LOST PINES GROUNDWATER CONSERVATION DISTRICT

GROUNDWATER MANAGEMENT PLAN

Adopted September 15, 2004;
Revised August 10, 2010;
Revised September 19, 2012;
Revised September 20, 2017;
Revised October 19, 2022;
Revised May 17, 2023

Table of Contents

Section 1. The District 3

Section 2. District Mission and Guiding Principles 4

Section 3. Time Period Covered By Groundwater Management Plan 6

Section 4. Governance 7

Section 5. District Desired Future Conditions (DFCs) 8

Section 6. Modeled Available Groundwater 9

Section 7. District Water Resources 10
A. Groundwater Resources 11
B. Surface Water Resources 19
C. District Water Demands, Needs and Strategies 20

Section 8. Management Goals, Objectives, and Performance Standards 22
A. Statutory Goals 22
B. District-Specific Goals 27

Section 9. District Certifications 30
A. Regional Cooperation and Coordination 30
B. District's Resolution Adopting Groundwater Management Plan 30
C. Evidence of Public Notice and Hearing on Groundwater Management Plan 30
D. Site-Specific Information Provided to the TWDB 30

MAPS

Map 1 - Groundwater Conservation Districts 31

Map 2 – Groundwater Management Areas 32

Map 3 - Regional Water Planning Groups 33

ATTACHMENTS

Attachment A: GAM Run 22-008 and GAM Run 21-017 MAG

Attachment B: Estimated Historical Water Use and 2022 State Water Plan Datasets: Lost Pines Groundwater Conservation District

- Estimated Historical Water Use
- Projected Surface Water Supplies
- Projected Water Demands
- Projected Water Supply Needs
- Projected Water Management Strategies

APPENDICES

Appendix A: Copy of GMA 12 Resolution and Submittal Adopting DFCs
Attachment A – Notice for November 30, 2021 GMA 12 Meeting
Attachment B – GMA 12 Desired Future Conditions
Attachment C – Non-Relevant Aquifers

Appendix B: Evidence of Coordination with Surface Water Management Entities

Appendix C: Certified Copy of District Resolution Adopting Groundwater Management Plan

Appendix D: Evidence of Public Notice and Hearing on Groundwater Management Plan

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 Groundwater Management Plan

Mission Statement: The mission of the Lost Pines Groundwater Conservation District (LPGCD) is to develop rules to provide protection to existing wells, prevent waste, promote conservation, provide a framework that will allow availability and accessibility of groundwater on a sustainable basis, protect the quality of the groundwater, maintain responsible local management of the aquifer resources beneath Bastrop and Lee Counties, and operate the District in a fair and equitable manner.

Based on current conditions, the statutory goal of controlling and preventing subsidence is applicable to the District. The TWDB Subsidence Risk Final Report: Identification of the Vulnerability of the Major and Minor aquifers of Texas to Subsidence with Regard to Groundwater Pumping, TWDB Contract Number 1648302062, March 21, 2017 shows the Carrizo-Wilcox aquifer within the District is in medium to high risk of subsidence in the map in Figure 4.7, page 4-13 and stated in section 7.3.7 on page 7-10.

Guiding Principles: The District's guiding principles derive from its mission statement. Groundwater resources within the District are of vital importance to the landowners or persons with private property rights in the District, 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 within the District's jurisdiction, while complying with statutory requirements, as amended at the District's discretion, 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. The District will manage the aquifers within its jurisdiction on a sustainable basis. The District defines sustainability as conservation and reasonable long-term management of groundwater in perpetuity.

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 Groundwater 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 by the development and use of 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 Groundwater Management Plan or the District's rules, and such exercise of discretion shall not be construed as limiting the power and authority of the District.

6. In implementing this Groundwater 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 Groundwater Management Plan and any necessary changes or modifications to adhere to the policy stated herein.

The District's rules, which may be amended at the Board's discretion, are available on the District website at:

https://www.lostpineswater.org/DocumentCenter/View/292/Lost-Pines-GCD-Rules-FINAL-Adopted-31523

Section 3. TIME PERIOD COVERED BY THE GROUNDWATER MANAGEMENT PLAN

This Groundwater Management Plan was originally adopted on September 15, 2004. The first revision was on August 10, 2010, the second revision was approved on September 19, 2012, the third revision was approved on September 20, 2017, the fourth revision was approved on October 19, 2022, and this fifth revision was approved on May 17, 2023. The District may review the Groundwater Management Plan annually, but at least once every five years, the District will review and re-adopt its Groundwater Management Plan, with or without change, and submit it to TWDB pursuant to Chapter 36.[1]

[1] See § 36.1072.

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 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 DESIRED FUTURE CONDITIONS (DFCs)

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. On April 27, 2017, the second round of DFCs was formally adopted by GMA-12, and on November 30, 2021, the third round of DFCs was formally adopted by GMA-12. See **Appendix A**. The District's DFCs by aquifer that were approved in 2021 are presented in **Table 1**.

Table 1- Desired Future Conditions

Aquifer	District-wide DFC (Average drawdown in feet from Jan. 2011 to Dec. 2070)
Sparta	22
Queen City	28
Carrizo	134
Calvert Bluff	132
Simsboro	240
Hooper	138

Section 6. MODELED AVAILABLE GROUNDWATER

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. The modeled available groundwater totals provided by the TWDB in 2022 are presented below in **Table 2** and Appendix A.

Table 2 - Modeled Available Groundwater Totals for the District

All values are in acre-feet/year

AQUIFER	2020	2030	2040	2050	2060	2070
Sparta	1,042	1,246	1,504	1,825	2,222	2,723
Queen City	1,109	1,219	1,340	1,471	1,615	1,771
Carrizo	4,716	5,903	7,237	8,788	10,656	12,980
Calvert Bluff	2,155	2,814	3,485	4,166	4,859	5,563
Simsboro	20,364	65,242	69,104	72,782	76,841	79,945
Hooper	1,691	1,987	2,291	2,607	2,937	3,278
TOTAL	**31,077**	**78,411**	**84,961**	**91,639**	**99,130**	**106,260**

Source: TWDB GAM Run 21-017 MAG.

Section 7. DISTRICT GROUNDWATER RESOURCES

This section presents information on District groundwater and surface water resources.

The annual amount of recharge from precipitation to each aquifer, the annual volume of water that discharges from the aquifer to springs and any surface water bodies and the annual volume of flow into and out of the District within each aquifer and between aquifers were obtained from the TWDB GAM Run 22-008, August 12, 2022 and is provided in **Attachment A**.

The District considered and used all information referenced in this Groundwater Management Plan, including without limitation historic use, surface water supplies, water demands, water supply needs and water management strategies from the State Water Plan Datasets. The TWDB 2022 State Water Plan Dataset for the District is provided in **Attachment B**. The District acknowledges the water supply needs and water management strategies data values that are supplied in the data packet provided by TWDB.

The estimated historical groundwater use in the District for the last five years is provided in **Table 3**. **Attachment B,** pages 3 - 4 includes the estimated historical groundwater use in the District since 2004.

Table 3 - Estimated Historical Groundwater Use

Year	County	Municipal	Manufacturing	Mining	Steam Electric (Power)	Irrigation	Livestock	Total
2015	Bastrop	10,466	98	44	5,519	3,204	210	19,541
2016	Bastrop	10,346	71	22	3,272	2,872	215	16,798
2017	Bastrop	11,319	167	61	5,163	5,093	269	22,072
2018	Bastrop	11,733	245	47	5,309	5,571	278	23,183
2019	Bastrop	12,306	350	25	5,555	6,810	278	25,324
2015	Lee	2,316	7	904	0	519	321	4,067
2016	Lee	2,168	6	571	0	519	326	3,590
2017	Lee	2,266	8	699	0	692	396	4,061
2018	Lee	2,312	7	1,392	0	674	411	4,796
2019	Lee	2,456	9	741	0	1,142	411	4,759

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 in Table 4.

Table 4 - 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 5,000 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. At the time of the preparation of this Groundwater Management Plan, 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 **Attachment A**.

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 are shown in **Attachment A**. 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. **Attachment A** also includes 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. These values do not distinguish between fresh, brackish, and saline water, and therefore all flows include all of these water types.

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 included in **Attachment B,** page 5.

C. DISTRICT WATER DEMANDS, NEEDS AND STRATEGIES

Based on data from the 2021 Regional Water Plan data, over the planning horizon, regional water planning data from Region G and Region K shows population is expected to increase from 95,487 in 2020 in Bastrop County to 384,244 in 2070 (an increase of 302%), and from 19,131 in 2020 in Lee County to 23,889 in 2070 (an increase of 25%). In addition, over the planning horizon, total water demands are projected to increase in Bastrop County from 34,240 acre-feet/year in 2020 to 75,154 acre-feet/year in 2070, and to increase in Lee County from 8,573 acre-feet/year in 2020 to 5,947 acre-feet/year in 2070.

Demands within the District, water supply needs within the District, and water management strategies are included in the 2022 State Water Plan Datasets in **Attachment B,** pages 6 - 7, pages 8 - 9, and 10 - 13 respectively. The projected needs listed in the TWDB estimated historical water use/2022 state water plan data packet (attached here as Attachment B) are primarily municipal, manufacturing, mining, livestock, and irrigation. Needs in Bastrop County exist for the following water user groups (WUGs): Aqua Water Supply Corporation, City of Bastrop, Bastrop County Water Control Improvement District no. 2, Creedmoor-Maha Water Supply Corporation, City of Elgin, Lee County Water Supply Corporation, Polonia Water Supply Corporation, City of Smithville. Additional needs exist in one other WUGs: Irrigation, Livestock, Manufacturing, Mining, and Steam-Electric Power. The projected needs in Bastrop County between 2020 and 2070 increase from 675 to 37,368 acre-feet per year. Needs in Lee County exist for the following water user groups (WUGs): Aqua Water Supply Corporation, City of Giddings, Lee County Water Supply Corporation, City of Lexington, and Southwest Milam Water Supply Corporation. Additional needs exist in one other WUGs: Irrigation, Livestock, Manufacturing, and Mining. The projected needs in Lee County between 2020 and 2070 decrease from 275 to 12 acre-feet per year.

Projected water management strategies for Bastrop and Lee Counties listed in the TWDB estimated historical water use/2022 state water plan data packet (Attachment B), are: Drought Management (Aqua WSC, Bastrop County WCID no. 2, County-Other Bastrop, City of Elgin, Lee County WSC, Polonia WSC, City of Smithville), Municipal Water Conservation – Aqua WSC (Aqua WSC) Municipal Water Conservation (Aqua WSC, City of Bastrop, Bastrop County WCID no. 2, Bastrop County – Other, City of Elgin, City of Smithville, City of Giddings, City of Lexington), Downstream Return Flows (Aqua WSC), Expansion of Current Groundwater Supplies – Carrizo-Wilcox Aquifer (Aqua WSC, City of Elgin, Lee County Mining, Southwest Milam WSC), LCRA – Import Return Flows from Williamson County (Aqua WSC, City of Bastrop, Bastrop County WCID no. 2, City of Smithville), Development of New Groundwater Supplies – Trinity Aquifer (City of Elgin), Mining Conservation (County-Other Bastrop), Development of New Groundwater Supplies – Yegua-Jackson Aquifer (City of Smithville), LCRA – Enhanced Municipal and Industrial Conservation (LCRA), Industrial Water Conservation (Mining – Lee County). The total water management strategies in Bastrop County between 2020 and 2070 increase from 3,725 to 42,318 acre-feet per year. The total water management strategies in Lee County between 2020 and 2070 decrease from 275 to 274 acre-feet per year.

Groundwater currently meets nearly 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).[2] 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 2022 State Water Plan Projected Net Water Demands:

- 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); and
- 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.

These factors have not been contemplated in the State Water Plan because the regional planning groups, pursuant to 31 Tex. Admin. Code § 357.32(d) and Tex. Water Code §16.053(e)(2-a), may only consider modeled available groundwater derived from the most recent DFC. As such, all demands must be separately evaluated by the District when implementing this Groundwater Management Plan.

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.

Municipal demands are expected to nearly quadruple in Bastrop County by 2070. Mining demands are expected to decrease significantly in both Bastrop and Lee Counties by 2070.

[2] The District has issued a permit to the Lower Colorado River Authority (LCRA) to produce groundwater to meet power generation needs at LCRA's Lost Pines Power Park.

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 General Manager will develop and evaluate a schedule for expanding the monitoring well network in the Monitoring Well Program and will measure and record water levels in the monitoring wells.

> **Performance Standard:** The General Manager will annually, before March 31st, evaluate and report to the Board on the current status of the monitoring well network and any need for improvements.

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

> **Performance Standard:** The General Manager will report annually, before March 31st, to the Board, in the Annual Report or in any other mandated report, on information on efficient use of groundwater which has been made available, at the District office and on the District website, and 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 and on the District website, and/or by public workshops or other presentations.

> **Performance Standard:** The General Manager will report annually, before March 31st, to the Board, in the Annual Report or in any other mandated report, on information on controlling and preventing the waste of groundwater which has been made available at the District office and on the District website, and identifying the publications and the number and dates of any public workshops or other presentations.

Management Objective 2.2: The General Manager 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 General Manager will report annually, before March 31st, to the Board, in the Annual Report or in any other mandated report, any leaks noted and reported. Additionally, the General Manager will promptly inform the Board of suck leaks.

GOAL 3: Controlling and preventing subsidence: This goal is applicable to the District according to the TWDB subsidence risk report.

Management Objective 3.1: The District will monitor drawdowns to track and prevent land subsidence.

> **Performance standard 1:** At least once every five years, beginning in 2023, the General Manager will investigate and report to the District's Board of Directors projected land subsidence for areas where water levels will decrease more than 300 feet (over a 50-year period) based on groundwater availability model (GAM) simulations used for the joint planning process and areas of high risk based on the TWDB subsidence risk assessment tool.
>
> **Performance Standard 2:** If actual subsidence is suspected or confirmed, the District will consider whether or not production should be curtailed in impacted areas or undertake any other action deemed to be necessary to reduce or halt further subsidence.

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, and 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 identify potential hazards that might negatively impact water quality or reduce the availability of high quality groundwater for consumptive use.

> **Performance Standard 1:** The General Manager will produce a map that includes the location of all known and identifiable mining hazards as well as the monitoring wells nearest to these sites, no later than November 2023. The hazardous sites will be noted as to type (e.g., coal ash, gravel and sand, etc).
>
> **Performance Standard 2:** The General Manager will water test annually the wells nearest these mapped sites for contamination and report results no later than November 1st of each year.
>
> **Performance Standard 3:** The General Manager will produce a map that includes the location of all known active or abandoned oil and gas production wells, no later than November 1, 2024.

Performance Standard 4: The General Manager will test monitoring wells nearest the oil and gas well sites for contamination and report results no later than November 2024.

Performance Standard 5: The Management Committee, or another committee of the Board of Directors, will conduct an investigation to determine sources for potential hazards and develop in-house database for all hazards of negative impact on water quality or availability, and summarize findings by March 31st of each year. The General Manager will publish and maintain this database on the district's website.

Management Objective 5.2: The District will plan for and establish a hydrological monitoring program on water quality in the alluvial aquifers and the interactions between surface water and groundwater and stream flows in the Colorado River.

Performance standard 1: The Board of Directors approved a hydrological surface water to groundwater interactions study on January 18, 2023. The District's hydrogeologists and General Manager will report to the District's Board of Directors the findings of the study no later than November 1, 2023. The General Manager will publish and maintain this report on the district's website.

Performance standard 2: The General Manager will investigate the locations and methods necessary to evaluate water quality and the interactions of groundwater production on surface water in the Colorado River and report to the District's Board of Directors the plan to monitor water quality and surface water and groundwater interactions no later than November 1, 2024.

Performance standard 3: Before the expiration of this Groundwater Management Plan, the District shall establish a monitoring program that focuses on water quality and the interactions between Colorado River Alluvial and stream flows in the Colorado River within the District. The General Manager shall submit a report to the Board of Directors of the data collected from the monitoring program annually. The General Manager's report shall include a discussion on the applicable criteria for creation of an alluvial management zone. The General Manager must publish and maintain this report on the district's website.

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 General Manager will monitor a public source on local drought conditions, such as **https://waterdatafortexas.org/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 in any other mandated report.

Management Objective 6.2: The District will monitor District monitoring wells at specified intervals.

Performance Standard: The General Manager will provide a summary of water levels in District monitoring wells at least annually to the Board.

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

Recharge enhancement: It is currently not economically feasible for the District to undertake recharge enhancement. 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. Therefore, this goal is not currently applicable.

Management Objective 7.1: The District will make available to the public at the District office and 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 in any other mandated report, on information on conservation which has been made available at the District office and on the District website, 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 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 in any other mandated report, on information on rainwater harvesting which has been made available at the District office and on the District website, 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 in any other mandated report, 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 assure conformance with the desired future conditions (DFC) adopted by the District.

Performance standard 1: At least once a year in by March 31st, the General Manager will report to the Board the measured water levels obtained from the monitoring wells for each Management Zone and aquifer, calculated from the measured water levels of the monitoring wells within the Management Zone.

Performance standard 2: The General Manager will report annually by March 31st to the Board the total permitted production and the estimated total annual production for each aquifer and compare these amounts to the MAGs listed in the District's Groundwater Management Plan for each aquifer.

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

Performance Standard: The General Manager will annually assess by March 31st of each year and report to the Board whether management zones should be established within its counties, or, if established, modified.

Management Objective 8.3: In order to facilitate District operations and achievement of management goals, the District may undertake other strategic initiatives such as evaluation of historic use, establishment of permit production limits, model evaluations, or other studies or programs.

Performance Standard: If the District undertakes strategic initiatives in support of operations and management goals, progress on these activities will be reported in the Annual Report to the Board of Directors.

Management Objective 8.4: Each year, the District will make an evaluation of the District Rules to determine whether any amendments are recommended to support achievement of the DFCs adopted by the District.

Performance Standard: Each year, the District will include a discussion of the evaluation of the District Rules and the determination of whether any amendments to the rules are recommended to support achievement of the DFCs adopted by the District in the Annual Report of the District provided to the Board of Directors.

B. District-Specific Goals

GOAL: Provide public education on groundwater resources including watershed protection, drought management and water conservation.

Management Objective: Educating public school children to better understand the water cycle, surface and groundwater characteristics and their relationships.

Performance standard 1: A teacher or member of the Education committee will do at least one presentation to fifth grade students within school districts of LPGCD in 2023.

Performance standard 2: The Education committee will secure a stream hydrology trailer by Spring of 2023 for use in educational presentations to K-12 students and the public.

Performance standard 3: The Education committee will secure an aquifer model by Spring of 2023 for use in educational presentations to K-12 students and the public.

Performance standard 4: A teacher or a member of the Education Committee will coordinate an essay contest in area high schools every fall semester beginning in 2023, with topics such as health, water quantity and quality, economics, energy production, recreation.

GOAL: Provide community outreach so that the community is aware of LPGCD existence and mission.

Management Objective: Carry out activities that increase community awareness and support of LPGCD.

Performance standard 1: A member of the Outreach committee will hold a photo contest, each odd year, beginning in the Spring of 2023. Winners will be published in a calendar.

Performance standard 2: A member of the Outreach committee will publish at least 6 informational articles in local newspapers each year beginning in 2023.

Performance standard 3: The Assistant General Manager will publish and distribute at least 10 monthly newsletters each year that provide relevant and timely information about LPGDC and distribute in public places, beginning in 2023.

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 and on the District website.

GOAL: Maintain a single 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, water level data, water production data, water quality and other information which facilitates management of groundwater consistent with DFCs.

Management Objective: The District will maintain a single database of **water level data, water production data, water quality for** 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 **water level data, water production data, water quality for** 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. This report will be made available on the District website.

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.

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.

B. District's Resolution Adopting Groundwater Management Plan

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

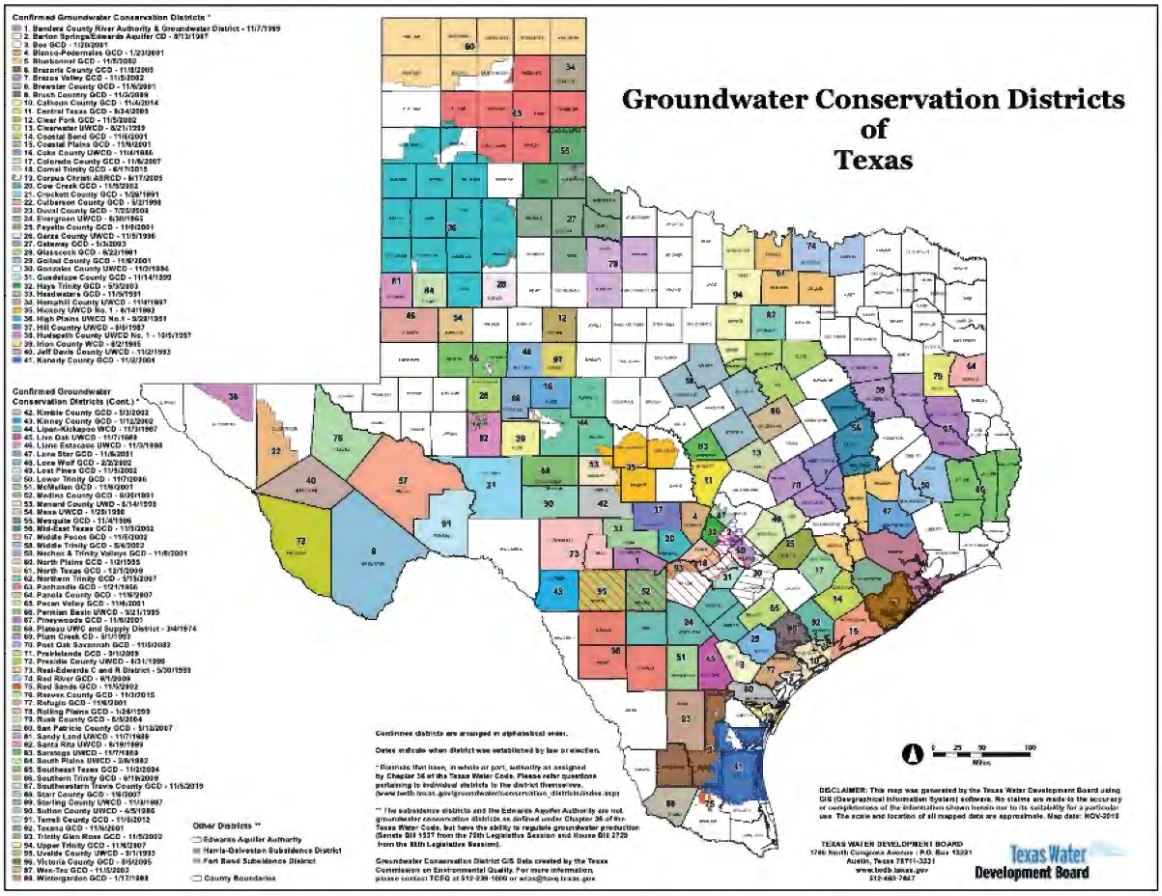
C. Evidence of Public Notice and Hearing of Groundwater Management Plan

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

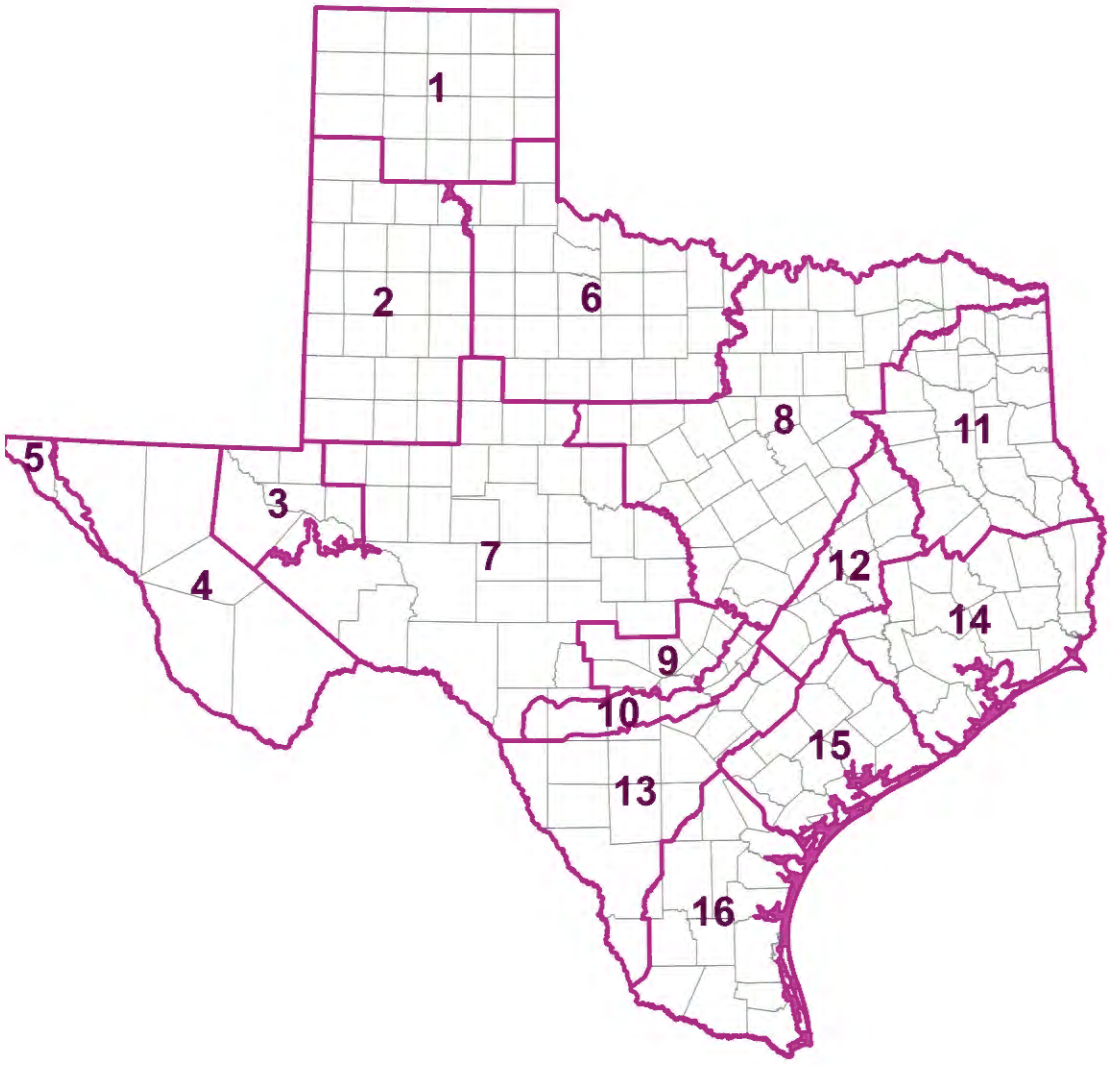
D. Site-Specific Information Provided to the TWDB

No site-specific information is available to provide to the Executive Administrator regarding the estimates required in subsections 31 TAC §356.52(a)(5)(C), (D), and (E).

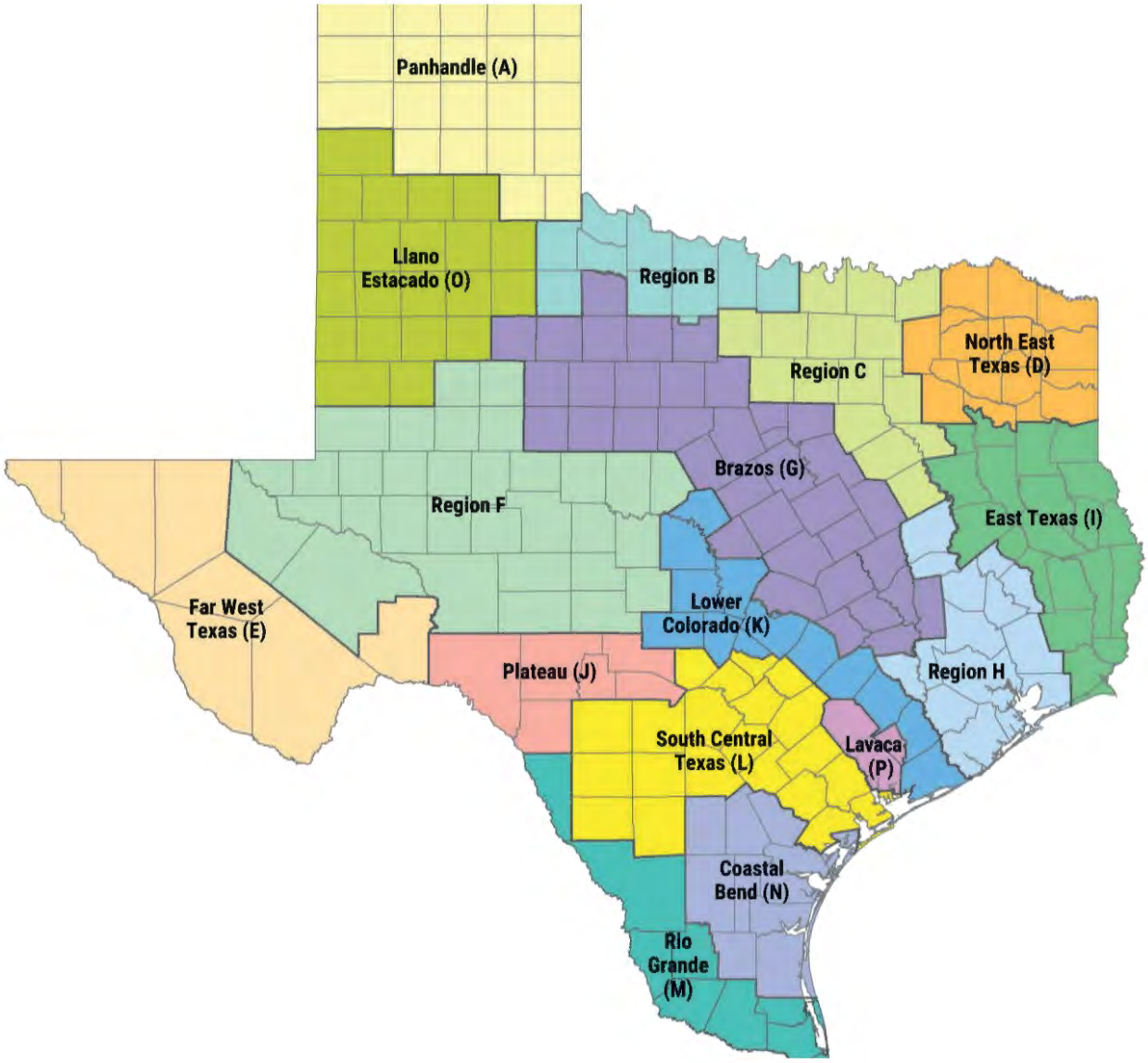
Maps



Map 1. Groundwater Conservation Districts



Map 2. Groundwater Management Areas



Map 3. Regional Water Planning Groups

Attachment A

GAM Run 22-008 and GAM Run 21-017 MAG:
Lost Pines GCD

GAM Run 22-008: Lost Pines Groundwater Conservation District Management Plan

Grayson Dowlearn, P.G.
Texas Water Development Board
Groundwater Division
Groundwater Modeling Department
(512) 475-1552
August 12, 2022

8/12/2022

This page is intentionally blank

GAM RUN 22-008: LOST PINES GROUNDWATER CONSERVATION DISTRICT MANAGEMENT PLAN

Grayson Dowlearn, P.G.
Texas Water Development Board
Groundwater Division
Groundwater Modeling Department
(512) 475-1552
August 12, 2022

EXECUTIVE SUMMARY:

Texas State Water Code, Section 36.1071, Subsection (h) (Texas Water Code, 2011), states that, in developing its groundwater management plan, a groundwater conservation district shall use groundwater availability modeling information provided by the Executive Administrator of the Texas Water Development Board (TWDB) in conjunction with any available site-specific information provided by the district for review and comment to the Executive Administrator.

