

TABLE OF CONTENTS – EXECUTIVE SUMMARY

ES. EXECUTIVE SUMMARY 1

 ES.1 OVERVIEW 1

 ES.2 INTRODUCTION AND BACKGROUND 2

 ES.3 POPULATION AND WATER DEMANDS 4

 ES.4 WATER SUPPLIES..... 5

 ES.5 IDENTIFIED SHORTAGES..... 7

 ES.6 MANAGEMENT STRATEGIES AND IMPACTS 9

 ES.6.1 Utilization of Return Flows 9

 ES.6.2 Wholesale Water Provider (WWP) Management Strategies 10

 ES.6.2.1 LCRA Management Strategies 10

 ES.6.2.2 COA Management Strategies 11

 ES.6.3 Regional Water Management Strategies 11

 ES.6.4 Municipal Water Management Strategies 14

 ES.6.5 Irrigation Water Management Strategies 15

 ES.6.6 Livestock, Manufacturing, and Mining Water Management Strategies..... 16

 ES.6.7 Steam Electric Water Management Strategies 16

 ES.6.8 Alternative Water Management Strategies..... 17

 ES.7 MANAGEMENT STRATEGY IMPACTS 18

 ES.8 WATER CONSERVATION AND DROUGHT MANAGEMENT 20

 ES.9 POLICY RECOMMENDATIONS..... 20

 ES.9.1 Management of Surface Water Resources 20

 ES.9.2 Environmental Flows 21

 ES.9.3 Environmental-Sustainable Growth..... 21

 ES.9.4 Groundwater..... 21

 ES.9.5 Protection of Agricultural and Rural Water Resources..... 22

 ES.9.6 Agricultural Water Conservation..... 22

 ES.9.7 Municipal/ Industrial Conservation 22

 ES.9.8 Reuse..... 23

 ES.9.9 Brush Control 23

 ES.9.10 Recommended Improvements to Regional Planning Process 23

 ES.9.11 Other Policy Recommendations 23

 ES.10 ECOLOGICALLY UNIQUE STREAM SEGMENTS AND RESERVOIR SITES 23

 ES.11 ECONOMIC IMPACT OF UNMET NEEDS AND INFRASTRUCTURE FUNDING 23

 ES.12 PUBLIC PARTICIPATION 24

 ES.13 REMAINING ISSUES AND CONCERNS 24

 ES.14 FOR MORE INFORMATION 25

LIST OF FIGURES

Figure ES.1: Lower Colorado Regional Water Planning Area (Region K) 3
Figure ES.2: LCRWPA Water Demands (ac-ft/yr) – Year 2010 and Year 2060..... 5
Figure ES.3: LCRWPA Water Availability – 2006 vs 2011..... 7
Figure ES.4: Number of LCRWPA Water User Groups With Needs 8
Figure ES.5: LCRWPA Identified Water Needs by Category of Use 9

LIST OF TABLES

Table ES.1 The Lower Colorado Regional Water Planning Group Voting Board Members 2
Table ES.2 Groundwater and Surface Water Supplies Available to the LCRWPA..... 6
Table ES.3 Estimated Return Flows (ac-ft/yr) 10
Table ES.4 WWP Water Management Strategies 10
Table ES.5 Expansion of Current Groundwater Supplies..... 12
Table ES.6 Development of New Groundwater Supplies..... 12
Table ES.7 Transfer Water Strategy 12
Table ES.8 Allocate Water Strategy 13
Table ES.9 Temporary Drought Period Use of Aquifers..... 13
Table ES.10 Drought Management 13
Table ES.11 Municipal Water Conservation by County 14
Table ES.12 Municipal Water Management Strategies 14
Table ES.13 Rice Irrigation Water Management Strategies 15
Table ES.14 Livestock, Manufacturing, and Mining Water Management Strategies 16
Table ES.15 COA Steam Electric Supplies and Water Management Strategies..... 16
Table ES.16 Rice Irrigation Alternative Water Management Strategies (ac-ft/yr) 17
Table ES.17 LCRA Wholesale Water Supply Alternative Water Management Strategies (ac-ft/yr) 18
Table ES.18 Desalination of Brackish Groundwater from the Ellenburger-San Saba Aquifer (Alternative Strategy)..... 18

ES. EXECUTIVE SUMMARY

ES.1 OVERVIEW

Following the guidelines provided by the Texas Water Development Board (TWDB), the Lower Colorado Regional Water Planning Group (LCRWPG) prepared this *Adopted Regional Water Plan* for the Lower Colorado Regional Water Planning Area (LCRWPA) (Region K) covering the 2010 to 2060 time period (2011 Plan). This plan has been submitted to the Texas Water Development Board (TWDB) for review and integration into a statewide water plan.

The Plan includes a description of the region, population and water demand projections, water supply analyses, water management strategies for ensuring supplies during drought-of-record (DOR) conditions, water conservation and drought management plans, consistency with the state's long-term resource protection goals, policy recommendations related to improving water management and preserving the environment, and public involvement activities.

It should be noted that local plans that are consistent with the regional water supply plan are also eligible to apply for TWDB financial assistance even though they have not been specifically recommended in this plan. The plan is comprised of the following ten chapters:

Chapter 1: Introduction and Description of the Lower Colorado Regional Water Planning Area

Chapter 2: Population Projections and Water Demand Projections

Chapter 3: Identification of Currently Available Water Supplies

Chapter 4: Identification, Evaluation, and Selection of Water Management Strategies Based on Need

Chapter 5: Impacts of Water Management Strategies on Key parameters of Water Quality and Impacts of Moving Water From Rural and Agricultural Areas

Chapter 6: Water Conservation and Drought Management Plans

Chapter 7: Regional Plan Consistency with State's Long-Term Resource Protection Goals

Chapter 8: Additional Recommendations (Including Unique Ecological Stream Segments and Reservoir Sites, Legislative Issues, and Regional Policy Issues)

Chapter 9: Water Infrastructure Financing Recommendations

Chapter 10: Public Involvement Activities

The LCRWPG, representing the 11 TWDB-required interest groups and two additional regional interest groups (*Table ES.1*), was responsible for the development of the Lower Colorado Regional Water Plan.

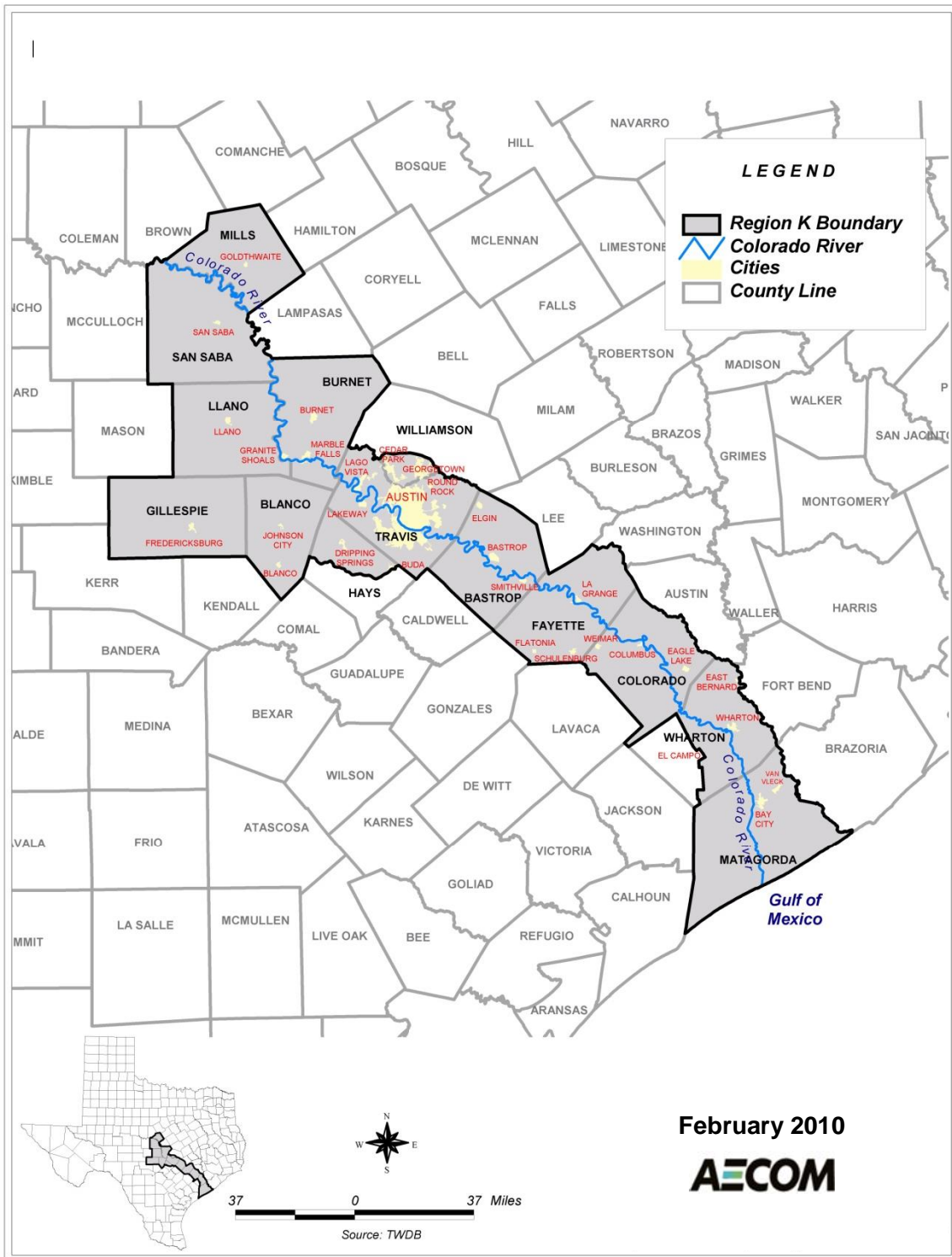
Table ES.1 The Lower Colorado Regional Water Planning Group Voting Board Members

