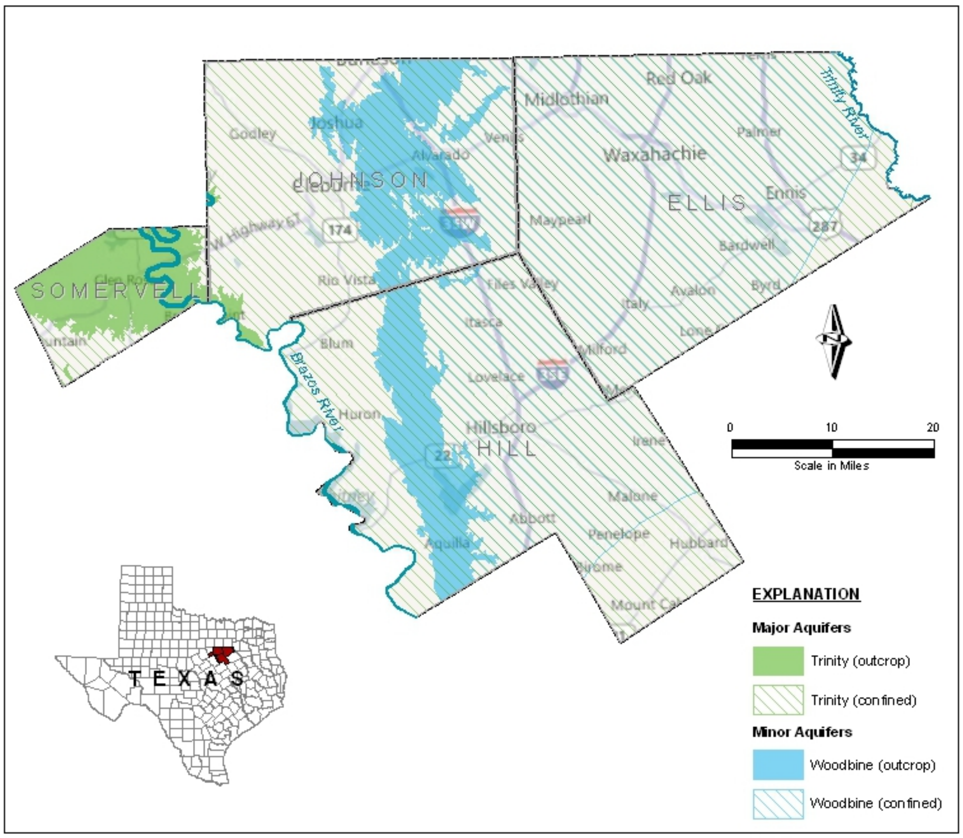
PRAIRIELANDS
GROUNDWATER CONSERVATION DISTRICT
MANAGEMENT PLAN



As Adopted on January 21, 2019

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I. DISTRICT MISSION

The Mission of the Prairielands 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, ensure that the residents of Ellis, Hill, Johnson, and Somervell Counties maintain local control over their groundwater, respect and protect the property rights of landowners in groundwater, and operate the District in a fair and equitable manner for all residents of the District.

II. HISTORY AND PURPOSE OF THE MANAGEMENT PLAN

The purpose of the management plan is to identify the goals of the District and to document the management objectives and performance standards that will be used to accomplish those goals.

The 75th Texas Legislature in 1997 enacted Senate Bill 1 ("SB 1") to establish a comprehensive statewide water planning process. In particular, SB 1 contained provisions that require each groundwater conservation district ("GCD") to prepare a management plan to identify the water supply resources and water demands that will shape the decisions of the GCD. SB 1 designed the management plans to include management goals for each GCD to manage and conserve the groundwater resources within their boundaries. In 2001, the Texas Legislature enacted Senate Bill 2 ("SB 2") to build on the planning requirements of SB 1 and to further clarify the actions necessary for GCDs to manage and conserve the groundwater resources of the state of Texas.

The Texas Legislature enacted significant changes to the management of groundwater resources in Texas with the passage of House Bill 1763 ("HB 1763") in 2005. HB 1763 created a long-term planning process in which GCDs in each Groundwater Management Area ("GMA") were required to meet and engage in joint planning activities to, among other things, determine the Desired Future Conditions ("DFCs") for the groundwater resources within their boundaries by September 1, 2010. There have been numerous subsequent legislative enactments further modifying these groundwater laws and GCD management requirements in Texas.

Texas groundwater law is clear in establishing the sequence that a GCD is to follow in accomplishing statutory responsibilities related to the conservation and management of groundwater resources. The three primary steps, each of which must occur at least once every five years, are the following: (1) to adopt desired future conditions (Texas Water Code Section 36.108(c)), (2) to develop and adopt a management plan that includes goals designed to achieve the desired future conditions (Texas Water Code Section 36.1071(a)(8)), and (3) to amend and adopt rules necessary to achieve goals included in the management plan (Texas Water Code Section 36.101(a)(5)).

The District's management plan satisfies the statutory requirements of the Texas Water Code Section 36.1071 and the administrative requirements of the Texas Water Development Board's rules set forth in Texas Administrative Code, Title 31, Chapter 356.

III. DISTRICT INFORMATION

A. Creation

The Prairielands Groundwater Conservation District ("District") was created by the 81st 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 ("Water Code"), by the Act of May 31, 2009, 81st Leg., R.S., Ch. 1208, 2009 Tex. Gen. Laws 3859, codified at TEX. SPEC. DIST. LOC. LAWS CODE ANN. Ch. 8855 ("the District Act"). The District is a governmental agency and a body politic and corporate. 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.

B. Directors

The District's Board of Directors ("Board") consists of eight members who are appointed by the county commissioners courts for four-year terms. There are two members on the Board for each of the four counties in the District. One director is appointed per county every two years; therefore, each county has one director with a term that expires every two years.

C. Authority

The District has the rights and responsibilities provided for in Chapter 36 of the Texas Water Code and Chapter 356, Title 31 of the Texas Administrative Code. The District is charged with conducting hydrogeological studies, adopting a management plan, providing for the permitting of certain water wells, and implementing programs to achieve statutory mandates. The District has rulemaking authority to implement the policies and procedures needed to manage the groundwater resources of Ellis, Hill, Johnson, and Somervell counties.

D. Location and Extent

The District's boundaries are coextensive with the boundaries of Ellis, Hill, Johnson, and Somervell Counties, Texas. The District covers an area of approximately 2,864 square miles. A map is included as Figure 1.

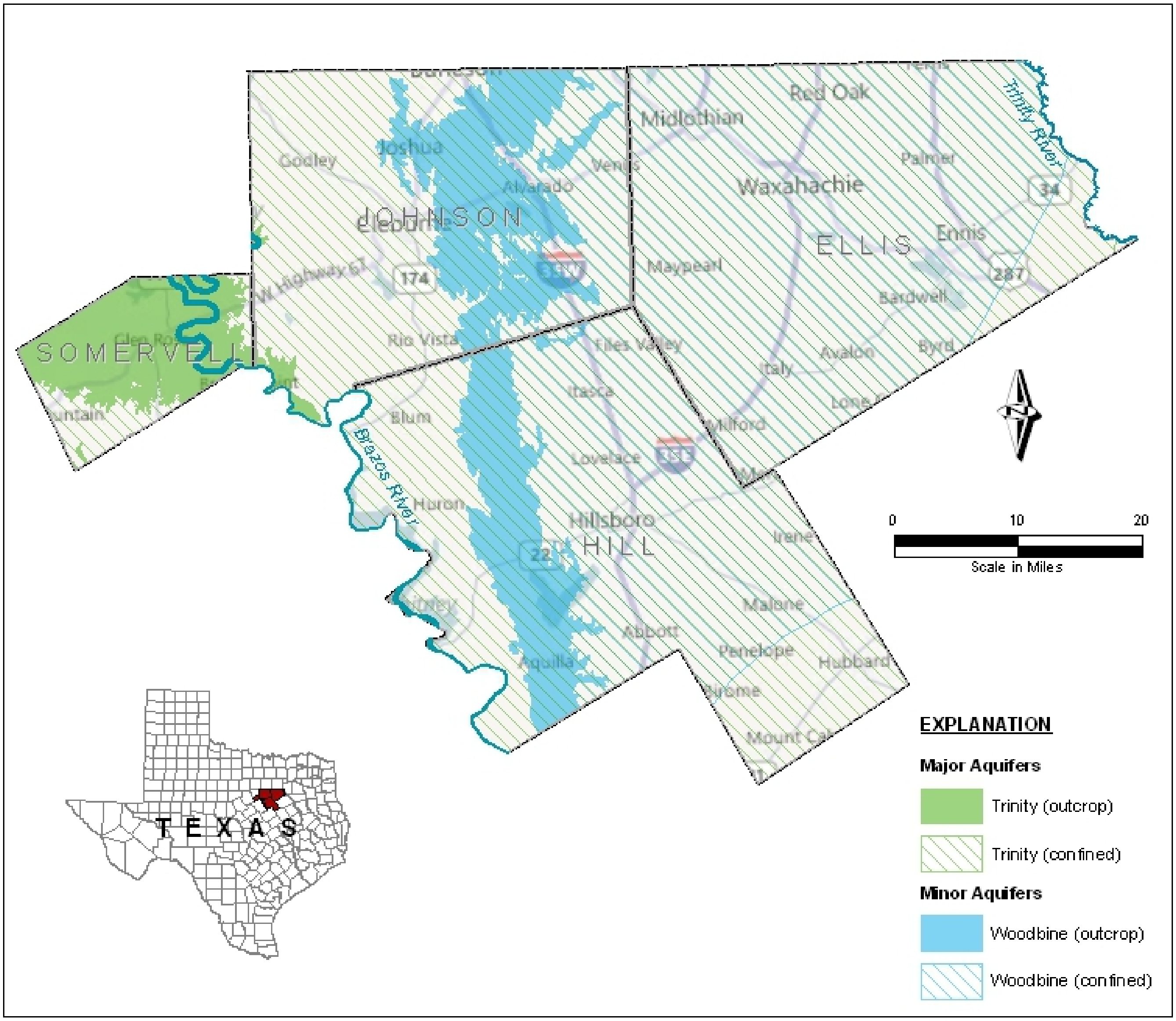

Figure 1. Prairielands Groundwater Conservation District Location Map

E. Topography and Drainage

The District is located within the Brazos and Trinity River Basins. Runoff on the west side of the District flows primarily west to the Brazos River, and runoff on the east side of the District drains primarily to the east to the Trinity River. Elevations in the District range from approximately 400 to 1,000 ft. above mean sea level (amsl) and the physiography consists primarily of gently rolling prairieland, woodlands, and wooded bottomlands in the river valleys.

F. Groundwater Resources of Ellis, Hill, Johnson, and Somervell Counties

A map showing the extent of the aquifers in the District is included as Figure 1. Cross sections through both the Woodbine and Trinity aquifers are included as Figures 2 and 3.

The Trinity aquifer consists of early Cretaceous Period formations of the Trinity Group where they occur in a band extending through the central part of the state in all or parts of 55 counties, from the Red River in North Texas to the Hill Country of South-Central Texas. Trinity Group deposits also occur in the Panhandle and Edwards Plateau regions where they are included as part of the Edwards-Trinity (High Plains and Plateau) aquifers.

Formations comprising the Trinity Group are (from youngest to oldest) the Paluxy, Glen Rose, and Twin Mountains-Travis Peak. Updip, where the Glen Rose thins or is missing, the Paluxy and Twin Mountains coalesce to form the Antlers Formation. The Antlers consists of up to 900 feet of sand and gravel, with clay beds in the middle section. Water from the Antlers is mainly used for irrigation in the outcrop area of North and Central Texas. Forming the upper unit of the Trinity Group, the Paluxy Formation consists of up to 400 feet of predominantly fine-to-coarse-grained sand interbedded with clay and shale. The formation pinches out downdip and does not occur south of the Colorado River.

Underlying the Paluxy, the Glen Rose Formation forms a gulf-ward-thickening wedge of marine carbonates consisting primarily of limestone. South of the Colorado River, the Glen Rose is the upper unit of the Trinity Group and is divisible into an upper and lower member. In the north, the downdip portion of the aquifer becomes highly mineralized and is a source of contamination to wells that are drilled into the underlying Twin Mountains.

The basal unit of the Trinity Group consists of the Twin Mountains and Travis Peak formations, which are laterally separated by a facies change. To the north, the Twin Mountains formation consists mainly of medium-to coarse-grained sands, silty clays, and conglomerates. The Twin Mountains is the most prolific of the Trinity aquifers in North-Central Texas; however, the quality of the water is generally not as good as that from the Paluxy or Antlers Formations. To the south, the Travis Peak Formation contains calcareous sands and silts, conglomerates, and limestones. The formation is subdivided into the following members in descending order: Hensell, Pearsall, Cow Creek, Hammett, Sligo, Hosston, and Sycamore.

Extensive development of the Trinity aquifer has occurred in the Fort Worth-Dallas region where water levels have historically dropped as much as 800 feet and greater. Since the mid-1970s, many public supply entities have inactivated wells and shifted to surface water supplies, and water levels in some areas have responded with slight rises. Water-level declines are still occurring in areas. The Trinity aquifer is most extensively developed from the Hensell and Hosston members in the Waco area, where the water level has declined by as much as 400 feet.

The Woodbine aquifer extends from McLennan County in North-Central Texas northward to Cooke County and eastward to Red River County, paralleling the Red River. Groundwater produced from the aquifer furnishes municipal, industrial, domestic, livestock, and small irrigation supplies throughout its North Texas extent. The Woodbine Formation is composed of water-bearing sandstone beds interbedded with shale and clay. The aquifer dips eastward into the subsurface where it reaches a maximum depth of 2,500 feet below land surface and a maximum thickness of approximately 700 feet.

The Woodbine aquifer is divided into three water-bearing zones that differ considerably in productivity and quality. Only the lower two zones of the aquifer are developed to supply water for domestic and municipal uses. Chemical quality deteriorates rapidly in well depths below 1,500 feet. In areas between the outcrop and this depth, quality is considered good overall as long as ground water from the upper Woodbine is sealed off. The upper Woodbine contains water of extremely poor quality in downdip locales and contains excessive iron concentrations along the outcrop.

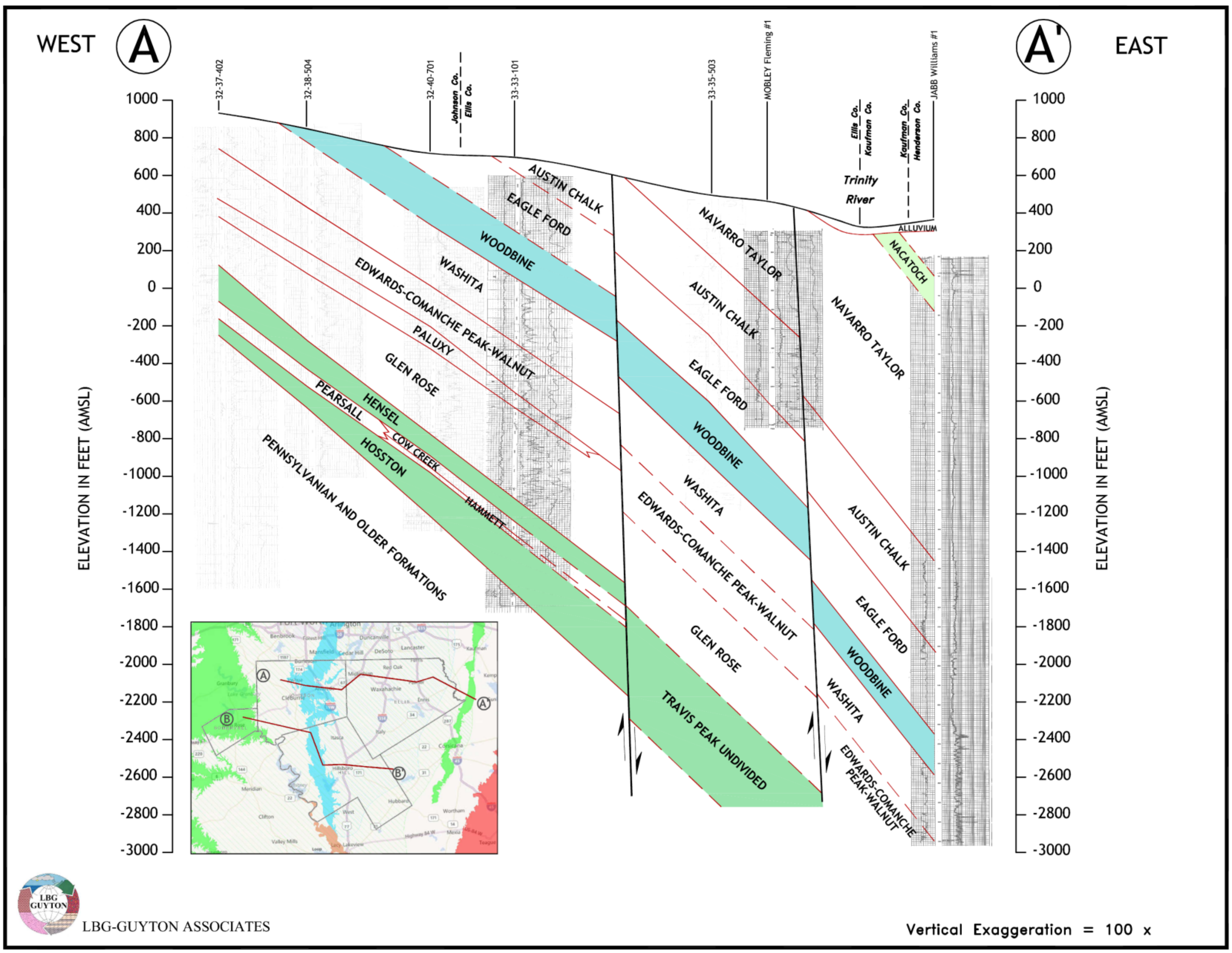

Figure 2. Cross section A-A' through the Trinity and Woodbine aquifers.

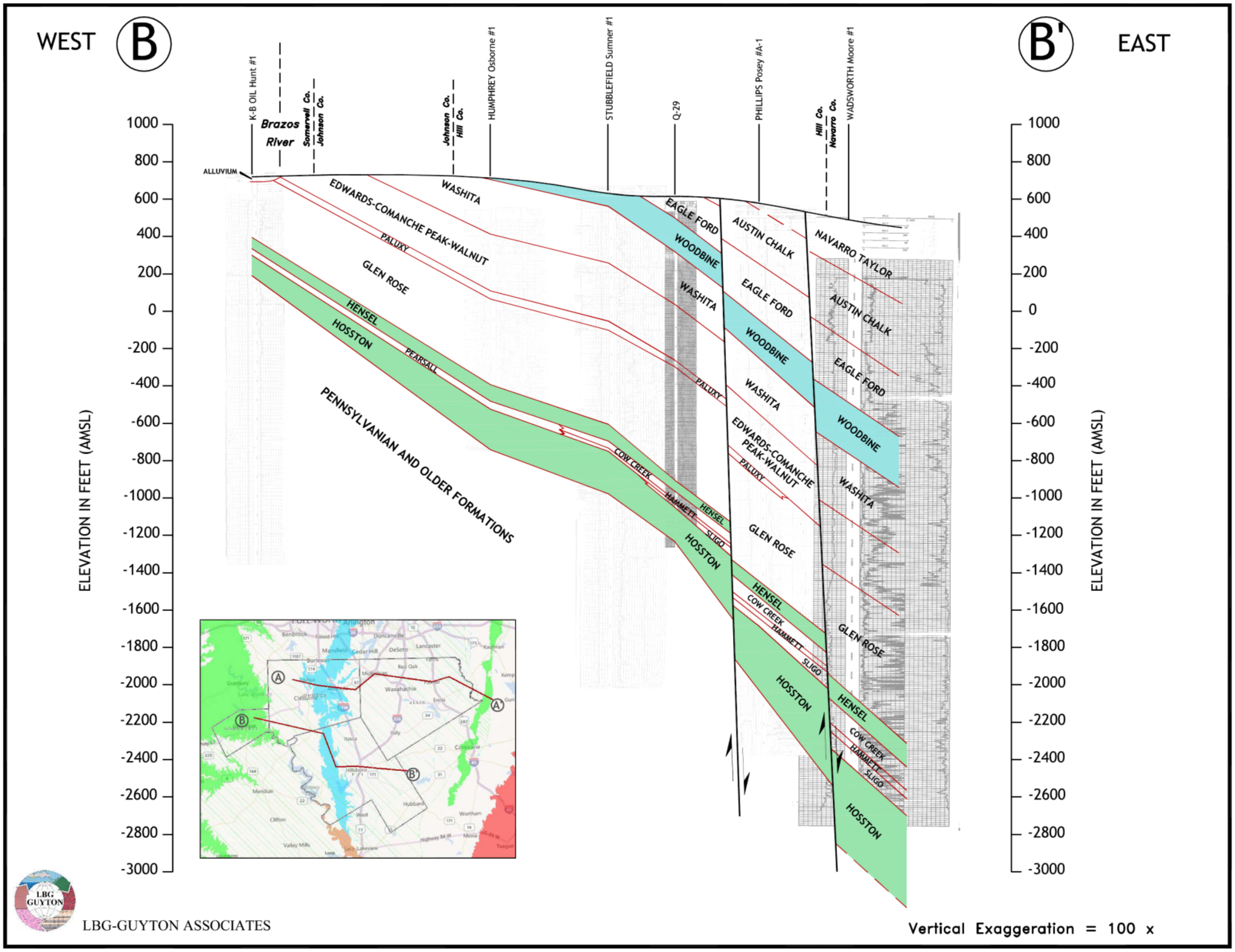

Figure 3. Cross section B-B' through the Trinity and Woodbine aquifers.

IV. STATEMENT OF GUIDING PRINCIPLES

The District is committed to manage and protect the groundwater resources within its jurisdiction and to work with others to ensure a sustainable, adequate, high quality, and cost-effective supply of water, now and in the future. The District will strive to develop, promote, and implement water conservation, augmentation, and management strategies to protect water resources for the benefit of the citizens, economy, and environment of the District. The preservation of this valuable resource can be managed in a prudent and cost effective manner through conservation, education, and appropriate rules. Any action taken by the District shall only be after full consideration and respect has been afforded to the individual property rights of all citizens of the District.

V. CRITERIA FOR PLAN CERTIFICATION

A. Planning Horizon

The time period for this management plan is five years from the date of approval by the Texas Water Development Board ("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 management plan will remain in effect until it is replaced by a revised management plan approved by the TWDB.

B. Board Resolution

A certified copy of the Prairielands Groundwater Conservation District resolution adopting the plan is located in Appendix A – District Resolution.

C. Plan Adoption

Public notices documenting that the plan was adopted following appropriate public meetings and hearings are located in Appendix B – Notice of Meetings.

D. Coordination with Surface Water Management Entities

A sample letter transmitting copies of this plan to the surface water management entities in the District along with a list of the surface water management entities to which the plan was sent are located in Appendix C – Coordination with Surface Water Management Entities.

VI. ESTIMATES OF TECHNICAL INFORMATION

A. Modeled Available Groundwater Based on the Desired Future Conditions

The amount of water that may be permitted from an aquifer is not the same amount as the total amount that can be pumped from an aquifer. Total pumping includes uses of water both subject to permitting and exempt from permitting ("exempt use"). Examples of exempt use include: domestic, livestock, and some types of water use associated with oil and gas exploration.

The desired future conditions ("DFCs") of the aquifer are determined through joint planning with other groundwater conservation districts ("GCDs") in the same groundwater management area ("GMA") as required by the 79th legislature with the passage of HB 1763. The Prairielands Groundwater Conservation District is located in GMA 8. The GCDs of GMA 8 have completed the establishment of DFCs of the aquifers in the GMA through the joint planning process.

To determine the DFCs, a series of simulations using the TWDB's Groundwater Availability Model ("GAM") for the Northern Trinity and Woodbine aquifers were completed. Each GAM simulation was done by iteratively applying various amounts of simulated groundwater pumping from the aquifer over a predictive period that included a simulated repeat of the drought of record. Pumping was increased until the amount of pumping that could be sustained by the aquifer without impairing the aquifer conditions selected for consideration as the indicator of the aquifer desired future condition was identified.

There are three subdivisions in the Trinity aquifer – the Upper, Middle and Lower. In the Prairielands District, the geologic units comprising the Trinity are: the Paluxy Sand, the Glen Rose Limestone, the Hensell Sand and the Hosston Conglomerate of the Travis Peak Formation. The DFCs of the Woodbine and Northern Trinity aquifers in GMA 8 are documented in GAM Run 17-029 MAG, which is included as Appendix D. The DFCs are based on average drawdown in feet after 50 years from the year 2000 for each of the following Trinity aquifer units: Paluxy (Upper Trinity), Glen Rose (Upper Trinity), Hensell (Middle Trinity) and the Hosston (Lower Trinity).

The current DFCs are listed in Table 1. These values are the maximum drawdown (in feet) allowed over the 50-year planning period. The associated MAGs (in acre-feet per year) are shown in Table 2.

Table 1. Summary of Desired Future Conditions in Prairielands GCD

	Woodbine	Paluxy	Glen Rose	Hensell	Hosston
Ellis	61	107	194	263	310
Hill	20	38	133	186	337
Johnson	2	-61	58	126	235
Somervell	Not present	1	4	26	83

Note: All values are in feet.

Table 2. Summary of Modeled Available Groundwater in Prairielands GCD

	Woodbine	Paluxy	Glen Rose	Hensell	Hosston
Ellis	2,078	443	50	0	5,040
Hill	588	353	115	226	3,281
Johnson	1,985	2,447	1,636	1,086	3,863
Somervell	Not present	14	146	1,978	845

Note: All values are in acre-feet per year.

B. Amount of Groundwater Being Used Within the District

Each year the TWDB conducts an annual survey of ground and surface water use by municipal and industrial entities within the state of Texas. The information obtained is then utilized by the TWDB for water resources planning. The historical water use estimates are subject to revision as additional data and corrections are made available to the TWDB.

The amount of groundwater used in Ellis, Hill, Johnson and Somervell Counties in the years 2000 through 2016 is presented in Appendix E. TWDB data included in Appendix E do not differentiate between exempt and non-exempt use.

C. Annual Amount of Recharge from Precipitation

Recharge from precipitation falling on the outcrop of the aquifer (where the aquifer is exposed to the surface) within the Prairielands GCD was estimated by the TWDB in the GAM Run 16-007 dated May 16, 2016. Water budget values of recharge extracted for the transient model period indicate that precipitation accounts for 15,668 acre-feet per year of recharge to the Trinity aquifer and 22,392 acre-feet per year of recharge to the Woodbine aquifer within the boundaries of the Prairielands GCD (Appendix F). The model assumes average rainfall as measured during the calibration and verification time period (years 1980 through 2012).

D. Annual Volume of Discharge from the Aquifer to Springs and Surface Water Bodies

The total water discharged from the aquifer to surface water features such as streams, reservoirs, and springs is defined as the surface water outflow. Water budget values of surface water outflow within the Prairielands GCD were estimated by the TWDB in the GAM Run 16-007 (Appendix F). Values from the transient model period (years 1980 through 2012) are 27,122 acre-feet per year of discharge from the Trinity aquifer and 16,865 acre-feet per year of discharge from the Woodbine aquifer to surface water bodies that are located within the Prairielands GCD.

E. Annual Volume of Flow into and out of the District within Each Aquifer and between Aquifers in the District

Flow into and out of the District is defined as the lateral flow within an aquifer between the District and adjacent counties. Flow between aquifers is defined as the vertical flow between aquifers or confining units that occurs within the boundaries of the District. The flow is controlled by hydrologic properties as well as relative water levels in the aquifers and confining units. Water budget values of flow for the Prairielands GCD were estimated by the TWDB in the GAM Run 16-007 (Appendix F). Values extracted from the transient model period represent the model's calibration and verification time period (years 1980 through 2012).

F. Projected Surface Water Supply in the District

The 2017 Texas State Water Plan, the most recent plan available, provides an estimate of projected surface water supplies in Ellis, Hill, Johnson, and Somervell counties. These estimates are included in Appendix E.

G. Projected Total Demand for Water in the District

Appendix E contains an estimate of projected net water demand in Ellis, Hill, Johnson, and Somervell counties based on the 2017 Texas State Water Plan.

VII. WATER SUPPLY NEEDS AND WATER MANAGEMENT STRATEGIES INCLUDED IN THE ADOPTED STATE WATER PLAN

Projected Water Supply Needs

Projected water needs for the counties in the District were developed for the 2017 State Water Plan. Those needs reflect conditions when projected water demands exceed projected water supplies in the event of a drought of record. Projected water needs were estimated on the county-basin level for all water user group categories for every decade from 2020 through 2070. Appendix E lists the total water supply needs for Ellis, Hill, Johnson and Somervell counties as adopted in the TWDB 2017 State Water Plan.

Water Management Strategies

The 2017 State Water Plan assessed and recommended water management strategies to meet the identified needs for every decade from 2020 through 2070. Potential strategies include water conservation, developing additional groundwater and surface water supplies, expanding and improving management of existing water supplies, water reuse, and alternative approaches such as desalination. The projected water management strategies for the counties in the District from the 2017 State Water Plan are shown in Appendix E by water user group ("WUG").

VIII. DISTRICT MANAGEMENT OF GROUNDWATER

The Texas Legislature has declared in Chapter 36 of the Texas Water Code that groundwater conservation districts ("GCDs") are the state's preferred method of groundwater management in order to protect property rights, balance the conservation and development of groundwater to meet the needs of this state, and use the best available science in the conservation and development of groundwater. TEX. WATER CODE ANN. § 36.0015(b) (2017). Chapter 36 gives GCDs the authority to manage groundwater resources by developing and implementing management plans and rules and also provides the necessary tools to help GCDs be successful in this endeavor.

Successful groundwater management requires a balance of long-term planning, consistent evaluation of groundwater science and the District's practices in light of that science, and responsiveness to the evolving needs of the individuals who rely on the resource. Since its creation in 2009, the District has operated toward achieving this balance through a comprehensive regulatory scheme, continuing education and interaction with experts in the groundwater arena, and building relationships in the community with the people who rely on us to steward our shared groundwater resources well.

The District's efforts in its early years focused on organization, assembling a management structure and administrative staff, retaining well-qualified technical and legal consultants, and gathering data on groundwater use and the nature, location, extent, and hydraulic properties of the various layers of the aquifers that are located within the District's boundaries. The District adopted temporary rules effective November 15, 2010, through December 31, 2018, that allowed it to gather information on groundwater production throughout the District through a well registration program and metering and production reporting requirements for non-exempt wells. The District also constructed a geodatabase to serve as a repository for that information, and has commissioned studies to map, characterize, and model the groundwater resources within its boundaries. This approach is largely reflected in the "Goals, Management Objectives, and Performance Standards" section of this management plan, as well as in the meeting minutes and other records of the District.

The District adopted its first comprehensive rules with a permitting system on December 17, 2018, which became effective January 1, 2019. The rules were developed over years through analysis of the aquifers in the District's boundaries, usage and growth patterns, consultation with hydrogeologists and legal counsel, and input from stakeholders. During the period of transition from the Temporary Rules to the permanent rules and beyond, the District will be available to assist and guide registrants and permittees through the process and ensure that the rules are having their intended result. The District expects to continue learning and improving as we implement the new rules.

The District was created after the inaugural round of DFCs for the aquifers in its boundaries were developed and adopted by the other existing GCDs in GMA 8 in 2008. There were a number of newly created GCDs in GMA 8 that were created late in the inaugural round of DFC development with little or no opportunity for input in the DFCs they would be expected to implement. Those inaugural DFCs were re-adopted verbatim by the GCDs in GMA 8 in early 2011 for the purpose of extending the time by which they must be formally re-adopted under state law. This extension provided the District and other interested districts in GMA 8 a new five-year period in which to gather the appropriate data and science to develop and adopt DFCs.

On January 31, 2017, the GCDs in GMA 8 adopted new DFCs for the aquifers in GMA 8 as required by Section 36.108 of the Texas Water Code. These DFCs were based in part on an overhauled Northern Trinity/Woodbine Groundwater Availability Model paid for by Prairielands GCD and other districts in GMA 8 and used in coordination with the TWDB during the DFC development and adoption process. The updated model has been utilized for purposes of this management plan to provide important technical information, including annual amount of recharge from precipitation, annual volume of discharge from the aquifer to springs and surface water bodies, and annual volume of flow into and out of the District within each aquifer and between aquifers in the District, as set forth in Section VI of this plan.

The aquifer characterization and modeling studies the District has undertaken helps provide the District with insight on how much pumping can be sustained by each layer of each aquifer on a long-term basis, maximizing the utilization of each resource without overproduction that could lead to failure to achieve DFCs. The District is also committed to manage groundwater resources to protect private property rights in the region, including the investments of both existing well owners and other property owners.

In addition to obvious threats to the long-term viability of the aquifers and property values from over-pumping, the District is also concerned about protecting the limited available groundwater resources from contamination that may render the supplies unusable. The District is particularly concerned with potential impacts of oil and gas development activities on groundwater resources, including both the localized and cumulative impacts from injection well waste disposal activities, and the future implications of those activities to both freshwater and brackish groundwater supplies in the District. The District Board is very supportive of the exploration and development of domestic energy supplies, but is aware that state agencies are too understaffed to thoroughly evaluate and track all proposed and ongoing projects. Therefore, the District Board attempts to monitor the waste-injection projects within its boundaries to ensure that the practices being used do not threaten the long-time viability of freshwater and brackish groundwater resources as water supplies.

The District is committed to the important and complex task it has been given to manage, conserve, and protect the groundwater resources of the region so that they are viable sources of supply both now and for future generations. In doing so, the District Board continues to rely upon the best information and science available and to act reasonably and prudently in carrying out the District's mission.

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

In order to implement the management plan, the District continually works to develop, maintain, review, and update the District's rules and procedures for the various activities contained in the management plan. The District's rules, as adopted on December 17, 2018, can be viewed at the following link:

https://bit.ly/2KIChVM

In order to monitor performance: (a) the General Manager routinely meets with staff to track progress on the various objectives and standards adopted in this management plan, and (b) on an annual basis, staff prepares and submits an annual report documenting progress made towards implementation of the management plan to the Board for its review and approval.

The District will work diligently to ensure that all landowners and groundwater users within the District's jurisdictional boundaries are treated as equitably as possible. The District, as needed, will work with federal, state, regional, and local water management entities in the implementation of this management plan and management of groundwater supplies. The District will continue to enforce its rules to conserve, preserve, protect, and prevent the waste of groundwater resources within its jurisdiction. Texas Water Code Chapter 36.1071(a) (1-8) requires that all management plans address the following management goals, as applicable:

- providing the most efficient use of groundwater;
- controlling and preventing waste of groundwater;
- controlling and preventing subsidence;
- addressing conjunctive surface water management issues;
- addressing natural resource issues;
- addressing drought conditions;
- addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control, where appropriate and cost-effective; and
- addressing the desired future conditions adopted by the District under Section 36.108 of the Texas Water Code.

The following management goals, management objectives, and performance standards have been developed and adopted to ensure the management and conservation of groundwater resources within the District's jurisdiction.

X. METHODOLOGY FOR TRACKING DISTRICT PROGRESS IN ACHIEVING MANAGEMENT GOALS

The District's General Manager and staff will prepare an annual report ("Annual Report") and will submit the Annual Report to members of the Board of the District. The Annual Report covers the activities of the District including information on the District's performance in regards to achieving the District's management goals and objectives. The Annual Report will be delivered to the Board by July 1 following the completion of the District's fiscal year. A copy of the Annual Report will be kept on file and available for public inspection at the District's offices upon approval by the Board.

XI. GOALS, MANAGEMENT OBJECTIVES, AND PERFORMANCE STANDARDS

A. Providing the most efficient use of groundwater

The Board of Directors and staff work to assist water users in protecting, preserving, and conserving groundwater resources. The Board strives to use scientific data and logical methods to make decisions that allow for reasonable groundwater use. The Board determines what programs and activities the staff and contractors will undertake to best implement water conservation and management services to the District. District rules will be developed to protect the quantity and quality of the groundwater and to prevent the waste of groundwater.

Management Objective 1

The District will require that all wells be registered in accordance with its rules.

Performance Standard

Each year the staff will report well registration statistics. A summary of registration activity by county and by aquifer will be included in the District's Annual Report.

Management Objective 2

Each year the District will monitor annual production from all non-exempt wells within the District. The District will compile records and develop a database of non-exempt wells to help assess the aquifer units from which groundwater production occurs.

Performance Standard

The District will require installation of meters on all non-exempt wells and reporting of production to the District.

Management Objective 3

The District will compile records and develop a database of non-exempt wells to help assess in which aquifer units groundwater production occurs.

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.

Management Objective 4

The District will develop a methodology to quantify current and projected annual groundwater production from exempt wells.

Performance Standard

The District will provide the TWDB with its methodology and estimates of current and projected annual groundwater production from exempt wells. The District will also utilize the information in the future in developing and achieving desired future conditions and in developing and implementing its production allocation and permitting system and rules. Information related to implementation of this objective will be included in the Annual Report to the Board of Directors.

B. Controlling and preventing waste of groundwater

Management Objective 1

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

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.

Management Objective 2

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

Performance Standard

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

Management Objective 3

The District will identify well owners that are not in compliance with District well registration, reporting, and fee payment requirements, and bring them into compliance.

Performance Standard

The District will compare existing state records and field staff observations with the well registration database to identify noncompliant well owners.

Management Objective 4

The District will investigate instances of potential waste of groundwater.

Performance Standard

Report to the Board as needed and include the number of investigations in the Annual Report.

C. Addressing conjunctive surface water management issues

Management Objective 1

The District will actively participate in the Region C and Region G regional water planning processes to stay abreast of water demand projections and supply strategies in the District and to coordinate the District's groundwater management strategies with the regional water planning groups and foster an understanding of regional management practices.

Performance Standard

The District will review the most recently approved State Water Plan to gain an understanding of water demand projections and supply strategies in the District. The District will monitor future proposed amendments to the Region C and Region G regional water plans as they pertain to the District and ensure that supply strategies impacting groundwater resources in the District are identified in the appropriate regional water plan. The District's General Manager or designated representative will attend meetings of the Region C and Region G regional water planning groups when feasible. A summary of the District's interactions with the regional water planning groups will be included in the Annual Report provided to the Board of Directors.

Management Objective 2

The District will: 1) seek to better understand groundwater and surface water interactions, including groundwater base flow discharges to surface water courses and aquifer recharge from surface water flows; 2) identify existing and planned surface water and other alternative supplies to meet anticipated demand growth; 3) explore possible groundwater to surface water conversions in the District and facilitate the process, and 4) understand current and planned surface water supplies and how they affect groundwater demands.

Performance Standard

A summary of the progress and interaction with RWPGs will be included in each Annual Report.

D. Addressing natural resource issues that impact the use and availability of groundwater and which are impacted by the use of groundwater

Management Objective 1

The District will develop a program to monitor and assess injection well activities in the District.

Performance Standard

The District will monitor and review injection well applications filed with the Railroad Commission of Texas and the Texas Commission on Environmental Quality that propose injection wells to be located within the boundaries of the District to identify contamination threats to groundwater resources in the District. The General Manager will bring to the attention of the Board any applications that the General Manager determines in his discretion threaten the groundwater resources in the District and any outcomes of actions taken by the District. A summary of the District's injection well monitoring activities and actions taken by the District will be included in each Annual Report.

Management Objective 2

The District will monitor compliance by oil and gas companies of the well registration, metering, production reporting, and fee payment requirements of the District's rules.

Performance Standard

As with other types of wells, instances of non-compliance by owners and operators of water wells for oil and gas activities will be reported to the Board of Directors as appropriate for enforcement action. A summary of such enforcement activities will be included in the Annual Report.

E. Addressing drought conditions

Management Objective 1

The District will conduct a monthly review of drought conditions within the District using the Texas Water Development Board's Monthly Drought Conditions available at:

http://www.twdb.texas.gov/surfacewater/conditions/report/index.asp

Performance Standard

An annual review of drought conditions within the District will be included in the Annual Report provided to the Board of Directors. Reports will be provided more frequently to the Board as deemed appropriate by the General Manager to timely respond to drought conditions as they occur.