The TWDB provides data and information to the Lost Pines Groundwater Conservation District in two parts. Part 1 is the Estimated Historical Water Use/State Water Plan dataset report, which will be provided to you separately by the TWDB Groundwater Technical Assistance Department. Please direct questions about the water data report to Mr. Stephen Allen at 512-463-7317 or stephen.allen@twdb.texas.gov. Part 2 is the required groundwater availability modeling information and this information includes:

1. the annual amount of recharge from precipitation, if any, to the groundwater resources within the district;

2. for each aquifer within the district, the annual volume of water that discharges from the aquifer to springs and any surface-water bodies, including lakes, streams, and rivers; and

3. the annual volume of flow into and out of the district within each aquifer and between aquifers in the district.

The groundwater management plan for the Lost Pines Groundwater Conservation District should be adopted by the district on or before October 26, 2022 and submitted to the executive administrator of the TWDB on or before November 25, 2022. The current management plan for the Lost Pines Groundwater Conservation District expires on January 24, 2023.

Five modeled aquifers are located within Lost Pines Groundwater Conservation District, which include the following: Trinity, Carrizo-Wilcox, Queen City, Sparta, and Yegua-Jackson aquifers. We used three groundwater availability models to estimate the management plan information for the aquifers within the Lost Pines Groundwater Conservation District. We used the groundwater availability models for the northern portion of the Trinity Aquifer and the Woodbine Aquifer (Kelley and others, 2014), the central portion of the Carrizo-Wilcox, Queen City, and Sparta aquifers (Young and others, 2018 and Young and Kushnereit, 2020), and the Yegua-Jackson Aquifer (Deeds and others, 2010) to estimate the groundwater management plan information for the Lost Pines Groundwater Conservation District.

This report replaces the results of GAM Run 16-014 (Wade, 2017) because it includes results from the updated groundwater availability model for the central portion of the Carrizo-Wilcox, Queen City, and Sparta aquifers (Young and Kushnereit, 2020). Values may also differ from the previous report as a result of routine updates to the spatial grid files used to define county, groundwater conservation district, and aquifer boundaries, which can impact the calculated water budget values. Additionally, the approach used for analyzing model results is reviewed during each update and may have been refined to better delineate groundwater flows. This report also includes a new figure not included in the previous report to help groundwater conservation districts better visualize water budget components. Tables 1 through 5 summarize the groundwater availability model data required by statute and Figures 1, 3, 5, 7, and 9 show the area of the models from which the values in Tables 1 through 5 were extracted. Figures 2, 4, 6, 8, and 10 provide generalized diagrams of the groundwater flow components provided in Tables 1 through 5. If, after review of the figures, the Lost Pines Groundwater Conservation District determines that the district boundaries used in the assessment do not reflect current conditions, please notify the TWDB at your earliest convenience.

METHODS:

In accordance with the provisions of the Texas State Water Code, Section 36.1071, Subsection (h), the groundwater availability models mentioned above were used to estimate information for the Lost Pines Groundwater Conservation District management

plan. Water budgets were extracted for the historical model periods for the Trinity Aquifer (1980 through 2012) and the Yegua-Jackson Aquifer (1980 through 1997) using ZONEBUDGET Version 3.01 (Harbaugh, 2009). Water budgets were extracted for the historical model periods for the Carrizo-Wilcox, Queen City, and Sparta aquifers (1980 through 2010) using ZONEBUDGET USG Version 1.00 (Panday and others, 2015). The average annual water budget values for recharge, surface-water outflow, inflow to the district, outflow from the district, and the flow between aquifers within the district are summarized in this report.

PARAMETERS AND ASSUMPTIONS:

Trinity Aquifer

- We used version 2.01 of the groundwater availability model for the northern portion of the Trinity Aquifer and the Woodbine Aquifer. See Kelley and others (2014) for assumptions and limitations of the model.
- The groundwater availability model for the northern portion of the Trinity Aquifer and Woodbine Aquifer contains eight layers that generally represent the following: Layer 1 (the surficial outcrop area of the units in layers 2 through 8 and units younger than Woodbine Aquifer), Layer 2 (Woodbine Aquifer), Layer 3 (Washita and Fredericksburg Groups, and the Edwards [Balcones Fault Zone] Aquifer), and Layers 4 through 8 (Trinity Aquifer). Layers 2 through 7 also include pass-through cells. The Woodbine Aquifer does not occur within the Lost Pines Groundwater Conservation District and therefore no groundwater budget values are included for it in this report.
- Perennial rivers and reservoirs were simulated using the MODFLOW River package. Ephemeral streams, flowing wells, springs, and evapotranspiration in riparian zones along perennial rivers were simulated using the MODFLOW Drain package.
- Water budget terms were averaged for the period 1980 through 2012 (stress periods 92 through 124)
- The model was run using MODFLOW-NWT (Niswonger and others, 2011).

Carrizo-Wilcox, Queen City, and Sparta aquifers

- We used version 3.02 of the groundwater availability model for the central portion of the Carrizo-Wilcox, Queen City, and Sparta aquifers. See Young and

Kushnereit (2020) and Young and others (2018) for assumptions and limitations of the model.

- The groundwater availability model for the central portion of the Carrizo-Wilcox, Queen City, and Sparta aquifers contains ten layers that generally represent the following: Layer 1 (Colorado River and Brazos River alluvium), Layer 2 (shallow flow system of all units in layers 3 through 10), Layer 3 (Sparta Aquifer and equivalent units), Layer 4 (Weches Formation), Layer 5 (Queen City Aquifer and equivalent units), Layer 6 (Reklaw Formation), and Layers 7 through 10 (Carrizo-Wilcox Aquifer and equivalent units).

- The MODFLOW River package was used to simulate groundwater exchange with major rivers and perennial streams. Outflow from ephemeral streams, intermittent streams, and seeps were simulated using the MODFLOW Drain package. The evapotranspiration package was used to simulate groundwater evapotranspiration from the model.

- Water budget terms were averaged for the period 1980 through 2010 (stress periods 52 through 82).

- The model was run with MODFLOW-USG (unstructured grid; Panday and others, 2015).

Yegua-Jackson Aquifer

- We used version 1.01 of the groundwater availability model for the Yegua-Jackson Aquifer. See Deeds and others (2010) for assumptions and limitations of the groundwater availability model.

- This groundwater availability model includes five layers, which represent the following: Layer 1 (Yegua-Jackson Aquifer outcrop and the Catahoula Formation and other younger overlying units), Layer 2 (the upper portion of the Jackson Group), Layer 3 (the lower portion of the Jackson Group), Layer 4 (the upper portion of the Yegua Group), and Layer 5 (the lower portion of the Yegua Group).

- An overall water budget for the district was determined for the Yegua-Jackson Aquifer (Layer 1 through Layer 5, collectively, for the portions of the model that represent the Yegua-Jackson Aquifer).

- Water budget terms were averaged for the period 1980 through 1997 (stress periods 10 through 27).

- The model was run with MODFLOW-2000 (Harbaugh and others, 2000).

RESULTS:

A groundwater budget summarizes the amount of water entering and leaving the aquifer according to the groundwater availability model. Selected groundwater budget components listed below were extracted from the groundwater availability model results for the Trinity, Carrizo-Wilcox, Queen City, Sparta, and Yegua-Jackson aquifer located within the Lost Pines Groundwater Conservation District and averaged over the historical calibration period, as shown in Tables 1 through 5.

1. Precipitation recharge—the areally distributed recharge sourced from precipitation falling on the outcrop areas of the aquifers (where the aquifer is exposed at land surface) within the district.

2. Surface-water outflow—the total water discharging from the aquifer (outflow) to surface-water features such as streams, reservoirs, and springs.

3. Flow into and out of district—the lateral flow within the aquifer between the district and adjacent counties.

4. Flow between aquifers—the net vertical flow between the aquifer and adjacent aquifers or confining units. This flow is controlled by the relative water levels in each aquifer and aquifer properties of each aquifer or confining unit that define the amount of leakage that occurs.

The information needed for the district's management plan is summarized in Tables 1 through 5. It is important to note that sub-regional water budgets are not exact. This is due to the size of the model cells and the approach used to extract data from the model. To avoid double accounting, a model cell that straddles a political boundary, such as a district or county boundary, is assigned to one side of the boundary based on the location of the centroid of the model cell. For example, if a cell contains two counties, the cell is assigned to the county where the centroid of the cell is located.

TABLE 1: SUMMARIZED INFORMATION FOR THE TRINITY AQUIFER THAT IS NEEDED FOR THE LOST PINES GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Trinity Aquifer	0
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Trinity Aquifer	0
Estimated annual volume of flow into the district within each aquifer in the district	Trinity Aquifer	355
Estimated annual volume of flow out of the district within each aquifer in the district	Trinity Aquifer	135
Estimated net annual volume of flow between each aquifer in the district	From the Trinity Aquifer to Trinity equivalent units	242
	From the Trinity Aquifer to overlying units	2
The model assumes a no-flow boundary at the base of the Trinity Aquifer.		

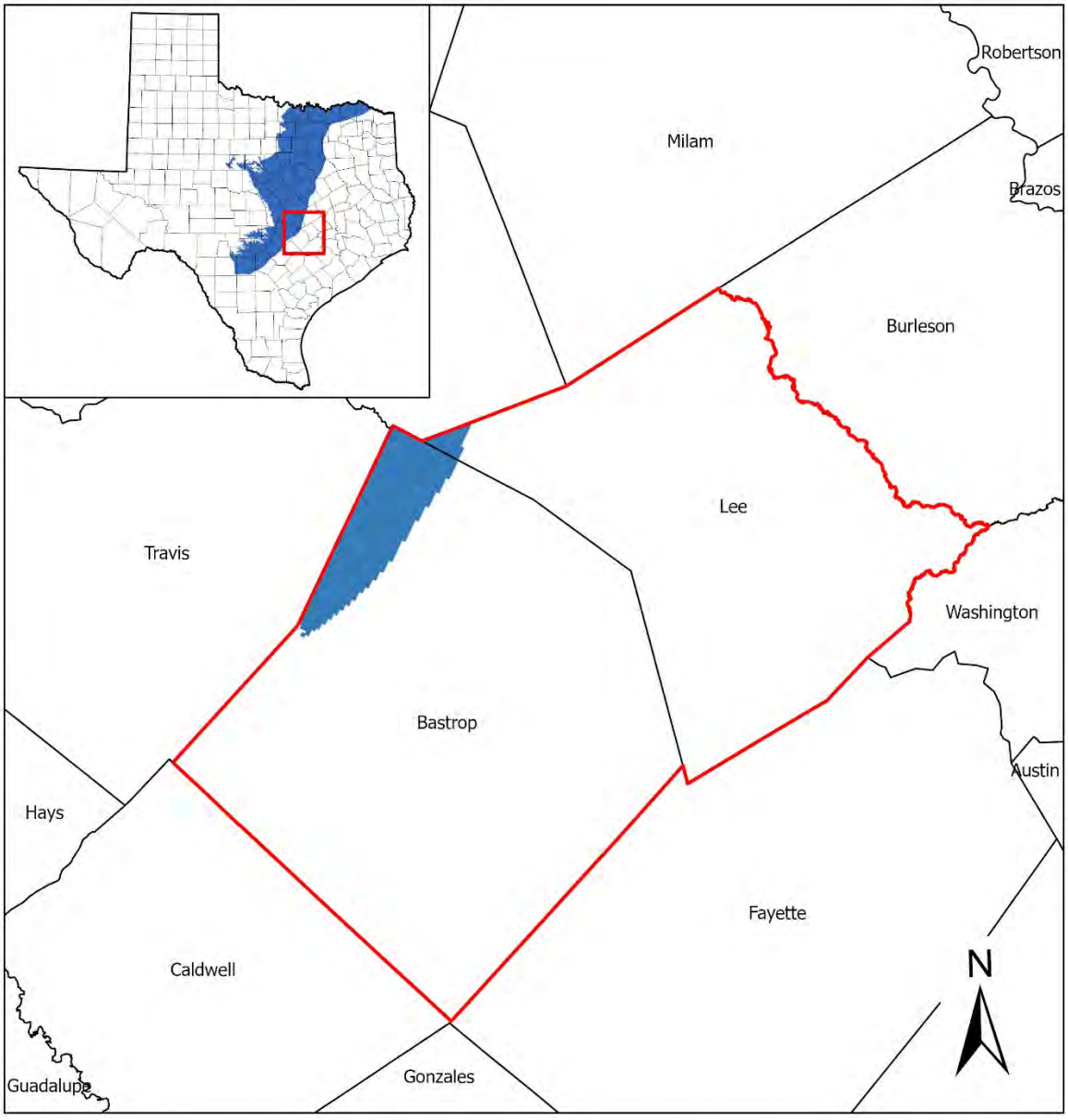
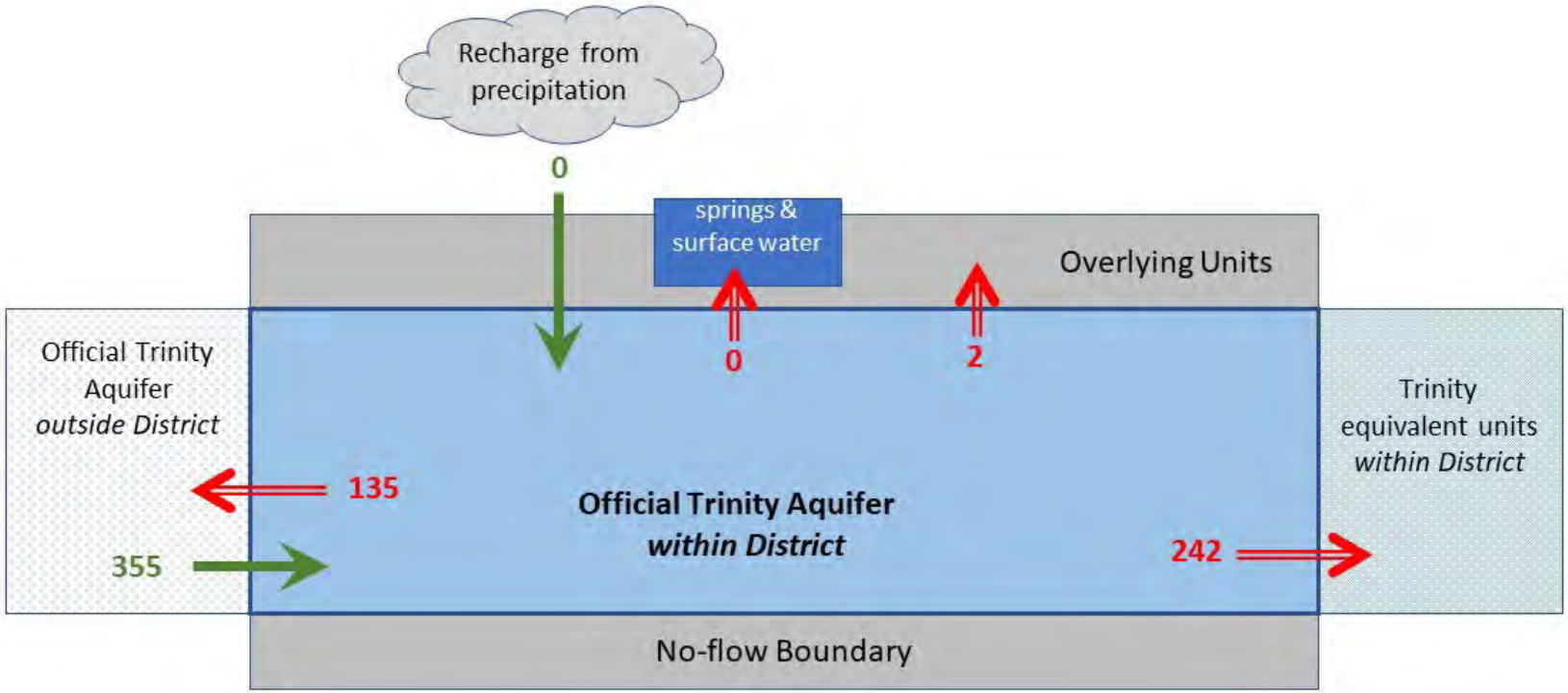


FIGURE 1: AREA OF THE NORTHERN TRINITY AND WOODBINE AQUIFER GROUNDWATER AVAILABILITY MODEL FROM WHICH THE INFORMATION IN TABLE 1 WAS EXTRACTED (THE TRINITY AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).



Caveat: This diagram only includes the water budget items provided in Table 1. A complete water budget would include additional inflows and outflows. If the District requires values for additional water budget items, please contact TWDB.

FIGURE 2: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 1, REPRESENTING DIRECTIONS OF FLOW FOR THE TRINITY AQUIFER WITHIN LOST PINES GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR (AFY).

TABLE 2: SUMMARIZED INFORMATION FOR THE CARRIZO-WILCOX AQUIFER THAT IS NEEDED FOR THE LOST PINES GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Carrizo-Wilcox Aquifer	42,520
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Carrizo-Wilcox Aquifer	64,202
Estimated annual volume of flow into the district within each aquifer in the district	Carrizo-Wilcox Aquifer	12,454
Estimated annual volume of flow out of the district within each aquifer in the district	Carrizo-Wilcox Aquifer	13,228
Estimated net annual volume of flow between each aquifer in the district	To the Carrizo-Wilcox Aquifer from Carrizo-Wilcox equivalent units	596
	To the Carrizo-Wilcox Aquifer from the Reklaw confining unit	452
	From the Carrizo-Wilcox Aquifer to the Queen City Aquifer	625
	From the Carrizo-Wilcox Aquifer to the Weches confining unit	331
	From the Carrizo-Wilcox Aquifer to overlying alluvium	18,490
The model assumes a no-flow boundary at the base of the Carrizo-Wilcox Aquifer.		

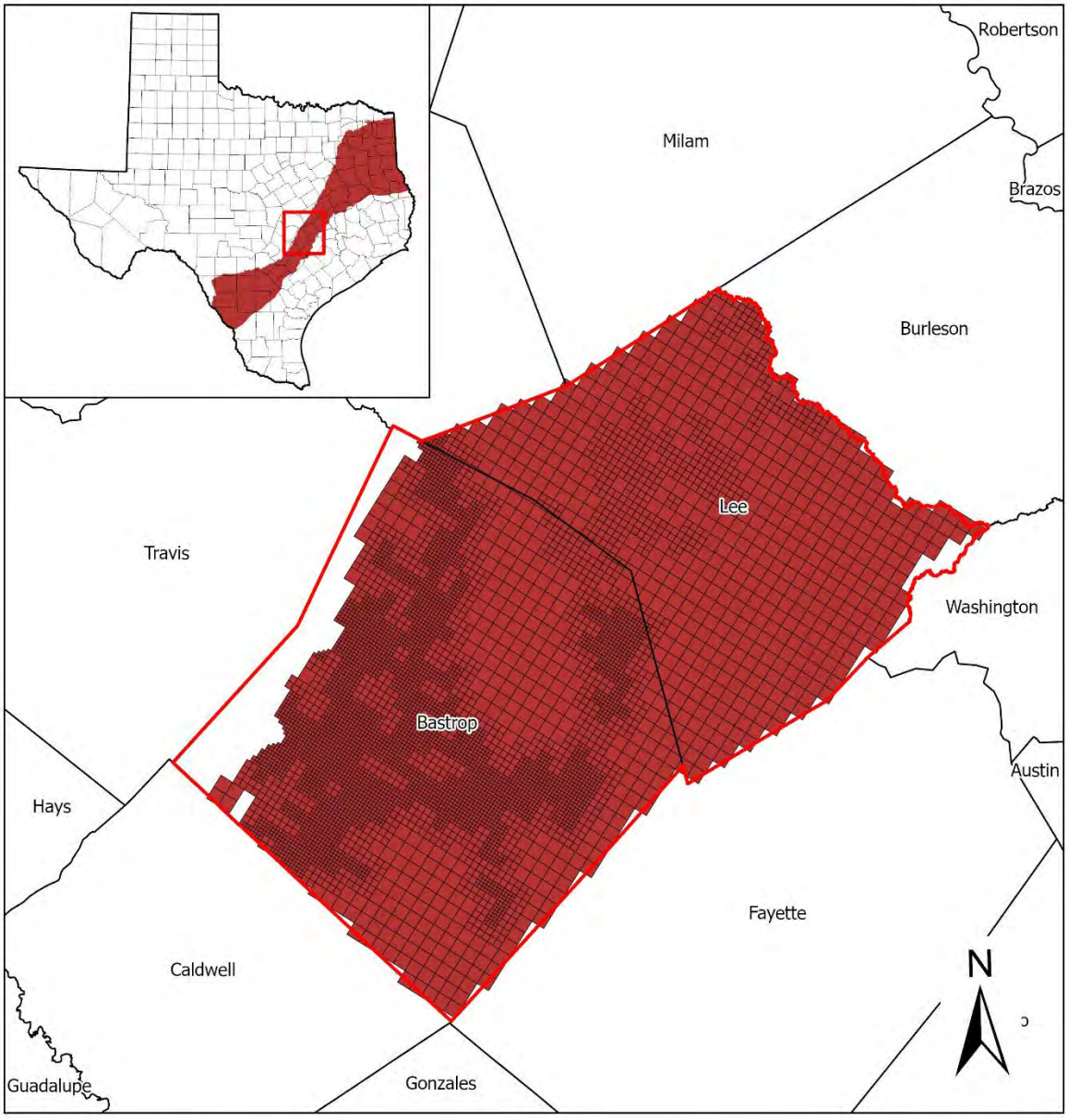
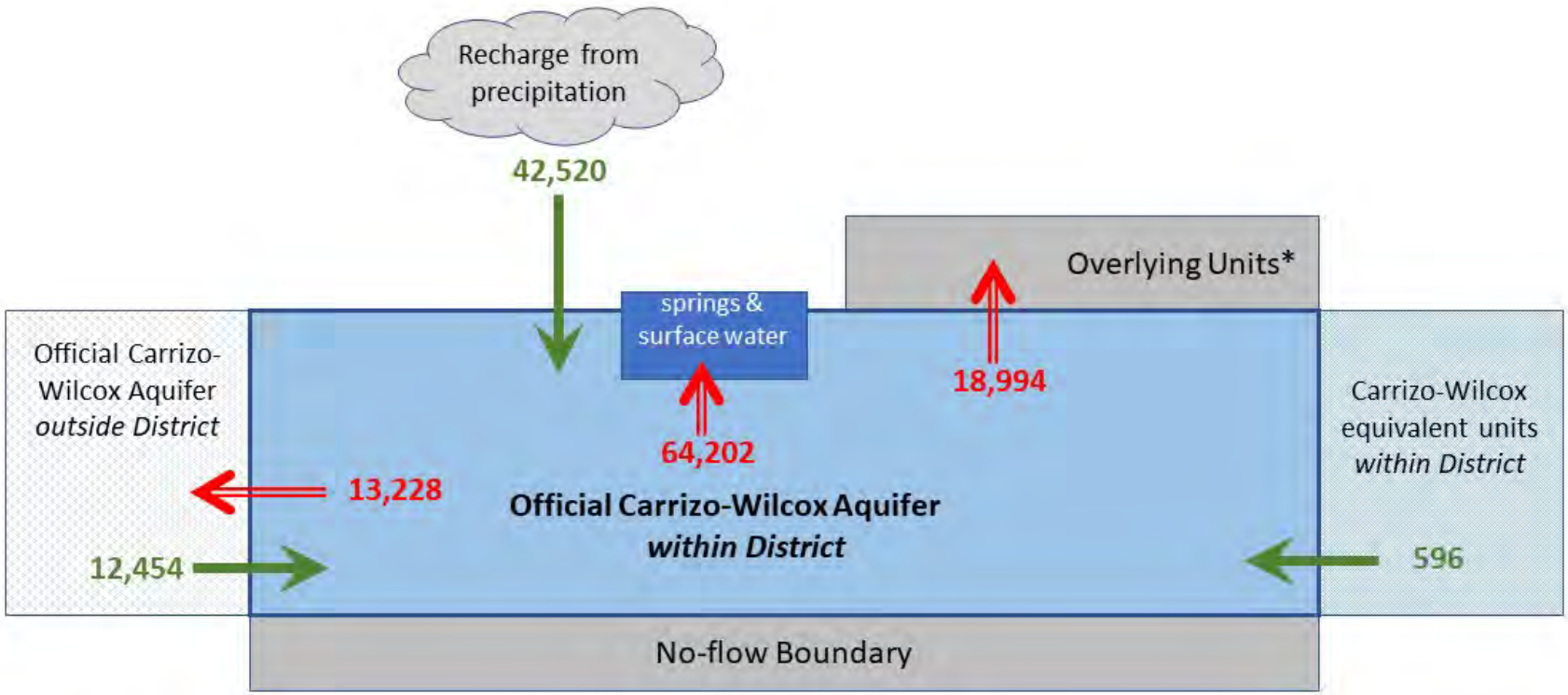


FIGURE 3: AREA OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS GROUNDWATER AVAILABILITY MODEL FROM WHICH THE INFORMATION IN TABLE 2 WAS EXTRACTED (THE CARRIZO-WILCOX AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).



* Flow to overlying units includes net inflow of 452 acre-feet per year from Reklaw confining unit, net outflow of 625 acre-feet per year to the Queen City Aquifer, net outflow of 331 acre-feet per year to the Weches confining unit, net outflow of 15,582 acre-feet per year to the Colorado River Alluvium, and net outflow of 2,908 acre-feet per year to other alluvium aquifers.

Caveat: This diagram only includes the water budget items provided in Table 2. A complete water budget would include additional inflows and outflows. If the District requires values for additional water budget items, please contact TWDB.

FIGURE 4: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 2, REPRESENTING DIRECTIONS OF FLOW FOR THE CARRIZO-WILCOX AQUIFER WITHIN LOST PINES GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR (AFY).

TABLE 3: SUMMARIZED INFORMATION FOR THE QUEEN CITY AQUIFER THAT IS NEEDED FOR THE LOST PINES GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Queen City Aquifer	11,188
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Queen City Aquifer	7,802
Estimated annual volume of flow into the district within each aquifer in the district	Queen City Aquifer	2,371
Estimated annual volume of flow out of the district within each aquifer in the district	Queen City Aquifer	3,380
Estimated net annual volume of flow between each aquifer in the district	To the Queen City Aquifer from the Carrizo-Wilcox Aquifer	625
	From the Queen City Aquifer to the Reklaw confining unit	3,240
	From the Queen City Aquifer to Queen City equivalent units	624
	To the Queen City Aquifer from the Weches confining units	818
	From the Queen City Aquifer to the Sparta Aquifer	1,057
	From the Queen City Aquifer to overlying alluvium	1,957

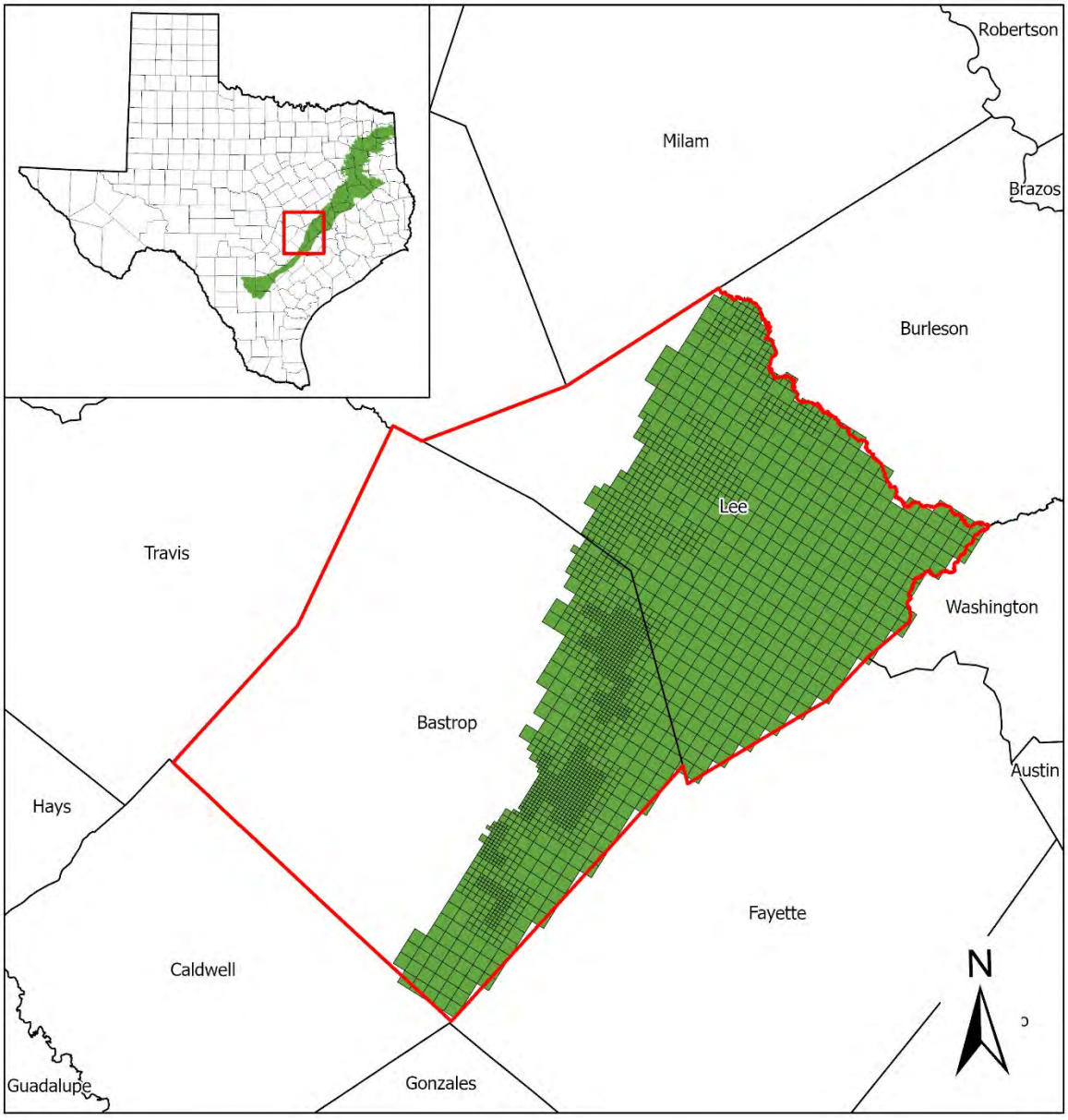
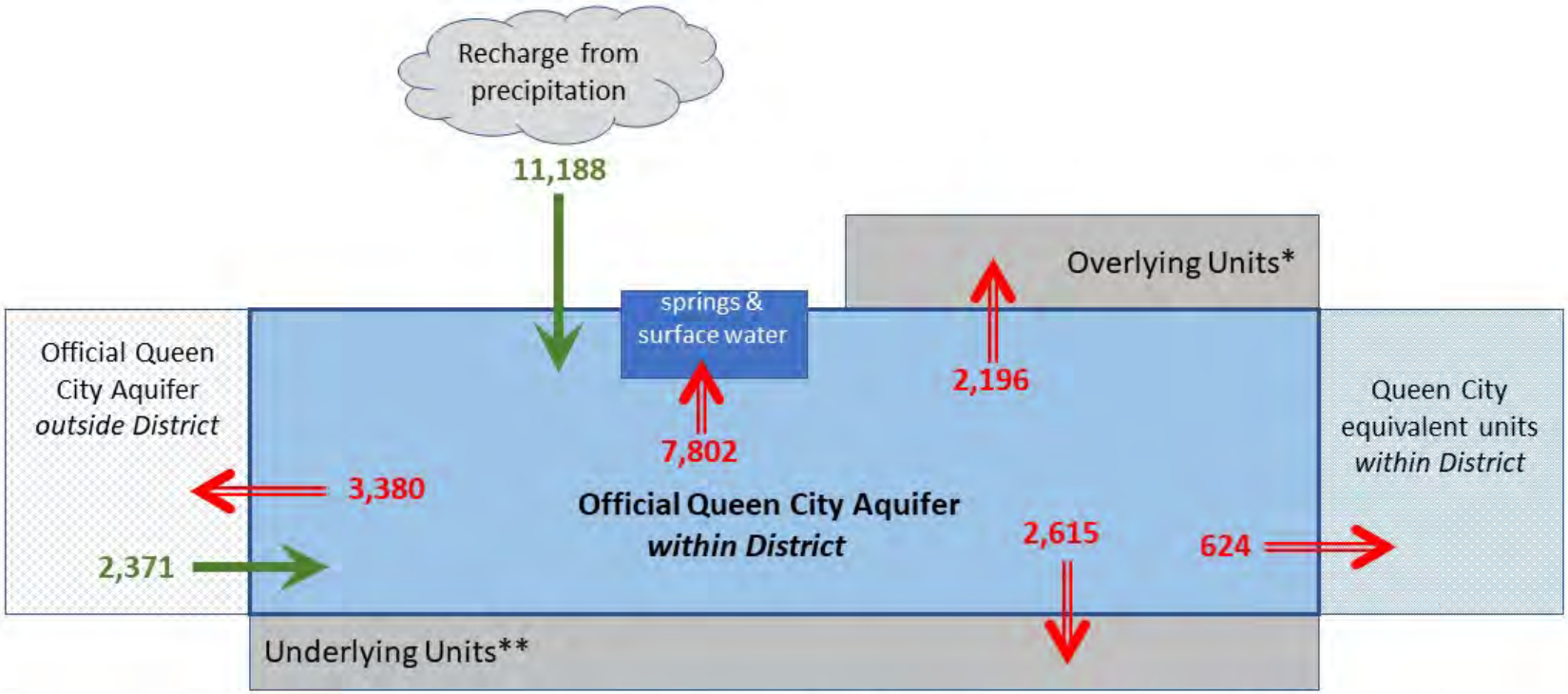


FIGURE 5: AREA OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS GROUNDWATER AVAILABILITY MODEL FROM WHICH THE INFORMATION IN TABLE 3 WAS EXTRACTED (THE QUEEN CITY AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).



