NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT

April 23, 2020

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

Re: North Texas Groundwater Conservation District – Collin, Cooke, and Denton Counties Management Plan - 2020 Update

Dear Mr. Walker,

Enclosed is a copy of the North Texas Groundwater Conservation District's Management Plan, 2020 update. A PDF copy is provided on the attached thumb drive as well.

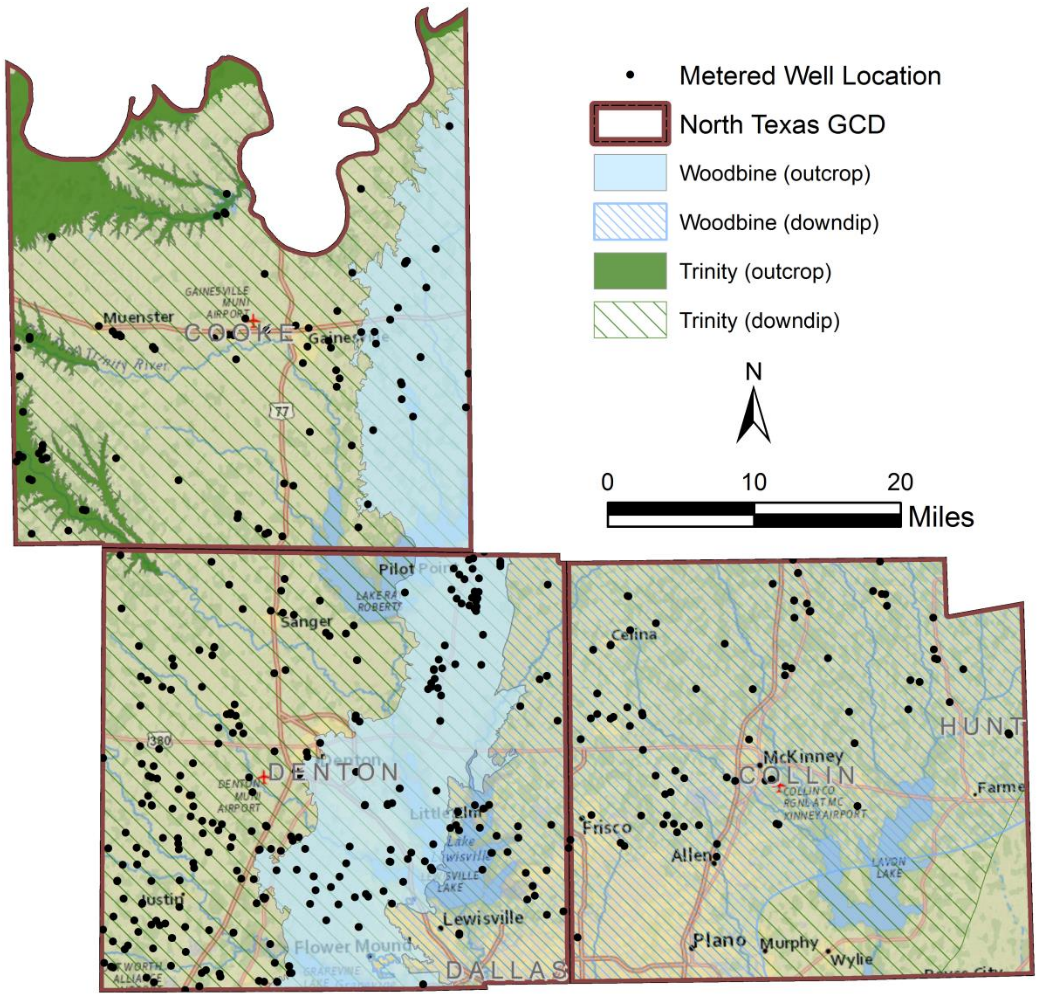
Sincerely,

Drew Satterwhite, PE
General Manager

DS:cb

Enclosure

NORTH TEXAS
GROUNDWATER CONSERVATION DISTRICT
MANAGEMENT PLAN



As Adopted on February 11, 2020

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North Texas GCD 2017 Management Plan Revisions

Feb. 1, 2017

Statute requires groundwater conservation districts (GCDs) to review, amend as necessary, and readopt management plans at least every five years. The North Texas GCD Management Plan developed in April 2012 has been updated to meet statute requirements and is in accordance with the Texas Water Development Board (TWDB) GCD management plan criteria checklist.

Below is a summarized list of revisions that have been made to the 2012 Plan in the development of the 2017 North Texas GCD Management Plan.

- Section 2 – History and Purpose of the Management Plan was enhanced to include text regarding new legislation (Senate Bill 660 and 737) which impacts the development of DFCs and the water planning process.

- Revisions to Goal 1 – Providing the Most Efficient Use of Groundwater.

Discussion was added to update the Plan regarding the current registration process of all non-exempt and exempts wells. In addition, the Plan includes mention of a groundwater monitoring program, meter inspection program, and updates to the District's geodatabase.

- Enhanced Goal 5 – Addressing natural resource issues within the District.

The District has recently engaged a firm to monitor all injection well applications who will notify the General Manager of any potential impacts. In addition, the District will monitor compliance by oil and gas companies of well registration, metering, production reporting, and fee payment requirements of the District's rules.

- Enhancement of Section 8 – Estimates of Technical Information.

Update summary table of newly adopted DFCs and incorporate new GAM runs as an appendix.

Update the general overview discussion to include District specific hydrogeology to include new figures, maps, and cross-sections. In addition, a section was developed to discuss District specific outcrop and downdip groundwater management issues.

- Update to all text, tables, appendices and the addition of new figures using the most recent data provided by the Texas Water Development Board (TWDB). The Board reports were relocated as separate appendices for clarity.

- Update supplemental content in Section 10 – Groundwater Resources. This information is helpful for stakeholders in understanding relevant groundwater issues within the District.

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT MANAGEMENT PLAN

1. INTRODUCTION

The North Texas Groundwater Conservation District (the District), after notice and hearing, adopts this Management Plan according to the requirements of Texas Water Code §36.1071. The North Texas Groundwater Conservation District Management Plan represents the management goals of the District for the next five years, including the desired future conditions of the aquifers within the jurisdictional boundaries of the District. These desired future conditions were adopted through the joint planning process in Groundwater Management Area 8 as prescribed in Chapter 36, Texas Water Code.

DISTRICT MISSION

The mission of the District is to develop and adopt a management plan and develop and enforce rules to provide protection to protect existing wells and the rights of landowners, 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 aquifers, ensure that the residents of Collin, Cooke, and Denton counties maintain local control over their groundwater, and operate the District in a fair and equitable manner for all residents.

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 most valuable resource can be managed in a prudent and cost effective manner through conservation, education, and management. 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.

2. 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 determine the Desired Future Conditions ("DFCs") for the groundwater resources within their boundaries by September 1, 2010. In 2011, Senate Bills 660 and 737 further modified 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)), (3) to amend and adopt rules necessary to achieve goals included in the management plan (Texas Water Code Section 36.101(a)(5)).

Senate Bill 660 required that GMA representatives must participate within each applicable RWPG. It also required the Regional Water Plans (RWP) be consistent with the DFCs in place when the regional plans are initially developed. TWDB technical guidelines indicate that the MAG volume (within each county and basin) is the maximum amount of groundwater that can be used for existing uses and new strategies in 2016 Regional Water Plans. In other words, the MAG volumes are a cap on groundwater production for TWDB planning purposes.

"Managed available groundwater" was redefined as "modeled available groundwater" in Senate Bill 737 by the 82nd Legislature. Modeled available groundwater is "the amount of water that can be produced on an average annual basis" to achieve a desired future condition.

3. DISTRICT INFORMATION

3.1 CREATION

The 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 by the Act of May 19, 2009, 81st Leg., R.S., Chapter 248, 2009 Tex. Gen. Laws 686, codified at TEX. SPEC. DIST. LOC. LAWS CODE ANN. Chapter 8856 (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. The District's boundaries are coextensive with the boundaries of Collin, Denton, and Cooke counties, Texas (Figure 1) and all lands and other property within these boundaries will benefit from the works and projects that will be accomplished by the District.

The creation of the District was confirmed by the Commissioners Court of Collin County on August 10, 2009; the Commissioners Court of Denton County on August 11, 2009; and the Commissioners Court of Cooke County on August 10, 2009.

3.2 DIRECTORS

The District is governed by a Board of Directors, which is comprised of nine appointed Directors, three from each of the three counties' commissioners' courts comprising the District.

3.3 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 Cooke, Collin and Denton counties.

3.4 LOCATION AND EXTENT

The District's boundaries are coextensive with the boundaries of Cooke, Collin and Denton Counties, Texas. The District covers an area of approximately 2,740 square miles. A map is included as Figure 1.

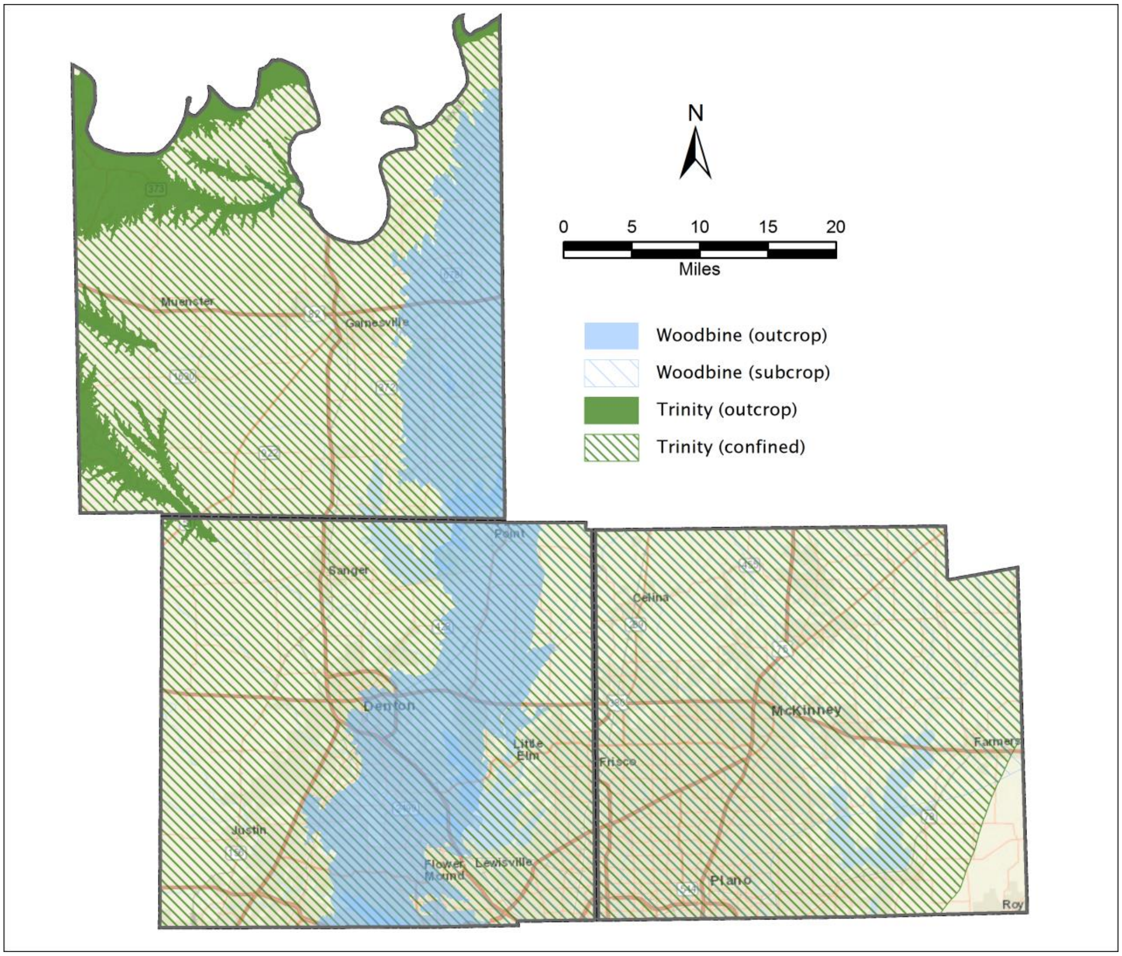


Figure 1. District aquifer map

4. CRITERIA FOR PLAN APPROVAL

4.1 PLANNING HORIZON

This management plan becomes effective upon adoption by the District Board of Directors and subsequent approval by the Executive Administrator of the Texas Water Development Board (TWDB). This management plan incorporates a planning period of ten years in accordance with 31 Texas Administrative Code (TAC) §356.5(a).

4.2 BOARD RESOLUTION

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

4.3 PLAN ADOPTION

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

4.4 COORDINATION WITH SURFACE MANAGEMENT ENTITIES

A template 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 – Letters to Surface Water Management Entities.

5. ACTIONS, PROCEDURES, PERFORMANCE, AND AVOIDANCE FOR PLAN IMPLEMENTATION, AND MANAGEMENT OF GROUNDWATER SUPPLIES

In order to effectuate the District's management plan, the District continually works to develop, maintain, review, and update the District rules and procedures for the various activities contained in the management plan. In order to monitor performance, (a) the Board of Directors routinely meets to track progress on the various objectives and standards adopted in this management plan and (b) the General Manager prepares and submits an annual report documenting progress made towards implementation of the management plan to the Board of Directors for its review and approval. Also, as needed, and at least annually, the Board of Directors reviews District rules to ensure that all provisions necessary to implement the plan are contained in the rules. The Board of Directors will revise the rules as needed to manage and conserve groundwater resources within the District more effectively and to ensure that the duties prescribed in Texas Water Code and other applicable laws are carried out.

The District is currently operating pursuant to a set of rules that became effective January 1, 2019 A copy of the District's rules may also be found on the District's website located at www.northtexasgcd.org/.

The District will work diligently to ensure that all citizens within the District's jurisdictional boundaries are treated as equitably as possible. The District, as needed, will seek the cooperation of 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 contain 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 desired future conditions of the groundwater resources in a quantitative manner.

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.

6. 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.

7. GOALS, MANAGEMENT OBJECTIVES AND PERFORMANCE STANDARDS

The following 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.

For purposes of this management plan, an exempt well means wells that meet any one of the following, unless the context clearly provides otherwise: (1) any well that was applied for or existed prior to January 1, 2019 that is used solely for domestic use, livestock use, or poultry use; (2) any well that was applied for or existed prior to January 1, 2019 that does not have the capacity, as equipped, to produce more than 25 gallons per minute and is used in whole or in part for commercial, industrial, municipal, manufacturing, or public water supply use, use for oil or gas or other hydrocarbon exploration or production, or any other purpose of use other than solely for domestic, livestock, or poultry use, except that if the total sum of the capacities of wells that operate as part of a well system is greater than 25 gallons per minute, the well system and individual wells that are part of it are not considered to be exempt; (3) any new well applied for after January 1, 2019 that does not have the capacity, as equipped, to produce more than 17.36 gallons per minute; or (4) leachate wells, monitoring wells, and piezometers. All wells that do not meet one of these criteria are considered to be non-exempt for purposes of this management plan. The characterization of exempt and non-exempt wells is intended to apply only to wells described in this management plan and shall not be interpreted to mean that the wells will be considered exempt or not exempt from permitting under any rules adopted by the District in the future.

GOAL 1 - PROVIDING THE MOST EFFICIENT USE OF GROUNDWATER

The District, through strategies and programs adopted in this management plan and rules, strives to ensure the most efficient use of groundwater in order to sustain available resources for the future while maintaining the vibrant economic growth of the District.

Management Objective 1.1

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

Performance standard 1.1

The Board of Directors will receive quarterly briefings by the General Manager regarding the District's well registration program. These quarterly reports will be included in the Annual Report to the Board of Directors. The District is currently in the beginning phase of making improvements to the online geodatabase that will make additional statistics available for this report such as the aquifer in which wells are being completed. In addition, a handout will be provided annually to local realtor associations detailing the requirement of new property owners to register their existing wells within 90 days of transfer of ownership.

Management Objective 1.2

It is the goal of the District that all non-exempt wells and exempt wells be registered. In order to ensure that all wells required by District rules to be registered have been accurately registered the District's Field Technician manages a Field Inspections Program, with the objective of conducting field inspections of at least 5 wells per month. These inspections will confirm that a well has been registered, accuracy of well location, and accuracy of certain other required well registration information.

Performance Standard 1.2

Quarterly briefings by the General Manager will be provided to the Board of Directors regarding the number of well sites inspected each month to confirm well registration requirements have been met. This information will also be included in the Annual Report to the Board of Directors.

Management Objective 1.3 (a)

In order to evaluate continually the effectiveness of the District's rules in meeting the goal of ensuring the efficient use of groundwater, the District will operate a groundwater monitoring program to collect information on the quantity and quality of groundwater resources throughout the District. This monitoring program is based on the establishment of a network of monitoring wells. The District staff has assumed the responsibility of monitoring all available TWDB wells at least annually. In addition, one additional well will be added in each county, for a total of three new wells to the system in accordance with the District's well monitoring plan. For the purpose of water quality sampling, samples collected for water quality taken by Texas Commission on Environmental Quality staff every five years will be used for monitoring purposes initially, and may be supplemented in the future as determined by the Board. All information collected in the monitoring program will be entered into the District's geodatabase after the current geodatabase improvements project is complete. The results of the monitoring program will be included in the Annual Report presented by the General Manager.

Performance Standard 1.3 (a)(1)

Track the number of wells in Collin, Cooke, and Denton counties for which water levels were measured per year as reported in the Annual Report presented by the General Manager to the Board of Directors.

Performance Standard 1.3 (a)(2)

Track the number of wells in Collin, Cooke, and Denton Counties for which water samples were collected for the testing of water quality: The Texas Commission on Environmental Quality provides a Consumer Confidence Report that provides consumers with information about the quality of drinking water.

This data may be reviewed at: www.tceq.texas.gov/drinkingwater/ccr/ for water systems.

Management Objective 1.3 (b)

In order to ensure the efficient use of groundwater, adequate data must be collected to facilitate groundwater availability modeling activities necessary to understand current groundwater resources and the projected availability of those resources in the future. Monitoring wells will be established by the District on a schedule determined by the Board of Directors as funds are available.

Performance Standard 1.3 (b)

The number of wells for which water level data is available will be accessible online after the current geodatabase improvements project is complete.

Management Objective 1.4

A critical component of the District's goal of ensuring the efficient use of groundwater is the collection of accurate water use information. The District has established by temporary rule a requirement that all non-exempt wells be equipped with meters to measure the use of groundwater. The well owner/operator is responsible for maintaining a meter log with at least monthly records of water use. Cumulative water use is to be reported to the District by the well owner/operator quarterly. All water use information will be entered and maintained in the District's geodatabase. It is the objective of the District that 95 percent of all registered non-exempt wells will report water use by the reporting deadlines established in the District's rules.

Performance Standard 1.4

Percent of registered non-exempt wells meeting reporting requirements of water use will be provided in the Annual Report to the Board of Directors.

Management Objective 1.5

In order to ensure that registered non-exempt wells have been equipped with District-approved meters and that water use is being accurately reported, the District Field Technician facilitates a meter inspection program to insure that all registered non-exempt wells will be inspected on at least a five-year cycle by District personnel. These inspections will, at a minimum, verify proper installation and operational status of meters and record the meter reading at the time of inspection. This meter reading will be compared to the most recent water use report for the inspected well. Any potential violations of District rules regarding meter installation and reporting requirements will be reported to the Board of Directors at the next practicable meeting for consideration of possible enforcement actions. Annual water use will be included in the Annual Report presented by the General Manager to the Board of Directors.

Performance Standard 1.5 (a)

Percentage of registered non-exempt wells inspected by District personnel annually is provided in the Annual Report presented by the General Manager.

Performance Standard 1.5 (b)

Comparison of annual water use versus estimates of modeled available groundwater established as a result of the adopted Desired Future Conditions shall be included in the Annual Report presented by the General Manager no later than 2021, after the current geodatabase improvements project is completed.

Management Objective 1.6

A critical component to accomplishing the District's mission is to ensure that proper data is being collected and that the data is being utilized to the fullest extent and efficiently. Shortly after the District's creation, the District hired a consultant to build an online geodatabase that would make workflows, data entry and data utilization easier and more efficient for well owners, well drillers, general public, District staff and the Board of Directors. After several years of utilizing the geodatabase the District had built, the District has identified areas in which the existing system can be upgraded

Performance Standard 1.6

The District will make substantial upgrades and improvements to the online geodatabase by, in order to make workflows, data entry and data utilization easier and more efficient.

Management Objective 1.7

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

Performance Standard 1.7

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 by 2019.

GOAL 2 - CONTROLLING AND PREVENTING THE WASTE OF GROUNDWATER

Another important goal of the District is to implement strategies that will control and prevent the waste of groundwater.

Management Objective 2.1

The District will annually provide information to the public on eliminating and reducing wasteful practices in the use of groundwater by publishing information on groundwater waste reduction on the District's website at least once a year.

Performance Standard 2.1

Information on groundwater waste reduction will be provided on the District's website and the information published on the website will be included in the District's Annual Report to be provided to the Board of Directors.

Management Objective 2.2

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

Performance Standard 2.2

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

Management Objective 2.3

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 2.3

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

Management Objective 2.4

The District will investigate instances of potential waste of groundwater.

Performance Standard 2.4

District staff will report to Board of Directors as needed regarding potential waste of groundwater and include number of investigations in Annual Report.

GOAL 3 - CONTROLLING AND PREVENTING SUBSIDENCE

Due to the geology of the Northern Trinity/Woodbine Aquifers in the District, problems resulting from water level declines causing subsidence are not technically feasible and as such, a goal addressing subsidence is not applicable.

GOAL 4 - ADDRESSING CONJUNCTIVE SURFACE WATER MANAGEMENT ISSUES

Surface water resources represent a vital component in meeting current and future water demands in all water use sectors within the District. The District coordinates with surface water management entities within the region by designating a board member or the general manager to attend and coordinate on water supply and management issues with the Region C Water Planning Group.

Management Objective 4.1

Coordination with surface water management agencies - the designated board member or General Manager will attend, at a minimum 75 percent of the meetings and events of the Region C Water Planning Group. Participation in the regional water planning process will ensure coordination with surface water management agencies that are participating in the regional water planning process.

Performance Standard 4.1

The designated board member or General Manager will report on actions of the Region C Water Planning Group as appropriate to the board, and the General Manager will document meetings attended in the Annual Report.

Management Objective 4.2

The General Manager of the District will monitor and participate in relevant stakeholder meetings concerning water resources relevant to the District.

Performance Standard 4.2

The General Manager of the District will monitor and participate in relevant stakeholder meetings that concern water resources relevant to the District. The meetings that are attended will be presented in the District's Annual Report.

GOAL 5 - ADDRESSING NATURAL RESOURCE ISSUES

The District understands the important nexus between water resources and natural resources. The exploration and production of natural resources such as oil and gas along with mining efforts for road aggregate materials such as sand and gravel clearly represent potential management issues for the District. For example, improperly plugged oil and gas wells may provide a conduit for various hydrocarbon and drilling fluids to potentially migrate and contaminate groundwater resources in the District.

Management Objective 5.1

The District has engaged a firm to monitor all injection well applications within the District and notify the General Manager of any potential impacts.

Performance Standard 5.1

General Manager will report to the Board of Directors any information provided by the consultant engaged to monitor injection well applications within the District to the Board of Directors and document the information in the Annual Report to the Board of Directors.

Management Objective 5.2

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

Performance Standard 5.2

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 to the Board of Directors.

GOAL 6 - ADDRESSING DROUGHT CONDITIONS

Management Objective 6.1

The District will make available through the District's website easily accessible drought information with an emphasis on developing droughts and on any current drought conditions. Examples of links that will be provided include routine updates to the Palmer Drought Severity Index (PDSI) map for the region, the Drought Preparedness Council Situation Report (routinely posted on the Texas Water Information Network, and the TWDB Drought Page at https://waterdatafortexas.org/drought.

Performance Standard 6.1

Current drought conditions information from multiple resources including the Palmer Drought Severity Index (PDSI) map for the region and the Drought Preparedness Council Situation Report is available to the public through the District's website

GOAL 7 - ADDRESS CONSERVATION, RECHARGE ENHANCEMENT, RAINWATER HARVESTING, PRECIPITATION ENHANCEMENT, AND BRUSH CONTROL

Texas Water Code §36.1071(a)(7) requires that a management plan include a goal that addresses conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control, where appropriate and cost-effective. The District has determined that a goal addressing recharge enhancement and precipitation enhancement is not appropriate or cost-effective, and therefore is not applicable to the District.

Management Objective 7.1

The primary goal, perhaps viewed as the *"umbrella goal"* of the District is to provide for and facilitate the conservation of groundwater resources within the District. The District will include a link on the District's website to the electronic library of water conservation resources supported by the Water Conservation Advisory Council. For example, one important resource available through this internet-based resource library is the Water Conservation Best Management Practices Guide developed by the Texas Water Conservation implementation Task Force. This Guide contains over 60 Best Management Practices for municipalities, industry, and agriculture that will be beneficial to water users in the District.

Performance Standard 7.1

Link to the electronic library of water conservation resources supported by the Water Conservation Advisory Council is available on the District's website.

Management Objective 7.2

The District will submit at least one article regarding water conservation for publication each year to at least one newspaper of general circulation in the District's Counties.

Performance Standard 7.2

A copy of the article submitted by the District for publication to a newspaper of general circulation in one of the District's Counties regarding water conservation will be included in the Annual Report to the Board of Directors.

Management Objective 7.3

The District will provide educational curriculum regarding water conservation offered by the Texas Water Development Board (Major Rivers) to at least one elementary school in each county of the District.

Performance Standard 7.3

Each year the District will seek to provide water conservation curriculum to at least one elementary school in each county within the District. The elementary schools for which the curriculum is provided will be listed in the Annual Report to the Board of Directors.

Management Objective 7.4

Rainwater harvesting is assuming a viable role either as a supplemental water supply or as the primary water supply in both urban and rural areas of Texas. As a result, Texas has become internationally recognized for the widespread use and innovative technologies that have been developed, primarily through efforts at the TWDB. To ensure these educational materials are readily available to citizens in the District, a link to rainwater harvesting materials including system design specifications and water quality requirements will be maintained on the District's website.

Performance Standard 7.4

Link to rainwater harvesting resources at the TWDB is available on the District's website.

Management Objective 7.5

Educate public on importance of brush control as it relates to water table consumption.

Performance Standard 7.5

Link to information concerning brush control is available on the District's website.

GOAL 8 - ACHIEVING DESIRED FUTURE CONDITIONS OF GROUNDWATER RESOURCES

The desired future conditions of the aquifers in Groundwater Management Area 8 represent average water levels in the various aquifers at the end of 50-years based on meeting current and projected groundwater supply needs. The Board of Directors has adopted a strategic approach that includes the adoption of this management plan and rules necessary to achieve the desired future conditions. This management plan and the companion rules have been designed as an integrated program that will systematically collect and review water data on water quantity, water quality, and water use, while at the same time, implementing public awareness and public education activities that will result in a better informed constituency.

Management Objective 8.1

Statute requires GCDs to review, amend as necessary, and readopt management plans at least every five years. The General Manager will annually present a summary report on the status of achieving the adopted desired future conditions. Prior to the adoption date of the next management plan, the General Manager will work with the Board of Directors to conduct a focused review to determine if any elements of this management plan or rules need to be amended in order to achieve the adopted desired future conditions, or if the adopted desired future conditions need to be revised to better reflect the needs of the District.

Performance Standard 8.1

The General Manager will include a summary report on the status of achieving the adopted desired future conditions in the Annual Report beginning by 2021, after the geodatabase improvements project is complete. This summary report will primarily be based on data collected from the District's groundwater monitoring program.

Four years after the adoption of this management plan, and based on the annual review conducted by the General Manager and the Board of Directors, the Board of Directors will determine which of the following are needed for the District; (1) the current management plan and rules are working effectively to meet the adopted desired future conditions, (2) specific amendments need to be made to this management plan and/or rules in order to achieve the adopted desired future conditions, (3) amendments are needed to the adopted desired future conditions in order to better meet the needs of the District, or (4) a combination of (2) and (3). This determination will be made at a regularly scheduled meeting of the Board of Directors.

8. ESTIMATES OF TECHNICAL INFORMATION

In order to better understand groundwater resources within a groundwater conservation district, Texas Water Code §36.1071 requires that estimates of recharge, discharge, and various other aspects of groundwater flow, such as cross-formational flow and flow into and out of the district, be included in the management plan if a groundwater availability model is available for use. The TWDB, in its role of providing technical assistance to the District, conducted groundwater availability modeling runs for the Northern Trinity and Woodbine aquifers and provided all required estimates for inclusion in the management plan.

8.1 MODELED AVAILABLE GROUNDWATER BASED ON THE DESIRED FUTURE CONDITIONS

The term "desired future conditions" was added by the Texas Legislature in 2005 to the list of goals that districts must address when adopting or readopting management plans required by Texas Water Code §36.1071. Desired future conditions is defined in Texas Water Code §36.001(30) as follows, "Desired future condition" means a quantitative description, adopted in accordance with Section 36.108, of the desired condition of the groundwater resources in a management area at one or more specified future times".

Even before creation of the District by the Texas Legislature in 2009, other districts in Groundwater Management Area 8 adopted, through the joint planning process required by Texas Water Code §36.108, desired future conditions for the Woodbine Aquifer on December 17, 2007 and for the Trinity Aquifer on September 17, 2008. Subsequently, and with participation by the District, designated representatives in Groundwater Management Area 8 voted on April 27, 2011 to readopt the previously adopted desired future conditions without amendment for the Woodbine and Trinity aquifers. Because the District was not in existence during the initial adoption of desired future conditions in 2008 and was still in the organizational stages of development during re-adoption of those desired future conditions in 2011, the District did not have an opportunity to participate in the development of those desired future conditions.

Upon approval of this management plan by the Texas Water Development Board, the District intends to continue collecting as much data and information on the groundwater resources within its boundaries as practically feasible in order to enable it to develop and establish meaningful and reasonable desired future conditions for the aquifers within its jurisdiction in the next round of joint planning. Once those desired future conditions have been established and adopted, the District intends to develop permanent rules that require the permitting of certain wells and that establish a management system that will be designed to achieve the desired future conditions.

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.

In the North Texas District, the geologic units comprising the Trinity are: the Antlers (which includes all of the Trinity Group Formations), the Paluxy Sand, the Glen Rose Limestone, and the Twin Mountains (which includes the Hensell and the Hosston Formations that are differentiated further to the south). Trinity Formations for which DFCs and MAGs are developed need to be modified in terms of the Antlers, Paluxy and Twin Mountains.

During the second round of joint planning, GMA-8 passed and adopted a resolution proposing DFCs for all relevant aquifers by letter dated April 1, 2016. In February 2017, GMA-8 submitted to the TWDB a Resolution package containing GMA-8's approved and adopted DFC's.

The Modeled Available Groundwater (MAG) estimates in GMA-8 for the Woodbine and Trinity aquifers are documented in Table 1 and are based on GAM Run 17-029 The GAM Run is included as Appendix E.

Table 1. Estimates of Modeled Available Groundwater for pumping in the Trinity and Woodbine aquifers (GAM Run 17-029)

County	Aquifer	Modeled Available Groundwater (acre-feet per year)							
		2009	2010	2020	2030	2040	2050	2060	2070
Collin	Antlers	629	1,961	1,966	1,961	1,966	1,961	1,966	1,961
Collin	Twin Mountains	163	2,201	2,207	2,201	2,207	2,201	2,207	2,201
Collin	Paluxy	616	1,547	1,551	1,547	1,551	1,547	1,551	1,547
Collin	Glen Rose	84	83	83	83	83	83	83	83
Collin	Woodbine	2,427	4,251	4,263	4,251	4,263	4,251	4,263	4,251
Collin	County Total	3,919	10,043	10,070	10,043	10,070	10,043	10,070	10,043
Cooke	Antlers	4,117	10,514	10,544	10,514	10,544	10,514	10,544	10,514
Cooke	Woodbine	1,646	800	802	800	802	800	802	800
Cooke	County Total	5,763	11,314	11,346	11,314	11,346	11,314	11,346	11,314
Denton	Antlers	11,427	16,545	16,591	16,545	16,591	16,545	16,591	16,545
Denton	Twin Mountains	997	8,366	8,389	8,366	8,389	8,366	8,389	8,366
Denton	Paluxy	1,532	4,819	4,832	4,819	4,832	4,819	4,832	4,819
Denton	Glen Rose	121	338	339	338	339	338	339	338
Denton	Woodbine	3,797	3,607	3,616	3,607	3,616	3,607	3,616	3,607
Denton	County Total	17,874	33,675	33,767	33,675	33,767	33,675	33,767	33,675
District Total		**27,556**	**55,032**	**55,183**	**55,032**	**55,183**	**55,032**	**55,183**	**55,032**

8.2 AMOUNT OF GROUNDWATER BEING USED WITHIN THE DISTRICT

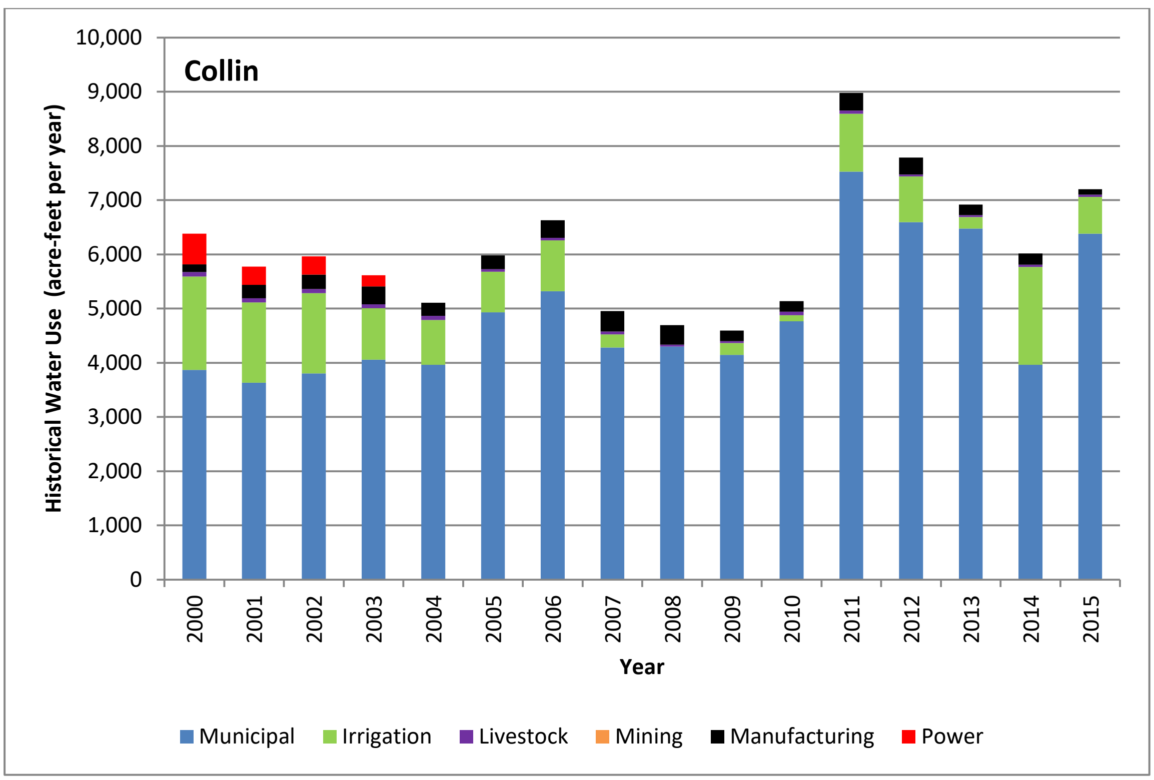
Estimates of historical water use, especially estimates from recent times, are very important during the process of developing water demand projections during the planning process. This is because changes in the volumes and types of water use, especially on a regional basis, will typically occur relatively slowly. Therefore, if one has a good understanding of recent water use statistics, then the projections of future water demands will be much more reliable.