Management Objective 2

The District will develop information to understand the relationships between drought conditions, increased pumping, and the impacts of both on water levels and shallow wells in the outcrops and subcrops of the aquifer subdivisions in the District. The District will also determine areas where it may be suitable for the District to implement pumping restrictions during drought times in order to protect public safety and welfare, as well as areas in which the District may wish to allow over-pumping during drought periods to promote conjunctive management when surface water supplies become unavailable to water user groups due to drought conditions.

Performance Standard

The District will monitor and assess drought impacts on aquifer outcrops and subcrops, including effects of increased pumping. By 2022, the District will complete studies and rules and regulatory plan development for drought pumping restrictions or over-pumping allowables.

F. Where appropriate and cost-effective address conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, and brush control

Management Objective 1

The District will annually submit at least one article regarding water conservation, rainwater harvesting, or brush control for publication to at least one newspaper of general circulation in the District counties.

Performance Standard

Each year, a copy of each conservation article will be included in the District's Annual Report to be given to the District's Board of Directors.

Management Objective 2

Each year, the District will include at least one informative flier on water conservation, rain water harvesting, or brush control within at least one mail-out to groundwater non-exempt water users distributed in the normal course of business for the District. The District will also consider additional fliers or initiating other public awareness campaigns and outreach efforts on water conservation during drought conditions.

Performance Standard

Each year, a copy of each mail-out flyer and a summary of all other public awareness water conservation campaigns and outreach efforts will be included in the District's Annual Report to be given to the District's Board of Directors.

Management Objective 3

The District will investigate the feasibility of recharge enhancement and aquifer storage and recovery projects in the District.

Performance Standard

By 2022, the District will complete studies and an initial assessment regarding the feasibility of recharge enhancement and aquifer storage and recovery projects in the District.

Management Objective 4

The District will periodically support or sponsor an education seminar addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control.

Performance Standard

The District will support or sponsor such a seminar at least once every other year. A summary of such educational activities will be included in the District's Annual Report.

Management Objective 4

Each year, the District will seek to provide an educational outreach regarding water conservation to at least one elementary school in each county of the District.

Performance Standard

Each year, a list of schools that participate in the educational outreach 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 adopted by the District under TWC §36.108; TWC §36.1071(a)(8)

Management Objective 1

The District will develop a Groundwater Monitoring Program within the District to monitor water well levels (and baseline water quality) in wells in each aquifer and subdivision thereof in the District. The District will review the geographic and vertical distribution of existing monitoring wells in the District with historical data from the TWDB, USGS, TCEQ, and other agencies and develop a plan to partner with those agencies as appropriate to ensure continued availability of the monitoring wells and data from them to the District. The District will also develop a plan to acquire or install new monitoring wells to fill in gaps in geographic or vertical distribution. The District will then develop an annual goal of how many monitoring wells it will add each year and a priority system for their installation based upon data deficiencies and needs for the geodatabase. The District will take periodic readings from the monitoring wells and input the data into the District's geodatabase. The District will utilize the information to help implement its regulatory and permitting program and monitor water level trends and actual achievement of DFCs.

Performance Standard

Upon development, a summary of the District Groundwater Monitoring Program will be included in the District's Annual Report to be given to the District's Board of Directors.

Management Objective 2

Upon approval of the District Monitoring Program, the District will conduct water level measurements within the District as specified in the Monitoring Program.

Performance Standard

The District will annually evaluate water-level trends and the adequacy of the monitoring network to monitor aquifer conditions within the District and to monitor achievement of applicable desired future conditions. The evaluation will be included in the District's Annual Report to be given to the District's Board of Directors.

Management Objective 3

The District will monitor non-exempt pumping within the District for use in evaluating the District's compliance with aquifer desired future conditions.

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.

XII. MANAGEMENT GOALS DETERMINED NON-APPLICABLE TO THE DISTRICT

Controlling and preventing subsidence

The District considered the applicable information regarding subsidence in the District in TWDB's 2017 report *Identification of the Vulnerability of the Major and Minor Aquifers of Texas to Subsidence with Regard to Groundwater Pumping* (Furnans and others, 2017), and determined that this management goal is not relevant due to the surface elevation and the compacted geologic units in the District.

Appendix A

District Resolution

RESOLUTION ADOPTING DISTRICT MANAGEMENT PLAN

THE STATE OF TEXAS §
§
PRAIRIELANDS GROUNDWATER CONSERVATION DISTRICT §

WHEREAS, Whereas, the Prairielands Groundwater Conservation District (the "District") was created as a groundwater conservation district by the 81st 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 31, 2009, 81st Leg., R.S., ch. 1208, 2009 Tex. Gen. Laws 3859, codified at TEX. SPEC. DIST. LOC. LAWS CODE ANN. ch. 8855 ("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 for re-adoption;

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 January 21, 2019, to receive public and written comments on the Management Plan at the District's office located at 205 S. Caddo Street, Cleburne, Texas;

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, the Board of Directors met in a public hearing on January 21, 2019, 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 District hereby adopts the attached Management Plan as the Management Plan for the District;

3. The General Manager of the District is further authorized to take all steps necessary to implement this resolution and submit the Management Plan to the TWDB for its approval, including without limitation making any minor technical or clerical corrections as necessary or appropriate for TWDB approval or otherwise; and

4. The General Manager of the District is 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 Maurice Osborn, and seconded by Director Kent Smith, and upon discussion, the Board of Directors voted 7 in favor and 0 opposed, 0 abstained, and 1 absent, and the motion thereby PASSED on this Mon day January 21, 2019.

PRAIRIELANDS GROUNDWATER CONSERVATION DISTRICT

By: Charl Bender
President

Maurice Osborn
Secretary

Appendix B

Notice of Meetings

NOTICE OF PUBLIC HEARING
AND REGULAR MEETING

OF THE BOARD OF DIRECTORS
of the
PRAIRIELANDS GROUNDWATER CONSERVATION DISTRICT
at the
Liberty Hotel
205 S Caddo Street, Cleburne, TX 76031

Monday, January 21, 2019

<u>Public Hearing on District Management Plan</u>

The Public Hearing will begin at 9:00 a.m.

Notice is hereby given that the Board of Directors of the Prairielands Groundwater Conservation District ("District") will hold a public hearing, accept public comment, and may discuss, consider, and take all necessary action regarding development and adoption of the District Management Plan.

1. **Call meeting to order and establish a quorum.**

2. **Summary review of proposed District Management Plan.**

3. **Public Comment (verbal comments limited to three (3) minutes each; written comments may also be submitted for the Board's consideration).**

4. **Consider adoption of the proposed District Management Plan in the form presented or as amended based upon comments received from the public, the Texas Water Development Board, District staff, attorneys, consultants, or members of the Board of Directors.**

5. **Adjourn or continue public hearing on District Management Plan.**

If the public hearing is continued, the proposed Management Plan may be adopted at any future special or regular meeting of the Board of Directors with or without further amendments based on comments received.

Regular Board Meeting

The Regular Board Meeting will begin at 9:00 a.m., or upon adjournment of the Public Hearing.

The Board of Directors may discuss, consider, and take all necessary action, including possible expenditure of funds, regarding each of the agenda items below:

1. Call to order, declare meeting open to the public, and take roll.

2. Public Comment (verbal comments limited to 3 minutes each).

3. Administrative and Financials:

A. Consent Agenda (Note: These items may be considered and approved by one motion of the Board. Directors may request to have any consent item removed from the consent agenda for consideration and possible action as a separate agenda item):

1. Approve minutes of the December 17, 2018 board meeting.
2. Approve December 2018 budget report.
3. Approve reimbursement of director expenses.
4. Approve employee reimbursements.
5. Approve December 2018 monthly invoices and payment of bills.

B. Approve any item removed from Consent Agenda.

4. Administrative, Operational, and Regulatory Issues of the District - 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 and update on administrative, operational, and regulatory issues of the District.
B. 2018 Fourth Quarter Investment report.
C. Update on GMA-8 activities.
D. Presentation on Monitor and Observation Well network.
E. District contribution to Texas 4-H Water Ambassadors.
F. PGCD to be TAGD's featured District for the month of January.
G. Discussion of personnel matters.

5. Discuss progress of new District Office facilities.

6. 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 Board meeting, and legal counsel's activities on behalf of the District, including without limitation waste

injection well monitoring activities including any protests of injection well applications with the Railroad Commission of Texas or the Texas Commission on Environmental Quality, District rules enforcement activities, rules and management plan implementation issues, groundwater-related legislative activities, joint planning and DFC 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.

7. Open forum / discussion of new business for future meeting agendas.

8. Adjourn Regular Meeting.

The above agenda schedule represents an estimate of the order for the indicated items and is subject to change at any time. Public hearings and public meetings of the District are available to all persons regardless of disability. If you require special assistance to attend a hearing or meeting, please call (817)556-2299 at least 24 hours in advance of the hearing or meeting to coordinate any special physical access arrangements.

At any time during a hearing or meeting of the Prairielands Groundwater Conservation District Board and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Board may meet in a closed executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gifts (§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 hearing or meeting.

Appendix C

Coordination with Surface Water Management Entities

Sample Letter

RE: Prairielands Groundwater Conservation District Adopted Management Plan

To Whom It May Concern:

This email is to notify you of the recent adoption of the Prairielands Groundwater Conservation District ("District") Management Plan, developed and adopted in accordance with Chapter 36 of the Texas Water Code and Title 31 Texas Administrative Code Chapter 356. The District's boundaries are coextensive with the boundaries of Ellis, Hill, Johnson, and Somervell counties. The purpose of the District Management Plan is to identify the water supplies and demands within the District and to define the goals that the District will use to manage the groundwater resources in the District.

The District Management Plan is the product of a public planning process that culminated in the adoption of the plan by the District's board of directors at the conclusion of a public hearing held on January 21, 2019, following appropriate public notice. The District submits the Management Plan to you in accordance with Section 36.1071(a) of the Texas Water Code in an effort to coordinate with you on the District's management goals. Due to the extensive size of the Management Plan, we are not mailing a hard copy but instead are providing the following link that will allow you to access the plan electronically: www.prairielandsgcd.org/management-plan.htm

For the most recent five-year joint planning cycle, Groundwater Management Area 8 ("GMA 8") developed Desired Future Conditions ("DFCs") for the Trinity and Woodbine aquifers using the Texas Water Development Board's ("TWDB's") updated Northern Trinity / Woodbine Groundwater Availability Model, and adopted revised DFCs on January 31, 2017. Those GMA 8 DFCs were subsequently adopted by the various individual groundwater conservation districts in GMA 8. With the exception of incorporating the revised DFCs and the updated technical data sets from the 2017 State Water Plan, as required by the TWDB, there are very few changes to the new management plan.

Please feel free to contact me if you have any questions or comments regarding the District Management Plan or other District activities.

Sincerely,

Kathy Turner Jones
General Manager

cc: Stephen Allen, Texas Water Development Board
Brian L. Sledge, SledgeLaw Group PLLC

District Name	Contact Name	Contact Type	Email address
Johnson County FWSD 2	Rory Norrell/A. Adams	Atty	aadams@crawlaw.net
Ellis County FWSD 1	Ward Eastman/A. Adams	Atty	aadams@crawlaw.net
Ellis County FWSD 2	Clay Crawford	Atty	ccrawford@crawlaw.net
Ellis County FWSD 3	Clay Crawford	Atty	ccrawford@crawlaw.net
Aquilla WSD	Henry Moore	Atty	hm@smhglaw.com
Ellis County MUD 1A	Angela Stepherson	Atty	astepherson@coatsrose.com

District Name	Contact Name	Contact Type	Email address
Acton MUD	Richard English	General Manager	renglish@amud.com
Buena Vista-Bethel SUD	Joe Buchanan	General Manager	Buchananjoe26@yahoo.com
Ellis County LID 2	Jerry Glaspy	Non-atty	bjglaspy@aol.com
Ellis County LID 3	Billy Downey	Non-atty	bdranch@gmail.com
Aquilla Hackberry Creek CD	Blair Russell	Board Member	gbrusselag@yahoo.com
McLennan and Hill Counties Tehuacana Creek WCID 1	Dr. Larry Lehr	Non-atty	Larry_lehr@baylor.edu
Post Oak SUD	Kerry Feller	Board President	kfeller@citizensstatebanktx.com
Ellis County LID 4	Lesley Gerron	Non-atty	Les_gerron@yahoo.com
Windsor Hills MMD	Kenneth Davis	Engineer	ken@kdatexas.com
Somervell County Water District	Kevin Taylor	General Manager	ktaylor@scwd.com
Mountain Peak SUD	Randel Kirk	General Manager	randelkirk@gmail.com
Johnson County SUD	Terry Kelley	General Manager	kelleyt@jcsud.com
Rockett SUD	Kay Phillips	General Manager	kphillips@rockettwater.com
Trinity River Authority	J. Kevin Ward	General Manager	wardk@trinityra.org
Brazos River Authority	Phil Ford	General Manager/CEO	pford@brazos.org

Appendix D

GAM Run 17-029-MAG

GAM Run 17-029 MAG: Modeled Available Groundwater for the Trinity, Woodbine, Edwards (Balcones Fault Zone), Marble Falls, Ellenburger-San Saba, and Hickory aquifers in Groundwater Management Area 8

Jerry Shi, Ph.D., P.G.
Texas Water Development Board
Groundwater Division
Groundwater Availability Modeling Department
(512) 463-5076

January 19, 2018

STATE OF TEXAS
JIANYOU SHI
GEOLOGY
11113
LICENSED
PROFESSIONAL GEOSCIENTIST

1/19/2018

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GAM RUN 17-029 MAG:
MODELED AVAILABLE GROUNDWATER FOR THE TRINITY, WOODBINE, EDWARDS (BALCONES FAULT ZONE), MARBLE FALLS, ELLENBURGER-SAN SABA, AND HICKORY AQUIFERS IN GROUNDWATER MANAGEMENT AREA 8

Jerry Shi, Ph.D., P.G.
Texas Water Development Board
Groundwater Division
Groundwater Availability Modeling Department
(512) 463-5076
January 19, 2018

EXECUTIVE SUMMARY:

The Texas Water Development Board (TWDB) has calculated the modeled available groundwater estimates 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 desired future conditions for these aquifers adopted by groundwater conservation district representatives in Groundwater Management Area 8 on January 31, 2017. The district representatives declared the Nacatoch, Blossom, and Brazos River Alluvium aquifers to be non-relevant for purposes of joint planning. The TWDB determined that the explanatory report and other materials submitted by the district representatives were administratively complete on November 2, 2017.

The modeled available groundwater values for the following relevant aquifers in Groundwater Management Area 8 are summarized below:

- Trinity Aquifer (Paluxy) – The modeled available groundwater ranges from approximately 24,500 to 24,600 acre-feet per year between 2010 and 2070, and is summarized by groundwater conservation districts and counties in Table 1, and by river basins, regional planning areas, and counties in Table 13.

- Trinity Aquifer (Glen Rose) – The modeled available groundwater is approximately 12,700 acre-feet per year between 2010 and 2070, and is summarized by groundwater conservation districts and counties in Table 2, and by river basins, regional planning areas, and counties in Table 14.
- Trinity Aquifer (Twin Mountains) – The modeled available groundwater ranges from approximately 40,800 to 40,900 acre-feet per year between 2010 and 2070, and is summarized by groundwater conservation districts and counties in Table 3, and by river basins, regional planning areas, and counties in Table 15.
- Trinity Aquifer (Travis Peak) – The modeled available groundwater ranges from approximately 93,800 to 94,000 acre-feet per year between 2010 and 2070, and is summarized by groundwater conservation districts and counties in in Table 4, and by river basins, regional planning areas, and counties in Table 16.
- Trinity Aquifer (Hensell) – The modeled available groundwater is approximately 27,300 acre-feet per year from 2010 to 2070, and is summarized by groundwater conservation districts and counties in Table 5, and by river basins, regional planning areas, and counties in Table 17.
- Trinity Aquifer (Hosston) – The modeled available groundwater ranges from approximately 64,900 to 65,100 acre-feet per year from 2010 to 2070, and is summarized by groundwater conservation districts and counties in Table 6, and by river basins, regional planning areas, and counties in Table 18.
- Trinity Aquifer (Antlers) – The modeled available groundwater ranges from approximately 74,500 to 74,700 acre-feet per year between 2010 and 2070, and is summarized by groundwater conservation districts and counties in Table 7, and by river basins, regional planning areas, and counties in Table 19.
- Woodbine Aquifer – The modeled available groundwater is approximately 30,600 acre-feet per year from 2010 to 2070, and is summarized by groundwater conservation districts and counties in Table 8, and by river basins, regional planning areas, and counties in Table 20.
- Edwards (Balcones Fault Zone) Aquifer – The modeled available groundwater is 15,168 acre-feet per year from 2010 to 2060, and is summarized by groundwater conservation districts and counties in Table 9, and by river basins, regional planning areas, and counties in Table 21.

- Marble Falls Aquifer – The modeled available groundwater is approximately 5,600 acre-feet per year from 2010 to 2070, and is summarized by groundwater conservation districts and counties in Table 10, and by river basins, regional planning areas, and counties in Table 22.
- Ellenburger-San Saba Aquifer – The modeled available groundwater is approximately 14,100 acre-feet per year between 2010 and 2070, and is summarized by groundwater conservation districts and counties in Table 11, and by river basins, regional planning areas, and counties in Table 23.
- Hickory Aquifer – The modeled available groundwater is approximately 3,600 acre-feet per year from 2010 to 2070, and is summarized by groundwater conservation districts and counties in Table 12, and by river basins, regional planning areas, and counties in Table 24.

The modeled available groundwater values for the Trinity Aquifer (Paluxy, Glen Rose, Twin Mountains, Travis Peak, Hensell, Hosston, and Antlers subunits), Woodbine Aquifer, and Edwards (Balcones Fault Zone) Aquifer are based on the official aquifer boundaries defined by the TWDB. The modeled available groundwater values for the Marble Falls, Ellenburger-San Saba, and Hickory aquifers are based on the modeled extent, as clarified by Groundwater Management Area 8 on October 9, 2017.

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. The modeled available groundwater values for the longer leap years (2020, 2040, and 2060) are slightly higher than shorter non-leap years (2010, 2030, 2050, and 2070).

REQUESTOR:

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

DESCRIPTION OF REQUEST:

In a letter dated February 17, 2017, Mr. Drew Satterwhite provided the TWDB with the desired future conditions of the Trinity (Paluxy), Trinity (Glen Rose), Trinity (Twin Mountains), Trinity (Travis Peak), Trinity (Hensell), Trinity (Hosston), Trinity (Antlers), Woodbine, Edwards (Balcones Fault Zone), Marble Falls, Ellenburger-San Saba, and Hickory aquifers. The desired future conditions were adopted as Resolution No. 2017-01 on January 31, 2017 by the groundwater conservation district representatives in

Groundwater Management Area 8. The following sections present the adopted desired future conditions for these aquifers:

Trinity and Woodbine Aquifers

The desired future conditions for the Trinity and Woodbine aquifers are expressed as water level decline or drawdown in feet over the planning period 2010 to 2070 relative to the baseline year 2009, based on a predictive simulation by Beach and others (2016).

The county-based desired future conditions for the Trinity Aquifer subunits, excluding counties in the Upper Trinity Groundwater Conservation District, are listed below (dashes indicate areas where the subunits do not exist and therefore no desired future condition was proposed):

County	Adopted Desired Future Condition (feet of drawdown below 2009 levels)							
	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Bell	—	19	83	—	300	137	330	—
Bosque	—	6	49	—	167	129	201	—
Brown	—	—	2	—	1	1	1	2
Burnet	—	—	2	—	16	7	20	—
Callahan	—	—	—	—	—	—	—	1
Collin	459	705	339	526	—	—	—	570
Comanche	—	—	1	—	2	2	3	9
Cooke	2		—	—	—		—	176
Coryell	—	7	14	—	99	66	130	—
Dallas	123	324	263	463	348	332	351	—
Delta	—	264	181	—	186	—	—	—
Denton	22	552	349	716	—	—	—	395
Eastland	—	—	—	—	—	—	—	3
Ellis	61	107	194	333	301	263	310	—
Erath	—	1	5	6	19	11	31	12
Falls	—	144	215	—	462	271	465	—
Fannin	247	688	280	372	269	—	—	251
Grayson	160	922	337	417	—	—	—	348
Hamilton	—	2	4	—	24	13	35	—
Hill	20	38	133	—	298	186	337	—
Hunt	598	586	299	370	324	—	—	—

County	Adopted Desired Future Condition (feet of drawdown below 2009 levels)							
	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Johnson	2	-61	58	156	179	126	235	—
Kaufman	208	276	269	381	323	309	295	—
Lamar	38	93	97	—	114	—	—	122
Lampasas	—	—	1	—	6	1	11	—
Limestone	—	178	271	—	392	183	404	—
McLennan	6	35	133	—	471	220	542	—
Milam	—	—	212	—	345	229	345	—
Mills	—	1	1	—	7	2	13	—
Navarro	92	119	232	—	290	254	291	—
Red River	2	21	36	—	51	—	—	13
Rockwall	243	401	311	426	—	—	—	—
Somervell	—	1	4	31	51	26	83	—
Tarrant	7	101	148	315	—	—	—	148
Taylor	—	—	—	—	—	—	—	0
Travis	—	—	85	—	141	50	146	—
Williamson	—	—	77	—	173	74	177	—

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 below (dashes indicate areas where the subunits do not exist):

Upper Trinity GCD County (crop)	Adopted Desired Future Conditions (feet of drawdown below 2009 levels)			
	Antlers	Paluxy	Glen Rose	Twin Mountains
Hood (outcrop)	—	5	7	4
Hood (downdip)	—	—	28	46
Montague (outcrop)	18	—	—	—
Montague (downdip)	—	—	—	—
Parker (outcrop)	11	5	10	1
Parker (downdip)	—	1	28	46
Wise (outcrop)	34	—	—	—
Wise (downdip)	142	—	—	—

Edwards (Balcones Fault Zone) Aquifer

The desired future conditions adopted by Groundwater Management Area 8 for the Edwards (Balcones Fault Zone) Aquifer are intended to maintain minimum stream and spring flows under the drought of record in Bell, Travis, and Williamson counties over the planning period 2010 to 2070. The desired future conditions are listed below:

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 intended to maintain 90 percent of the aquifer saturated thickness over the planning period 2010 to 2070 relative to the baseline year 2009.

Supplemental Information from Groundwater Management Area 8

After review of the explanatory report and model files, the TWDB emailed a request for clarifications to Mr. Drew Satterwhite on August 7, 2017. On September 8, 2017, Mr. Satterwhite provided the TWDB with a technical memorandum from James Beach, Jeff Davis, and Brant Konetchy of LBG-Guyton Associates. On October 9, 2017, Mr. Satterwhite sent the TWDB two emails with additional information and clarifications. The information and clarifications are summarized below:

a. For the Trinity and Woodbine aquifers, an additional error tolerance defined as five feet of drawdown between the adopted desired future condition and the simulated drawdown is included with the original error tolerance of five percent. Thus, if the drawdown from the predictive simulation is within five feet or five percent from the desired future condition, then the predictive simulation is considered to meet the desired future condition.

   Groundwater Management Area 8 provided a new MODFLOW-NWT well package, simulated head file, and simulated budget file on October 9, 2017. The TWDB determined that the distribution of pumping in the new model files was consistent with the explanatory report.

The TWDB evaluates if the simulated drawdown from the predictive simulation meets the desired future condition by county. However, Groundwater Management Area 8 also provided desired future conditions based on groundwater conservation district and the whole groundwater management area.

b. For the Edwards (Balcones Fault Zone) Aquifer in Bell, Travis, and Williamson counties, the coordinator for Groundwater Management Area 8 clarified that TWDB uses GAM Run 08-010 MAG by Anaya (2008) from the last cycle of desired future conditions with all associated assumptions including a baseline year of 2000.

c. For the Marble Falls, Ellenburger-San Saba, and Hickory aquifers in Brown, Burnet, Lampasas, and Mills counties, Groundwater Management Area 8 adjusted the desired future condition from "maintain 90 percent of the saturated thickness" to "maintain *at least* 90 percent of the saturated thickness". Groundwater Management Area 8 also provided estimated pumping to use for the predictive simulation by TWDB.

d. The Trinity, Woodbine, and Edwards (Balcones Fault Zone) aquifers are based on the official aquifer boundary while the Marble Falls, Ellenburger-San Saba, and Hickory aquifers include the portions both inside and outside the official aquifer boundaries (modeled extent).

e. The sliver of the Edwards-Trinity (Plateau) Aquifer was declared to be non-relevant by Groundwater Management Area 8.

METHODS:

The desired future conditions for Groundwater Management Area 8 are based on multiple criteria. For the Trinity and Woodbine aquifers, the desired future conditions are defined as water-level declines or drawdowns over the course of the planning period 2010 through 2070 relative to the baseline year 2009. The desired future conditions for the Edwards (Balcones Fault Zone) Aquifer are based on stream and spring flows under the drought of record over the planning period 2010 to 2070. For the Marble Falls, Ellenburger-San Saba, and Hickory aquifers, the desired future conditions are to maintain aquifer saturated thickness between 2010 and 2070 relative to the baseline year 2009. 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 a predictive simulation by Beach and others (2016), which used the groundwater availability model for the northern portion of the Trinity and Woodbine aquifers (Kelley and others, 2014). The predictive simulation contained 61 annual stress periods corresponding to 2010 through 2070, with an initial head equal to 2009 of the calibrated groundwater availability model. The desired future conditions are the drawdowns between 2009 and 2070.

Because the baseline year 2009 for the desired future conditions falls within the calibration period 1890 to 2012 of the groundwater availability model, the water levels for the baseline year have been calibrated to observed data and, thus, they were directly used as the initial water level (head) condition of the predictive simulation.

The drawdowns between 2009 and 2070 are calculated from composite heads. Appendix A presents additional details on methods used to calculate composite head and associated average drawdown values for the Trinity and Woodbine aquifers.

Edwards (Balcones Fault Zone) Aquifer

Per Groundwater Management Area 8 (clarification dated September 1, 2017), the results from GAM Run 08-010 MAG by Anaya (2008) are used for the current round of joint planning. The following summarizes the approach used:

- Ran the model for 141 years, starting with a 100-year initial stress period (pre-1980) followed by 21 years of historical monthly stress periods (1980 to 2000), then 10 years of predictive annual stress periods (2001 to 2010), and ending with 10 years of predictive monthly stress periods (2011 to 2020) to represent a simulated repeat of the 1950s' drought of record.

- Used pumpage and recharge distributions provided to TWDB by the Groundwater Management Area 8 consultant.

- Adjusted pumpage in Williamson County to meet the desired future conditions.

- Extracted projected discharge for drain cells representing Salado Creek in Bell County and drain cells representing aggregated springs and streams in Williamson and Travis counties, respectively, for each of the stress periods from 2011 through 2020 to verify that the desired future conditions were met.

- Determined which stress period reflected the worst case monthly scenario for Salado Springs during a repeat of the 1950s' drought of record.

- Generated modeled available groundwater for all three desired future conditions based on the lowest monthly springflow volume for Salado Springs during a simulated repeat of the 1950s' drought of record.

Marble Falls, Ellenburger-San Saba, and Hickory Aquifers

The TWDB constructed a predictive simulation to analyze 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. This simulation used the groundwater availability model for the minor aquifers in the Llano Uplift region by Shi and others (2016). The predictive simulation contains 61 annual stress periods corresponding to the planning period 2010 through 2070 with an initial head condition from 2009.

Because the baseline year 2009 for the desired future conditions falls within the model calibration period 1980 to 2010, and the water levels for the baseline year have been calibrated to observed data, the simulated head from 2009 of the calibrated groundwater availability model was directly used as the initial water level (head) condition of the predictive simulation.

Additional details on the predictive simulation and methods to estimate the drawdowns between 2009 and 2070 are described in Appendix B.

Modeled Available Groundwater

Once the predictive simulations met the desired future conditions, the modeled available groundwater values were extracted from the MODFLOW cell-by-cell budget files. Annual pumping rates were then divided by county, river basin, regional water planning area, and groundwater conservation district within Groundwater Management Area 8 (Figures 1 through 13 and Tables 1 through 24).

Modeled Available Groundwater and Permitting

As defined in Chapter 36 of the Texas Water Code, "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 by Kelley and others (2014) was used to construct the predictive model simulation for this analysis (Beach and others, 2016).
- 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).
- Multiple model layers could represent an aquifer where it outcrops. For example, the Woodbine Aquifer could span Layers 1 to 2 and the Trinity Aquifer (Hosston) could contain Layers 1 through 8. The aquifer designation in model layers was defined in the model grid files produced by TWDB.
- The predictive model simulation contains 61 transient annual stress periods with an initial head equal to 2009 of the calibrated groundwater availability model.
- The predictive simulation had the same hydrogeological properties and hydraulic boundary conditions as the calibrated groundwater availability model except groundwater recharge and pumping.
- The groundwater recharge for the predictive model simulation was the same as stress period 1 of the calibrated groundwater availability model (steady state period) except stress periods representing 2058 through 2060, which contained lower recharge representing severe drought conditions.
- In the predictive simulation, additional pumping was added to certain counties and some pumping in Layer 1 was moved to lower layer(s) to avoid the automatic pumping reduction enacted by the MODFLOW-NWT code (Beach and others, 2016).

- During the predictive simulation model run, some model cells went dry (Appendix C). Dry cells occur during a model run when the simulated water level in a cell falls below the bottom of the cell.
- 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 (Jones, 2003) was used to construct the predictive model simulation for the analysis by Anaya (2008).
- 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 predictive model simulation contains the calibrated groundwater availability model (253 monthly stress periods), stabilization (10 annual stress periods), and drought conditions (120 monthly stress periods).
- The boundary conditions for the stabilization and drought periods (except recharge and pumping) were the same in the predictive simulation as the last stress period (stress period 253) of the calibrated groundwater availability model.
- The groundwater recharge for the stabilization and drought periods and pumping information were from Groundwater Management Area 8 consultant.
- The groundwater pumping in Williamson County was adjusted as needed during the predictive model run simulation to match the desired future conditions.
- Estimates of modeled spring and stream flows 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 Llano Uplift region by Shi and others (2016) was used to develop the predictive model simulation used for this analysis.
- 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).
- The predictive model simulation contains 61 annual stress periods (2010 to 2070) with the initial head equal to 2009 of the calibrated groundwater availability model.
- The boundary conditions for the predictive model except recharge and pumping were the same in the predictive simulation of the last stress period of the calibrated groundwater availability model.
- The groundwater recharge for the predictive model simulation was set equal to the average of all stress periods (1982 to 2010) of the calibrated model except the first stress period.
- The groundwater pumping was initially set to the last stress period of the calibrated groundwater availability model. Additional pumping per county was then added to the model cells of the three aquifers based on the modeled extent to match the total pumping data for each aquifer provided by Groundwater Management area 8.
- During the predictive model run, some active model cells went dry (Appendix D). Dry cells occur during a model run when the simulated water level in a cell falls below the bottom of the cell.
- Estimates of modeled saturated aquifer thickness values were rounded to one decimal point.

RESULTS:

The modeled available groundwater for the Trinity Aquifer (Paluxy) that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 24,499 acre-feet per year for the non-leap (shorter) years (2010, 2030, 2050, and 2070) to 24,565 acre-feet per year for the leap (longer) years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 1. Table 13 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Trinity Aquifer (Glen Rose) that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 12,701 acre-feet per year for the non-leap years (2010, 2030, 2050, and 2070) to 12,736 acre-feet per year for the leap years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 2. Table 14 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Trinity Aquifer (Twin Mountains) that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 40,827 acre-feet per year for the non-leap years (2010, 2030, 2050, and 2070) to 40,939 acre-feet per year for the leap years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 3. Table 15 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Trinity Aquifer (Travis Peak) that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 93,757 acre-feet per year for the non-leap years (2010, 2030, 2050, and 2070) to 94,016 acre-feet per year for the leap years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 4. Table 16 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Trinity Aquifer (Hensell) that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 27,257 acre-feet per year for the non-leap years (2010, 2030, 2050, and 2070) to 27,331 acre-feet per year for the leap years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 5. Table 17 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Trinity Aquifer (Hosston) that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 64,922 acre-feet per year for the non-leap years (2010, 2030, 2050, and 2070) to 65,098 acre-feet per year for the leap years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 6. Table 18 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Trinity Aquifer (Antlers) that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 74,471 acre-feet per year for the non-leap years (2010, 2030, 2050, and 2070) to 74,677 acre-feet per year for the leap years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 7. Table 19 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Woodbine Aquifer that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 30,554 acre-feet per year for the non-leap years (2010, 2030, 2050, and 2070) to 30,636 acre-feet per year for the leap years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 8. Table 20 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Edwards (Balcones Fault Zone) Aquifer that achieves the desired future condition adopted by Groundwater Management Area 8 remains at 15,168 acre-feet per year from 2010 to 2060. The modeled available groundwater is summarized by groundwater conservation district and county in Table 9. Table 21 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Marble Falls Aquifer that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 5,623 acre-feet per year for the non-leap years (2010, 2030, 2050, and 2070) to 5,639 acre-feet per year for the leap years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 10. Table 22 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Ellenburger-San Saba Aquifer that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 14,050 acre-feet per year for the non-leap years (2010, 2030, 2050, and 2070) to 14,089 acre-feet per year for the leap years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 11. Table 23 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

The modeled available groundwater for the Hickory Aquifer that achieves the desired future condition adopted by Groundwater Management Area 8 ranges from 3,574 acre-feet per year for the non-leap years (2010, 2030, 2050, and 2070) to 3,585 acre-feet per year for the leap years (2020, 2040, and 2060). The modeled available groundwater is summarized by groundwater conservation district and county in Table 12. Table 24 summarizes the modeled available groundwater by county, river basin, and regional water planning area for use in the regional water planning process.