Interest	Name	Entity	County
Public	Laura Marbury	League of Women Voters	Travis
Counties	Bill Neve	Burnet County Commissioners Court	Burnet
	Billy Roeder	Gillespie County. Commissioners Court	Gillespie
	James Sultemeier	Blanco County Commissioners Court	Blanco
Municipalities	Finley de Graffenreid	City of Llano	Llano
	Teresa Lutes	City of Austin	Williamson
Industries	Barbara Johnson	Austin Area Research Organization, Inc.	Travis
Agricultural	Bill Miller	Rancher	Llano
	Haskell Simon	Rice Industry Rep. and Farmer	Matagorda
Environmental	Jim Barho	Protect Lakes Inks, Buchanan	Burnet
	Jennifer Walker	Sierra Club, Lone Star Chapter	Travis
Small Businesses	Ronald Gertson		Wharton
	Rob Ruggiero		Travis
Electric. Generating Utilities	Sandra Dannhardt	STP Nuclear Operating Company	Matagorda
River Authorities	James Kowis	LCRA	Travis
Water Districts	Paul Tybor	Hill Country UWCD	Gillespie
	Ron Fieseler	Blanco-Pedernales GCD	Hays
	David Van Dresar	Fayette County GCD	Fayette
Water Utilities	John Burke	Aqua WSC	Bastrop
Other(s)	Roy Varley		Mills
	Bob Pickens		Colorado
Recreation	Doug Powell	Emerald Point Marina	Travis

ES.2 INTRODUCTION AND BACKGROUND

The Lower Colorado Region—designated by the TWDB as Region K—consists of all or parts of 14 counties roughly consistent with the Lower Colorado River Basin (see *Figure ES.1*).

Figure ES.1: Lower Colorado Regional Water Planning Area (Region K)



This area relies primarily on the Colorado River; the Gulf Coast, Carrizo-Wilcox, Edwards, Trinity, and Edwards-Trinity (Plateau) aquifers; and several minor aquifers for its water supply. Small portions of the Brazos, Guadalupe, and Lavaca River Basins also lie within the region. In total, about 28 percent of dependable yield water supplies during DOR conditions come from groundwater, while the remaining 72 percent are provided by surface water throughout the planning period.

The region stretches from arid and rocky Hill Country counties that receive an average of 24 inches of rainfall annually to the humid Coastal Plain, which receives an average of 44 inches of rain per year. Average annual stormwater runoff ranges from about 350 acre-feet per square mile (ac-ft/sq mi) near the mouth of the Colorado River to less than 50 ac-ft/sq mi in the western portion of the region. During the 1950s drought, used as the DOR for calculation purposes in Region K's Plan, both of these average annual runoff values declined by about 75 percent.

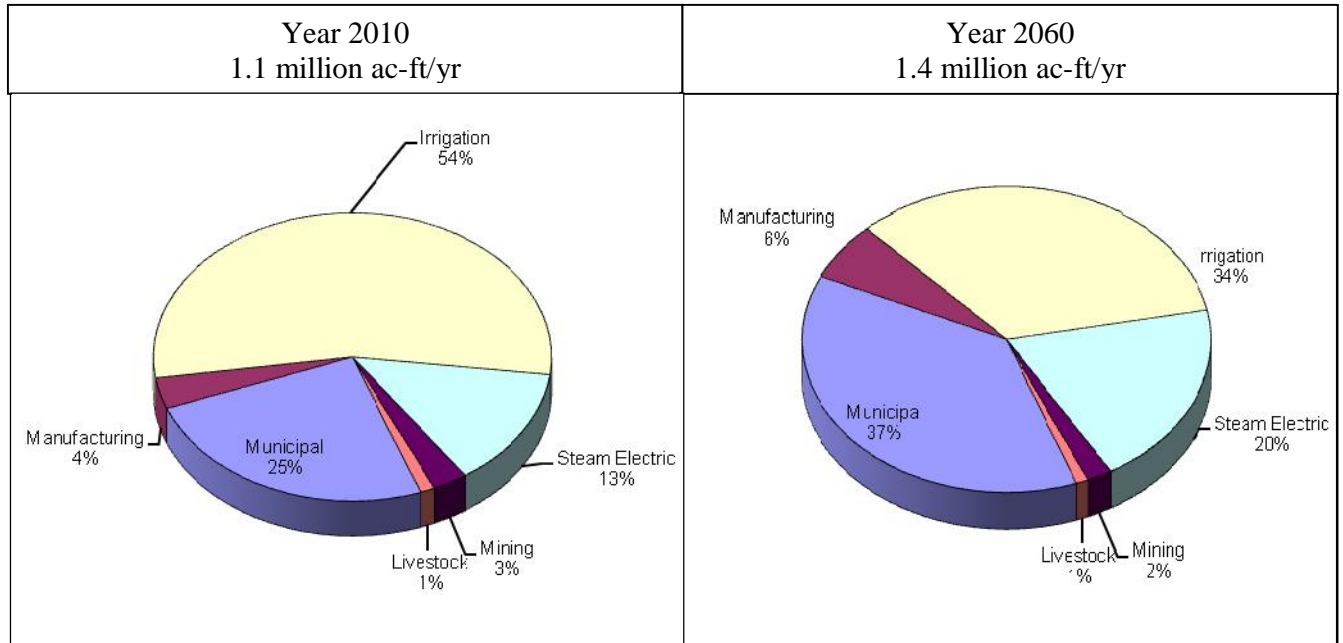
The system of Highland Lakes administered by the Lower Colorado River Authority (LCRA) is a major hydrologic feature of the region that provides flood control, power generation, water supply, and recreational benefits.

ES.3 POPULATION AND WATER DEMANDS

About 78 percent of the region's population of approximately 1.4 million is currently concentrated in the rapidly growing Austin metropolitan area, which includes Travis and parts of Williamson and Hays Counties. By 2060, the population of the region as a whole is projected to more than double (2.8 million). Each of the 14 counties in the region are projected to grow significantly over the planning period, with Travis County continuing to account for nearly 68 percent of the total population for the region. The vast majority of the population growth is expected in the geographic "middle" counties (i.e., Blanco, Burnet, Hays, Travis, Williamson, Bastrop, and Fayette Counties).

The region's population now consumes about 1.1 million ac-ft of water each year, with 55 percent used for agricultural and livestock purposes, 25 percent put to municipal use, 6 percent devoted to mining and manufacturing, and the remaining percentage to electric power generation (see *Figure ES.2*). As *Figure ES.2* shows, this pattern of use is expected to change over the planning period, such that the volume of irrigation use will decrease slightly, and the proportion of total use it represents will decline significantly. The total regional water demand is projected to increase to approximately 1.4 million ac-ft/yr by the year 2060. Chapter 2 includes details concerning the population and water demands projections and how they were developed. One issue of concern for the LCRWPG is that the original population projections that the LCRWPG developed for the plan were not accepted by the TWDB staff. The LCRWPG was requested by the TWDB staff to revise the projections so that the overall totals would be lower. The LCRWPG reluctantly agreed with the request in order to proceed with the planning process, but did adopt a Resolution regarding the issue on June 10, 2009.

Figure ES.2: LCRWPA Water Demands (ac-ft/yr) – Year 2010 and Year 2060



ES.4 WATER SUPPLIES

Water supplies in the LCRWPA are available from 11 aquifer systems and alluvial groundwater and 6 river and coastal basins. The Colorado River Basin makes up the single largest source of surface water for the region with large volumes of water available from both run-of-river (ROR) diversion rights and water stored in reservoirs. Water available in the LCRWPA was found to total nearly 1.3 million ac-ft/yr, of which over 72 percent is from surface water sources, over the planning period.

