LOST PINES GROUNDWATER CONSERVATION DISTRICT

MANAGEMENT PLAN

Adopted September 15, 2004;
Revised August 10, 2010;
Revised September 19, 2012

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Section 1. THE DISTRICT

The Lost Pines Groundwater Conservation District (District) was created in 1999 by Senate Bill 1911, 76th Texas legislature, pursuant to Section 59, Article 16 of the Texas Constitution and Article 7880-3c, Texas Civil Statutes (now Chapter 36, Texas Water Code); ratified by the 77th Texas Legislature in 2001; and confirmed by voters in Bastrop and Lee counties in November 2002.

The District includes all of Bastrop and Lee counties (**Map 1**).

For state water planning purposes, the District was designated by the Texas Water Development Board (TWDB) as part of Groundwater Management Area 12 (GMA 12) (**Map 2**). The District participates in GMA 12 along with Mid-East Texas Groundwater Conservation District, Brazos Valley Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, and Fayette County Groundwater Conservation District.

The District participates in two of the State's sixteen Regional Planning Areas: Bastrop County is in Lower Colorado Regional Planning Group or Region K and Lee County is in Brazos River Regional Planning Group or Region G (**Map 3**).

Section 2. DISTRICT MISSION AND GUIDING PRINCIPLES:

Actions, Procedures, Performance and Avoidance Necessary to Effectuate the Management Plan

Mission. The District's mission is to conserve, preserve and protect interests in groundwater in Bastrop and Lee counties, while addressing statutory goals and requirements. In fulfilling its mission, the District will endeavor to manage groundwater to meet demands on a sustainable basis, by which the District means development, use, and reasonable long-term management of groundwater resources so that those resources can continue to be used by future generations. The District will address applicable statutory management goals, including:

- Providing the most efficient use of groundwater
- Controlling and preventing waste of groundwater
- Addressing conjunctive surface water management issues
- Addressing natural resource issues that impact the use and availability of groundwater and are impacted by the use of groundwater
- Addressing drought conditions
- Addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control, where appropriate and cost effective, and
- Addressing the desired future conditions (meaning a quantitative description, adopted in accordance with Chapter 36, Texas Water Code,[1] of the desired condition of the groundwater resources for relevant aquifers (DFCs)), as those DFCs may be amended from time to time.

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[1] See §§ 36.001(30) (defining DFC) and 36.108 (joint planning process). References herein to "Chapter 36" are to Chapter 36, Texas Water Code. All references to a section of Chapter 36 are shown as "§ 36.[section number]."

Based on current conditions, the statutory goal of controlling and preventing subsidence is not applicable to the District.

Guiding Principles. The District's guiding principles derive from its mission statement. Groundwater resources within the District are of vital importance to the residents and businesses in Bastrop and Lee counties and effectively constitute the only source of water available for most of the District. The District was created to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater within the two counties, while complying with statutory requirements. The District believes its groundwater resources can be managed in a prudent manner through education and conservation coupled with reasonable regulation, and based on increasing quantitative understanding of available groundwater resources, recharge, and current and future demand, including real-time information on aquifer conditions developed via a network of monitoring wells.

Policy.

1. District groundwater is to be conserved, preserved, and protected and waste prevented to maintain the viability of the groundwater supply for future generations in the two counties, while complying with statutory requirements, as amended from time to time, including those applicable to permits for transport of water out-of-District, and including without limitation certain provisions of Chapter 36 which are summarized in Appendix A (which may be supplemented when appropriate).

2. To the extent consistent with statutory goals and requirements and with its DFCs, the District will attempt to manage District aquifers on a sustainable basis. The District defines sustainability as development, use, and reasonable long-term management of groundwater resources so that those resources can continue to be used by future generations.

3. The District, in cooperation with local municipalities and water supply companies, has established a monitoring well network and an aquifer water level monitoring program (the "Monitoring Well Program"), and a system for reporting water levels. The District will measure and monitor water levels to detect declines, to allow the District to consider appropriate action to avoid or minimize depletion of the water supply and to maintain or achieve water levels which are consistent with the DFCs. For instance, it may be necessary for the District to reduce the amount of groundwater that non-exempt users pump to avoid or to minimize depletion of the groundwater supply in specified areas within the District and to achieve water levels which are consistent with the DFCs.

4. This Management Plan and the District rules, as amended from time to time, will be based on the best technical advice available to the District. The District will undertake investigations of the District's groundwater resources, including through the Monitoring Well Program, and will cooperate with investigations of groundwater resources and the interaction of groundwater and surface water by TWDB, TCEQ, GMA 12 or other entities, and will make the results of such investigations available to the Board and to the public. The District recognizes that good long-term groundwater management is built on availability of high-quality data, improved understanding of groundwater flow systems, and increasingly better understanding of the interaction between groundwater and surface water. The District recognizes the uncertainties

inherent in long-term management of groundwater resources created by such factors as climate, drought, changes in exempt uses such as mining and oil and gas development, socioeconomic change and population growth, and also recognizes the uncertainties created by the geology and other characteristics of relevant aquifers. The District believes that uncertainties affecting decision-making can be reduced to some extent by reliance on high-quality data.

5. The District will treat all citizens equally. The District may exercise its discretion to consider unique situations or local conditions and the potential for adverse economic and environmental consequences, guided by this Management Plan, and such exercise of discretion shall not be construed as limiting the power and authority of the District.

6. In implementing this Management Plan, the District will seek cooperation from municipalities, water supply companies, irrigators, and other groundwater users, and will also seek to cooperate and coordinate with state and regional water planning authorities and agencies as well as the districts of GMA 12.

7. In support of its mission of conserving, protecting and preserving interests in groundwater within Bastrop and Lee counties, while addressing statutory goals and requirements, the Board may, among other actions, after notice and hearing, amend or revoke any permit for non-compliance, or reduce the groundwater production authorized by permit for the purpose of managing District groundwater resources consistent with the DFCs. The District may also enforce the terms and conditions of permits and District rules by fine and/or by enjoining the permit holder in a court of competent jurisdiction as provided by § 36.102.

The District's Board of Directors will implement this Management Plan and any necessary changes or modifications to adhere to the policy stated herein.

The rules are on the District website: http://www.lostpineswater.org/Forms----Documents.aspx.

Section 3. TIME PERIOD COVERED BY THE MANAGEMENT PLAN

This Management Plan was adopted September 15, 2004, revised August 10, 2010, found administratively complete by TWDB on October 25, 2010, and revised September 19, 2012. The District may review the Management Plan annually, but at least once every five years, the District will review and re-adopt its Management Plan, with or without change, and submit it to TWDB pursuant to Chapter 36.[2]

Section 4. GOVERNANCE

Board of Directors. The District is governed by a ten-member Board of Directors, five appointed by the Bastrop County Judge and five appointed by the Lee County Judge, qualified

[2] See § 36.1072.

and sworn as required by law. After the initial appointment of directors and the setting of staggered terms, each Director is appointed to a four-year term beginning in January. Thus, every second year, following the initial appointment of directors, two directors are appointed by the Bastrop County Judge and two Directors are appointed by the Lee County Judge. The succeeding second year, three Directors are appointed by the Lee County Judge and three Directors are appointed by the Bastrop County Judge.

Each year, in January, the Board selects one of its members to serve as president to preside over Board meetings and proceedings, a second member to serve as vice-president to preside over Board meetings and proceedings in the absence or recusal of the president, and a third to serve as secretary-treasurer to keep a true and correct account of all proceedings of the Board. The Board may appoint an assistant secretary to assist the secretary-treasurer. Unless a vacancy occurs, members of the Board and officers serve until their successors are appointed, qualified to hold office, and sworn in. In the event of a vacancy in any office, the Board shall select one of its members to fill out the term of office. In the absence of a General Manager, the president of the Board will serve as General Manager.

The president may establish committees for formulation of policy recommendations to the Board and may appoint the chair and membership of the committees, which may include members of the Board and/or non-board members. Committee members serve at the pleasure of the president.

The Board will hold regular meetings at least four times a year on a day and at a place that the Board may establish from time to time by Board resolution. At the request of the president, or by written request of at least three Board members, the Board may hold a special meeting. The business of the District will be conducted at regular or special Board meetings when a quorum is present. All Board meetings will be conducted in accordance with the Open Meetings Act.

Daily Operations. The Board may employ a person to be the General Manager, with full authority to manage and to operate the affairs of the District, subject only to direction provided by the Board through policies and orders adopted by the Board. The General Manager may, with Board approval, employ all persons necessary to carry out daily operations. The General Manager may delegate duties as may be necessary to efficiently and expeditiously accomplish those duties; provided that no delegation will relieve the General Manager from his or her responsibilities under the Texas Water Code, the District enabling act, District rules, or District policies, orders and permits.

The Board shall establish by resolution an official office of the District, and the office will maintain regular business hours.

Section 5. DISTRICT DFCs (DESIRED FUTURE CONDITIONS)

On August 10, 2010, the GMA-12 DFCs were adopted for the relevant aquifers, i.e., the major and minor Aquifers within the District other than the Yegua-Jackson (the Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers) and submitted to TWDB. The Yegua-Jackson Aquifer was considered not relevant for the District and a DFC was not established for it. See **Appendix A**. On September 8, 2010, TWDB notified GMA 12 that the GMA-12 DFC submission was administratively complete. In adopting and submitting the GMA-12 DFCs, the

District stated that in its Management Plan it would further divide the recommended DFCs by county. *Id.* The District's DFC's by county and by aquifer, are as follows:

Desired Future Conditions

Aquifer	County	District-wide DFC in 2060 (Average drawdown in feet)	DFC in 2060 (County-wide average drawdown in feet)
Sparta	Bastrop	7	7
	Lee	-	7
Queen City	Bastrop	13	10
	Lee	-	15
Carrizo	Bastrop	47	30
	Lee	-	60
Calvert Bluff	Bastrop	99	65
	Lee	-	135
Simsboro	Bastrop	237	145
	Lee	-	345
Hooper	Bastrop	129	90
	Lee	-	180

Pursuant to § 36.1071(h), the District used information from the applicable groundwater availability model (GAM) as a joint planning tool with GMA 12 for DFC development and in developing this Management Plan. The applicable GAM for the District was developed for the central parts of the Queen City, Sparta, and Carrizo-Wilcox aquifers[3].

Section 6. MODELED AVAILABLE GROUNDWATER ESTIMATE

Pursuant to the 2011 amendment of § 36.1071(e)(3), TWDB provided estimates of modeled available groundwater totals for the District, based on the DFCs established by GMA 12 under § 36.108. They are presented below in Table 1.

[3] Kelley, V. A., Deeds, N.E., Fryar, D.G., and Nicot, J.P., 2004, Groundwater availability models for the Queen City and Sparta aquifers: Contract report to the Texas Water Development Board.

Table 1 - Modeled Available Groundwater Totals for the District

All values are in acre-feet/year

AQUIFER	2010	2020	2030	2040	2050	2060
Sparta	2,405	2,236	5,315	1,980	1,885	1,877
Queen City	1,315	1,215	2,880	1,144	1,134	1,133
Carrizo	6,610	7,618	8,358	9,263	11,800	12,052
Calvert Bluff	1,785	2,226	2,633	3,183	3,912	3,985
Simsboro	29,556	32,731	31,362	34,916	36,544	37,249
Hooper	1,174	1,427	1,715	2,095	2,589	2,592
TOTAL	42,845	47,453	52,263	52,581	57,864	58,888

TWDB GAM Runs 10-044 MAG, 10-045 MAG, and 10-046 MAG.

Section 7. DISTRICT WATER RESOURCES

This section presents information on District groundwater and surface water resources. The estimates below in Tables 2 and 6-9 comprise data from the TWDB 2012 State Water Plan Dataset for the District. The estimates in Tables 3-5 are from TWDB GAM Run 10-014, May 28, 2010, pursuant to Texas Water Code § 36.1071(h) (a district shall use groundwater availability modeling information to provide certain required information).

