	103	195	333
Local Groundwater Supplies (Carrizo)	—	403	1,210	1,613	2,016	2,823
Purchase from WWP (GBRA)	—	1,120	1,120	1,120	1,120	1,120
Drought Management	123	—	—	—	—	—
Total New Supply	123	1,523	2,358	2,836	3,331	4,276

Estimated costs of the recommended plan to meet the City of Lockhart’s projected needs are shown in Table 4B.2.3-7.

**Table 4B.2.3-7.
Recommended Plan Costs by Decade for the City of Lockhart**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	\$18,838	\$70,011	\$132,630	\$220,164
Unit Cost (\$/acft)	—	—	\$673	\$680	\$680	\$661
Local Groundwater Supplies (Carrizo)						
Annual Cost (\$/yr)	—	\$428,429	\$1,285,286	\$1,411,730	\$1,236,191	\$1,791,064
Unit Cost (\$/acft)	—	\$1,062	\$1,062	\$875	\$613	\$634
Purchase from WWP (GBRA)						
Annual Cost (\$/yr)	—	\$1,556,158	\$1,556,158	\$570,065	\$570,065	\$439,563
Unit Cost (\$/acft)	—	\$1,389	\$1,389	\$509	\$509	\$392
Drought Management						
Annual Cost (\$/yr)	\$213,481	—	—	—	—	—
Unit Cost (\$/acft)	\$1,736	—	—	—	—	—

4B.2.3.4 City of Luling

Current water supply for the City of Luling is obtained from the Carrizo Aquifer and Guadalupe-Blanco River Authority run-of-river rights. Luling is projected to need additional water supplies prior to 2020. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Luling implement the following water supply plan to meet the projected needs for the city (Table 4B.2.3-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 70 acft/yr by 2010, increasing to 192 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Carrizo) to be implemented prior to 2020. This strategy can provide an additional 403 acft/yr of supply in 2020, increasing to 807 acft/yr of additional supply in 2060.¹
- Purchase from WWP (GBRA) to be implemented prior to 2020. This strategy can provide an additional 1,680 acft/yr from 2020 through 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 53 acft/yr by 2010.

**Table 4B.2.3-8.
Recommended Water Supply Plan for the City of Luling**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	122	211	296	398	506
Recommended Plan						
Municipal Water Conservation	70	90	108	117	148	192
Local Groundwater Supplies (Carrizo)	—	403	403	403	403	807
Purchase from WWP (GBRA)	—	1,680	1,680	1,680	1,680	1,680
Drought Management	53	—	—	—	—	—
Total New Supply	123	2,173	2,191	2,200	2,231	2,679

¹ In response to the Infrastructure Financing Survey in 2005, Luling explained that it does not plan to add a well in the Carrizo Aquifer. Review of Luling’s existing water supplies indicates that the reliability of existing surface water supplies may be underestimated, thereby eliminating the need for the Local Groundwater Supplies (Carrizo) water management strategy recommended in the plan. However, if the need arises, the strategy is included and available for consideration by the City.

Estimated costs of the recommended plan to meet the City of Luling's projected needs are shown in Table 4B.2.3-9.

**Table 4B.2.3-9.
Recommended Plan Costs by Decade for the City of Luling**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$53,961	\$67,257	\$71,761	\$70,867	\$85,077	\$109,043
Unit Cost (\$/acft)	\$771	\$747	\$664	\$606	\$575	\$568
<i>Local Groundwater Supplies (Carrizo)</i>						
Annual Cost (\$/yr)	—	\$437,500	\$437,500	\$180,043	\$180,043	\$617,543
Unit Cost (\$/acft)	—	\$1,085	\$1,085	\$446	\$446	\$766
<i>Purchase from WWP (GBRA)</i>						
Annual Cost (\$/yr)	—	\$2,334,237	\$2,334,237	\$855,098	\$855,098	\$659,344
Unit Cost (\$/acft)	—	\$1,389	\$1,389	\$509	\$509	\$392
<i>Drought Management</i>						
Annual Cost (\$/yr)	\$30,083	—	—	—	—	—
Unit Cost (\$/acft)	\$568	—	—	—	—	—

4B.2.3.5 City of Martindale

The City of Martindale is projected to have adequate water supplies available from run-of-river rights to meet the city's projected demand during the planning period. The following water supply plan is recommended to meet any shortages for the City of Martindale (Table 4B.2.3-10).

- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 6 acft/yr by 2010.

**Table 4B.2.3-10.
Recommended Water Supply Plan for the City of Martindale**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Drought Management	6	—	—	—	—	—
Total New Supply	6	—	—	—	—	—

Estimated costs of the recommended plan for the City of Martindale are shown in Table 4B.2.3-11.

**Table 4B.2.3-11.
Recommended Plan Costs by Decade for the City of Martindale**

Plan Element	2010	2020	2030	2040	2050	2060
Drought Management						
Annual Cost (\$/yr)	\$2,825	—	—	—	—	—
Unit Cost (\$/acft)	\$471	—	—	—	—	—

4B.2.3.6 Martindale WSC

Current water supply for Martindale WSC is obtained from Canyon Reservoir and run-of-river rights through Canyon Regional Water Authority (CRWA). Martindale WSC is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Martindale WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.3-12).

- Municipal Water Conservation
- Purchase from WWP (CRWA) to be implemented prior to 2010. This strategy can provide an additional 396 acft/yr by 2010, increasing to 896 acft/yr by 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 9 acft/yr by 2010.

Alternative water management strategies identified by Martindale WSC include Local Groundwater Supplies (Trinity), Purchase from San Marcos, Surface Water Rights, Recycled Water Programs, and/or Hays/Caldwell PUA Project.

**Table 4B.2.3-12.
Recommended Water Supply Plan for Martindale WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	42	70	95	126	151	182
Recommended Plan						
Purchase from WWP (CRWA)	396	396	696	896	896	896
Drought Management	9	—	—	—	—	—
Total New Supply	405	396	696	896	896	896

Estimated costs of the recommended plan to meet Martindale WSC’s projected needs are shown in Table 4B.2.3-13.

**Table 4B.2.3-13.
Recommended Plan Costs by Decade for Martindale WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Purchase from WWP (CRWA)						
Annual Cost (\$/yr)	\$287,100	\$435,475	\$743,318	\$639,162	\$401,574	\$387,522
Unit Cost (\$/acft)	\$725	\$1,100	\$1,068	\$713	\$448	\$433
Drought Management						
Annual Cost (\$/yr)	\$9,157	—	—	—	—	—
Unit Cost (\$/acft)	\$1,017	—	—	—	—	—

4B.2.3.7 Maxwell WSC

Current water supply for Maxwell WSC is obtained from the Edwards Aquifer, Canyon Reservoir, and run-of-river rights through Canyon Regional Water Authority (CRWA). Maxwell WSC is projected to need additional water supplies prior to 2030. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Maxwell WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.3-14).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 11 acft/yr by 2050, increasing to 55 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (CRWA) to be implemented prior to 2020. This strategy can provide an additional 400 acft/yr by 2020, increasing to 2,000 acft/yr by 2060.

Alternative water management strategies identified by Maxwell WSC include Local Groundwater Supplies (Trinity), Purchase from San Marcos, Surface Water Rights, and/or Recycled Water Programs.

**Table 4B.2.3-14.
Recommended Water Supply Plan for Maxwell WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	77	246	476	689
Recommended Plan						
Municipal Water Conservation	—	—	—	—	11	55
Purchase from WWP (CRWA)	—	400	800	1,200	1,600	2,000
Total New Supply	—	400	800	1,200	1,611	2,055

Estimated costs of the recommended plan to meet Maxwell WSC’s projected needs are shown in Table 4B.2.3-15.

**Table 4B.2.3-15.
Recommended Plan Costs by Decade for Maxwell WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$8,599	\$42,527
Unit Cost (\$/acft)	—	—	—	—	\$782	\$773
Purchase from WWP (CRWA)						
Annual Cost (\$/yr)	—	\$854,389	\$856,020	\$717,097	\$865,005	\$854,389
Unit Cost (\$/acft)	—	\$1,100	\$1,068	\$713	\$448	\$433

4B.2.3.8 City of Mustang Ridge

Current water supply for the City of Mustang Ridge is obtained from the Carrizo Aquifer. Mustang Ridge is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Mustang Ridge implement the following water supply plan to meet the projected needs for the city (Table 4B.2.3-16).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 10 acft/yr by 2010, increasing to 116 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (GBRA) to be implemented prior to 2010. This strategy can provide an additional 19 acft/yr by 2010, increasing to 213 acft/yr in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 6 acft/yr by 2010.

**Table 4B.2.3-16.
Recommended Water Supply Plan for the City of Mustang Ridge**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	19	62	99	137	175	213
Recommended Plan						
Municipal Water Conservation	10	26	48	74	98	116
Purchase from WWP (GBRA)	19	62	99	137	175	213
Drought Management	6	—	—	—	—	—
Total New Supply	35	88	147	211	273	329

Estimated costs of the recommended plan to meet the City of Mustang Ridge’s projected needs are shown in Table 4B.2.3-17.

**Table 4B.2.3-17.
Recommended Plan Costs by Decade for the City of Mustang Ridge**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$7,274	\$15,610	\$26,775	\$40,651	\$53,189	\$62,850
Unit Cost (\$/acft)	\$727	\$600	\$558	\$549	\$543	\$542
Purchase from WWP (GBRA)						
Annual Cost (\$/yr)	\$18,576	\$86,118	\$137,511	\$69,733	\$89,075	\$83,496
Unit Cost (\$/acft)	\$978	\$1,389	\$1,389	\$509	\$509	\$392
Drought Management*						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
* Insufficient data to develop a cost estimate.						

4B.2.3.9 Polonia WSC

Current water supply for Polonia WSC is obtained from the Carrizo Aquifer. Polonia WSC is projected to need additional water supplies prior to 2050. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Polonia WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.3-18).

- Municipal Water Conservation
- Local Groundwater Supplies (Wilcox) to be implemented prior to 2050. This strategy can provide an additional 161 acft/yr by 2050, increasing to 323 acft/yr in 2060.

**Table 4B.2.3-18.
Recommended Water Supply Plan for Polonia WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	66	265
Recommended Plan						
Local Groundwater Supplies (Wilcox)	—	—	—	—	161	323
Total New Supply	—	—	—	—	161	323

Estimated costs of the recommended plan to meet Polonia WSC’s projected needs are shown in Table 4B.2.3-19.

**Table 4B.2.3-19.
Recommended Plan Costs by Decade for Polonia WSC**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Local Wilcox						
Annual Cost (\$/yr)	—	—	—	—	\$142,000	\$284,000
Unit Cost (\$/acft)	—	—	—	—	\$880	\$880

4B.2.3.10 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Carrizo Aquifer, Queen City Aquifer, and run-of-river rights to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.3-20).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 21 acft/yr by 2010, increasing to 29 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Facilities Expansions (System Interconnects)

**Table 4B.2.3-20.
Recommended Water Supply Plan for Rural Areas**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	21	37	36	31	28	29
Facilities Expansions	—	—	—	—	—	—
Total New Supply	21	37	36	31	28	29

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.3-21.

**Table 4B.2.3-21.
Recommended Plan Costs by Decade for Rural Areas**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$16,475	\$24,451	\$22,357	\$18,050	\$15,873	\$15,929
Unit Cost (\$/acft)	\$785	\$661	\$621	\$582	\$567	\$549
<i>Facilities Expansions</i>						
Annual Cost (\$/yr)	\$1,644,000	\$1,644,000	\$111,000	\$111,000	\$111,000	\$111,000
Unit Cost (\$/acft)	—	—	—	—	—	—

In addition, the Tri-Community WSC in Rural Caldwell County is considering the addition of Local Groundwater Supplies (Carrizo) from a new well and interconnections with Maxwell WSC and/or City of Luling.

4B.2.3.11 Industrial

Industrial is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group’s projected demands during the planning period.

4B.2.3.12 Steam-Electric Power

There is no projected steam-electric power water demand in Caldwell County, therefore no water management strategies are recommended for this water user group.

4B.2.3.13 Mining

Mining is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group’s projected demands during the planning period.

4B.2.3.14 Irrigation

Irrigation is projected to have adequate water supplies available from the Carrizo Aquifer, Queen City Aquifer, and run-of-river rights to meet the water user group’s projected demands during the planning period.

4B.2.3.9 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group’s projected demands during the planning period.

4B.2.4 Calhoun County Water Supply Plan

Table 4B.2.4-1 lists each water user group in Calhoun County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.4-1.
Calhoun County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
Calhoun County WSC	1,064	868	No projected shortage
City of Point Comfort	-46	-489	Projected shortage (2010 through 2060)
City of Port Lavaca	2,711	2,135	No projected shortage
City of Seadrift	476	470	No projected shortage
Rural Area Residential and Commercial	4,222	4,220	No projected shortage
Industrial*	20,469	-1,985	Projected shortage (2060)
Steam-Electric Power	0	0	No projected shortage
Mining	6	0	No projected shortage
Irrigation	0	5,988	No projected shortage
Livestock	0	0	No projected shortage
*These values represent the sum of the Surplus/Shortage values for each river basin and/or across the entire county. These values may differ from the Need value reported in other tables because the Need represents only the sum of the shortages.			

4B.2.4.1 Calhoun County WSC

Calhoun County WSC is projected to have adequate water supplies available from run-of-river rights of the Guadalupe-Blanco River Authority (GBRA) to meet the WSC’s projected demands during the planning period.

4B.2.4.2 City of Point Comfort

Current water supply for the City of Point Comfort is obtained from Lake Texana. Point Comfort is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Point Comfort implement the following water supply plan to meet the projected needs for the city (Table 4B.2.4-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 18 acft/yr by 2010, increasing to 98 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (LNRA) to be implemented prior to 2010. This strategy can provide an additional 46 acft/yr by 2010, increasing to 499 acft/yr in 2040, and decreasing to 489 acft/yr in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 11 acft/yr by 2010.

**Table 4B.2.4-2.
Recommended Water Supply Plan for the City of Point Comfort**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	46	145	322	499	489	489
Recommended Plan						
Municipal Water Conservation	18	34	55	78	84	98
Purchase from WWP (LNRA)	46	145	322	499	489	489
Drought Management	11	—	—	—	—	—
Total New Supply	75	179	377	577	573	587

Estimated costs of the recommended plan to meet the City of Point Comfort’s projected needs are shown in Table 4B.2.4-3.

**Table 4B.2.4-3.
Recommended Plan Costs by Decade for the City of Point Comfort**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$13,536	\$24,111	\$36,406	\$47,601	\$48,315	\$55,877
Unit Cost (\$/acft)	\$752	\$709	\$662	\$610	\$575	\$570
Purchase from WWP (LNRA)¹						
Annual Cost (\$/yr)	\$32,246	\$101,645	\$181,286	\$280,937	\$48,900	\$48,900
Unit Cost (\$/acft)	\$701	\$701	\$563	\$563	\$100	\$100
Drought Management						
Annual Cost (\$/yr)	\$104	—	—	—	—	—
Unit Cost (\$/acft)	\$9	—	—	—	—	—

4B.2.4.3 City of Port Lavaca

The City of Port Lavaca is projected to have adequate water supplies available from run-of-river rights of the Guadalupe-Blanco River Authority (GBRA) to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Port Lavaca implement the following water supply plan (Table 4B.2.4-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 30 acft/yr by 2050, increasing to 89 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.4-4.
Recommended Water Supply Plan for the City of Port Lavaca**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	—	—	30	89
Total New Supply	—	—	—	—	30	89

Estimated costs of the recommended plan for the City of Port Lavaca are shown in Table 4B.2.4-5.

**Table 4B.2.4-5.
Recommended Plan Costs by Decade for the City of Port Lavaca**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$22,725	\$68,162
Unit Cost (\$/acft)	—	—	—	—	\$758	\$766

4B.2.4.4 City of Seadrift

The City of Seadrift is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Seadrift implement the following water supply plan (Table 4B.2.4-6).

- Municipal Water Conservation to be implemented or enhanced in the future. This strategy can provide an additional 20 acft/yr by 2010, increasing to 41 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.4-6.
Recommended Water Supply Plan for the City of Seadrift**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	20	29	30	32	36	41
Total New Supply	20	29	30	32	36	41

Estimated costs of the recommended plan for the City of Seadrift are shown in Table 4B.2.4-7.

**Table 4B.2.4-7.
Recommended Plan Costs by Decade for the City of Seadrift**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$15,284	\$19,576	\$19,242	\$18,614	\$20,369	\$23,351
Unit Cost (\$/acft)	\$764	\$675	\$641	\$582	\$566	\$570

4B.2.4.5 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Gulf Coast Aquifer and run-of-river rights of the Guadalupe-Blanco River Authority (GBRA) to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan for rural areas (Table 4B.2.4-8).

- Municipal Water Conservation to be implemented or enhanced in the future. This strategy can provide an additional 4 acft/yr by 2050, increasing to 11 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

An alternative water management strategy identified by GBRA for Rural Calhoun County is the Calhoun County Brackish Groundwater Project.

**Table 4B.2.4-8.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	—	—	4	11
Total New Supply	—	—	—	—	4	11

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.4-9.

**Table 4B.2.4-9.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$3,079	\$8,263
Unit Cost (\$/acft)	—	—	—	—	\$770	\$751

4B.2.4.6 Industrial

Industrial is projected to have adequate water supplies available from the Gulf Coast Aquifer, Lake Texana, and run-of-river rights of the Guadalupe-Blanco River Authority (GBRA) to meet the water user group’s projected demands during the planning period. The following water supply plan is recommended for Calhoun County Industrial.

- Purchase from WWP (LNRA) to be implemented by 2010. This strategy can provide an additional 10,000 acft/yr by 2010, continuing through 2060.

**Table 4B.2.4-10.
Recommended Water Supply Plan for Industrial**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	2,021
Recommended Plan						
Purchase from WWP (LNRA)*	—	10,000	10,000	10,000	10,000	10,000
Total New Supply	—	10,000	10,000	10,000	10,000	10,000
* 10,000 acft/yr is for Formosa Plastics Corporation based on information provided by LNRA during an inter-regional coordination meeting held on April 8, 2009.						

Estimated costs of the recommended plan for Industrial are shown in Table 4B.2.4-11.

**Table 4B.2.4-11.
Recommended Plan Costs by Decade for Industrial**

Plan Element	2010	2020	2030	2040	2050	2060
Purchase from WWP (LNRA)						
Annual Cost (\$/yr)	—	\$7,010,000	\$5,630,000	\$5,630,000	\$1,000,000	\$1,000,000
Unit Cost (\$/acft)	—	\$701	\$563	\$563	\$100	\$100

4B.2.4.7 Steam-Electric Power

Steam-electric power is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the water user group’s projected demands during the planning period.

4B.2.4.8 Mining

Mining is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the water user group’s projected demands during the planning period.

4B.2.4.9 Irrigation

Irrigation is projected to have adequate water supplies available from run-of-river rights to meet the water user group's projected demands during the planning period.

4B.2.4.10 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demands during the planning period.

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4B.2.5 Comal County Water Supply Plan

Table 4B.2.5-1 lists each water user group in Comal County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.5-1.
Comal County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
Bexar Metropolitan Water District			See Bexar County
City of Bulverde	-653	-4,595	Projected shortage (2010 through 2060)
Canyon Lake WSC	3,806	-6,769	Projected shortage (2030 through 2060)
Crystal Clear WSC			See Guadalupe County
Fair Oaks Ranch			See Bexar County
City of Garden Ridge	-257	-1052	Projected shortage (2010 through 2060)
Green Valley SUD			See Guadalupe County
City of New Braunfels	1,797	-13,920	Projected shortage (2020 through 2060)
City of Schertz			See Guadalupe County
City of Selma			See Bexar County
Water Service Inc.			See Bexar County
Rural Area Residential and Commercial*	-1,380	-2,742	Projected shortage (2010 through 2060)
Industrial*	-4,848	-8,672	Projected shortage (2010 through 2060)
Steam-Electric Power	0	0	No projected demand
Mining	-439	-1,173	Projected shortage (2010 through 2060)
Irrigation	807	892	No projected shortage
Livestock	0	0	No projected shortage

**These values represent the sum of the Surplus/Shortage values for each river basin and/or across the entire county. These values may differ from the Need value reported in other tables because the Need represents only the sum of the shortages.*

4B.2.5.1 City of Bulverde

Current water supply for the City of Bulverde is obtained from Canyon Reservoir and Trinity Aquifer through Canyon Lake Water Service Company. City of Bulverde is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Bulverde implement the following water supply plan to meet the projected needs for the city (Table 4B.2.5-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 38 acft/yr by 2030, increasing to 430 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (TWA) through Canyon Lake WSC to be implemented prior to 2020. This strategy can provide an additional 653 acft/yr by 2010, increasing to 4,595 acft/yr in 2060.
- Purchase from WWP (GBRA) to be implemented prior to 2020. This strategy can provide an additional 653 acft/yr by 2010, increasing to 4,595 acft/yr in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 53 acft/yr by 2010.

**Table 4B.2.5-2.
Recommended Water Supply Plan for the City of Bulverde**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	653	1,342	2,128	2,910	3,723	4,595
Recommended Plan						
Municipal Water Conservation	—	—	38	130	260	430
Purchase from WWP (TWA)	—	1,342	2,128	2,910	3,723	4,595
Purchase from WWP (GBRA)	653	1,342	2,128	2,910	3,723	4,595
Drought Management	53	—	—	—	—	—
Total New Supply	1,359	2,684	4,294	5,950	7,706	9,620

Estimated costs of the recommended plan to meet the City of Bulverde’s projected needs are shown in Table 4B.2.5-3.

