

Water for Texas: Summary of the 2011 Regional Water Plans

82nd Legislative Session



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Texas Water Development Board

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January 20, 2011

The People of Texas
The Honorable Rick Perry, Governor of Texas
The Honorable David Dewhurst, Lieutenant Governor of Texas
The Honorable Joe Straus, III, Speaker of the Texas House of Representatives
Members, Senate Natural Resources Committee, Texas Senate
Members, House Natural Resources Committee, Texas House of Representatives

In October, November, and December of 2010, the Texas Water Development Board (TWDB) approved sixteen 2011 Regional Water Plans. This represents the culmination of the third round of regional water planning, since the passage of Senate Bill 1 in 1997, and represents the exemplary work and dedicated efforts of over 400 voting and nonvoting members of the regional water planning groups. By January 5, 2012, the TWDB will develop, adopt, and submit the 2012 State Water Plan.

“Water for Texas: Summary of the 2011 Regional Water Plans” presents the highlights of the statewide totals of the regional plan results, as well as summaries of the plans of each of the 16 regions. The primary result of these water plans is a simple one: If the drought of record were to occur today, Texas would not have enough water to meet the needs of its people, its businesses, and its agricultural enterprises. These plans present the information regarding the recommended conservation and other types of water management strategies that would be necessary to meet the state’s needs in drought conditions, their cost, and estimates of the state’s financial assistance that would be required to implement these strategies. The plans also present the sobering news of the economic losses likely to occur if these water supply needs cannot be met. As the state continues to experience rapid growth and declining water supplies, implementation of these plans is crucial to ensure public health, safety, and welfare and economic development in the state.

We hope that this report will provide valuable information to you as important water supply issues are deliberated during the 82nd Legislative Session. We would also like to thank the 16 planning groups and our state agency partners, the Texas Parks and Wildlife Department, the Texas Commission on Environmental Quality, and the Texas Department of Agriculture for their assistance to the planning groups and the planning process. We greatly appreciate their input and assistance.

Respectfully submitted,



Edward G. Vaughan, Chairman

Our Mission

To provide leadership, planning, financial assistance, information, and education for the conservation and responsible development of water for Texas

Board Members

Edward G. Vaughan, Chairman
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EXECUTIVE SUMMARY

This document provides a brief overview of the regional water planning process, highlights from the 2011 regional water plans, costs of the recommended water management strategies recommended in the plans, infrastructure financing needs, social and economic impacts of not meeting water needs, and a brief summary of information from each of the 16 plans. The 2012 State Water Plan, which will be delivered to the Governor, Lieutenant Governor, Speaker of the House and Legislature on January 5, 2012, will provide more detail on each plan and also provide additional analyses and Texas Water Development Board (TWDB) policy recommendations on how to meet Texas' need for water during the next 50 years.

Results

In the first decade of the planning horizon, if the drought of record were to occur, the demand for water in Texas would exceed the supply, creating a need for additional water in excess of 3.6 million acre-feet per year.

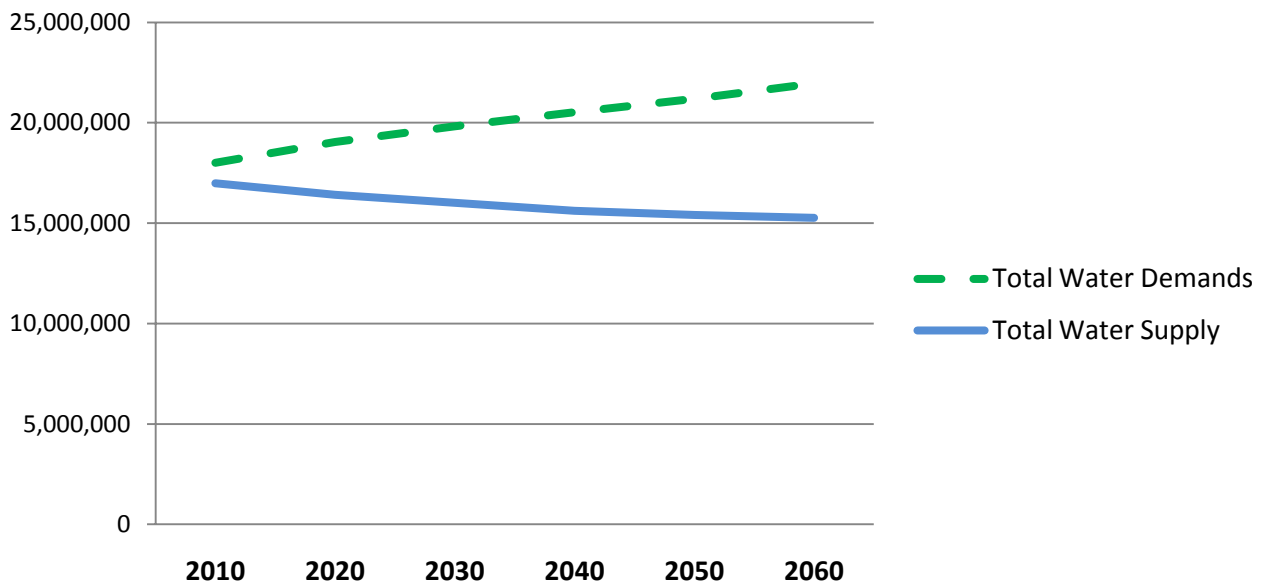


Figure E.1 – Statewide Existing Water Supplies and Projected Demands (acre-feet/year)

By 2060, more than 46 million people are expected to call Texas home – more than 80 percent greater than the 2010 population. It is projected that almost 22 million acre-feet of water per year would be required to meet the water demands of the state's homes, businesses, and agricultural enterprises if the drought of record were to occur. However, without implementation of recommended water management strategies, only 15 million acre-feet would be available to meet those demands. The true discrepancy between demand and supply is even greater than the difference between these figures indicates, as surplus existing water supplies in some areas are not necessarily available to meet demands in other areas. The total needs for water in 2060 for all water user groups would amount to

8.3 million acre-feet (Figure E.2). If no water management strategies could be implemented to meet these needs, Texas businesses and workers could lose \$115.7 billion in income, 1.1 million jobs would not be created, and 1.4 million in population growth would not be achieved.

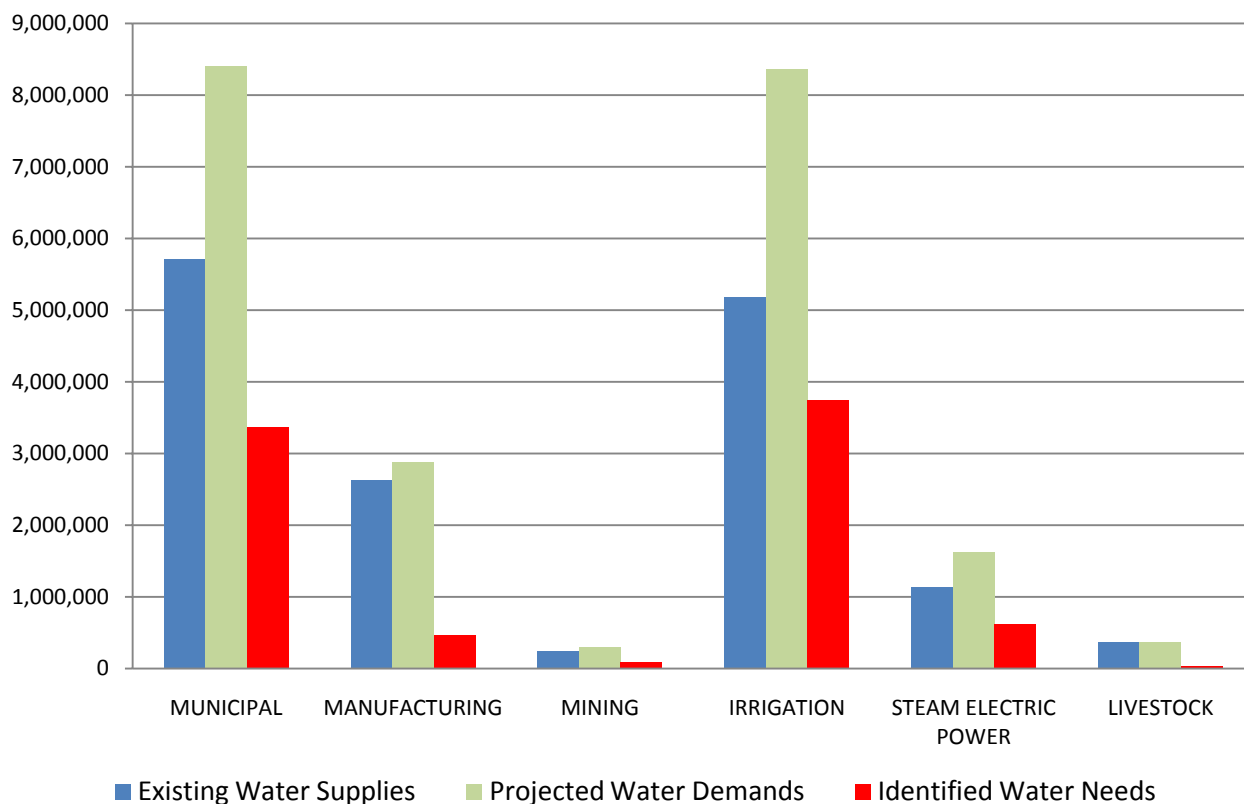


Figure E.2 – 2060 Statewide Existing Supplies, Projected Demands, and Identified Water Needs by Water User Category (acre-feet/year)

The regional planning groups recommended water management strategies to meet the identified water needs that, if implemented, would provide an additional 9.0 million acre-feet in additional water supplies. Approximately 34 percent of the volume of these strategies would come from conservation and reuse, about 16 percent from new major reservoirs, and about 35 percent from connection of other surface water supplies. The capital cost of these strategies was estimated to be \$53 billion, \$46 billion of which would go toward meeting municipal water needs. A survey of municipal water suppliers indicated that, if the capacity was available, they would look to state loan programs, including loans with subsidies, for \$27 billion to implement these recommended strategies.

The identified water needs (8.3 million acre-feet) are less than the 8.8 million acre-feet identified in the 2007 State Water Plan, due in large part to the implementation of previously recommended water management strategies made possible by appropriations by the 80th and 81st Legislatures to fund State Water Plan projects. However, the cost of implementing the strategies to meet these needs has increased significantly from the \$31 billion estimated in the 2007 plan. This increase can be attributed largely to the need to recommend an increased volume of strategies in areas of high population growth, as well as inflation in construction costs.

1.0 INTRODUCTION

Regional Planning Process

In response to the drought of the 1950s and in recognition of the need to plan for the future, the legislature created the Texas Water Development Board (TWDB) to develop water supplies and prepare plans to meet the state's future water needs. In 1997, the legislature established a new water planning process, based on a consensus-driven local and regional approach. Coordinating this process are planning groups representing each of 16 regional water planning areas (see Figure 1.1). The planning groups, each made up of about 20 members, represent a variety of interests, including agriculture, industry, environment, public, municipalities, business, water districts, river authorities, water utilities, counties, and power generation. Each planning group approves bylaws to govern its methods of conducting business and designates a political subdivision, such as a river authority, groundwater conservation district, or council of governments, to administer the planning process and manage any grant contracts related to developing regional water plans. TWDB, in coordination with the Texas Parks and Wildlife Department, Texas Department of Agriculture, and Texas Commission on Environmental Quality, adopts rules and guidelines, and provides funding to support the regional planning process.

The planning groups conduct all functions at open meetings in an open and participatory manner. They hold public meetings when they develop their scopes of work and hold hearings on their draft plans before adopting their regional water plans. This public involvement helps direct the planning and determine which water management strategies to recommend. Consensus building within the planning groups is crucial to ensure sufficient support for adopting the plan. Planning group members adopt plans by vote at open meetings in accordance with each group's respective bylaws.

The ongoing work of the regional water planning process consists of 10 tasks:

- describing the regional water planning area
- quantifying current and projected population and water demand over a 50-year planning horizon
- evaluating and quantifying current water supplies
- identifying surpluses and needs
- evaluating water management strategies and preparing plans to meet the needs
- evaluating impacts of water management strategies on water quality
- describing how the plan is consistent with long-term protection of the state's water, agricultural, and natural resources
- recommending regulatory, administrative, and legislative changes
- describing how sponsors of water management strategies will finance projects
- adopting the plan, including the required level of public participation

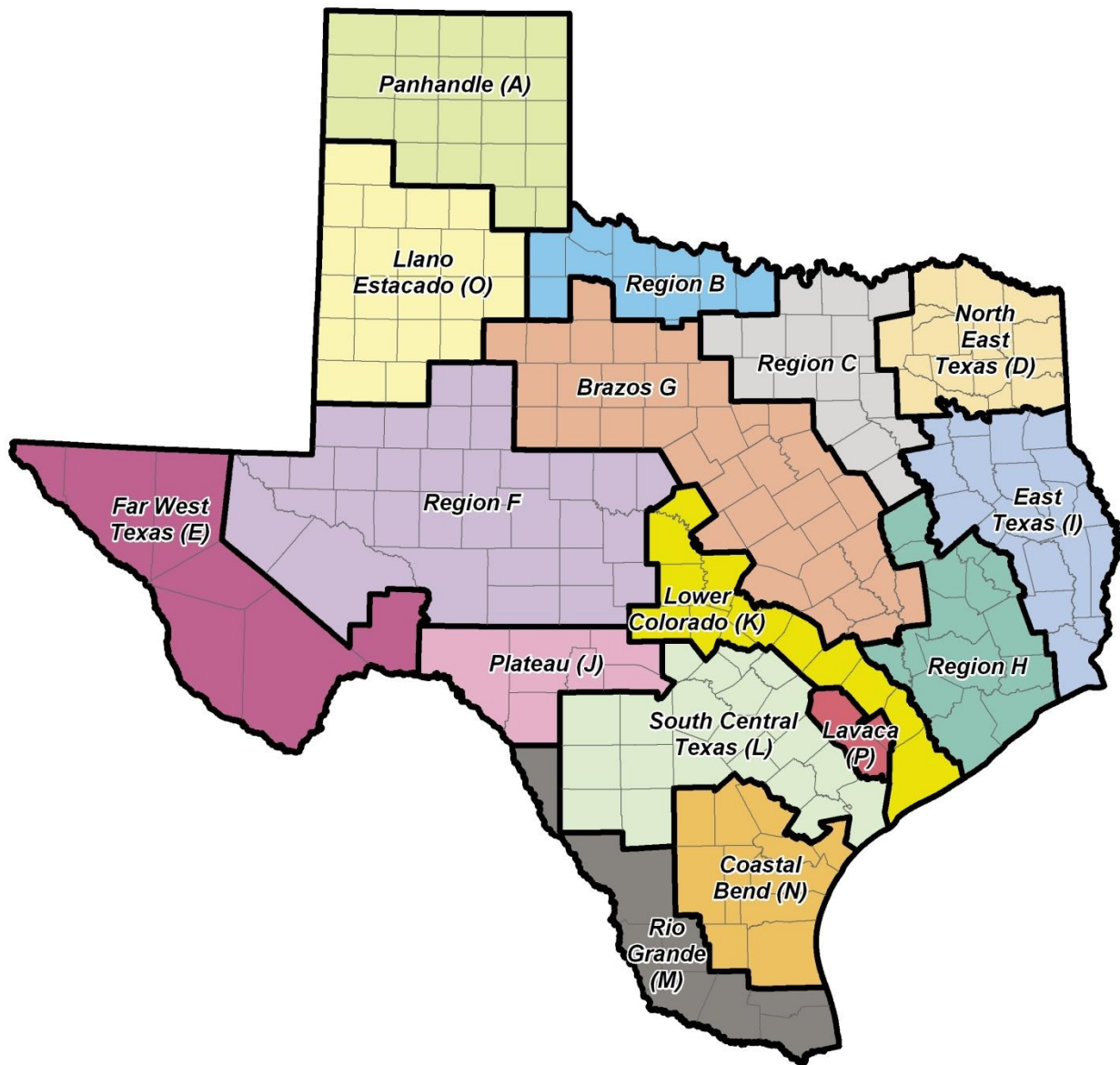


Figure 1.1 - The 16 Regional Water Planning Areas

Evaluation and Selection of Water Management Strategies

A key goal of regional water planning is to evaluate and recommend water management strategies to meet water supply needs under drought conditions. A recommended water management strategy is a specific plan to increase water supply, maximize the efficient use of existing supply, or reduce demands to address a specific water need. Water management strategies include water conservation and drought management; development of new groundwater and surface water supplies; improved management of existing water supplies, renewal of contracts for existing supplies, improving reservoir operations, reallocating reservoir storage, using groundwater and surface water conjunctively, and conveying water from one area to another; water reuse; and innovative approaches such as desalination of seawater and brackish groundwater, and brush control.

After receiving public input, each of the 16 planning groups identified potentially feasible water management strategies for detailed analyses. As a result of their analyses, planning groups recommended a portfolio of water management strategies tailored to meet each region's water supply needs. Some strategies were carried forward from the prior planning cycle and reassessed due to changing conditions or new information. Other water management strategies considered by planning groups introduced new approaches to meeting water supply needs.

Plan Adoption and Approval

Once the planning group adopts its regional water plan, the plan is sent to the TWDB for approval. The TWDB then compiles information from the approved regional water plans and other sources to develop the state water plan. The 2011 Regional Water Plans summarize the dedicated efforts of over 400 planning group members, numerous technical experts, the public, and several state agencies (the TWDB, Texas Parks and Wildlife Department, Texas Department of Agriculture, and Texas Commission on Environmental Quality).

2.0 HIGHLIGHTS OF THE 2011 REGIONAL WATER PLANS

Population Projections

The population in Texas is expected to nearly double between the years 2010 and 2060, growing from 25,388,403 to 46,323,725. The growth rates, however, will vary considerably across the state. While some planning areas will more than double their populations over the planning horizon others will grow only slightly (Table 2.1, Figure 2.1).

Table 2.1 – State Population

Region	2010	2020	2030	2040	2050	2060
A	388,104	423,380	453,354	484,954	516,729	541,035
B	210,642	218,918	223,251	224,165	223,215	221,734
C	6,670,493	7,971,728	9,171,650	10,399,038	11,645,686	13,045,592
D	772,163	843,027	908,748	978,298	1,073,570	1,213,095
E	863,190	1,032,970	1,175,743	1,298,436	1,420,877	1,542,824
F	618,889	656,480	682,132	700,806	714,045	724,094
G	1,957,767	2,278,243	2,576,783	2,873,382	3,164,776	3,448,879
H	6,020,078	6,995,442	7,986,480	8,998,002	10,132,237	11,346,082
I	1,090,382	1,166,057	1,232,138	1,294,976	1,377,760	1,482,448
J	135,723	158,645	178,342	190,551	198,594	205,910
K	1,412,834	1,714,282	2,008,142	2,295,627	2,580,533	2,831,937
L	2,460,599	2,892,933	3,292,970	3,644,661	3,984,258	4,297,786
M	1,628,278	2,030,994	2,470,814	2,936,748	3,433,188	3,935,223
N	617,143	693,940	758,427	810,650	853,964	885,665
O	492,627	521,930	540,908	552,188	553,691	551,758
P	49,491	51,419	52,138	51,940	51,044	49,663
Total	25,388,403	29,650,388	33,712,020	37,734,422	41,924,167	46,323,725

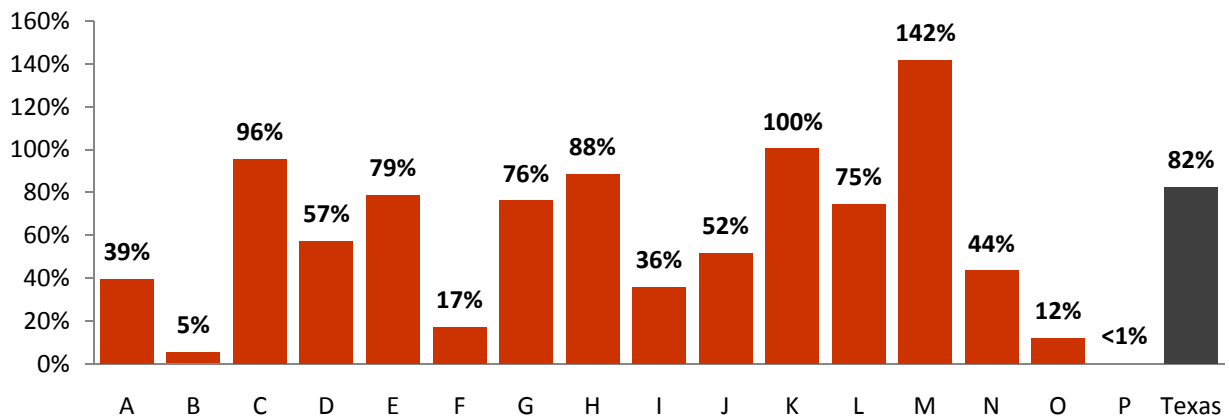


Figure 2.1 – Percent Growth in Population 2010-2060

Water Demand Projections

Although the population is projected to nearly double over 50 years, water demand in Texas is projected to increase by only 22 percent, from approximately 18 million acre-feet/year of water in 2010 to a projected demand of about 22 million acre-feet/year in 2060. This smaller increase is primarily due to declining demand for agricultural irrigation water and increased emphasis on municipal water conservation (Table 2.2, Figure 2.2).

Table 2.2 – Projected Water Demands (acre-feet/year)

Region	2010	2020	2030	2040	2050	2060
A	1,628,344	1,526,943	1,498,555	1,441,072	1,315,820	1,199,644
B	171,164	171,806	174,361	171,958	169,419	169,153
C	1,761,352	2,078,743	2,377,737	2,655,101	2,942,320	3,272,460
D	561,076	605,527	653,207	704,086	760,410	838,977
E	648,126	665,084	677,668	681,137	689,787	699,586
F	803,376	807,802	809,655	810,490	812,112	814,991
G	870,180	979,223	1,058,290	1,110,070	1,181,452	1,248,514
H	2,376,414	2,600,348	2,815,482	3,035,445	3,276,501	3,524,666
I	730,911	1,083,549	1,277,417	1,340,598	1,411,268	1,490,596
J	51,928	54,407	56,345	57,332	58,068	58,643
K	1,086,692	1,180,160	1,231,018	1,315,609	1,359,261	1,382,534
L	981,370	1,091,573	1,145,898	1,192,457	1,240,200	1,291,567
M	1,482,932	1,466,938	1,437,076	1,512,792	1,595,338	1,681,920
N	232,503	257,942	274,806	291,240	307,234	324,938
O	4,394,418	4,238,925	4,103,634	3,968,576	3,841,484	3,724,155
P	229,813	229,984	230,003	229,923	229,853	229,854
Total	18,010,599	19,038,954	19,821,152	20,517,886	21,190,527	21,952,198

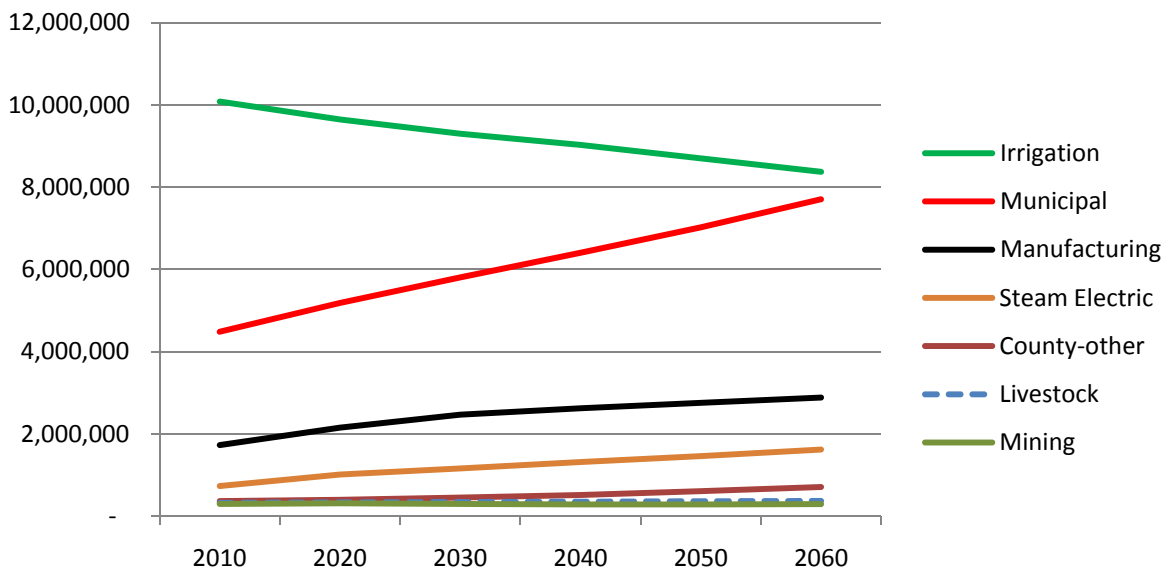


Figure 2.2 – Projected Water Demands (acre-feet/year)

Existing Water Supplies

Existing water supplies—the amount of water that is legally and physically available based on existing water right permits, contracts, firm yield, and infrastructure during drought—are projected to decrease about 10 percent, from approximately 17 million acre-feet in 2010 to about 15.3 million acre-feet in 2060. This decrease is due primarily to accumulation of sediment in reservoirs; the depletion of the Ogallala Aquifer; and decreased groundwater availability, for example, mandatory reductions due to regulations associated with Gulf Coast Aquifer subsidence (Table 2.3, Figure 2.3).

Table 2.3 – Existing Water Supplies (acre-feet/year)

Region	2010	2020	2030	2040	2050	2060
A	1,196,916	1,094,863	1,029,767	957,773	872,582	799,058
B	173,965	169,678	165,422	161,134	156,880	152,582
C	1,789,897	1,760,241	1,754,727	1,758,685	1,750,357	1,734,823
D	999,745	1,004,127	1,005,860	1,006,957	1,016,302	1,036,488
E	514,593	514,593	514,593	514,593	514,593	514,593
F	641,304	637,073	637,180	632,869	632,223	631,535
G	1,163,224	1,159,631	1,163,506	1,153,727	1,146,527	1,146,400
H	2,621,660	2,540,446	2,524,982	2,573,538	2,607,089	2,605,917
I	900,264	1,177,716	1,360,070	1,387,636	1,408,409	1,434,729
J	104,708	104,708	104,708	104,708	104,708	104,708
K	1,162,884	1,162,957	1,164,773	1,166,295	1,168,813	1,169,071
L	1,034,803	1,034,065	1,028,324	1,023,508	1,022,510	1,021,937
M	1,114,576	1,111,507	1,107,937	1,102,455	1,095,882	1,089,836
N	244,446	250,029	254,100	255,994	256,231	256,438
O	3,156,072	2,523,443	2,035,875	1,647,310	1,482,838	1,408,272
P	164,148	164,148	164,148	164,148	164,148	164,148
Total	16,983,205	16,409,225	16,015,972	15,611,330	15,400,092	15,270,535

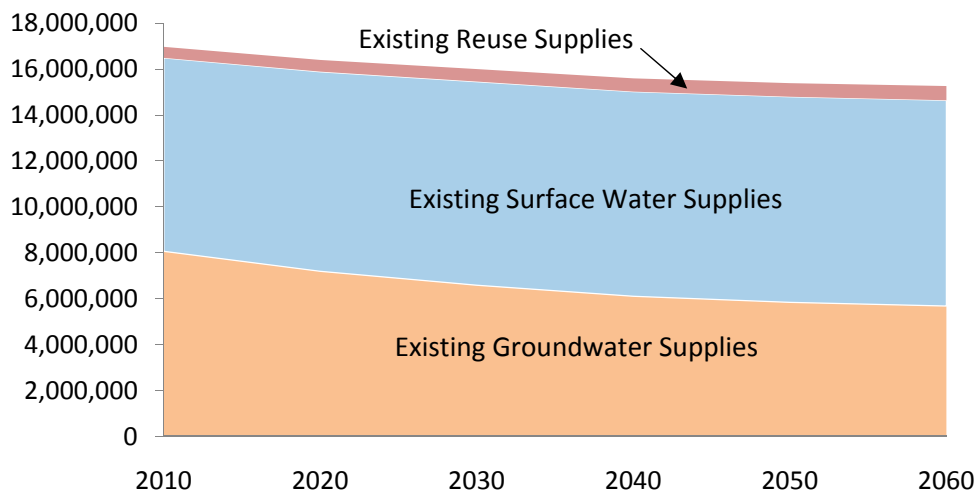


Figure 2.3 – Existing Water Supplies (acre-feet/year)

Identified Water Needs

If Texas went into a repeat of the drought of record, the state would face an immediate need for additional water supplies of 3.6 million acre-feet/year with approximately 8% of that need associated directly with municipal water users (Table 2.4, Figure 2.4). These identified needs are then projected to increase by an additional 130% between 2010 and 2060 to 8.3 million acre-feet/year (Table 2.4, Figure 2.4 and Figure 2.5). Municipal water needs grow 10-fold over the planning horizon, far exceeding the changes in all other water user categories.

Table 2.4 – Identified Water Needs by Region (acre-feet/year)

Region	2010	2020	2030	2040	2050	2060
A	454,876	454,118	487,316	501,830	462,230	418,414
B	23,559	28,347	34,074	35,802	37,485	40,397
C	69,087	399,917	686,836	953,949	1,244,618	1,588,236
D	10,252	14,724	18,696	31,954	60,005	96,142
E	209,591	213,091	215,624	210,794	216,113	226,569
F	191,057	200,868	204,186	211,018	214,792	219,995
G	131,489	196,761	228,978	272,584	334,773	390,732
H	290,890	524,137	698,776	833,518	1,004,872	1,236,335
I	28,856	83,032	83,153	106,900	141,866	182,145
J	1,494	1,878	2,044	2,057	2,275	2,389
K	255,709	303,240	294,534	309,813	340,898	367,671
L	174,235	265,567	308,444	350,063	390,297	436,751
M	435,922	401,858	362,249	434,329	519,622	609,906
N	3,404	14,084	27,102	41,949	57,994	75,744
O	1,275,057	1,750,409	2,107,876	2,364,996	2,405,010	2,366,036
P	67,739	67,739	67,739	67,739	67,739	67,739
Total	3,623,217	4,919,770	5,827,627	6,729,295	7,500,589	8,325,201

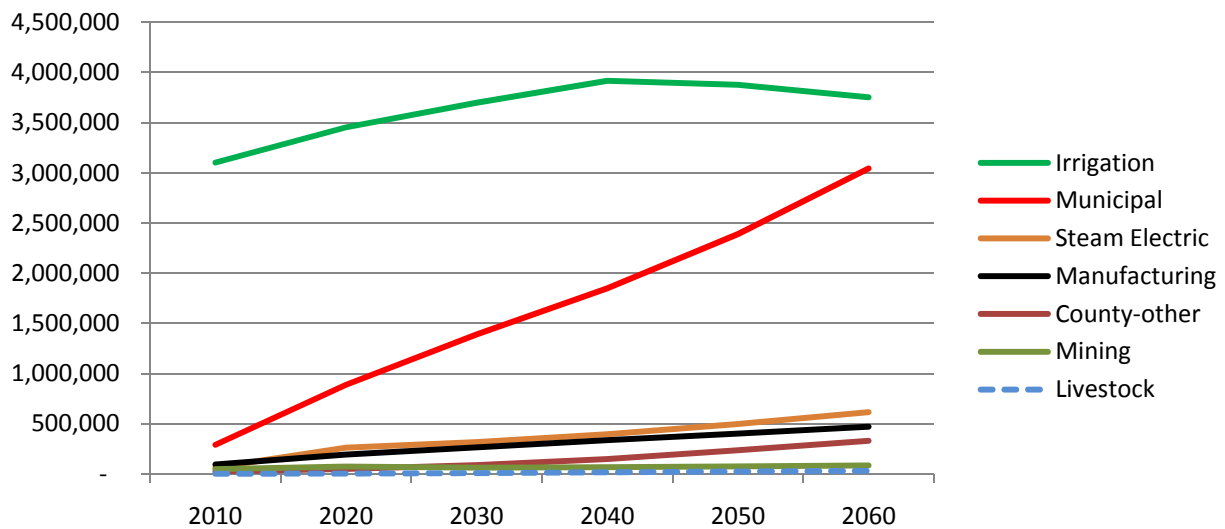


Figure 2.4 – Projected Water Needs by User Category (acre-feet/year)

Although, in some regions there appears to be sufficient existing water supplies region-wide to meet drought of record demands in the early planning decades, local existing water supplies are not available to all users throughout the region, and therefore water needs were identified as a result of this geographic mismatch of existing supply and anticipated shortage (Figure 2.5).