The District considered and used all information referenced in this Management Plan, including without limitation the information in Table 8 (water supply needs) and Table 9 (water supply management strategies).

Table 2 - Estimated Historical Water Use (Groundwater and Surface Water)[4]

BASTROP COUNTY

All values are in acre-feet/year

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	2,524	205	0	927	2	231	3,889
	SW	0	0	5,411	2,088	0	1,808	9,307
1980	GW	3,861	173	0	749	0	616	5,399
	SW	0	0	4,249	2,640	200	864	7,953
1984	GW	5,155	169	0	325	10	624	6,283
	SW	1	56	4,002	805	0	937	5,801
1985	GW	4,959	165	0	105	10	562	5,801
	SW	0	390	4,500	260	0	844	5,994
1986	GW	5,043	166	0	51	10	524	5,794
	SW	0	41	3,849	200	0	786	4,876
1987	GW	5,798	62	0	51	12	558	6,481

[4] Groundwater and surface water use estimates are currently unavailable for 2005 and 2010. TWDB staff anticipates the calculation and posting of such estimates at a later date.

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
	SW	0	6	3,960	200	0	838	5,004
1988	GW	6,083	30	0	75	10	591	6,789
	SW	0	3	5,506	300	6	888	6,703
1989	GW	6,432	28	0	273	10	581	7,324
	SW	0	2	4,052	273	6	871	5,204
1990	GW	6,247	26	0	323	10	572	7,178
	SW	0	1	2,967	322	6	859	4,155
1991	GW	5,978	64	0	322	26	585	6,975
	SW	0	0	2,911	322	6	879	4,118
1992	GW	5,876	43	0	323	20	610	6,872
	SW	0	0	2,694	323	12	915	3,944
1993	GW	6,577	69	0	181	20	609	7,456
	SW	0	0	3,810	120	12	915	4,857
1994	GW	6,542	72	0	423	20	632	7,689
	SW	1	0	3,468	273	9	948	4,699
1995	GW	6,755	72	0	443	22	598	7,890
	SW	0	0	3,904	295	6	897	5,102
1996	GW	7,883	81	0	443	22	704	9,133
	SW	1	0	5,715	295	6	1,056	7,073
1997	GW	7,470	71	0	395	22	510	8,468
	SW	1	0	2,638	263	6	764	3,672
1998	GW	8,451	31	0	343	22	585	9,432
	SW	0	0	3,588	228	6	878	4,700
1999	GW	8,892	41	0	234	22	629	9,818
	SW	2	0	3,721	162	6	945	4,836
2000	GW	8,753	55	0	904	22	609	10,343
	SW	3	0	1,944	942	6	913	3,808
2001	GW	8,492	43	0	834	12	403	9,784
	SW	87	0	3,417	869	28	1,136	5,537
2002	GW	7,990	47	0	834	12	402	9,285
	SW	82	0	2,944	869	28	1,135	5,058
2003	GW	8,047	90	0	400	12	437	8,986
	SW	83	0	2,944	0	28	1,231	4,286
2004	GW	8,803	59	0	539	12	441	9,854
	SW	90	0	2,944	0	28	1,242	4,304
2006	GW	11,335	97	0	596	0	325	12,353
	SW	2	8	3,514	0	0	1,301	4,825
2007	GW	9,740	66	0	365	0	231	10,402
	SW	2	30	2,019	0	0	924	2,975
2008	GW	11,060	70	0	371	0	267	11,768
	SW	19	12	7,306	0	0	1,066	8,403
2009	GW	10,986	79	0	2,915	2,117	257	16,354
	SW	0	10	4,535	0	48	1,027	5,620

LEE COUNTY

All values are in acre-feet/year

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	1,014	35	0	334	0	229	1,612
	SW	0	0	0	349	0	1,340	1,689
1980	GW	1,936	22	0	250	2	646	2,856
	SW	0	0	0	251	0	850	1,101
1984	GW	2,474	23	0	35	0	590	3,122
	SW	0	0	0	105	0	886	991
1985	GW	2,605	23	0	55	0	527	3,210
	SW	0	0	0	168	0	791	959
1986	GW	2,655	27	0	56	0	528	3,266
	SW	0	0	0	169	0	792	961
1987	GW	2,731	4	0	56	0	555	3,346
	SW	0	0	0	169	0	834	1,003
1988	GW	2,823	6	0	56	0	577	3,462
	SW	0	0	0	169	0	865	1,034
1989	GW	2,710	6	0	172	0	567	3,455
	SW	0	0	0	126	0	851	977
1990	GW	2,991	5	0	164	0	559	3,719
	SW	0	0	0	119	0	839	958
1991	GW	2,822	6	0	164	16	572	3,580
	SW	0	0	0	119	0	858	977
1992	GW	2,926	0	0	128	16	685	3,755
	SW	0	0	0	93	0	1,026	1,119
1993	GW	3,116	0	0	263	16	751	4,146
	SW	0	0	0	155	0	1,127	1,282
1994	GW	3,038	4	0	379	16	747	4,184
	SW	0	0	0	186	0	1,121	1,307
1995	GW	3,007	4	0	336	16	773	4,136
	SW	0	0	0	197	0	1,160	1,357
1996	GW	3,291	4	0	322	16	692	4,325
	SW	0	0	0	189	0	1,038	1,227
1997	GW	3,132	4	0	322	16	638	4,112
	SW	0	0	0	189	0	957	1,146
1998	GW	3,405	6	0	322	16	602	4,351
	SW	0	0	0	189	0	903	1,092
1999	GW	3,369	11	0	453	16	636	4,485
	SW	0	0	0	266	0	955	1,221
2000	GW	3,336	11	0	495	16	619	4,477
	SW	0	0	0	470	0	928	1,398
2001	GW	2,977	13	0	661	8	454	4,113
	SW	0	0	0	610	0	1,107	1,717
2002	GW	2,833	16	0	688	8	467	4,012
	SW	0	0	0	634	0	1,140	1,774
2003	GW	2,880	12	0	571	8	471	3,942
	SW	0	0	0	8	0	1,148	1,156
2004	GW	3,540	13	0	580	8	481	4,622

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
	SW	0	0	0	3	0	1,172	1,175
2006	GW	2,338	15	0	426	0	628	3,407
	SW	1	0	0	0	0	1,465	1,466
2007	GW	1,831	11	0	116	0	704	2,662
	SW	1	0	0	56	0	1,643	1,700
2008	GW	2,319	7	0	319	0	439	3,084
	SW	7	0	0	0	0	1,025	1,032
2009	GW	2,383	6	0	966	2,095	464	5,914
	SW	0	0	0	0	0	1,084	1,084

A. GROUNDWATER RESOURCES

Except for a small area along the northwest border of Bastrop County south of the Colorado River that is not an aquifer, the geologic units exposed in Bastrop and Lee counties are Tertiary and Quaternary in age. All the Tertiary age geologic units dip or tilt to the southeast, and are composed of varying portions of sand, silt, and clay. From oldest (westernmost) to youngest (easternmost), these exposed Tertiary geologic units include the Midway Group, the Wilcox Group, the Carrizo Formation, the Reklaw Formation, the Queen City Sand, the Weches Formation, the Sparta Sand, the Cook Mountain Formation, the Yegua Formation, and the Jackson Group. Quaternary geologic units include river or stream alluvium, such as along the Colorado River and Middle Yegua Creek, as well as topographically higher terrace deposits.

AQUIFERS

Most of these geologic formations found within the District will yield some quantity of water to wells, as shown by the stratigraphic section below.

Figure 1 - Stratigraphic Section

Aquifer or Unit	Maximum Thickness (feet)	Description	Water-Bearing Properties
Alluvium	100	Sand, gravel, silt, and clay	Yields small to moderate quantities of fresh to slightly saline water to wells
Yegua-Jackson	900	Medium to fine sand, silt, clay, some lignite	Yields small to moderate quantities of fresh to slightly saline water to wells
Cook Mountain Formation	400	Clay with some sand	Yields small quantities of fresh to slightly saline water to wells
Sparta Sand	170	Fine to medium sand with some clay and silt	Yields small to large quantities of fresh to slightly saline water to wells

Weches Greensand	100	Glauconitic clay and sand	Not known to yield significant quantities of water to wells
Queen City Sand	600	Fine to medium sand, clay, with some conglomerate	Yields small to large quantities of fresh to slightly saline water to wells
Reklaw Formation	100	Glauconitic sand and silt (lower) and clay with some sand (upper)	Yields very small water to wells in upper part of formation
Carrizo Sand	600	Fine to coarse sand with some sandstone and clay	Capable of yielding large quantities of water to wells
Calvert Bluff Formation (Wilcox Group)	1500	Fine to coarse grained sand and sandstone with some silt, mudstone, and lignite	Capable of yielding moderate quantities of water to wells
Simsboro Sand (Wilcox Group)	800	Massive, fine to medium, well sorted sand	Capable of yielding large quantities of water to wells
Hooper Formation (Wilcox Group)	1300	Predominantly mudstone, with some sand and lignite.	Capable of yielding small to moderate quantities of water to wells
Midway Group	?	Mostly shale	Not known to yield significant quantities of water to wells

However, only the Carrizo, Wilcox, Queen City, Sparta, and Colorado River alluvium aquifers yield sufficient quantities to have wells that have been permitted by the District. Each of these geologic units has different water-bearing characteristics and capabilities, and each is described separately below.

Carrizo-Wilcox Aquifer

The Carrizo Formation and the Wilcox Group (which includes the Hooper Formation (lower), the Simsboro Formation (middle), and the Calvert Bluff Formation (upper)) form a single, hydrologically connected aquifer system recognized by the State as the Carrizo-Wilcox Aquifer. The Carrizo-Wilcox Aquifer is a defined as a major aquifer by the state of Texas, and within Texas it stretches in a wide band from the Rio Grande in South Texas to Louisiana. The Carrizo-Wilcox crops out through the middle of Bastrop County and in the far northeastern portion of Lee County. Wells are completed in the Carrizo-Wilcox Aquifer in and near the outcrop of each of the four individual aquifer units.

Hooper Formation The lowermost aquifer within the Carrizo-Wilcox is the Hooper Formation, which is also generally the least productive of the three Wilcox Group aquifers. The Hooper is used by exempt wells in and near the outcrop area, as well as for municipal purposes by the City of Elgin, Aqua Water Supply Corporation, Manville Water Supply Corporation, and Lee County Water Supply Corporation.

The Hooper is comprised of predominantly mudstone, with varying amounts of sandstone, and some thin lignite beds in the upper part of the formation. The Hooper and the overlying Simsboro and Calvert Bluff Formations are no longer distinguishable as individual units much farther west than the Colorado River. Beyond this point the Wilcox Group aquifer is referred to as undifferentiated Wilcox.

The Hooper crops out in a band approximately 3 miles wide in northwestern Bastrop County near the Travis County line, as well as in far western Lee County. From the outcrop, the Hooper dips at a rate of 125 to 200 feet per mile, with the top of the Hooper reaching a maximum depth of more than 5,000 feet in southern Lee County, although wells completed in the Hooper in the District are generally less than 700 feet deep. The Hooper Formation can be up to 1,300 feet thick within the District.

The Hooper Formation produces a small to moderate amount of water to wells, mainly in the outcrop area. Well yields of larger, non-exempt wells are generally between 200 and 350 gpm, although some Hooper wells can yield more than 500 gpm. Water quality of groundwater produced from the Hooper is generally good, although water quality deteriorates farther downdip from the outcrop.

Simsboro Formation The middle aquifer within the Wilcox Group is the Simsboro Formation. This aquifer is identifiable only from the middle of Bastrop County and eastward, including all of Lee County, and is a highly productive unit. It is used by numerous exempt wells and by the City of Elgin, Aqua Water Supply Corporation, and Manville Water Supply Corporation for municipal supplies. Water is also produced by Alcoa from the Simsboro as part of its mining operations.