**Table 4B.2.5-3.
Recommended Plan Costs by Decade for the City of Bulverde**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	—	—	\$25,608	\$88,450	\$176,820	\$293,074
Unit Cost (\$/acft)	—	—	\$674	\$680	\$680	\$682
<i>Purchase from WWP (TWA)</i>						
Annual Cost (\$/yr)	—	\$2,043,866	\$3,240,944	\$1,489,920	\$1,906,176	\$2,352,640
Unit Cost (\$/acft)	—	\$1,523	\$1,523	\$512	\$512	\$512
<i>Purchase from WWP (GBRA)</i>						
Annual Cost (\$/yr)	\$638,438	\$1,312,073	\$2,080,546	\$2,845,107	\$4,813,839	\$5,941,335
Unit Cost (\$/acft)	\$978	\$978	\$978	\$978	\$1,293	\$1,293
<i>Drought Management</i>						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—

4B.2.5.2 Canyon Lake WSC

Current water supply for Canyon Lake WSC is obtained from Canyon Reservoir and the Trinity Aquifer. Canyon Lake WSC is projected to need additional water supplies prior to 2030. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Canyon Lake WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.5-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 96 acft/yr by 2020, increasing to 1,414 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (GBRA) to be implemented prior to 2010. This strategy can provide an additional 129 acft/yr by 2030, increasing to 6,769 acft/yr in 2060.
- Drought Management to be implemented or enhanced in the immediate future.
- Purchase from WWP (TWA) to be implemented prior to 2030. This strategy can provide an additional 3,000 acft/yr by 2030, increasing to 12,000 acft/yr in 2060.

**Table 4B.2.5-4.
Recommended Water Supply Plan for Canyon Lake WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	129	2,198	4,466	6,769
Recommended Plan						
Municipal Water Conservation	—	96	254	543	929	1,414
Purchase from WWP (GBRA)	—	—	129	2,198	4,466	6,769
Drought Management ¹	—	—	—	—	—	—
Purchase from WWP (TWA)	—	—	3,000	6,000	9,000	12,000
Total New Supply	—	96	3,383	8,741	14,395	20,183
¹ Historical per capita water use data unavailable or insufficient for calculation of yield.						

Estimated costs of the recommended plan to meet Canyon Lake WSC’s projected needs are shown in Table 4B.2.5-5.

**Table 4B.2.5-5.
Recommended Plan Costs by Decade for Canyon Lake WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	\$74,261	\$195,883	\$418,001	\$715,563	\$1,063,887
Unit Cost (\$/acft)	—	\$774	\$771	\$770	\$770	\$752
Purchase from WWP (GBRA)						
Annual Cost (\$/yr)	—	—	\$179,236	\$1,118,753	\$2,273,134	\$2,656,607
Unit Cost (\$/acft)	—	—	\$1,389	\$509	\$509	\$392
Drought Management¹						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
Purchase from WWP (TWA)						
Annual Cost (\$/yr)	—	—	\$4,569,000	\$9,138,000	\$4,608,000	\$6,144,000
Unit Cost (\$/acft)	—	—	\$1,523	\$1,523	\$512	\$512
¹ Historical per capita water use data unavailable or insufficient for calculation of annual cost and unit cost.						

4B.2.5.3 City of Garden Ridge

Current water supply for the City of Garden Ridge is obtained from the Edwards Aquifer. Garden Ridge is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Garden Ridge implement the following water supply plan to meet the projected needs for the city (Table 4B.2.5-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 42 acft/yr by 2010, increasing to 460 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (SSLGC) to be implemented prior to 2010. This strategy can provide an additional 257acft/yr by 2010, increasing to 1,052 acft/yr in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 28 acft/yr by 2010.

An alternative water management strategy for the City of Garden Ridge, if groundwater permits from Gonzales County are unable to be obtained, is Purchase from WWP (CRWA).

**Table 4B.2.5-6.
Recommended Water Supply Plan for the City of Garden Ridge**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	257	395	552	710	873	1,052
Recommended Plan						
Municipal Water Conservation	42	103	187	294	379	460
Purchase from WWP (SSLGC)	257	395	552	710	873	1,052
Drought Management	28	—	—	—	—	—
Total New Supply	327	498	739	1,004	1,252	1,512
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet the City of Garden Ridge’s projected needs are shown in Table 4B.2.5-7.

**Table 4B.2.5-7.
Recommended Plan Costs by Decade for the City of Garden Ridge**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$27,442	\$58,811	\$101,682	\$157,724	\$202,378	\$245,216
Unit Cost (\$/acft)	\$653	\$571	\$544	\$536	\$534	\$533
<i>Purchase from WWP (SSLGC)</i>						
Annual Cost (\$/yr)	\$127,215	\$224,360	\$378,272	\$345,495	\$317,912	\$383,097
Unit Cost (\$/acft)	\$495	\$568	\$685	\$487	\$364	\$364
<i>Drought Management</i>						
Annual Cost (\$/yr)	\$11,631	—	—	—	—	—
Unit Cost (\$/acft)	\$415	—	—	—	—	—

4B.2.5.4 City of New Braunfels

Current water supply for the City of New Braunfels is obtained from the Edwards Aquifer, Canyon Reservoir, and run-of-river rights. New Braunfels is projected to need additional water supplies prior to 2020. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that New Braunfels implement the following water supply plan to meet the projected needs for the city (Table 4B.2.5-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 815 acft/yr by 2010, increasing to 8,152 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 525 acft/yr by 2010.
- Purchase from WWP (GBRA) to be implemented prior to 2010. This strategy can provide an additional 907 acft/yr by 2020, increasing to 13,920 acft/yr in 2060.

**Table 4B.2.5-8.
Recommended Water Supply Plan for the City of New Braunfels**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	907	4,044	7,151	10,361	13,920
Recommended Plan						
Municipal Water Conservation	815	1,965	3,632	5,433	6,650	8,152
Drought Management	525	—	—	—	—	—
Purchase from WWP (GBRA)	—	907	4,044	7,151	10,361	13,920
Total New Supply	1,340	2,872	7,676	12,584	17,011	22,072
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet the City of New Braunfels’ projected needs are shown in Table 4B.2.5-9.

**Table 4B.2.5-9.
Recommended Plan Costs by Decade for the City of New Braunfels**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$542,429	\$1,135,506	\$2,009,283	\$2,957,523	\$3,595,588	\$4,400,341
Unit Cost (\$/acft)	\$666	\$578	\$553	\$544	\$541	\$540
Drought Management						
Annual Cost (\$/yr)	\$175,878	—	—	—	—	—
Unit Cost (\$/acft)	\$335	—	—	—	—	—
Purchase from WWP (GBRA)						
Annual Cost (\$/yr)	—	\$1,260,210	\$5,618,841	\$3,639,764	\$5,273,611	\$5,463,136
Unit Cost (\$/acft)	—	\$1,389	\$1,389	\$509	\$509	\$392

4B.2.5.5 Rural Area Residential and Commercial

Current water supply for Rural Areas is obtained from the Edwards Aquifer, Trinity Aquifer, Canyon Reservoir, and run-of-river rights. Rural Areas are projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.5-10).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 85 acft/yr in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (GBRA) to be implemented prior to 2010. This strategy can provide an additional 891acft/yr by 2010, increasing to 1,480 acft/yr in 2060.
- Purchase from NBU (term) to be implemented prior to 2010. This strategy can provide an additional 891acft/yr by 2010.
- Purchase from WWP (TWA) to be implemented prior to 2020. This strategy can provide an additional 986 acft/yr by 2010, increasing to 1,480 acft/yr in 2060.

**Table 4B.2.5-10.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	1,782	1,972	2,178	2,362	2,665	2,960
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	85
Purchase from WWP (GBRA)	891	986	1,089	1,181	1,333	1,480
Purchase water from NBU (term)	891	—	—	—	—	—
Purchase from WWP (TWA)	—	986	1,089	1,181	1,333	1,480
Total New Supply	1,782	1,972	2,178	2,362	2,666	3,045

Estimated costs of the recommended plan to meet the projected needs of rural areas are shown in Table 4B.2.5-11.

**Table 4B.2.5-11.
Recommended Plan Costs by Decade for Rural Areas**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	—	—	—	—	—	\$65,700
Unit Cost (\$/acft)	—	—	—	—	—	\$773
<i>Purchase from WWP (GBRA)</i>						
Annual Cost (\$/yr)	\$871,131	\$964,012	\$1,064,715	\$1,154,664	\$1,723,569	\$1,913,640
Unit Cost (\$/acft)	\$978	\$978	\$978	\$978	\$1,293	\$1,293
<i>Purchase water from NBU (term)</i>						
Annual Cost (\$/yr)	\$708,345	—	—	—	—	—
Unit Cost (\$/acft)	\$795	—	—	—	—	—
<i>Purchase from WWP (TWA)</i>						
Annual Cost (\$/yr)	—	\$1,501,678	\$1,658,547	\$604,672	\$682,496	\$757,760
Unit Cost (\$/acft)	—	\$1,523	\$1,523	\$512	\$512	\$512

4B.2.5.6 Industrial

Current water supply for industrial is obtained from the Edwards Aquifer, Canyon Reservoir, and run-of-river rights. Industrial is projected to need additional water supplies prior to the year 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that individual industrial operations implement the following water supply plan to meet the projected needs for industrial (Table 4B.2.5-12).

- Recycled water is to be implemented prior to 2010. This strategy can provide an additional 5,199 acft/yr of supply in 2010, increasing to 9,022 acft/yr of additional supply in 2060, capable of meeting the entire needs.
- Purchase from WWP (GBRA) is to be implemented prior to 2010. This strategy can provide an additional 5,199 acft/yr of supply in 2010, increasing to 9,022 acft/yr of additional supply in 2060.

**Table 4B.2.5-12.
Recommended Water Supply Plan for Industrial**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	5,199	6,033	6,784	7,514	8,141	9,022
Recommended Plan						
Recycled Water	5,199	6,033	6,784	7,514	8,141	9,022
Purchase from WWP (GBRA)	5,199	6,033	6,784	7,514	8,141	9,022
Total New Supply	10,298	12,066	13,568	15,028	16,282	18,044

Estimated costs of the recommended plan to meet the industrial projected needs are shown in Table 4B.2.5-13.

**Table 4B.2.5-13.
Recommended Plan Costs by Decade for Industrial**

Plan Element	2010	2020	2030	2040	2050	2060
Recycled Water						
Annual Cost (\$/yr)	\$3,015,420	\$3,499,140	\$664,832	\$736,372	\$797,818	\$884,156
Unit Cost (\$/acft)	\$580	\$580	\$98	\$98	\$98	\$98
Purchase from WWP (GBRA)						
Annual Cost (\$/yr)	\$5,083,062	\$5,898,464	\$6,632,717	\$7,346,438	\$10,526,313	\$11,665,446
Unit Cost (\$/acft)	\$978	\$978	\$978	\$978	\$1,293	\$1,293

4B.2.5.7 Steam-Electric Power

There is no projected steam-electric power water demand in Comal County, therefore no water management strategies are recommended for this water user group.

4B.2.5.8 Mining

Current water supply for mining is obtained from the Trinity Aquifer. Mining is projected to need additional water supplies in the planning year 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that individual mining operations implement the following water supply plan to meet the projected needs for mining (Table 4B.2.5-14).

- Mining water conservation to be implemented prior to 2010.

**Table 4B.2.5-14.
Recommended Water Supply Plan for Mining**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	439	635	753	870	1,068	1,173
Recommended Plan						
Mining Water Conservation	439	635	753	870	1,068	1,173
Total New Supply	439	635	753	870	1,068	1,173

Estimated costs of the recommended plan to meet the mining projected needs are shown in Table 4B.2.5-15.

**Table 4B.2.5-15.
Recommended Plan Costs by Decade for Mining**

Plan Element	2010	2020	2030	2040	2050	2060
Mining Water Conservation*						
Annual Cost (\$/yr)	N/A	N/A	N/A	N/A	N/A	N/A
Unit Cost (\$/acft)	N/A	N/A	N/A	N/A	N/A	N/A
*Costs not available due to lack of relevant data.						

4B.2.5.9 Irrigation

Irrigation is projected to have adequate water supplies available from the Edwards Aquifer, Canyon Reservoir, and run-of-river rights to meet the water user group’s projected demand during the planning period.

4B.2.5.10 Livestock

Current water supply for livestock is obtained from the Trinity Aquifer and local sources. Livestock is projected to have adequate water supplies through 2060.

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4B.2.6 DeWitt County Water Supply Plan

Table 4B.2.6-1 lists each water user group in DeWitt County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.6-1.
DeWitt County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Cuero	3,827	3,899	No projected shortage
Gonzales County WSC			See Gonzales County
City of Yoakum	1,148	1,172	No projected shortage
City of Yorktown	806	831	No projected shortage
Rural Area Residential and Commercial	263	364	No projected shortage
Industrial	76	6	No projected shortage
Steam-Electric Power	0	0	No projected demand
Mining	7	0	No projected shortage
Irrigation	0	105	No projected shortage
Livestock	0	0	No projected shortage

4B.2.6.1 City of Cuero

The City of Cuero is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Cuero implement the following water supply plan (Table 4B.2.6-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 99 acft/yr by 2010, increasing to 218 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.6-2.
Recommended Water Supply Plan for the City of Cuero**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	99	181	187	190	197	218
Total New Supply	99	181	187	190	197	218

Estimated costs of the recommended plan for the City of Cuero are shown in Table 4B.2.6-3.

**Table 4B.2.6-3.
Recommended Plan Costs by Decade for the City of Cuero**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$76,250	\$117,473	\$115,153	\$111,355	\$111,074	\$121,828
Unit Cost (\$/acft)	\$770	\$649	\$616	\$586	\$564	\$559

4B.2.6.2 City of Yoakum

The City of Yoakum is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Yoakum implement the following water supply plan (Table 4B.2.6-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 14 acft/yr by 2010, increasing to 27 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.6-4.
Recommended Water Supply Plan for the City of Yoakum**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	14	16	17	18	20	27
Total New Supply	14	16	17	18	20	27

Estimated costs of the recommended plan for the City of Yoakum are shown in Table 4B.2.6-5.

**Table 4B.2.6-5.
Recommended Plan Costs by Decade for the City of Yoakum**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$10,915	\$11,989	\$12,800	\$13,132	\$13,016	\$16,667
Unit Cost (\$/acft)	\$780	\$749	\$753	\$730	\$651	\$617

4B.2.6.3 City of Yorktown

The City of Yorktown is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Yorktown implement the following water supply plan (Table 4B.2.6-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 2 acft/yr by 2020, increasing to 13 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.6-6.
Recommended Water Supply Plan for the City of Yorktown**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	2	2	2	5	13
Total New Supply	—	2	2	2	5	13

Estimated costs of the recommended plan for the City of Yorktown are shown in Table 4B.2.6-7.

**Table 4B.2.6-7.
Recommended Plan Costs by Decade for the City of Yorktown**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	\$1,215	\$1,594	\$1,801	\$3,871	\$9,753
Unit Cost (\$/acft)	—	\$608	\$797	\$901	\$774	\$750

4B.2.6.4 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Gulf Coast Aquifer to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan for rural areas (Table 4B.2.6-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 6 acft/yr in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.6-8.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	6
Total New Supply	—	—	—	—	—	6

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.6-9.

**Table 4B.2.6-9.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	—	\$4,961
Unit Cost (\$/acft)	—	—	—	—	—	\$827

4B.2.6.5 Industrial

Industrial is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.6.6 Steam-Electric Power

There is no projected steam-electric power water demand in DeWitt County, therefore no water management strategies are recommended for this water user group.

4B.2.6.7 Mining

Mining is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the water user group's projected demand during the planning period.

4B.2.6.8 Irrigation

Irrigation is projected to have adequate water supplies available from the Gulf Coast Aquifer and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.6.9 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

4B.2.7 Dimmit County Water Supply Plan

Table 4B.2.7-1 lists each water user group in Dimmit County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.7-1.
Dimmit County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Asherton	327	334	No projected shortage
City of Big Wells	502	506	No projected shortage
City of Carrizo Springs	368	374	No projected shortage
Rural Area Residential and Commercial	59	80	No projected shortage
Industrial	0	0	No projected demand
Steam-Electric Power	0	0	No projected demand
Mining	92	0	No projected shortage
Irrigation	0	1,624	No projected shortage
Livestock	0	0	No projected shortage

4B.2.7.1 City of Asherton

The City of Asherton is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Asherton implement the following water supply plan (Table 4B.2.7-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 20 acft/yr by 2010, increasing to 64 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.7-2.
Recommended Water Supply Plan for the City of Asherton**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	20	43	58	59	62	64
Total New Supply	20	43	58	59	62	64

Estimated costs of the recommended plan for the City of Asherton are shown in Table 4B.2.7-3.

**Table 4B.2.7-3.
Recommended Plan Costs by Decade for the City of Asherton**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$15,404	\$26,899	\$33,391	\$32,594	\$33,605	\$34,805
Unit Cost (\$/acft)	\$770	\$626	\$576	\$552	\$542	\$544

4B.2.7.2 City of Big Wells

The City of Big Wells is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city's projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Big Wells implement the following water supply plan (Table 4B.2.7-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 11 acft/yr by 2010, increasing to 33 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.7-4.
Recommended Water Supply Plan for the City of Big Wells**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	11	23	30	30	32	33
Total New Supply	11	23	30	30	32	33

Estimated costs of the recommended plan for the City of Big Wells are shown in Table 4B.2.7-5.

**Table 4B.2.7-5.
Recommended Plan Costs by Decade for the City of Big Wells**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$8,603	\$14,638	\$17,438	\$17,012	\$17,547	\$18,185
Unit Cost (\$/acft)	\$782	\$636	\$581	\$567	\$548	\$551

4B.2.7.3 City of Carrizo Springs

The City of Carrizo Springs is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city's projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Carrizo Springs implement the following water supply plan (Table 4B.2.7-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 152 acft/yr by 2010, increasing to 777 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.7-6.
Recommended Water Supply Plan for the City of Carrizo Springs**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	152	312	464	590	700	777
Total New Supply	152	312	464	590	700	777

Estimated costs of the recommended plan for the City of Carrizo Springs are shown in Table 4B.2.7-7.

**Table 4B.2.7-7.
Recommended Plan Costs by Decade for the City of Carrizo Springs**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$102,816	\$183,308	\$257,908	\$318,509	\$374,006	\$414,285
Unit Cost (\$/acft)	\$676	\$588	\$556	\$540	\$534	\$533

4B.2.7.4 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Carrizo Aquifer to meet their projected demands during the planning period.

4B.2.7.5 Industrial

There is no projected industrial water demand in Dimmit County, therefore no water management strategies are recommended for this water user group.

4B.2.7.6 Steam-Electric Power

There is no projected steam-electric power water demand in Dimmit County, therefore no water management strategies are recommended for this water user group.

4B.2.7.7 Mining

Mining is projected to have adequate water supplies available from the Carrizo Aquifer and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.7.8 Irrigation

Irrigation is projected to have adequate water supplies available from the Carrizo Aquifer and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.7.9 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

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4B.2.8 Frio County Water Supply Plan

Table 4B.2.8-1 lists each water user group in Frio County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.8-1.
Frio County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
Benton City WSC			See Atascosa County
City of Dilley	878	282	No projected shortage
City of Pearsall	1,288	1,282	No projected shortage
Rural Area Residential and Commercial	293	13	No projected shortage
Industrial	0	0	No projected demand
Steam-Electric Power	0	198	No projected shortage
Mining	30	43	No projected shortage
Irrigation	35,081	48,506	No projected shortage
Livestock	0	0	No projected shortage

4B.2.8.1 City of Dilley

The City of Dilley is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Dilley implement the following water supply plan (Table 4B.2.8-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 104 acft/yr by 2010, increasing to 772 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.8-2.
Recommended Water Supply Plan for the City of Dilley**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	104	229	362	511	652	772
Total New Supply	104	229	362	511	652	772

Estimated costs of the recommended plan for the City of Dilley are shown in Table 4B.2.8-3.

**Table 4B.2.8-3.
Recommended Plan Costs by Decade for the City of Dilley**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$72,733	\$136,570	\$203,925	\$281,326	\$354,219	\$417,515
Unit Cost (\$/acft)	\$699	\$596	\$563	\$551	\$543	\$541

4B.2.8.2 City of Pearsall

The City of Pearsall is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Pearsall implement the following water supply plan (Table 4B.2.8-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 116 acft/yr by 2010, increasing to 324 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.8-4.
Recommended Water Supply Plan for the City of Pearsall**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	116	223	272	271	294	324
Total New Supply	116	223	272	271	294	324

Estimated costs of the recommended plan for the City of Pearsall are shown in Table 4B.2.8-5.

**Table 4B.2.8-5.
Recommended Plan Costs by Decade for the City of Pearsall**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$78,787	\$132,441	\$154,632	\$148,799	\$159,650	\$175,453
Unit Cost (\$/acft)	\$679	\$594	\$569	\$549	\$543	\$542

4B.2.8.3 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Carrizo Aquifer to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan for rural areas (Table 4B.2.8-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 18 acft/yr in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.8-6.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	18
Total New Supply	—	—	—	—	—	18

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.8-7.

**Table 4B.2.8-7.
Recommended Plan Costs by Decade for Rural Areas**

<i>Plan Element</i>	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	—	\$13,845
Unit Cost (\$/acft)	—	—	—	—	—	\$769

4B.2.8.4 Industrial

There is no projected industrial water demand in Frio County, therefore no water management strategies are recommended for this water user group.

4B.2.8.5 Steam-Electric Power

Steam-electric power is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group's projected demand during the planning period.

4B.2.8.6 Mining

Mining is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group's projected demand during the planning period.

4B.2.8.7 Irrigation

Irrigation is projected to have adequate water supplies available from the Carrizo Aquifer, Queen City Aquifer, Sparta Aquifer, and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.8.8 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

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4B.2.9 Goliad County Water Supply Plan

Table 4B.2.9-1 lists each water user group in Goliad County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.9-1.
Goliad County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Goliad	527	364	No projected shortage
Rural Area Residential and Commercial	368	134	No projected shortage
Industrial	20	0	No projected shortage
Steam-Electric Power	7,676	2,060	No projected shortage
Mining	0	0	No projected shortage
Irrigation	3,985	4,170	No projected shortage
Livestock	-3	0	Projected shortage (2010 through 2020)

4B.2.9.1 City of Goliad

The City of Goliad is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Goliad implement the following water supply plan (Table 4B.2.9-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 30 acft/yr by 2010, increasing to 100 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.9-2.
Recommended Water Supply Plan for the City of Goliad**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	30	59	67	73	85	100
Total New Supply	30	59	67	73	85	100

Estimated costs of the recommended plan for the City of Goliad are shown in Table 4B.2.9-3.

**Table 4B.2.9-3.
Recommended Plan Costs by Decade for the City of Goliad**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$23,424	\$38,872	\$41,790	\$42,695	\$48,426	\$56,450
Unit Cost (\$/acft)	\$781	\$659	\$624	\$585	\$570	\$565

4B.2.9.2 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Gulf Coast Aquifer to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan for rural areas (Table 4B.2.9-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 16 acft/yr in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.9-4.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	16
Total New Supply	—	—	—	—	—	16

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.9-5.