* Flow to overlying units includes net inflow of 818 acre-feet per year from the Weches confining unit, net outflow of 1,057 acre-feet per year to the Sparta Aquifer, and net outflow of 1,957 acre-feet per year to the Colorado River Alluvium.

** Flow to underlying units includes net inflow of 625 acre-feet per year from the Carrizo-Wilcox Aquifer and net outflow of 3,240 acre-feet per year to the Reklaw confining unit.

Caveat: This diagram only includes the water budget items provided in Table 3. A complete water budget would include additional inflows and outflows. If the District requires values for additional water budget items, please contact TWDB.

FIGURE 6: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 3, REPRESENTING DIRECTIONS OF FLOW FOR THE QUEEN CITY AQUIFER WITHIN LOST PINES GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR (AFY).

TABLE 4: SUMMARIZED INFORMATION FOR THE SPARTA AQUIFER THAT IS NEEDED FOR THE LOST PINES GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Sparta Aquifer	8,702
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Sparta Aquifer	13,664
Estimated annual volume of flow into the district within each aquifer in the district	Sparta Aquifer	434
Estimated annual volume of flow out of the district within each aquifer in the district	Sparta Aquifer	1,975
Estimated net annual volume of flow between each aquifer in the district	To the Sparta Aquifer from the Reklaw confining unit	26
	To the Sparta Aquifer from the Queen City Aquifer	1,057
	To the Sparta Aquifer from the Weches confining unit	2,321
	To the Sparta Aquifer from Sparta equivalent units	538
	From the Sparta Aquifer to the Cook Mountain confining unit	2,555
	From the Sparta Aquifer to overlying alluvium	1,529

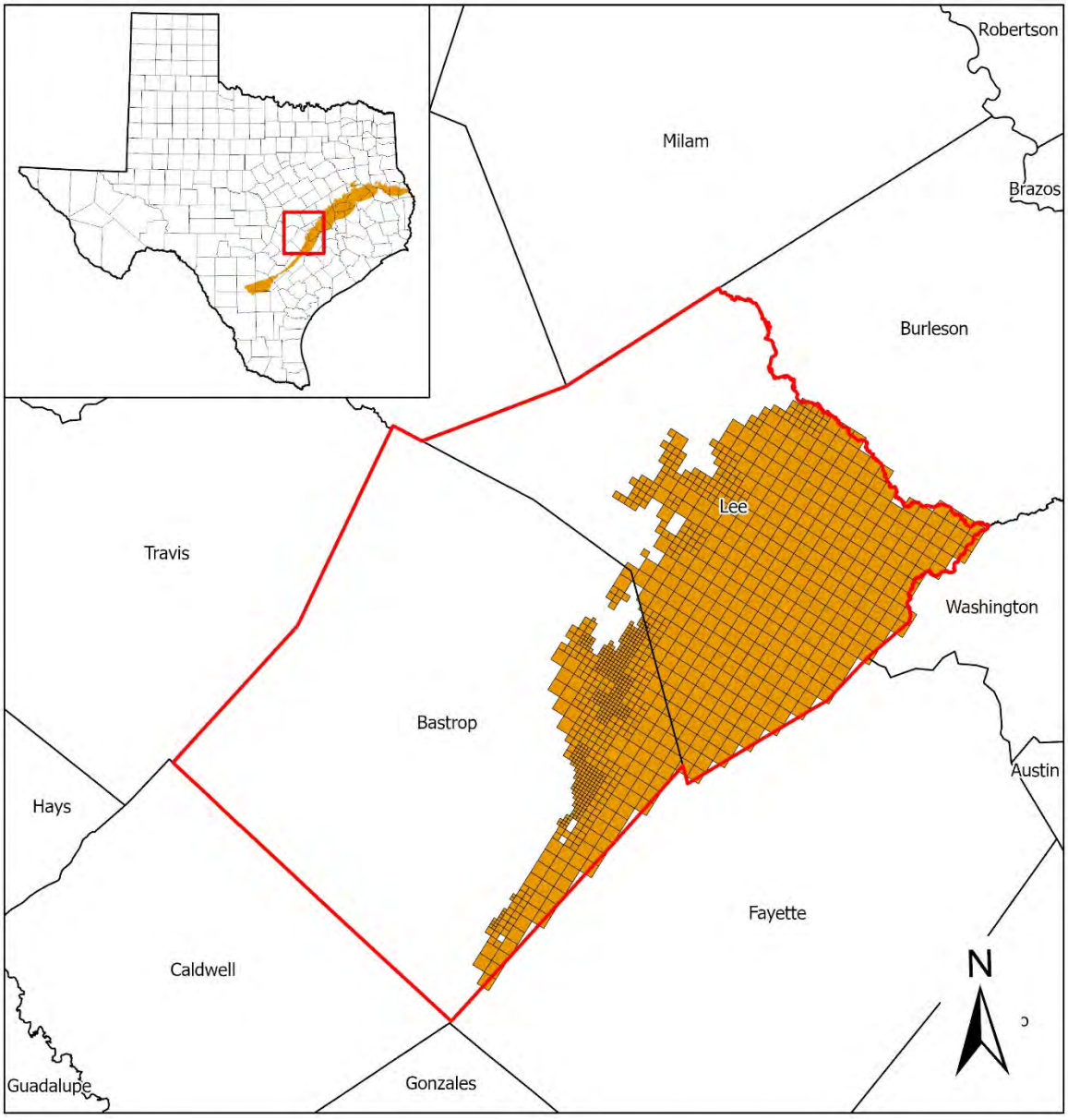
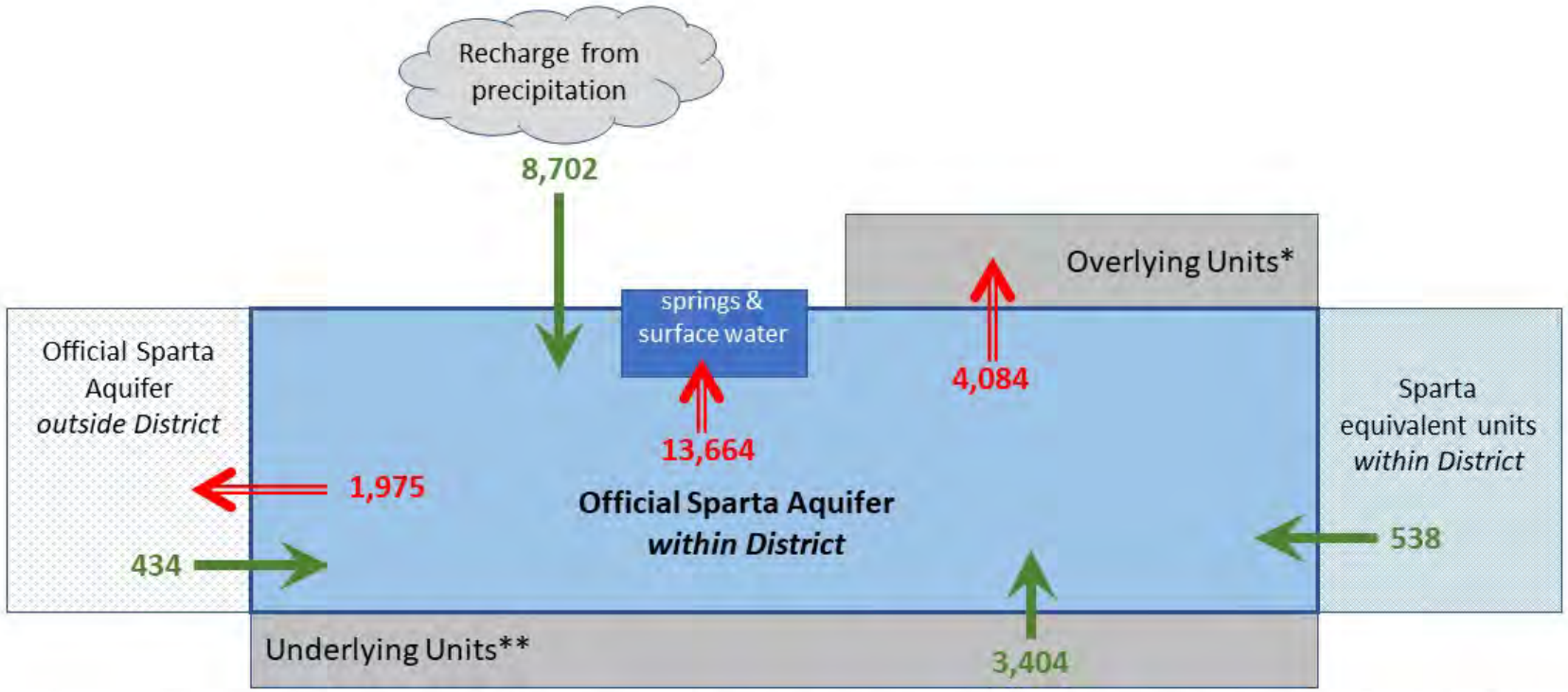


FIGURE 7: AREA OF THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS GROUNDWATER AVAILABILITY MODEL FROM WHICH THE INFORMATION IN TABLE 4 WAS EXTRACTED (THE SPARTA AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).



* Flow to overlying units includes net outflow of 2,555 acre-feet per year from the Cook Mountain confining unit and net outflow of 1,529 acre-feet per year to the Colorado River Alluvium.

** Flow from underlying units includes net inflow of 26 acre-feet per year from the Reklaw confining unit, net inflow of 1,057 acre-feet per year from the Queen City Aquifer, and new inflow of 2,321 acre-feet per year from the Weches confining unit.

Caveat: This diagram only includes the water budget items provided in Table 4. A complete water budget would include additional inflows and outflows. If the District requires values for additional water budget items, please contact TWDB.

FIGURE 8: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 4, REPRESENTING DIRECTIONS OF FLOW FOR THE SPARTA AQUIFER WITHIN LOST PINES GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR (AFY).

TABLE 5: SUMMARIZED INFORMATION FOR THE YEGUA-JACKSON AQUIFER THAT IS NEEDED FOR THE LOST PINES GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Yegua-Jackson Aquifer	38,860
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Yegua-Jackson Aquifer	35,781
Estimated annual volume of flow into the district within each aquifer in the district	Yegua-Jackson Aquifer	5,882
Estimated annual volume of flow out of the district within each aquifer in the district	Yegua-Jackson Aquifer	10,154
The model assumes a no-flow boundary at the base of the Yegua-Jackson Aquifer.		

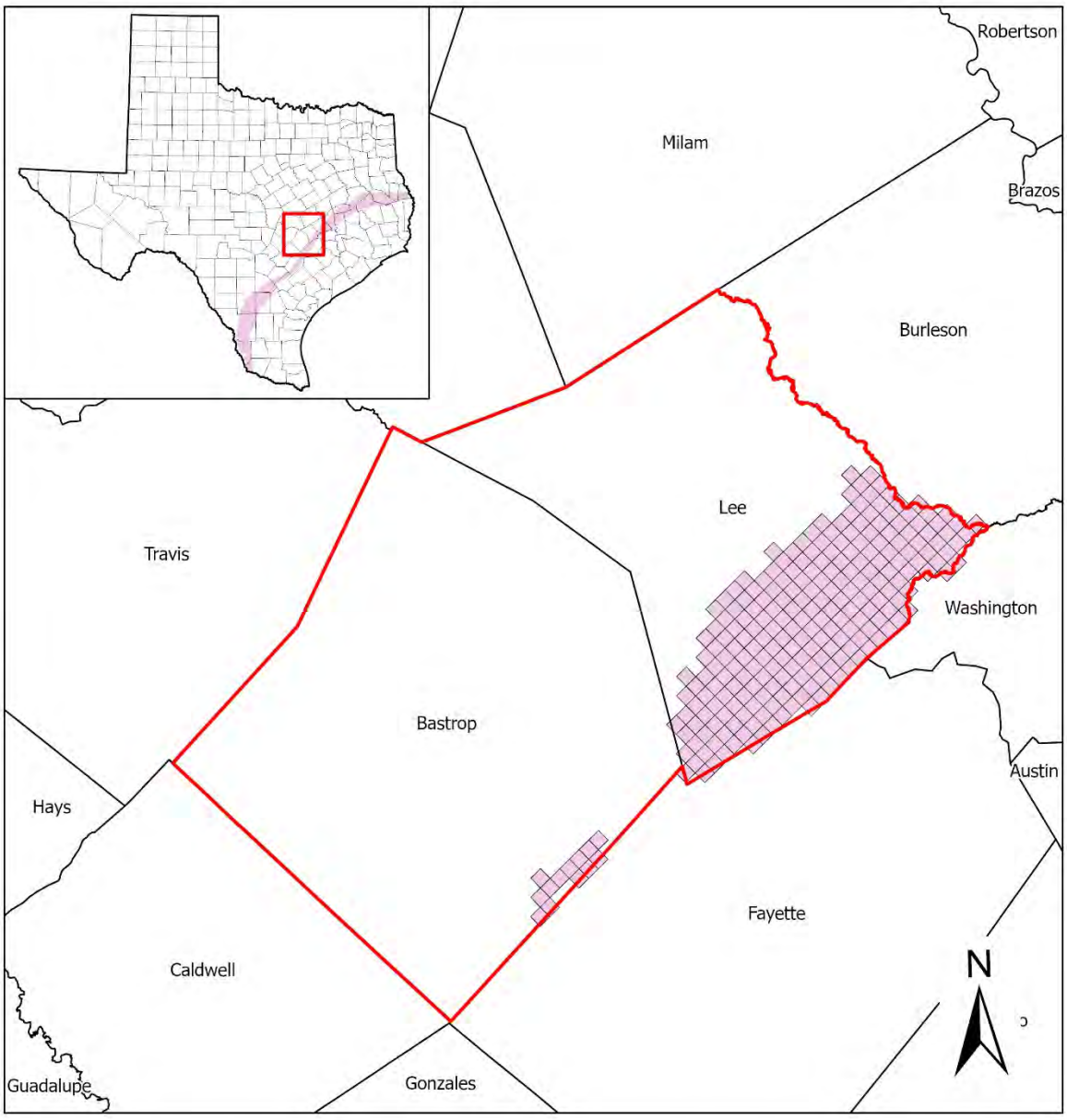
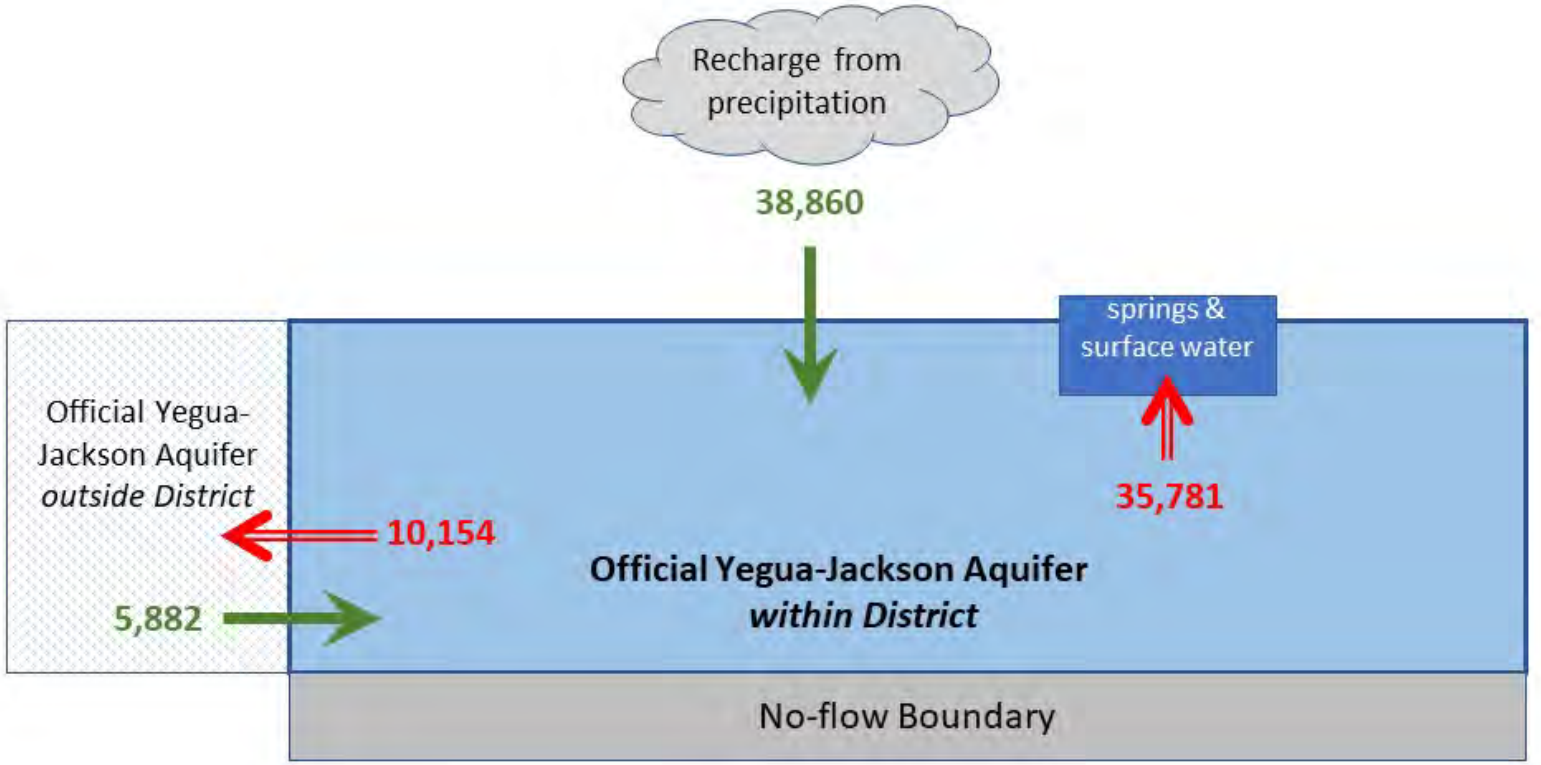


FIGURE 9: AREA OF THE YEGUA-JACKSON AQUIFER GROUNDWATER AVAILABILITY MODEL FROM WHICH THE INFORMATION IN TABLE 5 WAS EXTRACTED (THE YEGUA-JACKSON AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).



Caveat: This diagram only includes the water budget items provided in Table 5. A complete water budget would include additional inflows and outflows. If the District requires values for additional water budget items, please contact TWDB.

FIGURE 10: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 5, REPRESENTING DIRECTIONS OF FLOW FOR THE YEGUA-JACKSON AQUIFER WITHIN LOST PINES GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR (AFY).

LIMITATIONS:

The groundwater models used in completing this analysis are the best available scientific tools that can be used to meet the stated objectives. To the extent that this analysis will be used for planning purposes and/or regulatory purposes related to pumping in the past and into the future, it is important to recognize the assumptions and limitations associated with the use of the results. In reviewing the use of models in environmental regulatory decision making, the National Research Council (2007) noted:

> *"Models will always be constrained by computational limitations, assumptions, and knowledge gaps. They can best be viewed as tools to help inform decisions rather than as machines to generate truth or make decisions. Scientific advances will never make it possible to build a perfect model that accounts for every aspect of reality or to prove that a given model is correct in all respects for a particular regulatory application. These characteristics make evaluation of a regulatory model more complex than solely a comparison of measurement data with model results."*

A key aspect of using the groundwater model to evaluate historic groundwater flow conditions includes the assumptions about the location in the aquifer where historic pumping was placed. Understanding the amount and location of historical pumping is as important as evaluating the volume of groundwater flow into and out of the district, between aquifers within the district (as applicable), interactions with surface water (as applicable), recharge to the aquifer system (as applicable), and other metrics that describe the impacts of that pumping. In addition, assumptions regarding precipitation, recharge, and interaction with streams are specific to particular historic time periods.

Because the application of the groundwater models was designed to address regional scale questions, the results are most effective on a regional scale. The TWDB makes no warranties or representations related to the actual conditions of any aquifer at a particular location or at a particular time.

It is important for groundwater conservation districts to monitor groundwater pumping and overall conditions of the aquifer. Because of the limitations of the groundwater model and the assumptions in this analysis, it is important that the groundwater conservation districts work with the TWDB to refine this analysis in the future given the reality of how the aquifer responds to the actual amount and location of pumping now and in the future. Historic precipitation patterns also need to be placed in context as future climatic conditions, such as dry and wet year precipitation patterns, may differ and affect groundwater flow conditions.

REFERENCES:

Deeds, N. E., Yan, T., Singh, A., Jones, T. L., Kelley, V. A., Knox, P. R., and Young, S. C., 2010, Groundwater availability model for the Yegua-Jackson Aquifer: Final report prepared for the Texas Water Development Board by INTERA, Inc., 582 p., http://www.twdb.texas.gov/groundwater/models/gam/ygjk/YGJK_Model_Report.pdf.

Harbaugh, A. W., Banta, E. R., Hill, M. C., and McDonald, M. G., 2000, MODFLOW-2000, the U.S. Geological Survey modular ground-water model -- User guide to modularization concepts and the Ground-Water Flow Process: U.S. Geological Survey Open-File Report 00-92, 121 p.

Harbaugh, A. W., 2009, Zonebudget Version 3.01, A computer program for computing subregional water budgets for MODFLOW ground-water flow models, U.S. Geological Survey Groundwater Software.

Kelley, V.A., Ewing, J., Jones, T.L., Young, S.C., Deeds, N., and Hamlin, S., 2014, Updated Groundwater Availability Model of the Northern Trinity and Woodbine Aquifers – Final Model Report, 984 p., http://www.twdb.texas.gov/groundwater/models/gam/trnt_n/Final_NTGAM_Vol%20I%20Aug%202014_Report.pdf

National Research Council, 2007, Models in Environmental Regulatory Decision Making Committee on Models in the Regulatory Decision Process, National Academies Press, Washington D.C., 287 p., http://www.nap.edu/catalog.php?record_id=11972.

Niswonger, R.G., Panday, S., and Ibaraki, M., 2011, MODFLOW-NWT, a Newton formulation for MODFLOW-2005: USGS, Techniques and Methods 6-A37, 44 p.

Panday, S., Langevin, C.D., Niswonger, R.G., Ibaraki, M., and Hughes, J.D., 2015, MODFLOW-USG version 1.3.00: An unstructured grid version of MODFLOW for simulating groundwater flow and tightly coupled processes using a control volume finite-difference formulation: U.S. Geological Survey Software Release, 01 December 2015, 66p., http://dx.doi.org/10.5066/F7R20ZFJ

Texas Water Code, 2011, http://www.statutes.legis.state.tx.us/docs/WA/pdf/WA.36.pdf

Wade, S., 2017, GAM Run 16-014: Texas Water Development Board, GAM Run 16-014 Report, 20 p., https://www.twdb.texas.gov/groundwater/docs/GAMruns/GR16-014.pdf.

Young, S., Jigmond, M., Jones, T., Ewing, T., Panday, S., Harden, R. W, and Lupton, D., 2018, Final Report: Groundwater Availability Model for the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifers, 942 p.,

https://www.twdb.texas.gov/groundwater/models/gam/hpas/HPAS_GAM_Conceptual_Report.pdf

Young, S.C., and Kushnereit, R., 2020, GMA 12 Update to the Groundwater Availability Model for the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifers, Update to Improve Representation of the Transmissive Properties of the Simsboro Aquifer in the Vicinity of the Vista Ridge Well Field, 39 p., http://www.twdb.texas.gov/groundwater/models/gam/czwx_c/PE_Report_GMA12_final_october_2020_merge.pdf

GAM RUN 21-017 MAG:
MODELED AVAILABLE GROUNDWATER FOR THE AQUIFERS IN GROUNDWATER MANAGEMENT AREA 12

Jerry Shi, Ph.D., P.G. and Jevon Harding, P.G.
Texas Water Development Board
Groundwater Division
Groundwater Modeling Department
512-463-5076
November 1, 2022

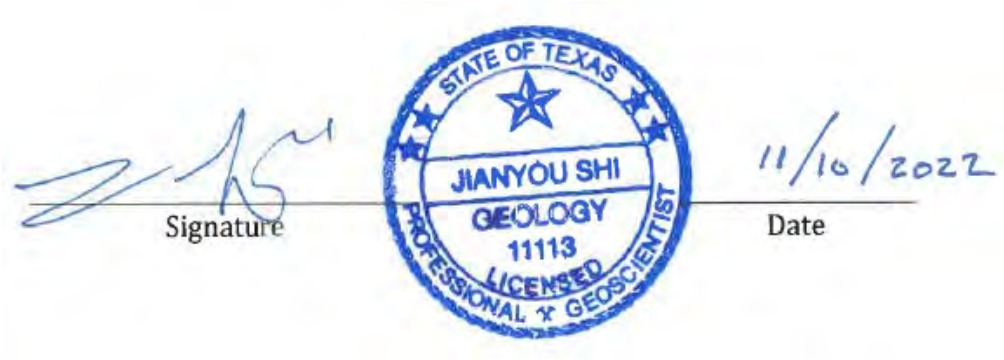
This page is intentionally left blank.

Geoscientist Seals

The following professional geoscientists contributed to this conceptual model report and associated data compilation and analyses:

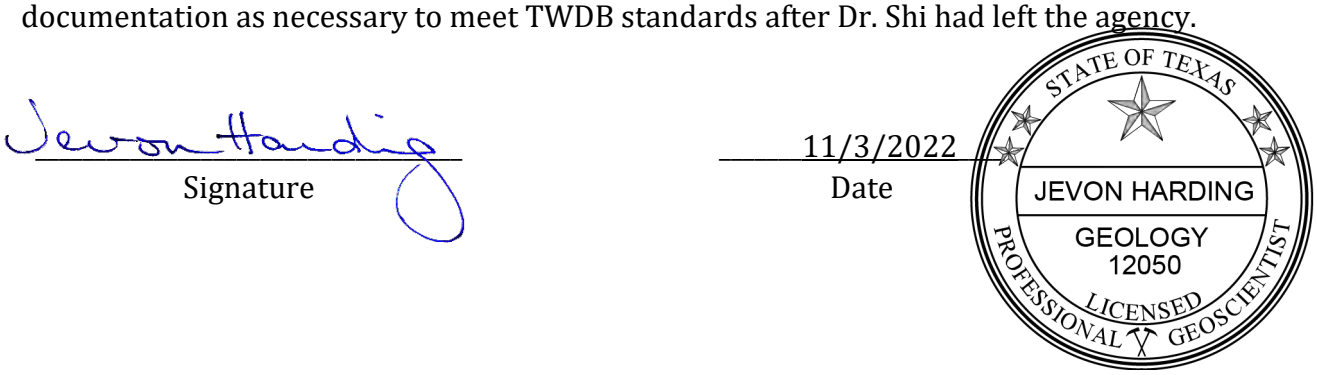
Jianyou (Jerry) Shi, Ph.D., P.G.

Dr. Shi was responsible for the calculations to verify the attainability of desired future conditions and the calculations of modeled available groundwater values. He was the primary author of the report.



Jevon Harding, P.G.

Ms. Harding was responsible for editing the report and adding additional documentation as necessary to meet TWDB standards after Dr. Shi had left the agency.



GAM RUN 21-017 MAG:
MODELED AVAILABLE GROUNDWATER FOR THE AQUIFERS IN GROUNDWATER MANAGEMENT AREA 12

Jerry Shi, Ph.D., P.G. and Jevon Harding, P.G.
Texas Water Development Board
Groundwater Division
Groundwater Modeling Department
512-463-5076
November 1, 2022

EXECUTIVE SUMMARY:

Groundwater Management Area 12 submitted a desired future conditions explanatory report and associated predictive groundwater availability model files to the Texas Water Development Board (TWDB) on February 2, 2022. The TWDB Executive Administrator determined that the explanatory report and other materials submitted to the TWDB were administratively complete on July 1, 2022.

The TWDB calculated modeled available groundwater in Groundwater Management Area 12 for the Sparta, Queen City, Yegua-Jackson, and Brazos River Alluvium aquifers, as well as for the following formations of the Carrizo-Wilcox Aquifer: Carrizo, Calvert Bluff (upper Wilcox), Simsboro (middle Wilcox), and Hooper (lower Wilcox) formations.

Modeled available groundwater is summarized by decade, county, and groundwater conservation district (Tables 4 through 11) and by county, regional water planning area, and river basin for use in the regional water planning process (Tables 12 through 19). Modeled available groundwater for each aquifer in Groundwater Management Area 12 is summarized below.

