Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

May 29, 2023

Mr. Doug Shaw
General Manager
Upper Trinity Groundwater Conservation District
P.O. Box 1749
Springtown, Texas 76082

Dear Mr. Shaw:

The purpose of this letter is to notify you that the amended groundwater management plan for the Upper Trinity Groundwater Conservation District required by Texas Water Code § 36.1072 and § 36.1073 is administratively complete in accordance with Texas Water Code § 36.1071(a) and (e).

We received the amended groundwater management plan for administrative completeness review on April 3, 2023, and it was approved on May 29, 2023.

Thank you for participating in this effort and contributing to the future of groundwater conservation and management in the state of Texas. Your next five-year management plan is due on July 6, 2025. Approval of an amended groundwater management plan does not reset the existing five-year plan renewal date.

If you have any questions or concerns, please contact Stephen Allen of our Groundwater Technical Assistance department at stephen.allen@twdb.texas.gov, 512-463-7317.

Sincerely,

Jeff Walker
Executive Administrator

Enclosure

c w/o enc: Stephen Allen, P.G., Groundwater
Robert Bradley, P.G., Groundwater
Abiy Berehe, P.G., Texas Commission on Environmental Quality
Peggy Hunka, P.G., Texas Commission on Environmental Quality

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April 3, 2023

Jeff Walker
Executive Administrator
Texas Water Development Board
1700 North Congress Avenue
P.O. Box 13231
Austin, TX 78711-3231

Mr. Walker,

On March 16, 2023, the Upper Trinity Groundwater Conservation District (District) Board of Directors adopted Resolution 23-001 adopting a Groundwater Management Plan. This action was taken after a properly noticed public hearing and was in regard to the required update to incorporate the recently adopted Desired Future Conditions (DFCs) and the associated Modeled Available Groundwater (MAG) values into the District's current plan.

Included with this letter is a copy of the District's 2023 Groundwater Management Plan. For your review, I have also included a copy of the resolution as well as a copy of the Hearing notice, as appendices to the plan.

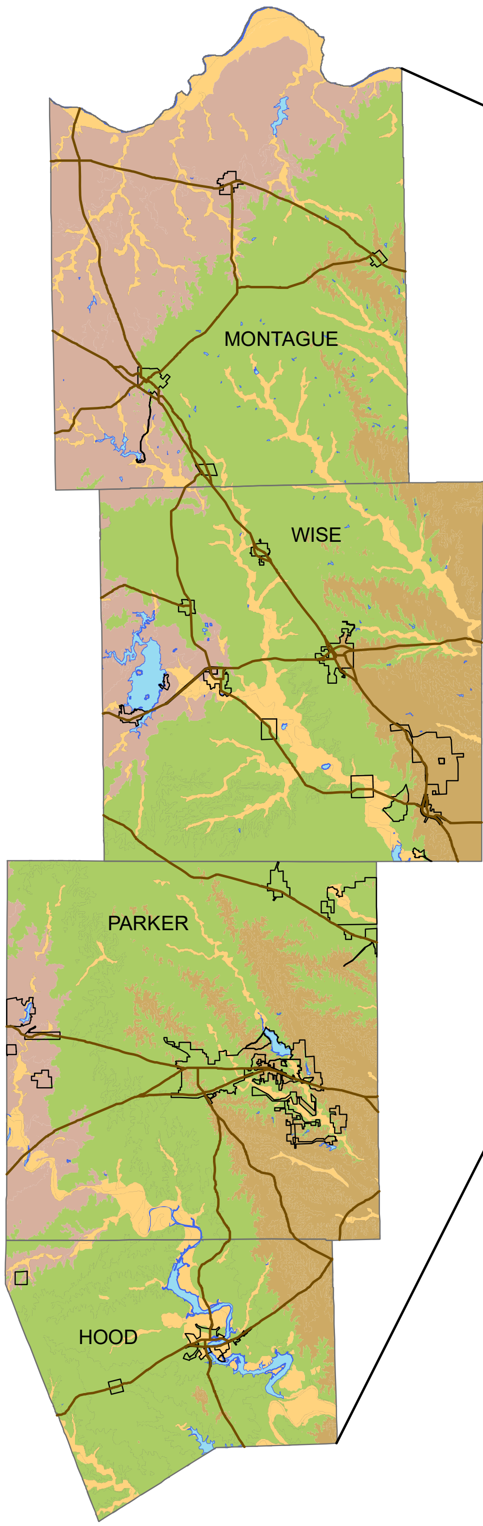
Please give my thanks to your staff for their help and the quick turn-around during the pre-review process.

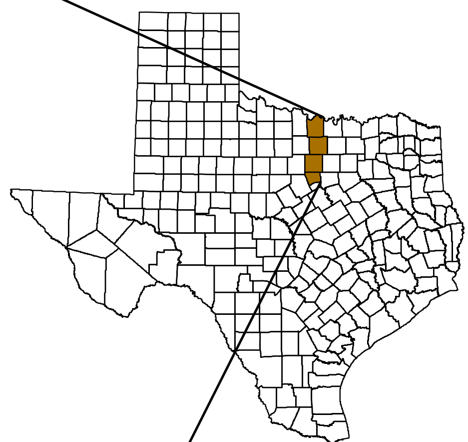
If you, or your staff, have any questions please contact me at 817-523-5200 or doug@uppertrinitygcd.com.

Sincerely,

Doug Shaw
General Manager

Upper Trinity Groundwater Conservation District





District Groundwater Management Plan

Adopted – February 16, 2023

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I. DISTRICT MISSION

The Mission of the Upper Trinity Groundwater Conservation District (District) 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 for future generations, protect the quality of the groundwater in the recharge zone of the aquifer, insure that the residents of Montague, Wise, Parker, and Hood counties maintain local control over their groundwater, and operate the District in a fair and equitable manner for all residents of the District.

II. PURPOSE OF THE GROUDWATER MANAGEMENT PLAN

The 75th Texas Legislature established a comprehensive regional and statewide water planning process in 1997. A critical component of that far-reaching overhaul of the Texas' water planning process included a requirement that each groundwater conservation district develop a groundwater management plan (plan) that defines the water needs and supply within each District and defines the goals the District will use to manage the groundwater in order to meet the stated needs or demonstrate that the needs exceed available groundwater supplies. Information from each District's plan is incorporated into the regional and state water plans. The plan is also used as the basis for the development of the District's permitting and groundwater management rules.

The time period for this plan is five years from the date of approval by the TWDB. This plan will be reviewed and readopted with or without amendments at least once every five years, or more frequently if deemed necessary or appropriate by the District Board. This plan will remain in effect until it is replaced by a revised plan approved by the TWDB

In addition, Chapter 36, Texas Water Code (Chapter 36), requires joint planning among Districts located within the same Groundwater Management Area (GMA). Among other activities conducted pursuant to this joint planning process, the Districts within each GMA must establish desired future conditions for all aquifers located in whole or in part within the GMA. The desired future conditions established through this process are then submitted to the Texas Water Development Board (TWDB), which is required to provide each District with estimates concerning the amount of groundwater that can be produced from each aquifer annually within each county located in the GMA in order to achieve the desired future conditions established for each aquifer. This quantified annual water budget for each aquifer is known as the modeled available groundwater or MAG amount. Chapter 36 requires that technical information, such as the desired future conditions of the aquifers within a District's jurisdiction and the amount of modeled available groundwater from such aquifers, be included in the District's plan. This technical information is used as a guide for a District's regulatory and management policies. This groundwater plan for the District is required by Chapter 36 and was developed in accordance with the administrative rules of the TWDB. Chapter 36 and the TWDB require use of projections of future water demands, surface water availability, water management strategies, and groundwater use provided to the District by the TWDB from the State Water Plan in the plan. This plan will be used to: (1) serve as a planning tool for the District in its management and operations; (2) provide general information about the District and its groundwater resources; (3) provide technical information concerning groundwater resources, water supply, and demand; (4) establish goals, management objectives, and performance standards for the District; (5) serve as a resource to help guide the District's development of additional technical information on local groundwater resources, use, and demand; and (5) support the District's development of its well permitting and regulatory program. The District considers the collection and development of site-specific data on groundwater use in Hood, Montague, Parker, and Wise counties and the groundwater sources of these counties to be a high priority. This plan will be updated as the District develops the site-specific data on local groundwater use and aquifer conditions. Although the District must review and readopt the plan at least once every five years, it is not restricted from doing so more frequently if deemed appropriate by the District.

III. DISTRICT INFORMATION

A. Creation

The Upper Trinity Groundwater Conservation District (the District) was created by the passage of Senate Bill 1983 by the 80th Texas Legislature under the authority of Section 59, Article XVI, of the Texas Constitution, and in accordance with Chapter 36, by the Act of May 25, 2007, 80th Leg., R.S., Ch. 1343, 2007 Tex. Gen. Laws 4583, codified at TEX. SPEC. DIST. LOC. LAWS CODE ANN. Ch. 8830, as amended (the District Act). The creation of the District was overwhelmingly confirmed by the citizens of Hood, Montague, Parker, and Wise counties on November 6, 2007, in an election called for that purpose. The District was created to serve a public use and benefit, and is essential to accomplish the objectives set forth in Section 59, Article XVI, of the Texas Constitution. The purpose of the District is to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, consistent with the objectives of Chapter 36 and Section 59, Article XVI, Texas Constitution.

B. Directors

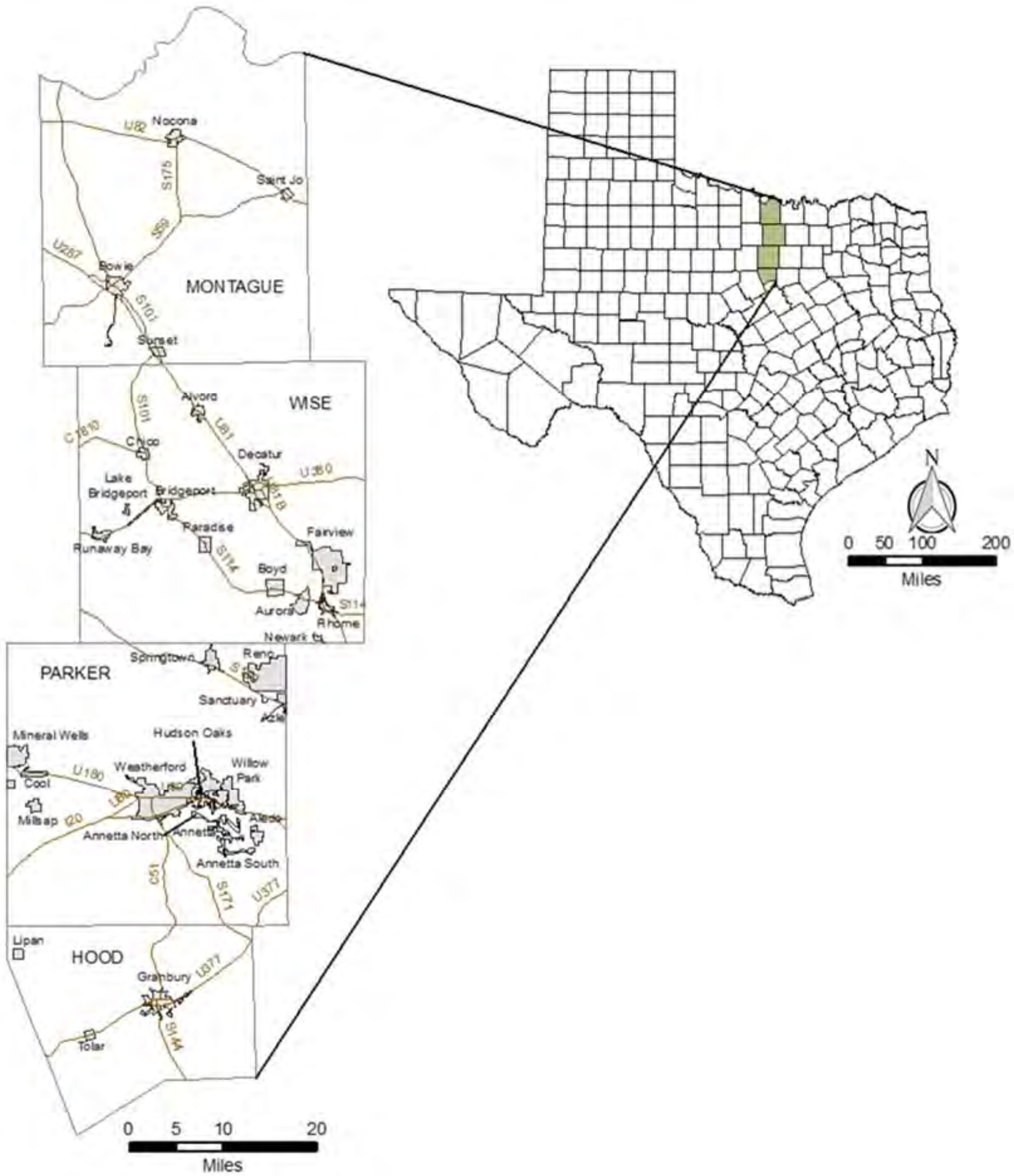
The Board of Directors consists of eight members, two from each of the following four counties: Hood, Montague, Parker, and Wise. The directors for each county are appointed by their respective commissioners' courts and serve staggered four-year terms. Each Director is eligible for multiple consecutive terms.

C. Location, Topography and Drainage

The area encompassed by the District is approximately 3,200 square miles and is coextensive with the boundaries of Hood, Montague, Parker and Wise counties. The topography of the District can be generally classified as high to gently rolling prairies with elevations ranging from approximately 850 to 1,300 feet above mean sea level in Montague County, an average of 800 feet in Wise County, 700 to 1,200 feet in Parker County and 600 to 1,000 feet above sea level in Hood County.

The District falls in the drainage area of three separate major river basins. The northern part of Montague County is drained by the Red River, while the Denton-Elm and West forks of the Trinity River drain the east-central and southern parts of the county, respectively. Tributaries of the Trinity River drain Wise County, the northeastern part of Parker County, and the very northeastern corner of Hood County. The southwestern part of Parker County and the vast majority of Hood County are drained by the Brazos River and its tributaries.

Figure 1. Locations and boundaries of the District.



D. Groundwater Resources in the District

Groundwater resources in the four counties making up the District include the Cretaceous-age Trinity Aquifer, the Pennsylvanian and Permian age Cross Timbers Aquifer (previously described as the Paleozoic aquifers) , and alluvial deposits. The Trinity Aquifer is recognized by the TWDB as a major aquifer in Texas, and the Cross Timbers Aquifer was recently designated by the TWDB as a minor aquifer in Texas. The TWDB defines a major aquifer as one that supplies large quantities of water over large areas of the state and defines a minor aquifer as one that supplies relatively small quantities of water over large areas of the state or supplies large quantities of water over small areas of the state (Ashworth and Hopkins, 1995). A generalized stratigraphic section representative of the hydrogeology of the District is provided in **Table 1**.

Major Aquifer – the Trinity Aquifer

The Trinity Aquifer, shown in **Figure 2**, is defined by the TWDB as a major aquifer composed of several individual aquifers contained within the Trinity Group. In the District, the Trinity Aquifer consists of the aquifers of the Paluxy Sand, the Glen Rose Formation, the Twin Mountains Formation, and the Antlers Formation. The Antlers Formation is the coalescence of the Paluxy and Twin Mountains formations north of the line where the Glen Rose Formation thins to extinction. This occurs approximately in central Wise County (**Figure 3**). The Cretaceous-age Fredericksburg and Washita Groups are generally considered confining units and they overlie the subcrop portion of the Trinity Aquifer in the easternmost areas of the District.

The Paluxy Sand consists of sand, silt, and clay, with sand dominating. The sand and silts in the aquifer are primarily fine-grained, well sorted, and poorly cemented (Bené and others, 2004). Coarse-grained sand is found in the lower sections grading up to fine-grained sand with shale and clay in the upper section (Nordstrom, 1982). In general, natural groundwater flow in the Paluxy Sand is east to southeast (Langley, 1999). Wells completed into the Paluxy Sand typically yield small to moderate quantities of water that is fresh to slightly saline (Nordstrom, 1982). Where the Glen Rose Formation is absent, the Paluxy Sand is equivalent to the upper sands of the Antlers Formation (Baker and others, 1990).

The Glen Rose Formation consists primarily of limestone with some shale, sandy-shale, and anhydrite. In general, the aquifer yields small quantities of water in localized areas (Baker and others, 1990). Groundwater flow in the Glen Rose Formation is generally to the east and southeast.

Table 1. General Stratigraphy (Bené and others 2004; McGowen and others, 1967; 1972; Brown and others, 1972).

System	Hydrogeologic Characteristic	Group	Formation	
			North	South
	Water-Bearing		alluvial deposits	
Cretaceous	Confining Units (locally productive)	Washita	Weno	
			Denton	
			Fort Worth	
			Duck Creek	
			Kiamichi	
	Confining Units (locally productive)	Fredericksburg	Goodland	Edwards
				Comanche Peak
			Walnut Clay	Walnut Clay
	Aquifer	Trinity	Antlers	Paluxy
				Glen Rose
				Twin Mountains
Permian	Water-Bearing	Bowie	Nocona	
			Archer City	
			Markley	
			Thrifty and Graham, undivided	
Pennsylvanian	Water-Bearing	Canyon	Colony Creek Shale	
			Ranger	
			Ventioner	
			Jasper Creek	
			Chico Ridge Limestone	
			Willow Point	
			Palo Pinto	
	Water-Bearing	Strawn	Mineral Wells	
			Brazos River	
			Mingus	
			Buck Creek Sandstone	
			Grindstone Creek	
			Lazy Bend	

Figure 2. Outcrop and subcrop of the Trinity Aquifer in the District.

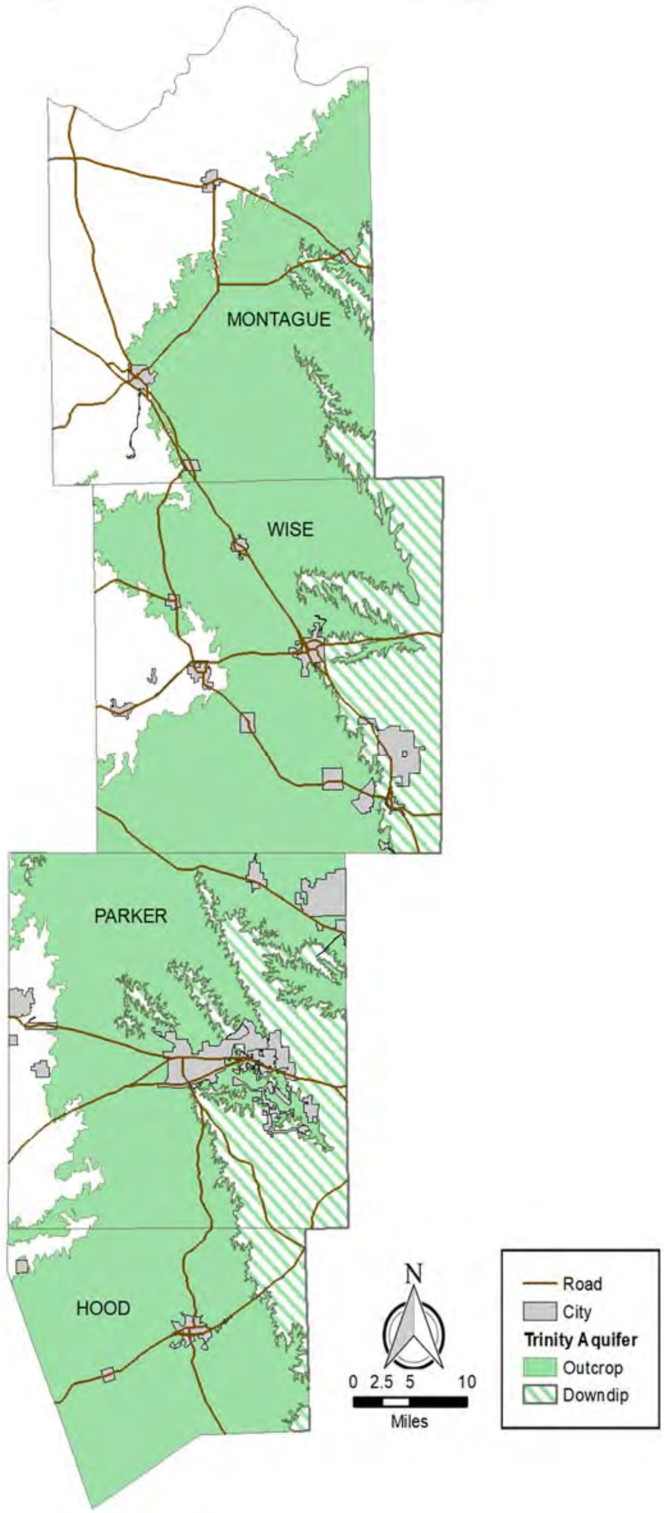
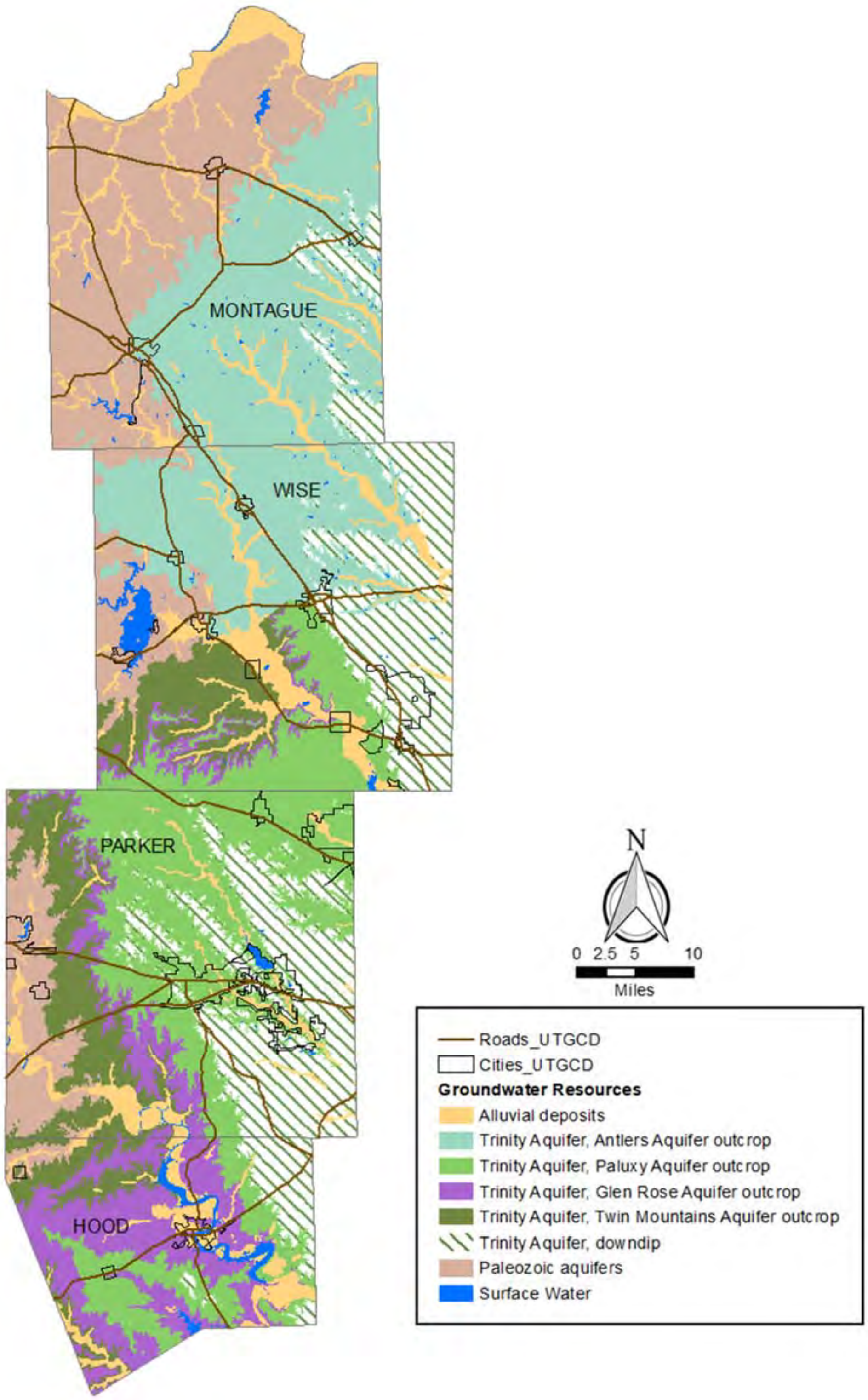


Figure 3. Groundwater resources in the District.



The Twin Mountains Formation consists predominantly of medium- to coarse-grained sand, silty clay, and conglomerates. A massive sand is found in the lower portion of the formation while less sand is found in the upper portion of the aquifer due to increased interbedding of shale and clay (Nordstrom, 1982). In general, wells are primarily completed into the lower part of the aquifer. Where the Glen Rose Formation is absent, the Twin Mountains Formation is equivalent to the lower sands of the Antlers Formation (Baker and others, 1990). Typically, wells completed into the Twin Mountains Formation yield fresh and slightly saline water in moderate to large quantities (Nordstrom, 1982). Groundwater flow in this formation is generally to the east and southeast.

Typically, the Antlers Formation consists of a basal conglomerate and sand overlain by poorly consolidated sand interbedded with discontinuous clay layers (Nordstrom, 1982). Considerably more clay is found in the middle portion of the formation than in the upper and lower portions. Limestone is also found in the middle portion near the updip limit of the Glen Rose Formation. Generally, groundwater flow in the Antlers Formation is to the east and southeast. Well yield in the Antlers Formation is similar to that in the Twin Mountains Formation with subcrop wells generally more productive than those in the outcrop areas.

<u>Minor Aquifer – The Cross Timbers Aquifer</u>

Several Pennsylvanian- and Permian-age formations in the District are capable of producing usable quantities of groundwater. These formations were previously referred to collectively as the Paleozoic aquifers (see **Figure 3**), however recently, in response to a request from the District, the TWDB designated these formations as the Cross Timbers Aquifer, a minor aquifer. Literature regarding these formations is very limited and, therefore, information regarding their hydrologic characteristics is also limited. The Paleozoic aquifers are a significant source of groundwater in northern and western portions of Montague County, west-central Wise County, and western Parker County where the Trinity Aquifer is absent. Based on information in the TWDB groundwater database (TWDB, b) as of November 2009, the percentage of wells in the District completed into the Paleozoic aquifers is 78.2, 14.8, 5.4, and 0.0 percent for Montague, Wise, Parker, and Hood counties, respectively.

From youngest to oldest, the formations of the Wichita, Cisco-Bowie, Canyon, and Strawn groups make up the Cross Timbers Aquifer. The Bowie Group consists of the Nocona Formation (mudstone with sandstone and siltstone in thin lenticular beds throughout), the Archer City Formation (predominantly mudstone with thin siltstone beds and sandstone), the Markley Formation (mudstone with local thin beds of sandstone in upper portion and mudstone and shale with some coal and limestone below), and the undivided Thrifty and Graham formations (predominantly mudstone and shale with thin sandstone beds and some sandstone sheets locally and two limestone members).

The underlying Canyon Group is comprised of the Colony Creek Shale (shale with some siltstone, local thin to medium beds of sandstone, and limestone lentils), the Ranger Limestone (predominantly limestone with local thin shale beds), the Ventioner Formation (shale and mudstone with numerous sandy and silty lenses and thin to medium beds), the Jasper Creek Formation (upper portion predominantly shale with thin siltstone beds throughout and isolated massive sandstone lenses and lower portion shale with thin limestone lentils and local thin and lenticular thick sandstone beds), the Chico Ridge Limestone (predominantly limestone with local shale beds), the Willow Point Formation (shale and claystone locally silty and sandy with local thin beds of sandstone and several limestone beds in lower portion and a single coal bed), and the Palo Pinto Formation (predominantly limestone and marl with some sandstone and shale). Sandstone lenses found in the Canyon Group are locally important to the occurrence of groundwater (Bayha, 1967).

The Strawn Group consists of the Mineral Wells Formation (shale containing local sandstone beds and a few limestone beds), the Brazos River Formation (sandstone with local lenses of conglomerate and mudstone), the Mingus Formation (sandy shale with one thin coal seam and some limestone beds), the Buck Creek Sandstone (sandstone), the Grindstone Creek Formation (shale, in part sandy, with local thin coal beds and sandstone lentils and limestone beds with some shale), and the Lazy Bend Formation (shale, in part sandy or silty, with local coal beds and limestone beds).

The Cross Timbers Aquifer is the primary source of water in Montague County (Bayha, 1967) as indicated by the high percentage of wells completed into these aquifers in the county. Bayha (1967) indicates that groundwater is difficult to trace in these aquifers due to the complex depositional sequence.

Other Water-Bearing Formations

Alluvial Deposits

Some alluvial deposits of Pleistocene to Recent age are capable of producing water in the District, especially along the Red River in Montague County and the Brazos River in Parker County. The majority of these sediments are stream deposits but some are of windblown origin. The alluvial deposits, consisting of sand, gravel, silt, and clay, yield small to large quantities of fresh water. Based on information in the TWDB groundwater database (TWDB, 2009b) as of November 2009, the percentage of wells in the District completed into alluvial deposits is 10.0, 0.4, 3.0, and 0.1 percent for Montague, Wise, Parker, and Hood counties, respectively.

IV. ESTIMATES OF TECHNICAL INFORMATION REQUIRED BY 31TAC 356.52/TWC § 36.1071

A. Modeled Available Groundwater in the District based on adopted Desired Future Conditions – 31TAC 356.52(a)(5)(A)/TWC §36.1071(e)(3)(A)

The Texas Legislature has established that the preferred method of managing groundwater in Texas is through rules developed by a groundwater conservation district. A groundwater conservation district is a district created under Texas Constitution, Article III, Section 52 or Article XVI, Section 59, which has the authority to regulate the spacing of water wells, the production from water wells, or both. Many groundwater conservation districts boundaries are consistent with political boundaries such as county boundaries and, as such, are not consistent with hydrologic boundaries which would need to be considered in the cohesive management of an aquifer.

Modeled available groundwater is defined as: "the amount of water that the executive administrator determines may be produced on an average annual basis to achieve a desired future condition established under Section 36.108."

In 2005 the Texas legislature recognized that aquifers may need to be managed based on hydrologic boundaries, and not just the political boundaries, such as county boundaries, that defined many groundwater conservation districts. That year legislation was passed requiring joint planning among groundwater conservation districts within a common groundwater management area (GMA). These GMAs are required to meet at least annually, and are charged with developing desired future conditions (DFCs) by which any aquifer deemed relevant by a GMA will be managed. The District only has one relevant TWDB-designated major or minor aquifer within its boundaries—the northern Trinity Aquifer, which is a major aquifer. GMA 8 adopted DFC's for the northern Trinity and Woodbine aquifers on July 26, 2022, that submittal package can be found here: http://www.twdb.texas.gov/groundwater/dfc/2021jointplanning.asp. The TWDB MAG values have been provided in Table 3, and the full report can be found here: http://www.twdb.texas.gov/groundwater/docs/GAMruns/GR21-013_MAG.pdf

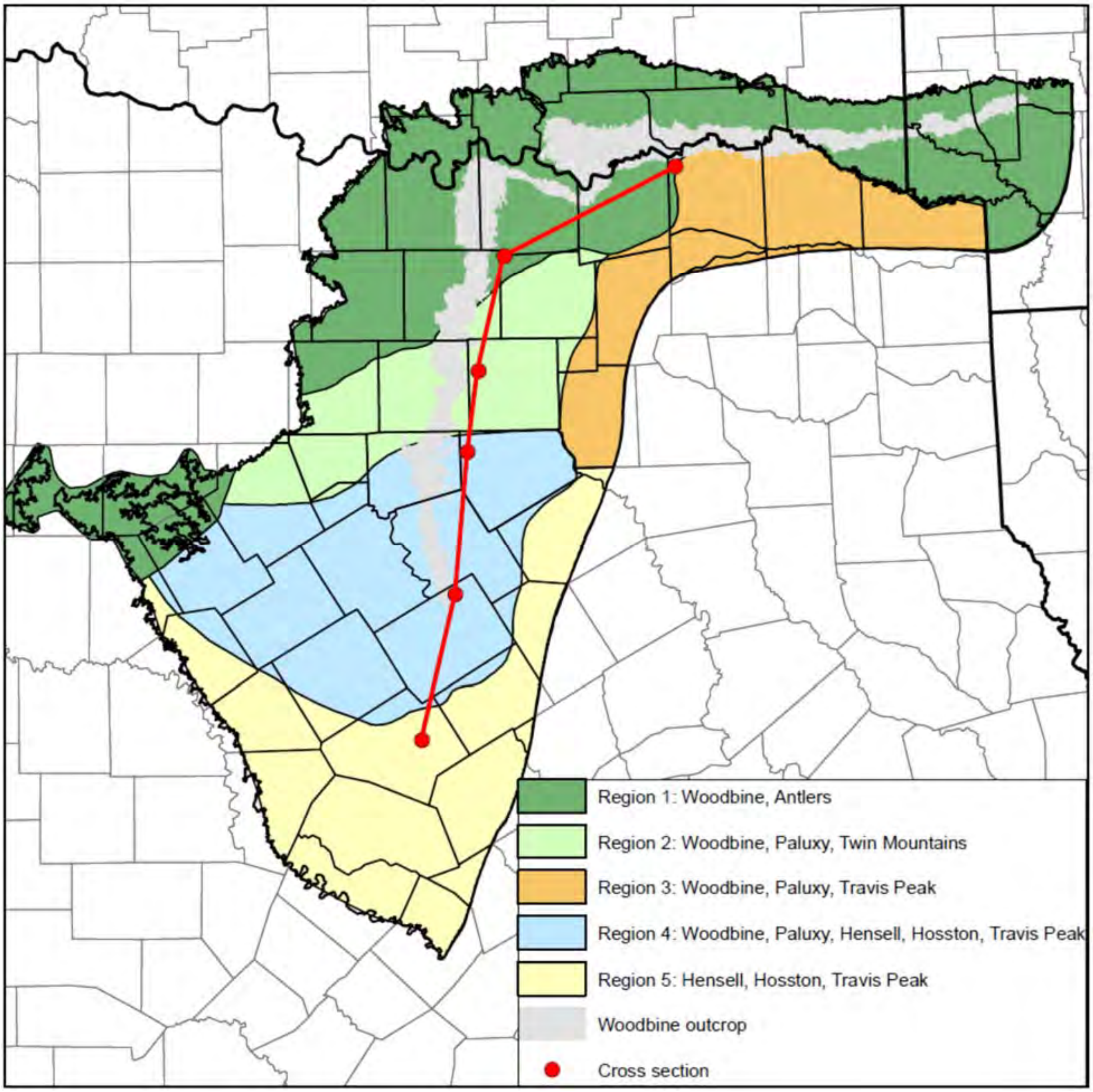
Selected Management Conditions

The different hydrogeologic units comprising the Trinity Aquifer within each of the five hydrogeologic regions have been evaluated according to their hydrostratigraphy, hydraulic properties, and lithology and the extent to which those hydrogeologic units are differentiable at different locations. Based upon that evaluation, the GMA 8 district representatives utilized the aquifer definitions in **Table 2** to define the spatial and vertical extent for which to adopt DFCs for GMA 8.. A map showing the regions identified in **Table 2** can be found in **Figure 4.**

Table 2. Spatial and Vertical extents for which to adopt DFCs for GMA 8.

Model Terminology	Region 1	Region 2	Region 3	Region 4	Region 5
Woodbine Aquifer	Woodbine	Woodbine	Woodbine	Woodbine	Woodbine (no sand)
Washita/ Fredericksburg Groups	Washita/ Fredericksburg	Washita/ Fredericksburg	Washita/ Fredericksburg	Washita/ Fredericksburg	Washita/ Fredericksburg
Paluxy Aquifer	Antlers	Paluxy	Paluxy	Paluxy	Paluxy (no sand)
Glen Rose Formation	Antlers	Glen Rose	Glen Rose	Glen Rose	Glen Rose
Hensell Aquifer	Antlers	Twin Mountains	Travis Peak	Hensell/ Travis Peak	Hensell/ Travis Peak
Pearsall Formation	Antlers	Twin Mountains	Travis Peak	Pearsall/ Sligo	Pearsall/ Sligo
Hosston Aquifer	Antlers	Twin Mountains	Travis Peak	Hosston/ Travis Peak	Hosston/ Travis Peak

Figure 4. Hydrogeologic Regions for the Trinity and Woodbine Aquifer in GMA 8.



Because the GAM was used as a means of defining desired future conditions as well as estimating the managed available groundwater, the following discussion is couched in terms of hydrostratigraphic nomenclature and model layers consistent with the GAM.

The desired future conditions were specified based upon average drawdown from the year 2010 through the year 2080 on a county, District and aquifer (model layer) basis. **Table 3** summarizes the desired future conditions for the four counties comprising the District for the Northern Trinity Aquifer. For example, for the Downdip portion of the Twin Mountains aquifer in Hood County, the specified management goal (desired future condition) is defined from estimated year 2010 conditions, the average drawdown of the

Downdip portion of the Twin Mountains Aquifer should not exceed approximately 72 feet through 2080. All of the desired future conditions are specified in (Shi, 2022) in a similar format.

Furthermore, as part of the GMA 8 joint planning process, the District requested that DFCs within their boundaries (Hood, Montague, Parker and Wise counties) be stated in terms of outcrop and downdip, rather than an average of the two. This request was based on recommendations submitted by the District, during the previous round of joint-planning, in response to the 90- day public comment period. GMA 8 District Representatives unanimously approved this request at the September 29, 2016, GMA 8 meeting.

Table 3. Desired Future Conditions and Modeled Available Groundwater for the northern Trinity Aquifer in the District.