**Table 4B.2.9-5.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	—	\$12,663
Unit Cost (\$/acft)	—	—	—	—	—	\$791

4B.2.9.3 Industrial

Industrial is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.9.4 Steam-Electric Power

Current water supply for steam-electric power is obtained from the Gulf Coast Aquifer and Coletto Creek Reservoir. Steam-electric power is projected to have adequate supplies through 2060.

4B.2.9.5 Mining

Mining is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.9.6 Irrigation

Irrigation is projected to have adequate water supplies available from the Gulf Coast Aquifer and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.9.7 Livestock

Livestock obtains its water supply from local sources. Shortages of 3 acft/yr and 1 acft/yr are projected for years 2010 and 2020, respectively. Livestock Water Conservation is recommended to meet this transient need. However, a cost estimate is not available due to lack of relevant data.

4B.2.10 Gonzales County Water Supply Plan

Table 4B.2.10-1 lists each water user group in Gonzales County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.10-1.
Gonzales County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Gonzales	1,040	826	No projected shortage
Gonzales County WSC	745	133	No projected shortage
City of Nixon	2,282	2,232	No projected shortage
City of Waelder	444	395	No projected shortage
Rural Area Residential and Commercial	179	368	No projected shortage
Industrial	1,135	133	No projected shortage
Steam-Electric Power	0	0	No projected demand
Mining	6	10	No projected shortage
Irrigation	2,118	2,801	No projected shortage
Livestock	72	72	No projected shortage

4B.2.10.1 City of Gonzales

The City of Gonzales is projected to have adequate water supplies available from the Carrizo Aquifer and run-of-river rights to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Gonzales implement the following water supply plan (Table 4B.2.10-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 116 acft/yr by 2010, increasing to 414 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.10-2.
Recommended Water Supply Plan for the City of Gonzales**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	116	245	325	353	381	414
Total New Supply	116	245	325	353	381	414

Estimated costs of the recommended plan for the City of Gonzales are shown in Table 4B.2.10-3.

**Table 4B.2.10-3.
Recommended Plan Costs by Decade for the City of Gonzales**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$89,431	\$154,089	\$190,182	\$200,317	\$212,805	\$229,940
Unit Cost (\$/acft)	\$771	\$629	\$585	\$567	\$559	\$555

4B.2.10.2 Gonzales County WSC

Current water supply for Gonzales County WSC is obtained from the Carrizo Aquifer and Canyon Reservoir. Gonzales County WSC is projected to have adequate water supplies through 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Gonzales County WSC implement the following water supply plan (Table 4B.2.10-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 143 acft/yr by 2010, increasing to 1,002 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (TWA) to be implemented by 2020. This strategy can provide an additional 500 acft/yr by 2020 through 2060.
- Facilities Expansions (System Interconnects)

**Table 4B.2.10-4.
Recommended Water Supply Plan for Gonzales County WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	143	312	505	693	858	1,002
Purchase from WWP (TWA)	—	500	500	500	500	500
Total New Supply	143	812	1,005	1,193	1,358	1,502

Estimated costs of the recommended plan for Gonzales County WSC are shown in Table 4B.2.10-5.

**Table 4B.2.10-5.
Recommended Plan Costs by Decade for Gonzales County WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$97,959	\$182,594	\$281,442	\$376,878	\$461,395	\$536,658
Unit Cost (\$/acft)	\$685	\$585	\$557	\$544	\$538	\$536
Purchase from WWP (TWA)						
Annual Cost (\$/yr)	—	\$761,500	\$761,500	\$256,000	\$256,000	\$256,000
Unit Cost (\$/acft)	—	\$1,523	\$1,523	\$512	\$512	\$512

4B.2.10.3 City of Nixon

The City of Nixon is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Nixon implement the following water supply plan (Table 4B.2.10-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 35 acft/yr by 2010, increasing to 93 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.10-6.
Recommended Water Supply Plan for the City of Nixon**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	35	64	72	75	83	93
Total New Supply	35	64	72	75	83	93

Estimated costs of the recommended plan for the City of Nixon are shown in Table 4B.2.10-7.

**Table 4B.2.10-7.
Recommended Plan Costs by Decade for the City of Nixon**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$26,707	\$41,079	\$44,133	\$44,084	\$47,526	\$52,622
Unit Cost (\$/acft)	\$763	\$642	\$613	\$588	\$573	\$566

4B.2.10.4 City of Waelder

The City of Waelder is projected to have adequate water supplies available from the Queen City Aquifer to meet the city's projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Waelder implement the following water supply plan (Table 4B.2.10-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 3 acft/yr by 2040, increasing to 11 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.10-8.
Recommended Water Supply Plan for the City of Waelder**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	—	3	7	11
Total New Supply	—	—	—	3	7	11

Estimated costs of the recommended plan for the City of Waelder are shown in Table 4B.2.10-9.

**Table 4B.2.10-9.
Recommended Plan Costs by Decade for the City of Waelder**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	\$2,582	\$5,110	\$8,815
Unit Cost (\$/acft)	—	—	—	\$861	\$730	\$801

4B.2.10.5 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Carrizo Aquifer to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan for rural areas (Table 4B.2.10-10).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 6 acft/yr by 2010, decreasing to 3 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.10-10.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	6	7	5	—	—	3
Total New Supply	6	7	5	—	—	3

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.10-11.

**Table 4B.2.10-11.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$4,791	\$5,521	\$3,910	—	—	\$2,398
Unit Cost (\$/acft)	\$799	\$789	\$782	—	—	\$799

4B.2.10.6 Industrial

Industrial is projected to have adequate water supplies available from the Carrizo Aquifer and Sparta Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.10.7 Steam-Electric Power

There is no projected steam-electric power water demand in Gonzales County, therefore no water management strategies are recommended for this water user group.

4B.2.10.8 Mining

Mining is projected to have adequate water supplies available from the Carrizo Aquifer, Sparta Aquifer, and Queen City Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.10.9 Irrigation

Irrigation is projected to have adequate water supplies available from the Carrizo Aquifer, Sparta Aquifer, Queen City Aquifer, Gulf Coast Aquifer, Canyon Reservoir, and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.10.10 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

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4B.2.11 Guadalupe County Water Supply Plan

Table 4B.2.11-1 lists each water user group in Guadalupe County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.11-1.
Guadalupe County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Cibolo	484	120	No projected shortage
Crystal Clear WSC	794	-2,716	Projected shortage (2030 through 2060)
East Central SUD			See Bexar County
Green Valley SUD	750	-547	Projected shortage (2060)
City of Marion	12	-75	Projected shortage (2020 through 2060)
Martindale WSC			See Caldwell County
City of New Berlin	0	0	No projected shortage
City of New Braunfels			See Comal County
Santa Clara	-76	-810	Projected shortage (2010 through 2060)
City of Schertz*	5,488	-2,420	Projected shortage (2050 through 2060)
City of Seguin	4,647	618	No projected shortage
City of Selma			See Bexar County
Springs Hill WSC	2,501	520	No projected shortage
Water Service Inc.			See Bexar County
Rural Area Residential and Commercial	179	436	No projected shortage
Industrial	1,460	1	No projected shortage
Steam-Electric Power	4,292	1,565	No projected shortage
Mining	47	0	No projected shortage
Irrigation	597	962	No projected shortage
Livestock	0	0	No projected shortage

*These values represent the sum of the Surplus/Shortage values for each river basin and/or across the entire county. These values may differ from the Need value reported in other tables because the Need represents only the sum of the shortages.

4B.2.11.1 City of Cibolo

Current water supply for the City of Cibolo is obtained from Canyon Reservoir through CRWA. Cibolo is projected to have adequate water supply through 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Cibolo implement the following water supply plan (Table 4B.2.11-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 65 acft/yr by 2010, increasing to 645 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (CRWA) to be implemented prior to 2010. This strategy can provide an additional 700 acft/yr in 2010, increasing to 7,180 acft/yr in 2060.
- Purchase from WWP (BMWD) to be implemented prior to 2010. This strategy can provide an additional 500 acft/yr in 2010 through 2060.

**Table 4B.2.11-2.
Recommended Water Supply Plan for the City of Cibolo**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	65	176	281	374	499	645
Purchase from WWP (CRWA)	700	980	6,180	6,680	7,180	7,180
Purchase from WWP (BMWD)	500	500	500	500	500	500
Total New Supply	1,265	1,656	6,961	7,554	8,179	8,325
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan for the City of Cibolo are shown in Table 4B.2.11-3.

**Table 4B.2.11-3.
Recommended Plan Costs by Decade for the City of Cibolo**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$44,008	\$104,545	\$161,586	\$212,045	\$280,697	\$361,068
Unit Cost (\$/acft)	\$677	\$594	\$575	\$567	\$563	\$560
<i>Purchase from WWP (CRWA)</i>						
Annual Cost (\$/yr)	\$507,500	\$1,077,690	\$6,600,155	\$4,765,178	\$3,217,972	\$3,105,369
Unit Cost (\$/acft)	\$725	\$1,100	\$1,068	\$713	\$448	\$433
<i>Purchase from WWP (BMWD)</i>						
Annual Cost (\$/yr)	\$527,060	\$522,922	\$289,067	\$232,987	\$193,661	\$193,444
Unit Cost (\$/acft)	\$1,054	\$1,046	\$578	\$466	\$387	\$387

4B.2.11.2 Crystal Clear WSC

Current water supply for Crystal Clear WSC is obtained from the Edwards Aquifer, Canyon Reservoir, and run-of-river rights. Crystal Clear WSC is projected to need additional water supplies prior to 2030. Working within the planning criteria established by the SCTRWP and the TWDB, it is recommended that Crystal Clear WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.11-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 41 acft/yr by 2050, increasing to 184 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Wilcox) to be implemented prior to 2030. This strategy can provide an additional 605 acft/yr by 2030, increasing to 2,823 acft/yr of supply by 2060.
- Purchase from WWP (CRWA) to be implemented prior to 2010. This strategy can provide an additional 1,300 acft/yr by 2010, increasing to 5,185 by 2060.
- Purchase from WWP (SSLGC) to be implemented prior to 2020. This strategy can provide an additional 300 acft/yr by 2020, increasing to 900 acft/yr of supply in 2040, continuing through 2060.

Alternative water management strategies identified by Crystal Clear WSC include Local Groundwater Supplies (Trinity), Brackish Edwards, and/or Purchase from WWP (GBRA).

**Project Table 4B.2.11-4.
Recommended Water Supply Plan for Crystal Clear WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	0	509	1,138	1,926	2,716
Recommended Plan						
Municipal Water Conservation	—	—	—	—	41	184
Local Groundwater Supplies (Wilcox)	—	—	605	1,210	2,016	2,823
Purchase from WWP (CRWA)	1,300	2,595	2,595	2,595	5,185	5,185
Purchase from WWP (SSLGC)	—	300	600	900	900	900
Total New Supply	1,300	2,895	3,800	4,705	8,142	9,092
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet Crystal Clear WSC's projected needs are shown in Table 4B.2.11-5.

**Table 4B.2.11-5.
Recommended Plan Costs by Decade for Crystal Clear WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$31,476	\$141,432
Unit Cost (\$/acft)	—	—	—	—	\$768	\$769
Local Groundwater Supplies (Wilcox)						
Annual Cost (\$/yr)	—	—	\$863,357	\$1,726,714	\$2,247,248	\$2,767,782
Unit Cost (\$/acft)	—	—	\$1,427	\$1,427	\$1,114	\$980
Purchase from WWP (CRWA)						
Annual Cost (\$/yr)	\$942,500	\$2,853,679	\$2,771,424	\$1,851,143	\$2,323,842	\$2,242,526
Unit Cost (\$/acft)	\$725	\$1,100	\$1,068	\$713	\$448	\$433
Purchase from WWP (SSLGC)						
Annual Cost (\$/yr)	—	\$170,400	\$411,166	\$437,952	\$327,745	\$327,745
Unit Cost (\$/acft)	—	\$568	\$685	\$487	\$364	\$364

4B.2.11.3 Green Valley SUD

Current water supply for Green Valley SUD is obtained from the Edwards Aquifer and Canyon Reservoir. Green Valley SUD is projected to need additional water supplies prior to 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Green Valley SUD implement the following water supply plan to meet the projected needs for the SUD (Table 4B.2.11-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 20 acft/yr in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (CRWA) to be implemented prior to 2010. This strategy can provide an additional 700 acft/yr by 2010, increasing to 9,500 acft/yr of supply in 2060.
- Purchase from NBU to be implemented by 2010 and can provide an additional 552 acft/yr through 2060.

Alternative water management strategies identified by Green Valley SUD include Local Groundwater Supplies (Trinity) and/or Purchase from WWP (GBRA).

**Table 4B.2.11-6.
Recommended Water Supply Plan for Green Valley SUD**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	0	0	0	0	640
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	20
Purchase from WWP (CRWA)	700	1,800	7,500	8,000	9,000	9,500
Purchase water from NBU	552	552	552	552	552	552
Total New Supply	1,252	2,352	8,052	8,552	9,552	10,072
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet Green Valley SUD’s projected need are shown in Table 4B.2.11-7.

**Table 4B.2.11-7.
Recommended Plan Costs by Decade for Green Valley SUD**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	—	—	—	—	—	\$15,704
Unit Cost (\$/acft)	—	—	—	—	—	\$785
<i>Purchase from WWP (CRWA)</i>						
Annual Cost (\$/yr)	\$507,500	\$1,979,430	\$8,009,897	\$5,706,800	\$4,033,669	\$4,108,775
Unit Cost (\$/acft)	\$725	\$1,100	\$1,068	\$713	\$448	\$433
<i>Purchase from NBU</i>						
Annual Cost (\$/yr)	\$438,840	\$438,840	\$438,840	\$438,840	\$438,840	\$438,840
Unit Cost (\$/acft)	\$795	\$795	\$795	\$795	\$795	\$795

4B.2.11.4 City of Marion

Current water supply for the City of Marion is obtained from the Edwards Aquifer and Canyon Reservoir through CRWA. Marion is projected to need additional water supplies prior to 2020. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Marion implement the following water supply plan to meet the projected needs for the city (Table 4B.2.11-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 3 acft/yr by 2050, increasing to 10 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (CRWA) to be implemented prior to 2010. This strategy can provide an additional 100 acft/yr by 2010, increasing to 400 acft/yr of supply in 2060.

An alternative water management strategy identified by City of Marion to potentially meet needs is Recycled Water Programs.

**Table 4B.2.11-8.
Recommended Water Supply Plan for the City of Marion**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	3	18	33	53	75
Recommended Plan						
Municipal Water Conservation	—	—	—	—	3	10
Purchase from WWP (CRWA)	100	200	400	400	400	400
Total New Supply	100	200	400	400	403	410

Estimated costs of the recommended plan to meet the City of Marion's projected needs are shown in Table 4B.2.11-9.

**Table 4B.2.11-9.
Recommended Plan Costs by Decade for the City of Marion**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$2,680	\$7,652
Unit Cost (\$/acft)	—	—	—	—	\$893	\$765
Purchase from WWP (CRWA)						
Annual Cost (\$/yr)	\$72,500	\$219,937	\$427,195	\$285,340	\$179,274	\$173,001
Unit Cost (\$/acft)	\$725	\$1,100	\$1,068	\$713	\$448	\$433

4B.2.11.5 City of Santa Clara

Current water supply for the City of Santa Clara is obtained from the Carrizo Aquifer. Santa Clara is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Santa Clara implement the following water supply plan to meet the projected needs for the city (Table 4B.2.11-10).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 10 acft/yr by 2030, increasing to 79 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (CRWA) to be implemented prior to 2010. This strategy can provide an additional 100 acft/yr by 2010, increasing to 900 acft/yr of supply in 2060.

- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 11 acft/yr by 2010.

**Table 4B.2.11-10.
Recommended Water Supply Plan for the City of Santa Clara**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	76	205	348	485	642	810
Recommended Plan						
Municipal Water Conservation	—	—	10	23	47	79
Purchase from WWP (CRWA)	100	300	400	500	700	900
Drought Management	11	—	—	—	—	—
Total New Supply	111	300	410	523	747	979

Estimated costs of the recommended plan to meet the City of Santa Clara’s projected needs are shown in Table 4B.2.11-11.

**Table 4B.2.11-11.
Recommended Plan Costs by Decade for the City of Santa Clara**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	\$7,877	\$17,462	\$36,225	\$61,080
Unit Cost (\$/acft)	—	—	\$788	\$759	\$771	\$773
Purchase from WWP (CRWA)						
Annual Cost (\$/yr)	\$72,500	\$329,905	\$427,195	\$356,675	\$313,730	\$389,252
Unit Cost (\$/acft)	\$725	\$1,100	\$1,068	\$713	\$448	\$433
Drought Management*						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
* Insufficient data to develop a cost estimate.						

4B.2.11.6 City of Schertz

Current water supply for the City of Schertz is obtained from the Edwards Aquifer and Carrizo Aquifer. Schertz is projected to need additional water supplies prior to 2050. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Schertz implement the following water supply plan to meet the projected needs for the city (Table 4B.2.11-12).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 22 acft/yr by 2010, increasing to 1,088 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (SSLGC) to be implemented prior to 2030. This strategy can provide an additional 939 acft/yr by 2030, increasing to 5,923 acft/yr of supply in 2060.

Alternative water management strategies identified by City of Schertz include Local Groundwater Supplies (Trinity) and/or Purchase from WWP (TWA).

**Table 4B.2.11-12.
Recommended Water Supply Plan for the City of Schertz**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	0	0	0	647	2,436
Recommended Plan						
Municipal Water Conservation	22	87	182	365	694	1,088
Purchase from WWP (SSLGC)	—	—	939	2,424	4,115	5,923
Total New Supply	22	87	1,121	2,789	4,809	7,011
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet the City of Schertz’s projected needs are shown in Table 4B.2.11-13.

**Table 4B.2.11-13.
Recommended Plan Costs by Decade for the City of Schertz**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation						
Annual Cost (\$/yr)	\$15,118	\$59,574	\$123,652	\$248,424	\$460,271	\$684,006
Unit Cost (\$/acft)	\$687	\$685	\$679	\$681	\$663	\$629
Purchase from WWP (SSLGC)						
Annual Cost (\$/yr)	—	—	\$643,474	\$1,179,550	\$1,498,522	\$2,156,924
Unit Cost (\$/acft)	—	—	\$685	\$487	\$364	\$364

4B.2.11.7 City of Seguin

The City of Seguin is projected to have adequate water supplies available from the Carrizo Aquifer, Canyon Reservoir, and run-of-river rights to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWP and the TWDB, it is recommended that the City of Seguin implement the following water supply plan (Table 4B.2.11-14).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 377 acft/yr by 2010, increasing to 2,131 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

Alternative water management strategies identified by City of Seguin include Purchase from WWP (SSLGC), Purchase from WWP (GBRA), and/or Purchase from WWP (TWA).

**Table 4B.2.11-14.
Recommended Water Supply Plan for the City of Seguin**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)*	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	377	853	1,229	1,448	1,744	2,131
Total New Supply	377	853	1,299	1,448	1,744	2,131
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan for the City of Seguin are shown in Table 4B.2.11-15.

**Table 4B.2.11-15.
Recommended Plan Costs by Decade for the City of Seguin**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$256,904	\$503,785	\$691,151	\$798,805	\$951,488	\$1,158,748
Unit Cost (\$/acft)	\$681	\$591	\$562	\$552	\$546	\$544

4B.2.11.8 Springs Hill WSC

Springs Hill WSC is projected to have adequate water supplies available from the Carrizo Aquifer and Canyon Reservoir to meet the WSC's projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Springs Hill WSC implement the following water supply plan (Table 4B.2.11-16).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 174 acft/yr by 2010, increasing to 877 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (SHWSC) to be implemented by 2020. This strategy can provide an additional 1,500 acft/yr by 2020, increasing to 3,000 acft/yr of supply by 2030, continuing through 2060.
- Facilities Expansion (Lake Placid WTP)

**Table 4B.2.11-16.
Recommended Water Supply Plan for Springs Hill WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	174	381	477	571	701	877
Purchase from WWP (SHWSC)	—	1,500	3,000	3,000	3,000	3,000
Facilities Expansion	—	—	—	—	—	—
Total New Supply	174	1,881	3,477	3,571	3,701	3,877
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan for Springs Hill WSC are shown in Table 4B.2.11-17.

**Table 4B.2.11-17.
Recommended Plan Costs by Decade for Springs Hill WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$134,027	\$239,728	\$287,191	\$330,685	\$397,267	\$492,788
Unit Cost (\$/acft)	\$770	\$629	\$602	\$579	\$567	\$562
Purchase from WWP (SHWSC)						
Annual Cost (\$/yr)	—	\$2,184,000	\$4,435,000	\$1,533,000	\$1,533,000	\$1,464,000
Unit Cost (\$/acft)	—	\$1,456	\$1,478	\$511	\$511	\$488
Facilities Expansion						
Annual Cost (\$/yr)	\$722,000	\$722,000	\$524,000	\$524,000	\$524,000	\$524,000
Unit Cost (\$/acft)	—	—	—	—	—	—

4B.2.11.9 Rural Area Residential and Commercial

Current water supply for Rural Areas is obtained from the Edwards Aquifer, Carrizo Aquifer, Queen City Aquifer, Canyon Reservoir, and run-of-river rights. Rural Areas are projected to have adequate water supplies through 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply

districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan (Table 4B.2.11-18).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 2 acft/yr in 2010 (Volume II, Section 4C.1.1).

**Table 4B.2.11-18.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	2	—	—	—	—	—
Total New Supply	2	—	—	—	—	—

Estimated costs of the recommended plan for the rural areas are shown in Table 4B.2.11-19.

**Table 4B.2.11-19.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$1,449	—	—	—	—	—
Unit Cost (\$/acft)	\$725	—	—	—	—	—

4B.2.11.10 Industrial

Industrial is projected to have adequate water supplies available from the Edwards Aquifer, Carrizo Aquifer, Canyon Reservoir, and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.1.11 Steam-Electric Power

Current water supply for steam-electric power is obtained from Canyon Reservoir and reuse water. Steam-electric power is projected to have adequate water supplies through 2060.

4B.2.11.12 Mining

Mining is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group's projected demand during the planning period.