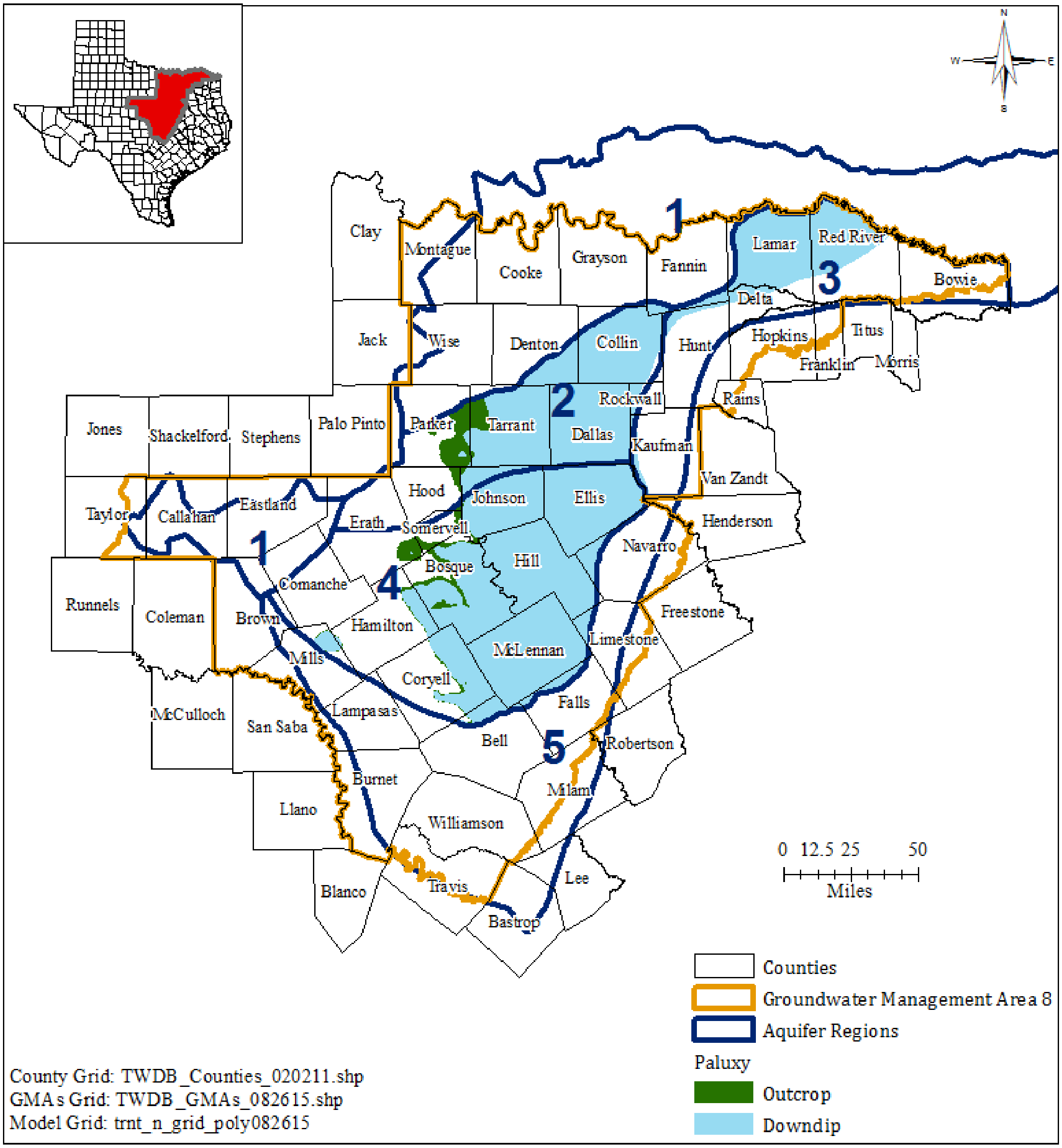

FIGURE 1. MAP SHOWING THE TRINITY AQUIFER (PALUXY) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

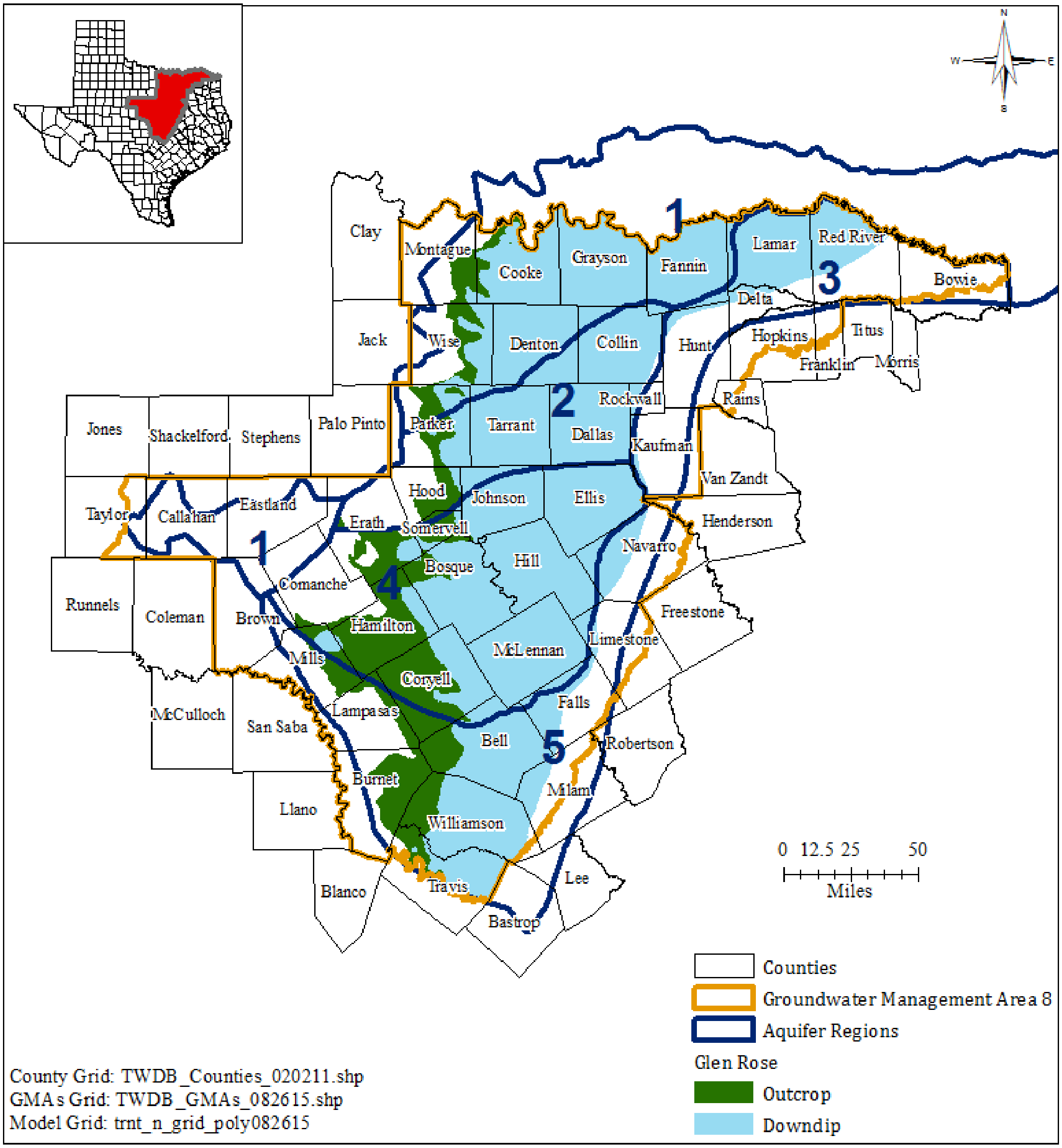

FIGURE 2. MAP SHOWING THE TRINITY AQUIFER (GLEN ROSE) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

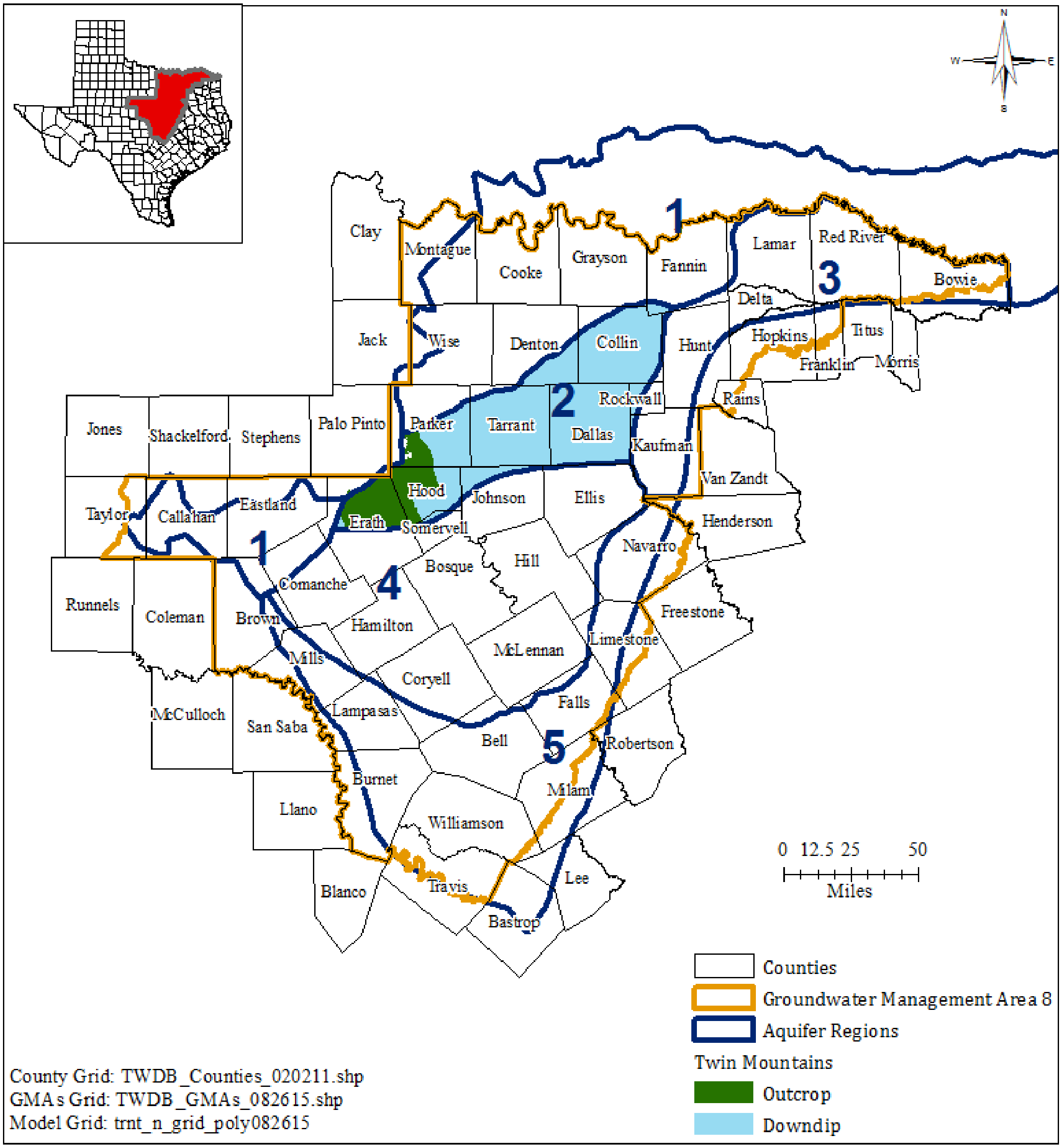

FIGURE 3. MAP SHOWING THE TRINITY AQUIFER (TWIN MOUNTAINS) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

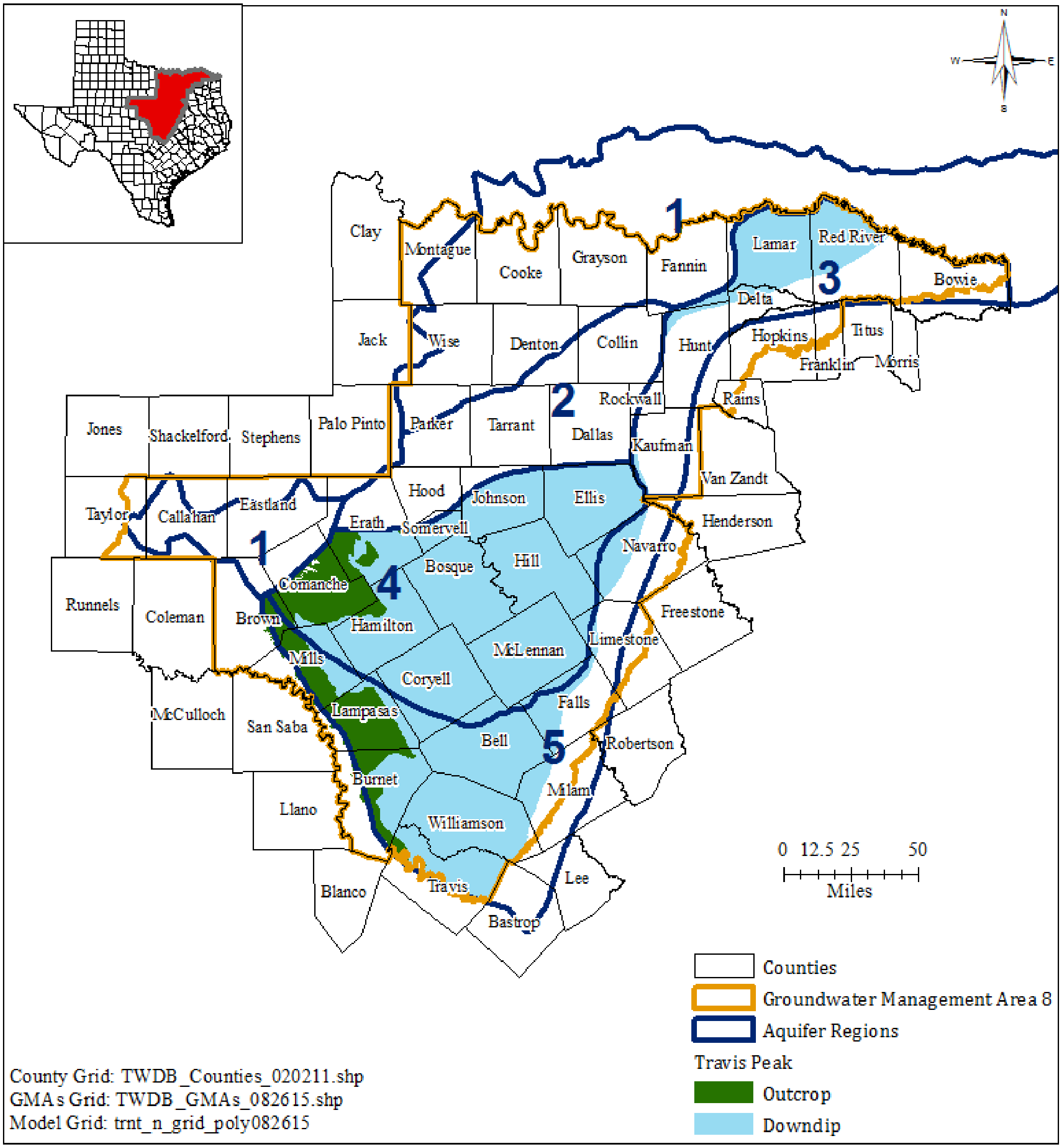

FIGURE 4. MAP SHOWING THE TRINITY AQUIFER (TRAVIS PEAK) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

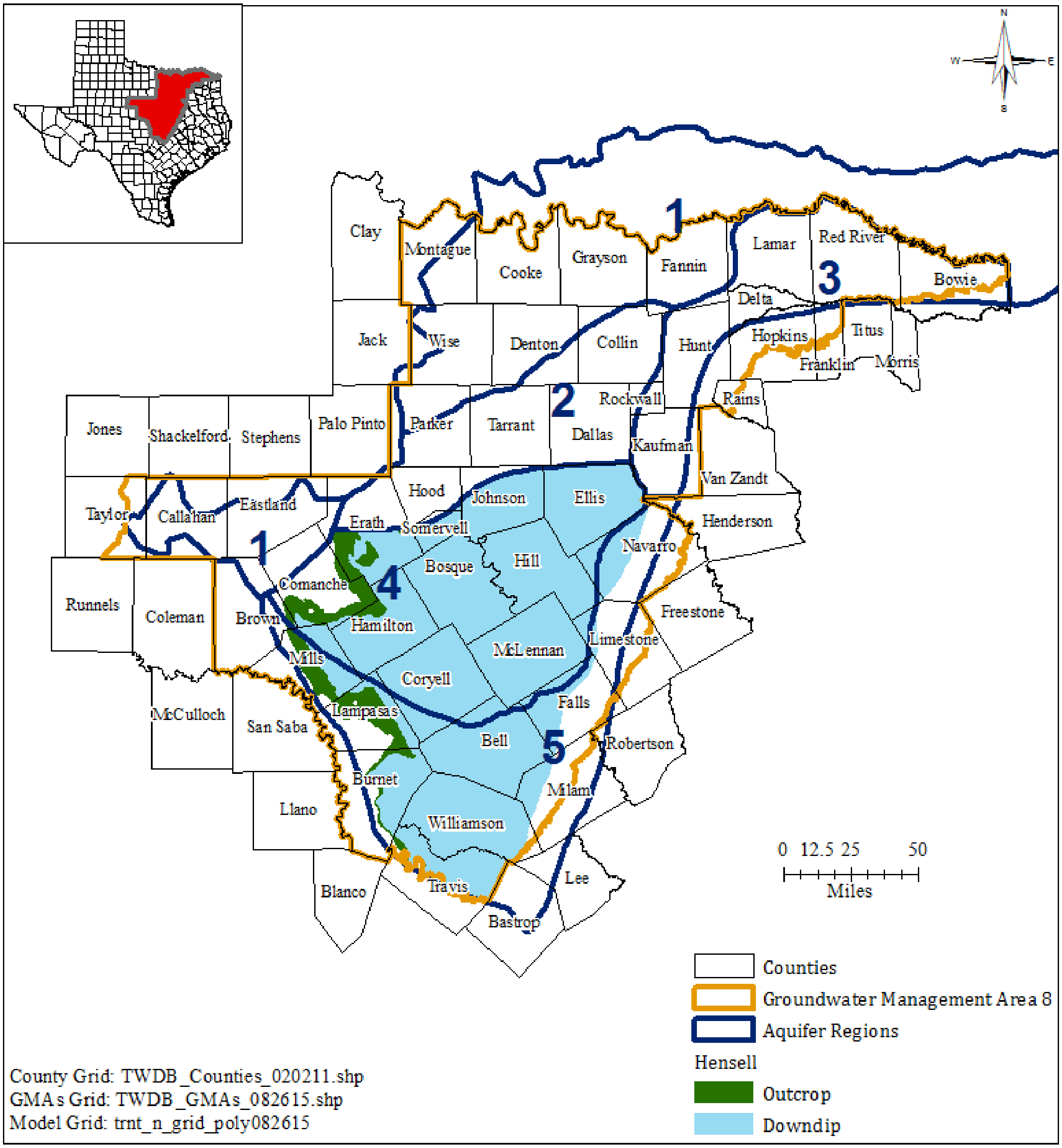

FIGURE 5. MAP SHOWING THE TRINITY AQUIFER (HENSELL) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

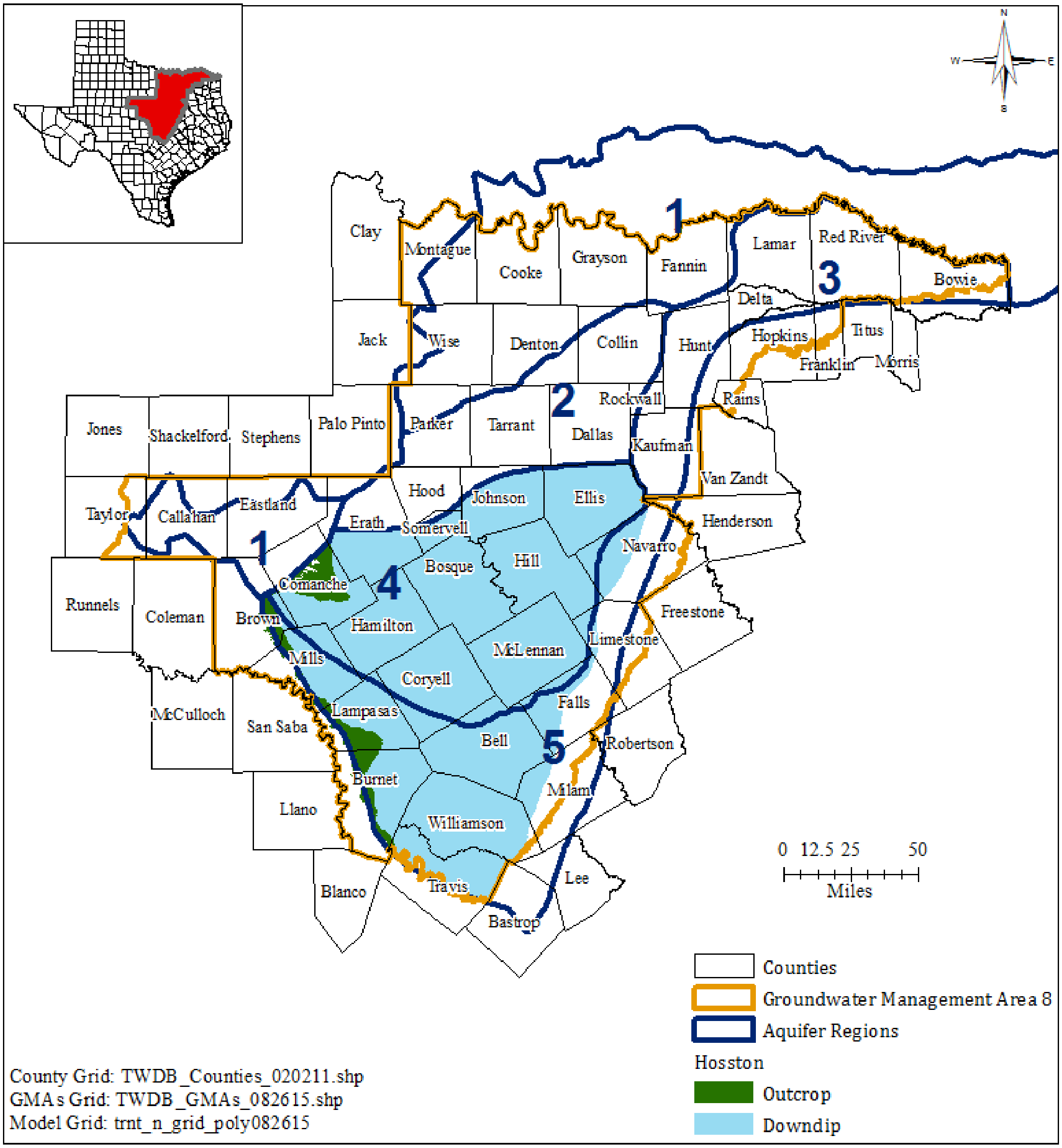

FIGURE 6. MAP SHOWING THE TRINITY AQUIFER (HOSSTON) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

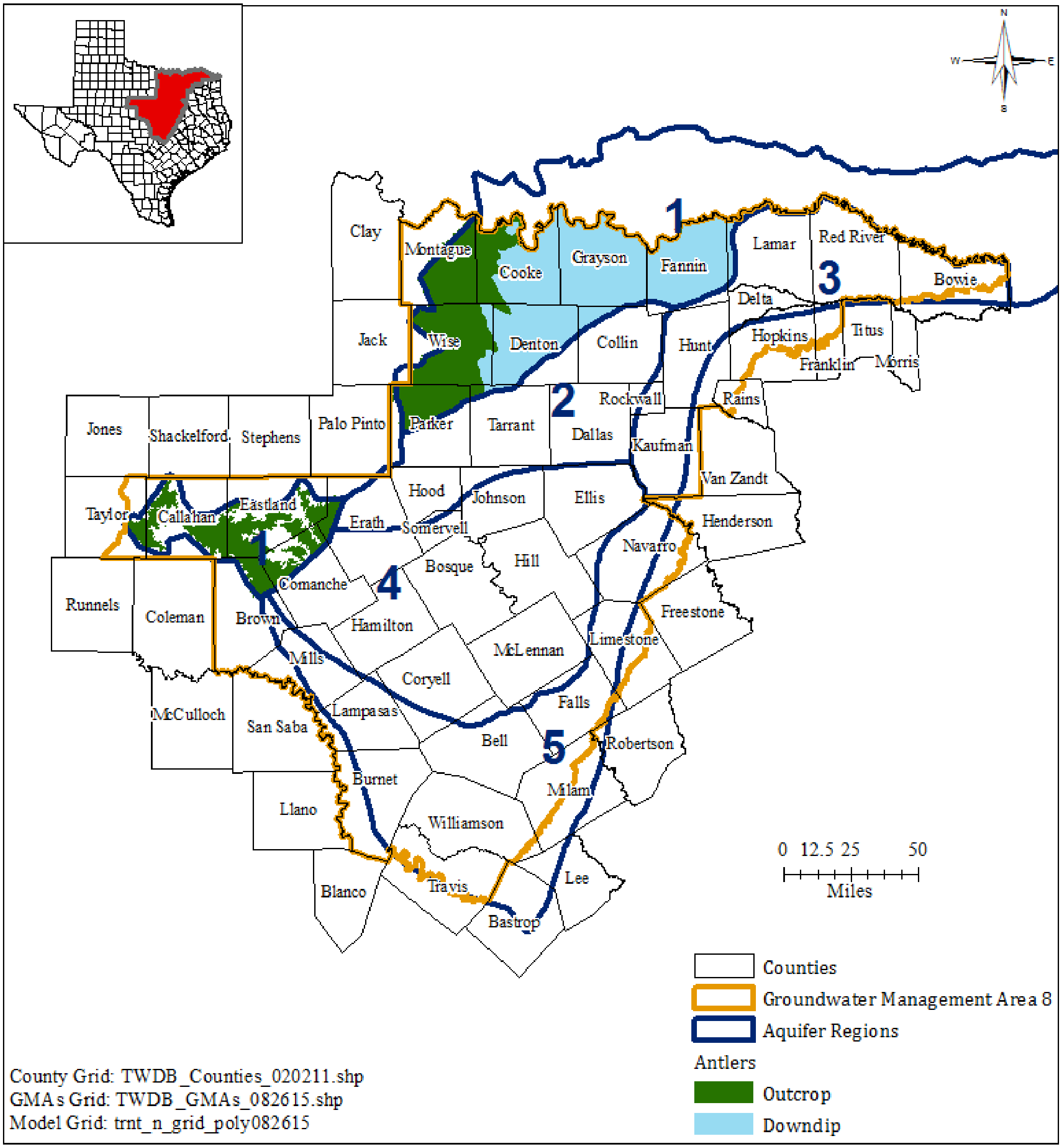

FIGURE 7. MAP SHOWING THE TRINITY AQUIFER (ANTLERS) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

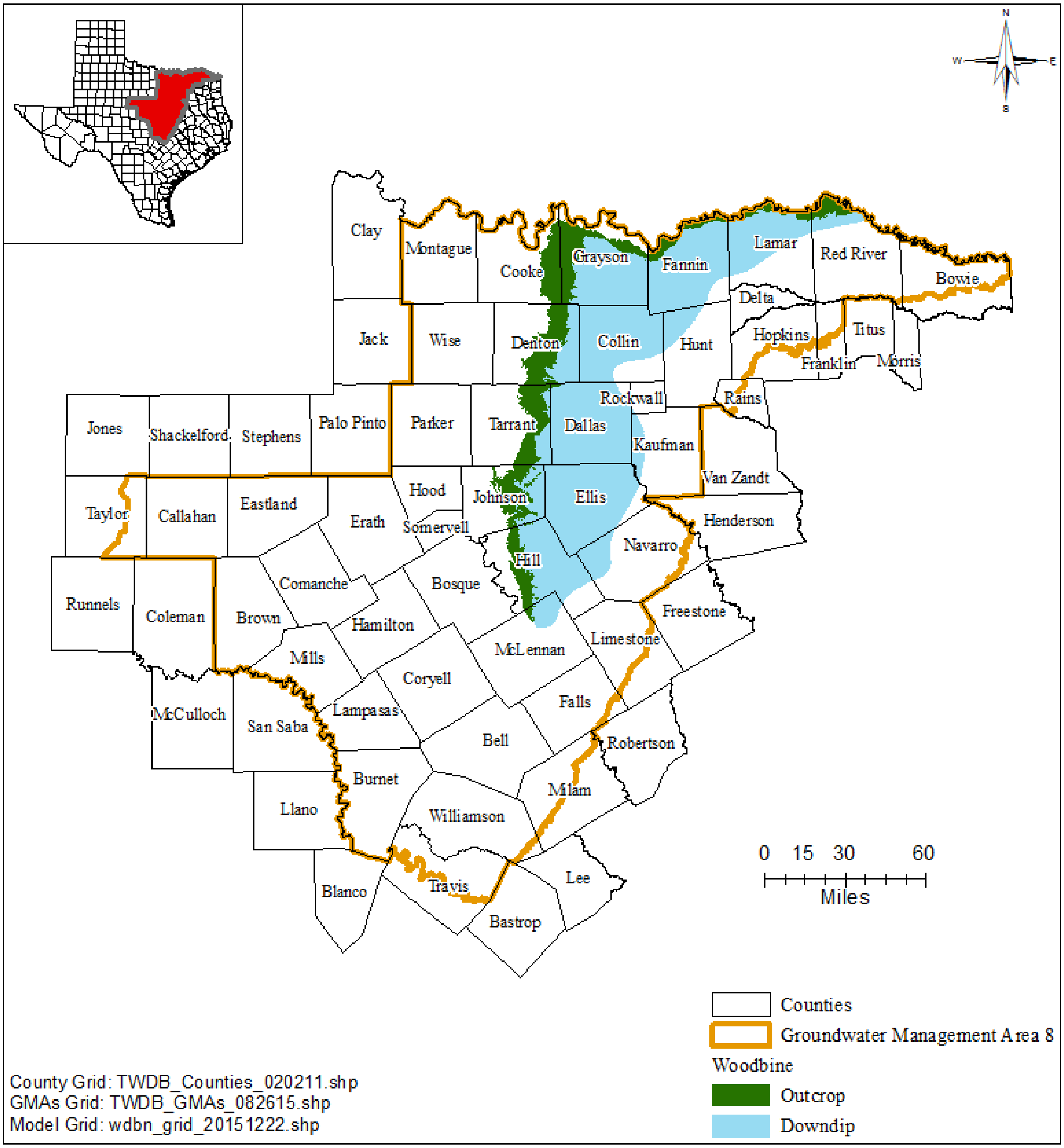

FIGURE 8. MAP SHOWING THE WOODBINE AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

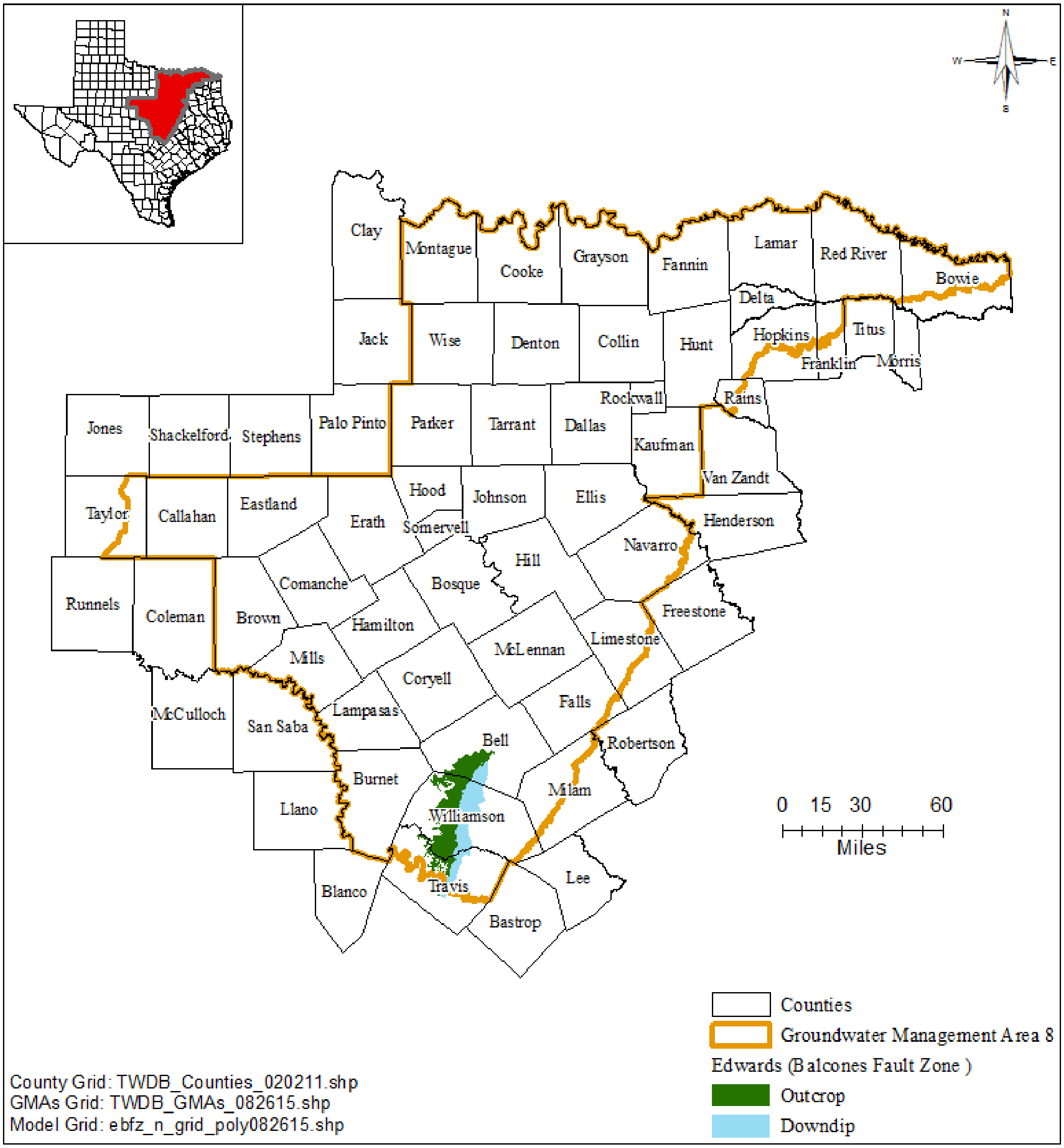

FIGURE 9. MAP SHOWING THE EDWARDS (BALCONES FAULT ZONE) AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN SEGMENT OF THE EDWARDS (BALCONES FAULT ZONE) AQUIFER.

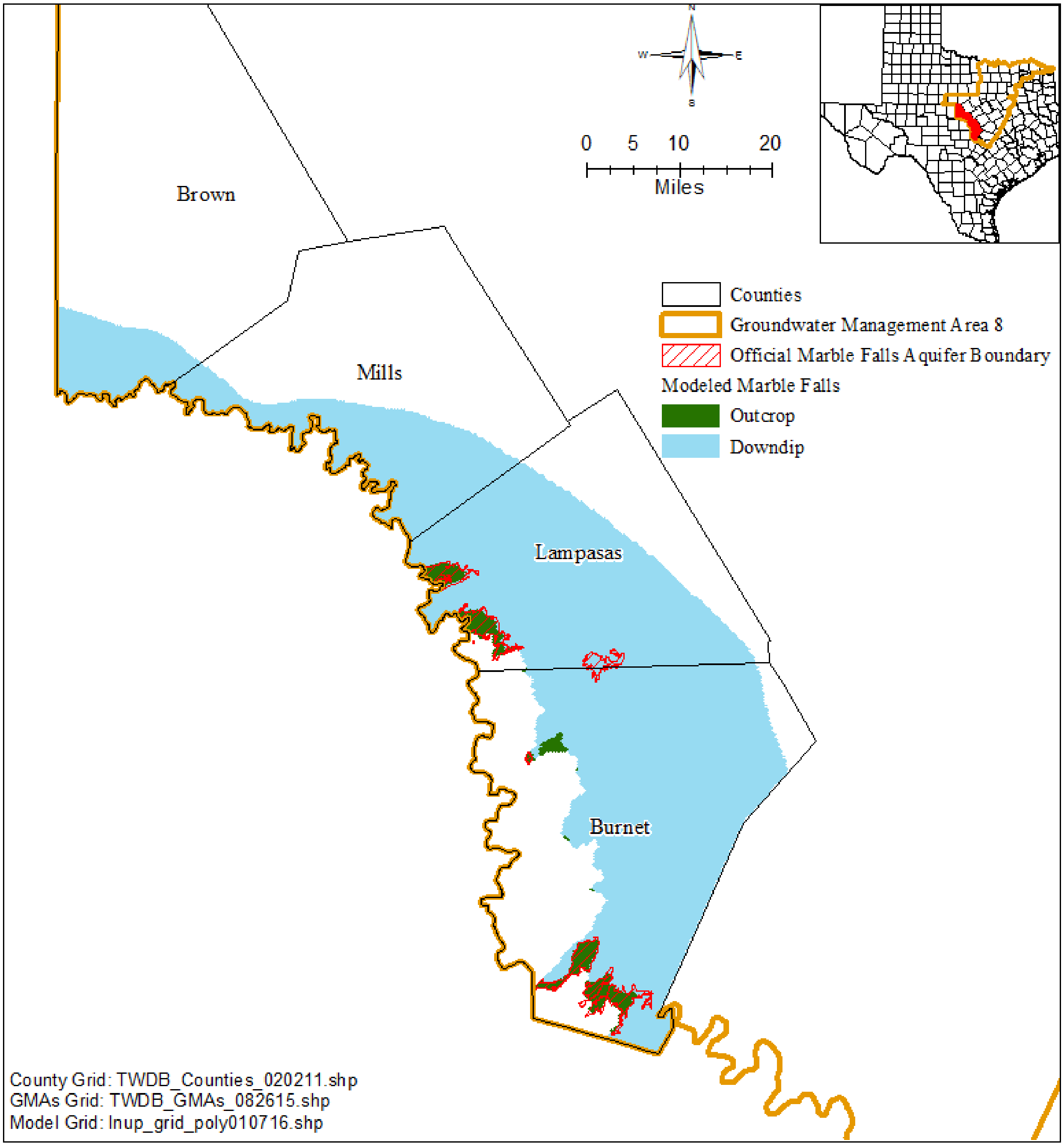

FIGURE 10. MAP SHOWING THE MARBLE FALLS AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE MINOR AQUIFERS IN LLANO UPLIFT REGION.

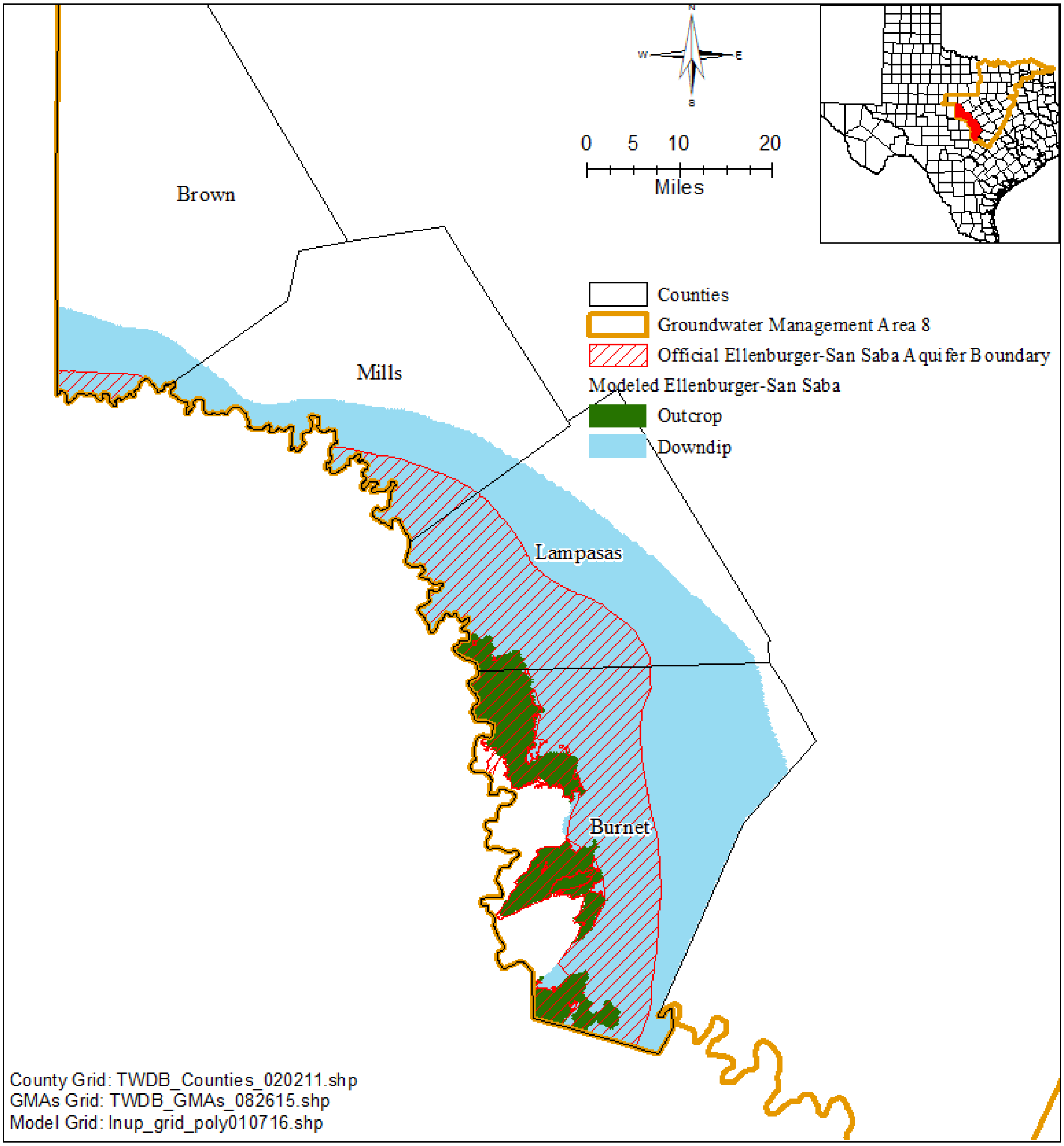

FIGURE 11. MAP SHOWING THE ELLENBURGER-SAN SABA AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE MINOR AQUIFERS IN LLANO UPLIFT REGION.

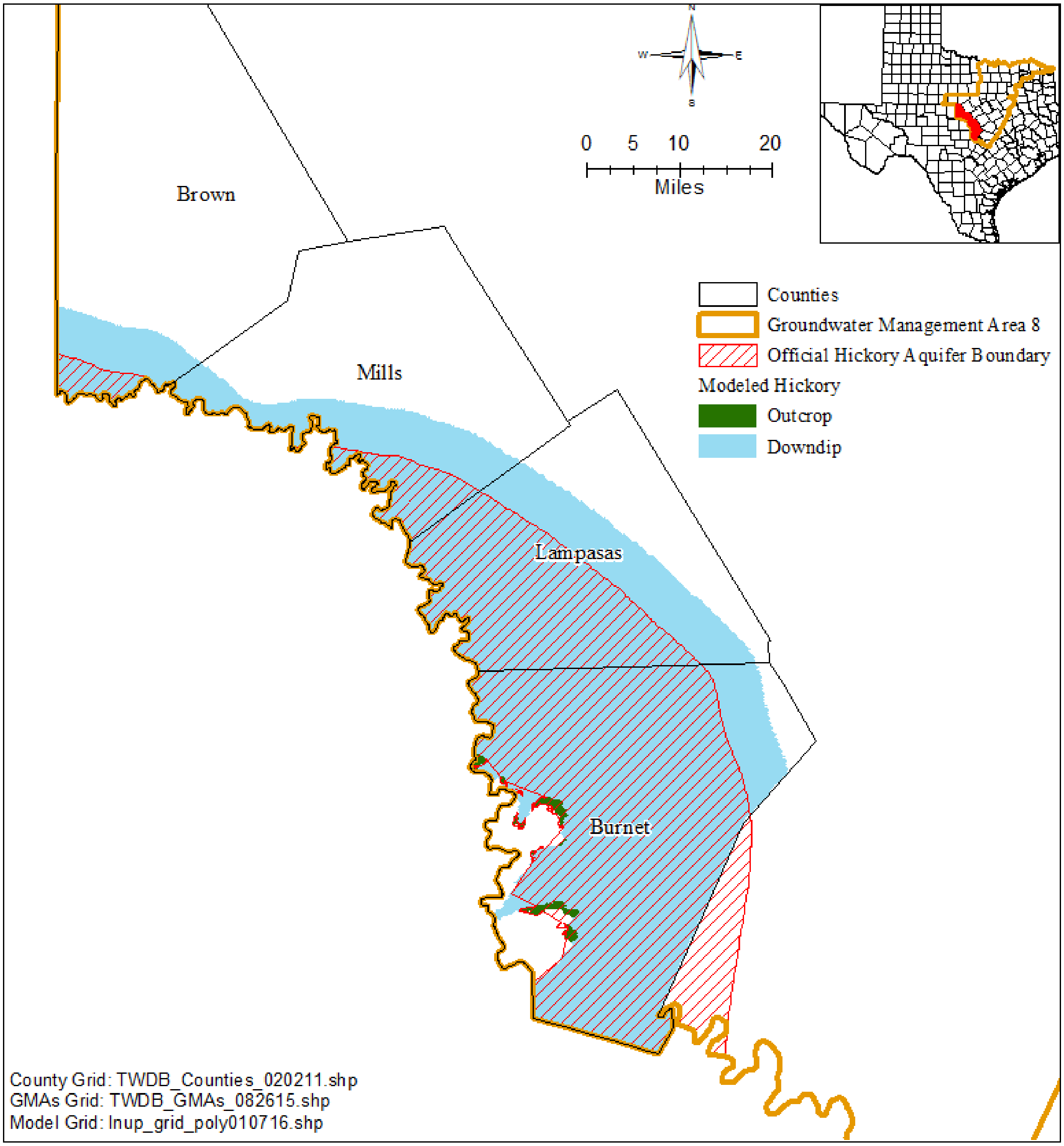

FIGURE 12. MAP SHOWING THE HICKORY AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE MINOR AQUIFERS IN LLANO UPLIFT REGION.