The Simsboro is primarily composed of a massive, fine to coarse-grained sand, with relatively small amounts of silt, clay, and mudstone. The Simsboro crops out in a band two to three miles wide across Bastrop and far northwestern Lee County. From the outcrop, the Simsboro dips at a rate of 125 to 200 feet per mile, with the top of the Simsboro reaching a maximum depth of nearly 4,500 feet in southern Lee County. Wells completed in the Simsboro in the District are generally less than 1,000 feet deep, although wells of more than 1,500 feet have been completed in the District. The Simsboro is up to 800 feet thick within the District, although it is generally less than 500 feet thick.

The Simsboro Formation produces large quantities of fresh to slightly saline groundwater to wells. Wells of over 2,000 gpm have been completed in the Simsboro Formation, and yields of 900 to 1,200 gpm in existing non-exempt wells are common. Water quality of groundwater produced from the Simsboro is good, although water quality deteriorates farther downdip from the outcrop.

Calvert Bluff Formation The uppermost aquifer within the Wilcox Group is the Calvert Bluff Formation. The Calvert Bluff is used by numerous exempt wells in and near the outcrop, as well as for irrigation by two non-exempt wells and for municipal purposes by Aqua Water Supply Corporation, Manville Water Supply Corporation, and Bastrop County Water Control Improvement District Nos. 1 and 2.

The Calvert Bluff Formation is comprised primarily of fine to coarse-grained sand and sandstone, interbedded with silt, mudstone, and some lignite. The Calvert Bluff crops out in a band six to eight miles wide in Bastrop and Lee counties, and from the outcrop the Calvert Bluff dips at a rate of 125 to 200 feet per mile. The top of the Calvert Bluff is more than 3,000 feet deep in southern Lee County, although wells completed in the Calvert Bluff within the District are generally less than 1,000 feet deep. The Calvert Bluff is up to 1,500 feet thick within the District.

The Calvert Bluff is more productive than the Hooper but not nearly as productive as the underlying Simsboro or overlying Carrizo aquifers. Typical non-exempt Calvert Bluff well yields within the District are 150 to 350 gpm, although several wells with yields of 500 to 1,000 gpm are present. Water quality in the Calvert Bluff is generally good, although water quality deteriorates farther downdip from the outcrop.

Carrizo Formation The uppermost aquifer within the "Carrizo-Wilcox" Aquifer is the Carrizo Formation. The Carrizo is a highly utilized aquifer within the District, with a large number of smaller, exempt wells producing from it in and near the outcrop. In addition, numerous non-exempt wells produce from the Carrizo for municipal purposes, including those operated by the Cities of Lexington, Smithville, and Giddings, as well as by Aqua Water Supply Corporation and Lee County Water Supply Corporation. Some water produced from the Carrizo is also used for irrigation purposes.

The Carrizo Formation is predominantly a fine to coarse-grained massive sand. It crops out in a band one to two miles wide though Bastrop and Lee counties. From the outcrop the Carrizo dips at a rate of about 140 feet per mile when not affected by faulting, with the top of the Carrizo being found at more than 2,500 feet in southern Lee County. The Carrizo can be up to 600 feet thick within the District, but is generally between 300 and 500 feet thick. The Carrizo is a highly productive aquifer throughout much of its extent not only in the District but throughout much of Texas.

Yields of non-exempt Carrizo wells within the District are generally between 400 and 750 gpm, although well yields of up to 1,500 gpm have been observed. Water quality in the Carrizo is good, although, as with most aquifers in the District, water quality deteriorates farther downdip from the outcrop.

Queen City Aquifer

The Queen City Aquifer is defined as a minor aquifer by the state of Texas. It is located stratigraphically above the Carrizo-Wilcox aquifer, between the Reklaw and Weches formations. The Queen City is used by a large number of exempt wells within the District, as well as for municipal purposes by the cities of Lincoln and Giddings, and the Lee County Water Supply Corporation.

The Queen City Formation is comprised of a massive to thin-bedded, fine to medium-grained sandstone with some silt, clay, shale, and lignite. It crops out in a band two to four miles wide across both Bastrop and Lee counties. From the outcrop the Queen City dips at a rate of 70 to 140 feet per mile, with the top of the formation being found at approximately 2,000 feet in southern Lee County. However, most Queen City wells are located in or near the outcrop area, with most being less than 1,400 feet deep. The Queen City is generally between 200 and 600 feet thick within the District.

The Queen City yields small to moderate quantities of fresh to slightly saline water to wells in and near the outcrop. Non-exempt Queen City wells in the District area typically yield between 130 and 250 gpm, although one Queen City well produced more than 450 gpm.

Sparta Aquifer

The Sparta Aquifer is defined as a minor aquifer by the state of Texas. It is located stratigraphically above the Queen City aquifer, between the Weches and Cook Mountain formations. The Sparta is used by exempt wells within the District for domestic and livestock purposes, and for municipal purposes by the Lee County Fresh Water Supply District and Lee County Water Supply Corporation.

The Sparta is primarily a loosely cemented, sand-rich unit, with some interbedded silt and clay. The Sparta crops out in a band one to ten miles wide from southern Bastrop County to northeastern Lee County. From the outcrop the Sparta dips at a rate of approximately 100 feet per mile, with the top of the formation being found at approximately 1,500 feet in southern Lee County. Most Sparta wells are located in or near the outcrop and are less than approximately 500 feet deep. However, one well (59-50-706) is nearly 1,500 feet deep. The Sparta is up to 170 feet thick within the District, and yields small to moderate quantities of fresh to slightly saline water to wells. Yields of non-exempt wells in the District typically range from 100 to 250 gpm. Water quality of groundwater produced from the Sparta is generally good, although, as with other dipping aquifers in the District, water quality deteriorates farther downdip from the outcrop area.

Other Aquifers

Colorado River Alluvium Aquifer In addition to the major and minor aquifers described above, the alluvium along the Colorado River also yields significant quantities of water to wells. The Colorado River Alluvium is not defined as a major or a minor aquifer by the State, and a DFC was not established for this aquifer. But this aquifer is used for water for municipal supply by the City of Bastrop, as well as for irrigation purposes, from several non-exempt wells.

The Colorado River Alluvium includes alluvial deposits in river bottom land along the Colorado River. The alluvium generally consists of sand, with some small gravel and disconnected layers of silt and clay. The alluvium can be on one side of the river or on both sides. It is not always connected beneath the river, and the maximum thickness is less than 100 feet. The alluvium along the Colorado River generally yields small to moderate quantities of fresh to slightly saline water.

In addition to the alluvium along the Colorado River, most other streams have some alluvium associated with them. Small, exempt wells may be installed in these very localized alluvial aquifers.

Trinity Aquifer The Trinity Aquifer, classified as a major aquifer by the state of Texas, underlies the District. However, it is virtually unused because of the extreme depth and poor water quality of this aquifer with the District. No known wells are completed in the Trinity Aquifer within the District.

Yegua-Jackson Aquifer The Yegua-Jackson Aquifer is classified as a minor aquifer by the state of Texas, and is found in the southeastern third of Lee County and a very small part of Bastrop County. The Yegua-Jackson Aquifer is comprised of the Yegua Formation and the Jackson Group. These units consist of interbedded sand, silt, and clay, with some lignite beds.

The thickness of the Yegua-Jackson Aquifer in the District is as much as 900 feet. A few exempt wells are completed in the Yegua-Jackson Aquifer, primarily in Lee County. Within the District, no non-exempt wells are completed in this aquifer, and it is not expected to yield significant quantities of water to wells within the District.

Midway Group The Midway Group is located stratigraphically beneath the Wilcox Group. The Midway consists of clay, silt, glauconitic sand, and thin beds of limestone and sandstone and can be more than 800 feet thick. Wells drilled into the Midway outcrop may yield small quantities of slightly to moderately saline water, and a few wells within the District have been installed into the Midway.

Reklaw Formation The Reklaw Formation is located stratigraphically between the overlying Carrizo and underlying Queen City Formations. The Reklaw is composed primarily of glauconitic sand and silt, and is about 100 feet thick. It is not considered to be an aquifer by the state of Texas, however a few exempt wells have been completed in the Reklaw within the District, mostly in the outcrop area.

Weches Formation The Weches Formation, sometimes referred to as the Weches Greensand, is located between the Queen City and Sparta Formations. The Weches consists of glauconitic shale, some sandstone, and some thin limestone beds, and is about 100 feet thick. It is not considered to be an aquifer by the state of Texas, however a few exempt wells have been completed in the Weches within the District, mostly in the outcrop area.

Cook Mountain Formation The Cook Mountain Formation is located stratigraphically above the Sparta Formation and below the Yegua Formation. The Cook Mountain consists primarily of clay, with some lenses of sand, sandstone, limestone, glauconite, and gypsum, and can be as much as 400 feet thick within the District. It is not considered to be an aquifer by the state of Texas, however exempt wells producing very small quantities of fresh to moderately saline groundwater have been completed in the Cook Mountain within the District, mostly in the outcrop area.

RECHARGE, DISCHARGE, AND GROUNDWATER FLOW

Recharge is the addition of water to an aquifer. Recharge to aquifers occurs from direct precipitation on aquifer outcrop at ground surface, from losses from surface water bodies to the underlying aquifer, and from inter-formational leakage between aquifers. Recharge estimates for the major and minor aquifers present within the District are included in **Table 3**.

The amount of recharge that occurs due to direct precipitation appears to be more a function of the specific soils in an area than the amount of precipitation. Recharge of direct precipitation where sandy aquifer units crop out is higher than where the soils and formations at ground surface are clay-dominated. Effective recharge from precipitation, i.e. recharge that moves down dip into the deeper portions of the aquifer and is not discharged to surface streams, is typically only a few percent of average annual rainfall. Leakage between formations accounts for a large component of total recharge to an individual aquifer. Losses from surface water bodies to the underlying aquifers appear to be a minimal source of recharge for most of the aquifers in the District.

Discharge is the loss of water from an aquifer. Before the development of aquifers for groundwater supply purposes, all discharge was natural. This includes discharge to surface water sources such as springs, streams, rivers, and lakes, as well as the removal of groundwater from an aquifer by evapotranspiration and inter-formational leakage. Discharge to surface water bodies is shown in **Table 4**. After the development of District aquifers for supply purposes, most discharge that occurs is to wells. Other sources of anthropogenic discharge may include gravel pits, mining operations, or other activities that intersect the water table.

Groundwater moves from areas of higher hydraulic head to areas of lower hydraulic head, which is from areas of recharge to areas of discharge. Under normal conditions within the District, the movement of water is in a downdip direction. However, these normal, undeveloped conditions are altered by pumpage that occurs in the aquifer. Because pumpage has become the dominant form of discharge from many of the aquifers in the District, groundwater tends to flow towards areas of pumpage. These natural and altered flow patterns result in not only the movement of groundwater across District boundaries, but also between aquifers within the District. **Tables 5 and 6** summarize the amount of water that flows laterally into and out of the District to adjacent districts or counties, and the amount of water that moves vertically between aquifers, respectively.

Negative values in these tables indicate water that is leaving the aquifer noted in the table. These values do not distinguish between fresh, brackish, and saline water, and therefore all flows include all of these water types.

Table 3 - Estimated precipitation recharge totals for major and minor aquifers

	Precipitation Recharge (acre-feet/year)
Sparta	10,142
Queen City	7,256
Carrizo-Wilcox	29,604
Trinity	0
Yegua-Jackson	38,859
Total	85,861

Source: TWDB GAM Run 10-014

Table 4 - Estimated discharge to surface water bodies from major and minor aquifers

	Surface Water Discharge (acre-feet/year)
Sparta	4,564
Queen City	5,488
Carrizo-Wilcox	32,780
Trinity	0
Yegua-Jackson	35,780
Total	78,612

Source: TWDB GAM Run 10-014

Table 5A - Estimated flow into and out of District in major and minor aquifers

	Flow Into District (acre-feet/year)	Flow Out Of District (acre-feet/year)
Sparta	1,299	733
Queen City	670	3,354
Carrizo-Wilcox	14,023	19,713
Trinity	517	661
Yegua-Jackson	5,883	10,155
Total	22,392	34,616

Source: TWDB GAM Run 10-014

Table 5B - Estimated flow between major/minor and adjacent aquifers

Figure 1, Stratigraphic Section, lists overlying and underlying aquifers.