4B.2.11.13 Irrigation

Irrigation is projected to have adequate water supplies available from the Carrizo Aquifer, Canyon Reservoir, and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.11.14 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

4B.2.12 Hays County Water Supply Plan

Table 4B.2.12-1 lists each water user group in Hays County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.12-1.
Hays County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
County Line WSC	140	-2,386	Projected shortage (2020 through 2060)
Creedmoor-Maha WSC			See Caldwell County
Crystal Clear WSC			See Guadalupe County
Goforth WSC	457	-1,872	Projected shortage (2030 through 2060)
City of Kyle	764	-1,699	Projected shortage (2020 through 2060)
Maxwell WSC			See Caldwell County
City of Mountain City	4	-134	Projected shortage (2020 and 2060)
City of Niederwald	-58	-377	Projected shortage (2010 through 2060)
Plum Creek Water Company	407	-657	Projected shortage (2040 through 2060)
City of San Marcos	5,014	-11,387	Projected shortage (2030 through 2060)
Wimberley WSC	-219	-1,409	Projected shortage (2010 through 2060)
City of Woodcreek	-23	-387	Projected shortage (2010 through 2060)
Woodcreek Utilities, Inc.	-455	-2,580	Projected shortage (2010 through 2060)
Rural Area Residential and Commercial	1,829	689	No projected shortage
Industrial	1,353	1,179	No projected shortage
Steam-Electric Power	5,151	2,533	No projected shortage
Mining	-82	-103	Projected shortage (2010 through 2060)
Irrigation	316	331	No projected shortage
Livestock	0	0	No projected shortage

4B.2.12.1 County Line WSC

Current water supply for County Line WSC is obtained from the Edwards Aquifer, Canyon Reservoir, and run-of-river rights. County Line WSC is projected to need additional water supplies prior to 2020. Working within the planning criteria established by the SCTRWP and the TWDB, it is recommended that County Line WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.12-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 43 acft/yr by 2010, increasing to 473 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Trinity) to be implemented prior to 2020. This strategy can provide an additional 1,129 acft/yr by 2020, increasing to 2,420 acft/yr of supply in 2060.
- Purchase from WWP (CRWA) to be implemented prior to 2020. This strategy can provide an additional 570 acft/yr by 2020, through 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 58 acft/yr by 2010.

Alternative water management strategies identified by County Line WSC include Recycled Water Programs and/or Brackish Barton Springs Edwards.

**Project Table 4B.2.12.-2.
Recommended Water Supply Plan for County Line WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	1,049	1,433	1,603	1,921	2,386
Recommended Plan						
Municipal Water Conservation	43	110	176	227	344	473
Local Groundwater Supplies (Trinity)	—	1,129	1,452	1,613	1,936	2,420
Purchase from WWP (CRWA)	—	570	570	570	570	570
Drought Management	58	—	—	—	—	—
Total New Supply	101	1,809	2,198	2,410	2,850	3,463
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet County Line WSC's projected needs are shown in Table 4B.2.12-3.

**Table 4B.2.12-3.
Recommended Plan Costs by Decade for County Line WSC**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$32,760	\$84,518	\$135,342	\$164,888	\$231,092	\$305,884
Unit Cost (\$/acft)	\$762	\$768	\$769	\$726	\$672	\$647
<i>Local Trinity</i>						
Annual Cost (\$/yr)	—	\$982,333	\$1,263,000	\$566,741	\$608,381	\$909,868
Unit Cost (\$/acft)	—	\$870	\$870	\$351	\$314	\$376
<i>Purchase from WWP (CRWA)</i>						
Annual Cost (\$/yr)	—	\$626,820	\$608,752	\$406,610	\$255,466	\$246,527
Unit Cost (\$/acft)	—	\$1,100	\$1,068	\$713	\$448	\$433
<i>Drought Management</i>						
Annual Cost (\$/yr)	\$9,527	—	—	—	—	—
Unit Cost (\$/acft)	\$164	—	—	—	—	—

4B.2.12.2 Goforth WSC

Current water supply for Goforth WSC is obtained from the Edwards (Barton Springs) Aquifer. Goforth WSC is projected to need additional water supplies prior to 2030. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Goforth WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.12-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 22 acft/yr by 2050, increasing to 111 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Hays/Caldwell PUA Project² to be implemented prior to 2020. This strategy can provide an additional 1,639 acft/yr by 2020, continuing through 2060.

² Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District's approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

- Purchase from WWP (GBRA) to be implemented prior to 2030. This strategy can provide an additional 300 acft/yr by 2030, continuing through 2060.

Alternative water management strategies identified by Goforth WSC include Local Groundwater Supplies (Edwards – Barton Springs), Brackish Edwards (Barton Springs), and/or Local Groundwater Supplies (Trinity). An alternative water management strategy for the Goforth WSC, if groundwater permits from Gonzales County are unable to be obtained, is Purchase from WWP (GBRA).

**Table 4B.2.12-4.
Recommended Water Supply Plan for Goforth WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	29	433	879	1,427	1,872
Recommended Plan						
Municipal Water Conservation	—	—	—	—	22	111
Hays/Caldwell PUA Project	—	1,639	1,639	1,639	1,639	1,639
Purchase from WWP (GBRA)	—	—	300	300	300	300
Total New Supply	0	1,639	1,939	1,939	1,961	2,050
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet Goforth WSC’s projected needs are shown in Table 4B.2.12-5.

**Table 4B.2.12-5.
Recommended Plan Costs by Decade for Goforth WSC**

Recommended Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$17,198	\$85,581
Unit Cost (\$/acft)	—	—	—	—	\$782	\$771
Hays/Caldwell PUA Project						
Annual Cost (\$/yr)	—	\$2,040,555	\$2,040,555	\$719,521	\$719,521	\$719,521
Unit Cost (\$/acft)	—	\$1,245	\$1,245	\$439	\$439	\$439
Purchase from WWP (GBRA)						
Annual Cost (\$/yr)	—	—	\$416,828	\$152,696	\$152,696	\$117,740
Unit Cost (\$/acft)	—	—	\$1,389	\$509	\$509	\$392

4B.2.12.3 City of Kyle

Current water supply for the City of Kyle is obtained from the Edwards Aquifer, Edwards (Barton Springs) Aquifer, and Canyon Reservoir. City of Kyle is projected to need additional water supplies prior to 2020. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Kyle implement the following water supply plan to meet the projected needs for the city (Table 4B.2.12-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 27 acft/yr by 2020, increasing to 443 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Hays/Caldwell PUA Project³ to be implemented prior to 2030. This strategy can provide an additional supply of 464 acft/yr by 2030, increasing to 9,355 acft/yr by 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 137 acft/yr by 2010.

An alternative water management strategy for the City of Kyle, if groundwater permits from Gonzales County are unable to be obtained, is Purchase from WWP (GBRA).

**Table 4B.2.12-6.
Recommended Water Supply Plan for the City of Kyle**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	436	713	873	1,370	1,699
Recommended Plan						
Municipal Water Conservation	—	27	96	167	302	443
Hays/Caldwell PUA Project	—	500	1,000	2,416	5,144	9,355
Drought Management	137	—	—	—	—	—
Total New Supply	137	27	560	2,583	5,446	9,798
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

³ Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District’s approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District’s management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District’s management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

Estimated costs of the recommended plan to meet the City of Kyle’s projected needs are shown in Table 4B.2.12-7.

**Table 4B.2.12-7.
Recommended Plan Costs by Decade for the City of Kyle**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation						
Annual Cost (\$/yr)	—	\$18,091	\$65,039	\$113,927	\$205,763	\$301,858
Unit Cost (\$/acft)	—	\$670	\$677	\$682	\$681	\$681
Hays/Caldwell PUA Project						
Annual Cost (\$/yr)	—	\$622,500	\$1,245,000	\$1,060,624	\$2,258,216	\$4,106,845
Unit Cost (\$/acft)	—	\$1,245	\$1,245	\$439	\$439	\$439
Drought Management						
Annual Cost (\$/yr)	\$161,234	—	—	—	—	—
Unit Cost (\$/acft)	\$1,177	—	—	—	—	—

4B.2.12.4 City of Mountain City

Current water supply for the City of Mountain City is obtained from the Edwards (Barton Springs) Aquifer. Mountain City is projected to need additional water supplies prior to 2020. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Mountain City implement the following water supply plan to meet the projected needs for the city (Table 4B.2.12-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 1 acft/yr by 2010, increasing to 22 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Hays/Caldwell PUA Project⁴ to be implemented by 2020. This strategy can provide an additional 150 acft/yr by 2020, continuing through 2060.

⁴ Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District’s approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District’s management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District’s management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

**Table 4B.2.12-8.
Recommended Water Supply Plan for the City of Mountain City**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	22	49	75	108	134
Recommended Plan						
Municipal Water Conservation	1	3	6	10	16	22
Hays/Caldwell PUA Project	—	150	150	150	150	150
Total New Supply	1	153	156	160	166	172

Estimated costs of the recommended plan to meet the City of Mountain City’s projected needs are shown in Table 4B.2.12-9.

**Table 4B.2.12-9.
Recommended Plan Costs by Decade for the City of Mountain City**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$1,109	\$2,321	\$4,477	\$7,140	\$10,794	\$14,626
Unit Cost (\$/acft)	\$1,109	\$774	\$746	\$714	\$675	\$665
Hays/Caldwell PUA Project						
Annual Cost (\$/yr)	—	\$186,750	\$186,750	\$65,850	\$65,850	\$65,850
Unit Cost (\$/acft)	—	\$1,245	\$1,245	\$439	\$439	\$439

4B.2.12.5 City of Niederwald

Current water supply for the City of Niederwald is obtained from the Edwards (Barton Springs) Aquifer. Niederwald is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Niederwald implement the following water supply plan to meet the projected needs for the city (Table 4B.2.12-10).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 1 acft/yr by 2020, increasing to 42 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

- Purchase from WWP (GBRA) to be implemented prior to 2010. This strategy can provide an additional 58 acft/yr by 2010, increasing to 377 acft/yr of supply in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 7 acft/yr by 2010.

**Table 4B.2.12-10.
Recommended Water Supply Plan for the City of Niederwald**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	58	118	183	244	317	377
Recommended Plan						
Municipal Water Conservation	—	1	8	15	27	42
Purchase from WWP (GBRA)	58	118	183	244	317	377
Drought Management	7	—	—	—	—	—
Total New Supply	65	119	191	259	344	419

Estimated costs of the recommended plan to meet the City of Niederwald’s projected needs are shown in Table 4B.2.12-11.

**Table 4B.2.12-11.
Recommended Plan Costs by Decade for the City of Niederwald**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	\$877	\$5,986	\$11,172	\$20,827	\$32,038
Unit Cost (\$/acft)	—	\$877	\$748	\$745	\$771	\$763
Purchase from WWP (GBRA)						
Annual Cost (\$/yr)	\$56,707	\$163,902	\$254,187	\$124,196	\$161,353	\$147,784
Unit Cost (\$/acft)	\$978	\$1,389	\$1,389	\$509	\$509	\$392
Drought Management*						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
* Insufficient data to develop a cost estimate.						

4B.2.12.6 Plum Creek Water Company

Current water supply for Plum Creek Water Company is obtained from the Edwards (Barton Springs) Aquifer. Plum Creek Water Company is projected to need additional water supplies prior to 2040. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Plum Creek Water Company implement the following water supply plan to meet the projected needs for the entity (Table 4B.2.12-12).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 12 acft/yr by 2050, increasing to 54 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (GBRA) to be implemented prior to 2010. This strategy can provide an additional 195 acft/yr by 2040, increasing to 657 acft/yr of supply in 2060.

**Table 4B.2.12-12.
Recommended Water Supply Plan for Plum Creek Water Company**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	0	0	195	454	657
Recommended Plan						
Municipal Water Conservation	—	—	—	—	12	54
Purchase from WWP (GBRA)	—	—	—	195	454	657
Total New Supply	—	—	—	195	466	711
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet Plum Creek Water Company’s projected needs are shown in Table 4B.2.12-13.

**Table 4B.2.12-13.
Recommended Plan Costs by Decade for Plum Creek Water Company**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	—	—	—	—	\$9,431	\$41,541
Unit Cost (\$/acft)	—	—	—	—	\$786	\$769
<i>Purchase from WWP (GBRA)</i>						
Annual Cost (\$/yr)	—	—	—	\$99,252	\$231,080	\$257,851
Unit Cost (\$/acft)	—	—	—	\$509	\$509	\$392

4B.2.12.7 City of San Marcos

Current water supply for the City of San Marcos is obtained from the Edwards Aquifer, Canyon Reservoir, and run-of-river rights. San Marcos is projected to need additional water supplies prior to 2030. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that San Marcos implement the following water supply plan to meet the projected needs for the city (Table 4B.2.12-14).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 417 acft/yr by 2010, increasing to 2,656 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Hays/Caldwell PUA Project⁵ to be implemented prior to 2030. This strategy can provide an additional 1,548 acft/yr by 2030, increasing to 11,910 by 2060.

Alternative water management strategies identified by City of San Marcos include Recycled Water Programs and/or Purchase from WWP (GBRA).

⁵ Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District’s approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District’s management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District’s management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

**Table 4B.2.12-14.
Recommended Water Supply Plan for the City of San Marcos**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	0	1,319	4,772	8,507	11,387
Recommended Plan						
Municipal Water Conservation	417	554	815	1,282	1,875	2,656
Hays/Caldwell PUA Project	—	—	1,548	4,953	8,675	11,910
Total New Supply	417	554	2,363	6,235	10,550	14,566
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet the City of San Marcos’ projected needs are shown in Table 4B.2.12-15.

**Table 4B.2.12-15.
Recommended Plan Costs by Decade for the City of San Marcos**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$284,314	\$377,577	\$539,269	\$772,590	\$1,080,431	\$1,503,171
Unit Cost (\$/acft)	\$682	\$682	\$662	\$603	\$576	\$566
Hays/Caldwell PUA Project						
Annual Cost (\$/yr)	—	—	\$1,927,260	\$6,166,485	\$3,808,325	\$5,228,490
Unit Cost (\$/acft)	—	—	\$1,245	\$1,245	\$439	\$439

4B.2.12.8 Wimberley WSC

Current water supply for Wimberley WSC is obtained from the Trinity Aquifer. Wimberley WSC is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Wimberley implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.12-16).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 19 acft/yr by 2050, increasing to 70 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

- Wimberley and Woodcreek Water Supply Project to be implemented prior to 2010. This strategy can provide an additional 320 acft/yr by 2010, increasing to 1,480 acft/yr of supply in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 39 acft/yr by 2010.

**Table 4B.2.12-16.
Recommended Water Supply Plan for Wimberley WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	219	440	667	885	1,179	1,409
Recommended Plan						
Municipal Water Conservation	—	—	—	—	19	70
Wimberley and Woodcreek Water Supply Project	336	1,425	1,425	1,425	1,425	1,425
Drought Management	39	—	—	—	—	—
Total New Supply	375	1,425	1,425	1,425	1,444	1,495

Estimated costs of the recommended plan to meet Wimberley WSC’s projected needs are shown in Table 4B.2.12-17.

**Table 4B.2.12-17.
Recommended Plan Costs by Decade for Wimberley WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$14,676	\$53,642
Unit Cost (\$/acft)	—	—	—	—	\$772	\$766
Wimberley and Woodcreek Water Supply Project						
Annual Cost (\$/yr)	\$764,400	\$3,461,325	\$3,461,325	\$2,525,100	\$2,525,100	\$2,525,100
Unit Cost (\$/acft)	\$2,275	\$2,429	\$2,429	\$1,772	\$1,772	\$1,772
Drought Management*						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
* Insufficient data to develop a cost estimate.						

4B.2.12.9 City of Woodcreek

Current water supply for the City of Woodcreek is obtained from the Trinity Aquifer. Woodcreek is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Woodcreek implement the following water supply plan to meet the projected needs for the city (Table 4B.2.12-18).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 2 acft/yr by 2030, increasing to 37 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Wimberley and Woodcreek Water Supply Project to be implemented prior to 2010. This strategy can provide an additional 100 acft/yr by 2010, increasing to 400 acft/yr of supply in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 12 acft/yr by 2010.

**Table 4B.2.12-18.
Recommended Water Supply Plan for the City of Woodcreek**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	23	92	162	229	317	387
Recommended Plan						
Municipal Water Conservation	—	—	2	6	20	37
Wimberley and Woodcreek Water Supply Project	112	400	400	400	400	400
Drought Management	12	—	—	—	—	—
Total New Supply	124	400	402	406	420	437

Estimated costs of the recommended plan to meet the City of Woodcreek’s projected needs are shown in Table 4B.2.12-19.

**Table 4B.2.12-19.
Recommended Plan Costs by Decade for the City of Woodcreek**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	—	—	\$1,323	\$4,535	\$15,573	\$28,752
Unit Cost (\$/acft)	—	—	\$662	\$756	\$779	\$777
<i>Wimberley and Woodcreek Water Supply Project</i>						
Annual Cost (\$/yr)	\$254,800	\$971,600	\$971,600	\$708,800	\$708,800	\$708,800
Unit Cost (\$/acft)	\$2,275	\$2,429	\$2,429	\$1,772	\$1,772	\$1,772
<i>Drought Management</i>						
Annual Cost (\$/yr)	\$12,009	—	—	—	—	—
Unit Cost (\$/acft)	\$1,001	—	—	—	—	—

4B.2.12.10 Woodcreek Utilities, Inc.

Current water supply for the Woodcreek Utilities is obtained from the Trinity Aquifer. Woodcreek Utilities is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Woodcreek Utilities implement the following water supply plan to meet the projected needs for the utility (Table 4B.2.12-20).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 56 acft/yr by 2010, increasing to 771 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Wimberley and Woodcreek Water Supply Project to be implemented prior to 2010. This strategy can provide an additional 700 acft/yr by 2010, increasing to 2,600 acft/yr of supply in 2060.

**Table 4B.2.12-20.
Recommended Water Supply Plan for Woodcreek Utilities**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	455	852	1,271	1,681	2,184	2,580
Recommended Plan						
Municipal Water Conservation	56	177	337	455	619	771
Wimberley and Woodcreek Water Supply Project	672	2,655	2,655	2,655	2,655	2,655
Total New Supply	728	2,832	2,992	3,110	3,274	3,426

Estimated costs of the recommended plan to meet Woodcreek Utilities’ projected needs are shown in Table 4B.2.12-21.

**Table 4B.2.12-21.
Recommended Plan Costs by Decade Woodcreek Utilities**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$38,437	\$104,785	\$193,365	\$257,964	\$348,401	\$431,974
Unit Cost (\$/acft)	\$686	\$592	\$574	\$567	\$563	\$560
Wimberley and Woodcreek Water Supply Project						
Annual Cost (\$/yr)	\$1,528,800	\$6,448,995	\$6,448,995	\$4,704,660	\$4,704,660	\$4,704,660
Unit Cost (\$/acft)	\$2,275	\$2,429	\$2,429	\$1,772	\$1,772	\$1,772

4B.2.12.11 Rural Area Residential and Commercial

Current water supply for Rural Areas is obtained from the Edwards Aquifer and Trinity Aquifer. Rural Areas are projected to have adequate water supplies through 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan (Table 4B.2.12-22).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 12 acft/yr in 2030, increasing to 184 acft/yr in 2060 (Volume II, Section 4C.1.1).

Alternative water management strategies identified by Rural Hays County include Hays/Caldwell PUA Project, Purchase from WWP (GBRA), and/or Rainwater Harvesting.

**Table 4B.2.12-22.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	12	49	112	184
Total New Supply	—	—	12	49	112	184

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.12-23.

**Table 4B.2.12-23.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	\$9,433	\$37,534	\$86,547	\$141,576
Unit Cost (\$/acft)	—	—	\$786	\$766	\$773	\$769

4B.2.12.12 Industrial

Industrial is projected to have adequate water supplies available from the Edwards Aquifer and run-of-river rights to meet the water user group’s projected demand during the planning period.

4B.2.12.13 Steam-Electric Power

Current water supply for steam-electric power is obtained from Canyon Reservoir and reclaimed water. Steam-electric power is projected to have adequate water supplies available through 2060.

4B.2.12.14 Mining

Current water supply for mining is obtained from the Trinity Aquifer. Mining is projected to need additional water supplies prior to year 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that individual mining operations implement the following water supply plan to meet the projected needs for mining (Table 4B.2.12-24).

- Mining Water Conservation to be implemented prior to 2010. This strategy can provide an additional 82 acft/yr by 2010, increasing to 103 acft/yr in 2060, meeting the entire needs.

**Table 4B.2.12-24.
Recommended Water Supply Plan for Mining**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	82	91	97	101	102	103
Recommended Plan						
Mining Water Conservation	82	91	97	101	102	103
Total New Supply	82	91	97	101	102	103

Estimated costs of the recommended plan to meet the mining projected needs are shown in Table 4B.2.12-25.

**Table 4B.2.12-25.
Recommended Plan Costs by Decade for Mining**

Plan Element	2010	2020	2030	2040	2050	2060
Mining Water Conservation						
Annual Cost (\$/yr)	N/A	N/A	N/A	N/A	N/A	N/A
Unit Cost (\$/acft)	N/A	N/A	N/A	N/A	N/A	N/A
*Costs not available due to lack of relevant data.						

4B.2.12.15 Irrigation

Irrigation is projected to have adequate water supplies available from the Edwards Aquifer and run-of-river rights to meet the water user group’s projected demand during the planning period.

4B.2.12.16 Livestock

Current water supply for livestock is obtained from the Trinity Aquifer and local sources. Livestock is projected to have adequate water supplies through 2060.

4B.2.13 Karnes County Water Supply Plan

Table 4B.2.13-1 lists each water user group in Karnes County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.13-1.
Karnes County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
El Oso WSC	241	68	No projected shortage
City of Falls City	58	26	No projected shortage
City of Karnes City	-182	-262	Projected shortage (2010 through 2060)
City of Kenedy	112	-118	Projected shortage (2040 through 2060)
City of Runge	104	52	No projected shortage
Sunko WSC			See Wilson County
Rural Area Residential and Commercial	608	158	No projected shortage
Industrial	21	2	No projected shortage
Steam-Electric Power	0	0	No projected demand
Mining	7	13	No projected shortage
Irrigation	0	546	No projected shortage
Livestock	0	0	No projected shortage

4B.2.13.1 El Oso WSC

El Oso WSC is projected to have adequate water supplies available from the Carrizo Aquifer to meet the WSC’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that El Oso WSC implement the following water supply plan (Table 4B.2.13-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 41 acft/yr by 2010, increasing to 139 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.13-2.
Recommended Water Supply Plan for El Oso WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	41	83	92	105	120	139
Total New Supply	41	83	92	105	120	139

Estimated costs of the recommended plan for El Oso WSC are shown in Table 4B.2.13-3.