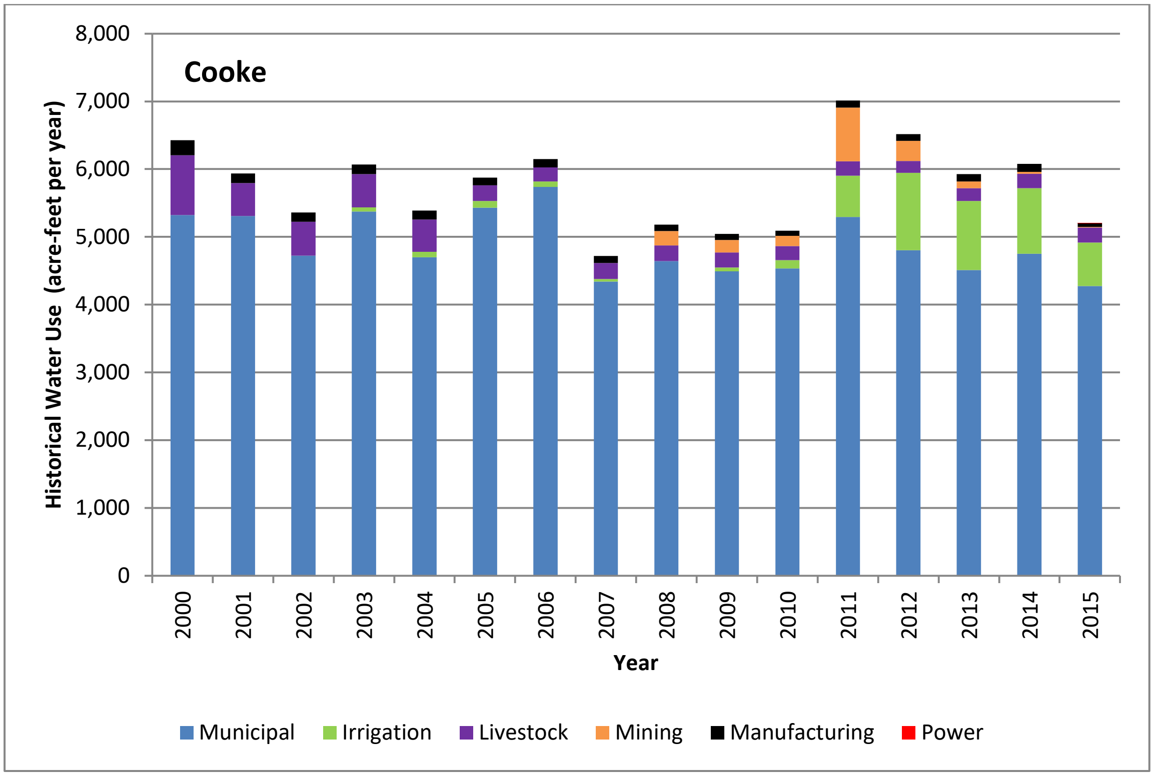
Texas Water Code §36.1071(e)(3)(B) requires that a management plan must include recent estimates of groundwater use. The primary source of this information is the TWDB Water Use Survey. Groundwater use estimates for the District for years 2000 through 2015 for the six primary water use sectors from the TWDB Water Use Survey are presented in Appendix F and Figure 2.

Estimated historical groundwater use in the District by category in 2015 was 90 percent for municipal use, seven percent for irrigation use, two percent for livestock use, less than one percent for manufacturing and mining use, and zero percent for steam-electric power use. In the

TWDB Water Use Survey, the municipal use category includes small water providers and rural domestic pumping in addition to municipalities.

Total use was about 26,530 acre-feet in 2000, around 20,000 acre-feet per year from 2000 through 2006, generally increased between 2008 and 2012 to a maximum of about 37,525 acre-feet in 2011, generally decreased from 2011 through 2015. Total groundwater use reached a total volume in 2015 of 27,313 acre-feet. Usage for irrigation purposes was greatest from 2000 through 2006 and decreased to zero in 2008. Water use for mining purposes increased significantly in 2008 through 2011. Livestock use remained on average, 1,000 acre-feet per year from 2000 through 2004 and then decreased by about half to around 589 acre-feet per year from 2008 through 2011. Water use for steam-electric power generation varied from over 500 acre-feet per year in 2000 to approximately 336 acre-feet per year in 2001 and 337 acre-feet in 2002. No usage for power occurred in 2004 through 2015. Generally, municipal use has been greater than about 15,000 acre-feet per year throughout the historical record with maximum usage in 2011 (29,919 acre-feet), 2012 (26,424 acre-feet, and 2015 (24,479 acre-feet).





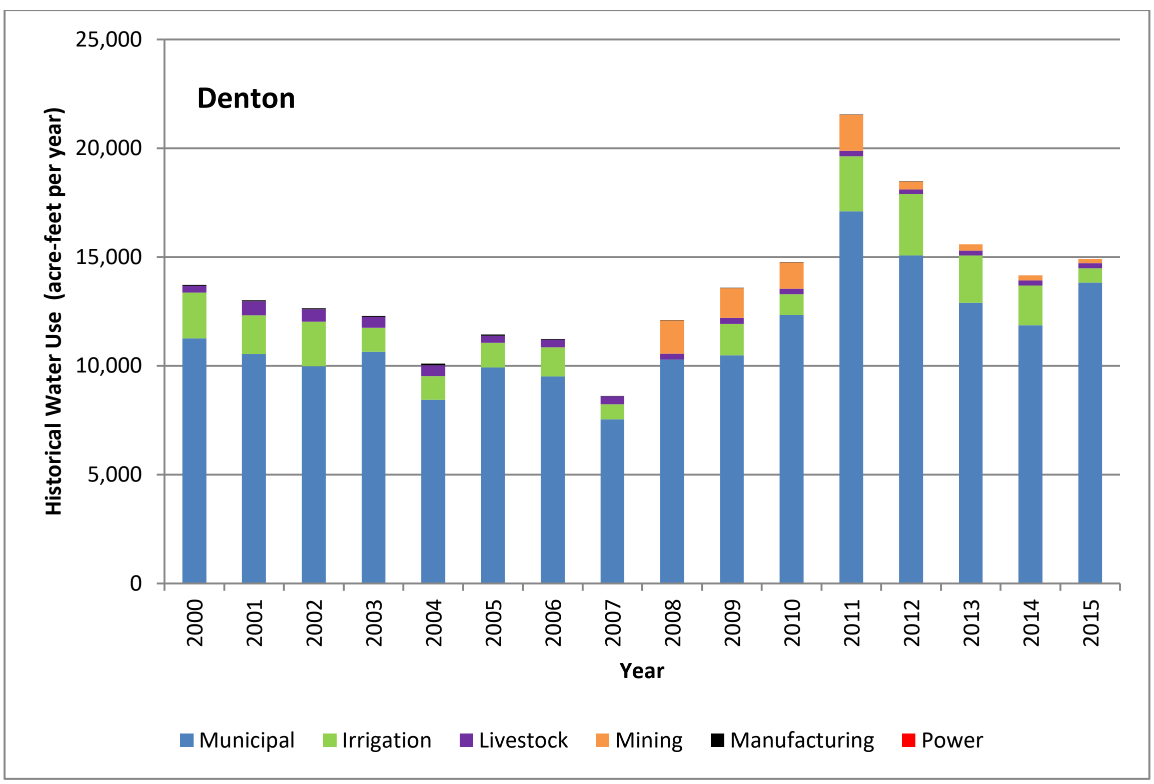


Figure 2. Historical groundwater use estimates by county, 2000-2015

8.3 ANNUAL AMOUNT OF RECHARGE OF PRECIPITATION

Recharge from precipitation falling on the outcrop of the aquifer (where the aquifer is exposed to the surface) within the North Texas GCD was estimated by the TWDB in the GAM Run 16-004 dated May 16, 2016. Water budget values of recharge extracted for the transient model period indicate that precipitation accounts for 13,851 acre-feet per year of recharge to the Trinity aquifer and 55,555 acre-feet per year of recharge to the Woodbine aquifer within the boundaries of the North Texas GCD (Appendix E).

8.4 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 North Texas GCD were estimated by the TWDB in the GAM Run 16-004 (Appendix E). Values from the transient model period are 27,471 acre-feet per year of discharge from the Trinity aquifer and 35,588 acre-feet per year of discharge from the Woodbine aquifer to surface water bodies that are located within the North Texas GCD.

8.5 ANNUAL VOLUME OF FLOW INTO AND OUT OF THE DISTRICT 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 North Texas GCD were estimated by the TWDB in the GAM Run 16-004 (Appendix E). Values extracted from the transient model period represent the model's calibration and verification time period (years 1980 through 2012).

For the Woodbine Aquifer, estimated annual flow into and out of the District is 7,668 and 16,202 acre-feet per year, respectively. These volumes indicate that the District gains only half as much water from neighboring portions of the Woodbine Aquifer than it loses. For the Northern Trinity Aquifer, estimated annual flow into and out of the District is 41,751 and 18,411 acre-feet per year, respectively. These volumes indicate that the District gains over twice as much water from neighboring portions of the Northern Trinity Aquifer than it loses.

The estimated amount of annual flow between aquifers in the District based on GAM Run 16-004 provided by the TWDB are given in Appendix E. The GAM run estimates flow of 3,280 acre-feet per year from the Woodbine Aquifer to younger units and flow of 6,595 acre-feet per year from the Woodbine Aquifer to the Washita and Fredericksburg confining units. The run also estimated that 16,473 acre-feet per year flows from overlying units to the Trinity Aquifer.

8.6 PROJECTED SURFACE WATER SUPPLY IN THE DISTRICT

Although the primary focus of this management plan is on groundwater resources, the reality is that in areas like the District, decision makers must also consider surface water resources available to meet water supply needs when planning for the sustainable utilization of the resource. Texas Water Code §36.1071 recognizes this need for a more comprehensive evaluation, and as such requires groundwater conservation districts to consider surface water resources available in the District and also water management strategies that are included in the most recently adopted state water plan, regardless of whether the original source is surface water or groundwater. Appendix F summarizes the projected surface water supplies in the District based on the 2017 Texas State Water Plan, as provided by Allen (2017). This table is organized by county and water user groups and provides projected values for every decade from2020 to 2070.

Total projected surface water supplies by county are illustrated in Figure 3. The estimated projections range from a maximum of 150,370 acre-feet per year in 2020 to a minimum of 112,754 acre-feet per year in 2070 for Collin County, from a maximum of 3,344 acre-feet per year in 2070 to a minimum of 1,929 acre-feet per year in 2020 for Cooke County, and from a maximum of 143,405 acre-feet per year in 2030 to a minimum of 130,146 acre-feet per year in 2070 for Denton County. These values indicate very little projected surface water supplies in Cooke County. They also indicate that projected surface water supplies for the District, which are on the order of 264,000 acre-feet per year, are significantly greater than historical groundwater use in the District, which is on the order of 20,000 to 30,000 acre-feet per year for 1980 through 2008.

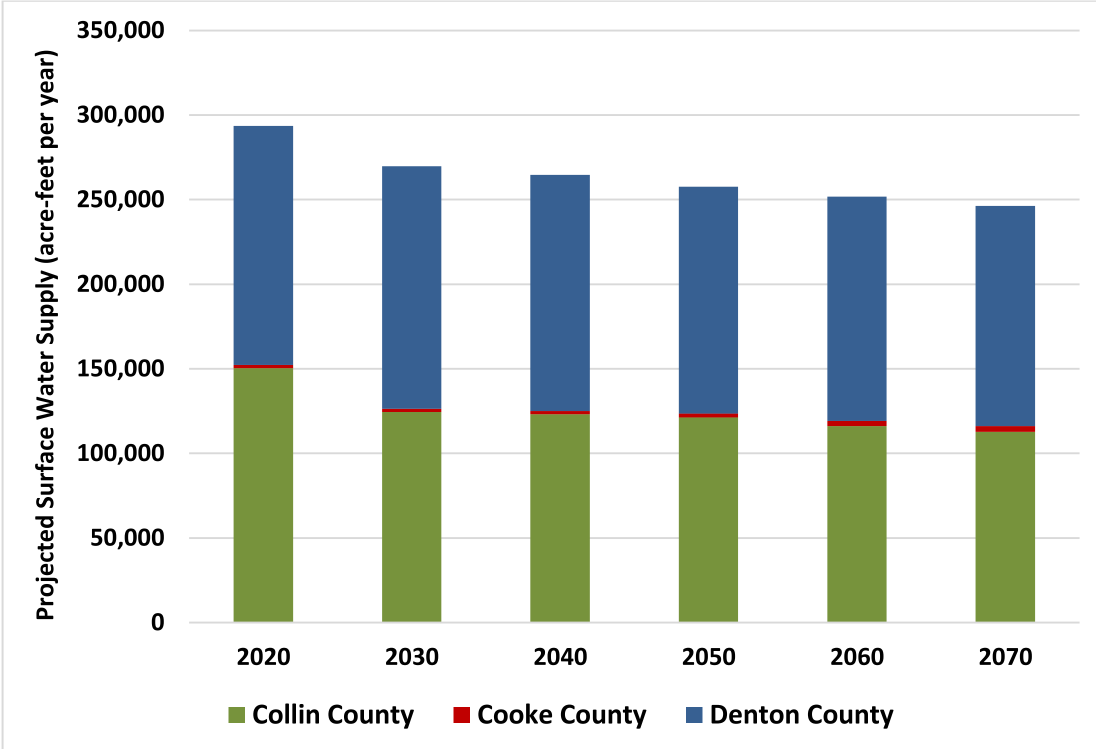


Figure 3. Projected surface water supply within the District by county

8.7 PROJECTED TOTAL DEMAND FOR WATER IN THE DISTRICT

The analyses to develop water demand projections are primarily conducted in Texas as part of the regional water supply planning process (created by the 75th Texas Legislature through the passage of Senate Bill 1 in 1997). Water demand projections are developed for the following water user categories; municipal, rural (county-other), irrigation, livestock, manufacturing, mining, and steam-electric power generation.

Texas Water Code §36.1071(e)(3)(G) requires that a management plan include projections of the total demand for water (surface water and groundwater) from the most recently adopted state water plan. Water demand projections from the 2017 Texas State Water Plan are presented in Appendix F. The projected total demand for the District increases significantly from 419,457 acre-feet per year in 2020 to 820,443 acre-feet per year in 2070. Projected demands are significantly higher in Collin and Denton counties than in Cooke County (Figure 4).

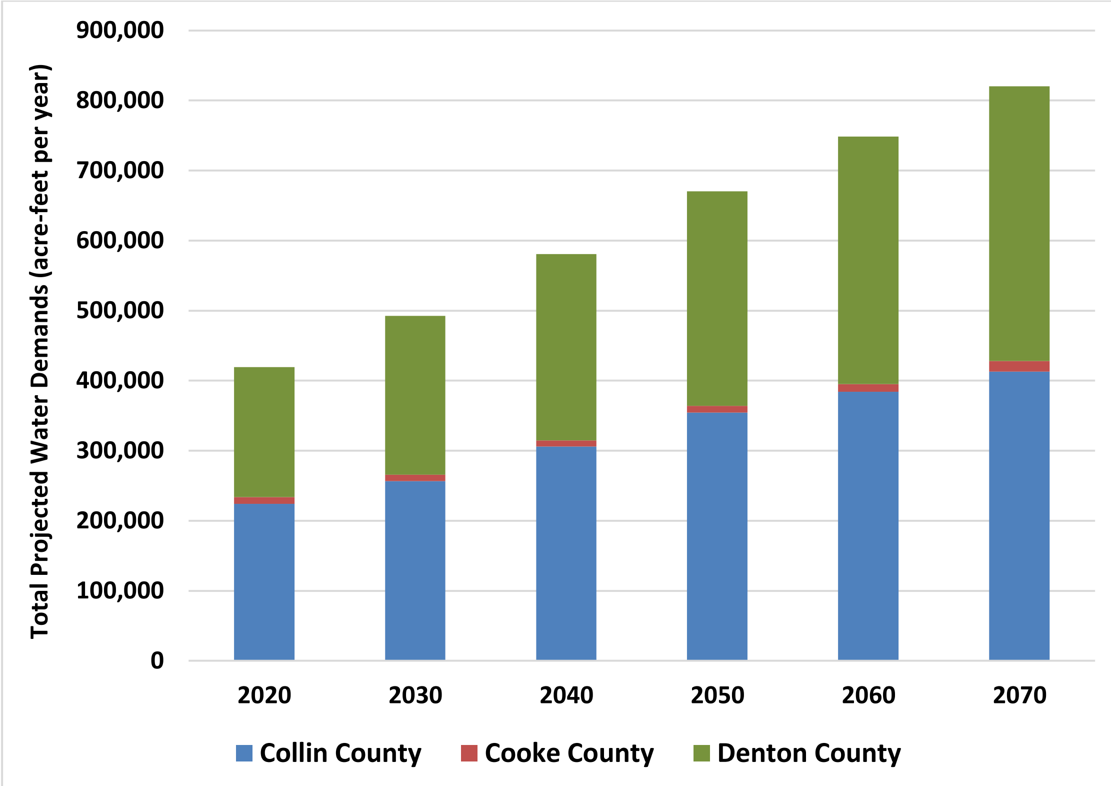


Figure 4. Water demand projections within the District by county

8.8 PROJECTED WATER SUPPLY NEEDS

This section replaces part of the former Section 6.0 Water Supply Plans.

Projected water needs for the counties in the District have been developed for inclusion in the 2017 Texas State Water Plan. The projected water needs reflect the volume of water needed in the event of a drought of record based on projected water supplies and projected water demands. A need occurs when the projected water demand is greater than the projected water supply. Projected water needs were estimated for all water user groups for every decade from 2020 through 2070 on a county-basin level. Appendix F summarizes the projected water needs for the District based on the database for the 2017 Texas State Water Plan received from Allen (2017). Data in this table are organized by county, water user group, and basin. The projected total water needs by county are illustrated in Figure 5.

Data for the 2017 State Water Plan projects future water needs for all three of the counties in the District. There are 51 water user groups in Collin County. A water need at some point between 2020 and 2070 is projected for all but five of those water user groups. The projected need in Collin County increases significantly from 18,865 acre-feet per year in 2020 to 207,655 acre-feet per year in 2070. Of the 19 water user groups in Cooke County, a need at some point between 2020 and 2070 is projected for 15. The projected need in Cooke County increases from 849 acre-feet per year in 2020 to 5,017 acre-feet per year in 2070. Fifty-three water user groups are listed for Denton County. Of those, a need at some point between 2020 and 2070 is projected for all but four of those water user groups. The need in Denton County significantly increases from 12,241 acre-feet per year in 2020 to 216,283 acre-feet per year in 2070. For the District as a whole, the total projected water need increases from 31,955 acre-feet per year in 2020 to 428,955 acre-feet per year in 2070.

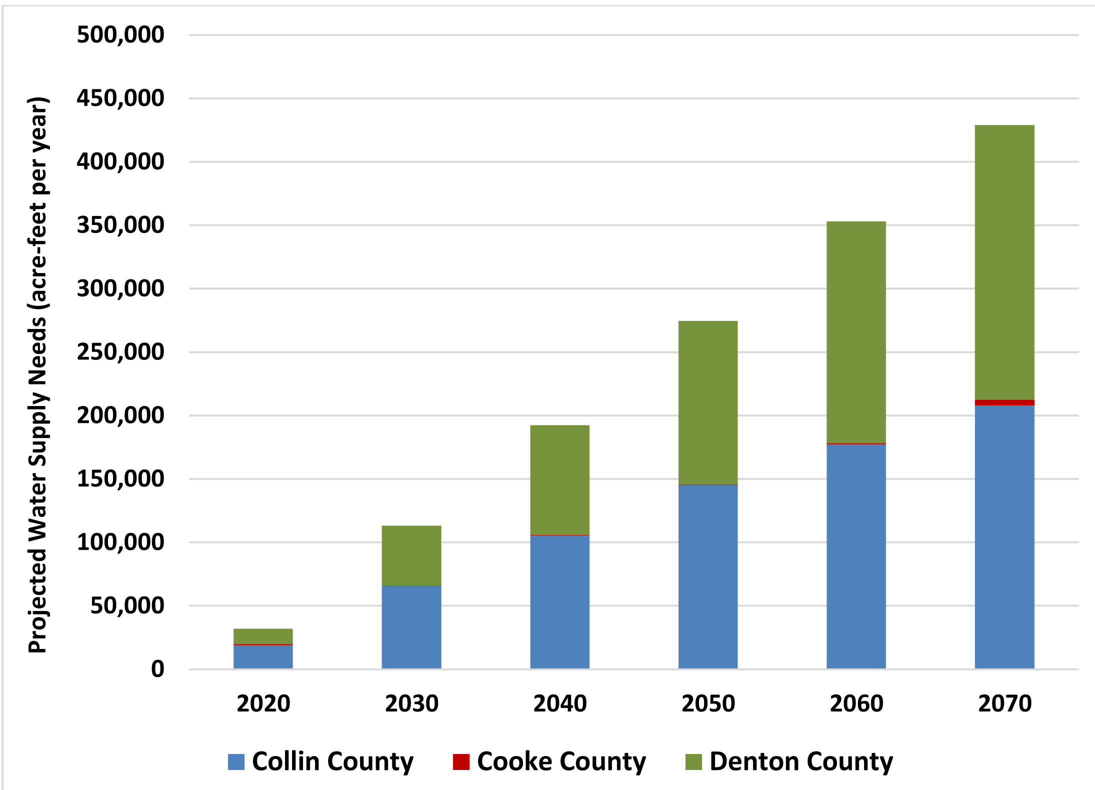


Figure 5. Total projected water supply needs within the District by county

8.9 WATER MANAGEMENT STRATEGIES

The database for the 2017 Texas State Water Plan also includes recommended water management strategies to meet the identified water needs in the District for every decade from 2020 through 2070. Potential strategies identified include conservation, water reuse, expansion, and improvement of existing water supplies, development of additional groundwater and surface water supplies, expansion of existing water treatment plants and construction of new water treatment plants, facility improvements, and purchase of water from water providers. The projected water management strategies for the counties in the District from the 2017 State Water Plan are shown in Appendix F by water user group ("WUG").

9. POPULATION

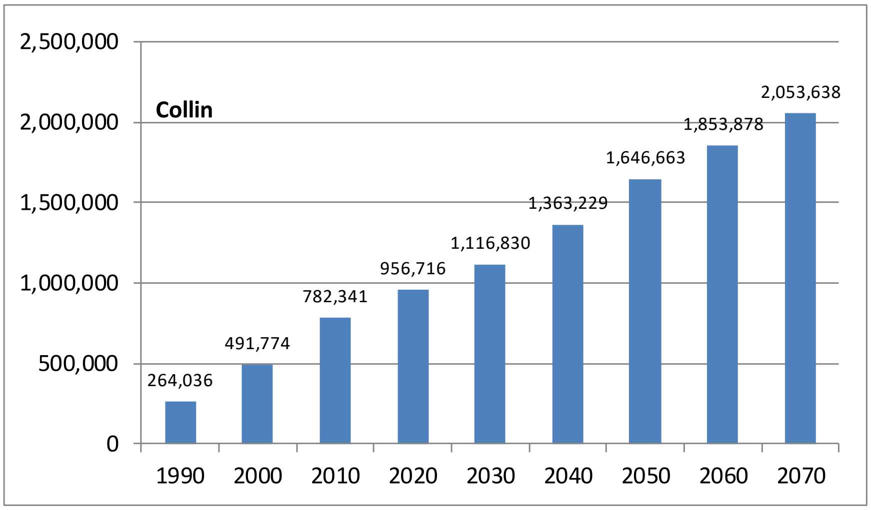
Water Use and Water Demands are now addressed in Sections 10.B and 10.G.

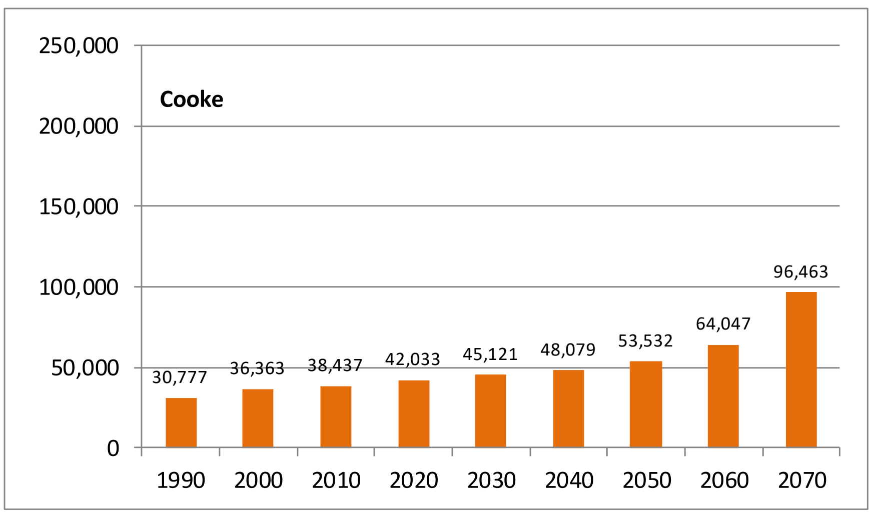
Primary activities involved in the development of a water resources management plan include the analysis and development of projections of population, historical and current water use, and water demands in the future (for a defined period of time). In order to develop projections for how much water supply we will need in the future, three questions must be answered: (1) how many people are there now and how much water has been used in the recent past, (2) how many people will there be in the future (population projections), and (3) how much water will be required to meet the needs of the projected population and other water use sectors in the future. These analyses to develop water demand projections are primarily conducted in Texas as part of the regional water supply planning process (created by the 75th Texas Legislature through the passage of Senate Bill 1 in 1997). Water demand projections are developed for the following water user categories; municipal, rural (county-other), irrigation, livestock, manufacturing, mining, and steam-electric power generation.

Based on the 2016 Region C Water Plan, the population projection for the District for 2020 was 1,900,348 increasing 223 percent to 4,240,586 in 2070 (Table 1). Population trends for each county of the District are shown in Figure 6.

Table 1. Population projections 2016 Region C Water Plan

	Historical			Projected					
County	**1990**	**2000**	**2010**	**2020**	**2030**	**2040**	**2050**	**2060**	**2070**
Collin	264,036	491,774	782,341	956,716	1,116,830	1,363,229	1,646,663	1,853,878	2,053,638
Cooke	30,777	36,363	38,437	42,033	45,121	48,079	53,532	64,047	96,463
Denton	273,525	432,976	662,614	901,645	1,135,397	1,348,271	1,576,424	1,846,314	2,090,485
Total	568,338	961,113	1,483,392	1,900,394	2,297,348	2,759,579	3,276,619	3,764,239	4,240,586





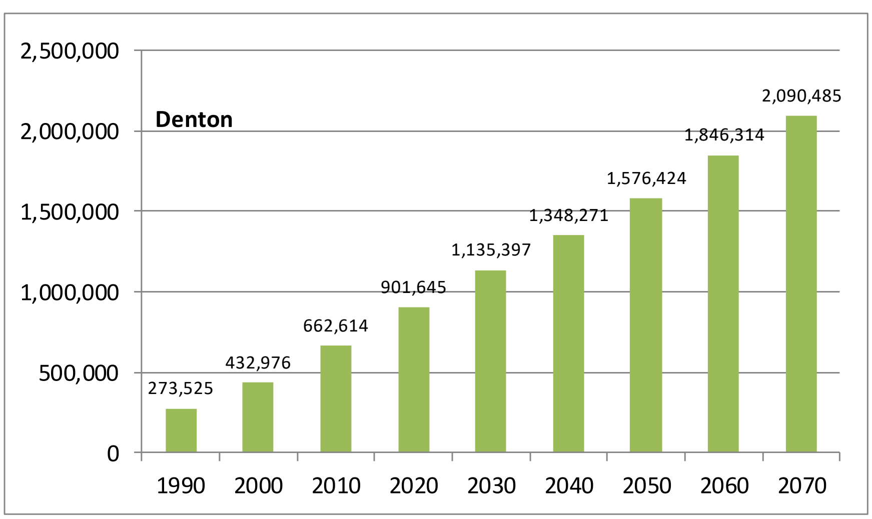


Figure 6. Population trends, by county

10. GROUNDWATER RESOURCES

A summary review of the hydrogeology and water resources of the North Texas region that includes the District is presented here to understand better the current "state of groundwater science" and to provide information necessary to develop a strategic plan for future technical efforts by the District. An understanding of currently available groundwater science in the District is important for a number of reasons including:

- Understanding the quantity and quality of groundwater resources available to meet current and future water supply needs of the different water use sectors present,
- Understanding the effects of changing conditions, such as population growth, shifting industrial demands, and climate variability on the availability of and demand for groundwater resources,
- Determining the temporal and spatial variability of aquifer dynamics so that adequate monitoring programs may be designed and implemented, and
- Determining areas of groundwater science for which current information is inadequate to make informed policy decisions, so that additional scientific investigations may be pursued to address targeted scientific deficiencies.

Recent scientific efforts have included significant literature reviews of the hydrogeology and water resources for the Northern Trinity and Woodbine aquifers. For example, Bene and others (2004) discuss the research results of over 46 different studies that were utilized in developing the most recent groundwater availability model for the Northern Trinity and Woodbine aquifers. With respect to the District, the most notable conclusion that can be drawn from Bene and others (2004) is that while the area within the District has been included in a number of regional groundwater water resources investigations, the area has never been the primary or sole focus of such a hydrogeology/water resource study. As the District works in the future to evaluate and adopt desired future conditions during future joint-planning efforts, it is clear that certain site-specific studies will be necessary in order to ensure that these critical policy decisions are based on adequate sound science.

PREVIOUS STUDIES, OVERVIEW, AND CURRENT UNDERSTANDING OF THE HYDROGEOLOGY OF THE NORTHERN TRINITY AND WOODBINE AQUIFERS IN THE DISTRICT

The vast majority of historical groundwater studies in the District may be divided into four categories; (1) water resources evaluations in support of regional water supply assessments conducted to support the need for large water supply projects and state water planning prior to 1985, (2) studies related to the Critical Area process required with the passage of House Bill 2 in 1985 and the Priority Groundwater Management Area process required with the passage of Senate Bill 1 in 1997, (3) regional water planning efforts required by the passage of Senate Bill 1 in 1997, and (4) groundwater availability modeling efforts for the Northern Trinity and Woodbine aquifers required by the passage of Senate Bill 2 in 2001 and in support of the Groundwater Management Areas/Joint Planning process resulting from the passage of House Bill 1763 in 2005.

For more than a century, there have been a number of regional studies related to the occurrence and availability of groundwater from the Northern Trinity and Woodbine aquifers. The following studies, which only represent a small fraction of the available literature, were reviewed in order to identify availability of information from those regional studies that would benefit the District and to identify any technical gaps that may exist.

In the earliest phase of groundwater development in North Texas (1880s to early 1900s), the science of groundwater hydrology was still poorly understood. The Trinity Aquifer was so charged with groundwater that many early wells flowed at the land surface (Hill, 1901; Mace and others, 1994) (Figure 7). This condition of flowing wells results when groundwater pressure (also known as artesian pressure) builds up under a confining layer. Groundwater pressure also increases with depth because of the weight of the water column confined between rock layers and in some cases, from the weight of the overlying geologic formations. The flowing well penetrates the overlying layers and provides a conduit for flow to the surface and pressure release. Decreasing fluid pressure in the aquifer causes water-level declines (drawdown) in wells. Hundreds of flowing wells were drilled in North Texas in the late 1800s and allowed to flow freely at the surface. At the time this was a novelty (“geysers”), and much of the groundwater was wasted. These wells experienced rapid pressure declines, and most had stopped flowing by 1914 (Leggatt, 1957). Groundwater use declined after 1914 as surface water (impounded lakes) began to be developed (Bene and others, 2004).

By the mid-1900s the population of North Texas was growing and groundwater use was again increasing. By the 1930s groundwater science had progressed greatly. Methods were developed for calculating productivity (yield) and water-level declines from data collected in water wells. The Texas Board of Water Engineers (predecessor agency to the TWDB) began compiling groundwater data from many Texas counties with the notable exception of the counties in the District. Texas Board of Water Engineers reports emphasized dramatic drawdowns that had already occurred in the North Texas region and documented the relationship between pumping and water level decline. Hundreds of feet of drawdown were common in the Dallas-Ft. Worth area at rates up to 20 feet per year (Bene and others, 2004). In spite of the efforts of the Texas Board of Water Engineers, few water-level measurements were recorded in wells in the District prior to 1960 (Figure 8).

Also by the mid-1900s, the geology of North Texas aquifers was becoming increasingly well understood (see summaries in Nordstrom [1982] and Bene and others [2004]). Aquifer geology describes the rock units making up the container that holds the groundwater. Groundwater is present in pores and cracks within the rocks and flows through an interconnected system. The ability of rock layers to store and transmit groundwater varies – aquifers readily store and transmit water, whereas aquitards lack well-interconnected pore systems and therefore inhibit groundwater flow. Geologic studies revealed that the Trinity and Woodbine rock formations are the primary aquifers in North Texas and that they are enclosed in aquitard formations. Thus, the Northern Trinity and Woodbine aquifers are confined by aquitards (confining layers) (Figures 9 and 10). Near land surface, where the upper part of the aquifer is exposed (outcrops), a water table develops that separates saturated (below) from unsaturated (above) parts of the aquifer. The level of the water table corresponds to the volume of groundwater in the aquifer outcrop. Deeper underground, however, the entire aquifer is usually saturated, and fluid pressure corresponds to groundwater volume. Groundwater pumping results in the lowering of water levels in wells, which corresponds directly to lower fluid pressure in the aquifer. The science of hydrogeology encompasses both groundwater (the liquid resource) and aquifer properties (the container). The main data types used to characterize groundwater resources are measured in wells: water levels to quantify volume and pumping tests to quantify yield (flow rate into wells) and aquifer properties such as hydraulic conductivity and storativity. During the 1960s and 1970s, numerous scientific and economic groundwater studies by state agencies and universities included systematic data collection from Texas aquifers and increased the number of water levels measured in the District (Figure 11). Groundwater-use data were also beginning to be collected systematically by the TWDB and other government agencies. Groundwater data and conditions during this period were documented by Nordstrom (1982). By the 1960s and 1970s, North Texas was becoming a major population center and a key focus of water planning efforts by the state through the efforts of the TWDB.

Nordstrom (1982) is one of the classic regional hydrogeologic/water resources investigations available, containing information on 22 counties in the North-Central Texas region including the entire District. Nordstrom (1982) also provides early estimates of historical groundwater use and future availability. Even more notable is the inclusion of pumping tests in this report from throughout the region. Specific to the District, results from 5, 8, and 10 pumping tests in Collin, Cooke, and Denton counties respectively, are included in the report (Figure 12). Analyses for yield, transmissivity, specific capacity, and hydraulic conductivity are provided for most of these tests. In the District, no additional pumping test analyses became available between the time of Nordstrom's study (1982) and the development of the Northern Trinity and Woodbine groundwater availability model (GAM) (Bene and others, 2004). Aquifer properties input to the GAM are based mainly on Nordstrom's (1982) data. Future technical studies by the District will need to take advantage of and add to Nordstrom's (1982) valuable data set of aquifer tests.