Carrizo-Wilcox, Queen City, and Sparta aquifers
Sparta Aquifer: Modeled available groundwater ranges from approximately 11,530 to 26,210 acre-feet per year during the period from 2020 to 2070. Values are summarized by groundwater conservation district and county (Table 4) and by county, regional water planning area, and river basin (Table 12).
Queen City Aquifer: Modeled available groundwater ranges from approximately 5,650 to 15,310 acre-feet per year during the period from 2020 to 2070. Values are summarized by

groundwater conservation district and county (Table 5) and by county, regional water planning area, and river basin (Table 13).
Carrizo-Wilcox Aquifer (Carrizo Formation): Modeled available groundwater ranges from approximately 27,460 to 52,370 acre-feet per year during the period from 2020 to 2070. Values are summarized by groundwater conservation district and county (Table 6) and by county, regional water planning area, and river basin (Table 14).
Carrizo-Wilcox Aquifer (Calvert Bluff Formation): Modeled available groundwater ranges from approximately 7,160 to 16,450 acre-feet per year during the period from 2020 to 2070. Values are summarized by groundwater conservation district and county (Table 7) and by county, regional water planning area, and river basin (Table 15).
Carrizo-Wilcox Aquifer (Simsboro Formation): Modeled available groundwater ranges from approximately 129,990 to 314,460 acre-feet per year during the period from 2020 to 2070. Values are summarized by groundwater conservation district and county (Table 8) and by county, regional water planning area, and river basin (Table 16).
Carrizo-Wilcox Aquifer (Hooper Formation): Modeled available groundwater ranges from approximately 7,420 to 14,440 acre-feet per year during the period from 2020 to 2070. Values are summarized by groundwater conservation district and county (Table 9) and by county, regional water planning area, and river basin (Table 17).

Yegua-Jackson Aquifer
Modeled available groundwater for the Yegua-Jackson Aquifer ranges from approximately 17,070 to 25,860 acre-feet per year during the period from 2020 to 2070. Values are summarized by groundwater conservation district and county (Table 10) and by county, regional water planning area, and river basin (Table 18).

Brazos River Alluvium Aquifer
Modeled available groundwater for the Brazos River Alluvium Aquifer ranges from approximately 194,220 to 197,360 acre-feet per year during the period from 2020 to 2070. Values are summarized by county and groundwater conservation districts (Table 11) and by county, regional water planning area, and river basin (Table 19).

REQUESTOR:

Mr. Gary Westbrook, Groundwater Management Area 12 Coordinator.

DESCRIPTION OF REQUEST:

The groundwater conservation districts (Figure 1) in Groundwater Management Area 12 adopted desired future conditions for the Carrizo-Wilcox, Queen City, Sparta, Yegua-Jackson, and Brazos River Alluvium aquifers on November 30, 2021.

Carrizo-Wilcox, Queen City, and Sparta Aquifers

The desired future conditions for the Carrizo-Wilcox, Queen City, and Sparta aquifers, described in the resolution adopted by Groundwater Management Area 12 on November 30, 2021, are listed in Table 1. The desired future conditions are the average water level drawdowns in feet measured from January 2011 through December 2070.

TABLE 1. ADOPTED DESIRED FUTURE CONDITIONS FOR THE CARRIZO-WILCOX, QUEEN CITY, AND SPARTA AQUIFERS IN GROUNDWATER MANAGEMENT AREA 12.

Groundwater Conservation District (GCD) or County	Sparta Aquifer	Queen City Aquifer	Carrizo-Wilcox Aquifer			
			Carrizo Formation	Wilcox (Calvert Bluff Formation)	Wilcox (Simsboro Formation)	Wilcox (Hooper Formation)
Brazos Valley GCD*	53	44	84	111	262	167
Fayette County GCD**	43	73	140	NR	NR	NR
Lost Pines GCD	22	28	134	132	240	138
Mid-East Texas GCD	25	20	48	57	76	69
Post Oak Savannah GCD	32	30	146	156	278	178
Falls County	NP	NP	NP	NP	7	3
Limestone County	NP	NP	NP	2	3	3
Navarro County	NP	NP	NP	0	1	0
Williamson County	NP	NP	NP	NR	31	24

** Brazos Valley GCD desired future conditions are for 2000 through 2070*
***Fayette County GCD desired future conditions are for all of Fayette County*
NR: non-relevant for the purposes of joint planning; NP: not present

Yegua-Jackson Aquifer

The desired future conditions for the Yegua-Jackson Aquifer, described in the resolution adopted by Groundwater Management Area 12 on November 30, 2021, are listed in Table 2. The desired future conditions are the average water level drawdowns in feet measured from January 2010 through December 2069.

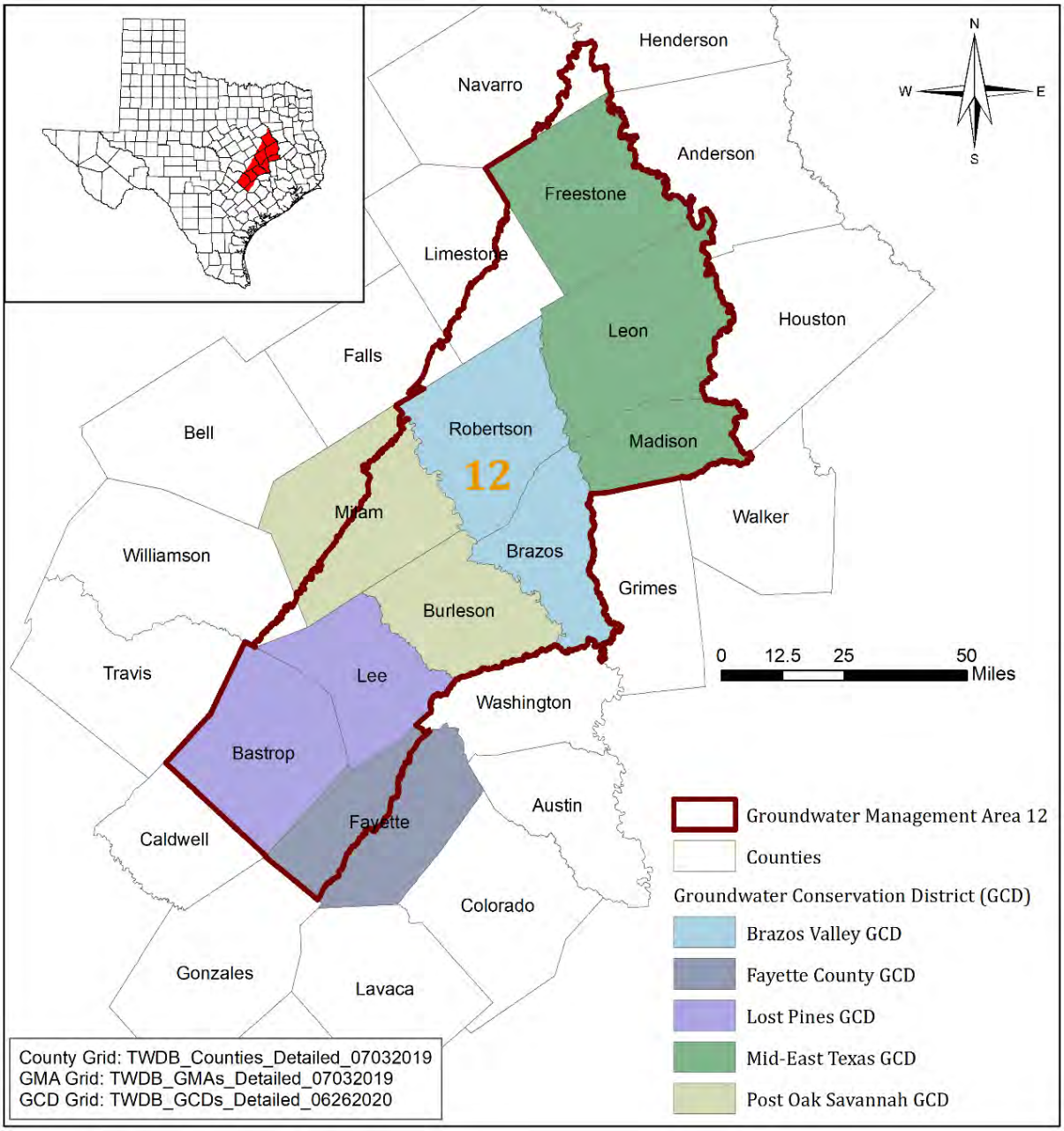


Figure 1. GROUNDWATER CONSERVATION DISTRITS IN GROUNDWATER MANAGEMENT AREA 12.

TABLE 2. ADOPTED DESIRED FUTURE CONDITIONS FOR THE YEGUA-JACKSON AQUIFER IN GROUNDWATER MANAGEMENT AREA 12.

Groundwater Conservation District (GCD)	Desired Future Condition
Brazos Valley GCD	67
Fayette County GCD*	81
Lost Pines GCD	NR
Mid-East Texas GCD	8
Post Oak Savannah GCD	61

** Fayette County GCD desired future conditions are for all of Fayette County*
NR: non-relevant.

Brazos River Alluvium Aquifer

The desired future conditions for the Brazos River Alluvium Aquifer, described in the resolution adopted by Groundwater Management Area 12 on November 30, 2021, are presented in Table 3. The desired future conditions for Brazos Valley Groundwater Conservation District are defined in terms of an average percent saturation and the desired future conditions for Post Oak Savannah Groundwater Conservation District are defined in terms of a decrease in the average saturated thickness.

TABLE 3 ADOPTED DESIRED FUTURE CONDITIONS FOR THE BRAZOS RIVER ALLUVIUM AQUIFER IN GROUNDWATER MANAGEMENT AREA 12.

Groundwater Conservation District (GCD)	County	Desired Future Condition
Brazos Valley GCD	Brazos and Robertson	North of State Highway 21: Percent saturation shall average at least 30% of total well depth from January 2013 to December 2069. South of State Highway 21: Percent saturation shall average at least 40% of total well depth from January 2013 to December 2069.
Post Oak Savannah GCD	Burleson	A decrease in 6 feet in the average saturated thickness over the period from January 2010 to December 2069.
	Milam	A decrease of 5 feet in average saturated thickness over the period from January 2010 to December 2069.

All desired future conditions in Groundwater Management Area 12 are based on modeled extent, which may contain portions of an aquifer that do not fall within the official TWDB aquifer boundary. In addition, the desired future conditions for Fayette County Groundwater Conservation District are based on the entire county, although only part of the district is within Groundwater Management Area 12.

Groundwater Management Area 12 provided the TWDB with the desired future conditions, associated predictive groundwater availability model files, and supporting documents on February 2, 2022 (Daniel B. Stephens & Associates and others, 2022).

TWDB staff reviewed the materials submitted by Groundwater Management Area 12 and requested clarifications on several items on April 21, 2022. On May 6, 2022, Groundwater Management Area 12 met to discuss the TWDB clarifications request and reviewed and approved two response documents titled "Calvert Bluff Aquifer Memo-Draft-20220503" and "Memo on TWDB Items-Draft-2022050". The response is summarized in Appendix A.

METHODS:

Carrizo-Wilcox, Queen City, and Sparta aquifers

The desired future conditions for the Carrizo-Wilcox, Queen City, and Sparta aquifers in Groundwater Management Area 12 are based on the predictive model files for "Scenario 19" submitted with the desired future conditions explanatory report (Daniel B. Stephens & Associates and others, 2022). This predictive simulation was constructed as an extension of the calibrated groundwater availability model (Version 3.02) for the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox aquifers (INTERA Incorporated and others, 2020).

The desired future conditions for each aquifer by groundwater conservation district or county are expressed as average drawdown between 2010 and 2070. The modeled available groundwater values were determined by extracting pumping rates by decade from the MODFLOW cell-by-cell budget files using custom Fortran scripts developed by the TWDB.

Yegua-Jackson Aquifer

The desired future conditions for the Yegua-Jackson Aquifer in Groundwater Management Area 12 are based on the predictive model files for "Scenario 2 (PS2)" submitted with the desired future conditions explanatory report (Daniel B. Stephens & Associates and others, 2022). Stress periods 1 through 27 in this predictive model represent the original calibrated groundwater availability model (Version 1.01; Deeds and others, 2010) and stress periods 28 through 100 represent the predictive simulation for the desired future conditions.

The desired future conditions for the Yegua-Jackson Aquifer are expressed as average drawdown between 2009 and 2069. The modeled available groundwater values were determined by extracting pumping rates by decade from the MODFLOW cell-by-cell budget files using custom Fortran scripts developed by the TWDB.

Brazos River Alluvium Aquifer

The desired future conditions for the Brazos River Alluvium Aquifer in Groundwater Management Area 12 are based on the predictive model files for "Scenario 2 (PS2)" submitted with the explanatory report (Daniel B. Stephens & Associates and others, 2022).

Stress periods 1 through 427 in this predictive model represent the original calibrated groundwater availability model (Version 1.01; Ewing and Jigmond, 2016) and stress periods 428 through 485 represent the predictive simulation for the desired future conditions.

BRAZOS VALLEY GROUNDWATER CONSERVATION DISTRICT

The desired future conditions for the Brazos Valley Groundwater Conservation District are expressed as percent saturation of total well depth at the end of 2069. The modeled available groundwater values were determined by extracting pumping rates by decade from the MODFLOW cell-by-cell budget files using custom Fortran scripts developed by the TWDB.

POST OAK SAVANNAH GROUNDWATER CONSERVATION DISTRICT

The desired future conditions for the Post Oak Savannah Groundwater Conservation District are expressed as a decrease in saturated thickness between 2009 and 2069. The modeled available groundwater values were determined by extracting pumping rates by decade from the MODFLOW cell-by-cell budget files using custom Fortran scripts developed by the TWDB.

MODELED AVAILABLE GROUNDWATER AND PERMITTING

As defined in Chapter 36 of the Texas Water Code (2011), "modeled available groundwater" is the estimated average amount of water that may be produced annually to achieve a desired future condition. Groundwater conservation districts are required to consider modeled available groundwater, along with several other factors, when issuing permits in order to manage groundwater production to achieve the desired future condition(s). The other factors districts must consider include annual precipitation and production patterns, the estimated amount of pumping exempt from permitting, existing permits, and a reasonable estimate of actual groundwater production under existing permits.

PARAMETERS AND ASSUMPTIONS:

The parameters and assumptions for the groundwater availability simulations are described below:

Carrizo-Wilcox, Queen City, and Sparta aquifers

- Version 3.02 of the updated groundwater availability model for Central Portion of the Sparta, Queen City, and Carrizo-Wilcox aquifers was the base model for this analysis. See INTERA Incorporated and others (2020) for the assumptions and

limitations of the historical calibrated model. Groundwater Management Area 12 constructed a predictive model simulation to extend the base model to 2070 for planning purposes. See Groundwater Management Area 12 explanatory report (Daniel B. Stephens & Associates and others, 2022) for the assumptions of this predictive model simulation.

- The predictive model was run with MODFLOW-USG (Panday and others, 2015).
- The model has ten layers that represent alluvium (Layer 1), the surficial layer of all aquifers (Layer 2), the Sparta Aquifer (Layer 3), the Weches confining unit (Layer 4), the Queen City Aquifer (Layer 5), the Reklaw confining unit (Layer 6), and the subunits that comprise the Carrizo-Wilcox Aquifer (Layers 7 to 10).
- The most recent TWDB model grid file, dated October 9, 2020 (*czwx_v3_01_MFUSG_ModelGrid100920.csv*), was used to assign model cells to counties, groundwater management areas, groundwater conservation districts, river basins, and regional water planning areas. This grid was also used to assign model grid cells to aquifer layers.
- Drawdown was calculated as the difference in modeled water levels between the baseline date of January 1, 2011 (initial water levels) and the final date of December 31, 2070 (stress period 60) using an area-weighted averaging methodology.
- During the predictive simulation model run, some model cells went dry, meaning the modeled water level fell below the bottom of the cell. Pumping in dry cells was excluded from the modeled available groundwater calculations.
- The drawdown averages and modeled available groundwater values were calculated using the modeled extent of aquifers, rather than the official TWDB boundaries for the Carrizo-Wilcox, Queen City, and Sparta Aquifers. Note that the TWDB does not maintain official boundaries for the Carrizo-Wilcox subunits.
- The drawdown calculations and modeled available drawdown values for Fayette County Groundwater Conservation District was based on all of Fayette County, including areas in both Groundwater Management Areas 12 and 15.
- Estimates of modeled available groundwater from the model simulation were rounded to whole numbers.

Yegua-Jackson Aquifer

- Version 1.01 of the updated groundwater availability model for the Yegua-Jackson Aquifer was the base model for this analysis. See Deeds and others (2010) for the assumptions and limitations of the historical calibrated model. Groundwater Management Area 12 constructed a predictive model simulation to extend the base

model to 2070 for planning purposes. See Groundwater Management Area 12 explanatory report (Daniel B. Stephens & Associates and others, 2022) for the assumptions of this predictive model simulation.

- The predictive model was run with MODFLOW 2000 (Harbaugh and others, 2000).
- The model has five layers that represent the Yegua-Jackson Aquifer and younger overlying units—the Catahoula Formation (Layer 1), the upper portion of the Jackson Group (Layer 2), the lower portion of the Jackson Group (Layer 3), the upper portion of the Yegua Group (Layer 4), and the lower portion of the Yegua Group (Layer 5).
- The most recent TWDB model grid file, dated July 9, 2020 (*ygjk_07092020.csv*), was used to assign model cells to counties, groundwater management areas, groundwater conservation districts, river basins, and regional water planning areas. This grid was also used to assign model grid cells to aquifer layers.
- Although the original groundwater availability model was only calibrated to 1997, a TWDB analysis (Oliver, 2010) verified that the model satisfactorily matched measured water levels for the period from 1997 to 2009. For this reason, the TWDB considers it acceptable to use the January 2010 as the reference date for drawdown calculations.
- Drawdown was calculated as the difference in modeled water levels between the baseline date of January 1, 2010 (stress period 39) and the final date of December 31, 2069 (stress period 99).
- During the predictive simulation model run, some model cells went dry, meaning the modeled water level fell below the bottom of the cell. Pumping in dry cells was excluded from the modeled available groundwater calculations.
- The drawdown averages and modeled available groundwater values were calculated using the modeled extent of aquifers, rather than the official TWDB boundaries for the Yegua-Jackson Aquifer.
- The drawdown calculations and modeled available drawdown values for Fayette County Groundwater Conservation District was based on all of Fayette County including areas in both Groundwater Management Areas 12 and 15.
- Estimates of modeled available groundwater from the model simulation were rounded to whole numbers.

Brazos River Alluvium Aquifer

- Version 1.01 of the updated groundwater availability model for the Brazos River Alluvium Aquifer was the base model for this analysis. See Ewing and Jigmond

(2016) for the assumptions and limitations of the historical calibrated model. Groundwater Management Area 12 constructed a predictive model simulation to extend the base model to 2070 for planning purposes. See Groundwater Management Area 12 explanatory report (Daniel B. Stephens & Associates and others, 2022) for the assumptions of this predictive model simulation.

- The predictive model was run with MODFLOW-USG beta (development) version (Panday and others, 2013).
- The model has three layers that represent the Brazos River Alluvium Aquifer (Layers 1 and 2) and the surficial portions of the underlying Carrizo-Wilcox, Queen City, Sparta, Yegua-Jackson, and Gulf Coast aquifers as well as various geologic units of the Cretaceous System (Layer 3).
- The most recent TWDB model grid file, dated July 10, 2020 (*bra_grid_poly071020.csv*), was used to assign model cells to counties, groundwater management areas, groundwater conservation districts, river basins, and regional water planning areas.
- In Brazos Valley Groundwater Conservation District, the calculation was for the average percent saturation on December 31, 2069 (stress period 484). In Post Oak Savannah Groundwater Conservation District, the calculation was for the decrease in average saturated thickness from January 1, 2013 (stress period 391) to December 31, 2069 (stress period 484).
- The drawdown averages and modeled available groundwater values were calculated using the modeled extent of the aquifer, which is coincident with the official TWDB boundary for the Brazos River Alluvium Aquifer.
- Estimates of modeled available groundwater from the model simulation were rounded to whole numbers.

RESULTS:

The modeled available groundwater values that achieve the desired future conditions adopted by Groundwater Management Area 12 are described below:

Carrizo-Wilcox, Queen City, and Sparta Aquifers

Sparta Aquifer: The modeled available groundwater ranges from approximately 11,530 to 26,210 acre-feet per year during the period from 2020 to 2070 (Tables 4 and 12).
Queen City Aquifer: The modeled available groundwater ranges from approximately 5,650 to 15,310 acre-feet per year during the period from 2020 to 2070 (Tables 5 and 13).

Carrizo-Wilcox Aquifer (Carrizo Formation): The modeled available groundwater ranges from approximately 27,460 to 52,370 acre-feet per year during the period from 2020 to 2070 (Tables 6 and 14).
Carrizo-Wilcox Aquifer (Calvert Bluff Formation): The modeled available groundwater ranges from approximately 7,160 to 16,450 acre-feet per year during the period from 2020 to 2070 (Tables 7 and 15).
Carrizo-Wilcox Aquifer (Simsboro Formation): The modeled available groundwater ranges from approximately 129,990 to 314,460 acre-feet per year during the period from 2020 to 2070 (Tables 8 and 16).
Carrizo-Wilcox Aquifer (Hooper Formation): The modeled available groundwater ranges from approximately 7,420 to 14,440 acre-feet per year during the period from 2020 to 2070 (Tables 9 and 17).

Yegua-Jackson Aquifer
The modeled available groundwater for the Yegua-Jackson Aquifer ranges from approximately 17,070 to 25,860 acre-feet per year during the period from 2020 to 2070 (Tables 10 and 18).

Brazos River Alluvium Aquifer
The modeled available groundwater for the Brazos River Alluvium Aquifer ranges from approximately 194,220 to 197,360 acre-feet per year during the period from 2020 to 2070 (Tables 11 and 19).

TABLE 4 MODELED AVAILABLE GROUNDWATER FOR THE SPARTA AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District (GCD)	County	Aquifer	2020	2030	2040	2050	2060	2070
Brazos Valley GCD	Brazos	Sparta	4,483	6,014	7,545	9,076	10,607	12,138
	Robertson	Sparta	167	338	509	680	851	1,022
Brazos Valley GCD Total		**Sparta**	**4,650**	**6,352**	**8,054**	**9,756**	**11,458**	**13,160**
Fayette County GCD	Fayette	Sparta	2,765	2,779	2,783	2,796	2,828	2,853
Fayette County GCD Total*		**Sparta**	**2,765**	**2,779**	**2,783**	**2,796**	**2,828**	**2,853**
Lost Pines GCD	Bastrop	Sparta	368	437	529	644	788	972
	Lee	Sparta	674	809	975	1,181	1,434	1,751
Lost Pines GCD Total		**Sparta**	**1,042**	**1,246**	**1,504**	**1,825**	**2,222**	**2,723**
Mid-East Texas GCD	Leon	Sparta	249	248	249	251	253	254
	Madison	Sparta	1,589	1,900	2,211	2,523	2,834	3,115
Mid-East Texas GCD Total		**Sparta**	**1,838**	**2,148**	**2,460**	**2,774**	**3,087**	**3,369**
Post Oak Savannah GCD	Burleson	Sparta	1,237	2,840	3,131	3,437	3,760	4,105
Post Oak Savannah GCD Total		**Sparta**	**1,237**	**2,840**	**3,131**	**3,437**	**3,760**	**4,105**
GMA 12 Total		**Sparta**	**11,532**	**15,365**	**17,932**	**20,588**	**23,355**	**26,210**

** Fayette County GCD values are for all of Fayette County.*

TABLE 5 MODELED AVAILABLE GROUNDWATER FOR THE QUEEN CITY AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District (GCD)	County	Aquifer	2020	2030	2040	2050	2060	2070
Brazos Valley GCD	Brazos	Queen City	133	245	357	469	582	694
	Robertson	Queen City	36	144	252	359	467	575
Brazos Valley GCD Total		**Queen City**	**169**	**389**	**609**	**828**	**1,049**	**1,269**
Fayette County GCD	Fayette	Queen City	2,694	2,715	2,737	2,761	2,786	2,813
Fayette County GCD Total*		**Queen City**	**2,694**	**2,715**	**2,737**	**2,761**	**2,786**	**2,813**
Lost Pines GCD	Bastrop	Queen City	469	519	573	632	698	771
	Lee	Queen City	640	700	767	839	917	1,000
Lost Pines GCD Total		**Queen City**	**1,109**	**1,219**	**1,340**	**1,471**	**1,615**	**1,771**
Mid-East Texas GCD	Freestone	Queen City	77	77	77	77	77	77
	Leon	Queen City	871	919	967	1,014	1,063	1,106
	Madison	Queen City	221	264	308	351	394	433
Mid-East Texas GCD Total		**Queen City**	**1,169**	**1,260**	**1,352**	**1,442**	**1,534**	**1,616**
Post Oak Savannah GCD	Burleson	Queen City	366	3,090	3,467	3,883	4,344	4,863
Post Oak Savannah GCD	Milam	Queen City	147	1,348	1,643	2,003	2,441	2,976
Post Oak Savannah GCD Total		**Queen City**	**513**	**4,438**	**5,110**	**5,886**	**6,785**	**7,839**
GMA 12 Total		**Queen City**	**5,654**	**10,021**	**11,148**	**12,388**	**13,769**	**15,308**

** Fayette County GCD values are for all of Fayette County.*

TABLE 6 MODELED AVAILABLE GROUNDWATER FOR THE CARRIZO FORMATION OF THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District (GCD)	County	Aquifer	2020	2030	2040	2050	2060	2070
Brazos Valley GCD	Brazos	Carrizo	864	1,444	2,023	2,603	3,183	3,763
	Robertson	Carrizo	81	412	743	1,074	1,405	1,736
Brazos Valley GCD Total		**Carrizo**	**945**	**1,856**	**2,766**	**3,677**	**4,588**	**5,499**
Fayette County GCD	Fayette	Carrizo	5,155	5,155	5,155	5,155	5,155	5,155
Fayette County GCD Total*		**Carrizo**	**5,155**	**5,155**	**5,155**	**5,155**	**5,155**	**5,155**
Lost Pines GCD	Bastrop	Carrizo	2,591	3,451	4,416	5,533	6,873	8,534
	Lee	Carrizo	2,125	2,452	2,821	3,255	3,783	4,446
Lost Pines GCD Total		**Carrizo**	**4,716**	**5,903**	**7,237**	**8,788**	**10,656**	**12,980**
Mid-East Texas GCD	Freestone	Carrizo	79	79	79	79	79	79
	Leon	Carrizo	5,356	6,396	7,435	8,474	9,514	10,450
	Madison	Carrizo	0	0	0	0	0	0
Mid-East Texas GCD Total		**Carrizo**	**5,435**	**6,475**	**7,514**	**8,553**	**9,593**	**10,529**
Post Oak Savannah GCD	Burleson	Carrizo	10,669	16,656	16,806	16,956	17,108	17,261
Post Oak Savannah GCD	Milam	Carrizo	540	607	680	759	847	945
Post Oak Savannah GCD Total		**Carrizo**	**11,209**	**17,263**	**17,486**	**17,715**	**17,955**	**18,206**
GMA 12 Total		**Carrizo**	**27,460**	**36,652**	**40,158**	**43,888**	**47,947**	**52,369**

** Fayette County GCD values are for all of Fayette County.*

TABLE 7 MODELED AVAILABLE GROUNDWATER FOR THE CALVERT BLUFF FORMATION OF THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District (GCD)	County	Aquifer	2020	2030	2040	2050	2060	2070
Brazos Valley GCD	Brazos	Calvert Bluff	0	0	0	0	0	0
	Robertson	Calvert Bluff	252	546	841	1,136	1,430	1,725
Brazos Valley GCD Total		**Calvert Bluff**	**252**	**546**	**841**	**1,136**	**1,430**	**1,725**
Lost Pines GCD	Bastrop	Calvert Bluff	1,837	2,419	3,010	3,609	4,217	4,834
	Lee	Calvert Bluff	318	395	475	557	642	729
Lost Pines GCD Total		**Calvert Bluff**	**2,155**	**2,814**	**3,485**	**4,166**	**4,859**	**5,563**
Mid-East Texas GCD	Freestone	Calvert Bluff	590	613	637	661	685	706
	Leon	Calvert Bluff	1,832	2,176	2,519	2,863	3,206	3,515
	Madison	Calvert Bluff	0	0	0	0	0	0
Mid-East Texas GCD Total		**Calvert Bluff**	**2,422**	**2,789**	**3,156**	**3,524**	**3,891**	**4,221**
Post Oak Savannah GCD	Burleson	Calvert Bluff	117	129	140	152	163	174
	Milam	Calvert Bluff	2,062	2,811	3,162	3,558	4,012	4,532
Post Oak Savannah GCD Total		**Calvert Bluff**	**2,179**	**2,940**	**3,302**	**3,710**	**4,175**	**4,706**
No District	Limestone	Calvert Bluff	140	153	168	184	202	222
	Navarro	Calvert Bluff	7	7	7	8	8	9
No District Total		**Calvert Bluff**	**147**	**160**	**175**	**192**	**210**	**231**
GMA 12 Total		**Calvert Bluff**	**7,155**	**9,249**	**10,959**	**12,728**	**14,565**	**16,446**

** Fayette County GCD values are for all of Fayette County.*

TABLE 8 MODELED AVAILABLE GROUNDWATER FOR THE SIMSBORO FORMATION OF THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District (GCD)	County	Aquifer	2020	2030	2040	2050	2060	2070
Brazos Valley GCD	Brazos	Simsboro	37,282	42,709	48,137	53,565	58,993	64,421
	Robertson	Simsboro	38,219	47,140	56,061	64,982	73,903	82,824
Brazos Valley GCD Total		**Simsboro**	**75,501**	**89,849**	**104,198**	**118,547**	**132,896**	**147,245**
Lost Pines GCD	Bastrop	Simsboro	16,424	38,836	41,484	43,946	46,429	48,977
	Lee	Simsboro	3,940	26,406	27,620	28,836	30,052	30,968
Lost Pines GCD Total		**Simsboro**	**20,364**	**65,242**	**69,104**	**72,782**	**76,481**	**79,945**
Mid-East Texas GCD	Freestone	Simsboro	2,843	3,371	3,900	4,429	4,958	5,434
	Leon	Simsboro	733	876	1,020	1,163	1,307	1,436
	Madison	Simsboro	0	0	0	0	0	0
Mid-East Texas GCD Total		**Simsboro**	**3,576**	**4,247**	**4,920**	**5,592**	**6,265**	**6,870**
Post Oak Savannah GCD	Burleson	Simsboro	27,267	39,656	48,662	52,267	52,273	52,278
	Milam	Simsboro	2,686	25,883	26,170	26,475	26,798	27,144
Post Oak Savannah GCD Total		**Simsboro**	**29,953**	**65,539**	**74,832**	**78,742**	**79,071**	**79,422**
No District	Falls	Simsboro	10	11	12	14	15	17
	Limestone	Simsboro	555	612	676	746	824	910
	Navarro	Simsboro	11	12	13	14	15	16
	Williamson	Simsboro	19	21	23	25	28	31
No District Total		**Simsboro**	**595**	**656**	**724**	**799**	**882**	**974**
GMA 12 Total		**Simsboro**	**129,989**	**225,533**	**253,778**	**276,462**	**295,595**	**314,456**