**Table 4B.2.13-3.
Recommended Plan Costs by Decade for El Oso WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$31,484	\$53,313	\$56,249	\$61,216	\$68,398	\$78,425
Unit Cost (\$/acft)	\$768	\$642	\$611	\$583	\$570	\$564

4B.2.13.2 City of Falls City

The City of Falls City is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Falls City implement the following water supply plan (Table 4B.2.13-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 8 acft/yr by 2010, increasing to 23 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.13-4.
Recommended Water Supply Plan for the City of Falls City**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	8	13	14	16	19	23
Total New Supply	8	13	14	16	19	23

Estimated costs of the recommended plan for the City of Falls City are shown in Table 4B.2.13-5.

**Table 4B.2.13-5.
Recommended Plan Costs by Decade for the City of Falls City**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$5,827	\$8,537	\$8,884	\$9,683	\$10,953	\$12,810
Unit Cost (\$/acft)	\$728	\$657	\$635	\$605	\$576	\$557

4B.2.13.3 City of Karnes City

The City of Karnes City obtains its water supply from the Carrizo Aquifer and is projected to have a shortage prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Karnes City implement the following water supply plan (Table 4B.2.13-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 11 acft/yr in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Carrizo) to be implemented prior to 2010. This strategy can provide an additional 323 acft/yr in 2010, through 2060.

Table 4B.2.13-6.
Recommended Water Supply Plan for the City of Karnes City

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	182	203	224	242	253	262
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	11
Local Groundwater Supplies (Carrizo)	323	323	323	323	323	323
Total New Supply	182	203	224	242	253	273

Estimated costs of the recommended plan for the City of Karnes City are shown in Table 4B.2.13-7.

Table 4B.2.13-7.
Recommended Plan Costs by Decade for the City of Karnes City

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	—	\$8,554
Unit Cost (\$/acft)	—	—	—	—	—	\$778
Local Groundwater Supplies (Carrizo) Aquifer						
Annual Cost (\$/yr)	\$404,000	\$404,000	\$104,955	\$104,955	\$104,955	\$104,955
Unit Cost (\$/acft)	\$1,251	\$1,251	\$325	\$325	\$325	\$325

4B.2.13.4 City of Kenedy

Current water supply for the City of Kenedy is obtained from the Gulf Coast Aquifer. Kenedy is projected to need additional water supplies prior to 2040. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Kenedy implement the following water supply plan to meet the projected needs for the city (Table 4B.2.13-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 58 acft/yr by 2010, increasing to 268 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Gulf Coast) to be implemented prior to 2040. This strategy can provide an additional 161 acft/yr by 2040, through 2060.

An alternative water management strategy identified by the City of Kenedy is obtaining surface water rights from the San Antonio River.

**Table 4B.2.13-8.
Recommended Water Supply Plan for the City of Kenedy**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	37	86	118
Recommended Plan						
Municipal Water Conservation	58	121	189	216	242	268
Local Gulf Coast	—	—	—	161	161	161
Total New Supply	58	121	189	377	403	429

Estimated costs of the recommended plan to meet the City of Kenedy’s projected needs are shown in Table 4B.2.13-9.

**Table 4B.2.13-9.
Recommended Plan Costs by Decade for the City of Kenedy**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$44,446	\$74,521	\$107,130	\$118,102	\$130,600	\$144,501
Unit Cost (\$/acft)	\$766	\$616	\$567	\$547	\$540	\$539
Local Gulf Coast						
Annual Cost (\$/yr)	—	—	—	\$294,000	\$294,000	\$102,716
Unit Cost (\$/acft)	—	—	—	\$1,823	\$1,823	\$637

4B.2.13.5 City of Runge

The City of Runge is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Runge implement the following water supply plan (Table 4B.2.13-10).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 15 acft/yr by 2010, increasing to 37 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.13-10.
Recommended Water Supply Plan for the City of Runge**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	15	22	24	26	31	37
Total New Supply	15	22	24	26	31	37

Estimated costs of the recommended plan for the City of Runge are shown in Table 4B.2.13-11.

**Table 4B.2.13-11.
Recommended Plan Costs by Decade for the City of Runge**

<i>Plan Element</i>	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$11,749	\$15,103	\$15,406	\$15,405	\$17,787	\$21,291
Unit Cost (\$/acft)	\$783	\$687	\$642	\$593	\$574	\$575

4B.2.13.6 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Carrizo Aquifer and the Gulf Coast Aquifer to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.13-12).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 68 acft/yr by 2010, increasing to 258 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.13-12.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	68	121	157	193	227	258
Total New Supply	68	121	157	193	227	258

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.13-13.

**Table 4B.2.13-13.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$52,693	\$85,066	\$105,807	\$124,816	\$143,861	\$160,393
Unit Cost (\$/acft)	\$775	\$703	\$674	\$647	\$634	\$622

4B.2.13.7 Industrial

Industrial is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.13.8 Steam-Electric Power

There is no projected steam-electric power water demand in Karnes County, therefore no water management strategies are recommended for this water user group.

4B.2.13.9 Mining

Mining is projected to have adequate water supplies available from the Carrizo Aquifer and Gulf Coast Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.13.10 Irrigation

Irrigation is projected to have adequate water supplies available from the Gulf Coast Aquifer and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.13.11 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

4B.2.14 Kendall County Water Supply Plan

Table 4B.2.14-1 lists each water user group in Kendall County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.14-1.
Kendall County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Boerne	2,435	-276	Projected shortage (2060)
City of Fair Oaks Ranch			See Bexar County
Water Service Inc.			See Bexar County
Rural Area Residential and Commercial*	1,194	-3,514	Projected shortage (2030 through 2060)
Industrial	0	0	No projected demand
Steam-Electric Power	0	0	No projected demand
Mining	0	0	No projected shortage
Irrigation	28	84	No projected shortage
Livestock	0	9	No projected shortage

**These values represent the sum of the Surplus/Shortage values for each river basin and/or across the entire county. These values may differ from the Need value reported in other tables because the Need represents only the sum of the shortages.*

4B.2.14.1 City of Boerne

Current water supply for the City of Boerne is obtained from the Trinity Aquifer, Canyon Reservoir, and Boerne Lake. Boerne is projected to need additional water supplies prior to 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Boerne implement the following water supply plan to meet the projected needs for the city (Table 4B.2.14-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 98 acft/yr by 2010, increasing to 816 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Western Canyon WTP Expansion to be implemented by 2050. This strategy can provide an additional 276 acft/yr by 2060.

**Table 4B.2.14-2.
Recommended Water Supply Plan for the City of Boerne**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	276
Recommended Plan						
Municipal Water Conservation	98	280	394	502	652	816
Western Canyon Expansion	—	—	—	—	—	276
Total New Supply	98	280	394	502	652	1,092

Estimated costs of the recommended plan to meet the City of Boerne's projected needs are shown in Table 4B.2.14-3.

**Table 4B.2.14-3.
Recommended Plan Costs by Decade for the City of Boerne**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$75,359	\$176,767	\$237,434	\$289,858	\$371,749	\$461,545
Unit Cost (\$/acft)	\$769	\$631	\$603	\$577	\$570	\$566
Western Canyon Expansion						
Annual Cost (\$/yr)	—	—	—	—	—	\$86,940
Unit Cost (\$/acft)	—	—	—	—	—	\$315

4B.2.14.2 Rural Area Residential and Commercial

Current water supply for Rural Areas is obtained from the Edwards-Trinity Aquifer, Trinity Aquifer, and Canyon Reservoir. Rural Areas are projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.14-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 73 acft/yr by 2050, increasing to 264 acft/yr in 2060 (Volume II, Section 4C.1.1).
- Western Canyon Expansion to be implemented by 2060. This strategy can provide an additional 374 acft/yr by 2060.

- Purchase from WWP (GBRA) to be implemented prior to 2010. Supply from unused Western Canyon commitments in 2010. The Storage Above Canyon Reservoir (ASR) strategy can provide 3,140 acft/yr by 2020 and through 2060.

**Table 4B.2.14-4.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	221	865	1,522	2,073	2,726	3,514
Recommended Plan						
Municipal Water Conservation	—	—	—	—	73	264
Western Canyon Expansion	—	—	—	—	—	374
Purchase from WWP (GBRA)	221	3,140	3,140	3,140	3,140	3,140
Total New Supply	3,140	3,140	3,140	3,140	3,213	3,778

Estimated costs of the recommended plan to meet the projected needs of rural areas are shown in Table 4B.2.14-5.

**Table 4B.2.14-5.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$56,422	\$203,520
Unit Cost (\$/acft)	—	—	—	—	\$773	\$771
Western Canyon Expansion						
Annual Cost (\$/yr)	—	—	—	—	—	\$117,810
Unit Cost (\$/acft)	—	—	—	—	—	\$315
Purchase from WWP (GBRA)¹						
Annual Cost (\$/yr)	\$205,309	\$4,361,460	\$4,361,460	\$1,598,260	\$1,598,260	\$1,230,880
Unit Cost (\$/acft)	\$929	\$1,389	\$1,389	\$509	\$509	\$392
¹ Unit cost from 2020 through 2060 based on cost estimate in Section 4C.9, plus treatment and integration associated with delivery of 3,140 acft/yr of water						

4B.2.14.3 Industrial

There is no projected industrial water demand in Kendall County, therefore no water management strategies are recommended for this water user group.

4B.2.14.4 Steam-Electric Power

There is no projected steam-electric power water demand in Kendall County, therefore no water management strategies are recommended for this water user group.

4B.2.14.5 Mining

Mining is projected to have adequate water supplies available from the Trinity Aquifer to meet the water user group's projected demand during the planning period.

4B.2.1.6 Irrigation

Current water supply for irrigation is obtained from the Trinity Aquifer and run-of-river rights. Irrigation is projected to have adequate water supplies through 2060.

4B.2.14.7 Livestock

Current water supply for livestock is obtained from the Trinity Aquifer and local sources. Livestock is projected to have adequate water supply through 2060.

4B.2.15 LaSalle County Water Supply Plan

Table 4B.2.15-1 lists each water user group in LaSalle County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.15-1.
LaSalle County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Cotulla	802	466	No projected shortage
City of Encinal	158	161	No projected shortage
Rural Area Residential and Commercial	218	0	No projected shortage
Industrial	0	0	No projected demand
Steam-Electric Power	0	0	No projected demand
Mining	0	0	No projected demand
Irrigation	1,200	1,894	No projected shortage
Livestock	0	0	No projected shortage

4B.2.15.1 City of Cotulla

The City of Cotulla is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Cotulla implement the following water supply plan (Table 4B.2.15-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 118 acft/yr by 2010, increasing to 745 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.15-2.
Recommended Water Supply Plan for the City of Cotulla**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	118	248	369	488	615	745
Total New Supply	118	248	369	488	615	745

Estimated costs of the recommended plan for the City of Cotulla are shown in Table 4B.2.15-3.

**Table 4B.2.15-3.
Recommended Plan Costs by Decade for the City of Cotulla**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$77,526	\$143,185	\$203,733	\$262,287	\$327,697	\$396,081
Unit Cost (\$/acft)	\$657	\$577	\$552	\$537	\$533	\$532

4B.2.15.2 City of Encinal

The City of Encinal is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Encinal implement the following water supply plan (Table 4B.2.15-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 9 acft/yr by 2010, increasing to 14 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.15-4.
Recommended Water Supply Plan for the City of Encinal**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	9	9	10	10	11	14
Total New Supply	9	9	10	10	11	14

Estimated costs of the recommended plan for the City of Encinal are shown in Table 4B.2.15-5.

**Table 4B.2.15-5.
Recommended Plan Costs by Decade for the City of Encinal**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$6,568	\$7,087	\$7,017	\$5,981	\$6,637	\$7,876
Unit Cost (\$/acft)	\$730	\$787	\$702	\$598	\$603	\$563

4B.2.15.3 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Carrizo Aquifer to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.15-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 3 acft/yr by 2010, increasing to 42 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.15-6.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	3	4	11	17	29	42
Total New Supply	3	4	11	17	29	42

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.15-7.

**Table 4B.2.15-7.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$2,160	\$2,958	\$8,526	\$12,845	\$22,694	\$32,667
Unit Cost (\$/acft)	\$720	\$740	\$775	\$756	\$783	\$778

4B.2.15.4 Industrial

There is no projected industrial water demand in LaSalle County, therefore no water management strategies are recommended for this water user group.

4B.2.15.5 Steam-Electric Power

There is no projected steam-electric power water demand in LaSalle County, therefore no water management strategies are recommended for this water user group.

4B.2.15.6 Mining

There is no projected mining water demand in LaSalle County, therefore no water management strategies are recommended for this water user group.

4B.2.15.7 Irrigation

Irrigation is projected to have adequate water supplies available from the Carrizo Aquifer, Sparta Aquifer, and run-of-river rights to meet the water user group’s projected demand during the planning period.

4B.2.15.8 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

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4B.2.16 Medina County Water Supply Plan

Table 4B.2.16-1 lists each water user group in Medina County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.16-1.
Medina County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
Benton City WSC			See Atascosa County
Bexar Metropolitan Water District			See Bexar County
City of Castroville	-294	-575	Projected shortage (2010 through 2060)
City of Devine	146	87	No projected shortage
East Medina SUD	13	-491	Projected shortage (2020 through 2060)
City of Hondo	-319	-1,252	Projected shortage (2010 through 2060)
City of La Coste	-92	-168	Projected shortage (2010 through 2060)
City of Lytle			See Atascosa County
City of Natalia	-194	-383	Projected shortage (2010 through 2060)
Yancey WSC	-214	-985	Projected shortage (2010 through 2060)
Rural Area Residential and Commercial*	229	-1,193	Projected shortage (2020 through 2060)
Industrial	1,246	1,210	No projected shortage
Steam-Electric Power	0	0	No projected demand
Mining	13	0	No projected shortage
Irrigation*	-4,994	5,441	Projected shortage (2010 through 2030)
Livestock	0	0	No projected shortage

**These values represent the sum of the Surplus/Shortage values for each river basin and/or across the entire county. These values may differ from the Need value reported in other tables because the Need represents only the sum of the shortages.*

4B.2.16.1 City of Castroville

Current water supply for the City of Castroville is obtained from the Edwards Aquifer. Castroville is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Castroville implement the following water supply plan to meet the projected needs for the city (Table 4B.2.16-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 53 acft/yr by 2010, increasing to 302 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 294 acft/yr by 2010, increasing to 575 acft/yr of supply in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 34 acft/yr by 2010.
- Facilities Expansions (Systems Interconnect)

**Table 4B.2.16-2.
Recommended Water Supply Plan for the City of Castroville**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	294	357	416	468	522	575
Recommended Plan						
Municipal Water Conservation	53	111	176	242	270	302
Edwards Transfers	294	357	416	468	522	575
Drought Management	34	—	—	—	—	—
Facilities Expansions	—	—	—	—	—	—
Total New Supply	381	468	592	710	792	877

Estimated costs of the recommended plan to meet the City of Castroville’s projected needs are shown in Table 4B.2.16-3.

**Table 4B.2.16-3.
Recommended Plan Costs by Decade for the City of Castroville**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$39,208	\$67,285	\$99,086	\$132,169	\$146,096	\$163,265
Unit Cost (\$/acft)	\$740	\$606	\$563	\$546	\$541	\$541
Edwards Transfers						
Annual Cost (\$/yr)	\$133,476	\$162,078	\$188,864	\$212,472	\$236,988	\$261,050
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Drought Management						
Annual Cost (\$/yr)	\$110,122	—	—	—	—	—
Unit Cost (\$/acft)	\$3,239	—	—	—	—	—
Facilities Expansions						
Annual Cost (\$/yr)	\$1,033,000	\$1,033,000	\$70,000	\$70,000	\$70,000	\$70,000
Unit Cost (\$/acft)	—	—	—	—	—	—

In addition, City of Castroville is a potential participant with BMWD in the Medina Lake Firm-Up (ASR) water management strategy.

4B.2.16.2 City of Devine

The City of Devine is projected to have adequate water supplies available from the Edwards Aquifer and the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Devine implement the following water supply plan (Table 4B.2.16-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 63 acft/yr by 2010, increasing to 196 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.16-4.
Recommended Water Supply Plan for the City of Devine**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	63	127	152	159	175	196
Total New Supply	63	127	152	159	175	196

Estimated costs of the recommended plan for the City of Devine are shown in Table 4B.2.16-5.

**Table 4B.2.16-5.
Recommended Plan Costs by Decade for the City of Devine**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$48,304	\$79,690	\$88,673	\$88,210	\$95,560	\$106,876
Unit Cost (\$/acft)	\$767	\$627	\$583	\$555	\$546	\$545

4B.2.16.3 East Medina SUD

Current water supply for East Medina SUD is obtained from the Edwards Aquifer. East Medina SUD is projected to need additional water supplies prior to 2020. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that East Medina SUD implement the following water supply plan to meet the projected needs for the SUD (Table 4B.2.16-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 19 acft/yr by 2050, increasing to 54 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2020. This strategy can provide an additional 104 acft/yr by 2020, increasing to 491 acft/yr of supply in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 44 acft/yr by 2010.

**Table 4B.2.16-6.
Recommended Water Supply Plan for East Medina SUD**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	104	214	303	397	491
Recommended Plan						
Municipal Water Conservation	—	—	—	—	19	54
Edwards Transfers	—	104	214	303	397	491
Drought Management	44	—	—	—	—	—
Total New Supply	44	104	214	303	416	545

Estimated costs of the recommended plan to meet East Medina SUD’s projected needs are shown in Table 4B.2.16-7.

**Table 4B.2.16-7.
Recommended Plan Costs by Decade for East Medina SUD**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	—	—	—	—	\$14,753	\$41,817
Unit Cost (\$/acft)	—	—	—	—	\$776	\$774
<i>Edwards Transfers</i>						
Annual Cost (\$/yr)	—	\$47,216	\$97,156	\$137,562	\$180,238	\$222,914
Unit Cost (\$/acft)	—	\$454	\$454	\$454	\$454	\$454
<i>Drought Management</i>						
Annual Cost (\$/yr)	\$57,986	—	—	—	—	—
Unit Cost (\$/acft)	\$1,318	—	—	—	—	—

4B.2.16.4 City of Hondo

Current water supply for the City of Hondo is obtained from the Edwards Aquifer. Hondo is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Hondo implement the following water supply plan to meet the projected needs for the city (Table 4B.2.16-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 125 acft/yr by 2010, increasing to 640 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 319 acft/yr by 2010, increasing to 1,252 acft/yr of supply in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 89 acft/yr by 2010.

**Table 4B.2.16-8.
Recommended Water Supply Plan for the City of Hondo**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	319	536	740	910	1,083	1,252
Recommended Plan						
Municipal Water Conservation	125	289	420	477	551	640
Edwards Transfers	319	536	740	910	1,083	1,252
Drought Management	89	—	—	—	—	—
Total New Supply	533	825	1,160	1,387	1,634	1,892

Estimated costs of the recommended plan to meet the City of Hondo’s projected needs are shown in Table 4B.2.16-9.

**Table 4B.2.16-9.
Recommended Plan Costs by Decade for the City of Hondo**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$96,064	\$179,692	\$245,330	\$270,796	\$307,217	\$355,156
Unit Cost (\$/acft)	\$769	\$622	\$584	\$568	\$558	\$555
Edwards Transfers						
Annual Cost (\$/yr)	\$144,826	\$243,344	\$335,960	\$413,140	\$491,682	\$568,408
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Drought Management						
Annual Cost (\$/yr)	\$185,648	—	—	—	—	—
Unit Cost (\$/acft)	\$2,086	—	—	—	—	—

4B.2.16.5 City of La Coste

Current water supply for the City of La Coste is obtained from the Edwards Aquifer. La Coste is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that La Coste implement the following water supply plan to meet the projected needs for the city (Table 4B.2.16-10).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 4 acft/yr by 2050, increasing to 11 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 92 acft/yr by 2010, increasing to 168 acft/yr of supply in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 10 acft/yr by 2010.

**Table 4B.2.16-10.
Recommended Water Supply Plan for the City of La Coste**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	92	109	126	138	152	168
Recommended Plan						
Municipal Water Conservation	—	—	—	—	4	11
Edwards Transfers	92	109	126	138	152	168
Drought Management	10	—	—	—	—	—
Total New Supply	102	109	126	138	156	179

Estimated costs of the recommended plan to meet the City of La Coste’s projected needs are shown in Table 4B.2.16-11.

**Table 4B.2.16-11.
Recommended Plan Costs by Decade for the City of La Coste**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$3,178	\$8,617
Unit Cost (\$/acft)	—	—	—	—	\$795	\$783
Edwards Transfers						
Annual Cost (\$/yr)	\$41,768	\$49,486	\$57,204	\$62,652	\$69,008	\$76,272
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Drought Management						
Annual Cost (\$/yr)	\$6,126	—	—	—	—	—
Unit Cost (\$/acft)	\$613	—	—	—	—	—

4B.2.16.6 City of Natalia

Current water supply for the City of Natalia is obtained from the Edwards Aquifer. Natalia is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Natalia implement the following water supply plan to meet the projected needs for the city (Table 4B.2.16-12).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 24 acft/yr by 2010, increasing to 73 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 194 acft/yr by 2010, increasing to 383 acft/yr of supply in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 17 acft/yr by 2010.

**Table 4B.2.16-12.
Recommended Water Supply Plan for the City of Natalia**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	194	238	279	314	349	383
Recommended Plan						
Municipal Water Conservation	24	31	38	46	58	73
Edwards Transfers	194	238	279	314	349	383
Drought Management	17	—	—	—	—	—
Total New Supply	235	269	317	360	407	456

Estimated costs of the recommended plan to meet the City of Natalia’s projected needs are shown in Table 4B.2.16-13.