Surface water supplies for DOR conditions for the Colorado River Basin were determined using a modified version of the Texas Commission on Environmental Quality (TCEQ) WAM (Water Availability Model) Run 3 that was developed in this round of planning by the Region K Planning Group and is referred to as the Region K Cutoff Model. This conservative model predicts water availability under DOR conditions and assumes maximum surface water diversions with no return flows to streams, and also includes in the 2011 plan a planning assumption whereby upstream water to meet downstream priority rights would not be released until some portion of the upstream needs were satisfied. This “No Call” assumption does not have legal standing and does not impact the seniority of owner’s rights. This is a planning level assumption only that was agreed to by the LCRWPG solely to avoid a potential conflict with Region F. Information from WAM Run 3 runs were used when available for determining firm supplies in other basins of the LCRWPA. Local supplies (stock ponds, etc.) were assumed to be consistent with numbers previously evaluated in the 2001 Plan.

Groundwater supplies were developed from the best information available from Groundwater Management Areas (GMAs), Groundwater Availability Models (GAMs), local information from Groundwater Conservation Districts (GCDs), or information from the previous LCRWPA Plan (2006). The GMA program is still in its formative stages: most of the GMAs in the LCRWP have not yet adopted their Desired Future Conditions (DFC), thereby determining the Managed Available Groundwater (MAG)

values for their aquifers. The result is that some aquifers in some counties have MAGs, some have availabilities established by a GCD, and the rest have the availability established in the 2006 Region K Plan. The sources of groundwater availability data in this plan, in descending order of priority, are:

1. Managed Available Groundwater (MAG) values
2. Preferred availability reported to the LCRWPA by a Groundwater Conservation District (GCD). Even where a GCD has a water management plan, they may have been in the process of establishing a new availability, and were given the opportunity to have that availability included in this plan;
3. GCD availabilities adopted in a groundwater management plan, and;
4. In absence of any of the above, the availabilities established in the 2006 Region K Plan.

In the LCRWPA there are five major aquifers and six minor aquifers that provide usable groundwater supplies. Both surface water and groundwater availability for the LCRWPA are shown in *Table ES.2*.

Table ES.2 Groundwater and Surface Water Supplies Available to the LCRWPA

Gulf Coast Aquifer	198,425	198,425	198,425
Carrizo-Wilcox Aquifer	28,400	28,400	28,400
Edwards Aquifer (Balcones Fault Zone)	9,496	9,496	9,496
Trinity Aquifer	17,600	17,598	17,311
Edwards-Trinity (Plateau) Aquifer	1,500	1,500	1,500
Hickory Aquifer	24,153	24,153	24,153
Queen City Aquifer	3,991	3,991	3,991
Sparta Aquifer	9,889	9,889	9,889
Ellenburger-San Saba Aquifer	26,451	26,451	26,451
Marble Falls Aquifer	14,658	14,658	14,658
Yegua-Jackson Aquifer	20,000	20,000	20,000
Other Aquifer ¹	15,562	15,601	15,622
Groundwater Subtotal	370,125	370,162	369,896
Surface Water ²			
Run of River	485,587	470,347	470,360
Reservoir	402,768	384,597	367,064
Local Supply	70,099	73,631	78,491
Surface Water Subtotal	958,454	928,575	915,915
Sources Outside the Region ³			
	3,136	3,327	3,642
TOTAL LCRWPA Water Availability	1,331,715	1,302,064	1,289,453

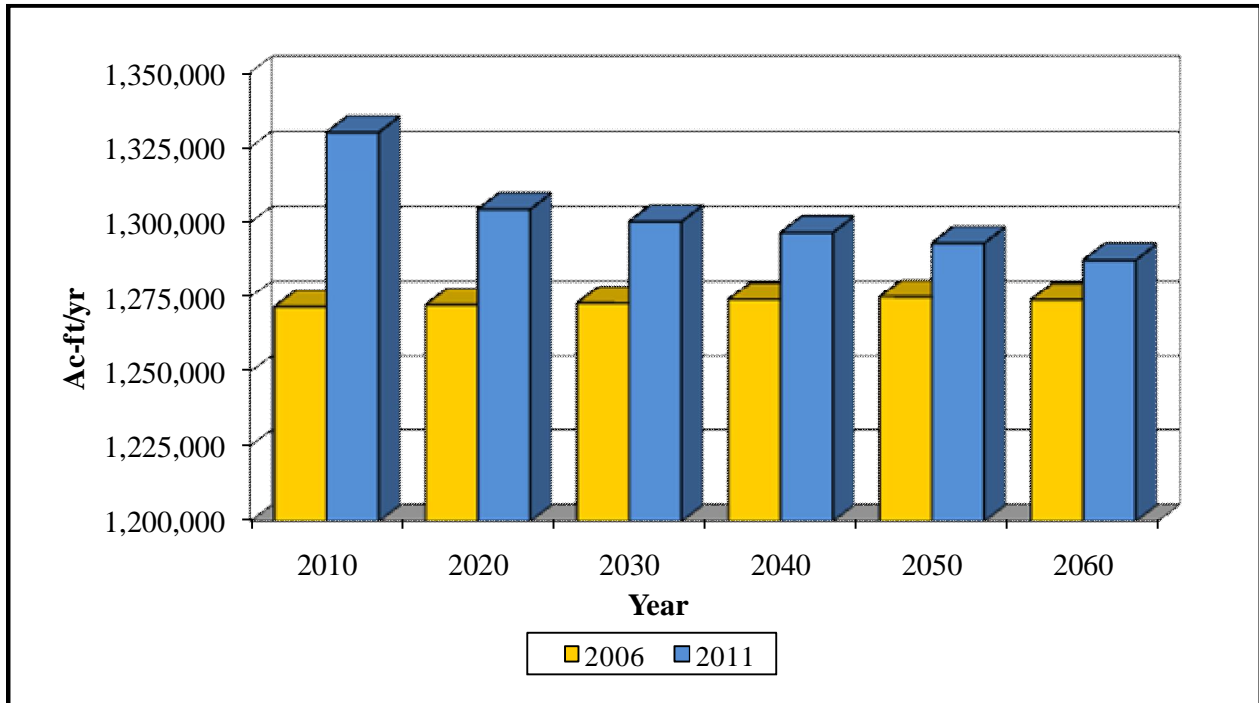
¹ Other Aquifer refers to alluvial aquifer water supplies.

² Includes local supplies determined from 2001 Plan.

³ Includes Lake Brownwood, Brazos River Authority System, Edwards-BFZ Aquifer, and Canyon Lake Reservoir

In comparison to water availability in each decade described in the 2006 Plan, total water availability for every decade in this Plan (2011) is higher. *Figure ES.3* shows a comparison of the water availability used in developing the 2006 Plan to the water availability for the 2011 Plan (supplies from other regions were not included in this comparison).

Figure ES.3: LCRWPA Water Availability – 2006 vs 2011



The total amount of water supply for the water user groups (WUGs) in Region K is less than the total available water to the region presented in *Table ES.2*. This condition exists because WUGs generally balance current needs with cost of water and provide additional supplies as they are needed throughout the planning period. As an example, a WUG on groundwater with a current need of 1 million gallons per day (mgd) will not drill wells to provide 10 mgd to meet its future needs. The water may still be available in the aquifer, but the WUG only has the capability to serve its current needs plus some adequate factor of safety. In general, water supplies for the WUGs are responsive to current needs, location relative to the source, and infrastructure limitations. There is water available in Region K that is not currently being used by WUGs because they do not have the needs right now, or they do not have the means to utilize the source at this time.

ES.5 IDENTIFIED SHORTAGES

The water supplies (Chapter 3) and projected demands (Chapter 2) for each WUG were compared to determine where shortages, or “needs,” are expected to occur. The comparison identified 73 WUGs that would have projected water deficits by the year 2030 under DOR conditions. An additional 19 WUGs are shown with projected water deficits arising between 2030 and 2060.

The estimated water need under DOR conditions for all of Region K is approximately 297,000 ac-ft/yr in 2030 and 370,000 ac-ft/yr in 2060. This identified shortage is based on conservative water availability

estimates, which assume (1) only water that is available during a repeat of the historical drought of record (DOR), (2) that all water rights are being fully and simultaneously utilized, and (3) excludes both water available from the Lower Colorado River Authority (LCRA) on an interruptible basis and water projected to be available as a result of municipal return flows to the Colorado River. Based upon these assumptions, water needs have been identified in all of the six water use categories, as shown in *Figure ES.4*, which illustrates the distribution of the number of WUGs with identified water needs in the years 2030 and 2060. *Figure ES.5* shows the magnitude of the identified needs by water use category for the years 2030 and 2060.