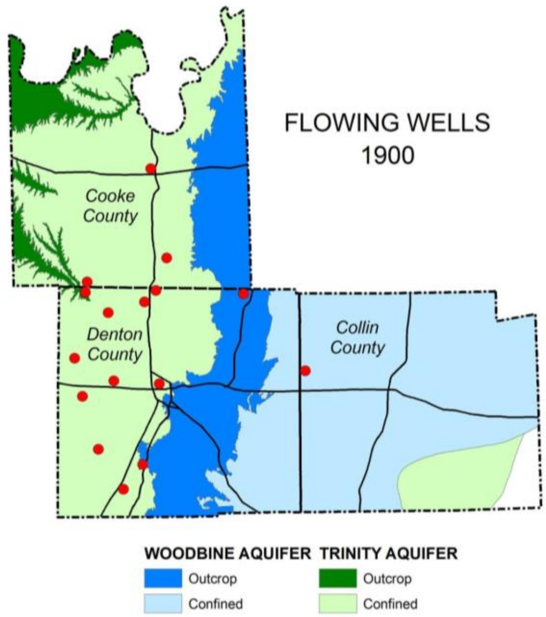


Figure 7. Location of wells flowing at the land surface in 1900 (Hill, 1901).

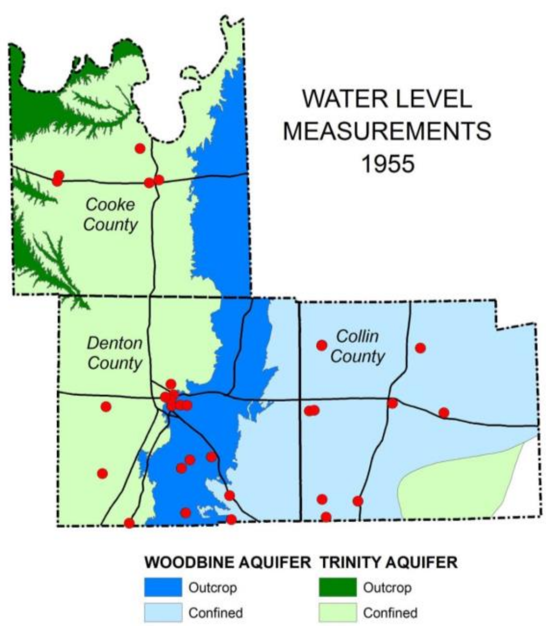


Figure 8. Location of wells having water-level measurements taken in 1955 (Nordstrom, 1982).

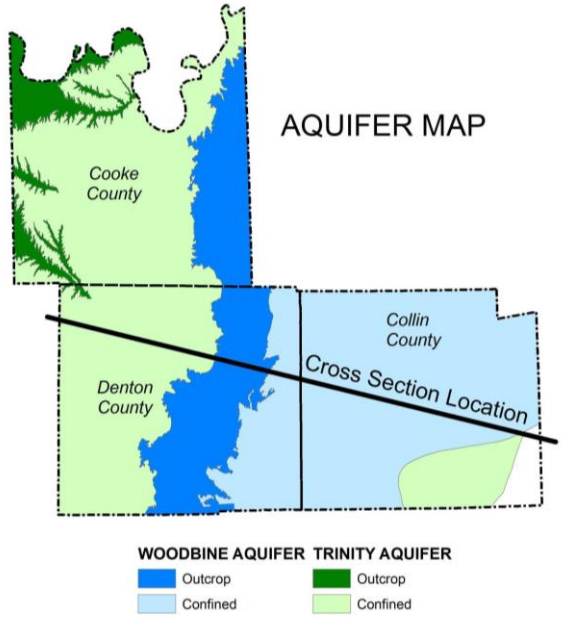


Figure 9. Aquifer Map

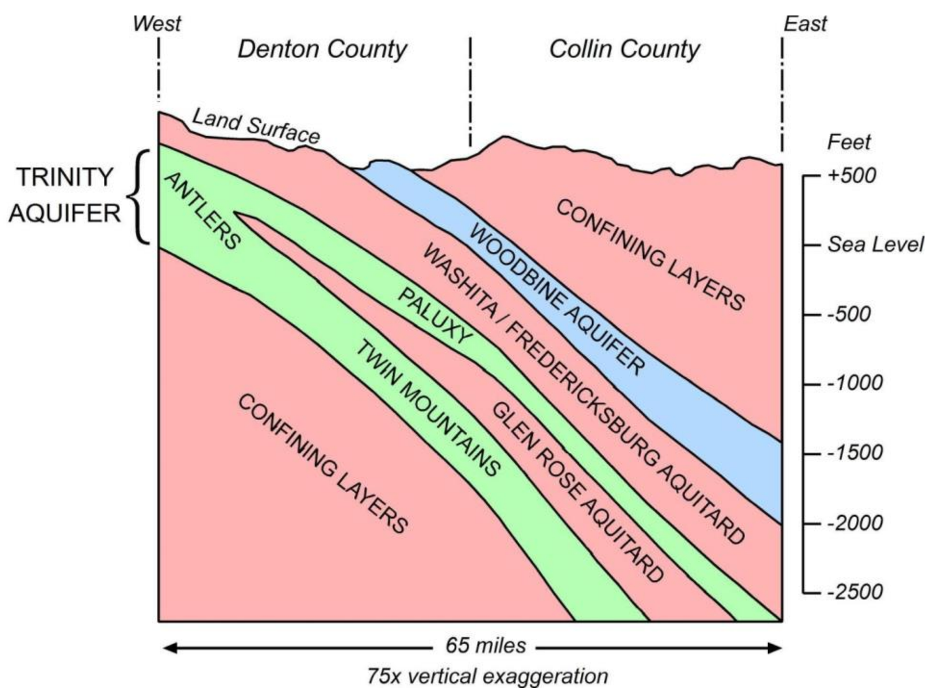


Figure 10. Cross section of the Trinity and Woodbine aquifers in the North Texas GCD.

Groundwater data (primarily water levels and water quality) have been collected by the TWDB and its predecessor and partner agencies from water wells throughout Texas since the early 1900s (Rein and Hopkins, 2008). Groundwater data collected before 1988 primarily represent one-time visits to wells and springs, but since then, monitoring programs have been established to record data annually in the same observation wells. Systematically revisiting the same wells is critical for establishing historical trends in groundwater conditions. Historical trend data track changes through time and can be used to make future projections. Historical trends in groundwater conditions are necessary input data for groundwater availability modeling. Many agencies and stakeholders cooperate with the TWDB to collect the measurements that go into the TWDB groundwater database: Texas Commission on Environmental Quality, U.S. Geological Survey, GCDs, water-supply corporations, municipalities, individual landowners, and other entities. GCDs actually provide the majority of water-level measurements in the TWDB groundwater database. In 2010, the counties of the District contained 555 wells having water levels in the TWDB database, but only 39 of these were observation wells (Figure 13). In 2015, there were 24 TWDB wells in the District for which 2015 water level data were available (Figure 14). These water level data are useful for the evaluation of “state of the aquifer” conditions relative to the DFCs.

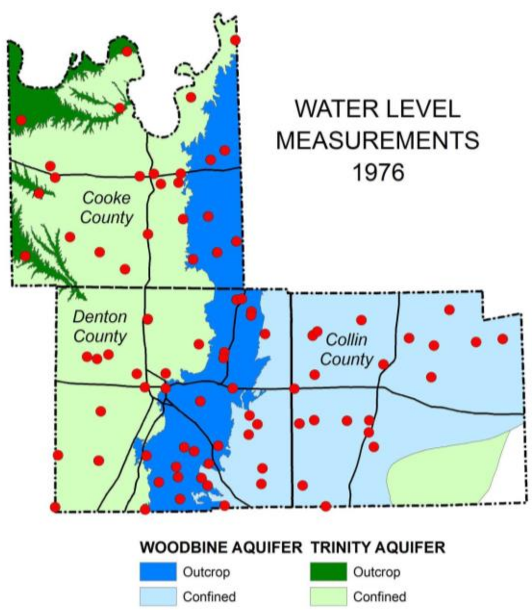


Figure 11. Location of wells having water-level measurements taken in 1976 (Nordstrom, 1982).

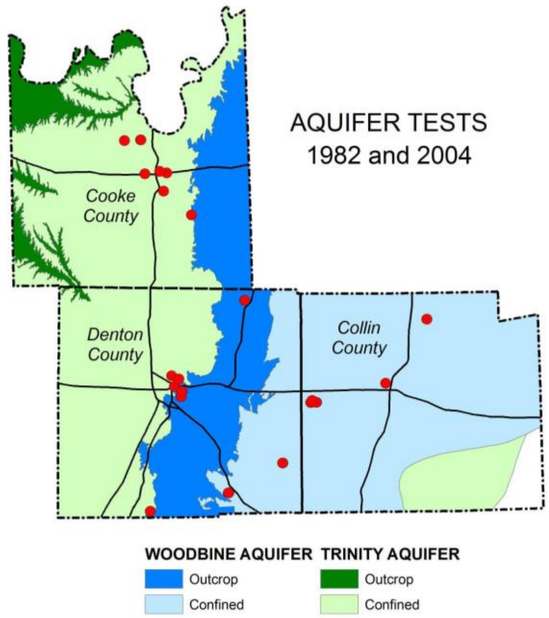


Figure 12. Location of wells having pumping test data reported by Nordstrom (1982) and used by Bene and others (2004) in the Northern Trinity/Woodbine GAM.

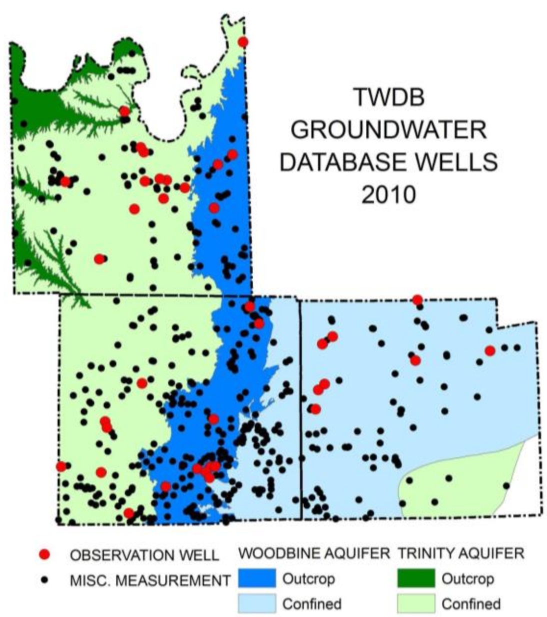


Figure 13. Location of wells having water-level measurements in the TWDB groundwater database. Observation wells that are monitored annually are shown in red.

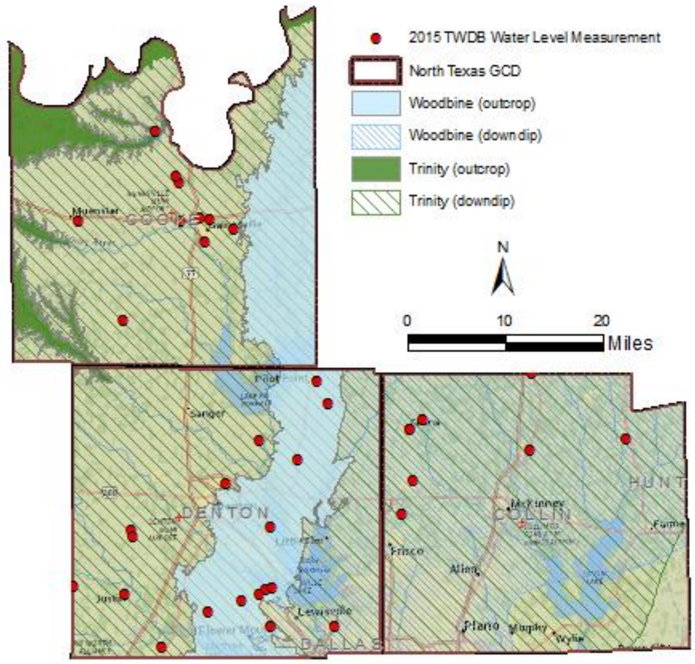


Figure 14. Location of wells having water-level measurements in the TWDB database in year 2015.

Since the passage of House Bill 2 in 1985, the reliability and vulnerability of groundwater resources in North-Central Texas have been a priority issue for the Texas Commission on Environmental Quality and its predecessor agencies. Specifically, the issue of focus has been areas of the state that are experiencing or are expected to experience critical groundwater problems in the next 20-25 years. As required by statute, the region, as a result of recognized critical groundwater problems, has been the subject of multiple studies and reviews to evaluate the status of groundwater resources in this area. Baker and others (1990) conducted the first study as a result of the critical area process. This report highlights the declines in water-level elevations between 1976 and 1989 in the Antlers and Twin Mountain aquifers from 100 to 250 feet with declines in the Paluxy and Woodbine aquifers being up to 150 feet. Baker and others (1990) also noted concerns regarding water quality in the region, some of which were naturally occurring, while others were suggested to be the result of poor well completion techniques, leaking underground petroleum storage tanks, brine contamination resulting from oil and gas activities, and industrial activities in the outcrop/recharge areas. It is interesting to note that in this study, the conclusion is drawn that if additional surface water supplies are not developed by 2010, some rural areas in the region could face water supply shortages. No groundwater availability estimates specific to the area covered by the District were included in the report. However, one significant finding was that even in 1985 (the period during which data for this report was primarily collected) it was estimated that groundwater demands for the study area were 110,000 acre-feet per year, which was estimated to be 44 percent greater than the annual recharge for the study area, which was estimated to be 76,000 acre-feet per year.

Baker and others (1990) emphasize groundwater sources (recharge), occurrence (location and movement of groundwater), and discharge (natural and pumpage). Much of the science presented by Baker and others (1990) summarizes and updates Nordstrom (1982). New material presented by Baker and others (1990) concerns groundwater use, availability, and related problems. The primary source of groundwater in North Texas is recharge from precipitation on the outcrop. In the District, average annual precipitation ranges from 35 to 40 inches per year. Most precipitation runs off the surface, evaporates, or is used by plants (transpiration), aquifer recharge being only a small fraction of precipitation. Surface-water seepage from lakes and streams on the aquifer outcrop provides a secondary source of recharge.

Water recharged to an aquifer is held in storage. Pumping tests measure aquifer storage: specific yield in outcrop and storativity in the confined part. In the aquifer outcrop water levels remain relatively constant. Lowering of the water table in outcrop requires complete dewatering of the upper part of the aquifer, effectively emptying the porous volume of the rock. Specific yield is a measure of aquifer porosity, which is 15 to 25 percent (of total rock volume) in the Trinity Aquifer and closer to 15 percent in the Woodbine Aquifer (Nordstrom, 1982). In the confined part of the aquifer, groundwater is under pressure, and storativity relates water volume to pressure decline. Much less water is available by pressured decline than by dewatering, but pressure declines have a dramatic effect on water levels in wells. Pumping-induced pressure declines, causing drawdowns of hundreds of feet, have been a major groundwater resource problem in North Texas (Baker and others, 1990).

The movement of groundwater through an aquifer is controlled by pressure gradient (from high to low pressure) and by the ease with which water flows through the aquifer pore system.

Pumping tests measure hydraulic conductivity (rate of flow) and transmissivity (volume of flow). Along with storage, hydraulic conductivity and transmissivity control how much water a well will produce for a given amount of drawdown (specific capacity or well yield). Because hydraulic conductivity and transmissivity are highly variable in the Trinity and Woodbine aquifers (Nordstrom, 1982), additional pumping test data will be needed to adequately characterize groundwater flow throughout the District.

The main groundwater resource problems identified by Baker and others (1990) are water-level declines and localized water-quality issues. Local water-level declines occur when pumpage exceeds flow rates in the aquifer, causing large drawdowns around wells (cones of depression). Cones of depression have been common around pumping centers in North Texas since the early 1900s (Mace and others, 1994). Cones of depression increase the cost of groundwater, because pumps must be lowered, well yields decrease, and it takes more energy to lift the water to the surface. Regional water-level declines occur when discharge (primarily from pumpage) exceeds recharge over large areas. Regional declines effectively mine the aquifer and are not sustainable over the long term.

In response to Senate Bill 1 passed by the Texas Legislature in 1997, Langley (1999) updated the analysis of Baker and others (1990) and addressed the potential for critical water resource problems in North-Central Texas in the following 25 years. Water levels remained relatively stable in the District during the 1990s. Southern Denton County experienced rising water levels in the Twin Mountains Aquifer due to decreased pumping in the Dallas - Ft. Worth area, but water levels in the Paluxy and Woodbine aquifers declined slightly in parts of Denton and Collin counties. Although water-level declines were less during 1989–1997 than during 1966–1989, groundwater use still exceeded availability in Cooke and Denton counties (Langley, 1999). Langley (1999) projections suggest that adequate supplies of groundwater plus surface water exist to meet demands through 2030 and that groundwater use will decline through conservation and conversion to surface water. In the District, however, these projections are based on a small number of wells and therefore subject to significant uncertainty.

Ashworth and Hopkins (1995) provide a general overview of the major and minor aquifers of Texas. In their report, regional characteristics and locations of the Trinity and Woodbine aquifers are presented. This report has served as a standard reference for subsequent hydrogeologic publications and planning documents such as the state water plan with respect to the recognized locations of the aquifers in Texas. The informative “atlas” nature of this report will be a good model for the District as it works to develop more locally- detailed information to educate the general public. This ‘atlas’ was updated in 2011 (George, and others, 2011).

The area covered by the District has now been the subject of four regional water plans, the 2001, 2006, 2011, and 2016 Region C Water Plans. Region C Water Plans summarize groundwater conditions in the Trinity and Woodbine aquifers within the region. The 2001 and 2006 Region C Water Plans include essentially identical aquifer information, much of which was derived from Nordstrom’s comprehensive study (Nordstrom, 1982). The 2001 and 2006 Region C Water Plans emphasize Nordstrom’s finding that annual pumpage is greater than aquifer recharge. Overdevelopment of aquifers and resulting water-level declines pose the greatest threat to small water suppliers and rural households. The 2001 and 2006 Region C Water Plans describe water quality as generally acceptable in the Trinity and Woodbine aquifers, although poor water quality occurs locally, and the deeper parts of both aquifers have higher concentrations of dissolved solids.

The 2006 and 2011 Region C Water Plans relied in part on the Northern Trinity/Woodbine GAM and accompanying report (Bene and others, 2004) for aquifer conditions. As reported in the 2006 Region C Water Plan, GAM simulations in 2004 (Bene and others, 2004) showed that groundwater availability in Cooke County is less than estimated in the 2001 Region C Water Plan and that overdrafting is occurring in that county. GAM simulations in 2004 also showed that groundwater use in Denton County exceeds the estimated reliable long-term supply (Bene and others, 2004).

The 2011 Region C Water Plan documents that groundwater use in 2006 exceeded the managed (now referred to as modeled) available groundwater estimates in certain Region C counties, including Collin County (Mullican, 2011). Cooke County groundwater use in 2006 was close to but did not exceed managed available groundwater. The 2011 Region C Water Plan states that temporary groundwater overdrafting may be necessary while other water supplies are developed. However, it is important to note that while the concept of temporary overdrafting has been a common strategy utilized by regional water planning groups to meet certain water supply needs in the 2001, 2006, and 2011, in the 2016 round of regional water planning, planned overdrafting (the volume of groundwater utilized in a regional water plan is greater than the modeled available groundwater estimate) was not allowed. Under rules that have been developed to implement House Bill 1763, enacted by the Texas Legislature in 2005, the use of more groundwater in regional and state water planning than is determined to be available through the joint-planning process as expressed by the estimate of modeled available groundwater will result in a conflict, and prevent the approval of regional water plans by the TWDB. Therefore, either in the 2016 Region C Water Plan or in the desired future conditions adopted for GMA 8 by 2016, the volume of groundwater available to meet future water supply needs was revised so that conflicts did not exist.

Development of brackish groundwater is considered in the 2011 and 2016 Region C Water Plan. Although GAMs to determine brackish groundwater availability have not yet been developed, preliminary analysis by the TWDB indicates approximately 85 million acre-feet of brackish groundwater supply may be present in Region C. Further study, perhaps through coordinated efforts of the GCDs, is needed to identify brackish groundwater resources and to deal with water-quality issues.

In general, all Region C Water Plans (2001, 2006, 2011, and 2016) describe the ***current*** state of fresh groundwater use to be close to long-term sustainable availability. Most water management strategies in the Region C Water Plans emphasize increasing surface water supplies while conserving groundwater supplies. The 2016 Plan indicates that currently available supplies are almost constant over time at 1.7 million acre-feet per year, as sedimentation in reservoirs is offset by increases in reuse supplies due to increased return flows. With the projected 2070 demand of 2.9 million acre-feet per year, the region has a shortage of 1.2 million acre-feet per year by 2070. Meeting the projected shortage and leaving a reasonable reserve of planned supplies beyond projected needs will require the development of significant new water supplies for Region C over the next 50 years.

GROUNDWATER AVAILABILITY MODELING EFFORTS FOR THE NORTHERN TRINITY AND WOODBINE AQUIFERS

One of the initial developments to result from the initiation of regional water planning in Texas was the realization that the science and quantification of Texas' surface water and groundwater resources was not sufficiently accurate to meet the requirements of the planning process. As a result, new surface water availability models, referred to as WAMs, were developed by the Texas Commission on Environmental Quality and groundwater availability models, referred to as GAMs, were developed by the Texas Water Development Board. The GAM Program has resulted in significant advancement of our understanding of groundwater resources throughout Texas. GAMs are numerical computer models that produce three-dimensional simulations of groundwater systems that track the "water budget" (inflow, storage, outflow) and spatially distribute aquifer properties (flow rates, volumes, and directions). Once the GAM is calibrated using historical water use and aquifer property data (such as water levels through time), it can then be used to test and evaluate future water use scenarios.

Bene and others (2004) constructed the first regionally comprehensive GAM for the Northern Trinity and Woodbine aquifers in Texas. It is important to note that "Bene and others (2004)" is not the GAM itself but is the technical report that describes the GAM and summarizes, from a regional perspective, relevant data and analyses that were used to build a conceptual model of the Northern Trinity and Woodbine aquifer system. The conceptual model utilized in the development of the model ideally includes everything affecting groundwater conditions: physiography, climate, geology, water quality, water levels, aquifer properties, recharge, surface-water/groundwater interaction, and discharge (evapotranspiration and pumpage). The design of the GAM is based as closely as possible on the conceptual model. The computer model divides the real world (i.e., the conceptual model) into cells that, in the case of the Northern Trinity and Woodbine aquifer GAM, are one square mile in area and several hundred feet thick. The thickness of the cells is controlled by aquifer layering. The Northern Trinity and Woodbine GAMs contain seven layers of cells representing all of the aquifers and aquitards in the area (see Figures 4 and 5 and Table 1). By making the model cells this large (1 square mile), the GAM often times does not do a good job of modeling or predicting local groundwater conditions, rather the GAM is specifically designed to better understand regional trends. Smaller model cells for an area as large as the area covered by the Northern Trinity and Woodbine GAM, however, would require massive amounts of computing power to run the GAM. Furthermore, the regional nature of the available data (widely spaced measurements) would not support a higher resolution model. One solution to the inherent resolution problem of the GAM would be to build a geographically smaller, more focused GAM based on more closely spaced well data for the area covered by the District.

As was the case with previous regional groundwater studies in North Texas, the GAM-related data are especially sparse in the counties of the District. Water-level data for the year 2000, for example, actually include fewer measurements than Nordstrom (1982) used for 1976 (compare Figures 6 and 9), and the GAM used the same aquifer pumping tests reported by Nordstrom (1982).

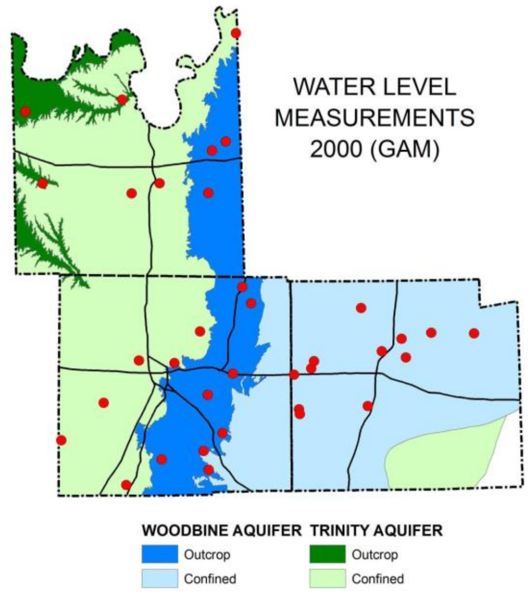


Figure 14. Location of wells having water-level measurements taken in 2000 that were used in the Northern Trinity/Woodbine GAM (Bene and others, 2004).

Updated Groundwater Availability Model of the Northern Trinity and Woodbine Aquifers

The purpose of the latest model update was "to make improvements to the original 2004 GAM by Bené and others (2004), including incorporation of data collected after the 2004 GAM was developed and results from recent studies in the region, and implementation of the model at a scale that better bridges the gap between regional models and a model that can be used at the scale of a typical GCD for pursuit of their groundwater management objectives. This study provides a model that has been calibrated across the entire period of record through 2012, which is a benefit to GCDs, Groundwater Management Area (GMA) 8, and stakeholders. This study provides significant advancement in the hydrogeological framework and understanding of these aquifers."

The updated GAM and the information collected and interpreted to support the study provide GCDs with the best available science to inform final rule making, groundwater management within GCD boundaries, and joint planning. The data collected and made public from this study provides a wealth of knowledge to support GCDs in local-scale hydraulic calculations with analytic tool to address such issues as well spacing.

The latest GAM update (Kelley and others, 2014) introduced hydrostratigraphic regions for the Trinity Group formations encompassed by the Northern Trinity GAM (Figure 15). The regions are delineated based on stratigraphic and lithologic similarities (Figure 16).

According to the GAM, Region 1 includes the western and northwestern portions of the model's study area in Texas, Oklahoma and Arkansas, and consists of undifferentiated sandstones and shales referred to as the Antlers Formation, which is locally referred to as the Antlers Aquifer.

Region 2 lies south and east of Region 1. In this region, limestones of the Glen Rose Formation separate the sandstones in the upper portion of the northern Trinity Group from the undifferentiated sandstones and shales in the lower portion of the northern Trinity Group (Figure 17). The boundary between Regions 1 and 2 is defined by a lithological transition between thinly interbedded sandstone and shale in the northwest and thick limestones of the Glen Rose Limestone that exist elsewhere else in the model study area.

In Region 2, the upper sandstones (above the Glen Rose Limestone) are referred to as the Paluxy Formation. The undifferentiated lower sandstones and shales (below the Glen Rose Limestone) are referred to as the Twin Mountains Formation.

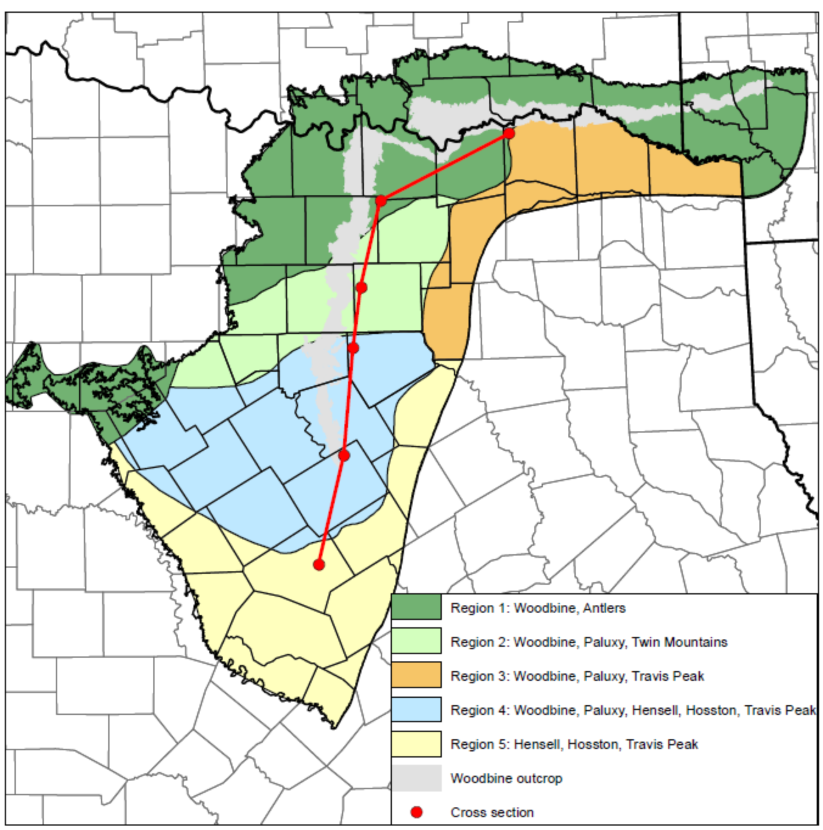
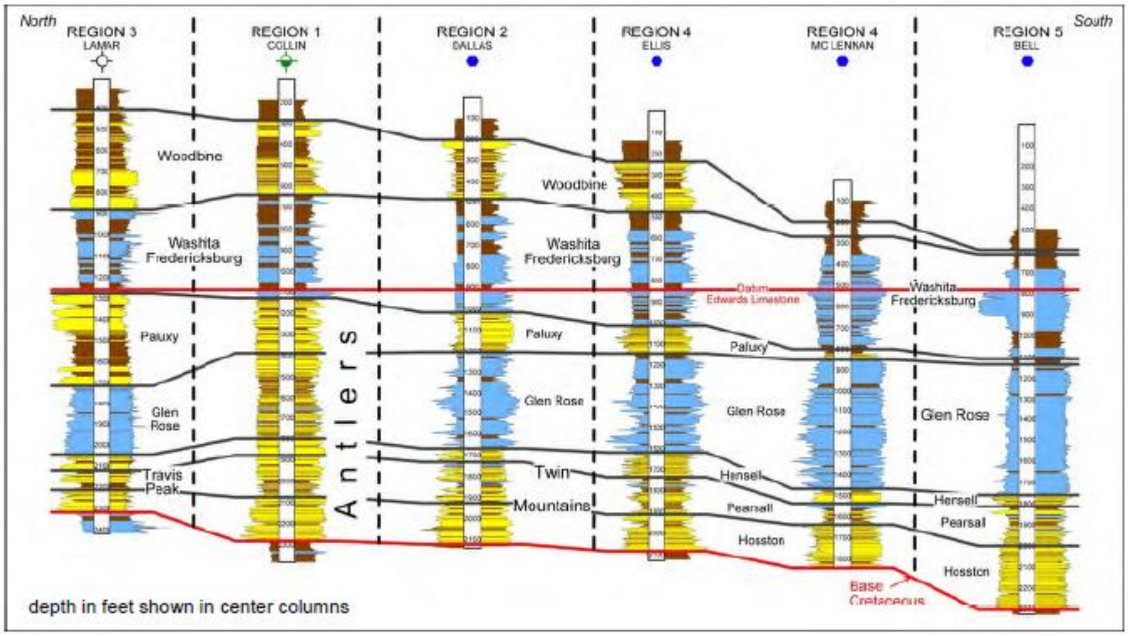


Figure 15. Northern Trinity GAM Regions (from Kelley and others, 2014).



yellow = greater than 50 percent sandstone, blue = greater than 50 percent limestone, brown = greater than 50 percent shale

Figure 16. Cross section through Regions 1 through 5 (from Kelley and others, 2014).

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

yellow = sandstone aquifers

Figure 17. North Trinity GAM terminology for Regions 1 through 5 (from Kelley and others, 2014).

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APPENDIX A

Resolution Adopting District Management Plan

RESOLUTION NO. 2020-02-11-02

A RESOLUTION AND ORDER OF THE BOARD OF DIRECTORS OF THE NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT READOPTING DISTRICT MANAGEMENT PLAN

WHEREAS, the North Texas Groundwater Conservation District (the "District") is a political subdivision of the State of Texas organized and existing under and by virtue of Article XVI, Section 59, of the Texas Constitution as a groundwater conservation district, acting pursuant to and in conformity with Chapter 36, Texas Water Code and Act of May 19, 2009, 81st Leg., R.S., ch. 248, 2009 Tex. Gen. Laws 686, codified at Chapter 8856 of the Texas Special District Local Laws Code (the "District Act");

WHEREAS, under the direction of the Board of Directors of the District (the "Board"), and in accordance with Sections 36.1071, 36.1072, and 36.108 of the Texas Water Code, and 31 Texas Administrative Code Chapter 356, the District has undertaken revisions to the District's Management Plan;

WHEREAS, the District Board met on January 14, 2020, and thoroughly reviewed the Management Plan revisions during an open meeting noticed in accordance with Chapter 551, Texas Government Code;

WHEREAS, the District issued notice in the manner required by Section 36.101(d) of the Texas Water Code and held a public hearing on February 11, 2020, at 10:00 a.m. at the District's meeting place located at the Pilot Point ISD Administration Office, 829 S. Harrison St., Pilot Point, Texas, to receive verbal and written comments on readoption of the District's Management Plan; and

WHEREAS, the District has met the statutory deadlines for readopting its Management Plan, including the five-year deadline set forth in Section 36.1072(e) of the Texas Water Code and the two-year deadline from the date of adoption of the Desired Future Conditions by the Groundwater Management Area set forth in Section 36.3011(b)(5) of the Texas Water Code.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT AS FOLLOWS:

1. The above recitals are true and correct;

2. The Board of Directors hereby approves and readopts the District Management Plan, which is included as "Attachment A" to this Resolution;

3. The District's Board of Directors, its officers, District staff, and District legal counsel are further authorized to take any and all actions necessary to implement this Resolution, including but not limited to submission to the Texas Water Development for final approval under Section 36.1072(e) of the Texas Water Code.

AND IT IS SO ORDERED.

PASSED AND ADOPTED on this 11th day of February, 2020.

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT

Thomas Smith

Thomas Smith, Board President

ATTEST:

APPENDIX B

Evidence that the Management Plan was Adopted

MINUTES OF THE BOARD OF DIRECTORS' BOARD MEETING AND PUBLIC HEARING
NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT

TUESDAY FEBRUARY 11, 2020

PILOT POINT ISD ADMINISTRATION OFFICE
829 S. HARRISON ST/
PILOT POINT, TEXAS 76258

Members Present:	Thomas Smith, Evan Groeschel, Ronny Young, Allen Knight, Joe Helmberger, Ron Sellman, and David Flusche
Members Absent:	Ryan Henderson and Lee K. Allison
Staff:	Drew Satterwhite, Theda Anderson, Carolyn Bennett, and Velma Starks
Visitors:	Kristen Fancher, Fancher Legal Peter M. Schulmeyer, Collier Consulting Les Westbrook, Axis Drilling Jason Flynt, Barco Dale Chepulis, Double D Drilling Tim Long, Billingsley James Beach, WSP

Permit Hearing

Agenda:

1. Call to Order; establish quorum; declare hearing open to the public; introduction of Board.

   President Thomas Smith called the permit hearing to order at 10:00 a.m.

2. Review the Production Permit Applications of:

Applicant: FSWC, LP; 7001 Preston Road, Ste 410, Dallas, TX 75205
Location of Well: Hwy 380 & FM 423, Little Elm, TX 75068; Latitude: 33.2145835°N, Longitude: 96.8838659°W; About 1,700 feet south of the FM 423 and Hwy 380 intersection and 1,100 feet west of FM 423
Purpose of Use: Landscape Irrigation
Requested Amount of Use: 6,730,000 gallons per year for 2020 and 4,160,000 gallons per year after 2020
Production Capacity of Well: 74 gallons per minute
Aquifer: Woodbine Aquifer

General Manager Drew Satterwhite reviewed the Permit with the Board. The Board discussed the Permit in detail. Board Member Joe Helmberger made the motion to approve the Permit. Board Member Ronny Young seconded the motion. The Permit was approved with the following vote: AYE 6; NAY 1. Board Member David Flusche voted NAY.