** Fayette County GCD values are for all of Fayette County.*

TABLE 9 MODELED AVAILABLE GROUNDWATER FOR THE HOOPER FORMATION OF THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District (GCD)	County	Aquifer	2020	2030	2040	2050	2060	2070
Brazos Valley GCD	Brazos	Hooper	0	0	0	0	0	0
	Robertson	Hooper	798	1,066	1,334	1,603	1,871	2,139
Brazos Valley GCD Total		**Hooper**	**798**	**1,066**	**1,334**	**1,603**	**1,871**	**2,139**
Lost Pines GCD	Bastrop	Hooper	1,664	1,957	2,259	2,572	2,897	3,234
	Lee	Hooper	27	30	32	35	40	44
Lost Pines GCD Total		**Hooper**	**1,691**	**1,987**	**2,291**	**2,607**	**2,937**	**3,278**
Mid-East Texas GCD	Freestone	Hooper	2,642	3,140	3,639	4,138	4,637	5,085
	Leon	Hooper	85	102	118	135	152	167
	Madison	Hooper	0	0	0	0	0	0
Mid-East Texas GCD Total		**Hooper**	**2,727**	**3,242**	**3,757**	**4,273**	**4,789**	**5,252**
Post Oak Savannah GCD	Burleson	Hooper	25	27	30	32	35	37
	Milam	Hooper	1,781	1,999	2,234	2,491	2,774	3,089
Post Oak Savannah GCD Total		**Hooper**	**1,806**	**2,026**	**2,264**	**2,523**	**2,809**	**3,126**
No District	Falls	Hooper	31	35	38	42	47	52
	Limestone	Hooper	176	195	215	238	262	290
	Navarro	Hooper	79	86	94	103	113	124
	Williamson	Hooper	108	119	132	146	161	177
No District Total		**Hooper**	**394**	**435**	**479**	**529**	**583**	**643**
GMA 12 Total		**Hooper**	**7,416**	**8,756**	**10,125**	**11,535**	**12,989**	**14,438**

** Fayette County GCD values are for all of Fayette County.*

TABLE 10 MODELED AVAILABLE GROUNDWATER FOR THE YEGUA-JACKSON AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District (GCD)	County	Aquifer	2020	2030	2040	2050	2060	2070
Brazos Valley GCD	Brazos	Yegua-Jackson	4,207	6,270	7,092	7,091	7,091	7,091
Brazos Valley GCD Total		**Yegua-Jackson**	**4,207**	**6,270**	**7,092**	**7,091**	**7,091**	**7,091**
Fayette County GCD	Fayette	Yegua-Jackson	9,984	9,984	9,984	9,983	9,983	9,983
Fayette County GCD Total*		**Yegua-Jackson**	**9,984**	**9,984**	**9,984**	**9,983**	**9,983**	**9,983**
Mid-East Texas GCD	Leon	Yegua-Jackson	0	0	0	0	0	0
	Madison	Yegua-Jackson	1,122	1,122	1,122	1,122	1,122	1,122
Mid-East Texas GCD Total		**Yegua-Jackson**	**1,122**	**1,122**	**1,122**	**1,122**	**1,122**	**1,122**
Post Oak Savannah GCD	Burleson	Yegua-Jackson	1,094	5,315	7,004	7,004	7,000	6,058
Post Oak Savannah GCD Total		**Yegua-Jackson**	**1,094**	**5,315**	**7,004**	**7,004**	**7,000**	**6,058**
GMA 12 Total		**Yegua-Jackson**	**16,407**	**22,691**	**25,202**	**25,200**	**25,196**	**24,254**

** Fayette County GCD values are for all of Fayette County.*

TABLE 11 **MODELED AVAILABLE GROUNDWATER FOR BRAZOS RIVER ALLUVIUM AQUIFER IN GROUNDWATER MANAGEMENT AREA 12 SUMMARIZED BY COUNTY FOR EACH DECADE BETWEEN 2020 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR. GCD = GROUNDWATER CONSERVATION DISTRICT.**

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070
Brazos Valley GCD	Brazos	Brazos River Alluvium	77,816	76,978	76,393	76,195	76,100	76,039
	Robertson	Brazos River Alluvium	55,907	55,424	55,157	54,839	54,723	54,618
Post Oak Savannah GCD	Burleson	Brazos River Alluvium	32,222	32,207	32,207	32,206	32,206	32,206
	Milam	Brazos River Alluvium	31,412	31,375	31,366	31,362	31,359	31,358
Total			**197,357**	**195,984**	**195,123**	**194,602**	**194,388**	**194,221**

TABLE 12 **MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE SPARTA AQUIFER IN GROUNDWATER MANAGEMENT AREA 12. VALUES ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WAER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070
Bastrop	K	Brazos	Sparta	60	71	86	103	125
		Colorado	Sparta	370	450	547	672	830
		Guadalupe	Sparta	7	8	11	13	17
Brazos	G	Brazos	Sparta	6,014	7,545	9,076	10,607	12,138
Burleson	G	Brazos	Sparta	2,840	3,131	3,437	3,760	4,105
Fayette*	K	Colorado	Sparta	1,618	1,617	1,617	1,640	1,657
		Guadalupe	Sparta	1,161	1,166	1,179	1,188	1,196
		Lavaca	Sparta	0	0	0	0	0
Lee	G	Brazos	Sparta	694	833	1,003	1,212	1,472
		Colorado	Sparta	115	142	178	222	279
Leon	H	Brazos	Sparta	97	97	97	97	97
		Trinity	Sparta	151	152	154	156	157
Madison	H	Brazos	Sparta	238	277	316	355	390
		Trinity	Sparta	1,662	1,934	2,207	2,479	2,725
Robertson	G	Brazos	Sparta	338	509	680	851	1,022
GMA 12 Total			**Sparta**	**15,365**	**17,932**	**20,588**	**23,355**	**26,210**

** Fayette County GCD values are for all of Fayette County.*

TABLE 13 **MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE QUEEN CITY AQUIFER IN GROUNDWATER MANAGEMENT AREA 12. VALUES ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070
Bastrop	K	Brazos	Queen City	45	49	54	60	66
		Colorado	Queen City	410	453	500	552	610
		Guadalupe	Queen City	64	71	78	86	95
Brazos	G	Brazos	Queen City	245	357	469	582	694
Burleson	G	Brazos	Queen City	3,090	3,467	3,883	4,344	4,863
Fayette*	K	Colorado	Queen City	1,879	1,891	1,905	1,919	1,935
		Guadalupe	Queen City	836	846	856	867	878
		Lavaca	Queen City	0	0	0	0	0
Freestone	C	Trinity	Queen City	77	77	77	77	77
Lee	G	Brazos	Queen City	601	656	717	783	854
		Colorado	Queen City	99	111	122	134	146
Leon	H	Brazos	Queen City	408	451	493	536	575
		Trinity	Queen City	511	516	521	527	531
Madison	H	Brazos	Queen City	132	154	175	197	216
		Trinity	Queen City	132	154	176	197	217
Milam	G	Brazos	Queen City	1,348	1,643	2,003	2,441	2,976
Robertson	G	Brazos	Queen City	144	252	359	467	575
GMA 12 Total			**Queen City**	**10,021**	**11,148**	**12,388**	**13,769**	**15,308**

** Fayette County GCD values are for all of Fayette County.*

TABLE 14 **MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE CARRIZO FORMATION OF THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 12. VALUES ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070
Bastrop	K	Brazos	Carrizo	189	241	314	417	565
		Colorado	Carrizo	3,000	3,853	4,815	5,937	7,289
		Guadalupe	Carrizo	262	322	404	519	680
Brazos	G	Brazos	Carrizo	1,444	2,023	2,603	3,183	3,763
Burleson	G	Brazos	Carrizo	16,656	16,806	16,956	17,108	17,261
Fayette*	K	Colorado	Carrizo	4,875	4,875	4,875	4,875	4,875
		Guadalupe	Carrizo	280	280	280	280	280
		Lavaca	Carrizo	0	0	0	0	0
Freestone	C	Trinity	Carrizo	79	79	79	79	79
Lee	G	Brazos	Carrizo	1,680	1,942	2,269	2,690	3,246
		Colorado	Carrizo	772	879	986	1,093	1,200
Leon	H	Brazos	Carrizo	1,258	1,457	1,656	1,855	2,035
		Trinity	Carrizo	5,138	5,978	6,818	7,659	8,415
Madison	H	Brazos	Carrizo	0	0	0	0	0
		Trinity	Carrizo	0	0	0	0	0
Milam	G	Brazos	Carrizo	607	680	759	847	945
Robertson	G	Brazos	Carrizo	412	743	1,074	1,405	1,736
GMA 12 Total			**Carrizo**	**36,652**	**40,158**	**43,888**	**47,947**	**52,369**

** Fayette County GCD values are for all of Fayette County.*

TABLE 15 **MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE CALVERT BLUFF FORMATION OF THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 12. VALUES ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070
Bastrop	K	Brazos	Calvert Bluff	29	32	36	40	44
		Colorado	Calvert Bluff	2,390	2,978	3,573	4,177	4,790
		Guadalupe	Calvert Bluff	0	0	0	0	0
Brazos	G	Brazos	Calvert Bluff	0	0	0	0	0
Burleson	G	Brazos	Calvert Bluff	129	140	152	163	174
Freestone	C	Brazos	Calvert Bluff	100	101	103	104	105
		Trinity	Calvert Bluff	513	536	558	581	601
Lee	G	Brazos	Calvert Bluff	395	475	557	642	729
		Colorado	Calvert Bluff	0	0	0	0	0
Leon	H	Brazos	Calvert Bluff	806	925	1,044	1,163	1,270
		Trinity	Calvert Bluff	1,370	1,594	1,819	2,043	2,245
Limestone	G	Brazos	Calvert Bluff	153	168	184	202	222
Madison	H	Brazos	Calvert Bluff	0	0	0	0	0
		Trinity	Calvert Bluff	0	0	0	0	0
Milam	G	Brazos	Calvert Bluff	2,811	3,162	3,558	4,012	4,532
Navarro	C	Trinity	Calvert Bluff	7	7	8	8	9
Robertson	G	Brazos	Calvert Bluff	546	841	1,136	1,430	1,725
GMA 12 Total			**Calvert Bluff**	**9,249**	**10,959**	**12,728**	**14,565**	**16,446**

TABLE 16 **MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE SIMSBORO FORMATION OF THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 12. VALUES ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070
Bastrop	K	Brazos	Simsboro	9,215	9,327	9,439	9,552	9,664
		Colorado	Simsboro	29,621	32,157	34,507	36,877	39,313
		Guadalupe	Simsboro	0	0	0	0	0
Brazos	G	Brazos	Simsboro	42,709	48,137	53,565	58,993	64,421
Burleson	G	Brazos	Simsboro	39,656	48,662	52,267	52,273	52,278
Falls	G	Brazos	Simsboro	11	12	14	15	17
Freestone	C	Brazos	Simsboro	461	525	589	653	710
		Trinity	Simsboro	2,910	3,375	3,840	4,305	4,724
Lee	G	Brazos	Simsboro	26,405	27,619	28,835	30,051	30,967
		Colorado	Simsboro	1	1	1	1	1
Leon	H	Brazos	Simsboro	519	604	689	774	850
		Trinity	Simsboro	357	416	474	533	586
Limestone	G	Brazos	Simsboro	612	676	746	824	910
Madison	H	Brazos	Simsboro	0	0	0	0	0
		Trinity	Simsboro	0	0	0	0	0
Milam	G	Brazos	Simsboro	25,883	26,170	26,475	26,798	27,144
Navarro	C	Trinity	Simsboro	12	13	14	15	16
Robertson	G	Brazos	Simsboro	47,140	56,061	64,982	73,903	82,824
Williamson	G	Brazos	Simsboro	21	23	25	28	31
GMA 12 Total			**Simsboro**	**225,533**	**253,778**	**276,462**	**295,595**	**314,456**

TABLE 17 **MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE HOOPER FORMATION OF THE CARRIZO-WILCOX AQUIFER IN GROUNDWATER MANAGEMENT AREA 12. VALUES ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070
Bastrop	K	Brazos	Hooper	0	0	0	0	0
		Colorado	Hooper	1,957	2,259	2,572	2,897	3,234
		Guadalupe	Hooper	0	0	0	0	0
Brazos	G	Brazos	Hooper	0	0	0	0	0
Burleson	G	Brazos	Hooper	27	30	32	35	37
Falls	G	Brazos	Hooper	35	38	42	47	52
Freestone	C	Brazos	Hooper	696	806	917	1,027	1,126
		Trinity	Hooper	2,444	2,833	3,221	3,610	3,959
Lee	G	Brazos	Hooper	18	19	21	24	26
		Colorado	Hooper	12	13	14	16	18
Leon	H	Brazos	Hooper	0	0	0	0	0
		Trinity	Hooper	102	118	135	152	167
Limestone	G	Brazos	Hooper	190	210	232	256	283
		Trinity	Hooper	5	5	6	6	7
Madison	H	Brazos	Hooper	0	0	0	0	0
		Trinity	Hooper	0	0	0	0	0
Milam	G	Brazos	Hooper	1,999	2,234	2,491	2,774	3,089
Navarro	C	Trinity	Hooper	86	94	103	113	124
Robertson	G	Brazos	Hooper	1,066	1,334	1,603	1,871	2,139
Williamson	G	Brazos	Hooper	118	130	144	159	175
		Colorado	Hooper	1	2	2	2	2
GMA 12 Total			**Hooper**	**8,756**	**10,125**	**11,535**	**12,989**	**14,438**

TABLE 18 **MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE YEGUA-JACKSON AQUIFER IN GROUNDWATER MANAGEMENT AREA 12. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070
Brazos	G	Brazos	Yegua-Jackson	6,270	7,092	7,091	7,091	7,091
Burleson	G	Brazos	Yegua-Jackson	5,315	7,004	7,004	7,000	6,058
Fayette*	K	Colorado	Yegua-Jackson	7,644	7,644	7,643	7,643	7,643
		Guadalupe	Yegua-Jackson	727	727	727	727	727
		Lavaca	Yegua-Jackson	1,613	1,613	1,613	1,613	1,613
Leon	H	Trinity	Yegua-Jackson	0	0	0	0	0
Madison	H	Brazos	Yegua-Jackson	11	11	11	11	11
		Trinity	Yegua-Jackson	1,111	1,111	1,111	1,111	1,111
GMA 12 Total			**Yegua-Jackson**	**22,691**	**25,202**	**25,200**	**25,196**	**24,254**

** Fayette County GCD values are for all of Fayette County.*

TABLE 19 **MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE BRAZOS RIVER ALLUVIUM AQUIFER IN GROUNDWATER MANAGEMENT AREA 12. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.**

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070
Brazos	G	Brazos	Brazos River Alluvium	76,978	76,393	76,195	76,100	76,039
Burleson	G	Brazos	Brazos River Alluvium	32,207	32,207	32,206	32,206	32,206
Milam	G	Brazos	Brazos River Alluvium	31,375	31,366	31,362	31,359	31,358
Robertson	G	Brazos	Brazos River Alluvium	55,424	55,157	54,839	54,723	54,618
GMA 12 Total			**Brazos River Alluvium**	**195,984**	**195,123**	**194,602**	**194,388**	**194,221**

LIMITATIONS:

The groundwater model used in completing this analysis is the best available scientific tool that can be used to meet the stated objectives. To the extent that this analysis will be used for planning purposes and/or regulatory purposes related to pumping in the past and into the future, it is important to recognize the assumptions and limitations associated with the use of the results. In reviewing the use of models in environmental regulatory decision making, the National Research Council (2007) noted:

> "Models will always be constrained by computational limitations, assumptions, and knowledge gaps. They can best be viewed as tools to help inform decisions rather than as machines to generate truth or make decisions. Scientific advances will never make it possible to build a perfect model that accounts for every aspect of reality or to prove that a given model is correct in all respects for a particular regulatory application. These characteristics make evaluation of a regulatory model more complex than solely a comparison of measurement data with model results."

A key aspect of using the groundwater model to evaluate historic groundwater flow conditions includes the assumptions about the location in the aquifer where historic pumping was placed. Understanding the amount and location of historic pumping is as important as evaluating the volume of groundwater flow into and out of the district, between aquifers within the district (as applicable), interactions with surface water (as applicable), recharge to the aquifer system (as applicable), and other metrics that describe the impacts of that pumping. In addition, assumptions regarding precipitation, recharge, and streamflow are specific to a particular historic time period.

Because the application of the groundwater model was designed to address regional scale questions, the results are most effective on a regional scale. The TWDB makes no warranties or representations relating to the actual conditions of any aquifer at a particular location or at a particular time.

It is important for groundwater conservation districts to monitor groundwater pumping and groundwater levels in the aquifer. Because of the limitations of the groundwater model and the assumptions in this analysis, it is important that the groundwater conservation districts work with the TWDB to refine this analysis in the future given the reality of how the aquifer responds to the actual amount and location of pumping now and in the future. Historic precipitation patterns also need to be placed in context as future climatic conditions, such as dry and wet year precipitation patterns, may differ and affect groundwater flow conditions.

REFERENCES:

Daniel B. Stephens & Associates, INTERA Incorporated, and Ground Water Consultants, LLC, 2022, Desired Future Condition Explanatory Report for Groundwater Management Area 12, 859 p.

Deeds, N. E., Yan, T., Singh, A., Jones, T. L., Kelley, V. A., Knox, P. R., and Young, S. C., 2010, Groundwater availability model for the Yegua-Jackson Aquifer: Final report prepared for the Texas Water Development Board by INTERA, Inc., 582 p., http://www.twdb.texas.gov/groundwater/models/gam/ygjk/YGJK_Model_Report.pdf.

Ewing, J.E., and Jigmond, M., 2016, Final Numerical Model Report for the Brazos River Alluvium Aquifer Groundwater Availability Model: Contract report to the Texas Water Development Board, 357 p., http://www.twdb.texas.gov/groundwater/models/gam/bzrv/BRAA_NM_REPORT_FINAL.pdf?d=1502891797831.

Harbaugh, A. W., Banta, E. R., Hill, M. C., and McDonald, M. G., 2000, MODFLOW-2000, the U.S. Geological Survey modular ground-water model -- User guide to modularization concepts and the Ground-Water Flow Process: U.S. Geological Survey Open-File Report 00-92, 121 p.

INTERA Incorporated, D.B. Stephens & Associates, and Ground Water Consultants, LLC, 2020, GMA 12 Update to the Groundwater Availability Model for the Central Portion of the Sparta, Queen City, Carrizo-Wilcox Aquifers: Update to Improve Representation of the Transmissive Properties of the Simsboro Aquifer in the Vicinity of the Vista Ridge Well Field, 30 p.

Oliver, W., 2010, GAM Task 10-012 Model Run Report: Texas Water Development Board, GAM Task 10-012 Report, 48 p., http://www.twdb.texas.gov/groundwater/docs/GAMruns/Task10-012.pdf

National Research Council, 2007, Models in Environmental Regulatory Decision Making Committee on Models in the Regulatory Decision Process, National Academies Press, Washington D.C., 287 p., http://www.nap.edu/catalog.php?record_id=11972.

Panday, S., Langevin, C.D., Niswonger, R.G., Ibaraki, M., and Hughes, J.D., 2013, MODFLOW-USG version 1: An unstructured grid version of MODFLOW for simulating groundwater flow and tightly coupled processes using a control volume finite-difference formulation: U.S. Geological Survey Techniques and Methods, book 6 chap. A45, 66 p.

Panday, S., C.D. Langevin, R.G. Niswonger, M. Ibaraki, and J.D. Hughes. 2015. MODFLOW-USG version 1.3.00: An unstructured grid version of MODFLOW for simulating groundwater flow and tightly coupled processes using a control volume finite-

difference formulation: U.S. Geological Survey Software Release, 01 December 2015, http://dx.doi.org/10.5066/F7R20ZFJ

Texas Water Code, 2011, http://www.statutes.legis.state.tx.us/docs/WA/pdf/WA.36.pdf.

APPENDIX A

Summary of Groundwater Management Area 12 Response to the TWDB's Review of the Desired Future Condition Deliverable

After reviewing the initial Groundwater Management Area 12 submittal, the TWDB sent an email on April 21, 2022, requesting clarifications on the desired future condition definitions. In response, Groundwater Management Area 12 consultants produced two memorandums dated May 5, 2022, that were presented and approved at the May 6, 2022, Groundwater Management Area 12 meeting. One memo provides the responses to the TWDB clarifications and is reproduced in Figure A1. Numbered entries represent the TWDB clarification questions and the entries beginning in "RESPONSE:" represent Groundwater Management Area 12's responses. This document is also available on the Post Oak Savannah Groundwater Conservation district website. The second memo provides a non-relevant statement for the Calvert Bluff Aquifer that was missing in the original submittal package (see Clarification #1 under Carrizo-Wilcox, Queen City, and Sparta aquifers). This document is not reproduced here.

Memorandum

To: Texas Water Development Board

From: GMA 12

Date: May 5, 2022

Subject: Items to address prior to calculating DFCs

GMA 12 has reviewed the email from the TWDB dated April, 21, 2022 regarding items that need to be addressed before calculating modeled available groundwater. The following is a summary of these items and GMA 12's response to them.

Carrizo-Wilcox, Queen City, and Sparta aquifers

1) Our analysis does not achieve the DFC for the Calvert Bluff Aquifer in Williamson County. There is only one active model cell for this aquifer in Williamson County and the cell goes dry around 2065 in the DFC predictive model. We suggest declaring the Calvert Bluff Aquifer as non-relevant in Williamson County. Please consider declaring the Calvert Bluff Aquifer non-relevant in Williamson County or provide additional information for our DFC analysis.

RESPONSE: GMA 12 will declare the Calvert Bluff Aquifer non-relevant in Williamson County at a GMA meeting on May 6, 2022. A memorandum providing the required documentation for this declaration will be submitted to the TWDB.

2) Please confirm that the DFCs for the Carrizo-Wilcox are calculated using a cell count averaging method, rather than an area-weighted averaging method.
   a. If a cell count averaging method is used, the current DFC error tolerance of 10% is good enough to make all DFCs compliant with our calculation, except the Calvert Bluff Aquifer in Williamson County (See Note #1 above).
   b. If an area-weighted averaging method is used, we recommend clarifying a tolerance of 11% for the GMA-wide Simsboro Aquifer DFC in order to be compliant with our calculation.

RESPONSE: GMA 12 uses an area-weighted averaging method. However, GMA 12 did not adopt a GMA-wide DFC for any of these aquifers. GMA-wide averages were erroneously included in the DFC summary tables in the Explanatory Report. The GMA 12 DFC resolution, dated November 30, 2022 and for which the Explanatory Report was submitted in support of, does not contain any GMA-wide DFCs. Therefore, no tolerance changes are needed to be compliant with TWDB calculations other than the declaration of the Calvert Bluff in Williamson County as a non-relevant aquifer

Yegua-Jackson Aquifer

1) Please confirm that the reference time period for the Yegua-Jackson Aquifer DFCs only goes to the end of December 2069 (stress period 99), even though the predictive model goes to December 2070 (stress period 100).

RESPONSE: The Yegua-Jackson DFCs are specified as from January 2010 (the end of Stress Period 39) through December 2069 (the end of Stress Period 99), for a total of 60 years.

2) Since there are no monthly stress periods, please confirm that the baseline year of "January 2010" refers to the end of 2009/beginning of January 2010 (stress period 39), rather than the end of 2010 (stress period 40).

RESPONSE: That is correct. The beginning of the GMA 12 predictive model runs is Stress Period 40, so the baseline year is the end of Stress Period 39.

Figure A1. Response Memorandum from Groundwater Management Area 12 to clarifications requested from the Texas Water Development Board.

3) Our analysis results in a 1-foot difference in the GMA-wide DFC for the Yegua-Jackson Aquifer. We recommend clarifying a tolerance of 1 foot for the GMA-wide Yegua-Jackson DFC in order to be compliant with the TWDB-calculated value.

RESPONSE: As with the Carrizo-Wilcox Aquifer, GMA 12 did not adopt a GMA-wide DFC for the Yegua-Jackson Aquifer. GMA averages were erroneously included in the DFC summary tables in the Explanatory Report. The actual GMA 12 DFC resolution, dated November 30, 2022 and for which the Explanatory Report was submitted in support of, does not contain any GMA-wide DFCs. Therefore, no tolerance changes are needed to be compliant with TWDB for the Yegua-Jackson Aquifer.

Brazos River Alluvium Aquifer

1) Please confirm that the reference time period for the Brazos River Alluvium Aquifer DFCs only goes to the end of December 2069 (stress period 484), even though the predictive model goes to the end of 2070 (stress period 485).

RESPONSE: The reference time period for the BRAA DFCs only extents to the end of December 2069 (Stress Period 484).

2) Since there are no monthly stress periods in 2013, please confirm that the Brazos Valley GCD baseline of "January 2013" refers to the end of 2012/beginning of January 2013 (stress period 427), rather than the end of 2013 (stress period 428).

RESPONSE: The baseline "January 2013" refers to the end of 2012/beginning of January 2013 (Stress Period 427).

3) Since there are monthly stress periods in 2010, please clarify whether the Post Oak Savannah GCD baseline of "January 2010" refers to the end of 2009/beginning of January 2010 (stress period 391) or the end of January 2010 (stress period 392).

RESPONSE: The baseline "January 2010" refers to the end of 2009/beginning of January 2010 (Stress Period 391).

4) For Brazos Valley GCD, please clarify how average percent saturation was defined by GMA 12. Is the average of only the final stress period (2069) or the average over the entire period from 2013 through 2069?

RESPONSE: The average percent saturation is for the final stress period (2069) and not for the entire period from 2013 through 2069.

5) The drawdown values calculated using the official TWDB grid shapefile and TWDB methodology are not compliant with the provided GMA 12 county-specific DFCs in the Brazos River Alluvium Aquifer. We recommend adopting the tolerances listed below in order to be compliant with the TWDB methodology. Alternatively, please provide the detailed methodology and zoned grid shapefile used to define the GMA 12 county-specific DFCs in the Brazos River Alluvium Aquifer, as these are not provided in the explanatory report or accompanying files:
   a. For Brazos Valley GCD, we suggest replacing the current tolerance of "1 foot or 5 percent (whichever was greater)" with "10% of total well depth" as the error tolerance for the DFC evaluation of the percent saturation. This will make the DFC compliant with our calculation regardless how the percent saturation is calculated (see Note #4 above).
   b. For Post Oak Savannah GCD, we suggest replacing the current tolerance of "1 foot or 5 percent (whichever was greater)" with "3 feet or 10 percent (whichever is greater)" as the error tolerance for the DFC evaluation of the decrease in average saturated thickness. This modification will make the DFC compliant with our calculation regardless of which baseline year is used (see Note #3 above).

RESPONSE: GMA 12 will adopt tolerances for the DFC evaluation of the percent saturation for the Brazos River Alluvium Aquifer as proposed by the TWDB.

Figure A1 (Cont). Response Memorandum from Groundwater Management Area 12 to clarifications requested from the Texas Water Development Board.

Attachment B

Estimated Historical Water Use and 2022 State Water Plan Datasets: Lost Pines Groundwater Conservation District

Estimated Historical Water Use And 2022 State Water Plan Datasets:

Lost Pines Groundwater Conservation District

Texas Water Development Board
Groundwater Division
Groundwater Technical Assistance Section
stephen.allen@twdb.texas.gov
(512) 463-7317
June 28, 2022

GROUNDWATER MANAGEMENT PLAN DATA:

This package of water data reports (part 1 of a 2-part package of information) is being provided to groundwater conservation districts to help them meet the requirements for approval of their five-year groundwater management plan. Each report in the package addresses a specific numbered requirement in the Texas Water Development Board's groundwater management plan checklist. The checklist can be viewed and downloaded from this web address:

http://www.twdb.texas.gov/groundwater/docs/GCD/GMPChecklist0113.pdf

The five reports included in this part are:

1. Estimated Historical Water Use (checklist item 2)

   from the TWDB Historical Water Use Survey (WUS)
2. Projected Surface Water Supplies (checklist item 6)
3. Projected Water Demands (checklist item 7)
4. Projected Water Supply Needs (checklist item 8)
5. Projected Water Management Strategies (checklist item 9)

   from the 2022Texas State Water Plan (SWP)

Part 2 of the 2-part package is the groundwater availability model (GAM) report for the District (checklist items 3 through 5). The District should have received, or will receive, this report from the Groundwater Availability Modeling Section. Questions about the GAM can be directed to Dr. Shirley Wade, shirley.wade@twdb.texas.gov, (512) 936-0883.

DISCLAIMER:

The data presented in this report represents the most up-to-date WUS and 2022 SWP data available as of 6/28/2022. Although it does not happen frequently, either of these datasets are subject to change pending the availability of more accurate WUS data or an amendment to the 2022 SWP. District personnel must review these datasets and correct any discrepancies in order to ensure approval of their groundwater management plan.

The WUS dataset can be verified at this web address:

http://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/

The 2022 SWP dataset can be verified by contacting Sabrina Anderson (sabrina.anderson@twdb.texas.gov or 512-936-0886).

For additional questions regarding this data, please contact Stephen Allen (stephen.allen@twdb.texas.gov or 512-463-7317).

Estimated Historical Water Use
TWDB Historical Water Use Survey (WUS) Data

Groundwater and surface water historical use estimates are currently unavailable for calendar year 2020. TWDB staff anticipates the calculation and posting of these estimates at a later date.