County	Trinity Sub-Aquifer	Desired Future Condition(1) Outcrop	Desired Future Condition(1) Downdip	Modeled Available Groundwater(2) Outcrop (AFY)	Modeled Available Groundwater(2) Downdip (AFY)
Hood	Paluxy	6	NA	159	NA
	Glen Rose	9	39	790	124
	Twin Mountains	13	72	5,024	10,863(3)
Hood County Total		NA	NA	5,973	10,987
Parker	Antlers	42	NA	2,889	NA
	Paluxy	6	2	2,609	50
	Glen Rose	20	50	3,685	1,406
	Twin Mountains	7	68	1,282	2,528
Parker County Total		NA	NA	10,465	3,984
Wise	Antlers	60	154	9,013	2,439
Wise County Total		NA	NA	9,013	2,439
Montague	Antlers	40	NA	6,103	NA
Montague County Total		NA	NA	6,103	NA
District Total		**NA**	**NA**	**31,554**	**17,410**

(1) Average drawdown in feet in 2080 compared with 2010 water levels (GMA 8 Resolution No. 2022-07-26-02)

(2) MAG from GAM Run 21-013 MAG (Shi, 2022)

(3) GAM Run 21-013 MAG includes MAG values for the Travis Peak (122), Hensell (50) & Hosston (72) for Hood County, however no DFCs were set for these sub-aquifers within the Upper Trinity as they only occur in a very small portion in Southeast Hood County. That area will be managed as the Twin Mountains.

B. Amount of groundwater being used within the District on an annual basis – 31TAC 356.52(a)(5)(B)/TWC §36.1071(e)(3)(B)

See Appendix A

C. Annual amount of recharge from precipitation to the groundwater resources within the District–31TAC 356.52(a)(5)(C)/TWC §36.1071(e)(3)(C)

See Appendix B

D. For each aquifer, annual volume of water that discharges from the aquifer to springs and any surface water bodies, including lakes, streams, and rivers – 31 TAC 356.52(a)(5)(D)/TWC §36.1071(e)(3)(D)

See Appendix B

E. Annual volume of flow into and out of the District within each aquifer and between aquifers in the District, if a groundwater availability model is available – 31 TAC 356.52(a)(5)(E)/TWC §36.1071(e)(3)(E)

See Appendix B

F. Projected surface water supply in the District, according to the most recently adopted State Water Plan – 31 TAC 356.52(a)(5)(F)/TWC §36.1071(e)(3)(F)

See Appendix A

G. Projected total demand for water in the District according to the most recently adopted State Water Plan – 31 TAC 356.52(a)(5)(G)/TWC §36.1071(e)(3)(G)

See Appendix A

H. Consider the Water supply needs included in the most recently adopted State Water Plan – TWC §36.1071(E)(4)

As part of the development of this plan, the District's Board of Directors considered the water supply needs that have been identified through the regional water planning process. Water supply needs are the potential shortages that could occur, if no projects are developed on implemented to address growing demands or other supply limitations.

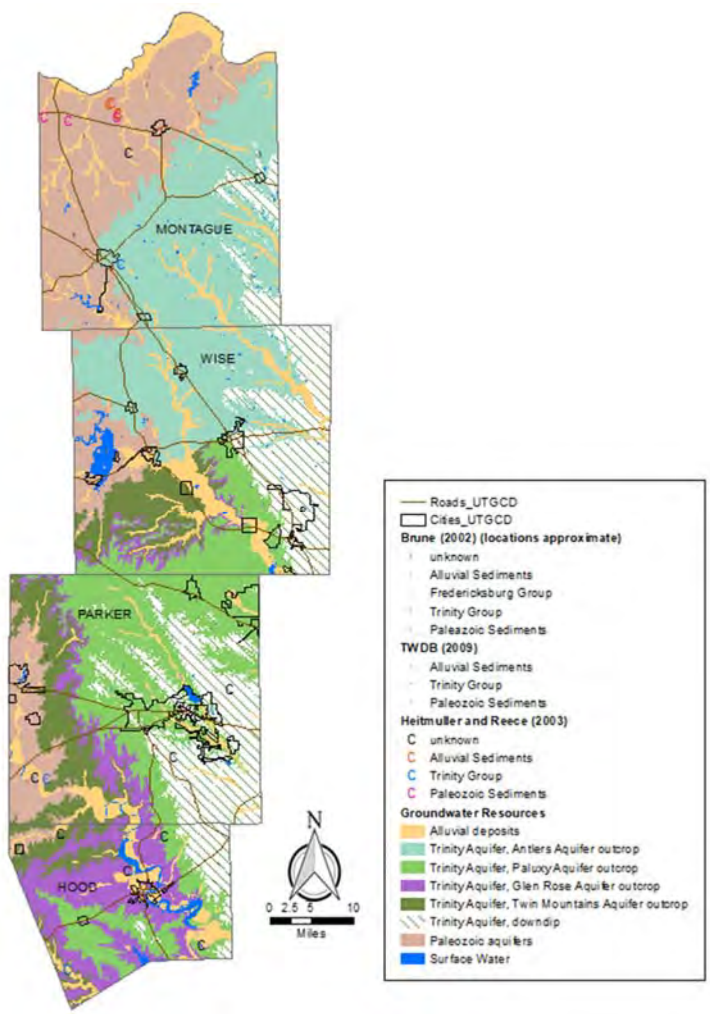
Within the boundaries of the District, future water supply needs are shown to occur for these categories: municipal (Acton Mud, Aledo, Alvord, Aurora, Azle, Bolivar WSC, Boyd, Bridgeport, Chico, Cresson, Decatur, Fort Worth, Parker County MUD, Springtown, Tolar, Weatherford, and Willow Park), irrigation, mining, manufacturing, steam electric, and non-municipal domestic use (county other).TWDB Estimated Historical Water Use/2017 Texas State Water Plan report, included as Appendix A to this plan, contains the detailed projected water supply needs that have been projected to occur within the District.

I. Consider the Water Management Strategies included in the most recently adopted State Water Plan – TWC §36.1071(E)(4)

As part of the development of this plan, the District's Board of Directors has also considered the water management strategies that were identified through the regional water planning process. These strategies have been identified for the purpose of addressing projected water supply needs.

Within the boundaries of the District, there are several water management strategies to develop added aquifer supplies from the Trinity Aquifer for municipal and county-other users. TWDB Estimated Historical Water Use/2017 Texas State Water Plan report, included as Appendix A to this plan, contains the water management strategies identified for the four counties within the District and projected volumes of water those strategies would potentially provide.

Figure 5. Documented springs in the District.



V. DETAILS ON THE DISTRICT MANAGEMENT OF GROUNDWATER

The District is acutely aware that its decisions regarding the permitting and regulation of water wells may have a significant impact on the manner in which water is provided to support human, animal, and plant life, land development, public water supplies, commercial and industrial operations, agriculture, and other economic growth in the District. The District Board takes its responsibilities very seriously with regard to these decisions and the impacts they may have on the property rights of the citizens of the District, and desires to undertake its approach to the development of a regulatory system in a careful, measured, and deliberate manner. In that regard, the District accumulated and considered as much data and information as is practicable on the groundwater resources located within its boundaries before developing permanent rules and regulations which impose permitting or groundwater production regulations on water wells.

The District began its initial studies and analysis of the aquifers and groundwater use patterns within its boundaries in early 2008 in an attempt to both catch up with then-ongoing discussions regarding the development of desired future conditions of the aquifers by the existing groundwater conservation districts in GMA-8, and to develop some baseline information on which decisions could be made for the development of temporary rules governing water wells. In August 2008, the District adopted its first set of temporary rules, which pioneer the District's information-gathering initiative. The District then spent the next decade gathering and studying data in order to ensure any permanent rules were based on the best available science. Among other things, the initial temporary rules required non-exempt wells to be registered with the District, have meters installed to record the amount of groundwater produced, and submit records of the amounts produced to the District. These well owners are also required to submit fee payments to the District based upon the amount of groundwater produced.

In addition, all new wells are required to be registered with the District and comply with the minimum well spacing requirements of the District. The minimum well spacing requirements were developed by the District to try to limit the off-property impacts of new wells to existing registered wells and adjoining landowners. They include minimum tract size requirements, spacing requirements from the property line on the tract where the well is drilled, and spacing requirements from registered wells in existence at the time the new well is proposed. The spacing distances were developed through hydrogeologic modeling of the varying sizes of the cones of depression of various well capacities, and such distances naturally increase with increases in well capacities. Well interference problems caused by wells being located too close to each other have historically been one of the predominant problems for wells completed in the Trinity Aquifer in the District and throughout GMA-8 and GMA-9. The District's spacing requirements should go a long way toward prospectively limiting such well interference problems between new wells and between new and existing wells.

On August 19, 2019, the District's Board of Directors adopted permanent rules to allow for the long-term management of the groundwater resources within the District. A copy of those rules can be found at:

https://uppertrinitygcd.com/pdf/UTGCD-RULES.pdf

These rules maintained the requirements included in the previous temporary rules, described above, and also added permitting requirements for non-exempt wells. This permitting system includes two separate types of permits:

Historic Use Permits:

- Applies to wells that were currently in operation, approved or for which an administratively complete application was submitted on or before December 31, 2019;

- Allocations of groundwater are meant to protect the investment backed expectations of well owners and are based on the maximum historic use for well or well system or maximum or the maximum designed and planned production amount.

Operating Permits:

- Applies to wells or well systems established after December 31, 2019;

- Allocations of groundwater are based on the surface acreage owned or controlled by the applicant.

The District has also established a monitoring well network at key locations throughout the four counties to monitor water levels and aquifer conditions over time. Information from the well network will be assimilated along with groundwater production and use reports and estimates, well location and completion data, information on aquifer recharge rates and other hydrogeologic properties, and other information in a database in order to better understand and manage the groundwater resources of the area. Information gleaned from these efforts has been used in the past and will continue to be used by the District in the future in the establishment of desired future conditions for the aquifers, in the monitoring of actual conditions of the aquifers and calibration of modeled conditions, in making planning decisions, and in the development of permanent District rules that may include a permitting system for water wells.

Chapter 36 requires the District to both adopt and enforce rules that will achieve the desired future conditions established for the aquifers in the District. Ideally, the District will be able to establish desired future conditions and implement rules that will promote and provide for sustainable groundwater production throughout the District for the current and future generations of citizens of the District. However, the science and information to be developed by the District may ultimately indicate that such a goal of sustainability, or perhaps even some less idealistic goal, is not achievable without reductions in groundwater production. Once again, if the District determines that groundwater production must be reduced in the future in order to achieve the desired future conditions, it will do so extremely cautiously and with due care and consideration for the possible economic impacts and other effects on the citizens and businesses of the District and their property rights and interests.

Chapter 36 and the District Act afford the District a number of options and tools for the management of groundwater and possible approaches to the regulation of production. Chapter 36 allows the District to be more protective of existing or historic wells and their use than it is of wells that have not yet been drilled. It allows the District to adopt dissimilar regulatory approaches for wells completed in separate aquifers or in different geographic regions of the District, in order to address critical areas or to otherwise tailor-make regulations that are more suitable for a particular aquifer or area. Groundwater management strategies employed for the outcrop of the aquifer may differ from those utilized in subcrop areas. The District may adopt production regulations that authorize production from a well based upon its past or existing use, the acreage or size of the tract of the property on which it is located, the level of decline in the aquifer where the well is located, or other reasonable and appropriate criteria as authorized by law.

Because the District is in a high-density growth area near the Dallas-Fort Worth Metroplex, the District will thoroughly investigate groundwater-to-surface-water conversion management strategies used in other parts of the states. Many of these regulatory approaches have been studied for decades and include methods to fairly reduce groundwater production in high-growth suburban and urban regions, and may prove to be the most appropriate for the District to pursue if it is required to reduce groundwater in order to achieve the desired future conditions established for the aquifers. However, groundwater reduction and surface water conversion management strategies can take many years to implement and represent a considerable capital investment for water users, as securing alternate sources of water supply by economically feasible means is an arduous endeavor that typically involves a very large number of stakeholders and overcoming numerous technical, legal, and financial hurdles. The District will ensure that it has thoroughly evaluated the alternatives and implications of pursuing such management strategies before opting for them, and has allowed a reasonable and sufficient amount of time for them to be implemented. This may necessitate the short-term allowance of groundwater production in excess of annual pumping goals or limits designed to achieve desired future conditions, and nothing in this plan shall be construed to limit the ability of the District to utilize that regulatory flexibility.

The District has and will continue to promote water conservation and public awareness in its management efforts and may investigate and pursue conservation incentive-based management strategies that encourage or reward conservation. In many cases, conservation and public awareness strategies can be among the most cost-efficient means to reduce water use, and thus groundwater production, and will be thoroughly investigated and promoted by the District.

Water quantity issues are only part of the District's concern and regulatory purview. Water quality issues are equally important. The District is very concerned about protection of the quality of the groundwater resources in the four counties and will continue to pursue management strategies to protect those resources from contamination, which can threaten to undermine groundwater conservation efforts by rendering the resource unusable. The District has implemented an injection well monitoring program to monitor and evaluate permit applications submitted to the Railroad Commission of Texas and the Texas Commission on Environmental Quality for injection of various types of waste into the geologic formations underlying the freshwater aquifers in the District. The District works with injection well permit applicants to insure that any concerns it may have regarding threats to groundwater resources are addressed and, if necessary, will vigorously protest an injection application before those state agencies to ensure such resource protection. The District also has adopted and will enforce well completion standards for the drilling and completion of water wells, as well as standards for the capping and plugging of abandoned or deteriorated water wells.

VI. ACTIONS, PROCEDURES, PERFORMANCE AND AVOIDANCE FOR PLAN IMPLEMENTATION

The provisions of this plan will be implemented by the District and will be used by the District as a guidepost for determining the direction or priority for all District activities. All operations of the District, all agreements entered into by the District, and any additional planning efforts in which the District may participate will be consistent with the provisions of this plan.

Rules adopted by the District for the permitting of wells and the use of groundwater shall comply with Chapter 36, the District Act, and the provisions of this plan. All rules will be adhered to and enforced. The development and enforcement of the rules will be based on the best technical evidence available to the District. A copy of the rules is included in Appendix C, and can be found here: https://uppertrinitygcd.com/pdf/UTGCD-RULES.pdf

The District will encourage cooperation and coordination in the implementation of this plan. All operations and activities of the District will be performed in a manner that best encourages and fosters cooperation with state, regional, and local water entities.

VII. METHODOLOGY FOR TRACKING DISTRICT PROGRESS IN ACHIEVING MANAGEMENT GOALS

The General Manager of the District will prepare and submit an Annual Report which will include an update on the District's performance in regards to achieving management goals and objectives set forth herein. The General Manager of the District will annually present the Annual Report to the Board of Directors after its completion. The District will maintain a copy of the Annual Report on file at the District's offices for members of the public to inspect upon adoption of the report by the board.

VIII. GOALS, MANAGEMENT OBJECTIVES AND PERFORMANCE STANDARDS

Management Goals

A. Providing the Most Efficient Use of Groundwater – 31TAC 356.52(a)(1)(A)/TWC §36.1071(a)(1)

A1. Objective - Each year the District will require registration of all new wells within the District.

A.1 Performance Standard - Annual reporting of well registration statistics will be included in the Annual Report provided to the Board of Directors.

A.2 Objective - Each year the District will monitor annual production from all non-exempt wells within the District.

A.2 Performance Standard - The District will require installation of meters on all non-exempt wells and reporting of production to the District. The annual production of groundwater from non-exempt wells will be included in the Annual Report provided to the Board of Directors.

A.3 Objective – Each year the District will monitor permitted groundwater production volumes.

A.3 Performance Standard – Annual permitted volume of groundwater will be included in the Annual Report provided to the Board of Directors.

B. Controlling and Preventing Waste of Groundwater – 31TAC 356.52(a)(1)(B)/ TWC §36.1071(a)(2))

B.1 Objective - Annual evaluation of the rules to determine if any amendments are recommended to decrease waste of groundwater within the District.

B.1 Performance Standard - Annual discussion of the evaluation of the rules and a reporting of whether any of the District rules require amendment to prevent waste of groundwater to be included in the Annual Report provided to the Board of Directors.

B.2 Objective - The District will encourage the elimination and reduction of groundwater waste through the collection of a water-use fee for non-exempt production wells within the District.

B.2 Performance Standard - Annual reporting of the total fees paid and total groundwater used by non-exempt wells will be included in the Annual Report provided to the Board of Directors.

B.3 Objective - Each year, the District will provide information to the public on eliminating and reducing wasteful practices in the use of groundwater by including information on groundwater waste reduction on the District's website.

B.3 Performance Standard - Each year, a copy of the information provided on the groundwater waste reduction page of the District's website will be included in the District's Annual Report to be given to the District's Board of Directors.

C. Addressing Conjunctive Surface Water Management Issues – 31TAC 356.52 (a)(1)(D)/TWC §36.1071(a)(4)

C.1 Objective - Each year the District will participate in the regional water planning process by attending at least one of the Region B, C or G Regional Water Planning Group Meetings to encourage the development of surface water supplies to meet the needs of water user groups within the District.

C.1 Performance Standard - The attendance of a District representative at any Regional Water Planning Group meeting will be noted in the Annual Report provided to the Board of Directors.

D. Addressing Natural Resource Issues which Impact the Use and Availability of Groundwater, and which are Impacted by the Use of Groundwater – 31TAC 356.52 (a)(1)(E)/TWC §36.1071(a)(5)

D.1 Objective – Ongoing monitoring and review of all applications submitted to the Railroad Commission of Texas to inject fluid into a reservoir productive of oil or gas within the boundaries of the District and all counties immediately adjacent to the District.

D.1. Performance Standard – Regular updates to the District's Board of Directors concerning injection well applications received and reviewed and inclusion of summary of all applications received and reviewed by the District in the Annual Report provided to the Board of Directors.

E. Addressing Drought Conditions – 31TAC 356.52 (a)(1)(F)/TWC §36.1071(a)(6)

E.1 Objective - Monthly review of drought conditions within the District using the Texas Water Development Board's monthly drought conditions presentation available at: http://waterdatafortexas.org/drought/drought-monitor)

E.1 Performance Standard – An annual review of drought conditions within the District will be included in the Annual Report provided to the Board of Directors and on the District website.

F. Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, and Brush Control, where Appropriate and Cost Effective – 31TAC 356.52 (a)(1)(G)/TWC §36.1071(a)(7)

Precipitation enhancement is not an appropriate or cost-effective program for the District at this time because there is not an existing precipitation enhancement program operating in nearby counties in which the District could participate and share costs. Given the relative youth of the District, development and running of a District-wide precipitation enhancement program is not considered a priority. The District has determined that addressing precipitation enhancement is not applicable to the District at this time.

Recharge enhancement is not an appropriate or cost-effective program for the District at this time. The District has determined that addressing recharge enhancement is not applicable to the District at this time.

Brush Control is not an appropriate or cost-effective program for the District at this time. The District has determined that addressing brush control is not applicable to the District at this time.

F.1 Objective - The District will annually submit an article regarding water conservation for publication to at least one newspaper of general circulation in the District counties.

F.1 Performance Standard - Each year, a copy of the conservation article will be included in the District's Annual Report to be given to the District's Board of Directors.

F.2 Objective - The District will annually submit an article regarding rain water harvesting for publication to at least one newspaper of general circulation in the District counties.

F.2 Performance Standard - Each year, a copy of the rain water harvesting article will be included in the District's Annual Report to be given to the District's Board of Directors.

F.3 Objective - Each year, the District will include an informative flier on water conservation within at least one mail out to groundwater non-exempt water users distributed in the normal course of business for the District.

F.3 Performance Standard - Each year, a copy of the water conservation mail-out flyer will be included in the District's Annual Report to be given to the District's Board of Directors.

G. Addressing the Desired Future Conditions of the Groundwater Resources – 31TAC (a)(1)(H)/TWC §36.1071(a)(8)

G.1 Objective - Within 3 years of Groundwater Management Plan adoption develop a Groundwater Monitoring Program within the District.

G.1 Performance Standard - Upon development, attachment of the District Groundwater Monitoring Program to the District's Annual Report to be given to the District's Board of Directors.

G.2 Objective - Upon approval of the District Monitoring Program – conduct water level measurements at least annually on groundwater resources within the District.

G.2 Performance Standard - Annual evaluation of water-level trends and the adequacy of the monitoring network to monitor aquifer conditions within the District and comply with the aquifer resources desired future conditions. The evaluation will be included in the District's Annual Report to be given to the District's Board of Directors. The District may also take into consideration any measurements made by the TWDB groundwater measurement team.

G.3 Objective - Monitor non-exempt pumping within the District for use in evaluating District compliance with aquifer desired future conditions.

G.3 Performance Standard - Annual reporting of groundwater used by non-exempt wells will be included in the Annual Report provided to the District's Board of Directors.

IX. MANAGEMENT GOALS DETERMINED NOT-APPLICABLE TO THE DISTRICT

A. Controlling and Preventing Subsidence – 31TAC 356.52 (a)(1)(C)/ TWC §36.1071(a)(3)

This category of management goal is not considered applicable to the District because the formations making up the aquifers of use are consolidated with little potential for subsidence within the District as a result of groundwater withdrawal. Mace and others (1994) studied the potential for subsidence resulting from the significant historical water-level declines observed in the northern Trinity Aquifer in central Texas. They concluded that even in the confined portions of the aquifer, where the largest declines have occurred, the subsidence expected would be only a small amount and would take a very long time to manifest itself.

More recently, the TWDB funded a study and development of a tool to assess the potential threat of subsidence: Identification of the Vulnerability of the Major and Minor Aquifers of Texas to Subsidence with Regard to Groundwater Pumping – TWDB Contract Number 1648302062. The District has reviewed this report, and utilized the tool, and have concluded that the updated information indicates the downdip portions of the aquifer, which occur to the east of the District's boundary, have the greatest risk for future subsidence due to pumping. Based on this review, it has been determined that this management goal is not applicable to the District. However, the District will continue to monitor any new studies or information, related to this issue, that becomes available.

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APPENDIX A

Estimated Historical Water Use and 2017 State Water Plan Datasets: Upper Trinity Groundwater Conservation District

Estimated Historical Water Use And 2017 State Water Plan Datasets:

Upper Trinity Groundwater Conservation District

by Stephen Allen
Texas Water Development Board
Groundwater Division
Groundwater Technical Assistance Section
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April 12, 2020

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 2017 Texas 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 2017 SWP data available as of 4/12/2020. 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 2017 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 2017 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 2018. TWDB staff anticipates the calculation and posting of these estimates at a later date.

HOOD COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2017	GW	5,956	13	0	14	2,991	190	9,164
	SW	1,688	393	142	1,828	4,608	231	8,890
2016	GW	5,982	10	9	26	1,932	221	8,180
	SW	1,461	0	180	1,818	4,359	270	8,088
2015	GW	6,057	12	0	21	2,058	221	8,369
	SW	1,516	0	131	1,969	5,141	270	9,027
2014	GW	6,622	14	16	14	4,890	263	11,819
	SW	1,463	0	269	3,137	3,771	321	8,961
2013	GW	6,807	12	27	13	3,102	209	10,170
	SW	1,486	0	325	2,559	5,000	256	9,626
2012	GW	6,859	14	48	9	3,640	197	10,767
	SW	1,535	0	416	6	5,355	240	7,552
2011	GW	7,099	13	21	9	397	246	7,785
	SW	2,353	0	83	4	10,916	300	13,656
2010	GW	6,708	6	1,216	6	675	240	8,851
	SW	664	0	1,522	5	7,500	293	9,984
2009	GW	5,823	12	1,313	26	404	247	7,825
	SW	917	0	1,643	6	8,298	301	11,165
2008	GW	5,337	20	1,410	41	0	238	7,046
	SW	1,533	0	1,765	487	6,083	292	10,160
2007	GW	5,085	25	0	150	498	184	5,942
	SW	919	0	0	1,652	5,044	225	7,840
2006	GW	5,232	25	0	77	2,776	260	8,370
	SW	1,667	0	0	39	5,641	317	7,664
2005	GW	5,276	22	0	93	0	245	5,636
	SW	1,329	0	0	293	7,960	299	9,881
2004	GW	4,704	17	0	53	0	275	5,049
	SW	545	0	0	302	5,540	281	6,668
2003	GW	4,782	15	0	44	0	255	5,096
	SW	762	0	0	1,489	8,726	261	11,238
2002	GW	4,145	16	0	39	0	361	4,561
	SW	1,920	0	0	3,070	2,691	371	8,052

MONTAGUE COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2017	GW	892	0	0	0	398	72	1,362
	SW	1,472	0	0	0	0	1,359	2,831
2016	GW	885	0	6	0	332	64	1,287
	SW	1,393	0	25	0	10	1,227	2,655
2015	GW	912	0	64	0	299	63	1,338
	SW	1,406	0	255	0	9	1,182	2,852
2014	GW	1,070	0	373	0	490	60	1,993
	SW	1,229	0	1,490	0	0	1,139	3,858
2013	GW	1,188	0	508	0	465	56	2,217
	SW	1,435	0	2,031	0	0	1,068	4,534
2012	GW	1,393	0	892	0	530	51	2,866
	SW	1,675	1	3,570	0	0	957	6,203
2011	GW	1,526	0	218	0	739	59	2,542
	SW	1,801	1	870	0	0	1,127	3,799
2010	GW	1,354	0	616	0	695	59	2,724
	SW	1,751	1	719	0	0	1,110	3,581
2009	GW	1,261	0	530	0	874	66	2,731
	SW	1,593	1	620	0	0	1,255	3,469
2008	GW	1,131	0	444	0	131	63	1,769
	SW	1,594	1	520	0	0	1,204	3,319
2007	GW	983	0	0	0	91	76	1,150
	SW	1,426	1	0	0	0	1,442	2,869
2006	GW	1,255	0	0	0	387	67	1,709
	SW	1,829	1	0	0	12	1,272	3,114
2005	GW	1,195	0	0	0	172	69	1,436
	SW	1,697	1	0	0	0	1,310	3,008
2004	GW	1,091	0	0	0	158	72	1,321
	SW	1,884	1	0	0	0	1,345	3,230
2003	GW	1,139	0	0	0	57	75	1,271
	SW	1,725	1	0	0	0	1,393	3,119
2002	GW	1,124	0	0	0	268	74	1,466
	SW	1,426	1	0	0	0	1,370	2,797

PARKER COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2017	GW	7,189	21	0	0	707	145	8,062
	SW	8,111	32	745	0	432	1,297	10,617
2016	GW	7,123	18	2	0	875	152	8,170
	SW	7,992	31	358	0	287	1,371	10,039
2015	GW	6,958	14	53	0	798	152	7,975
	SW	7,839	29	1,242	0	267	1,368	10,745
2014	GW	7,041	14	46	0	1,158	148	8,407
	SW	7,443	22	683	0	127	1,338	9,613
2013	GW	7,136	16	123	0	919	117	8,311
	SW	10,830	30	1,185	0	152	1,049	13,246
2012	GW	8,798	20	288	0	28	97	9,231
	SW	7,850	49	1,901	565	156	870	11,391
2011	GW	9,047	25	16	0	185	229	9,502
	SW	8,102	62	994	604	77	2,060	11,899
2010	GW	7,938	16	2,450	0	182	226	10,812
	SW	6,756	54	3,414	464	27	2,035	12,750
2009	GW	7,285	16	1,926	0	44	157	9,428
	SW	6,536	53	3,009	741	88	1,408	11,835
2008	GW	6,196	15	1,401	0	73	129	7,814
	SW	7,476	40	2,393	2	117	1,164	11,192
2007	GW	6,508	7	0	0	60	177	6,752
	SW	6,578	89	887	2	20	1,591	9,167
2006	GW	7,130	14	0	0	474	178	7,796
	SW	8,542	98	887	9	16	1,601	11,153
2005	GW	5,901	11	0	0	206	132	6,250
	SW	7,818	73	698	3	190	1,185	9,967
2004	GW	5,192	10	0	0	130	65	5,397
	SW	7,182	78	840	0	124	1,242	9,466
2003	GW	5,365	8	0	0	39	74	5,486
	SW	6,676	85	1,269	703	381	1,389	10,503
2002	GW	5,302	8	0	0	64	89	5,463
	SW	6,568	72	2,431	703	293	1,685	11,752

WISE COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2017	GW	3,545	53	99	0	1,411	293	5,401
	SW	3,361	43	1,229	692	25	1,174	6,524
2016	GW	3,522	113	18	0	1,080	265	4,998
	SW	3,329	56	867	1,944	43	1,060	7,299
2015	GW	3,408	160	133	0	1,370	258	5,329
	SW	3,342	52	1,693	2,843	55	1,034	9,019
2014	GW	3,832	240	387	0	1,167	252	5,878
	SW	3,346	43	2,504	2,894	110	1,007	9,904
2013	GW	4,158	179	441	1	1,261	225	6,265
	SW	3,764	43	2,875	2,593	39	900	10,214
2012	GW	4,550	160	501	0	1,516	210	6,937
	SW	3,989	44	3,063	2,879	46	842	10,863
2011	GW	4,873	162	111	0	1,458	257	6,861
	SW	3,854	292	1,356	0	10	1,027	6,539
2010	GW	4,383	176	5,135	0	830	254	10,778
	SW	3,642	53	6,821	0	761	1,017	12,294
2009	GW	3,263	187	4,454	0	692	321	8,917
	SW	2,215	97	6,090	0	831	1,285	10,518
2008	GW	2,218	418	3,773	0	0	267	6,676
	SW	2,141	121	5,316	0	1,070	1,067	9,715
2007	GW	2,085	120	14	0	130	405	2,754
	SW	2,016	52	966	0	1,220	1,618	5,872
2006	GW	2,280	93	1	0	290	288	2,952
	SW	2,443	70	977	0	1,000	1,150	5,640
2005	GW	2,196	99	1	0	62	295	2,653
	SW	2,103	62	977	0	1,323	1,178	5,643
2004	GW	1,934	69	12	0	128	713	2,856
	SW	1,774	72	1,003	0	152	713	3,714
2003	GW	1,767	283	1	0	45	780	2,876
	SW	1,946	235	266	0	430	780	3,657
2002	GW	1,810	66	1	0	129	782	2,788
	SW	1,436	456	8,298	0	316	782	11,288

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

HOOD COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
G	ACTON MUD	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	5,724	5,738	5,734	5,720	5,708	5,698
G	COUNTY-OTHER, HOOD	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	335	335	335	335	335	335
G	GRANBURY	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,400	1,400	1,400	1,400	1,400	1,400
G	IRRIGATION, HOOD	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	4,060	4,060	4,060	4,060	4,060	4,060
G	LIVESTOCK, HOOD	BRAZOS	BRAZOS LIVESTOCK LOCAL SUPPLY	520	520	520	520	520	520
G	LIVESTOCK, HOOD	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	2	2	2	2	2	2
G	MANUFACTURING, HOOD	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	10,000	10,000	10,000	10,000	10,000	10,000
G	OAK TRAIL SHORES SUBDIVISION	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	571	571	571	571	571	571
G	STEAM ELECTRIC POWER, HOOD	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	43,447	43,447	43,447	43,447	43,271	40,337
	Sum of Projected Surface Water Supplies (acre-feet)			**66,059**	**66,073**	**66,069**	**66,055**	**65,867**	**62,923**

MONTAGUE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
B	BOWIE	TRINITY	AMON G. CARTER LAKE/RESERVOIR	1,235	1,168	1,102	1,035	969	968
B	COUNTY-OTHER, MONTAGUE	RED	FARMERS CREEK/NOCONA LAKE/RESERVOIR	52	52	52	52	52	53

B	COUNTY-OTHER, MONTAGUE	TRINITY	AMON G. CARTER LAKE/RESERVOIR	131	131	130	130	131	132
B	IRRIGATION, MONTAGUE	RED	FARMERS CREEK/NOCONA LAKE/RESERVOIR	100	100	100	100	100	100
B	IRRIGATION, MONTAGUE	RED	RED RUN-OF-RIVER	108	108	108	108	108	108
B	LIVESTOCK, MONTAGUE	RED	RED LIVESTOCK LOCAL SUPPLY	1,165	1,165	1,165	1,165	1,165	1,165
B	LIVESTOCK, MONTAGUE	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	500	500	500	500	500	500
B	MANUFACTURING, MONTAGUE	RED	FARMERS CREEK/NOCONA LAKE/RESERVOIR	6	7	10	12	12	12
B	NOCONA	RED	FARMERS CREEK/NOCONA LAKE/RESERVOIR	1,102	1,101	1,098	1,096	1,096	1,095
	Sum of Projected Surface Water Supplies (acre-feet)			**4,399**	**4,332**	**4,265**	**4,198**	**4,133**	**4,133**

PARKER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	ALEDO	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	651	898	1,208	1,152	1,122	1,031
C	AZLE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	337	337	333	314	331	336
C	COUNTY-OTHER, PARKER	BRAZOS	PALO PINTO LAKE/RESERVOIR	393	507	567	507	435	370
C	COUNTY-OTHER, PARKER	BRAZOS	TRINITY RUN-OF-RIVER	20	25	28	25	22	18
C	COUNTY-OTHER, PARKER	BRAZOS	TRWD LAKE/RESERVOIR SYSTEM	125	143	139	151	157	159
C	COUNTY-OTHER, PARKER	TRINITY	PALO PINTO LAKE/RESERVOIR	270	156	96	156	228	293
C	COUNTY-OTHER, PARKER	TRINITY	TRINITY RUN-OF-RIVER	13	8	5	8	11	15
C	COUNTY-OTHER, PARKER	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	86	44	23	47	83	126
C	FORT WORTH	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	7,783	10,277	9,729	9,338	8,852	8,363
C	HUDSON OAKS	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	229	281	313	245	146	132
C	HUDSON OAKS	TRINITY	WEATHERFORD LAKE/RESERVOIR	106	120	128	84	55	38
C	IRRIGATION, PARKER	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	393	393	393	393	393	393
C	IRRIGATION, PARKER	BRAZOS	BRAZOS RUN-OF-RIVER	92	92	92	92	92	92
C	IRRIGATION, PARKER	BRAZOS	TRINITY RUN-OF-RIVER	96	96	96	96	96	96

C	IRRIGATION, PARKER	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	107	107	107	107	107	107
C	IRRIGATION, PARKER	TRINITY	BRAZOS RUN-OF-RIVER	25	25	25	25	25	25
C	IRRIGATION, PARKER	TRINITY	TRINITY RUN-OF-RIVER	26	26	26	26	26	26
C	LIVESTOCK, PARKER	BRAZOS	BRAZOS LIVESTOCK LOCAL SUPPLY	524	524	524	524	524	524
C	LIVESTOCK, PARKER	BRAZOS	TRINITY LIVESTOCK LOCAL SUPPLY	591	591	591	591	591	591
C	LIVESTOCK, PARKER	TRINITY	BRAZOS LIVESTOCK LOCAL SUPPLY	379	379	379	379	379	379
C	LIVESTOCK, PARKER	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	428	428	428	428	428	428
C	MANUFACTURING, PARKER	BRAZOS	PALO PINTO LAKE/RESERVOIR	1	1	0	0	0	1
C	MANUFACTURING, PARKER	BRAZOS	TRWD LAKE/RESERVOIR SYSTEM	13	14	13	12	9	8
C	MANUFACTURING, PARKER	BRAZOS	WEATHERFORD LAKE/RESERVOIR	5	5	5	3	2	2
C	MANUFACTURING, PARKER	TRINITY	PALO PINTO LAKE/RESERVOIR	24	24	25	25	25	24
C	MANUFACTURING, PARKER	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	612	649	659	580	404	390
C	MANUFACTURING, PARKER	TRINITY	WEATHERFORD LAKE/RESERVOIR	239	236	229	166	121	91
C	MINERAL WELLS	BRAZOS	PALO PINTO LAKE/RESERVOIR	346	332	320	310	302	294
C	MINING, PARKER	BRAZOS	BRAZOS OTHER LOCAL SUPPLY	8	8	8	8	8	8
C	MINING, PARKER	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	27	22	16	11	6	0
C	MINING, PARKER	BRAZOS	TRINITY OTHER LOCAL SUPPLY	4	4	4	4	4	4
C	MINING, PARKER	TRINITY	BRAZOS OTHER LOCAL SUPPLY	6	6	6	6	6	6
C	MINING, PARKER	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	17	13	10	7	3	0
C	MINING, PARKER	TRINITY	TRINITY OTHER LOCAL SUPPLY	2	2	2	2	2	2
C	PARKER COUNTY SUD	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	561	561	561	561	561	561
C	PARKER COUNTY SUD	BRAZOS	PALO PINTO LAKE/RESERVOIR	294	294	294	294	294	294
C	RENO	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	49	45	40	35	28	22

C	SPRINGTOWN	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	340	340	340	340	340	327
C	STEAM ELECTRIC POWER, PARKER	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	260	237	209	185	165	147
C	STEAM ELECTRIC POWER, PARKER	TRINITY	WEATHERFORD LAKE/RESERVOIR	120	101	85	55	36	25
C	WALNUT CREEK SUD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	1,455	1,736	2,130	2,936	4,634	6,443
C	WEATHERFORD	BRAZOS	TRWD LAKE/RESERVOIR SYSTEM	8	53	99	233	239	257
C	WEATHERFORD	BRAZOS	WEATHERFORD LAKE/RESERVOIR	138	135	134	139	142	143
C	WEATHERFORD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	136	902	1,668	3,921	4,019	4,338
C	WEATHERFORD	TRINITY	WEATHERFORD LAKE/RESERVOIR	2,315	2,283	2,256	2,345	2,394	2,408
	Sum of Projected Surface Water Supplies (acre-feet)			**19,654**	**23,460**	**24,343**	**26,866**	**27,847**	**29,337**

WISE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	AURORA	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	71	87	99	114	113	107
C	BOYD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	144	142	195	227	267	224
C	BRIDGEPORT	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	1,294	1,412	1,466	1,704	1,704	1,704
C	CHICO	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	13	13	13	13	13	13
C	COUNTY-OTHER, WISE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	616	471	368	647	776	834
C	DECATUR	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	1,206	1,348	1,449	1,227	1,113	1,055
C	FORT WORTH	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	1,497	1,799	1,904	2,135	2,309	2,420
C	IRRIGATION, WISE	TRINITY	TRINITY RUN-OF-RIVER	139	139	139	139	139	139
C	IRRIGATION, WISE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	124	124	124	124	124	124
C	LIVESTOCK, WISE	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	1,117	1,117	1,117	1,117	1,117	1,117
C	MANUFACTURING, WISE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	2,160	2,256	2,234	2,160	2,129	2,097
C	MINING, WISE	TRINITY	TRINITY RUN-OF-RIVER	133	133	133	133	133	133

C	MINING, WISE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	2,896	2,896	2,896	2,896	2,896	2,896
C	RHOME	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	131	265	368	636	730	745
C	RUNAWAY BAY	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	350	353	344	365	370	396
C	STEAM ELECTRIC POWER, WISE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	1,494	1,328	1,813	1,741	2,091	2,078
C	WALNUT CREEK SUD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	290	393	516	675	1,065	1,459
C	WEST WISE SUD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	425	386	344	310	283	260
	Sum of Projected Surface Water Supplies (acre-feet)			**14,100**	**14,662**	**15,522**	**16,363**	**17,372**	**17,801**

Projected Water Demands
TWDB 2017 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.