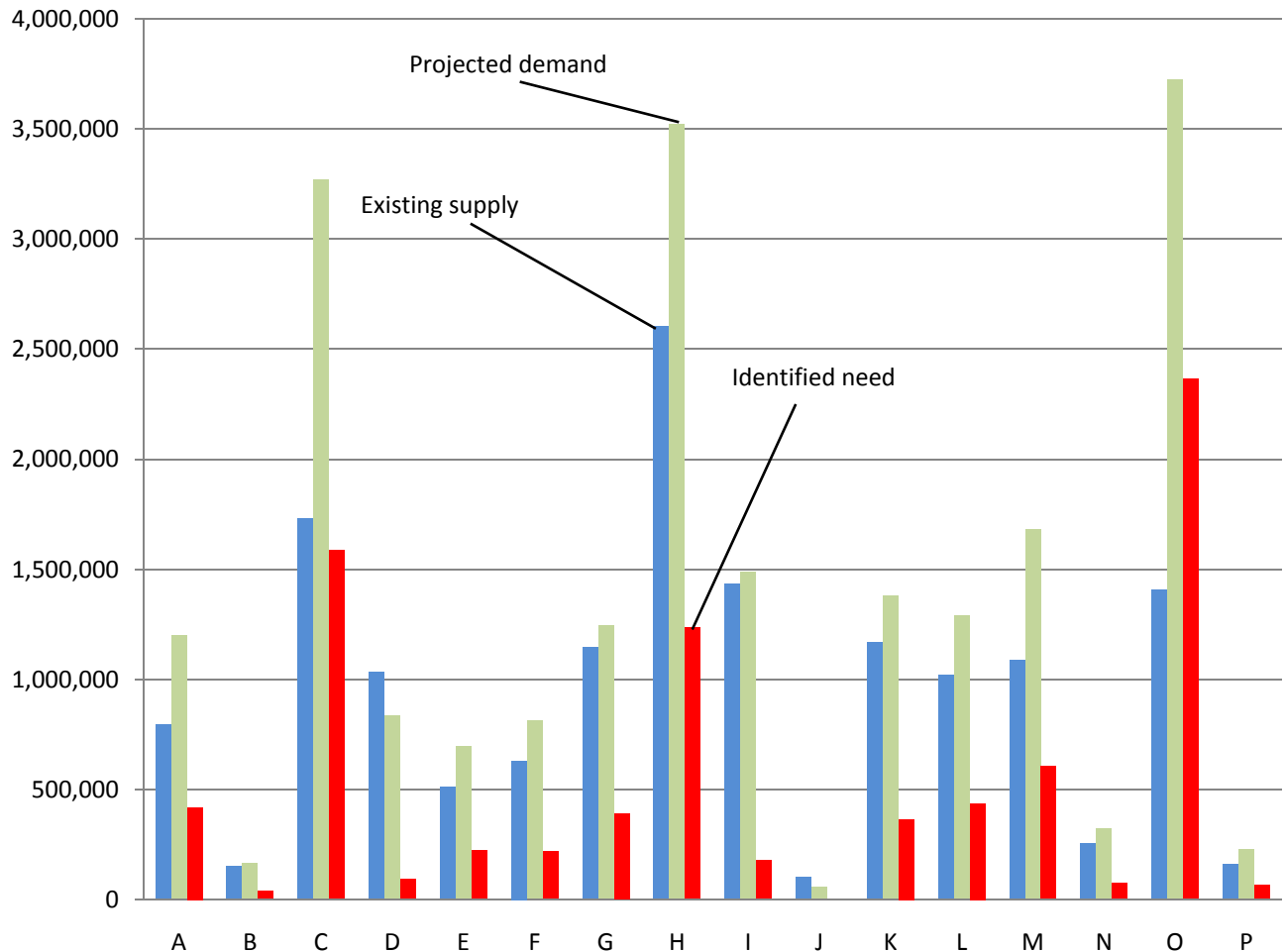


Figure 2.5 – 2060 Existing Water Supplies, Projected Demands, and Needs – by Region (acre-feet/year)

Recommended Water Management Strategies

Regional water planning groups evaluated and recommended water management strategies to meet the identified water needs that, if implemented, would account for an additional 9.0 million acre-feet/year in additional water supplies by 2060 (Table 2.5) at a capital cost of \$53 billion (Table 2.6).

In Figure 2.6, the quantity of each region’s recommended water management strategies is shown in addition to the region’s existing water supplies. Care should be taken not to interpret this total as total water availability, as water management strategies include demand reductions through conservation as well as some redistribution of existing supplies. Table 2.7 shows a simple accounting of total capital cost

in relation to total water management supplies in 2060, showing an effective unit capacity cost of implemented water management strategies.

Some regions recommended water management strategies that would provide more water than there were identified needs to address uncertainties, for example, regarding: implementation of projects; population and water demand projections; and climate change (Figure 2.7).

Table 2.5 – Recommended Water Management Strategy Supply Volumes (acre-feet/year)

Region	2010	2020	2030	2040	2050	2060
A	2,718	332,468	545,207	617,843	631,629	648,221
B	15,373	40,312	40,289	49,294	76,252	77,003
C	79,898	674,664	1,131,057	1,303,003	2,045,260	2,360,302
D	11,330	16,160	20,180	33,977	62,092	98,466
E	3,376	66,225	79,866	98,816	112,382	130,526
F	90,944	157,243	218,705	236,087	235,400	235,198
G	137,858	405,581	436,895	496,528	562,803	587,084
H	378,759	622,426	863,980	1,040,504	1,202,010	1,501,180
I	53,418	363,106	399,517	427,199	607,272	638,076
J	13,713	16,501	20,360	20,862	20,888	23,010
K	350,583	576,795	554,504	571,085	565,296	646,167
L	188,297	376,003	542,606	571,553	631,476	765,738
M	90,934	182,911	275,692	389,319	526,225	673,846
N	46,954	81,020	130,539	130,017	133,430	156,326
O	517,459	503,886	504,643	464,588	429,136	395,957
P	67,739	67,739	67,739	67,740	67,739	67,739
Total	2,049,353	4,483,040	5,831,779	6,518,415	7,909,290	9,004,839

Table 2.6 – Recommended Water Management Strategy Capital Costs (millions \$)

Region	2010	2020	2030	2040	2050	2060	TOTAL
A	\$187	\$129	\$137	\$287	\$0	\$0	\$739
B	\$110	\$0	\$0	\$7	\$383	\$0	\$499
C	\$9,922	\$3,976	\$3,891	\$928	\$17	\$2,747	\$21,482
D	\$39	\$0	\$0	\$0	\$0	\$0	\$39
E	\$0	\$382	\$0	\$246	\$214	\$0	\$842
F	\$231	\$439	\$245	\$0	\$0	\$0	\$915
G	\$2,064	\$745	\$94	\$273	\$10	\$0	\$3,186
H	\$4,710	\$4,922	\$287	\$1,135	\$458	\$506	\$12,019
I	\$363	\$350	\$79	\$80	\$0	\$12	\$885
J	\$11	\$44	\$0	\$0	\$0	\$0	\$55
K	\$663	\$67	\$4	\$169	\$0	\$4	\$907
L	\$1,022	\$2,973	\$2,321	\$2	\$12	\$1,294	\$7,623
M	\$2,070	\$124	\$0	\$0	\$0	\$0	\$2,195
N	\$45	\$113	\$360	\$0	\$0	\$139	\$656
O	\$669	\$273	\$167	\$0	\$0	\$0	\$1,108
P	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$22,105	\$14,537	\$7,585	\$3,127	\$1,095	\$4,702	\$53,150

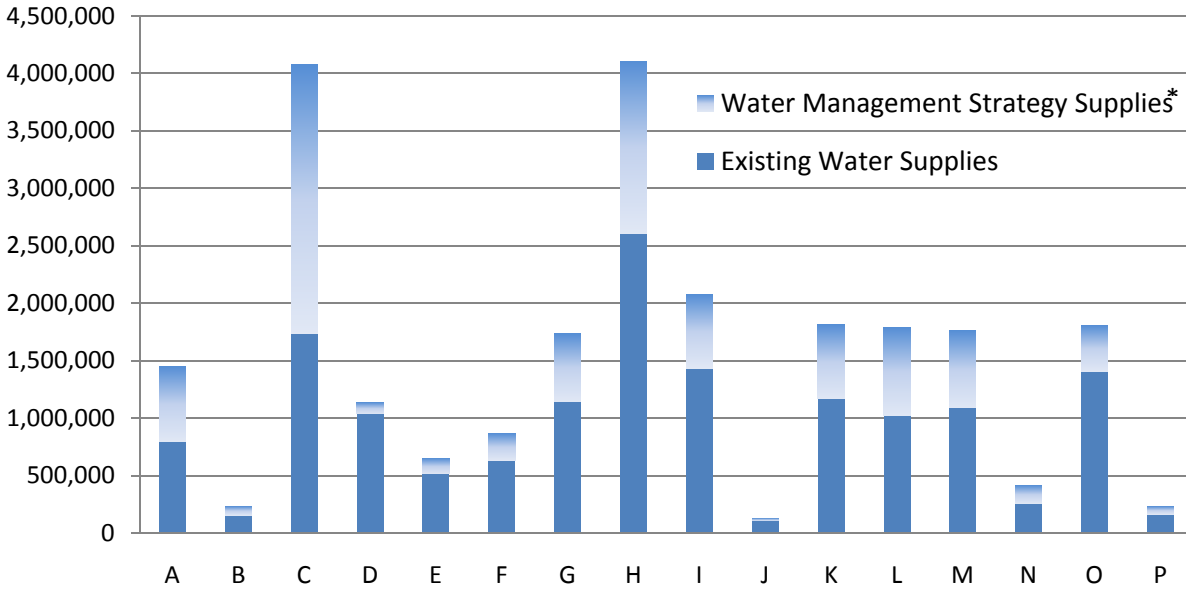


Figure 2.6 – Existing Supplies and Recommended Water Management Strategy Supplies (acre-foot/year) *Note that some strategies include demand reduction or shifts of existing supplies to other users.

Table 2.7 – Average Unit Capacity Cost of Recommended Strategies*

Region	2060 Strategy Supplies (acre-foot/year)	Total Capital Costs	Average Unit Capacity Cost - (Total Capital Cost/Total WMS Yields)*
A	648,221	\$739,043,420	\$1,140
B	77,003	\$499,168,169	\$6,482
C	2,360,302	\$21,481,952,189	\$9,101
D	98,466	\$38,508,104	\$391
E	130,526	\$842,099,633	\$6,452
F	235,198	\$914,554,558	\$3,888
G	587,084	\$3,186,357,303	\$5,427
H	1,501,180	\$12,019,061,335	\$8,006
I	638,076	\$884,829,743	\$1,387
J	23,010	\$54,792,390	\$2,381
K	646,167	\$907,239,116	\$1,404
L	765,738	\$7,622,886,271	\$9,955
M	673,846	\$2,194,663,908	\$3,257
N	156,326	\$656,110,917	\$4,197
O	395,957	\$1,108,391,955	\$2,799
P	67,739	\$0	\$0

*This region-wide average is not equivalent to the unit cost of produced water. It is based on total capital costs and the associated built capacity (supply provided in a single year) of all recommended strategies and is highly variable based on underlying strategy types. Cost is not based on debt service, operation, and maintenance costs associated with annual water volumes.

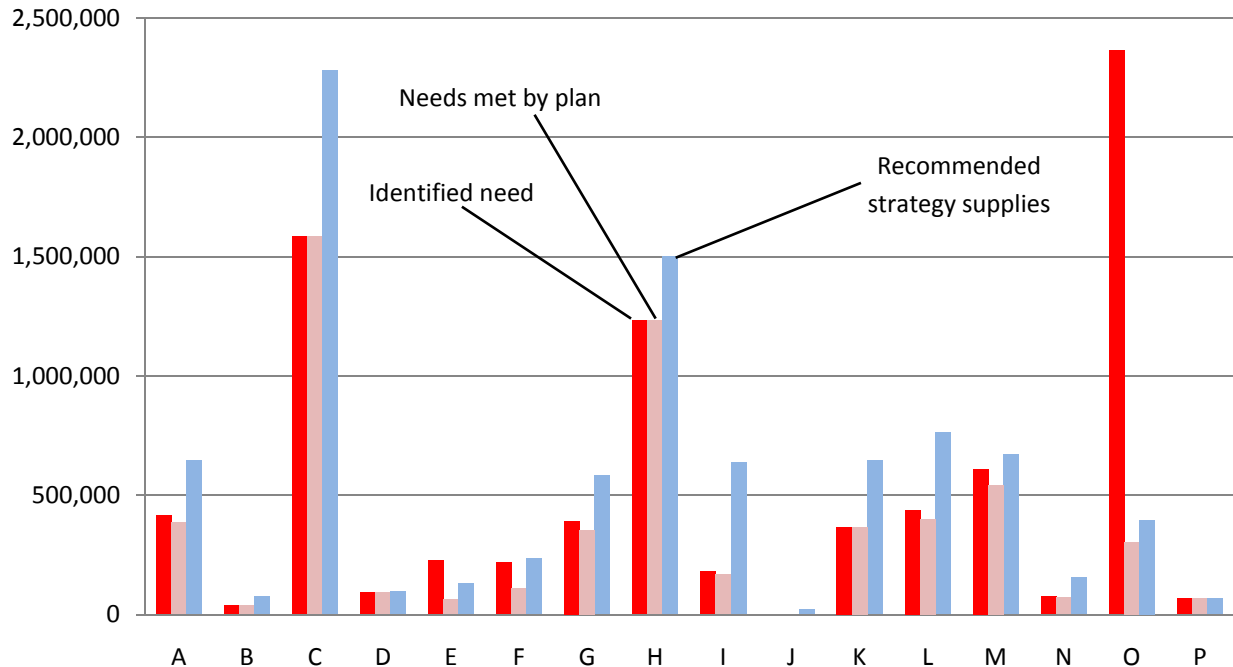


Figure 2.7 – 2060 Water Needs, Needs Met by Plans, and Strategy Supply – by Region (acre-feet/year)

In addition to increased surface water supplies and groundwater development, the recommended water management strategies include significant conservation savings, groundwater desalination, reuse, and seawater desalination (Table 2.8, Figure 2.8).

Table 2.8 – Recommended Water Management Strategy Supply Volumes (acre-feet/year)

	2010	2020	2030	2040	2050	2060
Municipal Conservation	137,847	264,885	353,620	436,632	538,997	647,361
Irrigation Conservation	624,151	1,125,494	1,351,175	1,415,814	1,463,846	1,505,465
Other Conservation	4,660	9,242	15,977	18,469	21,371	23,432
New Major Reservoir	19,672	432,291	918,391	948,355	1,230,573	1,499,671
Other Surface Water	742,447	1,510,997	1,815,624	2,031,532	2,700,690	3,050,049
Groundwater	254,057	443,614	599,151	668,690	738,484	800,795
Reuse	100,592	428,263	487,795	637,089	766,402	915,589
Groundwater Desalination	56,553	81,156	103,435	133,278	163,083	181,568
Conjunctive use	26,505	88,001	87,496	113,035	136,351	135,846
Aquifer Storage & Recovery	22,181	61,743	61,743	72,243	72,243	80,869
Weather Modification	-	15,206	15,206	15,206	15,206	15,206
Drought Management	41,701	461	461	461	461	1,912
Brush Control	18,862	18,862	18,862	18,862	18,862	18,862
Seawater Desalination	125	125	143	6,049	40,021	125,514
Surface Water Desalination	-	2,700	2,700	2,700	2,700	2,700
Total WMS Supply Volumes	2,049,353	4,483,040	5,831,779	6,518,415	7,909,290	9,004,839

Regional water planning groups recommended 26 major reservoirs, many of which are off-channel reservoirs (Figures 2.8 and 2.9). Conservation savings include municipal, irrigation and 'other' which includes mining, manufacturing, and power generation conservation.

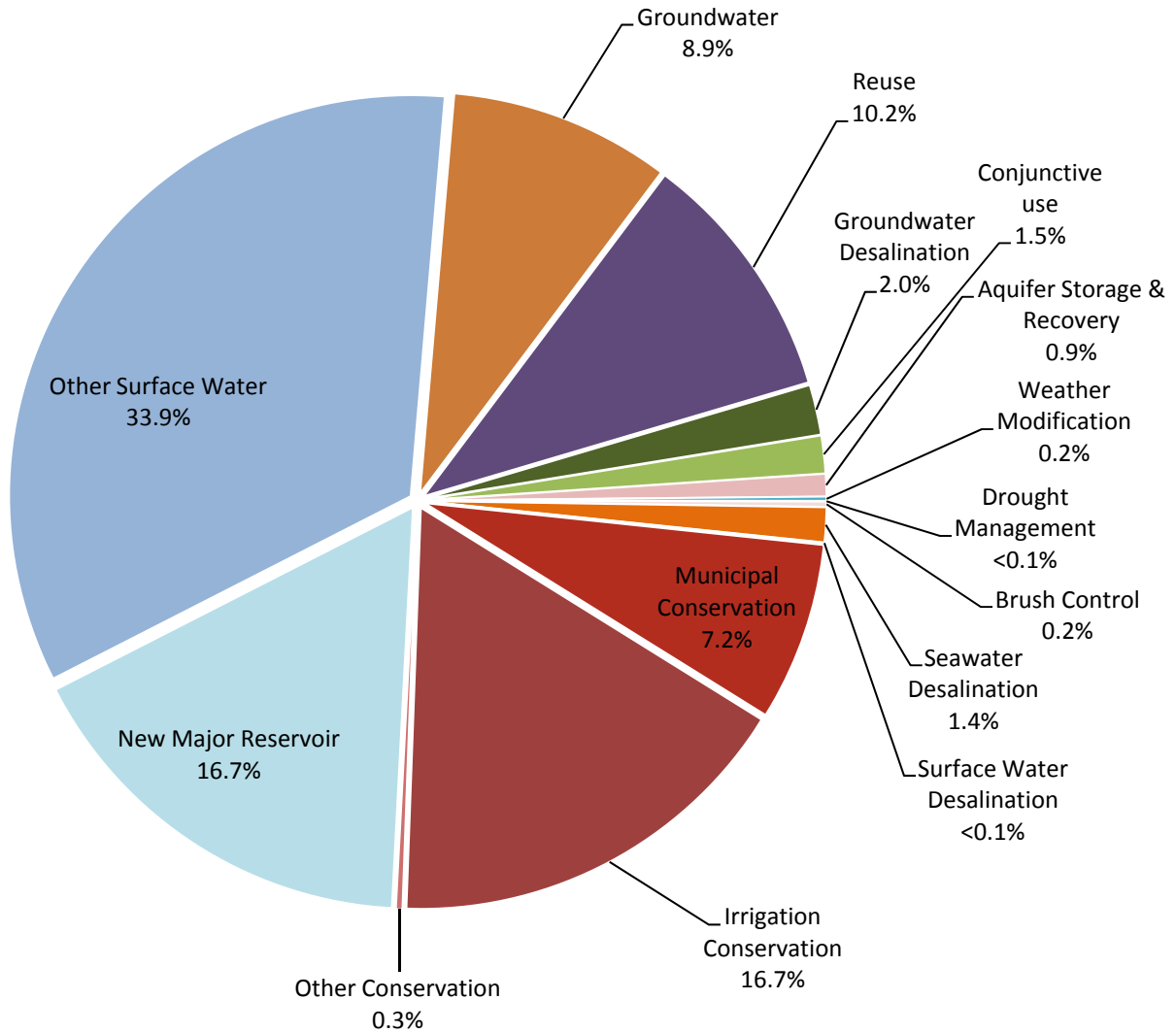


Figure 2.8 – 2060 Recommended Water Management Strategies - Relative Volumes

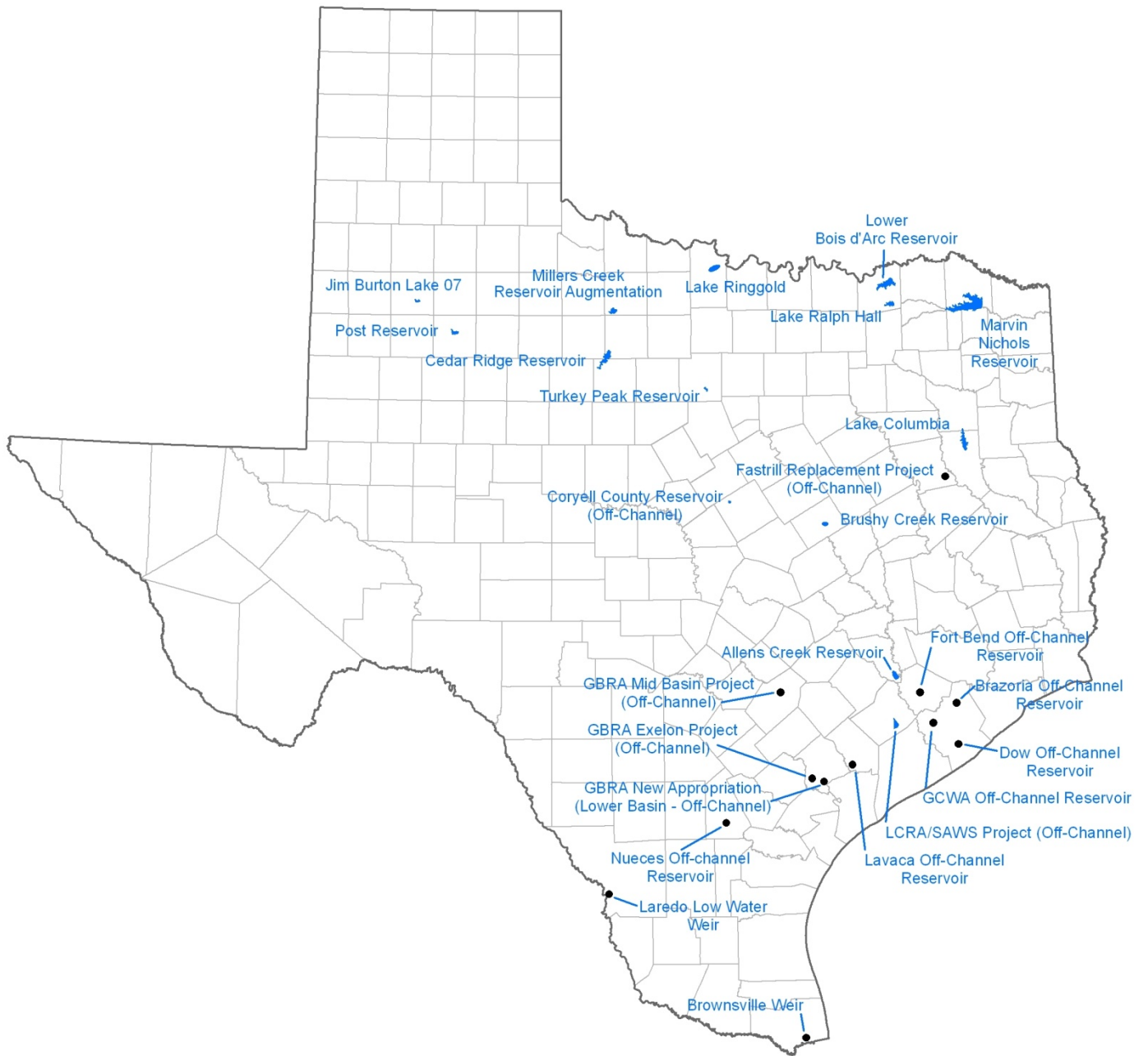


Figure 2.9 – Major Reservoirs Recommended in the 2011 Regional Water Plans

Unmet Needs

Some identified water needs could not be feasibly met by regional water planning groups because no water management strategy could be identified that could be implemented in those particular planning decades (Table 2.9).

Table 2.9 – Unmet Needs 2010-2060 (acre-feet/year)

Region	Water Use	2010	2020	2030	2040	2050	2060
A	Irrigation	(454,628)	(254,900)	(127,413)	(97,003)	(60,375)	(30,307)
B	Irrigation	(9,911)	-	-	-	-	-
C	Irrigation	(87)	-	-	-	-	-
D	Irrigation	(56)	-	(14)	(115)	(238)	(388)
E	Irrigation	(209,591)	(168,904)	(163,246)	(158,209)	(159,914)	(161,775)
F	Irrigation	(153,159)	(125,967)	(100,485)	(97,453)	(96,177)	(94,108)
F	Steam Electric	(1,219)	(3,969)	(5,512)	(7,441)	(10,608)	(14,935)
G	Irrigation	(49,973)	(45,234)	(40,664)	(38,358)	(36,113)	(33,932)
G	Mining	(1,800)	(2,001)	(2,116)	(2,281)	(2,446)	(2,567)
G	Municipal	(2,196)	-	-	-	-	-
G	Steam Electric	(36,086)	-	-	-	-	-
I	Mining	(7,772)	(8,620)	(9,191)	(9,760)	(10,333)	(10,772)
I	Steam Electric	(2,588)	-	-	-	-	-
L	Irrigation	(48,378)	(44,815)	(42,090)	(39,473)	(36,959)	(34,544)
M	Irrigation	(394,896)	(285,316)	(149,547)	(116,309)	(93,810)	(68,700)
N	Mining	(1,591)	(2,448)	(3,023)	(3,374)	(3,660)	(3,876)
O	Irrigation	(862,586)	(1,348,515)	(1,728,725)	(2,000,555)	(2,057,677)	(2,043,247)
O	Livestock	(1)	(763)	(3,191)	(9,506)	(14,708)	(17,574)
Total		(2,236,518)	(2,291,452)	(2,375,217)	(2,579,837)	(2,583,018)	(2,516,725)

The water demands, supplies, identified needs and recommended water management strategies for each region are presented in more detail in the regional plan summaries in the next chapter of this report.

Economic Impacts of Not Meeting Water Needs

If drought of record conditions were to recur and water management strategies identified in regional water plans are not implemented, planning areas could suffer significant economic losses (Table 2.10). Assuming such conditions took place statewide, models show that Texas businesses and workers could lose approximately \$11.9 billion in income in 2010. By 2060 lost income increases to roughly \$115.7 billion. Foregone state and local business taxes associated with lost commerce could amount to \$1.1 billion in 2010 and \$9.8 billion in 2060. Lost jobs total approximately 115,000 in 2010 and 1.1 million in 2060. By 2060, the state's projected population growth would be reduced by about 1.4 million people, with 403 thousand fewer students in Texas schools.

Table 2.10 Annual economic losses from not meeting water supply needs for 2010-2060 (monetary figures reported in millions of dollars)

	2010	2020	2030	2040	2050	2060
Region A						
Regional income (\$)	183	309	472	509	538	906
State and local business taxes (\$)	11	30	53	57	62	116
Number of full- and part-time jobs	2,970	3,417	4,067	4,459	4,806	4,879
Population Losses	3,693	4,234	4,670	5,548	6,338	6,864
Declines in school enrollment	1,042	1,201	1,237	1,025	1,171	1,270
Region B						
Regional income (\$)	5	5	5	5	5	6
State and local business taxes (\$)	0.3	0.3	0.3	0.3	0.3	0.4
Number of full- and part-time jobs	85	88	92	96	100	108
Population Losses	13	522	1,156	1,254	1,354	1,451
Declines in school enrollment	4	148	328	356	384	412
Region C						
Regional income (\$)	2,336	5,176	12,883	19,246	24,741	49,721
State and local business taxes (\$)	130	341	848	1,288	1,672	3,060
Number of full- and part-time jobs	23,808	52,165	131,257	206,836	270,935	546,676
Population Losses	33,019	74,375	190,664	301,075	394,560	796,606
Declines in school enrollment	10,348	24,340	64,415	102,345	134,283	271,468
Region D						
Regional income (\$)	357	515	620	871	1,341	1,960
State and local business taxes (\$)	51	73	88	123	189	267
Number of full- and part-time jobs	1,224	1,780	2,150	2,998	4,639	6,784
Population Losses	1,472	2,144	2,590	3,611	5,588	8,171
Declines in school enrollment	415	608	735	1,024	1,585	2,318
Region E						
Regional income (\$)	41	749	1,212	1,690	2,144	2,810
State and local business taxes (\$)	2	51	78	107	137	179
Number of full- and part-time jobs	340	2,447	3,944	5,669	7,380	9,843
Population Losses	409	2,947	4,745	6,787	8,814	11,750
Declines in school enrollment	115	836	1,257	1,254	1,628	2,173

Region F						
Regional income (\$)	1,444	1,715	2,195	2,729	3,061	3,470
State and local business taxes (\$)	145	176	236	288	330	380
Number of full- and part-time jobs	19,225	21,784	26,293	34,853	37,661	40,877
Population Losses	25,050	26,239	31,670	41,980	45,362	49,236
Declines in school enrollment	7,065	7,444	8,389	7,759	8,378	9,106
Region G						
Regional income (\$)	1,890	4,375	5,621	6,297	7,183	8,204
State and local business taxes (\$)	214	530	693	778	893	1,027
Number of full- and part-time jobs	14,699	33,660	39,733	48,896	58,432	73,117
Population Losses	15,801	35,645	41,465	51,910	61,309	71,604
Declines in school enrollment	4,457	10,112	11,764	14,727	17,393	20,314
Region H						
Regional income (\$)	3,195	5,189	10,012	12,910	15,759	18,637
State and local business taxes (\$)	326	536	1,024	1,375	1,689	2,036
Number of full- and part-time jobs	20,176	37,849	82,478	100,622	126,412	149,380
Population Losses	24,433	45,514	99,071	122,686	152,028	175,839
Declines in school enrollment	6,891	12,913	26,242	22,674	28,078	32,522
Region I						
Regional income (\$)	1,264	3,279	2,087	3,609	5,027	5,957
State and local business taxes (\$)	116	334	213	358	528	627
Number of full- and part-time jobs	8,739	20,661	11,018	16,886	24,091	28,872
Population Losses	10,511	24,754	13,269	20,337	29,015	34,773
Declines in school enrollment	2,965	7,023	3,764	5,770	8,232	9,865
Region J						
Regional income (\$)	2	2	2	2	2	2
State and local business taxes (\$)	0.3	0.3	0.2	0.2	0.2	0.2
Number of full- and part-time jobs	63	63	61	59	60	61
Population Losses	80	80	80	80	80	80
Declines in school enrollment	20	20	20	20	20	20
Region K						
Regional income (\$)	138	1,326	1,396	2,246	2,407	2,933
State and local business taxes (\$)	15	179	186	305	326	393
Number of full- and part-time jobs	1,989	8,447	9,860	14,651	16,273	21,576
Population Losses	2,393	10,174	11,876	17,647	19,601	25,988
Declines in school enrollment	675	2,886	3,146	3,261	3,620	4,807
Region L						
Regional income (\$)	299	5,279	5,943	7,034	8,192	8,944
State and local business taxes (\$)	39	564	668	775	885	965
Number of full- and part-time jobs	10,128	19,948	39,716	53,848	67,085	78,736
Population Losses	12,886	43,823	58,402	74,857	86,896	54,411
Declines in school enrollment	3,635	12,433	15,470	13,835	16,049	10,064
Region M						
Regional income (\$)	324	325	382	909	1,568	2,935
State and local business taxes (\$)	27	34	43	104	179	337
Number of full- and part-time jobs	5,081	5,609	6,664	17,658	32,124	62,574
Population Losses	6,112	6,756	8,027	21,269	38,597	75,252
Declines in school enrollment	1,724	1,917	2,277	6,034	10,950	21,349

Region N						
Regional income (\$)	56	427	1,612	2,484	5,999	7,796
State and local business taxes (\$)	3	22	74	123	274	352
Number of full- and part-time jobs	430	3,125	11,275	16,375	42,420	55,025
Population Losses	520	3,770	13,590	19,730	51,100	66,280
Declines in school enrollment	130	890	2,990	3,030	7,840	10,180
Region O						
Regional income (\$)	356	714	949	1,214	1,415	1,437
State and local business taxes (\$)	18	38	53	71	83	86
Number of full- and part-time jobs	5,546	10,843	14,760	19,532	23,761	23,966
Population Losses	7,160	13,910	18,670	24,590	29,830	30,030
Declines in school enrollment	1,680	3,270	4,380	5,770	7,000	7,040
Region P						
Regional income (\$)	16	16	16	16	16	16
State and local business taxes (\$)	2	2	2	2	2	2
Number of full- and part-time jobs	215	215	215	215	215	215
Population Losses	258	259	259	259	259	259
Declines in school enrollment	73	73	73	73	73	73
Total						
Regional income (\$)	11,905	29,400	45,409	61,771	79,398	115,734
State and local business taxes (\$)	1,100	2,909	4,261	5,755	7,249	9,828
Number of full- and part-time jobs	114,718	222,101	383,583	543,653	716,394	1,102,689
Population Losses	143,810	295,146	500,204	713,620	930,731	1,408,594
Declines in school enrollment	41,239	86,114	146,487	188,957	246,684	402,981

Funding Assistance Needed

TWDB and regional water planning groups evaluated the amount of funding needed from state financial assistance programs to support local and regional water providers in implementing water management strategies recommended in the regional water plans to meet municipal needs (Table 2.11). For the 2011 regional water plans, planning groups solicited information from 686 water providers including municipalities to determine if they need financial assistance from the state help implement water management strategies.