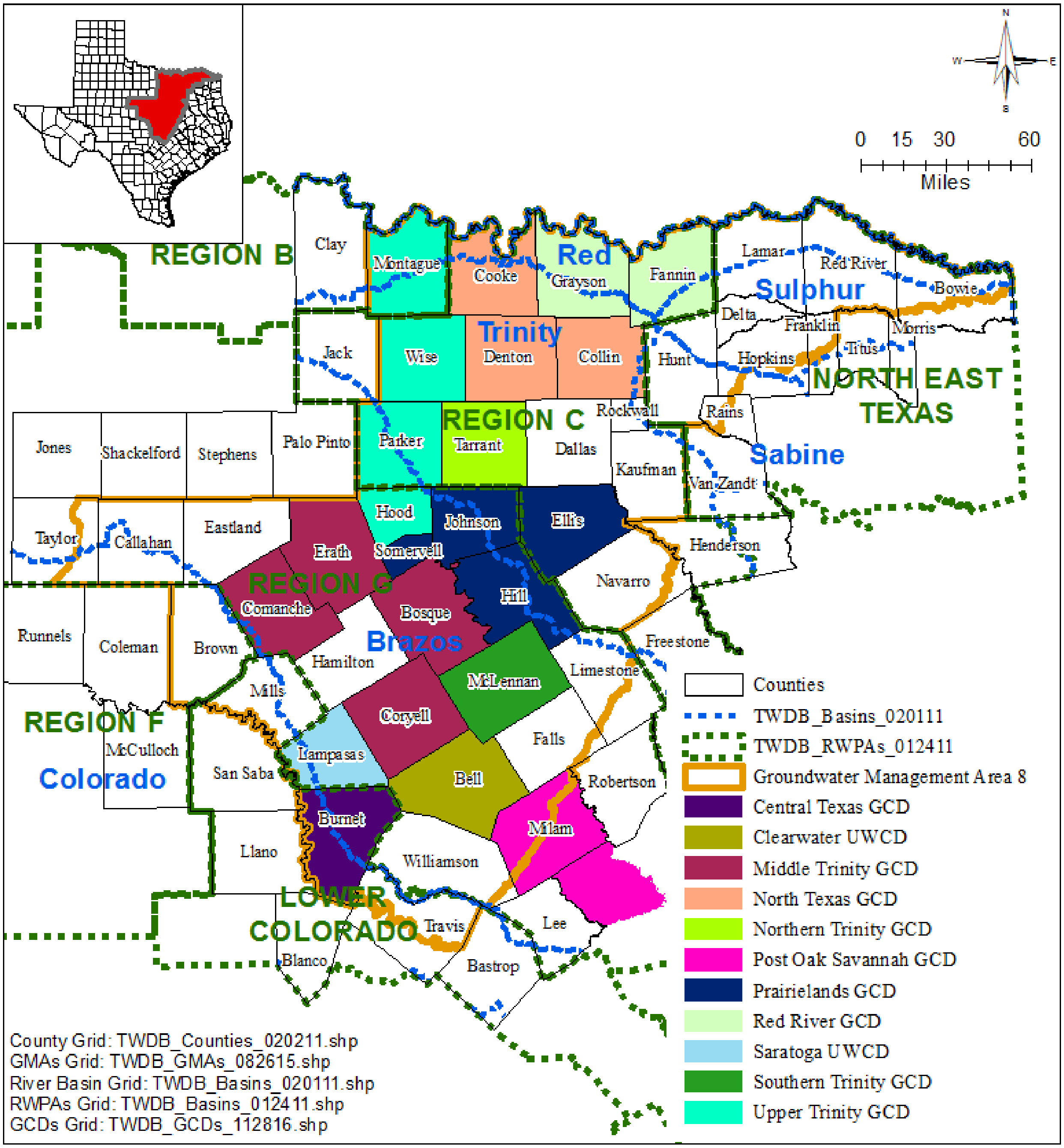

FIGURE 13. MAP SHOWING REGIONAL WATER PLANNING AREAS (RWPAS), GROUNDWATER CONSERVATION DISTRICTS (GCDS), AND RIVER BASINS ASSOCIATED WITH GROUNDWATER MANAGEMENT AREA 8.

TABLE 1. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (PALUXY) IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
Clearwater UWCD	Bell	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Middle Trinity GCD	Bosque	204	356	358	356	358	356	358	356
Middle Trinity GCD	Coryell	0	0	0	0	0	0	0	0
Middle Trinity GCD	Erath	38	61	61	61	61	61	61	61
Middle Trinity GCD Total		**242**	**417**	**419**	**417**	**419**	**417**	**419**	**417**
North Texas GCD	Collin	616	1,547	1,551	1,547	1,551	1,547	1,551	1,547
North Texas GCD	Denton	1,532	4,819	4,832	4,819	4,832	4,819	4,832	4,819
North Texas GCD Total		**2,148**	**6,366**	**6,383**	**6,366**	**6,383**	**6,366**	**6,383**	**6,366**
Northern Trinity GCD	Tarrant	**11,285**	**8,957**	**8,982**	**8,957**	**8,982**	**8,957**	**8,982**	**8,957**
Prairielands GCD	Ellis	510	442	443	442	443	442	443	442
Prairielands GCD	Hill	400	352	353	352	353	352	353	352
Prairielands GCD	Johnson	4,851	2,440	2,447	2,440	2,447	2,440	2,447	2,440
Prairielands GCD	Somervell	3	14	14	14	14	14	14	14
Prairielands GCD Total		**5,764**	**3,248**	**3,257**	**3,248**	**3,257**	**3,248**	**3,257**	**3,248**
Red River GCD	Fannin	389	2,087	2,092	2,087	2,092	2,087	2,092	2,087
Red River GCD	Grayson	0	0	0	0	0	0	0	0
Red River GCD Total		**389**	**2,087**	**2,092**	**2,087**	**2,092**	**2,087**	**2,092**	**2,087**
Southern Trinity GCD	McLennan	**319**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Upper Trinity GCD	Hood (outcrop)	106	159	159	159	159	159	159	159
Upper Trinity GCD	Parker (outcrop)	2,100	2,607	2,614	2,607	2,614	2,607	2,614	2,607
Upper Trinity GCD	Parker (downdip)	221	50	50	50	50	50	50	50
Upper Trinity GCD Total		**2,427**	**2,816**	**2,823**	**2,816**	**2,823**	**2,816**	**2,823**	**2,816**
No District	Dallas	231	358	359	358	359	358	359	358
No District	Delta	56	56	56	56	56	56	56	56
No District	Falls	0	0	0	0	0	0	0	0
No District	Hamilton	0	0	0	0	0	0	0	0
No District	Hunt	3	3	3	3	3	3	3	3
No District	Kaufman	0	0	0	0	0	0	0	0
No District	Lamar	16	8	8	8	8	8	8	8

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
No District	Limestone	0	0	0	0	0	0	0	0
No District	Mills	3	6	6	6	6	6	6	6
No District	Navarro	0	0	0	0	0	0	0	0
No District	Red River	190	177	177	177	177	177	177	177
No District	Rockwall	0	0	0	0	0	0	0	0
No District Total		**499**	**608**	**609**	**608**	**609**	**608**	**609**	**608**
Groundwater Management Area 8		**23,073**	**24,499**	**24,565**	**24,499**	**24,565**	**24,499**	**24,565**	**24,499**

UWCD: Underground Water Conservation District.

TABLE 2. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (GLEN ROSE) IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
Central Texas GCD	Burnet	**35**	**423**	**425**	**423**	**425**	**423**	**425**	**423**
Clearwater UWCD	Bell	**775**	**971**	**974**	**971**	**974**	**971**	**974**	**971**
Middle Trinity GCD	Bosque	576	728	731	728	731	728	731	728
Middle Trinity GCD	Comanche	3	41	41	41	41	41	41	41
Middle Trinity GCD	Coryell	0	120	120	120	120	120	120	120
Middle Trinity GCD	Erath	263	1,078	1,081	1,078	1,081	1,078	1,081	1,078
Middle Trinity GCD Total		**842**	**1,967**	**1,973**	**1,967**	**1,973**	**1,967**	**1,973**	**1,967**
North Texas GCD	Collin	84	83	83	83	83	83	83	83
North Texas GCD	Denton	121	338	339	338	339	338	339	338
North Texas GCD Total		**205**	**421**	**422**	**421**	**422**	**421**	**422**	**421**
Northern Trinity GCD	Tarrant	**1,070**	**793**	**795**	**793**	**795**	**793**	**795**	**793**
Post Oak Savannah GCD	Milam	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Prairielands GCD	Ellis	58	50	50	50	50	50	50	50
Prairielands GCD	Hill	116	115	115	115	115	115	115	115
Prairielands GCD	Johnson	1,780	1,632	1,636	1,632	1,636	1,632	1,636	1,632
Prairielands GCD	Somervell	81	146	146	146	146	146	146	146
Prairielands GCD Total		**2,035**	**1,943**	**1,947**	**1,943**	**1,947**	**1,943**	**1,947**	**1,943**
Red River GCD	Fannin	0	0	0	0	0	0	0	0
Red River GCD	Grayson	0	0	0	0	0	0	0	0
Red River GCD Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Saratoga UWCD	Lampasas	**65**	**68**	**68**	**68**	**68**	**68**	**68**	**68**
Southern Trinity GCD	McLennan	**845**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Upper Trinity GCD	Hood (outcrop)	483	653	655	653	655	653	655	653
Upper Trinity GCD	Hood (downdip)	81	103	103	103	103	103	103	103
Upper Trinity GCD	Parker (outcrop)	2,593	2,289	2,295	2,289	2,295	2,289	2,295	2,289
Upper Trinity GCD	Parker (downdip)	1,063	873	876	873	876	873	876	873
Upper Trinity GCD Total		**4,220**	**3,918**	**3,929**	**3,918**	**3,929**	**3,918**	**3,929**	**3,918**

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
No District	Brown	0	0	0	0	0	0	0	0
No District	Dallas	135	131	132	131	132	131	132	131
No District	Delta	0	0	0	0	0	0	0	0
No District	Falls	0	0	0	0	0	0	0	0
No District	Hamilton	168	218	218	218	218	218	218	218
No District	Hunt	0	0	0	0	0	0	0	0
No District	Kaufman	0	0	0	0	0	0	0	0
No District	Lamar	0	0	0	0	0	0	0	0
No District	Limestone	0	0	0	0	0	0	0	0
No District	Mills	12	189	189	189	189	189	189	189
No District	Navarro	0	0	0	0	0	0	0	0
No District	Red River	0	0	0	0	0	0	0	0
No District	Rockwall	0	0	0	0	0	0	0	0
No District	Travis	898	971	974	971	974	971	974	971
No District	Williamson	695	688	690	688	690	688	690	688
No District Total		**1,908**	**2,197**	**2,203**	**2,197**	**2,203**	**2,197**	**2,203**	**2,197**
Groundwater Management Area 8		**12,000**	**12,701**	**12,736**	**12,701**	**12,736**	**12,701**	**12,736**	**12,701**

UWCD: Underground Water Conservation District.

TABLE 3. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (TWIN MOUNTAINS) IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
Middle Trinity GCD	Erath	**3,443**	**5,017**	**5,031**	**5,017**	**5,031**	**5,017**	**5,031**	**5,017**
North Texas GCD	Collin	163	2,201	2,207	2,201	2,207	2,201	2,207	2,201
North Texas GCD	Denton	997	8,366	8,389	8,366	8,389	8,366	8,389	8,366
North Texas GCD Total		**1,160**	**10,567**	**10,596**	**10,567**	**10,596**	**10,567**	**10,596**	**10,567**
Northern Trinity GCD	Tarrant	**7,329**	**6,917**	**6,936**	**6,917**	**6,936**	**6,917**	**6,936**	**6,917**
Prairielands GCD	Ellis	0	0	0	0	0	0	0	0
Prairielands GCD	Johnson	539	384	385	384	385	384	385	384
Prairielands GCD	Somervell	150	174	174	174	174	174	174	174
Prairielands GCD Total		**689**	**558**	**559**	**558**	**559**	**558**	**559**	**558**
Red River GCD	Fannin	0	0	0	0	0	0	0	0
Red River GCD	Grayson	0	0	0	0	0	0	0	0
Red River GCD Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Upper Trinity GCD	Hood (outcrop)	3,379	3,662	3,672	3,662	3,672	3,662	3,672	3,662
Upper Trinity GCD	Hood (downdip)	7,143	7,759	7,780	7,759	7,780	7,759	7,780	7,759
Upper Trinity GCD	Parker (outcrop)	1,600	1,066	1,069	1,066	1,069	1,066	1,069	1,066
Upper Trinity GCD	Parker (downdip)	3,459	2,082	2,088	2,082	2,088	2,082	2,088	2,082
Upper Trinity GCD Total		**15,581**	**14,569**	**14,609**	**14,569**	**14,609**	**14,569**	**14,609**	**14,569**
No District	Dallas	2,282	3,199	3,208	3,199	3,208	3,199	3,208	3,199
No District	Hunt	0	0	0	0	0	0	0	0
No District	Kaufman	0	0	0	0	0	0	0	0
No District	Rockwall	0	0	0	0	0	0	0	0
No District Total		**2,282**	**3,199**	**3,208**	**3,199**	**3,208**	**3,199**	**3,208**	**3,199**
Groundwater Management Area 8		**30,484**	**40,827**	**40,939**	**40,827**	**40,939**	**40,827**	**40,939**	**40,827**

TABLE 4. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (TRAVIS PEAK) IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
Central Texas GCD	Burnet	**1,906**	**3,464**	**3,474**	**3,464**	**3,474**	**3,464**	**3,474**	**3,464**
Clearwater UWCD	Bell	**1,957**	**8,270**	**8,293**	**8,270**	**8,293**	**8,270**	**8,293**	**8,270**
Middle Trinity GCD	Bosque	5,255	7,678	7,699	7,678	7,699	7,678	7,699	7,678
Middle Trinity GCD	Comanche	9,793	6,160	6,177	6,160	6,177	6,160	6,177	6,160
Middle Trinity GCD	Coryell	3,350	4,371	4,383	4,371	4,383	4,371	4,383	4,371
Middle Trinity GCD	Erath	8,263	11,815	11,849	11,815	11,849	11,815	11,849	11,815
Middle Trinity GCD Total		**26,661**	**30,024**	**30,108**	**30,024**	**30,108**	**30,024**	**30,108**	**30,024**
Post Oak Savannah GCD	Milam	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Prairielands GCD	Ellis	5,583	5,032	5,046	5,032	5,046	5,032	5,046	5,032
Prairielands GCD	Hill	3,700	3,550	3,559	3,550	3,559	3,550	3,559	3,550
Prairielands GCD	Johnson	5,602	4,941	4,955	4,941	4,955	4,941	4,955	4,941
Prairielands GCD	Somervell	2,560	2,847	2,854	2,847	2,854	2,847	2,854	2,847
Prairielands GCD Total		**17,445**	**16,370**	**16,414**	**16,370**	**16,414**	**16,370**	**16,414**	**16,370**
Red River GCD	Fannin	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Saratoga UWCD	Lampasas	**1,669**	**1,599**	**1,603**	**1,599**	**1,603**	**1,599**	**1,603**	**1,599**
Southern Trinity GCD	McLennan	**13,252**	**20,635**	**20,691**	**20,635**	**20,691**	**20,635**	**20,691**	**20,635**
Upper Trinity GCD	Hood (downdip)	**70**	**89**	**89**	**89**	**89**	**89**	**89**	**89**
No District	Brown	680	394	395	394	395	394	395	394
No District	Dallas	0	0	0	0	0	0	0	0
No District	Delta	0	0	0	0	0	0	0	0
No District	Falls	1,158	1,434	1,438	1,434	1,438	1,434	1,438	1,434
No District	Hamilton	1,685	2,207	2,213	2,207	2,213	2,207	2,213	2,207
No District	Hunt	0	0	0	0	0	0	0	0
No District	Kaufman	0	0	0	0	0	0	0	0
No District	Lamar	0	0	0	0	0	0	0	0
No District	Limestone	0	0	0	0	0	0	0	0
No District	Mills	1,011	2,275	2,282	2,275	2,282	2,275	2,282	2,275
No District	Navarro	0	0	0	0	0	0	0	0
No District	Red River	0	0	0	0	0	0	0	0
No District	Travis	3,442	4,113	4,125	4,113	4,125	4,113	4,125	4,113
No District	Williamson	3,026	2,883	2,891	2,883	2,891	2,883	2,891	2,883

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
No District Total		**11,002**	**13,306**	**13,344**	**13,306**	**13,344**	**13,306**	**13,344**	**13,306**
Groundwater Management Area 8		**73,962**	**93,757**	**94,016**	**93,757**	**94,016**	**93,757**	**94,016**	**93,757**

UWCD: Underground Water Conservation District.

TABLE 5. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (HENSELL) IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
Central Texas GCD	Burnet	**51**	**1,888**	**1,894**	**1,888**	**1,894**	**1,888**	**1,894**	**1,888**
Clearwater UWCD	Bell	**355**	**1,096**	**1,099**	**1,096**	**1,099**	**1,096**	**1,099**	**1,096**
Middle Trinity GCD	Bosque	2,909	3,835	3,845	3,835	3,845	3,835	3,845	3,835
Middle Trinity GCD	Comanche	188	204	204	204	204	204	204	204
Middle Trinity GCD	Coryell	1,679	2,196	2,202	2,196	2,202	2,196	2,202	2,196
Middle Trinity GCD	Erath	3,446	5,137	5,151	5,137	5,151	5,137	5,151	5,137
Middle Trinity GCD Total		**8,222**	**11,372**	**11,402**	**11,372**	**11,402**	**11,372**	**11,402**	**11,372**
Post Oak Savannah GCD	Milam	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Prairielands GCD	Ellis	0	0	0	0	0	0	0	0
Prairielands GCD	Hill	237	225	226	225	226	225	226	225
Prairielands GCD	Johnson	1,530	1,083	1,086	1,083	1,086	1,083	1,086	1,083
Prairielands GCD	Somervell	1,822	1,973	1,978	1,973	1,978	1,973	1,978	1,973
Prairielands GCD Total		**3,589**	**3,281**	**3,290**	**3,281**	**3,290**	**3,281**	**3,290**	**3,281**
Saratoga UWCD	Lampasas	**730**	**712**	**715**	**712**	**715**	**712**	**715**	**712**
Southern Trinity GCD	McLennan	**3,018**	**4,698**	**4,711**	**4,698**	**4,711**	**4,698**	**4,711**	**4,698**
Upper Trinity GCD	Hood (downdip)	**45**	**36**	**36**	**36**	**36**	**36**	**36**	**36**
No District	Brown	6	4	4	4	4	4	4	4
No District	Dallas	0	0	0	0	0	0	0	0
No District	Falls	0	0	0	0	0	0	0	0
No District	Hamilton	1,221	1,671	1,675	1,671	1,675	1,671	1,675	1,671
No District	Kaufman	0	0	0	0	0	0	0	0
No District	Limestone	0	0	0	0	0	0	0	0
No District	Mills	224	607	608	607	608	607	608	607
No District	Navarro	0	0	0	0	0	0	0	0
No District	Travis	919	1,141	1,144	1,141	1,144	1,141	1,144	1,141
No District	Williamson	772	751	753	751	753	751	753	751
No District Total		**3,142**	**4,174**	**4,184**	**4,174**	**4,184**	**4,174**	**4,184**	**4,174**
Groundwater Management Area 8		**19,152**	**27,257**	**27,331**	**27,257**	**27,331**	**27,257**	**27,331**	**27,257**

UWCD: Underground Water Conservation District.

TABLE 6. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (HOSSTON) IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
Central Texas GCD	Burnet	**1,799**	**1,379**	**1,382**	**1,379**	**1,382**	**1,379**	**1,382**	**1,379**
Clearwater UWCD	Bell	**1,375**	**7,174**	**7,193**	**7,174**	**7,193**	**7,174**	**7,193**	**7,174**
Middle Trinity GCD	Bosque	2,289	3,762	3,772	3,762	3,772	3,762	3,772	3,762
Middle Trinity GCD	Comanche	9,504	5,864	5,881	5,864	5,881	5,864	5,881	5,864
Middle Trinity GCD	Coryell	1,661	2,161	2,167	2,161	2,167	2,161	2,167	2,161
Middle Trinity GCD	Erath	4,637	6,383	6,400	6,383	6,400	6,383	6,400	6,383
Middle Trinity GCD Total		**18,091**	**18,170**	**18,220**	**18,170**	**18,220**	**18,170**	**18,220**	**18,170**
Post Oak Savannah GCD	Milam	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Prairielands GCD	Ellis	5,575	5,026	5,040	5,026	5,040	5,026	5,040	5,026
Prairielands GCD	Hill	3,413	3,272	3,281	3,272	3,281	3,272	3,281	3,272
Prairielands GCD	Johnson	4,061	3,853	3,863	3,853	3,863	3,853	3,863	3,853
Prairielands GCD	Somervell	736	843	845	843	845	843	845	843
Prairielands GCD Total		**13,785**	**12,994**	**13,029**	**12,994**	**13,029**	**12,994**	**13,029**	**12,994**
Saratoga UWCD	Lampasas	**907**	**857**	**859**	**857**	**859**	**857**	**859**	**857**
Southern Trinity GCD	McLennan	**10,212**	**15,937**	**15,980**	**15,937**	**15,980**	**15,937**	**15,980**	**15,937**
Upper Trinity GCD	Hood (downdip)	**25**	**53**	**53**	**53**	**53**	**53**	**53**	**53**
No District	Brown	624	356	358	356	358	356	358	356
No District	Dallas	0	0	0	0	0	0	0	0
No District	Falls	1,157	1,434	1,438	1,434	1,438	1,434	1,438	1,434
No District	Hamilton	325	385	386	385	386	385	386	385
No District	Kaufman	0	0	0	0	0	0	0	0
No District	Limestone	0	0	0	0	0	0	0	0
No District	Mills	650	1,467	1,471	1,467	1,471	1,467	1,471	1,467
No District	Navarro	0	0	0	0	0	0	0	0
No District	Travis	2,357	2,783	2,791	2,783	2,791	2,783	2,791	2,783
No District	Williamson	2,050	1,933	1,938	1,933	1,938	1,933	1,938	1,933
No District Total		**7,163**	**8,358**	**8,382**	**8,358**	**8,382**	**8,358**	**8,382**	**8,358**
Groundwater Management Area 8		**53,357**	**64,922**	**65,098**	**64,922**	**65,098**	**64,922**	**65,098**	**64,922**

UWCD: Underground Water Conservation District.

TABLE 7. MODELED AVAILABLE GROUNDWATER FOR THE TRINITY AQUIFER (ANTLERS) IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
Middle Trinity GCD	Comanche	9,320	5,839	5,855	5,839	5,855	5,839	5,855	5,839
Middle Trinity GCD	Erath	1,663	2,628	2,636	2,628	2,636	2,628	2,636	2,628
Middle Trinity GCD Total		**10,983**	**8,467**	**8,491**	**8,467**	**8,491**	**8,467**	**8,491**	**8,467**
North Texas GCD	Collin	629	1,961	1,966	1,961	1,966	1,961	1,966	1,961
North Texas GCD	Cooke	4,117	10,514	10,544	10,514	10,544	10,514	10,544	10,514
North Texas GCD	Denton	11,427	16,545	16,591	16,545	16,591	16,545	16,591	16,545
North Texas GCD Total		**16,173**	**29,020**	**29,101**	**29,020**	**29,101**	**29,020**	**29,101**	**29,020**
Northern Trinity GCD	Tarrant	**1,908**	**1,248**	**1,251**	**1,248**	**1,251**	**1,248**	**1,251**	**1,248**
Red River GCD	Fannin	0	0	0	0	0	0	0	0
Red River GCD	Grayson	6,872	10,708	10,738	10,708	10,738	10,708	10,738	10,708
Red River GCD Total		**6,872**	**10,708**	**10,738**	**10,708**	**10,738**	**10,708**	**10,738**	**10,708**
Upper Trinity GCD	Montague (outcrop)	1,421	3,875	3,886	3,875	3,886	3,875	3,886	3,875
Upper Trinity GCD	Parker (outcrop)	3,321	2,897	2,905	2,897	2,905	2,897	2,905	2,897
Upper Trinity GCD	Wise (outcrop)	9,080	7,677	7,698	7,677	7,698	7,677	7,698	7,677
Upper Trinity GCD	Wise (downdip)	3,699	2,057	2,062	2,057	2,062	2,057	2,062	2,057
Upper Trinity GCD Total		**17,521**	**16,506**	**16,551**	**16,506**	**16,551**	**16,506**	**16,551**	**16,506**
No District	Brown	1,743	1,052	1,055	1,052	1,055	1,052	1,055	1,052
No District	Callahan	1,804	1,725	1,730	1,725	1,730	1,725	1,730	1,725
No District	Eastland	5,613	5,732	5,747	5,732	5,747	5,732	5,747	5,732
No District	Lamar	0	0	0	0	0	0	0	0
No District	Red River	0	0	0	0	0	0	0	0
No District	Taylor	17	13	13	13	13	13	13	13
No District Total		**9,177**	**8,522**	**8,545**	**8,522**	**8,545**	**8,522**	**8,545**	**8,522**
Groundwater Management Area 8		**62,634**	**74,471**	**74,677**	**74,471**	**74,677**	**74,471**	**74,677**	**74,471**

TABLE 8. MODELED AVAILABLE GROUNDWATER FOR THE WOODBINE AQUIFER IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
North Texas GCD	Collin	2,427	4,251	4,263	4,251	4,263	4,251	4,263	4,251
North Texas GCD	Cooke	1,646	800	802	800	802	800	802	800
North Texas GCD	Denton	3,797	3,607	3,616	3,607	3,616	3,607	3,616	3,607
North Texas GCD Total		**7,870**	**8,658**	**8,681**	**8,658**	**8,681**	**8,658**	**8,681**	**8,658**
Northern Trinity GCD	Tarrant	**2,646**	**1,138**	**1,141**	**1,138**	**1,141**	**1,138**	**1,141**	**1,138**
Prairielands GCD	Ellis	2,471	2,073	2,078	2,073	2,078	2,073	2,078	2,073
Prairielands GCD	Hill	752	586	588	586	588	586	588	586
Prairielands GCD	Johnson	3,880	1,980	1,985	1,980	1,985	1,980	1,985	1,980
Prairielands GCD Total		**7,103**	**4,639**	**4,651**	**4,639**	**4,651**	**4,639**	**4,651**	**4,639**
Red River GCD	Fannin	5,495	4,920	4,934	4,920	4,934	4,920	4,934	4,920
Red River GCD	Grayson	5,056	7,521	7,541	7,521	7,541	7,521	7,541	7,521
Red River GCD Total		**10,551**	**12,441**	**12,475**	**12,441**	**12,475**	**12,441**	**12,475**	**12,441**
Southern Trinity GCD	McLennan	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
No District	Dallas	1,957	2,796	2,804	2,796	2,804	2,796	2,804	2,796
No District	Hunt	463	763	765	763	765	763	765	763
No District	Kaufman	0	0	0	0	0	0	0	0
No District	Lamar	61	49	49	49	49	49	49	49
No District	Navarro	65	68	68	68	68	68	68	68
No District	Red River	3	2	2	2	2	2	2	2
No District	Rockwall	0	0	0	0	0	0	0	0
No District Total		**2,549**	**3,678**	**3,688**	**3,678**	**3,688**	**3,678**	**3,688**	**3,678**
Groundwater Management Area 8		**30,719**	**30,554**	**30,636**	**30,554**	**30,636**	**30,554**	**30,636**	**30,554**

TABLE 9. MODELED AVAILABLE GROUNDWATER FOR THE EDWARDS (BALCONES FAULT ZONE) AQUIFER IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2000	2010	2020	2030	2040	2050	2060	2070
Clearwater UWCD	Bell	**949**	**6,469**	**6,469**	**6,469**	**6,469**	**6,469**	**6,469**	**6,469**
No District	Travis	1,201	5,237	5,237	5,237	5,237	5,237	5,237	5,237
No District	Williamson	13,813	3,462	3,462	3,462	3,462	3,462	3,462	3,462
Groundwater Management Area 8		**15,981**	**15,168**	**15,168**	**15,168**	**15,168**	**15,168**	**15,168**	**15,168**

UWCD: Underground Water Conservation District.

TABLE 10. MODELED AVAILABLE GROUNDWATER FOR THE MARBLE FALLS AQUIFER IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
Central Texas GCD	Burnet	**2,220**	**2,736**	**2,744**	**2,736**	**2,744**	**2,736**	**2,744**	**2,736**
Saratoga UWCD	Lampasas	**363**	**2,837**	**2,845**	**2,837**	**2,845**	**2,837**	**2,845**	**2,837**
No District	Brown	0	25	25	25	25	25	25	25
No District	Mills	20	25	25	25	25	25	25	25
No District Total		**20**	**50**	**50**	**50**	**50**	**50**	**50**	**50**
Groundwater Management Area 8		**2,603**	**5,623**	**5,639**	**5,623**	**5,639**	**5,623**	**5,639**	**5,623**

UWCD: Underground Water Conservation District.

TABLE 11. MODELED AVAILABLE GROUNDWATER FOR THE ELLENBURGER-SAN SABA AQUIFER IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
Central Texas GCD	Burnet	**5,256**	**10,827**	**10,857**	**10,827**	**10,857**	**10,827**	**10,857**	**10,827**
Saratoga UWCD	Lampasas	**351**	**2,593**	**2,601**	**2,593**	**2,601**	**2,593**	**2,601**	**2,593**
No District	Brown	1	131	131	131	131	131	131	131
No District	Mills	0	499	500	499	500	499	500	499
No District Total		**1**	**630**	**631**	**630**	**631**	**630**	**631**	**630**
Groundwater Management Area 8		**5,608**	**14,050**	**14,089**	**14,050**	**14,089**	**14,050**	**14,089**	**14,050**

UWCD: Underground Water Conservation District.

TABLE 12. MODELED AVAILABLE GROUNDWATER FOR THE HICKORY AQUIFER IN GROUNDWATER MANAGEMENT AREA 8 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2010 AND 2070 WITH BASELINE YEAR 2009. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	2009	2010	2020	2030	2040	2050	2060	2070
Central Texas GCD	Burnet	**1,088**	**3,413**	**3,423**	**3,413**	**3,423**	**3,413**	**3,423**	**3,413**
Saratoga UWCD	Lampasas	**0**	**113**	**114**	**113**	**114**	**113**	**114**	**113**
No District	Brown	0	12	12	12	12	12	12	12
No District	Mills	0	36	36	36	36	36	36	36
No District Total		**0**	**48**	**48**	**48**	**48**	**48**	**48**	**48**
Groundwater Management Area 8		**1,088**	**3,574**	**3,585**	**3,574**	**3,585**	**3,574**	**3,585**	**3,574**

UWCD: Underground Water Conservation District.

TABLE 13. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (PALUXY) IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Counties Not in Upper Trinity GCD								
Bell	Region G	Brazos	0	0	0	0	0	0
Bosque	Region G	Brazos	358	356	358	356	358	356
Collin	Region C	Sabine	0	0	0	0	0	0
Collin	Region C	Trinity	1,551	1,547	1,551	1,547	1,551	1,547
Coryell	Region G	Brazos	0	0	0	0	0	0
Dallas	Region C	Trinity	359	358	359	358	359	358
Delta	Northeast Texas	Sulphur	56	56	56	56	56	56
Denton	Region C	Trinity	4,832	4,819	4,832	4,819	4,832	4,819
Ellis	Region C	Trinity	443	442	443	442	443	442
Erath	Region G	Brazos	61	61	61	61	61	61
Falls	Region G	Brazos	0	0	0	0	0	0
Fannin	Region C	Sulphur	2,092	2,087	2,092	2,087	2,092	2,087
Fannin	Region C	Trinity	0	0	0	0	0	0
Grayson	Region C	Trinity	0	0	0	0	0	0
Hamilton	Region G	Brazos	0	0	0	0	0	0
Hill	Region G	Brazos	348	347	348	347	348	347
Hill	Region G	Trinity	5	5	5	5	5	5
Hunt	Northeast Texas	Sabine	0	0	0	0	0	0
Hunt	Northeast Texas	Sulphur	3	3	3	3	3	3
Hunt	Northeast Texas	Trinity	0	0	0	0	0	0
Johnson	Region G	Brazos	880	878	880	878	880	878
Johnson	Region G	Trinity	1,567	1,562	1,567	1,562	1,567	1,562
Kaufman	Region C	Trinity	0	0	0	0	0	0
Lamar	Northeast Texas	Red	0	0	0	0	0	0
Lamar	Northeast Texas	Sulphur	8	8	8	8	8	8
Limestone	Region G	Brazos	0	0	0	0	0	0
Limestone	Region G	Trinity	0	0	0	0	0	0
McLennan	Region G	Brazos	0	0	0	0	0	0
Mills	Lower Colorado	Brazos	6	6	6	6	6	6
Mills	Lower Colorado	Colorado	0	0	0	0	0	0
Navarro	Region C	Trinity	0	0	0	0	0	0
Red River	Northeast Texas	Red	52	52	52	52	52	52
Red River	Northeast Texas	Sulphur	125	125	125	125	125	125

County	RWPA	River Basin	2020	2030	2040	2050	2060	2070
Rockwall	Region C	Trinity	0	0	0	0	0	0
Somervell	Region G	Brazos	14	14	14	14	14	14
Tarrant	Region C	Trinity	8,982	8,957	8,982	8,957	8,982	8,957
Subtotal			**21,742**	**21,683**	**21,742**	**21,683**	**21,742**	**21,683**
Counties in Upper Trinity GCD								
Hood (outcrop)	Region G	Brazos	159	158	159	158	159	158
Hood (outcrop)	Region G	Trinity	0	0	0	0	0	0
Parker (outcrop)	Region C	Brazos	34	34	34	34	34	34
Parker (outcrop)	Region C	Trinity	2,580	2,573	2,580	2,573	2,580	2,573
Parker (downdip)	Region C	Trinity	50	50	50	50	50	50
Subtotal			**2,823**	**2,815**	**2,823**	**2,815**	**2,823**	**2,815**
Groundwater Management Area 8			**24,565**	**24,498**	**24,565**	**24,498**	**24,565**	**24,498**

TABLE 14. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (GLEN ROSE) IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Counties Not in Upper Trinity GCD								
Bell	Region G	Brazos	974	971	974	971	974	971
Bosque	Region G	Brazos	731	728	731	728	731	728
Brown	Region F	Colorado	0	0	0	0	0	0
Burnet	Lower Colorado	Brazos	188	188	188	188	188	188
Burnet	Lower Colorado	Colorado	236	235	236	235	236	235
Collin	Region C	Sabine	0	0	0	0	0	0
Collin	Region C	Trinity	83	83	83	83	83	83
Comanche	Region G	Brazos	22	22	22	22	22	22
Comanche	Region G	Colorado	18	18	18	18	18	18
Coryell	Region G	Brazos	120	120	120	120	120	120
Dallas	Region C	Trinity	132	131	132	131	132	131
Delta	Northeast Texas	Sulphur	0	0	0	0	0	0
Denton	Region C	Trinity	339	338	339	338	339	338
Ellis	Region C	Trinity	50	50	50	50	50	50
Erath	Region G	Brazos	1,081	1,078	1,081	1,078	1,081	1,078
Falls	Region G	Brazos	0	0	0	0	0	0
Fannin	Region C	Sulphur	0	0	0	0	0	0
Fannin	Region C	Trinity	0	0	0	0	0	0
Grayson	Region C	Trinity	0	0	0	0	0	0
Hamilton	Region G	Brazos	218	218	218	218	218	218
Hill	Region G	Brazos	115	114	115	114	115	114
Hill	Region G	Trinity	1	1	1	1	1	1
Hunt	Northeast Texas	Sabine	0	0	0	0	0	0
Hunt	Northeast Texas	Sulphur	0	0	0	0	0	0
Hunt	Northeast Texas	Trinity	0	0	0	0	0	0
Johnson	Region G	Brazos	953	950	953	950	953	950
Johnson	Region G	Trinity	683	681	683	681	683	681
Kaufman	Region C	Trinity	0	0	0	0	0	0
Lamar	Northeast Texas	Red	0	0	0	0	0	0
Lamar	Northeast Texas	Sulphur	0	0	0	0	0	0
Lampasas	Region G	Brazos	68	68	68	68	68	68
Limestone	Region G	Brazos	0	0	0	0	0	0
Limestone	Region G	Trinity	0	0	0	0	0	0

County	RWPA	River Basin	2020	2030	2040	2050	2060	2070
McLennan	Region G	Brazos	0	0	0	0	0	0
Milam	Region G	Brazos	0	0	0	0	0	0
Mills	Lower Colorado	Brazos	96	96	96	96	96	96
Mills	Lower Colorado	Colorado	93	93	93	93	93	93
Navarro	Region C	Trinity	0	0	0	0	0	0
Red River	Northeast Texas	Red	0	0	0	0	0	0
Red River	Northeast Texas	Sulphur	0	0	0	0	0	0
Rockwall	Region C	Trinity	0	0	0	0	0	0
Somervell	Region G	Brazos	146	146	146	146	146	146
Tarrant	Region C	Trinity	795	793	795	793	795	793
Travis	Lower Colorado	Brazos	0	0	0	0	0	0
Travis	Lower Colorado	Colorado	974	971	974	971	974	971
Williamson	Region G	Brazos	623	621	623	621	623	621
Williamson	Region G	Colorado	0	0	0	0	0	0
Williamson	Lower Colorado	Brazos	0	0	0	0	0	0
Williamson	Lower Colorado	Colorado	67	67	67	67	67	67
Subtotal			**8,806**	**8,781**	**8,806**	**8,781**	**8,806**	**8,781**
Counties in Upper Trinity GCD								
Hood (outcrop)	Region G	Brazos	655	653	655	653	655	653
Hood (downdip)	Region G	Brazos	83	83	83	83	83	83
Hood (downdip)	Region G	Trinity	20	20	20	20	20	20
Parker (outcrop)	Region C	Brazos	87	87	87	87	87	87
Parker (downdip)	Region C	Brazos	7	7	7	7	7	7
Parker (outcrop)	Region C	Trinity	2,208	2,202	2,208	2,202	2,208	2,202
Parker (downdip)	Region C	Trinity	869	866	869	866	869	866
Subtotal			**3,929**	**3,918**	**3,929**	**3,918**	**3,929**	**3,918**
Groundwater Management Area 8			**12,735**	**12,699**	**12,735**	**12,699**	**12,735**	**12,699**