Note in *Figures ES.6* and *ES.7* that the category with the largest number of user groups with potentially unmet needs is in the category of municipal users. Irrigation shortages, which are expected to be the largest shortage in 2030, are reduced in 2060.

Figure ES.4: Number of LCRWPA Water User Groups With Needs

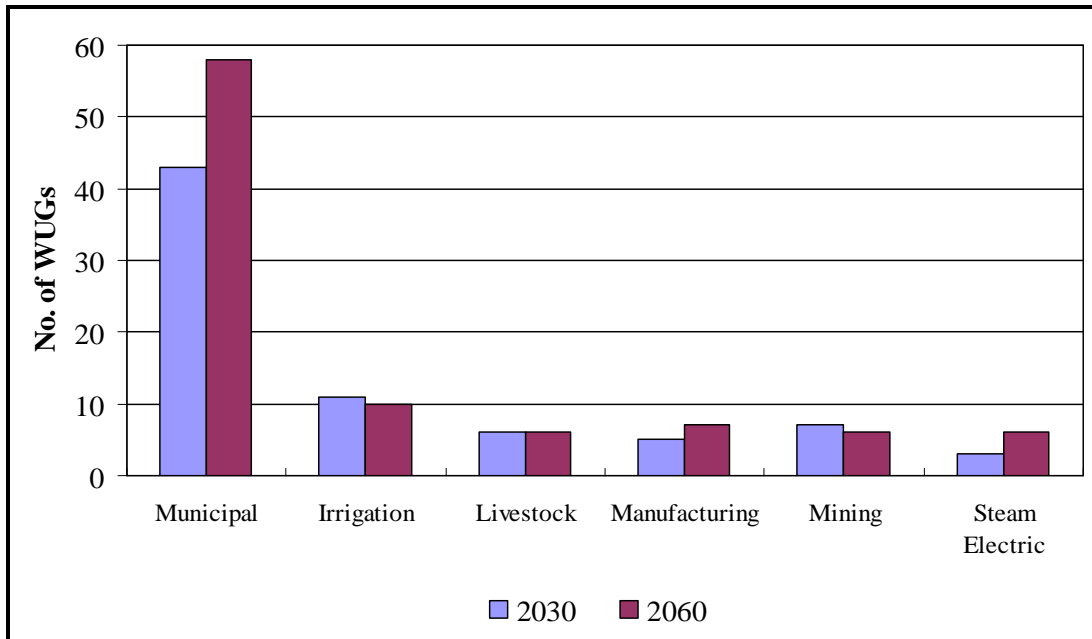
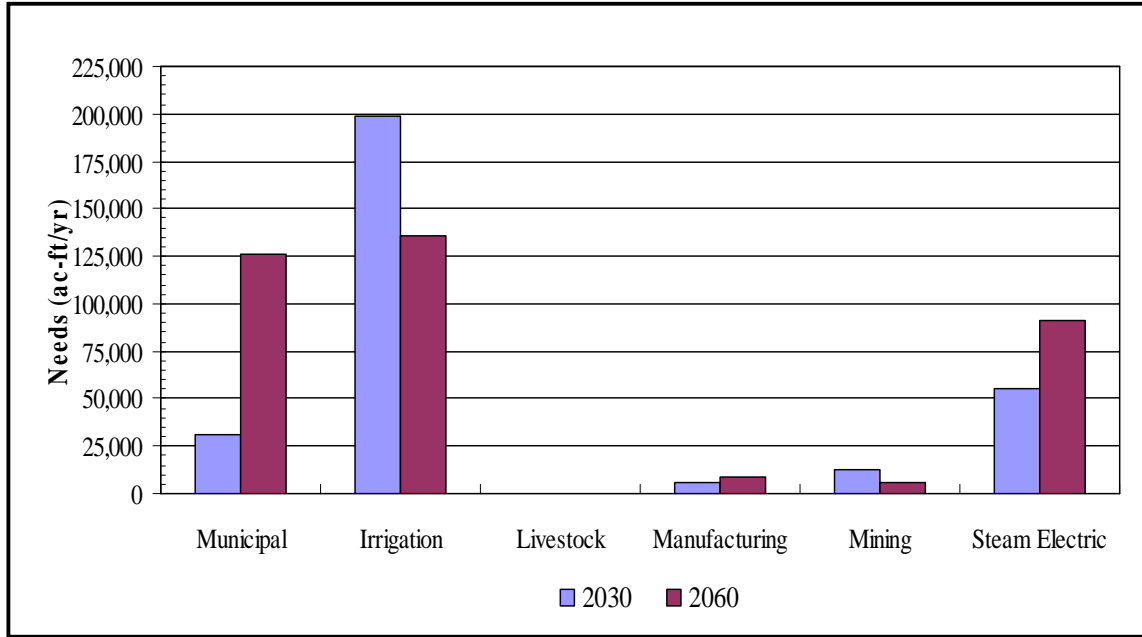


Figure ES.5: LCRWPA Identified Water Needs by Category of Use



ES.6 MANAGEMENT STRATEGIES AND IMPACTS

Several management strategies were assembled to provide for the unmet water needs identified above. Many of the shortages were met with the extension of existing contracts, new contracts, or allocation of existing supplies. Other strategies are more extensive and will require the implementation of conservation measures, drought management, or the construction of additional infrastructure.

ES.6.1 Utilization of Return Flows

Approximately 60 percent of all municipal diversions by the City of Austin (COA) and others are currently returned to the Colorado River as effluent discharges. Unless otherwise authorized by permit, once discharged to the river, this water is subject to diversion under existing water rights’ permits. Further, state law currently allows a water right holder to directly reuse all of its effluent unless its permit restricts such use. The City of Austin does reuse a portion of its return flows, with the remainder being available for downstream use. The Region K Cutoff Model for the Colorado River that was used for this round of planning excludes all sources of return flows in the model when determining water availability.

This exclusion of return flows in the model leads to identification of water shortages for entities that currently use and rely upon the return flows. For purposes of this plan, the strategies considered projected return flows discharged by the COA, the City of Pflugerville, and Aqua Water Supply Corporation. Strategies related to COA’s reuse of treated effluent are described in Chapter 4. This plan assumed projected levels of effluent to be discharged by the City of Pflugerville and Aqua Water Supply Corporation of 60 percent of the total projected demand for raw water in 2060, or about 12,500 ac-ft/yr. Effluent not being reused by Austin and these other projected levels of effluent were made available to

water rights according to the prior appropriation doctrine. *Table ES.3* shows the estimated amount of return flows that would be released to the river after any direct reuse occurs.

Table ES.3 Estimated Return Flows (ac-ft/yr)

Return Flows	2010	2020	2030	2040	2050	2060
Projected COA Effluent minus reuse	98,638	99,792	105,750	116,775	124,632	132,660
Projected Pflugerville and Aqua WSC Effluent			1,250	5,000	9,375	12,500

ES.6.2 Wholesale Water Provider (WWP) Management Strategies

LCRA and COA provide water to a large portion of the LCRWPA. Management strategies implemented at the WWP level are capable of alleviating the majority of the shortages within the LCRWPA. *Table ES.4* shows the strategies associated with each of these WWPs and the amounts of water made available to meet the needs of WUGs with shortages.

Table ES.4 WWP Water Management Strategies

WWP	Strategy	Supply From WMS (acre-feet per year)					
		2010	2020	2030	2040	2050	2060
LCRA ²	Irrigation Water Right Amendments ¹	43,000	47,000	55,000	65,000	65,000	106,600
	Available Interruptible Water for Irrigation	255,493	196,568	137,643	78,718	19,793	0
	New Contracts	300	35,864	37,082	59,722	60,477	70,210
	Contract Amendments	2,862	4,340	5,176	7,488	9,965	11,953
	LCRA-SAWS Water Project		201,950	201,950	201,950	201,950	201,950
	Unappropriated Flows and Off-Channel Storage						47,000
	Enhanced Municipal and Industrial Conservation			2,000	10,000	20,000	20,000
	Aquifer Storage and Recovery				10,000	10,000	10,000
	Reuse by Highland Lakes Communities		500	2,000	5,000	5,000	5,000
	Commitment Reductions ³	0	(15,000)	(17,000)	0	0	0
City of Austin	Conservation	11,030	18,795	24,036	25,385	30,401	36,370
	Direct Reuse (Municipal & Manufacturing)	5,143	13,620	22,077	30,268	36,218	40,468
	Direct Reuse (Steam Electric) Travis	2,315	3,315	7,315	8,315	12,315	13,315
	Purchase Water from LCRA (Steam Electric)	0	0	0	20,975	20,975	26,895

¹ These amendments are proposed to meet increased municipal and industrial demand within the lower Colorado River Basin and are also a necessary component of the LSWP.