**Table 4B.2.16-13.
Recommended Plan Costs by Decade for the City of Natalia**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$18,238	\$22,828	\$26,368	\$29,512	\$35,132	\$43,549
Unit Cost (\$/acft)	\$760	\$736	\$694	\$642	\$606	\$597
<i>Edwards Transfers</i>						
Annual Cost (\$/yr)	\$88,076	\$108,052	\$126,666	\$142,556	\$158,446	\$173,882
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
<i>Drought Management</i>						
Annual Cost (\$/yr)	\$30,258	—	—	—	—	—
Unit Cost (\$/acft)	\$1,780	—	—	—	—	—

4B.2.16.7 Yancey WSC

Current water supply for Yancey WSC is obtained from the Edwards Aquifer. Yancey WSC is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Yancey WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.16-14).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 61 acft/yr by 2010, increasing to 316 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 214 acft/yr by 2010, increasing to 985 acft/yr of supply in 2060.
- Facilities Expansions (System Upgrades)

Alternative water management strategies identified by Yancey WSC include Local Groundwater Supplies (Carrizo) to be implemented prior to 2010. This strategy can provide an additional 403 acft/yr by 2010, increasing to 1,210 acft/yr by 2060.

**Table 4B.2.16-14.
Recommended Water Supply Plan for Yancey WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	214	395	562	710	851	985
Recommended Plan						
Municipal Water Conservation	61	136	171	214	259	316
Edwards Transfers	214	395	562	710	851	985
Total New Supply	275	531	733	924	1,110	1,301

Estimated costs of the recommended plan to meet Yancey WSC’s projected needs are shown in Table 4B.2.16-15.

**Table 4B.2.16-15.
Recommended Plan Costs by Decade for Yancey WSC**

Recommended Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$47,146	\$88,373	\$106,268	\$128,622	\$152,055	\$183,043
Unit Cost (\$/acft)	\$773	\$650	\$621	\$601	\$587	\$579
Edwards Transfers						
Annual Cost (\$/yr)	\$97,156	\$179,330	\$255,148	\$322,340	\$386,354	\$447,190
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454

4B.2.16.8 Rural Area Residential and Commercial

Current water supply for Rural Areas is obtained from the Edwards Aquifer, Trinity Aquifer, and the Carrizo Aquifer. Rural Areas are projected to need additional water supplies prior to 2020. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.16-16).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 20 acft/yr by 2020, increasing to 244 acft/yr in 2060 (Volume II, Section 4C.1.1).

- Edwards Transfers to be implemented prior to 2020. This strategy can provide an additional 236 acft/yr by 2020, increasing to 1,296 acft/yr in 2060.

**Table 4B.2.16-16.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	236	528	787	1,055	1,296
Recommended Plan						
Municipal Water Conservation	—	20	41	86	160	244
Edwards Transfers	—	236	528	787	1,055	1,296
Total New Supply	—	256	569	873	1,215	1,540

Estimated costs of the recommended plan to meet the projected needs of rural areas are shown in Table 4B.2.16-17.

**Table 4B.2.16-17.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	\$15,020	\$31,826	\$66,279	\$123,399	\$187,503
Unit Cost (\$/acft)	—	\$751	\$776	\$771	\$771	\$768
Edwards Transfers						
Annual Cost (\$/yr)	—	\$107,144	\$239,712	\$357,298	\$478,970	\$588,384
Unit Cost (\$/acft)	—	\$454	\$454	\$454	\$454	\$454

4B.2.16.9 Industrial

Industrial is projected to have adequate water supplies available from the Edwards Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.16.10 Steam-Electric Power

There is no projected steam-electric power water demand in Medina County, therefore no water management strategies are recommended for this water user group.

4B.2.16.11 Mining

Mining is projected to have adequate water supplies available from the Carrizo Aquifer and the Trinity Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.1.12 Irrigation

Current water supply for irrigation is obtained from the Edwards Aquifer, Carrizo Aquifer, and run-of-river rights. Irrigation is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that individual irrigators implement the following water supply plan to meet a portion of the projected needs for irrigation (Table 4B.2.16-18).

- Irrigation water conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 7,770 acft/yr of supply.

**Table 4B.2.16-18.
Recommended Water Supply Plan for Irrigation**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	7,770	5,878	4,067	2,332	670	0
Recommended Plan						
Irrigation Water Conservation	7,770	5,878	4,067	2,332	670	—
Total New Supply	7,770	5,878	4,067	2,332	670	—

Estimated costs of the recommended plan to meet the irrigation projected needs are shown in Table 4B.2.16-19.

**Table 4B.2.16-19.
Recommended Plan Costs by Decade for Irrigation**

Plan Element	2010	2020	2030	2040	2050	2060
Irrigation Water Conservation						
Annual Cost (\$/yr)	\$1,072,260	\$811,164	\$561,246	\$321,816	\$92,460	—
Unit Cost (\$/acft)	\$138	\$138	\$138	\$138	\$138	—

4B.2.16.13 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

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4B.2.17 Refugio County Water Supply Plan

Table 4B.2.17-1 lists each water user group in Refugio County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.17-1.
Refugio County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Refugio	792	660	No projected shortage
City of Woodsboro	391	381	No projected shortage
Rural Area Residential and Commercial	132	221	No projected shortage
Industrial	0	0	No projected demand
Steam-Electric Power	0	0	No projected demand
Mining	1	0	No projected shortage
Irrigation	0	0	No projected shortage
Livestock	0	0	No projected shortage

4B.2.17.1 City of Refugio

The City of Refugio is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Refugio implement the following water supply plan (Table 4B.2.17-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 44 acft/yr by 2010, increasing to 144 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.17-2.
Recommended Water Supply Plan for the City of Refugio**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	44	94	100	114	130	144
Total New Supply	44	94	100	114	130	144

Estimated costs of the recommended plan for the City of Refugio are shown in Table 4B.2.17-3.

**Table 4B.2.17-3.
Recommended Plan Costs by Decade for the City of Refugio**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$33,794	\$60,341	\$60,375	\$65,588	\$72,966	\$80,476
Unit Cost (\$/acft)	\$768	\$642	\$604	\$575	\$561	\$559

4B.2.17.2 City of Woodsboro

The City of Woodsboro is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the city's projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Woodsboro implement the following water supply plan (Table 4B.2.17-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 5 acft/yr by 2010, increasing to 20 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

It is noted that groundwater quality and a potential change in the arsenic standard may necessitate additional treatment or alternative supplies, such as Brackish Groundwater Desalination (Gulf Coast) or Purchase from WWP.

**Table 4B.2.17-4.
Recommended Water Supply Plan for the City of Woodsboro**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	5	6	7	8	14	20
Total New Supply	5	6	7	8	14	20

Estimated costs of the recommended plan for the City of Woodsboro are shown in Table 4B.2.17-5.

**Table 4B.2.17-5.
Recommended Plan Costs by Decade for the City of Woodsboro**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$3,894	\$4,740	\$5,344	\$5,907	\$9,354	\$12,840
Unit Cost (\$/acft)	\$779	\$790	\$763	\$738	\$668	\$642

4B.2.1.3 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Gulf Coast Aquifer to meet their projected demands during the planning period.

4B.2.17.4 Industrial

There is no projected industrial water demand in Refugio County, therefore no water management strategies are recommended for this water user group.

4B.2.17.5 Steam-Electric Power

There is no projected steam-electric power water demand in Refugio County, therefore no water management strategies are recommended for this water user group.

4B.2.17.6 Mining

Mining is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.17.7 Irrigation

Irrigation is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the water user group's projected demand during the planning period.

4B.2.17.8 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

4B.2.18 Uvalde County Water Supply Plan

Table 4B.2.18-1 lists each water user group in Uvalde County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.18-1.
Uvalde County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Sabinal	-127	-109	Projected shortage (2010 through 2060)
City of Uvalde	-3,172	-3,263	Projected shortage (2010 through 2060)
Rural Area Residential and Commercial	1,277	317	No projected shortage
Industrial	943	837	No projected shortage
Steam-Electric Power	0	0	No projected demand
Mining	105	0	No projected shortage
Irrigation	14,680	24,768	No projected shortage
Livestock	0	0	No projected shortage

4B.2.18.1 City of Sabinal

Current water supply for the City of Sabinal is obtained from the Edwards Aquifer. Sabinal is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Sabinal implement the following water supply plan to meet the projected needs for the city (Table 4B.2.18-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 34 acft/yr by 2010, increasing to 145 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 127 acft/yr by 2010, decreasing to 109 acft/yr of supply in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 20 acft/yr by 2010.

**Table 4B.2.18-2.
Recommended Water Supply Plan for the City of Sabinal**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	127	123	118	113	109	109
Recommended Plan						
Municipal Water Conservation	34	65	92	116	139	145
Edwards Transfers	127	123	118	113	109	109
Drought Management	20	—	—	—	—	—
Total New Supply	181	188	210	229	248	254

Estimated costs of the recommended plan to meet the City of Sabinal’s projected needs are shown in Table 4B.2.18-3.

**Table 4B.2.18-3.
Recommended Plan Costs by Decade for the City of Sabinal**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$24,444	\$39,084	\$51,968	\$63,222	\$74,396	\$77,939
Unit Cost (\$/acft)	\$719	\$601	\$565	\$545	\$535	\$538
Edwards Transfers						
Annual Cost (\$/yr)	\$57,658	\$55,842	\$53,572	\$51,302	\$49,486	\$49,486
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Drought Management						
Annual Cost (\$/yr)	\$16,302	—	—	—	—	—
Unit Cost (\$/acft)	\$815	—	—	—	—	—

4B.2.18.2 City of Uvalde

Current water supply for the City of Uvalde is obtained from the Edwards Aquifer. Uvalde is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Uvalde implement the following water supply plan to meet the projected needs for the city (Table 4B.2.18-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 521 acft/yr by 2010, increasing to 2,652 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 3,172 acft/yr by 2010, increasing to 3,263 acft/yr of supply in 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 304 acft/yr by 2010.

**Table 4B.2.18-4.
Recommended Water Supply Plan for the City of Uvalde**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	3,172	3,209	3,229	3,233	3,235	3,263
Recommended Plan						
Municipal Water Conservation	521	1,017	1,471	1,882	2,269	2,652
Edwards Transfers	3,172	3,209	3,229	3,233	3,235	3,263
Drought Management	304	—	—	—	—	—
Total New Supply	3,997	4,226	4,700	5,115	5,504	5,915

Estimated costs of the recommended plan to meet the City of Uvalde’s projected needs are shown in Table 4B.2.18-5.

**Table 4B.2.18-5.
Recommended Plan Costs by Decade for the City of Uvalde**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$331,239	\$579,229	\$804,800	\$1,007,941	\$1,201,842	\$1,402,664
Unit Cost (\$/acft)	\$636	\$570	\$547	\$536	\$530	\$529
Edwards Transfers						
Annual Cost (\$/yr)	\$1,440,088	\$1,456,886	\$1,465,966	\$1,467,782	\$1,468,690	\$1,481,402
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Drought Management						
Annual Cost (\$/yr)	\$3,371	—	—	—	—	—
Unit Cost (\$/acft)	\$11	—	—	—	—	—

4B.2.18.3 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Edwards Aquifer and Carrizo Aquifer to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.18-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 33 acft/yr by 2040, increasing to 137 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.18-6.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	—	—	—	33	73	137
Total New Supply	—	—	—	33	73	137

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.18-7.

**Table 4B.2.18-7.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	\$25,734	\$56,398	\$105,635
Unit Cost (\$/acft)	—	—	—	\$780	\$773	\$771

4B.2.18.4 Industrial

Industrial is projected to have adequate water supplies available from the Edwards Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.18.5 Steam-Electric Power

There is no projected steam-electric power water demand in Uvalde County, therefore no water management strategies are recommended for this water user group.

4B.2.18.6 Mining

Mining is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group's projected demand during the planning period.

4B.2.18.7 Irrigation

Irrigation is projected to have adequate water supplies available from the Edwards Aquifer and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.18.8 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

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4B.2.19 Victoria County Water Supply Plan

Table 4B.2.19-1 lists each water user group in Victoria County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.19-1.
Victoria County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Victoria	3,505	551	No projected shortage
Rural Area Residential and Commercial	833	-310	Projected shortage (2050 through 2060)
Industrial	419	-14,441	Projected shortage (2020 through 2060)
Steam-Electric Power	-1,791	-51,076	Projected shortage (2010 through 2060)
Mining	0	0	No projected shortage
Irrigation	0	0	No projected shortage
Livestock	0	0	No projected shortage

4B.2.19.1 City of Victoria

The City of Victoria is projected to have adequate water supplies available from the Gulf Coast Aquifer and run-of-river rights to meet the city's projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Victoria implement the following water supply plan (Table 4B.2.19-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 874 acft/yr by 2010, increasing to 2,485 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

Surface Water Rights and Balancing Storage have been identified as recommended water management strategies.

**Table 4B.2.19-2.
Recommended Water Supply Plan for the City of Victoria**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	874	1,597	1,733	1,844	2,118	2,485
Total New Supply	874	1,597	1,733	1,844	2,118	2,485

Estimated costs of the recommended plan for the City of Victoria are shown in Table 4B.2.19-3.

**Table 4B.2.19-3.
Recommended Plan Costs by Decade for the City of Victoria**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$595,101	\$974,331	\$1,014,018	\$1,035,513	\$1,167,614	\$1,361,420
Unit Cost (\$/acft)	\$681	\$610	\$585	\$562	\$551	\$548

4B.2.19.2 Rural Area Residential and Commercial

Rural Areas obtain their water supplies from the Gulf Coast Aquifer to meet their projected demands during the planning period. A projected shortage is expected prior to 2040. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.19-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 32 acft/yr in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (GBRA) to be implemented by 2040. This strategy can provide an additional 81 acft/yr in 2040, increasing to 310 acft/yr by 2060.

**Table 4B.2.19-4.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	81	193	310
Recommended Plan						
Municipal Water Conservation	—	—	—	—	—	32
Purchase from WWP (GBRA)	—	—	—	81	193	310
Total New Supply	—	—	—	81	193	342

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.19-5.

**Table 4B.2.19-5.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	—	\$24,722
Unit Cost (\$/acft)	—	—	—	—	—	\$773
Purchase from WWP (GBRA)¹						
Annual Cost (\$/yr)	—	—	—	\$158,193	\$376,929	\$290,470
Unit Cost (\$/acft)	—	—	—	\$1,953	\$1,953	\$937

¹Unit cost based on cost estimate in Section 4C.14, plus treatment associated with delivery of 500 acft/yr of water.

4B.2.19.3 Industrial

Current water supply for industrial is obtained from the Gulf Coast Aquifer and run-of-river rights. Industrial is projected to need additional water supplies starting in the planning year 2020. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that individual industrial operations implement the following water supply plan to meet the projected needs for Industrial (Table 4B.2.19-6).

- Purchase from WWP (GBRA) to be implemented in 2020. This strategy can provide an additional 2,969 acft/yr of supply in 2020 increasing to 14,441 acft/yr in 2060.

**Table 4B.2.19-6.
Recommended Water Supply Plan for Industrial**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	—	2,969	5,921	8,860	11,489	14,441
Recommended Plan						
Purchase from WWP (GBRA)	—	2,969	5,921	8,860	11,489	14,441
Total New Supply	—	2,969	5,921	8,860	11,489	14,441

Estimated costs of the recommended plan to meet the industrial projected needs are shown in Table 4B.2.19-7.

**Table 4B.2.19-7.
Recommended Plan Costs by Decade for Industrial**

Plan Element	2010	2020	2030	2040	2050	2060
Purchase from WWP (GBRA)						
Annual Cost (\$/yr)	—	\$311,745	\$3,931,544	\$5,883,040	\$3,745,414	\$4,707,766
Unit Cost (\$/acft)	—	\$105	\$664	\$664	\$326	\$326

4B.2.19.4 Steam-Electric Power

Steam-electric power obtains water supply from the Gulf Coast Aquifer and run-of-river rights to meet the water user group’s projected needs during the entire planning period. The following water supply plan is recommended for Steam-Electric Power for Victoria County.

- Purchase from WWP (GBRA – Exelon) to be implemented in 2020. This strategy can provide an additional 49,126 acft/yr starting in 2020 through 2060.
- Purchase from WWP (GBRA) to be implemented in 2010. This strategy can provide an additional 1,791 acft/yr starting in 2010, increasing to 1,950 acft/yr by 2060.

**Table 4B.2.19-8.
Recommended Water Supply Plan for Steam-Electric Power**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	1,791	50,962	50,991	51,021	51,053	51,076
Recommended Plan						
Purchase from WWP (GBRA – Exelon)	—	49,126	49,126	49,126	49,126	49,126
Purchase from WWP (GBRA)	1,791	1,836	1,865	1,895	1,927	1,950
Total New Supply	1,791	50,962	50,991	51,021	51,053	51,076

Estimated costs of the recommended plan to meet the Steam-Electric Power projected needs are shown in Table 4B.2.19-9.

**Table 4B.2.19-9.
Recommended Plan Costs by Decade for Steam-Electric Power**

Plan Element	2010	2020	2030	2040	2050	2060
Purchase from WWP (GBRA – Exelon)						
Annual Cost (\$/yr)	—	\$31,735,396	\$31,735,396	\$22,990,968	\$22,990,968	\$11,004,224
Unit Cost (\$/acft)	—	\$646	\$646	\$468	\$468	\$224
Purchase from WWP (GBRA)*						
Annual Cost (\$/yr)	\$188,055	\$192,780	\$1,238,360	\$1,258,280	\$628,202	\$635,700
Unit Cost (\$/acft)	\$105	\$105	\$664	\$664	\$326	\$326
<i>*Unit cost based on cost estimate in Section 4C.14, plus treatment associated with delivery of 500 acft/yr of water.</i>						

4B.2.19.5 Mining

Mining is projected to have adequate water supplies available from the Gulf Coast Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.19.6 Irrigation

Irrigation is projected to have adequate water supplies available from the Gulf Coast Aquifer and run-of-river rights to meet the water user group’s projected demand during the planning period.

4B.2.19.7 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected demand during the planning period.

4B.2.20 Wilson County Water Supply Plan

Table 4B.2.20-1 lists each water user group in Wilson County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.20-1.
Wilson County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
East Central SUD			See Bexar County
El Oso WSC			See Karnes County
City of Floresville	762	-433	Projected shortage (2050 and 2060)
City of La Vernia	777	291	No projected shortage
McCoy WSC			See Atascosa County
Oak Hills WSC	1,169	-298	Projected shortage (2060)
City of Poth	955	718	No projected shortage
SS WSC	-223	-3,690	Projected shortage (2010 through 2060)
City of Stockdale	1,412	1,204	No projected shortage
Sunko WSC*	697	-16	Projected shortage (2060)
Rural Area Residential and Commercial	1,364	-33	Projected shortage (2060)
Industrial	0	0	No projected shortage
Steam-Electric Power	0	0	No projected demand
Mining	0	0	No projected shortage
Irrigation	307	5,273	No projected shortage
Livestock	0	0	No projected shortage

*These values represent the sum of the Surplus/Shortage values for each river basin and/or across the entire county. These values may differ from the Need value reported in other tables because the Need represents only the sum of the shortages.

4B.2.20.1 City of Floresville

Current water supply for the City of Floresville is obtained from the Carrizo Aquifer. Floresville is projected to need additional water supplies prior to 2050. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Floresville implement the following water supply plan to meet the projected needs for the city (Table 4B.2.20-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 136 acft/yr by 2010, increasing to 714 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Carrizo) to be implemented prior to 2050. This strategy can provide an additional 484 acft/yr by 2050, through 2060.

Alternative water management strategies identified by City of Floresville include Recycled Water Programs and/or Brackish Wilcox Groundwater.

**Table 4B.2.20-2.
Recommended Water Supply Plan for the City of Floresville**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	159	433
Recommended Plan						
Municipal Water Conservation	136	291	433	504	596	714
Local Groundwater Supplies (Carrizo)	—	—	—	—	484	484
Total New Supply	136	291	433	504	1,080	1,198

Estimated costs of the recommended plan to meet the City of Floresville's projected needs are shown in Table 4B.2.20-3.

**Table 4B.2.20-3.
Recommended Plan Costs by Decade for the City of Floresville**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$104,780	\$180,789	\$249,346	\$281,909	\$328,209	\$391,478
Unit Cost (\$/acft)	\$770	\$621	\$576	\$559	\$551	\$548
<i>Local Groundwater Supplies (Carrizo)</i>						
Annual Cost (\$/yr)	—	—	—	—	\$356,000	\$356,000
Unit Cost (\$/acft)	—	—	—	—	\$736	\$736

4B.2.20.2 City of La Vernia

Current water supply for the City of La Vernia is obtained from the Carrizo Aquifer. La Vernia is projected to have adequate water supplies through 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that La Vernia implement the following water supply plan (Table 4B.2.20-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 21 acft/yr by 2010, increasing to 227 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Purchase from WWP (CRWA) to be implemented prior to 2010. This strategy can provide an additional 400 acft/yr from 2010 through 2060.

**Table 4B.2.20-4.
Recommended Water Supply Plan for the City of La Vernia**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	0	0	0	0	0	0
<i>Recommended Plan</i>						
Municipal Water Conservation	21	56	105	146	184	227
Purchase from WWP (CRWA)	400	400	400	400	400	400
Total New Supply	421	456	505	546	584	627

Estimated costs of the recommended plan for the City of La Vernia are shown in Table 4B.2.20-5.

**Table 4B.2.20-5.
Recommended Plan Costs by Decade for the City of La Vernia**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation						
Annual Cost (\$/yr)	\$16,157	\$34,445	\$60,222	\$81,476	\$102,604	\$126,114
Unit Cost (\$/acft)	\$769	\$615	\$574	\$558	\$558	\$556
Purchase from WWP (CRWA)						
Annual Cost (\$/yr)	\$290,000	\$439,873	\$427,195	\$285,340	\$179,274	\$173,001
Unit Cost (\$/acft)	\$725	\$1,100	\$1,068	\$713	\$448	\$433

4B.2.20.3 Oak Hills WSC

Current water supply for Oak Hills WSC is obtained from the Carrizo Aquifer. Oak Hills WSC is projected to need additional water supplies prior to 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Oak Hills WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.20-6).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 26 acft/yr by 2040, increasing to 136 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Carrizo) to be implemented prior to 2060. This strategy can provide an additional 323 acft/yr by 2060.

**Table 4B.2.20-6.
Recommended Water Supply Plan for Oak Hills WSC**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)	0	0	0	0	0	298
Recommended Plan						
Municipal Water Conservation	—	—	—	26	76	136
Local Groundwater Supplies (Carrizo)	—	—	—	—	—	323
Total New Supply	—	—	—	26	76	459

Estimated costs of the recommended plan to meet Oak Hills WSC’s projected needs are shown in Table 4B.2.20-7.