BASTROP COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2019	GW	12,306	350	25	5,555	6,810	278	25,324
	SW	0	0	244	1,764	256	1,112	3,376
2018	GW	11,733	245	47	5,309	5,571	278	23,183
	SW	0	0	0	1,809	0	1,112	2,921
2017	GW	11,319	167	61	5,163	5,093	269	22,072
	SW	0	0	4	1,742	0	1,077	2,823
2016	GW	10,346	71	22	3,272	2,872	215	16,798
	SW	0	0	0	2,572	0	859	3,431
2015	GW	10,466	98	44	5,519	3,204	210	19,541
	SW	0	0	0	2,245	0	842	3,087
2014	GW	9,771	93	34	3,400	2,444	206	15,948
	SW	0	0	1	3,389	0	825	4,215
2013	GW	10,611	81	44	0	2,533	192	13,461
	SW	0	2	0	5,549	531	769	6,851
2012	GW	11,010	60	45	0	2,829	215	14,159
	SW	0	22	0	6,426	952	859	8,259
2011	GW	12,129	81	0	0	3,861	260	16,331
	SW	0	23	0	7,646	1,200	1,042	9,911
2010	GW	10,473	74	2,130	0	6,299	261	19,237
	SW	0	5	48	3,491	750	1,046	5,340
2009	GW	11,256	79	2,117	0	2,915	257	16,624
	SW	0	10	48	4,535	0	1,027	5,620
2008	GW	11,075	70	2,105	0	371	267	13,888
	SW	8	12	47	7,306	0	1,065	8,438
2007	GW	9,303	66	0	0	365	232	9,966
	SW	2	30	0	2,019	0	924	2,975
2006	GW	11,021	66	0	0	596	325	12,008
	SW	3	8	0	6,841	0	1,300	1,625
2005	GW	10,071	30	0	0	627	325	11,053
	SW	11	31	0	3,514	0	1,300	4,856
2004	GW	8,741	36	0	0	539	441	9,757
	SW	1	29	0	2,229	0	1,242	3,501

LEE COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2019	GW	2,456	9	741	0	1,142	411	4,759
	SW	0	0	24	0	0	957	981
2018	GW	2,312	7	1,392	0	674	411	4,796
	SW	0	0	92	0	0	957	1,049
2017	GW	2,266	8	699	0	692	396	4,061
	SW	0	0	24	0	0	923	947
2016	GW	2,168	6	571	0	519	326	3,590
	SW	0	0	2	0	0	760	762
2015	GW	2,316	7	904	0	519	321	4,067
	SW	0	0	26	0	0	750	776
2014	GW	2,327	6	439	0	802	316	3,890
	SW	0	0	35	0	2	736	773
2013	GW	2,538	6	6,081	0	837	305	9,767
	SW	0	0	10	0	0	713	723
2012	GW	2,503	6	5,674	0	1,017	356	9,556
	SW	0	0	2	0	0	833	835
2011	GW	2,886	7	5,478	0	1,609	422	10,402
	SW	0	0	0	0	0	983	983
2010	GW	2,328	6	6,966	0	1,575	425	11,300
	SW	0	0	0	0	0	993	993
2009	GW	2,371	6	6,895	0	966	464	10,702
	SW	0	0	0	0	0	1,084	1,084
2008	GW	2,305	7	6,705	0	319	439	9,775
	SW	0	0	0	0	0	1,025	1,025
2007	GW	1,996	11	0	0	116	704	2,827
	SW	1	0	0	0	56	1,643	1,700
2006	GW	2,436	15	0	0	426	628	3,505
	SW	1	0	0	0	0	1,465	2,093
2005	GW	2,494	13	0	0	470	667	3,644
	SW	2	0	0	0	0	1,556	1,558
2004	GW	2,307	13	0	0	579	481	3,380
	SW	0	0	0	0	3	1,172	1,175

Projected Surface Water Supplies
TWDB 2022 State Water Plan Data

BASTROP COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
K	County-Other, Bastrop	Colorado	Highland Lakes Lake/Reservoir System	744	744	744	744	744	744
K	Irrigation, Bastrop	Colorado	Highland Lakes Lake/Reservoir System	850	850	850	850	850	850
K	Livestock, Bastrop	Brazos	Brazos Livestock Local Supply	94	94	94	94	94	94
K	Livestock, Bastrop	Colorado	Colorado Livestock Local Supply	696	696	696	696	696	696
K	Livestock, Bastrop	Guadalupe	Guadalupe Livestock Local Supply	72	72	72	72	72	72
K	Mining, Bastrop	Colorado	Colorado Other Local Supply	8	7	7	9	9	9
K	Steam-Electric Power, Bastrop	Colorado	Highland Lakes Lake/Reservoir System	7,679	6,766	6,266	5,132	5,452	5,561
	Sum of Projected Surface Water Supplies (acre-feet)			**10,143**	**9,229**	**8,729**	**7,597**	**7,917**	**8,026**

LEE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
G	Irrigation, Lee	Brazos	Brazos Run-of-River	1	1	1	1	1	1
G	Livestock, Lee	Brazos	Brazos Livestock Local Supply	1,020	1,020	1,020	1,020	1,020	1,020
G	Livestock, Lee	Colorado	Brazos Livestock Local Supply	196	196	196	196	196	196
	Sum of Projected Surface Water Supplies (acre-feet)			**1,217**	**1,217**	**1,217**	**1,217**	**1,217**	**1,217**

Projected Water Demands
TWDB 2022 State Water Plan Data

Please note that the demand numbers presented here include the plumbing code savings found in the Regional and State Water Plans.

BASTROP COUNTY

All values are in acre-feet

WUG	RWPG	WUG Basin	2020	2030	2040	2050	2060	2070
K	Aqua WSC	Brazos	90	116	150	197	262	347
K	Aqua WSC	Colorado	9,072	11,636	15,054	19,775	26,231	34,832
K	Aqua WSC	Guadalupe	64	82	106	140	185	246
K	Bastrop	Colorado	2,046	2,709	3,590	4,803	6,458	8,660
K	Bastrop County WCID 2	Colorado	479	690	971	1,357	1,882	2,580
K	County-Other, Bastrop	Brazos	9	10	11	14	17	21
K	County-Other, Bastrop	Colorado	1,375	1,567	1,828	2,187	2,677	3,333
K	County-Other, Bastrop	Guadalupe	34	39	45	54	67	83
K	Creedmoor-Maha WSC	Colorado	2	3	3	3	4	4
K	Elgin	Colorado	1,317	1,674	2,155	2,822	3,734	4,950
K	Irrigation, Bastrop	Brazos	257	257	257	257	257	257
K	Irrigation, Bastrop	Colorado	3,808	3,808	3,808	3,808	3,808	3,808
K	Irrigation, Bastrop	Guadalupe	215	215	215	215	215	215
K	Lee County WSC	Brazos	54	68	88	115	153	203
K	Lee County WSC	Colorado	73	93	120	157	208	276
K	Livestock, Bastrop	Brazos	70	70	70	70	70	70
K	Livestock, Bastrop	Colorado	1,011	1,011	1,011	1,011	1,011	1,011
K	Livestock, Bastrop	Guadalupe	54	54	54	54	54	54
K	Manufacturing, Bastrop	Colorado	188	215	215	215	215	215
K	Mining, Bastrop	Brazos	173	409	450	360	24	29
K	Mining, Bastrop	Colorado	2,567	6,064	6,674	5,339	355	423
K	Mining, Bastrop	Guadalupe	144	340	374	299	20	24
K	Polonia WSC	Colorado	29	36	45	58	76	100
K	Smithville	Colorado	821	1,048	1,351	1,774	2,353	3,125
K	Steam-Electric Power, Bastrop	Colorado	10,288	10,288	10,288	10,288	10,288	10,288
	Sum of Projected Water Demands (acre-feet)		**34,240**	**42,502**	**48,933**	**55,372**	**60,624**	**75,154**

LEE COUNTY

All values are in acre-feet

WUG	RWPG	WUG Basin	2020	2030	2040	2050	2060	2070
G	Aqua WSC	Brazos	465	510	535	543	550	554
G	County-Other, Lee	Brazos	97	103	108	111	112	113
G	County-Other, Lee	Colorado	36	39	41	41	42	42
G	Giddings	Brazos	560	615	644	653	662	666

G	Giddings	Colorado	594	653	684	694	702	708
G	Irrigation, Lee	Brazos	1,145	1,145	1,145	1,145	1,145	1,145
G	Irrigation, Lee	Colorado	23	23	23	23	23	23
G	Lee County WSC	Brazos	646	704	736	745	753	759
G	Lee County WSC	Colorado	313	342	357	361	366	368
G	Lexington	Brazos	244	268	280	284	288	290
G	Livestock, Lee	Brazos	1,020	1,020	1,020	1,020	1,020	1,020
G	Livestock, Lee	Colorado	196	196	196	196	196	196
G	Manufacturing, Lee	Colorado	7	8	8	8	8	8
G	Mining, Lee	Brazos	2,480	2,480	0	0	0	0
G	Mining, Lee	Colorado	700	700	0	0	0	0
G	Southwest Milam WSC	Brazos	47	51	53	54	55	55
	Sum of Projected Water Demands (acre-feet)		**8,573**	**8,857**	**5,830**	**5,878**	**5,922**	**5,947**

Projected Water Supply Needs
TWDB 2022 State Water Plan Data

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

BASTROP COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
K	Aqua WSC	Brazos	0	0	0	0	0	0
K	Aqua WSC	Colorado	-224	-2,788	-5,698	-9,228	-16,703	-26,087
K	Aqua WSC	Guadalupe	0	0	0	0	0	0
K	Bastrop	Colorado	712	49	-832	-2,045	-3,700	-5,902
K	Bastrop County WCID 2	Colorado	759	636	416	141	-442	-1,178
K	County-Other, Bastrop	Brazos	12	11	10	7	4	0
K	County-Other, Bastrop	Colorado	0	0	0	0	0	0
K	County-Other, Bastrop	Guadalupe	0	0	0	0	0	0
K	Creedmoor-Maha WSC	Colorado	143	142	142	142	141	141
K	Elgin	Colorado	0	0	0	-534	-1,545	-2,853
K	Irrigation, Bastrop	Brazos	7	5	4	2	0	0
K	Irrigation, Bastrop	Colorado	74	69	47	24	0	0
K	Irrigation, Bastrop	Guadalupe	0	5	10	17	24	24
K	Lee County WSC	Brazos	132	141	164	197	234	274
K	Lee County WSC	Colorado	177	194	224	268	318	372
K	Livestock, Bastrop	Brazos	24	24	24	24	24	24
K	Livestock, Bastrop	Colorado	0	0	0	0	0	0
K	Livestock, Bastrop	Guadalupe	18	18	18	18	18	18
K	Manufacturing, Bastrop	Colorado	27	0	0	0	0	0
K	Mining, Bastrop	Brazos	277	41	0	90	5	0
K	Mining, Bastrop	Colorado	-449	-3,947	-4,557	-3,220	1,764	1,696
K	Mining, Bastrop	Guadalupe	-2	-243	-308	-233	44	24
K	Polonia WSC	Colorado	52	48	46	44	42	38
K	Smithville	Colorado	643	584	398	187	-503	-1,348
K	Steam-Electric Power, Bastrop	Colorado	0	0	0	0	0	0
	Sum of Projected Water Supply Needs (acre-feet)		**-675**	**-6,978**	**-11,395**	**-15,260**	**-22,893**	**-37,368**

LEE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	Aqua WSC	Brazos	0	0	0	0	0	0
G	County-Other, Lee	Brazos	17	10	5	3	1	1
G	County-Other, Lee	Colorado	6	4	2	1	1	0
G	Giddings	Brazos	280	224	194	184	176	170
G	Giddings	Colorado	296	237	206	196	186	181

G	Irrigation, Lee	Brazos	190	194	197	202	207	207
G	Irrigation, Lee	Colorado	0	0	0	0	0	0
G	Lee County WSC	Brazos	1,563	1,464	1,370	1,272	1,153	1,021
G	Lee County WSC	Colorado	758	711	665	615	560	496
G	Lexington	Brazos	423	399	387	383	379	377
G	Livestock, Lee	Brazos	0	0	0	0	0	0
G	Livestock, Lee	Colorado	0	0	0	0	0	0
G	Manufacturing, Lee	Colorado	6	6	7	8	9	10
G	Mining, Lee	Brazos	-215	-132	2,429	2,512	2,592	2,592
G	Mining, Lee	Colorado	-60	-37	686	709	732	732
G	Southwest Milam WSC	Brazos	5	-7	-13	-13	-11	-12
	Sum of Projected Water Supply Needs (acre-feet)		**-275**	**-176**	**-13**	**-13**	**-11**	**-12**

Projected Water Management Strategies
TWDB 2022 State Water Plan Data

BASTROP COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
Aqua WSC, Brazos (K)							
Drought Management	DEMAND REDUCTION [Bastrop]	17	23	30	39	52	69
Municipal Conservation - Aqua WSC	DEMAND REDUCTION [Bastrop]	4	2	1	0	0	0
Municipal Water Conservation	DEMAND REDUCTION [Bastrop]	0	0	0	0	0	1
		21	**25**	**31**	**39**	**52**	**70**
Aqua WSC, Colorado (K)							
Downstream Return Flows	Indirect Reuse [Travis]	0	0	0	0	0	1,200
Drought Management	DEMAND REDUCTION [Bastrop]	1,733	2,278	3,058	3,949	5,246	6,966
Expansion of Current Groundwater Supplies - Carrizo-Wilcox Aquifer	Carrizo-Wilcox Aquifer [Bastrop]	0	300	350	550	800	800
LCRA - Import Return Flows from Williamson County	Brazos Run-of-River [Williamson]	0	0	2,500	6,000	12,000	18,800
Municipal Conservation - Aqua WSC	DEMAND REDUCTION [Bastrop]	408	244	116	33	0	0
Municipal Water Conservation	DEMAND REDUCTION [Bastrop]	7	12	18	28	42	59
		2,148	**2,834**	**6,042**	**10,560**	**18,088**	**27,825**
Aqua WSC, Guadalupe (K)							
Drought Management	DEMAND REDUCTION [Bastrop]	12	16	21	28	37	49
Municipal Conservation - Aqua WSC	DEMAND REDUCTION [Bastrop]	3	2	1	0	0	0
		15	**18**	**22**	**28**	**37**	**49**
Bastrop, Colorado (K)							
Drought Management	DEMAND REDUCTION [Bastrop]	372	471	631	849	1,143	1,534
LCRA - Import Return Flows from Williamson County	Brazos Run-of-River [Williamson]	0	0	0	1,000	2,500	4,000
Municipal Conservation - Bastrop	DEMAND REDUCTION [Bastrop]	184	355	433	558	744	992
		556	**826**	**1,064**	**2,407**	**4,387**	**6,526**
Bastrop County WCID 2, Colorado (K)							
Drought Management	DEMAND REDUCTION [Bastrop]	24	35	49	68	94	129
LCRA - Import Return Flows from Williamson County	Brazos Run-of-River [Williamson]	0	0	0	0	500	1,500
Municipal Conservation - Bastrop County WCID 2	DEMAND REDUCTION [Bastrop]	0	0	0	0	93	125

		24	**35**	**49**	**68**	**687**	**1,754**
County-Other, Bastrop, Brazos (K)							
Drought Management	DEMAND REDUCTION [Bastrop]	2	2	2	2	3	4
Municipal Conservation - Bastrop County-Other	DEMAND REDUCTION [Bastrop]	1	1	1	2	2	2
		3	**3**	**3**	**4**	**5**	**6**
County-Other, Bastrop, Colorado (K)							
Drought Management	DEMAND REDUCTION [Bastrop]	250	274	322	386	474	591
Municipal Conservation - Bastrop County-Other	DEMAND REDUCTION [Bastrop]	124	198	219	255	307	381
		374	**472**	**541**	**641**	**781**	**972**
County-Other, Bastrop, Guadalupe (K)							
Drought Management	DEMAND REDUCTION [Bastrop]	6	7	8	10	12	15
Municipal Conservation - Bastrop County-Other	DEMAND REDUCTION [Bastrop]	3	5	5	6	8	9
		9	**12**	**13**	**16**	**20**	**24**
Elgin, Colorado (K)							
Development of New Groundwater Supplies - Trinity Aquifer	Trinity Aquifer [Travis]	0	0	0	0	1,000	1,825
Drought Management	DEMAND REDUCTION [Bastrop]	213	213	197	158	210	279
Expansion of Current Groundwater Supplies - Carrizo-Wilcox Aquifer	Carrizo-Wilcox Aquifer [Bastrop]	0	0	0	0	50	50
Municipal Conservation - Elgin	DEMAND REDUCTION [Bastrop]	66	119	224	405	531	700
		279	**332**	**421**	**563**	**1,791**	**2,854**
Lee County WSC, Brazos (K)							
Drought Management	DEMAND REDUCTION [Bastrop]	7	8	9	11	15	19
		7	**8**	**9**	**11**	**15**	**19**
Lee County WSC, Colorado (K)							
Drought Management	DEMAND REDUCTION [Bastrop]	10	11	13	15	20	26
		10	**11**	**13**	**15**	**20**	**26**
Mining, Bastrop, Guadalupe (K)							
Mining Conservation - Bastrop County	DEMAND REDUCTION [Bastrop]	2	243	308	233	0	0
		2	**243**	**308**	**233**	**0**	**0**
Polonia WSC, Colorado (K)							
Drought Management	DEMAND REDUCTION [Bastrop]	3	4	4	5	6	8
		3	**4**	**4**	**5**	**6**	**8**
Smithville, Colorado (K)							
Development of New Groundwater Supplies - Yegua-Jackson Aquifer	Yegua-Jackson Aquifer [Fayette]	0	700	700	700	700	700
Drought Management	DEMAND REDUCTION [Bastrop]	150	198	259	343	456	606

LCRA - Import Return Flows from Williamson County	Brazos Run-of-River [Williamson]	0	0	0	0	0	700
Municipal Conservation - Smithville	DEMAND REDUCTION [Bastrop]	69	59	54	59	75	97
		219	**957**	**1,013**	**1,102**	**1,231**	**2,103**

Steam-Electric Power, Bastrop, Colorado (K)

LCRA - Enhanced Municipal and Industrial Conservation	DEMAND REDUCTION [Bastrop]	55	64	73	82	82	82
		55	**64**	**73**	**82**	**82**	**82**
Sum of Projected Water Management Strategies (acre-feet)		**3,725**	**5,844**	**9,606**	**15,774**	**27,202**	**42,318**

LEE COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
Aqua WSC, Brazos (G)							
Municipal Water Conservation	DEMAND REDUCTION [Lee]	0	1	1	1	1	1
Municipal Water Conservation - Aqua WSC	DEMAND REDUCTION [Lee]	0	11	4	0	0	0
		0	**12**	**5**	**1**	**1**	**1**
Giddings, Brazos (G)							
Municipal Water Conservation - Giddings	DEMAND REDUCTION [Lee]	0	46	97	115	116	116
		0	**46**	**97**	**115**	**116**	**116**
Giddings, Colorado (G)							
Municipal Water Conservation - Giddings	DEMAND REDUCTION [Lee]	0	49	102	122	122	124
		0	**49**	**102**	**122**	**122**	**124**
Lexington, Brazos (G)							
Municipal Water Conservation - Lexington	DEMAND REDUCTION [Lee]	0	20	23	21	21	21
		0	**20**	**23**	**21**	**21**	**21**
Mining, Lee, Brazos (G)							
Carrizo Aquifer Development - Lee County Mining	Carrizo-Wilcox Aquifer [Lee]	140	8	0	0	0	0
Industrial Water Conservation	DEMAND REDUCTION [Lee]	74	124	0	0	0	0
		214	**132**	**0**	**0**	**0**	**0**
Mining, Lee, Colorado (G)							
Carrizo Aquifer Development - Lee County Mining	Carrizo-Wilcox Aquifer [Lee]	40	2	0	0	0	0
Industrial Water Conservation	DEMAND REDUCTION [Lee]	21	35	0	0	0	0
		61	**37**	**0**	**0**	**0**	**0**
Southwest Milam WSC, Brazos (G)							
Carrizo Aquifer Development - Southwest Milam WSC	Carrizo-Wilcox Aquifer [Lee]	0	7	13	13	11	12
		0	**7**	**13**	**13**	**11**	**12**

Sum of Projected Water Management Strategies (acre-feet)	**275**	**303**	**240**	**272**	**271**	**274**

Appendix A

Copy of GMA 12 Resolution and Submittal Adopting DFCs

RESOLUTION TO ADOPT DESIRED FUTURE CONDITIONS FOR AQUIFERS IN GROUNDWATER MANAGEMENT AREA 12

THE STATE OF TEXAS §
§
GROUNDWATER MANAGEMENT AREA 12 §
§
GROUNDWATER CONSERVATION DISTRICTS §

WHEREAS, Texas Water Code § 36.108 requires the groundwater conservation districts located in whole or in part in a groundwater management area ("GMA") designated by the Texas Water Development Board to adopt desired future conditions for the relevant aquifers located within the management area;

WHEREAS, the groundwater conservation districts located wholly or partially within Groundwater Management Area 12 ("GMA 12"), as designated by the Texas Water Development Board, as of the date of this resolution are as follows: Brazos Valley Groundwater Conservation District, Fayette County Groundwater Conservation District, Lost Pines Groundwater Conservation District, Mid-East Texas Groundwater Conservation District, and Post Oak Savannah Groundwater Conservation District (collectively hereinafter "the GMA 12 Districts");

WHEREAS, the GMA 12 Districts are each a local government operating under Chapter 36, Texas Water Code and their specific enabling act;

WHEREAS, the GMA 12 Districts desire to fulfill the requirements of Texas Water Code §36.108 through mutual cooperation and joint planning efforts;

WHEREAS, Section 36.108(d-3) of the Texas Water Code requires the GMA 12 Districts to approve a resolution adopted by a two-thirds (2/3) vote of all the district representatives not later than January 5, 2022, and every five years thereafter;

WHEREAS, the GMA 12 Districts have had numerous public meetings, including stakeholder meetings for the specific purpose of receiving comments and input from stakeholders within GMA 12, and they have engaged in joint planning efforts to promote comprehensive management of the aquifers located in whole or in part in Groundwater Management Area 12;

WHEREAS, the representatives of the GMA 12 Districts held meetings on May 11, 2018; October 9, 2018; January 29, 2019; May 30, 2019; August 2, 2019; September 24, 2019; November 15, 2019; January 29, 2020; July 24, 2020; September 18, 2020; October 22, 2020; December 10, 2020; January 15, 2021; February 12, 2021; March 18, 2021; April 20, 2021; June 24, 2021; October 6, 2021; October 13, 2021; November 12, 2021, and November 30, 2021 in order to comply with their statutory duty to publicly consider the factors and criteria required for proposing Desired Future Conditions for adoption under § 36.108 of the Texas Water Code;

WHEREAS, each of the GMA 12 Districts secured hydrogeologic and engineering consulting services to provide technical support in their efforts to establish requisite DFCs;

WHEREAS, information was presented for consideration to the GMA 12 Districts concerning the following factors, listed in §36.108(d), including:

(1) groundwater availability models and other data or information for the management area;

(2) aquifer uses or conditions within the management area, including conditions that differ substantially from one geographic area to another;
(3) the water supply needs and water management strategies included in the state water plan;
(4) hydrological conditions, including for each aquifer in the management area the total estimated recoverable storage as provided by the Texas Water Development Board Executive Administrator and the average annual recharge inflows, and discharge;
(5) other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water;
(6) the impact of subsidence;
(7) socioeconomic impacts reasonably expected to occur;
(8) 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 Texas Water Code §36.002;
(9) the feasibility of achieving the desired future conditions; and
(10) any other information relevant to the specific desired future conditions, including comments received from the Texas Water Development Board regarding the initially submitted desired future conditions;

WHEREAS, pursuant to Section 36.108(d-2) of the Texas Water Code, the GMA 12 Districts also considered the balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater and control of subsidence in the management area;

WHEREAS, after consideration of multiple GAM simulations and other data and information relevant to the development of DFCs as required by Section 36.108 of the Texas Water Code, the representatives of GMA 12 Districts voted to approve proposed DFCs for the relevant aquifers in GMA 12 on March 18, 2021, at a publicly held meeting;

WHEREAS, the proposed DFCs approved by the representatives of GMA 12 Districts were distributed by mail to each GMA 12 District, initiating a 90-day public comment period by which each GMA 12 District held a public hearing on the proposed DFCs relevant to that district pursuant to section 36.108(d-2) of the Texas Water Code;

WHEREAS, each GMA 12 District compiled a written summary report inclusive of relevant comments received during the comment period on the proposed DFCs, any suggested revisions to the proposed DFCs, and the basis for any such revisions;

WHEREAS, the GMA 12 Districts' summary reports were submitted for review and consideration by GMA 12 district representatives at the November 12, 2021 meeting in accordance with Section 36.108, Texas Water Code;

WHEREAS, after considering the factors listed in 36.108(d), Texas Water Code, the GMA 12 Districts may establish different desired future conditions for: (1) each aquifer, subdivision of an aquifer, or geologic strata located in whole or in part within the boundaries of GMA 12; or (2) each geographic area overlying an aquifer in whole or in part or subdivision of an aquifer within the boundaries of GMA 12;

WHEREAS, the GMA 12 Districts recognize that GMA 12 includes a geographically and hydrologically diverse area with a variety of land uses and a diverse mix of water users;

WHEREAS, in accordance with Section 36.108, Texas Water Code, at least two-thirds of the GMA 12 Districts had a voting representative in attendance at the reconvened November 12, 2021 meeting; Brazos Valley Groundwater Conservation District, Fayette County Groundwater Conservation District, Lost Pines Groundwater Conservation District, Mid-East Texas Groundwater Conservation District, and Post Oak Savannah Groundwater Conservation District were in attendance to review the reports and consider any district-suggested revisions to the proposed desired future conditions and

WHEREAS, on November 30, 2021, at an open meeting duly noticed and held in accordance with law at the Post Oak Savannah Groundwater Conservation District's office located at 310 East Avenue C, Milano, Texas, all GCDs within GMA 12, having had a chance to consider this Resolution at this meeting as well as comments submitted to the individual districts during the comment period have voted on the DFCs for in the counties and districts according to the tables in Attachment A.

NOW, THEREFORE, BE IT RESOLVED BY THE AUTHORIZED VOTING REPRESENTATIVES OF THE GMA 12 DISTRICTS AS FOLLOWS:

1. Each of the above affirmations and recitals set forth herein are true and correct and fully incorporated into this resolution.

2. The authorized voting representatives of the GMA 12 Districts hereby establish the Desired Future Conditions of the aquifer(s) as set forth in Attachment B by the vote reflected in the Minutes attached hereto as Attachment D, summarized as follows:

GCD	Aquifer: Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro and Hooper	Aquifer: Yegua-Jackson	Aquifer: Brazos River Alluvium
Brazos Valley GCD	Y	Y	Y
Fayette County GCD	Y	Y	Y
Lost Pines GCD	N	Y	Y
Mid-East Texas GCD	Y	Y	Y
Post Oak Savannah GCD	Y with objection as to process	Y with objection as to process	Y with objection as to process

3. The authorized voting representatives of the GMA 12 Districts declare that the following aquifers are non-relevant for the purpose of adopting Desired Future Conditions in Groundwater Management Area 12, as the districts determined that aquifer characteristics, groundwater demands, and current groundwater uses do not warrant adoption of a desired future condition for the: the Gulf Coast Aquifer in Brazos County; the Trinity Aquifer in Bastrop, Lee, and Williamson counties; the Yegua-Jackson Aquifer in Bastrop and Lee counties; and the Wilcox portion of the Carrizo-Wilcox Aquifer in Fayette County. Technical justifications of the non-relevant aquifers, as required by 31 Tex. Admin. Code §356.31, is set forth in Attachment C.

4. The GMA 12 Districts and their agents and representatives, individually and collectively, are further authorized to take all actions necessary to implement this resolution, including but not limited to additional actions required for adoption of the DFCs in accordance with Section 36.108 of the Texas Water Code.

5. The Desired Future Conditions of the aquifer(s) adopted by the GMA 12 Districts and attached hereto, along with the explanatory report, and proof of the notice of the meeting in which Desired Future Conditions adoption occurred, shall be submitted to the Texas Water Development Board and sent to the GMA 12 Districts, as required by Section 36.108(d-3), Texas Water Code.

AND IT IS SO ORDERED. PASSED AND ADOPTED on this 30th day of November, 2021.

ATTEST:

Brazos Valley Groundwater Conservation District

Fayette County Groundwater Conservation District

Lost Pines Groundwater Conservation District

Mid-East Texas Groundwater Conservation District

Post Oak Savannah Groundwater Conservation

ATTACHMENTS

A: Copies of notices of November 30, 2021, meeting
B: Desired Future Conditions
C: Non-relevant Aquifers
D: Minutes of November 12, 2021

Attachment A
Notice for November 30, 2021 GMA 12 Meeting
Attachment B
GMA 12 DESIRED FUTURE CONDITIONS

A. Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers

The Sparta, Queen City, and Carrizo aquifers are present and used in all GCDs within GMA 12. Therefore, all GCDs submitted DFCs for these aquifers. The Calvert Bluff, Simsboro, and Hooper aquifers are present in all GCDs but not used in Fayette County. Therefore, GMA 12 declared these aquifers not relevant for Fayette County, and Fayette County GCD did not submit a DFC for these aquifers. For the purpose of establishing DFCs, the Groundwater Availability Model (GAM) for the Sparta, Queen City and Carrizo-Wilcox Aquifer (Young and others, 2020) was used to determine the compatibility and physical possibility of the DFCs proposed by each GCD. The DFCs proposed by each GCD for these six aquifers are provided in **Table 2-1**, as well as the DFC adopted by GMA 12 as a whole. The DFCs are based on the average drawdown from January 2011 through December 2070 in all instances except for the Brazos Valley Groundwater Conservation District where the DFCs are based on the average drawdown from January 2000 through December 2070. Note that the DFCs for Fayette County GCD in the Sparta, Queen City, and Carrizo aquifers are for all of Fayette County, and not just the portion of Fayette County within GMA 12. This is because GMA 15 has declared these aquifers not relevant for Fayette County, and all joint groundwater planning for these aquifers is done through GMA 12.

Table 2-1 Adopted DFCs for the Sparta, Queen City, Carrizo, Calvert Bluff, Simsboro, and Hooper Aquifers

GCD or County	Average Aquifer Drawdown (ft) measured from January 2011 through December 2070					
	Sparta	Queen City	Carrizo	Calvert Bluff	Simsboro	Hooper
Brazos Valley GCD	53	44	84	111	262	167
Fayette County GCD	43*	73*	140*	--	--	--
Lost Pines GCD	22	28	134	132	240	138
Mid-East Texas GCD	25	20	48	57	76	69
Post Oak Savannah GCD	32	30	146	156	278	178
Falls County	--	--	--	--	7	3
Limestone County	--	--	--	2	3	3
Navarro County	--	--	--	0	1	0
Williamson County	--	--	--	25	31	24

* Fayette County GCD DFCs are for all of Fayette County.
Brazos Valley GCD DFCs are for 2000 through 2070

Based on the principle of using the GAM as a joint planning tool and the fact that the GAM predictions contain uncertainty, GMA 12 considered the DFCs to be compatible and physically

possible if the difference between modeled drawdown results and the DFC drawdown targets are within a 10 percent variance for all aquifers in the Queen City-Sparta/Carrizo-Wilcox GAM of the GAM simulation. Factors considered for determining tolerance criteria include:

- model calibration results and statistics;
- information used to calibrate the GAM;
- aquifer and recharge information collected since the GAM was developed;
- sensitivity of the GAM calibration and GAM predictions to change in the model parameters; and
- range of uncertainty in the model parameters including historical and future pumping, temporal variation in recharge distribution and magnitude.

Reference:
Young, S., Jigmond, M., Jones, T., and Ewing, T., 2020. Groundwater Availability Model for the Central Portion of the Sparta, Queen City, and Carrizo-Wilcox Aquifers, prepared for the Texas Water Development Board, Austin, Texas

B. Yegua-Jackson Aquifer

The Yegua-Jackson Aquifer is present in all GCDs in GMA 12. All GCDs manage the Yegua-Jackson Aquifer as a single unit. The DFCs proposed by each GCD for the Yegua-Jackson Aquifer are provided in **Table 2-2**, as well as the DFC adopted by GMA 12 as a whole. Lost Pines GCD did not propose a DFC because the district has declared the Yegua-Jackson Aquifer as a non-relevant aquifer. For the purpose of establishing and evaluating DFCs, the GAM for the Yegua-Jackson Aquifer (Deeds and others, 2010) was used to determine the compatibility and physical possibility of the DFCs submitted by each GCD. The DFC is based on the average drawdown from January 2010 through December 2069.

Table 2-2 Adopted DFCs for the Yegua and Jackson Aquifers

GCD	Average Aquifer Drawdown (ft) measured from January 2010 through December 2069
	Yegua-Jackson
Brazos Valley GCD	67
Fayette County GCD	81
Lost Pines GCD	--
Mid-East Texas GCD	8
Post Oak Savannah GCD	61

Based on the principle of using the GAM as a joint planning tool and the fact that the GAM predictions contain uncertainty, GMA 12 considered the DFCs to be compatible and physically possible if the difference between modeled drawdown results and the DFC drawdown targets are within a 10 percent for the Yegua-Jackson Aquifer in the GAM simulation. Factors considered for determining tolerance criteria include:

- model calibration results and statistics;
- information used to calibrate the GAM;

- aquifer and recharge information collected since the GAM was developed;
- sensitivity of the GAM calibration and GAM predictions to change in the model parameters; and
- range of uncertainty in the model parameters including historical and future pumping, temporal variation in recharge distribution and magnitude.