Applicant: Hollyhock Residential Association, Inc.; 12700 Hillcrest Road, Suite 234, Dallas, TX 75230
Location of Well: Latitude: 33.2112677°N, Longitude: 96.8675176°W; Northeast corner of Rockhill Parkway and Teel Parkway
Purpose of Use: Landscape Irrigation
Requested Amount of Use: 9,900,000 gallons per year
Production Capacity of Well: 150 gallons per minute
Aquifer: Woodbine Aquifer

General Manager Drew Satterwhite reviewed the Permit with the Board. The Board discussed the Permit in detail. Board Member Allen Knight made the motion to approve the Permit. Board member Joe Helmberger seconded the motion. The Permit was approved with the following vote: AYE 6; NAY 1. Board Member Ronny Young voted NAY.

Applicant: Lennar Homes of Texas; 1707 Market Place Blvd, Ste 100, Irving, TX 75063
Location of Well: East Lucas Road and CR 982, Princeton, TX 75407; Latitude: 33.094209°N, Longitude: 96.507545°W; About 1,500 feet south of the CR 982 and CR 1099 intersection and 2,00 feet west of CR 982
Purpose of Use: Landscape Irrigation and Filling Pond(s)/Other Impoundment
Requested Amount of Use: 25,500,000 gallons per year
Production Capacity of Well: 190 gallons per minute
Aquifer: Woodbine Aquifer

General Manager Drew Satterwhite reviewed the Permit with the Board. The Board discussed the Permit in detail. Board Member Joe Helmberger made the motion to approve the Permit. Board member Ronny Young seconded the motion. Motion passed unanimously.

3. Public Comment on the Production Permit Applications.

   There were no public comments.

4. Consider and act upon the Production Permit Applications, including designation of parties and/or granting or denying the Production Permit Applications in whole or in part, as applicable.

   The Permits were individually voted on as previously indicated.

5. Adjourn or continue permit hearing.

   Board President Thomas Smith adjourned the permit hearing at 10:23 a.m.

Public Hearing to Adopt District Management Plan in Collin, Cooke, and Denton Counties, Texas

Agenda

1. Call to Order; establish quorum; declare hearing open to the public; introduction of Board.

   President Thomas Smith called the Public Hearing to order at 10:23 a.m.

2. Review of Management Plan applicable to the District.

   General Manager Drew Satterwhite reviewed the Management Plan with the Board.

3. Public Comment on District's Management Plan (verbal comments limited to three (3) minutes each).

   There were no public comments.

Consider and act upon adoption of the Management Plan applicable to the District.

Board Member Ronny Young made the motion to adopt the Management Plan and resolution. Board Member David Flusche seconded the motion. Motion passed unanimously.

Public Hearing to Adopt Rules Amendments for Water Wells in Collin, Cooke, and Denton Counties, Texas

Agenda

4. Call to Order; establish quorum; declare hearing open to the public; introduction of Board.

   Board President Thomas Smith called the Public Hearing to order immediately after the adjournment of the Management Plan Public Hearing.

5. Review of Rules Amendments for Water Wells applicable to the District.

   General Manager Drew Satterwhite reviewed the amended rules with the Board.

6. Public Comment on District's Rules Amendments for Water Wells (verbal comments limited to three (3) minutes each).

   There were no public comments.

Consider and act upon adoption of the Rules Amendments for Water Wells applicable to the District.

Board Member Allen Knight made the motion to adopt the Rule Amendments and resolution. Board member Evan Groeschel seconded the motion. Motion passed unanimously.

Board Meeting

1. Pledge of Allegiance and Invocation

Board President Thomas Smith led the group in the Pledge of Allegiance and Board Member Ron Sellman provided the invocation.

2. Call to order, establish quorum; declare meeting open to the public

President Thomas Smith called the meeting to order 10:30 a.m., established a quorum was present, and declared the meeting open to the public.

3. Public Comment

There were no public comments.

4. Consider and act upon approval of the minutes from the January 14, 2020, Board meeting.

Board President Thomas Smith asked for approval of the minutes from the January 14, 2020 meeting. Board Member Joe Helmberger made the motion to approve the minutes. Board Member Evan Groeschel seconded the motion. Motion passed unanimously.

5. Consider and act upon approval of invoices and reimbursements, Resolution No. 2020-02-11-01.

General Manager Drew Satterwhite reviewed the liabilities with the Board. Board Member Allen Knight made the motion to approve Resolution No. 2020-02-11-01. Board Member David Flusche seconded the motion. Motion passed unanimously.

6. Receive reports from the following Committees*:
   a. Budget and Finance Committee
      1) Receive Monthly Financial Information

      General Manager Drew Satterwhite reviewed the monthly financial information with the Board.

   b. Investment Committee
      1) Receive Quarterly Investment Report

      General Manager Drew Satterwhite reviewed the Quarterly Investment Report with the Board.

   c. Management Plan Committee
      1) Receive Quarterly Report

      General Manager Drew Satterwhite reviewed the Quarterly Report with the Board.

7. Update and possible action regarding the process for the development of Desired Future Conditions (DFCs).

General Manager Drew Satterwhite reminded the Board that the GMA 8 meeting will be Wednesday February 26, 2020. Similar Rules Survey will be discussed. James Beach, WSP, will do presentation on second set of 3 factors.

The Board decided to go to Item 10 at this time.

8. Presentation and discussion regarding Aquifer Uses or Conditions, Supply Needs & Management Strategies, and Private Property Rights factors as they relate to Desired Future Conditions pursuant to Texas Water Code Section 36.108(d) – presentation by District hydrogeologist, James Beach..

James Beach, WSP, provided the presentation regarding Aquifer Uses or Conditions, Supply Needs & Management Strategies, and Private Property Rights.

9. Consider and act upon compliance and enforcement activities for violations of District's Rules.

There were none to be discussed at this time.

10. Consider and act upon amendments to District Flow Testing Procedure Manual.

General Manager Drew Satterwhite provided background information for the Board. The Flow Testing Procedure was adopted in conjunction with the adoption of the permanent rules that became effective January 1, 2019. All new wells are being flow tested. There have been instances where staff has faced difficulties in scheduling the time for the flow test. The following amendment has been proposed to alleviate the situation. *Upon completion (pump installed) of the well, the well owner representative shall provide the District with at least 3 dates (Monday-Friday) and times (between 8 am and 4 pm) within the 60 days following completion to meet for the purposes of conducting the flow test. If given advance notice, the District will strive to meet the well driller or pump installer at the site during the final stages of the well development.* The Board discussed the procedure. Board Member Joe Helmberger made the motion to adopt the amendments to the flow testing procedure. Board Member Evan Groeschel seconded the motion. Motion passed unanimously.

The Board returned to regular order Item 8 after Item 10.

11. General Manager's Report: The General Manager will update the board on operational, educational and other activities of the District.

a. District's Disposal/Injection Well Program

General Manager Drew Satterwhite reported that the District is working on the program.

b. Well Registration Summary

General Manager Drew Satterwhite reported that 25 new wells have been registered. A total of 2578 wells are registered in the District.

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

The March meeting will be held on Tuesday, March 17 instead of March 10.

13. Adjourn public meeting

Board President Thomas Smith declared the meeting adjourned at 11:37 p.m.

###

Velma Starks
Recording Secretary

Secretary-Treasurer

NOTICE OF PUBLIC MEETING

OF THE
BOARD OF DIRECTORS of the

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT
at the

Pilot Point ISD Administration Office
829 S. Harrison St.
Pilot Point, TX 76258
Tuesday, February 11, 2020

Permit Hearing

The Permit Hearing will begin at 10:00 a.m.

Notice is hereby given that the Board of Directors of the North Texas Groundwater Conservation District ("District") will conduct a permit hearing on the following Production Permit Applications:

Agenda:

1. Call to Order; establish quorum; declare hearing open to the public; introduction of Board.

2. Review the Production Permit Applications of:

Applicant: FSWC, LP; 7001 Preston Road, Ste 410, Dallas, TX 75205
Location of Well: Hwy 380 & FM 423, Little Elm, TX 75068; Latitude: 33.2145835°N, Longitude: 96.8838659°W; About 1,700 feet south of the FM 423 and Hwy 380 intersection and 1,100 feet west of FM 423
Purpose of Use: Landscape Irrigation
Requested Amount of Use: 6,730,000 gallons per year for 2020 and 4,160,000 gallons per year after 2020
Production Capacity of Well: 74 gallons per minute
Aquifer: Woodbine Aquifer

Applicant: Hollyhock Residential Association, Inc.; 12700 Hillcrest Road, Suite 234, Dallas, TX 75230
Location of Well: Latitude: 33.2112677°N, Longitude: 96.8675176°W; Northeast corner of Rockhill Parkway and Teel Parkway
Purpose of Use: Landscape Irrigation
Requested Amount of Use: 9,900,000 gallons per year
Production Capacity of Well: 150 gallons per minute
Aquifer: Woodbine Aquifer

Applicant: Lennar Homes of Texas; 1707 Market Place Blvd, Ste 100, Irving, TX 75063
Location of Well: East Lucas Road and CR 982, Princeton, TX 75407; Latitude: 33.094209°N, Longitude: 96.507545°W; About 1,500 feet south of the CR 982 and CR 1099 intersection and 2,00 feet west of CR 982

Purpose of Use: Landscape Irrigation and Filling Pond(s)/Other Impoundment
Requested Amount of Use: 25,500,000 gallons per year
Production Capacity of Well: 190 gallons per minute
Aquifer: Woodbine Aquifer

3. Public Comment on the Production Permit Applications (verbal comments limited to three (3) minutes each).

4. Consider and act upon the Production Permit Applications, including designation of parties and/or granting or denying the Production Permit Applications in whole or in part, as applicable.

5. Adjourn or continue permit hearing.

Public Hearing to Adopt District Management Plan in Collin, Cooke, and Denton Counties, Texas

The Public Hearing will begin upon adjournment of the above noticed Permit Hearing.

Notice is hereby given that the Board of Directors of the North Texas Groundwater Conservation District ("District") will hold a public hearing, accept public comment, and may discuss and consider adoption of the District's Management Plan in Collin, Cooke, and Denton Counties, Texas.

Agenda

1. Call to Order; establish quorum; declare hearing open to the public; introduction of Board.

2. Review of Management Plan applicable to the District.

3. Public Comment on District's Management Plan (verbal comments limited to three (3) minutes each).

Consider and act upon adoption of the Management Plan applicable to the District.

Public Hearing to Adopt Rules Amendments for Water Wells in Collin, Cooke, and Denton Counties, Texas

The Public Hearing will begin upon adjournment of the above noticed Public Hearing.

Notice is hereby given that the Board of Directors of the North Texas Groundwater Conservation District ("District") will hold a public hearing, accept public comment, and may discuss and consider adoption of the District's Rules Amendments for Water Wells in Collin, Cooke, and Denton Counties, Texas.

Agenda

4. Call to Order; establish quorum; declare hearing open to the public; introduction of Board.

5. Review of Rules Amendments for Water Wells applicable to the District.

6. Public Comment on District's Rules Amendments for Water Wells (verbal comments limited to three (3) minutes each).

Consider and act upon adoption of the Rules Amendments for Water Wells applicable to the District.

Board Meeting

The regular Board Meeting will begin upon adjournment of the above noticed Public Hearing.

Notice is hereby given that the Board of Directors of the North Texas Groundwater Conservation District ("District") may discuss, consider, and take all necessary action, including expenditure of funds, regarding each of the agenda items below:

Agenda:

1. Pledge of Allegiance and Invocation.

2. Call to order, establish quorum; declare meeting open to the public.

3. Public comment.

4. Consider and act upon approval of the minutes from the January 14, 2020, Board meeting.

5. Consider and act upon approval of invoices and reimbursements, Resolution No. 2020-02-11-01.

6. Receive reports from the following Committees*:
   a. Budget and Finance Committee
      1) Receive Monthly Financial Information
   b. Investment Committee
      1) Receive Quarterly Investment Report
   c. Management Plan Committee
      1) Receive Quarterly Report

7. Update and possible action regarding the process for the development of Desired Future Conditions (DFCs).

8. Presentation and discussion regarding Aquifer Uses or Conditions, Supply Needs & Management Strategies, and Private Property Rights factors as they relate to Desired Future Conditions pursuant to Texas Water Code Section 36.108(d) – presentation by District hydrogeologist, James Beach.

9. Consider and act upon compliance and enforcement activities for violations of District rules.

10. Consider and act upon amendments to District Flow Testing Procedure Manual.

11. General Manager's Report: The General Manager will update the board on operational, educational and other activities of the District.

a. District's Disposal/Injection Well Program
b. Well Registration Summary

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

13. Adjourn public meeting.

* Reports from District standing committees will include a briefing by each committee for the Board on the activities of the committee, if any, since the last regular Board meeting.

The above agenda schedule represents an estimate of the order for the indicated items and is subject to change at any time.

These public meetings are available to all persons regardless of disability. If you require special assistance to attend the meeting, please call (855) 426-4433 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements.

For questions regarding this notice, please contact Velma Starks at (855) 426-4433, at ntgcd@northtexasgcd.org, or at 5100 Airport Drive, Denison, TX 75020.

At any time during the meeting or work session and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the North Texas Groundwater Conservation District Board may meet in 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); deliberation regarding personnel matters (§551.074); deliberation regarding security devices (§551.076); and deliberation regarding cybersecurity (§551.089). Any subject discussed in executive session may be subject to action.

This is to certify that I, Velma Starks, posted this agenda on the west side of the Administrative Offices of the District at 5100 Airport Drive, Denison, Texas 75020, and on our website, at or before 5:00 p.m. on February 7, 2020.

Velma Starks

Velma Starks

Sworn and subscribed to before me this 11 day of February 2020.

Carolyn Bennett

Notary Public

(SEAL)

NOTARY PUBLIC
STATE OF TEXAS
CAROLYN BENNETT
Notary ID # 7072231
My Commission Expires
October 22, 2020

DRC MEDIA COMPANY

NEWS & ADVERTISING SOLUTIONS
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3555 Duchess Drive
P.O. Box 369
Denton, TX 76202
940-387-3811

Publication(s): Denton Record-Chronicle

PROOF OF PUBLICATION

Being duly sworn (s)he is the Publisher/authorized designee of Denton Record-Chronicle, in City of Denton/surrounding areas in Denton County; Newspaper of general circulation which has been continuously and regularly published for a period of not less than one year preceding the date of the attached notice, and that the said notice was published in said newspaper Denton Record-Chronicle on the following dates below:

01/21/2020

Alice McConnaughey
(signature of Authorized Designee)
Subscribed and sworn to before me
this 21st day of January, 2020 by

Alice McConnaughey
(printed name of Designee)
Witness my hand and official seal:

Patricia LaGard
(signature name of Designee)
Notary Public, Denton County, Texas

PATRICIA LAGARD
Notary Public
State of Texas
ID # 13027960-6
My Comm. Expires 08-05-2023

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT
PO BOX 508
GAINESVILLE TX 76241

Ad Number: 23935 Price: $80.80

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT NOTICE OF HEARINGS ON DISTRICT RULES AMENDMENTS AND DISTRICT MANAGEMENT PLAN FEBRUARY 11, 2020

NOTICE IS HEREBY GIVEN to all interested persons in Collin, Cooke, and Denton Counties, Texas:

That the Board of Directors of the North Texas Groundwater Conservation District ("District") will hold a public hearings to discuss, consider, receive public comments, and potentially act upon adoption of amendments to the District's Rules regulating water wells in Collin, Cooke, and Denton Counties, Texas. The proposed amendments to the Rules include changes and/or additions related to the following: definitions; registration of wells; administrative completeness requirements; well completion forms; well reports; smart irrigation controller requirements for certain irrigation wells; spacing exception requests; application fees; replacement wells; brackish production zones; system loss reporting; well development/rehabilitation reporting; exception to well reporting requirements; well report deposit; blind flanges and metering; deadline for flow testing; enforcement and penalties for violating the Rules; and organizational and conforming changes.

The District will also discuss, consider, receive public comments, and potentially act upon adoption of the District Management Plan.

The hearings will be held on Tuesday, February 11, 2020, at 10:00 a.m. at the Pilot Point ISD Administration, located at 829 S. Harrison St., Pilot Point, Texas 76258. Comments on the proposed Rules Amendments and/or Management Plan may be presented in written or verbal form at the hearings, and persons interested in submitting written comments on the proposed Rules Amendments and or Management Plan in advance may do so by sending comments to the District at P.O. Box 508, Gainesville, Texas 76241. Any person who desires to appear at the hearings and present comments may do so in person, by legal representative, or both. The hearings posted in this notice may be recessed from day to day or continued where appropriate. At the conclusion of the hearings or any time or date thereafter, the proposed Rules Amendments and/or Management Plan may be adopted in the form presented or as amended based upon comments received from the public, District staff, consultants, or members of the Board without any additional notice.

A copy of the proposed Rules Amendments and Management Plan will be available 20 days before the date of the hearings by requesting a copy by email to ntgcd@northtexasgcd.org, by accessing the District's website at www.northtexasgcd.org, or by reviewing or copying the proposed Rules Amendments and/or Management Plan in person at 5100 Airport Drive, Denison, Texas 75020. The District is committed to compliance with the Americans with Disabilities Act (ADA). Any person who needs special accommodations should contact District staff at (855) 426-4433 at least 24 hours in advance if accommodation is needed. Any person who wishes to receive more detailed information on this notice should contact District staff at (855) 426-4433.

drc 01/21/2020

Ad Copy:
NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT
NOTICE OF HEARINGS ON DISTRICT RULES AMENDMENTS AND DISTRICT MANAGEMENT PLAN
FEBRUARY 11, 2020

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drc 01/21/2020

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT
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STATE OF TEXAS

COUNTY OF COOKE

Before me, the undersigned, on this day personally appeared Sarah Einselen, The Editor and General Manager, of the Gainesville Daily Register, a newspaper having general circulation in Cooke County, Texas, who being by me duly sworn, deposes and says that the foregoing attached notice was published in said newspaper on the following date(s), to wit: 1/18/2020

Sarah Einselen, Editor/General Manager

Subscribed and sworn to before me this 21 day of January, 2020.

TERESIA L. TEEL
Notary Public, State of Texas
Comm. Expires 03-21-2021
Notary ID 131052769

NOTARY PUBLIC STATE OF TEXAS

Notary Public in and for the State of Texas

LEGAL NOTICE

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT
NOTICE OF HEARINGS ON DISTRICT RULES AMENDMENTS AND DISTRICT MANAGEMENT PLAN
FEBRUARY 11, 2020

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END OF NOTICE

McKinney Courier Gazette, Internet

AFFIDAVIT OF LEGAL NOTICE

I, Joani Dittrich, Vice President/General Manager of the McKinney Courier Gazette, Internet a newspaper printed in the English language in Collin County, State of Texas, do hereby certify that this notice was Published in the McKinney Courier Gazette, Internet on the following dates, to-wit

McKinney Courier Gazette	01/19/20	01/19/20	1
Internet	01/19/20	01/19/20	1

LEGAL: DISTRICT RULES HEARINGS $425.50

(Description) (Cost)

Joani Dittrich

Vice President/General Manager of the McKinney Courier Gazette, Internet

Subscribed and sworn on this

20 day of January, 20 20

Joni Craghead

Notary Public, State of Texas

JONI CRAGHEAD
Notary Public, State of Texas
Comm. Expires 03-14-2020
Notary ID 124850232

NOTARY PUBLIC STATE OF TEXAS

APPENDIX C

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

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT

COLLIN COUNTY - COOKE COUNTY - DENTON COUNTY

MEMO

TO: Surface Water Management Entities

FROM: Drew Satterwhite, P.E., General Manager

DATE: April 23, 2020

RE: North Texas Groundwater Conservation District Management Plan

---

The North Texas Groundwater Conservation District's Management Plan, adopted at the District's Public Hearing held February 11, 2020, is available on the District website, www.northtexasgcd.com. This copy is being made available for your review and files. The North Texas Groundwater Conservation District is required to make this document available to "Political subdivisions as defined by Texas Water Code, Chapter 15, and identified from Texas Commission on Environmental Quality records which are granted authority to store, take, divert, or supply surface water either directly or by contract under Texas Water Code, Chapter 11, for use within the boundaries of a district."

DS:vs

Evidence District Coordinated With Surface Water Entities

Entity	Address	Phone No.	County	Email Address
*CITY OF HASLET	105 MAIN ST; HASLET, TEXAS 76052-0000	(817) 307-0263	Denton	drogers@haslet.org, jtucker@haslet.org
*DENTON COUNTY FWSD 1-B	9406 BISCAYNE BLVD; SHUPE VENTURA LINDELOW & OLSON PLLC; DALLAS, TEXAS 75218-2705	(214) 328-1101	Denton	misty.ventura@svlandlaw.com
*DENTON COUNTY RECLAMATION & ROAD DISTRICT	PO BOX 7081; PAUL W PHY ATTORNEY: DALLAS, TEXAS 75209-0081	(214) 691-9448	Denton	no Email
*DENTON COUNTY ROAD UTILITY DISTRICT	200 CRESCENT CT FL 11; DALLAS, TEXAS 75201-1875	(214) 871-8200	Denton	no Email
*FOUR SEASONS RANCH MUD 1	NO OFFICIAL ADDRESS	no phone	Denton	no Email
*JONES ACRES WATER COMPANY	PO Box 1577; Roanoke, Texas 76262	(817) 491-2999	Denton	no Email
*P&M SERVICE COMPANY	PO BOX 7831; THE WOODLANDS, TEXAS 77387-7831	(832) 257-7660	Denton	no Email
*STONEBRIDGE WSC	PO BOX 246; ARGYLE, TEXAS 76226-0246	(940) 241-1386	Denton	tjbonfield@verizon.net
*SUETRAK USA CO INC	PO BOX 577; HUMBLE, TEXAS 77347-0577	(972) 436-9337	Denton	no Email
*TOWN OF WESTLAKE	VILLAGE CIRCLE SUITE 207; ROANOKE, TEXAS 76262-0000	(817) 430-8616	Denton	no Email
*WATER ASSOCIATION OF NORTH LAKE, INC.	25 DOVE CREEK CIRCLE; AUBREY,TEXAS, 76227-7613	no phone	Denton	no Email
AIR PARK HOMEOWNERS ASSOCIATION INC	6355 STINSON ST; PLANO, TEXAS 75093-0000	(972) 931-7186	Collin	charibier@aol.com
ALPHA RANCH WCID	19BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	cjordan@crawlaw.net; abenefield@crawlaw.net
ARGYLE WSC	PO BOX 249; ARGYLE, TEXAS 76226-0000	(940) 464-7713	Denton	gab@argylewater.com
BARTONVILLE WSC	1911 E JETER RD; BARTONVILLE, TEXAS 76226-9401	(817) 430-3541	Denton	Lloyd@bartonvillewater.com
BELMONT FWSD 1 OF DENTON COUNTY	19 BRIAR HOLLOW LN STE 245; HOUSTON, TEXAS 77027-2858	(713) 621-3707	Denton	ccrawford@crawlaw.net; kdabbs@crawlaw.net
BELMONT FWSD 2 OF DENTON COUNTY	19 BRIAR HOLLOW LN STE 245; HOUSTON, TEXAS 77027-2858	(713) 621-3707	Denton	ccrawford@crawlaw.net; kdabbs@crawlaw.net
CADDO BASIN SUD	156 CR 1118 GREENVILLE, TEXAS 75401-7514	(903) 527-3504	Collin	caddobasin@yahoo.com
CIRCLE T MUD 1	3 GREENWAY PLZ STE 2000; HOUSTON, TEXAS 77046-0307	(713) 651-0111	Denton	tgreen@coatsrose.com
CIRCLE T MUD 3	3 GREENWAY PLZ STE 2000; HOUSTON, TEXAS 77046-0307	(713) 651-0111	Denton	tgreen@coatsrose.com
CITY OF THE COLONY	5151 S COLONY BLVD; LEWISVILLE, TEXAS 75056-0000	(972) 625-1756	Denton	llavender@thecolonytx.gov
CITY OF ALLEN	1 BUTLER CIR, ALLEN, TEXAS 75013-0000	(972) 727-0100	Collin	sgeorge@cityofallen.org
CITY OF ANNA	PO BOX 776, ANNA, TEXAS 75409-0000	(972) 924-3325	Collin	jparkman@annatexas.gov
City of Aubrey	107 S MAIN ST; AUBREY, TEXAS 76227-0000	(940) 440-9343	Denton	nmdownes@aubreytx.gov
CITY OF CARROLLTON	PO BOX 110535; CARROLLTON, TEXAS 75011-0000	(972) 466 3000	Denton	Brian.Little@cityofcarrollton.com
CITY OF CELINA	302 W WALNUT ST, CELINA, TEXAS 75009-0000	(972) 382-2682	Collin	jjohnson@celina-tx.gov, vfaulkner@celina-tx.gov
CITY OF COPPELL	PO BOX 478; COPPELL, TEXAS 75019-0000	(972) 462-0022	Denton	utility@coppelltx.gov
CITY OF DENTON	901-A TEXAS STREET; DENTON, TEXAS 76209-0000	(940) 349-8230	Denton	Tim.fisher@cityofdenton.com
CITY OF FAIRVIEW	PO BOX 551, MCKINNEY, TEXAS 75069-0000	(972)-562-0522	Collin	jgodwin@fairviewtexas.org , aholmgren@fairviewtexas.org
CITY OF FARMERSVILLE	205 S MAIN ST, FARMERSVILLE, TEXAS 75442-0000	(972) 782-6151	Collin	p.jackson@cofarmersville.tx.us
CITY OF FORT WORTH	1000 THROCKMORTON ST; FORT WORTH, TEXAS 76102-6312	(817) 392-6118	Denton	betsy.price@fortworthtexas.gov
CITY OF FRISCO	6891 MAIN STREET, FRISCO, TEXAS 75035-0000	(972) 335-5551	Collin	staylor@friscotexas.gov
CITY OF GAINESVILLE	200 SOUTH RUSK STREET, GAINESVILLE, TEXAS 76240-0000	(940) 668-4500	Cooke	bsullivan@cogtx.org

Entity	Address	Phone No.	County	Email Address
CITY OF HACKBERRY	119 MAXWELL ROAD; FRISCO, TEXAS 75034-0000	(972) 292-3223	Denton	hackberry@prodigy.net
CITY OF HIGHLAND VILLAGE	1000 HIGHLAND VILLAGE RD; LEWISVILLE, TEXAS 75077-0000	(972) 317-0237	Denton	mkite@highlandvillage.org, skriston@highlandvillage.org
CITY OF JOSEPHINE	PO BOX 99, JOSEPHINE, TEXAS 75164-0099	(972) 843-8282	Collin	cityofjosephine@yahoo.com
CITY OF JUSTIN	PO BOX 578; JUSTIN, TEXAS 76247-0000	(940) 648-2541	Denton	bking@cityofjustin.com
CITY OF KRUGERVILLE	5097 US HIGHWAY 377 S; KRUGERVILLE, TEXAS 76227-0000	(940) 365-5833	Denton	susan@krugerville.org
CITY OF KRUM	PO BOX 217; KRUM, TEXAS 76249-0000	(940) 482-3491	Denton	Pattproserve@aol.com, twilson@ci.krum.tx.us, mbruce@ci.krum.tx.us
CITY OF LEWISVILLE	151 CHURCH ST; LEWISVILLE, TEXAS 75067-0000	(972) 219-3400	Denton	kemadiazar@cityoflewisville.com
CITY OF LUCAS	151 COUNTRY CLUB RD, LUCAS, TEXAS 75002-7663	(972) 727-8999	Collin	dmoody@lucastexas.us
CITY OF MCKINNEY	PO BOX 517, MCKINNEY, TEXAS 75070-0517	(972) 547-7500	Collin	jgray@mckinneytexas.org, knish@mckinneytexas.org
CITY OF MELISSA	PO BOX 409MELISSA, TEXAS 75454-0409	(972) 837-2460	Collin	jcartwright@cityofmelissa.com
CITY OF MURPHY	205 NORTH MURPHY ROAD, PLANO, TEXAS 75074-0000	(972) 424-6021	Collin	customerservice@murphytx.org
CITY OF OAK POINT	100 NAYLOR RD; OAK POINT, TEXAS 75068-2201	(972) 294-2312	Denton	dmousel@oakpointtexas.com
CITY OF PARKER	5700 E PARKER RD, PARKER, TEXAS 75002-0000	(972) 442-6811	Collin	jflanigan@parkertexas.us
CITY OF PLANO	PO BOX 860358, PLANO, TEXAS 75086-0000	(972)-941-7307	Collin	margies@plano.gov
CITY OF PLANO	PO BOX 860358; PLANO, TEXAS 75086-0000	(972) 769-4160	Denton	gentrys@plano.gov
CITY OF PLANO	PO BOX 860358; PLANO, TEXAS 75086-0000	(972)-769-4160	Denton	gentrys@plano.gov
CITY OF PRINCETON	306 N FRONT ST, PRINCETON, TEXAS 75407-0000	(972)-736-2711	Collin	lthornhill@princetontx.us
CITY OF RICHARDSON	411 W Arapaho, Richardson,Texas 75080	(972)-744-4220	Collin	jerry.ortega@cor.gov, richard.boston@cor.gov
CITY OF ROANOKE	108 S OAK ST; ROANOKE, TEXAS 76262-2610	(817) 491-2411	Denton	jstathatos@roanoketexas.com
CITY OF ROYSE CITY	305 ARCH STROYSE CITY, TEXAS 75189-0000	(972) 636-2250	Collin	Brenda.craft@roysecity.com
CITY OF SACHSE	5560 HWY 78, GARLAND, TEXAS 75048-0000	(972)-495-7600	Collin	spoe@cityofsachse.com
CITY OF SANGER	PO BOX 1729; SANGER, TEXAS 76266-0000	(949) 458-7930	Denton	mbrice@sangertexas.org, rwoods@sangertexas.org
CITY OF SOUTHLAKE	1400 MAIN ST STE 320; SOUTHLAKE, TEXAS 76092-7604	(817) 481-5581	Denton	bprice@ci.southlake.tx.us, cmcmurray@ci.southlake.tx.us, erice@ci.southlake.tx.us
CITY OF VAN ALSTYNE	PO BOX 247, VAN ALSTYNE, TEXAS 75495-0247	(903) 482-5426	Collin	tbrown@ci.van-alstyne.tx.com
CITY OF WYLIE	PO BOX 428, WYLIE, TEXAS 75098-0000	(972) 516-6000	Collin	mike.sferra@wylietexas.gov
CLEAR CREEK WATERSHED AUTHORITY	201 S DIXON ST STE 208GAINESVILLE, TEXAS 76240	(940) 668-2404	Cooke/Denton	ccwa-tx@att.net
COLLIN COUNTY MUD 1	19 BRIAR HOLLOW LN STE 245,HOUSTON, TEXAS 77027-2858	(713) 621-3707	Collin	kdabbs@crawlaw.net, ccrawford@crlaw.net
COMMUNITY WATER SERVICE INC	PO BOX 850155; MESQUITE, TEXAS 75185-0000	(972) 286-8051	Denton	Bonnie1015@aol.com
COPEVILLE SUD	PO BOX 135, COPEVILLE, TEXAS 75121-0135	(972) 853-4630	Collin	dhurth@copevillewater.com
COPEVILLE WSC	PO BOX 135, COPEVILLE, TEXAS 75121-0000	(972) 853-4630	Collin	dhurt@copeville.com
CREEKSIDE AT NORTHLAKE	8299 SMALL BLOCK RD; ROANOKE, TEXAS 76262-3328	(817) 854-0011	Denton	creeksideatnorthlake@lincolnapts.com
CREEKSIDE WATER	8299 SMALL BLOCK RD; ROANOKE, TEXAS 76262-3328	(817) 854-0011	Denton	drobinson@amcreit.com
CULLEOKA WSC	PO BOX 909PRINCETON, TEXAS 75407-0000	(972) 736-2592	Collin	culleoka@culleoka.org

Entity	Address	Phone No.	County	Email Address
DENTON COUNTY DEVELOPMENT DISTRICT 4	19 BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC;HOUSTON, TEXAS 77027-2801	(713) 968-9855	Denton	ccrawford@crawlaw.net, kdabbs@crawlaw.net
DENTON COUNTY FWSD 10	19 BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	ccrawford@crawlaw.net; mgordon@crawlaw.net
DENTON COUNTY FWSD 11-A	19 BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	cjordan@crawlaw.net; abenefield@crawlaw.net
DENTON COUNTY FWSD 11-B	19 BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	cjordan@crawlaw.net; abenefield@crawlaw.net
DENTON COUNTY FWSD 11-C	19 BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	cjordan@crawlaw.net; abenefield@crawlaw.net
DENTON COUNTY FWSD 1-A	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLPFORT WORTH, TEXAS 76102-3129	(817) 332-2500	Denton	ross.martin@kellyhart.com;.rebecca.daniels@kellyhart.com
DENTON COUNTY FWSD 1-C	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLPFORT WORTH, TEXAS 76102-3129	(817) 332-2500	Denton	ross.martin@kellyhart.com;.rebecca.daniels@kellyhart.com
DENTON COUNTY FWSD 1-D	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLPFORT WORTH, TEXAS 76102-3129	(817) 332-2501	Denton	ross.martin@kellyhart.com;.rebecca.daniels@kellyhart.com
DENTON COUNTY FWSD 1-E	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLPFORT WORTH, TEXAS 76102-3129	(817) 332-2502	Denton	ross.martin@kellyhart.com;.rebecca.daniels@kellyhart.com
DENTON COUNTY FWSD 1-F	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLPFORT WORTH, TEXAS 76102-3129	(817) 332-2503	Denton	ross.martin@kellyhart.com;.rebecca.daniels@kellyhart.com
DENTON COUNTY FWSD 1-G	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLPFORT WORTH, TEXAS 76102-3129	(817) 332-2504	Denton	ross.martin@kellyhart.com;.rebecca.daniels@kellyhart.com
DENTON COUNTY FWSD 1-H	201MAIN ST STE 2500; KELLY HART & HALLMAN LLPFORT WORTH, TEXAS 76102-3129	(817) 332-2505	Denton	ross.martin@kellyhart.com;.rebecca.daniels@kellyhart.com
DENTON COUNTY FWSD 4-A	3100 MCKINNON ST STE 950; DALLAS, TEXAS 75201	(214) 981-9090	Denton	glutzel@crawlaw.net
DENTON COUNTY FWSD 6	19BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	ccrawford@crawlaw.net; kdabbs@crawlaw.net
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DENTON COUNTY FWSD 8-A	19 BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	cjordan@crawlaw.net; abenefield@crawlaw.net
DENTON COUNTY FWSD 8-B	19BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	cjordan@crawlaw.net; abenefield@crawlaw.net
DENTON COUNTY FWSD 8-C	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLPFORT WORTH, TEXAS 76102-3129	(713) 621-3707	Denton	judy.mcangus@kellyhart.com; www.kellyhart.com
DENTON COUNTY MUD 4	1980 POST OAK BLVD STE 1380; HOUSTON, TEXAS 77056-3970	(713) 850-9000	Denton	kugle@sklaw.us
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DENTON COUNTY MUD 6	5420 LBJ FWY STE 1300; COATS ROSE YALE RYMAN AND LEE PC; DALLAS, TEXAS 75240-6299	(972) 982-8450	Denton	astepherson@coatsrose.com
EAST FORK FWSD 1	201 MAIN ST STE 2500, FORT WORTH, TEXAS 76102-3129	(817) 332-2500	Collin	Ross.martin@kellyhart.com
EAST FORK SUD	1355 TROY RD, WYLIE, TEXAS 75098-6615	(972) 442-7572	Collin	dana@eastforksud.com
GREATER TEXOMA UTILITY AUTHORITY	5100 AIRPORT DRDENISON, TEXAS 75020-8498	(903) 786-4433	Cooke	Carmen@gtua.org
KIOWA HOMEOWNERS WSC	133 KIOWA DR SLAKE KIOWA, TEXAS 76240-9539	(940) 668-8391	Cooke	gm@kiowawsc.com
LAKE CITIES MUNICIPAL UTILITY AUTHORITY	PO BOX 2017; LAKE DALLAS, TEXAS 75065-2017	(940) 497-2999	Denton	bvickers@lcmua.com
LAVON WSC	PO BOX 188, LAVON, TEXAS 75166-0000	(972) 843-2101	Collin	lwsc@lavonwater.com
MARILEE SUD	PO BOX 1017, CELINA, TEXAS 75009-1017	(972)-382-3222	Collin	donna.marileesud@suddenlinkmail.com; Vicki.msud@suddenlink.com
MEADOW ROAD IMPROVEMENT DISTRICT	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLPFORT WORTH, TEXAS 76102-3129	(817) 332-2500	Denton	ross.martin@kellyhart.com; rebecca.daniels@kellyhart.com
MIDWAY WATER UTILITIES INC	12535 REED RD; SUGAR LAND, TEXAS 77478-2837	(281) 207-5800	Denton	gfieitag@swwc.com
MILLIGAN WSC	1400 S BRIDGEFARMER RD, MCKINNEY, TEXAS 75069-0000	(972) 542-1143	Collin	candi@milliganwater.com
MULTI COUNTY WSC	PO BOX 1006GATESVILLE, TEXAS 76528-0000	(254) 865-2269	Cooke	mcwscgv@centurylink.net
MUSTANG SUD	7985 FM 2931; AUBREY, TEXAS 76227-3940	(940) 440-9561	Denton	swright@mustangwater.com