	Flow to/from Overlying Aquifer (acre-feet/year)	Flow to/from Underlying Aquifer (acre-feet/year)
Sparta	NA	970
Queen City	-946	-179
Carrizo-Wilcox	1,309	NA
Trinity	NA	NA
Yegua-Jackson	NA	NA
Total	363	791

Source: TWDB GAM Run 10-014. NA= Not applicable per GAM Run 10-014 report.

B. SURFACE WATER RESOURCES

Bastrop and Lee counties lie along the inner edge of the Texas Gulf Coastal Plain. The topography is flat to gently rolling, with elevations ranging from slightly less than 400 feet where the Colorado River exits Bastrop County to slightly more than 650 feet along the Bastrop-Lee county line just north of the upper reaches of West Yegua Creek.

The District lies within three river basins: the Guadalupe, Colorado, and Brazos. The Colorado River bisects Bastrop County, and a majority of Bastrop County and the southern quarter of Lee County lie within the Colorado River Basin and its tributaries, including Cummins, Rabbs, Pin Oak, Big Sandy, Wilbarger, and Cedar Creeks. The remainder of Lee County lies within the Brazos River basin, with the significant tributaries to the Brazos River within Lee County being the Middle and West Yegua Creeks. In addition to the Colorado and Brazos River basins, the extreme southern portion of Bastrop County lies within the Guadalupe River basin, an area drained by Peach Creek.

Currently surface water resources are little used in Bastrop and Lee counties because of lack of availability and because what is available has already been appropriated. Surface water from the Colorado River is used as make-up water for Lake Bastrop (which functions as a cooling pond for the LCRA Sim Gideon power plant), for cooling water for another privately owned power plant in Bastrop County, for some irrigation, and for livestock watering in Lee County. No other District uses of surface water are known. The current availability of surface water within Bastrop and Lee counties is summarized in **Table 6**.

Table 6 - Projected Surface Water Supplies - 2012 State Water Plan

BASTROP COUNTY All values are in acre-feet/year

RWPG[5]	WUG[6]	WUG Basin	Source Name	2010	2020	2030	2040	2050	2060
K	COUNTY-OTHER	COLORADO	HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	1,634	1,634	1,634	1,634	1,634	1,634
K	IRRIGATION	COLORADO	COLORADO RIVER COMBINED RUN-OF-RIVER IRRIGATION	750	750	750	750	750	750
K	LIVESTOCK	BRAZOS	LIVESTOCK LOCAL SUPPLY	154	154	154	154	154	154
K	LIVESTOCK	COLORADO	LIVESTOCK LOCAL SUPPLY	696	696	696	696	696	696
K	LIVESTOCK	GUADALUPE	LIVESTOCK LOCAL SUPPLY	5	5	5	5	5	5
K	MANUFACTURING	COLORADO	OTHER LOCAL SUPPLY	48	48	48	48	48	48
K	MINING	COLORADO	OTHER LOCAL SUPPLY	10	8	7	7	9	9
K	STEAM ELECTRIC POWER	COLORADO	HIGHLAND LAKES LAKE/RESERVOIR SYSTEM	16,720	16,720	16,720	16,720	16,720	16,720
Sum of Projected Surface Water Supplies (acre-feet/year)				**20,017**	**20,015**	**20,014**	**20,014**	**20,016**	**20,016**

LEE COUNTY All values are in acre-feet/year

RWPG	WUG	WUG Basin	Source Name	2010	2020	2030	2040	2050	2060
G	IRRIGATION	BRAZOS	BRAZOS RIVER COMBINED RUN-OF-RIVER IRRIGATION	181	181	181	181	181	181
G	LIVESTOCK	BRAZOS	LIVESTOCK LOCAL SUPPLY	1,299	1,299	1,299	1,299	1,299	1,299
G	LIVESTOCK	COLORADO	LIVESTOCK LOCAL SUPPLY	248	248	248	248	248	248
Sum of Projected Surface Water Supplies (acre-feet/year)				**1,728**	**1,728**	**1,728**	**1,728**	**1,728**	**1,728**

C. DISTRICT WATER DEMANDS, NEEDS AND STRATEGIES

Over the planning horizon, regional water planning data from Region G and Region K shows population in the District is expected to increase from 84,449 in 2010 in Bastrop County to 288,683 in 2060 (an increase of 241.8%), and from 17,789 in 2010 in Lee County to 26,946 in

[5] "RWPG" means Regional Water Planning Group; TWDB divides Texas into 16 distinct planning areas (A through P), with Bastrop County in Region K and Lee County in Region G.

[6] "WUG" means Water User Group, defined by TWDB as one of the following: cities with Census 2000 population equal to or greater than 500; "Select Census Designated Places"; utilities providing more than 280 acre-feet of municipal water per year (average of 250,000 gallons per day); rural/unincorporated areas of municipal water use, summed for each county (referred to as "County-Other"); or manufacturing, steam-electric power, mining, irrigated agriculture and livestock water use by county.

2060 (an increase of 51.5%). In addition, over the planning horizon, total water demands for the District are projected to increase in Bastrop County from 33,532 acre-feet/year in 2010 to 65,266 acre-feet/year in 2060, and to decrease in Lee County from 10,882 acre-feet/year in 2010 to 6,603 acre-feet/year in 2060.[7]

Groundwater currently meets virtually all District demand for municipal, manufacturing, mining, livestock, and irrigation purposes. with surface water used principally to meet some irrigation and all steam-electric demand (cooling water). Currently, the two largest uses are mining and municipal purposes, including rural-domestic use. Almost all mining water use is from the Simsboro Aquifer.

It is important to note that the 2012 State Water Plan Projected Net Water Demands below:

- do not distinguish between projected demands met by surface water and those met by groundwater;
- do not include out-of-District demand for District groundwater;
- do not account for groundwater pumpage within the District that is exported out-of-District (such as demand represented by the District's current export of groundwater to Fayette County) (demand estimates from Regions G and K submitted to TWDB are for in-District demands only);
- do not account for demand in areas outside the District which are served by pumpage within the District by retail rural water sellers or other special utility districts whose "Certificate of Convenience and Necessity" (CCN) extends beyond District boundaries.

Such demands must be separately evaluated.

The District expects that improvements to the applicable GAM and expanded data from the Monitoring Well Program will allow better understanding of District groundwater resources and better future estimates of groundwater availability as the District seeks to manage the District's groundwater resources consistently with the DFCs and its mission.

Table 7 - 2012 State Water Plan Projected Net Water Demands[8]

BASTROP COUNTY All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
K	COUNTY-OTHER	BRAZOS	97	135	171	226	270	325
K	MINING	BRAZOS	10	9	10	11	11	11
K	IRRIGATION	BRAZOS	89	78	68	59	52	45
K	LIVESTOCK	BRAZOS	259	259	259	259	259	259
K	LEE COUNTY WSC	BRAZOS	49	70	87	115	135	163

[7] Data in this paragraph for Bastrop County comes from the Region K Plan 2011, Appendix 2B-1, Comparison Between 2006 RWP [Regional Water Plan] and 2011 RWP, 2B-1, 2B-25. Data for Lee County comes from the 2011 Brazos G Regional Water Plan, Section 2, Current and Projected Population and Water Demand Data for the Region, Tables 2-1 and 2-5 to 2-9.

[8] Demand numbers presented here include the plumbing code savings found in the Regional and State Water Plans.

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
K	SMITHVILLE	COLORADO	904	1,233	1,551	2,018	2,398	2,884
K	ELGIN	COLORADO	1,658	2,278	2,847	3,703	4,404	5,295
K	MANUFACTURING	COLORADO	84	101	119	137	155	167
K	STEAM ELECTRIC POWER	COLORADO	12,000	14,000	16,000	18,000	19,500	19,500
K	MINING	COLORADO	5,016	5,018	5,018	18	19	20
K	IRRIGATION	COLORADO	1,521	1,329	1,158	1,013	882	769
K	LIVESTOCK	COLORADO	1,202	1,202	1,202	1,202	1,202	1,202
K	AQUA WSC	COLORADO	5,629	8,046	9,604	12,573	14,939	17,959
K	BASTROP COUNTY WCID #2	COLORADO	341	473	626	801	1,029	1,315
K	CREEDMOOR-MAHA WSC	COLORADO	19	26	33	43	51	62
K	LEE COUNTY WSC	COLORADO	77	108	136	178	211	254
K	MANVILLE WSC	COLORADO	67	94	125	161	207	266
K	POLONIA WSC	COLORADO	18	26	32	41	50	60
K	BASTROP	COLORADO	1,992	2,739	3,459	4,517	5,382	6,469
K	COUNTY-OTHER	COLORADO	2,361	3,304	4,181	5,517	6,608	7,944
K	COUNTY-OTHER	GUADALUPE	63	88	112	147	176	212
K	MINING	GUADALUPE	7	8	8	8	8	8
K	LIVESTOCK	GUADALUPE	61	61	61	61	61	61
K	MANUFACTURING	GUADALUPE	8	10	11	13	14	16
Sum of Projected Water Demands (acre-feet/year)			**33,532**	**40,695**	**46,878**	**50,821**	**58,023**	**65,266**

LEE COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
G	LEXINGTON	BRAZOS	270	305	334	357	378	397
G	LEE COUNTY WSC	BRAZOS	721	834	931	1,011	1,079	1,143
G	COUNTY-OTHER	BRAZOS	53	51	49	47	46	46
G	AQUA WSC	BRAZOS	443	494	532	567	596	625
G	GIDDINGS	BRAZOS	617	702	771	824	873	918
G	MINING	BRAZOS	5,450	5,450	5,450	5,450	13	13
G	IRRIGATION	BRAZOS	738	720	700	681	661	643
G	LIVESTOCK	BRAZOS	1,299	1,299	1,299	1,299	1,299	1,299
G	MANVILLE WSC	BRAZOS	19	25	30	34	38	41
G	SOUTHWEST MILAM WSC	BRAZOS	44	52	58	63	67	71
G	COUNTY-OTHER	COLORADO	276	265	256	247	241	239
G	MANUFACTURING	COLORADO	13	14	15	16	17	18
G	IRRIGATION	COLORADO	202	196	191	186	181	175
G	LIVESTOCK	COLORADO	248	248	248	248	248	248
G	GIDDINGS	COLORADO	489	556	611	652	691	727
Sum of Projected Water Demands (acre-feet/year)			**10,882**	**11,211**	**11,475**	**11,682**	**6,428**	**6,603**

Table 7A - Region K and Region G Projected Demand Detail[9]

All values are in acre-feet/year

BASTROP COUNTY

	2010	2020	2030	2040	2050	2060
MINING	5,033	5,035	5,036	37	38	39
STEAM-ELECTRIC	12,000	14,000	16,000	18,000	19,500	19,500
MANUFACTURING	92	111	130	150	169	183
MUNICIPAL	13,275	18,620	22,964	30,040	35,860	43,208
IRRIGATION	1,610	1,407	1,226	1,072	934	814
LIVESTOCK	1,522	1,522	1,522	1,522	1,522	1,522

LEE COUNTY

	2010	2020	2030	2040	2050	2060
MINING	5,450	5,450	5,450	5,450	13	13
STEAM-ELECTRIC	0	0	0	0	0	0
MANUFACTURING	13	14	15	16	17	18
MUNICIPAL	2,932	3,284	3,572	3,802	4,009	4,207
IRRIGATION	940	916	891	867	842	818
LIVESTOCK	1,398	1,547	1,547	1,547	1,547	1,547

Municipal demands are expected to more than triple in Bastrop County and double in Lee County by 2060. Projected changes in the 2012 State Water Plan are relatively insignificant for the District in other demand categories - manufacturing, livestock, and irrigation.