Reference:
Deeds, N.E., Yan, T., Sungh, A., Jones, T.L., Kelley, V.A., Knox, P.R., and Young, S.C., 2010, Groundwater Availability Model for the Yegua-Jackson Aquifer, final report prepared for the Texas Water Development Board, March, 2010, 582 pp.

C. Brazos Alluvium Aquifer

In GMA 12, the Brazos River Alluvium Aquifer is only present in Post Oak Savannah GCD and the Brazos Valley GCD. For this reason, GMA 12 adopted DFCs at a county level in these two GCDs, as shown in **Table 2-3**. DFCs for the Brazos River Alluvium Aquifer were not adopted for GMA 12 as a whole.

Table 2-3 Adopted DFCs for the Brazos River Alluvium Aquifer

GCD	County	Brazos River Alluvium Aquifer
Brazos Valley	Brazos & Robertson	North of State Highway 21: Percent saturation shall average at least 30% of total well depth from January 2013 to December 2069. South of State Highway 21: Percent saturation shall average at least 40% of total well depth from January 2013 to December 2069.
Post Oak Savannah	Burleson	A decrease in 6 feet in the average saturated thickness over the period from January 2010 to December 2069.
	Milam	A decrease of 5 feet in average saturated thickness over the period from January 2010 to December 2069

D. Non-relevant Areas of Aquifers

There are four areas where aquifers were declared non-relevant during the current cycle of joint groundwater planning. The Trinity Aquifer was declared non-relevant in Bastrop, Lee and Williamson counties because of its small areal coverage, great depth and poor water quality. The Yegua-Jackson Aquifer was declared non-relevant in Lost Pines GCD because it has a minimal amount of pumpage within the district. The Gulf Coast Aquifer was declared non-relevant in Brazos Valley GCD within GMA 12 since the small outcrop in the southernmost part of Brazos County is thin, can only provide water in small quantities and is very limited in areal extent. Also, the Wilcox portion of the Carrizo-Wilcox Aquifer in Fayette County was declared non-relevant because of the great depth to these units, the poor water quality and the lack of wells in the Wilcox aquifers within the district.

Attachment C
NON-RELEVANT AQUIFER: GULF COAST AQUIFER IN BRAZOS COUNTY

I. INTRODUCTION

The Texas Water Development Board, in its May 2020 document, Explanatory Report for Submittal of Desired Future Conditions to the Texas Water Development Board, offers the following guidance regarding documentation for aquifers that are to be classified not relevant for purposes of joint planning:

> *Districts in a groundwater management area may, as part of the process for adopting and submitting desired future conditions, propose classification of a portion or portions of a relevant aquifer as non-relevant (31 Texas Administrative Code 356.31 (b)). This proposed classification of an aquifer may be made if the districts determine that aquifer characteristics, groundwater demands, and current groundwater uses do not warrant adoption of a desired future condition.*
>
> *The districts must submit to the TWDB the following documentation for the portion of the aquifer proposed to be classified as non-relevant:*
>
> 1. *A description, location, and/or map of the aquifer or portion of the aquifer;*
> 2. *A summary of aquifer characteristics, groundwater demands, and current groundwater uses, including the total estimated recoverable storage as provided by the TWDB, that support the conclusion that desired future conditions in adjacent or hydraulically connected relevant aquifer(s) will not be affected; and*
> 3. *An explanation of why the aquifer or portion of the aquifer is non-relevant for joint planning purposes.*

This technical memorandum provides the required documentation to classify the Gulf Coast Aquifer as not relevant for purposes of joint planning.

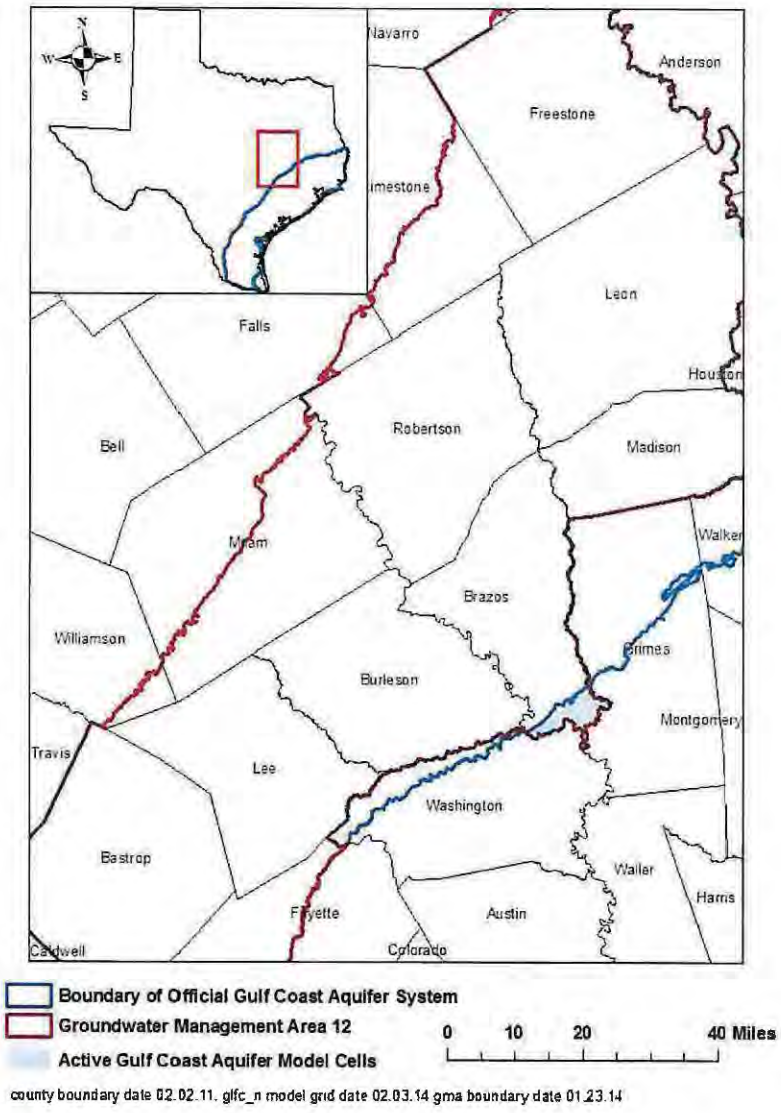
II. AQUIFER DESCRIPTION AND LOCATION

As described in George and others (2011):

> ***The Gulf Coast Aquifer*** *is a major aquifer paralleling the Gulf of Mexico coastline from the Louisiana border to the border of Mexico. It consists of several aquifers, including the Jasper, Evangeline, and Chicot aquifers, which are composed of discontinuous sand, silt, clay, and gravel beds. The maximum total sand thickness of the Gulf Coast Aquifer ranges from 700 feet in the south to 1,300 feet in the north. Freshwater saturated thickness averages about 1,000 feet. Water quality varies with depth and locality: it is generally good in the central and northeastern parts of the aquifer, where the water contains less than 500 milligrams per liter of total dissolved solids, but declines to the south, where it typically contains 1,000 to more than 10,000 milligrams per liter of total dissolved solids and where the productivity of the aquifer decreases. High levels of radionuclides, thought mainly to be naturally occurring, are found in some wells*

in Harris County in the outcrop and in South Texas. The aquifer is used for municipal, industrial, and irrigation purposes. In Harris, Galveston, Fort Bend, Jasper, and Wharton counties, water level declines of as much as 350 feet have led to land subsidence. The regional water planning groups, in their 2006 Regional Water Plans, recommended several water management strategies that use the Gulf Coast Aquifer, including drilling more wells, pumping more water from existing wells, temporary overdrafting, constructing new or expanded treatment plants, desalinating brackish groundwater, developing conjunctive use projects, and reallocating supplies.

Figure 1 (taken from Wade and others, 2014) shows the limited extent of the Gulf Coast Aquifer in GMA 12. Note that it occurs only in a small portion of Brazos County.



II.

Figure 1. Location of Gulf Coast Aquifer in GMA 12

III. AQUIFER CHARACTERISTICS

The Catahoula Sandstone, the very basal unit to the Gulf Coast Aquifer, occurs in the very south part of Brazos County with the outcrop covering the upper part of low rolling hills with the Jackson Group below the Catahoula Sandstone. The Catahoula Sandstone is described as clay, tuff, sand, sandstone in interbedded layers with a capacity to yield small quantities of fresh to slightly saline water. The aquifer covers about 1.3 percent of the Brazos Valley Groundwater Conservation District and is less than 250 feet in thickness.

IV. GROUNDWATER DEMANDS AND CURRENT GROUNDWATER USES

The Texas Water Development Board pumping database lists limited pumping from the Gulf Coast Aquifer in Brazos County that ranged from 6 to 23 acre-feet/year between 2007 and 2016.

V. TOTAL ESTIMATED RECOVERABLE STORAGE

Wade and others (2014) developed total estimated recoverable storage for the Gulf Coast Aquifer in GMA 12 as follows:

County	*Total Storage (acre-feet)*	*25 percent of Total Storage (acre-feet)*	*75 percent of Total Storage (acre-feet)*
Brazos	450,000	112,500	337,500
Total	450,000	112,500	337,500

Total storage is given in the first column. Lower percentages of storage are given in the next two columns.

VI. EXPLANATION OF NON-RELEVANCE

Due to its very limited areal extent, shallow depth and low use, the Gulf Coast Aquifer is classified as not relevant for purposes of joint planning in Groundwater Management Area 12.

VII. REFERENCES

George, P.G., Mace, R.E., and Petrossian, R., 2011. Aquifers of Texas. Texas Water Development Board Report 380, July 2011, 182p.

Wade, S. and Shi, J., 2014. GAM Task 13-035 Version 2: Total Estimated Recoverable Storage for Aquifers in Groundwater Management Area 12. Texas Water Development Board, Groundwater Resources Division, May 16, 2014, 43p.

NON-RELEVANT AQUIFER:
THE TRINITY AQUIFER IN BASTROP, LEE AND WILLIAMSON COUNTIES

I. INTRODUCTION

The Texas Water Development Board, in its May 2020 document, Explanatory Report for Submittal of Desired Future Conditions to the Texas Water Development Board, offers the following guidance regarding documentation for aquifers that are to be classified not relevant for purposes of joint planning:

> *Districts in a groundwater management area may, as part of the process for adopting and submitting desired future conditions, propose classification of a portion or portions of a relevant aquifer as non-relevant (31 Texas Administrative Code 356.31 (b)). This proposed classification of an aquifer may be made if the districts determine that aquifer characteristics, groundwater demands, and current groundwater uses do not warrant adoption of a desired future condition.*
>
> *The districts must submit to the TWDB the following documentation for the portion of the aquifer proposed to be classified as non-relevant:*
>
> 1. *A description, location, and/or map of the aquifer or portion of the aquifer;*
> 2. *A summary of aquifer characteristics, groundwater demands, and current groundwater uses, including the total estimated recoverable storage as provided by the TWDB, that support the conclusion that desired future conditions in adjacent or hydraulically connected relevant aquifer(s) will not be affected; and*
> 3. *An explanation of why the aquifer or portion of the aquifer is non-relevant for joint planning purposes.*

This technical memorandum provides the required documentation to classify the Trinity Aquifer as not relevant for purposes of joint planning.

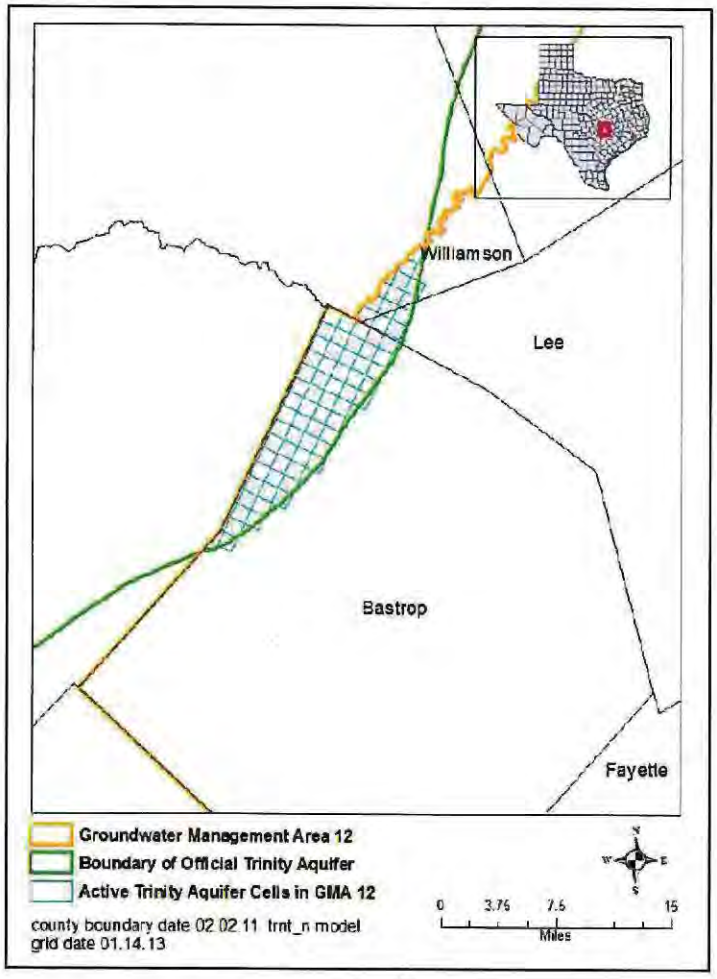
II. AQUIFER DESCRIPTION AND LOCATION

As described in George and others (2011):

> ***The Trinity Aquifer*** *extends across much of the central and northeastern part of the state. It is composed of several smaller aquifers contained within the Trinity Group. Although referred to differently in different parts of the state, they include the Antlers, Glen Rose, Paluxy, Twin Mountains, Travis Peak, Hensell, and Hosston aquifers. These aquifers consist of limestones, sands, clays, gravels, and conglomerates. Their combined freshwater saturated thickness averages about 600 feet in North Texas and about 1,900 feet in Central Texas. In general, groundwater is fresh but very hard in the outcrop of the aquifer. Total dissolved solids increase from less than 1,000 milligrams per liter in the east and southeast to between 1,000 and 5,000 milligrams per liter, or slightly to moderately saline, as the depth to the aquifer increases. Sulfate and chloride concentrations also tend*

to increase with depth. The Trinity Aquifer discharges to a large number of springs, with most discharging less than 10 cubic feet per second. The aquifer is one of the most extensive and highly used groundwater resources in Texas. Although its primary use is for municipalities, it is also used for irrigation, livestock, and other domestic purposes. Some of the state's largest water level declines, ranging from 350 to more than 1,000 feet, have occurred in counties along the IH-35 corridor from McLennan County to Grayson County. These declines are primarily attributed to municipal pumping, but they have slowed over the past decade as a result of increasing reliance on surface water. The regional water planning groups, in their 2006 Regional Water Plans, recommended numerous water management strategies for the Trinity Aquifer, including developing new wells and well fields, pumping more water from existing wells, overdrafting, reallocating supplies, and using surface water and groundwater conjunctively.

Figure 1 (taken from Wade and others, 2014) shows the limited extent of the Trinity Aquifer in GMA 12. Note that it occurs only in a small portion of Bastrop, Lee, and Williamson Counties.



I.

Figure 1. Location of Trinity Aquifer in GMA 12

III. AQUIFER CHARACTERISTICS

The Trinity Aquifer is a highly prolific aquifer across much of the northern part of the state. However, within GMA 12 it is only found at extreme depths in a very small portion of the GMA. There are no known wells in this area that produce from the Trinity, and therefore the aquifer characteristics within GMA 12 are unknown.

IV. GROUNDWATER DEMANDS AND CURRENT GROUNDWATER USES

The Texas Water Development Board pumping database lists limited pumping from the Trinity Aquifer in Williamson County that ranged from 1,353 and 3,116 acre-feet/year between 2007 and 2014. However, all of this is from the portion of Williamson County that lies outside of GMA 12. As noted above, there are no known wells producing from the Trinity Aquifer within GMA 12. The Texas Water Development Board pumping database shows no production from the Trinity Aquifer in Bastrop or Lee Counties.

V. TOTAL ESTIMATED RECOVERABLE STORAGE

Wade and others (2014) developed total estimated recoverable storage for the Trinity Aquifer in GMA 12 as follows:

County	*Total Storage (acre-feet)*	*25 percent of Total Storage (acre-feet)*	*75 percent of Total Storage (acre-feet)*
Bastrop	9,000,000	2,250,000	6,750,000
Lee	500,000	125,000	375,000
Williamson	1,600,000	400,000	1,200,000
Total	11,100,000	2,775,000	8,325,000

Total storage is given in the first column. Lower percentages of storage are given in the next two columns.

VI. EXPLANATION OF NON-RELEVANCE

Due to its very limited areal extent, extreme depth and no known use within GMA 12, the Trinity Aquifer is classified as not relevant for purposes of joint planning in Groundwater Management Area 12.

VII. REFERENCES

George, P.G., Mace, R.E., and Petrossian, R., 2011. Aquifers of Texas. Texas Water Development Board Report 380, July 2011, 182p.

Wade, S. and Shi, J., 2014. GAM Task 13-035 Version 2: Total Estimated Recoverable Storage for Aquifers in Groundwater Management Area 12. Texas Water Development Board, Groundwater Resources Division, May 16, 2014, 43p.

NON-RELEVANT AQUIFER:
THE YEGUA-JACKSON AQUIFER IN BASTROP AND LEE COUNTIES

I. INTRODUCTION

The Texas Water Development Board, in its May 2020 document, Explanatory Report for Submittal of Desired Future Conditions to the Texas Water Development Board, offers the following guidance regarding documentation for aquifers that are to be classified not relevant for purposes of joint planning:

> *Districts in a groundwater management area may, as part of the process for adopting and submitting desired future conditions, propose classification of a portion or portions of a relevant aquifer as non-relevant (31 Texas Administrative Code 356.31 (b)). This proposed classification of an aquifer may be made if the districts determine that aquifer characteristics, groundwater demands, and current groundwater uses do not warrant adoption of a desired future condition.*
>
> *The districts must submit to the TWDB the following documentation for the portion of the aquifer proposed to be classified as non-relevant:*
>
> 1. *A description, location, and/or map of the aquifer or portion of the aquifer;*
> 2. *A summary of aquifer characteristics, groundwater demands, and current groundwater uses, including the total estimated recoverable storage as provided by the TWDB, that support the conclusion that desired future conditions in adjacent or hydraulically connected relevant aquifer(s) will not be affected; and*
> 3. *An explanation of why the aquifer or portion of the aquifer is non-relevant for joint planning purposes.*

This technical memorandum provides the required documentation to classify the Yegua-Jackson Aquifer as not relevant for purposes of joint planning in Bastrop and Lee Counties (the Lost Pines GCD).

II. AQUIFER DESCRIPTION AND LOCATION

As described in George and others (2011):

> ***The Yegua-Jackson Aquifer*** *is a minor aquifer stretching across the southeast part of the state. It includes water-bearing parts of the Yegua Formation (part of the upper Claiborne Group) and the Jackson Group (comprising the Whitsett, Manning, Wellborn, and Caddell formations). These geologic units consist of interbedded sand, silt, and clay layers originally deposited as fluvial and deltaic sediments. Freshwater saturated thickness averages about 170 feet. Water quality varies greatly owing to sediment composition in the aquifer formations, and in all areas the aquifer becomes highly mineralized with depth. Most groundwater is produced from the sand units of the aquifer, where the water is fresh and ranges from less than 50 to 1,000 milligrams per liter of total dissolved solids. Some*

slightly to moderately saline water, with concentrations of total dissolved solids ranging from 1,000 to 10,000 milligrams per liter, also occurs in the aquifer. No significant water level declines have occurred in wells measured by the TWDB. Groundwater for domestic and livestock purposes is available from shallow wells over most of the aquifer's extent. Water is also used for some municipal, industrial, and irrigation purposes. The regional water planning groups, in their 2006 Regional Water Plans, recommended several water management strategies that use the Yegua-Jackson Aquifer, including drilling more wells and desalinating the water.

Figure 1 (taken from Wade and others, 2014) shows the limited extent of the Yegua-Jackson Aquifer in GMA 12.

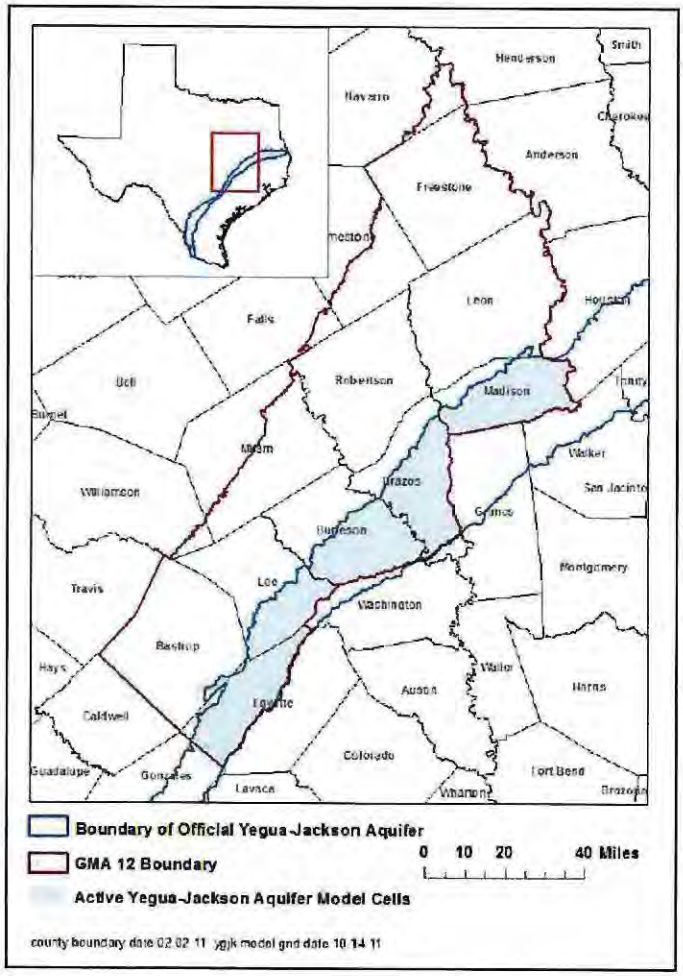


Figure 1. Location of Yegua-Jackson Aquifer in GMA 12

III. AQUIFER CHARACTERISTICS

The Yegua-Jackson Aquifer occurs in the very southern part of Bastrop County and the lower third of Lee County. The aquifer is described as interbedded layers of sand, silt, and clay with a capacity to yield small quantities of fresh to moderately saline water. Wells producing from the Yegua-Jackson Aquifer can produce as much as 500 gpm, although well capacities are typically much lower than that.

IV. GROUNDWATER DEMANDS AND CURRENT GROUNDWATER USES

The Texas Water Development Board pumping database lists limited pumping from the Yegua-Jackson Aquifer in Bastrop County that ranged from 2 to 3 acre-feet/year and 46 to 76 acre-feet/year in Lee County between 2007 and 2014. There is no permitted pumpage from the Yegua-Jackson Aquifer within the Lost Pines GCD and all use listed in the TWDB database is estimated to be rural domestic and livestock use.

V. TOTAL ESTIMATED RECOVERABLE STORAGE

Wade and others (2014) developed total estimated recoverable storage for the Yegua-Jackson Aquifer in the Lost Pines GCD as follows:

County	*Total Storage (acre-feet)*	*25 percent of Total Storage (acre-feet)*	*75 percent of Total Storage (acre-feet)*
Bastrop	290,000	72,500	217,500
Lee	10,000,000	2,500,000	7,500,000
Total	10,290,000	2,572,500	7,717,500

Total storage is given in the first column. Lower percentages of storage are given in the next two columns.

VI. EXPLANATION OF NON-RELEVANCE

Due to its very low use, lack of permitted production, and no anticipated permitted production in the future, the Yegua-Jackson Aquifer is classified as not relevant for purposes of joint planning in Bastrop and Lee Counties (the Lost Pines GCD) in Groundwater Management Area 12.

VII. REFERENCES

George, P.G., Mace, R.E., and Petrossian, R., 2011. Aquifers of Texas. Texas Water Development Board Report 380, July 2011, 182p.

Wade, S. and Shi, J., 2014. GAM Task 13-035 Version 2: Total Estimated Recoverable Storage for Aquifers in Groundwater Management Area 12. Texas Water Development Board, Groundwater Resources Division, May 16, 2014, 43p.

THE WILCOX PORTION OF THE CARRIZO-WILCOX AQUIFER

IN FAYETTE COUNTY

I. INTRODUCTION

The Texas Water Development Board, in its May 2020 document, Explanatory Report for Submittal of Desired Future Conditions to the Texas Water Development Board, offers the following guidance regarding documentation for aquifers that are to be classified not relevant for purposes of joint planning:

> *Districts in a groundwater management area may, as part of the process for adopting and submitting desired future conditions, propose classification of a portion or portions of a relevant aquifer as non-relevant (31 Texas Administrative Code 356.31 (b)). This proposed classification of an aquifer may be made if the districts determine that aquifer characteristics, groundwater demands, and current groundwater uses do not warrant adoption of a desired future condition. The districts must submit to the TWDB the following documentation for the portion of the aquifer proposed to be classified as non-relevant:*
>
> 1. *A description, location, and/or map of the aquifer or portion of the aquifer;*
> 2. *A summary of aquifer characteristics, groundwater demands, and current groundwater uses, including the total estimated recoverable storage as provided by the TWDB, that support the conclusion that desired future conditions in adjacent or hydraulically connected relevant aquifer(s) will not be affected; and*
> 3. *An explanation of why the aquifer or portion of the aquifer is nonrelevant for joint planning purposes.*

This technical memorandum provides the required documentation to classify the Wilcox portion of the Carrizo-Wilcox Aquifer in Fayette County as not relevant for purposes of joint planning.

II. AQUIFER DESCRIPTION AND LOCATION

As described in George and others (2011):

> ***The Carrizo-Wilcox Aquifer*** *is a major aquifer extending from the Louisiana border to the border of Mexico in a wide band adjacent to and northwest of the Gulf Coast Aquifer. It consists of the Wilcox Group and the overlying Carrizo Formation of the Claiborne Group. The aquifer is primarily composed of sand locally interbedded with gravel, silt, clay, and lignite. Although the Carrizo-Wilcox Aquifer reaches 3,000 feet in thickness, the freshwater saturated thickness of the sands averages 670 feet. The groundwater, although hard, is generally fresh and typically contains less than 500 milligrams per liter of total dissolved solids*

in the outcrop, whereas softer groundwater with total dissolved solids of more than 1,000 milligrams per liter occurs in the subsurface. High iron and manganese content in excess of secondary drinking water standards is characteristic of the deeper subsurface portions of the aquifer. Parts of the aquifer in the Winter Garden area are slightly to moderately saline, with total dissolved solids ranging from 1,000 to 7,000 milligrams per liter. Irrigation pumping accounts for slightly more than half the water pumped, and pumping for municipal supply accounts for another 40 percent. Water levels have declined in the Winter Garden area because of irrigation pumping and in the northeastern part of the aquifer because of municipal pumping. The regional water planning groups, in their 2006 Regional Water Plans, recommended several water management strategies that use the Carrizo-Wilcox Aquifer, including developing new wells and well fields, withdrawing additional water from existing wells, desalinating brackish water, using surface water and groundwater conjunctively, reallocating supplies, and
transporting water over long distances.

Figure 1 (taken from Wade and others, 2014) shows the extent of the Carrizo-Wilcox Aquifer in GMA 12.

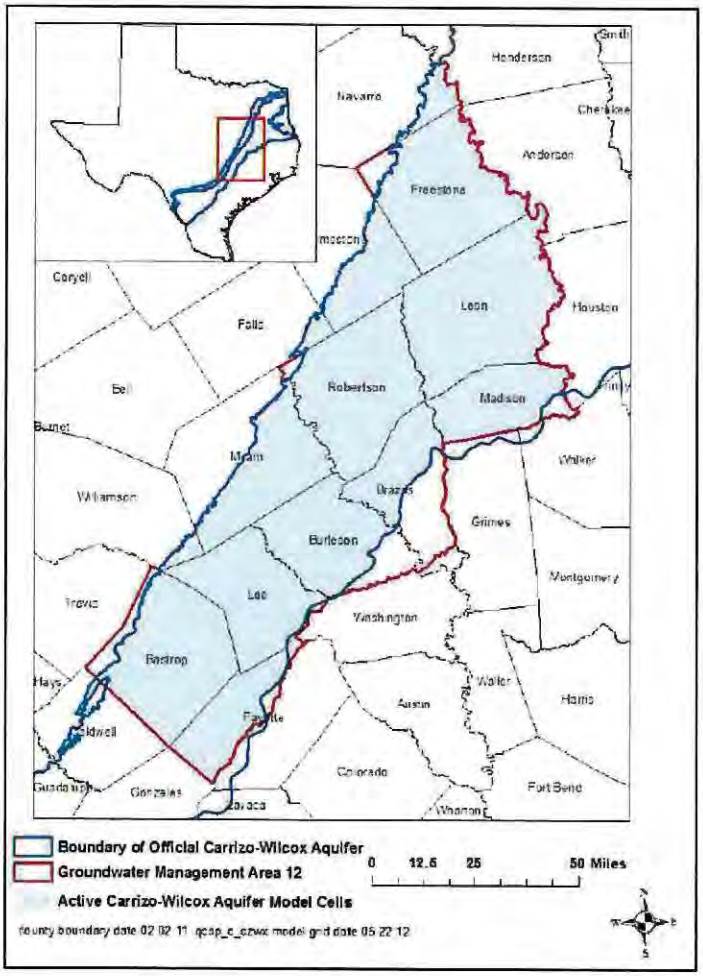


Figure 1. Location of Carrizo-Wilcox Aquifer in GMA 12

III. AQUIFER CHARACTERISTICS

The Wilcox portion of the Carrizo-Wilcox Aquifer occurs below the Carrizo Aquifer. In Fayette County, the depth of wells producing from the Carrizo Aquifer ranges from 1,700 to 3,200 feet. The Wilcox units (including the Calvert Bluff, Simsboro, and Hooper) occur below the Carrizo, and therefore wells producing from these units would be at least 2,000 feet deep. Water quality in these Wilcox units is estimated to be brackish to saline. There are no known wells in the Wilcox units within Fayette County, and therefore the aquifer characteristics within the county are unknown.

IV. GROUNDWATER DEMANDS AND CURRENT GROUNDWATER USES

The Texas Water Development Board pumping database lists limited pumping from the Carrizo-Wilcox Aquifer in Fayette County that ranged from 10 to 390 acre-feet/year between 2007 and 2018. However, this use is all from the Carrizo portion of the Carrizo-Wilcox Aquifer, as there are no known wells producing from the Wilcox units within Fayette County.