HOOD COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	ACTON MUD	BRAZOS	2,862	4,460	5,497	6,024	6,631	7,308
G	COUNTY-OTHER, HOOD	BRAZOS	2,820	2,179	1,898	1,930	1,814	1,582
G	COUNTY-OTHER, HOOD	TRINITY	3	5	5	3	5	6
G	CRESSON	BRAZOS	42	57	67	76	84	89
G	CRESSON	TRINITY	14	19	22	25	27	29
G	GRANBURY	BRAZOS	1,216	1,432	1,586	1,725	1,837	1,925
G	IRRIGATION, HOOD	BRAZOS	7,205	7,071	6,939	6,807	6,680	6,560
G	LIVESTOCK, HOOD	BRAZOS	520	520	520	520	520	520
G	LIVESTOCK, HOOD	TRINITY	2	2	2	2	2	2
G	MANUFACTURING, HOOD	BRAZOS	25	27	29	31	34	37
G	MINING, HOOD	BRAZOS	2,061	2,417	2,204	2,116	2,027	2,041
G	MINING, HOOD	TRINITY	17	19	18	17	16	16
G	OAK TRAIL SHORES SUBDIVISION	BRAZOS	357	351	345	344	345	348
G	STEAM ELECTRIC POWER, HOOD	BRAZOS	5,814	6,796	7,995	9,456	11,238	13,354
G	TOLAR	BRAZOS	120	139	153	166	176	184
		Sum of Projected Water Demands (acre-feet)	**23,078**	**25,494**	**27,280**	**29,242**	**31,436**	**34,001**

MONTAGUE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
B	BOWIE	TRINITY	927	935	929	934	942	949
B	COUNTY-OTHER, MONTAGUE	RED	560	561	554	555	559	564
B	COUNTY-OTHER, MONTAGUE	TRINITY	752	751	743	744	750	756
B	IRRIGATION, MONTAGUE	RED	436	436	436	436	436	436
B	IRRIGATION, MONTAGUE	TRINITY	436	436	436	436	436	436
B	LIVESTOCK, MONTAGUE	RED	1,193	1,193	1,193	1,193	1,193	1,193
B	LIVESTOCK, MONTAGUE	TRINITY	398	398	398	398	398	398
B	MANUFACTURING, MONTAGUE	RED	5	6	8	10	10	10
B	MINING, MONTAGUE	RED	1,747	1,237	771	332	373	373
B	MINING, MONTAGUE	TRINITY	1,892	1,340	835	359	404	404
B	NOCONA	RED	740	751	751	758	766	772
B	ST. JO	TRINITY	161	162	160	161	162	163
		Sum of Projected Water Demands (acre-feet)	**9,247**	**8,206**	**7,214**	**6,316**	**6,429**	**6,454**

PARKER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	ALEDO	TRINITY	822	1,262	1,900	1,992	1,991	1,990
C	ANNETTA	TRINITY	152	179	208	238	270	302
C	ANNETTA NORTH	TRINITY	67	71	76	83	91	100
C	ANNETTA SOUTH	TRINITY	63	60	58	57	57	57
C	AZLE	TRINITY	372	392	414	440	530	678
C	COUNTY-OTHER, PARKER	BRAZOS	4,161	5,234	5,741	7,086	9,319	12,323
C	COUNTY-OTHER, PARKER	TRINITY	2,866	1,617	973	2,183	4,886	9,735
C	CRESSON	TRINITY	68	75	83	92	104	118
C	FORT WORTH	TRINITY	12,373	19,140	21,862	23,960	25,530	27,120
C	HUDSON OAKS	TRINITY	458	618	779	795	795	795
C	IRRIGATION, PARKER	BRAZOS	385	385	385	385	385	385
C	IRRIGATION, PARKER	TRINITY	105	105	105	105	105	105
C	LIVESTOCK, PARKER	BRAZOS	896	896	896	896	896	896
C	LIVESTOCK, PARKER	TRINITY	648	648	648	648	648	648
C	MANUFACTURING, PARKER	BRAZOS	13	15	16	18	20	22
C	MANUFACTURING, PARKER	TRINITY	625	714	805	894	984	1,073
C	MINERAL WELLS	BRAZOS	346	332	320	310	302	294
C	MINING, PARKER	BRAZOS	1,973	2,498	2,484	2,525	2,557	2,706
C	MINING, PARKER	TRINITY	1,209	1,531	1,522	1,548	1,567	1,658
C	PARKER COUNTY SUD	BRAZOS	655	842	1,060	1,321	1,627	1,983
C	RENO	TRINITY	170	173	176	180	184	189
C	SPRINGTOWN	TRINITY	577	757	749	745	744	743
C	STEAM ELECTRIC POWER, PARKER	TRINITY	260	260	260	260	260	260
C	WALNUT CREEK SUD	TRINITY	1,455	1,659	1,921	2,463	3,635	4,758
C	WEATHERFORD	BRAZOS	298	348	408	660	1,034	1,509
C	WEATHERFORD	TRINITY	5,009	5,865	6,865	11,109	17,423	25,438
C	WILLOW PARK	TRINITY	759	904	1,074	1,483	1,924	2,366
		Sum of Projected Water Demands (acre-feet)	**36,785**	**46,580**	**51,788**	**62,476**	**77,868**	**98,251**

WISE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	ALVORD	TRINITY	110	132	155	189	216	242
C	AURORA	TRINITY	134	159	186	224	263	311
C	BOLIVAR WSC	TRINITY	111	122	134	150	168	187
C	BOYD	TRINITY	217	229	316	392	547	593
C	BRIDGEPORT	TRINITY	1,294	1,551	1,822	2,496	3,322	4,149
C	CHICO	TRINITY	207	213	221	411	522	652
C	COUNTY-OTHER, WISE	TRINITY	3,667	3,565	3,485	5,039	6,465	7,794
C	DECATUR	TRINITY	2,319	3,149	4,060	5,240	6,157	7,156

C	FORT WORTH	TRINITY	2,380	3,350	4,278	5,477	6,660	7,848
C	IRRIGATION, WISE	TRINITY	1,324	1,324	1,324	1,324	1,324	1,324
C	LIVESTOCK, WISE	TRINITY	1,575	1,575	1,575	1,575	1,575	1,575
C	MANUFACTURING, WISE	TRINITY	2,660	2,979	3,277	3,539	3,858	4,206
C	MINING, WISE	TRINITY	10,320	11,159	12,337	13,975	15,378	17,694
C	NEW FAIRVIEW	TRINITY	163	199	236	286	334	392
C	NEWARK	TRINITY	195	249	345	462	643	858
C	RHOME	TRINITY	411	571	738	1,175	1,576	2,011
C	RUNAWAY BAY	TRINITY	350	388	428	514	584	700
C	STEAM ELECTRIC POWER, WISE	TRINITY	1,494	1,459	2,254	2,450	3,298	3,673
C	WALNUT CREEK SUD	TRINITY	290	376	465	566	835	1,077
C	WEST WISE SUD	TRINITY	425	424	427	435	449	464
	Sum of Projected Water Demands (acre-feet)		**29,646**	**33,173**	**38,063**	**45,919**	**54,174**	**62,906**

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

HOOD COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	ACTON MUD	BRAZOS	4,322	2,742	1,700	1,155	533	-156
G	COUNTY-OTHER, HOOD	BRAZOS	-968	-344	-77	-121	-22	188
G	COUNTY-OTHER, HOOD	TRINITY	0	0	0	0	0	5
G	CRESSON	BRAZOS	6	1	-7	-19	-31	-40
G	CRESSON	TRINITY	2	1	-1	-2	-4	-6
G	GRANBURY	BRAZOS	890	674	520	358	246	158
G	IRRIGATION, HOOD	BRAZOS	325	459	591	723	850	970
G	LIVESTOCK, HOOD	BRAZOS	0	0	0	0	0	0
G	LIVESTOCK, HOOD	TRINITY	0	0	0	0	0	0
G	MANUFACTURING, HOOD	BRAZOS	10,000	9,998	9,996	9,994	9,991	9,988
G	MINING, HOOD	BRAZOS	-837	-1,193	-980	-892	-803	-817
G	MINING, HOOD	TRINITY	-17	-19	-18	-17	-16	-16
G	OAK TRAIL SHORES SUBDIVISION	BRAZOS	214	220	226	227	226	223
G	STEAM ELECTRIC POWER, HOOD	BRAZOS	37,783	36,801	35,602	34,141	32,183	27,133
G	TOLAR	BRAZOS	45	26	12	-1	-11	-19
	Sum of Projected Water Supply Needs (acre-feet)		**-1,822**	**-1,556**	**-1,083**	**-1,052**	**-887**	**-1,054**

MONTAGUE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
B	BOWIE	TRINITY	308	233	173	101	27	19
B	COUNTY-OTHER, MONTAGUE	RED	3	5	11	10	6	2
B	COUNTY-OTHER, MONTAGUE	TRINITY	68	66	74	73	68	63
B	IRRIGATION, MONTAGUE	RED	1	1	1	1	1	1
B	IRRIGATION, MONTAGUE	TRINITY	0	0	0	0	0	0
B	LIVESTOCK, MONTAGUE	RED	0	0	0	0	0	0
B	LIVESTOCK, MONTAGUE	TRINITY	124	124	124	124	124	124
B	MANUFACTURING, MONTAGUE	RED	1	1	2	2	2	2
B	MINING, MONTAGUE	RED	-631	-120	-135	5	11	11
B	MINING, MONTAGUE	TRINITY	-684	-130	-146	4	12	12
B	NOCONA	RED	362	350	347	338	330	323
B	ST. JO	TRINITY	50	49	51	50	49	48
	Sum of Projected Water Supply Needs (acre-feet)		**-1,315**	**-250**	**-281**	**0**	**0**	**0**

PARKER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	ALEDO	TRINITY	227	34	-294	-442	-471	-561
C	ANNETTA	TRINITY	202	175	146	116	84	52
C	ANNETTA NORTH	TRINITY	33	29	24	17	9	0
C	ANNETTA SOUTH	TRINITY	6	9	11	12	12	12
C	AZLE	TRINITY	-35	-55	-81	-126	-199	-342
C	COUNTY-OTHER, PARKER	BRAZOS	300	502	658	-1,338	-4,359	-8,074
C	COUNTY-OTHER, PARKER	TRINITY	205	155	111	-412	-2,285	-6,378
C	CRESSON	TRINITY	9	1	0	0	0	0
C	FORT WORTH	TRINITY	-460	-3,388	-6,734	-8,986	-10,864	-12,758
C	HUDSON OAKS	TRINITY	106	92	52	-68	-196	-227
C	IRRIGATION, PARKER	BRAZOS	476	476	476	476	476	476
C	IRRIGATION, PARKER	TRINITY	129	129	129	129	129	129
C	LIVESTOCK, PARKER	BRAZOS	352	352	352	352	352	352
C	LIVESTOCK, PARKER	TRINITY	255	255	255	255	255	255
C	MANUFACTURING, PARKER	BRAZOS	8	7	4	-1	-7	-9
C	MANUFACTURING, PARKER	TRINITY	332	277	190	-41	-352	-486
C	MINERAL WELLS	BRAZOS	0	0	0	0	0	0
C	MINING, PARKER	BRAZOS	759	229	238	191	154	0
C	MINING, PARKER	TRINITY	467	141	146	118	95	0
C	PARKER COUNTY SUD	BRAZOS	236	49	-169	-430	-736	-1,092
C	RENO	TRINITY	44	37	29	19	8	-3
C	SPRINGTOWN	TRINITY	-142	-322	-314	-310	-309	-321
C	STEAM ELECTRIC POWER, PARKER	TRINITY	120	78	34	-20	-59	-88
C	WALNUT CREEK SUD	TRINITY	0	77	209	473	999	1,685
C	WEATHERFORD	BRAZOS	-152	-160	-175	-288	-653	-1,109
C	WEATHERFORD	TRINITY	-2,558	-2,680	-2,941	-4,843	-11,010	-18,692
C	WILLOW PARK	TRINITY	-2	-147	-317	-726	-1,167	-1,609
	Sum of Projected Water Supply Needs (acre-feet)		**-3,349**	**-6,752**	**-11,025**	**-18,031**	**-32,667**	**-51,749**

WISE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	ALVORD	TRINITY	41	19	-4	-38	-65	-91
C	AURORA	TRINITY	0	-9	-24	-47	-87	-141
C	BOLIVAR WSC	TRINITY	0	-14	-30	-51	-72	-96
C	BOYD	TRINITY	0	-14	-48	-92	-207	-296
C	BRIDGEPORT	TRINITY	0	-139	-356	-792	-1,618	-2,445
C	CHICO	TRINITY	-1	-7	-15	-205	-316	-446
C	COUNTY-OTHER, WISE	TRINITY	-467	-510	-533	-1,808	-3,105	-4,376
C	DECATUR	TRINITY	-1,113	-1,801	-2,611	-4,013	-5,044	-6,101

C	FORT WORTH	TRINITY	-88	-593	-1,318	-2,054	-2,835	-3,692
C	IRRIGATION, WISE	TRINITY	-381	-381	-381	-381	-381	-381
C	LIVESTOCK, WISE	TRINITY	0	0	0	0	0	0
C	MANUFACTURING, WISE	TRINITY	-250	-473	-793	-1,129	-1,479	-1,859
C	MINING, WISE	TRINITY	1,125	286	-892	-2,530	-4,118	-6,434
C	NEW FAIRVIEW	TRINITY	0	-36	-73	-123	-171	-229
C	NEWARK	TRINITY	0	-54	-150	-267	-448	-663
C	RHOME	TRINITY	0	-26	-90	-259	-566	-986
C	RUNAWAY BAY	TRINITY	0	-35	-84	-149	-214	-304
C	STEAM ELECTRIC POWER, WISE	TRINITY	0	-131	-441	-709	-1,207	-1,595
C	WALNUT CREEK SUD	TRINITY	0	17	51	109	230	382
C	WEST WISE SUD	TRINITY	0	-38	-83	-125	-166	-204
	Sum of Projected Water Supply Needs (acre-feet)		**-2,300**	**-4,261**	**-7,926**	**-14,772**	**-22,099**	**-30,339**

HOOD COUNTY

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ACTON MUD, BRAZOS (G)							
REALLOCATION OF SWATS CAPACITY TO ACTON MUD	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	195
		0	**0**	**0**	**0**	**0**	**195**
COUNTY-OTHER, HOOD, BRAZOS (G)							
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [HOOD]	968	966	965	966	965	964
		968	**966**	**965**	**966**	**965**	**964**
COUNTY-OTHER, HOOD, TRINITY (G)							
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [HOOD]	0	2	3	2	3	4
		0	**2**	**3**	**2**	**3**	**4**
CRESSON, BRAZOS (G)							
CONSERVATION - CRESSON	DEMAND REDUCTION [HOOD]	0	0	0	0	1	1
CONSERVATION, WATER LOSS CONTROL - CRESSON	DEMAND REDUCTION [HOOD]	0	0	0	0	0	0
CRESSON NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [PARKER]	32	35	36	36	35	33
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [HOOD]	0	0	19	19	19	18
		32	**35**	**55**	**55**	**55**	**52**
CRESSON, TRINITY (G)							
CONSERVATION - CRESSON	DEMAND REDUCTION [HOOD]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - CRESSON	DEMAND REDUCTION [HOOD]	0	0	0	0	0	0
CRESSON NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [PARKER]	11	12	12	12	11	11
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [HOOD]	0	0	6	6	6	6
		11	**12**	**18**	**18**	**17**	**17**
MINING, HOOD, BRAZOS (G)							
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [HOOD]	61	121	155	148	142	143
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [HOOD]	1,104	1,102	1,103	1,104	1,105	1,105
		1,165	**1,223**	**1,258**	**1,252**	**1,247**	**1,248**
MINING, HOOD, TRINITY (G)							

INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [HOOD]	1	1	1	1	1	1
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [HOOD]	16	18	17	16	15	15
		17	**19**	**18**	**17**	**16**	**16**
TOLAR, BRAZOS (G)							
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [HOOD]	0	0	0	12	12	24
		0	**0**	**0**	**12**	**12**	**24**
Sum of Projected Water Management Strategies (acre-feet)		**2,193**	**2,257**	**2,317**	**2,322**	**2,315**	**2,520**

MONTAGUE COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
BOWIE, TRINITY (B)							
MUNICIPAL CONSERVATION - BOWIE	DEMAND REDUCTION [MONTAGUE]	27	43	40	48	64	81
		27	**43**	**40**	**48**	**64**	**81**
COUNTY-OTHER, MONTAGUE, RED (B)							
MUNICIPAL CONSERVATION - MONTAGUE COUNTY OTHER	DEMAND REDUCTION [MONTAGUE]	0	0	1	20	45	62
		0	**0**	**1**	**20**	**45**	**62**
COUNTY-OTHER, MONTAGUE, TRINITY (B)							
MUNICIPAL CONSERVATION - MONTAGUE COUNTY OTHER	DEMAND REDUCTION [MONTAGUE]	0	0	2	27	60	82
		0	**0**	**2**	**27**	**60**	**82**
IRRIGATION, MONTAGUE, RED (B)							
IRRIGATION CONSERVATION - MONTAGUE	DEMAND REDUCTION [MONTAGUE]	43	43	43	43	43	43
		43	**43**	**43**	**43**	**43**	**43**
IRRIGATION, MONTAGUE, TRINITY (B)							
IRRIGATION CONSERVATION - MONTAGUE	DEMAND REDUCTION [MONTAGUE]	44	44	44	44	44	44
		44	**44**	**44**	**44**	**44**	**44**
MINING, MONTAGUE, RED (B)							
MINING CONSERVATION - MONTAGUE	DEMAND REDUCTION [MONTAGUE]	437	309	193	83	93	93
		437	**309**	**193**	**83**	**93**	**93**
MINING, MONTAGUE, TRINITY (B)							
MINING CONSERVATION - MONTAGUE	DEMAND REDUCTION [MONTAGUE]	473	335	209	90	101	101
		473	**335**	**209**	**90**	**101**	**101**
Sum of Projected Water Management Strategies (acre-feet)		**1,024**	**774**	**532**	**355**	**450**	**506**

PARKER COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ALEDO, TRINITY (C)							
CONSERVATION - ALEDO	DEMAND REDUCTION [PARKER]	3	8	19	27	33	40
CONSERVATION, WATER LOSS CONTROL - ALEDO	DEMAND REDUCTION [PARKER]	4	4	0	0	0	0
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	116	213	179	140	95
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	246	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	379
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	60	111	128
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	23	60	45	53	35
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	5	15	14	21	46
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	59	171	256	200	160
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	81	141	65	75
		7	**215**	**559**	**722**	**869**	**958**
ANNETTA, TRINITY (C)							
CONSERVATION - ANNETTA	DEMAND REDUCTION [PARKER]	1	1	2	3	5	6
CONSERVATION, WATER LOSS CONTROL - ANNETTA	DEMAND REDUCTION [PARKER]	1	1	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	90
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	4	14	31
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	7	5	3	7	8
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	1	1	2	11
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	17	15	17	26	38
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	7	10	8	18
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	32	0
		2	**27**	**30**	**38**	**94**	**202**
ANNETTA NORTH, TRINITY (C)							
CONSERVATION - ANNETTA NORTH	DEMAND REDUCTION [PARKER]	0	0	1	1	2	2
CONSERVATION, WATER LOSS CONTROL - ANNETTA NORTH	DEMAND REDUCTION [PARKER]	0	0	0	0	0	0

SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	17
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	2	4	6
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	1	1	1	2
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	1	1	3
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	4	9	7	7
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	2	4	2	3
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	10	0
		0	**0**	**8**	**18**	**27**	**40**

ANNETTA SOUTH, TRINITY (C)

CONSERVATION - ANNETTA SOUTH	DEMAND REDUCTION [PARKER]	0	0	1	1	1	1
CONSERVATION, WATER LOSS CONTROL - ANNETTA SOUTH	DEMAND REDUCTION [PARKER]	0	0	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	10
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	1	3	3
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	1	1	1	1
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	1	1
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	3	5	4	4
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	1	2	1	2
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	7	0
		0	**0**	**6**	**10**	**18**	**22**

AZLE, TRINITY (C)

CONSERVATION - AZLE	DEMAND REDUCTION [PARKER]	1	3	4	6	9	14
CONSERVATION, WATER LOSS CONTROL - AZLE	DEMAND REDUCTION [PARKER]	2	2	0	0	0	0
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	70	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	151
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	14	29	51
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	20	14	14	11	15	14

TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	13	3	4	3	5	19
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	34	40	60	54	64
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	19	32	17	30
		36	**56**	**81**	**126**	**199**	**343**
COUNTY-OTHER, PARKER, BRAZOS (C)							
CONSERVATION - PARKER COUNTY	DEMAND REDUCTION [PARKER]	14	35	57	95	155	246
CONSERVATION, WATER LOSS CONTROL - PARKER COUNTY	DEMAND REDUCTION [PARKER]	21	27	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	249	0
PARKER COUNTY OTHER NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [PARKER]	118	153	171	153	131	112
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	3,008
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	43	491	1,019
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	3	6	32	234	274
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	2	2	11	93	368
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	8	16	182	892	1,266
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	8	102	288	598
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	848	0
WEATHERFORD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	720	978	1,183
		153	**228**	**260**	**1,338**	**4,359**	**8,074**
COUNTY-OTHER, PARKER, TRINITY (C)							
CONSERVATION - PARKER COUNTY	DEMAND REDUCTION [PARKER]	9	11	10	29	82	195
CONSERVATION, WATER LOSS CONTROL - PARKER COUNTY	DEMAND REDUCTION [PARKER]	14	8	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	134	0
PARKER COUNTY OTHER NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [PARKER]	82	47	29	47	69	88
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	2,376
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	13	258	805
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	1	1	10	122	218
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	3	48	291

TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	3	3	56	467	1,001
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	1	30	152	473
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	442	0
WEATHERFORD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	224	511	931
		105	**70**	**44**	**412**	**2,285**	**6,378**
CRESSON, TRINITY (C)							
CONSERVATION - CRESSON	DEMAND REDUCTION [PARKER]	0	1	1	1	1	1
CONSERVATION, WATER LOSS CONTROL - CRESSON	DEMAND REDUCTION [PARKER]	0	0	0	0	0	0
CRESSON NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [PARKER]	52	47	44	42	43	44
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [HOOD]	0	0	24	23	23	23
		52	**48**	**69**	**66**	**67**	**68**
FORT WORTH, TRINITY (C)							
CONSERVATION - FORT WORTH	DEMAND REDUCTION [PARKER]	360	722	956	1,098	1,253	1,420
CONSERVATION, WATER LOSS CONTROL - FORT WORTH	DEMAND REDUCTION [PARKER]	1,237	1,692	657	478	256	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	296	0
FORT WORTH ALLIANCE DIRECT REUSE	DIRECT REUSE [TARRANT]	0	230	602	595	584	574
FORT WORTH DIRECT REUSE	DIRECT REUSE [TARRANT]	59	74	69	68	67	66
FORT WORTH FUTURE DIRECT REUSE	DIRECT REUSE [TARRANT]	0	570	627	620	608	597
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	696	1,281	1,035	633	211
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	4,719
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	2,338	3,002	1,733
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	84	45	585	492	264	130
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	53	10	150	149	229	419
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	115	1,172	1,471	2,187	2,105
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	1,290	695	1,418	945
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	67	0
		1,793	**4,154**	**7,389**	**9,039**	**10,864**	**12,919**
HUDSON OAKS, TRINITY (C)							
CONSERVATION - HUDSON OAKS	DEMAND REDUCTION [PARKER]	7	13	24	27	29	32

CONSERVATION – WASTE PROHIBITION, HUDSON OAKS	DEMAND REDUCTION [PARKER]	1	3	4	4	4	4
CONSERVATION, WATER LOSS CONTROL - HUDSON OAKS	DEMAND REDUCTION [PARKER]	2	2	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	40	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	63
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	10	18	21
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	2	9	8	60	60
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	2	1	3	8
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	6	26	43	32	26
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	12	24	10	13
		10	**27**	**77**	**117**	**196**	**227**

MANUFACTURING, PARKER, BRAZOS (C)

CONSERVATION, MANUFACTURING - PARKER COUNTY	DEMAND REDUCTION [PARKER]	0	0	0	0	1	1
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	2	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	5
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	2	1
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	1	1	2	1	2
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	1	2	1	1
		0	**1**	**2**	**4**	**7**	**10**

MANUFACTURING, PARKER, TRINITY (C)

CONSERVATION, MANUFACTURING - PARKER COUNTY	DEMAND REDUCTION [PARKER]	0	1	17	25	27	30
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	127	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	222
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	29	58	76
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	18	27	22	28	21
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	4	7	7	11	28
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	42	75	121	105	93

TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	35	66	34	44
		0	**65**	**161**	**270**	**390**	**514**
MINERAL WELLS, BRAZOS (C)							
CONSERVATION - MINERAL WELLS	DEMAND REDUCTION [PARKER]	0	1	0	0	0	1
CONSERVATION, WATER LOSS CONTROL - MINERAL WELLS	DEMAND REDUCTION [PARKER]	0	0	0	0	0	0
MUNICIPAL WATER CONSERVATION (RURAL) - MINERAL WELLS	DEMAND REDUCTION [PARKER]	8	3	0	0	0	0
		8	**4**	**0**	**0**	**0**	**1**
PARKER COUNTY SUD, BRAZOS (C)							
CONSERVATION - PARKER COUNTY SUD	DEMAND REDUCTION [PARKER]	2	6	11	18	27	40
CONSERVATION, WATER LOSS CONTROL - PARKER COUNTY SUD	DEMAND REDUCTION [PARKER]	3	3	0	0	0	0
PARKER COUNTY SUD - BRA SURPLUS (NEW WTP)	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM [RESERVOIR]	539	539	539	539	539	539
PARKER COUNTY SUD ADDITIONAL GROUNDWATER (NEW WELLS IN TRINITY AQUIFER)	TRINITY AQUIFER [PARKER]	0	0	0	0	513	513
		544	**548**	**550**	**557**	**1,079**	**1,092**
RENO, TRINITY (C)							
CONSERVATION - RENO	DEMAND REDUCTION [PARKER]	1	1	2	2	3	4
CONSERVATION, WATER LOSS CONTROL - RENO	DEMAND REDUCTION [PARKER]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	8	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	11
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	1	3	4
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	1	1	1	1	1
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	1	0	0	1
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	1	4	6	5	5
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	2	4	2	1
		2	**4**	**10**	**14**	**22**	**27**
SPRINGTOWN, TRINITY (C)							
CONSERVATION - SPRINGTOWN	DEMAND REDUCTION [PARKER]	2	5	7	10	12	15
CONSERVATION, WATER LOSS CONTROL - SPRINGTOWN	DEMAND REDUCTION [PARKER]	3	3	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	79	0

SPRINGTOWN NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [PARKER]	70	70	70	70	70	70
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	109
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	27	37	37
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	41	65	43	20	18	10
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	26	15	11	7	6	13
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	164	124	114	66	46
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	59	62	21	22
		142	**322**	**314**	**310**	**309**	**322**

STEAM ELECTRIC POWER, PARKER, TRINITY (C)

DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	34	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	52
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	9	15	18
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	6	9	7	7	5
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	2	1	2	6
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	16	27	38	28	22
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	13	20	9	10
		0	**23**	**51**	**75**	**95**	**113**

WALNUT CREEK SUD, TRINITY (C)

CONSERVATION - WALNUT CREEK SUD	DEMAND REDUCTION [PARKER]	5	11	19	33	61	95
CONSERVATION, WATER LOSS CONTROL - WALNUT CREEK SUD	DEMAND REDUCTION [PARKER]	8	7	0	0	0	0
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	13	15	21	44	148
		13	**31**	**34**	**54**	**105**	**243**

WEATHERFORD, BRAZOS (C)

CONSERVATION - WEATHERFORD	DEMAND REDUCTION [PARKER]	4	8	12	22	37	60
CONSERVATION – WASTE PROHIBITION, WEATHERFORD	DEMAND REDUCTION [PARKER]	1	3	3	6	11	16
CONSERVATION, WATER LOSS CONTROL - WEATHERFORD	DEMAND REDUCTION [PARKER]	3	6	56	10	15	22
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	90	0

	SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	320
	SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	8	40	108
	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	18	18	0	13	19	29
	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	2	8	39
	TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	1	36	73	135
	TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	1	20	23	64
	WEATHERFORD INDIRECT REUSE - LAKE WEATHERFORD/SUNSHINE	INDIRECT REUSE [PARKER]	126	125	126	126	125	125
	WEATHERFORD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	45	225	208
			152	**160**	**199**	**288**	**666**	**1,126**

WEATHERFORD, TRINITY (C)

CONSERVATION - WEATHERFORD	DEMAND REDUCTION [PARKER]	67	126	206	370	630	1,018
CONSERVATION – WASTE PROHIBITION, WEATHERFORD	DEMAND REDUCTION [PARKER]	18	46	59	108	181	273
CONSERVATION, WATER LOSS CONTROL - WEATHERFORD	DEMAND REDUCTION [PARKER]	49	110	949	160	251	367
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	1,504	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	5,390
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	140	674	1,826
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	310	283	8	233	319	493
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	2	32	126	659
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	22	597	1,221	2,269
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	10	330	396	1,072
WEATHERFORD INDIRECT REUSE - LAKE WEATHERFORD/SUNSHINE	INDIRECT REUSE [PARKER]	2,114	2,115	2,114	2,114	2,115	2,115
WEATHERFORD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	759	3,798	3,510
		2,558	**2,680**	**3,370**	**4,843**	**11,215**	**18,992**

WILLOW PARK, TRINITY (C)

CONSERVATION - WILLOW PARK	DEMAND REDUCTION [PARKER]	3	6	11	20	32	47
CONSERVATION, WATER LOSS CONTROL - WILLOW PARK	DEMAND REDUCTION [PARKER]	4	4	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,438

SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	164	360	488
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	36	56	62	86	66
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	9	14	20	33	87
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	92	160	351	327	303
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	76	193	107	143
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	402	0
		7	**147**	**317**	**810**	**1,347**	**2,572**
Sum of Projected Water Management Strategies (acre-feet)		**5,584**	**8,810**	**13,531**	**19,111**	**34,213**	**54,243**

WISE COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ALVORD, TRINITY (C)							
CONSERVATION - ALVORD	DEMAND REDUCTION [WISE]	0	1	2	3	4	5
CONSERVATION, WATER LOSS CONTROL - ALVORD	DEMAND REDUCTION [WISE]	1	1	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	40
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	4	10	13
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	0	3	4	4
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	1	1	2	4
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	1	17	18	17
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	0	10	6	8
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	22	0
		1	**2**	**4**	**38**	**66**	**91**
AURORA, TRINITY (C)							
CONSERVATION - AURORA	DEMAND REDUCTION [WISE]	0	1	2	3	4	6
CONSERVATION, WATER LOSS CONTROL - AURORA	DEMAND REDUCTION [WISE]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	29	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	62

SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	5	13	21
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	2	4	4	6	6
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	2	1	3	8
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	5	11	22	24	26
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	5	12	8	12
		1	**9**	**24**	**47**	**87**	**141**

BOLIVAR WSC, TRINITY (C)

ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	3
CONSERVATION - BOLIVAR WSC	DEMAND REDUCTION [WISE]	0	1	1	2	3	4
CONSERVATION, WATER LOSS CONTROL - BOLIVAR WSC	DEMAND REDUCTION [WISE]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	1	5	7	7
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	5	7	9	11	12
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	2	4	5	5
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	0	0	1	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	15
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	2	5
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	2	2
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	0	1	1	2
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	1	1	1	3
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	1	4	7	8	9
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	2	8	16	25	19
UTRWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [HOPKINS]	0	1	3	4	5	6
UTRWD UNALLOCATED SUPPLY UTILIZATION	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	3	6	8	10	11

UTRWD UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	11	18	23	28	29
		1	**25**	**51**	**80**	**109**	**132**

BOYD, TRINITY (C)

CONSERVATION - BOYD	DEMAND REDUCTION [WISE]	3	5	9	5	9	12
CONSERVATION, WATER LOSS CONTROL - BOYD	DEMAND REDUCTION [WISE]	6	17	22	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	70	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	131
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	10	31	44
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	3	8	15	12
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	1	2	7	16
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	9	43	57	55
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	4	24	18	26
		9	**22**	**48**	**92**	**207**	**296**

BRIDGEPORT, TRINITY (C)

CONSERVATION - BRIDGEPORT	DEMAND REDUCTION [WISE]	18	34	55	83	122	166
CONSERVATION, WATER LOSS CONTROL - BRIDGEPORT	DEMAND REDUCTION [WISE]	6	6	0	0	0	0
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	532	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,049
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	408	1,071	1,046
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	26	55	63	112	96
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	6	14	18	45	128
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	67	158	353	170	442
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	74	195	140	209
		24	**139**	**356**	**1,120**	**2,192**	**3,136**

CHICO, TRINITY (C)

CONSERVATION - CHICO	DEMAND REDUCTION [WISE]	3	5	7	14	19	26
CONSERVATION, WATER LOSS CONTROL - CHICO	DEMAND REDUCTION [WISE]	1	1	0	0	0	0

DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	70	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	148
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	11	32	50
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	0	8	15	14
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	5	10	100	104	117
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	0	46	57	62
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	0	26	19	29
		4	**11**	**17**	**205**	**316**	**446**

COUNTY-OTHER, WISE, TRINITY (C)

CONSERVATION - WISE COUNTY	DEMAND REDUCTION [WISE]	12	24	35	67	108	156
CONSERVATION, WATER LOSS CONTROL - WISE COUNTY	DEMAND REDUCTION [WISE]	18	18	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	499	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,044
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	81	225	354
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	21	31	62	107	95
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	6	8	18	42	127
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	53	88	345	408	440
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	42	191	132	208
WISE COUNTY WSD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	467	421	356	1,098	1,671	2,083
		497	**543**	**560**	**1,862**	**3,192**	**4,507**

DECATUR, TRINITY (C)

CONSERVATION - DECATUR	DEMAND REDUCTION [WISE]	31	68	122	175	226	286
CONSERVATION, WATER LOSS CONTROL - DECATUR	DEMAND REDUCTION [WISE]	12	12	0	0	0	0
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	1,447	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	4,622
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	748	1,296	1,566

TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	261	324	382	284	308	211
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	165	74	98	86	120	282
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	821	1,092	1,599	1,176	973
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	516	884	382	460
WISE COUNTY WSD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	644	502	401	623	737	795
		1,113	**1,801**	**2,611**	**4,399**	**5,692**	**9,195**

FORT WORTH, TRINITY (C)

CONSERVATION - FORT WORTH	DEMAND REDUCTION [WISE]	69	126	187	251	327	411
CONSERVATION, WATER LOSS CONTROL - FORT WORTH	DEMAND REDUCTION [WISE]	238	296	128	110	67	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	77	0
FORT WORTH ALLIANCE DIRECT REUSE	DIRECT REUSE [TARRANT]	0	40	118	136	152	166
FORT WORTH DIRECT REUSE	DIRECT REUSE [TARRANT]	11	13	13	16	17	19
FORT WORTH FUTURE DIRECT REUSE	DIRECT REUSE [TARRANT]	0	100	123	142	159	173
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	122	251	237	165	61
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,366
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	535	783	502
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	16	8	115	113	69	38
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	10	2	29	34	60	121
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	20	229	336	571	609
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	252	159	370	273
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	18	0
		344	**727**	**1,445**	**2,069**	**2,835**	**3,739**

IRRIGATION, WISE, TRINITY (C)

CONSERVATION, IRRIGATION - WISE COUNTY	DEMAND REDUCTION [WISE]	0	0	1	1	1	1
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	143	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	187
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	47	65	63

TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	248	108	74	36	31	17
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	158	25	20	11	12	23
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	273	212	201	117	79
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	100	111	38	37
		406	**406**	**407**	**407**	**407**	**407**

MANUFACTURING, WISE, TRINITY (C)

CONSERVATION, MANUFACTURING - WISE COUNTY	DEMAND REDUCTION [WISE]	0	0	1	1	1	1
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	436	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,480
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	204	390	502
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	59	99	78	92	68
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	14	26	23	36	90
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	150	283	437	354	312
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	134	242	115	147
WISE COUNTY MANUFACTURING NEW WELLS	TRINITY AQUIFER [WISE]	250	250	250	250	250	250
WISE COUNTY WSD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	128	143	147	169	175	176
		378	**616**	**940**	**1,404**	**1,849**	**3,026**

MINING, WISE, TRINITY (C)

SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,110
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	151	273	377
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	122	120	147	115	130	102
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	78	28	38	34	51	134
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	304	421	645	494	468
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	199	356	160	221
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	610	0
WISE COUNTY MINING REUSE	DIRECT REUSE [WISE]	0	0	87	1,234	2,401	4,022
		200	**452**	**892**	**2,535**	**4,119**	**6,434**

NEW FAIRVIEW, TRINITY (C)

CONSERVATION - NEW FAIRVIEW	DEMAND REDUCTION [WISE]	1	1	2	4	6	8
CONSERVATION, WATER LOSS CONTROL - NEW FAIRVIEW	DEMAND REDUCTION [WISE]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	25	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	56
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	4	11	19
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	33	61	90	101	104
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	1	1	2	7
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	1	6	16	20	24
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	3	9	6	11
		2	**36**	**73**	**124**	**171**	**229**

NEWARK, TRINITY (C)

CONSERVATION - NEWARK	DEMAND REDUCTION [WISE]	1	2	3	6	11	17
CONSERVATION, WATER LOSS CONTROL - NEWARK	DEMAND REDUCTION [WISE]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	67	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	166
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	8	29	56
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	50	126	196	266	301
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	1	2	5	20
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	1	14	35	53	70
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	6	20	17	33
		2	**54**	**150**	**267**	**448**	**663**

RHOME, TRINITY (C)

CONSERVATION - RHOME	DEMAND REDUCTION [WISE]	5	13	22	40	58	80
CONSERVATION, WATER LOSS CONTROL - RHOME	DEMAND REDUCTION [WISE]	2	2	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	180	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	417

SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	26	81	141
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	3	12	19	38	38
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	3	6	15	51
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	8	36	109	146	176
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	17	60	48	83
		7	**27**	**90**	**260**	**566**	**986**

RUNAWAY BAY, TRINITY (C)

CONSERVATION - RUNAWAY BAY	DEMAND REDUCTION [WISE]	5	9	13	17	22	28
CONSERVATION, WATER LOSS CONTROL - RUNAWAY BAY	DEMAND REDUCTION [WISE]	2	2	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	68	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	127
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	15	31	43
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	7	13	12	15	12
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	4	4	6	16
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	17	37	65	55	53
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	17	36	18	25
		7	**36**	**84**	**149**	**215**	**304**

STEAM ELECTRIC POWER, WISE, TRINITY (C)

DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	429	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	734
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	82	192	249
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	35	81	63	90	67
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	8	21	19	36	90
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	88	230	353	347	309
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	109	195	113	146
		0	**131**	**441**	**712**	**1,207**	**1,595**

WALNUT CREEK SUD, TRINITY (C)

CONSERVATION - WALNUT CREEK SUD	DEMAND REDUCTION [WISE]	1	3	5	7	14	22
CONSERVATION, WATER LOSS CONTROL - WALNUT CREEK SUD	DEMAND REDUCTION [WISE]	1	2	0	0	0	0
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	3	4	5	10	33
		2	**8**	**9**	**12**	**24**	**55**

WEST WISE SUD, TRINITY (C)

CONSERVATION - WEST WISE SUD	DEMAND REDUCTION [WISE]	1	3	4	6	7	9
CONSERVATION, WATER LOSS CONTROL - WEST WISE SUD	DEMAND REDUCTION [WISE]	2	2	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	56	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	90
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	14	27	30
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	9	15	11	12	9
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	2	3	3	4	11
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	22	41	60	45	38
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	20	31	15	18
		3	**38**	**83**	**125**	**166**	**205**
Sum of Projected Water Management Strategies (acre-feet)		**3,001**	**5,083**	**8,285**	**15,907**	**23,868**	**35,587**

APPENDIX B

GAM Run 21-013 MAG: Modeled Available Groundwater for the Aquifers in Groundwater Management Area 8

GAM Run 21-013 MAG: Modeled Available Groundwater for the Aquifers in Groundwater Management Area 8

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

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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.