Not reflected in Table 7 are revised estimates of exempt usage (including an increase in mining) which the District provided to TWDB in 2011 in response to its request that districts provide updated data on exempt usage. These are included below as **Table 7B**:

Table 7B - 2011 Updated Estimates of District Exempt Use

All values are in acre-feet/year

Estimated Non-System Residential Demand (District-Wide)

	2010	2020	2030	2040	2050	2060
Non-System Residential Total	1,533	1,935	2,336	2,774	3,176	3,577

Estimated Livestock Demand

	2010	2020	2030	2040	2050	2060
Bastrop County	304	304	304	304	304	304
Lee County	464	464	464	464	464	464
Livestock Total	768	768	768	768	768	768

[9] Data for Bastrop County is from 2011 Region K Regional Water Plan, Appendix 2A; data for Lee County is from 2011 Brazos Region G Regional Water Plan, Tables 2-5 through 2-10.

Estimated Eagle Ford Shale Demand

	2010	2020	2030	2040	2050	2060
Bastrop County	0	0	0	0	0	0
Lee County	0	47	249	272	215	159
Eagle Ford Shale Total	0	47	249	272	215	159

Estimated Mining Demand

	2010	2020	2030	2040	2050	2060
Bastrop County	2,164	2,613	5,662	5,725	5,810	5,887
Lee County	2,089	2,547	5,749	5,772	5,715	5,659
Mining Total	4,253	5,160	11,411	11,497	11,525	11,546

Estimated Irrigation Demand (District-wide)

	2010	2020	2030	2040	2050	2060
Irrigation Total	5,112	5,112	5,112	5,112	5,112	5,112

Table 8 - 2012 State Water Plan Projected Water Needs[10]

BASTROP COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
K	AQUA WSC	COLORADO	3,812	1,157	-602	-3,709	-6,221	-9,415
K	BASTROP	COLORADO	-65	-812	-1,532	-2,590	-3,455	-4,542
K	BASTROP COUNTY WCID #2	COLORADO	830	698	545	370	142	-144
K	COUNTY-OTHER	BRAZOS	266	287	315	298	266	211
K	COUNTY-OTHER	COLORADO	524	-663	-1,879	-3,437	-4,528	-5,864
K	COUNTY-OTHER	GUADALUPE	133	108	84	49	20	-16
K	CREEDMOOR-MAHA WSC	COLORADO	0	0	0	0	0	0
K	ELGIN	COLORADO	21	-604	-1,176	-2,033	-2,734	-3,624
K	IRRIGATION	BRAZOS	-61	-50	-40	-31	-24	-17
K	IRRIGATION	COLORADO	-58	134	305	450	581	694
K	LEE COUNTY WSC	BRAZOS	676	655	638	610	590	562
K	LEE COUNTY WSC	COLORADO	1,046	967	870	774	680	550
K	LIVESTOCK	BRAZOS	75	75	75	75	75	75
K	LIVESTOCK	COLORADO	4,816	4,816	4,816	4,816	4,816	4,816
K	LIVESTOCK	GUADALUPE	341	341	341	341	341	341
K	MANUFACTURING	COLORADO	2	-7	-17	-25	-32	-44
K	MANUFACTURING	GUADALUPE	-8	-10	-11	-13	-14	-16
K	MANVILLE WSC	COLORADO	101	79	54	27	0	0
K	MINING	BRAZOS	18	19	18	17	17	17
K	MINING	COLORADO	-4,293	-4,297	-4,298	0	0	0

[10] Negative values (in red) reflect a projected water supply need, positive values a surplus.

K	MINING	GUADALUPE	67	66	66	66	66	66
K	POLONIA WSC	COLORADO	7	-2	-7	-16	-23	-30
K	SMITHVILLE	COLORADO	-74	-311	-526	-946	-1,115	-1,601
K	STEAM ELECTRIC POWER	COLORADO	4,720	2,720	720	-1,280	-2,780	-2,780
Sum of Projected Water Supply Needs (acre-feet/year)			**-4,559**	**-6,756**	**-10,088**	**-14,080**	**-20,926**	**-28,093**

LEE COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
G	AQUA WSC	BRAZOS	3	-48	-86	-212	-150	-179
G	COUNTY-OTHER	BRAZOS	2	4	6	8	9	9
G	COUNTY-OTHER	COLORADO	0	11	20	29	35	37
G	GIDDINGS	BRAZOS	361	276	207	154	105	60
G	GIDDINGS	COLORADO	280	213	158	117	78	42
G	IRRIGATION	BRAZOS	140	158	178	197	217	235
G	IRRIGATION	COLORADO	0	6	11	16	21	27
G	LEE COUNTY WSC	BRAZOS	-173	-286	-383	-463	-531	-595
G	LEXINGTON	BRAZOS	420	385	356	333	312	293
G	LIVESTOCK	BRAZOS	0	0	0	0	0	0
G	LIVESTOCK	COLORADO	0	0	0	0	0	0
G	MANUFACTURING	COLORADO	5	4	3	2	1	0
G	MANVILLE WSC	BRAZOS	40	34	29	25	21	18
G	MINING	BRAZOS	0	0	0	0	0	0
G	SOUTHWEST MILAM WSC	BRAZOS	3	-5	-11	-15	-19	-23
Sum of Projected Water Supply Needs (acre-feet/year)			**-173**	**-339**	**-480**	**-599**	**-700**	**-797**

Table 9 - Projected Water Management Strategies - 2012 State Water Plan Data[11]

BASTROP COUNTY

WUG, Basin (RWPG)

All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
AQUA WSC, COLORADO (K)							
ADDITIONAL MUNICIPAL CONSERVATION	CONSERVATION [BASTROP]	0	0	0	122	396	908
DROUGHT MANAGEMENT	DROUGHT MANAGEMENT [BASTROP]	0	0	0	0	0	898
EXPANSION OF CARRIZO-WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [BASTROP]	0	0	602	3,709	6,109	7,850
BASTROP, COLORADO (K)							
EXPANSION OF OTHER AQUIFER	OTHER AQUIFER [BASTROP]	0	416	777	1,366	2,017	2,814
MUNICIPAL CONSERVATION	CONSERVATION [BASTROP]	146	396	755	1,224	1,438	1,728

[11] As described in the 2012 State Water Plan, "[R]egional water planning groups evaluate and recommend water management strategies to meet the needs or water during a severe drought."

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
BASTROP COUNTY WCID #2, COLORADO (K)							
EXPANSION OF CARRIZO-WILCOX AQUIFER [BASTROP]	0	0	0	0	0	0	144
COUNTY-OTHER, COLORADO (K)							
ADDITIONAL MUNICIPAL CONSERVATION	CONSERVATION [BASTROP]	0	0	0	400	631	936
DEVELOPMENT OF CARRIZO-WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [BASTROP]	0	0	0	0	975	1,230
EXPANSION OF CARRIZO-WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [BASTROP]	0	663	1,879	3,037	2,922	3,700
COUNTY-OTHER, GUADALUPE (K)							
DEVELOPMENT OF CARRIZO-WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [BASTROP]	0	0	0	0	0	16
ELGIN, COLORADO (K)							
DROUGHT MANAGEMENT	DROUGHT MANAGEMENT [BASTROP]	0	0	0	0	0	265
EXPANSION OF CARRIZO-WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [BASTROP]	0	525	1,136	2,033	2,734	400
MUNICIPAL CONSERVATION	CONSERVATION [BASTROP]	91	79	40	0	0	0
NEW LCRA CONTRACTS	COLORADO RIVER COMBINED RUN-OF-RIVER - LCRA SUPPLY REALLOCATION [TRAVIS]	0	0	0	0	0	3,000
IRRIGATION, BRAZOS (K)							
EXPANSION OF QUEEN CITY AQUIFER	QUEEN CITY AQUIFER [BASTROP]	40	40	40	31	24	17
TEMPORARY DROUGHT PERIOD USE OF QUEEN CITY AQUIFER	QUEEN CITY AQUIFER [BASTROP]	21	10	0	0	0	0
IRRIGATION, COLORADO (K)							
EXPANSION OF QUEEN CITY AQUIFER	QUEEN CITY AQUIFER [BASTROP]	58	0	0	0	0	0
MANUFACTURING, COLORADO (K)							
EXPANSION OF CARRIZO-WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [BASTROP]	0	7	17	25	32	44
MANUFACTURING, GUADALUPE (K)							
EXPANSION OF CARRIZO-WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [BASTROP]	8	10	11	13	14	16
MINING, COLORADO (K)							
EXPANSION OF CARRIZO-WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [BASTROP]	4,293	4,297	4,298	0	0	0
POLONIA WSC, COLORADO (K)							
EXPANSION OF CARRIZO-WILCOX AQUIFER	CARRIZO-WILCOX AQUIFER [BASTROP]	0	2	7	16	23	30
SMITHVILLE, COLORADO (K)							
DEVELOPMENT OF QUEEN CITY AQUIFER	QUEEN CITY AQUIFER [BASTROP]	0	0	0	0	0	580
DROUGHT MANAGEMENT	DROUGHT MANAGEMENT [BASTROP]	0	0	0	0	0	288
EXPANSION OF CARRIZO-	CARRIZO-WILCOX	49	311	526	946	1,115	733

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
WILCOX AQUIFER	AQUIFER [BASTROP]						
MUNICIPAL CONSERVATION	CONSERVATION [BASTROP]	25	0	0	0	0	0
STEAM ELECTRIC POWER, COLORADO (K)							
AMEND LCRA CONTRACT	COLORADO RIVER COMBINED RUN-OF-RIVER - LCRA SUPPLY REALLOCATION [TRAVIS]	0	0	0	1,280	2,780	2,780
Sum of Projected Water Management Strategies (acre-feet/year)		**4,731**	**6,756**	**10,088**	**14,202**	**21,210**	**28,377**

LEE COUNTY
WUG, Basin (RWPG)

All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
AQUA WSC, BRAZOS (G)							
ADDITIONAL CARRIZO AQUIFER DEVELOPMENT (INCLUDES OVERDRAFTING)	CARRIZO-WILCOX AQUIFER [LEE]	0	388	373	355	336	315
LEE COUNTY WSC, BRAZOS (G)							
ADDITIONAL CARRIZO AQUIFER DEVELOPMENT (INCLUDES OVERDRAFTING)	CARRIZO-WILCOX AQUIFER [LEE]	806	806	806	806	806	806
SOUTHWEST MILAM WSC, BRAZOS (G)							
ADDITIONAL CARRIZO AQUIFER DEVELOPMENT (INCLUDES OVERDRAFTING)	CARRIZO-WILCOX AQUIFER [BURLESON]	0	5	11	15	19	23
Sum of Projected Water Management Strategies (acre-feet/year)		**806**	**1,199**	**1,190**	**1,176**	**1,161**	**1,144**

Section 8. MANAGEMENT GOALS, OBJECTIVES, AND PERFORMANCE STANDARDS

A. Statutory Goals.

GOAL 1: Provide the most efficient use of groundwater.

Management Objective 1.1: The District will develop and evaluate a schedule for expanding the monitoring well network in the Monitoring Well Program from the current seven wells and will measure and record water levels in the monitoring wells to provide groundwater use data.

Performance Standard: The District will annually evaluate and report to the Board on the monitoring well network, and will include monitoring well water level data in a hydrologic data study to be provided annually to the Board.

Management Objective 1.2: The District will make available to the public information on efficient use of groundwater, at the District office, on the District website, and/or by public workshops or other presentations.

Performance Standard: The General Manager will report annually to the Board, in the Annual Report or otherwise, on information on efficient use of groundwater which has

been made available, identifying the publications and the number and dates of any public workshops or other presentations.

GOAL 2: Controlling and preventing waste of groundwater.