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT
SURFACE WATER CONTACTS

Entity	Address	Phone No.	County	Email Address
NEVADA WSC	PO BOX 442, NEVADA, TEXAS 75173-0422	(972) 843-2608	Collin	Nevada@nevadawater.co
NORTH COLLIN WSC	PO BOX 343, MELISSA, TEXAS 75454-0343	(972) 837-2331	Collin	aknight@northcollinwsc.com
NORTH FARMERSVILLE WSC	PO BOX 212, FARMERSVILLE, TEXAS 75442-0212	(972) 782-6257	Collin	No Email
NORTH FORT WORTH WCID 1	19BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	abenefield@crawlaw.net; cjordan@crawlaw.net
NORTH TEXAS MWD	PO BOX 2408, WYLIE, TEXAS 75098-2408	(972) 442-5405	Collin/Dent	jparks@ntmwd.com, mrickman@ntmwd.com , dhickey@ntmwd.com
NORTHWEST GRAYSON COUNTY WCID 1	PO BOX 715; GORDONVILLE, TEXAS 76245-0715	(903) 523-5886	Cooke	nwwater@verizon.net
OAK POINT WCID 1	3100 MCKINNON ST STE 950; DALLAS, TEXAS 75201-7011	(214) 981-9090	Denton	glutzel@crawlaw.net
OAK POINT WCID 2	3100 MCKINNON ST STE 950; DALLAS, TEXAS 75201-7011	(214) 981-9090	Denton	glutzel@crawlaw.net
OAK POINT WCID 3	3100 MCKINNON ST STE 950; DALLAS, TEXAS 75201-7011	(214) 981-9090	Denton	glutzel@crawlaw.net
OAK POINT WCID 4	5420 LBJ FWY STE 1300; DALLAS, TEXAS 75240-6299	(972) 982-8450	Denton	astepherson@coatsrose.com
PROVIDENCE VILLAGE WCID OF DENTON COUNTY	19BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	mgordon@crawlaw.net; ccrawford@crawlaw.net
RED RIVER AUTHORITY OF TEXAS	900 8TH ST STE 520, HAMILTON BLDG, WICHITA FALLS, TEXAS 76301	(940)-723-8697	Cooke	ccampbell@rra.dst.tx.us
RED ROCK WSC	PO BOX 270103; FLOWER MOUND, TEXAS 75027-0103	no phone	Denton	no Email
SABINE RIVER AUTHORIT	PO BOX 579, ORANGE, TEXAS 77631-0579	(409) 746-2192	Collin	jtatum@sratx.org
SEIS LAGOS UTILITY DISTRICT	220 SEIS LAGOS TRLWYLIE, TEXAS 75098-8222	(972) 442-6875	Collin	district@slud.us
SMILEY ROAD WCID	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLPFORT WORTH, TEXAS 76102-3129	(817) 332-2500	Denton	ross.martin@kellyhart.com; rebecca.daniels@kellyhart.com
SOUTH DENTON COUNTY WCID 1	19BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	cjordan@crawlaw.net; abenefield@crawlaw.net
SOUTH WEST WATER COMPANY	9511 Ranch Rd. 620 North; Austin Tx 78726-2908	(512) 219-2272	Denton	gfieitag@swwc.com
SOUTHLAKE PARK SERVICE INC	3340 SOUTHLAKE PARK RD; SOUTHLAKE, TEXAS 76092-2506	(817) 874-3589	Denton	rc.ohara5@gmail.com
TALLEY RANCH WCID 1 OF DENTON COUNTY	5420 LBJ FWY STE 1300; DALLAS, TEXAS 75240-6299	(972) 982-8450	Denton	astepherson@coatsrose.com
THE LAKES FWSD OF DENTON COUNTY	19BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	cjordan@crawlaw.net; mgordon@crawlaw.net
TOWN OF FLOWER MOUND	2121 CROSS TIMBERS ROAD; LEWISVILLE, TEXAS 75028-0000	(972) 874-6000	Denton	Barbara.leet@flower-mound.com
TOWN OF LINDSAY	PO BOX 153, LINDSAY, TEXAS 76250-0153	(940) 665-4455	Cooke	cityoflindsey@ntin.net
TOWN OF LITTLE ELM	PO BOX 129; LITTLE ELM, TEXAS 75068-0000	972) 975-0404	Denton	kphillips@littleelm.org
TOWN OF NORTHLAKE	1400 FM 407Northlake, TEXAS 76247-	(940) 648-3290	Denton	etamayo@town.northlake.tx.us
TOWN OF PROSPER	PO BOX 307PROSPER, TEXAS 75078-0000	(972) 347-2304	Collin	Frank_Jarmon@prospertx.gov
TRADITION MUD 1 OF DENTON COUNTY	5420 LBJ FWY STE 1300; DALLAS, TEXAS 75240-6299	(972) 982-8450	Denton	astepherson@coatsrose.com
TROPHY CLUB MUD 1	100 MUNICIPAL DR, TROPHY CLUB, TEXAS 76262-5420	(682) 831-4685	Denton	jmcknight@trophyclub.org; lslaght@trophyclub.org
UPPER TRINITY REGIONAL WATER DISTRICT	PO BOX 305; LEWISVILLE, TEXAS 75067-0305	(972) 219-1228	Denton	jpierce@utrwd.com
VALENCIA ON THE LAKE WCID	19BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	cjordan@crawlaw.net; abenefield@crawlaw.net
WOODBINE WSC	PO BOX 1257, GAINESVILLE, TEXAS 76241-1257	(940) 668-8337	Cooke	Rdkemp55@yahoo.com
WYLIE NORTHEAST SUD	PO BOX 1029, WYLIE, TEXAS 75098-1029	(972) 442-2075	Collin	chester@wylienortheastwater.com
WYLIE NORTHEAST SUD	PO BOX 1029, WYLIE, TEXAS 75098-1029	(972) 442-2075	Collin	chester@wylienortheastwater.com

APPENDIX D

North Texas GCD Rules

North Texas Groundwater Conservation District

Rules for Water Wells in Collin, Cooke, and Denton Counties, Texas

As Amended on February 11, 2020

Procedural History of Rules Adoption

These rules of the North Texas Groundwater Conservation District were initially adopted by the Board of Directors on October 19, 2010, at a duly posted public meeting in compliance with the Texas Open Meetings Act and following notice and hearing in accordance with Chapter 36 of the Texas Water Code. The rules were subsequently amended, in accordance with all legal requirements, on January 21, 2013, November 12, 2013, August 12, 2014, March 1, 2017, January 1, 2019, and on February 11, 2020.

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PREAMBLE

The North Texas Groundwater Conservation District ("District") was created in 2009 by the 81st Texas Legislature with a directive to conserve, protect and enhance the groundwater resources of Collin, Cooke, and Denton Counties, Texas. The District's boundaries are coextensive with the boundaries of Collin, Cooke, and Denton Counties, and all lands and other property within these boundaries will benefit from the works and projects that will be accomplished by the District.

The Mission of the North Texas Groundwater Conservation 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 aquifers, insure that the residents of Collin, Cooke, and Denton Counties maintain local control over their groundwater, and operate the District in a fair and equitable manner for all residents of the District.

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 most valuable resource can be managed in a prudent and cost effective manner through conservation, education, and management. 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.

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SECTION 1.
DEFINITION, CONCEPTS, AND GENERAL PROVISIONS

Rule 1.1 Definition of Terms.

In the administration of its duties, the District follows the definitions of terms set forth in Chapter 36, Texas Water Code, and other definitions as follows:

(1) "Acre foot" means the standard measurement of groundwater necessary to cover one acre of land one foot deep, or approximately 325,851 U.S. gallons.

(2) "Aggregate Withdrawal" means the total pumpage measurement of the amount of water withdrawn from two or more wells in a well system from the same aquifer.

(3) "Agriculture use" (or "agricultural use") means any of the following activities:

(a) cultivating the soil to produce crops for human food, animal feed, or planting seed or for the production of fibers;

(b) the practice of floriculture, viticulture, silviculture, and horticulture, including the cultivation of plants in containers or nonsoil media, by a nursery grower;

(c) raising, feeding, or keeping animals for breeding purposes or for the production of food or fiber, leather, pelts, or other tangible products having a commercial value;

(d) planting cover crops, including cover crops cultivated for transplantation, or leaving land idle for the purpose of participating in any governmental program or normal crop or livestock rotation procedure;

(e) wildlife management; and

(f) raising or keeping equine animals.

(4) "Air gap" means the unobstructed vertical separation between the free flowing discharge end of the pipe supplying the well and an open or non-pressure receiving vessel.

(5) "Alternate Maximum Historic Use" means the amount of groundwater produced by the owner of a well that qualifies for a Historic Use Permit, as demonstrated by official Texas Water Development Board Water Use Survey records from calendar year 2010 only. Such an owner may elect to use the Alternate Maximum Historic Use amount of production in lieu of District production reports from the Historic Use Period as evidence of historic and existing use upon submission of a form provided by the District along with the official Texas Water Development Board Water Use Survey records from 2010.

(6) "Animal Feeding Operation" (AFO) means: (1) a lot or facility (other than an aquatic animal production facility) where animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and where the animal confinement areas do not sustain crops, vegetation, forage growth, or postharvest residues in the normal growing season over any portion of the lot or facility; or (2) any other facility regulated as an AFO or as a Concentrated Animal Feeding Operation by the TCEQ.

(7) "Aquifer" means a water bearing geologic formation in the District.

(8) "Aquifer Storage and Recovery" means the injection of water into a geologic formation and the subsequent recovery for beneficial use by the project operator, as defined by TCEQ rules.

(9) "Artificial flow restrictors" means the term used to describe the prohibited devices that are capable of altering the measurement of a well's maximum capacity or flow rate, including, but not limited to, the following types of devices: dole valves, static head reducers, artificial head devices, and fixed energy dissipaters. Dole valves installed below the wellhead are not prohibited under Rule 4.4.

(10) "As equipped" for purposes of determining the capacity of a well means visible pipes, plumbing, and equipment attached to the wellhead or adjacent plumbing that controls the maximum rate of flow of groundwater and that is permanently affixed to the well or adjacent plumbing by welding, glue or cement, bolts or related hardware, or other reasonably permanent means.

(11) "Beneficial use" or "beneficial purpose" means use of groundwater for:

(a) agricultural, gardening, domestic, stock raising, municipal, mining, manufacturing, industrial, commercial, or recreational purposes;

(b) exploring for, producing, handling, or treating oil, gas, sulfur, lignite, or other minerals; or

(c) any other purpose that is useful and beneficial to the user that does not constitute waste.

(12) "Best available data" means conclusions that are logically and reasonably derived using statistical or quantitative data, techniques, analyses, and studies that are available for peer review by scientists in the field and can be employed to address a specific scientific issue.

(13) "Board" means the Board of Directors of the District.

(14) "Boundary survey" means a diagram showing the proposed location of a well in relation to distance from property boundaries and existing registered wells, as required by Rule 4.3(a).

(15) "Cap" or "capped well" means covering a well with a securely fixed, removable device that will prevent the entrance of surface pollutants into the well. A well that is closed or capped must have a covering capable of preventing surface pollutants from entering the well and sustaining weight of at least 400 pounds. The cap must be constructed in such a way that the covering cannot be easily removed by hand.

(16) "Closed loop geothermal well" means a well used for domestic use purposes that re-circulates water or other fluids inside a sealed system for heating and/or cooling purposes, and where no water is produced from the well or used for any other purpose of use.

(17) "Completed well" means a well, the construction of which has been completed, with sealed off access of undesirable water or constituents to the well bore by utilizing proper casing and annular space positive displacement or pressure tremie tube grouting or cementing (sealing) methods.

(18) "Contiguous" means property within a continuous boundary situated within the District. The term also refers to properties that are divided by a publicly owned road or highway or other easements if the properties would otherwise share a common border.

(19) "Desired Future Conditions" means a quantitative description, adopted in accordance with Section 36.108 of the Texas Water Code, of the desired condition of the groundwater resources at one or more specified future times.

(20) "District" means the North Texas Groundwater Conservation District created in accordance with Section 59, Article XVI, Texas Constitution, Chapter 36, Texas Water Code, and the District Act.

(21) "District Act" means the Act of May 19, 2009, 81st Leg., R.S., ch. 248, 2009 Tex. Gen. Laws 686, codified at TEX. SPEC. DIST. LOC. LAWS CODE ANN. ch. 8856 ("the District Act"), as may be amended from time to time.

(22) "Domestic use" means the use of groundwater by an individual or a household to support essential domestic activity. Such use includes water for: drinking, washing, or culinary purposes; use by multiple households that do not qualify as a Public Water System as defined in these Rules, as long as there is no consideration given or received, as set forth herein; residential landscape watering of no more than one (1) acre contiguous to one (1) residence; irrigation of a family garden and/or family orchard; recreation limited to the filling of residential swimming pools and hot tubs; or for watering of domestic animals. Domestic use does not include the following types of use: water used to support activities for which consideration is given or received or for which the product of the activity is sold; use by or for a Public Water System; irrigation of crops in fields or pastures; or water used for open-loop residential geothermal heating and cooling systems, but does include water used for closed-loop residential geothermal systems.

(23) "Effective Date" means January 1, 2019, which is the date of adoption of permitting rules by the District.

(24) "Emergency purposes" means the use of groundwater:

(a) to fight fires, manage chemical spills, and otherwise address emergency public safety or welfare concerns; or

(b) for training exercises conducted in preparation for responding to fires, chemical spills, and other emergency public safety or welfare concerns.

(25) "Exempt well" means a new or an existing well that is exempt from permitting under these Rules, and is not required to have a Historic Use Permit or Production Permit to withdraw water from an aquifer within the District.

(26) "Existing well" means a well that was in existence or for which drilling commenced on or before the Effective Date.

(27) "Gallons per minute" or "gpm" means the maximum production capacity or flow rate of a well as equipped, which can be measured by the District in accordance with these Rules.

(28) "General Manager" as used herein is the chief administrative officer of the District, as set forth in the District's bylaws, or the District staff or other Board designee acting at the direction of the General Manager or Board to perform the duties of the General Manager.

(29) "Groundwater" means water percolating below the surface of the earth.

(30) "Groundwater reservoir" means a specific subsurface water-bearing stratum.

(31) "Hearings Examiner" means a person appointed by the Board of Directors to conduct a hearing or other proceedings including but not limited to an administrative law judge employed by the State Office of Administrative Hearings.

(32) "Historic Use Period" means the period from January 1, 2010 through December 31, 2018, in which water produced from a well or well system was put to beneficial use at any point during the duration of the period.

(33) "Historic Use Permit" means a permit required by the District for a non-exempt well or well system that produced water during the Historic Use Period and that has not been abandoned.

(34) "Landowner" means the person who holds possessory rights to the land surface or to the withdrawal of groundwater from wells located on the land surface.

(35) "Leachate well" means a well used to remove contamination from soil or groundwater.

(36) "Livestock or poultry" means the use of groundwater associated with watering, raising, feeding, or keeping non-commercial livestock and/or poultry, of any variety, for subsistence or labor. The term also includes domesticated horses, cattle, goats, sheep,

swine, poultry, and other similar animals involved in farming or ranching operations, on land recorded and taxed in the county as an agricultural land use. The term does not include any animal that is stabled, confined, or fed at a facility that is defined herein as an Animal Feeding Operation.

(37) "Maintenance Purposes" means the use of water used to flush mains, fire hydrants, or tanks as required by TCEQ.

(38) "Management Plan" means the District Management Plan required under Section 36.1071, Texas Water Code, and as further described in these Rules.

(39) "Maximum Historic Use" means the largest volume of groundwater produced during a calendar year from an aquifer and beneficially used during the Historic Use Period, as demonstrated by production reports submitted to the District.

(40) "Meter" or "measurement device" means a water flow measuring device that can measure within +/- 5% of accuracy the instantaneous rate of flow and record the amount of groundwater produced or transported from a well or well system during a measure of time, as specifically set forth under Section 10.

(41) "Modeled Available Groundwater" means the amount of water that the Executive Administrator of the Texas Water Development Board determines may be produced on an average annual basis to achieve a Desired Future Condition established for the groundwater resources in the District.

(42) "Modify" or "Modified" means performing work on the physical or mechanical components of the well head assembly or downhole portion of a well.

(43) "Monitoring well" means a well used solely for the purpose of measuring some property of the groundwater or the aquifer that it penetrates, and is not equipped with a pump. Wells with other uses can still be used to collect aquifer data in the District's Monitoring Program and not be considered a monitoring well for the purposes of these rules.

(44) "New well" means a water well for which an administratively complete registration application is filed with the District on or after the Effective Date, or conversion of another type of well or artificial excavation to a water well on or after the Effective Date, including but not limited to a well originally drilled for hydrocarbon production activities that is to be converted to a water well.

(45) "Non-exempt well" means an existing or a new well that does not qualify for exempt well status under these Rules.

(46) "Notice to Proceed" means the official registration approval form issued by the District for new exempt wells.

(47) “Nursery grower” means a person who grows more than 50 percent of the products that the person either sells or leases, regardless of the variety sold, leased, or grown. For the purpose of this definition, “grow” means the actual cultivation or propagation of the product beyond the mere holding or maintaining of the item prior to sale or lease and typically includes activities associated with the production or multiplying of stock such as the development of new plants from cuttings, grafts, plugs, or seedlings.

(48) “Penalty” means a reasonable civil penalty set by rule under the express authority delegated to the District through Section 36.102(b) of the Texas Water Code.

(49) “Person” means an individual, corporation, limited liability company, organization, government, governmental subdivision, agency, business trust, estate, trust, partnership, association, or other legal entity.

(50) “Pre-Effective Date Exempt Wells” means those existing wells that were exempt from the metering, reporting, and fee payment requirements under the District’s Temporary Rules in effect prior to the Effective Date because they are used solely for domestic use or livestock or poultry use, regardless of well capacity, or that are equipped with a maximum production capacity of 25 gpm or less but that were required to be registered under the District’s Temporary Rules.

(51) “Presiding Officer” means the President of the Board, or other Board member presiding at any hearing or other proceeding or a Hearings Examiner appointed by the Board to conduct or preside over any hearing or other District proceeding.

(52) “Production” or “producing” means the act of extracting groundwater from an aquifer by a pump or other method.

(53) “Production Permit” means a permit required by the District for a new, non-exempt well.

(54) “Public Water System” means a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, which includes all uses described under the definition for "drinking water" in 30 Texas Administrative Code, Section 290.38. Such a system must have at least 15 service connections or serve at least 25 individuals at least 60 days out of the year. This term includes any collection, treatment, storage, and distribution facilities under the control of the operator of such system and used primarily in connection with such system, and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Two or more systems with each having a potential to serve less than 15 connections or less than 25 individuals but owned by the same person, firm, or corporation and located on adjacent land will be considered a public water system when the total potential service connections in the combined systems are 15 or greater or if the total number of individuals served by the combined systems total 25 or greater at least 60 days out of the year. Without excluding other meanings of the terms "individual" or "served," an individual shall be deemed to be served by a water system if he lives in, uses as his place of employment, or works in a place to which drinking water is supplied from the system.

(55) "Pump" means any facility, device, equipment, materials, or method used to obtain water from a well.

(56) "Purpose of use" means the type of beneficial use of the groundwater produced from a well.

(57) "Registrant" means a person required to submit a registration.

(58) "Registration" means a well owner providing certain information about a well to the District, as more particularly described under Section 3.

(59) "Replacement well" means a new well drilled to replace an existing registered well that meets the requirements set forth in Rule 4.5.

(60) "Rule" or "Rules" means these Rules of the District regulating water wells, which shall continue to be effective until amended or repealed.

(61) "Spacing Formula" means the total spacing distance required under Rule 4.2 for new wells that have a production capacity of greater than 17.36 gpm, which is calculated according to the following formula: 1,175 feet + [1.2 x (gpm of proposed well)].

(62) "Substantially alter" with respect to the size or capacity of a well means to increase the inside diameter of the pump discharge column pipe size of the well in any way, change the depth or diameter of a well bore, increase the size of the pump or pump motor on the well, or performing work on the well in a way that involves reaming, setting casing, or grouting.

(63) "TCEQ" means the Texas Commission on Environmental Quality, or its predecessor or successor agency.

(64) "Temporary Rules" means the version of the District's Rules in effect prior to the Effective Date.

(65) "Tract" means a contiguous parcel of land under the ownership of a single entity, such as a corporation, partnership or trust, or an individual or individuals holding as joint owners or tenants in common.

(66) "Transfer" means a change to a registration or permit as follows, except that the term "transfer" shall have its ordinary meaning as read in context when used in other contexts:

(a) ownership; or

(b) the person authorized to exercise the right to make withdrawals and place the groundwater to beneficial use.

(67) “Variable Frequency Drive” or “VFD” means an automated adjustable speed device used to control pump motor speed.

(68) “Waste” means one or more of the following:

(a) withdrawal of groundwater from the aquifer at a rate and in an amount that causes or threatens to cause an intrusion into the aquifer unsuitable for agriculture, gardening, domestic, stock raising, or other beneficial purposes;

(b) the flowing or producing of water from the aquifer by artificial means if the water produced is not used for a beneficial purpose;

(c) the escape of groundwater from the aquifer to any other underground reservoir or geologic stratum that does not contain groundwater;

(d) pollution or harmful alteration of groundwater in the aquifer by saltwater or by other deleterious matter admitted from another stratum or from the surface of the ground;

(e) willfully or negligently causing, suffering, or allowing groundwater to escape into any river, creek, natural watercourse, depression, lake, reservoir, drain, sewer, street, highway, road, or road ditch, or onto any land other than that of the owner of the well unless such discharge is authorized by permit, rule, or other order issued by the TCEQ under Chapters 11 or 26 of the Texas Water Code;

(f) groundwater pumped for irrigation that escapes as irrigation tail water onto land other than that of the owner of the well unless permission has been granted by the occupant of the land receiving the discharge;

(g) for water produced from an artesian well, “waste” has the meaning assigned by Section 11.205, Texas Water Code;

(h) operating a deteriorated well; or

(i) producing groundwater in violation of any District rule governing the withdrawal of groundwater through production limits on wells, managed depletion, or both.

(69) “Well” means any artificial excavation located within the boundaries of the District that causes groundwater to be withdrawn or removed from an aquifer within the District.

(70) “Well Completion Report” is a form that developed by the District which includes information such as depth to water, permanent pump size and permanent pump production capacity.

(71) “Well owner” means the person who owns a possessory interest in: (1) the land upon which a well or well system is located or to be located; (2) the well or well system; or (3)

the groundwater withdrawn from a well or well system. A well owner may delegate the responsibility to act on his or her behalf in accordance with these Rules.

(72) "Well Report" is a form provided by the Texas Department of Licensing and Regulation that includes information such as well location, casing and screen data and lithology data.

(73) "Well system" means a well or group of wells connected by piping, storage, or that share or are tied to the same distribution system. Examples of a well system include, but are not limited to, a well or group of wells connected to the same ground storage tank, pond or swimming pool.

(74) "Withdraw" means the act of extracting or producing groundwater by pumping or any other method.

(75) "Year" means a calendar year (January 1 through December 31), except where the usage of the term clearly suggests otherwise.

Rule 1.2 Authority of District.

The North Texas Groundwater Conservation District is a political subdivision of the State of Texas organized and existing under Section 59, Article XVI, Texas Constitution, Chapter 36, Texas Water Code, and 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.

Rule 1.3 Purpose of Rules.

These Rules are adopted under the authority of Sections 36.101 and 36.1071(f), Texas Water Code, and the District Act for the purpose of conserving, preserving, protecting, and recharging groundwater in the District in order to prevent subsidence, prevent degradation of water quality, prevent waste of groundwater, and to carry out the powers and duties of Chapter 36, Texas Water Code, and the District Act.

Rule 1.4 Use and Effect of Rules.

(a) These rules are used by the District in the exercise of the powers conferred on the District by law and in the accomplishment of the purposes of the law creating the District. These rules may be used as guides in the exercise of discretion, where discretion is vested. However, under no circumstances and in no particular case will they or any part therein, be construed as a limitation or restriction upon the District to exercise powers, duties and jurisdiction conferred by law. These rules create no rights or privileges in any person or water well, and shall not be construed to bind the Board in any manner in its promulgation of the District Management Plan or amendments to these Rules.

(b) The accurate and timely reporting to the District of activities governed by these Rules is a critical component to the District's ability to effectively and prudently manage the groundwater resources that it has been charged by law with regulating. The purpose of these Rules is to require the submission, by the appropriate person or persons, of complete, accurate, and timely registrations, permit applications, records, reports, and logs as required throughout the District Rules. Because of the important role that accurate and timely reporting plays in the District's understanding of past, current and anticipated groundwater conditions within the District, the failure to comply with these rules may result in the assessment of additional fees, civil penalties, or any combination of the same, as specifically set forth in these Rules.

Rule 1.5 Purpose of District.

The purpose of the District is to provide for the conservation, preservation, protection, recharging, and prevention of waste of groundwater, and of groundwater reservoirs or their subdivisions, consistent with the objectives of Section 59, Article XVI, Texas Constitution.

Rule 1.6 Construction.

A reference to a title or chapter without further identification is a reference to a title or chapter of the Texas Water Code. A reference to a section or rule without further identification is a reference to a section or rule in these rules. Construction of words and phrases is governed by the Code Construction Act, Subchapter B, Chapter 311, Texas Government Code. The singular includes the plural, and the plural includes the singular. The masculine includes the feminine, and the feminine includes the masculine.

Rule 1.7 Methods of Service Under the Rules.

Except as provided in these rules, any notice or document required by these rules to be served or delivered may be delivered to the recipient or the recipient's authorized representative in person, by agent, by courier receipted delivery, by certified or registered mail sent to the recipient's last known address, or by fax to the recipient's current fax number and shall be accomplished by 5:00 o'clock p.m. on the date which it is due. Service by mail is complete upon deposit in a post office depository box or other official depository of the United States Postal Service. Service by fax is complete upon transfer, except that any transfer commencing after 5:00 o'clock p.m. shall be deemed complete the following business day. If service or delivery is by mail and the recipient has the right or is required to do some act within a prescribed period of time after service, three days will be added to the prescribed period. If service by other methods has proved unsuccessful, service will be deemed complete upon publication of the notice or document in a newspaper of general circulation in the District.

Rule 1.8 Severability.

If a provision contained in these Rules is for any reason held to be invalid, illegal, or unenforceable in any respect, the invalidity, illegality, or unenforceability does not affect any other rules or provisions of these Rules, and these Rules shall be construed as if the invalid, illegal, or unenforceable provision had never been contained in these Rules.

Rule 1.9 Regulatory Compliance; Other Governmental Entities.

All registrants of the District shall comply with all applicable rules and regulations of the District and of all other governmental entities. If the District Rules and regulations are more stringent than those of other governmental entities, the District Rules and regulations control.

Rule 1.10 Computing Time.

In computing any period of time prescribed or allowed by these rules, order of the Board, or any applicable statute, the day of the act, event, or default from which the designated period of time begins to run is not included, but the last day of the period so computed is included, unless it is a Saturday, Sunday, or legal holiday, in which event the period runs until the end of the next day which is neither a Saturday, Sunday, or legal holiday.

Rule 1.11 Time Limits.

Applications, requests, or other papers or documents required or allowed to be filed under these rules or by law must be received for filing by the District within the time limit for filing, if any. The date of receipt, not the date of posting, is determinative of the time of filing. Time periods set forth in these rules shall be measured by calendar days, unless otherwise specified.

Rule 1.12 Request for Reconsideration.

To appeal a decision of the District, including any determinations made by the General Manager, concerning any matter not specifically covered under any other section of these rules, a request for reconsideration may be filed with the District within twenty (20) calendar days of the date of the decision. Such request for reconsideration must be in writing and must state clear and concise grounds for the request. The Board will make a decision on the request for reconsideration within sixty (60) calendar days thereafter. The failure of the Board to grant or deny the request for reconsideration within sixty (60) calendar days of the date of filing of the request for reconsideration shall constitute a denial of the request.

Rule 1.13 Amending of Rules.

The Board may, following notice and hearing, amend or repeal these rules or adopt new rules from time to time.

SECTION 2.
DISTRICT MANAGEMENT ACTIONS AND DUTIES

Rule 2.1 District Management Plan.

Following notice and hearing, the District shall adopt a Management Plan. The District Management Plan shall specify the acts and procedures and performance and avoidance measures necessary to prevent waste, the reduction of artesian pressure, or the draw-down of the water table using the best available data. The District shall use the Rules to implement the Management Plan. The Board will review the Management Plan at least every five years. Upon adoption of Desired Future Conditions under Section 36.108 Texas Water Code, the District shall update its Management Plan within two years of the date of the adoption of the Desired Future Conditions. The District shall thereafter update its rules to implement the Management Plan within one year of the date the Management Plan is updated to include the adopted Desired Future Conditions. If the Board considers a new Management Plan necessary or desirable based on evidence presented at a hearing, a new Management Plan will be developed and adopted. A Management Plan, once adopted, remains in effect until the subsequent adoption of another Management Plan.

SECTION 3.
WELL REGISTRATION AND PERMITTING

Rule 3.1 Well Registration Required.

(a) Except as otherwise provided in this Section 3.1, all water wells must be registered with the District. All new, exempt wells require the issuance of a Notice to Proceed by the District prior to the drilling of the well. Issuance of a Notice to Proceed by the District evidences the District's review and approval of a registration application for a new, exempt well. All new, non-exempt wells require the issuance of a Production Permit by the District under Rule 3.9 prior to the drilling of the non-exempt well.

(b) The following wells are not required to be registered by the District:

1. Pre-Effective Date Exempt Wells in existence or for which drilling commenced prior to April 1, 2011; and

2. Leachate wells, monitoring wells, and piezometers.

Wells that meet the criteria of this subsection are, however, encouraged to be registered in order to receive the benefits of being classified as an existing well under these Rules, including but not limited to a consideration of the registered well in a review of a proposed new well's spacing requirements and during the permitting process for proposed new non-exempt wells. Wells not registered with the District are not considered in a review of a proposed new well's impact on existing wells.

(c) Failure of a well owner to timely register or amend the registration of a well under this rule shall subject the well owner to enforcement under these rules. A violation of this rule occurs on the first day that the drilling, alteration, modification, or operation occurs, and continues each day thereafter as a separate violation until cessation of the prohibited conduct, or until the well is registered or the registration is amended, as applicable.

(d) All existing wells not exempt from the registration requirements under Subsection (b) of this section that are required to be registered, but that are not registered or for which an administratively complete registration application has not been filed with the District prior to the Effective Date will be presumed to be wells not in existence prior to the Effective Date. Those wells that are not deemed as existing wells under these Rules are considered to be new wells that are required to comply with the spacing requirements under Rule 4.2 and, for non-exempt wells, are not eligible for a Historic Use Permit.

(e) Test holes must be registered with the District in accordance with the terms of this rule. Test holes are not subject to registration fees charged by the District. A plugging report shall be submitted to the District within 30 days of the date the test hole is plugged in accordance with Rule 3.4(c).

Rule 3.2 Well Registration Application.

(a) An owner or well driller, or any other person legally authorized to act on their behalf, must submit and obtain approval of a registration application, submit fees consistent with Rule 9.12, and submit a well report deposit to the District before any new well not exempt from registration under Rule 3.1(b)(2) may be drilled, equipped, or completed, or before an existing well may be substantially altered. For new, non-exempt wells, registration applications shall be submitted in addition to Production Permit applications.

(b) A person seeking to register a well shall provide the District with the following information in the registration application on a form provided by the District:

1. the name and mailing address of the registrant and the owner of the property, if different from the registrant, on which the well is or will be located;

2. if the registrant is other than the owner of the property, documentation establishing the applicable authority to file the application for well registration, serve as the registrant in lieu of the property owner, and construct and operate a well for the proposed use;

3. a statement of the nature and purpose of the existing or proposed use of water from the well;

4. the location or proposed location of the well, identified as a specific point measured by latitudinal and longitudinal coordinates;

5. the location or proposed location of the use of water from the well, if used or proposed to be used at a location other than the location of the well;

6. the production capacity or proposed production capacity of the well, as equipped, in gallons per minute, and the horsepower rating of the pump, as assigned by the pump manufacturer;

7. a water well closure plan or a declaration that the applicant will comply with well plugging guidelines and report closure to the District;

8. a statement that the water withdrawn from the well will be put to beneficial use at all times; and

9. any other information deemed necessary by the Board.

(c) For purposes of determining applicable well spacing and permitting requirements, the information included in a timely filed, administratively complete application for well registration may be used as evidence that the well existed before the Effective Date.

(d) Once a registration is complete, which for new wells also includes receipt by the District of the well report and well completion report required by Rule 3.4, the registration shall be perpetual in nature, subject to being amended or transferred and to enforcement for violations of these Rules.

(e) Notwithstanding any other rule to the contrary, the owner, driller, pump installer, or well service company that is authorized by the owner to complete or operate a new well, substantially alter an existing well, or modify or operate an existing well are jointly responsible for ensuring that a well registration required by this section, or well registration amendment required by Rule 3.6, is timely filed with the District and contains only information that is true and accurate. Each will be subject to enforcement action if a registration or registration amendment required by this section is not timely filed by either, or by any other person legally authorized to act on his or her behalf.

Rule 3.3 General Provisions Applicable to Registrations.

(a) Registration applications may be submitted to the District in person, by mail, by fax, or by internet submission, using the registration form provided by the District.