STATE OF TEXAS
JIANYOU SHI
GEOLOGY
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LICENSED
PROFESSIONAL GEOSCIENTIST

Signature 11/10/2022
Date

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.

STATE OF TEXAS
JEVON HARDING
GEOLOGY
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PROFESSIONAL GEOSCIENTIST

11/3/2022

Signature Date

GAM RUN 21-013 MAG: MODELED AVAILABLE GROUNDWATER FOR THE AQUIFERS IN GROUNDWATER MANAGEMENT AREA 8

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:

The Texas Water Development Board (TWDB) has prepared estimates of the modeled available groundwater for the Trinity, Woodbine, Edwards (Balcones Fault Zone), Marble Falls, Ellenburger-San Saba, and Hickory aquifers in Groundwater Management Area 8. The modeled available groundwater estimates are based on the revised desired future conditions for these aquifers adopted by groundwater conservation districts in Groundwater Management Area 8 on July 26, 2022. The district representatives declared the Nacatoch, Blossom, Brazos River Alluvium, and Cross Timbers aquifers to be non-relevant for purposes of joint planning. After review, the TWDB determined that the explanatory report and other materials submitted by the district representatives were administratively complete on September 23, 2022.

The modeled available groundwater values are summarized by decade by groundwater conservation district and county (Tables 1 through 12) and by county, regional water planning area, and river basin for use in the regional water planning process (Tables 13 through 24). The modeled available groundwater in Groundwater Management Area 8 is described below:

- Trinity Aquifer (Paluxy aquifer) – The modeled available groundwater is approximately 24,520 acre-feet per year during the period from 2020 to 2080.
- Trinity Aquifer (Glen Rose Formation) – The modeled available groundwater is approximately 12,410 acre-feet per year during the period from 2020 to 2080.

- Trinity Aquifer (Twin Mountains Formation) – The modeled available groundwater is approximately 45,510 acre-feet per year during the period from 2020 to 2080.
- Trinity Aquifer (Travis Peak Formation) – The modeled available groundwater is approximately 98,230 acre-feet per year during the period from 2020 to 2080.
- Trinity Aquifer (Hensell aquifer) – The modeled available groundwater is approximately 27,120 acre-feet per year during the period from 2020 to 2080.
- Trinity Aquifer (Hosston aquifer) – The modeled available groundwater is approximately 67,730 acre-feet per year during the period from 2020 to 2080.
- Trinity Aquifer (Antlers Formation) – The modeled available groundwater is approximately 78,440 acre-feet per year during the period from 2020 to 2080.
- Woodbine Aquifer – The modeled available groundwater is approximately 30,570 acre-feet per year during the period from 2020 to 2080.
- Edwards (Balcones Fault Zone) Aquifer – The modeled available groundwater is approximately 15,170 acre-feet per year during the period from 2020 to 2080.
- Marble Falls Aquifer – The modeled available groundwater is approximately 5,630 acre-feet per year during the period from 2020 to 2080.
- Ellenburger-San Saba Aquifer – The modeled available groundwater is approximately 14,060 acre-feet per year during the period from 2020 to 2080.
- Hickory Aquifer – The modeled available groundwater is approximately 3,580 acre-feet per year during the period from 2020 to 2080.

Modeled available groundwater estimates are also provided by outcrop and downdip areas for the counties within Upper Trinity Groundwater Conservation District to be consistent with that district's desired future conditions statements.

The modeled available groundwater values estimated for counties may be slightly different from those estimated for groundwater conservation districts because of the process for rounding the values.

REQUESTOR:

Mr. Drew Satterwhite, General Manager of North Texas Groundwater Conservation District and Groundwater Management Area 8 Coordinator at the time of request.

DESCRIPTION OF REQUEST:

In a letter dated January 4, 2022, Mr. Drew Satterwhite provided the TWDB with the desired future conditions of the Trinity Aquifer subunits (Paluxy, Glen Rose, Twin Mountains, Travis Peak, Hensell, Hosston, and Antlers formations), and the Woodbine, Edwards (Balcones Fault Zone), Marble Falls, Ellenburger-San Saba, and Hickory aquifers. After review of the submittal, the TWDB identified missing or corrupted model files and received updated versions from Groundwater Management Area 8 on March 3, 2022. Following the TWDB analysis to verify the achievability of the adopted desired future conditions, the TWDB identified desired future conditions that were unachievable. Groundwater Management Area 8 confirmed that these were typos and adopted a revised version of the desired future conditions resolution on July 26, 2022. The following sections present the final adopted desired future conditions:

Trinity and Woodbine aquifers

The desired future conditions for the Trinity and Woodbine aquifers are expressed as water level decline, or drawdown, in feet from January 1, 2010, to December 31, 2080 (Groundwater Management Area 8, 2021).

The county-based desired future conditions for the Trinity Aquifer subunits, excluding counties in the Upper Trinity Groundwater Conservation District, are listed in Table 1 (dashes indicate areas where the subunits do not exist):

TABLE 1. DESIRED FUTURE CONDITIONS IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY COUNTY FOR THE NORTHERN TRINITY AND WOODBINE AQUIFERS. VALUES REPRESENT AVERAGE DRAWDOWN IN FEET BETWEEN JANUARY 1, 2010, AND DECEMBER 31, 1980.

County	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Bell	—	17	83	—	333	145	375	—
Bosque	—	6	53	—	189	139	232	—
Bowie	—	—	—	—	—	—	—	—
Brown	—	—	1	—	2	1	1	2
Burnet	—	—	2	—	19	7	21	—
Callahan	—	—	—	—	—	—	—	1
Collin	482	729	366	560	—	—	—	596
Comanche	—	—	2	—	4	2	3	12

TABLE 2 (CONT). DESIRED FUTURE CONDITIONS IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY COUNTY FOR THE NORTHERN TRINITY AND WOODBINE AQUIFERS. VALUES REPRESENT AVERAGE DRAWDOWN IN FEET BETWEEN JANUARY 1, 2010, AND DECEMBER 31, 1980.

County	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Cooke	2	—	—	—	—	—	—	191
Coryell	—	5	15	—	107	70	141	—
Dallas	137	346	288	515	415	362	419	—
Delta	—	279	198	—	202	—	—	—
Denton	22	558	367	752	—	—	—	416
Eastland	—	—	—	—	—	—	—	4
Ellis	76	128	220	413	380	290	390	—
Erath	—	6	6	8	25	12	35	14
Falls	—	159	238	—	505	296	511	—
Fannin	259	709	305	400	291	—	—	269
Franklin	—	—	—	—	—	—	—	—
Grayson	163	943	364	445	—	—	—	364
Hamilton	—	2	4	—	26	14	38	—
Hill	20	45	149	—	365	211	413	—
Hopkins	—	—	—	—	—	—	—	—
Hunt	631	610	326	399	350	—	—	—
Johnson	4	-57	66	184	235	120	329	—
Kaufman	242	311	305	427	372	349	345	—
Lamar	42	100	107	—	125	—	—	132
Lampasas	—	—	1	—	6	1	11	—
Limestone	—	199	301	—	433	214	445	—
McLennan	6	41	148	—	504	242	582	—
Milam	—	—	241	—	412	261	412	—
Mills	—	1	1	—	9	2	13	—
Navarro	110	139	266	—	343	295	343	—
Rains	—	—	—	—	—	—	—	—
Red River	2	24	40	—	57	—	—	15
Rockwall	275	433	343	466	—	—	—	—
Somervell	—	4	4	50	64	17	120	—
Tarrant	6	105	163	348	—	—	—	177
Taylor	—	—	—	—	—	—	—	0
Travis	—	—	90	—	219	68	226	—
Williamson	—	—	78	—	220	89	225	—

The desired future conditions for the counties in the Upper Trinity Groundwater Conservation District are further divided into outcrop and downdip areas, and are listed in Table 2 (dashes indicate areas where the subunits do not exist):

TABLE 2. THE DESIRED FUTURE CONDITIONS FOR THE UPPER TRINITY GROUNDWATER CONSERVTION DISTRICT IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY AQUIFER. VALUES REPRESENT AVERAGE DRAWDOWN IN FEET BETWEEN JANUARY 1, 2010, AND DECEMBER 31, 1980.

County	Antlers	Paluxy	Glen Rose	Twin Mountains
Hood -Outcrop	—	6	9	13
Hood-Downdip	—	—	39	72
Montague-Outcrop	40	—	—	—
Montague-Downdip	—	—	—	—
Parker-Outcrop	42	6	20	7
Parker-Downdip	—	2	50	68
Wise-Outcrop	60	—	—	—
Wise-Downdip	154	—	—	—

Edwards (Balcones Fault Zone) Aquifer

The desired future conditions adopted by Groundwater Management Area 8 for the Edwards (Balcones Fault Zone) Aquifer are to maintain minimum streamflow and springflow under a repeat of the drought of record in Bell, Travis, and Williamson counties from January 1, 2010, to December 31, 2080 (Groundwater Management Area 8, 2021). The desired future conditions are listed in Table 3:

TABLE 3. THE DESIRED FUTURE CONDITIONS IN GROUNDWATER MANAGEMENT AREA (GMA) 8 BASED ON SPRING/STREAM FLOW FOR SELECTED COUNTIES. THESE CONDITIONS ARE TO BE MAINTAINED BETWEEN JANUARY 1, 2010, AND DECEMBER 31, 1980.

County	Adopted Desired Future Condition
Bell	Maintain at least 100 acre-feet per month of stream/spring flow in Salado Creek during a repeat of the drought of record
Travis	Maintain at least 42 acre-feet per month of aggregated stream/spring flow during a repeat of the drought of record
Williamson	Maintain at least 60 acre-feet per month of aggregated stream/spring flow during a repeat of the drought of record

Marble Falls, Ellenburger-San Saba, and Hickory aquifers

The desired future conditions for the Marble Falls, Ellenburger-San Saba, and Hickory aquifers in Brown, Burnet, Lampasas, and Mills counties are defined as water level decline, or drawdown, in feet from January 1, 2010, to December 31, 2080 (Groundwater Management Area 8, 2021). The desired future conditions are listed in Table 4:

TABLE 4. DESIRED FUTURE CONDITIONS IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY COUNTY FOR THE LLANO UPLIFT AQUIFERS. VALUES REPRESENT AVERAGE DRAWDOWN IN FEET BETWEEN JANUARY 1, 2010, AND DECEMBER 31, 1980.

County	Ellenburger-San Saba	Hickory	Marble Falls
Brown	3	3	3
Burnet	12	11	11
Lampasas	16	16	16
Mills	9	9	9

METHODS:

The desired future conditions for Groundwater Management Area 8 are based on multiple criteria. The methods to calculate the desired future conditions are discussed below.

Trinity and Woodbine aquifers

The desired future conditions for the Trinity and Woodbine aquifers in Groundwater Management Area 8 are based on the predictive simulation "Run 11" (Groundwater Management area 8, 2021), which was constructed as an extension of the groundwater availability model for the northern portion of the Trinity and Woodbine aquifers (Kelley and others, 2014).

The average drawdowns between January 1, 2010 (initial water levels) and December 31, 2080 (stress period 71) were calculated using a composite water levels methodology, described in Appendix A. Appendix A also presents the calculated average drawdown results for the Trinity and Woodbine aquifers that the TWDB used to verify that the pumping scenario in the submitted model files achieved the desired future conditions. 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.

Edwards (Balcones Fault Zone) Aquifer

Groundwater Management Area 8 requested that the results from the previous GAM Run 08-010 MAG (Anaya, 2008) be used, unchanged, for the current round of joint planning. That model run includes a ten-year predictive period that represents a simulated repeat of the drought of record in the 1950s. The modeled available groundwater values were determined using the monthly stress period within that predictive period with the lowest monthly springflow volume, which was assumed to represent the worst-case scenario for Salado Springs during a potential repeat of the 1950s drought of record.

Marble Falls, Ellenburger-San Saba, and Hickory aquifers

The desired future conditions for the Marble Falls, Ellenburger-San Saba, and Hickory aquifers in Brown, Burnet, Lampasas, and Mills counties within Groundwater Management Area 8 are based on a predictive simulation constructed by Groundwater Management Area 8 for planning purposes (Groundwater Management Area 8, 2021). This simulation is an extension of the groundwater availability model for the minor aquifers in the Llano Uplift region by Shi and others (2016). Modeled water levels were extracted for January 1, 2010 (initial water levels) and December 31, 2080 (stress period 71) and drawdown calculated as the difference in water level between those two endpoints. Drawdown averages were calculated by aquifer for each area specified in the desired future conditions. Additional details on the predictive simulation and methods to calculate the drawdowns are described in Appendix B. Appendix B also presents the calculated average drawdown results for the Marble Falls, Ellenburger-San Saba, and Hickory aquifers that the TWDB used to verify that the pumping scenario in the submitted model files achieved the desired future conditions. 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:

Trinity and Woodbine Aquifers

- Version 2.01 of the updated groundwater availability model for the northern Trinity and Woodbine aquifers was the base model for this analysis. See Kelley and others (2014) for the assumptions and limitations of the historical calibrated model. Groundwater Management Area 8 constructed a predictive model simulation to extend the base model to 2080 for planning purposes. See Appendix E of Groundwater Management Area 8 (2021) for the assumptions of this predictive model simulation.

- The predictive model was run with MODFLOW-NWT (Niswonger and others, 2011).
- The model has eight layers that represent units younger than the Woodbine Aquifer and the shallow outcrop of all aquifers (Layer 1), the Woodbine Aquifer (Layer 2), the Fredericksburg and Washita units (Layer 3), and various combinations of the subunits that comprise the Trinity Aquifer (Layers 4 to 8).
- To be consistent with Groundwater Management Area 8, the TWDB model grid files dated August 26, 2015 (*trnt_n_grid_poly082615.csv* and *wdbn_grid_poly082615.csv* for the Trinity and Woodbine aquifers, respectively) were used to assign model cells to counties, groundwater management areas, groundwater conservation districts, river basins, and regional water planning areas.
- Drawdown was calculated as the difference in modeled water levels between the baseline date of January 1, 2010 (initial water levels) and the final date of December 31, 2080 (stress period 71) using a composite water level methodology described in Appendix A.
- During the predictive simulation model run, some model cells went dry, meaning the modeled water level fell below the bottom of the cell. The dry cell count at the baseline date of January 1, 2010 (initial water levels) and final date of December 31, 2080 (stress period 71) is presented in Table C1 of Appendix C. Appendix A describes how dry cells were handled in the drawdown calculations using the composite water level methodology. Pumping in dry cells was excluded from the modeled available groundwater calculations.
- The drawdown averages and modeled available groundwater values were calculated using the official TWDB boundaries for the Trinity and Woodbine aquifers.
- Estimates of modeled drawdown and available groundwater from the model simulation were rounded to whole numbers.

Edwards (Balcones Fault Zone) Aquifer

- Version 1.01 of the groundwater availability model for the northern segment of the Edwards (Balcones Fault Zone) Aquifer was the base model for this analysis. See Jones (2003) for the assumptions and limitations of the historical calibrated model. During the previous planning cycle, a predictive model simulation was constructed to extend the base model and include a simulated repeat of the 1950s drought of record for planning purposes. See the previous GAM Run 08-010 MAG (Anaya, 2008) for the assumptions of this predictive model simulation.

- The model has one layer that represents the Edwards (Balcones Fault Zone) Aquifer.
- The model was run with MODFLOW-96 (Harbaugh and McDonald, 1996).
- The modeled available groundwater values were determined using the monthly stress period within the predictive drought period with the lowest monthly springflow volume, which was assumed to represent the worst-case scenario for Salado Springs during a potential repeat of the 1950s drought of record.
- The modeled available groundwater values were calculated using the official TWDB Edwards (Balcones Fault Zone) Aquifer boundary.
- To be consistent with Groundwater Management Area 8, the TWDB model grid file dated August 26, 2015 (*ebfz_n_grid_poly082615.csv*) was used to assign model cells to counties, groundwater management areas, groundwater conservation districts, river basins, and regional water planning areas.
- Estimates of modeled streamflow and springflow from the model simulation were rounded to whole numbers.

Marble Falls, Ellenburger-San Saba, and Hickory Aquifers

- Version 1.01 of the groundwater availability model for the minor aquifers in the Llano Uplift region was the base model for this analysis. See Shi and others (2016) for the assumptions and limitations of the historical calibrated model. Groundwater Management Area 8 constructed a predictive model simulation to extend the base model to 2080 for planning purposes. See Groundwater Management Area 8 (2021) for the assumptions of this predictive model simulation.
- The model has eight layers: Layer 1 (the Trinity Aquifer, Edwards-Trinity (Plateau) Aquifer, and younger alluvium deposits), Layer 2 (confining units), Layer 3 (the Marble Falls Aquifer and equivalent unit), Layer 4 (confining units), Layer 5 (Ellenburger-San Saba Aquifer and equivalent unit), Layer 6 (confining units), Layer 7 (the Hickory Aquifer and equivalent unit), and Layer 8 (Precambrian units).
- The model was run with MODFLOW-USG beta (development) version (Panday and others, 2013).
- To be consistent with Groundwater Management Area 8, the TWDB model grid file dated January 7, 2016 (*lnup_grid_poly010716.csv*) was used to assign model cells to

counties, groundwater management areas, groundwater conservation districts, river basins, and regional water planning areas.

- Drawdown was calculated as the difference in modeled water level between the baseline date of January 1, 2010 (initial water levels) and the final date of December 31, 2080 (stress period 71), using the methodology described in Appendix B.
- During the predictive model run, some active model cells went dry, meaning the modeled water level fell below the bottom of the cell. The dry cell count at the baseline date of January 1, 2010 (initial water levels) and final date of December 31, 2080 (stress period 71) is presented in Table C2 of Appendix C). Appendix B describes how dry cells were handled in the drawdown calculations. Pumping in dry cells was excluded from the modeled available groundwater.
- To be consistent with the desired future conditions defined by Groundwater Management Area 8, the drawdown averages and modeled available groundwater values were calculated using the active model extent of Layers 3, 5, and 7 (Figures 10 through 12) for the Marble Falls, Ellenburger-San Saba, and Hickory aquifers, respectively, rather than the official TWDB boundaries for these aquifers.
- Estimates of modeled drawdown and available groundwater from the model simulation were rounded to whole numbers.

RESULTS:

The modeled available groundwater for the Trinity, Woodbine, Edwards (Balcones Fault Zone), Marble Falls, Ellenburger-San Saba, and Hickory aquifers are listed below:

- Trinity Aquifer (Paluxy aquifer) – The modeled available groundwater is approximately 24,520 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 5) and by county, regional water planning group, and river basin (Table 17).
- Trinity Aquifer (Glen Rose Formation) – The modeled available groundwater is approximately 12,410 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 6) and by county, regional water planning group, and river basin (Table 18).
- Trinity Aquifer (Twin Mountains Formation) – The modeled available groundwater is approximately 45,510 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 7) and by county, regional water planning group, and river basin (Table 19).

- Trinity Aquifer (Travis Peak Formation) – The modeled available groundwater is approximately 98,230 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 8) and by county, regional water planning group, and river basin (Table 20).
- Trinity Aquifer (Hensell aquifer) – The modeled available groundwater is approximately 27,120 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 9) and by county, regional water planning group, and river basin (Table 21).
- Trinity Aquifer (Hosston aquifer) – The modeled available groundwater is approximately 67,730 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 10) and by county, regional water planning group, and river basin (Table 22).
- Trinity Aquifer (Antlers Formation) – The modeled available groundwater is approximately 78,440 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 11) and by county, regional water planning group, and river basin (Table 23).
- Woodbine Aquifer – The modeled available groundwater is approximately 30,570 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 12) and by county, regional water planning group, and river basin (Table 24).
- Edwards (Balcones Fault Zone) Aquifer – The modeled available groundwater is approximately 15,170 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 13) and by county, regional water planning group, and river basin (Table 25).
- Marble Falls Aquifer – The modeled available groundwater is approximately 5,630 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 14) and by county, regional water planning group, and river basin (Table 26).
- Ellenburger-San Saba Aquifer – The modeled available groundwater is approximately 14,060 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 15) and by county, regional water planning group, and river basin (Table 27).
- Hickory Aquifer – The modeled available groundwater is approximately 3,580 acre-feet per year during the period from 2020 to 2080. Values are summarized by groundwater conservation district and county (Table 16) and by county, regional water planning group, and river basin (Table 28).

Figures 1 through 7 show the extent of the Trinity Aquifer subunits (Paluxy, Glen Rose, Twin Mountains, Travis Peak, Hensell, Hosston, and Antlers formations, respectively). Figures 8 through 12 show the extent of the Woodbine, Edwards (Balcones Fault Zone), Marble Falls, Ellenburger-San Saba, and Hickory aquifers, respectively. Figure 13 shows the county, groundwater conservation district, regional water planning area, and river basin boundaries represented by the divisions in Tables 5 to 28.

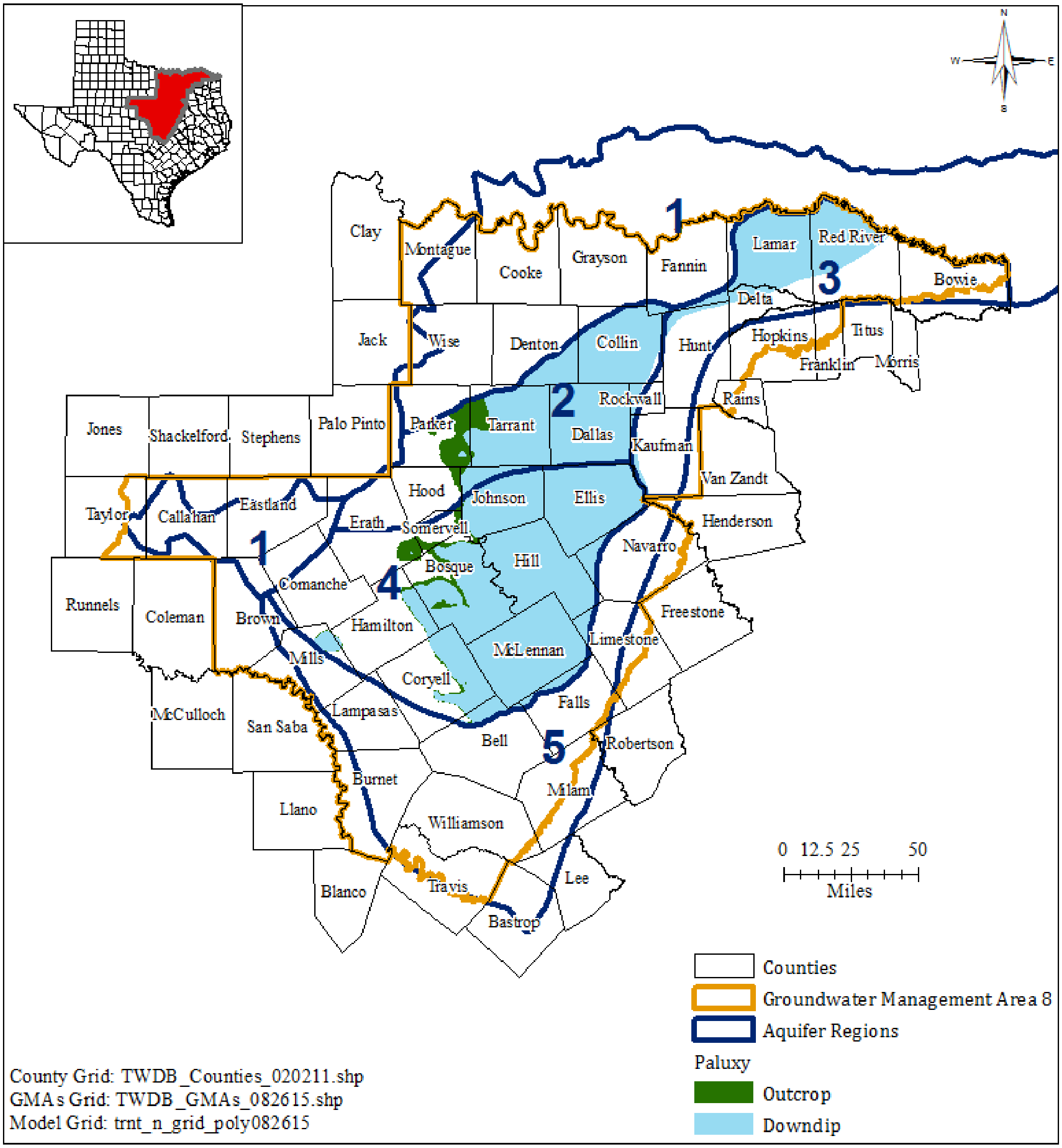

FIGURE 1. **MAP SHOWING THE TRINITY AQUIFER (PALUXY) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR NORTHERN PORTION OF TRINITY AND WOODBINE AQUIFERS. SEE APPENDIX A FOR AQUIFER REGION DETAILS.**

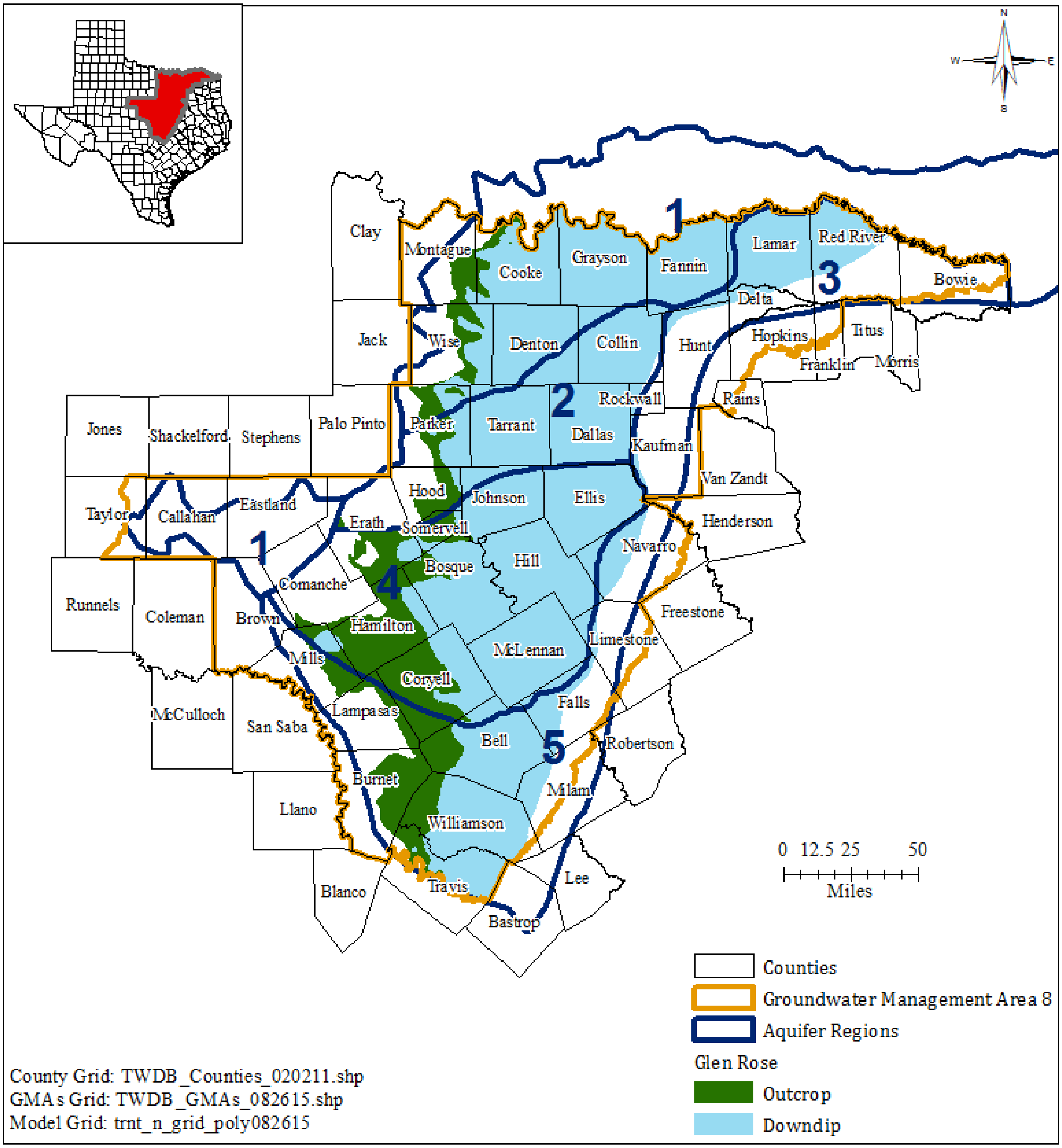

FIGURE 2. MAP SHOWING THE TRINITY AQUIFER (GLEN ROSE) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF TRINITY AND WOODBINE AQUIFERS. SEE APPENDIX A FOR AQUIFER REGION DETAILS.

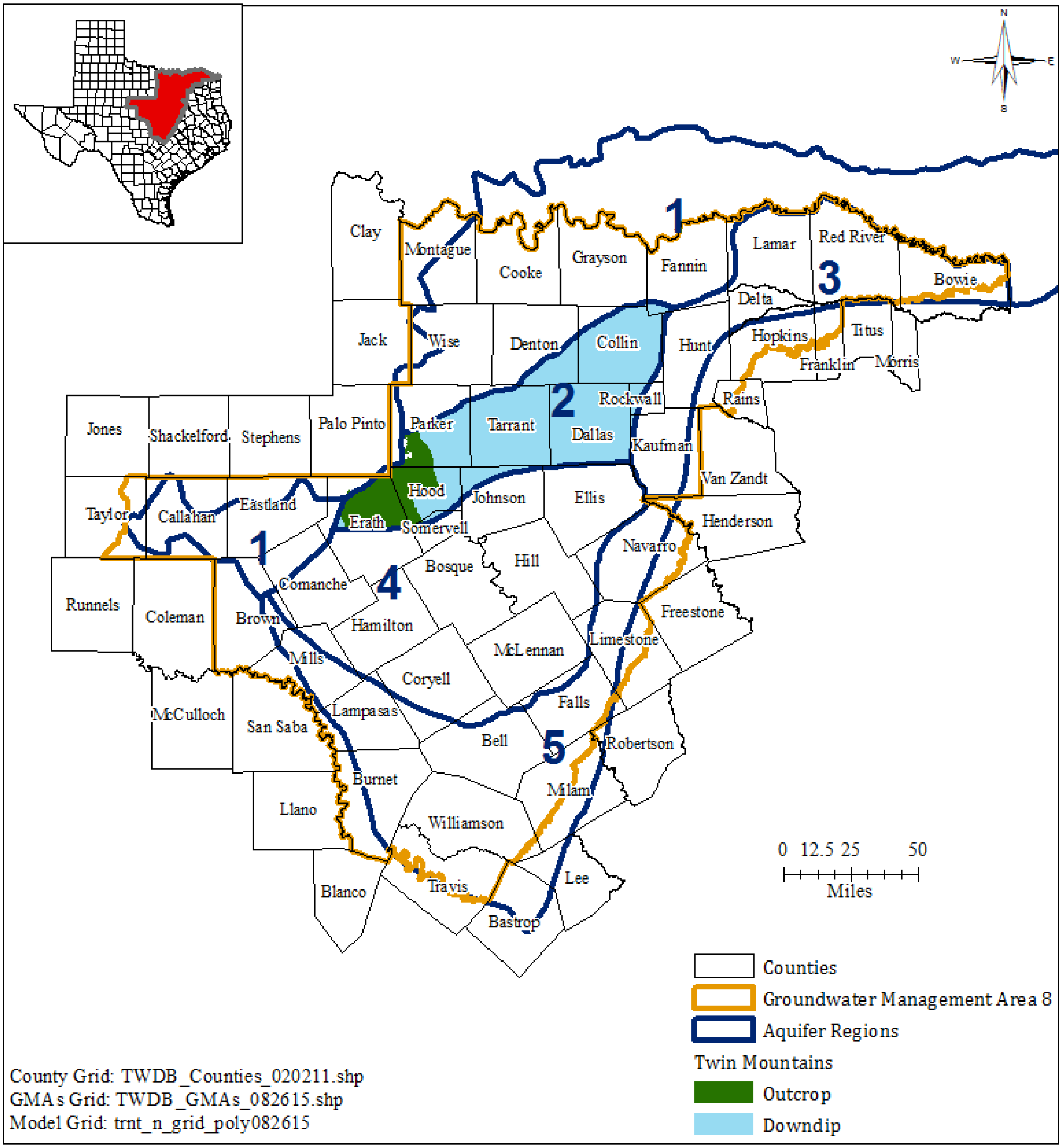

FIGURE 3. **MAP SHOWING THE TRINITY AQUIFER (TWIN MOUNTAINS) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF TRINITY AND WOODBINE AQUIFERS. SEE APPENDIX A FOR AQUIFER REGION DETAILS.**

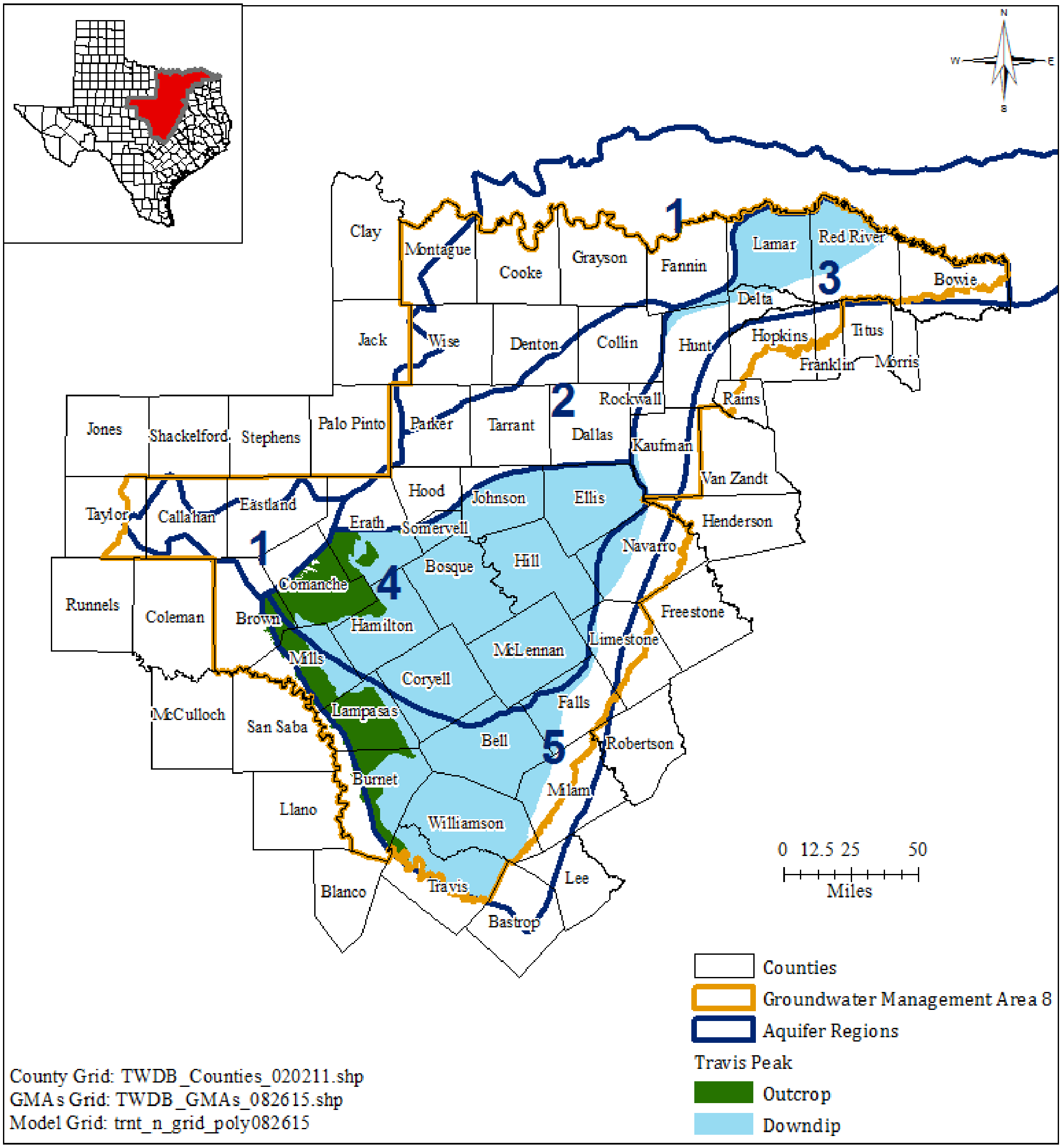

FIGURE 4. **MAP SHOWING THE TRINITY AQUIFER (TRAVIS PEAK) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF TRINITY AND WOODBINE AQUIFERS. SEE APPENDIX A FOR AQUIFER REGION DETAILS.**

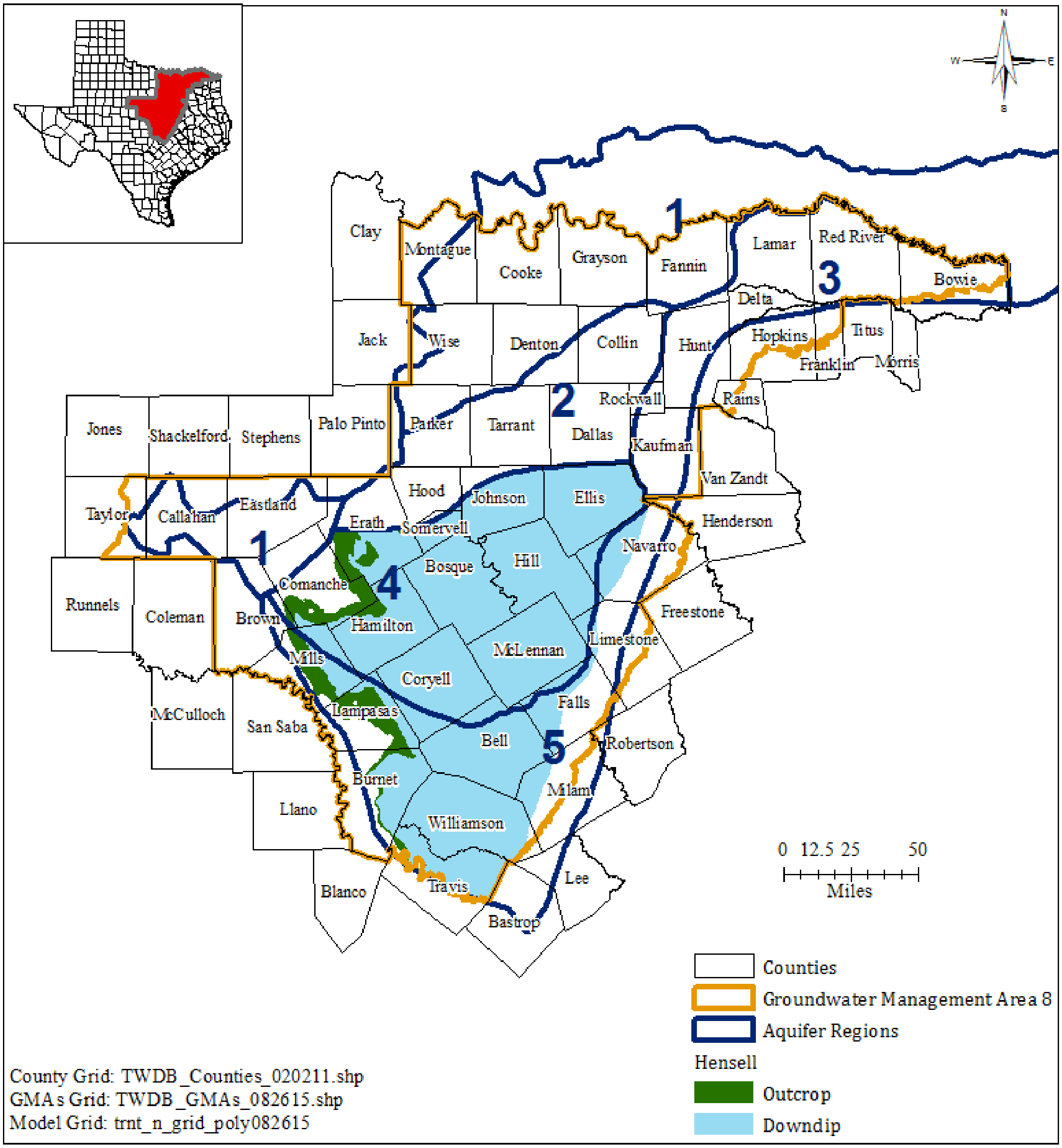

FIGURE 5. MAP SHOWING THE TRINITY AQUIFER (HENSELL) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF TRINITY AND WOODBINE AQUIFERS. SEE APPENDIX A FOR AQUIFER REGION DETAILS.