Management Objective 2.1: The District will make available to the public information on controlling and preventing waste of groundwater, at the District office, on the District website, or by public workshops or other presentations.

Performance Standard: The General Manager will report annually to the Board, in the Annual Report or otherwise, on information on efficient use of groundwater which has been made available, identifying the publications and the number and dates of any public workshops or other presentations.

Management Objective 2.2: The District will document and promptly report to the relevant water supply entity any water leaks from pipelines or distribution systems which are noted or reported to the District.

Performance Standard: The District will report annually to the Board, in the Annual Report or otherwise, any leaks noted and reported.

GOAL 3: Controlling and preventing subsidence: Under current conditions this goal is not applicable to the District.

GOAL 4: Address conjunctive surface water management issues.

Management Objective 4.1: The District will encourage the use of surface water supplies, where available and practical, to meet the needs of specific user groups within the District.

Performance Standard: The District will participate at least annually in the Region G and Region K Regional Water Planning processes, encourage the development of surface water supplies where appropriate, and document any such activity in the Annual Report.

GOAL 5: Address natural resource issues that impact the use and availability of groundwater and which are impacted by the use of groundwater.

Management Objective 5.1: The District will make available to the public at the District Office and/or on the District website or at public meetings or presentations information on issues that impact use and availability of groundwater and are impacted by groundwater use, which may include without limitation such issues as drought, mining, endangered species, District hydrologic data, out-of-District export of groundwater, protection of endangered species, and the spread of phreatophytic vegetation.

Performance Standard: The General Manager will report annually to the Board, in the Annual Report or otherwise, information made available on natural resource issues that impact the use and availability of groundwater and are impacted by the use of groundwater, identifying the publications and the number and dates of any public workshops or other presentations.

Management Objective 5.2: The District will produce a hydrologic data report discussing the status of groundwater use, availability, and water levels within the District, including information on well registrations for exempt wells and permits for non-exempt wells.

Performance Standard: The hydrologic data report will be presented annually to the Board and, upon review and acceptance by the Board, made available to the public

GOAL 6: Address drought conditions.

Management Objective 6.1: The District will monitor information on drought severity and provide a link to the drought information on the District website.

Performance Standard: The District will monitor a public source on local drought conditions, such as http://www.twdb.state.tx.us/data/drought/, make the information available to the public on the District website, and report annually to the Board on the status of this objective in the Annual Report or otherwise.

Management Objective 6.2. The District will develop and implement a Drought Management Strategy Plan within five years of the adoption and approval of this Management Plan, including drought stage categories and notification requirements for affected permittees.

Performance Standard: The Drought Management Strategy Plan will be developed and implemented within five years of the adoption and approval of this Management Plan, with status reported annually to the Board in the Annual Report or otherwise.

Management Objective 6.3. The District will monitor District monitoring wells at specified intervals.

Performance Standard: A summary of water levels in District monitoring wells will be provided annually to the Board in the hydrological data report.

GOAL 7: Address conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control, where appropriate and cost-effective.

Recharge enhancement: The District does not currently have the financial resources to buy property and construct recharge structures Therefore, based on current conditions, this goal is not currently applicable.

Precipitation enhancement: The District does not know of any precipitation enhancement activity currently applicable to the District; this goal is not currently applicable.

Management Objective 7.1: The District will make available to the public at the District office and/or on the District website information on water conservation on topics such as advances in plumbing fixtures that conserve water, xeriscaping, and other related subjects, where appropriate and cost-effective, identified by the District.

Performance Standard: The General Manager will report annually to the Board, in the Annual Report or otherwise, on information on conservation which has been made available, identifying the information and the number and dates of any public workshops or other presentations.

Management Objective 7.2. The District will make available to the public at the District office and/or on the District website information concerning rainwater harvesting where appropriate and cost effective, including one or more publications related to advances in rainwater harvesting or any other related subject identified by the District.

Performance Standard: The General Manager will report annually to the Board, in the Annual Report or otherwise, on information on rainwater harvesting which has been made available, identifying the information and the number and dates of any public workshops or other presentations.

Management Objective 7.3. The District will make available to the public information concerning brush control where appropriate and cost effective, including on topics related to brush control or any other related subject identified by the District.

Performance Standard: The General Manager will report annually to the Board, in the Annual Report or otherwise, on information on brush control which has been made available, identifying the information and the number and dates of any public workshops or other presentations.

GOAL 8: Address desired future conditions (DFCs) of the groundwater resources established pursuant to § 36.108.

Management Objective 8.1: The District will include in the hydrologic data report information on the consistency of water levels with DFCs, including by county.

Performance Standard: The hydrologic data report will be updated annually, will include information on the consistency of water levels with DFCs, including by county, and will be presented annually to the Board and, upon review and acceptance by the Board, made available to the public.

Management Objective 8.2: The District will regularly assess whether or not management zones should be established within its counties, or, if established, modified.

Performance Standard: The General Manager will at least every five years assess and report to the Board whether management zones should be established within its counties, or, if established, modified.

B. District-Specific Goals

GOAL: Provide public education on groundwater resources.

Management Objective: The District will make available to the public, with a focus on children, information related to the occurrence, distribution, behavior, and use of groundwater.

Performance Standard: At least once each year in each county of the District, the District will present a program dealing with the above matters at a public school.

GOAL: Register all wells within District boundaries.

Management Objective: The District will register all exempt wells drilled since the District Rules became effective and work towards registering all pre-existing exempt wells.

Performance Standard: The District will encourage registration of newly drilled exempt wells by refunding the drilling permit fee upon submittal of completion reports, well logs, and well registration materials. Because registration of exempt wells existing prior to the effective date of District rules is voluntary, the General Manager or the General Manager's designated representative will note the existence of unregistered wells, locate such wells on a map as best possible, and visit with the landowner, if possible, to encourage registration of the wells. The District will document such attempts at the District office.

GOAL: Publicize operating permit requirements

Management Objective: The District will publicize the requirement for operating permits for non-exempt wells, not otherwise excluded, and notify operating permit holders of the need to renew their operating permit at least sixty days prior to expiration.

Performance Standard: At least annually, the District will notify all known water-well drillers and pump installers operating in the District of the requirement for owners of non-exempt wells, not otherwise excluded, to obtain an operating permit and the requirement that the driller and/or pump installer insure that no non-exempt well, not otherwise excluded, is placed into service within the District without an operating permit. Such notice may be by publication in one or more newspapers of general circulation in Bastrop and Lee counties.

GOAL: Publicize transport permit requirements

Management Objective: The District will publicize the requirement for transport permits and to notify holders of transport permits of the need to renew their transfer permit prior to expiration.

Performance Standard: At least annually, the District shall cause to be published in one or more newspapers of general circulation in Bastrop and Lee counties a publication

including or related to the requirement to obtain a transport permit to transport groundwater out of the District.

GOAL: Timely process operating permits and transport permits.

Management Objective: The District will endeavor to set an application on the agenda for a Board meeting within sixty (60) days of the date on which the General Manager determines that an application is Administratively Complete as defined by District rules.

Performance Standard: On an annual basis the District will track the dates on which applications and components of requested information are received, the dates on which (following technical review) an application is determined to be administratively complete, and the dates on which the Board considers applications. For any permit application taking longer than sixty days to process, the General Manager will cause a brief comment to be included in the files as to the reason for the delay. The General Manager will include an annual summary of permit application tracking in the Annual Report. Upon review and approval of the Annual Report, the District will make it available for public review at the District office.

GOAL: Maintain a database of registration of exempt wells, operating permits of non-exempt wells, and transport permits, permitting development of spacing and completion information for District wells and other information which facilitates management of groundwater consistent with DFCs.

Management Objective: The District will maintain a database of each registration of an exempt well, each operating permit for a non-exempt well, and each transport permit, such that the District can generate plots of the locations of each registered and permitted well, access available completion and other relevant information for wells, and compute distances between the wells.

Performance Standard: Data on each registration of an exempt well, each operating permit for a non-exempt well, and each transport permit shall be entered in the database within sixty (60) days of issuance of the operating permit or registration. A summary of exempt wells will be provided in the annual hydrological data report.

Section 9. DISTRICT CERTIFICATIONS

A. Regional Cooperation and Coordination

Evidence of coordination by the District with the relevant surface water entities in its boundaries is provided in Appendix B. In addition:

Lower Colorado River Regional Planning Group (Region K). The District regularly coordinates with Region K by participating at regional planning meetings and by written and verbal communication as needed.

Brazos River Regional Planning Group (Region G). The District regularly coordinates and communicates with Region G. A District representative commonly attends Region G planning meetings.

Lower Colorado River Authority (LCRA). The District communicates with LCRA through the Region K planning group and directly as needed. The District will participate when regular communication begins on conjunctive use of surface and groundwater (which has not occurred to date in Bastrop and Lee counties).

Brazos River Authority (BRA). The District communicates with BRA through the Region G planning group and directly as needed. BRA representatives commonly attend District Board meetings. The District will participate when regular communication begins on conjunctive use of surface and groundwater (which has not occurred to date in Bastrop and Lee counties).

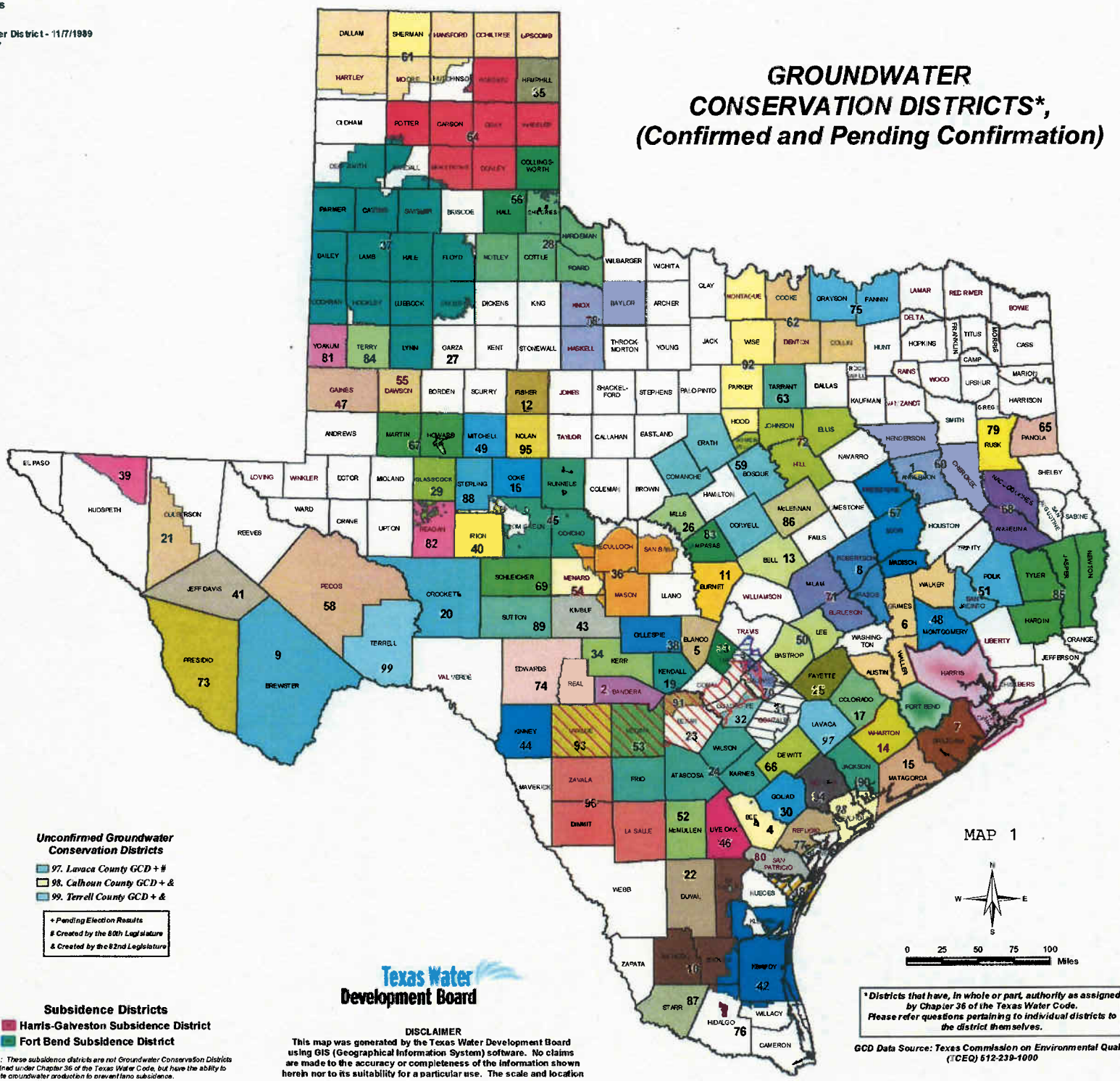
B. District's Resolution Adopting Management Plan

Appendix C contains a certified copy of the District resolution adopting this Management Plan.