(b) A determination of administrative completeness of a registration application shall be made by the General Manager within thirty (30) business days after the date of receipt of an application for registration, which must also include fees consistent with Rule 9.12 and a well report deposit to the District. If an application is not administratively complete, the District shall request the applicant to complete the application. The application will expire if the applicant does not complete the application within 120 days of the date of the District's request. A registration application will be considered administratively complete and may be approved by the General Manager without notice or hearing if:

1. it substantially complies with the requirements set forth under Rule 3.2(b), including providing all information required to be included in the application that may be obtained through reasonable diligence; and

2. if it is a registration for a new well:

    (A) includes the well log deposit; and

    (B) proposes a well that complies with the spacing, location, and well completion requirements of Section 4.

A person may appeal the General Manager's ruling on a registration application by filing a written request for a hearing before the Board. The Board will hear the applicant's appeal at the next regular Board meeting. The General Manager may set the application for consideration by the Board at the next available Board meeting or hearing in lieu of approving or denying an application.

(c) Upon approval or denial of an application, the General Manager shall inform the registrant in writing of the approval or denial, as well as whether the well meets the exemptions provided in Rule 3.7 or whether it is subject to the permitting, fee payment, metering and reporting requirements of these rules.

(d) Except as provided under Subsection (e) of this section, a registrant for a new well has 240 days from the date of approval of the application for well registration to drill and complete the new well. If drilling has not commenced within 240 days from the date of approval of the registration application, the well registration expires. However, a registrant may apply for one extension of an additional 240 days or may resubmit an identical well registration without the need to pay any additional administrative fee associated with the submittal of well registrations for new wells. Upon the expiration of a well registration, the District may process a resubmission of an expired registration application only upon the passage of thirty (30) calendar days from the date the previous registration application expired.

(e) A registrant for a new well that is required by state law to be approved by TCEQ prior to operation has 365 days from the date of approval of the registration application to drill and complete the new well, with up to two (2) 365-day extension options authorized under the same filing requirements under Subsection (d) if drilling has not commenced prior to the end of the applicable 365-day period. Any extension requested under this Subsection (e) shall be granted only upon the submission of proof that an extension is warranted as determined by the District. Upon the expiration of a well registration, the District may process a resubmission of an expired registration application only upon the passage of thirty (30) calendar days from the date the previous registration application expired.

(f) A registration application for a well may be filed prior to the filing of a Production Permit application for the well as required under Rule 3.9; provided, however, the Production Permit application must be filed, be declared administratively complete, and be acted on by the District Board within a timeframe that allows the well to be drilled according to the deadline set forth in Subsection (d) or (e) of this rule, as applicable.

(g) If the well report is timely submitted to the District, the District shall return the well report deposit to the owner or well driller. In the event that the well report required under this rule and Rule 3.4 are not filed within the deadline set forth in Rule 3.4(b), the driller or owner shall forfeit the well report deposit and may be subject to enforcement by the District for violation of this rule.

(h) All new wells must be drilled within 30 feet (10 yards) of the location specified in the registration application.

(i) An application pursuant to which a registration has been issued is incorporated in the registration, and the registration is valid contingent upon the accuracy of the information supplied in the registration application. A finding that false information has been supplied in the application may be grounds to refuse to approve the registration or to revoke or suspend the registration.

(j) Submission of a registration application constitutes an acknowledgment by the registrant of receipt of the rules and regulations of the District and agreement that the registrant will comply with all rules and regulations of the District.

(k) The District may amend any registration, in accordance with these rules, to accomplish the purposes of the District Rules, Management Plan, the District Act, or Chapter 36, Texas Water Code.

(l) If multiple wells have been aggregated under one registration and one or more wells under the registration will be transferred, the District will require separate registration applications from each new owner for the wells retained or obtained by that person.

(m) No person shall operate or otherwise produce groundwater from a well required under this Section to be registered with the District before:

1. timely submitting an accurate application for registration, or accurate application to amend an existing registration as applicable, of the well to the District; and

2. obtaining a Notice to Proceed or a Production Permit issued by the District.

Rule 3.4 Records of Drilling, Pump Installation and Alteration Activity, Plugging and Capping.

(a) Each person who drills, deepens, completes or otherwise alters a well shall make, at the time of drilling, deepening, completing or otherwise altering the well, a legible, complete, and accurate well report recorded on the Texas Department of Licensing and Regulation "Well Report" form.

(b) The person who drilled, deepened, completed or otherwise altered a well pursuant to this rule shall, within sixty (60) days after the date the well is drilled, deepened, completed or otherwise altered, file the well report described in Subsection (a) and the well completion report with the District.

(c) Not later than the 30th day after the date a well is plugged, a driller, licensed pump installer, or well owner who plugs the well shall submit a plugging report to the District, which shall be substantially similar in form to the Texas Department of Licensing and Regulation Form a004WWD (Plugging Report) and shall include all information required therein.

(d) The District requires wells to be capped under certain conditions to prevent waste, prevent pollution, or prevent further deterioration of well casing. The well must remain capped until such a time as the condition that led to the capping requirement is eliminated or repaired. A well must be capped in accordance with this rule if the well is inactive and the pump equipment is removed from a well with the intention of re-equipping the well at a later date for future use; provided, however that the casing is not in a deteriorated condition that could result in the commingling of water strata and degradation of water quality, in which case the well must be plugged or repaired in accordance with this rule. The cap must be capable of sustaining a weight of at least 400 pounds when installed on the well and must be constructed in such a way that the covering cannot be easily removed by hand. The driller, licensed pump installer, or well owner who caps a well shall submit to the District a well capping notice on a form provided by the District.

Rule 3.5 Transfer of Well Ownership.

(a) Within ninety (90) days after the date of a change in ownership of a well that is required to be registered under these Rules, the new well owner (transferee) shall file with the District a Transfer of Well Ownership form that provides the name, daytime telephone number, and mailing address of the new well owner, along with any other contact or well-related information reasonably requested by the General Manager. The requirement under this rule to transfer well ownership shall also apply to capped or inactive wells.

(b) If a registrant conveys by any lawful and legally enforceable means to another person the real property interests in one or more wells or a well system that is recognized in the registration so that the transferring party (the transferor) is no longer the well owner, as defined herein, and if an application for Transfer of Well Ownership under Subsection (a) has been approved by the District, the District shall recognize the person to whom such interests were conveyed (the transferee) as the legal owner of the well, subject to the conditions and limitations of these District Rules.

(c) The burden of proof in any proceeding related to a question of well ownership or status as the legal holder of a registration or permit issued by the District and the rights thereunder shall be on the person claiming such ownership or status.

(d) Notwithstanding any provision of this rule to the contrary, no application made pursuant to Subsection (a) of this rule shall be granted by the District unless all outstanding fees, penalties, and compliance matters have first been fully and finally paid or otherwise resolved by the transferring party (transferor) for all wells included in the application or existing registration, and each well and registration made the subject of the application is otherwise in good standing with the District.

(e) The new owner of a well that is the subject of a transfer described in this rule (transferee) may not operate or otherwise produce groundwater from the well after ninety (90) days from the date of the change in ownership until the new owner has submitted a Transfer of Well Ownership if required under this rule.

Rule 3.6 Amendment of Registration.

A registrant of an exempt well shall file an application to amend an existing registration and obtain approval by the District of the application prior to engaging in any activity that would constitute a substantial change from the information in the existing registration. For purposes of this rule, a substantial change includes a change that would substantially alter the pump or well, a change in the type of use of the water produced, the addition of a new well to be included in an already registered aggregate system, a change in location of a well or proposed well, a change of the location of use of the groundwater, or a change in ownership of a well. A substantial change to a non-exempt well requires a permit amendment application under Rule 3.15. A registration amendment is not required for maintenance or repair of a well if the maintenance or repair does not increase the designed production capabilities of the pump.

Rule 3.7 Permit Exclusions and Exemptions.

(a) The permitting requirements of these Rules do not apply to:

1. Wells exempt from registration under Rule 3.1(b);

2. Pre-Effective Date Exempt Wells drilled or for which an administratively complete registration application is on file with the District prior to the Effective Date;

3. Wells registered and drilled on or after the Effective Date that have a capacity to produce 17.36 gallons per minute or less, as equipped; and

4. Wells used for certain limited oil and gas operations as specifically exempted from permitting only under Section 36.117(b) of the Texas Water Code.

(b) Wells exempt from the permitting requirements under Subsection (a)(4) shall meter, report and pay production fees based on groundwater produced from the well in accordance with the District Act and these Rules.

Rule 3.8 Historic Use Permits; Permit By Rule.

(a) The owner of an existing, non-exempt water well or well system that was operational and produced groundwater during the Historic Use Period and was registered or for which an administratively complete registration application is on file with the District as of the Effective Date is eligible for a Historic Use Permit. Wells classified as non-exempt to which a Historic Use Permit may apply include those wells that were subject to the registration, metering, reporting and fee payment requirements under the District's Temporary Rules. Wells that qualify for a Historic Use Permit may be operated in the same manner as the well was operated prior to the Effective Date until such time as a Historic Use Permit is approved by the District. Any changes to a well eligible for a Historic Use Permit prior to issuance of a Historic Use Permit by the District requires a well registration amendment under Rule 3.6.

(b) A Historic Use Permit shall be based on the Maximum Historic Use from the well during the Historic Use Period.

(c) Failure of an owner of a well or well system to have registered and been in compliance with District Rules prior to the Effective Date shall preclude the owner from making any future claim or application to the District for historic use under these Rules, and the owner is required to obtain a Production Permit in order to be able to produce groundwater.

(d) The District shall review the records of those owners with wells that qualify for a Historic Use Permit. After determining the Maximum Historic Use based on District records of production reports and fee payments during the Historic Use Period, the District shall send a letter to each well owner with a well that qualifies for a Historic Use Permit that includes a draft permit for review by the owner. The draft permit shall be signed by the General Manager and shall include the terms set forth in Rule 3.16.

(e) In the event the owner elects to use the Alternate Maximum Historic Use in lieu of the Maximum Historic Use amount, the owner shall notify the District on a form provided by the District within 120 days from the date the owner receives the draft permit from the District. Such an Alternate Maximum Historic Use designation shall include the Texas Water Development Board Water Use Survey records relied on for the applicable production year and a certification that such records are true and accurate copies of that information submitted to the Texas Water Development Board representing groundwater production for calendar year 2010.

(f) Wells drilled and completed within eighteen (18) months prior to the end of the Historic Use Period that have not been in operation for a full calendar year during the Historic Use Period are eligible to have the Historic Use Period extended until December 31, 2019, upon submission of a request on a form provided by the District. Such an extension is intended to allow for wells drilled within eighteen (18) months prior to the end of the Historic Use Period the opportunity to demonstrate the amount of Maximum Historic Use of the well during a one (1) year period prior to the end of the extended Historic Use Period. The amount of Maximum Historic Use of a well under this Subsection (f) shall be demonstrated by meter reading and submitted on a form provided by the District.

(g) The General Manager or well owner eligible for a Historic Use Permit may refer or appeal the matter to the Board, as applicable, through a permit hearing held in accordance with Rule 5.3 to determine the amount of beneficial use from the well during the Historic Use Period.

Rule 3.9 Production Permit.

The owner of a new, non-exempt well must obtain a Production Permit from the District prior to the drilling, construction, or operation of the well or well system. The owner of a new or existing well that is exempt from the District’s permitting requirements, but is subsequently substantially altered in a manner which causes the well to lose its exempt status, must obtain a Production Permit. In addition, the owner of an existing well or well system that has obtained a Historic Use Permit for the well must obtain a Production Permit if any of the following apply:

1. The permit holder intends to produce groundwater in excess of the amount authorized in a Historic Use Permit;

2. The well or well system has been substantially altered in a manner that causes the well or well system to be capable of producing more groundwater from the same aquifer; or

3. The purpose of use of the groundwater produced changes to another type of use other than that authorized in the Historic Use Permit.

Rule 3.10 Application Requirements for Production Permits.

(a) Each original application for Production Permit must contain all of the information as set forth below in this rule. Application forms will be provided on the District's website and can be furnished to the applicant upon request. For well systems, the applicant shall provide the information required in this subsection for each well that is part of the well system. All applications for a permit shall be in writing and sworn to, and shall include the following:

1. name, telephone number, fax number, and mailing address of the applicant and the owner of the land on which the well will be located;

2. if the applicant is other than the owner of the property, documentation establishing the applicable authority to construct and operate a well for the proposed use;

3. the location of each well, including a location map showing the proposed well location;
4. a statement of the nature and purpose of the proposed use and the amount of water to be used for each purpose;
5. a requirement that the water withdrawn under the permit be put to beneficial use at all times;

6. location of the use of the water from the well;

7. the estimated rate at which water will be withdrawn from the well;

8. a declaration that the applicant will comply with the District's Rules and all groundwater use permits and plans promulgated pursuant to the District's Rules;

9. a water conservation plan or a declaration that the applicant will comply with the District's Management Plan;

10. a drought contingency plan, if the applicant is required to prepare a drought contingency plan by other law, or a declaration that the applicant will comply with the District's Drought Contingency Plan;

11. a declaration that the applicant will comply with all District well plugging and capping guidelines and report closure to the District and the appropriate state agencies;

12. if the groundwater is to be resold, leased, or otherwise transferred to others, whether inside or outside of the District, provide the location to which the groundwater will be delivered, the purpose for which the groundwater will be used, and a copy of the legal documents establishing the right for the groundwater to be sold, leased, or otherwise transferred, including but not limited to any contract for the sale, lease, or transfer of groundwater;

13. For wells or well systems with a proposed aggregate production capacity of 200 gpm and above, a Hydrogeological Report that meets all of the requirements of the District's Hydrogeological Report Requirements; and

14. if groundwater is proposed to be transported out of the District, the applicant shall describe the following issues and provide documents relevant to these issues:

    i. availability of water in the District and in the proposed receiving area during the period for which the water supply is requested;
    ii. projected effect of the proposed transport on aquifer conditions, depletion, subsidence, or effects on existing permit holders or other groundwater users within the District; and
    iii. how the proposed transport is consistent with the approved regional water plan and District Management Plan.

(b) Hydrogeological Reports required under Subsection (a)(13) and Rule 3.15 shall be submitted simultaneously with a Production Permit application and shall include all of the required elements of the District's Hydrogeological Report Requirements in order for the Production Permit application to be deemed administratively complete.

Rule 3.11 Administrative Completeness of Production Permit Application.

The District shall promptly consider and act on each administratively complete application for a Production Permit that meets the requirements of Rule 3.10, includes the application fee established by the District under Rule 9.12, and for which the applicant is in compliance with District Rules. If an application is not administratively complete, the District may request the applicant to complete the application as required by these Rules. The application will expire if the applicant does not complete the application within 60 (sixty) days of the date of the District's request or upon conclusion of an extension granted by the General Manager of the District.

Rule 3.12 Considerations for Granting or Denying a Permit Application.

(a) Before granting or denying a Production Permit application, the District must consider whether:

1. the application contains accurate information, all the information requested and is accompanied by the subscribed administrative fees;

2. the water well(s) complies with Chapter 36 of the Texas Water Code, and these Rules, including but not limited to the spacing and production limitations identified in these Rules;

3. the proposed use of water unreasonably affects existing groundwater and surface water resources or existing permit holders;

4. the proposed use of water is dedicated to a beneficial use;

5. the proposed use of water is consistent with the District's Management Plan;

6. the applicant agrees to avoid waste and achieve water conservation;

7. if the applicant is requesting water for the purposes of irrigating an acre or more of landscape, the applicant must agree to install and maintain a smart irrigation controller (weather or soil moisture-based) on the irrigation system;

8. the applicant has agreed that reasonable diligence will be used to protect groundwater quality and that the applicant will follow well plugging guidelines at the time of well closure; and

9. for those hearings conducted by the State Office of Administrative Hearings, the Board shall consider the proposal for decision issued by the State Office of Administrative Hearings.

(b) The District, to the extent possible, shall issue permits up to the point the total volume of exempt and permitted groundwater production will achieve the applicable Desired Future Conditions established for the aquifers in the District. In issuing permits, the District shall manage total groundwater production on a long-term basis to achieve the applicable Desired Future Conditions and shall consider:

1. the Modeled Available Groundwater determined by the Executive Administrator of the Texas Water Development Board;

2. the Executive Administrator of the Texas Water Development Board's estimate, as may be provided by the District, of the current and projected amount of groundwater produced under the exemptions in District Rule 3.7;

3. the amount of groundwater authorized under permits previously issued by the District;

4. a reasonable estimate of the amount of groundwater that is actually produced under permits issued by the District; and

5. yearly precipitation and production patterns.

Rule 3.13 Permit Term.

Except as otherwise specifically provided in the conditions of an individual permit, all permits are perpetual in nature; provided, however, that the District will conduct inspections and will request information from a permit holder from time-to-time as required to ensure the accuracy and integrity of the District's information, and to enforce compliance with District Rules, the District Act, and Chapter 36 of the Texas Water Code. Upon receipt of information that necessitates a permit amendment under Rule 3.15, the District shall notify the well owner in writing that a permit amendment is required prior to the initiation of the permit amendment process.

Rule 3.14 Aggregation of Withdrawal Among Multiple Wells.

Multiple wells that are part of a well system that are owned and operated by the same person or entity may be aggregated under a single permit; provided, however, that wells owned by the same person or entity that produce from different aquifers are not aggregated for purposes of authorized production. All aggregated production shall be based on the maximum amount of production authorized from the specific aquifer, or subdivision thereof, from which the well system produces.

Rule 3.15 Permit Amendment.

(a) Prior to undertaking any action that would exceed the maximum amount of groundwater authorized to be produced under a permit issued by the District, or a change to the location or purpose of use, the capacity of the well, or any other applicable term, condition or restriction of an existing permit, the permit holder must first apply for and obtain a permit amendment. All applications for amendments to any permit issued by the District are subject to the considerations for Production Permits in Rule 3.12, and are subject to the notice and hearing procedures set forth in Rule 5.3. Changes requested to the purpose of use or to increase the amount of annual production under a Historic Use Permit require the issuance of a Production Permit prior to the changes being made.

(b) Requests to modify or increase an existing well or well system that would result in the existing well(s), in total, being equipped to produce 200 gallons per minute or more require the submission of a Hydrogeological Report under Rule 3.10(a)(13).

(c) A permit amendment is not required for any well, well pump, or pump motor repair or maintenance if such repair or maintenance does not substantially alter the well, well pump, or pump motor.

(d) The District may initiate an amendment to a permit as necessary and provided by these Rules. If the District initiates an amendment to a permit, the permit as it existed before the permit amendment process shall remain in effect until the conclusion of the permit amendment or process.

Rule 3.16 Permits Subject to Conditions and Restrictions.

(a) Permits issued by the District may be subject to the conditions and restrictions placed on the rate and amount of withdrawal, the Rules promulgated by the District, and terms and provisions with reference to the equipping of wells or pumps that may be necessary to prevent waste and achieve water conservation, minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure, lessen interference between wells, or to achieve the Desired Future Conditions established for the aquifers in whole or in part within the boundaries of the District. The permittee, by accepting the permit, agrees to abide by any and all groundwater withdrawal regulations established by the District that are currently in place, as well as any and all regulations established by the District in the future. Acceptance of the permit by the person or entity to whom it is issued constitutes acknowledgment of, and agreement to comply with, all of the terms, provisions, conditions, limitations, and restrictions.

(b) All permits shall include, at a minimum, the following conditions:

1. That the permit holder may not exceed the annual amount of production from a well or well system from the specific aquifer authorized under the permit, except as authorized by the District.

2. The permit is granted subject to the District's rules, orders of the District Board of Directors, special provisions, permit conditions, and laws of the State of Texas, including but not limited to Chapter 36 of the Texas Water Code and the District's enabling legislation codified at Chapter 8856 of the Special District Local Laws Code.

3. Acceptance of the permit and production of groundwater under the authority granted constitutes acknowledgement and agreement that the permittee is required to abide by the precise terms of this permit and comply with the District's rules, orders of the District Board of Directors, special provisions, permit conditions, and laws applicable to the permit.

4. Violation of the terms of the permit shall result in enforcement in accordance with the District's Enforcement Policy and Civil Penalty Schedule, Chapter 36 of the Texas Water Code, and the District's enabling legislation codified at Chapter 8856 of the Special District Local Laws Code.

5. The permit does not confer any rights and/or privileges other than those expressly set forth herein.

6. The well(s) identified in the permit shall be installed, equipped, operated, maintained, plugged, capped, or closed, as may be appropriate in accordance with the District's rules.

7. Production shall not exceed the amount of authorized production set forth in the permit.

8. Produced groundwater shall be put to a beneficial use at all times. Operation of the well(s) under the permit shall be conducted in a manner so as to avoid waste, pollution, or harm to groundwater resources.

9. The well site shall be accessible to District representatives and/or agents for inspection during business hours and during emergencies. The permit holder agrees to cooperate fully in any reasonable monitoring or sampling of the well(s).

10. A permit holder shall provide written notice to the District of any change of ownership, name of any authorized representative, well operator, mailing address or telephone number in accordance with District rules.

11. The permit holder shall reduce water production as required by District rules and orders of the Board of Directors, including but not limited to proportional adjustments issued based on achievement of the District's Desired Future Conditions, and/or adjustments due to times of drought and in accordance with the District's Drought Contingency Plan, as applicable.

12. The application and all information pursuant to which the permit has been granted is incorporated therein, and the permit has been granted based on the accuracy thereof. A finding that false information has been supplied to the District shall be grounds for immediate revocation of the permit, and shall subject the permit holder to enforcement.

13. The permit contains all matters approved by the District related to the permittee's authority to use groundwater, and all other matters requested by the permit holder not included in the permit are denied.

14. In the event of a conflict between the terms of the permit and the application and information pursuant to which the permit was granted, the terms of the permit shall prevail.

15. Any other information, special conditions or restrictions deemed necessary by the District.

Rule 3.17 Emergency Authorization.

(a) The General Manager or Board may grant an Emergency Permit authorizing the drilling, equipping, or operation of a well that complies with the spacing requirements of Rule 4.2. An Emergency Permit may be granted without notice, hearing, or further action by the Board, or with such notice and hearing as the General Manager deems practical and necessary under the circumstances.

(b) An Emergency Permit may only be issued upon a finding that:

1. No suitable surface water or permitted groundwater is immediately available to the applicant; and

2. An emergency need for the groundwater exists such that issuance of the permit is necessary to prevent the loss of life or to prevent severe, imminent threats to the public health or safety.

(c) An Emergency Permit may be issued for a term determined by the Board or General Manager based upon the nature and extent of the emergency, but which shall in no event exceed sixty (60) days. Upon expiration of the term, the permit automatically expires and is cancelled.

SECTION 4.
SPACING AND LOCATION OF WELLS; WELL COMPLETION

Rule 4.1 Spacing and Location of Existing Wells.

Wells drilled or for which an administratively complete registration application is filed prior to the Effective Date, shall be drilled in accordance with state law and District rules in effect on the date such drilling commenced or the administratively complete registration application was filed, and are exempt from the spacing and location requirements of these rules to the extent that they were drilled lawfully.

Rule 4.2 Spacing Requirements for All New Wells.

(a) Except as authorized under Rule 4.3, all new wells for which a registration application is filed after the Effective Date shall be required to adhere to the spacing requirements of the District. The owner of a well or well system for which significant plans or funding related to the drilling thereof have been developed prior to the Effective Date may submit evidence to the District in order for the District to consider whether the well or well system qualifies under Rule 4.1 for spacing purposes only.

(b) The minimum distance from the property line for all new wells shall be fifty (50) feet for all aquifers within the District. The minimum distance from existing registered wells completed in the same aquifer is based upon the capacity of the proposed new well. Wells equipped so that the maximum production capacity is 17.36 gpm (25,000 gallons per day) or less are required to be located no less than one-hundred (100) feet from existing registered wells for all aquifers within the District. The Spacing Formula for new wells that are proposed to be equipped so that the maximum production capacity is more than 17.36 gpm (25,000 gallons per day) requires wells to be located at a total distance (in feet) of not less than the sum of 1,175 feet plus 1.2 multiplied by the maximum production capacity of the proposed well (in gpm) for all aquifers within the District. The following table summarizes the District's spacing requirements:

Minimum Spacing Requirements for All New Wells in the District
Applies to all aquifers

Maximum Capacity of Well	Spacing from Property Line	Spacing from Existing Wells Completed in the Same Aquifer (in feet)
17.36 gpm or less	**50 feet**	**100 feet**
Greater than 17.36 gpm	**50 feet**	**1,175 feet + [1.2 x (gpm of proposed well)]**

(c) A person who drills a well in violation of the applicable spacing requirements of this rule may be required to recomplete or reconstruct the well in accordance with the District's rules, and may be ordered to plug the well deemed to be in violation.

(d) An administratively complete registration application approved by the District or a spacing exception granted by the District Board pursuant to Rule 4.3 shall reserve a well site for the duration of time before the well is drilled or upon expiration of the deadline set forth in Rule 3.3(d) or (e), as applicable.

Rule 4.3 Exceptions to Spacing Requirements.

(a) If an exception to the spacing requirements of the District is desired, a person shall submit an application on a form provided by the District. In the application, the applicant must explain the circumstances justifying an exception to the spacing requirements of the District. The application must include a boundary survey or sketch, drawn to scale, one inch equaling two-hundred (200) feet. The boundary survey or sketch must show the property lines in the immediate area and show accurately, to scale, all existing wells within the applicable spacing distance under Rule 4.2 of the proposed well site. The application and boundary survey or sketch must be certified by a person acquainted with the facts who shall state that the facts contained in the application are true and correct.

(b) An exception to the property line and existing well spacing requirements shall be automatically granted upon receipt of an application under Subsection (a) that includes evidence and a sworn statement by the landowner or well owner, as applicable, that the abutting land or existing well to which a spacing exception is requested is owned by the same person as the proposed well.

(c) An exception may be granted by the Board after written notice has been given by the applicant by mailing notice by certified mail, return receipt requested, to all existing registered wells or all adjacent property owners, as applicable, located within the minimum required distance from the proposed well site. Such an exception may only be granted by the Board after a public hearing at which all interested parties may appear and be heard, except as otherwise provided in Subsection (d). Proof of the mailed notice shall be given to the General Manager by the applicant no less than twenty (20) days prior to the date of the public hearing on the spacing exception request. The District may require the applicant or any interested party that appears or submits information protesting the spacing exception request to provide additional information in order for the Board to further evaluate the exception request.

(d) If all existing well and/or property owners within the applicable spacing distance for which an exception is sought execute a certified waiver in writing, stating that they do not object to the granting of the exception, the District may proceed, upon notice to the applicant only and without hearing, and take action to grant or deny the exception in full or in part.

(e) Grounds for granting a spacing exception from an existing well may include evidence that the well proposed in the application will produce groundwater from a different aquifer subdivision other than that from existing wells within the minimum required distance from the proposed well.

(f) If the Board approves a spacing exception for a non-exempt well, the Board may limit the production of the well under the Production Permit to prevent or limit injury to existing well owners or the applicable aquifer or subdivision thereof.

Rule 4.4 Standards of Completion for All New Wells.

(a) All wells must be completed in accordance with the well completion standards set forth under the Texas Water Well Drillers and Pump Installers Administrative Rules, Title 16, Part 4, Chapter 76, Texas Administrative Code, and under these Rules. Artificial flow restrictors that can in any way affect the measurement of the capacity of a well as equipped are strictly prohibited until after the District has been able to perform a flow test on the well. Flow tests conducted by the District shall be completed according to the District's Flow Testing Procedure manual adopted by the District Board.

(b) In addition to the requirements under Subsection (a), all new wells, re-completed wells, and wells that are re-worked in a manner that involves removal of the pump from the well for any reason shall be equipped in such a manner as to allow the measurement of the water level in the aquifer supplying water to the well. The driller or well owner is responsible for ensuring that the completed well complies with this subsection.

(c) Water well drillers shall indicate the method of completion performed on the well report and shall indicate the water level upon completion of the well.

(d) To prevent the commingling of water between the aquifers which can result in a loss of artesian (or static) head pressure or the degradation of water quality, each well penetrating more than one aquifer or subdivision thereof must be completed in a manner so as to prevent the commingling of groundwater between aquifers or between subdivisions of an aquifer if required by the Texas Water Well Drillers and Pump Installers Administrative Rules, Title 16, Part 4, Chapter 76, Texas Administrative Code. The driller shall indicate the method of completion used to prevent the commingling of water on the well report. The well driller may use any lawful method of completion calculated to prevent the commingling of groundwater.

(e) All wells drilled on or after April 1, 2017, must be equipped with either one of the following water quality control devices for the purpose of preventing the siphoning of external water and contaminants into the well:

1. a backflow prevention device installed downstream of the well head so that it is readily accessible for maintenance or replacement; or

2. an air gap installed at the well discharge location.

A device installed under this subsection is subject to inspection and testing by the District.

(f) Wells drilled on or after April 1, 2017, shall meet at least one of the following completion standards:

1. the well shall be completed in a manner that exposes fourteen (14) inches or fifteen (15) pipe diameters, whichever is greater, of straight and unobstructed discharge pipe above ground so that the District's flow metering measurement device can measure the flow rate;

2. provide a tee above ground with the same pipe diameter requirements as Subsection (f)(1) and with valves arranged in a manner to divert 100% of the discharge to one side of the tee temporarily so that the District's flow metering device can measure the flow rate; or

3. equip the well with a meter that is easily accessible and measures instantaneous flow rate.

(g) The District shall test the flow rate of all new wells through one of the following methods:

1. At the well head before the well is tied into the system that it will ultimately serve; or

2. Through a bypass installed immediately downstream of the meter, but located within fifty (50) feet downstream of the well head.

A "bypass" as the term is used in this rule means an installation downstream of the meter that is of equal size to the discharge pipe so that there is unobstructed flow for purposes of measuring the maximum flow capacity from a well. A Variable Frequency Drive installed on a well must be set at one-hundred percent (100%) speed during the flow test performed by the District.

(h) In order to protect water quality, the integrity of the well, or loss of groundwater from the well, the District may impose additional well completion requirements on any well as determined necessary or appropriate by the Board.

Rule 4.5 Replacement Wells.

(a) No person may replace an existing well without first having obtained authorization from the District. Authorization for the construction of a replacement well may only be granted following the submission to the District of an application for registration of a replacement well on a form provided by the District. Authority to replace an existing well applies only to wells registered as of the Effective Date. The application for registration of a replacement well shall include a diagram of the property that depicts both the proposed replacement well and the well being replaced, and any other structures on the property.

(b) Applications for registration of replacement wells submitted under this rule may be granted by the General Manager without notice or hearing. An applicant may appeal the General Manager's ruling by filing a written request before the Board. The Board will hear such an appeal at the next available regular Board meeting or hearing called for that purpose.

(c) A replacement well must be actually drilled and completed so that it is located within fifty (50) feet of the well being replaced. A replacement well shall be drilled in the same aquifer as the well being replaced. A replacement well shall be drilled so that it is located farther away from the nearest existing registered well than the well being replaced if possible based on property configuration. The replacement well and pump must not be larger in designed production capacity than the well and pump being replaced.

(d) The well owner must cease all production from the well being replaced immediately upon commencing production from the replacement well, and must plug the well being replaced within ninety (90) days from the date that the replacement well is completed.

(e) For those applications submitted to replace a well that also include a request to increase the capacity of the replacement well beyond that of the well being replaced, the spacing requirements of Rule 4.2 shall apply only to the increase in capacity over that of the well being replaced. A Production Permit or permit amendment shall also be required for the increase in capacity over that of the well being replaced if required by Rules 3.9 or 3.15. Increasing the capacity of the replacement well from that being replaced will result in forfeiture of any applicable exemptions under Rule 3.7(a).

SECTION 5.
HEARINGS OF THE DISTRICT

Rule 5.1 Hearings Generally.

(a) A public hearing may be held on any matter within the jurisdiction of the Board, or if the Board deems a hearing to be in the public interest or necessary to effectively carry out the duties and responsibilities of the District. The District conducts four general types of hearings under this Section:

1. rulemaking or Management Plan hearings involving matters of general applicability that implement, interpret, or prescribe the law or District policy, or that describe the procedure or practice requirements of the District;

2. hearings involving the issuance of Production Permits or permit amendments, in which the rights, duties, or privileges of a party are determined after an opportunity for an adjudicative hearing;

3. show cause hearings, in which the obligation and authority of the District to impose civil penalties is considered under specific relevant circumstances, as set forth in Rule 11.6; and

4. hearings on the Desired Future Conditions proposed for the District.

(b) Any matter designated for hearing before the Board may be heard by a quorum of the Board, referred by the Board for a hearing before a hearing examiner, by a quorum of the Board along with an appointed hearing examiner who officiates during the hearing, or by the State Office of Administrative Hearings if required under Rule 5.4(b).

(c) Any hearing may be scheduled during the District's regular business hours, Monday through Friday of each week, except District holidays. All hearings shall be held at the location set forth in the notice. Any hearing may be continued from time to time and date to date without notice after providing the initial notice.

Rule 5.2 Rulemaking Hearings.

(a) Rulemaking hearing notice shall include a brief explanation of the subject matter of the hearing, the time, date, and place of the hearing, location or internet site at which a copy of the proposed rules may be reviewed or copied, if the District has a functioning internet site, and any other information deemed relevant by the General Manager or the Board.

(b) Not less than 20 calendar days prior to the date of the hearing, the General Manager shall:

1. Post notice in a place readily accessible to the public at the District office;

2. Provide notice to the county clerks within the District;

3. Publish notice in one or more newspapers of general circulation in the District;

4. Provide notice by mail, facsimile, or electronic mail to any person who has requested rulemaking hearing notice; and

5. Make available a copy of all proposed rules at a place accessible to the public during normal business hours, and post an electronic copy on the District's internet site.

(c) A person may submit to the District a written request for notice of a rulemaking hearing. A request is effective for the remainder of the calendar year in which the request is received by the District. To receive notice of a rulemaking hearing in a later year, a person must submit a new request. An affidavit of an officer or employee of the District establishing attempted service by first class mail, facsimile, or e-mail to the person in accordance with the information provided by the person is proof that notice was provided by the District.

(d) Failure to provide notice under Subsection (c) does not invalidate an action taken by the District at a rulemaking hearing.

(e) A person participating in a rulemaking hearing shall complete a hearing registration form stating the person's name, address, and whom the person represents, if applicable.

(f) The District shall prepare and keep a record of each rulemaking hearing in the form of an audio or video recording or a court reporter transcription.

(g) The District may use an informal conference or consultation to obtain the opinions and advice of interested persons about contemplated rules and may appoint advisory committees of experts, interested persons, or public representatives to advise the District about contemplated rules.

Rule 5.3 Permit Hearings.

(a) If the General Manager or Board schedules a hearing on an application for a Historic Use Permit, Production Permit, permit amendment or permit revocation, the General Manager shall give notice of the hearing as provided in this section. The General Manager or Board may schedule more than one permit application for consideration at a hearing.

(b) Any person having an interest in the subject matter of a permit hearing may receive written notice of the hearing if the person submits to the District a written request to receive notice of the hearing. The request remains valid for a period of one year from the date of the request, after which time a new request must be submitted. Failure by the District to provide written notice to a person under this Subsection does not invalidate any action taken by the Board.

(c) Not later than the 10th day before the date of a permit hearing, the General Manager shall:

1. Post notice at a place readily accessible to the public in the District office;

2. Provide notice to the county clerk of all counties within the District, whereby the county clerks must post the notice on a bulletin board at a place convenient to the public;

3. Provide notice by regular mail to the applicant; and

4. Provide notice by mail, fax, or email to any person who has specifically requested to receive notices of permit hearings.

(d) The notice provided under Subsection (c) must include:

1. the name and address of the applicant;

2. the address or approximate location of the well or proposed well;

3. a brief explanation, including any requested amount of groundwater, the purpose of the proposed use, and any change in use, if applicable;

4. a general explanation of the manner by which a person may contest the permit, or permit amendment;

5. the time, date, and location of the hearing; and

6. any other information the Board or General Manager deems relevant and appropriate to include in the notice.