TABLE 15. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (TWIN MOUNTAINS) IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Counties Not in Upper Trinity GCD								
Collin	Region C	Sabine	0	0	0	0	0	0
Collin	Region C	Trinity	2,207	2,201	2,207	2,201	2,207	2,201
Dallas	Region C	Trinity	3,208	3,199	3,208	3,199	3,208	3,199
Denton	Region C	Trinity	8,389	8,366	8,389	8,366	8,389	8,366
Ellis	Region C	Trinity	0	0	0	0	0	0
Erath	Region G	Brazos	5,031	5,017	5,031	5,017	5,031	5,017
Fannin	Region C	Sulphur	0	0	0	0	0	0
Fannin	Region C	Trinity	0	0	0	0	0	0
Grayson	Region C	Trinity	0	0	0	0	0	0
Hunt	Northeast Texas	Sabine	0	0	0	0	0	0
Hunt	Northeast Texas	Trinity	0	0	0	0	0	0
Johnson	Region G	Brazos	133	133	133	133	133	133
Johnson	Region G	Trinity	252	251	252	251	252	251
Kaufman	Region C	Trinity	0	0	0	0	0	0
Rockwall	Region C	Trinity	0	0	0	0	0	0
Somervell	Region G	Brazos	174	174	174	174	174	174
Tarrant	Region C	Trinity	6,936	6,917	6,936	6,917	6,936	6,917
Subtotal			**26,330**	**26,258**	**26,330**	**26,258**	**26,330**	**26,258**
Counties in Upper Trinity GCD								
Hood (outcrop)	Region G	Brazos	3,672	3,662	3,672	3,662	3,672	3,662
Hood (downdip)	Region G	Brazos	7,761	7,740	7,761	7,740	7,761	7,740
Hood (downdip)	Region G	Trinity	19	19	19	19	19	19
Parker (outcrop)	Region C	Brazos	1,069	1,066	1,069	1,066	1,069	1,066
Parker (downdip)	Region C	Brazos	778	776	778	776	778	776
Parker (downdip)	Region C	Trinity	1,310	1,306	1,310	1,306	1,310	1,306
Subtotal			**14,609**	**14,569**	**14,609**	**14,569**	**14,609**	**14,569**
Groundwater Management Area 8			**40,939**	**40,827**	**40,939**	**40,827**	**40,939**	**40,827**

TABLE 16. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (TRAVIS PEAK) IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Counties Not in Upper Trinity GCD								
Bell	Region G	Brazos	8,293	8,270	8,293	8,270	8,293	8,270
Bosque	Region G	Brazos	7,699	7,678	7,699	7,678	7,699	7,678
Brown	Region F	Brazos	3	3	3	3	3	3
Brown	Region F	Colorado	392	391	392	391	392	391
Burnet	Lower Colorado	Brazos	2,950	2,943	2,950	2,943	2,950	2,943
Burnet	Lower Colorado	Colorado	523	521	523	521	523	521
Comanche	Region G	Brazos	6,128	6,111	6,128	6,111	6,128	6,111
Comanche	Region G	Colorado	49	49	49	49	49	49
Coryell	Region G	Brazos	4,383	4,371	4,383	4,371	4,383	4,371
Dallas	Region C	Trinity	0	0	0	0	0	0
Delta	Northeast Texas	Sulphur	0	0	0	0	0	0
Ellis	Region C	Trinity	5,046	5,032	5,046	5,032	5,046	5,032
Erath	Region G	Brazos	11,849	11,815	11,849	11,815	11,849	11,815
Falls	Region G	Brazos	1,438	1,434	1,438	1,434	1,438	1,434
Fannin	Region C	Sulphur	0	0	0	0	0	0
Fannin	Region C	Trinity	0	0	0	0	0	0
Hamilton	Region G	Brazos	2,213	2,207	2,213	2,207	2,213	2,207
Hill	Region G	Brazos	3,304	3,295	3,304	3,295	3,304	3,295
Hill	Region G	Trinity	256	255	256	255	256	255
Hunt	Northeast Texas	Sabine	0	0	0	0	0	0
Hunt	Northeast Texas	Sulphur	0	0	0	0	0	0
Hunt	Northeast Texas	Trinity	0	0	0	0	0	0
Johnson	Region G	Brazos	1,932	1,927	1,932	1,927	1,932	1,927
Johnson	Region G	Trinity	3,022	3,014	3,022	3,014	3,022	3,014
Kaufman	Region C	Trinity	0	0	0	0	0	0
Lamar	Northeast Texas	Red	0	0	0	0	0	0
Lamar	Northeast Texas	Sulphur	0	0	0	0	0	0
Lampasas	Region G	Brazos	1,528	1,523	1,528	1,523	1,528	1,523
Lampasas	Region G	Colorado	76	75	76	75	76	75
Limestone	Region G	Brazos	0	0	0	0	0	0
Limestone	Region G	Trinity	0	0	0	0	0	0
McLennan	Region G	Brazos	20,691	20,635	20,691	20,635	20,691	20,635
Milam	Region G	Brazos	0	0	0	0	0	0

County	RWPA	River Basin	2020	2030	2040	2050	2060	2070
Mills	Lower Colorado	Brazos	706	703	706	703	706	703
Mills	Lower Colorado	Colorado	1,576	1,572	1,576	1,572	1,576	1,572
Navarro	Region C	Trinity	0	0	0	0	0	0
Red River	Northeast Texas	Red	0	0	0	0	0	0
Red River	Northeast Texas	Sulphur	0	0	0	0	0	0
Somervell	Region G	Brazos	2,854	2,847	2,854	2,847	2,854	2,847
Travis	Lower Colorado	Brazos	1	1	1	1	1	1
Travis	Lower Colorado	Colorado	4,124	4,112	4,124	4,112	4,124	4,112
Williamson	Region G	Brazos	2,885	2,877	2,885	2,877	2,885	2,877
Williamson	Region G	Colorado	5	5	5	5	5	5
Williamson	Lower Colorado	Brazos	0	0	0	0	0	0
Williamson	Lower Colorado	Colorado	0	0	0	0	0	0
Subtotal			**93,926**	**93,666**	**93,926**	**93,666**	**93,926**	**93,666**
Counties in Upper Trinity GCD								
Hood (downdip)	Region G	Brazos	89	89	89	89	89	89
Subtotal			**89**	**89**	**89**	**89**	**89**	**89**
Groundwater Management Area 8			**94,015**	**93,755**	**94,015**	**93,755**	**94,015**	**93,755**

TABLE 17. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (HENSELL) IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Counties Not in Upper Trinity GCD								
Bell	Region G	Brazos	1,099	1,096	1,099	1,096	1,099	1,096
Bosque	Region G	Brazos	3,845	3,835	3,845	3,835	3,845	3,835
Brown	Region F	Colorado	4	4	4	4	4	4
Burnet	Lower Colorado	Brazos	1,761	1,757	1,761	1,757	1,761	1,757
Burnet	Lower Colorado	Colorado	133	132	133	132	133	132
Comanche	Region G	Brazos	181	180	181	180	181	180
Comanche	Region G	Colorado	24	24	24	24	24	24
Coryell	Region G	Brazos	2,202	2,196	2,202	2,196	2,202	2,196
Dallas	Region C	Trinity	0	0	0	0	0	0
Ellis	Region C	Trinity	0	0	0	0	0	0
Erath	Region G	Brazos	5,151	5,137	5,151	5,137	5,151	5,137
Falls	Region G	Brazos	0	0	0	0	0	0
Hamilton	Region G	Brazos	1,675	1,671	1,675	1,671	1,675	1,671
Hill	Region G	Brazos	225	224	225	224	225	224
Hill	Region G	Trinity	1	1	1	1	1	1
Johnson	Region G	Brazos	618	616	618	616	618	616
Johnson	Region G	Trinity	468	467	468	467	468	467
Kaufman	Region C	Trinity	0	0	0	0	0	0
Lampasas	Region G	Brazos	713	711	713	711	713	711
Lampasas	Region G	Colorado	1	1	1	1	1	1
Limestone	Region G	Brazos	0	0	0	0	0	0
Limestone	Region G	Trinity	0	0	0	0	0	0
McLennan	Region G	Brazos	4,711	4,698	4,711	4,698	4,711	4,698
Milam	Region G	Brazos	0	0	0	0	0	0
Mills	Lower Colorado	Brazos	172	172	172	172	172	172
Mills	Lower Colorado	Colorado	436	435	436	435	436	435
Navarro	Region C	Trinity	0	0	0	0	0	0
Somervell	Region G	Brazos	1,978	1,973	1,978	1,973	1,978	1,973
Travis	Lower Colorado	Brazos	1	1	1	1	1	1
Travis	Lower Colorado	Colorado	1,144	1,141	1,144	1,141	1,144	1,141
Williamson	Region G	Brazos	753	751	753	751	753	751
Williamson	Region G	Colorado	0	0	0	0	0	0
Williamson	Lower Colorado	Brazos	0	0	0	0	0	0

County	RWPA	River Basin	2020	2030	2040	2050	2060	2070
Williamson	Lower Colorado	Colorado	0	0	0	0	0	0
Subtotal			**27,296**	**27,223**	**27,296**	**27,223**	**27,296**	**27,223**
Counties in Upper Trinity GCD								
Hood (downdip)	Region G	Brazos	36	36	36	36	36	36
Subtotal			**36**	**36**	**36**	**36**	**36**	**36**
Groundwater Management Area 8			**27,332**	**27,259**	**27,332**	**27,259**	**27,332**	**27,259**

TABLE 18. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (HOSSTON) IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Counties Not in Upper Trinity GCD								
Bell	Region G	Brazos	7,193	7,174	7,193	7,174	7,193	7,174
Bosque	Region G	Brazos	3,772	3,762	3,772	3,762	3,772	3,762
Brown	Region F	Brazos	3	3	3	3	3	3
Brown	Region F	Colorado	355	353	355	353	355	353
Burnet	Lower Colorado	Brazos	1,027	1,025	1,027	1,025	1,027	1,025
Burnet	Lower Colorado	Colorado	355	354	355	354	355	354
Comanche	Region G	Brazos	5,875	5,858	5,875	5,858	5,875	5,858
Comanche	Region G	Colorado	6	6	6	6	6	6
Coryell	Region G	Brazos	2,167	2,161	2,167	2,161	2,167	2,161
Dallas	Region C	Trinity	0	0	0	0	0	0
Ellis	Region C	Trinity	5,040	5,026	5,040	5,026	5,040	5,026
Erath	Region G	Brazos	6,400	6,383	6,400	6,383	6,400	6,383
Falls	Region G	Brazos	1,438	1,434	1,438	1,434	1,438	1,434
Hamilton	Region G	Brazos	386	385	386	385	386	385
Hill	Region G	Brazos	3,026	3,018	3,026	3,018	3,026	3,018
Hill	Region G	Trinity	255	254	255	254	255	254
Johnson	Region G	Brazos	1,311	1,307	1,311	1,307	1,311	1,307
Johnson	Region G	Trinity	2,553	2,546	2,553	2,546	2,553	2,546
Kaufman	Region C	Trinity	0	0	0	0	0	0
Lampasas	Region G	Brazos	786	783	786	783	786	783
Lampasas	Region G	Colorado	72	72	72	72	72	72
Limestone	Region G	Brazos	0	0	0	0	0	0
Limestone	Region G	Trinity	0	0	0	0	0	0
McLennan	Region G	Brazos	15,980	15,937	15,980	15,937	15,980	15,937
Milam	Region G	Brazos	0	0	0	0	0	0
Mills	Lower Colorado	Brazos	376	375	376	375	376	375
Mills	Lower Colorado	Colorado	1,096	1,093	1,096	1,093	1,096	1,093
Navarro	Region C	Trinity	0	0	0	0	0	0
Somervell	Region G	Brazos	845	843	845	843	845	843
Travis	Lower Colorado	Brazos	0	0	0	0	0	0
Travis	Lower Colorado	Colorado	2,791	2,783	2,791	2,783	2,791	2,783
Williamson	Region G	Brazos	1,933	1,928	1,933	1,928	1,933	1,928
Williamson	Region G	Colorado	5	5	5	5	5	5

County	RWPA	River Basin	2020	2030	2040	2050	2060	2070
Williamson	Lower Colorado	Brazos	0	0	0	0	0	0
Williamson	Lower Colorado	Colorado	0	0	0	0	0	0
Subtotal			**65,046**	**64,868**	**65,046**	**64,868**	**65,046**	**64,868**
Counties in Upper Trinity GCD								
Hood (downdip)	Region G	Brazos	53	53	53	53	53	53
Subtotal			**53**	**53**	**53**	**53**	**53**	**53**
Groundwater Management Area 8			**65,099**	**64,921**	**65,099**	**64,921**	**65,099**	**64,921**

TABLE 19. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE TRINITY AQUIFER (ANTLERS) IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Counties Not in Upper Trinity GCD								
Brown	Region F	Brazos	48	48	48	48	48	48
Brown	Region F	Colorado	1,007	1,004	1,007	1,004	1,007	1,004
Callahan	Region G	Brazos	444	443	444	443	444	443
Callahan	Region G	Colorado	1,285	1,282	1,285	1,282	1,285	1,282
Collin	Region C	Trinity	1,966	1,961	1,966	1,961	1,966	1,961
Comanche	Region G	Brazos	5,855	5,839	5,855	5,839	5,855	5,839
Cooke	Region C	Red	2,191	2,184	2,191	2,184	2,191	2,184
Cooke	Region C	Trinity	8,353	8,330	8,353	8,330	8,353	8,330
Denton	Region C	Trinity	16,591	16,545	16,591	16,545	16,591	16,545
Eastland	Region G	Brazos	5,194	5,180	5,194	5,180	5,194	5,180
Eastland	Region G	Colorado	553	552	553	552	553	552
Erath	Region G	Brazos	2,636	2,628	2,636	2,628	2,636	2,628
Fannin	Region C	Red	0	0	0	0	0	0
Fannin	Region C	Sulphur	0	0	0	0	0	0
Fannin	Region C	Trinity	0	0	0	0	0	0
Grayson	Region C	Red	6,678	6,660	6,678	6,660	6,678	6,660
Grayson	Region C	Trinity	4,059	4,048	4,059	4,048	4,059	4,048
Lamar	Northeast Texas	Red	0	0	0	0	0	0
Lamar	Northeast Texas	Sulphur	0	0	0	0	0	0
Red River	Northeast Texas	Red	0	0	0	0	0	0
Tarrant	Region C	Trinity	1,251	1,248	1,251	1,248	1,251	1,248
Taylor	Region G	Brazos	5	5	5	5	5	5
Taylor	Region G	Colorado	9	9	9	9	9	9
Subtotal			**58,125**	**57,966**	**58,125**	**57,966**	**58,125**	**57,966**
Counties in Upper Trinity GCD								
Montague (outcrop)	Region B	Red	154	154	154	154	154	154
Montague (outcrop)	Region B	Trinity	3,732	3,721	3,732	3,721	3,732	3,721
Parker (outcrop)	Region C	Brazos	257	256	257	256	257	256
Parker (outcrop)	Region C	Trinity	2,648	2,640	2,648	2,640	2,648	2,640
Wise (outcrop)	Region C	Trinity	7,698	7,677	7,698	7,677	7,698	7,677

County	RWPA	River Basin	2020	2030	2040	2050	2060	2070
Wise (downdip)	Region C	Trinity	2,062	2,057	2,062	2,057	2,062	2,057
Subtotal			**16,551**	**16,505**	**16,551**	**16,505**	**16,551**	**16,505**
Groundwater Management Area 8			**74,676**	**74,471**	**74,676**	**74,471**	**74,676**	**74,471**

TABLE 20. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE WOODBINE AQUIFER IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Collin	Region C	Sabine	0	0	0	0	0	0
Collin	Region C	Trinity	4,263	4,251	4,263	4,251	4,263	4,251
Cooke	Region C	Red	262	261	262	261	262	261
Cooke	Region C	Trinity	540	538	540	538	540	538
Dallas	Region C	Trinity	2,804	2,796	2,804	2,796	2,804	2,796
Denton	Region C	Trinity	3,616	3,607	3,616	3,607	3,616	3,607
Ellis	Region C	Trinity	2,078	2,073	2,078	2,073	2,078	2,073
Fannin	Region C	Red	3,553	3,544	3,553	3,544	3,553	3,544
Fannin	Region C	Sulphur	551	550	551	550	551	550
Fannin	Region C	Trinity	829	827	829	827	829	827
Grayson	Region C	Red	5,615	5,599	5,615	5,599	5,615	5,599
Grayson	Region C	Trinity	1,926	1,922	1,926	1,922	1,926	1,922
Hill	Region G	Brazos	285	284	285	284	285	284
Hill	Region G	Trinity	303	302	303	302	303	302
Hunt	Northeast Texas	Sabine	269	268	269	268	269	268
Hunt	Northeast Texas	Sulphur	165	165	165	165	165	165
Hunt	Northeast Texas	Trinity	330	329	330	329	330	329
Johnson	Region G	Brazos	24	24	24	24	24	24
Johnson	Region G	Trinity	1,961	1,956	1,961	1,956	1,961	1,956
Kaufman	Region C	Trinity	0	0	0	0	0	0
Lamar	Northeast Texas	Red	0	0	0	0	0	0
Lamar	Northeast Texas	Sulphur	49	49	49	49	49	49
McLennan	Region G	Brazos	0	0	0	0	0	0
Navarro	Region C	Trinity	68	68	68	68	68	68
Red River	Northeast Texas	Red	2	2	2	2	2	2
Rockwall	Region C	Trinity	0	0	0	0	0	0
Tarrant	Region C	Trinity	1,141	1,138	1,141	1,138	1,141	1,138
Groundwater Management Area 8			**30,634**	**30,553**	**30,634**	**30,553**	**30,634**	**30,553**

TABLE 21. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE EDWARDS (BALCONES FAULT ZONE) AQUIFER IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Bell	Region G	Brazos	6,469	6,469	6,469	6,469	6,469	6,469
Travis	Lower Colorado	Brazos	275	275	275	275	275	275
Travis	Lower Colorado	Colorado	4,962	4,962	4,962	4,962	4,962	4,962
Williamson	Region G	Brazos	3,351	3,351	3,351	3,351	3,351	3,351
Williamson	Region G	Colorado	101	101	101	101	101	101
Williamson	Lower Colorado	Brazos	6	6	6	6	6	6
Williamson	Lower Colorado	Colorado	4	4	4	4	4	4
Groundwater Management Area 8			**15,168**	**15,168**	**15,168**	**15,168**	**15,168**	**15,168**

TABLE 22. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE MARBLE FALLS AQUIFER IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Brown	Region F	Colorado	25	25	25	25	25	25
Burnet	Lower Colorado	Brazos	1,387	1,383	1,387	1,383	1,387	1,383
Burnet	Lower Colorado	Colorado	1,357	1,353	1,357	1,353	1,357	1,353
Lampasas	Region G	Brazos	1,958	1,952	1,958	1,952	1,958	1,952
Lampasas	Region G	Colorado	887	885	887	885	887	885
Mills	Lower Colorado	Brazos	1	1	1	1	1	1
Mills	Lower Colorado	Colorado	24	24	24	24	24	24
Groundwater Management Area 8			**5,639**	**5,623**	**5,639**	**5,623**	**5,639**	**5,623**

TABLE 23. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE ELLENBURGER-SAN SABA AQUIFER IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Brown	Region F	Colorado	131	131	131	131	131	131
Burnet	Lower Colorado	Brazos	3,833	3,822	3,833	3,822	3,833	3,822
Burnet	Lower Colorado	Colorado	7,024	7,005	7,024	7,005	7,024	7,005
Lampasas	Region G	Brazos	1,685	1,680	1,685	1,680	1,685	1,680
Lampasas	Region G	Colorado	916	913	916	913	916	913
Mills	Lower Colorado	Brazos	93	93	93	93	93	93
Mills	Lower Colorado	Colorado	407	406	407	406	407	406
Groundwater Management Area 8			**14,089**	**14,050**	**14,089**	**14,050**	**14,089**	**14,050**

TABLE 24. MODELED AVAILABLE GROUNDWATER BY DECADE FOR THE HICKORY AQUIFER IN GROUNDWATER MANAGEMENT AREA 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	2020	2030	2040	2050	2060	2070
Brown	Region F	Colorado	12	12	12	12	12	12
Burnet	Lower Colorado	Brazos	1,240	1,236	1,240	1,236	1,240	1,236
Burnet	Lower Colorado	Colorado	2,183	2,177	2,183	2,177	2,183	2,177
Lampasas	Region G	Brazos	80	79	80	79	80	79
Lampasas	Region G	Colorado	34	34	34	34	34	34
Mills	Lower Colorado	Brazos	7	7	7	7	7	7
Mills	Lower Colorado	Colorado	29	29	29	29	29	29
Groundwater Management Area 8			**3,585**	**3,574**	**3,585**	**3,574**	**3,585**	**3,574**

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 2070 were based on the simulated head values at individual model cells extracted from predictive simulation head 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>Region 4</th><th colspan="2">Region 5</th></tr>
<tr><td>2</td><td colspan="3">Woodbine</td><td colspan="3">Woodbine (no sand)</td></tr>
<tr><td>3</td><td colspan="6">Washita/Fredericksburg</td></tr>
<tr><td>4</td><td rowspan="5">Antlers</td><td colspan="3">Paluxy</td><td colspan="2">Paluxy (no sand)</td></tr>
<tr><td>5</td><td colspan="5">Glen Rose</td></tr>
<tr><td>6</td><td rowspan="3">Twin Mountains</td><td 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, Beach and others (2016) adopted a method presented by Van Kelley of INTERA, Inc., which calculated a single composite head from multiple model cells with each adjusted by transmissivity. This composite head took both the head 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:

Hc = Composite Head (feet above mean sea level)

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

H_i = Head 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.

The average head 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 head for a county (feet above mean sea level)

Hc_i = Composite Head 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:

$$DD\_County = Hc\_County_{2009} - Hc\_County_{2070}$$

Where:

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

Hc_County_{2070} = Average head of an aquifer in a county in 2070 as defined above (feet above mean sea level).

Model cells with head values below the cell bottom in 2009 were excluded from the calculation. Also, head was set at the cell bottom if it fell below the cell bottom at 2070.

In comparison with a simple average calculation based on total model cell count, use of composite head 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 head and drawdown calculation.

Per Groundwater Management Area 8, a desired future condition was met if the simulated drawdown from the desired future condition was within five percent or five feet. Using the head output file submitted by Groundwater Management Area 8 and the method described above, the TWDB calculated the drawdowns (Tables A1 and A2) and performed the comparison against the corresponding desired future conditions by county (Tables A3, A4, A5, and A6). The review by the TWDB indicates that the predictive simulation meets the desired future conditions (Tables A7 and A8).

TABLE A1. SIMULATED DRAWDOWN VALUES OF THE TRINITY AND WOODBINE AQUIFERS FOR COUNTIES NOT IN THE UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT. DRAWDOWNS ARE IN FEET.

County	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Bell	—	19	83	—	294	137	330	—
Bosque	—	6	49	—	167	129	201	—
Brown	—	—	2	—	1	1	1	2
Burnet	—	—	2	—	16	7	20	—
Callahan	—	—	—	—	—	—	—	1
Collin	459	705	339	526	—	—	—	570
Comanche	—	—	1	—	2	2	3	9
Cooke	2	—	—	—	—	—	—	179
Coryell	—	7	14	—	100	66	130	—
Dallas	123	324	263	463	350	332	351	—
Delta	—	264	181	—	186	—	—	—
Denton	19	552	349	716	—	—	—	398
Eastland	—	—	—	—	—	—	—	3
Ellis	61	107	194	333	305	263	310	—
Erath	—	1	5	6	19	11	31	11
Falls	—	144	215	—	460	271	465	—
Fannin	247	688	280	372	269	—	—	251
Grayson	157	922	337	417	—	—	—	348
Hamilton	—	2	4	—	24	13	35	—
Hill	16	38	133	—	299	186	337	—
Hunt	598	586	299	370	324	—	—	—
Johnson	3	-61	58	156	184	126	235	—
Kaufman	208	276	269	381	323	309	295	—
Lamar	38	93	97	—	114	—	—	122
Lampasas	—	—	1	—	6	1	11	—
Limestone	—	178	271	—	393	183	404	—
McLennan	6	35	133	—	468	220	542	—
Milam	—	—	212	—	344	229	345	—
Mills	—	1	1	—	7	2	13	—
Navarro	92	119	232	—	291	254	291	—
Red River	2	21	36	—	51	—	—	13
Rockwall	243	401	311	426	—	—	—	—
Somervell	—	1	4	31	52	26	83	—
Tarrant	6	101	148	315	—	—	—	149

County	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Taylor	—	—	—	—	—	—	—	0
Travis	—	—	85	—	142	51	148	—
Williamson	—	—	76	—	172	73	176	—

—: Not available.

TABLE A2. SIMULATED DRAWDOWN VALUES OF THE TRINITY AQUIFER FOR COUNTIES IN THE UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT. DRAWDOWNS ARE IN FEET.

County	Paluxy	Glen Rose	Twin Mountains	Antlers
Hood (outcrop)	5	7	4	—
Hood (downdip)	—	27	46	—
Montague (outcrop)	—	—	—	18
Montague (downdip)	—	—	—	—
Parker (outcrop)	5	10	1	11
Parker (downdip)	1	28	46	—
Wise (outcrop)	—	—	—	35
Wise (downdip)	—	—	—	142

—: Not available.

TABLE A3. RELATIVE DIFFERENCE BETWEEN SIMULATED DRAWDOWNS AND DESIRED FUTURE CONDITIONS OF THE TRINITY AND WOODBINE AQUIFERS FOR COUNTIES NOT IN THE UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT. VALUES GREATER THAN THE ERROR TOLERANCE OF FIVE PERCENT ARE HIGHLIGHTED.

County	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Bell	—	0%	0%	—	-2%	0%	0%	—
Bosque	—	0%	0%	—	0%	0%	0%	—
Brown	—	—	0%	—	0%	0%	0%	0%
Burnet	—	—	0%	—	0%	0%	0%	—
Callahan	—	—	—	—	—	—	—	0%
Collin	0%	0%	0%	0%	—	—	—	0%
Comanche	—	—	0%	—	0%	0%	0%	0%
Cooke	0%	—	—	—	—	—	—	2%
Coryell	—	0%	0%	—	1%	0%	0%	—
Dallas	0%	0%	0%	0%	1%	0%	0%	—
Delta	—	0%	0%	—	0%	—	—	—
Denton	-16%	0%	0%	0%	—	—	—	1%
Eastland	—	—	—	—	—	—	—	0%
Ellis	0%	0%	0%	0%	1%	0%	0%	—
Erath	—	0%	0%	0%	0%	0%	0%	-9%
Falls	—	0%	0%	—	0%	0%	0%	—
Fannin	0%	0%	0%	0%	0%	—	—	0%
Grayson	-2%	0%	0%	0%	—	—	—	0%
Hamilton	—	0%	0%	—	0%	0%	0%	—
Hill	-25%	0%	0%	—	0%	0%	0%	—
Hunt	0%	0%	0%	0%	0%	—	—	—
Johnson	33%	0%	0%	0%	3%	0%	0%	—
Kaufman	0%	0%	0%	0%	0%	0%	0%	—
Lamar	0%	0%	0%	—	0%	—	—	0%
Lampasas	—	—	0%	—	0%	0%	0%	—
Limestone	—	0%	0%	—	0%	0%	0%	—
McLen—n	0%	0%	0%	—	-1%	0%	0%	—
Milam	—	—	0%	—	0%	0%	0%	—
Mills	—	0%	0%	—	0%	0%	0%	—
—varro	0%	0%	0%	—	0%	0%	0%	—
Red River	0%	0%	0%	—	0%	—	—	0%
Rockwall	0%	0%	0%	0%	—	—	—	—

County	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Somervell	—	0%	0%	0%	2%	0%	0%	—
Tarrant	-17%	0%	0%	0%	—	—	—	1%
Taylor	—	—	—	—	—	—	—	0%
Travis	—	—	0%	—	1%	2%	1%	—
Williamson	—	—	-1%	—	-1%	-1%	-1%	—

—: Not available.

TABLE A4. RELATIVE DIFFERENCE BETWEEN SIMULATED DRAWDOWNS AND DESIRED FUTURE CONDITIONS OF THE TRINITY AQUIFER FOR COUNTIES IN THE UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT. VALUES GREATER THAN THE ERROR TOLERANCE OF FIVE PERCENT ARE HIGHLIGHTED.

County	Paluxy	Glen Rose	Twin Mountains	Antlers
Hood (outcrop)	0%	0%	0%	—
Hood (downdip)	—	-4%	0%	—
Montague (outcrop)	—	—	—	0%
Montague (downdip)	—	—	—	—
Parker (outcrop)	0%	0%	0%	0%
Parker (downdip)	0%	0%	0%	—
Wise (outcrop)	—	—	—	3%
Wise (downdip)	—	—	—	0%

—: Not available.

TABLE A5. DIFFERENCE BETWEEN SIMULATED DRAWDOWNS AND DESIRED FUTURE CONDITIONS OF THE TRINITY AND WOODBINE AQUIFERS FOR COUNTIES NOT IN THE UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT. VALUES GREATER THAN THE ERROR TOLERANCE OF FIVE FEET ARE HIGHLIGHTED.

County	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Bell	—	0	0	—	-6	0	0	—
Bosque	—	0	0	—	0	0	0	—
Brown	—	—	0	—	0	0	0	0
Burnet	—	—	0	—	0	0	0	—
Callahan	—	—	—	—	—	—	—	0
Collin	0	0	0	0	—	—	—	0
Comanche	—	—	0	—	0	0	0	0
Cooke	0	—	—	—	—	—	—	3
Coryell	—	0	0	—	1	0	0	—
Dallas	0	0	0	0	2	0	0	—
Delta	—	0	0	—	0	—	—	—
Denton	-3	0	0	0	—	—	—	3
Eastland	—	—	—	—	—	—	—	0
Ellis	0	0	0	0	4	0	0	—
Erath	—	0	0	0	0	0	0	-1
Falls	—	0	0	—	-2	0	0	—
Fannin	0	0	0	0	0	—	—	0
Grayson	-3	0	0	0	—	—	—	0
Hamilton	—	0	0	—	0	0	0	—
Hill	-4	0	0	—	1	0	0	—
Hunt	0	0	0	0	0	—	—	—
Johnson	1	0	0	0	5	0	0	—
Kaufman	0	0	0	0	0	0	0	—
Lamar	0	0	0	—	0	—	—	0
Lampasas	—	—	0	—	0	0	0	—
Limestone	—	0	0	—	1	0	0	—
McLennan	0	0	0	—	-3	0	0	—
Milam	—	—	0	—	-1	0	0	—
Mills	—	0	0	—	0	0	0	—
Navarro	0	0	0	—	1	0	0	—
Red River	0	0	0	—	0	—	—	0
Rockwall	0	0	0	0	—	—	—	—

County	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Somervell	—	0	0	0	1	0	0	—
Tarrant	-1	0	0	0	—	—	—	1
Taylor	—	—	—	—	—	—	—	0
Travis	—	—	0	—	1	1	2	—
Williamson	—	—	-1	—	-1	-1	-1	—

—: Not available.

TABLE A6. DIFFERENCE BETWEEN SIMULATED DRAWDOWNS AND DESIRED FUTURE CONDITIONS OF THE TRINITY AQUIFER FOR COUNTIES IN THE UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT. NO VALUES ARE GREATER THAN THE ERROR TOLERANCE OF FIVE FEET.

County	Paluxy	Glen Rose	Twin Mountains	Antlers
Hood (outcrop)	0	0	0	—
Hood (downdip)	—	-1	0	—
Montague (outcrop)	—	—	—	0
Montague (downdip)	—	—	—	—
Parker (outcrop)	0	0	0	0
Parker (downdip)	0	0	0	—
Wise (outcrop)	—	—	—	1
Wise (downdip)	—	—	—	0

—: Not available.

TABLE A7. COMPARISON OF SIMULATED DRAWDOWNS WITH THE DESIRED FUTURE CONDITIONS OF THE TRINITY AND WOODBINE AQUIFERS FOR COUNTIES NOT IN THE UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT. NO VALUES ARE GREATER THAN BOTH ERROR TOLERRANCES OF FIVE PERCENT AND FIVE FEET AT THE SAME TIME. THUS, PREDICTIVE SIMULATION MEETS ALL DESIRED FUTURE CONDITIONS.

County	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Bell	—	MEET	MEET	—	MEET	MEET	MEET	—
Bosque	—	MEET	MEET	—	MEET	MEET	MEET	—
Brown	—	—	MEET	—	MEET	MEET	MEET	MEET
Burnet	—	—	MEET	—	MEET	MEET	MEET	—
Callahan	—	—	—	—	—	—	—	MEET
Collin	MEET	MEET	MEET	MEET	—	—	—	MEET
Comanche	—	—	MEET	—	MEET	MEET	MEET	MEET
Cooke	MEET	—	—	—	—	—	—	MEET
Coryell	—	MEET	MEET	—	MEET	MEET	MEET	—
Dallas	MEET	MEET	MEET	MEET	MEET	MEET	MEET	—
Delta	—	MEET	MEET	—	MEET	—	—	—
Denton	MEET	MEET	MEET	MEET	—	—	—	MEET
Eastland	—	—	—	—	—	—	—	MEET
Ellis	MEET	MEET	MEET	MEET	MEET	MEET	MEET	—
Erath	—	MEET	MEET	MEET	MEET	MEET	MEET	MEET
Falls	—	MEET	MEET	—	MEET	MEET	MEET	—
Fannin	MEET	MEET	MEET	MEET	MEET	—	—	MEET
Grayson	MEET	MEET	MEET	MEET	—	—	—	MEET
Hamilton	—	MEET	MEET	—	MEET	MEET	MEET	—
Hill	MEET	MEET	MEET	—	MEET	MEET	MEET	—
Hunt	MEET	MEET	MEET	MEET	MEET	—	—	—
Johnson	MEET	MEET	MEET	MEET	MEET	MEET	MEET	—
Kaufman	MEET	MEET	MEET	MEET	MEET	MEET	MEET	—
Lamar	MEET	MEET	MEET	—	MEET	—	—	MEET
Lampasas	—	—	MEET	—	MEET	MEET	MEET	—
Limestone	—	MEET	MEET	—	MEET	MEET	MEET	—
McLennan	MEET	MEET	MEET	—	MEET	MEET	MEET	—
Milam	—	—	MEET	—	MEET	MEET	MEET	—
Mills	—	MEET	MEET	—	MEET	MEET	MEET	—
Navarro	MEET	MEET	MEET	—	MEET	MEET	MEET	—

County	Woodbine	Paluxy	Glen Rose	Twin Mountains	Travis Peak	Hensell	Hosston	Antlers
Red River	MEET	MEET	MEET	—	MEET	—	—	MEET
Rockwall	MEET	MEET	MEET	MEET	—	—	—	—
Somervell	—	MEET	MEET	MEET	MEET	MEET	MEET	—
Tarrant	MEET	MEET	MEET	MEET	—	—	—	MEET
Taylor	—	—	—	—	—	—	—	MEET
Travis	—	—	MEET	—	MEET	MEET	MEET	—
Williamson	—	—	MEET	—	MEET	MEET	MEET	—

—: Not available.

TABLE A8. COMPARISON OF SIMULATED DRAWDOWNS WITH THE DESIRED FUTURE CONDITIONS OF THE TRINITY AQUIFER FOR COUNTIES IN THE UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT. NO VALUES ARE GREATER THAN BOTH ERROR TOLERRANCES OF FIVE PERCENT AND FIVE FEET AT THE SAME TIME. THUS, PREDICTIVE SIMULATION MEETS ALL DESIRED FUTURE CONDITIONS.

County	Paluxy	Glen Rose	Twin Mountains	Antlers
Hood (outcrop)	MEET	MEET	MEET	—
Hood (downdip)	—	MEET	MEET	—
Montague (outcrop)	—	—	—	MEET
Montague (downdip)	—	—	—	—
Parker (outcrop)	MEET	MEET	MEET	MEET
Parker (downdip)	MEET	MEET	MEET	—
Wise (outcrop)	—	—	—	MEET
Wise (downdip)	—	—	—	MEET

—: Not available.

Appendix B

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

The predictive simulation used to evaluate the desired future conditions and the modeled available groundwater values for the Marble Falls, Ellenburger-San Saba, and Hickory aquifers in Brown, Burnet, Lampasas, and Mills counties within Groundwater Management Area 8 involves rewriting all relevant MODFLOW-USG packages to reflect the predictive simulation. The initial pumping for the predictive simulation was based on the last stress period of the groundwater availability model. In its clarification, Groundwater Management Area 8 also provided estimated pumping to use for the predictive simulation by TWDB (Table B1).

These pumping values from Groundwater Management Area 8 are more than the pumpage from the last stress period of the groundwater availability model. This surplus pumping for each aquifer was redistributed uniformly in each county according to its modeled extent.

The head file from the model output was used to calculate the remaining saturated thickness (*ST*) within the modeled extent for each aquifer between 2009 and 2070 using the following equation:

$$ST = \frac{\sum_{i=1}^{n}\left(h2070_i - e_i\right)}{\sum_{i=1}^{n}\left(h2009_i - e_i\right)}$$

Where:

n = Total model cells in a county

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

$h2070_i$ = Head of 2070 at model cell i (feet)

e_i = Bottom elevation of model cell i (feet).

Model cells with head values below the cell bottom in 2009 were excluded from the calculation. Also, head was set at the cell bottom if it fell below the cell bottom at 2070.

The comparison between the simulated remaining saturated thickness and the desired future conditions is presented in Table B2. Table B2 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. GROUNDWATER PUMPING RATES FOR THE MARBLE FALLS, ELLENBURGER-SAN SABA, AND HICKORY AQUIFERS IN BROWN, BURNET, LAMPASAS, AND MILLS COUNTIES PROVIDED BY GROUNDWATER MNAAGMENT AREA 8.

County	Aquifer	2010 to 2070 (acre-feet per year)
Burnet	Marble Falls	2,736
Lampasas	Marble Falls	2,837
Brown	Marble Falls	25
Mills	Marble Falls	25
Burnet	Ellenburger-San Saba	10,827
Lampasas	Ellenburger-San Saba	2,593
Brown	Ellenburger-San Saba	131
Mills	Ellenburger-San Saba	499
Burnet	Hickory	3,413
Lampasas	Hickory	113
Brown	Hickory	12
Mills	Hickory	36

TABLE B2. 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	Remaining Aquifer Saturated Thickness Defined by Desired Future Condition	Simulated Remaining Aquifer Saturated Thickness	Is Desired Future Condition Met?
Brown	Marble Falls	at least 90%	99.8%	Yes
Brown	Ellenburger-San Saba	at least 90%	99.9%	Yes
Brown	Hickory	at least 90%	99.9%	Yes
Burnet	Marble Falls	at least 90%	98.8%	Yes
Burnet	Ellenburger-San Saba	at least 90%	99.3%	Yes
Burnet	Hickory	at least 90%	99.5%	Yes
Lampasas	Marble Falls	at least 90%	98.2%	Yes
Lampasas	Ellenburger-San Saba	at least 90%	99.0%	Yes
Lampasas	Hickory	at least 90%	99.5%	Yes
Mills	Marble Falls	at least 90%	99.5%	Yes
Mills	Ellenburger-San Saba	at least 90%	99.7%	Yes
Mills	Hickory	at least 90%	99.8%	Yes

Appendix C

Summary of Dry Model Cell Count for the Trinity and Woodbine Aquifers

TABLE C1. SUMMARY OF DRY MODEL CELLS FOR THE TRINITY AQUIFER (PALUXY) FROM THE REVISED PREDICTIVE SIMULATION.

Year	Collin	Dallas	Denton	Johnson	Tarrant
Total Active Official Aquifer Model Cells	12,062	14,532	3,520	11,627	15,389
2009 (baseline)	0	0	0	17	3
2010	0	0	9	0	3
2011	1	0	49	0	3
2012	4	0	83	0	17
2013	8	0	140	0	47
2014	35	0	196	0	91
2015	49	0	264	0	146
2016	64	0	306	0	209
2017	72	0	349	0	291
2018	83	0	385	0	373
2019	93	0	428	0	460
2020	99	0	482	0	555
2021	109	0	550	0	620
2022	115	0	622	0	684
2023	125	0	695	0	746
2024	129	0	780	0	802
2025	138	0	879	0	862
2026	147	0	957	0	919
2027	151	0	1,018	0	964
2028	159	0	1,087	0	995
2029	166	0	1,171	0	1,038
2030	173	0	1,262	0	1,072
2031	176	0	1,326	0	1,101
2032	180	0	1,379	0	1,137
2033	187	0	1,420	0	1,156
2034	193	0	1,461	0	1,194
2035	201	0	1,492	0	1,224
2036	204	0	1,520	0	1,240
2037	209	0	1,554	0	1,274
2038	212	0	1,584	0	1,292
2039	215	0	1,607	0	1,317
2040	217	0	1,627	0	1,347
2041	224	0	1,659	0	1,362
2042	228	0	1,682	0	1,377

Year	Collin	Dallas	Denton	Johnson	Tarrant
2043	235	0	1,710	0	1,409
2044	239	0	1,735	0	1,425
2045	242	0	1,755	0	1,438
2046	247	0	1,777	0	1,455
2047	250	0	1,790	0	1,477
2048	251	0	1,807	0	1,497
2049	253	0	1,823	0	1,517
2050	254	0	1,834	0	1,530
2051	258	2	1,847	0	1,539
2052	264	2	1,860	0	1,562
2053	266	2	1,874	0	1,585
2054	270	3	1,883	0	1,594
2055	272	3	1,893	0	1,606
2056	275	3	1,902	0	1,621
2057	276	3	1,923	0	1,634
2058	280	4	1,929	0	1,650
2059	282	4	1,934	0	1,666
2060	286	4	1,943	0	1,679
2061	288	4	1,947	0	1,693
2062	288	4	1,961	0	1,701
2063	290	5	1,973	0	1,712
2064	291	5	1,977	0	1,726
2065	292	5	1,988	0	1,739
2066	295	5	1,996	0	1,752
2067	297	6	2,002	0	1,760
2068	300	7	2,009	0	1,769
2069	304	7	2,017	0	1,778
2070	305	7	2,024	0	1,784

TABLE C2. SUMMARY OF DRY MODEL CELLS FOR THE TRINITY AQUIFER (GLEN ROSE) FROM THE REVISED PREDICTIVE SIMULATION.