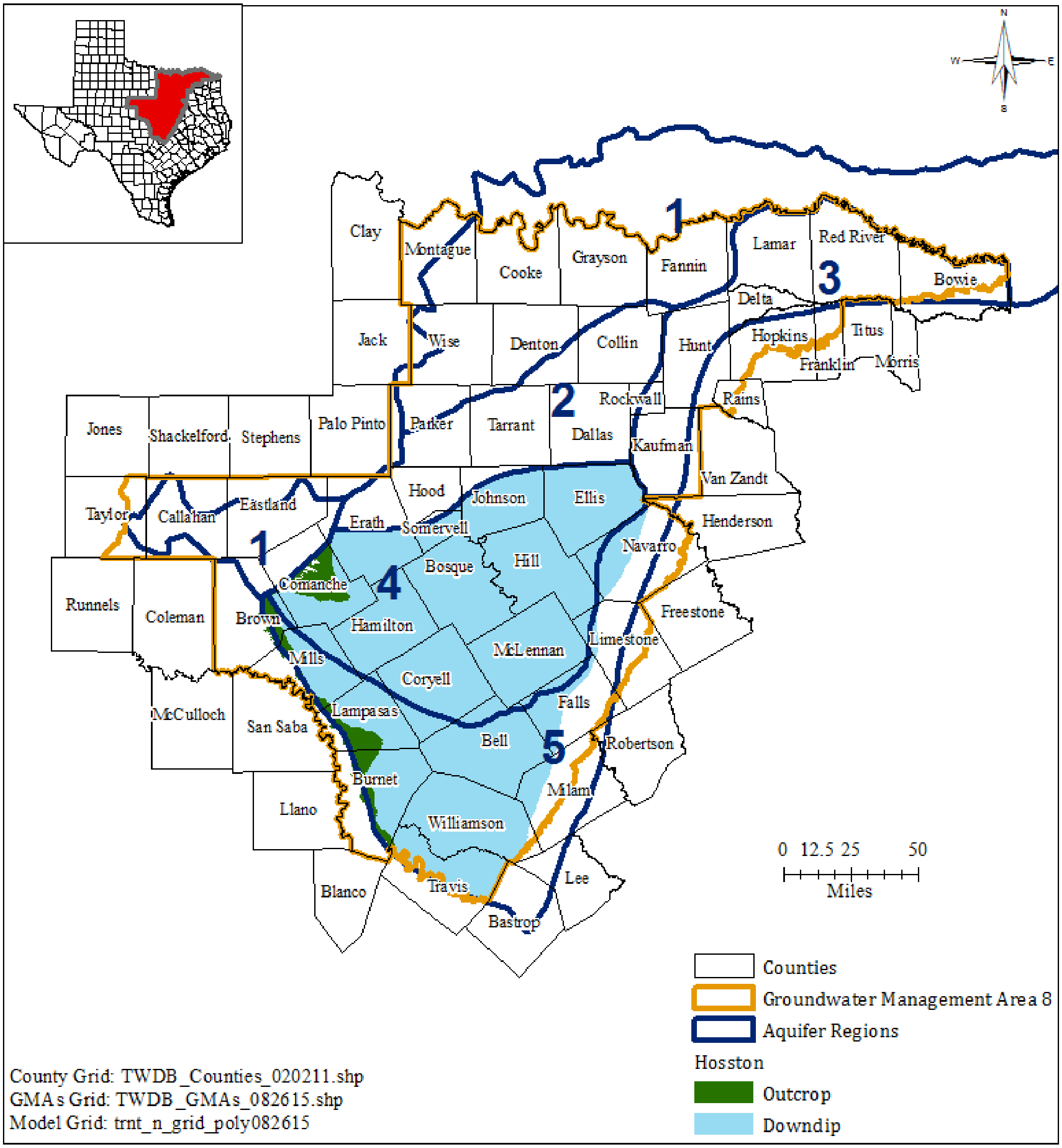

FIGURE 6. MAP SHOWING THE TRINITY AQUIFER (HOSSTON) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS. SEE APPENDIX A FOR AQUIFER REGION DETAILS.

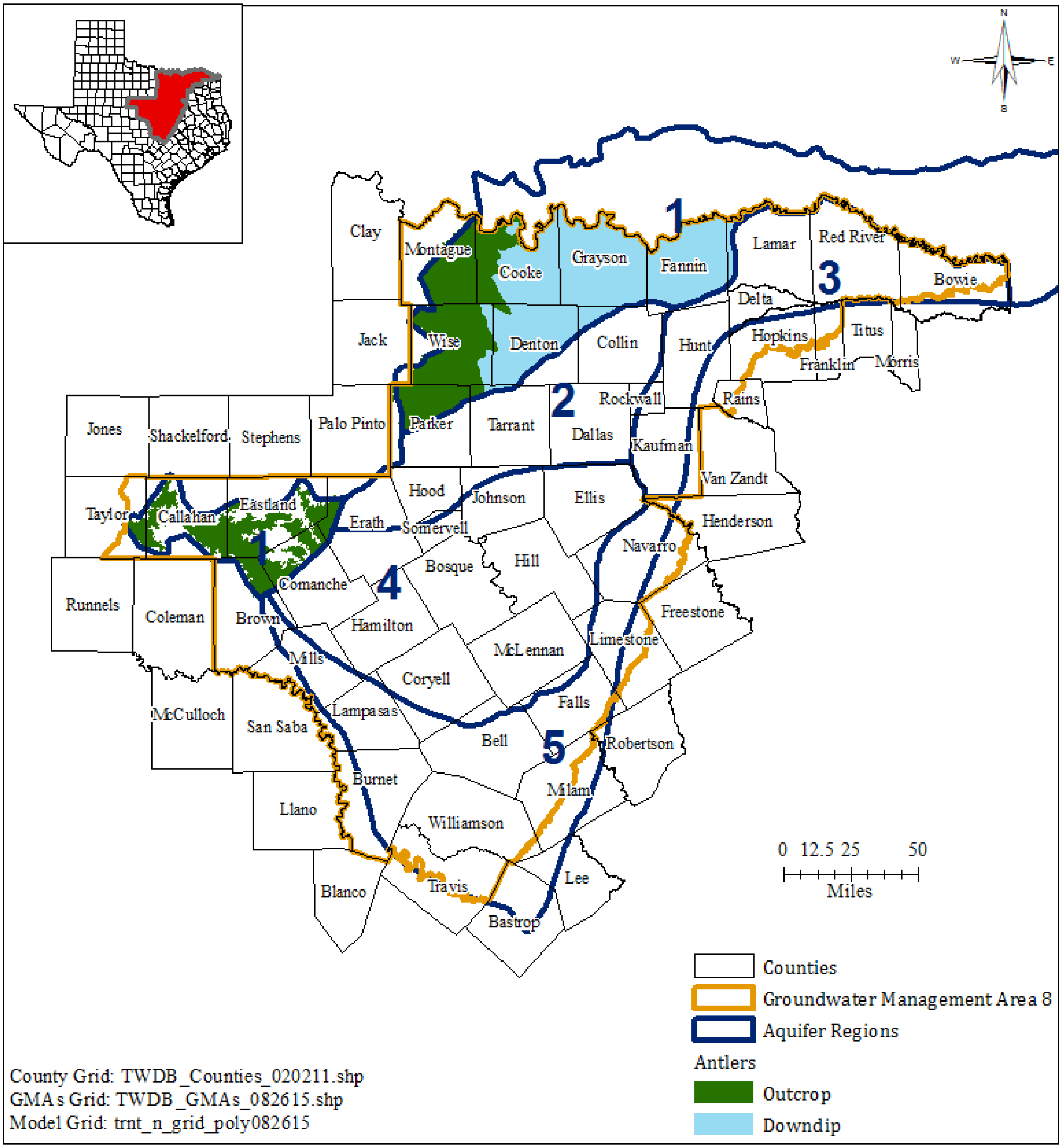

FIGURE 7. **MAP SHOWING THE TRINITY AQUIFER (ANTLERS) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF TRINITY AND WOODBINE AQUIFERS. SEE APPENDIX A FOR AQUIFER REGION DETAILS.**

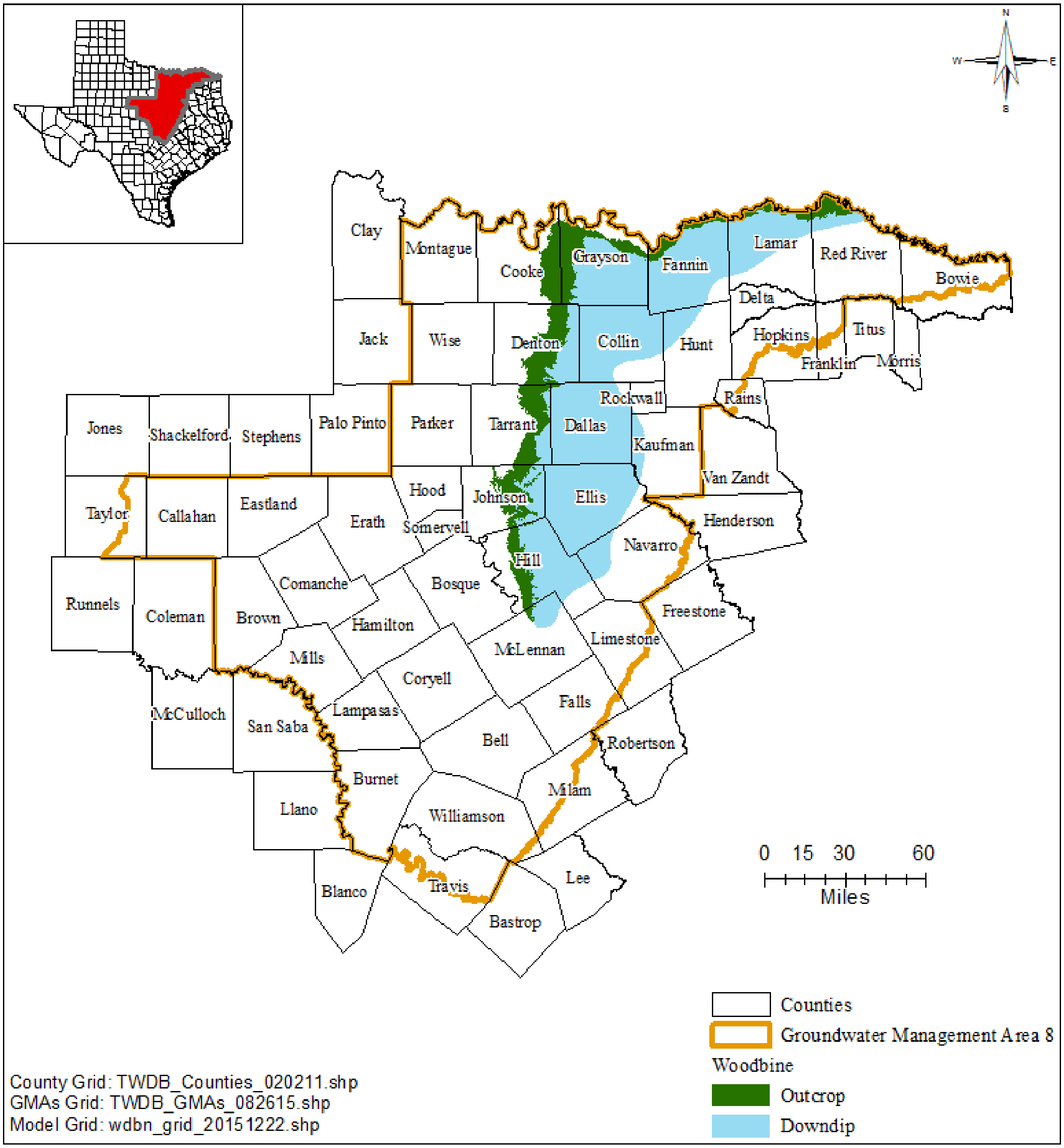

FIGURE 8. MAP SHOWING THE WOODBINE AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF TRINITY AND WOODBINE AQUIFERS.

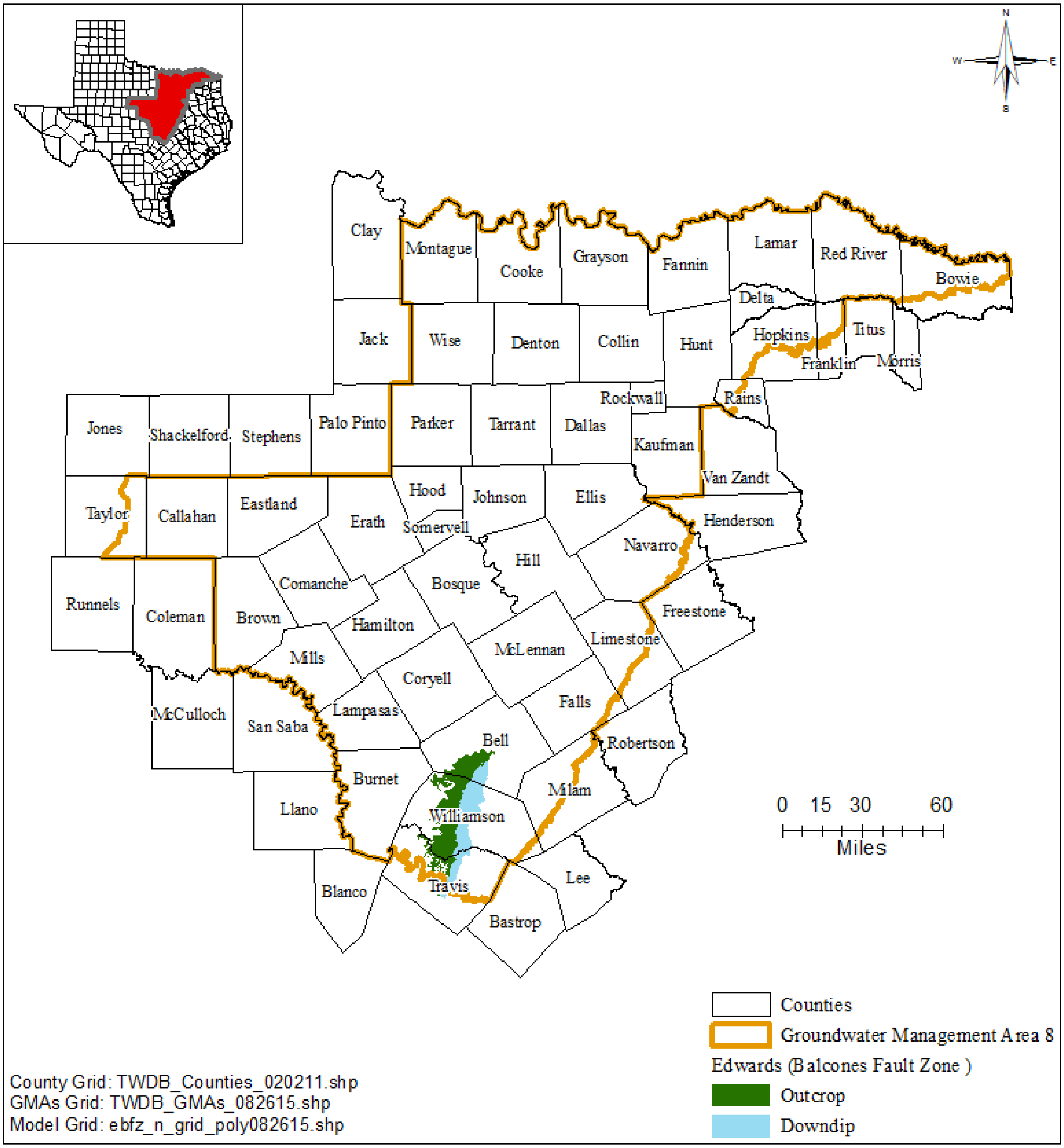

FIGURE 9. MAP SHOWING THE EDWARDS (BALCONES FAULT ZONE) AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN SEGMENT OF EDWARDS (BALCONES FAULT ZONE) AQUIFER.

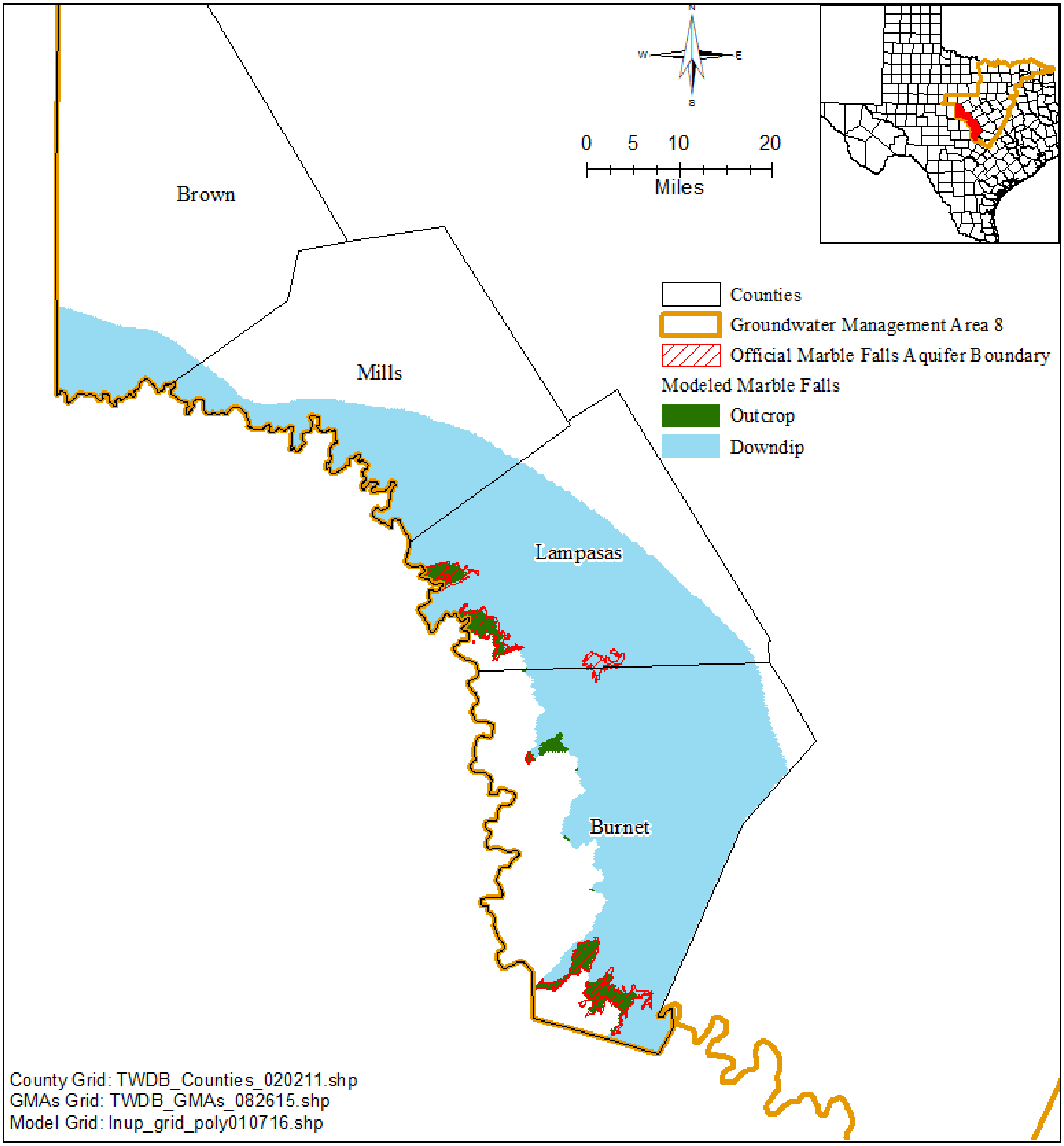

FIGURE 10. MAP SHOWING THE MARBLE FALLS AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE MINOR AQUIFERS IN THE LLANO UPLIFT REGION.

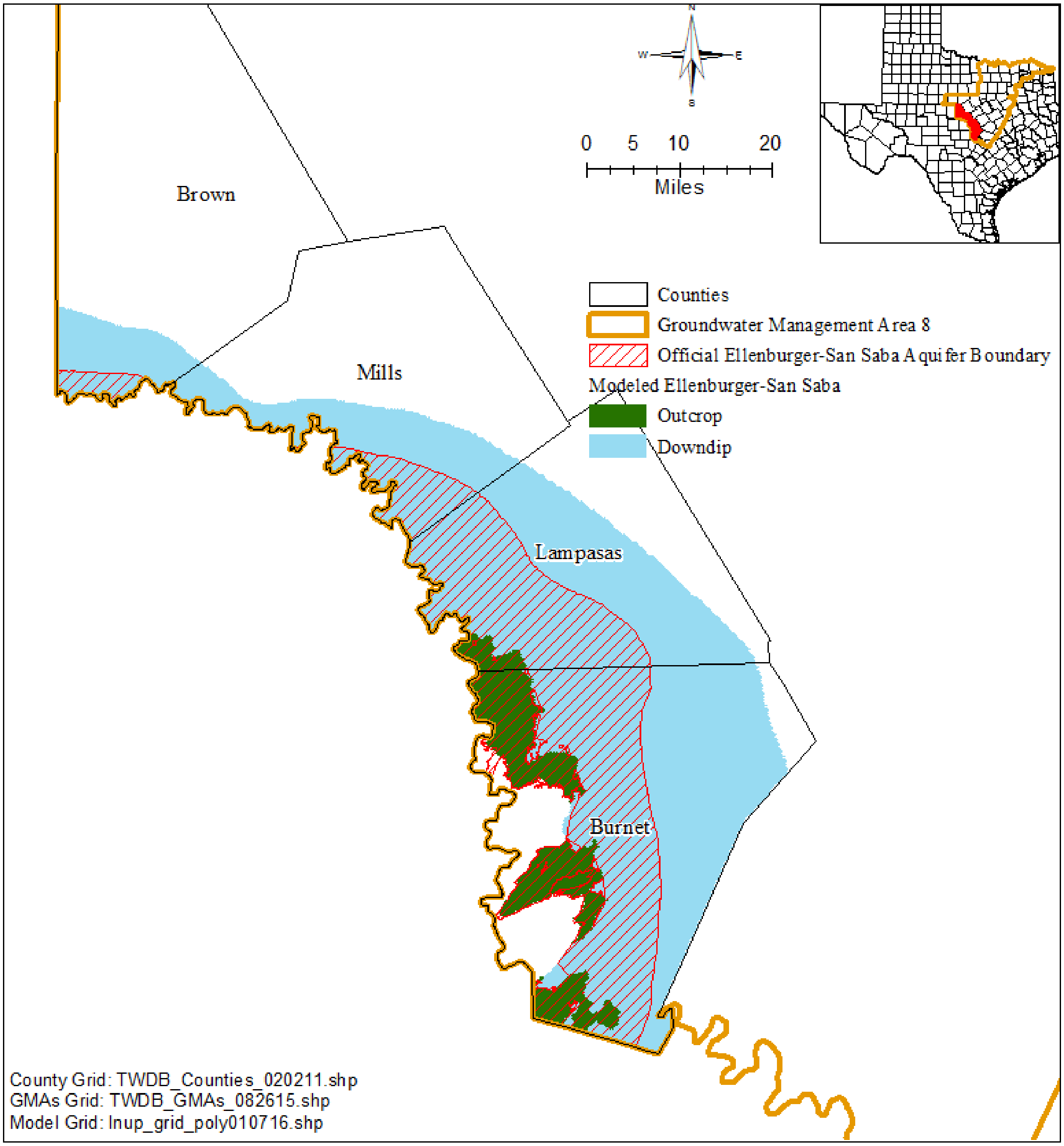

FIGURE 11. MAP SHOWING THE ELLENBURGER-SAN SABA AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE MINOR AQUIFERS IN THE LLANO UPLIFT REGION.

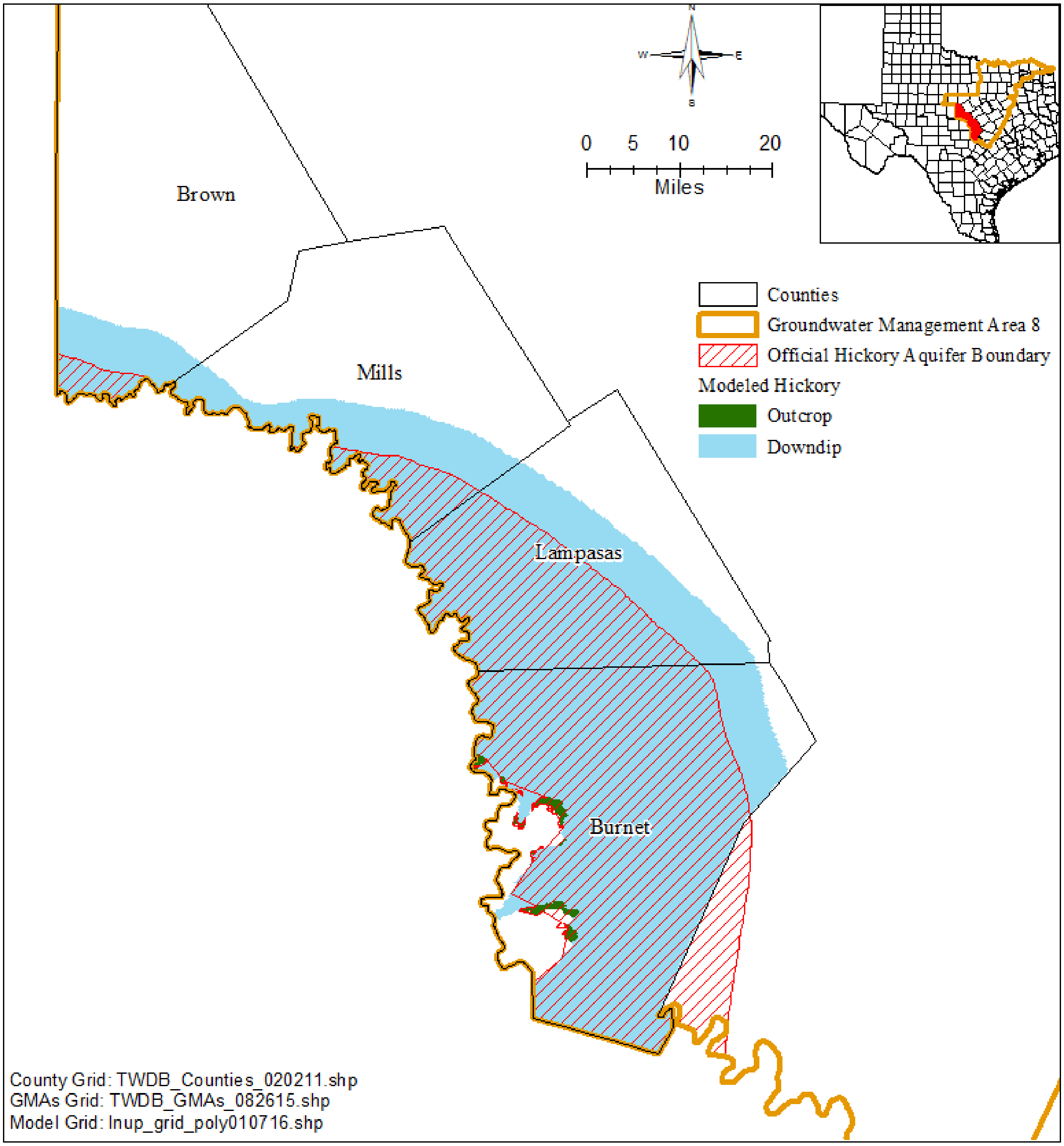

FIGURE 12. MAP SHOWING THE HICKORY AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE MINOR AQUIFERS IN THE LLANO UPLIFT REGION.

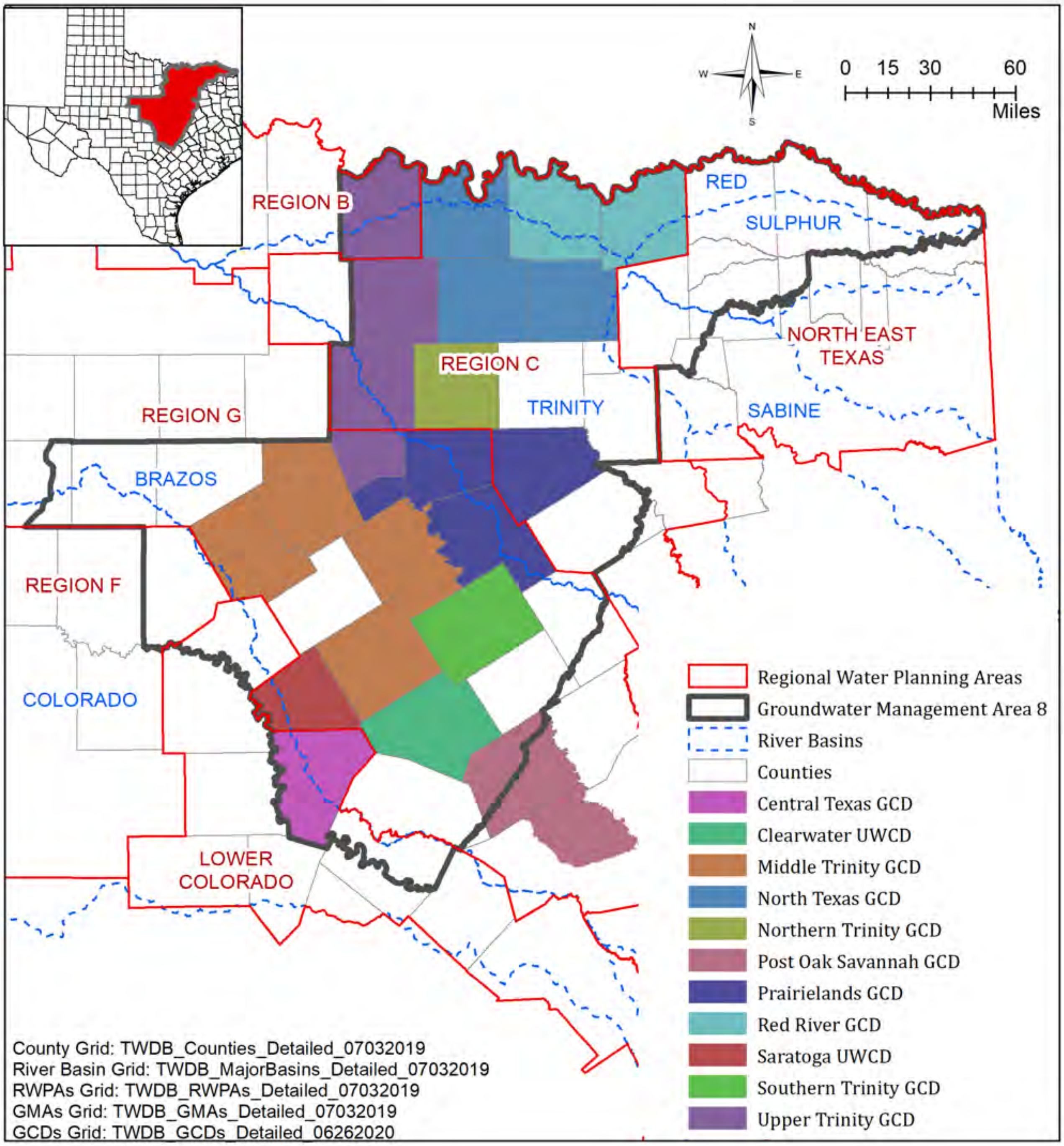

FIGURE 13. MAP SHOWING REGIONAL WATER PLANNING AREAS (RWPAs), GROUNDWATER CONSERVATION DISTRICTS (GCDs), AND RIVER BASINS ASSOCIATED WITH GROUNDWATER MANAGEMENT AREA 8.