² LCRA's irrigation strategies are discussed in Section ES.6.5.

³ Reduction in LCRA commitments due to improved efficiency in Ferguson and COA reuse. The use of this strategy is based on calculated surpluses shown in the 2011 Region K Plan only and does not assume that any legal changes to existing commitments would occur as a result of this strategy.

ES.6.2.1 LCRA Management Strategies

LCRA proposes the use of portions of its Garwood, Pierce Ranch, Lakeside, and Gulf Coast Irrigation Operations' irrigation rights as well as the Highland Lakes as a system for meeting municipal and industrial needs throughout the basin. These amendments to the existing water rights would be made possible through conservation and other programs to reduce overall irrigation demands in the lower basin as part of the Lower Colorado River Authority-San Antonio Water System (LCRA-SAWS) Water

Project¹ (LSWP). These ROR rights could be reallocated by incorporating them into a system operation yield through the use of off-channel reservoirs to capture unused firm yield water as well as some peak flows. An amount of the additional yield created by the LSWP, totaling up to 150,000 ac-ft/yr, is intended for use by Region L in meeting their needs on a temporary basis until up to 2090. In addition, the LCRA is seeking a permit for the remaining unappropriated flows in the Colorado River Basin to help meet future water needs in this basin and in San Antonio.

A portion of this water would be available to expand existing contracts within the basin and provide water to new customers. The Plan also recommends new contracts and the amendment of existing contracts to better allocate supplies to needs in the LCRWPA. Additional water supply options include enhanced municipal/industrial conservation, aquifer storage and recovery (ASR), and reuse by communities around the Highland Lakes.

ES.6.2.2 COA Management Strategies

The COA plans to meet its future needs with a combination of conservation, municipal effluent reuse, and purchasing additional water from LCRA for steam-electric demands. The COA conservation program has been successful at making significant impact upon peak and average water demands, and this strategy aims to further reduce demands placed on the city's supplies by continuing these efforts. Reclaimed water will be used, to provide for municipal, manufacturing, and steam electric demands, and this resource will be used in a continuously greater capacity through the decades of the planning period. These supplies will allow COA to meet its own demands and the needs of its wholesale customers.

ES.6.3 Regional Water Management Strategies

For municipal WUGs with shortages, water conservation was considered before these regional strategies. Amounts of water produced from conservation strategies are shown in *Table ES.10*.

The strategies selected to provide for unmet needs on a regional basis include expansion of current groundwater supplies, development of new groundwater supplies, the transfer or allocation of water from WUGs that have an anticipated surplus through 2060, and drought management. The expansion of current groundwater supplies involves the pumpage of additional water from groundwater sources by WUGs already served by groundwater. WUGs that are recommended to develop new groundwater supplies will need to construct new well fields to obtain the additional supplies. The transfer and allocation of water is intended to utilize water that is in excess of a WUG's anticipated demands through the 2060 decade. Temporary drought period use of aquifers was recommended for a few WUGs in the LCRWPA, to be carried out only when maximum demands corresponded with minimum anticipated supplies. Drought management was recommended for a few WUGs that are either already incorporating drought management through existing regulations, or for WUGs that have limited options for additional supply. In the future, the planning group may decide to recommend drought management on a more region-wide basis, as conservation is.

Table ES.5 lists aquifers recommended for expansion of current groundwater supplies and the amount of additional water supplies obtained from each. This strategy will provide supplies to WUGs in Bastrop, Burnet, Colorado, Fayette, Hays, Llano, Matagorda, Mills, Travis, and Wharton Counties.

¹ This project is the subject of litigation. For a description of the status of the project *see* p. 4-35.

Table ES.5 Expansion of Current Groundwater Supplies

Aquifer	Water Management Strategies (ac-ft/yr)					
	2010	2020	2030	2040	2050	2060
Carrizo-Wilcox	4,350	5,815	8,476	9,779	12,950	12,920
Ellenburger-San Saba	681	756	788	1,229	1,633	2,076
Gulf Coast	4,486	4,261	3,659	2,573	1,185	1,409
Hickory	62	62	62	62	62	62
Queen City	98	40	40	31	24	17
Sparta	188	208	129	129	129	129
Trinity	428	431	988	937	1,147	1,124
Yegua-Jackson	0	0	0	0	0	9
Other Aquifer	0	416	777	1,366	2,017	2,814
TOTAL	10,293	11,989	14,919	16,106	19,147	20,560

The strategy to develop new groundwater supplies will require the construction of new well fields to deliver groundwater to WUGs in Bastrop, Colorado, Fayette, Hays, and Llano Counties. The development of new groundwater supplies from the Edwards-BFZ would involve a new well field over the Saline Zone of the Edwards-BFZ Aquifer in eastern Travis County that would pump saline groundwater. Desalination of the water would occur on-site prior to connecting to an existing distribution system that would distribute the water to customers in southern Travis and northern Hays County. The new supplies from this strategy are shown in *Table ES.6*.

Table ES.6 Development of New Groundwater Supplies

Aquifer	Water Management Strategies (ac-ft/yr)					
	2010	2020	2030	2040	2050	2060
Carrizo-Wilcox	0	1,687	1,687	1,687	2,662	2,933
Edwards-BFZ*	0	250	2,750	2,850	5,500	7,100
Ellenburger-San Saba	478	478	478	478	519	542
Hickory	512	488	406	331	261	196
Queen City	0	0	0	0	0	580
Trinity	0	0	75	200	301	400
Other Aquifer	4,291	4,291	4,370	4,582	4,839	5,180
TOTAL	5,281	7,194	9,766	10,128	14,082	16,931

* This strategy uses brackish groundwater from the Saline Zone of the Edwards-BFZ Aquifer

The transfer strategy was utilized for WUGs with shortages that are located in multiple counties or basins. This strategy moves the surplus from the county/basin with the surplus to the one with the shortage. The WUG receiving the transferred supplies is shown in *Table ES.7*.

Table ES.7 Transfer Water Strategy

WUG Name	County	River Basin	Water Management Strategies (ac-ft/yr)					
			2010	2020	2030	2040	2050	2060
Goforth WSC	Travis	Colorado	11	21	30	37	43	48
TOTAL			11	21	30	37	43	48

The allocate water strategy typically moves water from a County-Other WUG to various WUGs with shortages in the same county. The supplies that are being reallocated were estimated in the 2001 Plan. The water demands have changed and the number of WUGs included in County-Other has changed since the last plan; therefore, this strategy involves adjusting the 2001 supply allocation estimates to better represent the current plan conditions. The WUGs receiving the allocated supplies from this strategy are shown in *Table ES.8*.

Table ES.8 Allocate Water Strategy

WUG Name	County	River Basin	Water Management Strategies (ac-ft/yr)					
			2010	2020	2030	2040	2050	2060
Cimarron Park Water Company	Hays	Colorado	17	110	0	0	0	0
Irrigation	Mills	Colorado	50	0	0	0	0	0
TOTAL			67	110	0	0	0	0

Temporary drought period use of aquifers was found to be the most cost-effective strategy for two WUGs in the LCRWPG. During some severe drought periods, these WUGs would use groundwater in excess of the sustainable yield of the aquifer temporarily to meet their needs. This strategy would only be required to meet drought shortages and would not pose a long-term impact on the aquifer. *Table ES.9* lists the WUGs that this strategy has been recommended for and the supplies expected to be pumped in excess of the groundwater sustainable yield.

Table ES.9 Temporary Drought Period Use of Aquifers

WUG Name	County	River Basin	Aquifer	Water Management Strategies (ac-ft/yr)					
				2010	2020	2030	2040	2050	2060
Irrigation	Bastrop	Brazos	Queen City	21	10	0	0	0	0
Manufacturing	Matagorda	Colorado	Gulf Coast	0	0	0	0	0	47
TOTAL				21	10	0	0	0	47

Drought management was found to be a cost-effective strategy for some WUGs that have limited options for new supplies or that already reduce their water use significantly during times of critical drought. This strategy involves using public outreach and potentially enforcement to encourage communities to reduce their water use during times of drought by restricting outdoor watering. *Table ES.10* lists the WUGs that this strategy has been recommended for and the water savings expected.