Year	Bell	Burnet	Coryell	Erath	Hamilton	Hood	Johnson	Mills	Parker	Travis
Total Active Official Aquifer Model Cells	23,737	22,534	41,647	20,905	36,944	14,461	12,342	10,615	11,389	14,552
2009 (baseline)	0	0	11	0	0	0	15	0	8	25
2010	0	0	11	0	0	0	15	0	9	29
2011	0	0	11	0	0	0	15	0	12	29
2012	0	0	11	0	0	0	15	0	15	29
2013	0	0	11	1	0	0	15	1	19	29
2014	0	1	11	1	0	1	15	1	22	31
2015	0	1	11	1	0	1	15	1	23	32
2016	0	1	12	1	0	1	15	1	30	33
2017	0	1	12	2	0	2	15	1	37	34
2018	0	1	12	3	0	2	15	1	38	34
2019	0	1	14	3	0	2	16	1	44	34
2020	0	1	14	3	0	2	16	1	46	34
2021	0	1	14	3	0	3	16	1	48	35
2022	0	1	14	3	0	3	16	1	49	38
2023	0	1	14	3	0	3	17	1	54	41
2024	0	1	15	3	0	3	17	1	58	45
2025	0	1	15	3	0	3	17	1	65	47
2026	0	1	15	3	0	5	19	1	72	48
2027	0	1	15	4	0	5	21	1	78	50
2028	0	1	15	4	0	5	21	1	82	51
2029	0	1	15	4	0	6	22	1	84	51
2030	0	1	15	4	0	6	22	1	90	54
2031	0	1	15	8	0	6	22	1	99	54
2032	0	1	15	8	0	8	23	1	103	55
2033	0	1	15	8	0	8	23	1	105	56
2034	0	1	15	9	0	9	23	1	108	56
2035	0	1	15	9	0	10	23	1	109	57
2036	0	1	15	9	0	12	23	1	110	58
2037	0	1	15	9	0	13	23	1	110	58
2038	0	1	15	9	0	14	23	1	113	59

Year	Bell	Burnet	Coryell	Erath	Hamilton	Hood	Johnson	Mills	Parker	Travis
2039	0	2	15	9	0	14	23	1	113	59
2040	0	2	15	9	0	14	23	1	116	60
2041	0	2	15	9	0	16	23	1	119	60
2042	0	2	15	10	1	16	23	1	122	61
2043	0	2	15	10	2	16	23	1	124	61
2044	0	2	15	10	2	18	24	1	125	62
2045	0	2	15	10	2	18	25	1	131	63
2046	0	2	15	10	2	18	25	1	131	63
2047	0	2	16	10	3	18	25	1	134	64
2048	0	2	16	10	4	18	26	1	137	64
2049	0	2	16	11	4	20	26	1	139	65
2050	0	2	16	11	4	22	26	1	143	65
2051	0	2	16	12	5	22	29	1	144	66
2052	1	2	16	12	5	22	31	1	147	66
2053	3	2	16	12	7	24	32	1	149	67
2054	4	2	17	12	7	27	32	1	151	67
2055	4	2	17	12	7	27	34	1	152	67
2056	4	2	17	12	7	30	34	1	152	68
2057	6	2	17	13	7	31	34	1	156	69
2058	7	2	17	13	7	31	34	1	159	69
2059	7	2	17	13	7	31	34	1	164	69
2060	7	2	17	13	8	34	34	1	166	69
2061	7	2	17	13	8	34	34	1	165	69
2062	7	2	17	13	9	35	34	1	168	69
2063	7	2	17	14	9	36	34	1	168	69
2064	7	2	17	16	9	36	34	1	172	69
2065	8	2	17	16	9	36	34	2	176	69
2066	8	2	17	16	10	36	34	2	180	69
2067	8	3	17	19	10	36	34	2	184	69
2068	8	3	17	19	11	38	34	2	188	69
2069	8	3	17	20	11	38	34	2	191	69
2070	8	4	17	20	11	41	34	2	194	69

TABLE C3. SUMMARY OF DRY MODEL CELLS FOR THE TRINITY AQUIFER (TWIN MOUNTAINS) FROM THE REVISED PREDICTIVE SIMULATION.

Year	Denton	Erath	Hood	Johnson	Parker	Tarrant
Total Active Official Aquifer Model Cells	10,560	46,642	37,444	6,816	30,830	40,713
2009 (baseline)	0	20	0	0	0	0
2010	0	27	0	0	0	0
2011	0	33	0	0	0	0
2012	0	40	0	0	0	0
2013	0	44	0	0	0	0
2014	0	48	0	0	0	0
2015	0	53	0	0	0	0
2016	0	56	0	0	0	0
2017	0	61	0	0	0	0
2018	0	65	0	0	0	0
2019	0	68	1	0	0	0
2020	0	71	1	0	0	0
2021	0	76	1	0	1	0
2022	0	80	1	0	4	0
2023	0	81	1	0	8	2
2024	0	85	4	0	13	6
2025	0	88	7	0	16	10
2026	0	91	15	0	17	16
2027	0	94	18	0	18	25
2028	0	97	23	0	18	32
2029	0	101	28	0	23	36
2030	0	107	33	0	24	41
2031	1	108	41	0	25	48
2032	1	111	46	0	25	53
2033	1	119	56	0	26	56
2034	1	122	64	0	27	66
2035	1	123	68	0	27	74
2036	2	126	75	0	29	93
2037	2	131	82	0	29	127
2038	2	134	95	0	30	170
2039	2	136	100	0	31	231
2040	2	137	114	0	32	289
2041	2	143	129	0	32	354

Year	Denton	Erath	Hood	Johnson	Parker	Tarrant
2042	2	146	137	0	32	426
2043	2	150	150	0	32	500
2044	2	154	165	0	32	587
2045	3	157	178	0	34	648
2046	4	161	194	0	35	711
2047	4	167	212	0	36	767
2048	4	171	228	0	38	832
2049	5	174	242	0	38	889
2050	7	176	251	0	38	930
2051	8	178	262	0	38	996
2052	8	181	272	2	38	1,057
2053	9	184	282	7	38	1,114
2054	9	186	297	13	39	1,169
2055	9	189	313	19	40	1,234
2056	10	194	320	26	40	1,303
2057	11	196	330	33	41	1,366
2058	14	207	336	41	42	1,435
2059	14	211	341	49	42	1,508
2060	15	221	351	57	42	1,595
2061	16	221	363	67	43	1,681
2062	17	223	368	75	43	1,783
2063	18	224	375	83	43	1,899
2064	20	228	385	94	45	1,988
2065	22	229	393	105	46	2,104
2066	23	231	401	115	47	2,188
2067	24	233	408	130	47	2,285
2068	27	236	416	139	47	2,364
2069	31	240	424	155	47	2,468
2070	35	242	429	168	47	2,553

TABLE C4. SUMMARY OF DRY MODEL CELLS FOR THE TRINITY AQUIFER (TRAVIS PEAK) FROM THE REVISED PREDICTIVE SIMULATION.

Year	Burnet	Comanche	Erath	Johnson	Lampasas	McLennan	Travis
Total Active Official Aquifer Model Cells	46,474	78,137	39,220	28,386	63,905	50,973	30,318
2009 (baseline)	217	0	0	0	1	0	57
2010	176	0	1	0	1	0	59
2011	186	0	1	0	1	0	60
2012	218	0	1	0	1	0	63
2013	249	0	1	0	1	0	65
2014	271	0	1	0	1	0	68
2015	291	0	1	0	1	0	68
2016	314	0	3	0	1	0	70
2017	331	0	4	0	1	0	70
2018	345	0	5	0	1	0	71
2019	363	0	6	0	1	0	72
2020	378	0	11	0	1	0	72
2021	394	0	17	0	1	0	74
2022	400	0	29	0	1	0	74
2023	414	0	59	0	1	0	76
2024	424	0	93	0	1	0	77
2025	438	1	114	0	1	0	77
2026	450	9	130	0	1	0	79
2027	463	14	160	0	1	0	80
2028	474	14	183	0	1	0	80
2029	483	18	205	0	1	0	82
2030	494	30	238	0	1	0	82
2031	505	34	266	0	1	0	83
2032	512	35	299	0	1	0	83
2033	520	41	328	0	1	0	84
2034	527	54	343	0	1	0	85
2035	533	67	351	0	1	0	85
2036	543	72	370	0	1	0	87
2037	545	77	398	0	1	0	88
2038	554	85	414	0	1	0	88
2039	564	94	421	0	1	0	90
2040	571	103	435	0	1	1	90
2041	579	111	453	0	1	1	91
2042	588	116	481	0	1	1	92

Year	Burnet	Comanche	Erath	Johnson	Lampasas	McLennan	Travis
2043	599	116	497	0	1	1	93
2044	604	121	507	0	1	1	93
2045	609	128	520	0	1	1	94
2046	618	138	538	0	1	1	95
2047	623	146	557	0	1	2	97
2048	629	152	590	0	1	2	97
2049	634	160	606	0	1	2	98
2050	640	166	620	0	1	2	99
2051	644	172	638	1	1	2	100
2052	648	180	651	1	1	2	100
2053	654	186	665	1	1	2	101
2054	658	190	678	1	1	2	102
2055	670	194	690	1	1	2	103
2056	675	196	699	1	1	2	103
2057	678	199	711	1	1	2	104
2058	692	206	723	1	1	2	105
2059	702	216	746	1	1	2	106
2060	717	222	774	1	1	2	106
2061	714	225	776	1	1	2	106
2062	719	227	790	1	1	2	107
2063	723	231	799	1	1	3	107
2064	728	235	813	2	1	3	109
2065	730	238	822	3	1	3	109
2066	730	245	832	3	1	3	109
2067	734	252	841	3	1	3	110
2068	741	258	850	3	1	3	110
2069	745	264	861	6	1	3	111
2070	748	269	871	7	1	3	112

TABLE C5. SUMMARY OF DRY MODEL CELLS FOR THE TRINITY AQUIFER (HENSELL) FROM THE REVISED PREDICTIVE SIMULATION.

Year	Erath	Lampasas
Total Active Official Aquifer Model Cells	21,880	25,364
2009 (baseline)	0	1
2010	0	1
2011	0	1
2012	0	1
2013	0	1
2014	0	1
2015	0	1
2016	0	1
2017	0	1
2018	0	1
2019	0	1
2020	0	1
2021	0	1
2022	0	1
2023	0	1
2024	0	1
2025	0	1
2026	0	1
2027	0	1
2028	0	1
2029	0	1
2030	0	1
2031	0	1
2032	0	1
2033	0	1
2034	0	1
2035	0	1
2036	0	1
2037	0	1
2038	0	1
2039	0	1
2040	1	1
2041	1	1
2042	3	1
2043	3	1

Year	Erath	Lampasas
2044	3	1
2045	6	1
2046	7	1
2047	7	1
2048	12	1
2049	14	1
2050	14	1
2051	18	1
2052	20	1
2053	22	1
2054	24	1
2055	25	1
2056	25	1
2057	30	1
2058	31	1
2059	35	1
2060	37	1
2061	37	1
2062	40	1
2063	42	1
2064	42	1
2065	44	1
2066	46	1
2067	46	1
2068	48	1
2069	50	1
2070	52	1

TABLE C6. SUMMARY OF DRY MODEL CELLS FOR THE TRINITY AQUIFER (HOSSTON) FROM THE REVISED PREDICTIVE SIMULATION.

Year	Burnet	Comanche	Erath	Johnson	McLennan	Travis
Total Active Official Aquifer Model Cells	24,354	41,062	8,464	9,462	16,991	9,480
2009 (baseline)	217	0	0	0	0	57
2010	176	0	1	0	0	59
2011	186	0	1	0	0	60
2012	218	0	1	0	0	63
2013	247	0	1	0	0	65
2014	269	0	1	0	0	68
2015	288	0	1	0	0	68
2016	310	0	1	0	0	70
2017	325	0	1	0	0	70
2018	338	0	1	0	0	71
2019	353	0	1	0	0	72
2020	368	0	1	0	0	72
2021	382	0	2	0	0	74
2022	387	0	9	0	0	74
2023	400	0	25	0	0	76
2024	409	0	51	0	0	77
2025	423	1	66	0	0	77
2026	433	9	75	0	0	79
2027	444	14	93	0	0	80
2028	455	14	99	0	0	80
2029	463	18	105	0	0	82
2030	473	30	111	0	0	82
2031	484	34	118	0	0	83
2032	491	35	127	0	0	83
2033	498	41	132	0	0	84
2034	505	54	138	0	0	85
2035	511	67	143	0	0	85
2036	520	72	151	0	0	87
2037	522	77	158	0	0	88
2038	531	85	162	0	0	88
2039	541	94	162	0	0	90
2040	547	103	166	0	1	90
2041	555	111	174	0	1	91
2042	563	116	183	0	1	92
2043	570	116	187	0	1	93

Year	Burnet	Comanche	Erath	Johnson	McLennan	Travis
2044	575	121	192	0	1	93
2045	579	128	198	0	1	94
2046	588	138	206	0	1	95
2047	591	146	211	0	2	97
2048	597	152	219	0	2	97
2049	602	160	222	0	2	98
2050	607	166	227	0	2	99
2051	609	172	229	1	2	100
2052	613	180	232	1	2	100
2053	619	186	239	1	2	101
2054	623	190	246	1	2	102
2055	633	194	253	1	2	103
2056	637	196	259	1	2	103
2057	640	199	263	1	2	104
2058	651	206	269	1	2	105
2059	659	216	283	1	2	106
2060	673	222	294	1	2	106
2061	671	225	295	1	2	106
2062	675	227	297	1	2	107
2063	679	231	299	1	3	107
2064	684	235	305	2	3	109
2065	686	238	307	3	3	109
2066	686	245	310	3	3	109
2067	689	252	315	3	3	110
2068	696	258	317	3	3	110
2069	700	264	320	6	3	111
2070	703	269	323	7	3	112

TABLE C7. SUMMARY OF DRY MODEL CELLS FOR THE TRINITY AQUIFER (ANTLERS) FROM THE REVISED PREDICTIVE SIMULATION.

Year	Collin	Comanche	Cooke	Denton	Eastland	Erath	Grayson	Montague	Parker	Tarrant	Wise
Total Active Official Aquifer Model Cells	7,055	23,711	77,143	59,107	44,009	9,287	77,954	56,141	42,539	5,009	92,333
2009 (baseline)	0	123	0	0	74	0	0	0	0	0	0
2010	1	80	0	0	91	6	0	0	0	0	1
2011	3	85	0	5	94	13	0	0	0	0	5
2012	7	92	0	29	99	29	0	0	0	0	6
2013	11	99	0	95	108	34	0	0	0	1	6
2014	16	103	1	201	110	36	0	0	0	6	6
2015	22	111	2	341	111	36	0	0	0	15	8
2016	30	120	3	500	113	36	0	0	0	28	67
2017	37	130	4	616	115	36	2	0	0	40	221
2018	44	141	7	721	117	39	6	0	1	58	372
2019	47	156	10	806	120	44	10	0	1	78	484
2020	53	167	17	901	125	48	22	0	2	94	574
2021	57	176	27	1,017	127	51	29	0	2	111	654
2022	62	186	37	1,199	130	52	36	0	2	124	741
2023	67	202	49	1,375	130	60	48	0	6	140	810
2024	71	230	64	1,543	133	74	57	0	9	151	879
2025	77	270	76	1,692	137	81	72	0	19	158	947
2026	79	294	95	1,803	139	90	90	0	54	162	995
2027	83	327	111	1,903	149	102	101	0	84	167	1,053
2028	86	373	123	1,983	156	110	106	0	112	171	1,109
2029	90	422	140	2,056	162	128	117	0	141	179	1,180
2030	94	448	152	2,121	179	171	122	0	166	183	1,236

Year	Collin	Comanche	Cooke	Denton	Eastland	Erath	Grayson	Montague	Parker	Tarrant	Wise
2031	96	478	164	2,180	204	185	134	0	184	190	1,294
2032	100	517	175	2,244	221	197	140	0	206	195	1,368
2033	103	554	185	2,299	233	208	148	0	218	202	1,479
2034	105	617	199	2,364	236	222	152	0	234	208	1,551
2035	110	669	216	2,436	242	225	161	0	244	215	1,628
2036	111	710	222	2,517	249	232	168	0	254	222	1,713
2037	113	771	234	2,623	259	246	175	0	262	229	1,809
2038	116	836	245	2,708	282	262	184	0	270	236	1,879
2039	121	865	256	2,788	304	283	191	0	278	244	1,952
2040	122	913	264	2,879	321	303	195	0	285	256	2,029
2041	123	957	276	2,951	331	313	201	0	292	291	2,085
2042	126	998	292	3,038	344	326	205	0	295	349	2,130
2043	128	1,032	300	3,119	363	334	210	0	303	383	2,174
2044	130	1,074	307	3,189	380	351	215	0	305	414	2,214
2045	131	1,129	314	3,251	397	359	221	0	309	446	2,253
2046	131	1,171	323	3,336	412	372	230	0	312	472	2,291
2047	136	1,221	333	3,405	442	390	233	0	318	501	2,349
2048	137	1,266	340	3,465	453	415	239	0	319	533	2,382
2049	139	1,320	353	3,524	474	440	240	0	325	558	2,413
2050	141	1,351	361	3,589	502	455	244	0	326	583	2,442
2051	141	1,389	367	3,633	525	468	247	0	327	608	2,458
2052	143	1,435	376	3,688	548	482	254	0	331	632	2,480
2053	146	1,469	379	3,745	590	493	257	0	332	652	2,496
2054	147	1,510	384	3,788	619	506	258	0	334	671	2,518
2055	148	1,548	392	3,849	645	526	264	0	335	697	2,533
2056	149	1,585	399	3,897	668	548	267	0	337	719	2,545

Year	Collin	Comanche	Cooke	Denton	Eastland	Erath	Grayson	Montague	Parker	Tarrant	Wise
2057	150	1,626	402	3,948	681	564	270	0	340	754	2,558
2058	150	1,703	407	3,981	715	578	274	0	340	788	2,574
2059	152	1,750	411	4,028	733	606	280	1	346	817	2,586
2060	154	1,813	416	4,067	751	627	283	1	346	845	2,594
2061	155	1,846	424	4,115	756	637	283	1	350	872	2,607
2062	156	1,909	428	4,152	777	646	287	1	350	898	2,616
2063	158	1,944	434	4,193	793	673	288	1	350	930	2,629
2064	158	1,968	441	4,232	807	711	292	1	350	953	2,635
2065	158	2,001	448	4,260	821	744	294	1	350	966	2,642
2066	158	2,065	450	4,295	842	770	298	1	352	984	2,653
2067	160	2,117	454	4,335	854	792	301	1	354	1,005	2,665
2068	162	2,154	455	4,360	863	802	303	1	355	1,016	2,676
2069	162	2,198	459	4,395	876	825	303	1	359	1,017	2,684
2070	164	2,268	462	4,438	881	846	307	1	360	1,019	2,691

TABLE C8. SUMMARY OF DRY MODEL CELLS FOR THE WOODBINE AQUIFER FROM THE REVISED PREDICTIVE SIMULATION.

Year	Collin	Cooke	Denton	Fannin	Grayson	Johnson	Tarrant
Total Active Model Cells in Official Aquifer Boundary	11,762	5,700	11,991	15,443	17,911	8,407	8,901
2009 (baseline)	0	0	3	3	2	14	2
2010	0	4	3	3	3	16	2
2011	0	4	3	4	3	16	2
2012	0	4	3	4	5	16	2
2013	0	4	3	4	5	19	2
2014	0	4	3	5	6	23	2
2015	0	4	3	6	7	23	2
2016	0	5	3	6	8	23	2
2017	0	5	3	8	9	24	2
2018	0	5	3	9	10	26	2
2019	0	5	3	10	11	26	2
2020	0	5	3	11	11	26	2
2021	0	5	3	12	13	27	2
2022	0	5	3	12	14	28	2
2023	0	5	3	12	14	28	2
2024	0	5	4	13	14	29	2
2025	0	5	5	14	15	29	2
2026	0	5	5	15	15	30	2
2027	0	5	5	15	15	31	2
2028	0	6	5	15	15	33	2
2029	0	6	5	15	15	34	2
2030	0	6	5	15	15	36	2
2031	0	6	5	16	15	37	2
2032	0	6	5	17	16	37	2
2033	0	6	5	18	17	38	2
2034	0	6	5	20	18	40	2
2035	0	6	5	21	19	40	2
2036	0	6	5	22	19	41	2
2037	0	6	5	24	19	41	2
2038	0	6	5	25	23	42	2
2039	0	6	5	26	25	42	2
2040	0	6	5	27	25	42	2
2041	0	6	5	27	25	42	2

Year	Collin	Cooke	Denton	Fannin	Grayson	Johnson	Tarrant
2042	0	6	5	27	27	42	2
2043	0	6	5	27	27	42	2
2044	0	6	5	28	30	42	2
2045	0	6	5	29	31	43	2
2046	0	6	6	30	31	43	2
2047	0	6	6	30	31	43	2
2048	0	6	7	32	34	43	2
2049	0	6	8	35	34	43	2
2050	0	7	8	35	35	43	2
2051	0	8	8	35	35	43	2
2052	0	8	8	37	35	43	2
2053	0	8	8	38	35	44	2
2054	0	8	8	38	37	45	2
2055	0	9	8	38	38	45	2
2056	0	10	8	38	38	46	2
2057	0	10	9	39	38	46	2
2058	0	10	9	42	39	50	3
2059	0	10	9	44	40	52	3
2060	0	13	9	47	41	54	3
2061	0	14	9	47	41	53	3
2062	0	14	9	47	41	53	3
2063	0	17	9	47	42	55	3
2064	0	20	9	47	42	55	3
2065	0	21	9	47	42	56	3
2066	1	23	9	47	42	57	3
2067	1	23	9	48	45	58	3
2068	2	24	9	49	45	59	3
2069	2	24	9	50	45	59	3
2070	2	24	9	50	45	60	3

Appendix D

Summary of Dry Model Cell Count for the Marble Falls, Ellenburger-San Saba, and Hickory Aquifers in Brown, Burnet, Lampasas, and Mills Counties

TABLE D1. SUMMARY OF DRY MODEL CELLS FOR THE MARBLE FALLS, ELLENBURGER-SAN SABA, AND HICKORY AQUIFERS IN BROWN, BURNET, LAMPASAS, AND MILLS COUNTIES FROM THE PREDICTIVE SIMULATION.

Year	Burnet	Lampasas	Burnet	Burnet
	Marble Falls		Ellenburger-San Saba	Hickory
Total Active Cells in modeled extent	10,810	7,614	13,618	14,334
2009 (baseline)	2298	611	709	111
2010	2353	631	724	112
2011	2363	638	735	112
2012	2376	641	744	113
2013	2386	642	758	113
2014	2391	646	769	113
2015	2395	650	776	113
2016	2397	653	781	115
2017	2405	654	787	117
2018	2406	657	795	117
2019	2409	659	801	118
2020	2413	661	804	118
2021	2419	661	809	118
2022	2419	661	810	118
2023	2421	661	811	118
2024	2422	662	813	119
2025	2423	662	817	120
2026	2425	664	821	120
2027	2426	665	821	120
2028	2428	666	823	120
2029	2433	667	824	122
2030	2433	669	824	123
2031	2435	670	825	123
2032	2436	671	828	123
2033	2438	671	830	123
2034	2440	672	832	124
2035	2441	673	832	124
2036	2441	675	833	124
2037	2442	676	833	124
2038	2442	677	834	125
2039	2443	678	837	126
2040	2443	678	837	126

Year	Burnet	Lampasas	Burnet	Burnet
	Marble Falls		Ellenburger-San Saba	Hickory
2041	2443	680	839	126
2042	2443	680	840	126
2043	2443	680	842	127
2044	2444	680	842	127
2045	2445	680	842	128
2046	2446	680	843	128
2047	2446	680	843	128
2048	2446	680	843	128
2049	2446	680	844	128
2050	2446	680	845	128
2051	2446	681	846	128
2052	2446	681	846	128
2053	2446	681	846	130
2054	2446	681	846	130
2055	2447	681	846	130
2056	2447	681	847	130
2057	2447	681	848	130
2058	2447	682	848	130
2059	2448	682	849	130
2060	2448	682	849	130
2061	2448	682	849	130
2062	2448	682	849	130
2063	2448	682	849	130
2064	2449	682	849	130
2065	2449	683	849	130
2066	2449	683	849	130
2067	2449	683	850	130
2068	2449	683	850	130
2069	2450	683	850	130
2070	2450	683	850	130

Appendix E

Estimated Historical Water Use

and 2017 State Water Plan Datasets

Estimated Historical Water Use And 2017 State Water Plan Datasets:

Prairielands Groundwater Conservation District

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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 4/12/2019. 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 2017. TWDB staff anticipates the calculation and posting of these estimates at a later date.

ELLIS COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2016	GW	6,052	2,122	0	0	2,934	19	11,127
	SW	17,395	2,619	0	734	0	915	21,663
2015	GW	6,310	1,967	0	0	830	18	9,125
	SW	17,763	2,591	0	729	1	888	21,972
2014	GW	6,236	2,226	0	0	1,249	17	9,728
	SW	17,475	2,967	0	901	51	855	22,249
2013	GW	5,758	2,704	0	0	1,229	18	9,709
	SW	19,957	2,417	0	0	0	891	23,265
2012	GW	7,077	1,946	5	0	1,933	15	10,976
	SW	20,302	2,070	21	0	44	724	23,161
2011	GW	8,047	2,069	0	0	1,499	32	11,647
	SW	19,810	2,923	0	83	0	1,564	24,380
2010	GW	6,407	1,316	136	0	270	32	8,161
	SW	17,045	2,830	239	77	0	1,554	21,745
2009	GW	7,936	1,116	87	0	1,019	19	10,177
	SW	15,752	1,358	159	0	0	930	18,199
2008	GW	7,697	1,844	1,209	0	1,155	18	11,923
	SW	16,706	2,251	1,847	0	0	864	21,668
2007	GW	7,012	2,117	0	0	166	19	9,314
	SW	16,305	2,992	33	0	0	929	20,259
2006	GW	8,002	2,326	0	0	261	22	10,611
	SW	19,827	2,998	23	0	51	1,093	23,992
2005	GW	7,340	2,652	0	0	208	21	10,221
	SW	18,004	1,488	23	0	0	1,041	20,556
2004	GW	6,224	2,543	0	0	208	97	9,072
	SW	14,646	1,182	23	0	0	872	16,723
2003	GW	5,974	2,112	0	0	208	120	8,414
	SW	15,157	1,874	23	0	0	1,075	18,129
2002	GW	5,962	2,185	0	0	68	136	8,351
	SW	15,919	1,375	25	0	688	1,222	19,229
2001	GW	6,445	1,593	0	0	52	164	8,254
	SW	15,853	1,630	21	0	531	1,474	19,509

HILL COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2016	GW	3,807	0	2	0	226	55	4,090
	SW	2,271	0	0	0	720	1,055	4,046
2015	GW	3,829	0	2	0	85	54	3,970
	SW	2,303	0	0	0	1,379	1,029	4,711
2014	GW	4,296	0	2	0	407	55	4,760
	SW	2,361	0	0	0	1,717	1,041	5,119
2013	GW	4,051	0	2	0	64	51	4,168
	SW	2,391	0	0	0	1,587	981	4,959
2012	GW	4,392	0	2	0	823	46	5,263
	SW	2,437	0	0	0	1,568	871	4,876
2011	GW	4,641	1	0	0	18	92	4,752
	SW	2,764	0	0	0	1,817	1,750	6,331
2010	GW	3,422	1	593	0	181	90	4,287
	SW	2,757	0	772	0	569	1,710	5,808
2009	GW	3,152	0	608	0	99	68	3,927
	SW	2,662	0	792	0	232	1,296	4,982
2008	GW	2,481	0	623	0	324	61	3,489
	SW	2,679	0	812	0	27	1,161	4,679
2007	GW	2,851	0	0	0	0	46	2,897
	SW	2,392	0	0	0	881	882	4,155
2006	GW	3,105	0	0	0	0	59	3,164
	SW	2,565	8	0	0	1,073	1,118	4,764
2005	GW	2,995	1	0	0	108	61	3,165
	SW	2,503	8	0	0	238	1,166	3,915
2004	GW	3,250	0	0	0	150	74	3,474
	SW	2,365	10	0	0	15	1,216	3,606
2003	GW	3,333	0	0	0	132	76	3,541
	SW	2,444	1	0	0	320	1,238	4,003
2002	GW	2,980	0	0	0	287	74	3,341
	SW	2,656	5	0	0	0	1,222	3,883
2001	GW	3,255	0	0	0	151	79	3,485
	SW	2,837	8	0	0	0	1,288	4,133

JOHNSON COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2016	GW	5,863	959	9	0	84	495	7,410
	SW	13,437	789	0	264	468	1,156	16,114
2015	GW	6,154	845	35	0	89	484	7,607
	SW	13,629	657	67	322	436	1,129	16,240
2014	GW	6,317	796	36	0	107	494	7,750
	SW	14,427	687	68	327	427	1,153	17,089
2013	GW	6,770	776	137	0	210	431	8,324
	SW	14,474	621	460	312	453	1,006	17,326
2012	GW	7,102	725	268	0	289	387	8,771
	SW	14,700	632	928	448	625	905	18,238
2011	GW	6,925	786	549	0	192	437	8,889
	SW	17,004	791	2,117	487	126	1,019	21,544
2010	GW	6,139	698	1,762	0	130	429	9,158
	SW	14,140	838	2,468	644	269	999	19,358
2009	GW	6,227	731	2,818	0	304	533	10,613
	SW	14,001	921	3,990	469	96	1,245	20,722
2008	GW	6,376	987	3,963	0	95	468	11,889
	SW	12,793	811	5,361	480	69	1,095	20,609
2007	GW	6,483	998	0	0	29	440	7,950
	SW	12,411	802	0	465	9	1,026	14,713
2006	GW	7,802	1,017	0	0	17	493	9,329
	SW	15,682	892	17	207	33	1,151	17,982
2005	GW	8,045	79	2	0	0	483	8,609
	SW	12,947	1,471	195	261	51	1,128	16,053
2004	GW	6,361	136	0	0	0	395	6,892
	SW	10,501	1,264	221	855	21	1,184	14,046
2003	GW	6,372	219	0	0	0	418	7,009
	SW	11,186	1,010	602	895	0	1,252	14,945
2002	GW	7,382	244	0	0	0	483	8,109
	SW	10,988	1,092	462	722	0	1,451	14,715
2001	GW	7,787	269	0	0	0	477	8,533
	SW	10,354	1,212	510	854	0	1,431	14,361

SOMERVELL COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2016	GW	467	3	233	0	145	40	888
	SW	828	0	23	65,543	275	92	66,761
2015	GW	697	4	190	1	111	39	1,042
	SW	540	0	45	60,578	4	91	61,258
2014	GW	677	3	38	0	0	54	772
	SW	612	0	84	52,490	234	125	53,545
2013	GW	702	2	164	1	128	43	1,040
	SW	594	0	81	65,315	260	100	66,350
2012	GW	773	1	120	2	526	40	1,462
	SW	590	0	99	70,360	0	94	71,143
2011	GW	1,288	2	157	23	582	56	2,108
	SW	67	0	60	19,959	97	130	20,313
2010	GW	1,202	2	691	21	130	54	2,100
	SW	0	0	935	21,283	95	127	22,440
2009	GW	1,195	4	634	23	0	46	1,902
	SW	0	0	699	20,142	34	108	20,983
2008	GW	1,138	8	628	22	0	46	1,842
	SW	0	0	507	19,235	39	107	19,888
2007	GW	989	8	386	25	20	55	1,483
	SW	0	0	55	38,184	88	129	38,456
2006	GW	1,217	9	430	28	83	46	1,813
	SW	0	0	167	46,746	84	108	47,105
2005	GW	1,113	6	433	29	0	43	1,624
	SW	0	0	137	39,137	70	101	39,445
2004	GW	1,058	4	253	24	2	64	1,405
	SW	0	0	58	44,989	81	64	45,192
2003	GW	1,061	4	253	29	0	64	1,411
	SW	0	0	19	41,635	96	64	41,814
2002	GW	1,050	5	188	35	0	81	1,359
	SW	0	0	7	32,127	590	81	32,805
2001	GW	1,052	7	155	33	0	79	1,326
	SW	0	0	0	58,303	452	79	58,834

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

ELLIS COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	BRANDON-IRENE WSC	TRINITY	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	9	11	14	15	18	20
C	BUENA VISTA - BETHEL SUD	TRINITY	BARDWELL LAKE/RESERVOIR	279	244	255	286	389	458
C	BUENA VISTA - BETHEL SUD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	170	142	143	376	620	728
C	BUENA VISTA - BETHEL SUD	TRINITY	WAXAHACHIE LAKE/RESERVOIR	181	157	166	187	257	292
C	CEDAR HILL	TRINITY	FORK LAKE/RESERVOIR	16	20	24	29	29	29
C	CEDAR HILL	TRINITY	RAY HUBBARD LAKE/RESERVOIR	15	18	20	21	19	17
C	CEDAR HILL	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	37	39	42	44	38	33
C	CEDAR HILL	TRINITY	TAWAKONI LAKE/RESERVOIR	55	62	67	72	64	58
C	COUNTY-OTHER, ELLIS	TRINITY	BARDWELL LAKE/RESERVOIR	481	438	365	579	682	745
C	COUNTY-OTHER, ELLIS	TRINITY	JOE POOL LAKE/RESERVOIR	162	106	69	48	40	50
C	COUNTY-OTHER, ELLIS	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	519	415	317	580	705	822
C	COUNTY-OTHER, ELLIS	TRINITY	WAXAHACHIE LAKE/RESERVOIR	200	178	150	149	144	165
C	ENNIS	TRINITY	BARDWELL LAKE/RESERVOIR	3,714	3,588	3,502	3,395	3,325	3,296
C	ENNIS	TRINITY	JOE POOL LAKE/RESERVOIR	1	1	1	0	0	0
C	ENNIS	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	285	704	883	1,611	1,842	1,867
C	FERRIS	TRINITY	JOE POOL LAKE/RESERVOIR	7	8	7	7	10	15
C	FERRIS	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	69	96	113	130	241	397

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	FILES VALLEY WSC	TRINITY	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	259	336	385	433	484	536
C	GARRETT	TRINITY	BARDWELL LAKE/RESERVOIR	317	363	442	309	231	329
C	GARRETT	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	23	64	88	146	128	186
C	GLENN HEIGHTS	TRINITY	FORK LAKE/RESERVOIR	39	50	62	76	92	141
C	GLENN HEIGHTS	TRINITY	RAY HUBBARD LAKE/RESERVOIR	39	45	50	55	60	85
C	GLENN HEIGHTS	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	93	99	106	114	121	164
C	GLENN HEIGHTS	TRINITY	TAWAKONI LAKE/RESERVOIR	136	155	171	185	202	281
C	GRAND PRAIRIE	TRINITY	FORK LAKE/RESERVOIR	1	1	1	1	2	2
C	GRAND PRAIRIE	TRINITY	JOE POOL LAKE/RESERVOIR	1	1	1	1	2	2
C	GRAND PRAIRIE	TRINITY	RAY HUBBARD LAKE/RESERVOIR	1	1	1	1	1	1
C	GRAND PRAIRIE	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	2	2	2	2	2	2
C	GRAND PRAIRIE	TRINITY	TAWAKONI LAKE/RESERVOIR	3	3	3	3	4	4
C	GRAND PRAIRIE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	2	2	2	2	2	2
C	IRRIGATION, ELLIS	TRINITY	TRINITY RUN-OF-RIVER	3	3	3	3	3	3
C	JOHNSON COUNTY SUD	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	18	19	20	20	20	20
C	JOHNSON COUNTY SUD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	37	37	37	33	33	32
C	LIVESTOCK, ELLIS	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	1,112	1,112	1,112	1,112	1,112	1,112

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	MANSFIELD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	24	25	27	30	34	38
C	MANUFACTURING, ELLIS	TRINITY	BARDWELL LAKE/RESERVOIR	1,419	1,274	1,003	756	549	408
C	MANUFACTURING, ELLIS	TRINITY	JOE POOL LAKE/RESERVOIR	94	67	52	43	35	29
C	MANUFACTURING, ELLIS	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	764	694	564	876	796	631
C	MANUFACTURING, ELLIS	TRINITY	WAXAHACHIE LAKE/RESERVOIR	602	524	413	323	257	200
C	MIDLOTHIAN	TRINITY	JOE POOL LAKE/RESERVOIR	1,584	1,675	1,711	1,694	1,650	1,585
C	MIDLOTHIAN	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	2,632	2,872	3,023	3,085	3,088	3,034
C	MILFORD	TRINITY	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	84	84	84	84	84	84
C	MOUNTAIN PEAK SUD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	260	451	586	712	842	983
C	OAK LEAF	TRINITY	FORK LAKE/RESERVOIR	11	13	15	23	35	44
C	OAK LEAF	TRINITY	JOE POOL LAKE/RESERVOIR	4	2	2	1	1	0
C	OAK LEAF	TRINITY	RAY HUBBARD LAKE/RESERVOIR	11	11	12	16	23	27
C	OAK LEAF	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	27	24	25	34	47	51
C	OAK LEAF	TRINITY	TAWAKONI LAKE/RESERVOIR	39	38	39	56	78	89
C	OAK LEAF	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	35	28	23	20	15	12
C	OVILLA	TRINITY	FORK LAKE/RESERVOIR	108	139	168	203	244	451
C	OVILLA	TRINITY	RAY HUBBARD LAKE/RESERVOIR	107	122	134	147	161	271
C	OVILLA	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	258	269	288	306	322	521

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	OVILLA	TRINITY	TAWAKONI LAKE/RESERVOIR	377	425	461	498	537	897
C	PALMER	TRINITY	JOE POOL LAKE/RESERVOIR	19	15	12	10	8	10
C	PALMER	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	182	183	182	191	197	267
C	PECAN HILL	TRINITY	JOE POOL LAKE/RESERVOIR	7	6	5	4	3	3
C	PECAN HILL	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	70	70	70	74	76	83
C	RED OAK	TRINITY	FORK LAKE/RESERVOIR	7	30	108	214	301	578
C	RED OAK	TRINITY	JOE POOL LAKE/RESERVOIR	79	52	33	23	16	10
C	RED OAK	TRINITY	RAY HUBBARD LAKE/RESERVOIR	7	27	86	155	198	348
C	RED OAK	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	14	59	184	322	399	670
C	RED OAK	TRINITY	TAWAKONI LAKE/RESERVOIR	24	94	295	524	664	1,153
C	RED OAK	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	777	636	519	445	358	265
C	RICE WSC	TRINITY	BARDWELL LAKE/RESERVOIR	39	36	29	20	12	7
C	RICE WSC	TRINITY	NAVARRO MILLS LAKE/RESERVOIR	517	415	476	527	568	597
C	RICE WSC	TRINITY	RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	103	83	95	105	114	120
C	RICE WSC	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	2	6	7	10	7	4
C	ROCKETT SUD	TRINITY	JOE POOL LAKE/RESERVOIR	243	195	155	134	117	90
C	ROCKETT SUD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	3,623	3,437	3,286	3,307	3,453	3,635
C	SARDIS-LONE ELM WSC	TRINITY	JOE POOL LAKE/RESERVOIR	139	128	111	87	63	39
C	SARDIS-LONE ELM WSC	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	1,369	1,579	1,725	1,665	1,444	1,066