Table 2.11 – 2060 Existing Supplies, Projected Demands, Identified Needs, Water Management Strategy (WMSs) Supplies (acre-feet/year), WMSs Capital Cost, and Reported Financial Assistance Needed

	Water Supplies	Water Demands	Water Needs	WMS Supplies	WMS Capital Cost (millions \$)	Financial Assistance Needed (millions \$)
A	799,058	1,199,644	418,414	648,221	\$739	\$624
B	152,582	169,153	40,397	77,003	\$499	\$384
C	1,734,823	3,272,460	1,588,236	2,360,302	\$21,482	\$11,743
D	1,036,488	838,977	96,142	98,466	\$39	\$5
E	514,593	699,586	226,569	130,526	\$842	\$500
F	631,535	814,991	219,995	235,198	\$915	\$593
G	1,146,400	1,248,514	390,732	587,084	\$3,186	\$1,153
H	2,605,917	3,524,666	1,236,335	1,501,180	\$12,019	\$7,142
I	1,434,729	1,490,596	182,145	638,076	\$885	\$500
J	104,708	58,643	2,389	23,010	\$55	\$20
K	1,169,071	1,382,534	367,671	646,167	\$907	\$154
L	1,021,937	1,291,567	436,751	765,738	\$7,623	\$3,517
M	1,089,836	1,681,920	609,906	673,846	\$2,195	\$445
N	256,438	324,938	75,744	156,326	\$656	\$0
O	1,408,272	3,724,155	2,366,036	395,957	\$1,108	\$78
P	164,148	229,854	67,739	67,739	\$0	\$0
Total	15,270,535	21,952,198	8,325,201	9,004,839	\$53,150	\$26,857

- Of the 694 entities surveyed, 269 responded (39 percent, representing over 92 percent of the total capital cost of recommended municipal water management strategies) and reported an anticipated need of \$26.9 billion in loans from TWDB financial assistance programs which provide interest rate savings; payment deferrals; or interest rate subsidies. This amount represents about 58 percent of total capital costs for water supply management strategies recommended for municipal water user groups in the 2011 regional water plans (Table 2.11).
- Of the total reported needs for state financial assistance, nearly \$15.7 billion is expected to occur between the years 2010 and 2020, \$4.2 billion will occur between 2020 and 2030 and \$4.1 billion between 2030 and 2040 (Figure 2.10).

- Survey respondents stated that over \$20 billion (75 percent) of requested funds would target site acquisition and construction activities and \$3.3 billion (12 percent) would finance project permitting, planning, and design activities. Of the \$26.9 billion total, survey respondents identified approximately \$0.4 billion for projects in rural and economically distressed areas of the state.

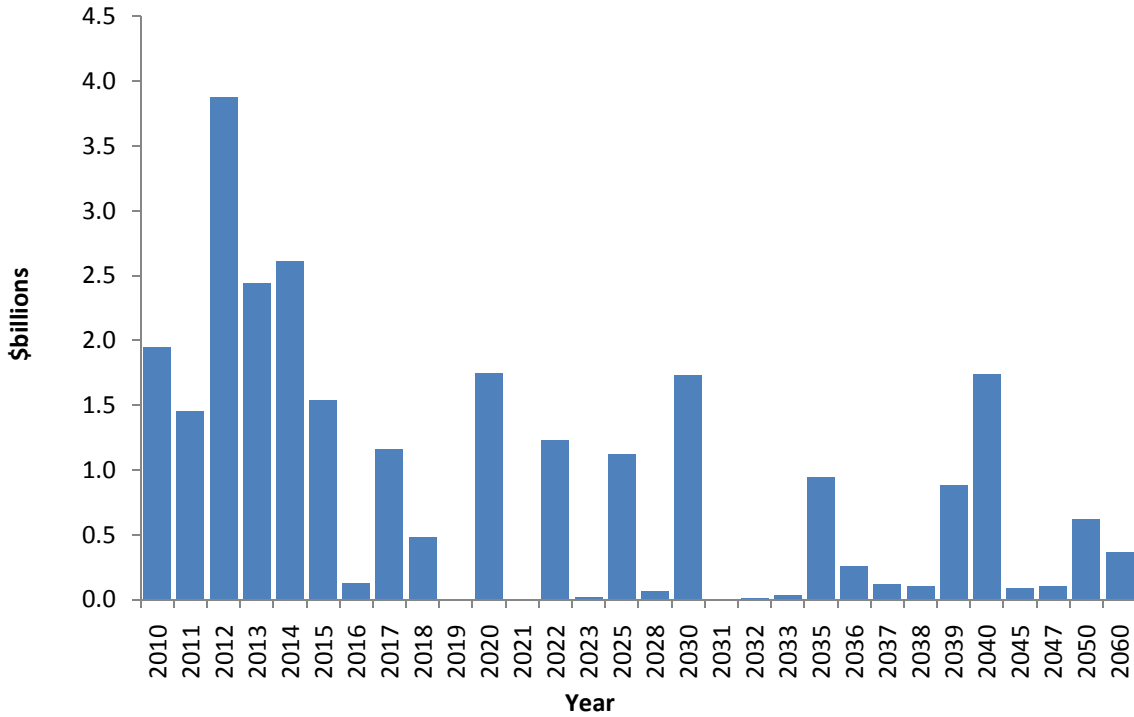


Figure 2.10 – Demand for TWDB Financial Assistance Programs Reported by Sponsors of 2011 Regional Water Plan Projects by Year of Anticipated Need (\$ billions)

SUMMARY OF PANHANDLE (A) REGION

Located in the northern Panhandle, the Panhandle Regional Water Planning Area includes 21 counties split between portions of the Canadian and Red River basins (Figure A.1). Groundwater currently provides approximately 90 percent of the existing water supplies in the region, with the Ogallala aquifer alone providing 88 percent of the region's supply. Surface water supplies are associated primarily with Lake Meredith and Greenbelt Lake.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 – 418,414 acre-feet/year
- Recommended water strategy volume in 2060 – 648,221 acre-feet/year
- Total capital cost \$739 million
- Conservation accounts for 86% of 2060 strategy volumes
- Conservation primarily associated with irrigation
- Significant groundwater development
- Significant unmet irrigation needs in near-term

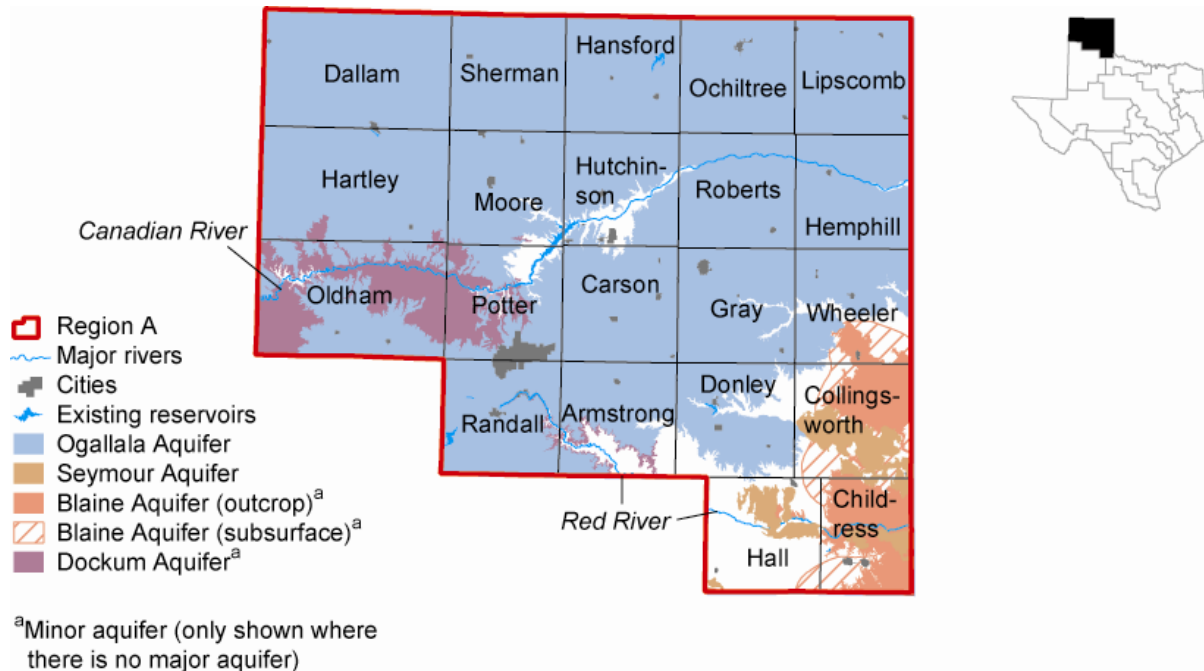


Figure A.1 - Panhandle Region

Almost two percent of the state's 2010 total population is projected to reside in Region A, and between 2010 and 2060 its population is projected to increase by 39 percent to 541,035.

Table A.1 - Population, Water Supply, Demand, and Needs 2010-2060

Year		2010	2020	2030	2040	2050	2060
Population Projections		388,104	423,380	453,354	484,954	516,729	541,035
Existing Supplies	Surface Water	40,636	47,381	47,348	47,284	47,189	47,043
	Groundwater	1,131,151	1,018,554	951,799	877,961	790,795	714,438
	Reuse	25,129	28,928	30,620	32,528	34,598	37,577
	Total Water Supply	1,196,916	1,094,863	1,029,767	957,773	872,582	799,058
Demands	Municipal	68,137	72,793	76,638	80,648	84,614	87,658
	County-other	9,468	11,097	12,550	14,035	15,516	16,584
	Manufacturing	43,930	47,275	49,998	52,612	54,860	58,231
	Mining	14,012	14,065	13,218	11,696	10,495	9,542
	Irrigation	1,429,990	1,311,372	1,271,548	1,203,332	1,066,736	936,929
	Steam Electric	25,139	26,996	29,116	30,907	33,163	37,415
	Livestock	37,668	43,345	45,487	47,842	50,436	53,285
	Total Water Demands	1,628,344	1,526,943	1,498,555	1,441,072	1,315,820	1,199,644
Needs	Municipal	-	967	7,354	13,968	20,492	25,712
	County-other	-	108	1,190	2,663	4,235	5,502
	Manufacturing	173	800	1,317	2,845	4,212	5,866
	Irrigation	454,628	452,144	477,338	482,226	433,155	381,180
	Steam Electric	75	99	117	128	136	154
	Total Water Needs	454,876	454,118	487,316	501,830	462,230	418,414

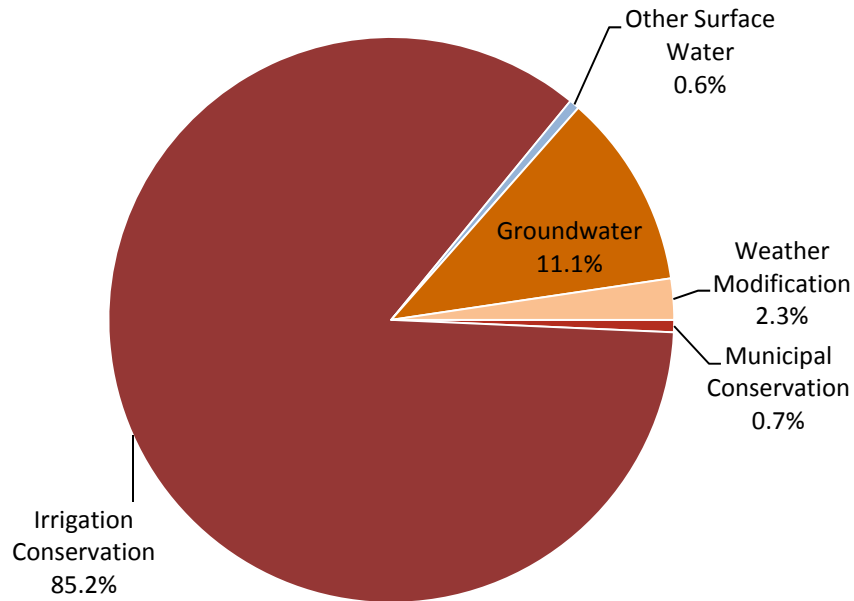


Figure A.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table A.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
A	CRMWA ACQUISITION OF WATER RIGHTS	\$88,200,000						
A	CRMWA ROBERTS COUNTY WELL FIELD	\$21,824,000			15,000	15,000	15,000	15,000
A	DRILL ADDITIONAL GROUNDWATER WELL	\$98,400,920	2,718	8,718	12,013	16,472	20,519	23,000
A	IRRIGATION CONSERVATION	\$0 -	-	297,114	485,080	540,861	549,383	552,385
A	MUNICIPAL CONSERVATION	\$0 -	-	1,963	3,641	3,979	4,278	4,529
A	PALO DURO RESERVOIR	\$114,730,000			3,875	3,833	3,792	3,750
A	POTTER COUNTY WELL FIELD	\$128,511,300 -		9,467	10,292	11,182	11,141	10,831
A	PRECIPITATION ENHANCEMENT	\$0 -		15,206	15,206	15,206	15,206	15,206
A	ROBERTS COUNTY WELL FIELD - AMARILLO	\$287,377,200 -				11,210	11,210	22,420
A	VOLUNTARY TRANSFER FROM OTHER USERS	\$0 -			100	100	1,100	1,100
A	VOLUNTARY TRANSFER FROM OTHER USERS*	\$0 -	200	800	2,458	3,579	5,311	6,563
	Total	\$739,043,420 -	2,718	332,468	545,207	617,843	631,629	648,221
	* DENOTES STRATEGIES WITH SUPPLY VOLUMES INCLUDED IN OTHER STRATEGIES	-	-	-	-	-	-	-

SUMMARY OF REGION B

The Region B Regional Water Planning Area includes all or parts of 11 counties and portions of three river basins (Red, Brazos, and Trinity) in north central Texas bordering the Red River (Figure B.1). Groundwater currently provides almost 34 percent of the existing water supplies in the region primarily from the Seymour aquifer. Surface water supplies are derived from reservoirs within the region and one reservoir (Greenbelt) located in Region A, with the largest single source being the Lake Kemp and Lake Diversion System. Significant water quality issues impact both surface and groundwater sources in the region.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 40,397 acre-feet/year
- Recommended water strategy volume in 2060 - 77,003 acre-feet/year
- Total capital cost \$499 million
- Conservation accounts for 19% of 2060 strategy volumes
- One new major reservoir (Ringgold – see Figure 2.9)
- Limited unmet irrigation needs in 2010

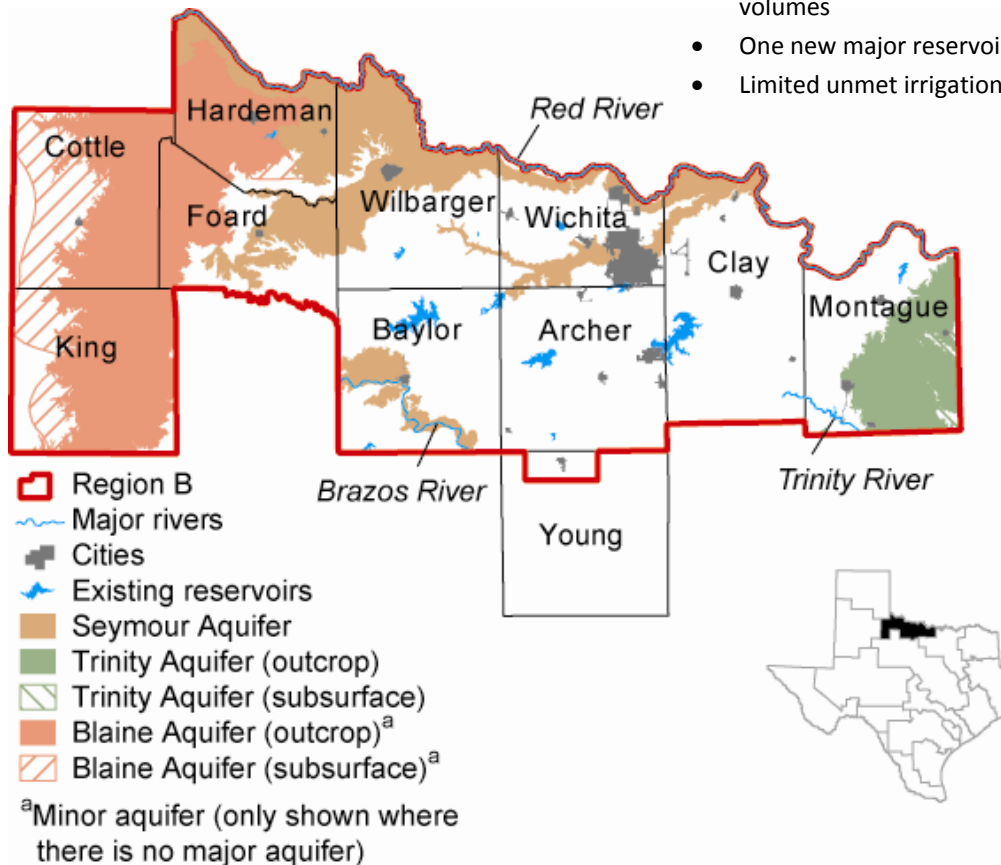


Figure B.1 - Region B

Less than one percent of the state’s 2010 total population is projected to reside in Region B, and between 2010 and 2060 its population is projected to increase by five percent to 221,734.

Table B.1 - Population, Water Supply, Demand, and Needs 2010-2060

		Year	2010	2020	2030	2040	2050	2060
		Population Projections	210,642	218,918	223,251	224,165	223,215	221,734
Existing Supplies	Surface Water		115,509	111,239	106,991	102,724	98,477	94,179
	Groundwater		58,456	58,439	58,431	58,410	58,403	58,403
	Total Existing Water Supply		173,965	169,678	165,422	161,134	156,880	152,582
Demands	Municipal		36,695	35,394	35,964	35,532	35,107	34,964
	County-other		4,269	4,261	4,232	4,132	3,855	3,732
	Manufacturing		3,547	3,755	3,968	4,260	4,524	4,524
	Mining		909	845	811	785	792	792
	Irrigation		99,895	97,702	95,537	93,400	91,292	91,292
	Steam Electric		13,360	17,360	21,360	21,360	21,360	21,360
	Livestock		12,489	12,489	12,489	12,489	12,489	12,489
	Total Water Demands		171,164	171,806	174,361	171,958	169,419	169,153
Needs	County-other		437	468	491	502	460	462
	Mining		177	153	145	149	162	162
	Irrigation		22,945	23,926	24,909	25,893	26,876	29,058
	Steam Electric		-	3,800	8,529	9,258	9,987	10,715
	Total Water Needs		23,559	28,347	34,074	35,802	37,485	40,397

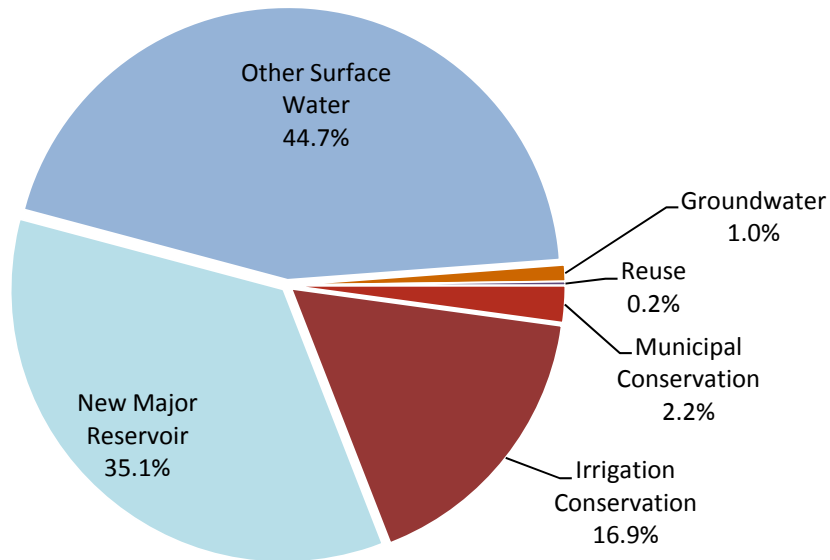


Figure B.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table B.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
B	CONSTRUCT LAKE RINGGOLD	\$382,900,000	-	-	-	-	27,000	27,000
B	DEVELOP OTHER AQUIFER SUPPLIES	\$957,975	245	245	245	245	245	245
B	DEVELOP TRINITY AQUIFER SUPPLIES	\$1,059,638	271	271	271	271	271	271
B	DEVELOP TRINITY AQUIFER SUPPLIES (INCLUDES OVERDRAFTING)	\$265,887	68	68	68	68	68	68
B	ENCLOSE CANAL LATERALS IN PIPE	\$7,658,469	13,034	13,034	13,034	13,034	13,034	13,034
B	INCREASE WATER CONSERVATION POOL AT LAKE KEMP	\$130,000	-	24,834	24,776	24,718	24,660	24,600
B	MUNICIPAL CONSERVATION	\$0	197	764	799	841	857	1,668
B	NITRATE REMOVAL PLANT	\$647,000	50	50	50	50	50	50
B	PURCHASE WATER FROM LOCAL PROVIDER	\$2,798,700	1,508	1,046	1,046	1,046	1,046	1,046
B	WASTEWATER REUSE	\$1,206,500	-	-	-	171	171	171
B	WICHITA RIVER DIVERSION	\$5,380,000	-	-	-	8,850	8,850	8,850
B	EMERGENCY INTERCONNECT MILLERS CREEK RESERVOIR*	\$714,000	250	250	250	250	250	250
B	PURCHASE WATER FROM LOCAL PROVIDER*	\$0	-	462	462	462	462	462
B	WICHITA BASIN CHLORIDE CONTROL PROJECT*	\$95,450,000	26,500	26,500	26,500	26,500	26,500	26,500
Total		\$499,168,169	15,373	40,312	40,289	49,294	76,252	77,003

* DENOTES STRATEGIES WITH SUPPLY VOLUMES INCLUDED IN OTHER STRATEGIES

SUMMARY OF REGION C

The Region C Regional Water Planning Area includes all or parts of 16 counties (Figure C.1). Overlapping much of the upper portion of the Trinity River Basin, the region also includes parts of the Red, Brazos, Sulphur, and Sabine river basins. Surface water currently provides almost 83 percent of the existing water supplies in the region and 22 percent of the water available to Region C is imported from other regions. Reuse water is the second largest source of supply in the region. Groundwater provides approximately 7 percent of the existing supplies primarily from the Trinity, Woodbine, and Carrizo-Wilcox aquifers.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 1,588,236 acre-feet/year
- Recommended water strategy volume in 2060 – 2,360,302 acre-feet/year
- Total capital cost \$21.5 billion
- Conservation accounts for 12% of 2060 strategy volumes
- Four new major reservoirs (Ralph Hall, Lower Bois D’Arc, Marvin Nichols, Fastrill Replacement Project – see Figure 2.9)
- Reuse accounts for 12% of 2060 strategy volumes
- Significant costs associated with numerous conveyance projects

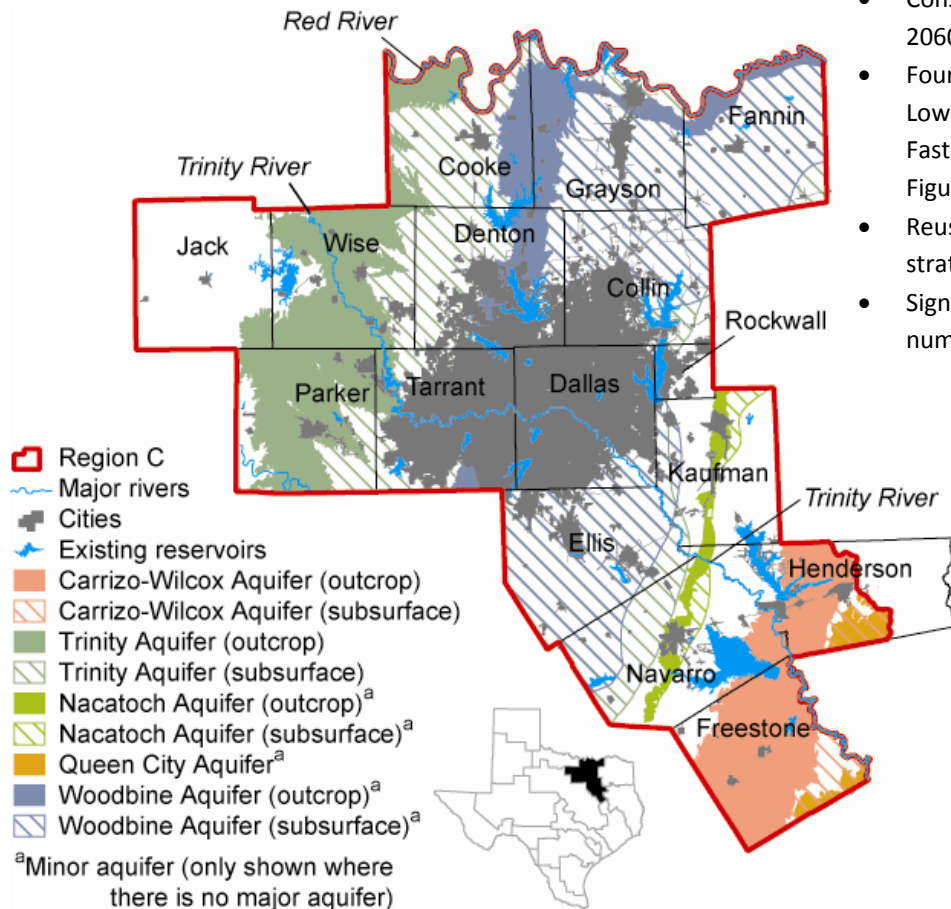


Figure C.1- Region C

Approximately 26 percent of the state’s 2010 total population is projected to reside in Region C, and between 2010 and 2060 its population is projected to increase by 96 percent to 13,045,592.

Table C.1 - Population, Water Supply, Demand, and Needs 2010-2060

Year		2010	2020	2030	2040	2050	2060
Population Projections		6,670,493	7,971,728	9,171,650	10,399,038	11,645,686	13,045,592
Existing Supplies	Surface Water	1,481,272	1,406,598	1,359,808	1,343,319	1,328,097	1,305,588
	Groundwater	125,939	121,827	121,916	122,074	122,117	122,106
	Reuse	182,686	231,816	273,003	293,292	300,143	307,129
	Total Water Supply	1,789,897	1,760,241	1,754,727	1,758,685	1,750,357	1,734,823
Demands	Municipal	1,512,231	1,796,086	2,048,664	2,304,240	2,571,450	2,882,356
	County-other	34,738	37,584	38,932	39,874	40,725	41,800
	Manufacturing	72,026	81,273	90,010	98,486	105,808	110,597
	Mining	41,520	38,961	41,630	44,486	47,435	50,200
	Irrigation	40,776	40,966	41,165	41,373	41,596	41,831
	Steam Electric	40,813	64,625	98,088	107,394	116,058	126,428
	Livestock	19,248	19,248	19,248	19,248	19,248	19,248
	Total Water Demands	1,761,352	2,078,743	2,377,737	2,655,101	2,942,320	3,272,460
Needs	Municipal	67,519	362,099	614,610	859,838	1,127,749	1,445,025
	County-other	87	5,158	7,931	10,118	12,295	14,302
	Manufacturing	557	11,946	21,151	30,369	39,640	48,894
	Mining	414	4,909	10,036	14,782	19,445	23,779
	Irrigation	510	2,588	3,412	4,007	4,492	4,913
	Steam Electric	-	13,217	29,696	34,835	40,997	51,323
	Total Water Needs	69,087	399,917	686,836	953,949	1,244,618	1,588,236

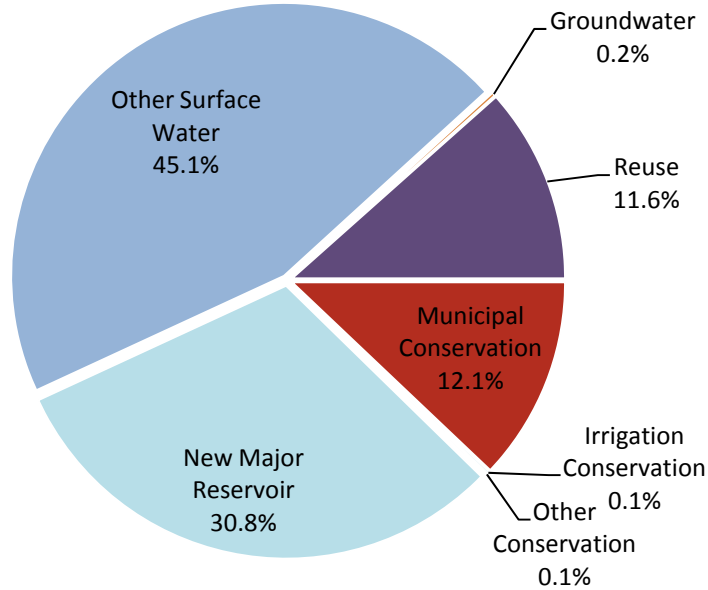


Figure C.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Water for Texas:

Summary of the 2011 Regional Water Plans

Table C.2- Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
C	ADDITIONAL DRY YEAR SUPPLY	\$1,750,000	25,000		-	-	-	-
C	ADDITIONAL PIPELINE FROM LAKE TAWAKONI (MORE LAKE FORK SUPPLY)	\$496,243,000		77,994	75,777	73,563	71,346	69,128
C	COLLIN-GRAYSON MUNICIPAL ALLIANCE SYSTEM	\$77,366,000	-	3,255	8,614	14,192	20,604	27,412
C	COOKE COUNTY PROJECT	\$50,280,000	-	2,240	2,240	3,360	4,480	4,480
C	DIRECT REUSE	\$264,783,000	1,552	14,327	29,283	38,649	43,184	46,250
C	DIRECT REUSE - FRISCO	\$31,448,606		2,240	3,359	5,650	5,649	5,650
C	DWU REUSE	\$82,920,000		34,902	41,326	39,907	47,001	50,382
C	ENNIS REUSE	\$31,779,000		-	-	333	2,199	3,696
C	FACILITY IMPROVEMENTS	\$2,314,558,600		-	-	-	-	-
C	FACILITY IMPROVEMENTS- REUSE SOURCES	\$590,686,000		-	-	-	-	-
C	FANNIN COUNTY PROJECT	\$38,471,000		1,254	2,400	3,862	4,439	5,113
C	FASTRILL REPLACEMENT (REGION C COMPONENT)**	\$1,980,278,000		-	-	-	-	112,100
C	GOLF COURSE CONSERVATION	\$0	56	942	1,808	2,261	2,690	3,121
C	GRAYSON COUNTY PROJECT	\$136,016,000	200	7,560	10,920	13,440	19,040	24,640
C	INDIRECT REUSE	\$0		4,368	4,368	4,368	4,368	4,368
C	INDIRECT REUSE - JACKSBORO FOR JACK CO MINING	\$200,000	385	385	385	385	385	385
C	LAKE PALESTINE CONNECTION (INTEGRATED PIPELINE WITH TRWD)	\$887,954,000		111,776	110,670	109,563	108,455	107,347
C	LAKE RALPH HALL	\$286,401,000		34,050	34,050	34,050	34,050	34,050
C	LAKE RALPH HALL - INDIRECT REUSE	\$0	0	6,129	12,258	18,387	18,387	18,387
C	LAKE TEXOMA - AUTHORIZED (BLEND)	\$336,356,000		-	69,200	68,500	113,000	113,000
C	LAKE TEXOMA - INTERIM PURCHASE FROM GTUA	\$0		21,900	21,900	21,899		-
C	LOWER BOIS D ARC CREEK RESERVOIR	\$615,498,000		54,796	117,800	114,138	111,361	108,487
C	MAIN STEM PS (ADDITIONAL EAST FORK) NTMWD	\$0		34,900	15,100		-	-
C	MAIN STEM TRINITY PUMP STATION (LAKE RAY HUBBARD INDIRECT REUSE - DWU)	\$142,567,000		17,168	15,004	20,010	13,700	11,105