TABLE 5. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (PALUXY) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Clearwater UWCD*	Bell	Paluxy	0	0	0	0	0	0	0
Clearwater UWCD Total		**Paluxy**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Middle Trinity GCD	Bosque	Paluxy	357	357	357	357	357	357	357
Middle Trinity GCD	Coryell	Paluxy	0	0	0	0	0	0	0
Middle Trinity GCD	Erath	Paluxy	61	61	61	61	61	61	61
Middle Trinity GCD Total		**Paluxy**	**418**	**418**	**418**	**418**	**418**	**418**	**418**
North Texas GCD	Collin	Paluxy	1,548	1,548	1,548	1,548	1,548	1,548	1,548
North Texas GCD	Denton	Paluxy	4,823	4,823	4,823	4,823	4,823	4,823	4,823
North Texas GCD Total		**Paluxy**	**6,371**	**6,371**	**6,371**	**6,371**	**6,371**	**6,371**	**6,371**
Northern Trinity GCD	Tarrant	Paluxy	8,963	8,963	8,963	8,963	8,963	8,963	8,963
Northern Trinity GCD Total		**Paluxy**	**8,963**	**8,963**	**8,963**	**8,963**	**8,963**	**8,963**	**8,963**
Prairielands GCD	Ellis	Paluxy	442	442	442	442	442	442	442
Prairielands GCD	Hill	Paluxy	352	352	352	352	352	352	352
Prairielands GCD	Johnson	Paluxy	2,442	2,442	2,442	2,442	2,442	2,442	2,442
Prairielands GCD	Somervell	Paluxy	14	14	14	14	14	14	14
Prairielands GCD Total		**Paluxy**	**3,250**	**3,250**	**3,250**	**3,250**	**3,250**	**3,250**	**3,250**
Red River GCD	Fannin	Paluxy	2,088	2,088	2,088	2,088	2,088	2,088	2,088
Red River GCD	Grayson	Paluxy	0	0	0	0	0	0	0
Red River GCD Total		**Paluxy**	**2,088**	**2,088**	**2,088**	**2,088**	**2,088**	**2,088**	**2,088**
Southern Trinity GCD	McLennan	Paluxy	0	0	0	0	0	0	0
Southern Trinity GCD Total		**Paluxy**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

TABLE 5 (CONT). MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (PALUXY) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Upper Trinity GCD	Hood	Paluxy (outcrop)	159	159	159	159	159	159	159
Upper Trinity GCD	Parker	Paluxy (outcrop)	2,609	2,609	2,609	2,609	2,609	2,609	2,609
Upper Trinity GCD	Parker	Paluxy (downdip)	50	50	50	50	50	50	50
Upper Trinity GCD Total		**Paluxy**	**2,818**	**2,818**	**2,818**	**2,818**	**2,818**	**2,818**	**2,818**
No District	Dallas	Paluxy	359	359	359	359	359	359	359
No District	Delta	Paluxy	56	56	56	56	56	56	56
No District	Falls	Paluxy	0	0	0	0	0	0	0
No District	Hamilton	Paluxy	0	0	0	0	0	0	0
No District	Hunt	Paluxy	3	3	3	3	3	3	3
No District	Kaufman	Paluxy	0	0	0	0	0	0	0
No District	Lamar	Paluxy	8	8	8	8	8	8	8
No District	Limestone	Paluxy	0	0	0	0	0	0	0
No District	Mills	Paluxy	6	6	6	6	6	6	6
No District	Navarro	Paluxy	0	0	0	0	0	0	0
No District	Red River	Paluxy	177	177	177	177	177	177	177
No District	Rockwall	Paluxy	0	0	0	0	0	0	0
No District Total		**Paluxy**	**609**	**609**	**609**	**609**	**609**	**609**	**609**
GMA 8 Total		**Paluxy**	**24,517**	**24,517**	**24,517**	**24,517**	**24,517**	**24,517**	**24,517**

*UWCD: Underground Water Conservation District.

TABLE 6. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (GLEN ROSE) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Central Texas GCD	Burnet	Glen Rose	148	148	148	148	148	148	148
Central Texas GCD Total		**Glen Rose**	**148**	**148**	**148**	**148**	**148**	**148**	**148**
Clearwater UWCD	Bell	Glen Rose	275	275	275	275	275	275	275
Clearwater UWCD Total		**Glen Rose**	**275**	**275**	**275**	**275**	**275**	**275**	**275**
Middle Trinity GCD	Bosque	Glen Rose	729	729	729	729	729	729	729
Middle Trinity GCD	Comanche	Glen Rose	41	41	41	41	41	41	41
Middle Trinity GCD	Coryell	Glen Rose	120	120	120	120	120	120	120
Middle Trinity GCD	Erath	Glen Rose	1,078	1,078	1,078	1,078	1,078	1,078	1,078
Middle Trinity GCD Total		**Glen Rose**	**1,968**	**1,968**	**1,968**	**1,968**	**1,968**	**1,968**	**1,968**
North Texas GCD	Collin	Glen Rose	83	83	83	83	83	83	83
North Texas GCD	Denton	Glen Rose	339	339	339	339	339	339	339
North Texas GCD Total		**Glen Rose**	**422**	**422**	**422**	**422**	**422**	**422**	**422**
Northern Trinity GCD	Tarrant	Glen Rose	793	793	793	793	793	793	793
Northern Trinity GCD Total		**Glen Rose**	**793**	**793**	**793**	**793**	**793**	**793**	**793**
Post Oak Savannah GCD	Milam	Glen Rose	0	0	0	0	0	0	0
Post Oak Savannah GCD Total		**Glen Rose**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Prairielands GCD	Ellis	Glen Rose	50	50	50	50	50	50	50
Prairielands GCD	Hill	Glen Rose	115	115	115	115	115	115	115
Prairielands GCD	Johnson	Glen Rose	1,633	1,633	1,633	1,633	1,633	1,633	1,633
Prairielands GCD	Somervell	Glen Rose	146	146	146	146	146	146	146
Prairielands GCD Total		**Glen Rose**	**1,944**	**1,944**	**1,944**	**1,944**	**1,944**	**1,944**	**1,944**
Red River GCD	Fannin	Glen Rose	0	0	0	0	0	0	0
Red River GCD	Grayson	Glen Rose	0	0	0	0	0	0	0
Red River GCD Total		**Glen Rose**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

TABLE 6 (CONT). MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (GLEN ROSE) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Saratoga UWCD	Lampasas	Glen Rose	68	68	68	68	68	68	68
Saratoga UWCD Total		**Glen Rose**	**68**	**68**	**68**	**68**	**68**	**68**	**68**
Southern Trinity GCD	McLennan	Glen Rose	0	0	0	0	0	0	0
Southern Trinity GCD Total		**Glen Rose**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Upper Trinity GCD	Hood	Glen Rose (outcrop)	790	790	790	790	790	790	790
Upper Trinity GCD	Hood	Glen Rose (downdip)	124	124	124	124	124	124	124
Upper Trinity GCD	Parker	Glen Rose (outcrop)	3,685	3,685	3,685	3,685	3,685	3,685	3,685
Upper Trinity GCD	Parker	Glen Rose (downdip)	1,406	1,406	1,406	1,406	1,406	1,406	1,406
Upper Trinity GCD Total			**6,005**	**6,005**	**6,005**	**6,005**	**6,005**	**6,005**	**6,005**
No District	Brown	Glen Rose	0	0	0	0	0	0	0
No District	Dallas	Glen Rose	131	131	131	131	131	131	131
No District	Delta	Glen Rose	0	0	0	0	0	0	0
No District	Falls	Glen Rose	0	0	0	0	0	0	0
No District	Hamilton	Glen Rose	218	218	218	218	218	218	218
No District	Hunt	Glen Rose	0	0	0	0	0	0	0
No District	Kaufman	Glen Rose	0	0	0	0	0	0	0
No District	Lamar	Glen Rose	0	0	0	0	0	0	0
No District	Limestone	Glen Rose	0	0	0	0	0	0	0
No District	Mills	Glen Rose	189	189	189	189	189	189	189
No District	Navarro	Glen Rose	0	0	0	0	0	0	0
No District	Red River	Glen Rose	0	0	0	0	0	0	0
No District	Rockwall	Glen Rose	0	0	0	0	0	0	0
No District	Travis	Glen Rose	100	100	100	100	100	100	100
No District	Williamson	Glen Rose	149	149	149	149	149	149	149
No District Total		**Glen Rose**	**787**	**787**	**787**	**787**	**787**	**787**	**787**
GMA 8 Total		**Glen Rose**	**12,410**	**12,410**	**12,410**	**12,410**	**12,410**	**12,410**	**12,410**

*UWCD: Underground Water Conservation District.

TABLE 7. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (TWIN MOUNTAINS) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Middle Trinity GCD	Erath	Twin Mountains	5,017	5,017	5,017	5,017	5,017	5,017	5,017
Middle Trinity GCD Total		**Twin Mountains**	**5,017**	**5,017**	**5,017**	**5,017**	**5,017**	**5,017**	**5,017**
North Texas GCD	Collin	Twin Mountains	2,202	2,202	2,202	2,202	2,202	2,202	2,202
North Texas GCD	Denton	Twin Mountains	8,372	8,372	8,372	8,372	8,372	8,372	8,372
North Texas GCD Total		**Twin Mountains**	**10,574**	**10,574**	**10,574**	**10,574**	**10,574**	**10,574**	**10,574**
Northern Trinity GCD	Tarrant	Twin Mountains	6,922	6,922	6,922	6,922	6,922	6,922	6,922
Northern Trinity GCD Total		**Twin Mountains**	**6,922**	**6,922**	**6,922**	**6,922**	**6,922**	**6,922**	**6,922**
Prairielands GCD	Ellis	Twin Mountains	0	0	0	0	0	0	0
Prairielands GCD	Johnson	Twin Mountains	278	278	278	278	278	278	278
Prairielands GCD	Somervell	Twin Mountains	65	65	65	65	65	65	65
Prairielands GCD Total		**Twin Mountains**	**343**	**343**	**343**	**343**	**343**	**343**	**343**
Red River GCD	Fannin	Twin Mountains	0	0	0	0	0	0	0
Red River GCD	Grayson	Twin Mountains	0	0	0	0	0	0	0
Red River GCD Total		**Twin Mountains**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Upper Trinity GCD	Hood (outcrop)	Twin Mountains (outcrop)	5,024	5,024	5,024	5,024	5,024	5,024	5,024
Upper Trinity GCD	Hood	Twin Mountains (downdip)	10,619	10,619	10,619	10,619	10,619	10,619	10,619
Upper Trinity GCD	Parker	Twin Mountains (outcrop)	1,282	1,282	1,282	1,282	1,282	1,282	1,282
Upper Trinity GCD	Parker	Twin Mountains (downdip)	2,528	2,528	2,528	2,528	2,528	2,528	2,528
Upper Trinity GCD Total		**Twin Mountains**	**19,453**	**19,453**	**19,453**	**19,453**	**19,453**	**19,453**	**19,453**

TABLE 7 (CONT). MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (TWIN MOUNTAINS) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
No District	Dallas	Twin Mountains	3,201	3,201	3,201	3,201	3,201	3,201	3,201
No District	Hunt	Twin Mountains	0	0	0	0	0	0	0
No District	Kaufman	Twin Mountains	0	0	0	0	0	0	0
No District	Rockwall	Twin Mountains	0	0	0	0	0	0	0
No District Total		**Twin Mountains**	**3,201**	**3,201**	**3,201**	**3,201**	**3,201**	**3,201**	**3,201**
GMA 8 Total		**Twin Mountains**	**45,510**	**45,510**	**45,510**	**45,510**	**45,510**	**45,510**	**45,510**

TABLE 8. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (TRAVIS PEAK) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Central Texas GCD	Burnet	Travis Peak	3,742	3,742	3,742	3,742	3,742	3,742	3,742
Central Texas GCD Total		**Travis Peak**	**3,742**	**3,742**	**3,742**	**3,742**	**3,742**	**3,742**	**3,742**
Clearwater UWCD[1]	Bell	Travis Peak	9,000	9,000	9,000	9,000	9,000	9,000	9,000
Clearwater UWCD Total		**Travis Peak**	**9,000**	**9,000**	**9,000**	**9,000**	**9,000**	**9,000**	**9,000**
Middle Trinity GCD	Bosque	Travis Peak	7,683	7,683	7,683	7,683	7,683	7,683	7,683
Middle Trinity GCD	Comanche	Travis Peak	6,164	6,164	6,164	6,164	6,164	6,164	6,164
Middle Trinity GCD	Coryell	Travis Peak	4,374	4,374	4,374	4,374	4,374	4,374	4,374
Middle Trinity GCD	Erath	Travis Peak	11,824	11,824	11,824	11,824	11,824	11,824	11,824
Middle Trinity GCD Total		**Travis Peak**	**30,045**	**30,045**	**30,045**	**30,045**	**30,045**	**30,045**	**30,045**
Post Oak Savannah GCD	Milam	Travis Peak	0	0	0	0	0	0	0
Post Oak Savannah GCD Total		**Travis Peak**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Prairielands GCD	Ellis	Travis Peak	5,676	5,676	5,676	5,676	5,676	5,676	5,676
Prairielands GCD	Hill	Travis Peak	4,685	4,685	4,685	4,685	4,685	4,685	4,685
Prairielands GCD	Johnson	Travis Peak	4,472	4,472	4,472	4,472	4,472	4,472	4,472
Prairielands GCD	Somervell	Travis Peak	1,763	1,763	1,763	1,763	1,763	1,763	1,763
Prairielands GCD Total		**Travis Peak**	**16,596**	**16,596**	**16,596**	**16,596**	**16,596**	**16,596**	**16,596**
Red River GCD	Fannin	Travis Peak	0	0	0	0	0	0	0
Red River GCD Total		**Travis Peak**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Saratoga UWCD	Lampasas	Travis Peak	1,593	1,593	1,593	1,593	1,593	1,593	1,593
Saratoga UWCD Total		**Travis Peak**	**1,593**	**1,593**	**1,593**	**1,593**	**1,593**	**1,593**	**1,593**
Southern Trinity GCD	McLennan	Travis Peak	20,649	20,649	20,649	20,649	20,649	20,649	20,649
Southern Trinity GCD Total		**Travis Peak**	**20,649**	**20,649**	**20,649**	**20,649**	**20,649**	**20,649**	**20,649**
Upper Trinity GCD[2]	Hood	Travis Peak	122	122	122	122	122	122	122
Upper Trinity GCD Total[2]		**Travis Peak**	**122**	**122**	**122**	**122**	**122**	**122**	**122**

TABLE 8 (CONT). MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (TRAVIS PEAK) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
No District	Brown	Travis Peak	384	384	384	384	384	384	384
No District	Dallas	Travis Peak	0	0	0	0	0	0	0
No District	Delta	Travis Peak	0	0	0	0	0	0	0
No District	Falls	Travis Peak	1,435	1,435	1,435	1,435	1,435	1,435	1,435
No District	Hamilton	Travis Peak	2,209	2,209	2,209	2,209	2,209	2,209	2,209
No District	Hunt	Travis Peak	0	0	0	0	0	0	0
No District	Kaufman	Travis Peak	0	0	0	0	0	0	0
No District	Lamar	Travis Peak	0	0	0	0	0	0	0
No District	Limestone	Travis Peak	0	0	0	0	0	0	0
No District	Mills	Travis Peak	2,264	2,264	2,264	2,264	2,264	2,264	2,264
No District	Navarro	Travis Peak	0	0	0	0	0	0	0
No District	Red River	Travis Peak	0	0	0	0	0	0	0
No District	Travis	Travis Peak	6,644	6,644	6,644	6,644	6,644	6,644	6,644
No District	Williamson	Travis Peak	3,548	3,548	3,548	3,548	3,548	3,548	3,548
No District Total		**Travis Peak**	**16,484**	**16,484**	**16,484**	**16,484**	**16,484**	**16,484**	**16,484**
GMA 8 Total		**Travis Peak**	**98,231**	**98,231**	**98,231**	**98,231**	**98,231**	**98,231**	**98,231**

[1]UWCD: Underground Water Conservation District.
[2]Splits for Upper Trinity GCD are presented since they are included in the GMA 8-wide desired future conditions.

TABLE 9. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (HENSELL) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Central Texas GCD	Burnet	Hensell	2,662	2,662	2,662	2,662	2,662	2,662	2,662
Central Texas GCD Total		**Hensell**	**2,662**	**2,662**	**2,662**	**2,662**	**2,662**	**2,662**	**2,662**
Clearwater UWCD[1]	Bell	Hensell	1,100	1,100	1,100	1,100	1,100	1,100	1,100
Clearwater UWCD Total		**Hensell**	**1,100**	**1,100**	**1,100**	**1,100**	**1,100**	**1,100**	**1,100**
Middle Trinity GCD	Bosque	Hensell	3,837	3,837	3,837	3,837	3,837	3,837	3,837
Middle Trinity GCD	Comanche	Hensell	204	204	204	204	204	204	204
Middle Trinity GCD	Coryell	Hensell	2,197	2,197	2,197	2,197	2,197	2,197	2,197
Middle Trinity GCD	Erath	Hensell	5,141	5,141	5,141	5,141	5,141	5,141	5,141
Middle Trinity GCD Total		**Hensell**	**11,379**	**11,379**	**11,379**	**11,379**	**11,379**	**11,379**	**11,379**
Post Oak Savannah GCD	Milam	Hensell	0	0	0	0	0	0	0
Post Oak Savannah GCD Total		**Hensell**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Prairielands GCD	Ellis	Hensell	0	0	0	0	0	0	0
Prairielands GCD	Hill	Hensell	25	25	25	25	25	25	25
Prairielands GCD	Johnson	Hensell	119	119	119	119	119	119	119
Prairielands GCD	Somervell	Hensell	217	217	217	217	217	217	217
Prairielands GCD Total		**Hensell**	**361**	**361**	**361**	**361**	**361**	**361**	**361**
Saratoga UWCD	Lampasas	Hensell	713	713	713	713	713	713	713
Saratoga UWCD Total		**Hensell**	**713**	**713**	**713**	**713**	**713**	**713**	**713**
Southern Trinity GCD	McLennan	Hensell	4,701	4,701	4,701	4,701	4,701	4,701	4,701
Southern Trinity GCD Total		**Hensell**	**4,701**	**4,701**	**4,701**	**4,701**	**4,701**	**4,701**	**4,701**
Upper Trinity GCD[2]	Hood	Hensell	50	50	50	50	50	50	50
Upper Trinity GCD Total[2]		**Hensell**	**50**	**50**	**50**	**50**	**50**	**50**	**50**

TABLE 9 (CONT). MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (HENSELL) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
No District	Brown	Hensell	4	4	4	4	4	4	4
No District	Dallas	Hensell	0	0	0	0	0	0	0
No District	Falls	Hensell	0	0	0	0	0	0	0
No District	Hamilton	Hensell	1,672	1,672	1,672	1,672	1,672	1,672	1,672
No District	Kaufman	Hensell	0	0	0	0	0	0	0
No District	Limestone	Hensell	0	0	0	0	0	0	0
No District	Mills	Hensell	607	607	607	607	607	607	607
No District	Navarro	Hensell	0	0	0	0	0	0	0
No District	Travis	Hensell	2,269	2,269	2,269	2,269	2,269	2,269	2,269
No District	Williamson	Hensell	1,599	1,599	1,599	1,599	1,599	1,599	1,599
No District Total		**Hensell**	**6,151**	**6,151**	**6,151**	**6,151**	**6,151**	**6,151**	**6,151**
GMA 8 Total		**Hensell**	**27,117**	**27,117**	**27,117**	**27,117**	**27,117**	**27,117**	**27,117**

[1]UWCD: Underground Water Conservation District.
[2]Splits for Upper Trinity GCD are presented since they are included in the GMA 8-wide desired future conditions.
*Note that the Hensell values in this table represent a portion of the total Travis Peak values already provided in Table 8 and do not represent an additional source of water.

TABLE 10. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (HOSSTON) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Central Texas GCD	Burnet	Hosston	883	883	883	883	883	883	883
Central Texas GCD Total		**Hosston**	**883**	**883**	**883**	**883**	**883**	**883**	**883**
Clearwater UWCD[1]	Bell	Hosston	7,900	7,900	7,900	7,900	7,900	7,900	7,900
Clearwater UWCD Total		**Hosston**	**7,900**	**7,900**	**7,900**	**7,900**	**7,900**	**7,900**	**7,900**
Middle Trinity GCD	Bosque	Hosston	3,765	3,765	3,765	3,765	3,765	3,765	3,765
Middle Trinity GCD	Comanche	Hosston	5,869	5,869	5,869	5,869	5,869	5,869	5,869
Middle Trinity GCD	Coryell	Hosston	2,163	2,163	2,163	2,163	2,163	2,163	2,163
Middle Trinity GCD	Erath	Hosston	6,387	6,387	6,387	6,387	6,387	6,387	6,387
Middle Trinity GCD Total		**Hosston**	**18,184**	**18,184**	**18,184**	**18,184**	**18,184**	**18,184**	**18,184**
Post Oak Savannah GCD	Milam	Hosston	0	0	0	0	0	0	0
Post Oak Savannah GCD Total		**Hosston**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Prairielands GCD	Ellis	Hosston	5,545	5,545	5,545	5,545	5,545	5,545	5,545
Prairielands GCD	Hill	Hosston	3,610	3,610	3,610	3,610	3,610	3,610	3,610
Prairielands GCD	Johnson	Hosston	4,251	4,251	4,251	4,251	4,251	4,251	4,251
Prairielands GCD	Somervell	Hosston	930	930	930	930	930	930	930
Prairielands GCD Total		**Hosston**	**14,336**	**14,336**	**14,336**	**14,336**	**14,336**	**14,336**	**14,336**
Saratoga UWCD	Lampasas	Hosston	849	849	849	849	849	849	849
Saratoga UWCD Total		**Hosston**	**849**	**849**	**849**	**849**	**849**	**849**	**849**
Southern Trinity GCD	McLennan	Hosston	15,948	15,948	15,948	15,948	15,948	15,948	15,948
Southern Trinity GCD Total		**Hosston**	**15,948**	**15,948**	**15,948**	**15,948**	**15,948**	**15,948**	**15,948**
Upper Trinity GCD[2]	Hood	Hosston	72	72	72	72	72	72	72
Upper Trinity GCD Total[2]		**Hosston**	**72**	**72**	**72**	**72**	**72**	**72**	**72**

TABLE 10 (CONT). MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (HOSSTON) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
No District	Brown	Hosston	346	346	346	346	346	346	346
No District	Dallas	Hosston	0	0	0	0	0	0	0
No District	Falls	Hosston	1,435	1,435	1,435	1,435	1,435	1,435	1,435
No District	Hamilton	Hosston	385	385	385	385	385	385	385
No District	Kaufman	Hosston	0	0	0	0	0	0	0
No District	Limestone	Hosston	0	0	0	0	0	0	0
No District	Mills	Hosston	1,455	1,455	1,455	1,455	1,455	1,455	1,455
No District	Navarro	Hosston	0	0	0	0	0	0	0
No District	Travis	Hosston	4,185	4,185	4,185	4,185	4,185	4,185	4,185
No District	Williamson	Hosston	1,750	1,750	1,750	1,750	1,750	1,750	1,750
No District Total		**Hosston**	**9,556**	**9,556**	**9,556**	**9,556**	**9,556**	**9,556**	**9,556**
GMA 8 Total		**Hosston**	**67,728**	**67,728**	**67,728**	**67,728**	**67,728**	**67,728**	**67,728**

[1]UWCD: Underground Water Conservation District.
[2]Splits for Upper Trinity GCD are presented since they are included in the GMA 8-wide desired future conditions.
*Note that the Hosston values in this table represent a portion of the total Travis Peak values already provided in Table 8 and do not represent an additional source of water.

TABLE 11. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (ANTLERS) IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Middle Trinity GCD	Comanche	Antlers	5,843	5,843	5,843	5,843	5,843	5,843	5,843
Middle Trinity GCD	Erath	Antlers	2,627	2,627	2,627	2,627	2,627	2,627	2,627
Middle Trinity GCD Total		**Antlers**	**8,470**	**8,470**	**8,470**	**8,470**	**8,470**	**8,470**	**8,470**
North Texas GCD	Collin	Antlers	1,962	1,962	1,962	1,962	1,962	1,962	1,962
North Texas GCD	Cooke	Antlers	10,522	10,522	10,522	10,522	10,522	10,522	10,522
North Texas GCD	Denton	Antlers	16,557	16,557	16,557	16,557	16,557	16,557	16,557
North Texas GCD Total		**Antlers**	**29,041**	**29,041**	**29,041**	**29,041**	**29,041**	**29,041**	**29,041**
Northern Trinity GCD	Tarrant	Antlers	1,248	1,248	1,248	1,248	1,248	1,248	1,248
Northern Trinity GCD Total		**Antlers**	**1,248**	**1,248**	**1,248**	**1,248**	**1,248**	**1,248**	**1,248**
Red River GCD	Fannin	Antlers	0	0	0	0	0	0	0
Red River GCD	Grayson	Antlers	10,716	10,716	10,716	10,716	10,716	10,716	10,716
Red River GCD Total		**Antlers**	**10,716**	**10,716**	**10,716**	**10,716**	**10,716**	**10,716**	**10,716**
Upper Trinity GCD	Montague	Antlers (outcrop)	6,103	6,103	6,103	6,103	6,103	6,103	6,103
Upper Trinity GCD	Parker	Antlers (outcrop)	2,889	2,889	2,889	2,889	2,889	2,889	2,889
Upper Trinity GCD	Wise	Antlers (outcrop)	9,013	9,013	9,013	9,013	9,013	9,013	9,013
Upper Trinity GCD	Wise	Antlers (downdip)	2,439	2,439	2,439	2,439	2,439	2,439	2,439
Upper Trinity GCD Total		**Antlers**	**20,444**	**20,444**	**20,444**	**20,444**	**20,444**	**20,444**	**20,444**
No District	Brown	Antlers	1,043	1,043	1,043	1,043	1,043	1,043	1,043
No District	Callahan	Antlers	1,726	1,726	1,726	1,726	1,726	1,726	1,726
No District	Eastland	Antlers	5,736	5,736	5,736	5,736	5,736	5,736	5,736
No District	Lamar	Antlers	0	0	0	0	0	0	0
No District	Red River	Antlers	0	0	0	0	0	0	0
No District	Taylor	Antlers	13	13	13	13	13	13	13
No District Total		**Antlers**	**8,518**	**8,518**	**8,518**	**8,518**	**8,518**	**8,518**	**8,518**
GMA 8 Total		**Antlers**	**78,437**	**78,437**	**78,437**	**78,437**	**78,437**	**78,437**	**78,437**

TABLE 12. MODELED AVAILABLE GROUNDWATER FOR THE WOODBINE AQUIFER IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
North Texas GCD	Collin	Woodbine	4,254	4,254	4,254	4,254	4,254	4,254	4,254
North Texas GCD	Cooke	Woodbine	800	800	800	800	800	800	800
North Texas GCD	Denton	Woodbine	3,609	3,609	3,609	3,609	3,609	3,609	3,609
North Texas GCD Total		**Woodbine**	**8,663**	**8,663**	**8,663**	**8,663**	**8,663**	**8,663**	**8,663**
Northern Trinity GCD	Tarrant	Woodbine	1,139	1,139	1,139	1,139	1,139	1,139	1,139
Northern Trinity GCD Total		**Woodbine**	**1,139**	**1,139**	**1,139**	**1,139**	**1,139**	**1,139**	**1,139**
Prairielands GCD	Ellis	Woodbine	2,074	2,074	2,074	2,074	2,074	2,074	2,074
Prairielands GCD	Hill	Woodbine	587	587	587	587	587	587	587
Prairielands GCD	Johnson	Woodbine	1,981	1,981	1,981	1,981	1,981	1,981	1,981
Prairielands GCD Total		**Woodbine**	**4,642**	**4,642**	**4,642**	**4,642**	**4,642**	**4,642**	**4,642**
Red River GCD	Fannin	Woodbine	4,924	4,924	4,924	4,924	4,924	4,924	4,924
Red River GCD	Grayson	Woodbine	7,526	7,526	7,526	7,526	7,526	7,526	7,526
Red River GCD Total		**Woodbine**	**12,450**	**12,450**	**12,450**	**12,450**	**12,450**	**12,450**	**12,450**
Southern Trinity GCD	McLennan	Woodbine	0	0	0	0	0	0	0
Southern Trinity GCD Total		**Woodbine**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
No District	Dallas	Woodbine	2,798	2,798	2,798	2,798	2,798	2,798	2,798
No District	Hunt	Woodbine	763	763	763	763	763	763	763
No District	Kaufman	Woodbine	0	0	0	0	0	0	0
No District	Lamar	Woodbine	49	49	49	49	49	49	49
No District	Navarro	Woodbine	68	68	68	68	68	68	68
No District	Red River	Woodbine	2	2	2	2	2	2	2
No District	Rockwall	Woodbine	0	0	0	0	0	0	0
No District Total		**Woodbine**	**3,680**	**3,680**	**3,680**	**3,680**	**3,680**	**3,680**	**3,680**
GMA 8 Total		**Woodbine**	**30,574**	**30,574**	**30,574**	**30,574**	**30,574**	**30,574**	**30,574**

TABLE 13. MODELED AVAILABLE GROUNDWATER FOR THE EDWARDS (BALCONES FAULT ZONE) AQUIFER IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Clearwater UWCD*	Bell	Edwards (Balcones Fault Zone)	6,469	6,469	6,469	6,469	6,469	6,469	6,469
Clearwater UWCD Total		**Edwards (Balcones Fault Zone)**	**6,469**	**6,469**	**6,469**	**6,469**	**6,469**	**6,469**	**6,469**
No District	Travis	Edwards (Balcones Fault Zone)	5,237	5,237	5,237	5,237	5,237	5,237	5,237
No District	Williamson	Edwards (Balcones Fault Zone)	3,462	3,462	3,462	3,462	3,462	3,462	3,462
No District Total		**Edwards (Balcones Fault Zone)**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**	**8,699**
GMA 8 Total		**Edwards (Balcones Fault Zone)**	**15,168**	**15,168**	**15,168**	**15,168**	**15,168**	**15,168**	**15,168**

*UWCD: Underground Water Conservation District.

TABLE 14. MODELED AVAILABLE GROUNDWATER FOR THE MARBLE FALLS AQUIFER IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Central Texas GCD	Burnet	Marble Falls	2,738	2,738	2,738	2,738	2,738	2,738	2,738
Central Texas GCD Total		**Marble Falls**	**2,738**	**2,738**	**2,738**	**2,738**	**2,738**	**2,738**	**2,738**
Saratoga UWCD*	Lampasas	Marble Falls	2,839	2,839	2,839	2,839	2,839	2,839	2,839
Saratoga UWCD Total		**Marble Falls**	**2,839**	**2,839**	**2,839**	**2,839**	**2,839**	**2,839**	**2,839**
No District	Brown	Marble Falls	25	25	25	25	25	25	25
No District	Mills	Marble Falls	25	25	25	25	25	25	25
No District Total		**Marble Falls**	**50**	**50**	**50**	**50**	**50**	**50**	**50**
GMA 8 Total		**Marble Falls**	**5,627**	**5,627**	**5,627**	**5,627**	**5,627**	**5,627**	**5,627**

*UWCD: Underground Water Conservation District.

TABLE 15. MODELED AVAILABLE GROUNDWATER FOR ELLENBURGER-SAN SABA AQUIFER IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Central Texas GCD	Burnet	Ellenburger-San Saba	10,835	10,835	10,835	10,835	10,835	10,835	10,835
Central Texas GCD Total		**Ellenburger-San Saba**	**10,835**	**10,835**	**10,835**	**10,835**	**10,835**	**10,835**	**10,835**
Saratoga UWCD*	Lampasas	Ellenburger-San Saba	2,595	2,595	2,595	2,595	2,595	2,595	2,595
Saratoga UWCD Total		**Ellenburger-San Saba**	**2,595**	**2,595**	**2,595**	**2,595**	**2,595**	**2,595**	**2,595**
No District	Brown	Ellenburger-San Saba	131	131	131	131	131	131	131
No District	Mills	Ellenburger-San Saba	499	499	499	499	499	499	499
No District Total		**Ellenburger-San Saba**	**630**	**630**	**630**	**630**	**630**	**630**	**630**
GMA 8 Total		**Ellenburger-San Saba**	**14,060**	**14,060**	**14,060**	**14,060**	**14,060**	**14,060**	**14,060**

*UWCD: Underground Water Conservation District.

TABLE 16. MODELED AVAILABLE GROUNDWATER FOR THE HICKORY AQUIFER IN GROUNDWATER MANAGEMENT AREA (GMA) 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Central Texas GCD	Burnet	Hickory	3,415	3,415	3,415	3,415	3,415	3,415	3,415
Central Texas GCD Total		**Hickory**	**3,415**	**3,415**	**3,415**	**3,415**	**3,415**	**3,415**	**3,415**
Saratoga UWCD*	Lampasas	Hickory	113	113	113	113	113	113	113
Saratoga UWCD Total		**Hickory**	**113**	**113**	**113**	**113**	**113**	**113**	**113**
No District	Brown	Hickory	12	12	12	12	12	12	12
No District	Mills	Hickory	36	36	36	36	36	36	36
No District Total		**Hickory**	**48**	**48**	**48**	**48**	**48**	**48**	**48**
GMA 8 Total		**Hickory**	**3,576**	**3,576**	**3,576**	**3,576**	**3,576**	**3,576**	**3,576**

*UWCD: Underground Water Conservation District.