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	STEAM ELECTRIC POWER, ELLIS	TRINITY	BARDWELL LAKE/RESERVOIR	460	420	324	226	138	82
C	STEAM ELECTRIC POWER, ELLIS	TRINITY	JOE POOL LAKE/RESERVOIR	79	55	42	34	27	23
C	STEAM ELECTRIC POWER, ELLIS	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	172	191	175	187	145	108
C	WAXAHACHIE	TRINITY	BARDWELL LAKE/RESERVOIR	2,595	2,587	2,473	2,349	2,274	2,251
C	WAXAHACHIE	TRINITY	JOE POOL LAKE/RESERVOIR	39	26	17	12	8	5
C	WAXAHACHIE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	1,965	1,818	1,641	3,316	3,805	3,707
C	WAXAHACHIE	TRINITY	WAXAHACHIE LAKE/RESERVOIR	1,682	1,667	1,606	1,539	1,504	1,435
	Sum of Projected Surface Water Supplies (acre-feet)			**30,939**	**31,072**	**30,910**	**34,412**	**35,619**	**37,805**

HILL COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
G	BRANDON-IRENE WSC	BRAZOS	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	43	48	46	46	45	44
G	BRANDON-IRENE WSC	TRINITY	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	158	172	169	166	162	158
G	COUNTY-OTHER, HILL	BRAZOS	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	229	237	237	238	239	240
G	COUNTY-OTHER, HILL	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	53	53	53	53	53	53
G	COUNTY-OTHER, HILL	BRAZOS	NAVARRO MILLS LAKE/RESERVOIR	358	243	232	215	193	171
G	COUNTY-OTHER, HILL	BRAZOS	RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	72	49	46	43	39	34

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
G	COUNTY-OTHER, HILL	TRINITY	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	29	30	31	31	31	31
G	COUNTY-OTHER, HILL	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	7	7	7	7	7	7
G	COUNTY-OTHER, HILL	TRINITY	NAVARRO MILLS LAKE/RESERVOIR	45	30	29	27	24	21
G	COUNTY-OTHER, HILL	TRINITY	RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	9	6	6	5	5	4
G	FILES VALLEY WSC	BRAZOS	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	264	285	268	254	240	225
G	FILES VALLEY WSC	TRINITY	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	619	668	636	602	565	528
G	HILL COUNTY WSC	BRAZOS	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	210	230	230	230	230	230
G	HILLSBORO	BRAZOS	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	3,833	3,633	3,631	3,630	3,629	3,628
G	HUBBARD	TRINITY	NAVARRO MILLS LAKE/RESERVOIR	126	82	76	71	63	57
G	HUBBARD	TRINITY	RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION	25	17	15	14	13	11
G	IRRIGATION, HILL	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,000	1,000	1,000	1,000	1,000	1,000
G	IRRIGATION, HILL	BRAZOS	BRAZOS RUN-OF-RIVER	9	9	9	9	9	9

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
G	JOHNSON COUNTY SUD	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	16	13	12	10	8	7
G	JOHNSON COUNTY SUD	BRAZOS	TRWD LAKE/RESERVOIR SYSTEM	32	26	22	17	14	12
G	JOHNSON COUNTY SUD	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	3	3	2	2	2	2
G	JOHNSON COUNTY SUD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	7	5	4	3	3	3
G	LIVESTOCK, HILL	BRAZOS	BRAZOS LIVESTOCK LOCAL SUPPLY	944	944	944	944	944	944
G	LIVESTOCK, HILL	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	240	240	240	240	240	240
G	MINING, HILL	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,000	952	843	901	878	855
G	MINING, HILL	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	32	124	50	56	63
G	PARKER WSC	BRAZOS	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	24	21	18	16	14	13
G	PARKER WSC	TRINITY	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	5	5	4	3	3	3
G	WHITNEY	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0
	Sum of Projected Surface Water Supplies (acre-feet)			**9,360**	**9,040**	**8,934**	**8,827**	**8,709**	**8,593**

JOHNSON COUNTY

All values are in acre-feet

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
G	ACTON MUD	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	112	98	102	116	128	138
G	ALVARADO	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	2,241	2,241	2,241	2,241	2,241	2,241
G	BETHANY WSC	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,120	1,120	1,120	1,120	1,120	1,120
G	BETHESDA WSC	BRAZOS	TRWD LAKE/RESERVOIR SYSTEM	43	45	48	52	58	63
G	BETHESDA WSC	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	858	916	962	1,060	1,168	1,270
G	BURLESON	BRAZOS	TRWD LAKE/RESERVOIR SYSTEM	4	4	4	4	4	4
G	BURLESON	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	3,869	3,982	4,016	3,836	3,765	3,769
G	CLEBURNE	BRAZOS	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	5,300	5,235	5,039	4,864	4,691	4,501
G	CLEBURNE	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0
G	CLEBURNE	BRAZOS	PAT CLEBURNE LAKE/RESERVOIR	3,801	3,412	3,148	2,904	2,662	2,402
G	COUNTY-OTHER, JOHNSON	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	438	438	438	438	438	438
G	CROWLEY	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	7	8	10	11	10	11
G	FORT WORTH	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	0	0	0	371	527	586
G	IRRIGATION, JOHNSON	BRAZOS	PAT CLEBURNE LAKE/RESERVOIR	102	100	99	97	96	94

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
G	IRRIGATION, JOHNSON	TRINITY	PAT CLEBURNE LAKE/RESERVOIR	100	99	97	96	94	93
G	JOHNSON COUNTY SUD	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	827	787	744	694	639	576
G	JOHNSON COUNTY SUD	BRAZOS	TRWD LAKE/RESERVOIR SYSTEM	1,710	1,567	1,402	1,175	1,062	961
G	JOHNSON COUNTY SUD	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	2,282	2,173	2,053	1,917	1,761	1,594
G	JOHNSON COUNTY SUD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	4,718	4,325	3,867	3,242	2,929	2,652
G	JOSHUA	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	577	676	784	906	1,045	1,194
G	JOSHUA	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	374	439	508	588	677	774
G	KEENE	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	156	157	157	156	156	156
G	KEENE	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	964	963	963	964	964	964
G	LIVESTOCK, JOHNSON	BRAZOS	BRAZOS LIVESTOCK LOCAL SUPPLY	1,290	1,290	1,290	1,290	1,290	1,290
G	LIVESTOCK, JOHNSON	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	323	323	323	323	323	323
G	MANSFIELD	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	537	677	766	786	868	939
G	MANUFACTURING, JOHNSON	BRAZOS	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	6	72	270	446	620	811
G	MANUFACTURING, JOHNSON	BRAZOS	PAT CLEBURNE LAKE/RESERVOIR	1,037	1,357	1,552	1,727	1,900	2,091

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
G	MANUFACTURING, JOHNSON	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	2	2	2	2	2	2
G	MINING, JOHNSON	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	10	10	10	10	10	10
G	MINING, JOHNSON	TRINITY	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	10	10	10	10	10	10
G	PARKER WSC	BRAZOS	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	236	239	242	244	246	247
G	PARKER WSC	TRINITY	BRAZOS RIVER AUTHORITY AQUILLA LAKE/RESERVOIR SYSTEM	71	71	72	73	73	73
G	VENUS	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	269	274	262	260	261	268
	Sum of Projected Surface Water Supplies (acre-feet)			**33,394**	**33,110**	**32,601**	**32,023**	**31,838**	**31,665**

SOMERVELL COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
G	COUNTY-OTHER, SOMERVELL	BRAZOS	BRAZOS RUN-OF-RIVER	1,400	1,400	1,400	1,400	1,400	1,400
G	LIVESTOCK, SOMERVELL	BRAZOS	BRAZOS LIVESTOCK LOCAL SUPPLY	158	158	158	158	158	158
G	STEAM ELECTRIC POWER, SOMERVELL	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	40,000	40,000	40,000	40,000	40,000	40,000
G	STEAM ELECTRIC POWER, SOMERVELL	BRAZOS	SQUAW CREEK LAKE/RESERVOIR	9,285	9,272	9,260	9,247	9,234	9,222
	Sum of Projected Surface Water Supplies (acre-feet)			**50,843**	**50,830**	**50,818**	**50,805**	**50,792**	**50,780**

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.

ELLIS COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	BARDWELL	TRINITY	71	86	105	129	158	348
C	BRANDON-IRENE WSC	TRINITY	11	14	16	20	24	29
C	BUENA VISTA - BETHEL SUD	TRINITY	1,249	1,509	1,772	2,173	3,119	4,154
C	CEDAR HILL	TRINITY	142	178	221	272	272	272
C	COUNTY-OTHER, ELLIS	TRINITY	745	762	815	3,058	6,623	11,645
C	ENNIS	TRINITY	4,148	4,789	5,447	7,397	11,879	19,748
C	FERRIS	TRINITY	460	537	619	712	1,176	2,201
C	FILES VALLEY WSC	TRINITY	119	148	182	223	272	330
C	GARRETT	TRINITY	346	438	546	674	827	1,970
C	GLENN HEIGHTS	TRINITY	383	476	590	725	888	1,352
C	GRAND PRAIRIE	TRINITY	10	12	15	18	22	27
C	IRRIGATION, ELLIS	TRINITY	572	572	572	572	572	572
C	ITALY	TRINITY	314	386	473	580	733	976
C	JOHNSON COUNTY SUD	TRINITY	28	34	42	51	63	76
C	LIVESTOCK, ELLIS	TRINITY	905	905	905	905	905	905
C	MANSFIELD	TRINITY	32	38	47	65	81	100
C	MANUFACTURING, ELLIS	TRINITY	5,247	5,403	5,560	5,716	5,716	5,716
C	MAYPEARL	TRINITY	117	135	145	143	143	143
C	MIDLOTHIAN	TRINITY	4,198	5,429	7,069	8,589	9,956	10,995
C	MILFORD	TRINITY	66	67	69	74	80	89
C	MINING, ELLIS	TRINITY	147	213	164	123	82	55
C	MOUNTAIN PEAK SUD	TRINITY	1,671	2,109	2,627	3,240	3,971	4,820
C	OAK LEAF	TRINITY	155	165	186	262	385	468
C	OVILLA	TRINITY	966	1,213	1,507	1,857	2,275	4,188
C	PALMER	TRINITY	289	353	432	529	675	1,242
C	PECAN HILL	TRINITY	111	136	167	205	257	384
C	RED OAK	TRINITY	1,845	2,052	2,750	3,741	4,595	7,170
C	RICE WSC	TRINITY	662	812	995	1,218	1,490	1,806
C	ROCKETT SUD	TRINITY	3,756	4,621	5,678	6,963	9,043	11,160
C	SARDIS-LONE ELM WSC	TRINITY	3,904	4,793	5,824	6,338	6,688	6,686

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.

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	STEAM ELECTRIC POWER, ELLIS	TRINITY	698	1,450	3,741	5,754	7,878	10,786
C	VENUS	TRINITY	16	20	25	31	37	45
C	WAXAHACHIE	TRINITY	6,872	7,741	9,320	11,299	13,749	16,715
		Sum of Projected Water Demands (acre-feet)	**40,255**	**47,596**	**58,626**	**73,656**	**94,634**	**127,173**

HILL COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	BRANDON-IRENE WSC	BRAZOS	55	57	57	59	61	62
G	BRANDON-IRENE WSC	TRINITY	201	205	208	214	220	225
G	COUNTY-OTHER, HILL	BRAZOS	860	898	926	957	982	1,005
G	COUNTY-OTHER, HILL	TRINITY	108	113	116	120	123	126
G	FILES VALLEY WSC	BRAZOS	121	125	127	131	135	138
G	FILES VALLEY WSC	TRINITY	284	294	301	310	318	325
G	HILL COUNTY WSC	BRAZOS	425	444	457	473	486	497
G	HILLSBORO	BRAZOS	1,945	2,027	2,077	2,144	2,204	2,255
G	HUBBARD	TRINITY	151	153	152	158	162	166
G	IRRIGATION, HILL	BRAZOS	392	392	392	392	382	379
G	IRRIGATION, HILL	TRINITY	190	190	190	190	186	184
G	ITASCA	BRAZOS	145	147	147	150	154	156
G	ITASCA	TRINITY	11	11	11	11	11	12
G	JOHNSON COUNTY SUD	BRAZOS	24	24	25	26	26	27
G	JOHNSON COUNTY SUD	TRINITY	5	5	5	5	6	6
G	LIVESTOCK, HILL	BRAZOS	944	944	944	944	944	944
G	LIVESTOCK, HILL	TRINITY	240	240	240	240	240	240
G	MANUFACTURING, HILL	BRAZOS	45	50	55	60	65	70
G	MINING, HILL	BRAZOS	1,307	952	620	322	349	378
G	MINING, HILL	TRINITY	327	238	155	81	87	94
G	PARKER WSC	BRAZOS	27	27	27	28	29	30
G	PARKER WSC	TRINITY	5	6	6	6	6	6
G	WHITE BLUFF COMMUNITY WS	BRAZOS	434	458	474	491	505	517
G	WHITNEY	BRAZOS	431	449	461	475	488	500

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.

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	WOODROW-OSCEOLA WSC	BRAZOS	384	385	388	402	412	421
	Sum of Projected Water Demands (acre-feet)		**9,061**	**8,834**	**8,561**	**8,389**	**8,581**	**8,763**

JOHNSON COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	ACTON MUD	BRAZOS	56	76	98	122	149	177
G	ALVARADO	TRINITY	456	493	536	589	653	722
G	BETHANY WSC	TRINITY	367	396	430	472	524	581
G	BETHESDA WSC	BRAZOS	154	173	194	219	246	275
G	BETHESDA WSC	TRINITY	3,105	3,506	3,932	4,422	4,972	5,566
G	BURLESON	BRAZOS	6	7	8	8	9	10
G	BURLESON	TRINITY	5,309	6,326	7,290	7,912	8,773	9,845
G	CLEBURNE	BRAZOS	5,927	6,446	7,010	7,678	8,445	9,276
G	COUNTY-OTHER, JOHNSON	BRAZOS	833	996	1,163	1,161	1,182	1,221
G	COUNTY-OTHER, JOHNSON	TRINITY	780	533	371	230	195	170
G	CRESSON	BRAZOS	8	10	13	16	19	22
G	CRESSON	TRINITY	16	21	26	31	38	45
G	CROWLEY	TRINITY	10	14	19	25	31	37
G	FORT WORTH	TRINITY	0	0	0	951	1,520	1,899
G	GODLEY	BRAZOS	115	125	137	151	167	184
G	GRANDVIEW	TRINITY	182	197	214	234	260	287
G	IRRIGATION, JOHNSON	BRAZOS	71	71	71	71	71	71
G	IRRIGATION, JOHNSON	TRINITY	70	70	70	70	70	70
G	JOHNSON COUNTY SUD	BRAZOS	1,279	1,431	1,596	1,790	2,011	2,250
G	JOHNSON COUNTY SUD	TRINITY	3,529	3,948	4,403	4,938	5,546	6,207
G	JOSHUA	BRAZOS	577	676	784	906	1,045	1,194
G	JOSHUA	TRINITY	374	439	508	588	677	774
G	KEENE	BRAZOS	68	79	91	103	117	132
G	KEENE	TRINITY	419	485	557	638	725	817
G	LIVESTOCK, JOHNSON	BRAZOS	1,290	1,290	1,290	1,290	1,290	1,290
G	LIVESTOCK, JOHNSON	TRINITY	323	323	323	323	323	323
G	MANSFIELD	TRINITY	721	1,024	1,337	1,681	2,055	2,455

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.

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	MANUFACTURING, JOHNSON	BRAZOS	2,499	2,883	3,272	3,620	3,966	4,344
G	MANUFACTURING, JOHNSON	TRINITY	18	20	23	26	28	31
G	MINING, JOHNSON	BRAZOS	2,075	1,402	762	510	584	672
G	MINING, JOHNSON	TRINITY	2,051	1,386	753	503	577	664
G	MOUNTAIN PEAK SUD	TRINITY	613	737	868	1,013	1,172	1,342
G	PARKER WSC	BRAZOS	256	310	366	431	503	580
G	PARKER WSC	TRINITY	77	92	109	128	149	173
G	RIO VISTA	BRAZOS	150	178	207	241	279	320
G	STEAM ELECTRIC POWER, JOHNSON	BRAZOS	7,000	7,000	7,000	7,000	7,000	7,000
G	VENUS	TRINITY	624	710	801	904	1,016	1,137
		Sum of Projected Water Demands (acre-feet)	**41,408**	**43,873**	**46,632**	**50,995**	**56,387**	**62,163**

SOMERVELL COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	COUNTY-OTHER, SOMERVELL	BRAZOS	822	892	941	982	1,022	1,056
G	GLEN ROSE	BRAZOS	583	638	677	709	738	763
G	IRRIGATION, SOMERVELL	BRAZOS	83	82	82	81	80	79
G	LIVESTOCK, SOMERVELL	BRAZOS	158	158	158	158	158	158
G	MANUFACTURING, SOMERVELL	BRAZOS	8	9	10	11	12	13
G	MINING, SOMERVELL	BRAZOS	1,112	1,279	1,146	1,060	998	971
G	STEAM ELECTRIC POWER, SOMERVELL	BRAZOS	84,817	84,817	84,817	84,817	84,817	84,817
		Sum of Projected Water Demands (acre-feet)	**87,583**	**87,875**	**87,831**	**87,818**	**87,825**	**87,857**

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

ELLIS COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	BARDWELL	TRINITY	-24	-44	-68	-97	-130	-320
C	BRANDON-IRENE WSC	TRINITY	4	5	7	6	6	5
C	BUENA VISTA - BETHEL SUD	TRINITY	480	135	-39	-64	-425	-1,143
C	CEDAR HILL	TRINITY	-7	-22	-48	-78	-89	-98
C	COUNTY-OTHER, ELLIS	TRINITY	1,411	1,177	899	-849	-4,197	-8,946
C	ENNIS	TRINITY	-148	-496	-1,061	-2,391	-6,712	-14,585
C	FERRIS	TRINITY	-32	-81	-148	-223	-573	-1,437
C	FILES VALLEY WSC	TRINITY	140	188	203	210	212	206
C	GARRETT	TRINITY	-6	-11	-16	-219	-468	-1,455
C	GLENN HEIGHTS	TRINITY	-16	-59	-125	-198	-284	-478
C	GRAND PRAIRIE	TRINITY	0	-1	-4	-7	-7	-12
C	IRRIGATION, ELLIS	TRINITY	0	0	0	0	0	0
C	ITALY	TRINITY	0	-72	-159	-266	-419	-662
C	JOHNSON COUNTY SUD	TRINITY	39	34	27	17	8	-6
C	LIVESTOCK, ELLIS	TRINITY	304	304	304	304	304	304
C	MANSFIELD	TRINITY	-8	-13	-20	-35	-47	-62
C	MANUFACTURING, ELLIS	TRINITY	1,000	530	-173	-433	-907	-1,379
C	MAYPEARL	TRINITY	38	20	10	12	12	12
C	MIDLOTHIAN	TRINITY	18	-882	-2,335	-3,810	-5,218	-6,376
C	MILFORD	TRINITY	50	49	47	42	36	27
C	MINING, ELLIS	TRINITY	66	0	49	90	131	158
C	MOUNTAIN PEAK SUD	TRINITY	-154	-401	-784	-1,271	-1,872	-2,580
C	OAK LEAF	TRINITY	-21	-40	-60	-93	-149	-193
C	OVILLA	TRINITY	-45	-161	-340	-531	-756	-1,522
C	PALMER	TRINITY	-64	-131	-214	-304	-446	-941
C	PECAN HILL	TRINITY	-34	-60	-92	-127	-178	-298
C	RED OAK	TRINITY	-377	-577	-895	-1,321	-1,789	-2,914
C	RICE WSC	TRINITY	-1	-272	-388	-556	-789	-1,078
C	ROCKETT SUD	TRINITY	110	-989	-2,237	-3,522	-5,473	-7,435
C	SARDIS-LONE ELM WSC	TRINITY	-658	-1,348	-2,250	-2,848	-3,443	-3,843
C	STEAM ELECTRIC POWER, ELLIS	TRINITY	922	125	-2,291	-4,398	-6,659	-9,664

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	VENUS	TRINITY	-16	-20	-25	-31	-37	-45
C	WAXAHACHIE	TRINITY	1,499	758	-723	-907	-2,917	-6,082
	Sum of Projected Water Supply Needs (acre-feet)		**-1,611**	**-5,680**	**-14,495**	**-24,579**	**-43,984**	**-73,554**

HILL COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	BRANDON-IRENE WSC	BRAZOS	19	22	20	17	14	11
G	BRANDON-IRENE WSC	TRINITY	72	80	73	62	50	39
G	COUNTY-OTHER, HILL	BRAZOS	437	264	218	163	109	55
G	COUNTY-OTHER, HILL	TRINITY	55	33	29	22	15	8
G	FILES VALLEY WSC	BRAZOS	143	160	141	123	105	87
G	FILES VALLEY WSC	TRINITY	335	374	335	292	247	203
G	HILL COUNTY WSC	BRAZOS	427	428	415	399	386	375
G	HILLSBORO	BRAZOS	1,888	1,606	1,554	1,486	1,425	1,373
G	HUBBARD	TRINITY	29	-25	-32	-44	-57	-69
G	IRRIGATION, HILL	BRAZOS	822	822	822	822	832	835
G	IRRIGATION, HILL	TRINITY	10	10	10	10	14	16
G	ITASCA	BRAZOS	79	77	77	75	71	68
G	ITASCA	TRINITY	6	6	6	5	5	5
G	JOHNSON COUNTY SUD	BRAZOS	34	24	18	9	2	-2
G	JOHNSON COUNTY SUD	TRINITY	7	5	3	1	0	0
G	LIVESTOCK, HILL	BRAZOS	0	0	0	0	0	0
G	LIVESTOCK, HILL	TRINITY	0	0	0	0	0	0
G	MANUFACTURING, HILL	BRAZOS	0	0	0	0	0	0
G	MINING, HILL	BRAZOS	-307	0	223	579	529	477
G	MINING, HILL	TRINITY	-296	-175	0	0	0	0
G	PARKER WSC	BRAZOS	17	11	6	1	-3	-6
G	PARKER WSC	TRINITY	4	3	1	0	-1	-1
G	WHITE BLUFF COMMUNITY WS	BRAZOS	166	142	126	109	95	83
G	WHITNEY	BRAZOS	169	151	139	125	112	100
G	WOODROW-OSCEOLA WSC	BRAZOS	221	220	217	203	193	184
	Sum of Projected Water Supply Needs (acre-feet)		**-603**	**-200**	**-32**	**-44**	**-61**	**-78**

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

JOHNSON COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	ACTON MUD	BRAZOS	85	47	30	24	12	-4
G	ALVARADO	TRINITY	2,095	2,058	2,015	1,962	1,898	1,829
G	BETHANY WSC	TRINITY	1,186	1,157	1,123	1,081	1,029	972
G	BETHESDA WSC	BRAZOS	-43	-60	-77	-97	-118	-140
G	BETHESDA WSC	TRINITY	-874	-1,203	-2,580	-3,136	-3,613	-4,102
G	BURLESON	BRAZOS	-2	-3	-4	-4	-5	-6
G	BURLESON	TRINITY	-1,440	-2,344	-3,274	-4,076	-5,008	-6,076
G	CLEBURNE	BRAZOS	3,174	2,201	1,177	90	-1,092	-2,373
G	COUNTY-OTHER, JOHNSON	BRAZOS	0	0	0	0	0	0
G	COUNTY-OTHER, JOHNSON	TRINITY	87	171	166	309	323	309
G	CRESSON	BRAZOS	2	0	-3	-3	-2	-5
G	CRESSON	TRINITY	3	0	-1	-3	-7	-8
G	CROWLEY	TRINITY	-2	-4	-7	-12	-19	-24
G	FORT WORTH	TRINITY	0	0	0	-356	-647	-893
G	GODLEY	BRAZOS	44	34	22	8	-8	-25
G	GRANDVIEW	TRINITY	187	172	155	135	109	82
G	IRRIGATION, JOHNSON	BRAZOS	119	117	116	114	113	111
G	IRRIGATION, JOHNSON	TRINITY	39	38	36	35	33	32
G	JOHNSON COUNTY SUD	BRAZOS	1,776	1,442	1,070	599	211	-191
G	JOHNSON COUNTY SUD	TRINITY	4,901	3,982	2,951	1,658	582	-521
G	JOSHUA	BRAZOS	0	0	0	0	0	0
G	JOSHUA	TRINITY	0	0	0	0	0	0
G	KEENE	BRAZOS	147	137	125	112	98	72
G	KEENE	TRINITY	907	840	768	688	601	447
G	LIVESTOCK, JOHNSON	BRAZOS	0	0	0	0	0	0
G	LIVESTOCK, JOHNSON	TRINITY	0	0	0	0	0	0
G	MANSFIELD	TRINITY	-184	-347	-571	-895	-1,187	-1,516
G	MANUFACTURING, JOHNSON	BRAZOS	78	80	84	87	88	92
G	MANUFACTURING, JOHNSON	TRINITY	13	11	8	5	3	0
G	MINING, JOHNSON	BRAZOS	-636	37	677	931	856	768
G	MINING, JOHNSON	TRINITY	-628	37	670	918	845	758

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	MOUNTAIN PEAK SUD	TRINITY	800	676	545	400	241	71
G	PARKER WSC	BRAZOS	172	124	73	12	-56	-132
G	PARKER WSC	TRINITY	52	37	22	4	-17	-40
G	RIO VISTA	BRAZOS	99	71	42	8	-30	-71
G	STEAM ELECTRIC POWER, JOHNSON	BRAZOS	-5,656	-5,656	-5,656	-5,656	-5,656	-5,656
G	VENUS	TRINITY	-144	-225	-328	-433	-544	-658
	Sum of Projected Water Supply Needs (acre-feet)		**-9,609**	**-9,842**	**-12,501**	**-14,671**	**-18,009**	**-22,441**

SOMERVELL COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	COUNTY-OTHER, SOMERVELL	BRAZOS	578	508	459	418	378	344
G	GLEN ROSE	BRAZOS	141	86	47	15	-14	-39
G	IRRIGATION, SOMERVELL	BRAZOS	21	22	22	23	24	25
G	LIVESTOCK, SOMERVELL	BRAZOS	0	0	0	0	0	0
G	MANUFACTURING, SOMERVELL	BRAZOS	12	11	10	9	8	7
G	MINING, SOMERVELL	BRAZOS	-407	-574	-441	-355	-293	-266
G	STEAM ELECTRIC POWER, SOMERVELL	BRAZOS	-35,496	-35,509	-35,521	-35,534	-35,547	-35,559
	Sum of Projected Water Supply Needs (acre-feet)		**-35,903**	**-36,083**	**-35,962**	**-35,889**	**-35,854**	**-35,864**

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

ELLIS COUNTY

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
BARDWELL, TRINITY (C)							
CONSERVATION - BARDWELL	DEMAND REDUCTION [ELLIS]	1	1	1	2	3	7
CONSERVATION, WATER LOSS CONTROL - BARDWELL	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	288
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	22	40	98
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	14	11	12	8	10	13
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	9	3	3	3	3	17
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	29	35	47	36	61
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	17	26	12	29
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	46	0
		24	**44**	**68**	**108**	**150**	**513**
BRANDON-IRENE WSC, TRINITY (C)							
CONSERVATION - BRANDON-IRENE WSC	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - BRANDON-IRENE WSC	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
		0	**0**	**0**	**0**	**0**	**0**
BUENA VISTA - BETHEL SUD, TRINITY (C)							
CONSERVATION - BUENA VISTA - BETHEL SUD	DEMAND REDUCTION [ELLIS]	16	33	53	72	114	166
CONSERVATION, WATER LOSS CONTROL - BUENA VISTA - BETHEL SUD	DEMAND REDUCTION [ELLIS]	6	6	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	312	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	977

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	312	0
		22	**39**	**53**	**72**	**738**	**1,143**

CEDAR HILL, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	13
CONSERVATION - CEDAR HILL	DEMAND REDUCTION [ELLIS]	2	4	7	9	10	11
CONSERVATION – WASTE PROHIBITION, CEDAR HILL	DEMAND REDUCTION [ELLIS]	0	1	1	1	1	1
CONSERVATION, WATER LOSS CONTROL - CEDAR HILL	DEMAND REDUCTION [ELLIS]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	4	4	10	35	37	36
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	13	32	33	29	26
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	13	11
		7	**23**	**50**	**78**	**90**	**98**

COUNTY-OTHER, ELLIS, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - ELLIS COUNTY	DEMAND REDUCTION [ELLIS]	2	5	8	41	110	233
CONSERVATION, WATER LOSS CONTROL - ELLIS COUNTY	DEMAND REDUCTION [ELLIS]	4	4	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	573	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	5,252
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	458	826	1,778
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	1,262	729	721	644	743	1,406
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	772	121	108	79	145	974
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	1,330	1,035	981	750	1,105
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	489	542	243	522

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	923	0
		2,040	**2,189**	**2,361**	**2,745**	**4,313**	**11,270**
ENNIS, TRINITY (C)							
CONSERVATION - ENNIS	DEMAND REDUCTION [ELLIS]	55	104	163	247	436	790
CONSERVATION – WASTE PROHIBITION, ENNIS	DEMAND REDUCTION [ELLIS]	5	13	17	28	52	94
CONSERVATION, IRRIGATION RESTRICTIONS – ENNIS	DEMAND REDUCTION [ELLIS]	1	4	5	8	15	28
CONSERVATION, WATER LOSS CONTROL - ENNIS	DEMAND REDUCTION [ELLIS]	99	292	308	418	672	1,117
ENNIS INDIRECT REUSE	INDIRECT REUSE [ELLIS]	0	0	518	1,392	3,696	3,696
ENNIS UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	144	1,536	1,558
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	5	8	9	11	12	14
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	3,004
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	993
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	20	0	0	0	0
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	63	49	153	304	2,245
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,061
		165	**504**	**1,069**	**2,401**	**6,723**	**14,600**
FERRIS, TRINITY (C)							
CONSERVATION - FERRIS	DEMAND REDUCTION [ELLIS]	2	4	6	10	20	44
CONSERVATION, WATER LOSS CONTROL - FERRIS	DEMAND REDUCTION [ELLIS]	2	2	0	0	0	0
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	28	0	0	0	0	0
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	75	142	213	553	1,393
		32	**81**	**148**	**223**	**573**	**1,437**

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
FILES VALLEY WSC, TRINITY (C)							
CONSERVATION - FILES VALLEY WSC	DEMAND REDUCTION [ELLIS]	0	0	1	1	2	3
CONSERVATION, WATER LOSS CONTROL - FILES VALLEY WSC	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	33
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	7	11	11
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	15	11	6	6	3
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	3	2	1	2	4
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	37	31	31	19	14
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	15	18	6	7
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	9	0
		0	**55**	**60**	**64**	**55**	**75**
GARRETT, TRINITY (C)							
CONSERVATION - GARRETT	DEMAND REDUCTION [ELLIS]	4	10	16	24	30	78
CONSERVATION, WATER LOSS CONTROL - GARRETT	DEMAND REDUCTION [ELLIS]	2	2	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	233	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,377
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	0	64	205	0
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	0	132	0	0
		6	**12**	**16**	**220**	**468**	**1,455**
GLENN HEIGHTS, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	71
CONSERVATION - GLENN HEIGHTS	DEMAND REDUCTION [ELLIS]	1	3	6	10	15	27

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION, WATER LOSS CONTROL - GLENN HEIGHTS	DEMAND REDUCTION [ELLIS]	2	2	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	13	13	29	98	126	188
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	41	91	90	99	133
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	44	59
		16	**59**	**126**	**198**	**284**	**478**

GRAND PRAIRIE, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1
ARLINGTON UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	1	1
CONSERVATION - GRAND PRARIE	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	1
CONSERVATION, WATER LOSS CONTROL - GRAND PRAIRIE	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	1	4	2	3
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	1	2	2	2	2
MANSFIELD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	1	1	1	1	1	1
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	0	0	0	1
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	1	1
		1	**2**	**4**	**7**	**7**	**12**

ITALY, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - ITALY	DEMAND REDUCTION [ELLIS]	1	3	5	8	12	20
CONSERVATION, WATER LOSS CONTROL - ITALY	DEMAND REDUCTION [ELLIS]	2	2	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	592

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	60	130	200
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	18	28	23	31	27
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	4	7	6	12	36
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	46	81	129	117	124
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	38	70	38	59
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	144	0
		3	**73**	**159**	**296**	**484**	**1,058**

JOHNSON COUNTY SUD, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	2
ARLINGTON UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	1	1
CONSERVATION - JOHNSON COUNTY SUD	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - JOHNSON COUNTY SUD	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	1	2	18	2
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	1	0	0	0
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRINITY AQUIFER [DALLAS]	11	12	14	15	16	18
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRINITY AQUIFER [TARRANT]	11	12	14	15	16	18
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DENTON]	1	1	1	1	2	2
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	FORK LAKE/RESERVOIR [RESERVOIR]	1	1	1	1	1	2
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	JOE POOL LAKE/RESERVOIR [RESERVOIR]	1	1	1	1	1	2
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	RAY HUBBARD LAKE/RESERVOIR [RESERVOIR]	1	1	1	1	1	1

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	2	2	2	2	2	2
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	3	4	4	3	3	3
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	2	2	2	2	2	2
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	1	2	2	1	1
MANSFIELD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	2	2	2	2	2	2
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	18
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	0	0	0	0
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	0	0	0	0
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	1	1
		35	**40**	**46**	**49**	**71**	**83**

MANSFIELD, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - MANSFIELD	DEMAND REDUCTION [ELLIS]	0	1	1	2	3	4
CONSERVATION, WATER LOSS CONTROL - MANSFIELD	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	12	0
MANSFIELD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	8	10	11	15	17	18
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	18
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	2	4	6

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	1	1	2	1	2
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	1	2
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	1	5	10	7	9
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	2	4	3	3
		8	**13**	**20**	**35**	**48**	**62**

MANUFACTURING, ELLIS, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION, MANUFACTURING - ELLIS COUNTY	DEMAND REDUCTION [ELLIS]	0	6	63	88	90	90
DREDGE LAKE WAXAHACHIE	WAXAHACHIE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	171	563
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	25	0
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	4	43	51	56	57	56
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	6	11	13
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	4	28	4	5	4
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	116	1	2	5
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	10	89	144	164	17
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	8	59	165	408
WAXAHACHIE UNALLOCATED SUPPLY UTILIZATION	WAXAHACHIE LAKE/RESERVOIR [RESERVOIR]	0	0	74	76	218	183
		4	**64**	**429**	**434**	**908**	**1,379**

MAYPEARL, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - MAYPEARL	DEMAND REDUCTION [ELLIS]	0	1	1	2	2	3
CONSERVATION, WATER LOSS CONTROL - MAYPEARL	DEMAND REDUCTION [ELLIS]	1	1	0	0	0	0

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	64
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	16	22	22
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	71	36	26	12	10	6
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	45	8	7	4	4	8
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	90	75	71	41	27
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	36	38	13	13
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	50	0
		117	**136**	**145**	**143**	**142**	**143**

MIDLOTHIAN, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - MIDLOTHIAN	DEMAND REDUCTION [ELLIS]	56	117	212	287	365	440
CONSERVATION – WASTE PROHIBITION, MIDLOTHIAN	DEMAND REDUCTION [ELLIS]	15	41	57	71	84	93
CONSERVATION, IRRIGATION RESTRICTIONS – MIDLOTHIAN	DEMAND REDUCTION [ELLIS]	4	12	17	21	24	27
CONSERVATION, WATER LOSS CONTROL - MIDLOTHIAN	DEMAND REDUCTION [ELLIS]	21	21	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	914	0
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	523	1,273	1,804	2,163	2,276
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,630
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	189	410	552
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	44	152	144	195	148
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	10	36	45	77	199
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	114	406	809	744	686
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	192	448	243	325

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
		96	**882**	**2,345**	**3,818**	**5,219**	**6,376**
MILFORD, TRINITY (C)							
CONSERVATION - MILFORD	DEMAND REDUCTION [ELLIS]	0	0	1	1	1	2
CONSERVATION, WATER LOSS CONTROL - MILFORD	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
		0	**0**	**1**	**1**	**1**	**2**
MOUNTAIN PEAK SUD, TRINITY (C)							
CONSERVATION - MOUNTAIN PEAK SUD	DEMAND REDUCTION [ELLIS]	6	14	26	75	126	192
CONSERVATION, WATER LOSS CONTROL - MOUNTAIN PEAK SUD	DEMAND REDUCTION [ELLIS]	6	6	0	88	328	404
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	139	325	516	717	970	1,033
MOUNTAIN PEAK SUD ADDITIONAL WELLS (WOODBINE)	WOODBINE AQUIFER [ELLIS]	7	7	7	7	7	7
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	491
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	44	70	131
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	14	44	34	34	35
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	4	11	10	13	48
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	37	127	191	127	162
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	60	105	41	77
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	156	0
		158	**407**	**791**	**1,271**	**1,872**	**2,580**
OAK LEAF, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	22
CONSERVATION - OAK LEAF	DEMAND REDUCTION [ELLIS]	1	1	2	3	6	9
CONSERVATION, WATER LOSS CONTROL - OAK LEAF	DEMAND REDUCTION [ELLIS]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	4	3	7	29	48	59

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	10	20	27	38	42
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	16	25	31	34	40	42
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	17	19
		22	**40**	**60**	**93**	**149**	**193**
OVILLA, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	213
CONSERVATION - OVILLA	DEMAND REDUCTION [ELLIS]	13	26	46	62	83	167
CONSERVATION, WATER LOSS CONTROL - OVILLA	DEMAND REDUCTION [ELLIS]	4	4	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	28	30	71	246	316	564
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	101	224	225	248	401
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	109	179
		45	**161**	**341**	**533**	**756**	**1,524**
PALMER, TRINITY (C)							
CONSERVATION - PALMER	DEMAND REDUCTION [ELLIS]	1	2	4	7	11	25
CONSERVATION, WATER LOSS CONTROL - PALMER	DEMAND REDUCTION [ELLIS]	1	1	0	0	0	0
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	86	0	0	0	0	0
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	151	234	321	459	940
		88	**154**	**238**	**328**	**470**	**965**
PECAN HILL, TRINITY (C)							
CONSERVATION - PECAN HILL	DEMAND REDUCTION [ELLIS]	0	1	2	3	4	8
CONSERVATION, WATER LOSS CONTROL - PECAN HILL	DEMAND REDUCTION [ELLIS]	1	1	0	0	0	0
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	33	59	90	124	174	290
		34	**61**	**92**	**127**	**178**	**298**