(e) An administratively complete application shall be set for a hearing within sixty (60) days after the date the application is determined to be administratively complete. A hearing shall be held within thirty-five (35) days after the setting of the date, and the District shall act on the application within sixty (60) days after the date the final hearing on the application is concluded.

Rule 5.4 Contested Permit Hearings.

(a) The General Manager, the applicant, or an affected person may request a contested hearing on an application for a permit or permit amendment. A request for a contested hearing is distinguished from public comment on an application, and shall be filed not later than five (5) calendar days before the scheduled hearing date, and shall include the following information:

1. The name, address, telephone number and email address of the person filing the request. If the request is made by a group or association, the request must identify the primary contact person responsible for receiving all official communications on behalf of the group or association;

2. The person or entity's personal justiciable interest affected by the application and proposed withdrawal, including a statement demonstrating how that interest is not common to members of the general public; and

3. Specifically request a contested hearing.

(b) A request for a contested hearing to be conducted by the State Office of Administrative Hearings pursuant to Section 36.416 of the Texas Water Code shall be made not later than five (5) calendar days before the scheduled hearing date. If timely requested under this section, the District shall contract with the State Office of Administrative Hearings to conduct the hearing on the application.

Rule 5.5 Preliminary Hearing for Contested Application.

(a) Upon the timely filing of a contested hearing request that meets the requirements of Rule 5.4, the District shall schedule a preliminary hearing on the application. The preliminary hearing may be conducted by a quorum of the Board, a Hearing Examiner, or the State Office of Administrative Hearings.

(b) Parties to a contested hearing shall be designated at the preliminary hearing. Unless the District is required to contract with the State Office of Administrative Hearings to conduct the contested hearing, the District may conduct the preliminary hearing on the same day and immediately before the evidentiary hearing on an application.

(c) If the District determines that no person requesting a contested hearing has standing or that no justiciable issues are presented, the Board may take any action authorized under Rule 5.6(a).

Rule 5.6 Action on Uncontested Application.

(a) The Board may take action on any uncontested application at a properly noticed public meeting held at any time after the public hearing at which the application is scheduled to be heard. The Board may issue a written order to:

1. grant the permit application;

2. grant the permit application with special conditions; or

3. deny the permit application.

(b) An applicant may, not later than the 20th day after the date the Board issues an order granting the application, request a contested case hearing if the order:

1. includes special conditions that were not part of the application as finally submitted; or

2. grants a maximum amount of groundwater production that is less than the amount requested in the application.

Rule 5.7 Contested Case Hearings Conducted by the State Office of Administrative Hearings.

(a) If timely requested by the applicant or other party to a contested case hearing, the District shall contract with the State Office of Administrative Hearings to conduct the hearing on the application. The Board shall determine whether the hearing held by the State Office of Administrative Hearings will be held in Travis County or at the District office or other regular meeting place of the Board.

(b) The party requesting that the hearing be conducted by the State Office of Administrative

Hearings shall pay all costs associated with the contract for the hearing and shall make a deposit with the District in an amount that is sufficient to pay the estimated contract amount before the hearing begins. If the total cost for the contract exceeds the amount deposited by the paying party at the conclusion of the hearing, the party that requested the hearing shall pay the remaining amount due to pay the final price of the contract. If there are unused funds remaining from the deposit at the conclusion of the hearing, the unused funds shall be refunded to the paying party. The District may assess other costs related to hearings conducted under this rule as authorized under Chapter 36, Texas Water Code, or the District Rules.

(c) The administrative law judge who conducts a contested case hearing shall consider applicable District rules or policies in conducting the hearing. The District shall provide the administrative law judge with a written statement of applicable rules or policies.

(d) The District Board may change a finding of fact or conclusion of law made by the administrative law judge, or may vacate or modify an order issued by the administrative judge, only if the Board determines:

1. that the administrative law judge did not properly apply or interpret applicable law, District rules, written policies provided under Section 36.416(e) of the Texas Water Code, or prior administrative decisions;

2. that a prior administrative decision on which the administrative law judge relied is incorrect or should be changed; or

3. that a technical error in a finding of fact should be changed.

Rule 5.8 Procedures for Permit Hearings Conducted by the District.

(a) Authority of Presiding Officer: The Presiding Officer may conduct the hearing or other proceeding in the manner the Presiding Officer deems most appropriate for the particular hearing. The Presiding Officer has the authority to:

1. set hearing dates, other than the hearing date set by the General Manager or Board under Rule 5.3;

2. convene the hearing at the time and place specified in the notice for public hearing;

3. designate the parties to a hearing;

4. admit evidence that is relevant to an issue at the hearing, exclude evidence that is irrelevant, immaterial, or unduly repetitious, and rule on motions and on the admissibility of evidence;

5. establish the order for presentation of evidence;

6. administer oaths to all persons presenting testimony;

7. examine witnesses;

8. ensure that information and testimony are introduced as conveniently and expeditiously as possible, without prejudicing the rights of any person participating in the proceeding;

9. Conduct public hearings in an orderly manner in accordance with these rules;

10. recess any hearing from time to time and place to place; and

11. exercise any other appropriate powers necessary or convenient to effectively carry out the responsibilities of Presiding Officer.

(b) Hearing Registration Forms: Each person attending and participating in a permit hearing of the District must submit on a form provided by the District the following information: the person's name; the person's address; who the person represents if other than himself; whether the person wishes to provide public comment or testify; and any other information relevant to the hearing.

(c) Public Comment: Documents that are filed with the Board that comment on an application, but that do not request a hearing will be treated as public comment. The Presiding Officer may allow any person, including the General Manager or a District employee, to provide comments at a hearing on an uncontested application.

(d) Any interested person may appear at a hearing in person or may appear by representative provided the representative is fully authorized to speak and act for the principal. Such person or representative may present evidence, exhibits, or testimony, or make an oral presentation as determined by the Board. Any partner may appear on behalf of a partnership. A duly authorized officer or agent of a public or private corporation, political subdivision, governmental agency, municipality, association, firm, or other entity may appear on behalf of the entity. A fiduciary may appear for a ward, trust, or estate. A person appearing in a representative capacity may be required to prove proper authority.

(e) After the Presiding Officer calls a hearing to order, the Presiding Officer shall announce the subject matter of the hearing and the order and procedure for presentation.

(f) The Presiding Officer may prescribe reasonable time limits for the presentation of evidence and oral argument.

(g) If the Board has not acted on the application, in the discretion of the Presiding Officer, any person who testifies at a hearing may supplement that testimony by filing additional written material with the Presiding Officer within ten (10) days after the date of conclusion of the hearing. A person who files additional written material with the Presiding Officer must also provide the material, not later than the 10th day after the date of the hearing, to any person who provided comments on an uncontested application or any party to a contested hearing.

A person who receives additional written material under this Subsection may file a response to the material with the Presiding Officer not later than the 10th day after the date the material was received. Cumulative, repetitive, and unduly burdensome evidence filed under this Subsection will not be considered by the Board.

(h) Every person, representative, witness, and other participant in a proceeding must conform to ethical standards of conduct and must exhibit courtesy and respect for all other participants. No person may engage in any activity during a proceeding that interferes with the orderly conduct of District business. If in the judgment of the Presiding Officer, a person is acting in violation of this provision, the Presiding Officer will first warn the person to refrain from engaging in such conduct. Upon further violation by the same person, the Presiding Officer may exclude that person from the proceeding for such time and under such conditions as the Presiding Officer deems necessary.

(i) Written testimony: When a proceeding will be expedited and the interest of the persons participating in the hearing will not be prejudiced substantially, testimony may be received in written form. The written testimony of a witness, either in narrative or question and answer form, may be admitted into evidence upon the witness being sworn and identifying the testimony as a true and accurate record of what the testimony would be if given orally. On the motion of a party to the hearing, the Presiding Officer may exclude written testimony if the person who submits the testimony is not available for cross-examination by phone, a deposition before the hearing, or other reasonable means.

(j) No person will be allowed to appear in any hearing or other proceeding whose appearance, in the opinion of the Presiding Officer, is for the sole purpose of unduly broadening the issues to be considered in the hearing or other proceeding.

(k) A record of a hearing in the form of an audio or video recording or a court reporter transcription shall be prepared and kept by the Presiding Officer in a contested hearing. The Presiding Officer shall have the hearing transcribed by a court reporter upon a request by a party to a contested hearing. The Presiding Officer may assess court reporter transcription costs against the party requesting the transcription or among the parties to the hearing. The Presiding Officer may exclude a party from further participation in a hearing for failure to pay in a timely manner costs assessed against that party under this rule, unless the parties have agreed that the costs assessed against such party will be paid by another party.

Rule 5.9 Board Action.

The Board shall act on a permit or permit amendment application not later than the 60th day after the date the final hearing on the application is concluded. For hearings conducted by the State Office of Administrative Hearings, the Board shall make the final decision on the application within 60 days after the issuance of the proposal for decision by the State Office of Administrative Hearings. In a hearing in which the District has contracted with the State Office of Administrative Hearings to conduct the contested case hearing, the Board has the authority to make a final decision on consideration of a proposal for decision issued by the State Office of Administrative Hearings administrative law judge consistent with Section 2001.058, Texas Government Code.

Rule 5.10 Request for Rehearing or Findings and Conclusions.

(a) An applicant in a contested or uncontested hearing on an application or a party to a contested hearing may appeal a decision of the Board by requesting written findings of fact and conclusions of law within twenty (20) calendar days of the date of the Board's decision. On receipt of a timely written request, the Board shall make written findings of fact and conclusions of law regarding a decision of the Board on a permit or permit amendment application. The Board shall provide certified copies of the findings and conclusions to the party who requested them, and to each designated party, not later than the 35th day after the date the Board receives the request.

(b) A party who receives a certified copy of the findings and conclusions from the Board may request a rehearing before the Board not later than the 20th day after the date the Board issues the findings and conclusions. In a contested case, a party must first make a request for written findings and conclusions under District Rule 5.10 before any party to the contested case may submit a request for rehearing under this rule.

(c) A request for rehearing must be filed with the District in writing and must state clear and concise grounds for the request. The person requesting a rehearing must provide copies of the request to all parties to the hearing. With respect to any decision or action of the Board in a contested case, such a request for rehearing is mandatory before any appeal to District Court may be brought. Any appeal to District Court shall be limited to the issues and grounds raised in the motion for rehearing.

Rule 5.11 Final Decision.

(a) A decision by the Board on a permit or permit amendment application is final:

1. If a request for rehearing is not filed on time, on the expiration of the period for filing a request for rehearing; or

2. If a request for rehearing is filed on time, on the date:

   (A) the Board denies the request for rehearing either expressly or by operation of law; or

   (B) the Board renders a written decision after rehearing.

(b) Except as provided by Subsection (c), an applicant or a party to a contested hearing may file suit against the District under Section 36.251, Texas Water Code, to appeal a decision on a permit or permit amendment application not later than the 60th day after the date on which the decision becomes final.

(c) An applicant or a party to a contested hearing may not file suit against the District under

Section 36.251, Texas Water Code, if a request for rehearing was not filed on time.

SECTION 6.
PRODUCTION LIMITATIONS; DROUGHT BUFFER; MANAGEMENT ZONE AND PROPORTIONAL REDUCTION AUTHORITY

Rule 6.1 Production Limits for Permits.

The District shall designate the maximum quantity of groundwater authorized to be produced on an annual basis under each Historic Use Permit and Production Permit issued by the District pursuant to the conditions of the District Act, Chapter 36 of the Texas Water Code, the Desired Future Conditions established by Groundwater Management Area 8, as adopted by the District, in which the District is located, for the aquifers located in whole or in part within the boundaries of the District, and these Rules. Except as otherwise provided in these Rules, the quantity withdrawn under a Historic Use Permit or Production Permit shall not exceed the maximum amount of groundwater designated in the permit issued by the District.

Rule 6.2 Temporary Drought Buffer.

(a) The District shall adopt a Drought Contingency Plan that establishes voluntary conservation strategies applicable to various drought stages declared by the District. The drought stages set forth in the Drought Contingency Plan shall be based upon those recognized by the Texas Water Development Board, as follows:

1. Abnormally dry conditions;
2. Drought – Moderate;
3. Drought – Severe;
4. Drought – Extreme; and
5. Drought – Exceptional.

(b) The declaration of each drought stage under the Drought Contingency Plan shall occur based on the most recent Texas Water Development Board Monthly Drought Report as specified for the counties within the District. In the event one or more of the counties within the District are at least partially included in a Drought-Extreme or Drought-Exceptional status, the District's Drought Buffer shall apply to some or all of the permits issued by the District as determined according to the District's Drought Contingency Plan. Issuance of a Drought Buffer declaration by the District according to the Drought Contingency Plan shall result in the affected permits' production limits set forth under Rule 6.1 being adjusted upward by fifteen percent (15%) of the maximum quantity of groundwater authorized under the permit. The Drought Buffer shall remain in place until the District suspends the Drought Buffer under this rule based upon improvement of the drought status according to the Texas Water Development Board Monthly Drought Report.

Rule 6.3 Authority to Establish Management Zones.

(a) Using the best hydrogeologic and other relevant scientific data readily available, the Board by resolution may create specific management zones within the District based on geographically or hydrogeologically defined areas, aquifers, or aquifer subdivisions, in whole or in part, within which the District may:

1. assess water availability;

2. assess water quality;

3. establish more restrictive spacing requirements;

4. authorize total production and make proportional adjustments to permitted withdrawals; and

5. otherwise undertake efforts to manage the groundwater resources in a manner that is consistent with the District Act, Chapter 36, Texas Water Code, and that aids in the attainment of all applicable Desired Future Conditions established for the aquifers located in whole or in part within the boundaries of the District.

(b) In creating management zones, the Board shall attempt to establish zone boundaries that will promote fairness and efficiency by the District in its management of groundwater, while considering hydrogeologic conditions and the Desired Future Conditions established for the aquifers located in whole or in part within the boundaries of the District.

Rule 6.4 Proportional Adjustment.

(a) The Board, by resolution, may establish proportional adjustment reductions to alter the amount of production allowed from an aquifer within the District if reductions are required under these rules, and/or if reductions are required within one or more Management Zones, if necessary to avoid impairment of and to achieve the applicable Desired Future Conditions established for the aquifers located in whole or in part within the boundaries of the District.

(b) When establishing proportional adjustment restrictions, the Board shall first set aside an amount of groundwater equal to an estimate of total exempt use for each aquifer. If the proportional adjustment restrictions are to be imposed for a particular aquifer in a particular Management Zone, the Board shall first set aside an amount of groundwater equal to an estimate of total exempt use for each aquifer within that particular Management Zone.

(c) After first setting aside an amount of groundwater for exempt use for each aquifer, the Board shall allocate groundwater next to Historic Use Permits according to the permitted amount in each or a proportion thereof, and then to Production Permits according to the permitted amount in each or a proportion thereof.

(d) When establishing proportional adjustment restrictions that contemplate the reduction of authorized production, the Board may choose to proportionately reduce existing permits on a pro rata basis according to the order stated herein to allow for new production.

Rule 6.5 Issuance of New Production Permits.

In a management zone where the Board has already established proportional adjustment regulations, new Production Permits may be issued by the District for production in the management zone only if the management zone contains groundwater available for permitting after the District has made any and all proportional adjustments to existing permits in a manner that is consistent with the achievement of the Desired Future Conditions established for the aquifers located in whole or in part within the boundaries of the District.

SECTION 7.
AQUIFER STORAGE AND RECOVERY WELLS AND BRACKISH PRODUCTION ZONES

Rule 7.1 Registration Required.

A project operator of an Aquifer Storage and Recovery project shall register the injection and recovery wells associated with the project with the District, and shall provide the District with all reports required to be submitted to TCEQ under Sections 27.155-.156 of the Texas Water Code.

Rule 7.2 No Permit Required; No Water Use Fee Imposed on Authorized Recovery.

Except as provided by Rule 7.3, no permit is required for the drilling, equipping, or operation of an Aquifer Storage and Recovery injection or recovery well authorized by TCEQ. Similarly, no water use fee or transport fee will be imposed on the volume of groundwater authorized by TCEQ to be recovered under an Aquifer Storage and Recovery project. The District may, however, assess a well registration fee or other similar administrative fee for an Aquifer Storage and Recovery well.

Rule 7.3 Exceeding Authorized Recovery Volume.

(a) If an Aquifer Storage and Recovery project recovers an amount of groundwater that exceeds the volume authorized by the TCEQ to be recovered under the project, the project operator shall immediately report to the District the volume of groundwater recovered that exceeds the volume authorized to be recovered in addition to providing the reports required by Rule 7.1.

(b) The recovery wells associated with an Aquifer Storage and Recovery project are subject to the District’s spacing, permitting, metering, production and fee payment requirements if the amount of groundwater recovered from the wells exceeds the authorized volume to be recovered under the project. The District’s spacing, permitting, metering, production and fee payment requirements only apply to the volume of groundwater recovered that exceeds the recovery volume authorized by the TCEQ.

Rule 7.4 Desired Future Conditions Planning.

The District may consider hydrogeologic conditions related to the injection and recovery of water as part of an Aquifer Storage and Recovery project in the planning related to, and monitoring of the achievement of, a Desired Future Condition for the aquifer in which the injection and recovery wells associated with the project are located.

Rule 7.5 Adoption of Rules for Permits in Brackish Production Zones

Upon receipt of a petition meeting the requirements of Section 36.1015, Texas Water Code, the District shall adopt rules governing the issuance of permits authorizing the completion and operation of a water well used for the withdrawal of brackish groundwater from a brackish groundwater production zone designated by the Texas Water Development Board, or its successor agency.

SECTION 8.
TRANSPORTATION OF GROUNDWATER OUT OF THE DISTRICT

Rule 8.1 General Provisions.

(a) A person who produces or wishes to produce water from a well located within the District and transport such water for use outside of the District must report and submit timely payment of any applicable Groundwater Transport Fee to the District under Rule 9.3 for any water transported out of the District. The District may require the person to install any meters necessary to report the total amount of groundwater transported outside of the District for reporting purposes and for purposes of calculating the Groundwater Transport Fee.

(b) The District may not, in a manner inconsistent with rules and fees applied to production and use occurring wholly within the boundaries of the District, regulate production of groundwater or assess fees against the transport of water produced in an area of a retail public utility that is located inside the District boundaries and transported for use to an area that is within the same retail public utility but that is located outside the District boundaries if the majority of the geographic area of the retail public utility's boundaries or defined service area is within the boundaries of the District and the majority of the groundwater produced is used within the boundaries of the District. If conditions change over time such that the majority of such geographic area or use is not within the boundaries of the District, the groundwater transported for use outside of the District shall be assessed the Groundwater Transport Fee.

Rule 8.2 Reporting.

A person transporting groundwater for use outside of the District and subject to the requirement to pay the Groundwater Transport Fee shall file quarterly reports with the District describing the amount of water transported and used outside the District. The report shall be filed with the District in the same manner, for the same reporting periods, and by the same deadlines set forth for Water Production Reports under Rule 9.1. The report for groundwater transported shall be on the appropriate form provided by the District and shall state the following:

1. the name of the person;

2. the well registration numbers of each well from which the person has produced groundwater transported for use outside the District;

3. the total amount of groundwater produced from each well or well system during the immediately preceding reporting period;

4. the total amount of groundwater transported outside of the District from each well, well system, or surface impoundment containing produced groundwater during each month of the immediately preceding reporting period;

5. the purposes for which the water was transported; and

6. any other information requested by the District.

SECTION 9.
WATER PRODUCTION REPORTING AND FEES

Rule 9.1 Water Production Reports.

(a) The owner of any non-exempt well within the District must submit, through regular mail, facsimile, electronic mail, hand delivery, or the District's online reporting system, a quarterly report on a form provided or approved by the District.

(b) There shall be four quarterly reporting periods each year: January 1 to March 31, April 1 to June 30, July 1 to September 30, and October 1 to December 31. The report for each quarter shall be due no later than 30 days after the last day of the applicable quarterly reporting period. To comply with this rule, each water meter required to be installed on a well under these Rules shall be read and recorded on a meter log within ten (10) days before or after the last day of each month, which shall be reported to the District on a quarterly basis. Additionally, to comply with this rule, all applicable information required under Subsection (a) must be contained in the water production report filed with the District.

(c) For any fee payment exemptions requested under Rule 9.2(c), the quarterly report shall include:

1. the total amount of groundwater produced or used, as applicable, solely for the fee

exempted purpose during each month of the reporting period provided for under this rule; and

2. the total amount of groundwater produced or used, as applicable, for any purpose other than for the fee exempted purpose during each month of the reporting period provided for under this rule.

(d) The report required by Subsection (a) must also include a true and correct copy of the monthly meter log required by District Rule 10.5. All such reports and logs may be submitted via internet on the District's well registration website.

(e) If a non-exempt well owner is not using an existing well and would like to be exempt from the requirement to submit quarterly production reports, the well owner can enter the well into the District's Well Monitoring Program. The well owner must contact the District to first see if the well is a candidate for the District's Well Monitoring Program. By entering the well into the program, the well owner agrees that District staff will visit the site at least annually to collect data and to confirm no usage on the meter during the visit(s).

Rule 9.2 Water Use Fees.

(a) A water use fee rate schedule shall be established by Board resolution annually at least 60 days before the end of the calendar year. The Board may adopt a different water use fee rate for water used for agricultural purposes than for water used for non-agricultural purposes. The rate shall be applied to the groundwater pumpage in the ensuing calendar year for each non-exempt well. The District will review the account of any person changing the use of a well from non-exempt to exempt or vice versa to determine if additional water use fees are due or if a refund of water use fees is warranted.

(b) No later than 30 days prior to the end of the calendar year the District shall send by regular mail or email to the owner or operator of each registered well that is required to pay the Water Use Fee a reminder statement setting forth the water use fee rate applicable to the water produced in the ensuing year, setting forth deadlines for submission of fee payments and production reports of meter readings, and other information deemed appropriate by the District.

(c) Groundwater produced from a well during its development or rehabilitation, including groundwater used in a pump test, is exempt from the requirements relating to the payment of fees under Section 9 and metering of production under Section 10. A Water Production Report that complies with Rule 9.1 must be submitted to the District providing all usage under this subsection. For unmetered usage, the Water Production Report submitted under this subsection shall provide an estimated amount of use based on acceptable estimation methods, including but not limited to electricity usage or calculation of usage based on run time at the known flow measurement rate. A well no longer qualifies for the fee payment and metering exemptions authorized by this subsection once the well is placed into operation, unless the well is otherwise exempt under Rule 3.7(a).

Rule 9.3 Groundwater Transport Fees.

The District may impose a Groundwater Transport Fee in accordance with the authority set forth in Section 36.122(e) of the Texas Water Code. The procedures, requirements, and penalties related to payment of the Water Use Fee shall also apply to payment of the Groundwater Transport Fee. Groundwater Transport Fees shall not be imposed on a water supplier that withdraws groundwater from a well located in the District and that distributes the water to any part of the territory within the water supplier's certificate of convenience and necessity (CCN) issued by the Texas Commission on Environmental Quality, or its predecessor or successor agency, that is outside the boundaries of the District. Groundwater Transport Fees shall also not be imposed on a person that produces groundwater from a well located in the District, but who uses the water outside the boundaries of the District, only if the property where the well is located and the water is used is contiguous and owned by the same person.

Rule 9.4 Payments of Water Use and Groundwater Transport Fees.

(a) All fees for groundwater production or transport in a calendar year must be paid to the District based on quarterly production. All water production reports, monthly logs, and groundwater transport reports will be due no later than 30 days from the end of the applicable quarterly reporting period in accordance with Rule 9.1. All payments that are due to the District must be paid no later than 60 days from the end of the applicable quarterly reporting period.

(b) Any well that is subject to fee payment under this rule and that provides water for both agricultural and non-agricultural purposes shall pay the water use fee rate applicable to non- agricultural purposes for all water produced from the well, unless the applicant can demonstrate through convincing evidence to the satisfaction of the District that a system is or will be in place so as to assure an accurate accounting of water for each purpose of use.

Rule 9.5 Summary of Applicable Meter Reading, Reporting and Water Use Fee Payment Deadlines.

The following chart summarizes Rules 9.1, 9.4, and 10.5 regarding the deadlines for meter readings, production reporting and water use fee payments that must occur on a quarterly basis:

Applicable Quarterly Reporting Period	Water Meter Reading Must Occur and Be Recorded on Monthly Meter Log Between	Water Production Report Deadlines (Date by Which Report of Monthly Usage Must be Submitted to District)	Water Use Payment Deadlines
Quarter 1: January 1 to March 31	**January 21 to February 10** **February 18 to March 11 (additional day added into end of timeframe to account for leap years)** **March 21 to April 10**	**April 30**	**May 30**
Quarter 2: April 1 to June 30	**April 20 to May 10** **May 21 to June 10** **June 20 to July 10**	**July 30**	**August 29**
Quarter 3: July 1 to September 30	**July 21 to August 10** **August 21 to September 10** **September 20 to October 10**	**October 30**	**November 29**
Quarter 4: October 1 to December 31	**October 21 to November 10** **November 20 to December 10** **December 21 to January 10**	**January 30**	**March 1*** ***deadline automatically extended by one day during leap years for consistency**

Rule 9.6 Failure to Make Fee Payments.

(a) Payments not received pursuant to the deadline established under Rule 9.4(a) will be subject to a late payment fee of fifteen percent (15%) of the total amount of water use fees due and owing to the District.

(b) Persons failing to remit all Water Use Fees or Groundwater Transport Fees due and owing to the District within 60 days of the date such fees are due pursuant to Rule 9.4(a) shall be subject to a civil penalty not to exceed three times the amount of the outstanding fees due and owing, in addition to the late fee penalty prescribed in Subsection (a) of this rule, and may be subject to additional enforcement measures provided for by these rules or by order of the Board.

Rule 9.7 Failure to Submit Water Production Reports.

(a) Water Production Reports not received by the deadline of not later than thirty (30) days after the last day of the applicable quarterly reporting period pursuant to Rule 9.1 will be subject to a late fee of fifty dollars ($50.00) per billing account.

(b) Persons failing to submit Water Production Reports within sixty (60) days after the last day of the applicable quarterly reporting period pursuant to Rule 9.1 shall be subject to a civil penalty as set forth in the District's Enforcement Policy and Civil Penalty Schedule in Appendix A.

Rule 9.8 Penalty for Production in Excess of Maximum Amount Authorized by Permit or Rule.

(a) Except as specifically authorized under Rule 6.2, no person may withdraw, or cause to be withdrawn, groundwater within the District's boundaries in an amount that exceeds the maximum amount specifically authorized by these Rules or in any permit issued by the District. Persons withdrawing, or causing to be withdrawn, groundwater in an amount that exceeds the specific amount authorized for withdrawal in the applicable District permit shall be subject to an automatic penalty of three (3) times the applicable water use fee rate for the first occurrence. Such excess production penalty shall accrue in addition to, and shall be due at the same time as, the final quarterly production payment due to the District under Rule 9.4 for production from the previous calendar year.

(b) Any production in violation of Subsection (a) of this section that occurs within three (3) calendar years of a first occurrence of excess production shall result in an automatic penalty of ten (10) times the applicable water use fee rate, and shall result in initiation of an automatic permit amendment by the District.

Rule 9.9 Returned Check Fee.

The Board, by resolution, may establish a fee for checks returned to the District for insufficient funds, account closed, signature missing, or any other reason causing a check to be returned by the District's depository.

Rule 9.10 Well Report Deposit.

The Board, by resolution, may establish a well report deposit to be held by the District as part of the well registration procedures. The District shall return the deposit to the depositor if all relevant well logs and well completion reports are timely submitted to the District in accordance with Rule 3.4(b). In the event the District does not timely receive all relevant well logs and well completion reports, or if rights granted within the registration are not timely used, the deposit shall become the property of the District. In addition, the well report deposit will not be returned until the District has flow tested the new well.

Rule 9.11 Enforcement.

After a well is determined to be in violation of these rules for failure to make payment of water use fees or groundwater transport fees on or before the 60th day following the date such fees are due, all enforcement mechanisms provided by law and these rules shall be available to prevent unauthorized use of the well and may be initiated by the General Manager without further authorization from the Board.

Rule 9.12 Well Registration and Permit Fees.

The Board, by resolution, shall establish a non-refundable well registration fee and permit application fee. The owner of any new well shall submit the non-refundable well registration fee payment to the District per well, which is due by the same deadline established under these rules for registration of the well. The owner of a non-exempt well that requires a permit shall also be required to pay the permit application fee established by the Board. A fee required under this rule and established by the Board must be received by the District in order for the District to find the application administratively complete. The purpose of such fees is to cover the administrative costs to the District associated with registering and permitting the well, where applicable, and administering the rules of the District related to the well.

Rule 9.13 Meter Sealing Fee.

The Board, by resolution, may establish a fee to recover all or part of its costs for removing and reapplying a District seal and verifying relevant well and meter information in situations where a well owner or operator submits a request to move a meter from one well to another.

SECTION 10.
METERING

Rule 10.1 Water Meter Required.

(a) The owner of a well located in the District and not exempt under Rule 3.7(a) shall equip the well with a flow measurement device meeting the specifications of these rules and shall operate the meter on the well to measure the cumulative amount of groundwater withdrawn from the well.

(b) Except as otherwise provided in these Rules, all meters installed on new, non-exempt wells must be installed prior to production from the well and must be located within fifty (50) feet of the wellhead. The meter (or blind flange) must be installed the same day the well is completed and must be sealed in place by the District with a District seal upon completion of the well. For purposes of this Section 10, “completion” shall mean construction of the well and installation of the pump. If a newly drilled well has a pump installed, but is not capable of pumping due to lack of power service or other reason, the well must be equipped with a meter or bolted blind flange so that the District can place a seal on the well for the interim period until a flow test can be performed. The well log deposit reference in Section 9.10 of these rules will not be returned until the District has completed a flow test. Except as provided by Rule 10.4, the meter must remain with the well except in cases where the well is modified or the meter no longer meets the accuracy standards set forth under this rule and Rule 10.3. In the event a well owner wants to move a meter from one well to another, the well owner must submit a request to the District to remove its meter seal. The District shall remove or provide authorization to remove the seal within five (5) business days of receiving a request from the well owner. The District may seal the well from which the meter was removed to prevent its operation without a meter, in addition to sealing the meter on the new well. The readings on the meter must be recorded immediately prior to removal and at the time of reinstallation.

(c) A mechanically driven, magnetic, or ultrasonic totalizing water meter must be installed on a well registered with the District unless an approval for another type of meter or measuring method is granted by the District. The totalizer must not be resettable by the registrant and must be capable of a maximum reading greater than the maximum expected annual pumpage. Battery operated registers must have a minimum five-year life expectancy and must be permanently hermetically sealed. Battery operated registers must visibly display the expiration date of the battery. All meters must meet the requirements for registration accuracy set forth in the American Water Works Association standards for cold-water meters as those standards existed on the date of adoption of these rules.

(d) The water meter must be installed according to the manufacturer's published specifications in effect at the time of the meter installation, or the meter's accuracy must be verified by the registrant in accordance with Rule 10.3. If no specifications are published, there must be a minimum length of five pipe diameters of straight pipe upstream of the water meter and one pipe diameter of straight pipe downstream of the water meter. These lengths of straight pipe must contain no check valves, tees, gate valves, back flow preventers, blow-off valves, or any other fixture other than those flanges or welds necessary to connect the straight pipe to the meter. In addition, the pipe must be completely full of water throughout the region. All installed meters must measure only groundwater.

(e) Each meter shall be installed, operated, maintained, and repaired in accordance with the manufacturer's standards, instructions, or recommendations, and shall be calibrated to ensure an accuracy reading range of 95% to 105% of actual flow.

(f) The owner of a well is responsible for the purchase, installation, operation, maintenance, and repair of the meter associated with the well.

(g) All water produced from a well must go through a single meter that must record all production from the well.

Rule 10.2 Water Meter Exemption.

Wells exempt from permitting under Rule 3.7(a) shall be exempt from the requirement to obtain a water meter under Rule 10.1.

Rule 10.3 Accuracy Verification.

(a) **Meter Accuracy to be Tested:** The General Manager may require the registrant, at the registrant's expense, to test the accuracy of a water meter and submit a certificate of the test results. The certificate shall be on a form provided by the District. The General Manager may further require that such test be performed by a third party qualified to perform such tests. The third party must be approved by the General Manager prior to the test. Except as otherwise provided herein, certification tests will be required no more than once every three years for the same meter. If the test results indicate that the water meter is registering an accuracy reading outside the range of 95% to 105% of the actual flow, then appropriate steps shall be taken by the registrant to repair or replace the water meter within 90 calendar days from the date of the test. The District, at its own expense, may undertake random tests and other investigations at any time for the purpose of verifying water meter readings. If the District's tests or investigations reveal that a water meter is not registering within the accuracy range of 95% to 105% of the actual flow, or is not properly recording the total flow of groundwater withdrawn from the well or wells, the registrant shall reimburse the District for the cost of those tests and investigations within 90 calendar days from the date of the tests or investigations, and the registrant shall take appropriate steps to bring the meter or meters into compliance with these rules within 90 calendar days from the date of the tests or investigations. If a water meter or related piping or equipment is tampered with or damaged so that the measurement of accuracy is impaired, the District may require the registrant, at the registrant's expense, to take appropriate steps to remedy the problem and to retest the water meter within 90 calendar days from the date the problem is discovered and reported to the registrant.

(b) **Meter Testing and Calibration Equipment:** Only equipment capable of accuracy results of plus or minus two percent of actual flow may be used to calibrate or test meters.

(c) **Calibration of Testing Equipment:** All approved testing equipment must be calibrated every two years by an independent testing laboratory or company capable of accuracy verification. A copy of the accuracy verification must be presented to the District before any further tests may be performed using that equipment.

Rule 10.4 Removal of Meter for Repairs.

A water meter may be removed for repairs and the well may remain operational. A water meter may also be removed if necessary to modify the well. A water meter may be removed by the well owner only according to this Section 10 and the owner must notify the District within three (3) business days of the removal. If the well is to remain operational, the repairs must be completed in a timely manner; provided, however, that a well shall not be operated without a meter for more than fourteen (14) days from the date of removal. If the meter on the well has already been sealed by the District, the District shall remove or provide authorization to remove the seal within five (5) business days of receiving a request from the well owner. The readings on the meter must be recorded immediately prior to removal and at the time of reinstallation, and the owner must either make the previous meter available for inspection by District staff or have a photo available evidencing the last reading prior to removal of the meter. The record of pumpage must include an estimate of the amount of groundwater withdrawn during the period the meter was not installed and operating.

Rule 10.5 Water Meter Readings.

Each meter must be read and the actual amount of pumpage recorded in a log at least monthly. The logs containing the recordings shall be available for inspection by the District at reasonable business hours. Copies of the logs must be included with the Water Production Report required by District Rule 9.1, along with fee payments as set forth under Section 9. The registrant of a well shall read each water meter associated with a well within ten (10) days before or after the last day of each month, and shall report the readings to the District on a form provided by the District along with copies of the monthly logs and payment of all Water Use Fees and Groundwater Transport Fees by the deadlines set forth for fee payment under Rule 9.4.

Rule 10.6 Enforcement.

It is a major violation of these rules to fail to meter a well and report meter readings in accordance with this Section. After a well is determined to be in violation of these rules for failure to meter or maintain and report meter readings, all enforcement mechanisms provided by law and these rules shall be available to prevent unauthorized use of the well and may be initiated by the General Manager without further authorization from the Board.