**Table 4B.2.20-7.
Recommended Plan Costs by Decade for Oak Hills WSC**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	\$20,004	\$58,480	\$100,600
Unit Cost (\$/acft)	—	—	—	\$769	\$769	\$740
Local Groundwater Supplies (Carrizo)						
Annual Cost (\$/yr)	—	—	—	—	—	\$260,000
Unit Cost (\$/acft)	—	—	—	—	—	\$806

4B.2.20.4 City of Poth

The City of Poth is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Poth implement the following water supply plan (Table 4B.2.20-8).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 20 acft/yr by 2010, increasing to 64 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

An alternative water management strategy identified by City of Poth is Local Groundwater Supplies (Carrizo).

**Table 4B.2.20-8.
Recommended Water Supply Plan for the City of Poth**

	<i>2010 (acft/yr)</i>	<i>2020 (acft/yr)</i>	<i>2030 (acft/yr)</i>	<i>2040 (acft/yr)</i>	<i>2050 (acft/yr)</i>	<i>2060 (acft/yr)</i>
Projected Need (Shortage)*	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	20	22	25	28	46	64
Total New Supply	20	22	25	28	46	64
<i>* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.</i>						

Estimated costs of the recommended plan for the City of Poth are shown in Table 4B.2.20-9.

**Table 4B.2.20-9.
Recommended Plan Costs by Decade for the City of Poth**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation</i>						
Annual Cost (\$/yr)	\$15,634	\$16,790	\$18,217	\$18,712	\$27,907	\$37,476
Unit Cost (\$/acft)	\$782	\$763	\$729	\$668	\$607	\$586

4B.2.20.5 SS WSC

Current water supply for SS WSC is obtained from the Carrizo Aquifer. SS WSC is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that SS WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.20-10).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 84 acft/yr by 2050, increasing to 221 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Carrizo) to be implemented prior to 2010. This strategy can provide an additional 807 acft/yr by 2010, increasing to 4,033 acft/yr of supply by 2060.
- Purchase from WWP (CRWA) to be implemented prior to 2060. This strategy can provide an additional 690 acft/yr in 2060.
- Brackish Wilcox Groundwater for SS WSC⁶ to be implemented by 2040. This strategy can provide an additional 1,120 acft/yr by 2040, through 2060.
- Drought Management to be implemented or enhanced in the immediate future. This strategy can provide an additional 78 acft/yr by 2010.

An alternative water management strategy identified by SS WSC is Recycled Water Programs.

⁶ Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District's approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

**Table 4B.2.20-10.
Recommended Water Supply Plan for SS WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	223	864	1,546	2,214	2,939	3,690
Recommended Plan						
Municipal Water Conservation	—	—	—	—	84	221
Local Groundwater Supplies (Carrizo)	807	1,613	1,613	2,420	3,226	4,033
Purchase from WWP (CRWA)	—	—	—	—	—	690
Brackish Wilcox Groundwater for SS WSC	—	—	—	1,120	1,120	1,120
Drought Management	78	—	—	—	—	—
Total New Supply	885	1,613	1,613	3,540	4,430	6,064
* Additional Water Supply Needs in Drought may be greater than shown in some decades due to locally observed population growth rates greater than approved population projections for the 2011 Region L Water Plan.						

Estimated costs of the recommended plan to meet SS WSC’s projected needs are shown in Table 4B.2.20-11.

**Table 4B.2.20-11.
Recommended Plan Costs by Decade for SS WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	—	\$64,588	\$169,800
Unit Cost (\$/acft)	—	—	—	—	\$769	\$768
Local Groundwater Supplies (Carrizo)						
Annual Cost (\$/yr)	\$926,400	\$1,852,800	\$1,337,763	\$1,749,127	\$2,675,527	\$3,086,890
Unit Cost (\$/acft)	\$1,149	\$1,149	\$829	\$723	\$829	\$765
Purchase from WWP (CRWA)						
Annual Cost (\$/yr)	—	—	—	—	—	\$298,427
Unit Cost (\$/acft)	—	—	—	—	—	\$433
Brackish Wilcox Groundwater for SS WSC						
Annual Cost (\$/yr)	—	—	—	\$2,108,960	\$2,108,960	\$856,800
Unit Cost (\$/acft)	—	—	—	\$1,883	\$1,883	\$765
Drought Management						
Annual Cost (\$/yr)	\$86,090	—	—	—	—	—
Unit Cost (\$/acft)	\$1,104	—	—	—	—	—

4B.2.20.6 City of Stockdale

The City of Stockdale is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Stockdale implement the following water supply plan (Table 4B.2.20-12).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 27 acft/yr by 2010, increasing to 171 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

An alternative water management strategy identified by City of Stockdale is Local Groundwater Supplies (Carrizo).

**Table 4B.2.20-12.
Recommended Water Supply Plan for the City of Stockdale**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	27	57	93	128	147	171
Total New Supply	27	57	93	128	147	171

Estimated costs of the recommended plan for the City of Stockdale are shown in Table 4B.2.20-13.

**Table 4B.2.20-13.
Recommended Plan Costs by Decade for the City of Stockdale**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$20,213	\$34,888	\$52,515	\$70,039	\$79,781	\$92,384
Unit Cost (\$/acft)	\$749	\$612	\$565	\$547	\$543	\$540

4B.2.20.7 Sunko WSC

Current water supply for Sunko WSC is obtained from the Carrizo Aquifer. Sunko WSC is projected to need additional water supplies prior to 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Sunko WSC implement the following water supply plan to meet the projected needs for the WSC (Table 4B.2.20-14).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 3 acft/yr by 2010, increasing to 92 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).
- Local Groundwater Supplies (Carrizo) to be implemented prior to 2060. This strategy can provide an additional 161 acft/yr by 2060.

**Table 4B.2.20-14.
Recommended Water Supply Plan for Sunko WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	70
Recommended Plan						
Municipal Water Conservation	3	6	10	29	54	92
Local Groundwater Supplies (Carrizo)	—	—	—	—	—	161
Total New Supply	3	6	10	29	54	253

Estimated costs of the recommended plan to meet Sunko WSC’s projected needs are shown in Table 4B.2.20-15.

**Table 4B.2.20-15.
Recommended Plan Costs by Decade for Sunko WSC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$2,522	\$4,800	\$7,421	\$22,111	\$39,363	\$60,669
Unit Cost (\$/acft)	\$841	\$800	\$742	\$762	\$729	\$659
Local Groundwater Supplies (Carrizo)						
Annual Cost (\$/yr)	—	—	—	—	—	\$161,000
Unit Cost (\$/acft)	—	—	—	—	—	\$998

4B.2.20.8 Rural Area Residential and Commercial

Rural Areas obtain their water supplies from the Carrizo Aquifer and run-of-river rights to meet their projected demands during the planning period. A projected shortage is expected in year 2060. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected need for rural areas (Table 4B.2.20-16).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 14 acft/yr by 2040, increasing to 116 acft/yr in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.20-16.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	33
Recommended Plan						
Municipal Water Conservation	—	—	—	14	58	116
Total New Supply	—	—	—	14	58	116

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.20-17.

**Table 4B.2.20-17.
Recommended Plan Costs by Decade for Rural Areas**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	—	—	—	\$10,542	\$44,842	\$89,671
Unit Cost (\$/acft)	—	—	—	\$753	\$773	\$773

4B.2.20.9 Industrial

Industrial is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group’s projected demand during the planning period.

4B.2.20.10 Steam-Electric Power

There is no projected steam-electric power water demand in Wilson County, therefore no water management strategies are recommended for this water user group.

4B.2.20.11 Mining

Mining is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group's projected demand during the planning period.

4B.2.20.12 Irrigation

Irrigation is projected to have adequate water supplies available from the Carrizo Aquifer, Sparta Aquifer, Queen City Aquifer, and run-of-river rights to meet the water user group's projected demand during the planning period.

4B.2.20.13 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group's projected needs during the planning period.

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4B.2.21 Zavala County Water Supply Plan

Table 4B.2.21-1 lists each water user group in Zavala County and its corresponding management supply or shortage in years 2010 and 2060. For each water user group with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.2.21-1.
Zavala County Management Supply/Shortage by Water User Group**

Water User Group	Management Supply/Shortage		Comment
	2010 (acft/yr)	2060 (acft/yr)	
City of Crystal City	1,277	1,154	No projected shortage
Rural Area Residential and Commercial	524	17	No projected shortage
Industrial	272	0	No projected shortage
Steam-Electric Power	0	0	No projected demand
Mining	8	0	No projected shortage
Irrigation	-54,600	-41,492	Projected shortage (2010 through 2060)
Livestock	0	0	No projected shortage

4B.2.21.1 City of Crystal City

The City of Crystal City is projected to have adequate water supplies available from the Carrizo Aquifer to meet the city’s projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that the City of Crystal City implement the following water supply plan (Table 4B.2.21-2).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 192 acft/yr by 2010, increasing to 1,002 acft/yr of supply in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.21-2.
Recommended Water Supply Plan for the City of Crystal City**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	192	364	543	695	850	1,002
Total New Supply	192	364	543	695	850	1,002

Estimated costs of the recommended plan for the City of Crystal City are shown in Table 4B.2.21-3.

**Table 4B.2.21-3.
Recommended Plan Costs by Decade for the City of Crystal City**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$131,689	\$214,268	\$302,422	\$375,117	\$454,514	\$534,401
Unit Cost (\$/acft)	\$686	\$589	\$557	\$540	\$535	\$533

4B.2.21.2 Rural Area Residential and Commercial

Rural Areas are projected to have adequate water supplies available from the Carrizo Aquifer to meet their projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that rural area water supply districts and authorities and individual households and/or businesses not served by public water supply systems implement the following water supply plan to meet the projected needs for rural areas (Table 4B.2.21-4).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 42 acft/yr by 2010, increasing to 149 acft/yr in 2060 (Volume II, Section 4C.1.1).

**Table 4B.2.21-4.
Recommended Water Supply Plan for Rural Areas**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation	42	54	71	89	115	149
Total New Supply	42	54	71	89	115	149

Estimated costs of the recommended plan for rural areas are shown in Table 4B.2.21-5.

**Table 4B.2.21-5.
Recommended Plan Costs by Decade for Rural Areas**

<i>Plan Element</i>	2010	2020	2030	2040	2050	2060
Municipal Water Conservation						
Annual Cost (\$/yr)	\$32,321	\$41,667	\$54,983	\$62,138	\$74,636	\$92,728
Unit Cost (\$/acft)	\$770	\$772	\$774	\$698	\$649	\$622

4B.2.21.3 Industrial

Industrial is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group's projected demand during the planning period.

4B.2.21.4 Steam-Electric Power

There is no projected steam-electric water demand in Zavala County, therefore no water management strategies are recommended for this water user group.

4B.2.21.5 Mining

Mining is projected to have adequate water supplies available from the Carrizo Aquifer to meet the water user group's projected demand during the planning period.

4B.2.21.6 Irrigation

Current water supply for irrigation is obtained from the Carrizo Aquifer. Irrigation is projected to need additional water supplies prior to 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that individual irrigators implement the following water supply plan to meet a portion of the projected needs for irrigation (Table 4B.2.21-6).

- Irrigation Water Conservation to be implemented or enhanced in the immediate future. This strategy can provide an additional 6,948 acft/yr of supply. The SCTRWPG has determined that it is not economically feasible for agricultural producers to pay for additional supplies to meet projected needs.

**Table 4B.2.21-6.
Recommended Water Supply Plan for Irrigation**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	54,600	51,763	49,038	46,421	43,907	41,492
Recommended Plan						
Irrigation Water Conservation	6,948	6,948	6,948	6,948	6,948	6,948
Total New Supply	6,948	6,948	6,948	6,948	6,948	6,948

Estimated costs of the recommended plan to meet the Irrigation projected needs are shown in Table 4B.2.21-7.

**Table 4B.2.21-7.
Recommended Plan Costs by Decade for Irrigation**

Plan Element	2010	2020	2030	2040	2050	2060
Irrigation Water Conservation						
Annual Cost (\$/yr)	\$882,396	\$882,396	\$882,396	\$882,396	\$882,396	\$882,396
Unit Cost (\$/acft)	\$127	\$127	\$127	\$127	\$127	\$127

4B.2.21.7 Livestock

Livestock is projected to have adequate water supplies available from local sources to meet the water user group’s projected demand during the planning period.

4B.3 Water Supply Plans for Wholesale Water Providers

Table 4B.3-1 lists each Wholesale Water Provider identified by the SCTRWPG and their corresponding management supply or shortage in years 2010 and 2060. For each Wholesale Water Provider with a projected shortage, or need, a water supply plan has been developed and is presented in the following subsections.

**Table 4B.3-1.
Wholesale Water Provider Management Supply/Shortage**

<i>Major Water Provider</i>	<i>Management Supply/Shortage</i>		<i>Comment</i>
	<i>2010 (acft/yr)</i>	<i>2060 (acft/yr)</i>	
San Antonio Water System (SAWS)	-73,600	-193,264	Projected shortage (2010 through 2060)
Bexar Metropolitan Water District (BMWD)	-16,638	-36,387	Projected shortage (2010 through 2060)
Guadalupe-Blanco River Authority (GBRA)	126,065	-16,708	Projected shortage (2050 through 2060)
Canyon Regional Water Authority (CRWA)	-7,920	-40,400	Projected shortage (2010 through 2060)
Lavaca-Navidad River Authority (LNRA)*	-10,046	-10,489	Projected shortage (2010 through 2060)
Schertz-Seguin Local Government Corporation (SSLGC)	3,432	-4,935	Projected shortage (2040 through 2060)
Springs Hill WSC (SHWSC)	2,751	770	No projected shortage
Texas Water Alliance (TWA)	0	-21,095	Projected shortage (2020 through 2060)

* LNRA, while located outside of Region L, is the WWP for municipal (Point Comfort) and industrial (Formosa Plastics Corporation) users in the portion of Calhoun County east of Lavaca Bay. LNRA is presented in Section 4B.3 only. Management Supply/Shortage for LNRA based on Region L demands only.

4B.3.1 San Antonio Water System (SAWS)

Current water supply for SAWS is obtained from the Edwards Aquifer, Trinity Aquifer, Carrizo Aquifer, Canyon Reservoir, Aquifer Storage and Recovery (ASR) Project, and Direct Reuse. SAWS is projected to need additional water supplies prior to the year 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that SAWS implement the following water supply plan to meet the projected needs for SAWS (Table 4B.3.1-1).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy has been assigned to each individual Water User Group (WUG) based on the Municipal Water Conservation water management strategy recommended by the SCTRWPG.

- Drought Management⁷ to be implemented prior to 2010. This strategy can provide an additional 37,622 acft/yr of supply for the year 2010.
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 35,935 acft/yr of supply for the years 2010 through 2060.
- ASR Project and Phased Expansion⁸ to be implemented prior to 2010. This strategy can provide an additional 3,800 acft/yr of supply for the year 2010, increasing to 16,000 acft/yr through 2060.
- Recycled Water Programs⁹ to be implemented prior to 2010. This strategy can provide an additional 15,127 acft/yr of supply by the year 2010 through 2060.
- Facilities Expansions/Integration Pipelines¹⁰
- Regional Carrizo for SAWS¹¹ to be implemented prior to 2020. This strategy can provide an additional 11,687 acft/yr of supply for the years 2020 through 2060.
- Edwards Aquifer Recharge – Type 2 Projects to be implemented prior to 2020. This strategy can provide an additional 13,451 acft/yr of supply for the years 2020 through 2050, increasing to 21,577 acft/yr in 2060.
- Brackish Wilcox Groundwater for SAWS¹¹ to be implemented prior to 2020. This strategy can provide an additional 12,000 acft/yr of supply by 2020, increasing to 26,400 acft/yr by 2060.
- LCRA/SAWS Water Project to be implemented prior to 2030. This strategy can provide an additional 90,000 acft/yr of supply for the years 2030 through 2060.
- Seawater Desalination to be implemented prior to 2060. This strategy can provide an additional 84,012 acft/yr of supply for the year 2060.

Water management strategies requiring further study prior to implementation include: Edwards Aquifer Recharge and Recirculation, Mesa Water Supply Project, and the Other Water Supplies (Planned RFP).

⁷ Periodic activation of drought contingency measures resulting in demand reductions considered as a near-term alternative to development of water supplies that are reliable during drought. Amount shown is near-term Permitted Supply Gap from SAWS 2009 Water Management Plan Update.

⁸ Amounts shown are from SAWS 2009 Water Management Plan Update.

⁹ Uncommitted portion of existing 35,000 acft/yr Recycled Water system capacity.

¹⁰ Systems and pipelines have no associated firm yield, but are necessary to deliver new sources of supply to SAWS customers.

¹¹ Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District's approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

**Table 4B.3.1-1.
Recommended Water Supply Plan for SAWS**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	73,600	102,549	128,122	152,713	177,022	193,264
Recommended Plan						
Municipal Water Conservation ¹	—	—	—	—	—	—
Drought Management	37,622	—	—	—	—	—
Edwards Transfers	35,935	35,935	35,935	35,935	35,935	35,935
ASR Project and Phased Expansion	3,800	16,000	16,000	16,000	16,000	16,000
Recycled Water Program Expansion	15,127	15,127	15,127	15,127	15,127	15,127
Regional Carrizo for SAWS	—	11,687	11,687	11,687	11,687	11,687
Edwards Aquifer Recharge – Type 2 Projects	—	13,451	13,451	13,451	13,451	21,577
Brackish Wilcox Groundwater for SAWS	—	12,000	21,000	26,400	26,400	26,400
LCRA/SAWS Water Project	—	—	90,000	90,000	90,000	90,000
Seawater Desalination	—	—	—	—	—	84,012
Total New Supply	92,484	104,200	203,200	208,600	208,600	300,738
¹ Assigned by Water User Group based on Municipal Conservation water management strategy recommended by SCTRWPG.						

Estimated costs of the recommended plan to meet the SAWS projected needs are shown in Table 4B.3.1-2.

**Table 4B.3.1-2.
Recommended Plan Costs by Decade for SAWS**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
Municipal Water Conservation¹						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
Drought Management						
Annual Cost (\$/yr)	\$21,632,650	—	—	—	—	—
Unit Cost (\$/acft)	\$575	—	—	—	—	—
Edwards Transfers						
Annual Cost (\$/yr)	\$16,314,490	\$16,314,490	\$16,314,490	\$16,314,490	\$16,314,490	\$16,314,490
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
ASR Project and Phased Expansion						
Annual Cost (\$/yr)	NA	NA	NA	NA	NA	NA
Unit Cost (\$/acft)	NA	NA	NA	NA	NA	NA
Recycled Water Programs						
Annual Cost (\$/yr)	\$13,565,102	\$14,160,410	\$14,725,443	\$3,913,671	\$4,237,753	\$4,498,681
Unit Cost (\$/acft)	\$725	\$602	\$525	\$124	\$124	\$124
Regional Carrizo for SAWS						
Annual Cost (\$/yr)	—	\$15,695,641	\$15,695,641	\$3,786,588	\$3,786,588	\$3,786,588
Unit Cost (\$/acft)	—	\$1,343	\$1,343	\$324	\$324	\$324
Edwards Aquifer Recharge – Type 2 Projects						
Annual Cost (\$/yr)	—	\$11,940,000	\$11,940,000	\$11,117,000	\$11,117,000	\$37,275,000
Unit Cost (\$/acft)	—	\$888	\$888	\$826	\$826	\$1,728
Brackish Wilcox Groundwater for SAWS						
Annual Cost (\$/yr)	—	\$17,976,000	\$31,458,000	\$19,668,000	\$19,668,000	\$19,668,000
Unit Cost (\$/acft)	—	\$1,498	\$1,498	\$745	\$745	\$745
LCRA/SAWS Water Project						
Annual Cost (\$/yr)	—	—	\$215,460,000	\$215,460,000	\$74,610,000	\$74,610,000
Unit Cost (\$/acft)	—	—	\$2,394	\$2,394	\$829	\$829
Seawater Desalination						
Annual Cost (\$/yr)	—	—	—	—	—	\$191,857,000
Unit Cost (\$/acft)	—	—	—	—	—	\$2,284

¹ These costs have been assigned to the individual Water User Groups.

4B.3.2 Bexar Metropolitan Water District (BMWD)

Current water supply for BMWD is obtained from the Edwards Aquifer, Carrizo Aquifer, Trinity Aquifer, Canyon Reservoir, Medina Lake System, and run-of-river rights. BMWD is projected to need additional water supplies prior to the year 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that BMWD implement the following water supply plan to meet the projected needs for BMWD (Table 4B.3.2-1).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy has been assigned to each individual BMWD customer Water User Group (WUG) based on the Municipal Conservation water management strategy recommended by the SCTRWPG. Quantities shown in Table 4B.3.3-1 are approximate and for general reference only.
- Edwards Transfers to be implemented prior to 2010. This strategy can provide an additional 3,000 acft/yr of supply for the years 2010 through 2060.
- Surface Water Rights¹².
- Local Groundwater Supplies (Trinity) to be implemented prior to 2010. This strategy can provide an additional 2,016 acft/yr of supply for the years 2010 through 2060.
- Local Groundwater Supplies (Carrizo) to be implemented prior to 2010. This strategy can provide an additional 4,030 acft/yr of supply for the years 2010, increasing to 16,129 acft/yr by 2060.
- Medina Lake Firm-Up (ASR) to be implemented prior to 2010. This strategy can provide an additional 9,933 acft/yr of supply for the years 2010 through 2060.
- Purchase from WWP (CRWA) to be implemented prior to 2010. This strategy can provide an additional 2,800 acft/yr of supply in the year 2010, increasing to 8,250 acft/yr of additional supply in 2020, and continuing at 8,250 acft/yr to 2060.
- Facilities Expansions (System Interconnects)¹³

Medina Lake Firm-Up (OCR) is listed as an alternative water management strategy.

¹² Purchase of junior water rights on the Medina River likely to have little, if any firm yield. Such water rights could be used in non-drought years and/or as part of the Medina Lake Firm-Up WMS.

¹³ Systems and pipelines have no associated firm yield, but are necessary to deliver new sources of supply to BMWD customers.