TABLE 17. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (PALUXY) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Counties Not in Upper Trinity GCD									
Bell	G	Brazos	Paluxy	0	0	0	0	0	0
Bosque	G	Brazos	Paluxy	357	357	357	357	357	357
Collin	C	Sabine	Paluxy	0	0	0	0	0	0
Collin	C	Trinity	Paluxy	1,548	1,548	1,548	1,548	1,548	1,548
Coryell	G	Brazos	Paluxy	0	0	0	0	0	0
Dallas	C	Trinity	Paluxy	359	359	359	359	359	359
Delta	D	Sulphur	Paluxy	56	56	56	56	56	56
Denton	C	Trinity	Paluxy	4,823	4,823	4,823	4,823	4,823	4,823
Ellis	C	Trinity	Paluxy	442	442	442	442	442	442
Erath	G	Brazos	Paluxy	61	61	61	61	61	61
Falls	G	Brazos	Paluxy	0	0	0	0	0	0
Fannin	C	Sulphur	Paluxy	2,088	2,088	2,088	2,088	2,088	2,088
Fannin	C	Trinity	Paluxy	0	0	0	0	0	0
Grayson	C	Trinity	Paluxy	0	0	0	0	0	0
Hamilton	G	Brazos	Paluxy	0	0	0	0	0	0
Hill	G	Brazos	Paluxy	347	347	347	347	347	347
Hill	G	Trinity	Paluxy	5	5	5	5	5	5
Hunt	D	Sabine	Paluxy	0	0	0	0	0	0
Hunt	D	Sulphur	Paluxy	3	3	3	3	3	3
Hunt	D	Trinity	Paluxy	0	0	0	0	0	0
Johnson	G	Brazos	Paluxy	878	878	878	878	878	878
Johnson	G	Trinity	Paluxy	1,563	1,563	1,563	1,563	1,563	1,563
Kaufman	C	Trinity	Paluxy	0	0	0	0	0	0
Lamar	D	Red	Paluxy	0	0	0	0	0	0
Lamar	D	Sulphur	Paluxy	8	8	8	8	8	8
Limestone	G	Brazos	Paluxy	0	0	0	0	0	0
Limestone	G	Trinity	Paluxy	0	0	0	0	0	0
McLennan	G	Brazos	Paluxy	0	0	0	0	0	0
Mills	K	Brazos	Paluxy	6	6	6	6	6	6
Mills	K	Colorado	Paluxy	0	0	0	0	0	0
Navarro	C	Trinity	Paluxy	0	0	0	0	0	0
Red River	D	Red	Paluxy	52	52	52	52	52	52
Red River	D	Sulphur	Paluxy	125	125	125	125	125	125
Rockwall	C	Trinity	Paluxy	0	0	0	0	0	0
Somervell	G	Brazos	Paluxy	14	14	14	14	14	14
Tarrant	C	Trinity	Paluxy	8,963	8,963	8,963	8,963	8,963	8,963
Subtotal			**Paluxy**	**21,698**	**21,698**	**21,698**	**21,698**	**21,698**	**21,698**

TABLE 17 (CONT). MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (PALUXY) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Counties in Upper Trinity GCD									
Hood	G	Brazos	Paluxy (outcrop)	159	159	159	159	159	159
Hood	G	Trinity	Paluxy (outcrop)	0	0	0	0	0	0
Parker	C	Brazos	Paluxy (outcrop)	34	34	34	34	34	34
Parker	C	Trinity	Paluxy (outcrop)	2,575	2,575	2,575	2,575	2,575	2,575
Parker	C	Trinity	Paluxy (downdip)	50	50	50	50	50	50
Subtotal			**Paluxy**	**2,818**	**2,818**	**2,818**	**2,818**	**2,818**	**2,818**
GMA 8 Total			**Paluxy**	**24,516**	**24,516**	**24,516**	**24,516**	**24,516**	**24,516**

TABLE 18. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (GLEN ROSE) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Counties Not in Upper Trinity GCD									
Bell	G	Brazos	Glen Rose	275	275	275	275	275	275
Bosque	G	Brazos	Glen Rose	729	729	729	729	729	729
Brown	F	Colorado	Glen Rose	0	0	0	0	0	0
Burnet	K	Brazos	Glen Rose	66	66	66	66	66	66
Burnet	K	Colorado	Glen Rose	82	82	82	82	82	82
Collin	C	Sabine	Glen Rose	0	0	0	0	0	0
Collin	C	Trinity	Glen Rose	83	83	83	83	83	83
Comanche	G	Brazos	Glen Rose	22	22	22	22	22	22
Comanche	G	Colorado	Glen Rose	18	18	18	18	18	18
Coryell	G	Brazos	Glen Rose	120	120	120	120	120	120
Dallas	C	Trinity	Glen Rose	131	131	131	131	131	131
Delta	D	Sulphur	Glen Rose	0	0	0	0	0	0
Denton	C	Trinity	Glen Rose	339	339	339	339	339	339
Ellis	C	Trinity	Glen Rose	50	50	50	50	50	50
Erath	G	Brazos	Glen Rose	1,078	1,078	1,078	1,078	1,078	1,078
Falls	G	Brazos	Glen Rose	0	0	0	0	0	0
Fannin	C	Sulphur	Glen Rose	0	0	0	0	0	0
Fannin	C	Trinity	Glen Rose	0	0	0	0	0	0
Grayson	C	Trinity	Glen Rose	0	0	0	0	0	0
Hamilton	G	Brazos	Glen Rose	218	218	218	218	218	218
Hill	G	Brazos	Glen Rose	114	114	114	114	114	114
Hill	G	Trinity	Glen Rose	1	1	1	1	1	1
Hunt	D	Sabine	Glen Rose	0	0	0	0	0	0
Hunt	D	Sulphur	Glen Rose	0	0	0	0	0	0
Hunt	D	Trinity	Glen Rose	0	0	0	0	0	0
Johnson	G	Brazos	Glen Rose	951	951	951	951	951	951
Johnson	G	Trinity	Glen Rose	682	682	682	682	682	682
Kaufman	C	Trinity	Glen Rose	0	0	0	0	0	0
Lamar	D	Red	Glen Rose	0	0	0	0	0	0
Lamar	D	Sulphur	Glen Rose	0	0	0	0	0	0
Lampasas	G	Brazos	Glen Rose	68	68	68	68	68	68
Limestone	G	Brazos	Glen Rose	0	0	0	0	0	0
Limestone	G	Trinity	Glen Rose	0	0	0	0	0	0
McLennan	G	Brazos	Glen Rose	0	0	0	0	0	0
Milam	G	Brazos	Glen Rose	0	0	0	0	0	0
Mills	K	Brazos	Glen Rose	96	96	96	96	96	96
Mills	K	Colorado	Glen Rose	93	93	93	93	93	93
Navarro	C	Trinity	Glen Rose	0	0	0	0	0	0
Red River	D	Red	Glen Rose	0	0	0	0	0	0

TABLE 18 (CONT). MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (GLEN ROSE) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Red River	D	Sulphur	Glen Rose	0	0	0	0	0	0
Rockwall	C	Trinity	Glen Rose	0	0	0	0	0	0
Somervell	G	Brazos	Glen Rose	146	146	146	146	146	146
Tarrant	C	Trinity	Glen Rose	793	793	793	793	793	793
Travis	K	Brazos	Glen Rose	0	0	0	0	0	0
Travis	K	Colorado	Glen Rose	100	100	100	100	100	100
Williamson	G	Brazos	Glen Rose	135	135	135	135	135	135
Williamson	G	Colorado	Glen Rose	0	0	0	0	0	0
Williamson	K	Brazos	Glen Rose	0	0	0	0	0	0
Williamson	K	Colorado	Glen Rose	15	15	15	15	15	15
Subtotal			**Glen Rose**	**6,405**	**6,405**	**6,405**	**6,405**	**6,405**	**6,405**
Counties in Upper Trinity GCD									
Hood	G	Brazos	Glen Rose (outcrop)	790	790	790	790	790	790
Hood	G	Brazos	Glen Rose (downdip)	100	100	100	100	100	100
Hood	G	Trinity	Glen Rose (downdip)	24	24	24	24	24	24
Parker	C	Brazos	Glen Rose (outcrop)	140	140	140	140	140	140
Parker	C	Brazos	Glen Rose (downdip)	11	11	11	11	11	11
Parker	C	Trinity	Glen Rose (outcrop)	3,545	3,545	3,545	3,545	3,545	3,545
Parker	C	Trinity	Glen Rose (downdip)	1,395	1,395	1,395	1,395	1,395	1,395
Subtotal			**Glen Rose**	**6,005**	**6,005**	**6,005**	**6,005**	**6,005**	**6,005**
GMA 8 Total			**Glen Rose**	**12,410**	**12,410**	**12,410**	**12,410**	**12,410**	**12,410**

TABLE 19. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (TWIN MOUNTAINS) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2020	2030	2040	2050	2060	2070
Counties Not in Upper Trinity GCD									
Collin	C	Sabine	Twin Mountains	0	0	0	0	0	0
Collin	C	Trinity	Twin Mountains	2,202	2,202	2,202	2,202	2,202	2,202
Dallas	C	Trinity	Twin Mountains	3,201	3,201	3,201	3,201	3,201	3,201
Denton	C	Trinity	Twin Mountains	8,372	8,372	8,372	8,372	8,372	8,372
Ellis	C	Trinity	Twin Mountains	0	0	0	0	0	0
Erath	G	Brazos	Twin Mountains	5,017	5,017	5,017	5,017	5,017	5,017
Fannin	C	Sulphur	Twin Mountains	0	0	0	0	0	0
Fannin	C	Trinity	Twin Mountains	0	0	0	0	0	0
Grayson	C	Trinity	Twin Mountains	0	0	0	0	0	0
Hunt	D	Sabine	Twin Mountains	0	0	0	0	0	0
Hunt	D	Trinity	Twin Mountains	0	0	0	0	0	0
Johnson	G	Brazos	Twin Mountains	127	127	127	127	127	127
Johnson	G	Trinity	Twin Mountains	152	152	152	152	152	152
Kaufman	C	Trinity	Twin Mountains	0	0	0	0	0	0
Rockwall	C	Trinity	Twin Mountains	0	0	0	0	0	0
Somervell	G	Brazos	Twin Mountains	65	65	65	65	65	65
Tarrant	C	Trinity	Twin Mountains	6,922	6,922	6,922	6,922	6,922	6,922
Subtotal			**Twin Mountains**	**26,058**	**26,058**	**26,058**	**26,058**	**26,058**	**26,058**

TABLE 19 (CONT). MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (TWIN MOUNTAINS) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2020	2030	2040	2050	2060	2070
Counties in Upper Trinity GCD									
Hood	G	Brazos	Twin Mountains (outcrop)	5,024	5,024	5,024	5,024	5,024	5,024
Hood	G	Brazos	Twin Mountains (downdip)	10,594	10,594	10,594	10,594	10,594	10,594
Hood	G	Trinity	Twin Mountains (downdip)	26	26	26	26	26	26
Parker	C	Brazos	Twin Mountains (outcrop)	1,282	1,282	1,282	1,282	1,282	1,282
Parker	C	Brazos	Twin Mountains (downdip)	942	942	942	942	942	942
Parker	C	Trinity	Twin Mountains (downdip)	1,586	1,586	1,586	1,586	1,586	1,586
Subtotal			**Twin Mountains**	**19,454**	**19,454**	**19,454**	**19,454**	**19,454**	**19,454**
GMA 8 Total			**Twin Mountains**	**45,512**	**45,512**	**45,512**	**45,512**	**45,512**	**45,512**

TABLE 20. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (TRAVIS PEAK) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Counties Not in Upper Trinity GCD									
Bell	G	Brazos	Travis Peak	9,000	9,000	9,000	9,000	9,000	9,000
Bosque	G	Brazos	Travis Peak	7,683	7,683	7,683	7,683	7,683	7,683
Brown	F	Brazos	Travis Peak	3	3	3	3	3	3
Brown	F	Colorado	Travis Peak	381	381	381	381	381	381
Burnet	K	Brazos	Travis Peak	3,297	3,297	3,297	3,297	3,297	3,297
Burnet	K	Colorado	Travis Peak	445	445	445	445	445	445
Comanche	G	Brazos	Travis Peak	6,115	6,115	6,115	6,115	6,115	6,115
Comanche	G	Colorado	Travis Peak	49	49	49	49	49	49
Coryell	G	Brazos	Travis Peak	4,374	4,374	4,374	4,374	4,374	4,374
Dallas	C	Trinity	Travis Peak	0	0	0	0	0	0
Delta	D	Sulphur	Travis Peak	0	0	0	0	0	0
Ellis	C	Trinity	Travis Peak	5,676	5,676	5,676	5,676	5,676	5,676
Erath	G	Brazos	Travis Peak	11,824	11,824	11,824	11,824	11,824	11,824
Falls	G	Brazos	Travis Peak	1,435	1,435	1,435	1,435	1,435	1,435
Fannin	C	Sulphur	Travis Peak	0	0	0	0	0	0
Fannin	C	Trinity	Travis Peak	0	0	0	0	0	0
Hamilton	G	Brazos	Travis Peak	2,209	2,209	2,209	2,209	2,209	2,209
Hill	G	Brazos	Travis Peak	4,404	4,404	4,404	4,404	4,404	4,404
Hill	G	Trinity	Travis Peak	281	281	281	281	281	281
Hunt	D	Sabine	Travis Peak	0	0	0	0	0	0
Hunt	D	Sulphur	Travis Peak	0	0	0	0	0	0
Hunt	D	Trinity	Travis Peak	0	0	0	0	0	0

TABLE 20 (CONT). MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (TRAVIS PEAK) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Johnson	G	Brazos	Travis Peak	1,581	1,581	1,581	1,581	1,581	1,581
Johnson	G	Trinity	Travis Peak	2,891	2,891	2,891	2,891	2,891	2,891
Kaufman	C	Trinity	Travis Peak	0	0	0	0	0	0
Lamar	D	Red	Travis Peak	0	0	0	0	0	0
Lamar	D	Sulphur	Travis Peak	0	0	0	0	0	0
Lampasas	G	Brazos	Travis Peak	1,525	1,525	1,525	1,525	1,525	1,525
Lampasas	G	Colorado	Travis Peak	68	68	68	68	68	68
Limestone	G	Brazos	Travis Peak	0	0	0	0	0	0
Limestone	G	Trinity	Travis Peak	0	0	0	0	0	0
McLennan	G	Brazos	Travis Peak	20,649	20,649	20,649	20,649	20,649	20,649
Milam	G	Brazos	Travis Peak	0	0	0	0	0	0
Mills	K	Brazos	Travis Peak	704	704	704	704	704	704
Mills	K	Colorado	Travis Peak	1,560	1,560	1,560	1,560	1,560	1,560
Navarro	C	Trinity	Travis Peak	0	0	0	0	0	0
Red River	D	Red	Travis Peak	0	0	0	0	0	0
Red River	D	Sulphur	Travis Peak	0	0	0	0	0	0
Somervell	G	Brazos	Travis Peak	1,763	1,763	1,763	1,763	1,763	1,763
Travis	K	Brazos	Travis Peak	1	1	1	1	1	1
Travis	K	Colorado	Travis Peak	6,642	6,642	6,642	6,642	6,642	6,642
Williamson	G	Brazos	Travis Peak	3,543	3,543	3,543	3,543	3,543	3,543
Williamson	G	Colorado	Travis Peak	5	5	5	5	5	5
Williamson	K	Brazos	Travis Peak	0	0	0	0	0	0

TABLE 20 (CONT). MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (TRAVIS PEAK) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Williamson	K	Colorado	Travis Peak	0	0	0	0	0	0
Subtotal			**Travis Peak**	**98,108**	**98,108**	**98,108**	**98,108**	**98,108**	**98,108**
Counties in Upper Trinity GCD[1]									
Hood	G	Brazos	Travis Peak	122	122	122	122	122	122
Subtotal			**Travis Peak**	**122**	**122**	**122**	**122**	**122**	**122**
GMA 8 Total			**Travis Peak**	**98,230**	**98,230**	**98,230**	**98,230**	**98,230**	**98,230**

[1]Splits for Upper Trinity GCD are presented since they are included in the GMA 8-wide desired future conditions.

TABLE 21. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (HENSELL) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Counties Not in Upper Trinity GCD[1]									
Bell	G	Brazos	Hensell	1,100	1,100	1,100	1,100	1,100	1,100
Bosque	G	Brazos	Hensell	3,837	3,837	3,837	3,837	3,837	3,837
Brown	F	Colorado	Hensell	4	4	4	4	4	4
Burnet	K	Brazos	Hensell	2,477	2,477	2,477	2,477	2,477	2,477
Burnet	K	Colorado	Hensell	186	186	186	186	186	186
Comanche	G	Brazos	Hensell	180	180	180	180	180	180
Comanche	G	Colorado	Hensell	24	24	24	24	24	24
Coryell	G	Brazos	Hensell	2,197	2,197	2,197	2,197	2,197	2,197
Dallas	C	Trinity	Hensell	0	0	0	0	0	0
Ellis	C	Trinity	Hensell	0	0	0	0	0	0
Erath	G	Brazos	Hensell	5,141	5,141	5,141	5,141	5,141	5,141
Falls	G	Brazos	Hensell	0	0	0	0	0	0
Hamilton	G	Brazos	Hensell	1,672	1,672	1,672	1,672	1,672	1,672
Hill	G	Brazos	Hensell	25	25	25	25	25	25
Hill	G	Trinity	Hensell	0	0	0	0	0	0
Johnson	G	Brazos	Hensell	68	68	68	68	68	68
Johnson	G	Trinity	Hensell	51	51	51	51	51	51
Kaufman	C	Trinity	Hensell	0	0	0	0	0	0
Lampasas	G	Brazos	Hensell	712	712	712	712	712	712
Lampasas	G	Colorado	Hensell	1	1	1	1	1	1
Limestone	G	Brazos	Hensell	0	0	0	0	0	0
Limestone	G	Trinity	Hensell	0	0	0	0	0	0
McLennan	G	Brazos	Hensell	4,701	4,701	4,701	4,701	4,701	4,701
Milam	G	Brazos	Hensell	0	0	0	0	0	0
Mills	K	Brazos	Hensell	172	172	172	172	172	172
Mills	K	Colorado	Hensell	435	435	435	435	435	435
Navarro	C	Trinity	Hensell	0	0	0	0	0	0
Somervell	G	Brazos	Hensell	217	217	217	217	217	217
Travis	K	Brazos	Hensell	1	1	1	1	1	1
Travis	K	Colorado	Hensell	2,268	2,268	2,268	2,268	2,268	2,268
Williamson	G	Brazos	Hensell	1,599	1,599	1,599	1,599	1,599	1,599
Williamson	G	Colorado	Hensell	0	0	0	0	0	0
Williamson	K	Brazos	Hensell	0	0	0	0	0	0
Williamson	K	Colorado	Hensell	0	0	0	0	0	0
Subtotal			**Hensell**	**27,068**	**27,068**	**27,068**	**27,068**	**27,068**	**27,068**

TABLE 21 (CONT). MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (HENSELL) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Counties in Upper Trinity GCD[1]									
Hood	G	Brazos	Hensell	50	50	50	50	50	50
Subtotal			**Hensell**	**50**	**50**	**50**	**50**	**50**	**50**
GMA 8 Total			**Hensell**	**27,118**	**27,118**	**27,118**	**27,118**	**27,118**	**27,118**

[1]Splits for Upper Trinity GCD are presented since they are included in the GMA 8-wide desired future conditions.
*Note that the Hensell values in this table represent a portion of the total Travis Peak values already provided in Table 20 and do not represent an additional source of water.

TABLE 22. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (HOSSTON) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Counties Not in Upper Trinity GCD[1]									
Bell	G	Brazos	Hosston	7,900	7,900	7,900	7,900	7,900	7,900
Bosque	G	Brazos	Hosston	3,765	3,765	3,765	3,765	3,765	3,765
Brown	F	Brazos	Hosston	3	3	3	3	3	3
Brown	F	Colorado	Hosston	343	343	343	343	343	343
Burnet	K	Brazos	Hosston	659	659	659	659	659	659
Burnet	K	Colorado	Hosston	224	224	224	224	224	224
Comanche	G	Brazos	Hosston	5,863	5,863	5,863	5,863	5,863	5,863
Comanche	G	Colorado	Hosston	6	6	6	6	6	6
Coryell	G	Brazos	Hosston	2,163	2,163	2,163	2,163	2,163	2,163
Dallas	C	Trinity	Hosston	0	0	0	0	0	0
Ellis	C	Trinity	Hosston	5,545	5,545	5,545	5,545	5,545	5,545
Erath	G	Brazos	Hosston	6,387	6,387	6,387	6,387	6,387	6,387
Falls	G	Brazos	Hosston	1,435	1,435	1,435	1,435	1,435	1,435
Hamilton	G	Brazos	Hosston	385	385	385	385	385	385
Hill	G	Brazos	Hosston	3,330	3,330	3,330	3,330	3,330	3,330
Hill	G	Trinity	Hosston	280	280	280	280	280	280
Johnson	G	Brazos	Hosston	1,442	1,442	1,442	1,442	1,442	1,442
Johnson	G	Trinity	Hosston	2,809	2,809	2,809	2,809	2,809	2,809
Kaufman	C	Trinity	Hosston	0	0	0	0	0	0
Lampasas	G	Brazos	Hosston	785	785	785	785	785	785
Lampasas	G	Colorado	Hosston	65	65	65	65	65	65
Limestone	G	Brazos	Hosston	0	0	0	0	0	0
Limestone	G	Trinity	Hosston	0	0	0	0	0	0
McLennan	G	Brazos	Hosston	15,948	15,948	15,948	15,948	15,948	15,948
Milam	G	Brazos	Hosston	0	0	0	0	0	0
Mills	K	Brazos	Hosston	375	375	375	375	375	375
Mills	K	Colorado	Hosston	1,081	1,081	1,081	1,081	1,081	1,081

TABLE 22 (CONT). MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (HOSSTON) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Navarro	C	Trinity	Hosston	0	0	0	0	0	0
Somervell	G	Brazos	Hosston	930	930	930	930	930	930
Travis	K	Brazos	Hosston	0	0	0	0	0	0
Travis	K	Colorado	Hosston	4,185	4,185	4,185	4,185	4,185	4,185
Williamson	G	Brazos	Hosston	1,746	1,746	1,746	1,746	1,746	1,746
Williamson	G	Colorado	Hosston	5	5	5	5	5	5
Williamson	K	Brazos	Hosston	0	0	0	0	0	0
Williamson	K	Colorado	Hosston	0	0	0	0	0	0
Subtotal			**Hosston**	**67,659**	**67,659**	**67,659**	**67,659**	**67,659**	**67,659**
Counties in Upper Trinity GCD[1]									
Hood	G	Brazos	Hosston	72	72	72	72	72	72
Subtotal			**Hosston**	**72**	**72**	**72**	**72**	**72**	**72**
GMA 8 Total			**Hosston**	**67,731**	**67,731**	**67,731**	**67,731**	**67,731**	**67,731**

[1]Splits for Upper Trinity GCD are presented since they are included in the GMA 8-wide desired future conditions.

*Note that the Hosston values in this table represent a portion of the total Travis Peak values already provided in Table 20 and do not represent an additional source of water.

TABLE 23. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (ANTLERS) IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Counties Not in Upper Trinity GCD									
Brown	F	Brazos	Antlers	48	48	48	48	48	48
Brown	F	Colorado	Antlers	995	995	995	995	995	995
Callahan	G	Brazos	Antlers	443	443	443	443	443	443
Callahan	G	Colorado	Antlers	1,283	1,283	1,283	1,283	1,283	1,283
Collin	C	Trinity	Antlers	1,962	1,962	1,962	1,962	1,962	1,962
Comanche	G	Brazos	Antlers	5,843	5,843	5,843	5,843	5,843	5,843
Cooke	C	Red	Antlers	2,186	2,186	2,186	2,186	2,186	2,186
Cooke	C	Trinity	Antlers	8,335	8,335	8,335	8,335	8,335	8,335
Denton	C	Trinity	Antlers	16,557	16,557	16,557	16,557	16,557	16,557
Eastland	G	Brazos	Antlers	5,184	5,184	5,184	5,184	5,184	5,184
Eastland	G	Colorado	Antlers	552	552	552	552	552	552
Erath	G	Brazos	Antlers	2,627	2,627	2,627	2,627	2,627	2,627
Fannin	C	Red	Antlers	0	0	0	0	0	0
Fannin	C	Sulphur	Antlers	0	0	0	0	0	0
Fannin	C	Trinity	Antlers	0	0	0	0	0	0
Grayson	C	Red	Antlers	6,665	6,665	6,665	6,665	6,665	6,665
Grayson	C	Trinity	Antlers	4,051	4,051	4,051	4,051	4,051	4,051
Lamar	D	Red	Antlers	0	0	0	0	0	0
Lamar	D	Sulphur	Antlers	0	0	0	0	0	0
Red River	D	Red	Antlers	0	0	0	0	0	0
Tarrant	C	Trinity	Antlers	1,248	1,248	1,248	1,248	1,248	1,248
Taylor	G	Brazos	Antlers	5	5	5	5	5	5
Taylor	G	Colorado	Antlers	9	9	9	9	9	9
Subtotal			**Antlers**	**57,993**	**57,993**	**57,993**	**57,993**	**57,993**	**57,993**
Counties in Upper Trinity GCD									
Montague	B	Red	Antlers (outcrop)	238	238	238	238	238	238
Montague	B	Trinity	Antlers (outcrop)	5,866	5,866	5,866	5,866	5,866	5,866
Parker	C	Brazos	Antlers (outcrop)	247	247	247	247	247	247
Parker	C	Trinity	Antlers (outcrop)	2,642	2,642	2,642	2,642	2,642	2,642
Wise	C	Trinity	Antlers (outcrop)	9,013	9,013	9,013	9,013	9,013	9,013
Wise	C	Trinity	Antlers (downdip)	2,439	2,439	2,439	2,439	2,439	2,439
Subtotal			**Antlers**	**20,445**	**20,445**	**20,445**	**20,445**	**20,445**	**20,445**
GMA 8 Total			**Antlers**	**78,438**	**78,438**	**78,438**	**78,438**	**78,438**	**78,438**

TABLE 24. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE WOODBINE AQUIFER IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Collin	C	Sabine	Woodbine	0	0	0	0	0	0
Collin	C	Trinity	Woodbine	4,254	4,254	4,254	4,254	4,254	4,254
Cooke	C	Red	Woodbine	262	262	262	262	262	262
Cooke	C	Trinity	Woodbine	539	539	539	539	539	539
Dallas	C	Trinity	Woodbine	2,798	2,798	2,798	2,798	2,798	2,798
Denton	C	Trinity	Woodbine	3,609	3,609	3,609	3,609	3,609	3,609
Ellis	C	Trinity	Woodbine	2,074	2,074	2,074	2,074	2,074	2,074
Fannin	C	Red	Woodbine	3,547	3,547	3,547	3,547	3,547	3,547
Fannin	C	Sulphur	Woodbine	550	550	550	550	550	550
Fannin	C	Trinity	Woodbine	827	827	827	827	827	827
Grayson	C	Red	Woodbine	5,603	5,603	5,603	5,603	5,603	5,603
Grayson	C	Trinity	Woodbine	1,923	1,923	1,923	1,923	1,923	1,923
Hill	G	Brazos	Woodbine	284	284	284	284	284	284
Hill	G	Trinity	Woodbine	302	302	302	302	302	302
Hunt	D	Sabine	Woodbine	268	268	268	268	268	268
Hunt	D	Sulphur	Woodbine	165	165	165	165	165	165
Hunt	D	Trinity	Woodbine	330	330	330	330	330	330
Johnson	G	Brazos	Woodbine	24	24	24	24	24	24
Johnson	G	Trinity	Woodbine	1,957	1,957	1,957	1,957	1,957	1,957
Kaufman	C	Trinity	Woodbine	0	0	0	0	0	0
Lamar	D	Red	Woodbine	0	0	0	0	0	0
Lamar	D	Sulphur	Woodbine	49	49	49	49	49	49
McLennan	G	Brazos	Woodbine	0	0	0	0	0	0
Navarro	C	Trinity	Woodbine	68	68	68	68	68	68
Red River	D	Red	Woodbine	2	2	2	2	2	2
Rockwall	C	Trinity	Woodbine	0	0	0	0	0	0
Tarrant	C	Trinity	Woodbine	1,139	1,139	1,139	1,139	1,139	1,139
GMA 8 Total			**Woodbine**	**30,574**	**30,574**	**30,574**	**30,574**	**30,574**	**30,574**

TABLE 25. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE EDWARDS (BALCONES FAULT ZONE) AQUIFER IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN. MODELED AVAILABLE GROUNDWATER VALUES ARE FROM GAM RUN 08-010MAG BY ANAYA (2008).

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Bell	G	Brazos	Edwards (Balcones Fault Zone)	6,469	6,469	6,469	6,469	6,469	6,469
Travis	K	Brazos	Edwards (Balcones Fault Zone)	275	275	275	275	275	275
Travis	K	Colorado	Edwards (Balcones Fault Zone)	4,962	4,962	4,962	4,962	4,962	4,962
Williamson	G	Brazos	Edwards (Balcones Fault Zone)	3,351	3,351	3,351	3,351	3,351	3,351
Williamson	G	Colorado	Edwards (Balcones Fault Zone)	101	101	101	101	101	101
Williamson	K	Brazos	Edwards (Balcones Fault Zone)	6	6	6	6	6	6
Williamson	K	Colorado	Edwards (Balcones Fault Zone)	4	4	4	4	4	4
GMA 8 Total			Edwards (Balcones Fault Zone)	**15,168**	**15,168**	**15,168**	**15,168**	**15,168**	**15,168**

TABLE 26. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE MARBLE FALLS AQUIFER IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Brown	F	Colorado	Marble Falls	25	25	25	25	25	25
Burnet	K	Brazos	Marble Falls	1,384	1,384	1,384	1,384	1,384	1,384
Burnet	K	Colorado	Marble Falls	1,354	1,354	1,354	1,354	1,354	1,354
Lampasas	G	Brazos	Marble Falls	1,954	1,954	1,954	1,954	1,954	1,954
Lampasas	G	Colorado	Marble Falls	885	885	885	885	885	885
Mills	K	Brazos	Marble Falls	1	1	1	1	1	1
Mills	K	Colorado	Marble Falls	24	24	24	24	24	24
GMA 8 Total			**Marble Falls**	**5,627**	**5,627**	**5,627**	**5,627**	**5,627**	**5,627**

TABLE 27. MODELED AVAILABLE GROUNDWATER BY DECADE FOR ELLENBURGER-SAN SABA AQUIFER IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Brown	F	Colorado	Ellenburger-San Saba	131	131	131	131	131	131
Burnet	K	Brazos	Ellenburger-San Saba	3,825	3,825	3,825	3,825	3,825	3,825
Burnet	K	Colorado	Ellenburger-San Saba	7,010	7,010	7,010	7,010	7,010	7,010
Lampasas	G	Brazos	Ellenburger-San Saba	1,681	1,681	1,681	1,681	1,681	1,681
Lampasas	G	Colorado	Ellenburger-San Saba	914	914	914	914	914	914
Mills	K	Brazos	Ellenburger-San Saba	93	93	93	93	93	93
Mills	K	Colorado	Ellenburger-San Saba	406	406	406	406	406	406
GMA 8 Total			Ellenburger-San Saba	**14,060**	**14,060**	**14,060**	**14,060**	**14,060**	**14,060**

TABLE 28. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE HICKORY AQUIFER IN GROUNDWATER MANAGEMENT AREA (GMA) 8. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Brown	F	Colorado	Hickory	12	12	12	12	12	12
Burnet	K	Brazos	Hickory	1,237	1,237	1,237	1,237	1,237	1,237
Burnet	K	Colorado	Hickory	2,178	2,178	2,178	2,178	2,178	2,178
Lampasas	G	Brazos	Hickory	79	79	79	79	79	79
Lampasas	G	Colorado	Hickory	34	34	34	34	34	34
Mills	K	Brazos	Hickory	7	7	7	7	7	7
Mills	K	Colorado	Hickory	29	29	29	29	29	29
GMA 8 Total			**Hickory**	**3,576**	**3,576**	**3,576**	**3,576**	**3,576**	**3,576**

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.

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Appendix A

Comparison between Desired Future Conditions and Simulated Drawdowns for the Trinity and Woodbine Aquifers

Drawdown values for the Trinity and Woodbine aquifers between 2009 and 2080 were based on the simulated water level values at individual model cells extracted from predictive simulation water level file submitted by Groundwater Management Area 8.

The Paluxy, Glen Rose, Twin Mountains, Travis Peak, Hensell, Hosston, and Antlers are subunits of the Trinity Aquifer. These subunits and Woodbine Aquifer exist in both outcrop and downdip areas (Figures 1 through 8). Kelley and others (2014) further divided these aquifers into five (5) regions, each with unique aquifer combinations and properties (table below and Figures 1 through 8).

<table>
<tr><th>Model Layer</th><th>Region 1</th><th>Region 2</th><th>Region 3</th><th colspan="2">Region 4</th><th colspan="2">Region 5</th></tr>
<tr><td>2</td><td colspan="4">Woodbine</td><td colspan="3">Woodbine (no sand)</td></tr>
<tr><td>3</td><td colspan="7">Washita/Fredericksburg</td></tr>
<tr><td>4</td><td rowspan="5">Antlers</td><td colspan="4">Paluxy</td><td colspan="2">Paluxy (no sand)</td></tr>
<tr><td>5</td><td colspan="6">Glen Rose</td></tr>
<tr><td>6</td><td rowspan="3">Twin Mountains</td><td colspan="2" rowspan="3">Travis Peak</td><td>Hensell</td><td rowspan="3">Travis Peak</td><td>Hensell</td></tr>
<tr><td>7</td><td>Pearsall/Sligo</td><td>Pearsall/Sligo</td></tr>
<tr><td>8</td><td>Hosston</td><td>Hosston</td></tr>
</table>

Vertically, the Trinity and Woodbine aquifers could contain multiple model layers and some of the model cells are pass-through cells with a thickness of one foot. To account for variable model cells from multiple model layers for the same aquifer, Groundwater Management Area 8 (2021) adopted a method presented by Van Kelley of INTERA, Inc., which calculated a single composite water level from multiple model cells with each adjusted by transmissivity. This composite water level took both the water level and hydraulic transmissivity at each cell into calculation, as shown in the following equation:

$$Hc = \frac{\sum_{i=UL}^{LL} T_i H_i}{\sum_{i=UL}^{LL} T_i}$$

Where:

H_C = Composite Water Level (feet above mean sea level)

T_i = Transmissivity of model layer i (square feet per day)

H_i = Water Level of model layer i (feet above mean sea level)

LL = Lowest model layer representing the regional aquifer

UL = Uppermost model layer representing the regional aquifer.

Note that multiple model layers can represent a single aquifer or subunit, so the aquifer or subunit designation should be determined by the IBOUND value of a model cell rather than the model layer. When a model cell goes dry, the water level was set to the cell bottom. However, if an aquifer completely goes dry, TWDB assigns the bottom elevation from the lowest model cell of the aquifer to the composite water level.

The average water level for the same aquifer in a county (*Hc_County*) was then calculated using the following equation:

$$Hc\_County = \frac{\sum_{i=1}^{n} Hc_i}{n}$$

Where:

Hc_County = Average composite water level for a county (feet above mean sea level)

Hc_i = Composite Water Level at a lateral location as defined in last step (feet above mean sea level)

n = Total lateral (row, column) locations of an aquifer in a county.

Drawdown of the aquifer in a county (*DD_County*) was calculated using the following equation:

$$DD\_County = Hc\_County_{2009} - Hc\_County_{2080}$$

Where:

Hc_County_{2009} = Average water level of an aquifer in a county in 2009 as defined above (feet above mean sea level)

Hc_County_{2080} = Average water level of an aquifer in a county in 2080 as defined above (feet above mean sea level).

If an aquifer went dry in 2009, that lateral location was excluded from the calculation.

In comparison with a simple average calculation based on total model cell count, use of composite water level gives less weight to cells with lower transmissivity values (such as pass-through cells, cells with low saturation in outcrop area, or cells with lower hydraulic conductivity) in water level and drawdown calculation.

Per Groundwater Management Area 8, a desired future condition was met if the simulated drawdown was within five percent or five feet of the desired future condition. Using the water level output file submitted by Groundwater Management Area 8 and the method described above, the TWDB calculated the drawdowns and then compared with the correlated desired future conditions. The comparisons are presented in Tables A1, A2, A3, and A4. The comparison indicates that the predictive simulation meets the desired future conditions of the Trinity and Woodbine aquifers in Groundwater Management Area 8.

TABLE A1. COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY GROUNDWATER CONSERVATION DISTRICT (GCD), EXCLUDING UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

GCD	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Central Texas GCD	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	2	2	No
	Twin Mountains	—	—	—
	Travis Peak	19	11	No
	Hensell	7	9	No
	Hosston	21	21	No
	Antlers	—	—	—
Clearwater UWCD	Woodbine	—	—	—
	Paluxy	17	18	No
	Glen Rose	83	83	No
	Twin Mountains	—	—	—
	Travis Peak	333	333	No
	Hensell	145	145	No
	Hosston	375	375	No
	Antlers	—	—	—
Middle Trinity GCD	Woodbine	—	—	—
	Paluxy	5	7	No
	Glen Rose	29	29	No
	Twin Mountains	8	6	No
	Travis Peak	98	98	No
	Hensell	77	77	No
	Hosston	124	124	No
	Antlers	12	12	No
North Texas GCD	Woodbine	263	263	No
	Paluxy	690	690	No
	Glen Rose	366	366	No
	Twin Mountains	601	601	No
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	305	296	No

TABLE A1 (CONT). COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY GROUNDWATER CONSERVATION DISTRICT (GCD), EXCLUDING UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

GCD	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Northern Trinity GCD	Woodbine	6	6	No
	Paluxy	105	105	No
	Glen Rose	163	163	No
	Twin Mountains	348	232	No
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	177	83	No
Post Oak Savannah GCD	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	241	241	No
	Twin Mountains	—	—	—
	Travis Peak	412	412	No
	Hensell	261	261	No
	Hosston	412	412	No
	Antlers	—	—	—
Prairielands GCD	Woodbine	44	44	No
	Paluxy	44	46	No
	Glen Rose	142	142	No
	Twin Mountains	170	46	No
	Travis Peak	323	311	No
	Hensell	201	207	No
	Hosston	364	369	No
	Antlers	—	—	—
Red River GCD	Woodbine	209	211	No
	Paluxy	830	720	No
	Glen Rose	335	308	No
	Twin Mountains	405	405	No
	Travis Peak	291	291	No
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	321	321	No
Saratoga UWCD	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	1	1	No
	Twin Mountains	—	—	—
	Travis Peak	6	6	No
	Hensell	1	2	No
	Hosston	11	12	No
	Antlers	—	—	—

TABLE A1 (CONT). COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY GROUNDWATER CONSERVATION DISTRICT (GCD), EXCLUDING UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

GCD	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Southern Trinity GCD	Woodbine	6	6	No
	Paluxy	41	41	No
	Glen Rose	148	148	No
	Twin Mountains	—	—	—
	Travis Peak	504	499	No
	Hensell	242	242	No
	Hosston	582	582	No
	Antlers	—	—	—

TABLE A2. COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS FOR UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

GCD	Portion	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Upper Trinity GCD	outcrop	Woodbine	—	—	—
		Paluxy	6	6	No
		Glen Rose	15	14	No
		Twin Mountains	10	6	No
		Travis Peak	—	—	—
		Hensell	—	—	—
		Hosston	—	—	—
		Antlers	47	16	No
Upper Trinity GCD	subcrop	Woodbine	—	—	—
		Paluxy	2	2	No
		Glen Rose	45	49	No
		Twin Mountains	70	46	No
		Travis Peak	—	—	—
		Hensell	—	—	—
		Hosston	—	—	—
		Antlers	154	92	No

TABLE A3. COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY COUNTY, EXCLUDING COUNTIES IN UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

County	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Bell	Woodbine	—	—	—
	Paluxy	17	18.46	No
	Glen Rose	83	82.74	No
	Twin Mountains	—	—	—
	Travis Peak	333	332.79	No
	Hensell	145	144.73	No
	Hosston	375	374.76	No
	Antlers	—	—	—
Bosque	Woodbine	—	—	—
	Paluxy	6	6.78	No
	Glen Rose	53	53.38	No
	Twin Mountains	—	—	—
	Travis Peak	189	188.88	No
	Hensell	139	139.01	No
	Hosston	232	232.23	No
	Antlers	—	—	—
Brown	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	1	1.9	No
	Twin Mountains	—	—	—
	Travis Peak	2	1.23	No
	Hensell	1	1.14	No
	Hosston	1	1.3	No
	Antlers	2	2.56	No
Burnet	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	2	2.39	No
	Twin Mountains	—	—	—
	Travis Peak	19	10.76	No
	Hensell	7	8.89	No
	Hosston	21	21.2	No
	Antlers	—	—	—
Callahan	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	—	—	—
	Twin Mountains	—	—	—
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	1	1.38	No

TABLE A3 (CONT). COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY COUNTY, EXCLUDING COUNTIES IN UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

County	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Collin	Woodbine	482	481.88	No
	Paluxy	729	728.64	No
	Glen Rose	366	365.79	No
	Twin Mountains	560	559.87	No
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	596	583.45	No
Comanche	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	2	1.44	No
	Twin Mountains	—	—	—
	Travis Peak	4	2.4	No
	Hensell	2	1.76	No
	Hosston	3	2.86	No
	Antlers	12	12.08	No
Cooke	Woodbine	2	2.41	No
	Paluxy	—	—	—
	Glen Rose	—	—	—
	Twin Mountains	—	—	—
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	191	178.36	No
Coryell	Woodbine	—	—	—
	Paluxy	5	7.5	No
	Glen Rose	15	15.37	No
	Twin Mountains	—	—	—
	Travis Peak	107	107.32	No
	Hensell	70	70.02	No
	Hosston	141	140.6	No
	Antlers	—	—	—
Dallas	Woodbine	137	137.41	No
	Paluxy	346	345.58	No
	Glen Rose	288	288.24	No
	Twin Mountains	515	515.09	No
	Travis Peak	415	414.61	No
	Hensell	362	361.55	No
	Hosston	419	418.84	No
	Antlers	—	—	—

TABLE A3 (CONT). COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY COUNTY, EXCLUDING COUNTIES IN UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

County	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Delta	Woodbine	—	—	—
	Paluxy	279	278.97	No
	Glen Rose	198	197.8	No
	Twin Mountains	—	—	—
	Travis Peak	202	202.1	No
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	—	—	—
Denton	Woodbine	22	20.37	No
	Paluxy	558	557.89	No
	Glen Rose	367	367.03	No
	Twin Mountains	752	742.97	No
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	416	404.5	No
Eastland	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	—	—	—
	Twin Mountains	—	—	—
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	4	4.11	No
Ellis	Woodbine	76	76.07	No
	Paluxy	128	127.51	No
	Glen Rose	220	220.03	No
	Twin Mountains	413	413.29	No
	Travis Peak	380	380.25	No
	Hensell	290	290.49	No
	Hosston	390	390.34	No
	Antlers	—	—	—
Erath	Woodbine	—	—	—
	Paluxy	6	1.01	No
	Glen Rose	6	5.07	No
	Twin Mountains	8	6.4	No
	Travis Peak	25	20.18	No
	Hensell	12	11.45	No
	Hosston	35	35	No
	Antlers	14	13.56	No