C. Evidence of Public Notice and Hearing of Management Plan

Appendix D contains evidence of public notice and hearing prior to adoption of this Management Plan.

GROUNDWATER CONSERVATION DISTRICTS*, (Confirmed and Pending Confirmation)



Confirmed Groundwater Conservation Districts

1. Anderson County UWCD - 10/17/1987
2. Bandera County River Authority & Ground Water District - 11/7/1989
3. Barton Springs/Edwards Aquifer CD - 8/13/1987
4. Bee GCD - 1/20/2001
5. Blanco-Pedernales GCD - 1/23/2001
6. Bluebonnet GCD - 11/5/2002
7. Brazoria County GCD - 11/8/2005
8. Brazos Valley GCD - 11/5/2002
9. Brewster County GCD - 11/6/2001
10. Brush Country GCD - 11/3/2009
11. Central Texas GCD - 9/24/2005
12. Clear Fork GCD - 11/5/2002
13. Clearwater UWCD - 8/21/1999
14. Coastal Bend GCD - 11/6/2001
15. Coastal Plains GCD - 11/6/2001
16. Coke County UWCD - 11/4/1986
17. Colorado County GCD - 11/6/2007
18. Corpus Christi ASRCD - 6/17/2005
19. Cow Creek GCD - 11/5/2002
20. Crockett County GCD - 1/26/1991
21. Culberson County GCD - 5/2/1998
22. Duval County GCD - 7/25/2009
23. Edwards Aquifer Authority - 7/28/1996
24. Evergreen UWCD - 8/30/1965
25. Fayette County GCD - 11/6/2001
26. Fox Crossing Water District - 4/4/1986
27. Garza County UWCD - 11/5/1996
28. Gateway GCD - 5/3/2003
29. Glasscock GCD - 8/22/1981
30. Goliad County GCD - 11/6/2001
31. Gonzales County UWCD - 11/2/1994
32. Guadalupe County GCD - 11/14/1999
33. Hays Trinity GCD - 5/3/2003
34. Headwaters GCD - 11/5/1991
35. Hemphill County UWCD - 11/4/1997
36. Hickory UWCD No. 1 - 8/14/1982
37. High Plains UWCD No.1 - 9/29/1951
38. Hill Country UWCD - 8/8/1987
39. Hudspeth County UWCD No. 1 - 10/5/1957
40. Irion County WCD - 8/2/1986
41. Jeff Davis County UWCD - 11/2/1993
42. Kenedy County GCD - 11/2/2004
43. Kimble County GCD - 5/3/2002
44. Kinney County GCD - 1/12/2002
45. Lipan-Kickapoo WCD - 11/3/1987
46. Live Oak UWCD - 11/7/1989
47. Llano Estacado UWCD - 11/3/1998
48. Lone Star GCD - 11/6/2001
49. Lone Wolf GCD - 2/2/2002
50. Lost Pines GCD - 11/5/2002
51. Lower Trinity GCD - 11/7/2006
52. McMullen GCD - 11/6/2001
53. Medina County GCD - 8/26/1991
54. Menard County UWD - 8/14/1999
55. Mesa UWCD - 1/20/1990
56. Mesquite GCD - 11/4/1986
57. Mid-East Texas GCD - 11/5/2002
58. Middle Pecos GCD - 11/5/2002
59. Middle Trinity GCD - 5/4/2002
60. Neches & Trinity Valleys GCD - 11/6/2001
61. North Plains GCD - 1/2/1955
62. North Texas GCD - 12/1/2009
63. Northern Trinity GCD - 5/15/2007
64. Panhandle GCD - 1/21/1956
65. Panola County GCD - 11/6/2007
66. Pecan Valley GCD - 11/6/2001
67. Permian Basin UWCD - 9/21/1985
68. Pineywoods GCD - 11/6/2001
69. Plateau UWC and Supply District - 3/4/1974
70. Plum Creek CD - 5/1/1993
71. Post Oak Savannah GCD - 11/5/2002
72. Prairielands GCD - 9/1/2009
73. Presidio County UWCD - 8/31/1999
74. Real-Edwards C and R District - 5/30/1959
75. Red River GCD - 9/1/2009
76. Red Sands GCD - 11/5/2002
77. Refugio GCD - 11/6/2001
78. Rolling Plains GCD - 1/26/1999
79. Rusk County GCD - 6/5/2004
80. San Patricio County GCD - 5/12/2007
81. Sandy Land UWCD - 11/7/1989
82. Santa Rita UWCD - 8/19/1989
83. Saratoga UWCD - 11/7/1989
84. South Plains UWCD - 2/8/1992
85. Southeast Texas GCD - 11/2/2004
86. Southern Trinity GCD - 6/19/2009
87. Starr County GCD - 1/6/2007
88. Sterling County UWCD - 11/3/1987
89. Sutton County UWCD - 4/5/1986
90. Texana GCD - 11/6/2001
91. Trinity Glen Rose GCD - 11/5/2002
92. Upper Trinity GCD - 11/6/2007
93. Uvalde County UWCD - 9/1/1993
94. Victoria County GCD - 8/5/2005
95. Wes-Tex GCD - 11/5/2002

Unconfirmed Groundwater Conservation Districts

97. *Lavaca County GCD + #*
98. *Calhoun County GCD + &*
99. *Terrell County GCD + &*

+ Pending Election Results
 # Created by the 80th Legislature
& Created by the 82nd Legislature

Subsidence Districts

- Harris-Galveston Subsidence District
- Fort Bend Subsidence District

NOTE: These subsidence districts are not Groundwater Conservation Districts as defined under Chapter 36 of the Texas Water Code, but have the ability to regulate groundwater production to prevent land subsidence.

Texas Water Development Board

MAP 1

0 25 50 75 100 Miles

** Districts that have, in whole or part, authority as assigned by Chapter 36 of the Texas Water Code. Please refer questions pertaining to individual districts to the district themselves.*