**Table 4B.3.2-1.
Recommended Water Supply Plan for BMWD**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	16,638	20,139	27,798	30,607	33,461	36,387
Recommended Plan						
Municipal Water Conservation ¹	—	—	—	—	—	—
Edwards Transfers	3,000	3,000	3,000	3,000	3,000	3,000
Local Groundwater Supplies (Trinity)	2,016	2,016	2,016	2,016	2,016	2,016
Local Groundwater Supplies (Carrizo)	4,030	6,448	8,060	8,060	12,090	16,129
Medina Lake Firm-Up (ASR)	9,933	9,933	9,933	9,933	9,933	9,933
Purchase from WWP (CRWA)	2,800	8,250	8,250	8,250	8,250	8,250
Total New Supply	21,779	29,647	31,259	31,259	35,289	39,328
¹ Assigned by Water User Group based on Municipal Conservation water management strategy recommended by SCTRWPG.						

Estimated costs of the recommended plan to meet the BMWD projected needs are shown in Table 4B.3.2-2.

**Table 4B.3.2-2.
Recommended Plan Costs by Decade for BMWD**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation¹						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
Edwards Transfers						
Annual Cost (\$/yr)	\$1,362,000	\$1,362,000	\$1,362,000	\$1,362,000	\$1,362,000	\$1,362,000
Unit Cost (\$/acft)	\$454	\$454	\$454	\$454	\$454	\$454
Local Groundwater Supplies (Trinity)						
Annual Cost (\$/yr)	\$1,043,000	\$1,043,000	\$1,043,000	\$1,043,000	\$1,043,000	\$1,043,000
Unit Cost (\$/acft)	\$517	\$517	\$517	\$517	\$517	\$517
Local Groundwater Supplies (Carrizo)						
Annual Cost (\$/yr)	\$1,676,750	\$2,682,800	\$2,386,357	\$1,806,071	\$3,095,964	\$4,772,714
Unit Cost (\$/acft)	\$416	\$416	\$296	\$224	\$256	\$296
Medina Lake Firm-Up (ASR)						
Annual Cost (\$/yr)	\$16,846,368	\$16,846,368	\$4,469,850	\$4,469,850	\$4,469,850	\$4,469,850
Unit Cost (\$/acft)	\$1,696	\$1,696	\$450	\$450	\$450	\$450
Purchase from WWP (CRWA)						
Annual Cost (\$/yr)	\$2,030,000	\$9,072,389	\$8,810,887	\$5,885,138	\$3,697,530	\$3,568,147
Unit Cost (\$/acft)	\$725	\$1,100	\$1,068	\$713	\$448	\$433
¹ These costs have been assigned to the individual Water User Groups.						

4B.3.3 Canyon Regional Water Authority (CRWA)

Current water supply for CRWA is obtained from GBRA and various water right leases. CRWA is projected to need additional water supplies prior to the year 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that CRWA implement the following water supply plan to meet the projected needs for CRWA (Table 4B.3.3-1).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy has been assigned to each individual member Water User Group (WUG) based on the Municipal Conservation water management strategy recommended by the SCTRWPG, and quantities are not tabulated in the CRWA tables referenced here.
- CRWA Wells Ranch Project Phase I¹⁴ to be implemented prior to 2010. This strategy can provide an additional 5,200 acft/yr of supply for the years 2010 through 2060.
- CRWA Wells Ranch Project Phase II¹⁴ to be implemented prior to 2010. This strategy can provide an additional 5,800 acft/yr of supply for the years 2010 through 2060.
- Purchase from WWP (GBRA) to be implemented prior to 2020. This strategy can provide an additional 5,000 acft/yr of supply for the years 2020 through 2060.
- Brackish Wilcox Groundwater for RWA¹⁴ to be implemented prior to 2030. This strategy can provide an additional 5,600 acft/yr of supply for the years 2030 and 2040, increasing to 11,200 acft/yr for 2050 through 2060.
- CRWA Siesta Project to be implemented prior to 2030. This strategy can provide an additional 1,000 acft/yr for 2030, increasing to 5,042 acft/yr of supply for the years 2040 through 2060.
- Hays/Caldwell PUA Project¹⁴ to be implemented prior to 2020. This strategy can provide an additional 5,000 acft/yr of supply in the year 2020, increasing to 10,260 acft/yr of additional supply through 2060.

¹⁴ Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District's approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

**Table 4B.3.3-1.
Recommended Water Supply Plan for CRWA**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	7,920	14,815	30,465	33,215	38,560	40,400
Recommended Plan						
Municipal Water Conservation ¹	—	—	—	—	—	—
CRWA Wells Ranch Project Phase I	5,200	5,200	5,200	5,200	5,200	5,200
CRWA Wells Ranch Project Phase II	5,800	5,800	5,800	5,800	5,800	5,800
Purchase from WWP (GBRA)	—	5,000	5,000	5,000	5,000	5,000
Brackish Wilcox Groundwater for RWA	—	—	5,600	5,600	11,200	11,200
CRWA Siesta Project	—	—	1,000	5,042	5,042	5,042
Hays/Caldwell PUA Project	—	5,000	10,260	10,260	10,260	10,260
Total New Supply	11,000	21,000	32,860	36,902	42,502	42,502

¹ Assigned by Water User Group based on Municipal Conservation water management strategy recommended by SCTRWP.

Estimated costs of the recommended plan to meet the CRWA projected needs are shown in Table 4B.3.3-2.

**Table 4B.3.3-2.
Recommended Plan Costs by Decade for CRWA**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation¹						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
CRWA Wells Ranch Project Phase I						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
CRWA Wells Ranch Project Phase II						
Annual Cost (\$/yr)	\$4,205,000	\$4,205,000	\$1,160,000	\$1,160,000	\$1,160,000	\$1,160,000
Unit Cost (\$/acft)	\$725	\$725	\$200	\$200	\$200	\$200
Purchase from WWP (GBRA)						
Annual Cost (\$/yr)	—	\$6,947,133	\$6,947,133	\$2,544,933	\$2,544,933	\$1,962,333
Unit Cost (\$/acft)	—	\$1,389	\$1,389	\$509	\$509	\$392
Brackish Wilcox Groundwater for RWA						
Annual Cost (\$/yr)	—	—	\$7,240,800	\$7,240,800	\$6,003,200	\$6,003,200
Unit Cost (\$/acft)	—	—	\$1,293	\$1,293	\$536	\$536
CRWA Siesta Project						
Annual Cost (\$/yr)	—	—	\$1,421,000	\$7,164,682	\$2,505,874	\$2,505,874
Unit Cost (\$/acft)	—	—	\$1,421	\$1,421	\$497	\$497
Hays/Caldwell PUA Project						
Annual Cost (\$/yr)	—	\$6,225,000	\$12,773,700	\$4,504,140	\$4,504,140	\$4,504,140
Unit Cost (\$/acft)	—	\$1,245	\$1,245	\$439	\$439	\$439

¹ These costs have been assigned to the individual Water User Groups.

4B.3.4 Guadalupe-Blanco River Authority (GBRA)

Current water supply for GBRA is obtained from Canyon Reservoir and run-of-river rights. GBRA is projected to need additional water supplies soon after year 2010 to meet the Wholesale Water Provider's projected demands; however, certain portions of the GBRA system are projected to have a shortage (need) at year 2010. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that GBRA implement the following water supply plan to meet the projected needs for GBRA (Table 4B.3.4-1).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy has been assigned to each individual Water User Group (WUG) based on the Municipal Conservation water management strategy recommended by the SCTRWPG.
- Wimberley and Woodcreek Water Supply Project to be implemented prior to 2010. This strategy can provide an additional 1,120 acft/yr upon implementation soon after 2010 and an additional 4,480 acft/yr for 2020 through 2060.
- GBRA Simsboro Aquifer^{15,16} to be implemented prior to 2020. This strategy can provide an additional 30,000 acft/yr for 2020, increasing to 49,777 acft/yr of supply for the years 2050 through 2060.
- GBRA Mid-Basin (Surface Water) to be implemented prior to 2020. This strategy can provide an additional 25,000 acft/yr for 2020 through 2060.
- Storage Above Canyon Reservoir (ASR) to be implemented prior to 2020. This strategy can provide an additional 3,140 acft/yr for 2020 through 2060.
- GBRA-Exelon Project to be implemented prior to 2020. This strategy can provide an additional 49,126 acft/yr for 2020 through 2060.
- GBRA Lower Basin Storage (100 acre Site)¹⁷ to be implemented prior to 2030. This strategy can provide an additional 26,452 acft/yr for 2030 through 2060.
- GBRA New Appropriation (Lower Basin) to be implemented prior to 2030. This strategy can provide an additional 11,500 acft/yr for 2030 through 2060.
- Western Canyon WTP Expansion to be implemented prior to 2050. This strategy can provide an additional 5,600 acft/yr for 2050 through 2060.

¹⁵ Source of water is Simsboro Aquifer in Regions K and G with delivery to the San Marcos WTP.

¹⁶ Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District's approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

¹⁷ Firm yield estimate based on off-channel storage of 2,500 acft.

The following are alternative water management strategies: Lower Guadalupe Water Supply Project (LGWSP) for Upstream GBRA Needs, GBRA Lower Basin Storage (500 acre Site), Regional Carrizo for Guadalupe Basin (GBRA), GBRA Mid-Basin (Conjunctive Use), and Calhoun County Brackish Groundwater.

**Table 4B.3.4-1.
Recommended Water Supply Plan for GBRA**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	0	10,226	23,808	36,564	51,163	67,580
Recommended Plan						
Municipal Water Conservation ¹	—	—	—	—	—	—
Wimberley and Woodcreek Water Supply Project	1,120	4,480	4,480	4,480	4,480	4,480
GBRA Simsboro Aquifer	—	30,000	30,000	30,000	49,777	49,777
GBRA Mid-Basin (Surface Water)	—	25,000	25,000	25,000	25,000	25,000
Storage Above Canyon Reservoir (ASR)	—	3,140	3,140	3,140	3,140	3,140
GBRA-Exelon Project	—	49,126	49,126	49,126	49,126	49,126
GBRA Lower Basin Storage	—	—	28,369	28,369	28,369	28,369
GBRA New Appropriation (Lower Basin)	—	—	11,300	11,300	11,300	11,300
Western Canyon WTP Expansion	—	—	—	—	5,600	5,600
Total New Supply	4,480	107,266	146,935	146,935	172,312	172,312
* Projected needs in upper portion of GBRA district are offset by management supplies in the lower portion of the GBRA district.						
¹ Assigned by Water User Group based on Municipal Conservation water management strategy recommended by SCTRWPG.						

Estimated costs of the recommended plan to meet the GBRA projected needs are shown in Table 4B.3.4-2.

**Table 4B.3.4-2.
Recommended Plan Costs by Decade for GBRA**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation¹						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
Wimberley and Woodcreek Water Supply Project						
Annual Cost (\$/yr)	\$2,747,360	\$10,989,440	\$9,253,000	\$9,253,000	\$9,253,000	\$9,253,000
Unit Cost (\$/acft)	\$2,453	\$2,453	\$2,065	\$2,065	\$2,065	\$2,065
GBRA Simsboro Aquifer						
Annual Cost (\$/yr)	—	\$29,460,000	\$29,460,000	\$11,580,000	\$19,300,000	\$19,300,000
Unit Cost (\$/acft)	—	\$982	\$982	\$386	\$386	\$386
GBRA Mid-Basin (Surface Water)						
Annual Cost (\$/yr)	—	\$46,975,000	\$46,975,000	\$16,200,000	\$16,200,000	\$9,250,000
Unit Cost (\$/acft)	—	\$1,879	\$1,879	\$648	\$648	\$370
Storage Above Canyon Reservoir (ASR)						
Annual Cost (\$/yr)	—	\$5,564,080	\$5,564,080	\$1,843,180	\$1,843,180	\$1,843,180
Unit Cost (\$/acft)	—	\$1,772	\$1,772	\$587	\$587	\$587
GBRA-Exelon Project						
Annual Cost (\$/yr)	—	\$31,735,396	\$31,735,396	\$22,990,968	\$22,990,968	\$11,004,224
Unit Cost (\$/acft)	—	\$646	\$646	\$468	\$468	\$224
GBRA Lower Basin Storage						
Annual Cost (\$/yr)	—	—	\$2,751,008	\$2,751,008	\$1,587,120	\$1,587,120
Unit Cost (\$/acft)	—	—	\$104	\$104	\$60	\$60
GBRA New Appropriation (Lower Basin)						
Annual Cost (\$/yr)	—	—	\$21,585,000	\$21,585,000	\$2,521,000	\$2,521,000
Unit Cost (\$/acft)	—	—	\$1,910	\$1,910	\$223	\$223
Western Canyon WTP Expansion						
Annual Cost (\$/yr)	—	—	—	—	\$1,764,000	\$1,764,000
Unit Cost (\$/acft)	—	—	—	—	\$315	\$315
¹ These costs have been assigned to the individual Water User Groups.						

4B.3.5 Lavaca-Navidad River Authority (LNRA)

Lavaca-Navidad River Authority obtains its supply from Lake Texana Stage I and is projected to have shortages throughout the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that LNRA implement the following water supply plan to meet the projected needs for LNRA (Table 4B.3.5-1).

- Lavaca River Off-Channel Reservoir to be implemented prior to 2010. This strategy can provide an additional 26,242 acft/yr of supply, starting in 2020 and continuing through 2060.
- Facilitate temporary reallocation of presently contracted supplies to meet projected needs of Point Comfort until addition firm supplies are developed.

**Table 4B.3.5-1.
Recommended and Alternative Water Supply Plan for LNRA**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)*	10,046	10,145	10,322	10,499	10,489	10,489
Recommended Plan						
Lavaca River Off-Channel Reservoir	26,242	26,242	26,242	26,242	26,242	26,242
Total New Supply	26,242	26,242	26,242	26,242	26,242	26,242
* Projected needs are reported only for the portion of LNRA service area within Calhoun County in Region L. 10,000 acft/yr of the projected need is for Formosa Plastics Corporation based on information provided by LNRA during an inter-regional coordination meeting held on April 8, 2009. The remainder is for Point Comfort.						

Estimated costs of the recommended and alternative plan to meet the LNRA projected needs are shown in Table 4B.3.5-2.

**Table 4B.3.5-2.
Recommended and Alternative Plan Costs by Decade for LNRA**

Recommended Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation¹						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
Lavaca River Off-Channel Reservoir						
Annual Cost (\$/yr)	\$18,395,642	\$18,395,642	\$14,774,246	\$14,774,246	\$2,624,200	\$2,624,200
Unit Cost (\$/acft)	\$701	\$701	\$563	\$563	\$100	\$100
¹ These costs have been assigned to the individual Water User Groups.						

4B.3.6 Schertz-Seguin Local Government Corporation (SSLGC)

Current water supply for SSLGC is obtained from the Carrizo Aquifer. SSLGC is projected to need additional water supplies prior to the year 2040. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that SSLGC implement the following water supply plan to meet the projected needs for SSLGC (Table 4B.3.6-1).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy has been assigned to each individual Water User Group (WUG) based on the Municipal Conservation water management strategy recommended by the SCTRWPG.
- Regional Carrizo for SSLGC Project Expansion¹⁸ to be implemented prior to 2020. This strategy can provide an additional 10,364 acft/yr of supply in the year 2020 through 2060.
- Brackish Wilcox Groundwater for RWA¹⁸ to be implemented prior to 2030. This strategy can provide an additional 2,000 acft/yr of supply in the year 2030 through 2060.

An alternative water management strategy is the Regional Carrizo for SSLGC Project Expansion – Wilson County Option.

¹⁸ Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District's approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

**Table 4B.3.6-1.
Recommended Water Supply Plan for SSLGC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	—	—	—	1,102	2,947	4,935
Recommended Plan						
Municipal Water Conservation ¹	—	—	—	—	—	—
Regional Carrizo for SSLGC Project Expansion	—	10,364	10,364	10,364	10,364	10,364
Brackish Wilcox Groundwater for RWA	—	—	2,000	2,000	2,000	2,000
Total New Supply	—	10,364	12,364	12,364	12,364	12,364
¹ Assigned by Water User Group based on Municipal Conservation water management strategy recommended by SCTRWPG.						

Estimated costs of the recommended plan to meet the SSLGC projected needs are shown in Table 4B.3.6-2.

**Table 4B.3.6-2.
Recommended Plan Costs by Decade for SSLGC**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation¹						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
Regional Carrizo for SSLGC Project Expansion						
Annual Cost (\$/yr)	—	\$5,885,000	\$5,885,000	\$3,427,000	\$3,427,000	\$3,427,000
Unit Cost (\$/acft)	—	\$568	\$568	\$331	\$331	\$331
Brackish Wilcox Groundwater for RWA						
Annual Cost (\$/yr)	—	—	\$2,586,000	\$2,586,000	\$1,072,000	\$1,072,000
Unit Cost (\$/acft)	—	—	\$1,293	\$1,293	\$536	\$536
¹ These costs have been assigned to the individual Water User Groups.						

4B.3.7 Springs Hill WSC (SHWSC)

Springs Hill WSC is projected to have adequate water supplies available from the Carrizo Aquifer and Canyon Reservoir to meet the WSC's projected demands during the planning period. Working within the planning criteria established by the SCTRWPG and the TWDB, it is recommended that Springs Hill WSC implement the following water supply plan (Table 4B.3.7-1).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy has been assigned to each individual Water User Group (WUG) based on the Municipal Conservation water management strategy recommended by the SCTRWPG.
- TWA Regional Carrizo¹⁹ to be implemented prior to 2020. This strategy can provide an additional 1,500 acft/yr from 2020, increasing to 3,000 in 2030 through 2060.
- Purchase from GBRA to be implemented prior to 2020, providing 1,500 acft/yr of water through 2060.
- Brackish Wilcox Groundwater for RWA¹⁹ to be implemented prior to 2060. This strategy can provide an additional 1,500 in 2060.

**Table 4B.3.7-1.
Recommended Water Supply Plan for Springs Hill WSC**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	0	0	0	0	0
Recommended Plan						
Municipal Water Conservation ¹	—	—	—	—	—	—
Purchase from WWP (TWA)	—	1,500	3,000	3,000	3,000	3,000
Purchase from WWP (GBRA)	—	1,500	1,500	1,500	1,500	1,500
Brackish Wilcox Groundwater for RWA	—	—	—	—	—	1,500
Total New Supply	—	3,000	4,500	4,500	4,500	6,000
¹ Assigned by Water User Group (WUG) based on Municipal Conservation water management strategy recommended by SCTRWPG.						

¹⁹ Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District's approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District's management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

Estimated costs of the recommended plan for Springs Hill WSC are shown in Table 4B.3.7-2.

**Table 4B.3.7-2.
Recommended Plan Costs by Decade for Springs Hill WSC**

<i>Plan Element</i>	<i>2010</i>	<i>2020</i>	<i>2030</i>	<i>2040</i>	<i>2050</i>	<i>2060</i>
<i>Municipal Water Conservation¹</i>						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
<i>Purchase from WWP (TWA)</i>						
Annual Cost (\$/yr)	—	\$2,284,500	\$4,569,000	\$1,536,000	\$1,536,000	\$1,536,000
Unit Cost (\$/acft)	—	\$1,523	\$1,523	\$512	\$512	\$512
<i>Purchase from WWP (GBRA)</i>						
Annual Cost (\$/yr)	—	\$2,083,500	\$2,083,500	\$763,500	\$763,500	\$588,000
Unit Cost (\$/acft)	—	\$1,389	\$1,389	\$509	\$509	\$392
<i>Brackish Wilcox Groundwater for RWA</i>						
Annual Cost (\$/yr)	—	—	—	—	—	\$804,000
Unit Cost (\$/acft)	—	—	—	—	—	\$536
¹ <i>These costs have been assigned to the individual Water User Groups.</i>						

4B.3.8 Texas Water Alliance (TWA)

Texas Water Alliance is projected to have shortages during the planning period. There is no current supply for TWA. Working within the planning criteria established by the SCTRWP and the TWDB, it is recommended that TWA implement the following water supply plan (Table 4B.3.8-1).

- Municipal Water Conservation to be implemented or enhanced in the immediate future. This strategy has been assigned to each individual Water User Group (WUG) based on the Municipal Conservation water management strategy recommended by the SCTRWP.

- TWA Regional Carrizo²⁰ is to be implemented by 2020. This strategy can provide an additional supply of 27,000 acft/yr, starting in 2020, continuing through 2060.

**Table 4B.3.8-1.
Recommended Water Supply Plan for Texas Water Alliance**

	2010 (acft/yr)	2020 (acft/yr)	2030 (acft/yr)	2040 (acft/yr)	2050 (acft/yr)	2060 (acft/yr)
Projected Need (Shortage)	0	5,328	10,717	14,591	18,556	22,575
Recommended Plan						
Municipal Water Conservation ¹	—	—	—	—	—	—
TWA Regional Carrizo	—	27,000	27,000	27,000	27,000	27,000
Total New Supply	—	27,000	27,000	27,000	27,000	27,000
¹ Assigned by Water User Group (WUG) based on Municipal Conservation water management strategy recommended by SCTRWPG.						

Estimated costs of the recommended plan for Texas Water Alliance are shown in Table 4B.3.8-2.

**Table 4B.3.8-2.
Recommended Plan Costs by Decade for Texas Water Alliance**

Plan Element	2010	2020	2030	2040	2050	2060
Municipal Water Conservation¹						
Annual Cost (\$/yr)	—	—	—	—	—	—
Unit Cost (\$/acft)	—	—	—	—	—	—
TWA Regional Carrizo						
Annual Cost (\$/yr)	—	\$41,121,000	\$41,121,000	\$13,824,000	\$13,824,000	\$13,824,000
Unit Cost (\$/acft)	—	\$1,523	\$1,523	\$512	\$512	\$512
¹ These costs have been assigned to the individual Water User Groups.						

²⁰ Part or all of the water needed by this Water Management Strategy (WMS) is anticipated to be supplied from locations within the jurisdiction of a groundwater conservation district (District) and may exceed the amount of available water identified in the District’s approved management plan, or may for other reasons not be permitted by the District. The amount of water needed by this WMS that exceeds the available water in the District’s management plan, or for other reasons is not permitted by the District, cannot be implemented as part of this WMS unless and until all necessary permits are received from the District. The amount of water needed by this WMS that exceeds the available water in the District’s management plan, or for other reasons is not permitted by the District, introduces an added element of uncertainty to reliance upon this WMS and, therefore, additional management supplies may be needed for this WMS.

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