Water for Texas:

Summary of the 2011 Regional Water Plans

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
C	MANUFACTURING CONSERVATION	\$0	1	131	1,530	2,259	2,457	2,618
C	MARVIN NICHOLS RESERVOIR	\$3,345,052,000		-	227,400	227,400	472,300	472,300
C	MUNICIPAL CONSERVATION-BASIC	\$1,151,575	41,967	97,040	137,705	175,858	216,941	264,429
C	MUNICIPAL CONSERVATION-EXPANDED	\$480,774	4,756	9,862	13,907	16,910	18,824	20,541
C	NEW WELLS - CARRIZO WILCOX AQUIFER	\$1,853,000	154	181	183	465	466	467
C	NEW WELLS - TRINITY AQUIFER	\$7,778,150	1,882	2,042	2,306	2,306	2,306	2,306
C	NEW WELLS - WOODBINE AQUIFER	\$14,543,000	763	1,932	1,932	1,932	1,932	1,932
C	OKLAHOMA WATER TO IRVING	\$194,825,000		-	25,000	25,000	25,000	25,000
C	OKLAHOMA WATER TO NTMWD, TRWD, UTRWD	\$756,044,500		-	-	-	-	115,000
C	OVERDRAFT TRINITY AQUIFER - EXISTING WELLS	\$0	2,168		-	-	-	-
C	OVERDRAFT TRINITY AQUIFER - NEW WELLS	\$269,000	75		-	-	-	-
C	PURCHASE FROM WATER PROVIDER (1)	\$0	46		-	-	-	-
C	REDISTRIBUTION OF SUPPLIES	\$0	530	13,979	18,526	24,028	33,981	58,031
C	SUBORDINATION AGREEMENT- FUTURE-ONLY SOURCES	\$8,217,000		280	220	219	217	215
C	SUPPLEMENTAL WELLS	\$495,381,934		-	-	-	-	-
C	TOLEDO BEND PROJECT	\$2,406,236,000	363	329	272	232	400,229	400,217
C	TRA 10-MILE CREEK REUSE PROJECT	\$14,895,000		-	6,760	6,760	6,760	6,760
C	TRA DENTON CREEK WWTP REUSE	\$9,506,000		3,750	3,750	3,750	3,750	3,750
C	TRA ELLIS COUNTY REUSE	\$10,384,000		-	-	-	-	2,200
C	TRA FREESTONE COUNTY REUSE	\$17,266,000		-	-	-	6,760	6,760
C	TRA KAUFMAN COUNTY REUSE	\$9,761,000		1,000	1,000	1,000	1,000	1,000
C	TRA LAS COLINAS REUSE	\$14,530,000		7,000	7,000	7,000	7,000	7,000
C	TRA TARRANT COUNTY PROJECT	\$59,008,000		-	-	-	-	-
C	TRWD THIRD PIPELINE AND REUSE	\$914,424,000		105,500	105,500	105,500	105,500	105,500
C	WATER TREATMENT PLANT - EXPANSION	\$19,970,000		1,260	1,081	3,180	2,786	2,268
C	WATER TREATMENT PLANT - NEW	\$308,309,400		192	523	587	613	807
C	WRIGHT PATMAN - REALLOCATION OF FLOOD POOL	\$896,478,000		-	-	112,100	112,100	112,100

Water for Texas:

Summary of the 2011 Regional Water Plans

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
C	CONVEYANCE PROJECT (1)*	\$413,884,000	194	10,417	17,255	19,490	23,046	25,178
C	CONVEYANCE PROJECT (2)*	\$69,299,100		1,672	1,299	1,234	1,226	1,237
C	CONVEYANCE PROJECT (3)*	\$6,465,400		213	1,009	1,717	1,957	2,016
C	GRAYSON COUNTY PROJECT*	\$146,071,000		5,600	8,400	8,400	14,000	19,600
C	PURCHASE FROM WATER PROVIDER (1)*	\$164,114,900	402	27,039	32,425	31,243	30,709	30,103
C	PURCHASE FROM WATER PROVIDER (2)*	\$3,538,000		52	50	50	50	86
C	PURCHASE FROM WATER PROVIDER (3)*	\$65,481,250		4,004	4,493	6,083	5,626	6,417
C	WATER TREATMENT PLANT - EXPANSION*	\$2,708,430,000		484	828	2,279	2,545	2,618
C	WATER TREATMENT PLANT-EXPANSION- REUSE SOURCES*	\$32,750,000		-	-	-	-	-
Total		\$21,481,952,189	79,898	674,664	1,131,057	1,303,003	2,045,260	2,360,302

* DENOTES STRATEGIES WITH SUPPLY VOLUMES INCLUDED IN OTHER STRATEGIES

** Estimated planning costs and water supply associated with this strategy are based on the Neches River Run-of-River strategy. This project, however is only one of several water management strategies being considered to meet these 2060 needs, and through action by the Region C Water Planning Group, any of those other strategies may be substituted into the plan to represent the 'Fastrill Reservoir Replacement' strategy. Those other strategies include: additional water conservation, Lake Texoma, Toledo Bend Reservoir, Lake O' the Pines, Lake Livingston, Ogallala groundwater in Roberts County (Region A), Marvin Nichols Reservoir, Lake Columbia, George Parkhouse Reservoir (North), George Parkhouse Reservoir (South), and Oklahoma Water.

SUMMARY OF NORTH EAST TEXAS (D) REGION

The North East Texas Regional Water Planning Area includes all or parts of 19 counties and portions of six river basins (the Red, Sulphur, Cypress, Sabine, Neches, and Trinity as shown in Figure D.1). Surface water currently provides approximately 83 percent of the existing water supplies in the region, mostly from 14 reservoirs within the region and 3 reservoirs located in other regions. Groundwater supplies are associated primarily with the Carrizo-Wilcox Aquifer.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 96,142 acre-feet/year
- Recommended water strategy volume in 2060 - 98,466 acre-feet/year
- Total capital cost \$39 million
- Limited unmet irrigation needs
- Surface water contract strategies to meet most needs including contracting for water from new reservoir in Region C.
- Opposition to Marvin Nichols Reservoir
- Three unique stream segments recommended for designation (see Appendix A, Figure II)

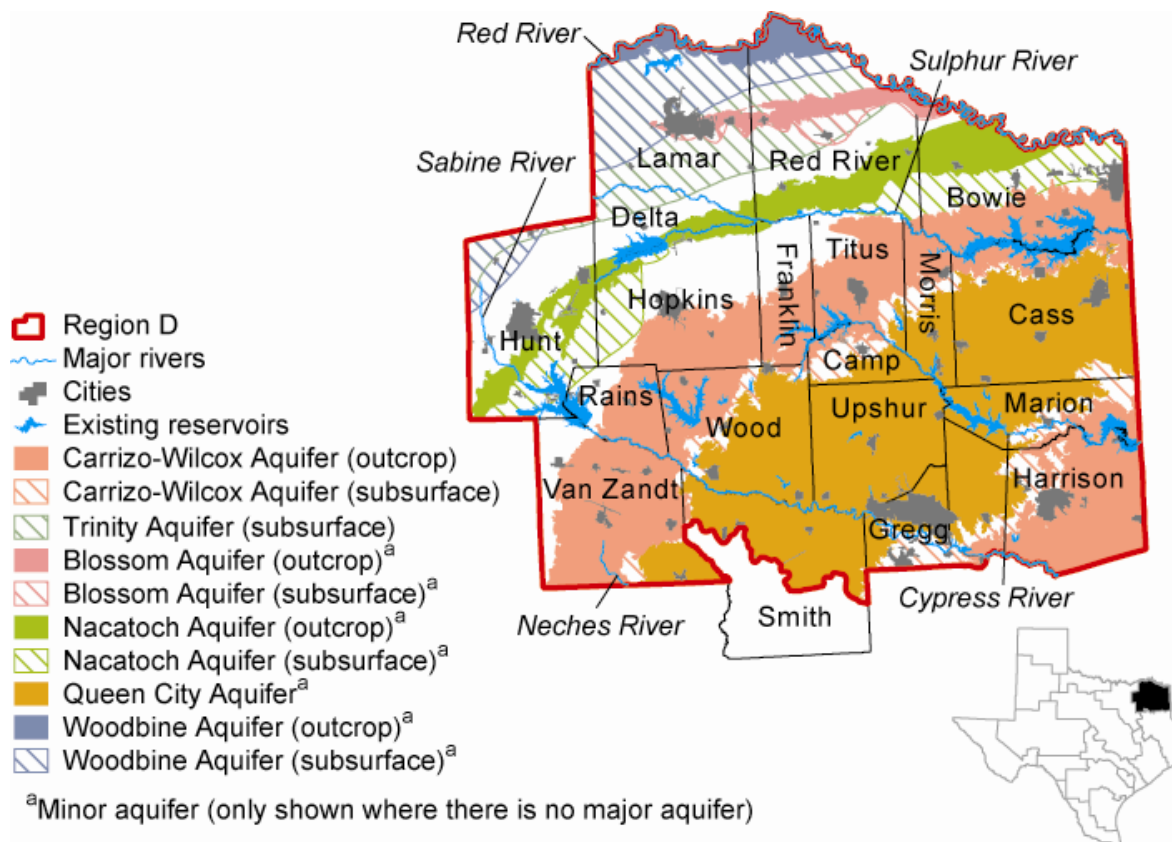


Figure D.1 - North East Texas Region

Approximately three percent of the state's 2010 total population is projected to reside in Region D, and between 2010 and 2060 its population is projected to increase by 57 percent to 1,213,095.

Table D.1 - Population, Water Supply, Demand, and Needs 2010-2060

		Year					
		2010	2020	2030	2040	2050	2060
Population Projections		772,163	843,027	908,748	978,298	1,073,570	1,213,095
Existing Supplies	Surface Water	831,239	838,379	843,707	848,652	855,180	864,067
	Groundwater	84,864	87,501	89,332	90,800	92,361	94,786
	Reuse	83,642	78,247	72,821	67,505	68,761	77,635
	Total Water Supply	999,745	1,004,127	1,005,860	1,006,957	1,016,302	1,036,488
Demands	Municipal	90,171	96,359	102,345	109,227	119,821	135,811
	County-other	29,780	32,352	34,404	36,177	38,637	42,367
	Manufacturing	301,091	328,568	351,427	373,504	392,387	421,496
	Mining	8,802	9,605	10,108	10,595	11,111	11,625
	Irrigation	15,504	15,415	15,329	15,182	14,949	14,728
	Steam Electric	89,038	96,492	112,809	132,703	156,951	186,509
	Livestock	26,690	26,736	26,785	26,698	26,554	26,441
	Total Water Demands	561,076	605,527	653,207	704,086	760,410	838,977
Needs	Municipal	1,404	2,082	2,834	3,856	8,190	16,711
	County-other	153	276	411	587	748	1,574
	Irrigation	56	-	14	115	238	388
	Steam Electric	8,639	12,366	15,437	27,396	50,829	77,469
	Total Water Needs	10,252	14,724	18,696	31,954	60,005	96,142

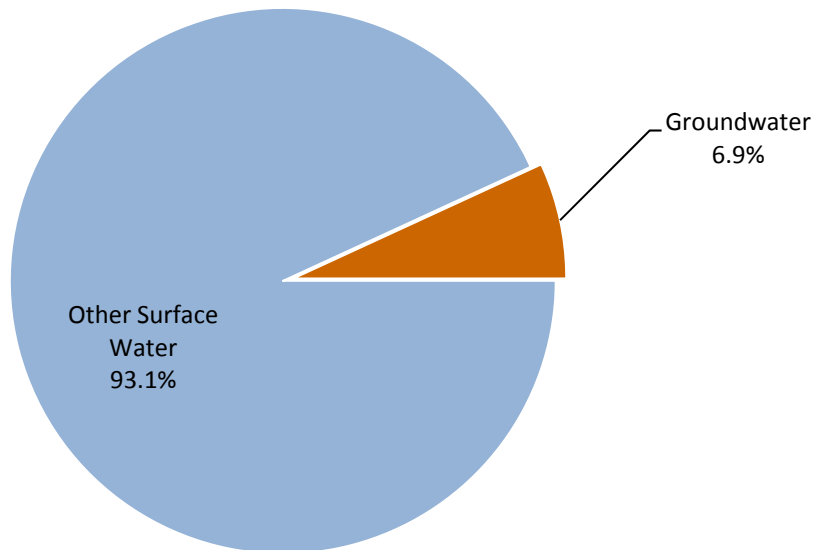


Figure D.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table D.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
D	DRILL NEW WELL	\$32,260,219	1,094	1,636	1,969	3,100	4,888	6,757
D	INCREASE EXISTING CONTRACT	\$0	1,576	2,001	3,345	13,199	34,692	59,478
D	NEW SURFACE WATER CONTRACT	\$6,247,886	8,660	12,523	14,866	17,678	22,512	32,231
D	INCREASE EXISTING CONTRACT*	\$0	-	340	558	711	1,280	1,471
Total		\$38,508,104	11,330	16,160	20,180	33,977	62,092	98,466

* DENOTES STRATEGIES WITH SUPPLY VOLUMES INCLUDED IN REGION C STRATEGIES
(incl. supply from Bois D'Arc reservoir)

SUMMARY OF FAR WEST TEXAS (E) REGION

Reaching from El Paso to the Big Bend country and Pecos River, the Far West Texas Regional Water Planning Area includes seven counties and lies within the Rio Grande basin (Figure E.1). Groundwater currently provides almost 75 percent of the existing water supplies in the region primarily from the Edwards-Trinity (Plateau) Aquifer and the Hueco-Mesilla Bolson. Surface water supplies are run-of-river water rights on the Rio Grande River.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 – 226,569 acre-feet/year
- Recommended water strategy volume in 2060 -130,526 acre-feet/year
- Total capital cost \$842 million
- Conservation accounts for 40% of 2060 strategy volumes
- Significant unmet irrigation needs
- Groundwater desalination accounts for 21% of 2060 strategy volumes
- One additional unique stream segment recommended for designation (see Appendix A, Figure II)

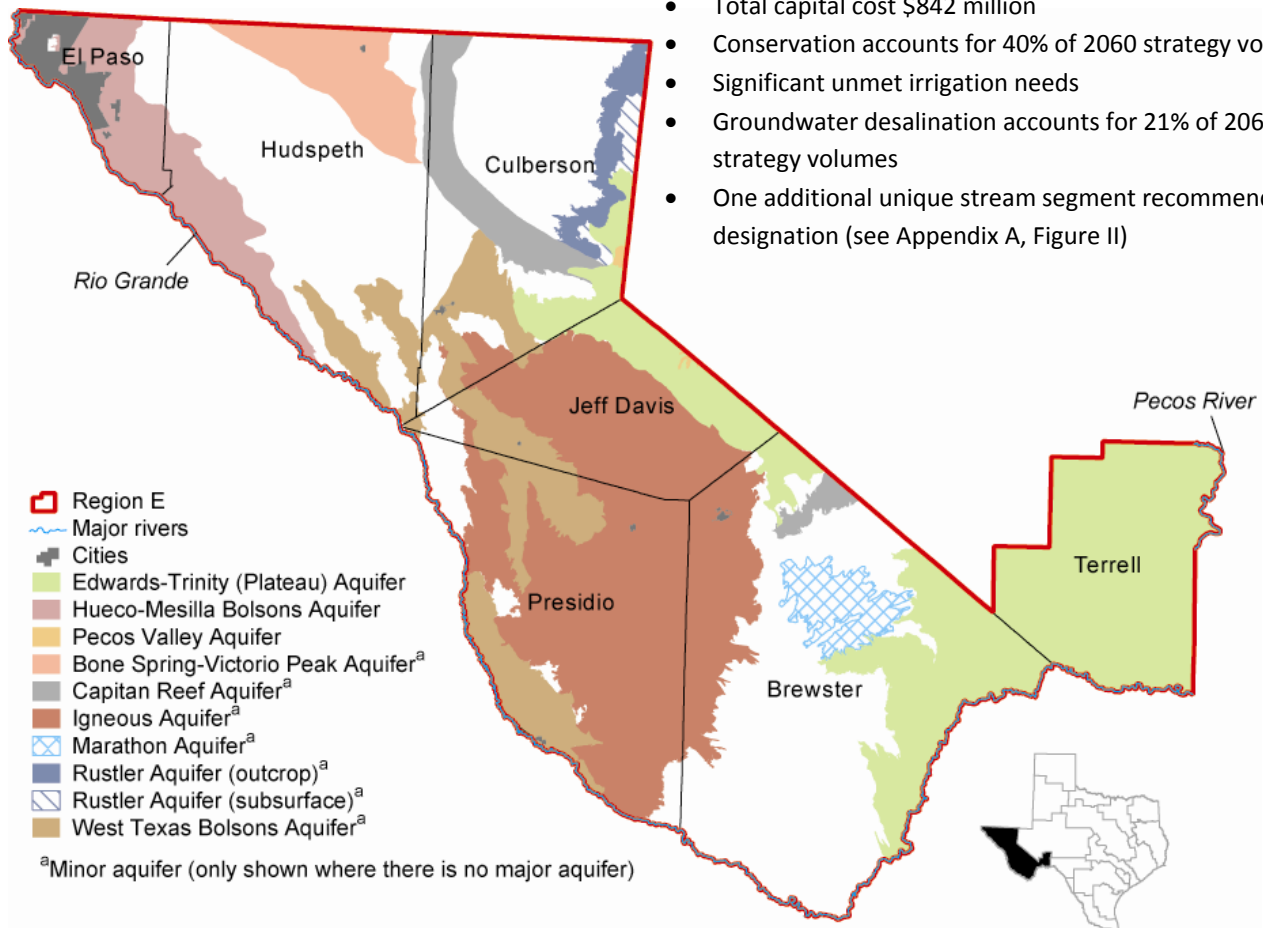


Figure E.1 - Far West Texas Region

Approximately three percent of the state’s 2010 total population is projected to reside in Region E, and between 2010 and 2060 its population is projected to increase by 79 percent to 1,542,824.

Table E.1 - Population, Water Supply, Demand, and Needs 2010-2060

		Year	2010	2020	2030	2040	2050	2060
		Population Projections	863,190	1,032,970	1,175,743	1,298,436	1,420,877	1,542,824
Existing Supplies	Surface Water		85,912	85,912	85,912	85,912	85,912	85,912
	Groundwater		384,650	384,650	384,650	384,650	384,650	384,650
	Reuse		44,031	44,031	44,031	44,031	44,031	44,031
	Total Water Supply		514,593	514,593	514,593	514,593	514,593	514,593
Demands	Municipal		122,105	140,829	156,086	168,970	181,995	194,972
	County-other		7,371	10,479	12,968	14,894	16,877	19,167
	Manufacturing		9,187	10,000	10,698	11,373	11,947	12,861
	Mining		2,397	2,417	2,424	2,432	2,439	2,451
	Irrigation		499,092	489,579	482,538	469,084	460,402	451,882
	Steam Electric		3,131	6,937	8,111	9,541	11,284	13,410
	Livestock		4,843	4,843	4,843	4,843	4,843	4,843
	Total Water Demands		648,126	665,084	677,668	681,137	689,787	699,586
Needs	Municipal		-	3,867	7,675	10,875	19,239	31,584
	County-other		-	3,114	5,625	7,589	9,584	11,876
	Manufacturing		-	813	1,511	2,186	2,760	3,674
	Irrigation		209,591	201,491	195,833	183,734	176,377	169,156
	Steam Electric		-	3,806	4,980	6,410	8,153	10,279
	Total Water Needs		209,591	213,091	215,624	210,794	216,113	226,569

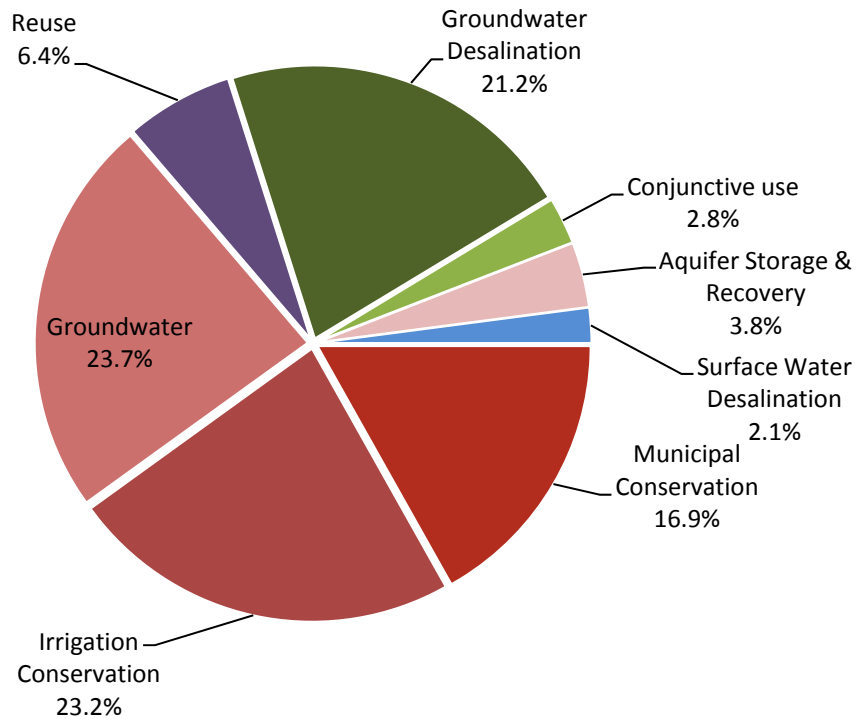


Figure E.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table E.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
E	ADDITIONAL ONE WELL	\$702,770		500	500	500	500	500
E	ADDITIONAL WELLS	\$1,006,762		175	175	350	350	350
E	ADDITIONAL WELLS AND DESALINATION PLANT EXPANSIONS	\$34,344,000		1,607	3,304	4,764	6,245	7,726
E	ARSENIC TREATMENT FACILITY	\$1,996,232		276	276	276	276	276
E	IRRIGATION SCHEDULING	\$0		5,275	5,275	5,275	5,275	5,275
E	IWMS - CONJUNCTIVE USE WITH ADDITIONAL SURFACE WATER	\$0		-	-	3,600	3,600	3,600
E	IWMS - CONSERVATION	\$0		3,000	7,000	11,000	16,000	22,000
E	IWMS - DESALINATION OF AGRICULTURAL DRAIN WATER	\$16,675,000		2,700	2,700	2,700	2,700	2,700
E	IWMS - DIRECT REUSE	\$25,257,000		2,000	4,000	6,000	6,000	6,000
E	IWMS - IMPORT FROM DELL VALLEY	\$214,113,000	-	-	-	-	10,000	20,000
E	IWMS - IMPORT FROM DIABLO FARMS	\$245,506,000		-	-	10,000	10,000	10,000
E	IWMS - RECHARGE OF GROUNDWATER WITH TREATED SURFACE WATER	\$14,625,000		5,000	5,000	5,000	5,000	5,000
E	PURCHASE WATER FROM EPWU	\$0	3,376	16,939	21,512	18,156	14,074	13,569
E	PURCHASE WATER FROM LVWD	\$0		1,441	2,812	3,883	5,050	6,218
E	TAILWATER REUSE	\$0		2,312	2,312	2,312	2,312	2,312
E	WATER DISTRICT DELIVERY SYSTEMS	\$147,635,869		25,000	25,000	25,000	25,000	25,000
E	IWMS - CONJUNCTIVE USE WITH ADDITIONAL SURFACE WATER*	\$140,238,000		5,000	15,000	16,400	16,400	16,400
E	PURCHASE WATER FROM EPWU*	\$0		605	1,161	9,193	18,231	24,706
	Total	\$842,099,633	3,376	66,225	79,866	98,816	112,382	130,526

* DENOTES STRATEGIES WITH SUPPLY VOLUMES INCLUDED IN OTHER STRATEGIES

SUMMARY OF REGION F

Located in the Edwards Plateau, the Region F Regional Water Planning Area includes 32 counties, portions of the Brazos, Colorado, and Rio Grande basins (Figure F.1). Groundwater currently provides approximately 75 percent of the existing water supplies in the region primarily from the Edwards-Trinity (Plateau), Pecos Valley, and Ogallala aquifers. Surface water is supplied to Region F from 17 reservoirs located in the region and provides most of the municipal water supply in the region.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 – 219,995 acre-feet/year
- Recommended water strategy volume in 2060 – 235,198 acre-feet/year
- Total capital cost \$915 million
- Conservation accounts for 35% of 2060 strategy volumes
- Subordination of downstream senior water rights as strategy to increase reliability of significant supply volume
- Unmet needs in irrigation and steam electric power

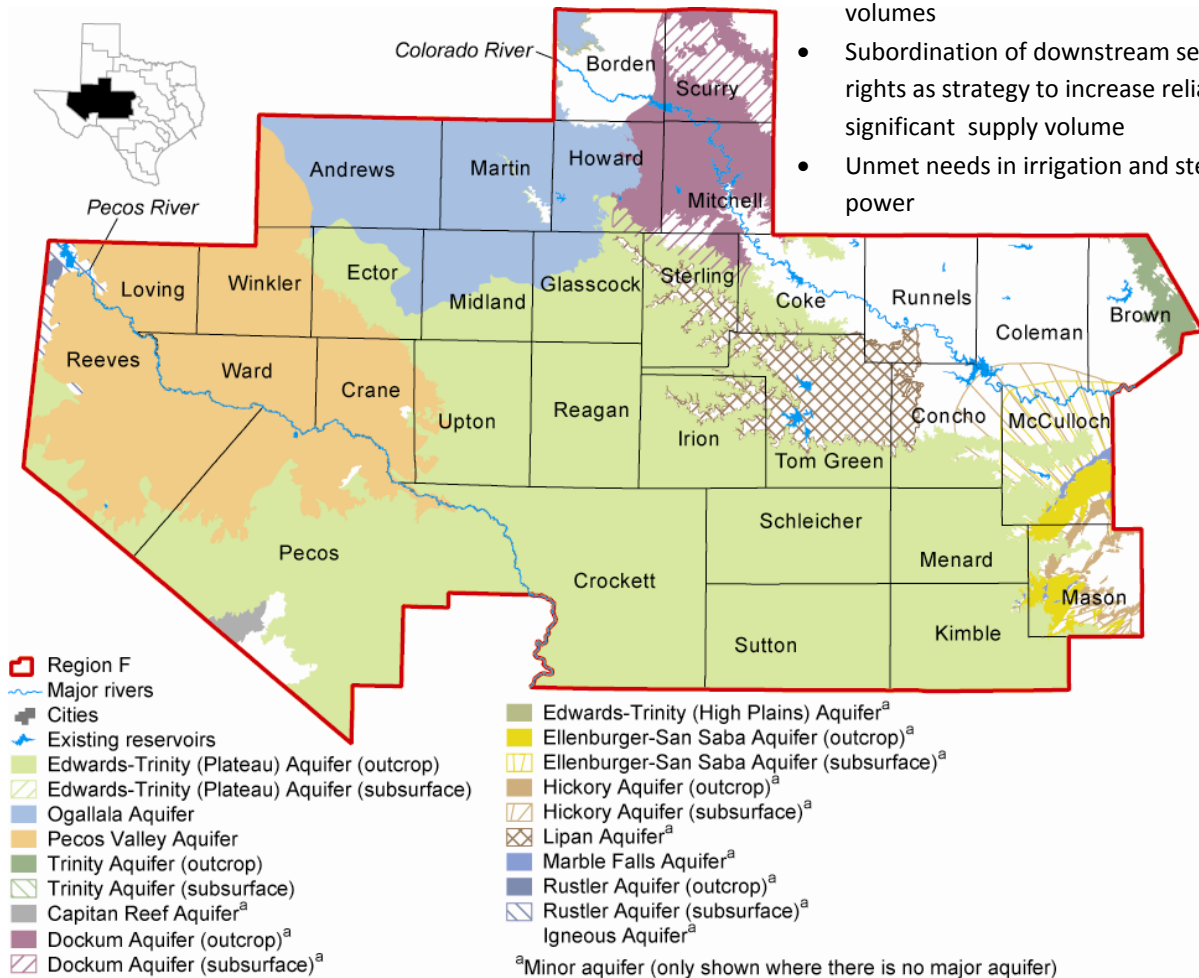


Figure F.1 - Region F

Approximately two percent of the state’s 2010 total population is projected to reside in Region F, and between 2010 and 2060 its population is projected to increase by 17 percent to 724,094.