GCD Data Source: Texas Commission on Environmental Quality (TCEQ) 512-239-1000

DISCLAIMER

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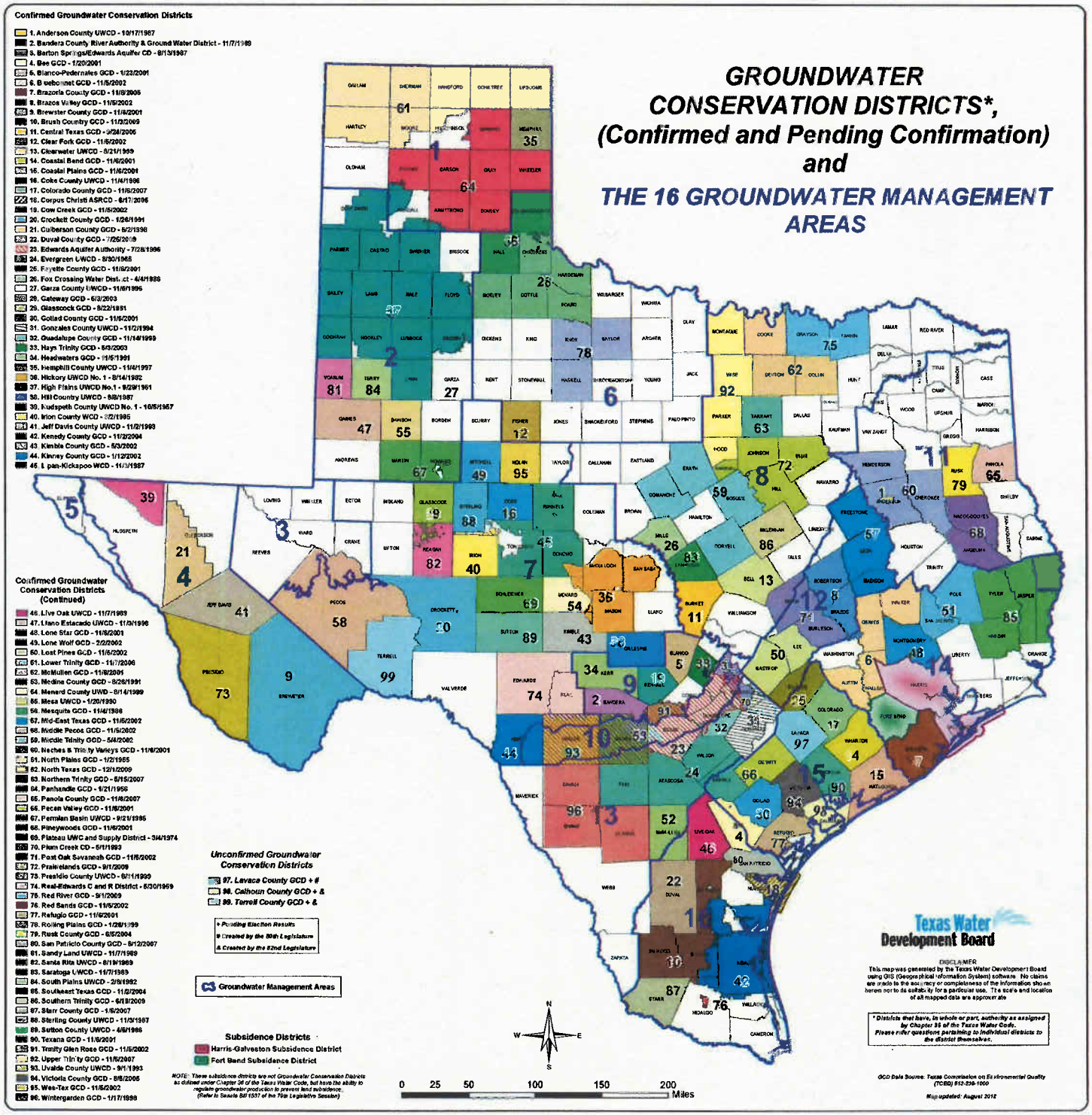
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21. Culberson County GCD - 5/2/1998
22. Duval County GCD - 7/25/2019
23. Edwards Aquifer Authority - 7/28/1996
24. Evergreen UWCD - 8/30/1965
25. Fayette County GCD - 11/6/2001
26. Fox Crossing Water Dist. ct - 4/4/1988
27. Garza County UWCD - 11/6/1996
28. Gateway GCD - 6/3/2003
29. Glasscock GCD - 8/22/1991
30. Goliad County GCD - 11/6/2001
31. Gonzales County UWCD - 11/2/1994
32. Guadalupe County GCD - 11/14/1999
33. Hays Trinity GCD - 5/3/2003
34. Headwaters GCD - 11/5/1991
35. Hemphill County UWCD - 11/4/1997
36. Hickory UWCD No. 1 - 8/14/1982
37. High Plains UWCD No.1 - 9/29/1951
38. Hill Country UWCD - 8/8/1987
39. Hudspeth County UWCD No. 1 - 10/5/1957
40. Irion County WCD - 8/2/1985
41. Jeff Davis County UWCD - 11/2/1993
42. Kenedy County GCD - 11/2/2004
43. Kimble County GCD - 5/3/2002
44. Kinney County GCD - 1/12/2002
45. Lipan-Kickapoo WCD - 11/3/1987
GROUNDWATER CONSERVATION DISTRICTS*, (Confirmed and Pending Confirmation) and THE 16 GROUNDWATER MANAGEMENT AREAS
Confirmed Groundwater Conservation Districts (Continued)
46. Live Oak UWCD - 11/7/1989
47. Llano Estacado UWCD - 11/3/1998
48. Lone Star GCD - 11/6/2001
49. Lone Wolf GCD - 2/2/2002
50. Lost Pines GCD - 11/5/2002
51. Lower Trinity GCD - 11/7/2006
52. McMullen GCD - 11/6/2001
53. Medina County GCD - 8/26/1991
54. Menard County UWD - 8/14/1999
55. Mesa UWCD - 1/20/1990
56. Mesquite GCD - 11/4/1998
57. Mid-East Texas GCD - 11/6/2002
58. Middle Pecos GCD - 11/5/2002
59. Middle Trinity GCD - 5/4/2002
60. Neches & Trinity Valleys GCD - 11/6/2001
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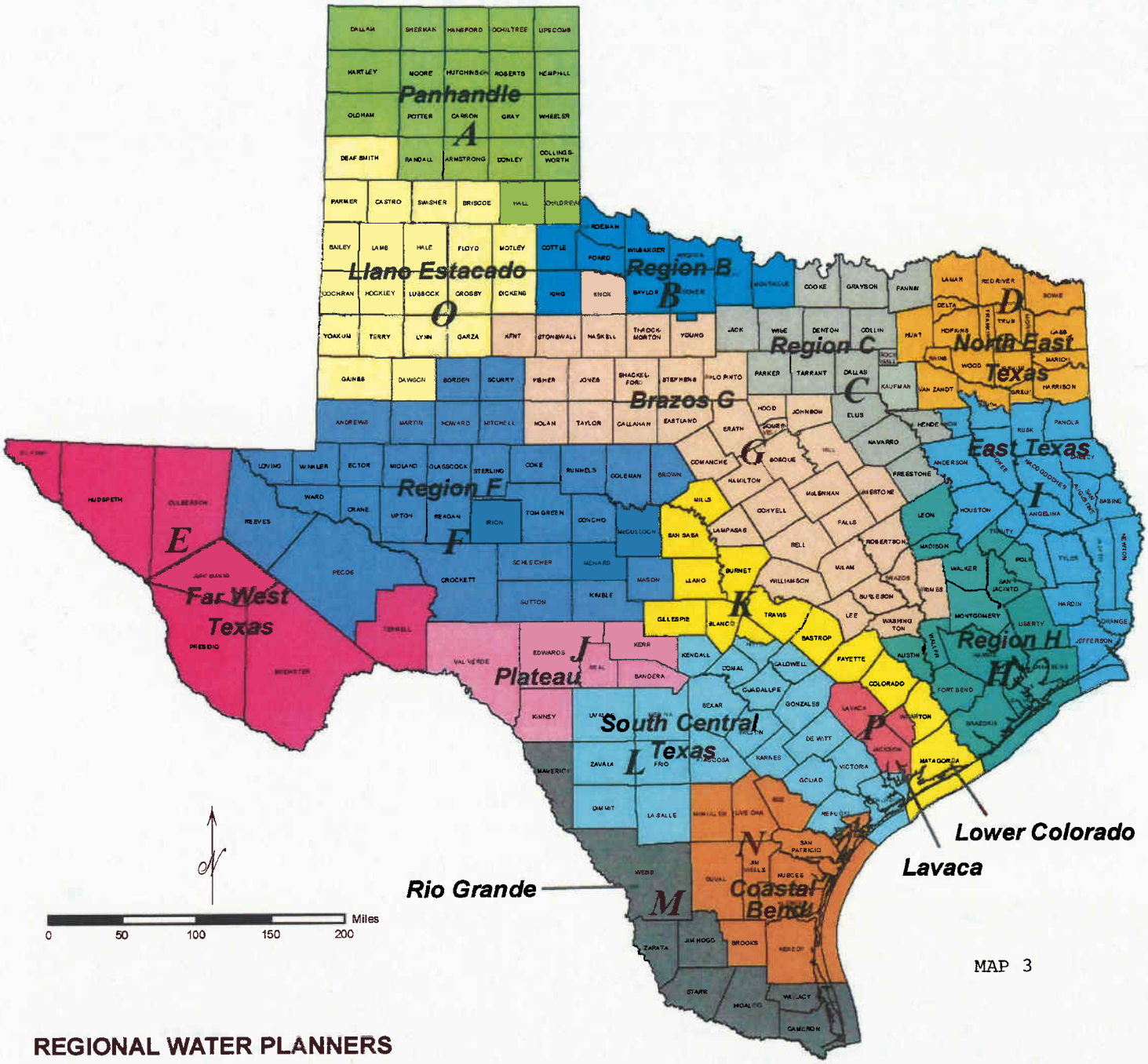
62. North Texas GCD - 12/1/2009
63. Northern Trinity GCD - 5/15/2007
64. Panhandle GCD - 1/21/1956
65. Panola County GCD - 11/6/2007
66. Pecan Valley GCD - 11/6/2001
67. Permian Basin UWCD - 9/21/1985
68. Pineywoods GCD - 11/6/2001
69. Plateau UWC and Supply District - 3/4/1974
70. Plum Creek CD - 5/11/1993
71. Post Oak Savanah GCD - 11/5/2002
72. Prairielands GCD - 9/1/2009
73. Presidio County UWCD - 6/21/1999
74. Real-Edwards C and R District - 5/30/1969
75. Red River GCD - 9/1/2009
76. Red Sands GCD - 11/5/2002
77. Refugio GCD - 11/6/2001
78. Rolling Plains GCD - 1/26/1999
79. Rusk County GCD - 6/5/2004
80. San Patricio County GCD - 5/12/2007
81. Sandy Land UWCD - 11/7/1989
82. Santa Rita UWCD - 8/19/1989
83. Saratoga UWCD - 11/7/1989
84. South Plains UWCD - 2/9/1982
85. Southeast Texas GCD - 11/2/2004
86. Southern Trinity GCD - 6/19/2009
87. Starr County GCD - 1/5/2007
88. Sterling County UWCD - 11/3/1987
89. Sutton County UWCD - 4/5/1986
90. Texana GCD - 11/6/2001
91. Trinity Glen Rose GCD - 11/5/2002
92. Upper Trinity GCD - 11/6/2007
93. Uvalde County UWCD - 9/1/1993
94. Victoria County GCD - 8/8/2006
95. Wes-Tex GCD - 11/5/2002
96. Wintergarden GCD - 1/17/1998
Unconfirmed Groundwater Conservation Districts
97. Lavaca County GCD + #
98. Calhoun County GCD + &
99. Terrell County GCD + &
+ Pending Election Results
# Created by the 80th Legislature
& Created by the 82nd Legislature
Groundwater Management Areas
Subsidence Districts
Harris-Galveston Subsidence District
Fort Bend Subsidence District
NOTE: These subsidence districts are not Groundwater Conservation Districts as defined under Chapter 36 of the Texas Water Code, but have the ability to regulate groundwater production to prevent land subsidence. (Refer to Senate Bill 1527 of the 76th Legislative Session)
N
W
E
S
0 25 50 100 150 200 Miles
Texas Water Development Board
DISCLAIMER
This map was generated by the Texas Water Development Board using GIS (Geographical Information System) software. No claims are made to the accuracy or completeness of the information shown hereon nor to its suitability for a particular use. The scale and location of all mapped data are approximate
* Districts that have, in whole or part, authority as assigned by Chapter 36 of the Texas Water Code. Please refer questions pertaining to individual districts to the district themselves.
GCD Data Source: Texas Commission on Environmental Quality (TCEQ) 512-239-1000
Map updated: August 2012

MAP 2

Regional Water Planning Areas



MAP 3

REGIONAL WATER PLANNERS

Lann Bookout (512) 936 - 9439: Regions G, I & P
Angela Kennedy (512) 463 - 1437: Regions C, N, & O
Temple McKinnon (512) 475 - 2057: Regions D & H
David Meesey (512) 936 - 0852: Region K
Matt Nelson (512) 936 - 3550: Region L
Doug Shaw (512) 463 - 1711: Regions A, B, & F
Connie Townsend (512) 463 - 8290: Regions E, J & M

Texas Water Development Board

Updated by Erik O'Brian
Mapping Coordinator
11/07/2011

Attachment A
Summary of selected provisions of Chapter 36, Texas Water Code as of the date of this Management Plan

1. In establishing desired future conditions (DFCs) for relevant aquifers as part of District participation in joint planning in GMA12, the District will establish (and revise as necessary) DFCs that provide for the reasonable long-term management of groundwater resources consistent with statutory management goals under § 36.107(a), and that provide a balance between the conservation, preservation, protection, recharging, and prevention of waste of groundwater and control of subsidence in the management area and the highest practicable level of groundwater production.[12]

2. Before adopting DFCs the District will consider[13]:

- aquifer uses or conditions within the management area, including conditions that differ substantially from one geographic area to another;
- the water supply needs and water management strategies included in the state water plan;
- hydrological conditions, including for each aquifer in the management area the total estimated recoverable storage as provided by the executive director of the Texas Water Development Board (TWDB), and the average annual recharge, inflows and discharge;
- other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water;
- the impact on subsidence;
- socioeconomic impacts reasonably expected to occur;
- the impact on the interests and rights in private property, including ownership and the rights of management area landowners and their lessees and assigns in groundwater as recognized under § 36.002;
- the feasibility of achieving the DFC; and

any other information relevant to the specific DFC.

3. The Management Plan's goals and objectives shall be consistent with achieving consistency with the DFCs of the relevant aquifers[14].

4. To the extent possible, the District shall issue permits up to the point that the total volume of exempt and permitted groundwater production will achieve an applicable DFC under § 36.108.[15] In issuing permits, the District shall manage total

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[12] See § 36.108(d)(2).
[13] See § 36.108(d).
[14] See § 36.1085.
[15] See § 36.1132.

groundwater production on a long-term basis to achieve the applicable DFC for each aquifer, and shall consider[16]:

- the modeled available groundwater determined by TWDB;
- TWDB's estimate of the current and projected amount of groundwater produced under exemptions granted by District rules and § 36.117;
- the amount of groundwater authorized under permits previously issued by the District;
- a reasonable estimate of the amount of groundwater that is actually produced under permits issued by the District; and
- yearly precipitation and production patterns.

5. The District may adopt and will enforce rules pursuant to Chapter 36, including without limitation rules limiting groundwater production, to provide for conserving, preserving, protecting, and recharging of the groundwater in order to control subsidence, to minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure, to prevent or lessen interference between wells, to prevent degradation of water quality, or to prevent waste and achieve water conservation. District rules may regulate the spacing of water wells and the production of groundwater.[17] The District may impose permit conditions, including without limitations conditions requiring conservation or drought contingency plans.[18] In adopting rules under Chapter 36, the District shall:

- consider all groundwater uses and needs;
- develop rules that are fair and impartial;
- consider the groundwater ownership and rights described by § 36.002;
- consider the public interest in conservation, preservation, protection, recharging, and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, and in controlling subsidence caused by withdrawal of groundwater from those groundwater reservoirs or their subdivisions, consistent with the objectives of Section 59, Article XVI, Texas Constitution;
- consider the goals developed as part of its Management Plan under § 36.1071; and
- not discriminate between land that is irrigated for production and land that was irrigated for production and enrolled or participating in a federal conservation program.[19]

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[16] See § 36.1132.
[17] See § 36.116.
[18] See Chapter 36 generally, including without limitation §§ 36.101, 36.102, 36.113, 36.116 and 36.122.
[19] See §§ 36.101.