Table ES.10 Drought Management

WUG Name	County	River Basin	Water Management Strategies (ac-ft/yr)					
			2010	2020	2030	2040	2050	2060
Aqua WSC	Bastrop	Colorado						898
Elgin	Bastrop	Colorado						265
Smithville	Bastrop	Colorado						288
Cimarron Park Water Company	Hays	Colorado	109	109	109	109	109	109
Mountain City	Hays	Colorado	39	39	39	39	39	39
Manufacturing	Hays	Colorado	257	257	257	257	257	257
Goldthwaite	Mills	Colorado	56	56	56	56	56	56
TOTAL			461	461	461	461	461	1,912

ES.6.4 Municipal Water Management Strategies

Various municipal water management strategies were selected in addition to the regional management strategies recommended above. Water conservation was a general strategy and was applied to a number of WUGs throughout the LCRWPA, while other strategies were intended for individual WUGs or groups of WUGs.

Conservation was recommended as the first strategy for all municipal WUGs within the LCRWPA that were expected to have a shortage and had a per capita demand in excess of 140 gallons per capita per day (gpcd). The LCRWPG recommends a 1 percent reduction in per capita use annually for all municipal WUGs with shortages and per capita usage above 140 gpcd. *Table ES.11* shows the total reduction in water demand in each WUG by decade and county.

Table ES.11 Municipal Water Conservation by County

County	Water Savings from Municipal Conservation (ac-ft/yr)					
	2010	2020	2030	2040	2050	2060
Bastrop	262	475	795	1,224	1,438	1,728
Burnet	298	758	1,351	2,043	2,685	3,408
Fayette	43	104	157	159	167	184
Hays	107	294	483	558	666	755
Llano	1,108	1,645	2,127	2,492	2,858	3,225
Mills	47	100	147	187	223	259
San Saba	13	22	19	15	14	15
Travis ¹	12,579	21,830	28,583	31,383	37,790	45,172
Wharton	41	29	18	8	4	4
TOTAL	14,498	25,257	33,680	38,069	45,845	54,750

¹ The amount of savings from Conservation for the City of Austin was provided by City of Austin and is included in this table as well as in *Table ES.4*

Other strategies to reduce needs for specific WUGs can be categorized into two types of strategies:

- Water transmission strategies
- Reservoir strategies

Table ES.12 lists each strategy and WUG with its associated supply of water it would receive from the strategy.

Table ES.12 Municipal Water Management Strategies

Strategy	WUGs	Supply From WMS (ac-ft/yr)					
		2010	2020	2030	2040	2050	2060
Water Transmission							
Purchase SW From COA	Hays County-Other	1,100	1,100	1,100	1,100	1,100	1,100
HB 1437	Round Rock	126	246	349	426	536	645
Reservoir Strategies							
Goldthwaite Channel Dam	Goldthwaite	0	0	0	0	0	0
TOTAL		1,226	1,346	1,449	1,526	1,636	1,745

ES.6.5 Irrigation Water Management Strategies

Rice irrigators in Colorado, Wharton, and Matagorda Counties have the greatest anticipated needs and would be expected to experience a shortage in every decade if the DOR were repeated. For this reason, irrigation management strategies were selected with the interests of these growers in mind. *Table ES.13* shows each recommended water management strategy (WMS) for rice irrigation and the anticipated yield of each strategy.

Table ES.13 Rice Irrigation Water Management Strategies

Rice Irrigation Strategies	2010	2020	2030	2040	2050	2060
Continued Use of Austin Return Flows	18,665	19,687	22,900	27,781	30,382	33,838
Continued Use of Downstream Return Flows ¹	0	0	213	850	1,594	2,125
Water Management Plan-Interruptible Water Supply	255,493	196,568	137,643	78,718	19,793	0
On-Farm Conservation		34,150	34,150	34,150	34,150	34,150
Irrigation District Conveyance Improvements		65,000	65,000	65,000	65,000	65,000
Conjunctive Use of Groundwater		62,000	62,000	62,000	62,000	62,000
Development of New Rice Varieties		40,800	40,800	40,800	40,800	40,800
LSWP Subtotal		201,950	201,950	201,950	201,950	201,950
Firm up ROR With Off-Channel Reservoir						47,000
HB 1437	4,000	4,000	4,000	4,000	14,800	25,000
Supply Reduction due to LSWP						(71,381)
Amendment to Irrigation Rights for Municipal and Industrial Needs	(25,365)	(42,769)	(50,769)	(57,769)	(67,769)	(90,487)
TOTAL	252,793	379,436	315,937	255,530	200,750	148,045

¹ The downstream return flows are from Pflugerville and Aqua WSC.

For Irrigation WUGs with shortages outside of Colorado, Matagorda, and Wharton Counties, the following regional WMSs were selected:

- Expansion of current groundwater supplies
- Transfer/Allocate water from WUGs with surplus

- Temporary drought period use of aquifer

ES.6.6 Livestock, Manufacturing, and Mining Water Management Strategies

The expansion of current groundwater supplies and the development of new groundwater supplies were selected to meet the minor shortages expected for mining and livestock uses. For manufacturing shortages, strategies such as the expansion of current groundwater supplies, transfer/allocate water from WUGs with surplus, and temporary drought period use were recommended. *Table ES.14* shows the supplies for each category that were used to meet these shortages. These strategies were also discussed in the regional strategy section.

Table ES.14 Livestock, Manufacturing, and Mining Water Management Strategies

Category	Supply to Meet Shortages (ac-ft/yr)					
	2010	2020	2030	2040	2050	2060
Livestock	188	188	188	188	188	188
Manufacturing	310	344	454	612	741	934
Mining	13,550	13,146	12,366	6,972	5,574	5,794
TOTAL	14,048	13,678	13,008	7,772	6,503	6,916

ES.6.7 Steam Electric Water Management Strategies

Several strategies were selected to meet shortages in steam electric power demands including the regional strategy of expanding current groundwater supplies. Additional strategies were recommended that would be carried out by LCRA, COA, STP Nuclear Operating Company (STPNOC), and other existing or future steam-electric power facilities.

LCRA has selected the use of water taken from the current Garwood water right to provide for steam electric demands at the Fayette Power Project. Both the Fayette facility and the Garwood Irrigation Operation are operated by LCRA. The reallocation of this supply is described above in Section ES.6.2 and explained in detail in Chapter 4.

COA expects to meet the needs of steam electric facilities in Fayette and Travis Counties through the City's ROR rights, LCRA firm water supplies, and effluent reuse. These strategies are shown below in *Table ES.15* with the anticipated supplies from each.

Table ES.15 COA Steam Electric Supplies and Water Management Strategies

COA Strategies	Supply to Meet Shortages (ac-ft/yr)					
	2010	2020	2030	2040	2050	2060
<i>Supplies</i>						
COA Run-of-River	8,420	8,420	8,420	8,420	8,420	8,420
LCRA Contracts	18,674	18,674	18,674	18,674	18,674	18,674
<i>Strategies</i>						
Purchase from LCRA				20,975	20,975	26,885
Direct Reuse	2,315	3,315	7,315	8,315	12,315	13,315
Reduction in LCRA Commitment ¹		(3,000)	(5,000)			
TOTAL	29,409	27,409	29,409	56,384	60,384	67,294

¹ The use of this strategy is based on calculated surpluses shown in the 2011 Region K Plan only and does not assume that any legal changes to existing commitments would occur as a result of this strategy.

STPNOC will continue to meet its demands with a variety of supplies from ROR rights, existing off-channel reservoirs, and groundwater. Several strategies have also been included to meet deficits that cannot be met with these current supplies. These strategies include, but are not limited to:

- A water right permit amendment
- Blending brackish surface water in their existing reservoir
- Rainwater harvesting

ES.6.8 Alternative Water Management Strategies

The viability of the future LSWP² water management strategy and its use to meet various needs in Region K is currently unclear. As such, the LCRWPG desired to identify alternative strategies that would meet the various needs if the LSWP strategy was no longer an option. In addition, the LCRA is looking at several options to help meet future needs in the decades to come, and would like to include some of the potential strategies as alternative strategies while the evaluation process continues. Mills County is also looking at a potential alternative to meet the needs in their county.

Rice irrigation in the Lower Basin is one water user that has a significant portion of its needs met by the LSWP strategy through agricultural conservation and groundwater development. The recommended group of alternative strategies to meet these specific needs is shown below in *Table ES.16*.

Table ES.16 Rice Irrigation Alternative Water Management Strategies (ac-ft/yr)

Water Management Strategy	2010	2020	2030	2040	2050	2060
Expansion of Gulf Coast Aquifer	0	10,000	10,000	10,000	10,000	10,000
Off-Channel Storage in Reservoirs	0		30,000	40,000	40,000	40,000
On-Farm Conservation	0	20,000	20,000	35,000	35,000	35,000
Irrigation District Delivery System Improvements	0	20,000	25,000	40,000	48,000	48,000
Conjunctive Use of Groundwater Resources	0	0	0	0	15,000	15,000
Enhanced Recharge of Groundwater	0	0	0	0	17,200	17,200
Total	0	50,000	85,000	125,000	165,200	165,200

Alternative new water supply options for LCRA were also developed using their Water Supply Resource Plan. This water would provide additional firm yield to LCRA as a wholesale water provider and could be used to meet various needs throughout Region K, including irrigation needs. *Table ES.17* shows these alternative strategies and the amounts of water they could provide.