Table F.1- Population, Water Supply, Demand, and Needs 2010-2060

		Year	2010	2020	2030	2040	2050	2060
		Population Projections	618,889	656,480	682,132	700,806	714,045	724,094
Existing Supplies	Surface Water		138,352	137,285	136,063	134,929	133,840	132,821
	Groundwater		483,937	480,479	481,658	478,331	478,624	478,805
	Reuse		19,015	19,309	19,459	19,609	19,759	19,909
	Total Water Supply		641,304	637,073	637,180	632,869	632,223	631,535
Demands	Municipal		122,593	127,135	129,747	131,320	133,361	135,597
	County-other		19,372	20,693	21,533	21,886	21,979	22,035
	Manufacturing		9,757	10,595	11,294	11,960	12,524	13,313
	Mining		31,850	33,097	33,795	34,479	35,154	35,794
	Irrigation		578,606	573,227	567,846	562,461	557,080	551,774
	Steam Electric		18,138	19,995	22,380	25,324	28,954	33,418
	Livestock		23,060	23,060	23,060	23,060	23,060	23,060
	Total Water Demands		803,376	807,802	809,655	810,490	812,112	814,991
Needs	Municipal		21,537	30,464	35,442	43,088	45,923	49,060
	County-other		501	811	658	618	588	559
	Manufacturing		3,537	4,138	3,747	4,403	4,707	5,152
	Mining		503	660	29	143	232	375
	Irrigation		157,884	154,955	152,930	149,472	146,995	144,276
	Steam Electric		7,095	9,840	11,380	13,294	16,347	20,573
	Livestock		-	-	-	-	-	-
	Total Water Needs		191,057	200,868	204,186	211,018	214,792	219,995

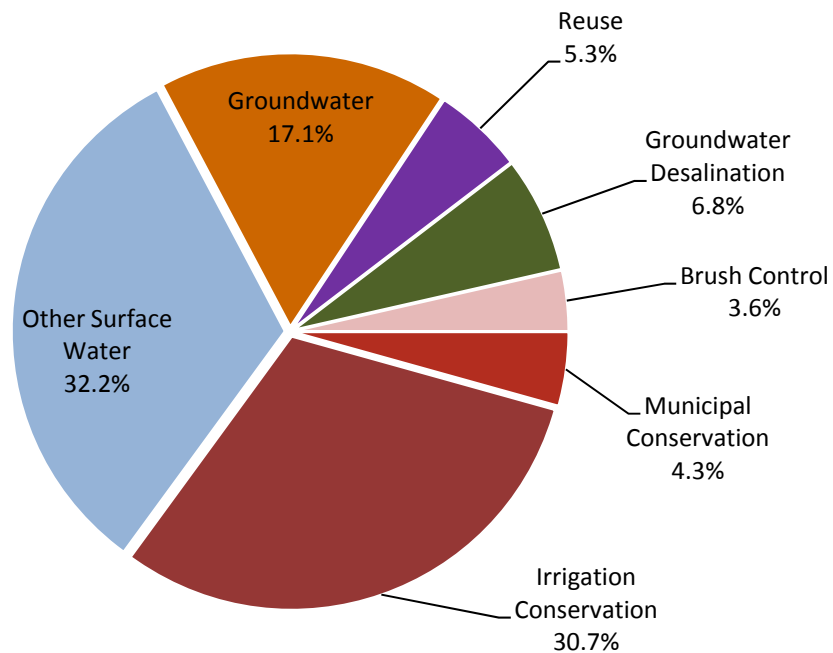


Figure F.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table F.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
F	ADVANCED TREATMENT	\$2,582,000						
F	BOTTLED WATER PROGRAM	\$3,000	1	1	1	1	1	1
F	BRUSH CONTROL	\$23,020,000	8,362	8,362	8,362	8,362	8,362	8,362
F	DESALINATION	\$213,760,990		950	950	16,050	16,050	16,050
F	DEVELOP CENOZOIC AQUIFER SUPPLIES	\$244,775,000			19,600	19,600	19,600	19,600
F	DEVELOP DOCKUM AQUIFER SUPPLIES	\$17,855,000		2,200	2,200	2,200	2,200	2,200
F	DEVELOP ELLENBURGER AQUIFER SUPPLIES	\$5,148,000		200	200	200	200	200
F	DEVELOP HICKORY AQUIFER SUPPLIES	\$174,991,000	160	6,860	10,160	12,160	12,160	12,160
F	IRRIGATION CONSERVATION	\$68,650,668		36,125	72,244	72,244	72,244	72,244
F	MUNICIPAL CONSERVATION	\$0	3,197	6,988	8,307	8,897	9,525	10,179
F	NEW WTP AND STORAGE FACILITIES	\$2,436,000						
F	NEW/RENEW WATER SUPPLY	\$8,964,000	392	5,622	15,629	16,180	17,073	16,866
F	REHABILITATION OF PIPELINE	\$7,521,900			2,281	2,267	2,254	2,240
F	REPLACEMENT WELL	\$13,941,000						
F	REUSE	\$130,906,000		12,380	12,380	12,490	12,490	12,490
F	SUBORDINATION	\$0	78,832	77,555	66,391	65,436	63,241	62,606
	Total	\$914,554,558	90,944	157,243	218,705	236,087	235,400	235,198

SUMMARY OF BRAZOS (G) REGION

The Brazos G Regional Water Planning Area includes all or parts of 37 counties. Over 90% of the region lies within the Brazos river basin and the remainder is located in the Colorado river basin (Figure G.1). Surface water currently provides 68 percent of the existing water supplies in the region primarily from the Brazos River and its tributaries. Groundwater supplies are associated with six major aquifers in the region.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 390,732 acre-feet/year
- Recommended water strategy volume in 2060 – 587,084 acre-feet/year
- Total capital cost \$3.2 billion
- Conservation accounts for 7% of 2060 strategy volumes
- Five new major reservoirs (Brushy Creek, Cedar Ridge, Millers Creek Augmentation*, Turkey Peak *, Coryell County Reservoir*); three sites indicated * also recommended for designation as unique reservoir sites (see Figure 2.9 and Appendix A, Figure I)
- Conjunctive use strategies account for 12% of 2060 strategy volumes
- Brazos River Authority System Operation strategy accounts for 14% of strategy volumes
- Unmet irrigation and mining needs in all decades; limited unmet steam electric power and municipal needs in 2010 decade

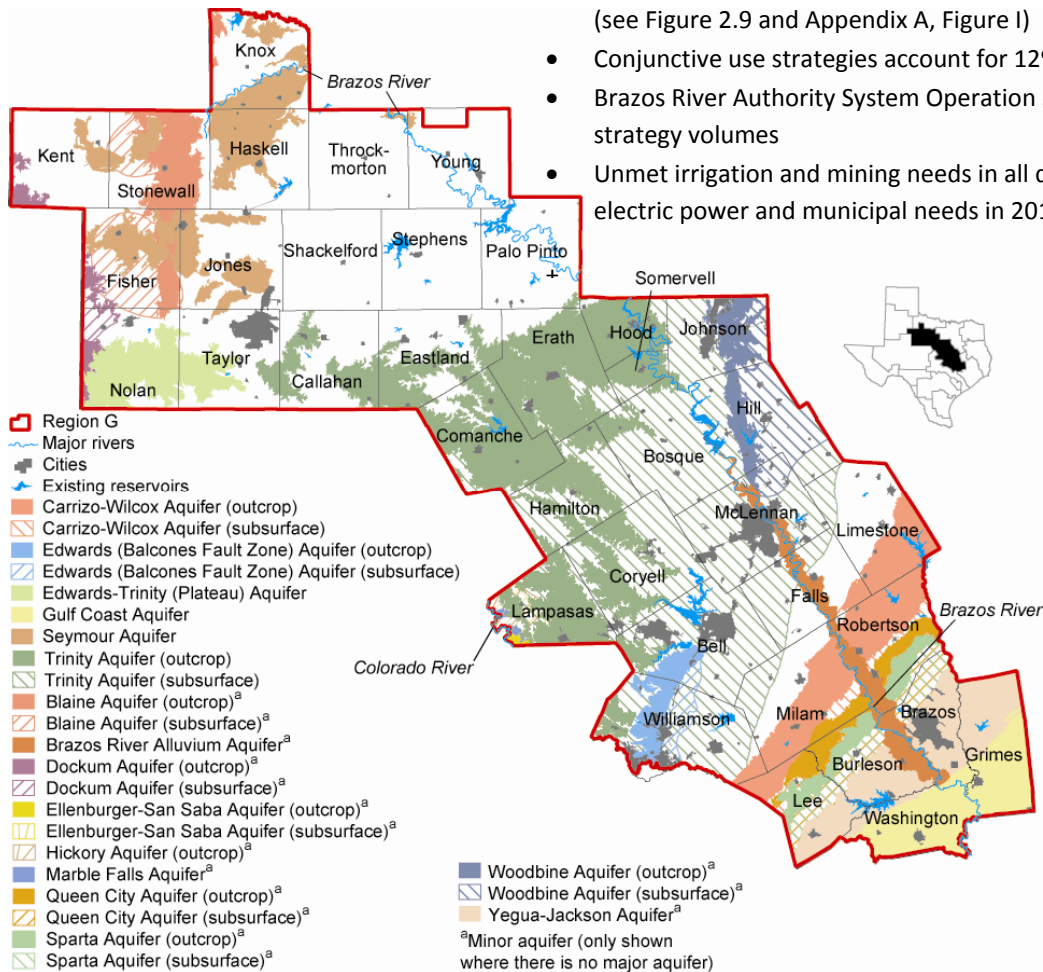


Figure G.1 - Brazos G Region

Almost eight percent of the state’s 2010 total population is projected to reside in Region G, and between 2010 and 2060 its population is projected to increase by 76 percent to 3,448,879.

Table G.1 - Population, Water Supply, Demand, and Needs 2010-2060

		Year					
		2010	2020	2030	2040	2050	2060
Population Projections		1,957,767	2,278,243	2,576,783	2,873,382	3,164,776	3,448,879
Existing Supplies	Surface Water	790,543	787,031	791,011	792,331	792,252	792,258
	Groundwater	355,337	355,256	355,151	344,052	336,931	336,798
	Reuse	17,344	17,344	17,344	17,344	17,344	17,344
	Total Water Supply	1,163,224	1,159,631	1,163,506	1,153,727	1,146,527	1,146,400
Demands	Municipal	328,006	382,974	430,635	477,748	524,700	572,602
	County-other	33,413	34,488	35,471	37,403	40,327	42,881
	Manufacturing	19,787	23,201	25,077	26,962	30,191	31,942
	Mining	36,664	37,591	38,037	27,251	20,744	21,243
	Irrigation	232,541	227,697	222,691	217,859	213,055	208,386
	Steam Electric	168,193	221,696	254,803	271,271	300,859	319,884
	Livestock	51,576	51,576	51,576	51,576	51,576	51,576
	Total Water Demands	870,180	979,223	1,058,290	1,110,070	1,181,452	1,248,514
Needs	Municipal	20,549	53,971	76,295	109,962	147,780	188,632
	County-other	395	361	299	997	2,753	3,835
	Manufacturing	2,762	3,441	4,108	4,783	5,393	6,054
	Mining	9,670	10,544	10,963	11,301	11,704	12,158
	Irrigation	59,571	56,961	54,422	51,942	49,527	47,181
	Steam Electric	38,542	71,483	82,891	93,599	117,616	132,872
	Livestock						
	Total Water Needs	131,489	196,761	228,978	272,584	334,773	390,732

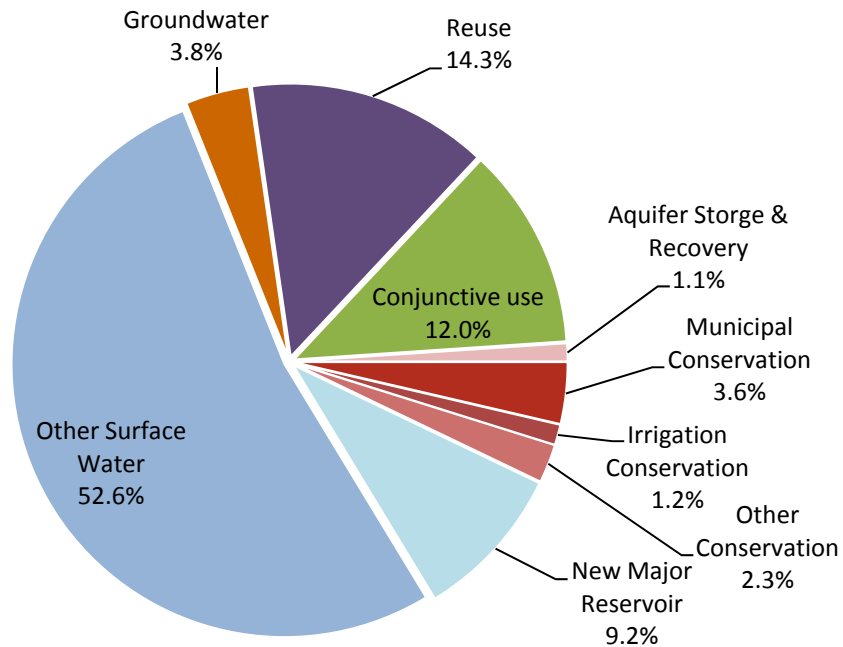


Figure G.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table G.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
G	ADDITIONAL CARRIZO AQUIFER DEVELOPMENT (INCLUDES OVERDRAFTING)	\$23,676,071	1,481	1,884	2,184	5,084	6,963	6,963
G	ADDITIONAL EDWARDS-TRINITY (PLATEAU) AQUIFER DEVELOPMENT (INCLUDES OVERDRAFTING)	\$679,000	114	114	114	114	114	114
G	ADDITIONAL GULF COAST AQUIFER DEVELOPMENT	\$31,630,000			-	5,600	5,600	5,600
G	ADDITIONAL TRINITY AQUIFER DEVELOPMENT (INCLUDES OVERDRAFTING)	\$19,278,000	723	322	522	1,357	1,708	2,025
G	AQUIFER STORAGE & RECOVERY (BRAZOS RIVER TO SEYMOUR AQUIFER)	\$38,625,000	6,208	6,208	6,208	6,208	6,208	6,208
G	BELTON TO STILLHOUSE PIPELINE	\$36,038,000		30,000	30,000	30,000	30,000	30,000
G	BOSQUE COUNTY REGIONAL PROJECT	\$5,150,000			190	190	190	190
G	BRA SUPPLY THROUGH THE EWCRWTS	\$44,706,000	4,601	6,260	6,260	6,958	6,958	6,958
G	BRA SWATS EXPANSION	\$39,971,000	375	3,545	3,545	3,545	3,545	3,545
G	BRA SYSTEM OPERATIONS PERMIT	\$204,281,000	750	77,020	82,242	84,742	84,742	84,899
G	BRUSHY CREEK RESERVOIR	\$18,553,000	2,090	2,090	2,090	2,090	2,090	2,090
G	CEDAR RIDGE RESERVOIR	\$285,214,000		23,380	23,380	23,380	23,380	23,380
G	CITY OF GROESBECK OFF-CHANNEL RESERVOIR	\$10,412,000			-	-	1,755	1,755
G	CONJUNCTIVE MANAGEMENT OF CHAMPION WELL FIELD AND OAK CREEK RESERVOIR WITH SUBORDINATION AGREEMENT	\$0	688	755	878	948	953	963
G	CORYELL COUNTY RESERVOIR (BRA SYSTEM)	\$37,489,000	-	3,365	3,365	3,365	3,365	3,365
G	EXPANSION OF CHAMPION WELL FIELD	\$15,015,000	1,000	1,000	1,000	1,000	1,000	1,000
G	FUTURE PHASES OF LAKE WHITNEY WATER SUPPLY PROJECT	\$110,843,000		7,572	7,572	7,572	7,572	7,572
G	GROUNDWATER/SURFACE WATER CONJUNCTIVE USE (LAKE GRANGER AUGMENTATION)	\$643,928,000	26,505	26,001	25,496	47,435	70,751	70,246
G	INCREASE TREATMENT CAPACITY	\$195,654,000	15,176	28,176	36,016	40,047	51,330	58,435
G	INTERCONNECTION OF CITY OF WACO SYSTEM WITH NEIGHBORING COMMUNITIES	\$14,652,000	837	837	837	1,564	1,664	1,814
G	IRRIGATION WATER CONSERVATION	\$0	3,390	5,519	7,550	7,376	7,206	7,041

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
G	LIMESTONE COUNTY CARRIZO-WILCOX AQUIFER DEVELOPMENT	\$18,458,000	2,500	3,000	3,000	3,600	3,600	3,600
G	MANUFACTURING WATER CONSERVATION	\$0	140	275	440	494	545	594
G	MIDWAY PIPELINE PROJECT (WEST CENTRAL BRAZOS DISTRIBUTION SYSTEM)	\$13,524,731	843	843	843	843	843	843
G	MILLERS CREEK AUGMENTATION	\$46,948,000	17,582	17,582	17,582	17,582	17,582	17,582
G	MINING WATER CONSERVATION	\$0	340	611	885	913	941	973
G	MUNICIPAL WATER CONSERVATION	\$0	4,873	13,572	14,379	15,865	18,497	21,347
G	NEW WATER TREATMENT PLANT	\$3,522,000	224	224	224	224	224	224
G	NEW WEST LOOP REUSE LINE	\$5,495,500	680	680	680	680	680	680
G	OAK CREEK RESERVOIR WITH SUBORDINATION AGREEMENT	\$0	1,679	1,671	1,557	1,435	1,301	1,154
G	PHASE I LAKE WHITNEY WATER SUPPLY PROJECT	\$41,453,000	2,128	2,128	2,128	2,128	2,128	2,128
G	PURCHASE WATER FROM CITY OF BRYAN	\$1,201,000	1,500	1,500	1,500	1,500	1,500	1,500
G	RAISE LEVEL OF GIBBONS CREEK RESERVOIR	\$12,140,600	-	3,870	3,870	3,870	3,870	3,870
G	REALLOCATION OF SOURCE	\$0	9,081	35,928	35,928	40,028	45,728	52,628
G	REGIONAL SURFACE WATER SUPPLY TO WILLIAMSON COUNTY FROM LAKE TRAVIS	\$391,533,000	600	34,148	41,187	41,187	44,459	44,459
G	REHABILITATE EXISTING WELLS	\$350,000	-	1,100	1,100	1,100	1,100	1,100
G	RESTRUCTURE CONTRACT	\$0	502	470	437	406	373	341
G	SOMERVELL COUNTY WATER SUPPLY PROJECT (PHASES 1-4)	\$29,923,000	840	840	840	840	840	840
G	SOMERVELL COUNTY WATER SUPPLY PROJECT (PHASES 5-13)	\$74,228,000	-	-	960	960	960	960
G	STEAM-ELECTRIC CONSERVATION	\$0	2,114	4,896	8,219	9,109	10,822	11,803
G	STONEWALL, KENT, AND GARZA CHLORIDE CONTROL PROJECT	\$163,226,000	-	-	-	-	-	-
G	STORAGE REALLOCATION OF FEDERAL RESERVOIRS - LAKE AQUILLA	\$11,447,000	-	-	-	2,050	2,050	2,050
G	TURKEY PEAK RESERVOIR	\$50,227,000	-	7,600	7,600	7,600	7,600	7,600
G	VOLUNTARY REDISTRIBUTION	\$6,391,000	11,251	11,942	13,564	14,425	15,236	16,558
G	WASTEWATER REUSE	\$115,432,500	17,043	38,653	40,523	51,114	64,830	70,087
G	CORYELL COUNTY RESERVOIR (BRA SYSTEM)*	\$14,399,000	-	-	3,365	3,365	3,365	3,365

Water for Texas:

Summary of the 2011 Regional Water Plans

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
G	GROUNDWATER/SURFACE WATER CONJUNCTIVE USE (LAKE GRANGER AUGMENTATION)*	\$229,822,000			-	33,814	37,839	39,710
G	INCREASE CURRENT CONTRACT*	\$0	43	43	543	1,043	1,543	2,143
G	INCREASE TREATMENT CAPACITY*	\$13,951,000		2,800	2,800	2,800	2,800	2,800
G	LIMESTONE COUNTY CARRIZO-WILCOX AQUIFER DEVELOPMENT*	\$0	148	146	144	142	141	141
G	NEW WATER TREATMENT PLANT*	\$35,822,000		8,400	8,400	8,400	8,400	8,400
G	STORAGE REALLOCATION OF FEDERAL RESERVOIRS - LAKE AQUILLA*	\$0			-	375	745	999
G	TURKEY PEAK RESERVOIR*	\$0		7,600	7,600	7,600	7,600	7,600
G	VOLUNTARY REDISTRIBUTION*	\$91,940,000	3,529	19,162	28,296	29,099	29,903	30,757
G	WASTEWATER REUSE*	\$39,128,901	9,232	10,831	11,760	11,760	11,760	11,760
Total		\$3,186,357,303	137,858	405,581	436,895	496,528	562,803	587,084

* DENOTES STRATEGIES WITH SUPPLY VOLUMES INCLUDED IN OTHER STRATEGIES

SUMMARY OF REGION H

The Region H Regional Water Planning Area includes all or parts of 15 counties, portions of three river basins, four coastal basins, and Galveston Bay (Figure H.1). Surface water currently provides approximately 70 percent of the existing water supplies in the region with the largest source being the Lake Livingston/Wallisville System. Groundwater supplies are associated primarily with the Gulf Coast aquifer and decrease in volume due to land subsidence regulations.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 1,236,335 acre-feet/year
- Recommended water strategy volume in 2060 – 1,501,180 acre-feet/year
- Total capital cost \$12 billion
- Conservation accounts for 12% of 2060 strategy volumes
- Five new major reservoirs (Allens Creek, Dow Off-Channel, GCWA Off-Channel, Brazoria Off-Channel, Fort Bend Off-Channel – see Figure 2.9)
- Reuse accounts for 19% of 2060 strategy volumes

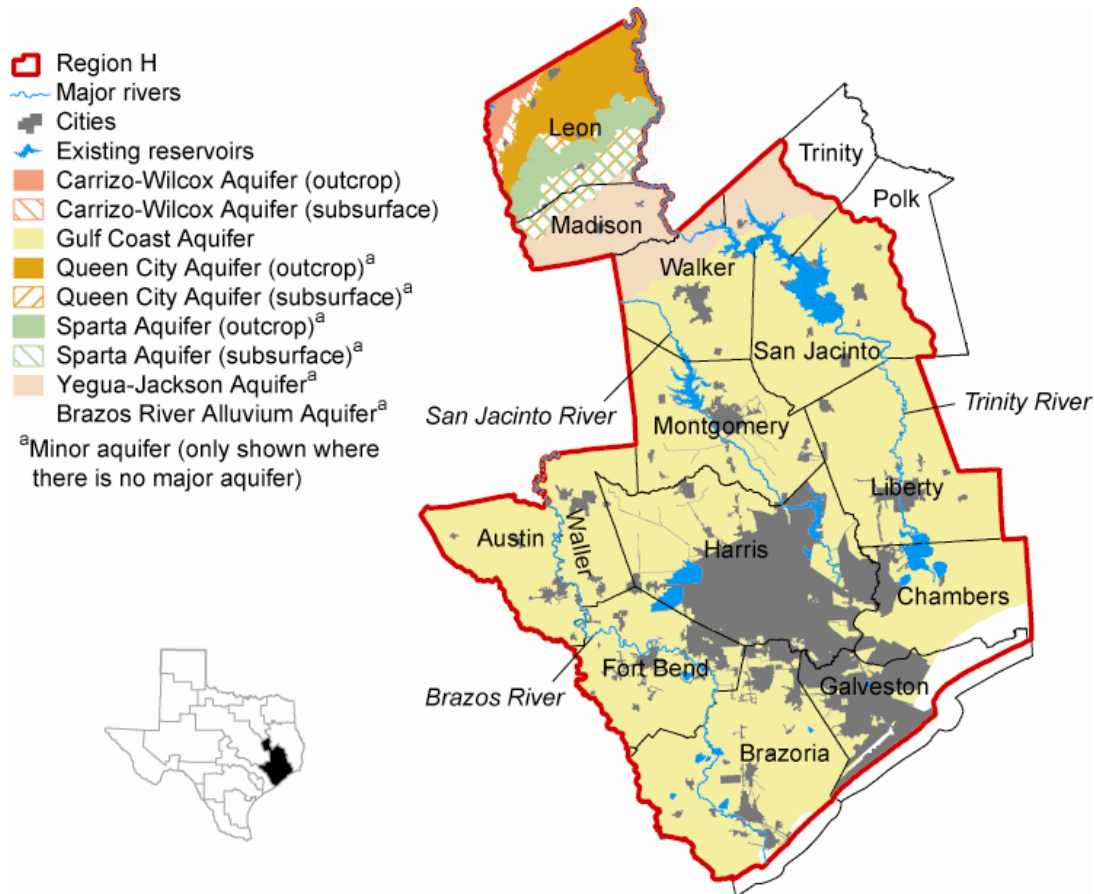


Figure H.1 - Region H

Almost 24 percent of the state’s 2010 total population is projected to reside in Region H, and between 2010 and 2060 its population is projected to increase by 88 percent to 11,346,082.

Table H.1 - Population, Water Supply, Demand, and Needs 2010-2060

Year		2010	2020	2030	2040	2050	2060
Population Projections		6,020,078	6,995,442	7,986,480	8,998,002	10,132,237	11,346,082
Existing Supplies	Surface Water	1,843,815	1,899,087	1,932,954	1,971,925	2,013,605	2,021,690
	Groundwater	777,845	641,359	591,590	586,814	578,644	569,361
	Reuse	-	-	438	14,799	14,840	14,866
	Total Water Supply	2,621,660	2,540,446	2,524,982	2,573,538	2,607,089	2,605,917
Demands	Municipal	968,949	1,117,677	1,236,037	1,341,483	1,444,026	1,558,706
	County-other	73,915	75,235	102,549	144,360	211,236	286,111
	Manufacturing	722,873	783,835	836,597	886,668	927,860	950,102
	Mining	57,043	60,782	63,053	65,285	67,501	69,457
	Irrigation	450,175	438,257	433,686	430,930	430,930	430,930
	Steam Electric	91,231	112,334	131,332	154,491	182,720	217,132
	Livestock	12,228	12,228	12,228	12,228	12,228	12,228
	Total Water Demands	2,376,414	2,600,348	2,815,482	3,035,445	3,276,501	3,524,666
Needs	Municipal	42,081	206,131	317,539	367,712	428,499	534,252
	County-other	13,070	21,975	42,697	85,430	150,770	224,682
	Manufacturing	75,164	131,531	168,597	202,219	231,118	255,604
	Mining	5,992	10,595	13,850	16,278	18,736	20,984
	Irrigation	151,366	141,232	137,995	137,113	140,733	144,802
	Steam Electric	3,203	12,609	18,058	24,726	34,976	55,972
	Livestock	14	64	40	40	40	39
	Total Water Needs	290,890	524,137	698,776	833,518	1,004,872	1,236,335

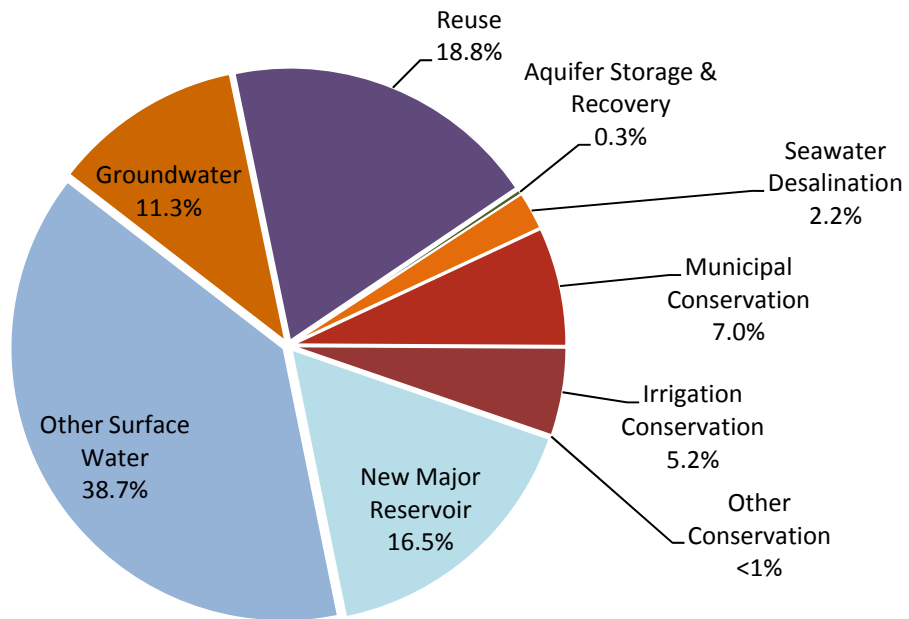


Figure H.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Water for Texas:

Summary of the 2011 Regional Water Plans

Table H.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
H	ALLENS CREEK RESERVOIR	\$222,752,400		57,393	55,096	87,781	99,650	99,650
H	BRA SYSTEM OPERATIONS PERMIT	\$0		6,621	18,870	25,350	25,350	25,350
H	BRAZORIA CO. INTERRUPTIBLE SUPPLIES FOR IRR.	\$0	104,977	86,759	64,000	64,000	64,000	64,000
H	BRAZORIA OFF-CHANNEL RESERVOIR	\$173,898,602	-	-	-			24,000
H	BRAZOS SALTWATER BARRIER	\$44,470,739	-	-	-			
H	BWA TO WUG CONTRACT	\$22,363,694	7,750	7,750	7,750	7,750	7,750	7,750
H	CHCRWA TO WUG CONTRACT	\$2,048,820		977	862	720	631	546
H	CITY OF MISSOURI CITY GRP - ASR	\$58,967,437		4,147	4,147	4,147	4,147	4,147
H	CITY OF MISSOURI CITY GRP PARTICIPATION	\$6,618,706		1,004	1,860	1,896	1,896	1,896
H	CITY OF MISSOURI CITY GRP REUSE	\$9,100,352		640	640	640	640	640
H	CLCND WEST CHAMBERS SYSTEM	\$20,380,000		1,691	1,978	2,235	2,511	2,804
H	COH GRP PARTICIPATION	\$58,235,873	3,762	11,417	16,809	19,870	22,399	24,990
H	COH TO WUG CONTRACT	\$63,420,357		6,128	4,816	4,742	5,400	6,027
H	DOW OFF-CHANNEL RESERVOIR	\$124,468,000		21,800	21,800	21,800	21,800	21,800
H	EXPANDED USE OF GW	\$165,928,999		40,159	62,297	68,916	80,337	90,617
H	FB WCID 1 TO WUG CONTRACT	\$1,815,739		148	824	940	1,016	1,016
H	FORT BEND MUD 25 GRP (REUSE)	\$776,145		589	589	589	589	589
H	FORT BEND OFF-CHANNEL RESERVOIR	\$202,514,788		-	-	-	90	45,943
H	FREERPORT DESALINATION PLANT	\$255,699,000		-	-	-	33,600	33,600
H	FULSHEAR REUSE	\$566,625		287	430	430	430	430
H	GALVESTON TO WUG CONTRACT	\$10,542,328		7,262	7,262	7,262	7,262	7,262
H	GC WCID 1 TO WUG CONTRACT	\$1,807,960		766	909	940	975	1,014
H	GCWA OFF-CHANNEL RESERVOIR	\$197,448,012		-	39,500	39,500	39,500	39,500
H	GCWA TO WUG CONTRACT	\$132,634,164		29,718	30,708	31,618	32,719	34,057

Water for Texas:

Summary of the 2011 Regional Water Plans

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
H	HOUSTON BAYOUS PERMIT	\$20,956,000	-	-	-			
H	HOUSTON INDIRECT REUSE	\$721,822,850		-	-	66,420	114,679	128,801
H	INDUSTRIAL CONSERVATION	\$0		558	558	558	558	558
H	INTERIM STRATEGIES	\$1,155,965	503	-	-	-	-	
H	INTERIM STRATEGIES - TEMPORARY OVERDRAFT	\$85,545,570	45,009	-	-			
H	IRRIGATION CONSERVATION	\$757,436	71,275	71,275	71,275	71,275	77,881	77,881
H	LNVA TO WUG CONTRACT	\$405,835	16	23	26	29	33	37
H	MONTGOMERY MUD 8/9 INDIRECT REUSE	\$12,245,687		657	816	1,120	1,120	1,120
H	MUNICIPAL CONSERVATION	\$0	1,680	3,635	3,954	4,269	4,716	5,232
H	MUNICIPAL CONSERVATION - LARGE WUG	\$0	31,612	38,940	42,664	46,276	50,073	54,484
H	MUNICIPAL CONSERVATION - MEDIUM WUG	\$0	2,658	4,377	5,062	5,684	6,384	7,189
H	MUNICIPAL CONSERVATION - SMALL WUG	\$0	9,655	18,366	24,016	28,274	33,219	38,589
H	NEW GROUNDWATER WELLS FOR LIVESTOCK	\$18,635		41	41	41	41	41
H	NFBWA GRP PARTICIPATION	\$1,638,063		106	258	295	466	687
H	NHCRWA GRP PARTICIPATION	\$17,814,585	761	2,933	4,243	5,573	6,664	8,088
H	NHCRWA INDIRECT REUSE	\$66,778,694		-	-	7,300	16,300	16,300
H	NHCRWA TO WUG CONTRACT	\$42,207,965		56,453	83,041	64,491	34,726	27,478
H	REALLOCATION OF EXISTING SUPPLIES	\$275,269,912	59,614	56,931	54,011	66,006	76,391	152,895
H	RICHMOND ROSENBERG GRP (WFB SWTP)	\$117,220,150		7,500	7,500	7,500	7,500	7,500
H	RIVER PLANTATION GRP (REUSE)	\$484,926	168	368	368	368	368	368
H	SJRA TO WUG CONTRACT	\$264,926,229	23,008	27,754	37,090	54,777	54,805	54,849
H	SJRA WRAP PARTICIPATION	\$89,604,231		21,441	27,020	30,247	28,720	26,896
H	SUGAR LAND GRP PARTICIPATION	\$6,360,101		480	1,763	2,380	2,381	2,155
H	SUGAR LAND GRP REUSE	\$78,783,825		560	5,040	5,040	5,040	5,040
H	TRA TO HOUSTON CONTRACT	\$0		-	116,738	123,524	123,524	123,524
H	TRA TO SJRA CONTRACT	\$302,781,597		-	-	7,935	39,096	76,476
H	TRA TO WUG CONTRACT	\$249,479,472	13,823	17,083	19,972	22,888	25,732	28,672

Water for Texas:

Summary of the 2011 Regional Water Plans

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
H	WASTEWATER RECLAMATION FOR MUN. IRRIGATION	\$48,043,249	-	-	7,272	15,425	25,561	36,388
H	WASTEWATER REUSE FOR INDUSTRY	\$332,051,761	-	-	-	-	-	67,200
H	WHCRWA GRP PARTICIPATION	\$35,268,970	2,488	7,689	10,105	11,683	13,340	15,104
H	BAWA TO WUG CONTRACT*	\$900,444	-	-	191	349	496	496
H	BRA TO BRAZOSPORT WATER AUTHORITY CONTRACT*	\$0	-	232	248	3,114	6,366	10,870
H	BRA TO GCWA CONTRACT*	\$0	-	35,558	80,016	100,410	112,400	131,128
H	BRA TO NRG CONTRACT*	\$0	-	-	-	-	-	17,000
H	BRA TO RICHMOND-ROSENBERG CONTRACT*	\$0	-	-	-	2,182	6,120	11,290
H	BRA TO SUGAR LAND CONTRACT*	\$0	-	2,054	5,894	7,232	7,750	9,512
H	BRA TO WUG CONTRACT*	\$652,480,634	-	49,416	35,211	62,308	100,156	145,264
H	BWA TO WUG CONTRACT*	\$2,102,169	-	116	124	1,557	3,183	5,435
H	CHCRWA GRP*	\$0	2,375	4,146	4,789	4,806	4,806	4,806
H	CHCRWA INTERNAL DISTRIBUTION*	\$0	2,375	4,146	4,789	4,806	4,806	4,806
H	CHCRWA TO WUG CONTRACT*	\$1,867,449	-	794	1,129	1,500	1,668	1,668
H	CHCRWA TRANSMISSION LINE*	\$0	2,375	4,146	4,789	4,806	4,806	4,806
H	CITY OF MISSOURI CITY GRP*	\$24,003,201	-	395	4,644	8,362	8,362	12,775
H	CLCND TO WUG CONTRACT*	\$30,827,919	-	1,691	1,978	2,235	2,511	2,804
H	COH DISTRIBUTION EXPANSION*	\$261,040,000	-	280,000	128,000	64,000	48,000	48,000
H	COH TO BAWA CONTRACT*	\$0	-	26	262	398	535	692
H	COH TO BRA CONTRACT*	\$0	-	54,996	50,402	115,772	139,510	139,510
H	COH TO CHCRWA CONTRACT*	\$0	-	1,771	2,414	2,431	2,431	2,431
H	COH TO CITY OF PASADENA CONTRACT*	\$0	1,865	2,278	2,665	3,153	3,579	4,068
H	COH TO NCWA CONTRACT*	\$0	1,954	2,392	2,869	3,511	4,157	4,912
H	COH TO NFBWA CONTRACT*	\$0	-	888	35,942	62,322	82,344	100,884
H	COH TO NHCRWA CONTRACT*	\$0	-	56,453	83,041	83,041	78,041	83,041
H	COH TO SJRA CONTRACT*	\$0	-	36,377	55,538	54,582	53,581	52,534
H	COH TO WHCRWA CONTRACT*	\$0	1,241	31,837	46,324	52,759	55,549	58,402

Water for Texas:

Summary of the 2011 Regional Water Plans

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
H	COH TO WUG CONTRACT*	\$183,896,349	-	14,981	31,413	30,449	34,995	34,995
H	COH TREATMENT EXPANSION*	\$2,045,672,161	16,000	280,000	128,000	64,000	48,000	48,000
H	DOW TO WUG CONTRACT*	\$155,206,615	-	21,800	21,800	21,800	21,800	21,800
H	FB WCID 2 TO WUG CONTRACT*	\$2,049,847	-	491	1,092	1,092	1,092	1,092
H	FORT BEND WCID #2 GRP*	\$24,828,857	-	2,296	5,753	5,753	5,753	5,753
H	GCWA FBC WCID #2 CONTRACT*	\$0	-	491	1,092	1,092	1,092	1,092
H	GCWA TO CITY OF GALVESTON CONTRACT*	\$0	-	7,262	7,262	7,262	7,262	7,262
H	GCWA TO GC WCID #1 CONTRACT*	\$0	-	766	909	940	975	1,014
H	GCWA TO MISSOURI CITY CONTRACT*	\$0	-	713	6,330	10,661	10,911	15,435
H	GCWA TO WUG CONTRACT*	\$144,117,128	-	135	54,513	58,116	60,587	65,213
H	HARRIS COUNTY MUD 50 WTP*	\$6,131,600	560	560	560	560	588	632
H	HUNTSVILLE WTP*	\$61,023,906	11,200	11,200	11,200	11,200	11,200	11,200
H	LLWSSC SURFACE WATER PROJECT*	\$3,087,974	954	954	954	954	954	954
H	LUCE BAYOU TRANSFER*	\$253,916,914	-	128,259	206,276	207,629	205,171	270,742
H	MISSOURI CITY TO WUG CONTRACT *	\$4,807,747	-	713	6,330	10,661	10,911	15,435
H	NCWA TO WUG CONTRACT *	\$3,632,614	-	-	2,088	3,078	3,852	3,852
H	NFBWA GRP*	\$0	35,009	61,021	70,363	84,943	96,103	106,402
H	NFBWA INTERNAL DISTRIBUTION *	\$225,000,000	35,009	61,021	70,363	84,943	96,103	106,402
H	NFBWA SHARED TRANSMISSION LINE*	\$213,000,000	-	21,878	39,405	52,595	62,606	71,876
H	NFBWA TO WUG CONTRACT*	\$44,964,481	-	444	13,085	27,315	38,155	38,155
H	NHCRWA GRP*	\$0	34,714	91,167	117,755	99,625	81,126	117,755
H	NHCRWA INTERNAL 2010 DISTRIBUTION*	\$153,149,640	34,714	34,714	34,714	34,714	34,714	34,714
H	NHCRWA INTERNAL 2020 DISTRIBUTION*	\$345,292,192	-	91,167	91,167	91,167	91,167	91,167
H	NHCRWA INTERNAL 2030 DISTRIBUTION*	\$37,439,584	-	-	117,755	117,755	117,755	117,755
H	NHCRWA TRANSMISSION 2010*	\$80,690,624	34,714	34,714	34,714	34,714	34,714	34,714
H	NHCRWA TRANSMISSION 2020*	\$172,558,512	-	91,167	91,167	91,167	91,167	91,167
H	NHCRWA TRANSMISSION 2030*	\$0	-	-	117,755	117,755	117,755	117,755

Water for Texas:

Summary of the 2011 Regional Water Plans

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
H	NRG TO WUG CONTRACT*	\$0	-	-	-			8,500
H	PASADENA TO WUG CONTRACT*	\$2,918,547		967	1,941	2,765	3,317	3,317
H	PEARLAND SWTP*	\$265,000,000	6,720	6,720	6,720	13,420	13,420	13,420
H	PECAN GROVE GRP*	\$15,960,000	866	866	1,731	1,731	1,731	1,731
H	RICHMOND-ROSENBERG TO WUG CONTRACT*	\$0		-	-	1,091	3,060	5,645
H	SEALY GW TREATMENT EXPANSION*	\$6,450,000		360	360	360	360	888
H	SJRA TO COH CONTRACT*	\$0		-	1,356	5,300	3,875	2,428
H	SJRA TO WUG CONTRACT*	\$43,842,177		-	-	7,935	39,096	76,476
H	SJRA WRAP *	\$900,000,000		36,377	55,538	62,517	92,677	129,010
H	SJRA WRAP PARTICIPATION*	\$128,252,622		36,377	55,538	54,582	53,581	52,534
H	SUGAR LAND GRP*	\$82,576,224		1,027	2,947	3,616	3,875	4,756
H	SUGAR LAND TO WUG CONTRACT*	\$4,982,927		1,027	2,947	3,616	3,875	4,756
H	WHCRWA GRP*	\$0	21,678	52,274	66,761	73,196	75,985	78,839
H	WHCRWA INTERNAL DISTRIBUTION*	\$552,472,000	21,678	52,274	66,761	73,196	75,985	78,839
H	WHCRWA TO WUG*	\$44,753,636		31,837	46,324	40,241	43,031	38,961
H	WHCRWA TRANSMISSION LINE*	\$290,084,193	21,678	52,274	66,761	73,196	75,985	78,839
Total		\$12,019,061,335	378,759	622,426	863,980	1,040,504	1,202,010	1,501,180

* DENOTES STRATEGIES WITH SUPPLY VOLUMES INCLUDED IN OTHER STRATEGIES

SUMMARY OF EAST TEXAS (I) REGION

The East Texas Regional Water Planning Area includes all or parts of 20 counties within portions of the Sabine, Neches, and Trinity river basins and the Neches-Trinity coastal basin (Figure I.1). Surface water currently provides 73 percent of the existing water supplies in the region and run-of-river water rights on the Neches and Sabine. Groundwater supplies are associated primarily with the Gulf Coast and Carrizo-Wilcox Aquifers.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 182,145 acre-feet/year
- Recommended water strategy volume in 2060 – 638,076 acre-feet/year
- Total capital cost \$885 million
- Conservation accounts for 7% of 2060 strategy volumes
- Two new major reservoirs (Lake Columbia, Fastrill Replacement Project – see Figure 2.9)
- Limited unmet steam electric power and mining needs

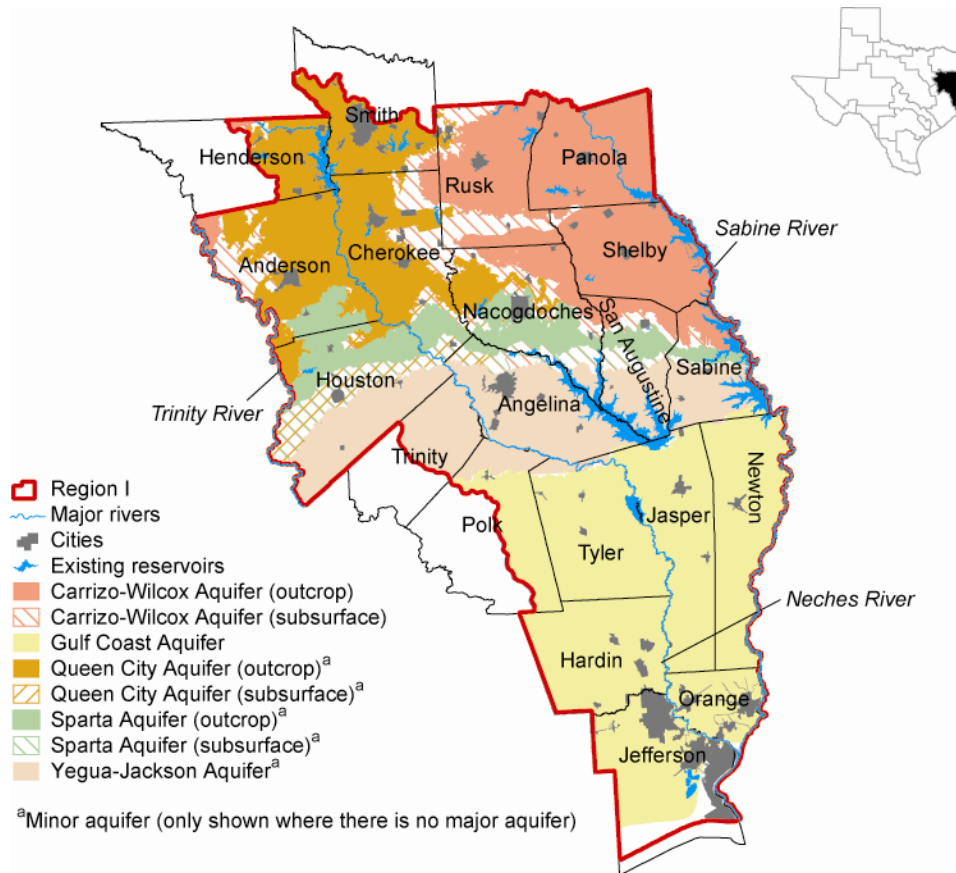


Figure I.1 - East Texas Region

Almost five percent of the state’s 2010 total population is projected to reside in Region I, and between 2010 and 2060 its population is projected to increase by 36 percent to 1,482,448.

Table I.1 - Population, Water Supply, Demand, and Needs 2010-2060

Year		2010	2020	2030	2040	2050	2060
Population Projections		1,090,382	1,166,057	1,232,138	1,294,976	1,377,760	1,482,448
Existing Supplies	Surface Water	661,511	941,613	1,123,982	1,151,585	1,172,399	1,198,769
	Groundwater	220,676	220,883	220,855	220,805	220,753	220,689
	Reuse	18,077	15,220	15,233	15,246	15,257	15,271
	Total Water Supply	900,264	1,177,716	1,360,070	1,387,636	1,408,409	1,434,729
Demands	Municipal	153,520	159,266	164,327	169,332	178,627	191,273
	County-other	36,039	37,562	38,434	38,861	40,078	42,349
	Manufacturing	299,992	591,904	784,140	821,841	857,902	893,476
	Mining	21,662	37,297	17,331	18,385	19,432	20,314
	Irrigation	151,100	151,417	151,771	152,153	152,575	153,040
	Steam Electric	44,985	80,989	94,515	111,006	131,108	155,611
	Livestock	23,613	25,114	26,899	29,020	31,546	34,533
	Total Water Demands	730,911	1,083,549	1,277,417	1,340,598	1,411,268	1,490,596
Needs	Municipal	3,340	5,548	7,042	9,049	12,214	16,408
	County-other	1,072	1,803	2,272	2,584	3,152	4,101
	Manufacturing	3,392	16,014	24,580	33,256	40,999	49,588
	Mining	14,812	29,744	9,395	10,075	10,748	11,276
	Irrigation	1,675	1,805	2,156	2,536	2,955	3,416
	Steam Electric	3,588	25,922	33,615	43,053	62,778	85,212
	Livestock	977	2,196	4,093	6,347	9,020	12,144
	Total Water Needs	28,856	83,032	83,153	106,900	141,866	182,145

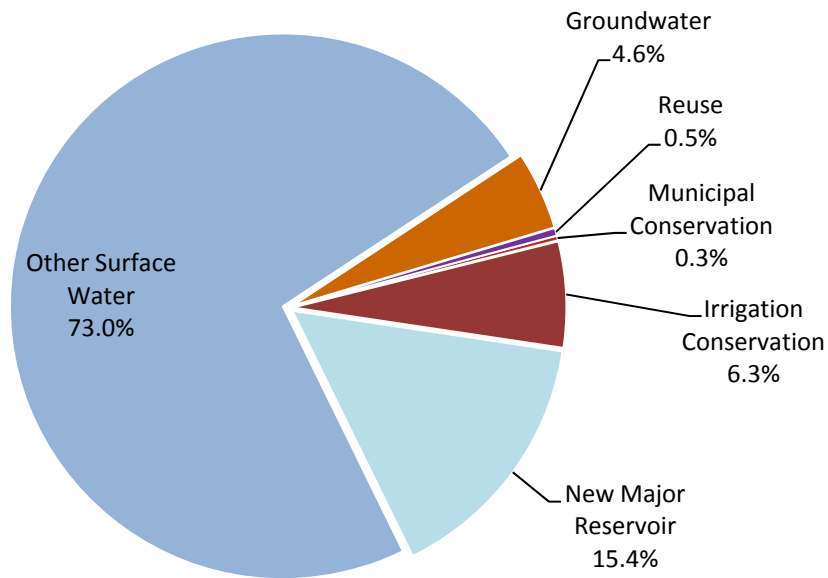


Figure I.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Water for Texas:

Summary of the 2011 Regional Water Plans

Table I.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
I	ANGELINA COUNTY REGIONAL PROJECT	\$53,164,000	-			11,210	11,210	11,210
I	EXPAND LOCAL SURFACE WATER SUPPLIES	\$1,983,800	50	150	707	990	1,000	1,190
I	FASTRILL REPLACEMENT (REGION I COMPONENT)**	\$0	-			-	-	22,400
I	FOREST GROVE RESERVOIR PROJECT	\$26,619,000	-			2,240	2,240	2,240
I	INDIRECT REUSE	\$0		2,872	2,872	2,872	2,872	2,872
I	INFRASTRUCTURE IMPROVEMENTS	\$1,000,000	1,000	1,000	1,000	1,000	1,000	1,000
I	LAKE KURTH REGIONAL SYSTEM	\$56,488,600	6,800	18,400	18,400	18,400	18,400	18,400
I	LAKE NACONICHE REGIONAL WATER SUPPLY SYSTEM	\$24,890,050		800	1,200	1,200	1,700	1,700
I	LAKE PALESTINE INFRASTRUCTURE	\$79,389,250		-	16,815	16,815	16,815	16,815
I	MUNICIPAL CONSERVATION	\$0	111	480	811	1,085	1,381	1,701
I	NEW SOURCE - LAKE COLUMBIA	\$231,865,000		75,700	75,700	75,700	75,700	75,700
I	NEW WELLS - CARRIZO WILCOX AQUIFER	\$39,623,385	11,787	13,493	15,656	17,006	20,433	21,403
I	NEW WELLS - GULF COAST AQUIFER	\$6,818,213	804	1,992	2,199	3,033	3,038	3,043
I	NEW WELLS - QUEEN CITY AQUIFER	\$5,646,042	137	231	318	455	650	1,097
I	NEW WELLS - YEGUA JACKSON AQUIFER	\$2,581,793	710	730	971	1,110	1,302	1,376
I	OVERDRAFT CARRIZO WILCOX AQUIFER	\$4,209,789	100	1,400	1,400	1,500	1,500	1,540
I	OVERDRAFT GULF COAST AQUIFER	\$2,359,067	844	996	996	996	1,149	1,149
I	PERMIT AMENDMENT - HOUSTON COUNTY LAKE	\$0	3,500	3,500	3,500	3,500	3,500	3,500
I	PERMIT AMMENDMENT FOR SAM RAYBURN	\$0		28,000	28,000	28,000	28,000	28,000
I	PURCHASE WATER FROM PROVIDER (1)	\$17,495,246	5,396	42,367	46,133	51,148	51,167	54,200
I	PURCHASE WATER FROM PROVIDER (2)	\$109,419,358	2,152	29,995	38,839	42,939	86,040	89,365
I	PURCHASE WATER FROM PROVIDER (3)	\$0	27			-	5,175	5,175
I	REALLOCATION OF FLOOD STORAGE (RAYBURN)	\$0	-			-	122,000	122,000
I	SALTWATER BARRIER CONJUNCTIVE OPERATION WITH RAYBURN/STEINHAGEN	\$2,000,000		111,000	111,000	111,000	111,000	111,000
I	WHOLESALE CUSTOMER CONSERVATION	\$1,400,000	20,000	30,000	33,000	35,000	40,000	40,000

Water for Texas:

Summary of the 2011 Regional Water Plans

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
I	ANRA TREATMENT AND DISTRIBUTION SYSTEM*	\$35,127,250	-	-	-	-	-	-
I	INDIRECT REUSE*	\$0	-	1,377	1,589	1,784	1,993	2,198
I	NEW WTP*	\$12,387,000	-	-	-	-	-	2,240
I	PURCHASE WATER FROM PROVIDER (1)*	\$0	1,080	2,508	2,633	2,908	3,308	3,708
I	PURCHASE WATER FROM PROVIDER (2)*	\$113,947,150	13,350	45,201	33,051	34,351	45,751	56,251
I	PURCHASE WATER FROM PROVIDER (3)*	\$56,415,750	-	10,251	10,251	10,251	10,251	10,251
Total		\$884,829,743	53,418	363,106	399,517	427,199	607,272	638,076

* DENOTES STRATEGIES WITH SUPPLY VOLUMES INCLUDED IN OTHER STRATEGIES

** Estimated planning costs and water supply associated with this strategy are based on the Neches River Run-of-River strategy. This project, however is only one of several water management strategies being considered to meet these 2060 needs, and through action by the Region C Water Planning Group, any of those other strategies may be substituted into the plan to represent the 'Fastrill Reservoir Replacement' strategy. Those other strategies include: additional water conservation, Lake Texoma, Toledo Bend Reservoir, Lake O' the Pines, Lake Livingston, Ogallala groundwater in Roberts County (Region A), Marvin Nichols Reservoir, Lake Columbia, George Parkhouse Reservoir (North), George Parkhouse Reservoir (South), and Oklahoma Water.

SUMMARY PLATEAU (J) REGION

Located on the southern edge of the Edwards Plateau, the Plateau Regional Water Planning Area includes six counties and portions of the Colorado, Guadalupe, Nueces, Rio Grande, and San Antonio river basins (Figure J.1). Groundwater currently provides almost 82 percent of the existing water supplies in the region primarily from the Edwards-Trinity (Plateau), Trinity, and Edwards (Balcones Fault Zone) aquifers. Surface water supplies are associated primarily with San Felipe Springs and run-of-river water rights on the Guadalupe and Nueces Rivers.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 2,389 acre-feet/year
- Recommended water strategy volume in 2060 – 23,010 acre-feet/year
- Total capital cost \$55 million
- Conservation accounts for 3% of 2060 strategy volumes
- Brush control strategy supply not available during drought of record conditions
- Aquifer Storage and Recovery accounts for 21% of 2060 strategy volumes

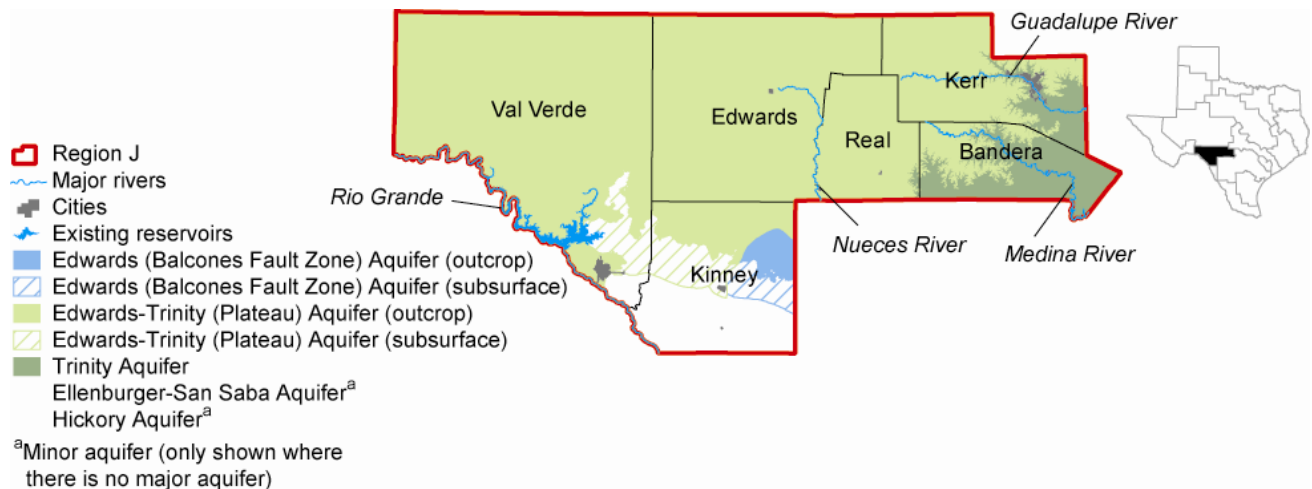


Figure J.1 - Plateau Texas Region

Less than one percent of the state’s 2010 total population is projected to reside in Region J, and between 2010 and 2060 its population is projected to increase by 52 percent to 205,910.

Table J.1 - Population, Water Supply, Demand, and Needs 2010-2060

		Year	2010	2020	2030	2040	2050	2060
		Population Projections	135,723	158,645	178,342	190,551	198,594	205,910
Existing Supplies	Surface Water		19,269	19,269	19,269	19,269	19,269	19,269
	Groundwater		85,439	85,439	85,439	85,439	85,439	85,439
	Total Water Supply		104,708	104,708	104,708	104,708	104,708	104,708
Demands	Municipal		20,695	22,068	23,101	23,795	24,563	25,106
	County-other		8,625	10,515	12,170	13,178	13,836	14,526
	Manufacturing		30	33	36	39	41	44
	Mining		403	394	389	385	381	378
	Irrigation		19,423	18,645	17,897	17,183	16,495	15,837
	Livestock		2,752	2,752	2,752	2,752	2,752	2,752
	Total Water Demands		51,928	54,407	56,345	57,332	58,068	58,643
Needs	Municipal		1,494	1,878	2,044	2,057	2,275	2,389
	Total Water Needs		1,494	1,878	2,044	2,057	2,275	2,389

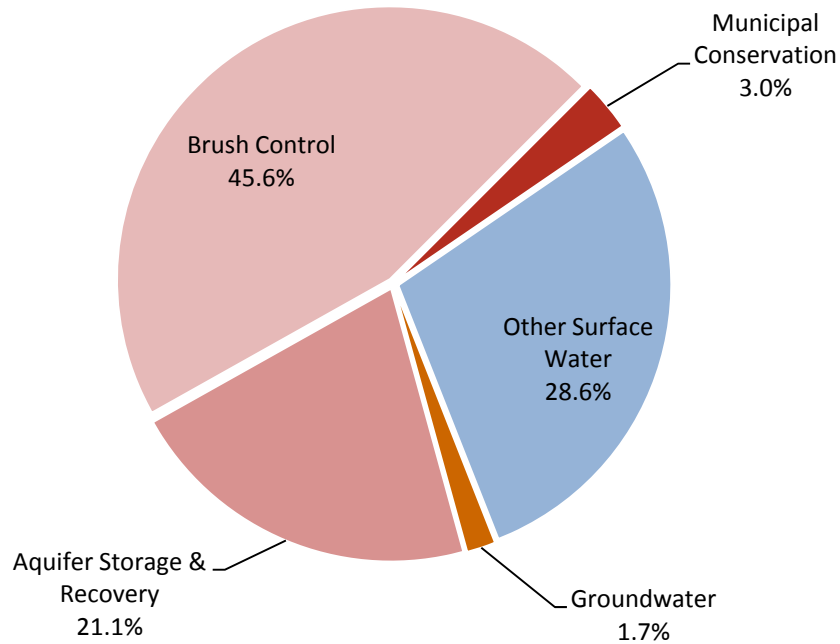


Figure J.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table J.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
J	ADDITIONAL GROUNDWATER WELLS	\$240,350	222	222	222	222	222	222
J	CONSERVATION: BRUSH MANAGEMENT**	\$3,937,790	10,500	10,500	10,500	10,500	10,500	10,500
J	CONSERVATION: PUBLIC INFORMATION	\$0	65	69	71	71	76	77
J	CONSERVATION: SYSTEM WATER AUDIT AND WATER LOSS AUDIT	\$0	514	553	570	572	593	604
J	GROUNDWATER WELLS	\$247,250	172	172	172	172	172	172
J	INCREASED WATER TREATMENT AND ASR CAPACITY	\$6,650,000	2,240	2,240	2,240	2,240	2,240	2,240
J	PURCHASE WATER FROM UGRA	\$0	-	-	3,840	3,840	3,840	5,450
J	REPLACE PRESSURE TANK	\$7,000	-	-	-	-	-	-
J	SURFACE WATER ACQUISITION, TREATMENT AND ASR	\$36,660,000	-	1,624	1,624	2,124	2,124	2,624
J	SURFACE WATER STORAGE	\$7,050,000 -	-	1,121	1,121	1,121	1,121	1,121
	Total	\$54,792,390	13,713-	16,501-	20,360-	20,862-	20,888	23,010

** Supply would not available during drought of record conditions

-
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SUMMARY OF LOWER COLORADO (K) REGION

The Lower Colorado Regional Water Planning Area includes all or parts of 14 counties within the Colorado River Basin down to Matagorda Bay (Figure K.1). Surface water from the Lower Colorado River Authority’s Highland Lakes system and run-of-river water rights on the Colorado River currently provide almost 77 percent of the existing water supplies in the region. Groundwater supplies are associated primarily with the Gulf Coast, Trinity, and Carrizo-Wilcox aquifers.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 367,671 acre-feet/year
- Recommended water strategy volume in 2060 - 646,167 acre-feet/year
- Total capital cost \$907 million
- Conservation accounts for 38% of 2060 strategy volumes
- One new major reservoir (LCRA/SAWS Project Off-Channel – see Figure 2.9)
- Reuse accounts for 21% of 2060 strategy volumes

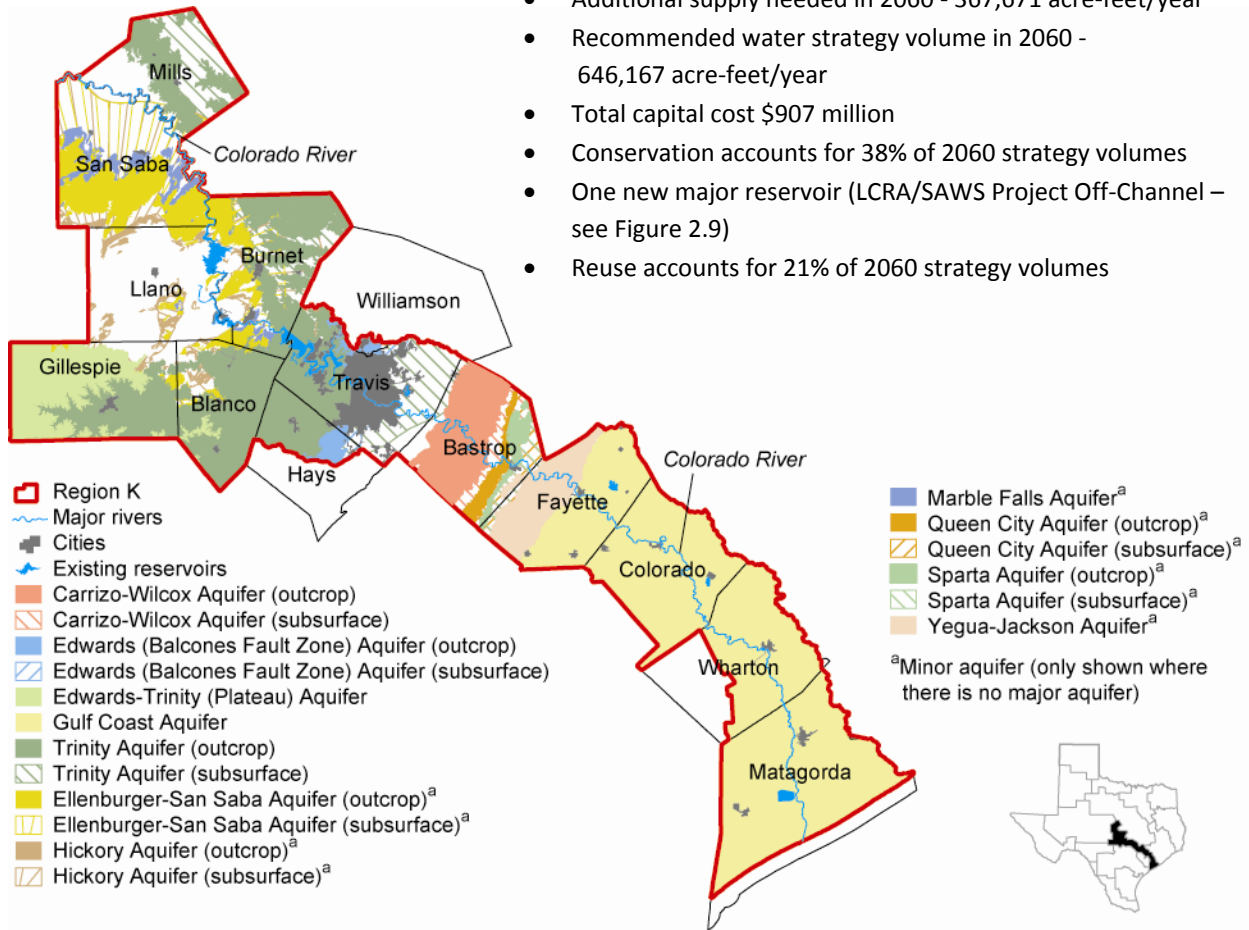


Figure K.1 - Lower Colorado Region

Almost six percent of the state’s 2010 total population is projected to reside in Region K, and between 2010 and 2060 its population is projected to increase by 100 percent to 2,831,937.