TABLE A3 (CONT). COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY COUNTY, EXCLUDING COUNTIES IN UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

County	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Falls	Woodbine	—	—	—
	Paluxy	159	159.35	No
	Glen Rose	238	238.09	No
	Twin Mountains	—	—	—
	Travis Peak	505	504.77	No
	Hensell	296	296.31	No
	Hosston	511	511.14	No
	Antlers	—	—	—
Fannin	Woodbine	259	259.23	No
	Paluxy	709	708.85	No
	Glen Rose	305	305.1	No
	Twin Mountains	400	400.17	No
	Travis Peak	291	291.45	No
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	269	268.98	No
Grayson	Woodbine	163	162.86	No
	Paluxy	943	942.74	No
	Glen Rose	364	363.85	No
	Twin Mountains	445	445.2	No
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	364	363	No
Hamilton	Woodbine	—	—	—
	Paluxy	2	2.77	No
	Glen Rose	4	4.25	No
	Twin Mountains	—	—	—
	Travis Peak	26	25.93	No
	Hensell	14	13.99	No
	Hosston	38	38.2	No
	Antlers	—	—	—
Hill	Woodbine	20	19.71	No
	Paluxy	45	44.9	No
	Glen Rose	149	148.93	No
	Twin Mountains	—	—	—
	Travis Peak	365	364.39	No
	Hensell	211	211.07	No
	Hosston	413	412.6	No
	Antlers	—	—	—

TABLE A3 (CONT). COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY COUNTY, EXCLUDING COUNTIES IN UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

County	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Hunt	Woodbine	631	630.96	No
	Paluxy	610	610.15	No
	Glen Rose	326	326.15	No
	Twin Mountains	399	398.85	No
	Travis Peak	350	349.84	No
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	—	—	—
Johnson	Woodbine	4	3.55	No
	Paluxy	-57	-57.56	No
	Glen Rose	66	65.87	No
	Twin Mountains	184	33.24	No
	Travis Peak	235	178.04	No
	Hensell	120	120.41	No
	Hosston	329	329.41	No
	Antlers	—	—	—
Kaufman	Woodbine	242	241.7	No
	Paluxy	311	311.43	No
	Glen Rose	305	304.98	No
	Twin Mountains	427	427	No
	Travis Peak	372	371.84	No
	Hensell	349	348.53	No
	Hosston	345	344.74	No
	Antlers	—	—	—
Lamar	Woodbine	42	42.07	No
	Paluxy	100	100.09	No
	Glen Rose	107	106.9	No
	Twin Mountains	—	—	—
	Travis Peak	125	124.5	No
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	132	132.31	No
Lampasas	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	1	1.22	No
	Twin Mountains	—	—	—
	Travis Peak	6	6.31	No
	Hensell	1	1.56	No
	Hosston	11	11.64	No
	Antlers	—	—	—

TABLE A3 (CONT). COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY COUNTY, EXCLUDING COUNTIES IN UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

County	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Limestone	Woodbine	—	—	—
	Paluxy	199	198.7	No
	Glen Rose	301	300.8	No
	Twin Mountains	—	—	—
	Travis Peak	433	433.11	No
	Hensell	214	214.2	No
	Hosston	445	444.63	No
	Antlers	—	—	—
McLennan	Woodbine	6	6.49	No
	Paluxy	41	41.02	No
	Glen Rose	148	147.65	No
	Twin Mountains	—	—	—
	Travis Peak	504	498.88	No
	Hensell	242	242.36	No
	Hosston	582	581.81	No
	Antlers	—	—	—
Milam	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	241	240.72	No
	Twin Mountains	—	—	—
	Travis Peak	412	411.52	No
	Hensell	261	260.7	No
	Hosston	412	412.3	No
	Antlers	—	—	—
Mills	Woodbine	—	—	—
	Paluxy	1	0.64	No
	Glen Rose	1	1.2	No
	Twin Mountains	—	—	—
	Travis Peak	9	7.36	No
	Hensell	2	2.16	No
	Hosston	13	13.67	No
	Antlers	—	—	—
Navarro	Woodbine	110	110.34	No
	Paluxy	139	139.22	No
	Glen Rose	266	265.96	No
	Twin Mountains	—	—	—
	Travis Peak	343	343.14	No
	Hensell	295	295.18	No
	Hosston	343	343.41	No
	Antlers	—	—	—

TABLE A3 (CONT). COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY COUNTY, EXCLUDING COUNTIES IN UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

County	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Red River	Woodbine	2	2.28	No
	Paluxy	24	23.74	No
	Glen Rose	40	39.58	No
	Twin Mountains	—	—	—
	Travis Peak	57	56.88	No
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	15	14.51	No
Rockwall	Woodbine	275	274.86	No
	Paluxy	433	432.69	No
	Glen Rose	343	342.57	No
	Twin Mountains	466	466.49	No
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	—	—	—
Somervell	Woodbine	—	—	—
	Paluxy	4	1.62	No
	Glen Rose	4	4.45	No
	Twin Mountains	50	50.27	No
	Travis Peak	64	64.26	No
	Hensell	17	16.57	No
	Hosston	120	120.22	No
	Antlers	—	—	—
Tarrant	Woodbine	6	6.41	No
	Paluxy	105	105.14	No
	Glen Rose	163	163.16	No
	Twin Mountains	348	231.93	No
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	177	83.43	No
Taylor	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	—	—	—
	Twin Mountains	—	—	—
	Travis Peak	—	—	—
	Hensell	—	—	—
	Hosston	—	—	—
	Antlers	0	0.26	No

TABLE A3 (CONT). COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY COUNTY, EXCLUDING COUNTIES IN UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

County	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Travis	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	90	89.73	No
	Twin Mountains	—	—	—
	Travis Peak	219	215.69	No
	Hensell	68	69.19	No
	Hosston	226	224.15	No
	Antlers	—	—	—
Williamson	Woodbine	—	—	—
	Paluxy	—	—	—
	Glen Rose	78	79.23	No
	Twin Mountains	—	—	—
	Travis Peak	220	220.43	No
	Hensell	89	90.6	No
	Hosston	225	225.78	No
	Antlers	—	—	—

TABLE A4. COMPARISON BETWEEN DRAWDOWN AND DESIRED FUTURE CONDITIONS BY COUNTY IN UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT.

County	Portion	Aquifer	Desired Future Condition (feet of drawdown between January 1, 2010 and December 31, 2080)	Simulated Drawdown between Initial Water Levels and Stress Period 71 (feet)	Is Desired Future Condition Violated (Exceeded by 5 feet and 5%)?
Hood	outcrop	Antlers	—	—	—
		Paluxy	6	5.68	No
		Glen Rose	9	9.41	No
		Twin Mountains	13	8.14	No
	subcrop	Antlers	—	—	—
		Paluxy	—	—	—
		Glen Rose	39	39.41	No
		Twin Mountains	72	20.57	No
Montague	outcrop	Antlers	40	20.37	No
		Paluxy	—	—	—
		Glen Rose	—	—	—
		Twin Mountains	—	—	—
	subcrop	Antlers	—	—	—
		Paluxy	—	—	—
		Glen Rose	—	—	—
		Twin Mountains	—	—	—
Parker	outcrop	Antlers	42	8.76	No
		Paluxy	6	5.69	No
		Glen Rose	20	20.06	No
		Twin Mountains	7	2.42	No
	subcrop	Antlers	—	—	—
		Paluxy	2	1.81	No
		Glen Rose	50	50.41	No
		Twin Mountains	68	61.87	No
Wise	outcrop	Antlers	60	16.44	No
		Paluxy	—	—	—
		Glen Rose	—	—	—
		Twin Mountains	—	—	—
	subcrop	Antlers	154	92.38	No
		Paluxy	—	—	—
		Glen Rose	—	—	—
		Twin Mountains	—	—	—

Appendix B

Comparison between Desired Future Conditions and Drawdowns for the Marble Falls, Ellenburger-San Saba, and Hickory Aquifers in Brown, Burnet, Lampasas, and Mills Counties

The water level file from the predictive model output was used to calculate the drawdown (D) within the modeled extent for each aquifer between 2009 and 2080 using the following equation:

$$D = \frac{\sum_{i=1}^{n}(h2009_i - h2080_i)}{n}$$

Where:

n = Total model cells in a county

$h2009_i$ = Water level of 2009 at model cell i (feet)

$h2080_i$ = Water level of 2080 at model cell i (feet)

Model cells with water level values below the cell bottom in 2009 were excluded from the calculation. Also, water level was set at the cell bottom if it fell below the cell bottom in 2080.

The comparison between the simulated drawdowns and the desired future conditions is presented in Table B1. The comparison indicates that the predictive simulation meets the desired future conditions of the Marble Falls, Ellenburger-San Saba, and Hickory aquifers in Brown, Burnet, Lampasas, and Mills counties.

TABLE B1. COMPARISON BETWEEN SIMULATED REMAINING AQUIFER SATURATED THICKESS AND DESIRED FUTURE CONDITIONS OF MARBLE FALLS, ELLENBURGER-SAN SABA, AND HICKORY AQUIFERS IN BROWN, BURNET, LAMPASAS, AND MILLS COUNTIES.

County	Aquifer	Desired Future Condition (feet of drawdown between 2009 and 2080)	Simulated Drawdown between 2009 and 2080 (feet)	Is Desired Future Condition Violated?
Brown	Marble Falls	3	3	no
	Ellenburger-San Saba	3	3	no
	Hickory	3	3	no
Burnet	Marble Falls	11	11	no
	Ellenburger-San Saba	12	9	no
	Hickory	11	11	no
Lampasas	Marble Falls	16	16	no
	Ellenburger-San Saba	16	16	no
	Hickory	16	16	no
Mills	Marble Falls	9	9	no
	Ellenburger-San Saba	9	9	no
	Hickory	9	9	no

Appendix C

Summary of Dry Model Cell Count for the Trinity, Woodbine, Marble Falls, Ellenburger-San Saba, and Hickory Aquifers

TABLE C1. SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Bell	Paluxy	2009	1,767	0
		2080	1,767	0
	Glen Rose	2009	23,737	0
		2080	23,737	8
	Hensell	2009	17,390	0
		2080	17,390	0
	Hosston	2009	17,390	0
		2080	17,390	0
	Travis Peak	2009	52,170	0
		2080	52,170	0
Bosque	Paluxy	2009	13,818	0
		2080	13,818	0
	Glen Rose	2009	22,360	0
		2080	22,360	0
	Hensell	2009	16,034	0
		2080	16,034	0
	Hosston	2009	16,034	0
		2080	16,034	0
	Travis Peak	2009	48,102	0
		2080	48,102	0
Brown	Glen Rose	2009	36	0
		2080	36	0
	Hensell	2009	1,608	0
		2080	1,608	0
	Hosston	2009	10,258	0
		2080	10,258	0
	Travis Peak	2009	15,847	0
		2080	15,847	0
	Antlers	2009	12,354	0
		2080	12,354	0

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Burnet	Glen Rose	2009	22,534	0
		2080	22,534	0
	Hensell	2009	12,332	0
		2080	12,332	0
	Hosston	2009	22,320	217
		2080	22,320	765
	Travis Peak	2009	44,433	217
		2080	44,433	828
Callahan	Antlers	2009	34,576	0
		2080	34,576	0
Collin	Woodbine	2009	11,762	0
		2080	11,762	2
	Paluxy	2009	12,062	0
		2080	12,062	319
	Glen Rose	2009	12,062	0
		2080	12,062	0
	Twin Mountains	2009	36,186	0
		2080	36,186	0
	Antlers	2009	7,055	0
		2080	7,055	172
Comanche	Glen Rose	2009	1,440	0
		2080	1,440	0
	Hensell	2009	22,362	0
		2080	22,362	0
	Hosston	2009	41,062	0
		2080	41,062	353
	Travis Peak	2009	78,137	0
		2080	78,137	353
	Antlers	2009	23,711	123
		2080	23,711	3,149
Cooke	Woodbine	2009	5,700	0
		2080	5,700	26
	Antlers	2009	77,047	0
		2080	77,047	839

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Coryell	Paluxy	2009	6,512	0
		2080	6,512	0
	Glen Rose	2009	41,647	11
		2080	41,647	25
	Hensell	2009	16,914	0
		2080	16,914	0
	Hosston	2009	16,914	0
		2080	16,914	0
	Travis Peak	2009	50,742	0
		2080	50,742	0
Dallas	Woodbine	2009	14,152	0
		2080	14,152	0
	Paluxy	2009	14,532	0
		2080	14,532	10
	Glen Rose	2009	14,532	0
		2080	14,532	0
	Hensell	2009	80	0
		2080	80	0
	Hosston	2009	80	0
		2080	80	0
	Twin Mountains	2009	43,353	0
		2080	43,353	0
	Travis Peak	2009	243	0
		2080	243	0
Delta	Paluxy	2009	1,217	0
		2080	1,217	0
	Glen Rose	2009	1,217	0
		2080	1,217	0
	Travis Peak	2009	3,651	0
		2080	3,651	0

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Denton	Woodbine	2009	11,991	3
		2080	11,991	10
	Paluxy	2009	3,520	0
		2080	3,520	2,115
	Glen Rose	2009	3,520	0
		2080	3,520	0
	Twin Mountains	2009	10,560	0
		2080	10,560	84
	Antlers	2009	59,107	0
		2080	59,107	5,738
Eastland	Antlers	2009	44,009	74
		2080	44,009	1,116
Ellis	Woodbine	2009	14,207	0
		2080	14,207	0
	Paluxy	2009	15,173	0
		2080	15,173	0
	Glen Rose	2009	15,209	0
		2080	15,209	0
	Hensell	2009	15,120	0
		2080	15,120	0
	Hosston	2009	15,120	0
		2080	15,120	0
	Twin Mountains	2009	225	0
		2080	225	0
	Travis Peak	2009	45,402	0
		2080	45,402	0

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Erath	Paluxy	2009	1,443	0
		2080	1,443	0
	Glen Rose	2009	20,905	0
		2080	20,905	32
	Hensell	2009	21,880	0
		2080	21,880	83
	Hosston	2009	8,464	0
		2080	8,464	372
	Twin Mountains	2009	46,114	20
		2080	46,114	286
	Travis Peak	2009	39,220	0
		2080	39,220	1,006
	Antlers	2009	8,983	0
		2080	8,983	962
Falls	Paluxy	2009	1,439	0
		2080	1,439	0
	Glen Rose	2009	5,840	0
		2080	5,840	0
	Hensell	2009	5,840	0
		2080	5,840	0
	Hosston	2009	5,840	0
		2080	5,840	0
	Travis Peak	2009	17,520	0
		2080	17,520	0
Fannin	Woodbine	2009	15,443	3
		2080	15,443	60
	Paluxy	2009	1,582	0
		2080	1,582	0
	Glen Rose	2009	1,582	0
		2080	1,582	0
	Twin Mountains	2009	1,758	0
		2080	1,758	0
	Travis Peak	2009	2,988	0
		2080	2,988	0
	Antlers	2009	63,730	0
		2080	63,730	0

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Grayson	Woodbine	2009	17,911	2
		2080	17,911	58
	Paluxy	2009	77	0
		2080	77	0
	Glen Rose	2009	77	0
		2080	77	0
	Twin Mountains	2009	231	0
		2080	231	0
	Antlers	2009	77,954	0
		2080	77,954	327
Hamilton	Paluxy	2009	1,897	0
		2080	1,897	0
	Glen Rose	2009	36,944	0
		2080	36,944	13
	Hensell	2009	16,890	0
		2080	16,890	0
	Hosston	2009	13,373	0
		2080	13,373	0
	Travis Peak	2009	43,636	0
		2080	43,636	0
Hill	Woodbine	2009	12,602	0
		2080	12,602	0
	Paluxy	2009	15,648	0
		2080	15,648	0
	Glen Rose	2009	15,766	0
		2080	15,766	0
	Hensell	2009	15,766	0
		2080	15,766	0
	Hosston	2009	15,766	0
		2080	15,766	0
	Travis Peak	2009	47,298	0
		2080	47,298	157

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Hood	Paluxy	2009	434	0
		2080	434	0
	Glen Rose	2009	14,461	0
		2080	14,461	74
	Hensell	2009	117	0
		2080	117	0
	Hosston	2009	117	0
		2080	117	5
	Twin Mountains	2009	37,444	0
		2080	37,444	1,710
	Travis Peak	2009	351	0
		2080	351	5
Hunt	Woodbine	2009	2,193	0
		2080	2,193	0
	Paluxy	2009	1,362	0
		2080	1,362	0
	Glen Rose	2009	1,362	0
		2080	1,362	0
	Twin Mountains	2009	492	0
		2080	492	0
	Travis Peak	2009	3,594	0
		2080	3,594	0
Johnson	Woodbine	2009	8,407	14
		2080	8,407	68
	Paluxy	2009	11,627	17
		2080	11,627	0
	Glen Rose	2009	12,342	15
		2080	12,342	37
	Hensell	2009	9,462	0
		2080	9,462	0
	Hosston	2009	9,462	0
		2080	9,462	1,278
	Twin Mountains	2009	6,816	0
		2080	6,816	1,836
	Travis Peak	2009	28,386	0
		2080	28,386	1,278

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Kaufman	Woodbine	2009	1,616	0
		2080	1,616	0
	Paluxy	2009	1,321	0
		2080	1,321	0
	Glen Rose	2009	1,331	0
		2080	1,331	0
	Hensell	2009	82	0
		2080	82	0
	Hosston	2009	82	0
		2080	82	0
	Twin Mountains	2009	960	0
		2080	960	0
	Travis Peak	2009	3,033	0
		2080	3,033	0
Lamar	Woodbine	2009	9,839	0
		2080	9,839	0
	Paluxy	2009	12,260	0
		2080	12,260	0
	Glen Rose	2009	12,260	0
		2080	12,260	0
	Travis Peak	2009	36,780	0
		2080	36,780	0
	Antlers	2009	7,995	0
		2080	7,995	0
Lampasas	Glen Rose	2009	8,692	0
		2080	8,692	0
	Hensell	2009	25,364	1
		2080	25,364	1
	Hosston	2009	23,100	0
		2080	23,100	0
	Travis Peak	2009	62,529	1
		2080	62,529	1

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Limestone	Paluxy	2009	962	0
		2080	962	0
	Glen Rose	2009	1,760	0
		2080	1,760	0
	Hensell	2009	1,760	0
		2080	1,760	0
	Hosston	2009	1,760	0
		2080	1,760	0
	Travis Peak	2009	5,280	0
		2080	5,280	0
McLennan	Woodbine	2009	1,909	0
		2080	1,909	0
	Paluxy	2009	16,952	0
		2080	16,952	0
	Glen Rose	2009	16,991	0
		2080	16,991	0
	Hensell	2009	16,991	0
		2080	16,991	0
	Hosston	2009	16,991	0
		2080	16,991	16
	Travis Peak	2009	50,973	0
		2080	50,973	16
Milam	Glen Rose	2009	2,579	0
		2080	2,579	0
	Hensell	2009	2,579	0
		2080	2,579	0
	Hosston	2009	2,579	0
		2080	2,579	0
	Travis Peak	2009	7,737	0
		2080	7,737	0

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Mills	Paluxy	2009	936	0
		2080	936	0
	Glen Rose	2009	10,615	0
		2080	10,615	2
	Hensell	2009	18,539	0
		2080	18,539	0
	Hosston	2009	14,226	0
		2080	14,226	0
	Travis Peak	2009	42,934	0
		2080	42,934	0
Montague	Antlers	2009	52,693	0
		2080	52,693	417
Navarro	Woodbine	2009	1,578	0
		2080	1,578	0
	Paluxy	2009	1,755	0
		2080	1,755	0
	Glen Rose	2009	6,326	0
		2080	6,326	0
	Hensell	2009	6,326	0
		2080	6,326	0
	Hosston	2009	6,326	0
		2080	6,326	0
	Travis Peak	2009	18,978	0
		2080	18,978	0
Parker	Paluxy	2009	5,637	0
		2080	5,637	0
	Glen Rose	2009	11,389	8
		2080	11,389	753
	Twin Mountains	2009	30,326	0
		2080	30,326	223
	Antlers	2009	40,600	0
		2080	40,600	435

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Red River	Woodbine	2009	4,222	0
		2080	4,222	0
	Paluxy	2009	8,494	0
		2080	8,494	0
	Glen Rose	2009	8,494	0
		2080	8,494	0
	Travis Peak	2009	25,482	0
		2080	25,482	0
	Antlers	2009	1,065	0
		2080	1,065	0
Rockwall	Woodbine	2009	33	0
		2080	33	0
	Paluxy	2009	711	0
		2080	711	0
	Glen Rose	2009	711	0
		2080	711	0
	Twin Mountains	2009	2,133	0
		2080	2,133	0
Somervell	Paluxy	2009	851	0
		2080	851	0
	Glen Rose	2009	11,274	0
		2080	11,274	0
	Hensell	2009	3,045	0
		2080	3,045	0
	Hosston	2009	2,640	0
		2080	2,640	0
	Twin Mountains	2009	1,660	0
		2080	1,660	0
	Travis Peak	2009	8,325	0
		2080	8,325	0

TABLE C1 (CONT). SUMMARY OF DRY MODEL CELLS FOR TRINITY AND WOODBINE AQUIFERS FROM PREDICTIVE SIMULATION.

County	Aquifer	Year	Total Aquifer Cells	Dry Cells
Tarrant	Woodbine	2009	8,901	2
		2080	8,901	3
	Paluxy	2009	15,389	3
		2080	15,389	1,926
	Glen Rose	2009	13,571	0
		2080	13,571	0
	Twin Mountains	2009	40,713	0
		2080	40,713	6,065
	Antlers	2009	5,009	0
		2080	5,009	1,033
Taylor	Antlers	2009	6,176	0
		2080	6,176	0
Travis	Glen Rose	2009	14,314	25
		2080	14,314	0
	Hensell	2009	11,310	0
		2080	11,310	0
	Hosston	2009	9,400	57
		2080	9,400	123
	Travis Peak	2009	30,124	57
		2080	30,124	124
Williamson	Glen Rose	2009	24,271	0
		2080	24,271	0
	Hensell	2009	17,454	0
		2080	17,454	0
	Hosston	2009	17,454	0
		2080	17,454	0
	Travis Peak	2009	52,362	0
		2080	52,362	0
Wise	Antlers	2009	90,469	0
		2080	90,469	3,563

TABLE C2. SUMMARY OF DRY MODEL CELLS FOR MARBLE FALLS, ELLENBURGER-SAN SABA, AND HICKORY AQUIFERS IN BROWN, BURNET, LAMPASAS, AND MILLS COUNTIES FROM PREDICTIVE SIMULATION.

County	Aquifer	Active Cells	Dry Cells (2009)	Dry Cells (2080)
Brown	Marble Falls	1,635	0	0
	Ellenburger-San Saba	1,635	0	0
	Hickory	1,635	0	0
Burnet	Marble Falls	10,810	2,298	2,450
	Ellenburger-San Saba	13,618	709	851
	Hickory	14,334	111	131
Lampasas	Marble Falls	7,614	611	683
	Ellenburger-San Saba	7,895	0	0
	Hickory	7,895	0	0
Mills	Marble Falls	3,540	0	0
	Ellenburger-San Saba	3,540	0	0
	Hickory	3,540	0	0

APPENDIX C

District Rules for Water Wells in Hood, Montague, Parker, and Wise Counties, Texas

https://uppertrinitygcd.com/pdf/UTGCD-RULES.pdf

APPENDIX D

Resolution Adopting the Management Plan

RESOLUTION#23-001 ADOPTING A MANAGEMENT PLAN

THE STATE OF TEXAS	§
	§
UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT	§

Whereas, the Upper Trinity Groundwater Conservation District (the "District") was created as a groundwater conservation district by the 80th Texas Legislature under the authority of Section 59, Article XVI, of the Texas Constitution, and in accordance with Chapter 36 of the Texas Water Code by the Act of May 25, 2007, 80th Leg., R.S., ch. 1343, 2007 Tex. Gen. Laws 4583, codified at TEX. SPEC. DIST. LOC. LAWS CODE ANN. ch. 8830 ("the District Act");

Whereas, under the direction of the Board of Directors of the District (the "Board"), and in accordance with sections 36.1071 and 36.1072 of the Texas Water Code, and 31 Texas Administrative Code Chapter 356, the District has timely undertaken the development of its Management Plan;

Whereas, as part of the process of developing its Management Plan, the District requested and received the assistance of the Texas Water Development Board (the "TWDB") and worked closely with the TWDB staff to obtain staff's input and comments on the draft Management Plan and its technical and legal sufficiency;

Whereas, the Board and the staff of the District and the District's consultants and legal counsel reviewed and analyzed the District's best available data, groundwater availability modeling information, and other information and data required by the TWDB;

Whereas, the District issued the notice in the manner required by state law and held a public hearing on February 16, 2023 at the District's office located at 1859 W. Hwy 199, Springtown, Texas Springtown Texas, to receive public and written comments on the Management Plan.;

Whereas, the District coordinated its planning efforts on a regional basis with the appropriate surface water management entities during the preparation of the Management Plan;

Whereas, the Board finds that the Management Plan meets all of the requirements of Chapter 36, Water Code, and 31 Texas Administrative Code Chapter 356; and

Whereas, after the public hearing, the Board of Directors met in a regular board meeting on February 16, 2023, properly noticed in accordance with appropriate law, and considered adoption of the attached Management Plan and approval of this resolution after due consideration of all comments received.

NOW, THEREFORE, BE IT RESOLVED THAT:

1. The above recitals are true and correct.

2. The Board of Directors of the Upper Trinity Groundwater Conservation District hereby adopts the attached Management Plan as the Management Plan for the District;

3. The Board President and the General Manager of the District are further authorized to take all steps necessary to implement this resolution and submit the Management Plan to the TWDB for its approval; and

4. The Board President and General Manager of the District are further authorized to take any and all action necessary to coordinate with the TWDB as may be required in furtherance of TWDB's approval pursuant to the provisions of Section 36.1072 of the Texas Water Code.

AND IT IS SO ORDERED.

Upon motion duly made by Director Majka, and seconded by Director Wilson, and upon discussion, the Board of Directors voted 6 in favor, 0 opposed, 0 abstained, and 1 absent; the motion thereby PASSED on this 16th day of March, 2023.

UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT

By: ______________________
President

____
Secretary

OFFICE of the SECRETARY of STATE

Open Meeting Archive

Agency Name:	Upper Trinity Groundwater Conservation District
Date of Meeting:	03/16/2023
Time of Meeting:	05:00 PM
Board:	Upper Trinity Groundwater Conservation District
Street Location:	https://us02web.zoom.us/j/86334329704
City Location:	1 (346) 248-7799 – US Meeting ID: 863 3432 9704
State Location:	TX
Status:	Active
Date of Submission:	03/09/2023
Additional Information Obtained From:	817-523-5200
Emergency Mtg:	N

Agenda:

For this hearing and meeting, at least a quorum of the Board will be physically present at the Board's regular meeting location at the District office in Springtown, Texas. However, members of the public interested in joining the meeting may do so in-person at the District office or remotely via the Zoom Remote Conferencing Service.

Persons wanting to join the meeting remotely to observe the meeting, hear the communications that occur at the meeting and the public deliberations of the Board, or to comment on a permit application, or any other item on the agenda, may join the hearing at no charge online at the following address: https://us02web.zoom.us/j/86334329704 of the public may also access the hearing by telephone at the following number: (346) 248-7799. Use Meeting ID: 863 3432 9704. Long distance charges may apply to persons calling in to the number, depending upon their phone carrier and plan.

Persons not able to join the hearing remotely but who wish to comment on a permit application may submit comments or other information via email to the following address: doug@uppertrinitygcd.com. Written comments must be received prior to the Board's decision on the application.

Persons may make comments for or against a permit application without the need to request a contested case hearing on the application. However, persons wanting to protest a permit application by requesting a contested case hearing must do so either in writing or by appearing at the public hearing on the date specified in this notice and opposing the application. Written requests for a contested case hearing must be received by the District on or before the date of the public hearing as it appears on this notice, and before Board action on the application. Written requests for a contested case hearing may be mailed to the District at P.O. Box 1749, Springtown, Texas, 76082, or submitted by email to: doug@uppertrinitygcd.com.

Additional requirements for requesting a contested case hearing on this application, including the information that must be included in such a request, may be found in Appendix E, Rule E.6, of the District Rules: https://uppertrinitygcd.com/pdf/UTGCD-RULES.pdf

Any additional public information concerning this hearing will be posted on the District's website "Meetings" page prior to or during the hearing at: https://uppertrinitygcd.com/meetings/

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INTRODUCTORY MATTERS
The Board may discuss, consider, and take appropriate action, including expenditure of funds as necessary or appropriate, on any item listed on this agenda:

1. Welcome guests and members of the public.

2. Roll call, establish a quorum, call Public Hearings and Board Meeting to order; declare the hearings and board meeting open to the public.

3. Pledges of allegiance to the flags.

4. Public comment.

PUBLIC HEARING

1. Discussion and public comment on the District's 2023 Management Plan Update, including the adoption of Resolution 23-001 Adopting a Management Plan; take action as necessary - During the hearing, at the conclusion of the hearing, or any time or date thereafter, the proposed Management Plan may be adopted in the form presented or as amended based upon comments received from the public, the TWDB, District staff, attorneys, consultants, or members of the Board of Directors without any additional notice.

2. Receive any public comments, requests to contest, and the General Manager's report and recommendations regarding the following applications for permits, permit amendments, and/or requests for exceptions to the District's water well spacing or minimum tract size requirements:

A. Applicant/Owner: Store Master Funding XVI, LLC - 640 N Lasalle St, Ste 670, Chicago, IL 60654
Type of Application: Operating Permit and Exception to Minimum Well Spacing Requirements
Permit ID: 197-W-OP
Well ID(s): 19284
Location of well or proposed well: 2188 E Hwy 380, Decatur, TX 76234
Requested Permit Volume: 300,000 gallons/year
General Manager's Recommendation: 300,000 gallons/year
Description of Request: Store Master Funding XVI, LLC is seeking an operating permit and an exception to the District's water well spacing requirements under District Rule 4.7, in order to drill and operate one new commercial well to supply water for fire suppression on the property.

B. Applicant/Owner: Autodrome, LLC - 7629 FM 51 N, Decatur, TX 76234
Type of Application: Operating Permit
Permit ID: 198-W-OP
Well ID(s): NA
Location of well or proposed well: 7629 FM 51 N, Decatur, TX 76234
Requested Permit Volume: 1,500,000 gallons/year
General Manager's Recommendation: 1,500,000 gallons/year
Description of Request: Autodrome, LLC is seeking an operating permit in order to drill and operate one new commercial water well to supply water for bathrooms, showers, and car washing on the property.

3. Adjourn or continue Public Hearing(s) in whole or in part.

REGULAR BOARD MEETING

1. Discuss and consider appointment of person to fill vacancy on Board of Directors for an unexpired term representing Hood county created by the resignation of Mr. Richard English, including but not limited to the adoption of Resolution 23-002 and consultation with the District's Attorney in executive session, in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, concerning personnel matters (§551.074); any action will be taken during the open meeting.

2. Consent Agenda: Each of these items is recommended by the Staff and approval thereof will be strictly on the basis of the Staff recommendations. Approval of the Consent Agenda authorizes the General Manager or his designee to implement each item in accordance with the Staff recommendations. The consent agenda will be approved as a block. Any Board member that has questions regarding any item on the consent agenda may have the item pulled and considered as a regular item on the agenda. Any items so pulled for separate discussion will be considered as the first items following approval of the consent agenda.
A. Approval of minutes from the Regular Board Meeting and Public Hearing on January 26, 2023.
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C. Approval of Investment Report.
D. Payment of bills/invoices received through March 16, 2023.
E. Reimbursements for expenses incurred on behalf of the District through March 16, 2023.
F. Approval of Request for an Extension Applications submitted through March 16, 2023.

3. Any items from consent agenda that were pulled for further discussion.

4. Discussion regarding proposed Interlocal Agreement related to Groundwater Management Area 8 (GMA 8) Funding for Update to Groundwater Availability Model, including by not limited to authorizing the District Representative to GMA 8 to execute the Agreement on behalf of the District; take action as necessary.

5. Discussion regarding the following potential violations of District Rules; take action as necessary.
A. Exempt Wells
1. Water Well Drilled without an approved Registration by Gap Drilling Water Well Service at 9538 Evergreen Cemetery Rd, Lipan, Hood Co., TX.
2. Well ID 16606 in Wise Co owned by Crosswire Properties, LLC.

B. Non-Exempt Wells
1. Pumping in Excess of Authorized Amount
a. Aqua Texas, Inc.
i. System ID 004-H
ii. System ID 005-H
iii. System ID 017-H
iv. System ID 024-H
v. System ID 025-H
vi. System ID 009-P
vii. System ID 010-P
viii. System ID 011-P
ix. System ID 014-P
x. System ID 018-P
xi. System ID 002-W
xii. System ID 005-W
xiii. System ID 008-W

b. Texas Water Utilities, L.P.
i. System ID 046-H
ii. System ID 050-H
iii. System ID 058-P
iv. System ID 059-P
v. System ID 018-W
vi. System ID 019-W
vii. System ID 028-W
c. System ID 030-H - City of Tolar
d. System ID 011-M - Red River Authority of Texas
e. System ID 001-P - 3D Mobile Home and RV Park, Inc.
f. System ID 046-P - New Progress Water
g. System ID 064-P - CSWR Texas Utility Operating Company, LLC
h. System ID 183-P - Homestead Weatherford, LLC
i. System ID 116-W - Sage Natural Resources

6. Discussion regarding a request to locate a replacement well (Well ID 19182) further than 100 ft. from the well being replaced; take action as necessary.

7. Management Report on Administrative and Operational Issues: The General Manager and staff will brief the Board on the following and any other items included in the General Manager's written report, which may be discussed, considered, and acted upon by the Board, including authorizing the initiation of, managing, or resolving enforcement action or litigation where applicable.
A. General Manager's report
B. Report on delinquent customers of the District and take any necessary action for collection of delinquent fees
C. Report on Education and Outreach activities
D. Report on injection well applications filed with the Railroad Commission
E. Well Registration and Groundwater Production reports

8. General Counsel's Report: The District's legal counsel will brief the Board on pertinent legal issues and developments impacting the District since the last regular Board meeting, and legal counsel's activities on behalf of the District, including without limitation: waste injection; well monitoring activities; District rules enforcement activities; District Rules and District Management Plan development or implementation issues; groundwater related legislative activities; joint planning and desired future conditions development activities; developments in groundwater case law and submission of legal briefs; contractual issues related to the District; open government, policy, personnel, and financial issues of the District; and other legal activities on behalf of the District, take action as necessary.

9. Determine time and place for next meeting.

10. New business to be placed on the next meeting agenda.

11. Adjourn board meeting.

The above agenda schedule represents an estimate of the order for the indicated items and is subject to change at any time. These public meetings and hearings are available to all persons regardless of disability. If you require special assistance to attend the meetings or hearings, please call or (817) 523- 5200 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements.

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--Please visit the website - www.uppertrinitygcd.com

TRD ID: 2023001361
Datestamp: 03/09/2023 10:59 AM
Archive Date: 03/18/2023

APPENDIX E

Evidence that the Management Plan was
Adopted after Notice and Hearing

NOTICE OF HEARING AND REGULAR MEETING
OF THE
UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT

District Office
1859 W. Highway 199
Springtown, TX 76082
Zoom Remote Conferencing Service
https://us02web.zoom.us/j/86334329704
1 (346) 248-7799 – US
Meeting ID: 863 3432 9704

Thursday, March 16, 2023
Hearing begins at 5:00 PM
Regular Meeting begins at conclusion of Public Hearing

For this hearing and meeting, at least a quorum of the Board will be physically present at the Board's regular meeting location at the District office in Springtown, Texas. However, members of the public interested in joining the meeting may do so in-person at the District office or remotely via the Zoom Remote Conferencing Service.

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   Requested Permit Volume: 1,500,000 gallons/year
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   iii. System ID 058-P
   iv. System ID 059-P
   v. System ID 018-W
   vi. System ID 019-W
   vii. System ID 028-W
c. System ID 030-H – City of Tolar
d. System ID 011-M – Red River Authority of Texas
e. System ID 001-P – 3D Mobile Home and RV Park, Inc.
f. System ID 046-P – New Progress Water
g. System ID 064-P – CSWR Texas Utility Operating Company, LLC
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   D. Report on injection well applications filed with the Railroad Commission
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deliberation regarding prospective gift (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

--Please visit the website – www.uppertrinitygcd.com

This is to certify that I, Doug Shaw, posted this agenda on the bulletin board of the Administrative Offices of the District at 1859 W. Highway 199, Springtown TX 76082, and also provided this agenda to the County Clerk in Parker County with a request that it be posted at or before 4:00 p.m. on the 10th of March 2023.

Doug Shaw, General Manager

APPENDIX F

Evidence that the District Coordinated Development of the Management Plan with Surface Water Entities

From:	Doug Shaw
To:	Doug Shaw
Bcc:	renglish@amud.com; "davidc@brazos.org"; "citymanager@cityofbowietx.com"; "cnolen@granbury.org"; "lhenley@cityofnocona.com"; Rick Shaffer; dakota@parkercountywater.com; Randy Whiteman ; "dan.buhman@trwd.com"; "wardk@trinityra.org"; "doug@walnutcreeksud.org"
Subject:	UTGCD 2023 Management Plan Update
Date:	Monday, April 3, 2023 9:57:00 AM
Attachments:	UTGCD Management Plan 2023.pdf

Good Morning,

At a Public Hearing held in conjunction with their Regular March Board meeting, the Upper Trinity Groundwater Conservation District (District) Board of Directors adopted an update to the District's Management Plan. Chapter 36 of the Texas Water Code requires that groundwater districts update their management plan to incorporate the recently adopted Desired Future Conditions (DFCs) and the associated Modeled Available Groundwater (MAG) values.

For your review, as required by the Texas Water Development Board, I have included a copy of the updated Management Plan to this email. Please do not hesitate to contact me with any questions.

Thanks,
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