² This project is the subject of litigation. For a description of the status of the project *see* p. 4-35.

Table ES.17 LCRA Wholesale Water Supply Alternative Water Management Strategies (ac-ft/yr)

Water Management Strategy	2010	2020	2030	2040	2050	2060
Groundwater Importation	0	0	0	35,000	35,000	35,000
Brackish Desalination of the Gulf Coast Aquifer	0	0	0	22,400	22,400	22,400
Total	0	0	0	57,400	57,400	57,400

Mills County, in coordination with Fox Crossing Water District, has shown interest in a strategy involving the desalination of brackish groundwater from the Ellenburger-San Saba Aquifer. Due to the implementation cost of the strategy, it is not necessarily the most viable strategy at this time, but placing it in the Plan as an alternative strategy allows the county to keep their options open and allow for future growth. Chapter 4 provides more detail on this strategy. *Table ES.18* lists the amount of water available from the strategy.

Table ES.18 Desalination of Brackish Groundwater from the Ellenburger-San Saba Aquifer (Alternative Strategy)

WUG Name	County	River Basin	Water Management Strategies (ac-ft/yr)					
			2010	2020	2030	2040	2050	2060
County-Other	Mills	Colorado	0	0	384	384	384	384

ES.7 MANAGEMENT STRATEGY IMPACTS

The impacts associated with water management strategies were considered throughout the selection process, and strategies that imposed minimal impacts on the environment existing resources were weighted more favorably than less desirable strategies. The LCRWPG considered impacts to a number of resources, including:

- Water quality
- Existing water rights
- Instream flows
- Bay and estuary freshwater inflows
- Sustainable aquifer yield
- Agricultural water resources
- Threatened and endangered species
- Wildlife habitat
- Public lands

While reuse is projected to increase, municipal return flows are also projected to increase over the planning period. When available, downstream water rights can continue to divert, in seniority order, these return flows. Because the exact amount of reuse and downstream diversion cannot be determined, the amount of return flow available for environmental purposes is uncertain.

The construction of a channel dam on the Colorado River at Goldthwaite would have minor impacts on instream flows but would not affect downstream water rights, as the right for this reservoir would be junior to all existing permits.

The transfer of water anticipated under HB 1437 would constitute an inter-basin transfer to the Brazos River Basin. With this distinction comes the potential for environmental impacts from the introduction of invasive species and issues resulting from mixing water supplies from multiple sources. The greatest potential impacts on the Colorado River Basin would result from the reduced streamflow resulting from the transfer. LCRA will continue to meet the environmental flow requirements as specified in its Water Management Plan (WMP).

The 2002 State Water Plan included a proposal to temporarily transfer up to 150,000 ac-ft/yr of water from the Lower Colorado River Basin to the Region L water planning area. The objective of this proposal was and is to satisfy long-term water shortages in both Region K and Region L. In 2001, the Region K planning group also considered and passed a nine-point policy to be considered by the regional planning group in evaluating the proposed inter-basin transfer of this water to Region L (refer to Chapter 8 Section 8.2.1).

In 2004, LCRA entered into an agreement with SAWS³ to effectuate this proposal. Prior to finalizing the agreement with SAWS, specific legislation was enacted that imposes several restrictions and requirements on the LSWP (Texas Water Code § 222.030). Specifically, the LCRA Board must find that the contract:

1. Protects and benefit the Lower Colorado River watershed and the authority's water service area, including municipal, industrial, agricultural, recreational, and environmental interests
2. Is consistent with regional water plans filed with the Texas Water Development Board on or before January 5, 2001
3. Ensures that the beneficial inflows remaining after any water diversions will be adequate to maintain the ecological health and productivity of the Matagorda Bay system
4. Provides for instream flows no less protective than those included in the authority's WMP for the Lower Colorado River Basin, as approved by the commission
5. Ensures that, before any water is delivered under the contract, the municipality has prepared a drought contingency plan and has developed and implemented a water conservation plan that will result in the highest practicable levels of water conservation and efficiency achievable within the jurisdiction of the municipality
6. Provides for a broad public and scientific review process designed to ensure that all information that can be practicably developed is considered in establishing beneficial inflow and instream flow provisions
7. Benefits stored water levels in the authority's existing reservoirs

These and additional requirements contained in the legislation and final agreement between LCRA and SAWS mirror many of those contained in the nine-point policy of the 2001 Plan.

³ This project is the subject of litigation. For a description of the status of the project *see* p. 4-35.

Regional strategies such as conservation, expanded use of groundwater, and development of new groundwater resources are thought to have minimal effects on the environment and natural resources. Preserving a sustainable level of groundwater resources and specifically spring flows is important in maintaining endangered species habitat. Information concerning the impacts of specific strategies can be found in Chapter 4. Chapter 5 discusses the impacts of strategies on water quality and rural areas. Finally, Chapter 7 includes information about the overall impacts of the Plan on water, agricultural, and natural resources of the State.

ES.8 WATER CONSERVATION AND DROUGHT MANAGEMENT

Water conservation is recommended for all water user groups, although it is calculated and applied in the tables only for WUGs with shortages. Drought management plans are required for all WUGs to address brief periods of water shortage, but are not recommended as long-term management strategies. Drought management plans typically force conservation over a limited period of time. To achieve a sustained reduction in demand, water conservation strategies must be implemented, so that water users do not perceive the required changes as being temporary. Chapter 6 provides information on what types of conservation measures are currently being implemented.

ES.9 POLICY RECOMMENDATIONS

The regional water planning process provides for RWPGs to make any recommendations they see as desirable regarding regulatory, administrative, or legislative changes to foster wise water planning and water use. Planning Group members deliberated at length about such changes and adopted a series of resolutions reflecting the recommendations outlined below.

ES.9.1 Management of Surface Water Resources

The LCRWPG recognizes the growing need for use of surface water resources from regions with more plentiful supplies to meet the demands of regions with insufficient water supplies through inter-basin transfer (IBT). However, as this need grows, there is also a growing need for implementing policies that are aimed at protecting the state's surface water supplies. The LCRWPG proposed four major points of policy on protection of surface water resources in order to meet this challenge.

The LCRWPG previously devised and adopted a nine point policy for transporting water outside the Colorado River Basin in the 2001 planning round. These points have been revised and are, again, adopted for this Plan. These guidelines directly impact the proposed water transfers to the South Central Texas RWPG but would also apply to other potential customers for surface water supplies from the LCRWPA.

The LCRWPG also recommended the development of models that will be capable of estimating the interaction between groundwater and surface water. Studying the linkage between these two resources will provide a better understanding of how the complete system behaves when impacted by significant events such as droughts or flooding and would be especially important in areas with close groundwater and surface water interaction. Estimates of the impacts of pumpage on aquifers were in some cases determined by maintaining a percentage of spring flow contributing to a surface resource, so the LCRWPG is already moving in this area.

The conjunctive use of groundwater and surface water was also recommended by the LCRWPG. The combined use of these two resources would be conducted in a way which would minimize the use of groundwater when surface water was available and manage aquifers for sustainable yield.

New electrical generation facilities should provide reasonable assurance that surface and groundwater are available, can be developed, or can be obtained during the facility planning and permitting process.

ES.9.2 Environmental Flows

Maintaining streamflows to lower reaches and, ultimately, bay and estuary systems is recognized as a major goal for the regional water planning process. Many authorized water diversions were issued prior to the addition of restrictions to protect environmental flows. The LCRWPG recommends legislative changes to protect instream flows by issuing permits with thorough mitigation plans that would assure the maintenance of appropriate environmental flows, and that existing water rights be converted to environmental uses through a voluntary sale or lease of underutilized water rights. In places where unpermitted water is available, the State should set aside water in order to assure critical flows and include provisions in all new permits that would further protect these flows.

ES.9.3 Environmental-Sustainable Growth

The LCRWPG recognizes the complexities and the seemingly insurmountable political obstacles that prevent the adoption of growth management plans. Therefore, it is the LCRWPG's recommendation that the issue of sustainable growth be addressed primarily through educational efforts. The LCRWPG strongly supports the proposed state-wide Water IQ public education campaign and encourages that this campaign be saturated with information regarding the finite nature of water resources and the inescapable trade-offs that inevitably must occur when water use in a given geographic area or economic sector increases. Care must be taken in such a program to highlight the need for a balance to be sought among competing water uses that would ensure the maintenance of:

- Healthy riparian, riverine, estuarine, and hardwood bottomland ecosystems
- Historic cultural resources
- Regional economic opportunities
- Agricultural development
- Preservation of rural communities

ES.9.4 Groundwater

Groundwater is an important resource throughout the state of Texas for many communities with no reasonable means of alternative water sources. The role of protecting these supplies has been given to GCDs which are able to manage groundwater with an insight into local needs and concerns. The LCRWPG supports the power of the GCDs to modify the Rule of Capture in order to preserve groundwater quality and quantity but recognizes the authority of the Rule of Capture in locations where no GCD exists. The LCRWPG also supports the creation of a GCD within the LCRWPA if the need arises for such an entity at the local level.