Table K.1 - Population, Water Supply, Demand, and Needs 2010-2060

		Year					
		2010	2020	2030	2040	2050	2060
Population Projections		1,412,834	1,714,282	2,008,142	2,295,627	2,580,533	2,831,937
Existing Supplies	Surface Water	892,327	892,689	894,886	897,359	900,286	900,477
	Groundwater	270,557	270,268	269,887	268,936	268,527	268,594
	Total Water Supply	1,162,884	1,162,957	1,164,773	1,166,295	1,168,813	1,169,071
Demands	Municipal	239,013	288,152	336,733	382,613	428,105	467,075
	County-other	29,630	33,820	36,697	40,438	44,673	49,273
	Manufacturing	38,162	44,916	56,233	69,264	77,374	85,698
	Mining	30,620	31,252	31,613	26,964	27,304	27,598
	Irrigation	589,705	567,272	545,634	524,809	504,695	468,763
	Steam Electric	146,167	201,353	210,713	258,126	263,715	270,732
	Livestock	13,395	13,395	13,395	13,395	13,395	13,395
	Total Water Demands	1,086,692	1,180,160	1,231,018	1,315,609	1,359,261	1,382,534
	Needs	Municipal	6,671	17,867	25,289	36,420	76,771
County-other		223	1,725	4,347	8,128	11,610	14,892
Manufacturing		146	298	452	605	741	934
Mining		13,550	13,146	12,366	6,972	5,574	5,794
Irrigation		234,738	217,011	198,717	181,070	164,084	135,822
Steam Electric		193	53,005	53,175	76,430	81,930	89,042
Livestock		188	188	188	188	188	188
Total Water Needs		255,709	303,240	294,534	309,813	340,898	367,671

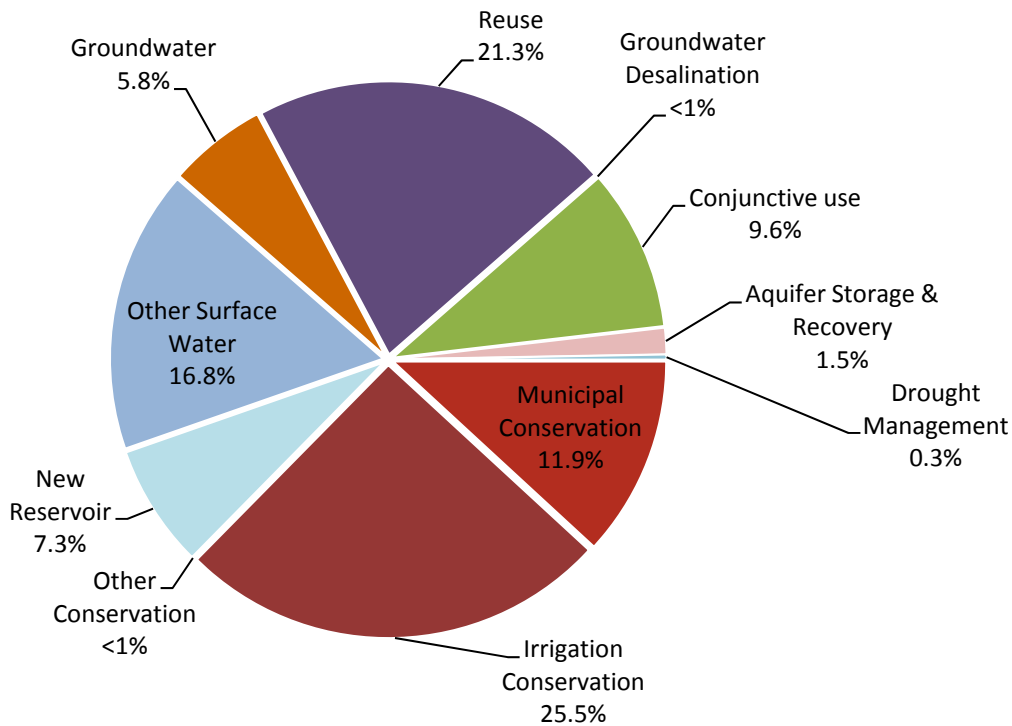


Figure K.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table K.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
K	ADDITIONAL MUNICIPAL CONSERVATION	\$0		-		522	1,027	1,844
K	AMEND LCRA CONTRACT	\$0	3,708	5,265	6,165	8,503	10,955	12,911
K	AQUIFER STORAGE AND RECOVERY	\$168,711,000		-		10,000	10,000	10,000
K	BLEND BRACKISH SURFACE WATER IN STPNOC RESERVOIR	\$0		17,505	17,505	17,505	17,505	17,625
K	COA CONSERVATION	\$0	11,030	18,795	24,036	25,385	30,401	36,370
K	COA DIRECT REUSE (MUNICIPAL & MANUFACTURING)	\$302,250,510	5,143	13,620	22,077	30,268	36,218	40,468
K	COA DIRECT REUSE (STEAM ELECTRIC)	\$302,250,510	2,315	3,315	7,315	8,315	12,315	13,315
K	COA RETURN FLOWS	\$0	46,853	45,641	49,862	62,330	64,645	74,366
K	CONJUNCTIVE USE OF GROUNDWATER - INCLUDES OVERDRAFTS	\$0		62,000	62,000	62,000	62,000	62,000
K	DEVELOPMENT OF CARRIZO-WILCOX AQUIFER	\$12,242,071		1,687	1,687	1,687	2,662	2,933
K	DEVELOPMENT OF ELLENBURGER-SAN SABA AQUIFER	\$5,601,523	478	478	478	478	519	542
K	DEVELOPMENT OF GULF COAST AQUIFER	\$164,000		-		-	-	82
K	DEVELOPMENT OF HICKORY AQUIFER	\$4,697,200	512	488	406	331	261	196
K	DEVELOPMENT OF NEW RICE VARIETIES	\$0		40,800	40,800	40,800	40,800	40,800
K	DEVELOPMENT OF OTHER AQUIFER	\$3,104,788	4,291	4,291	4,370	4,582	4,839	5,180
K	DEVELOPMENT OF QUEEN CITY AQUIFER	\$4,190,135		-		-	-	580
K	DEVELOPMENT OF SALINE ZONE OF EDWARDS-BFZ AQUIFER	\$19,753,964		250	2,750	2,850	5,500	7,100
K	DEVELOPMENT OF TRINITY AQUIFER	\$4,084,198		-	75	200	301	400
K	DOWNSTREAM RETURN FLOWS	\$0		--	460	1,836	3,443	4,590
K	DROUGHT MANAGEMENT	\$0	461	461	461	461	461	1,912
K	ENHANCED MUNICIPAL AND INDUSTRIAL CONSERVATION	\$0		-	2,000	10,000	20,000	20,000
K	EXPAND SUPPLY FROM STPNOC RESERVOIR	\$0	193	-	-	-	-	-
K	EXPANSION OF CARRIZO-WILCOX AQUIFER	\$16,872,960	4,350	5,815	8,476	9,779	12,950	12,920
K	EXPANSION OF ELLENBURGER-SAN SABA AQUIFER	\$14,482,800	681	756	788	1,229	1,633	2,076
K	EXPANSION OF GULF COAST AQUIFER	\$1,475,140	4,486	4,261	3,659	2,573	1,185	1,409

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
K	EXPANSION OF HICKORY AQUIFER	\$611,320	62	62	62	62	62	62
K	EXPANSION OF OTHER AQUIFER	\$1,721,920		416	777	1,366	2,017	2,814
K	EXPANSION OF QUEEN CITY AQUIFER	\$0	98	40	40	31	24	17
K	EXPANSION OF SPARTA AQUIFER	\$0	188	208	129	129	129	129
K	EXPANSION OF TRINITY AQUIFER	\$3,609,180	428	431	988	937	1,147	1,124
K	EXPANSION OF YEGUA-JACKSON AQUIFER	\$0		-		-	-	9
K	FIRM-UP RUN-OF-RIVER WITH OFF-CHANNEL RESERVOIR - LCRA/SAWS PROJECT (REGION K COMPONENT)	\$0		-		-	-	47,000
K	GOLDTHWAITE CHANNEL DAM	\$1,841,800	300	300	300	300	300	300
K	HB 1437 ON-FARM CONSERVATION	\$3,817,897	4,000	4,000	4,000	4,000	14,800	25,000
K	IRRIGATION DISTRICT CONVEYANCE IMPROVEMENTS	\$0		65,000	65,000	65,000	65,000	65,000
K	LCRA WMP INTERRUPTIBLE WATER SUPPLY	\$0	255,493	196,568	137,643	78,718	19,793	
K	MUNICIPAL CONSERVATION	\$0	3,468	6,462	9,644	12,684	15,444	18,380
K	NEW LCRA CONTRACTS	\$17,556,000		35,564	36,782	59,422	60,177	69,910
K	ON-FARM CONSERVATION	\$0		34,150	34,150	34,150	34,150	34,150
K	PURCHASE WATER FROM COA	\$2,280,200	1,100	1,100	1,100	1,100	1,100	1,100
K	PURCHASE WATER FROM WEST TRAVIS COUNTY REGIONAL WS	\$0	846	925	989	1,015	990	958
K	REUSE BY HIGHLAND LAKES COMMUNITIES	\$15,920,000		500	2,000	5,000	5,000	5,000
K	TEMPORARY DROUGHT PERIOD USE OF GULF COAST AQUIFER	\$0		-		-	-	47
K	TEMPORARY DROUGHT PERIOD USE OF QUEEN CITY AQUIFER	\$0	21	10	-	-		
K	WATER ALLOCATION	\$0	67	110	-	-		
K	WATER RIGHT PERMIT AMENDMENT	\$0		5,500	5,500	5,500	5,500	5,500
K	WATER TRANSFER	\$0	11	21	30	37	43	48
K	HB 1437 FOR WILLIAMSON COUNTY*	\$0	126	246	349	426	536	645
K	NEW LCRA CONTRACTS*	\$0	300	300	300	300	300	300
Total		\$907,239,116	350,583	576,795	554,504	571,085	565,296	646,167

* DENOTES STRATEGIES WITH SUPPLY VOLUMES INCLUDED IN OTHER STRATEGIES

SUMMARY OF SOUTH CENTRAL (L) REGION

Reaching from the Gulf Coast to the Hill Country, the South Central Texas Regional Water Planning Area includes all or parts of 21 counties, portions of nine river and coastal basins, the Guadalupe Estuary, and San Antonio Bay (Figure L.1). Groundwater currently provides almost 70 percent of the existing water supplies in the region primarily from the Edwards and Carrizo-Wilcox aquifers. Surface water supplies are associated primarily with Canyon Reservoir and run-of-river water rights on the Guadalupe River.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 436,751 acre-feet/year
- Recommended water strategy volume in 2060 - 765,738 acre-feet/year
- Total capital cost \$7.6 billion
- Conservation accounts for 11% of 2060 strategy volumes
- Five new, major off-channel reservoirs (GBRA Mid-Basin, Exelon, New Appropriation Project; LCRA/SAWS Project Off-Channel, Lavaca Off-Channel – see Figure 2.9)
- Significant Carrizo-Wilcox Aquifer development
- Five unique stream segments recommended for designation (see Appendix A, Figure II)
- Limited unmet irrigation needs

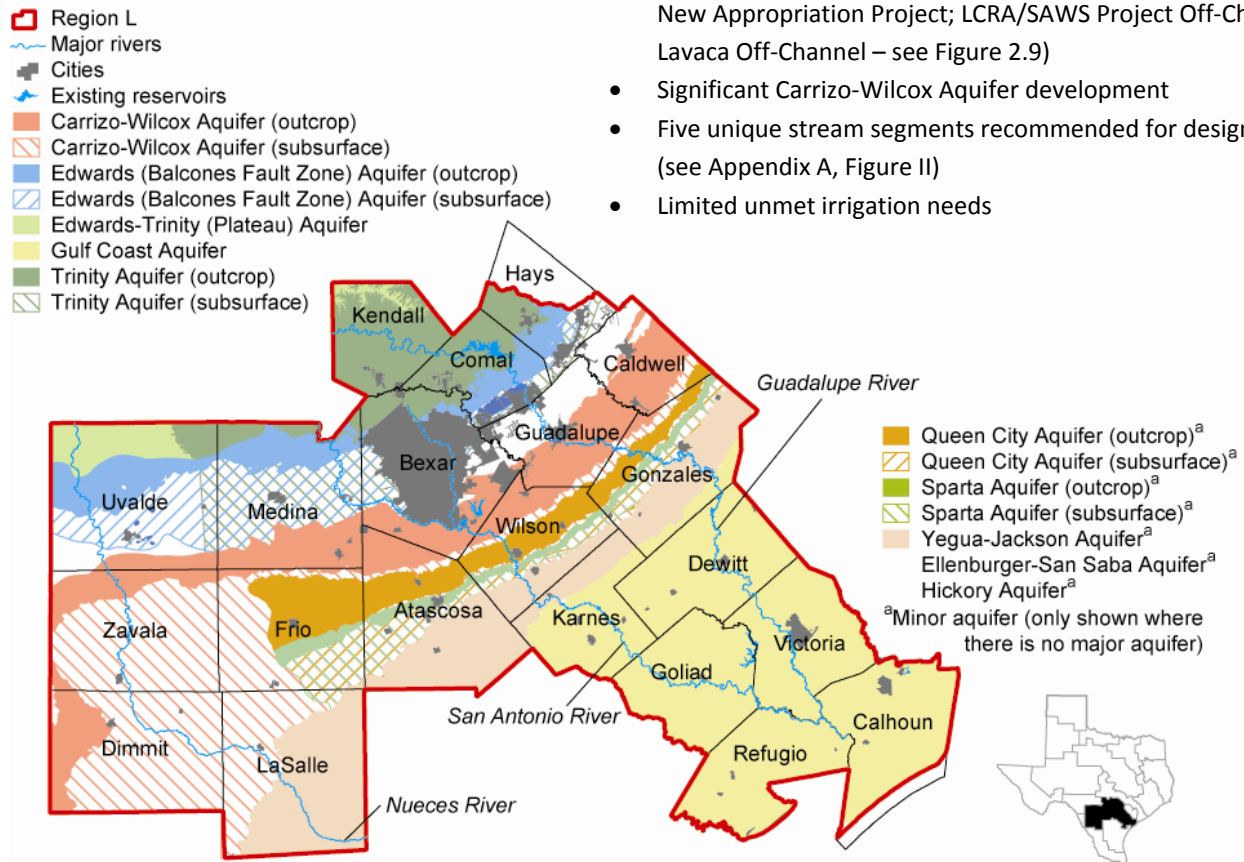


Figure L.1 - South Central Texas Region

Almost 10 percent of the state’s 2010 total population is projected to reside in Region L, and between 2010 and 2060 its population is projected to increase by 75 percent to 4,297,786.

Table L.1 - Population, Water Supply, Demand, and Needs 2010-2060

Year		2010	2020	2030	2040	2050	2060
Population Projections		2,460,599	2,892,933	3,292,970	3,644,661	3,984,258	4,297,786
Existing Supplies	Surface Water	301,491	301,475	299,956	295,938	295,922	295,913
	Groundwater	717,263	716,541	712,319	711,521	710,539	709,975
	Reuse	16,049	16,049	16,049	16,049	16,049	16,049
	Total Water Supply	1,034,803	1,034,065	1,028,324	1,023,508	1,022,510	1,021,937
Demands	Municipal	369,694	422,007	471,529	512,671	555,281	597,619
	County-other	26,302	29,104	31,846	34,465	37,062	39,616
	Manufacturing	119,310	132,836	144,801	156,692	167,182	179,715
	Mining	14,524	15,704	16,454	17,212	17,977	18,644
	Irrigation	379,026	361,187	344,777	329,395	315,143	301,679
	Steam Electric	46,560	104,781	110,537	116,068	121,601	128,340
	Livestock	25,954	25,954	25,954	25,954	25,954	25,954
	Total Water Demands	981,370	1,091,573	1,145,898	1,192,457	1,240,200	1,291,567
Needs	Municipal	94,650	134,541	173,989	212,815	249,735	288,618
	County-other	2,003	3,073	4,228	5,430	7,042	8,768
	Manufacturing	6,539	13,888	20,946	27,911	34,068	43,072
	Mining	521	726	1,771	1,992	2,293	2,493
	Irrigation	68,465	62,376	56,519	50,894	45,502	41,782
	Steam Electric	2,054	50,962	50,991	51,021	51,657	52,018
	Livestock	3	1	-	-	-	-
	Total Water Needs	174,235	265,567	308,444	350,063	390,297	436,751

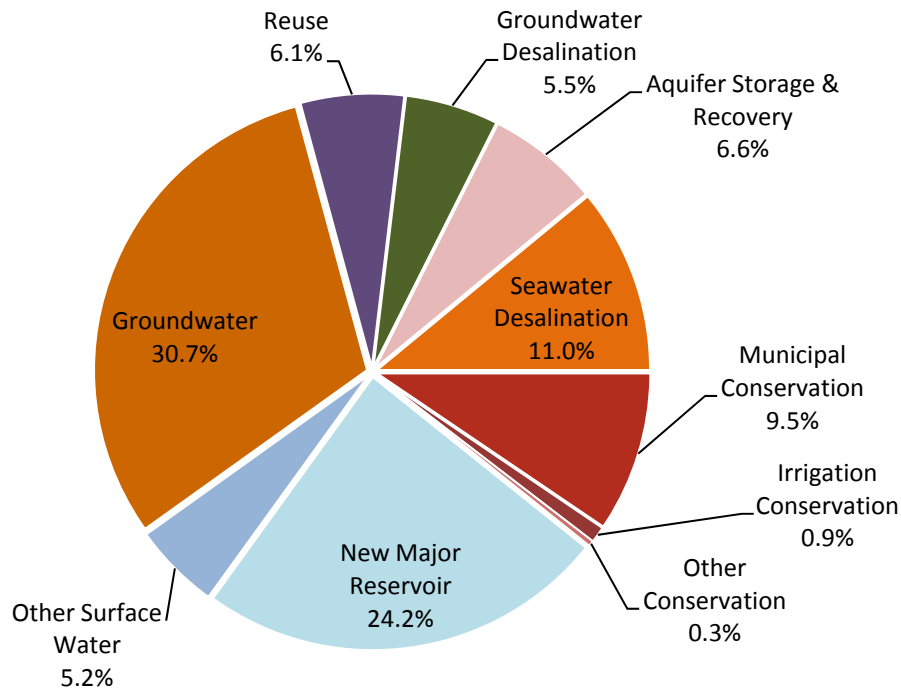


Figure L.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Water for Texas:

Summary of the 2011 Regional Water Plans

Table L.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
L	ASR PROJECT AND PHASED EXPANSION	\$0	3,800	16,000	16,000	16,000	16,000	16,000
L	BRACKISH GROUNDWATER DESALINATION (WILCOX AQUIFER)	\$378,330,000		12,000	28,600	35,120	40,720	42,220
L	CONSTRUCTION OF LAVACA RIVER OFF-CHANNEL RESERVOIR DIVERSION PROJECT (REGION L COMPONENT)	\$85,429,083		10,000	10,000	10,000	10,000	10,000
L	CRWA SIESTA PROJECT	\$53,481,000			1,000	5,042	5,042	5,042
L	CRWA WELLS RANCH PROJECT PHASE I	\$0	5,200	5,200	5,200	5,200	5,200	5,200
L	CRWA WELLS RANCH PROJECT PHASE II (INCL. GONZALES CO.)	\$34,910,000	5,800	5,800	5,800	5,800	5,800	5,800
L	DROUGHT MANAGEMENT	\$0	41,240					
L	EDWARDS AQUIFER RECHARGE - TYPE 2 PROJECTS	\$527,643,000		13,451	13,451	13,451	13,451	21,577
L	EDWARDS TRANSFERS	\$0	45,896	47,479	48,931	49,870	50,855	51,875
L	FACILITIES EXPANSION	\$142,282,000						
L	FIRM-UP RUN-OF-RIVER WITH OFF-CHANNEL RESERVOIR - LCRA/SAWS PROJECT (REGION L COMPONENT)	\$1,986,684,000			90,000	90,000	90,000	90,000
L	GBRA EXELON PROJECT	\$280,598,000		49,126	49,126	49,126	49,126	49,126
L	GBRA LOWER BASIN STORAGE	\$33,800,000			28,369	28,369	28,369	28,369
L	GBRA MID BASIN (SURFACE WATER)	\$546,941,000		25,000	25,000	25,000	25,000	25,000
L	GBRA NEW APPROPRIATION (LOWER BASIN)	\$246,849,000			11,300	11,300	11,300	11,300
L	GBRA SIMSBORO PROJECT (OVERDRAFT)	\$330,782,000		30,000	30,000	30,000	49,777	49,777
L	HAYS/CALDWELL PUA PROJECT (INCL. GONZALES CO.)	\$307,717,752		7,289	14,597	19,418	25,868	33,314
L	INDUSTRIAL, STEAM-ELECTRIC POWER GENERATION, AND MINING WATER CONSERVATION	\$0	521	726	1,771	1,992	2,293	2,493
L	IRRIGATION WATER CONSERVATION	\$0	20,087	17,561	14,429	11,421	8,543	7,238
L	LIVESTOCK WATER CONSERVATION	\$0	3	1				
L	LOCAL GROUNDWATER (GULF COAST AQUIFER)	\$2,194,000				161	161	161
L	LOCAL GROUNDWATER (TRINITY AQUIFER)	\$30,224,000	2,016	3,145	3,468	3,629	3,952	4,436
L	LOCAL GROUNDWATER CARRIZO-WILCOX AQUIFER (INCLUDES	\$166,718,000	6,773	11,610	15,441	17,256	23,946	33,874

Water for Texas:

Summary of the 2011 Regional Water Plans

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)						
			2010	2020	2030	2040	2050	2060	
	OVERDRAFTS)								
L	MEDINA LAKE FIRM-UP (ASR)	\$146,237,000	9,933	9,933	9,933	9,933	9,933	9,933	9,933
L	MUNICIPAL WATER CONSERVATION	\$0	13,232	22,744	31,618	40,531	53,925	72,566	
L	PURCHASE FROM NBU/REDISTRIBUTION OF SUPPLIES	\$0	1,443	552	552	552	552	552	552
L	PURCHASE FROM WWP (GUADALUPE-BLANCO RIVER AUTHORITY)	\$0	8,940	4,805	-	-	-	-	-
L	PURCHASE FROM WWP (LNRA)/REDISTRIBUTION OF SUPPLIES	\$0	46	145	322	499	489	489	489
L	PURCHASE FROM WWP(SSLGC)/REDISTRIBUTION OF SUPPLIES	\$0	581	719	876	1,034	1,197	1,376	
L	RECYCLED WATER PROGRAMS	\$465,339,000	21,666	26,046	30,151	34,178	37,706	41,737	
L	REGIONAL CARRIZO FOR SAWS (INCL. GONZALES CO.)	\$136,550,000	-	11,687	11,687	11,687	11,687	11,687	11,687
L	REGIONAL CARRIZO FOR SSLGC PROJECT EXPANSION (INCL. GONZALES CO.)	\$28,189,000	-	10,364	10,364	10,364	10,364	10,364	10,364
L	SEAWATER DESALINATION	\$1,293,827,000	-	-	-	-	-	-	84,012
L	STORAGE ABOVE CANYON RESERVOIR (ASR)	\$37,326,000	-	3,140	3,140	3,140	3,140	3,140	3,140
L	TWA REGIONAL CARRIZO (INCL. GONZALES CO.)	\$313,060,000	-	27,000	27,000	27,000	27,000	27,000	27,000
L	WESTERN CANYON WTP EXPANSION	\$11,727,436	-	-	-	-	-	5,600	5,600
L	WIMBERLEY AND WOODCREEK WATER SUPPLY PROJECT	\$33,771,000	1,120	4,480	4,480	4,480	4,480	4,480	4,480
L	BRACKISH GROUNDWATER DESALINATION (WILCOX AQUIFER)*	\$0	-	-	3,596	3,596	9,196	9,196	
L	CRWA SIESTA PROJECT*	\$0	-	-	1,000	5,042	3,711	4,211	
L	CRWA WELLS RANCH PROJECT PHASE I*	\$0	5,200	5,200	5,200	5,200	5,200	5,200	5,200
L	CRWA WELLS RANCH PROJECT PHASE II (INCL. GONZALES CO.)*	\$0	1,296	4,626	5,800	5,800	5,800	5,800	5,800
L	EDWARDS TRANSFERS*	\$0	5,259	6,220	8,297	12,483	20,823	21,138	
L	FACILITIES EXPANSION*	\$2,277,000	-	-	-	-	-	-	-
L	GBRA LOWER BASIN STORAGE*	\$0	-	-	7,786	10,755	13,416	16,391	
L	GBRA MID BASIN (SURFACE WATER)*	\$0	-	12,855	13,554	13,988	14,424	14,794	
L	GBRA NEW APPROPRIATION (LOWER BASIN)*	\$0	-	-	-	81	193	310	
L	GBRA SIMSBORO PROJECT (OVERDRAFT)*	\$0	-	9,268	14,174	20,954	28,024	35,786	
L	HAYS/CALDWELL PUA PROJECT (INCL. GONZALES CO.)*	\$0	-	1,370	7,521	5,344	5,986	7,502	
L	LOCAL GROUNDWATER (TRINITY AQUIFER)*	\$0	296	283	403	705	963	1,216	

Water for Texas:

Summary of the 2011 Regional Water Plans

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
L	LOCAL GROUNDWATER CARRIZO-WILCOX AQUIFER (INCLUDES OVERDRAFTS)*	\$0	120	120	120	120	120	120
L	MEDINA LAKE FIRM-UP (ASR)*	\$0	500	500	500	500	500	500
L	RECYCLED WATER PROGRAMS*	\$0	4,240	7,367	15,127	15,127	15,127	15,127
L	REGIONAL CARRIZO FOR SSLGC PROJECT EXPANSION (INCL. GONZALES CO.)*	\$0		616	2,302	4,082	5,764	7,573
L	STORAGE ABOVE CANYON RESERVOIR (ASR)*	\$0		3,140	3,140	3,140	3,140	3,140
L	TWA REGIONAL CARRIZO (INCL. GONZALES CO.)*	\$0		6,828	13,717	17,591	21,556	25,575
L	WESTERN CANYON WTP EXPANSION*	\$0					-	650
L	WIMBERLEY AND WOODCREEK WATER SUPPLY PROJECT*	\$0	1,120	4,480	4,480	4,480	4,480	4,480
Total		\$7,622,886,271	188,297	376,003	542,606	571,553	631,476	765,738

* DENOTES STRATEGIES WITH SUPPLY VOLUMES INCLUDED IN OTHER STRATEGIES

SUMMARY OF RIO GRANDE (M) REGION

The Rio Grande Regional Water Planning Area includes 8 counties along the lower portion of the Rio Grande river basin to the Gulf of Mexico (Figure M.1). Surface water from the Amistad-Falcon System and run-of-river water rights on the Rio Grande currently provides 90 percent of the existing water supplies in the region. Groundwater supplies are associated primarily with the Gulf Coast and Carrizo-Wilcox aquifers.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 609,906 acre-feet/year
- Recommended water strategy volume in 2060 – 673,846 acre-feet/year
- Total capital cost \$2.2 billion
- Conservation accounts for 43% of 2060 strategy volumes
- Two new major reservoirs (Brownsville Weir, Laredo Low Water Weir – see Figure 2.9)
- Significant unmet irrigation needs

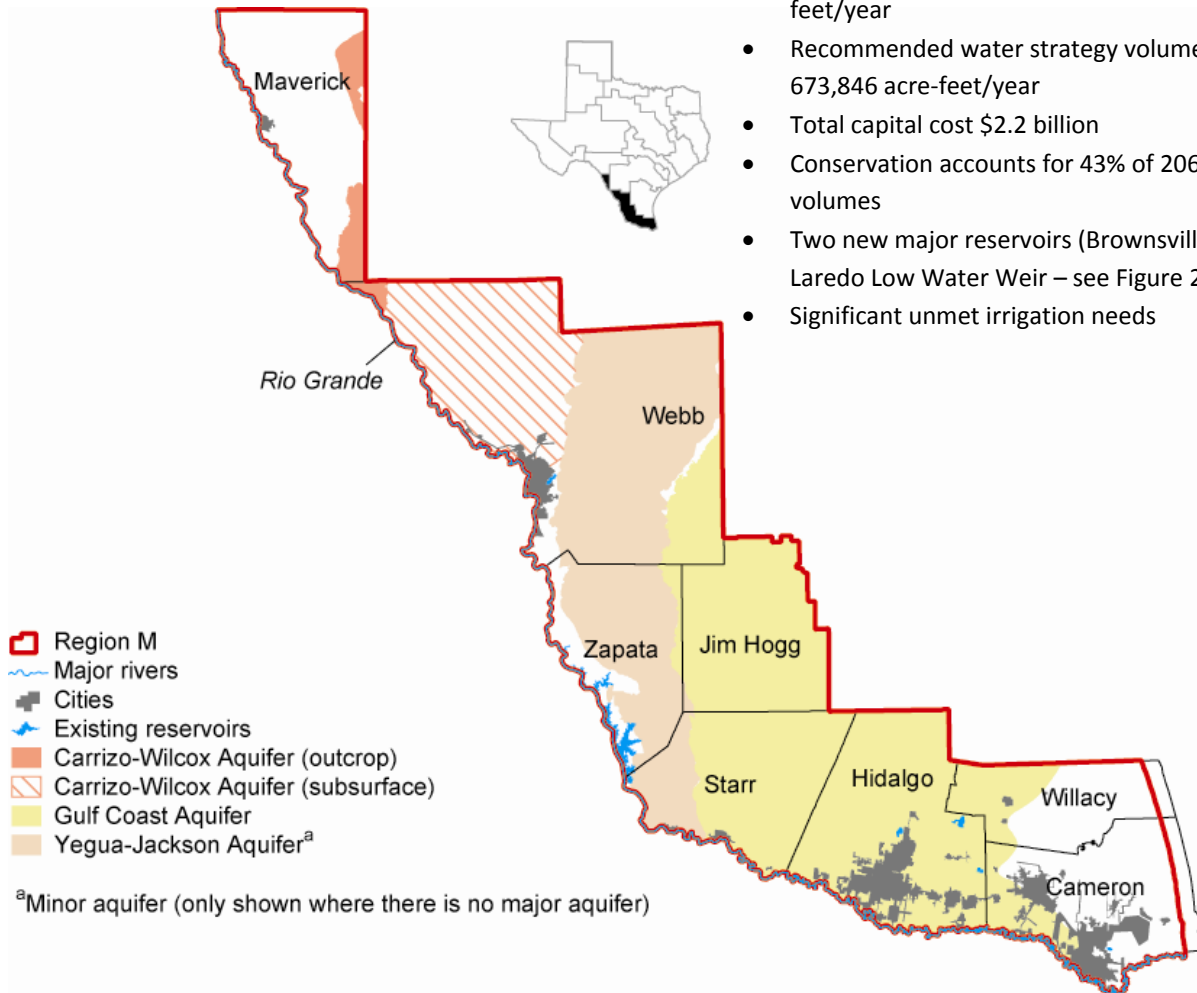


Figure M.1 - Rio Grande Region

Almost six percent of the state’s 2010 total population is projected to reside in Region M, and between 2010 and 2060 its population is projected to increase by 142 percent to 3,935,223.