V. TOTAL ESTIMATED RECOVERABLE STORAGE

Wade and others (2014) developed total estimated recoverable storage for the Carrizo-Wilcox Aquifer in GMA 12 as follows:

County	*Total Storage (acre-feet)*	*25 percent of Total Storage (acre-feet)*	*75 percent of Total Storage (acre-feet)*
Fayette	95,000,000	23,750,000	71,250,000
Total	95,000,000	23,750,000	71,250,000

Total storage is given in the first column. Lower percentages of storage are given in the next two columns.

VI. EXPLANATION OF NON-RELEVANCE

Due to its extreme depth, poor water quality, lack of use and zero anticipated use in the future, the Wilcox portion of the Carrizo-Wilcox Aquifer is classified as not relevant for purposes of joint planning in Fayette County in Groundwater Management Area 12.

VII. REFERENCES

George, P.G., Mace, R.E., and Petrossian, R., 2011. Aquifers of Texas. Texas Water Development Board Report 380, July 2011, 182p.

Wade, S. and Shi, J., 2014. GAM Task 13-035 Version 2: Total Estimated Recoverable Storage for Aquifers in Groundwater Management Area 12. Texas Water Development Board, Groundwater Resources Division, May 16, 2014, 43p.

Appendix B

Evidence of Coordination with Surface Water Management Entities

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Region K Regional Water Planning Group
LCRA
Attn: Region K
Mailstop R325
P O Box 220
Austin, TX 78767-0220

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Brazos G Regional Water Planning Group
Mr. Trey Buzbee, Administrative Agent
Brazos River Authority
Ms. Jennifer White
c/o Brazos G Regional Water Planning Group
P O Box 7555
Waco, TX 76714

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Lower Colorado River Authority
P O Box 220
Austin, TX 78767-0220

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Brazos River Authority
P O Box 7555
Waco, TX 76714

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

GateHouse Water LLC
1122 Colorado St., Ste. 2399
Austin, TX 78701

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

City of Hutto
James Earp, City Manager
500 W. Live Oak St.
Hutto, TX 78634

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

City of Smithville
P O Box 449
Smithville, TX 78957

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Bastrop County MUD 1
3200 Southwest Freeway Suite 2600
Allen Boone Humphries Robinson LLP
Houston, TX 77027-7597

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Bastrop County WCID 1
P O Box 814
McDade, TX 78650

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Bastrop County WCID 3
P O Box 1627
Bastrop, TX 78602

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

The Colony MUD IE
100 Congress Ave., Suite 1300
Armbrust & Brown LLP
Austin, TX 78701

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

The Colony MUD IA
100 Congress Ave., Suite 1300
Armbrust & Brown LLP
Austin, TX 78701

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

The Colony MUD IF
100 Congress Ave., Suite 1300
Armbrust & Brown LLP
Austin, TX 78701

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

XS Ranch MUD
8500 Bluffstone Cove, Suite B 104
Austin, TX 78759

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Lee County FWSD 1
P O Box 74
Dime Box, TX 77853

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Lee-Fayette Counties Cummins Creek WCID 1
P O Box 1026
LaGrange, TX 78945

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Aqua WSC
P O Drawer P
Bastrop, TX 78602

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

City of Elgin
P O Box 591
Elgin, TX 78621

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Creedmoor – MAHA WSC
12100 Laws Rd.
Buda, TX 78610-9607

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

K & K Water Company
231 Mandy Lane
Red Rock, TX 78662

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Lee County WSC
P O Box 8
Giddings, TX 78942

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Polonia WSC
P O Box 778
Lockhart, TX 78644

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

City of Giddings
118 E. Richmond St.
Giddings, TX 78942

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

City of Lexington
P O Box 56
Lexington, TX 78947

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Lincoln WSC
P O Box 336
Lincoln, TX 78948-0336

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Manville WSC
P O Box 248
Coupland, TX 78615-0248

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Southwest Milam WSC
P O Box 232
Rockdale, TX 78567

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

City of Austin
P O Box 1088
Austin, TX 78767-1088

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Bastrop West Water Company
379 Highway 95 N
Bastrop, TX 78602

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Recharge Water LP
c/o Kate Brightwell
P O Box 863376
Plano, TX 75086

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Darling Ingredients
264 FM 2336
Bastrop, TX 78602

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Hunters Crossing
1311 Chestnut St.
Bastrop, TX 78602

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

Bastrop County WCID 2
112 Corporate Dr.
Bastrop, TX 78602

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Lost Pines Groundwater Conservation District
908 NE Loop 230
Post Office Box 1027
Smithville, TX 78957
Tax ID Number 74-2955722

512-360-5088
FAX: 512-360-5448
Email: lpgcd@lostpineswater.org
Web Site: www.lostpineswater.org

James Totten, General Manager

June 6, 2023

City of Bastrop
1311 Chestnut St.
Bastrop, TX 78602

Re: Notice of Adoption of Amended Management Plan by Lost Pines Groundwater Conservation District

Dear Sir or Madam:

Please take notice that on May 17, 2023, following notice and public hearing, the Board of Directors of the Lost Pines Groundwater Conservation District adopted an amended Management Plan. A copy of the amended and adopted Management Plan is enclosed for your review and comment, pursuant to 31 TAC §356.6(a)(4), concerning coordination with all surface water management entities in the District's boundaries.

Please do not hesitate to call if you have any questions.

Very truly yours,

James Totten
General Manager

Appendix C

Certified Copy of District Resolution Adopting Groundwater Management Plan

No. 2023-05-01

RESOLUTION ADOPTING AMENDMENTS TO THE LOST PINES GROUNDWATER CONSERVATION DISTRICT'S MANAGEMENT PLAN

WHEREAS, the Lost Pines Groundwater Conservation District (the "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; and

WHEREAS, the Board of Directors ("Board") of the Lost Pines Groundwater Conservation District proposes to amend the District's Management Plan to update the modeled available groundwater, update data in the plan to be consistent with data used in the adopted State Water Plan, updating the plan to address water supply needs, and including new or revised management objectives and performance standards ("Proposed Amendments") as required by Texas Water Code § 36.1071 and § 36.1073; and

WHEREAS, after notice, the Board previously held a public hearing on Proposed Amendments at 7:00 p.m. on October 19th, 2022 at the Elgin Library Chambers, Texas to amend the District's Management Plan to revise the District's mission, update data in the plan to be consistent with data used in the adopted State Water Plan, and include new or revised management objectives and performance standards ("Proposed Amendments") as required by Texas Water Code § 36.1071 and § 36.1073; and

WHEREAS, after notice, the Board held a public hearing on the Proposed Amendments at 6:00 p.m. on May 17th, 2023 at Giddings City Hall, Texas; and

WHEREAS, at the same meeting on May 17th, 2023, the Board closed the public hearing on the Proposed Amendments; and

WHEREAS, at the Board meeting on May 17th, 2023 after considering the statutory requirements for management plans and plan amendments in the Texas Water Code § 36.1071 and § 36.1073, the District Rules, written comments, and oral comments, the Board voted to approved the Proposed Amendments;

NOW, THEREFORE, BE IT RESOLVED by the Lost Pines Groundwater Conservation District that:

1. The District's Management Plan is amended and shown in Attachment A attached hereto.
2. The General Manager is directed to update the District's Management Plan to reflect the plan in Attachment A and place the amended plan on the District's website.

PASSED AND APPROVED on May 17th, 2023.

Elvis Hernandez, President

ATTEST:

Mike Simmang, Secretary/Treasurer

Appendix D

Evidence of Public Notice and Hearing on Groundwater Management Plan

LOST PINES GROUNDWATER CONSERVATION DISTRICT

NOTICE OF HEARING ON MANAGEMENT PLAN

TIME, DATE AND LOCATION
The Board of Directors of the Lost Pines Groundwater Conservation District ("District") will conduct a hearing on proposed revision and amendment of the Management Plan at:

Wednesday, May 17, 2023 – 6:00 p.m.
City of Giddings Council Chambers
118 E. Richmond St.
Giddings, TX 78942

BRIEF EXPLANATION OF SUBJECT OF HEARING
The proposed amendments to the District's existing Management Plan are related to updating the modeled available groundwater, updating data in the plan to be consistent with data used in the adopted State Water Plan, updating the plan to address water supply needs, and including new or revised management objectives and performance standards.

COPIES OF PROPOSED MANAGEMENT PLAN
The proposed Management Plan is available for review and copying at the District offices, 908 Loop 230, Smithville, Texas 78957, or at the District's website, https://www.lostpineswater.org

WRITTEN AND ORAL COMMENTS
The District will accept written comments on the proposed Management Plan filed before or at the hearing. In addition, the District will accept oral comments at the hearing.

For additional information, please contact the District by calling 512-360-5088 or e-mailing lpgcd@lostpineswater.org.

Date: April 21, 2023

Peggy Campion
Assistant Secretary

FILED

APR 24 2023

Krista Bartsch
Bastrop County Clerk

FILED AND RECORDED

APR 24 2023

Sharon Blasig
SHARON BLASIG
COUNTY CLERK, LEE COUNTY, TEXAS

State *of* Texas }
County of Lee }

AFFIDAVIT

Before me the undersigned authority, on this day personally appeared

Cindy Terrell (First and Last name) of the Lexington Leader, a weekly newspaper published on Thursday of each week at the Lexington, Lee County, Texas, who being by me duly sworn and declared that the attached Hearing Notice (Article Summary) for Lost Pines Groundwater Conservation District (Customers name)

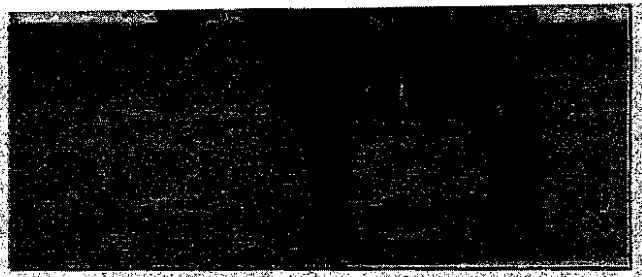
Was published ONE times in said newspaper, the dates of said publication being as follows: APR 27, 2023 Pg A8 (Page # and Section) and that the attached clipping(s) is a true copy of said publication.

Publisher or Employee

WITNESS my hand and seal this 3rd day of May, 2023

TINA BIEHLE
NOTARY PUBLIC
ID# 12023151
State of Texas
Comm. Exp. 10-26-2023

Notary Public, Lee County, Texas



LOST PINES GROUNDWATER CONSERVATION DISTRICT

NOTICE OF HEARING ON MANAGEMENT PLAN

TIME, DATE AND LOCATION

The Board of Directors of the Lost Pines Groundwater Conservation District ("District") will conduct a hearing on proposed revision and amendment of the Management Plan at:

Wednesday, May 17, 2023 – 6:00 p.m.
City of Giddings Council Chambers
118 E. Richmond St.
Giddings, TX 78942

BRIEF EXPLANATION OF SUBJECT OF HEARING

The proposed amendments to the District's existing Management Plan are related to updating the modeled available groundwater, updating data in the plan to be consistent with data used in the adopted State Water Plan, updating the plan to address water supply needs, and including new or revised management objectives and performance standards.

COPIES OF PROPOSED MANAGEMENT PLAN

The proposed Management Plan is available for review and copying at the District offices, 908 Loop 230, Smithville, Texas 78957, or at the District's website, https://www.lostpineswater.org

WRITTEN AND ORAL COMMENTS

The District will accept written comments on the proposed Management Plan filed before or at the hearing. In addition, the District will accept oral comments at the hearing.

For additional information, please contact the District by calling 512-360-5088 or e-mailing lpgcd@lostpineswater.org.

Date: April 21, 2023

Peggy Campion
Assistant Secretary

Bluebonnet's members

ELGIN COURIER

"Your Hometown Newspaper Since 1890"
P.O. Box 631, Elgin, Texas 78621
(512) 285-3333

PUBLISHER'S CERTIFICATE

STATE OF TEXAS §

COUNTY OF BASTROP §

I solemnly swear that the notice, mentioned hereafter, was published in the Elgin Courier, a weekly newspaper published in Elgin, Bastrop County, Texas, and that said newspaper published in Elgin, Bastrop County, Texas, for a period of not less than one year preceding the publication of the attached notice styled:

118 E. Richmond St.
Giddings, TX 78942

BRIEF EXPLANATION OF SUBJECT OF HEARING

The proposed amendments to the District's existing Management Plan are related to updating the modeled available groundwater, updating data in the plan to be consistent with data used in the adopted State Water Plan, updating the plan to address water supply needs, and including new or revised management objectives and performance standards.

COPIES OF PROPOSED MANAGEMENT PLAN

The proposed Management Plan is available for review and copying at the District offices, 908 Loop 230, Smithville, Texas 78957, or at the District's website, https://www.lostpineswater.org

WRITTEN AND ORAL COMMENTS

The District will accept written comments on the proposed Management Plan filed before or at the hearing. In addition, the District will accept oral comments at the hearing.

For additional information, please contact the District by calling 512-360-5088 or e-mailing lpgcd@lostpineswater.org.

Date: April 21, 2023
Peggy Campion
Assistant Secretary

Published in the issue(s) of **April 26, 2023**

SIGNED _____

Subscribed and sworn to before me on this the 12 **day of** May **,2023.**

_____
Notary Public In And For
The State of Texas

Carrie Llen Walker
My Commission Expires
8/30/2025
Notary ID
131009610

PUBLIC NOTICES

RATES
15 Words or Less -$12 per week
Boxed Classifieds - $12/inch
MC, Visa, Discover and Amex credit card's accepted

DEADLINE for ad submissions are the Friday before publication • 12:00pm noon

512-285-3333 vikki.blackman@elgincourier.com

IN PRINT & ONLINE

PUBLIC NOTICE
RFB # 23BCP04A

Bastrop County is requesting sealed bids for **RFB 23BCP04A - Vinyl Tape and Sign Blank.** Copies of the request for Bids may be obtained from the Bastrop County Purchasing Department website at http://www.co.bastrop.tx.us/page/pur.bids or by calling 512-581-7110. Bid submissions must be received by the Purchasing Office located at 803 Pine Street Rm. #101, Bastrop, Texas 78602 or mailed to 804 Pecan Street, Bastrop, Texas 78602 and received no later than 2:00 pm on May 4, 2023. Sealed envelopes must be marked with; **RFB#: 23BCP04A and the bidder's company name.** Submissions received in the Bastrop County Purchasing Office after deadline shall be returned unopened and will be considered void and unacceptable. Bastrop County is not responsible for lateness of mail; private carrier; etc. Time/date stamp in the Purchasing Office shall be the official time of receipt. Bastrop County will not be responsible for unmarked bids or bids delivered to the wrong location. . Successful bidders must be able to meet all requirements for insurance and bonds. Bastrop County is an Affirmative Action/Equal Opportunity Employer and strives to attain goals for Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) as amended. Contractor is responsible for meeting all Local, State and Federal requirements.

PUBLIC NOTICE
RFB # 23BCP04

Bastrop County is requesting sealed bids for **RFB 23BCP04C - Trucking and Hauling Services.** Copies of the request for Bids may be obtained from the Bastrop County Purchasing Department website at http://www.co.bastrop.tx.us/page/pur.bids or by calling 512-581-7110. Bid submissions must be received by the Purchasing Office located at 803 Pine Street Rm. #101, Bastrop, Texas 78602 or mailed to 804 Pecan Street, Bastrop, Texas 78602 and received no later than 2:00 pm on May 4, 2023. Sealed envelopes must be marked with; **RFB#: 23BCP04C and the bidder's company name.** Submissions received in the Bastrop County Purchasing Office after deadline shall be returned unopened and will be considered void and unacceptable. Bastrop County is not responsible for lateness of mail; private carrier; etc. Time/date stamp in the Purchasing Office shall be the official time of receipt. Bastrop County will not be responsible for unmarked bids or bids delivered to the wrong location. . Successful bidders must be able to meet all requirements for insurance and bonds. Bastrop County is an Affirmative Action/Equal Opportunity Employer and strives to attain goals for Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) as amended. Contractor is responsible for meeting all Local, State and Federal requirements.

PUBLIC NOTICE
RFB # 23BCP04E

Bastrop County is requesting sealed bids for **RFB 23BCP04E - Petroleum Products** Copies of the request for Bids may be obtained from the Bastrop County Purchasing Department website at http://www.co.bastrop.tx.us/page/pur.bids or by calling 512-581-7110. Bid submissions must be received by the Purchasing Office located at 803 Pine Street Rm. #101, Bastrop, Texas 78602 or mailed to 804 Pecan Street, Bastrop, Texas 78602 and received no later than 2:00 pm on May 4, 2023. Sealed envelopes must be marked with; **RFB#: 23BCP04E and the bidder's company name.** Submissions received in the Bastrop County Purchasing Office after deadline shall be returned unopened and will be considered void and unacceptable. Bastrop County is not responsible for lateness of mail; private carrier; etc. Time/date stamp in the Purchasing Office shall be the official time of receipt. Bastrop County will not be responsible for unmarked bids or bids delivered to the wrong location. . Successful bidders must be able to meet all requirements for insurance and bonds. Bastrop County is an Affirmative Action/Equal Opportunity Employer and strives to attain goals for Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) as amended. Contractor is responsible for meeting all Local, State and Federal requirements.

PUBLIC NOTICE
RFB # 23BCP04F

Bastrop County is requesting sealed bids for **23BCP04F RFB : Culverts.** Copies of the request for Bids may be obtained from the Bastrop County Purchasing Department website at http://www.co.bastrop.tx.us/page/pur.bids or by calling 512-581-7110. Bid submissions must be received by the Purchasing Office located at 803 Pine Street Rm. #101, Bastrop, Texas 78602 or mailed to 804 Pecan Street, Bastrop, Texas 78602 and received no later than 2:00 pm on May 4, 2023. Sealed envelopes must be marked with; **RFB#: 23BCP04F and the bidder's company name.** Submissions received in the Bastrop County Purchasing Office after deadline shall be returned unopened and will be considered void and unacceptable. Bastrop County is not responsible for lateness of mail; private carrier; etc. Time/ date stamp in the Purchasing Office shall be the official time of receipt. Bastrop County will not be responsible for unmarked bids or bids delivered to the wrong location. . Successful bidders must be able to meet all requirements for insurance and bonds. Bastrop County is an Affirmative Action/Equal Opportunity Employer and strives to attain goals for Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) as amended. Contractor is responsible for meeting all Local, State and Federal requirements.

PUBLIC NOTICE
RFB # 23BCP04D

Bastrop County is requesting sealed bids for **RFB 23BCP04D - Emulsified Asphalt.** Copies of the request for Bids may be obtained from the Bastrop County Purchasing Department website at http://www.co.bastrop.tx.us/page/pur.bids or by calling 512-581-7110. Bid submissions must be received by the Purchasing Office located at 803 Pine Street Rm. #101, Bastrop, Texas 78602 or mailed to 804 Pecan Street, Bastrop, Texas 78602 and received no later than 2:00 pm on May 4, 2023. Sealed envelopes must be marked with; **RFB#: 23BCP04D and the bidder's company name.** Submissions received in the Bastrop County Purchasing Office after deadline shall be returned unopened and will be considered void and unacceptable. Bastrop County is not responsible for lateness of mail; private carrier; etc. Time/date stamp in the Purchasing Office shall be the official time of receipt. Bastrop County will not be responsible for unmarked bids or bids delivered to the wrong location. . Successful bidders must be able to meet all requirements for insurance and bonds. Bastrop County is an Affirmative Action/Equal Opportunity Employer and strives to attain goals for Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) as amended. Contractor is responsible for meeting all Local, State and Federal requirements.

PUBLIC NOTICE
RFB # 23BCP04

Bastrop County is requesting sealed bids for RFB 23BCP04C - Hot and Cold Mix. Copies of the request for Bids may be obtained from the Bastrop County Purchasing Department website at http://www.co.bastrop.tx.us/page/pur.bids or by calling 512-581-7110. Bid submissions must be received by the Purchasing Office located at 803 Pine Street Rm. #101, Bastrop, Texas 78602 or mailed to 804 Pecan Street, Bastrop, Texas 78602 and received no later than 2:00 pm on May 4, 2023. Sealed envelopes must be marked with; **RFB#: 23BCP04C and the bidder's company name.** Submissions received in the Bastrop County Purchasing Office after deadline shall be returned unopened and will be considered void and unacceptable. Bastrop County is not responsible for lateness of mail; private carrier; etc. Time/date stamp in the Purchasing Office shall be the official time of receipt. Bastrop County will not be responsible for unmarked bids or bids delivered to the wrong location. . Successful bidders must be able to meet all requirements for insurance and bonds. Bastrop County is an Affirmative Action/Equal Opportunity Employer and strives to attain goals for Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) as amended. Contractor is responsible for meeting all Local, State and Federal requirements.

Elgin ISD Request for Qualifications
RFQ 2023-15
Testing, Adjusting and Balancing Services

The Elgin Independent School District Board of Trustees hereby serves notice that Elgin ISD is issuing an invitation to submit qualifications for professional services. Elgin ISD will accept electronic responses from firms interested in providing Testing, Adjusting and Balancing Services to the school district until 10:00 a.m. on Thursday, May 18, 2023. To access the opportunity, please go to https://elginisd.bonfirehub.com/opportunities. Information will be posted to our website: https://elginisd.net/Domain/104. You may email carnoldj@elginisd.net for assistance

LOST PINES GROUNDWATER CONSERVATION DISTRICT

NOTICE OF HEARING ON MANAGEMENT PLAN

TIME, DATE AND LOCATION
The Board of Directors of the Lost Pines Groundwater Conservation District ("District") will conduct a hearing on proposed revision and amendment of the Management Plan at:

Wednesday, May 17, 2023 – 6:00 p.m.
City of Giddings Council Chambers
118 E. Richmond St.
Giddings, TX 78942

BRIEF EXPLANATION OF SUBJECT OF HEARING
The proposed amendments to the District's existing Management Plan are related to updating the modeled available groundwater, updating data in the plan to be consistent with data used in the adopted State Water Plan, updating the plan to address water supply needs, and including new or revised management objectives and performance standards.

COPIES OF PROPOSED MANAGEMENT PLAN
The proposed Management Plan is available for review and copying at the District offices, 908 Loop 230, Smithville, Texas 78957, or at the District's website, https://www.lostpineswater.org

WRITTEN AND ORAL COMMENTS
The District will accept written comments on the proposed Management Plan filed before or at the hearing. In addition, the District will accept oral comments at the hearing.

For additional information, please contact the District by calling 512-360-5088 or e-mailing lpgcd@lostpineswater.org.

Date: April 21, 2023
Peggy Campion
Assistant Secretary

NOTICE TO CREDITORS

Notice is hereby given that original Letters of Administration for the Estate of Jimmy Galvan, Deceased, were issued on April 6, 2023, in Cause No. 12,417, pending in the County Court-at-Law of Bastrop County, Texas, to: Ellene Galvan.

All persons having claims against this Estate which is currently being administered are required to present them to the undersigned within the time and in the manner prescribed by law.

c/o: Carter & Denham, PLLC
808 N. Ave. C, P.O. Box 669
Elgin, Texas 78621

DATED the 20th day of April, 2023.

Carter & Denham, PLLC

By: _____
W. Christopher Denham
State Bar No.: 24052139
808 N. Ave. C, P.O. Box 669
Elgin, Texas 78621
Telephone: (512) 538-2282
E-mail: cdenham@carterdenham.com

Public Notice
RFB # 23BCP04B

Bastrop County is requesting sealed bids for **RFB 23BCP04B - Road Base, Topping Rock, Stone Riprap and Fill Material.** Copies of the request for Bids may be obtained from the Bastrop County Purchasing Department website at https://www.co.bastrop.tx.us/page/purchbids or by calling 512-581-7110. Bid submissions must be received by the Purchasing Office located at 803 Pine Street Rm. #101, Bastrop, Texas 78602 or mailed to 804 Pecan Street, Bastrop, Texas 78602 and received no later than 2:00 pm on May 4, 2023. Sealed envelopes must be marked with; **RFB#: 23BCP04B and the bidder's company name.** Submissions received in the Bastrop County Purchasing Office after deadline shall be returned unopened and will be considered void and unacceptable. Bastrop County is not responsible for lateness of mail; private carrier; etc. Time/ date stamp in the Purchasing Office shall be the official time of receipt. Bastrop County will not be responsible for unmarked bids or bids delivered to the wrong location. . Successful bidders must be able to meet all requirements for insurance and bonds. Bastrop County is an Affirmative Action/Equal Opportunity Employer and strives to attain goals for Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u) as amended. Contractor is responsible for meeting all Local, State and Federal requirements.

NOTICE TO CREDITORS

Notice is given that original Letters Testamentary for the Estate of Howard C. Tanner were issued on April 11, 2023, in docket number 12584, pending in the County Court of Bastrop County, Texas, to Sandra Lynn Piechot. All persons having claims against the estate, which is presently being administered, are required to submit them, within the time and manner prescribed by law, and before the estate is closed, addressed as follows:

Representative
Estate of Howard C. Tanner
c/o Serena Li
13145 Partridge Bend Drive
Austin, TX 78729

Dated April 20, 2023

/s/ Serena Li
Serena Li, Attorney for Executor of the Estate of Howard C. Tanner

STATE OF TEXAS
COUNTY OF LEE

BEFORE ME, THE UNDERSIGNED AUTHORITY, ON THIS DAY PERSONALLY APPEARED _____

Sloan Preuss, PUBLISHER OF THE GIDDINGS TIMES & NEWS, A WEEKLY NEWSPAPER PUBLISHED ON THURSDAY OF EACH WEEK AT GIDDINGS, LEE COUNTY, TEXAS WHO BEING BY ME DULY SWORN DECLARED

THAT THE ATTACHED 4x8 ad - Notice of Hearing on management plan WAS PUBLISHED 1 TIMES IN SAID NEWSPAPER. THE DATES OF SAID PUBLICATION BEING AS FOLLOWS:

April 27, 2023

AND THAT THE ATTACHED CLIPPING IS A TRUE COPY OF SAID PUBLICATION.

EDITOR-PUBLISHER

WITNESS MY HAND AND SEAL OF OFFICE THIS 27 DAY OF April 20 23

CANDACE SCHINDLER
Notary Public, State of Texas
Notary ID# 12428180-1
My Commission Expires
JULY 25, 2026

Candace Schindler
NOTARY PUBLIC, LEE COUNTY, TEXAS

He wrestled for Wrestling Enter-
it, NWA Wildside, River City Wres-
nd Lucha Xtreme.
i was able to travel
) states doing what
l. He also enjoyed
g on cars and had
al skill for fixing
Family was al-
portant to him and
ed forward to mak-
als for them when
uld come to visit.
m was received
loving arms of the
Tuesday, April 18,
his home in San
).
as preceded in
y his father, Jesse
n, and brother-in-
minique Banister.
m leaves to mourn
sing his mother,
Iamilton of Dime

nities for students.
m Albert Swinney,
rvived by Brenda,
ing wife, all his
i: sons, William A.
Swinney, Jr. (Phyl-
vid Bruce Swin-
ott Swinney (Pat-
tt James Swinney
), daughters Karla
y Keahey (Rob-
athleen Swinney
Brad), and Scarlett
ker Swinney, and
's children, Jeff
ly (Brittney) and
ennedy (Karen),
dchildren, and 13
randchildren. He
survived by many
who were like

tion will be Thurs-
ril 27, 2023 from
n at Providence
Family Funeral
n Elgin. A service
Chapel will follow
morning, April 28,
10am. A graveside
ony will be held
y, May 1, 2023
Ft. Sam Houston
l Cemetery in San
).

Jr., Timothy Williams, Steve Williams, Tyrone Williams, Anthony Williams, and Bryston Banister.

Memorials may be made to Sandy Point AME Church or to the charity of one's choice.

Arrangements by Phillips and Luckey Funeral Home Giddings.

been hit by a vehicle. TxDOT was notified to help clear the roadway.

Deputy Dickerson spoke with the female driver who hit the cow. She said that she was not injured, but did not need a wrecker.

The road was cleared, and the cows went west of Yegua Creek underneath the bridge.

LOST PINES GROUNDWATER CONSERVATION DISTRICT

NOTICE OF HEARING ON MANAGEMENT PLAN

TIME, DATE AND LOCATION

The Board of Directors of the Lost Pines Groundwater Conservation District ("District") will conduct a hearing on proposed revision and amendment of the Management Plan at:

Wednesday, May 17, 2023 – 6:00 p.m.
City of Giddings Council Chambers
118 E. Richmond St.
Giddings, TX 78942

BRIEF EXPLANATION OF SUBJECT OF HEARING

The proposed amendments to the District's existing Management Plan are related to updating the modeled available groundwater, updating data in the plan to be consistent with data used in the adopted State Water Plan, updating the plan to address water supply needs, and including new or revised management objectives and performance standards.

COPIES OF PROPOSED MANAGEMENT PLAN

The proposed Management Plan is available for review and copying at the District offices, 908 Loop 230, Smithville, Texas 78957, or at the District's website, https://www.lostpineswater.org

WRITTEN AND ORAL COMMENTS

The District will accept written comments on the proposed Management Plan filed before or at the hearing. In addition, the District will accept oral comments at the hearing.

For additional information, please contact the District by calling 512-360-5088 or e-mailing lpgcd@lostpineswater.org.

Date: April 21, 2023

Peggy Campion
Assistant Secretary

Lost Pines Groundwater

LOCALiQ

Austin
American-Statesman

PO Box 631667 Cincinnati, OH 45263-1667

PROOF OF PUBLICATION

Molly Henderson
GDHM
401 Congress AVE # 2700
Austin TX 78701-3736

STATE OF TEXAS, COUNTY OF BASTROP

The below stated newspapers that are generally circulated in the county of Bastrop, State of Texas, printed and published and personal knowledge of the facts herein state and that the notice hereto annexed was Published in said newspapers in the issues dated on:

ACO Bastrop Advertiser 04/28/2023

and that the fees charged are legal.
Sworn to and subscribed before on 04/28/2023

Legal Clerk

Notary, State of WI, County of Brown

My commision expires 9.19.25

Publication Cost:	$236.52	
Order No:	8737680	# of Copies:
Customer No:	928256	1
PO #:		

THIS IS NOT AN INVOICE!

Please do not use this form for payment remittance.

VICKY FELTY
Notary Public
State of Wisconsin

LOST PINES GROUNDWATER CONSERVATION DISTRICT

NOTICE OF HEARING ON MANAGEMENT PLAN

TIME, DATE AND LOCATION
The Board of Directors of the Lost Pines Groundwater Conservation District ("District") will conduct a hearing on proposed revision and amendment of the Management Plan at:
Wednesday, May 17, 2023 - 6:00 p.m.
City of Giddings Council Chambers
118 E. Richmond St.
Giddings, TX 78942

BRIEF EXPLANATION OF SUBJECT OF HEARING
The proposed amendments to the District's existing Management Plan are related to updating the modeled available groundwater, updating data in the plan to be consistent with data used in the adopted State Water Plan, updating the plan to address water supply needs, and including new or revised management objectives and performance standards.

COPIES OF PROPOSED MANAGEMENT PLAN
The proposed Management Plan is available for review and copying at the District offices, 908 Loop 230, Smithville, Texas 78957, or at the District's website, https://www.lostpineswater.org

WRITTEN AND ORAL COMMENTS
The District will accept written comments on the proposed Management Plan filed before or at the hearing. In addition, the District will accept oral comments at the hearing.

For additional information, please contact the District by calling 512-360-5088 or e-mailing lpgcd@lostpineswater.org.

Date: April 21, 2023

Peggy Campion
Assistant Secretary
04-28/2023