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
RED OAK, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	299
CONSERVATION - RED OAK	DEMAND REDUCTION [ELLIS]	6	14	28	50	77	143
CONSERVATION, WATER LOSS CONTROL - RED OAK	DEMAND REDUCTION [ELLIS]	9	9	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	6	50	283	426	794
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	21	159	259	335	566
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	23	238	348	348	290	127
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	341	289	311	381	515	229
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	504
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	147	252
		379	**577**	**896**	**1,321**	**1,790**	**2,914**
RICE WSC, TRINITY (C)							
CONSERVATION - RICE WSC	DEMAND REDUCTION [ELLIS]	2	5	10	17	25	36
CONSERVATION, WATER LOSS CONTROL - RICE WSC	DEMAND REDUCTION [ELLIS]	3	3	0	0	0	0
CORSICANA - HALBERT/RICHLAND CHAMBERS NEW WTP	RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	0	197	472	692
CORSICANA UNALLOCATED SUPPLY UTILIZATION	NAVARRO MILLS LAKE/RESERVOIR [RESERVOIR]	0	264	370	328	267	317
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	14	25	33
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	8	0	0	0
		5	**272**	**388**	**556**	**789**	**1,078**
ROCKETT SUD, TRINITY (C)							
CONSERVATION - ROCKETT SUD	DEMAND REDUCTION [ELLIS]	13	31	57	93	151	223
CONSERVATION, WATER LOSS CONTROL - ROCKETT SUD	DEMAND REDUCTION [ELLIS]	18	18	0	0	0	0

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	231	0
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	694	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	8,049
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	2,091	1,913	2,565
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	847	619	638	110	534	34
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	684	247	321	250	385	506
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	1,428	1,444	1,095	1,212	155
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	1,687	539	87	91
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	266	0
		1,562	**2,343**	**4,147**	**4,178**	**5,473**	**11,623**

SARDIS-LONE ELM WSC, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - SARDIS-LONE ELM WSC	DEMAND REDUCTION [ELLIS]	52	104	174	212	245	268
CONSERVATION, WATER LOSS CONTROL - SARDIS-LONE ELM WSC	DEMAND REDUCTION [ELLIS]	20	20	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,032
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	260	356	350
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	685	298	205	99	85	47
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	436	68	53	30	33	63
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	2,103	2,836	3,038	2,327	2,464
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	277	465	1,296	1,699
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	398	0
		1,193	**2,593**	**3,545**	**4,104**	**4,740**	**5,923**

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
STEAM ELECTRIC POWER, ELLIS, TRINITY (C)							
DREDGE LAKE WAXAHACHIE	WAXAHACHIE LAKE/RESERVOIR [RESERVOIR]	0	0	96	705	534	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	1,026	0
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	5	38	54	58	58	54
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,633
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	439	1,078	376
TRINITY RIVER AUTHORITY ELLIS COUNTY REUSE (SEP)	DIRECT REUSE [ELLIS]	0	0	0	0	2,200	4,700
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	3	559	638	328	321
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	63	82	188	430
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	8	300	1,248	981	1,475
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	191	385	602	697
WAXAHACHIE UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [ELLIS]	0	0	455	593	471	0
WAXAHACHIE UNALLOCATED SUPPLY UTILIZATION	BARDWELL LAKE/RESERVOIR [RESERVOIR]	0	0	393	438	331	0
WAXAHACHIE UNALLOCATED SUPPLY UTILIZATION	WAXAHACHIE LAKE/RESERVOIR [RESERVOIR]	0	0	181	211	0	0
		5	**50**	**2,292**	**4,797**	**7,797**	**9,686**
VENUS, TRINITY (C)							
CONSERVATION - VENUS	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - VENUS	DEMAND REDUCTION [ELLIS]	0	0	0	0	0	0
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	4	5	7	8	10	11
MUNICIPAL WATER CONSERVATION (SUBURBAN) - VENUS	DEMAND REDUCTION [ELLIS]	13	3	3	4	5	6
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	7

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	1	2	2
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	12	12	13	17	14
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	1
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	1	2	3	3	3
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	1	2	1	1
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	4	0
		17	**21**	**25**	**31**	**42**	**45**

WAXAHACHIE, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - WAXAHACHIE	DEMAND REDUCTION [ELLIS]	92	168	279	377	504	668
CONSERVATION, IRRIGATION RESTRICTIONS – WAXAHACHIE	DEMAND REDUCTION [ELLIS]	4	9	12	16	20	26
CONSERVATION, WATER LOSS CONTROL - WAXAHACHIE	DEMAND REDUCTION [ELLIS]	34	34	0	0	0	0
DREDGE LAKE WAXAHACHIE	WAXAHACHIE LAKE/RESERVOIR [RESERVOIR]	0	0	609	0	0	142
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	152	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	2,329
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	352	995	1,660
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	0	0	148	189
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	175
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	442	284	842	604
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	209	584	199	285
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	756	0
WAXAHACHIE UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [ELLIS]	0	0	0	0	0	413

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
WAXAHACHIE UNALLOCATED SUPPLY UTILIZATION	BARDWELL LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	288
		130	**211**	**1,551**	**1,613**	**3,616**	**6,779**
Sum of Projected Water Management Strategies (acre-feet)		**6,214**	**11,106**	**21,466**	**29,844**	**47,946**	**83,792**

HILL COUNTY

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
BRANDON-IRENE WSC, BRAZOS (G)							
CONSERVATION - BRANDON-IRENE WSC	DEMAND REDUCTION [HILL]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - BRANDON-IRENE WSC	DEMAND REDUCTION [HILL]	0	0	0	0	0	0
		0	**0**	**0**	**0**	**0**	**0**
BRANDON-IRENE WSC, TRINITY (G)							
CONSERVATION - BRANDON-IRENE WSC	DEMAND REDUCTION [HILL]	0	0	0	1	1	1
CONSERVATION, WATER LOSS CONTROL - BRANDON-IRENE WSC	DEMAND REDUCTION [HILL]	0	0	0	0	0	0
		0	**0**	**0**	**1**	**1**	**1**
COUNTY-OTHER, HILL, BRAZOS (G)							
CORSICANA - HALBERT/RICHLAND CHAMBERS NEW WTP	RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	0	83	166	204
CORSICANA UNALLOCATED SUPPLY UTILIZATION	NAVARRO MILLS LAKE/RESERVOIR [RESERVOIR]	0	158	185	139	93	94
WTP UPGRADE FOR ARSENIC REMOVAL	WOODBINE AQUIFER [HILL]	222	222	222	222	222	222
		222	**380**	**407**	**444**	**481**	**520**
COUNTY-OTHER, HILL, TRINITY (G)							
CORSICANA - HALBERT/RICHLAND CHAMBERS NEW WTP	RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	0	10	21	26
CORSICANA UNALLOCATED SUPPLY UTILIZATION	NAVARRO MILLS LAKE/RESERVOIR [RESERVOIR]	0	20	23	17	12	12

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
WTP UPGRADE FOR ARSENIC REMOVAL	WOODBINE AQUIFER [HILL]	28	28	28	28	28	28
		28	**48**	**51**	**55**	**61**	**66**
FILES VALLEY WSC, BRAZOS (G)							
CONSERVATION - FILES VALLEY WSC	DEMAND REDUCTION [HILL]	0	0	0	1	1	1
CONSERVATION, WATER LOSS CONTROL - FILES VALLEY WSC	DEMAND REDUCTION [HILL]	0	0	0	0	0	0
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	0	0	0	0
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	4	0
		0	**0**	**0**	**1**	**5**	**1**
FILES VALLEY WSC, TRINITY (G)							
CONSERVATION - FILES VALLEY WSC	DEMAND REDUCTION [HILL]	0	1	1	1	2	3
CONSERVATION, WATER LOSS CONTROL - FILES VALLEY WSC	DEMAND REDUCTION [HILL]	1	1	0	0	0	0
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	0	0	0	0
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	11	0
		1	**2**	**1**	**1**	**13**	**3**
HILLSBORO, BRAZOS (G)							
MUNICIPAL WATER CONSERVATION (URBAN) - HILLSBORO	DEMAND REDUCTION [HILL]	79	230	385	495	506	517
		79	**230**	**385**	**495**	**506**	**517**
HUBBARD, TRINITY (G)							
CORSICANA - HALBERT/RICHLAND CHAMBERS NEW WTP	RICHLAND CHAMBERS LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	0	27	55	67
CORSICANA UNALLOCATED SUPPLY UTILIZATION	NAVARRO MILLS LAKE/RESERVOIR [RESERVOIR]	0	54	61	46	31	31
		0	**54**	**61**	**73**	**86**	**98**
JOHNSON COUNTY SUD, BRAZOS (G)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
ARLINGTON UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - JOHNSON COUNTY SUD	DEMAND REDUCTION [HILL]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - JOHNSON COUNTY SUD	DEMAND REDUCTION [HILL]	0	0	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	1	1	1
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRINITY AQUIFER [DALLAS]	10	9	8	8	7	6
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRINITY AQUIFER [TARRANT]	10	9	8	8	7	6
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DENTON]	1	1	1	1	1	1
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	FORK LAKE/RESERVOIR [RESERVOIR]	1	1	1	1	1	1
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	JOE POOL LAKE/RESERVOIR [RESERVOIR]	1	1	1	1	1	1
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	RAY HUBBARD LAKE/RESERVOIR [RESERVOIR]	1	1	1	1	0	0
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	2	2	1	1	1	1
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	3	3	2	2	1	1
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	2	1	1	1	1	1
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	1	1	1	1	1
MANSFIELD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	2	2	1	1	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	6
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	1	2	2
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	0	0	0	0
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0
		33	**31**	**26**	**28**	**24**	**31**

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	0	0	0	3
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	0	0
		33	**31**	**26**	**28**	**24**	**31**

JOHNSON COUNTY SUD, TRINITY (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
ARLINGTON UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0
CONSERVATION - JOHNSON COUNTY SUD	DEMAND REDUCTION [HILL]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - JOHNSON COUNTY SUD	DEMAND REDUCTION [HILL]	0	0	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	0	0
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRINITY AQUIFER [DALLAS]	2	2	2	1	2	1
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRINITY AQUIFER [TARRANT]	2	2	2	1	2	1
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DENTON]	0	0	0	0	0	0
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	FORK LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	JOE POOL LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	RAY HUBBARD LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	1	1	0	0	0	0
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
MANSFIELD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	0	0	0	0
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	0	0	0	1
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	0	0
		5	**5**	**4**	**2**	**4**	**4**

MINING, HILL, BRAZOS (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [HILL]	39	48	0	0	0	0
WOODBINE AQUIFER DEVELOPMENT	WOODBINE AQUIFER [HILL]	274	397	0	0	0	0
		313	**445**	**0**	**0**	**0**	**0**

MINING, HILL, TRINITY (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [HILL]	10	12	0	0	0	0
WOODBINE AQUIFER DEVELOPMENT	WOODBINE AQUIFER [HILL]	286	163	0	0	0	0
		296	**175**	**0**	**0**	**0**	**0**

PARKER WSC, BRAZOS (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
WOODBINE AQUIFER DEVELOPMENT	WOODBINE AQUIFER [JOHNSON]	0	0	0	0	7	6
		0	**0**	**0**	**0**	**7**	**6**

PARKER WSC, TRINITY (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
WOODBINE AQUIFER DEVELOPMENT	WOODBINE AQUIFER [JOHNSON]	0	0	0	0	2	2
		0	**0**	**0**	**0**	**2**	**2**

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
WHITE BLUFF COMMUNITY WS, BRAZOS (G)							
MUNICIPAL WATER CONSERVATION (RURAL) - WHITE BLUFF COMMUNITY WS	DEMAND REDUCTION [HILL]	24	63	103	125	128	132
		24	**63**	**103**	**125**	**128**	**132**
WHITNEY, BRAZOS (G)							
MUNICIPAL WATER CONSERVATION (URBAN) - WHITNEY	DEMAND REDUCTION [HILL]	17	50	70	68	69	71
		17	**50**	**70**	**68**	**69**	**71**
Sum of Projected Water Management Strategies (acre-feet)		**1,018**	**1,483**	**1,108**	**1,293**	**1,387**	**1,452**

JOHNSON 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	5
		0	**0**	**0**	**0**	**0**	**5**
BETHESDA WSC, BRAZOS (G)							
ARLINGTON UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	42	44	45	45	46	46
CONSERVATION - BETHESDA WSC	DEMAND REDUCTION [JOHNSON]	1	1	2	3	3	4
CONSERVATION, WATER LOSS CONTROL - BETHESDA WSC	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	6	8	8	7	6
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	14	0
MUNICIPAL WATER CONSERVATION (SUBURBAN) - BETHESDA WSC	DEMAND REDUCTION [JOHNSON]	4	12	23	31	35	40
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	64
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	16	17	21

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	18	11	11	8	8	5
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	12	3	3	2	4	8
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	5	11	15	17	16
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	15	8	10	13
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	17	0
		77	**82**	**118**	**136**	**178**	**223**

BETHESDA WSC, TRINITY (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ARLINGTON UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	852	895	985	913	929	940
CONSERVATION - BETHESDA WSC	DEMAND REDUCTION [JOHNSON]	15	28	42	51	62	73
CONSERVATION, WATER LOSS CONTROL - BETHESDA WSC	DEMAND REDUCTION [JOHNSON]	6	6	0	0	0	0
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	118	270	164	146	117
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	247	0
MUNICIPAL WATER CONSERVATION (SUBURBAN) - BETHESDA WSC	DEMAND REDUCTION [JOHNSON]	76	249	468	631	714	808
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,289
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	321	351	438
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	380	225	225	149	166	119
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	241	52	57	44	66	157
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	99	230	692	375	327
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	303	171	206	257
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	351	0
		1,570	**1,672**	**2,580**	**3,136**	**3,613**	**4,525**

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
BURLESON, BRAZOS (G)							
CONSERVATION - BURLESON	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - BURLESON	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	4
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	1	1	1
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	2	1	1	1	0	0
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	1	1	1	0	0	0
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	2	2	2	2	1
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	2	1	1	2
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	1	0
		3	**4**	**6**	**5**	**5**	**8**
BURLESON, TRINITY (G)							
CONSERVATION - BURLESON	DEMAND REDUCTION [JOHNSON]	3	7	12	21	32	43
CONSERVATION, WATER LOSS CONTROL - BURLESON	DEMAND REDUCTION [JOHNSON]	6	6	0	0	0	0
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	1,764	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	3,683
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	655	1,069	1,248
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	1,524	955	864	499	506	337
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	970	220	221	150	200	451
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	1,570	1,706	2,015	1,433	1,170

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	1,166	1,116	628	732
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	623	0
		2,503	**2,758**	**3,969**	**4,456**	**6,255**	**7,664**
CLEBURNE, BRAZOS (G)							
BRA SYSTEM OPERATION MAIN STEM	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	72	144	216	288	1,189
LAKE AQUILLA AUGMENTATION - A (SURPLUS)	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM [RESERVOIR]	6,285	6,353	6,421	6,349	6,277	5,016
MUNICIPAL WATER CONSERVATION (SUBURBAN) - CLEBURNE	DEMAND REDUCTION [JOHNSON]	207	685	736	749	809	883
		6,492	**7,110**	**7,301**	**7,314**	**7,374**	**7,088**
CRESSON, BRAZOS (G)							
CONSERVATION - CRESSON	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - CRESSON	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
CRESSON NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [PARKER]	6	6	7	8	8	8
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [HOOD]	0	0	4	4	4	4
		6	**6**	**11**	**12**	**12**	**12**
CRESSON, TRINITY (G)							
CONSERVATION - CRESSON	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - CRESSON	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
CRESSON NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [PARKER]	12	13	14	15	16	17
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [HOOD]	0	0	7	8	8	9
		12	**13**	**21**	**23**	**24**	**26**
CROWLEY, TRINITY (G)							
CONSERVATION - CROWLEY	DEMAND REDUCTION [JOHNSON]	0	0	0	0	1	1
CONSERVATION, WATER LOSS CONTROL - CROWLEY	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	6	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]	1	1	1	1	1	1
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	1	0	0	0	1	1
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	3	4	5	6	5
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	2	6	2	2
		2	**4**	**7**	**13**	**20**	**25**

FORT WORTH, TRINITY (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - FORT WORTH	DEMAND REDUCTION [JOHNSON]	0	0	0	44	75	99
CONSERVATION, WATER LOSS CONTROL - FORT WORTH	DEMAND REDUCTION [JOHNSON]	0	0	0	19	15	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	18	0
FORT WORTH ALLIANCE DIRECT REUSE	DIRECT REUSE [TARRANT]	0	1	0	24	35	40
FORT WORTH DIRECT REUSE	DIRECT REUSE [TARRANT]	0	0	0	3	4	5
FORT WORTH FUTURE DIRECT REUSE	DIRECT REUSE [TARRANT]	0	0	0	25	36	42
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	41	38	15
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	330
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	93	179	121
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	0	20	16	9
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	6	14	29
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	0	58	130	147

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	0	28	84	66
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	4	0
		0	**1**	**0**	**361**	**648**	**903**

GODLEY, BRAZOS (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
WOODBINE AQUIFER DEVELOPMENT	WOODBINE AQUIFER [JOHNSON]	0	0	0	0	30	30
		0	**0**	**0**	**0**	**30**	**30**

JOHNSON COUNTY SUD, BRAZOS (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	24
ARLINGTON UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	19	16	18	16	19	17
CONSERVATION - JOHNSON COUNTY SUD	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - JOHNSON COUNTY SUD	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	12	12	23	64	391	63
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	4	4	4	3	2
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRINITY AQUIFER [DALLAS]	524	524	525	525	526	527
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRINITY AQUIFER [TARRANT]	523	524	525	525	526	527
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DENTON]	30	35	34	41	49	55
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	FORK LAKE/RESERVOIR [RESERVOIR]	46	50	49	49	47	47
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	JOE POOL LAKE/RESERVOIR [RESERVOIR]	55	48	45	45	45	45
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	RAY HUBBARD LAKE/RESERVOIR [RESERVOIR]	45	44	40	35	31	28
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	109	97	85	73	62	55
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	159	153	136	119	103	94

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	100	80	70	65	59	54
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	38	73	58	52	46
MANSFIELD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	92	74	58	59	55	50
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	524
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	87	152	177
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	5	9	8	8	6
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	2	2	4	8
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	133	252	358	279	223
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	116	191	85	99
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	23	20
		1,714	**1,838**	**2,064**	**2,324**	**2,519**	**2,691**
JOHNSON COUNTY SUD, TRINITY (G)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	66
ARLINGTON UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	53	43	50	44	53	48
CONSERVATION - JOHNSON COUNTY SUD	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - JOHNSON COUNTY SUD	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	34	35	63	177	1,044	174
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	12	12	10	8	5
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRINITY AQUIFER [DALLAS]	1,443	1,446	1,446	1,450	1,451	1,453
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRINITY AQUIFER [TARRANT]	1,444	1,446	1,446	1,450	1,451	1,453
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DENTON]	81	95	93	113	135	152

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	FORK LAKE/RESERVOIR [RESERVOIR]	126	138	137	134	129	130
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	JOE POOL LAKE/RESERVOIR [RESERVOIR]	152	132	123	123	125	124
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	RAY HUBBARD LAKE/RESERVOIR [RESERVOIR]	125	122	109	97	85	79
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	300	268	234	202	171	150
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	440	422	375	329	287	260
GRAND PRAIRIE UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	275	222	193	179	163	147
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	105	201	161	142	126
MANSFIELD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	251	205	163	162	149	137
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,447
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	238	417	491
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	17	27	19	21	16
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	4	7	7	9	21
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	387	734	1,038	760	613
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	348	576	253	298
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	63	56
		4,724	**5,099**	**5,761**	**6,509**	**6,916**	**7,446**

MANSFIELD, TRINITY (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - MANSFIELD	DEMAND REDUCTION [JOHNSON]	10	21	38	53	72	93
CONSERVATION, WATER LOSS CONTROL - MANSFIELD	DEMAND REDUCTION [JOHNSON]	3	4	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	240	0

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
MANSFIELD UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	178	257	311	402	428	444
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	450
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	51	109	153
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	17	41	39	52	41
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	4	10	12	20	55
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	44	116	219	198	190
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	55	121	68	90
		191	**347**	**571**	**897**	**1,187**	**1,516**

MINING, JOHNSON, BRAZOS (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [JOHNSON]	62	0	0	0	0	0
WOODBINE AQUIFER DEVELOPMENT	WOODBINE AQUIFER [JOHNSON]	574	0	0	0	0	0
		636	**0**	**0**	**0**	**0**	**0**

MINING, JOHNSON, TRINITY (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [JOHNSON]	62	0	0	0	0	0
WOODBINE AQUIFER DEVELOPMENT	WOODBINE AQUIFER [JOHNSON]	566	0	0	0	0	0
		628	**0**	**0**	**0**	**0**	**0**

MOUNTAIN PEAK SUD, TRINITY (G)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION, WATER LOSS CONTROL - MOUNTAIN PEAK SUD	DEMAND REDUCTION [JOHNSON]	2	2	0	28	97	112
MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	15	0	0	0	0	0
MOUNTAIN PEAK SUD ADDITIONAL WELLS (WOODBINE)	WOODBINE AQUIFER [ELLIS]	0	0	0	0	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0

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

WUG, Basin (RWPG)	Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	0	0	0	0
	TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	0	0	0
	TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	0	0	0	0	0
	TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	0
	UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	0	0
			17	**2**	**0**	**28**	**97**	**112**
PARKER WSC, BRAZOS (G)								
	WOODBINE AQUIFER DEVELOPMENT	WOODBINE AQUIFER [JOHNSON]	0	0	0	0	132	132
			0	**0**	**0**	**0**	**132**	**132**
PARKER WSC, TRINITY (G)								
	WOODBINE AQUIFER DEVELOPMENT	WOODBINE AQUIFER [JOHNSON]	0	0	0	0	39	40
			0	**0**	**0**	**0**	**39**	**40**
RIO VISTA, BRAZOS (G)								
	WOODBINE AQUIFER DEVELOPMENT	WOODBINE AQUIFER [JOHNSON]	0	0	0	0	1,179	1,179
			0	**0**	**0**	**0**	**1,179**	**1,179**
STEAM ELECTRIC POWER, JOHNSON, BRAZOS (G)								
	BRA SYSTEM OPERATION MAIN STEM	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM [RESERVOIR]	3,415	3,275	3,135	3,135	3,135	3,135
	INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [JOHNSON]	210	350	490	490	490	490
	LAKE AQUILLA AUGMENTATION - A (SURPLUS)	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM [RESERVOIR]	3,415	3,275	3,135	3,135	3,135	3,135
			7,040	**6,900**	**6,760**	**6,760**	**6,760**	**6,760**
VENUS, TRINITY (G)								
	CONSERVATION - VENUS	DEMAND REDUCTION [JOHNSON]	0	0	1	1	2	2
	CONSERVATION, WATER LOSS CONTROL - VENUS	DEMAND REDUCTION [JOHNSON]	0	0	0	0	0	0
	MIDLOTHIAN UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	156	193	225	247	263	270

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
MUNICIPAL WATER CONSERVATION (SUBURBAN) - VENUS	DEMAND REDUCTION [JOHNSON]	17	87	112	123	135	150
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	186
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	23	47	63
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	10	5	6	4
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	3	6	6	8	23
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	30	60	101	86	78
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	28	54	28	37
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	105	0
		173	**313**	**442**	**560**	**680**	**813**
Sum of Projected Water Management Strategies (acre-feet)		**25,788**	**26,149**	**29,611**	**32,534**	**37,668**	**41,198**

SOMERVELL COUNTY

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
GLEN ROSE, BRAZOS (G)							
MUNICIPAL WATER CONSERVATION (URBAN) - GLEN ROSE	DEMAND REDUCTION [SOMERVELL]	24	73	128	167	172	178
		24	**73**	**128**	**167**	**172**	**178**
MINING, SOMERVELL, BRAZOS (G)							
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [SOMERVELL]	33	64	80	74	70	68
TRINITY AQUIFER DEVELOPMENT	TRINITY AQUIFER [SOMERVELL]	550	550	550	550	550	550
		583	**614**	**630**	**624**	**620**	**618**
STEAM ELECTRIC POWER, SOMERVELL, BRAZOS (G)							
BRA SYSTEM OPERATION MAIN STEM	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM [RESERVOIR]	76,120	76,120	76,120	76,120	76,120	76,120

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

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

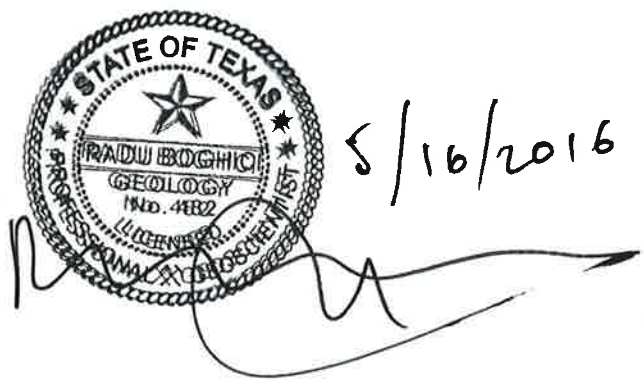
Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
HOOD COUNTY SE REALLOCATION TO SOMERVELL COUNTY SE	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM [RESERVOIR]	27,133	27,133	27,133	27,133	27,133	27,133
SOMERVELL COUNTY WSP	BRAZOS RUN-OF-RIVER [SOMERVELL]	300	300	484	484	484	484
		103,553	**103,553**	**103,737**	**103,737**	**103,737**	**103,737**
Sum of Projected Water Management Strategies (acre-feet)		**104,160**	**104,240**	**104,495**	**104,528**	**104,529**	**104,533**

Appendix F

GAM Run 16-007

GAM Run 16-007: Prairielands Groundwater Conservation District Management Plan

Radu Boghici, P.G.
Texas Water Development Board
Groundwater Division
Groundwater Availability Modeling Section
(512)463-5808
May 16, 2016



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GAM RUN 16-007: PRAIRIELANDS GROUNDWATER CONSERVATION DISTRICT MANAGEMENT PLAN

Radu Boghici, P.G.
Texas Water Development Board
Groundwater Division
Groundwater Availability Modeling Section
(512)463-5808
May 16, 2016

EXECUTIVE SUMMARY:

Texas State Water Code, Section 36.1071, Subsection (h) (Texas Water Code, 2015), states that, in developing its groundwater management plan, a groundwater conservation district shall use groundwater availability modeling information provided by the executive administrator of the Texas Water Development Board (TWDB) in conjunction with any available site-specific information provided by the district for review and comment to the executive administrator. Information derived from groundwater availability models that shall be included in the groundwater management plan includes:

- the annual amount of recharge from precipitation, if any, to the groundwater resources within the district;
- for each aquifer within the district, the annual volume of water that discharges from the aquifer to springs and any surface-water bodies, including lakes, streams, and rivers; and
- the annual volume of flow into and out of the district within each aquifer and between aquifers in the district.

This report—Part 2 of a two-part package of information from the TWDB to the Prairielands Groundwater Conservation District—fulfills the requirements noted above. Part 1 of the two-part package is the Estimated Historical Water Use/State Water Plan data report. The district will receive this data report from the TWDB Groundwater Technical Assistance Section. Questions about the data report can be directed to Mr. Stephen Allen, stephen.allen@twdb.texas.gov, (512)463-7317.

The groundwater management plan for the Prairielands Groundwater Conservation District should be adopted by the district on or before May 1, 2017, and submitted to the Executive Administrator of the TWDB on or before May 31, 2017. The current management plan for the Prairielands Groundwater Conservation District expires on July 30, 2017.

This report discusses the methods, assumptions, and results from a model run using version 2.01 of the groundwater availability model for the northern portion of the Trinity and Woodbine aquifers (Kelley and others, 2014). This model run replaces the results of GAM Run 11-004 (Wade, 2011). GAM Run 11-004 was completed using version 1.01 of the groundwater availability model for the northern portion of the Trinity and Woodbine aquifers (Bené and others, 2004). Table 1 and Table 2 summarize the groundwater availability model data required by statute. Figure 1 and Figure 2 show the area of the model from which the values in the tables were extracted. If after review of the figures Prairielands Groundwater Conservation District determines that the district boundaries used in the assessment do not reflect current conditions, please notify the TWDB at your earliest convenience.

METHODS:

In accordance with the provisions of the Texas State Water Code, Section 36.1071, Subsection (h), the groundwater availability model for the northern portion of the Trinity and Woodbine aquifers was used for this analysis. The water budget for the Prairielands Groundwater Conservation District was extracted for selected years of the historical model period (1980 to 2012) using ZONEBUDGET Version 3.01 (Harbaugh, 2009). The average annual water budget values for recharge, surface-water outflow, inflow to the district, and outflow from the district for the Trinity Aquifer and Woodbine Aquifer within the district are summarized in this report.

PARAMETERS AND ASSUMPTIONS:

Trinity Aquifer and Woodbine Aquifer

- We used version 2.01 of the updated groundwater availability model for the northern portion of the Trinity and Woodbine aquifers. See Kelley and others (2014) for assumptions and limitations of the model.
- The groundwater availability model for the northern portion of the Trinity and Woodbine aquifers contains eight layers: Layer 1 (the surficial outcrop area of the units in layers 2 through 8 and units younger than Woodbine Aquifer), Layer 2 (Woodbine Aquifer and pass-through cells), Layer 3

(Washita and Fredericksburg, Edwards (Balcones Fault Zone), and pass-through cells), and Layers 4 through 8 (Trinity Aquifer).

- Perennial rivers and reservoirs were simulated using MODFLOW-NWT river package. Ephemeral streams, flowing wells, springs, and evapotranspiration in riparian zones along perennial rivers were simulated using MODFLOW-NWT drain package. For this management plan, groundwater discharge to surface water includes groundwater leakage to all of the river and drain boundaries except for the groundwater loss along the riparian zone.

- The model was run with MODFLOW-NWT (Niswonger and others, 2011).

RESULTS:

A groundwater budget summarizes the amount of water entering and leaving the aquifer according to the groundwater availability model. Selected groundwater budget components listed below were extracted from the model results for the Trinity and Woodbine aquifers located within the district and averaged over the duration of the calibration and verification portion of the model run in the district, as shown in Table 1 and Table 2.

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

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

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

- Flow between aquifers—the net vertical flow between aquifers or confining units. This flow is controlled by the relative water levels in each aquifer or confining unit and aquifer properties of each aquifer or confining unit that define the amount of leakage that occurs. Please note that the model assumes no cross-formational flow at the base of the Trinity Aquifer. Therefore, no cross-formational flow between the Trinity Aquifer and underlying hydrogeologic units was calculated by the model.

The information needed for the district's management plan is summarized in Table 1 and Table 2. It is important to note that sub-regional water budgets are not exact. This is due to the size of the model cells and the approach used to extract data from

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

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Trinity Aquifer	15,668
Estimated annual volume of water that discharges from the aquifer to springs and any surface-water body including lakes, streams, and rivers	Trinity Aquifer	27,122
Estimated annual volume of flow into the district within each aquifer in the district	Trinity Aquifer	35,709[1]
Estimated annual volume of flow out of the district within each aquifer in the district	Trinity Aquifer	15,754[2]
Estimated net annual volume of flow between each aquifer in the district	From overlying younger units to Trinity Aquifer	8,066

[1] The estimated volume of flow from the brackish portion of the Trinity Group into the Trinity Aquifer in eastern Ellis County is 69 acre-feet per year and was not included in the management plan requirement results.

[2] The estimated volume of flow from the Trinity Aquifer into the brackish portion of the Trinity Group in eastern Ellis County is 16 acre-feet per year and was not included in the management plan requirement results.

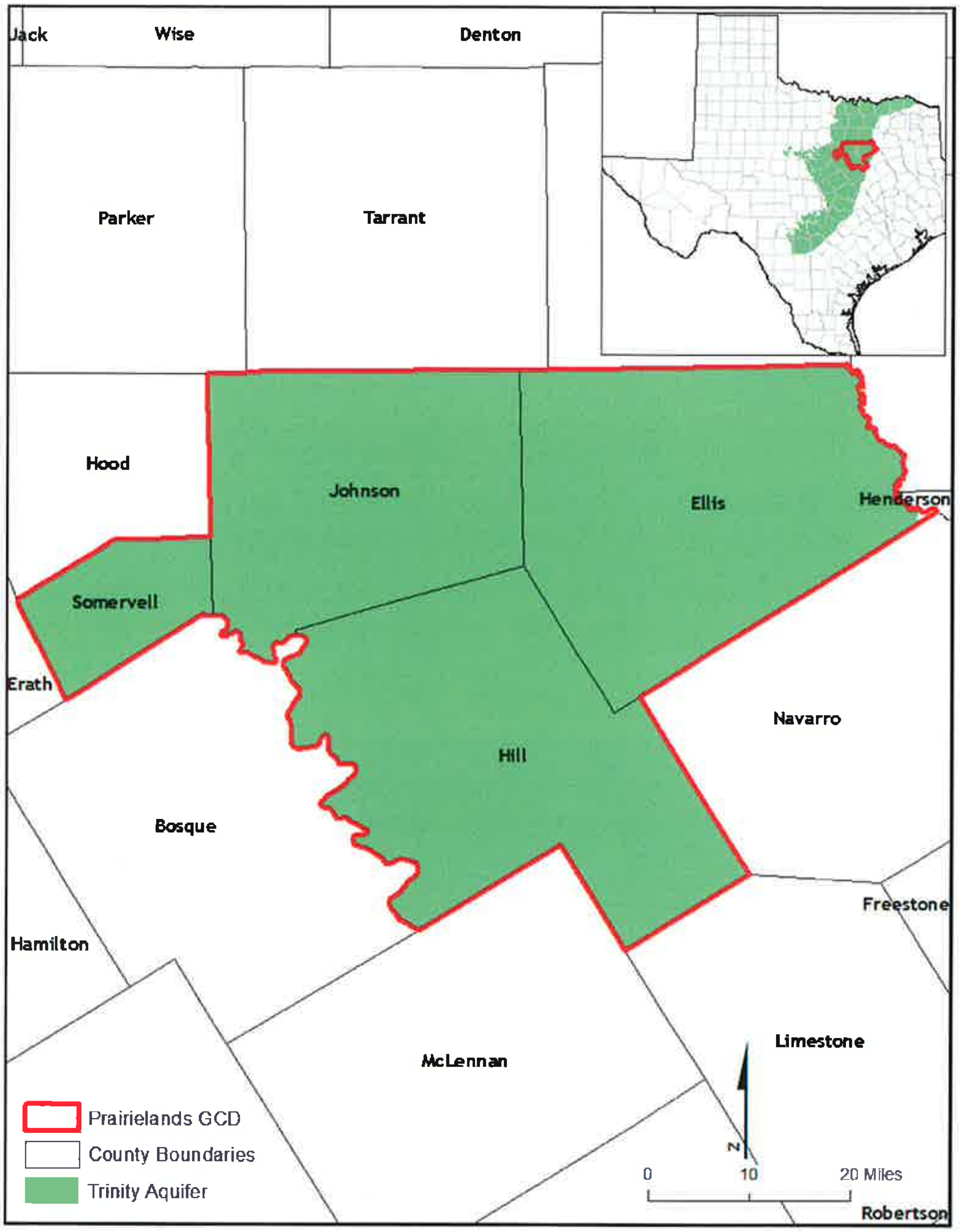

FIGURE 1: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE TRINITY AQUIFER FROM WHICH THE INFORMATION IN TABLE 1 WAS EXTRACTED FOR THE PRAIRIELANDS GROUNDWATER CONSERVATION DISTRICT (GCD).

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

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Woodbine Aquifer	22,392
Estimated annual volume of water that discharges from the aquifer to springs and any surface-water body including lakes, streams, and rivers	Woodbine Aquifer	16,865
Estimated annual volume of flow into the district within each aquifer in the district	Woodbine Aquifer	8,089[1]
Estimated annual volume of flow out of the district within each aquifer in the district	Woodbine Aquifer	12,781[2]
Estimated net annual volume of flow between each aquifer in the district	From younger units to Woodbine Aquifer	2,024
	From Woodbine Aquifer to Washita and Fredericksburg confining units	7,334

[1] The estimated volume of flow from the brackish portion of the Woodbine Formation into the Woodbine Aquifer in Ellis and Hill counties is 42 acre-feet per year and was not included in the management plan requirement results.

[2] The estimated volume of flow from the Woodbine Aquifer into the brackish portion of the Woodbine Formation in Ellis and Hill counties is 23 acre-feet per year and was not included in the management plan requirement results.

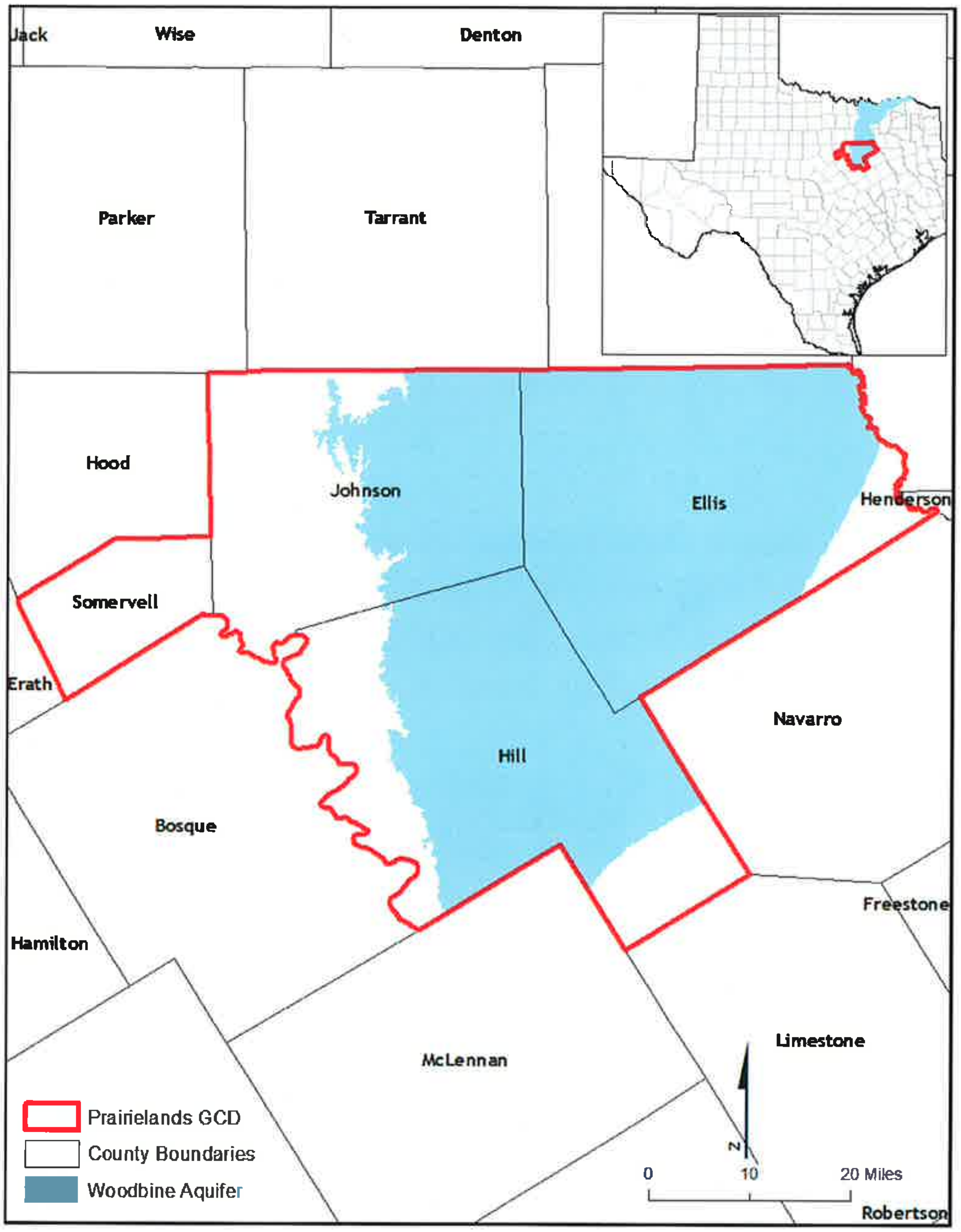

FIGURE 2: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE WOODBINE AQUIFER FROM WHICH THE INFORMATION IN TABLE 2 WAS EXTRACTED FOR THE PRAIRIELANDS GROUNDWATER CONSERVATION DISTRICT (GCD).

LIMITATIONS:

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

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

A key aspect of using the groundwater model to evaluate historic groundwater flow conditions includes the assumptions about the location in the aquifer where historic pumping was placed. Understanding the amount and location of 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 interaction with streams are specific to particular historic time periods.

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

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

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