Table M.1 - Population, Water Supply, Demand, and Needs 2010-2060

Year		2010	2020	2030	2040	2050	2060
Population Projections		1,628,278	2,030,994	2,470,814	2,936,748	3,433,188	3,935,223
Existing Supplies	Surface Water	1,008,597	1,002,180	996,295	990,244	983,767	977,867
	Groundwater	81,302	84,650	86,965	87,534	87,438	87,292
	Reuse	24,677	24,677	24,677	24,677	24,677	24,677
	Total Water Supply	1,114,576	1,111,507	1,107,937	1,102,455	1,095,882	1,089,836
Demands	Municipal	259,524	314,153	374,224	438,453	508,331	581,043
	County-other	28,799	35,257	42,172	49,405	57,144	64,963
	Manufacturing	7,509	8,274	8,966	9,654	10,256	11,059
	Mining	4,186	4,341	4,433	4,523	4,612	4,692
	Irrigation	1,163,634	1,082,232	981,748	981,748	981,748	981,748
	Steam Electric	13,463	16,864	19,716	23,192	27,430	32,598
	Livestock	5,817	5,817	5,817	5,817	5,817	5,817
	Total Water Demands	1,482,932	1,466,938	1,437,076	1,512,792	1,595,338	1,681,920
Needs	Municipal	20,889	53,849	98,933	154,514	221,595	292,700
	County-other	5,590	10,428	16,786	23,491	30,698	37,925
	Manufacturing	1,921	2,355	2,748	3,137	3,729	4,524
	Irrigation	407,522	333,246	239,408	245,896	252,386	258,375
	Steam Electric	-	1,980	4,374	7,291	11,214	16,382
	Total Water Needs	435,922	401,858	362,249	434,329	519,622	609,906

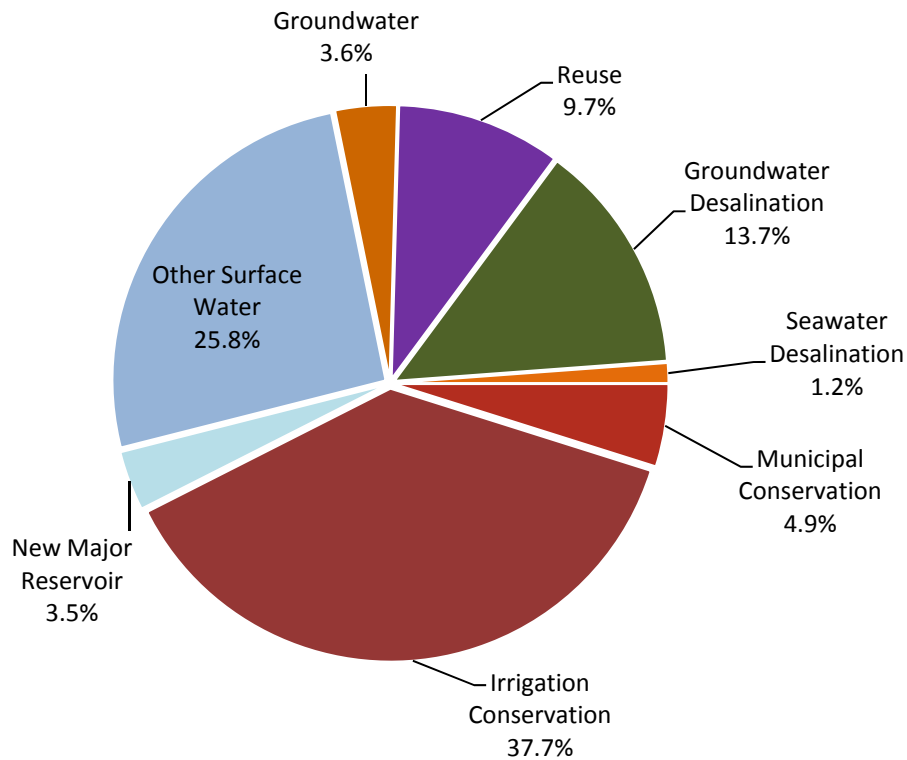


Figure M.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table M.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
M	ACQUISITION OF WATER RIGHTS THROUGH CONTRACT	\$16,263,877	312	738	1,665	2,352	3,198	4,671
M	ACQUISITION OF WATER RIGHTS THROUGH PURCHASE	\$631,081,709	9,611	19,461	41,602	70,944	110,913	151,237
M	ACQUISITION OF WATER RIGHTS THROUGH URBANIZATION	\$56,167,089	299	3,433	6,467	9,496	12,868	16,406
M	ADVANCED WATER CONSERVATION	\$22,583,710	2,917	6,339	11,986	16,512	24,867	32,793
M	BANCO MORALES RESERVOIR	\$25,790,900		238	238	238	238	238
M	BRACKISH WATER DESALINATION	\$267,290,631	56,553	63,239	67,221	73,984	86,708	92,212
M	BROWNSVILLE WEIR & RESERVOIR	\$98,411,077		20,643	20,643	20,643	20,643	23,643
M	EXPAND EXISTING GROUNDWATER WELLS	\$27,474,302 ⁻	3,772	8,572	17,139	20,492	22,284	24,520
M	IRRIGATION CONVEYANCE SYSTEM CONSERVATION	\$131,899,803	11,204	37,711	63,762	89,347	114,465	139,217
M	LAREDO LOW WATER WEIR	\$294,400,000 ⁻					-	-
M	NON-POTABLE REUSE	\$174,944,916	2,417	9,891	16,425	28,087	42,938	64,116
M	ON- FARM WATER CONSERVATION	\$194,569,720	1,622	10,419	26,299	49,073	78,550	114,619
M	POTABLE REUSE	\$7,519,850 ⁻	1,120 ⁻	1,120 ⁻	1,120 ⁻	1,120	1,150	1,290
M	PROPOSED ELEVATED STORAGE TANK AND INFRASTRUCTURE IMPROVEMENTS FOR CITY OF ELSA	\$8,325,386	105	105	105	105	105	105
M	RESACA RESTORATION	\$52,000,000	877	877	877	877	877	877
M	SEAWATER DESALINATION	\$185,940,937	125	125	143	6,049	6,421	7,902
	Total	\$2,194,663,908	90,934	182,911	275,692	389,319	526,225	673,846

SUMMARY OF COASTAL BEND (N) REGION

The Coastal Bend Regional Water Planning Area includes 11 counties, portions of the Nueces river basin, and its adjoining coastal basins, including the Nueces Estuary (Figure N.1). Surface water currently provides 76 percent of the existing water supplies in the region primarily from the Choke Canyon Reservoir and Lake Corpus Christi. Groundwater supplies are associated primarily with the Gulf Coast aquifer.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 75,744 acre-feet/year
- Recommended water strategy volume in 2060 – 156,326 acre-feet/year
- Total capital cost \$656 million
- Conservation accounts for 5% of 2060 strategy volumes
- Two new major reservoirs (Lavaca Off-Channel, Nueces Off-Channel – see Figure 2.9)
- Limited unmet mining needs



Figure N.1 - Coastal Bend Region

Over two percent of the state’s 2010 total population is projected to reside in Region N, and between 2010 and 2060 its population is projected to increase by 44 percent to 885,665.

Table N.1 - Population, Water Supply, Demand, and Needs 2010-2060

		Year	2010	2020	2030	2040	2050	2060
		Population Projections	617,143	693,940	758,427	810,650	853,964	885,665
Existing Supplies	Surface Water		186,866	191,078	195,658	197,472	197,994	198,814
	Groundwater		57,580	58,951	58,442	58,522	58,237	57,624
	Total Water Supply		244,446	250,029	254,100	255,994	256,231	256,438
Demands	Municipal		100,231	111,366	120,543	128,115	134,959	140,636
	County-other		11,264	11,495	11,520	11,310	11,077	10,838
	Manufacturing		63,820	69,255	73,861	78,371	82,283	88,122
	Mining		15,150	16,524	16,640	17,490	18,347	19,114
	Irrigation		25,884	26,152	26,671	27,433	28,450	29,726
	Steam Electric		7,316	14,312	16,733	19,683	23,280	27,664
	Livestock		8,838	8,838	8,838	8,838	8,838	8,838
	Total Water Demands		232,503	257,942	274,806	291,240	307,234	324,938
	Needs	Municipal		138	256	366	464	550
County-other			428	301	387	363	1,890	1,768
Manufacturing			409	7,980	15,859	25,181	34,686	46,905
Mining			1,802	2,996	4,471	6,166	6,897	7,584
Irrigation			627	569	1,264	2,316	3,784	5,677
Steam Electric			-	1,982	4,755	7,459	10,187	13,183
Total Water Needs			3,404	14,084	27,102	41,949	57,994	75,744

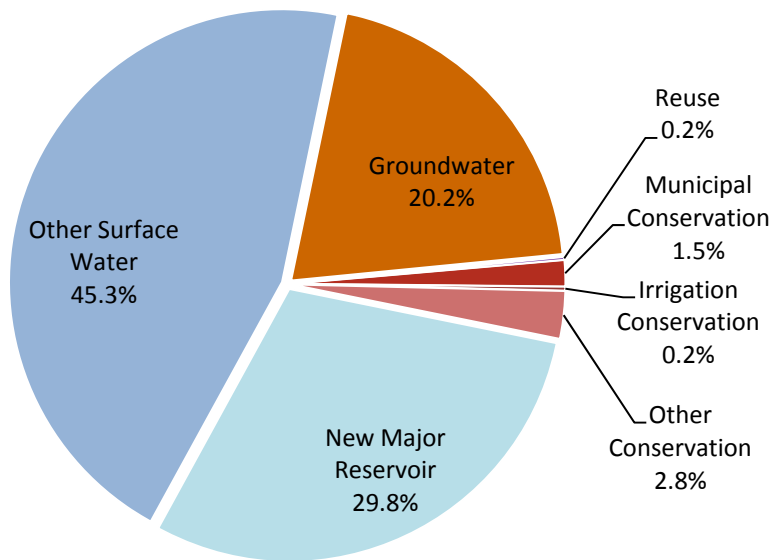


Figure N.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table N.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
N	CONSTRUCTION OF LAVACA RIVER OFF-CHANNEL RESERVOIR DIVERSION PROJECT (REGION N COMPONENT)	\$138,753,917		-				16,242
N	GARWOOD PIPELINE	\$112,798,000		35,000	35,000	35,000	35,000	35,000
N	GULF COAST AQUIFER SUPPLIES	\$13,413,000	1,975	2,535	11,535	11,535	13,551	13,551
N	GULF COAST AQUIFER SUPPLIES (REGIONAL)	\$59,245,000		-	11,000	11,000	11,000	18,000
N	IRRIGATION WATER CONSERVATION	\$0	17	52	103	169	248	342
N	MANUFACTURING WATER CONSERVATION	\$0	1,260	1,418	1,576	1,734	1,892	2,050
N	MINING WATER CONSERVATION	\$0	281	626	998	1,410	1,863	2,343
N	MUNICIPAL WATER CONSERVATION	\$0	106	353	721	1,153	1,763	2,415
N	O.N. STEVENS WATER TREATMENT PLANT IMPROVEMENTS	\$31,324,000	42,329	40,048	38,102	36,366	34,817	32,996
N	OFF-CHANNEL RESERVOIR NEAR LAKE CORPUS CHRISTI	\$300,577,000		-	30,340	30,340	30,340	30,340
N	RECLAIMED WASTEWATER SUPPLIES	\$0	250	250	250	250	250	250
N	VOLUNTARY REDISTRIBUTION	\$0	736	738	914	1,060	2,706	2,797
	Total	\$656,110,917	46,954	81,020	130,539	130,017	133,430	156,326

SUMMARY OF LLANO ESTACADO (O) REGION

The Llano Estacado Regional Water Planning Area includes 21 counties in the Southern High Plains of Texas in the upstream portion of four river basins (Figure O.1). Groundwater currently provides over 97 percent of the existing water supplies in the region. Surface water is supplied by four reservoirs in or near the region, primarily from Lake Meredith in the Canadian River Municipal Water Authority's system.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 2,366,036 acre-feet/year
- Recommended water strategy volume in 2060 – 395,957 acre-feet/year
- Total capital cost \$1.1 billion
- Conservation accounts for 74% of 2060 strategy volumes
- Two new major reservoirs (Jim Bertram Lake 07, Post – see Figure 2.9)
- Significant unmet irrigation and livestock needs

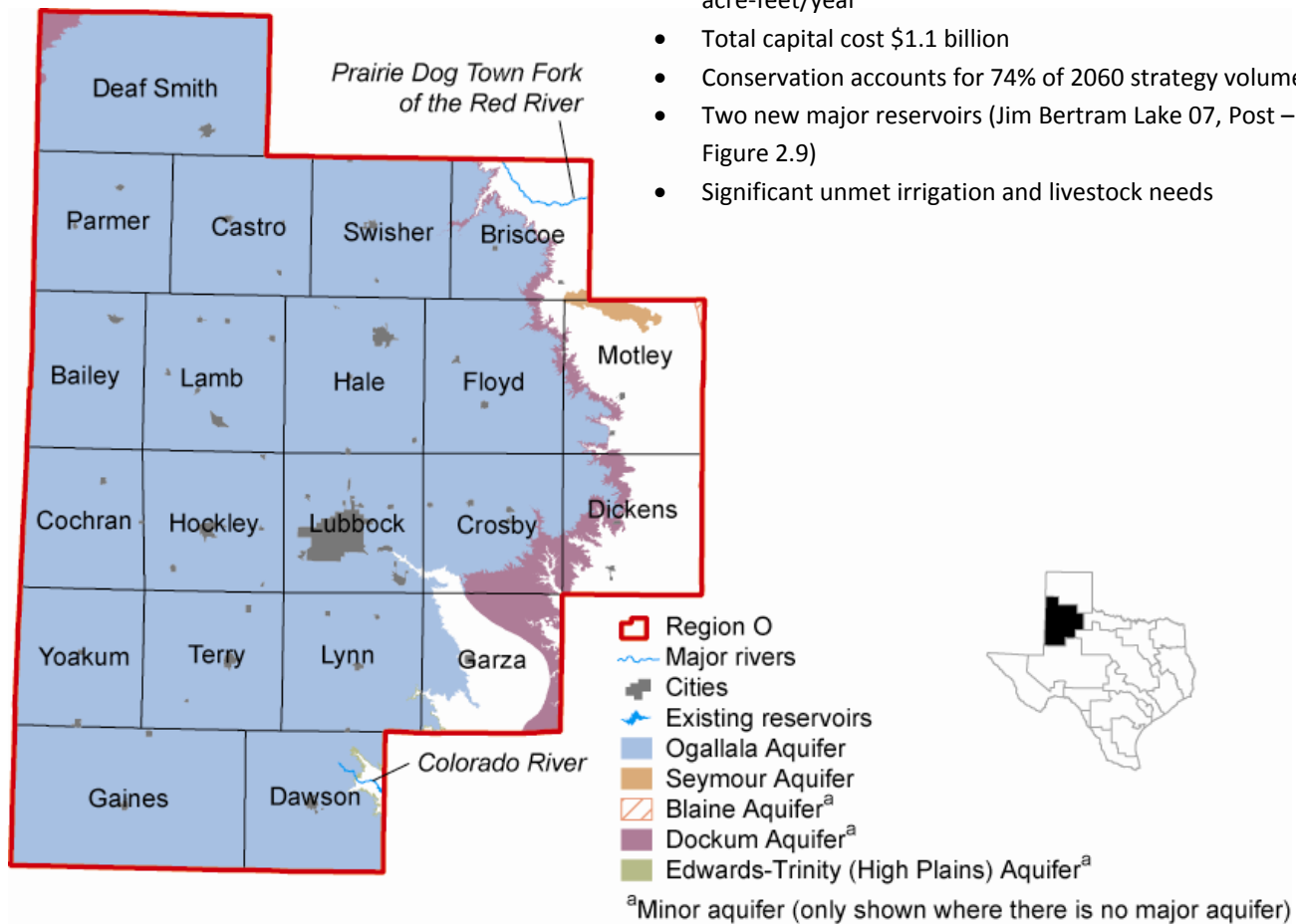


Figure O.1 - Llano Estacado Region

Almost two percent of the state's 2010 total population is projected to reside in Region O, and between 2010 and 2060 its population is projected to increase by 12 percent to 551,758.

Table O.1 - Population, Water Supply, Demand, and Needs 2010-2060

Year		2010	2020	2030	2040	2050	2060
Population Projections		492,627	521,930	540,908	552,188	553,691	551,758
Existing Supplies	Surface Water	28,261	33,707	33,590	33,490	32,096	32,042
	Groundwater	3,076,297	2,454,665	1,966,463	1,577,083	1,412,889	1,337,017
	Reuse	51,514	35,071	35,822	36,737	37,853	39,213
	Total Water Supply	3,156,072	2,523,443	2,035,875	1,647,310	1,482,838	1,408,272
Demands	Municipal	87,488	91,053	92,823	93,459	93,458	93,935
	County-other	11,949	12,420	12,652	12,583	12,399	12,005
	Manufacturing	15,698	16,669	17,460	18,216	18,865	19,919
	Mining	16,324	10,280	6,359	2,852	728	258
	Irrigation	4,186,018	4,024,942	3,882,780	3,740,678	3,604,568	3,474,163
	Steam Electric	25,645	25,821	30,188	35,511	42,000	49,910
	Livestock	51,296	57,740	61,372	65,277	69,466	73,965
	Total Water Demands	4,394,418	4,238,925	4,103,634	3,968,576	3,841,484	3,724,155
Needs	Municipal	10,349	14,247	20,116	23,771	28,489	30,458
	Irrigation	1,264,707	1,735,399	2,084,569	2,331,719	2,361,813	2,318,004
	Livestock	1	763	3,191	9,506	14,708	17,574
	Total Water Needs	1,275,057	1,750,409	2,107,876	2,364,996	2,405,010	2,366,036

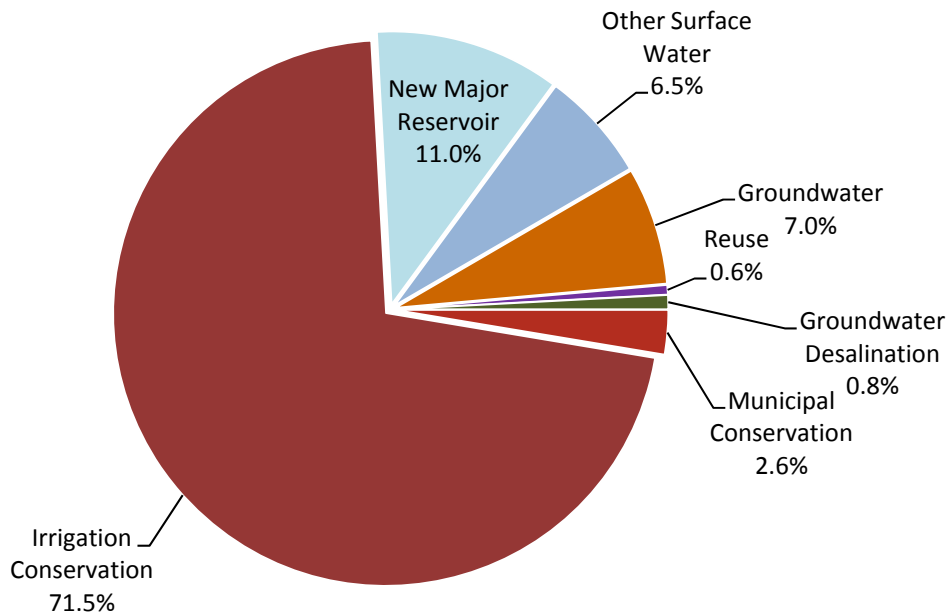


Figure O.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table O.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
O	CRMWA REGION O LOCAL GROUNDWATER DEVELOPMENT	\$56,574,000		-	15,500	14,130	12,717	11,445
O	IRRIGATION WATER CONSERVATION	\$345,824,000	479,466	431,517	388,366	349,528	314,577	283,118
O	LAKE ALAN HENRY PIPELINE FOR THE CITY OF LUBBOCK	\$294,329,000	21,880	21,880	21,880	21,880	21,880	21,880
O	LAKE ALAN HENRY SUPPLY FOR LAKE ALAN HENRY WSC	\$7,334,502	270	270	270	270	270	270
O	LOCAL GROUNDWATER DEVELOPMENT	\$21,438,369	10,034	12,711	15,253	15,871	16,841	16,175
O	LUBBOCK BRACKISH GROUNDWATER DESALINATION	\$13,167,000		3,360	3,360	3,360	3,360	3,360
O	LUBBOCK JIM BERTRAM LAKE 7	\$68,288,400		17,650	17,650	17,650	17,650	17,650
O	LUBBOCK NORTH FORK DIVERSION OPERATION (A)	\$153,040,000		3,675	3,675	3,675	3,675	3,675
O	MUNICIPAL WATER CONSERVATION	\$0	5,809	10,583	10,729	10,264	10,206	10,424
O	POST RESERVOIR- DELIVERED TO LAH PIPELINE	\$110,307,000		-	25,720	25,720	25,720	25,720
O	RECLAIMED WATER- WHITE RIVER MWD	\$38,089,684		2,240	2,240	2,240	2,240	2,240
	Total	\$1,108,391,955	517,459	503,886	504,643	464,588	429,136	395,957
			-	-				

SUMMARY OF LAVACA (P) REGION

The Lavaca Regional Water Planning Area, mostly within the Lavaca river basin, is composed of Jackson and Lavaca counties and County Precinct 3 of Wharton County (Figure P.1). Groundwater currently provides 99 percent of the existing water supplies in the region from the Gulf Coast aquifer. Surface water supply is from Lake Texana.

PLAN HIGHLIGHTS

- Additional supply needed in 2060 - 67,739 acre-feet/year
- Recommended water strategy volume in 2060 - 67,739 acre-feet/year



Figure P.1 - Lavaca Region

Less than one percent of the state's 2010 total population is projected to reside in Region P, and between 2010 and 2060 its population is projected to increase by less than one percent to 49,663.

Table P.1 - Population, Water Supply, Demand, and Needs 2010-2060

Year		2010	2020	2030	2040	2050	2060
Population Projections		49,491	51,419	52,138	51,940	51,044	49,663
Existing Supplies	Surface Water	1,832	1,832	1,832	1,832	1,832	1,832
	Groundwater	162,316	162,316	162,316	162,316	162,316	162,316
	Total Water Supply	164,148	164,148	164,148	164,148	164,148	164,148
Demands	Municipal	4,841	4,927	4,975	4,996	5,032	5,092
	County-other	2,374	2,378	2,283	2,119	1,957	1,800
	Manufacturing	1,089	1,162	1,223	1,281	1,331	1,425
	Mining	164	172	177	182	188	192
	Irrigation	217,846	217,846	217,846	217,846	217,846	217,846
	Livestock	3,499	3,499	3,499	3,499	3,499	3,499
	Total Water Demands	229,813	229,984	230,003	229,923	229,853	229,854
Needs	Irrigation	67,739	67,739	67,739	67,739	67,739	67,739
	Total Water Needs	67,739	67,739	67,739	67,739	67,739	67,739

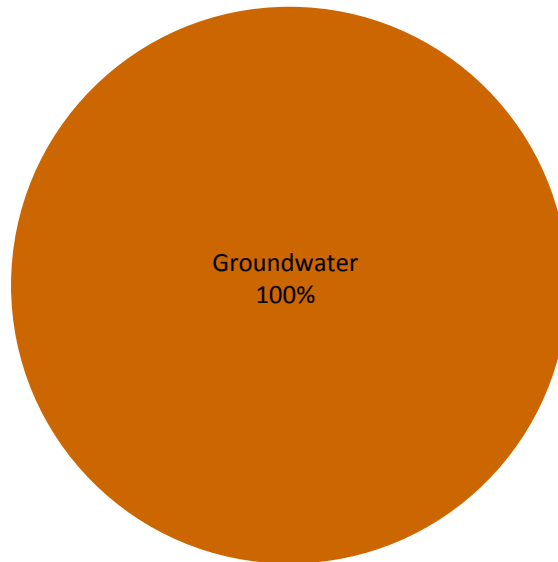


Figure P.2 - 2060 Recommended Water Management Strategies – Relative Share of Supply

Table P.2 - Recommended Water Management Strategies

Region	Recommended Water Management Strategy	Total Capital Costs	Water Supply Volume (acre feet/year)					
			2010	2020	2030	2040	2050	2060
P	CONJUNCTIVE USE OF GROUNDWATER (TEMPORARY OVERDRAFT) - JACKSON COUNTY	\$0	5,053	5,053	5,053	5,054	5,053	5,053
P	CONJUNCTIVE USE OF GROUNDWATER (TEMPORARY OVERDRAFT) - WHARTON COUNTY	\$0	62,686	62,686	62,686	62,686	62,686	62,686
Total		\$0	67,739	67,739	67,739	67,740	67,739	67,739

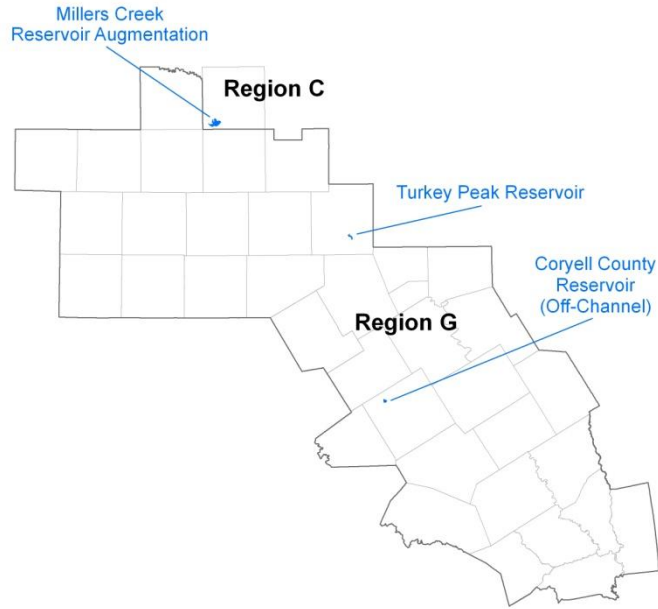


Figure I - Locations Recommended in the Brazos G RWPG Water Plan for Designation as Unique Reservoir Sites

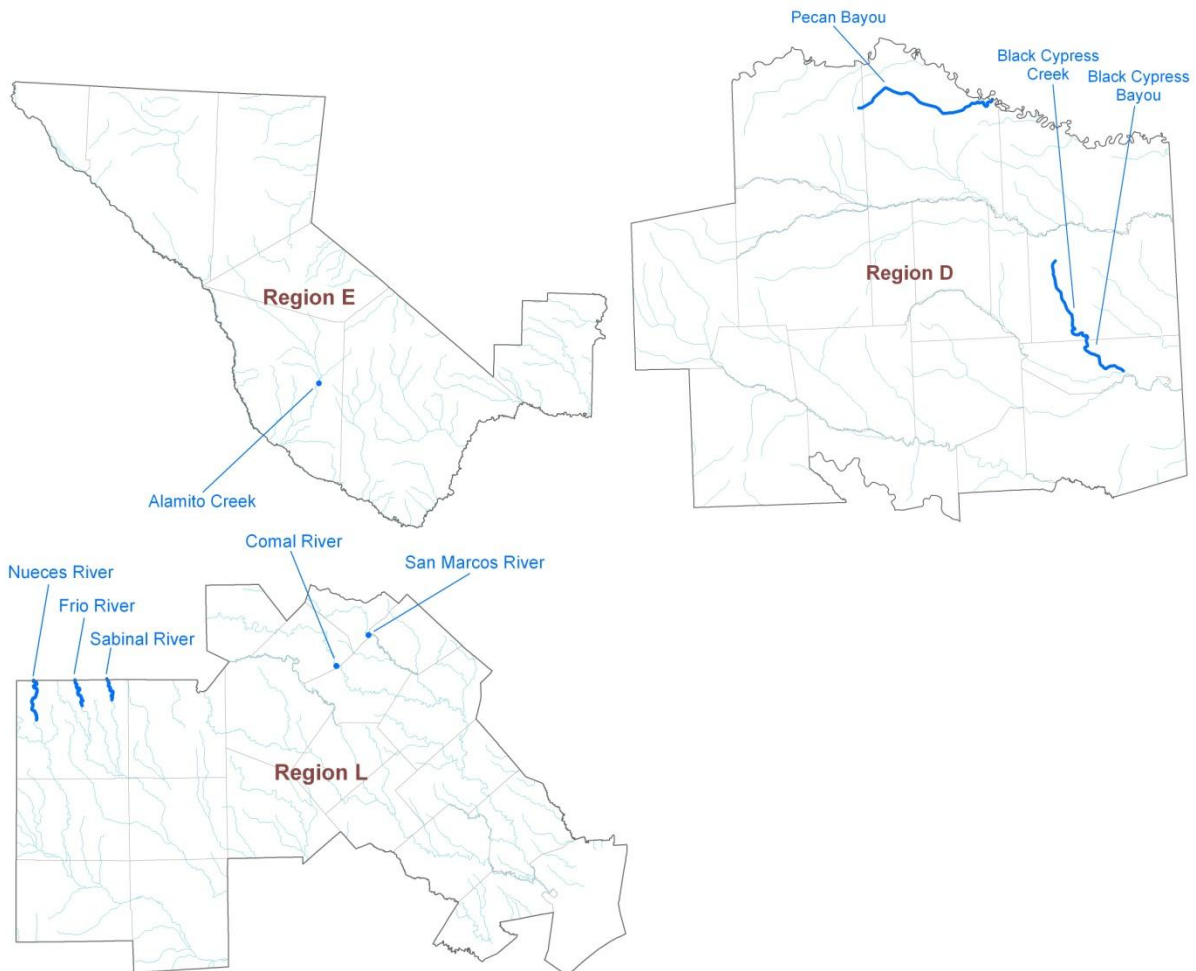


Figure II - Locations Recommended by Regional Water Planning Groups for Designation as River and Stream Segments of Unique Ecological Value

Glossary of Selected Water Planning Terms

acre-foot: volume of water needed to cover 1 acre to a depth of 1 foot. It equals 325,851 gallons.

aquifer: geologic formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs. The formation could be sand, gravel, limestone, sandstone, or fractured igneous rocks.

availability: maximum amount of water available during the drought of record, regardless of whether the supply is physically or legally available.

brackish water: water with total dissolved solids between 1,000 and 10,000 milligrams per liter.

capital cost: portion of the estimated cost (based on 2008 dollars) of a water management strategy that includes both the direct costs of constructing facilities, such as materials, labor, and equipment, and the indirect expenses associated with construction activities, such as costs for engineering studies, legal counsel, land acquisition, contingencies, environmental mitigation, interest during construction, and permitting costs.

conjunctive use: the combined use of groundwater and surface water sources that optimizes the beneficial characteristics of each source.

desalination: process of removing salt from seawater or brackish water.

drought: term is generally applied to periods of less than average precipitation over a certain period of time. Associated definitions include meteorological drought (abnormally dry weather), agricultural drought (adverse impact on crop or range production), and hydrologic drought (below average water content in aquifers and/or reservoirs).

drought of record: period of time during recorded history when natural hydrological conditions provided the least amount of water supply.

existing water supply: maximum amount of water available from existing sources for use during drought of record conditions that is physically and legally available for use.

firm yield: maximum water volume a reservoir can provide each year under a repeat of the drought of record.

flood control storage: storage in a lake or reservoir, between two designated water surface elevations, that is dedicated to storing floodwater so that flood damages downstream are eliminated or reduced.

groundwater availability model: numerical groundwater flow models used by TWDB to determine groundwater availability of the major and minor aquifers in Texas.

groundwater management area: area designated and delineated by TWDB as an area suitable for management of groundwater resources.

infrastructure: physical means for meeting water and wastewater needs, such as dams, wells, conveyance systems, and water treatment plants.

interbasin transfer: physical conveyance of surface water from one river basin to another.

major reservoir: reservoir having a storage capacity of 5,000 acre-feet or more.

needs: projected water demands in excess of existing water supplies for a water user group or a wholesale water provider.

recharge: amount of water that infiltrates to the water table of an aquifer.

recommended water management strategy: specific project or action to increase water supply or maximize existing supply to meet a specific need.

reuse: use of surface water that has already been beneficially used once under a water right or the use of groundwater which has already been used.

run-of-river diversion: Water right permit that allows the permit holder to divert water directly out of a stream or river.

safe yield: firm yield in addition to an amount of water supply for an additional period of time.

sedimentation: action or process of depositing sediment in a reservoir, usually silts, sands, or gravel.

storage: natural or artificial impoundment and accumulation of water in surface or underground reservoirs, usually for later withdrawal or release.

subordination agreement: contracts between junior and senior water right holders where the senior water right holder agrees not to assert its priority right against the junior.

unmet needs: portion of the demand for water that exceeds water supply after inclusion of all recommended water management strategies in a regional water plan.

water availability model: numerical surface water flow models to determine the availability of surface water for permitting in the state.

water demand: quantity of water projected to meet the overall necessities of a water user group in a specific future year.

water user group: identified user or group of users for which water demands and water supplies have been identified and analyzed and plans developed to meet water needs. Water user groups are defined at the county level for the manufacturing, irrigation, livestock, steam-electric power generation, and mining water use categories. Municipal water user groups include (a) incorporated cities and selected Census Designated Places with a population of 500 or more; (b) individual or groups of selected water utilities serving smaller municipalities or unincorporated areas; and (c) rural areas not included in a listed city or utility, aggregated for each county.

wholesale water provider: person or entity, including river authorities and irrigation districts, that had contracts to sell more than 1,000 acre-feet of water wholesale in any one year during the five years immediately preceding the adoption of the last regional water plan.

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