Region K supports GMA-wide cooperation in management of groundwater resources, while also recommending certain improvements to the process provided by HB 1763 of the 79th Legislature. Region K recommends that GCDs be required to manage the resource as necessary for meeting the DFCs

set forth in their management plans and ratified through the GMA MAG process rather than using the MAG as a cap on groundwater permitting. Region K supports the use of GMA-wide average DFCs in conjunction with GMA-established pumping patterns as a means of expediting the establishment of MAG numbers. However Region K also understands that an aquifer can vary within a GMA and may require different DFCs to effectively manage the aquifer.

As noted above, the LCRWPA supports the management of groundwater resources at the sustainable level wherever possible. Sustainability is defined as balancing groundwater withdrawals with natural recharge and replenishment to maintain long-term stability in regional or local groundwater supplies. GCDs should incorporate the best available information to assure that this is done.

LCRWPG recommends establishing coordination between water marketing proposals with local GCDs and RWPGs and requiring state agencies to comply with all local GCD rules and state-certified groundwater management plans and all state and regional water plans. LCRWPG also recommends requiring all groundwater export or water marketing projects to coordinate with local GCDs and RWPGs.

LCRWPG supports the funding needs of the TWDB in order to continue maintaining state-wide groundwater databases.

ES.9.5 Protection of Agricultural and Rural Water Resources

The view of the LCRWPG is that agricultural industries and rural areas are vital to the State. Accordingly, water transfers to serve unmet needs in more urbanized areas should be based on more factors than simply market-driven conditions. Water resources in these areas should be protected through strengthening of GCDs, encouraging the interaction of agricultural and rural users to those in the water market and planning arenas, and protecting IBT source basins.

ES.9.6 Agricultural Water Conservation

The LCRWPG supports further efforts to promote agricultural conservation practices. The large magnitude of agricultural demands indicates a strong potential for making a major reduction in overall demand through conservation. In particular, the LCRWPG supports increased funding of programs such as the Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP) and future cooperation between municipalities and farmers as in the LSWP.

ES.9.7 Municipal/ Industrial Conservation

The LCRWPG supports efforts to promote municipal and industrial conservation practices. The LCRWPG supports the development of a consistent methodology for calculating gallons per capita per day (GPCD), by the Texas Water Conservation Advisory Council (TWCAC). Consistent water savings metrics, additional financial assistance to reduce water loss, conservation coordinators, conservation messaging coordination, property owners' associations' outdoor water use policies, dedicated conservation funding are conservation practices that the LCRWPG supports. More information on these water conservation practices can be found in Chapter 8.

ES.9.8 Reuse

The LCRWPG supports reuse as a water management strategy but acknowledges that the practice has many complex issues that may have long-term impacts. The LCRWPG looks to continue monitoring of legislative activity involving reuse and supports further review of planned reuse projects.

ES.9.9 Brush Control

The LCRWPG has chosen to adopt a policy to recommend and promote voluntary brush control in the LCRWPA and recommend that state and federal funds be made available to support this effort.

ES.9.10 Recommended Improvements to Regional Planning Process

Six recommendations were made by the LCRWPG to improve and strengthen continued regional water planning efforts. These include the following points:

- The State should work to coordinate water quantity planning along with water quality planning in the form of the Texas Clean Rivers Program.
- The State should continue funding for data collection that is essential for decisions made in the water planning process.
- The State should continue to provide assistance to the RWPGs in the form of public information materials and administrative support.
- The State should continue the commitment to diversity set forth by the State by improved representation by women and minorities.
- The State should structure the planning process to include and plan for environmental needs.
- The State should provide adequate and timely funding for the regional water planning process to aid in developing effective and environmentally responsible strategies to meet future water needs.

ES.9.11 Other Policy Recommendations

The LCRWPG also made the following recommendation:

- The State should provide sufficient funding to aid rural communities in treating radionuclides in the Hickory and Marble Falls aquifers and disposing of radioactive wastes generated by the process.

ES.10 ECOLOGICALLY UNIQUE STREAM SEGMENTS AND RESERVOIR SITES

No sites are recommended for designation for this planning cycle.

ES.11 ECONOMIC IMPACT OF UNMET NEEDS AND INFRASTRUCTURE FUNDING

This section was not complete at the time of submittal, but will be included in the Final 2011 Regional Water Plan for the LCRWPA.

ES.12 PUBLIC PARTICIPATION

Regional Planning Group members reached out to interest groups, civic leaders, small water utilities, and the public-at-large. The LCRWPG will have held more than 20 open regular meetings in locations throughout the LCRWPA by March 2010. Two public meetings in Burnet and Bay City and one public hearing in Austin will be held to receive public comments on the Initially Prepared Plan.

Members of the LCRWPG made presentations to civic and special-interest groups throughout the area at various times through the planning process. The LCRWPG also maintained a web page and provided fact sheets about the process and proposed solutions. In this way, the LCRWPG succeeded in providing important information to thousands of regional stakeholders.

The LCRWPG also formed several committees to develop portions of and to help guide and oversee the development of the regional water plan. These committees include the following:

- Population and Water Demand Committee
- SH 130/45 and Northern Hays Committee

All of these efforts made information and updates on the regional water planning process available to thousands of people throughout the entire region. Additional information concerning public involvement can be found in Chapter 10.

ES.13 REMAINING ISSUES AND CONCERNS

Some of the strategies in this plan are predicated upon identified water needs or possible water supply scenarios which are affected by the outcomes of pending or future permitting processes at the Texas Commission on Environmental Quality (TCEQ). The planning group recognizes that the plan is typically updated on an every five-year cycle, providing regular opportunities to update future plans to reflect the resolution of such processes. This plan includes various alternative strategies, which may be needed depending on the outcome of pending or future litigation or permitting processes (see *Section 4.15 Alternative Water Management Strategies* for a discussion of alternative strategies included in the plan).

The LCRWPG has met with the TWDB staff and Region L to resolve the potential interregional conflict regarding the over-allocation of the Carrizo-Wilcox Aquifer in Bastrop County. During this planning round, the LCRWPG worked diligently to avoid over-allocation of this water source within Region K. In fact, there is not sufficient availability of the Carrizo-Wilcox Aquifer supplies to meet all of the projected demands for those WUGS which currently rely on this aquifer for their municipal supplies; consequently, additional water management strategies in addition to expansion and development of groundwater supplies have been recommended during the latter decades of the plan to meet those needs. Bastrop County is an area of Region K that is growing very rapidly with growth rates exceeding previous projections. As a result, the 2011 Region K Water Plan includes significantly revised population and water demand numbers for this round of planning which reflect that projected high growth rate. Many of the municipal WUGs in Bastrop County currently rely on the Carrizo-Wilcox Aquifer as their sole or primary water source. In addition, these WUGs already have existing groundwater permits that currently meet or exceed the annual amount of water identified as needed for their future system demands within the fifty-year planning period of the 2011 Region K Water Plan. Unfortunately, the amount of Carrizo-Wilcox Aquifer water currently permitted to WUGs in Bastrop County by the Lost Pines GCD is 43,486 ac-ft/yr, which is already greater than the 28,000 ac-ft/yr that is currently estimated to be the

maximum availability of this source. Because these WUGs in Bastrop County already have existing permits that meet or exceed the quantities of water shown as water management strategies in the 2011 Region K Water Plan, and because Region K itself has not over-allocated the Carrizo-Wilcox Aquifer in Bastrop County, it does not appear reasonable to propose plans for these WUGs to develop new water management strategies in order to accommodate export of the groundwater supplies to another County and planning region of the state.

ES.14 FOR MORE INFORMATION

For information regarding opportunities to obtain additional information about the Region K planning process and how you can participate, please refer to the Region K website or the LCRA web page at: www.regionk.org; www.lcra.org or navigate directly to <http://www.lcra.org/water/lcrwpg.html>

Full text of the 16 RWPG Adopted Plans will be available on the TWDB web page at: www.twdb.state.tx.us/.

Copies of this Executive Summary and other information materials may also be obtained by calling John Burke, Chairman, Lower Colorado Regional Water Planning Group, 512-303-3943.

Please refer to the body of the Plan for detailed information regarding methodology, projections, and issue discussions.