SECTION 11.
INSPECTION AND ENFORCEMENT OF RULES

Rule 11.1 Purpose and Policy.

The District's ability to effectively and efficiently manage the limited groundwater resources within its boundaries depends entirely upon the adherence to the rules promulgated by the Board to carry out the District's purposes. Those purposes include providing for the conservation, preservation, protection and recharge of the groundwater resources within the District, to protect against subsidence, degradation of water quality, and to prevent waste of those resources. Without the ability to enforce these rules in a fair, effective manner, it would not be possible to accomplish the District's express groundwater management purposes. The enforcement rules and procedures that follow are consistent with the responsibilities delegated to the District by the Texas Legislature through the District Act and through Chapter 36 of the Texas Water Code.

Rule 11.2 Rules Enforcement.

(a) If it appears that a person or entity has violated, is violating, or is threatening to violate any provision of the District Rules, the Board may institute and conduct a suit in a court of competent jurisdiction in the name of the District for injunctive relief, recovery of a civil penalty in an amount set by District rule per violation, both injunctive relief and a civil penalty, or any other appropriate remedy. A violation of any of the prohibitions in these Rules occurs on the first day that the prohibited action begins and continues each day thereafter as a separate violation.

(b) Unless otherwise provided in these rules, the penalty for a violation of any District rule shall be either:

1. $10,000.00 per violation; or

2. a lesser amount, based on the severity of the violation, as set forth in the Enforcement Policy and Civil Penalty Schedule, which is attached to these rules as Appendix A and adopted as a rule of the District for all purposes.

(c) In determining the amount of a civil penalty, the Board of Directors shall consider the following factors:

1. compliance history;

2. efforts to correct the violation and whether the violator makes a good faith effort to cooperate with the District;

3. the penalty amount necessary to ensure future compliance and deter future noncompliance;

4. any enforcement costs related to the violation; and

5. any other matters deemed necessary by the Board.

(d) A penalty under this section is in addition to any other penalty provided by law and may be enforced by filing a complaint in a court of competent jurisdiction in the county in which the District's principal office or meeting place is located.

(e) If the District prevails in a suit to enforce its rules, the District may seek, in the same action, recovery of attorney's fees, costs for expert witnesses, and other costs incurred by the District before the court. The amount of attorney's fees awarded by a court under this rule shall be fixed by the court.

Rule 11.3 Failure to Report Pumpage and/or Transported Volumes.

(a) The accurate reporting and timely submission of pumpage and/or transported volumes is necessary for the proper management of water resources in the District.

(b) Failure of a well owner required by these Rules to submit complete, accurate, and timely pumpage and transportation reports may result in:

1. the assessment of any fees or penalties adopted under Rule 11.2 for meter reading and inspection as a result of District inspections to obtain current and accurate pumpage and/or transported volumes; and

2. additional enforcement measures provided by these rules or by order of the Board.

Rule 11.4 District Inspections.

No person shall unreasonably interfere with the District's efforts to conduct inspections or otherwise comply with the requirements, obligations, and authority provided in Section 36.123 of the Texas Water Code.

All new and altered wells are required to undergo a flow test consistent with the District's Flow Testing Procedure manual adopted by the District Board. A flow test is required to be performed within 60 days of a new pump being installed or an existing well that has been substantially altered.

Rule 11.5 Notices of Violation.

Whenever the District determines that any person has violated or is violating any provision of the District's Rules, including the terms of any rule or order issued by the District, it may use any of the following means of notifying the person or persons of the violation:

(a) Informal Notice: The officers, staff or agents of the District acting on behalf of the District or the Board may inform the person of the violation by telephone by speaking or attempting to speak to the appropriate person to explain the violation and the steps necessary to satisfactorily remedy the violation. The information received by the District through this informal notice concerning the violation will be documented, along with the date and time of the call, and will be kept on file with the District. Nothing in this subsection shall limit the authority of the District to take action, including emergency actions or any other enforcement action, without first providing notice under this subsection.

(b) Notice of Violation: The District may inform the person of the violation through a written notice of violation issued pursuant to this rule. Each notice of violation issued hereunder shall explain the basis of the violation, identify the rule or order that has been violated or is being violated, and list specific required actions that must be satisfactorily completed—which may include the payment of applicable civil penalties—to address each violation raised in the notice. Notices of violation issued hereunder shall be tendered by a delivery method that complies with District Rule 1.7. Nothing in this subsection shall limit the authority of the District to take action, including emergency actions or any other enforcement action, without first issuing a notice of violation.

(c) Compliance Meeting: The District may hold a meeting with any person whom the District believes to have violated or to be violating, a District Rule or District order to discuss each such violation and the steps necessary to satisfactorily remedy each such violation. The information received in any meeting conducted pursuant to this subsection concerning the violation will be documented, along with the date and time of the meeting, and will be kept on file with the District. Nothing in this subsection shall limit the authority of the District to take action, including emergency actions or any other enforcement action, without first conducting a meeting under this subsection.

Rule 11.6 Show Cause Hearing.

(a) Upon recommendation of the General Manager to the Board or upon the Board's own motion, the Board may order any person that it believes has violated or is violating any provision of the District's Rules a District notice to appear before the Board at a public meeting called for such purpose and show cause why an enforcement action, including the initiation of a suit in a court of competent jurisdiction, should not be pursued by the District against the person or persons made the subject of the show cause hearing.

(b) No show cause hearing under Subsection (a) of this rule may be held unless the District first certified mails each person to be made the subject of the hearing, written notice not less than twenty (20) days prior to the date of the hearing. Such notice shall include the following:

1. the time and place for the hearing;

2. the basis of each asserted violation;

3. the rule or order that the District believes has been violated or is being violated; and

4. a request that the person cited duly appear and show cause why enforcement action should not be pursued.

(c) The District may pursue immediate enforcement action against the person cited to appear in any show cause order issued by the District where the person so cited fails to appear and show cause why an enforcement action should not be pursued.

(d) Nothing in this rule shall limit the authority of the District to take action, including emergency actions or any other enforcement action, against a person at any time regardless of whether the District holds a hearing under this rule.

SECTION 12.
EFFECTIVE DATE

Rule 12.1. Effective Date.

The District’s Temporary Rules took effect on October 19, 2010, which was the date of their original adoption. Pursuant to the District Act and Chapter 36 of the Texas Water Code, the District adopted permanent rules on January 1, 2019, the Effective Date of these Rules. An amendment to these rules takes effect on the date of its original adoption, or upon a specific effective date for the amendment as approved by the Board of Directors. It is the District's intention that the rules and amendments thereto be applied retroactively to activities involving the production and use of groundwater resources located in the District, as specifically authorized by state law and as set forth in these Rules.

APPENDIX A. Enforcement Policy and Civil Penalty Schedule.

North Texas Groundwater Conservation District
ENFORCEMENT POLICY AND CIVIL PENALTY SCHEDULE

General Guidelines

When the General Manager discovers a violation of the District Rules that either (1) constitutes a Major Violation, or (2) constitutes a Minor Violation that the General Manager is unable to resolve within 60 days of discovering the Minor Violation, the General Manager shall bring the Major Violation or the unresolved Minor Violation and the pertinent facts surrounding it to the attention of the Board. Violations related to water well construction and completion requirements shall also be brought to the attention of the Board.

The General Manager shall recommend to the Board of Directors an appropriate settlement offer to settle the violation in lieu of litigation based upon the Civil Penalty Schedule set forth below. The Board may instruct the General Manager to tender an offer to settle the violation or to institute a civil suit in the appropriate court to seek civil penalties, injunctive relief, and costs of court and expert witnesses, damages, and attorneys' fees.

I. Minor Violations

The following acts each constitute a minor violation:

1. Failure to conduct a meter reading within the required period.
2. Failure to timely submit a Transfer of Ownership.
3. Failure to timely file a Well Report.
4. Failure to timely submit required documentation reflecting alterations or increased production.
5. Operating a meter that is not accurately calibrated.

CIVIL PENALTY SCHEDULE FOR MINOR VIOLATIONS

First Violation:	**$100.00**
Second Violation:	**$200.00**
Third Violation:	**Major Violation**

A second violation shall be any minor violation within 3 years of the first minor violation. A third violation shall be any minor violation following the second minor violation within 5 years of the first minor violation. Each day of a continuing violation constitutes a separate violation.

II. Major Violations

The following acts each constitute a major violation:

1. Failure to register or permit a well or amend the registration of a well where mandated by rules, including drilling, equipping, completing, altering, or operating a well without an approved registration, as evidenced through a Notice to Proceed or permit issued by the District.

2. Drilling an exempt or non-exempt well with an expired well registration.

3. Failure to timely meter or blind flange a well when required.

4. Failure to submit accurate Water Production report within 60 days of the date the report is due.

5. Failure to submit accurate Groundwater Transport report within the required period.

6. Drilling a well at a different location than authorized or in violation of spacing requirements.*****

7. Failure to close or cap an open or uncovered well.

8. Failure to submit Water Use Fees within 60 days of the date the fees are due.******

9. Failure to timely submit Groundwater Transport Fees within 60 days of the date the fees are due.******

10. Committing waste.

11. Tampering with or disabling a required meter or tampering with a District seal.

12. Failure to make a well available within 60 days for a required flow test.

CIVIL PENALTY SCHEDULE FOR MAJOR VIOLATIONS

First Violation:	**$500.00**
Second Violation:	**$1000.00**
Third Violation:	**Civil Suit for injunction and damages, and escalated penalties**

A second violation shall be any major violation within 3 years of the first major violation. A third violation shall be any major violation following the second major violation within 5 years of the first major violation. Each day of a continuing violation constitutes a separate violation. Multiple violations by the same person or entity shall result in escalated fines assessed in order to deter such continued noncompliance.

***** In addition to the applicable penalty provided for in the Civil Penalty Schedule for Major Violations, persons who drill a well in violation of applicable spacing requirements may be required to plug the well.

****** In addition to the applicable penalty provided for in the Civil Penalty Schedule for Major Violations, persons who do not submit all Water Use Fees and Groundwater Transport Fees due and owing within 60 days of the date the fees are due pursuant to Rule 9.4(a) will be assessed a civil penalty equal to three times the total amount of outstanding Water Use Fees, Groundwater Transport Fees, or both, that are due and owing.

III. Water Well Construction and Completion Requirements

Failure to use approved construction materials:	**$250 + total costs of remediation**
Failure to properly cement annular space:	**$500 + total costs of remediation**

In addition to the civil penalties provided for in this schedule, persons who drill a well in violation of applicable spacing or completion requirements may be required to re-drill, re-complete or reconstruct the well in accordance with the District's rules, or may be ordered to plug the well.

IV. Production in Excess of Maximum Amount Authorized in Permit

In accordance with Rule 9.8, an automatic penalty of three (3) times the applicable water use fee rate for a calendar year shall be applied in addition to the standard water use fee rate owed for those persons that produce groundwater in excess of the maximum amount authorized in a District-issued permit. A second occurrence of production in excess of the maximum amount authorized within three (3) calendar years of the first occurrence shall result in an automatic penalty of ten (10) times the applicable water use fee rate, which shall be applied in addition to the standard water use fee rate owed for the production.

V. Other Violations of District Rules Not Specifically Listed Herein

Any violation of a District Rule not specifically set forth herein shall be presented to the Board of Directors for a determination of whether the violation is Minor or Major, based upon the severity of the violation and the particular facts and issues involved, whereupon the procedures and the appropriate civil penalty amount set forth herein for Minor and Major Violations shall apply to the violation.

APPENDIX B. List of Commonly Used Acronyms

The following acronyms are commonly used in the District Rules, District Management Plan, and/or the daily operations of the District:

AFO	Animal Feeding Operation
ASR	Aquifer Storage and Recovery
BOD	District Board of Directors
CCN	Certificate of Convenience and Necessity
DCP	Drought Contingency Plan
DFC	Desired Future Condition
GAM	Groundwater Availability Model
GCD	Groundwater Conservation District
GMA	Groundwater Management Area
GPM	Gallons per minute
HUP	Historic Use Permit
MAG	Modeled Available Groundwater
MP	District Management Plan
NTGCD	North Texas Groundwater Conservation District
NTP	Notice to Proceed
PGMA	Priority Groundwater Management Area
PIA	Public Information Act
PFD	Proposal for Decision
PP	Production Permit
PWS	Public Water System
RRC	Railroad Commission of Texas
SOAH	State Office of Administrative Hearings
TCEQ	Texas Commission on Environmental Quality
TOMA	Texas Open Meetings Act
TWDB	Texas Water Development Board

APPENDIX E

GAM Runs

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
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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.

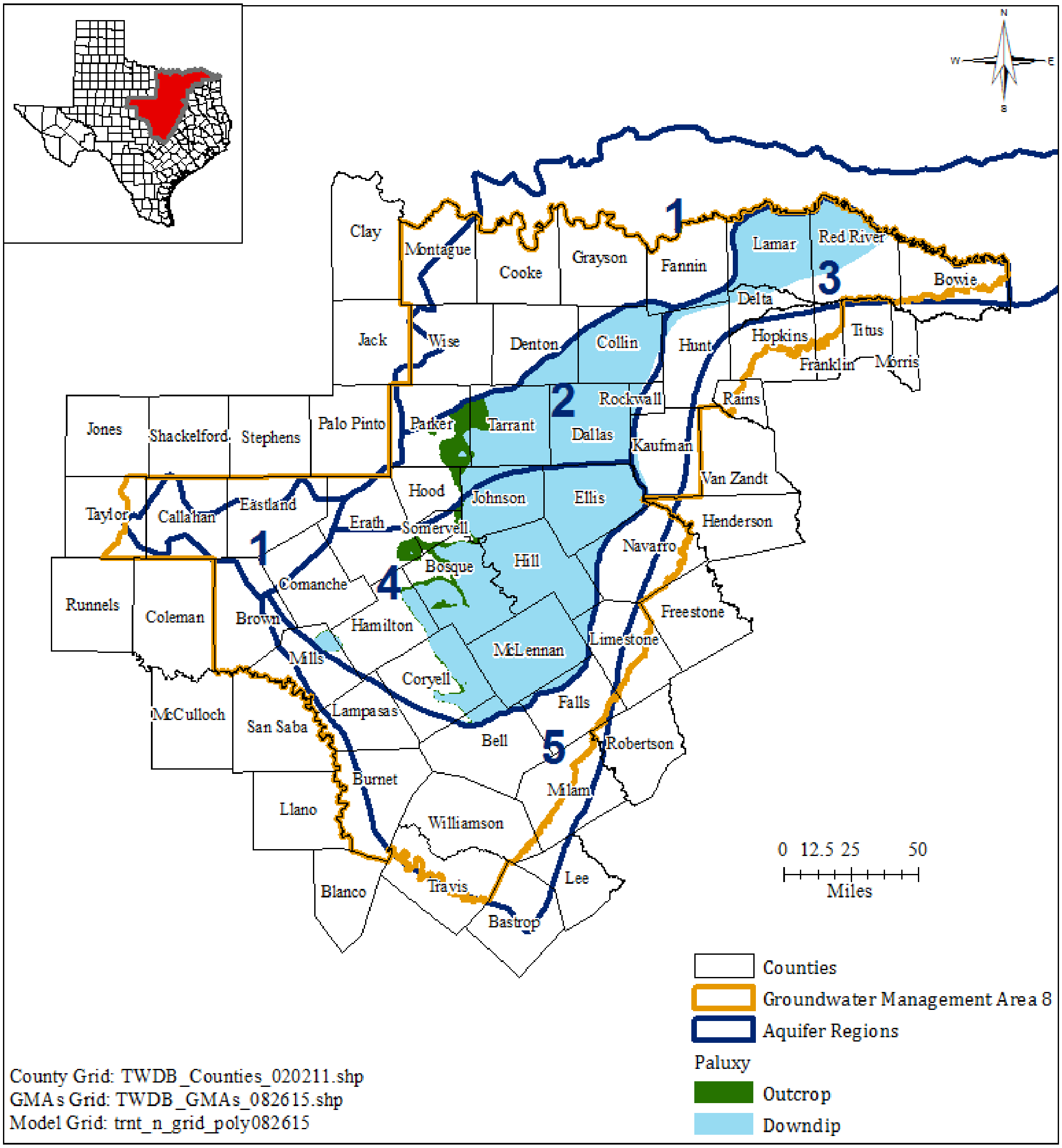

FIGURE 1. MAP SHOWING THE TRINITY AQUIFER (PALUXY) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

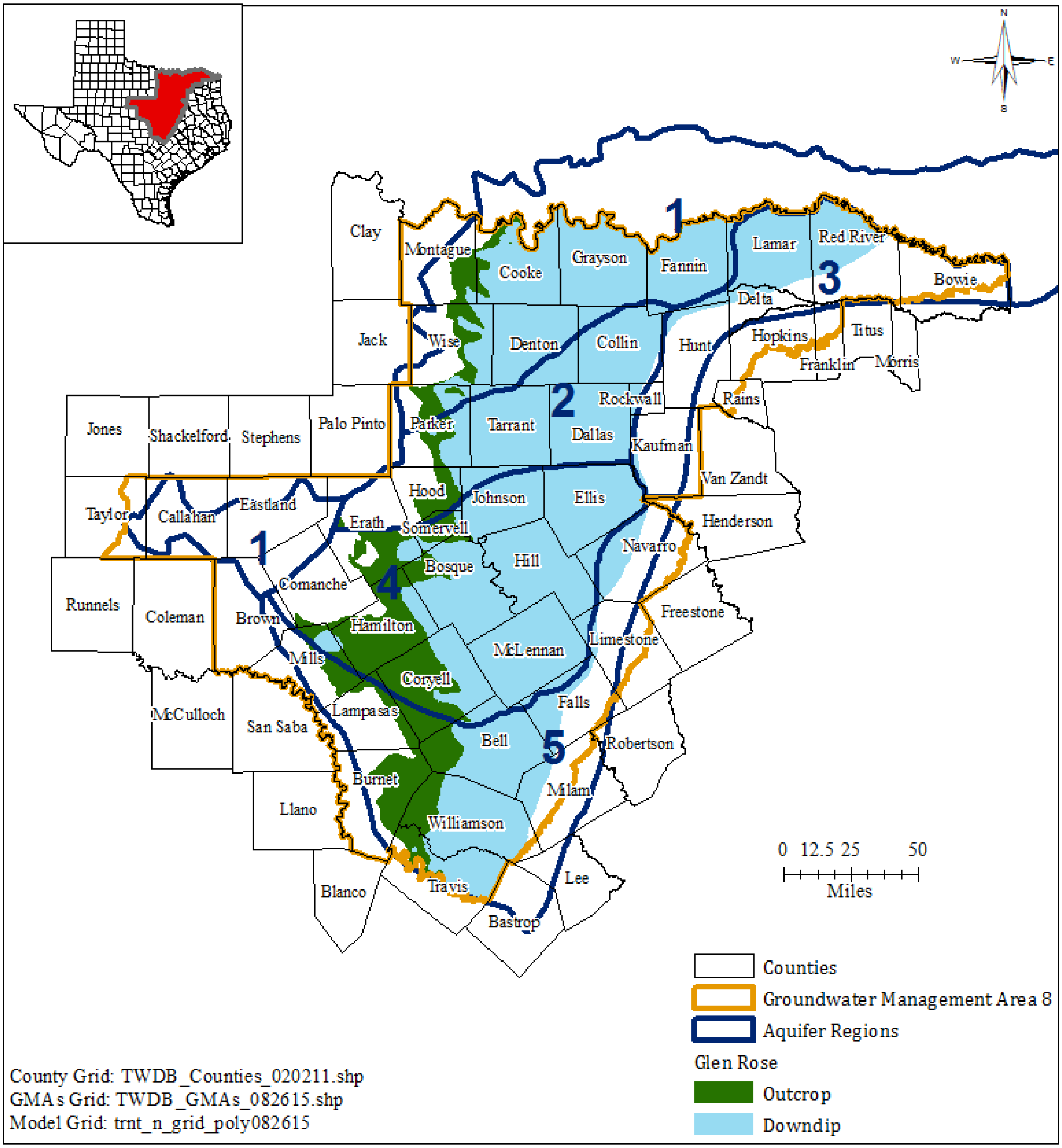

FIGURE 2. MAP SHOWING THE TRINITY AQUIFER (GLEN ROSE) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

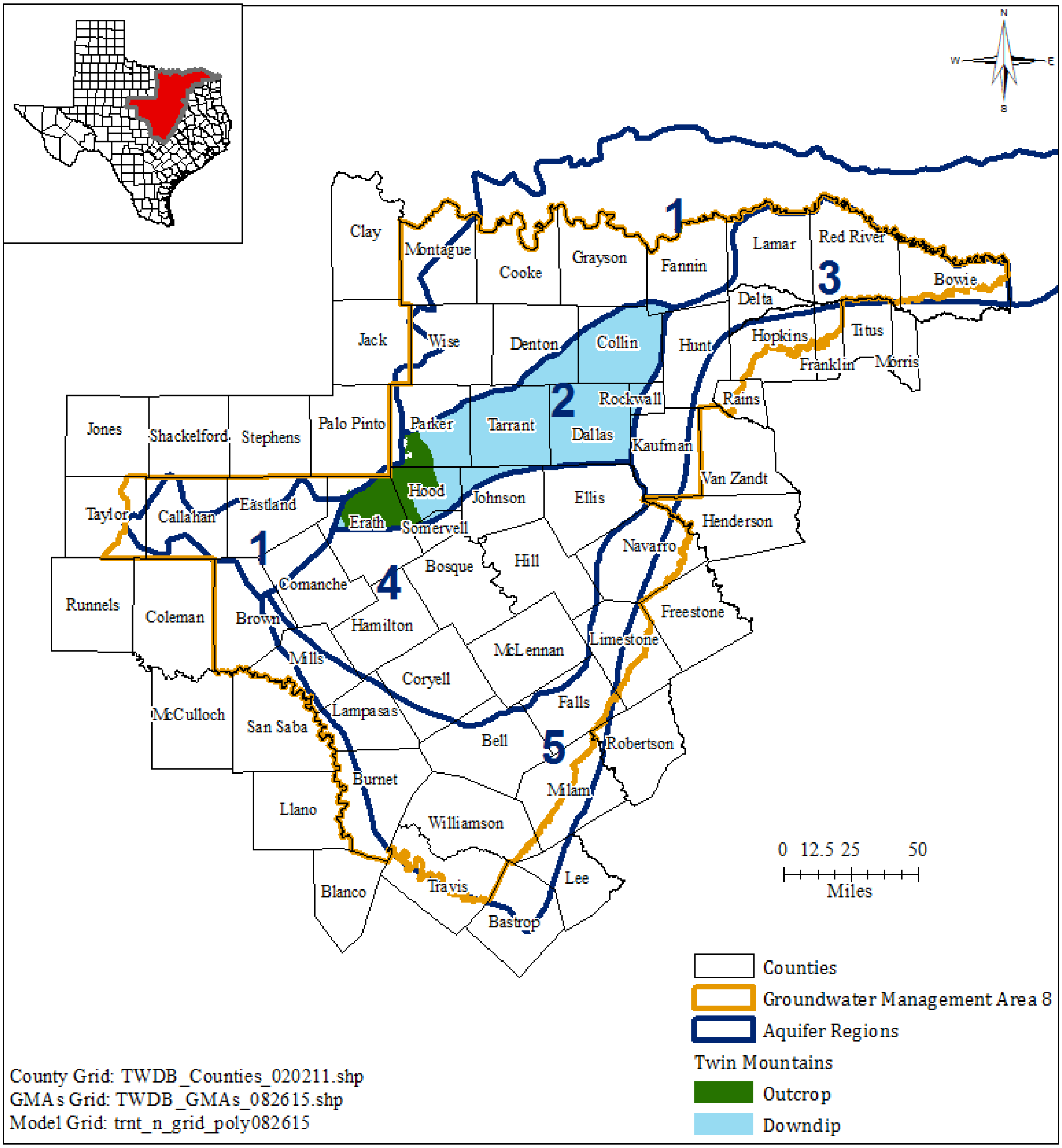

FIGURE 3. MAP SHOWING THE TRINITY AQUIFER (TWIN MOUNTAINS) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

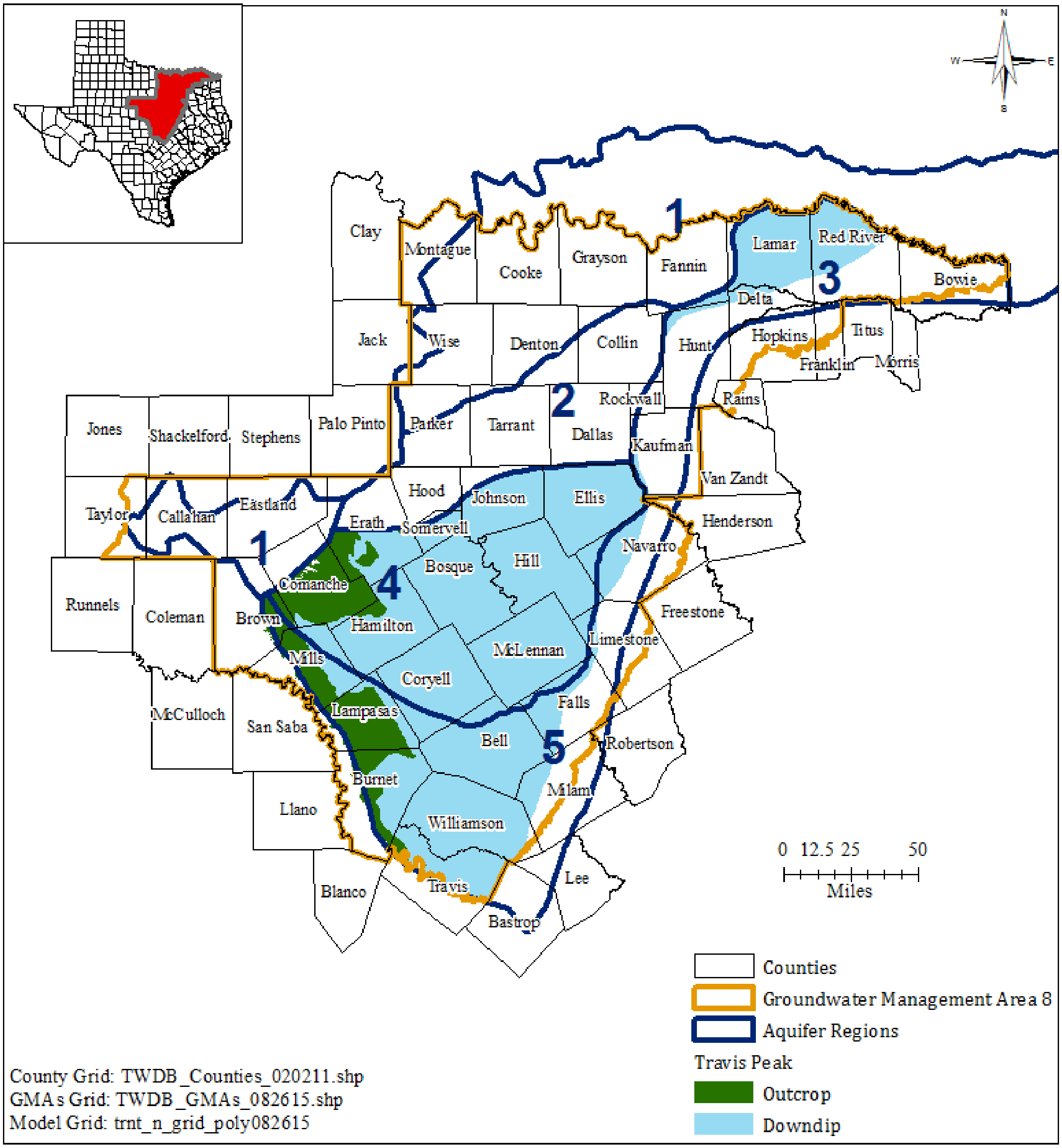

FIGURE 4. MAP SHOWING THE TRINITY AQUIFER (TRAVIS PEAK) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

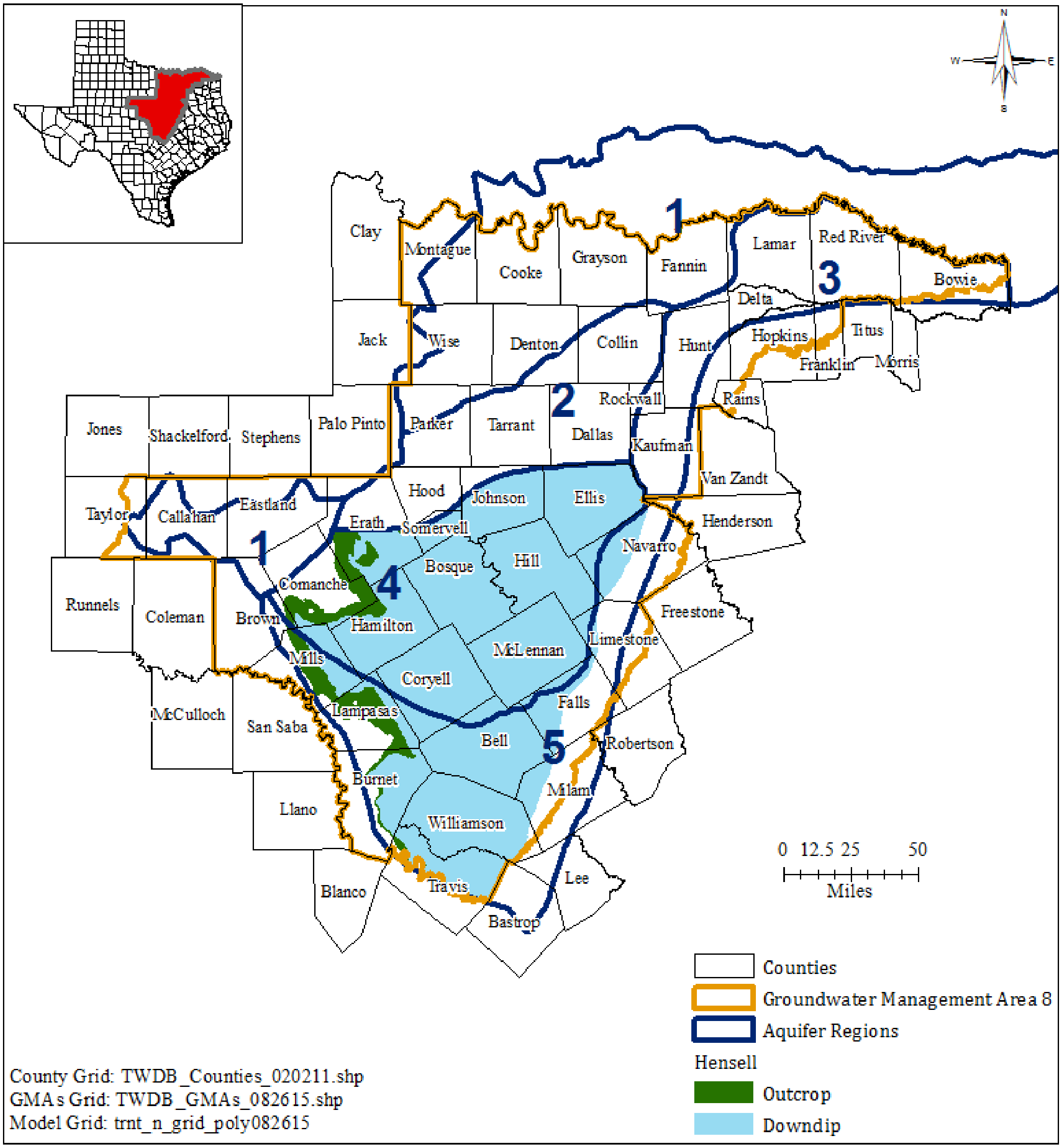

FIGURE 5. MAP SHOWING THE TRINITY AQUIFER (HENSELL) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

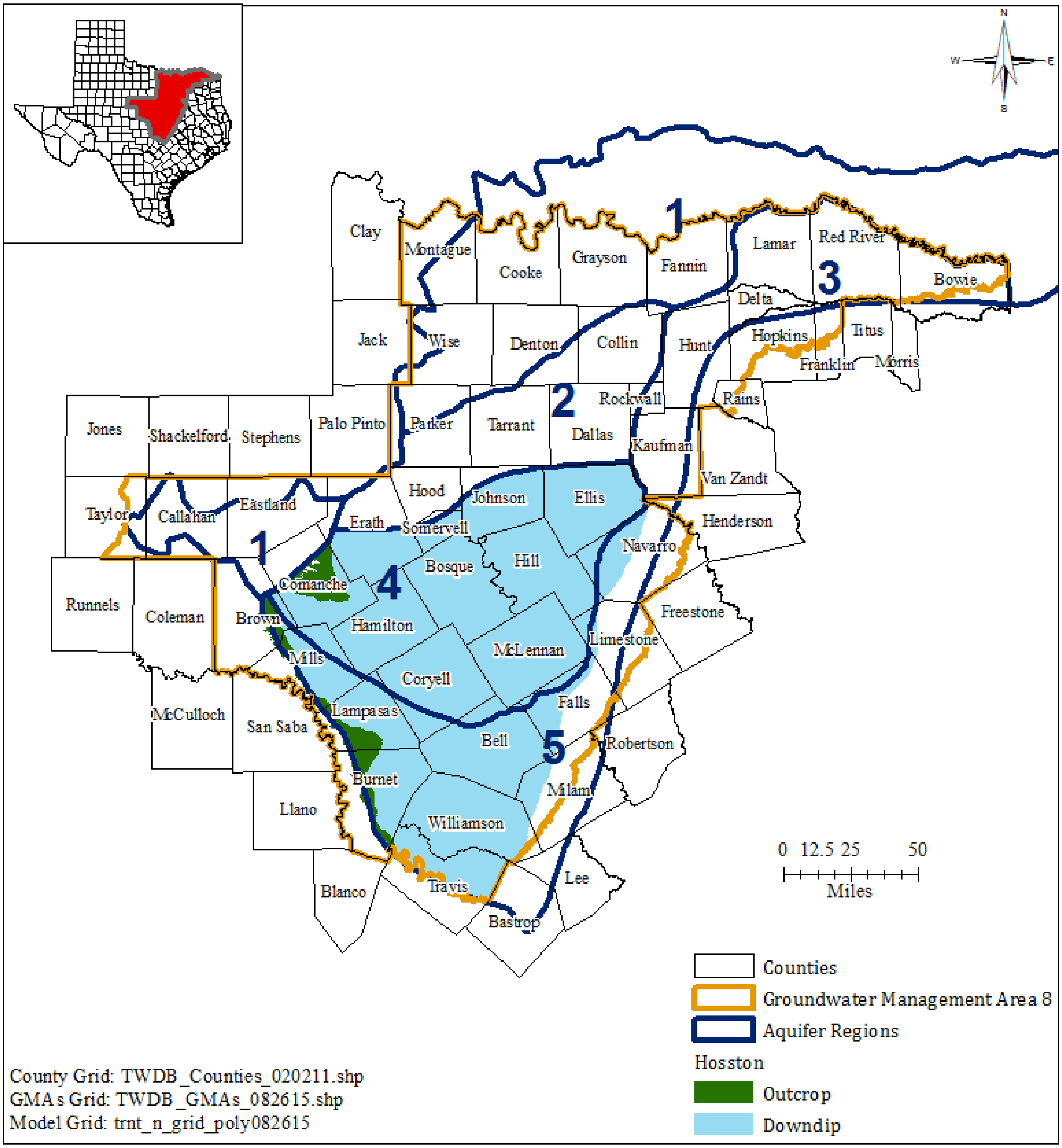

FIGURE 6. MAP SHOWING THE TRINITY AQUIFER (HOSSTON) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

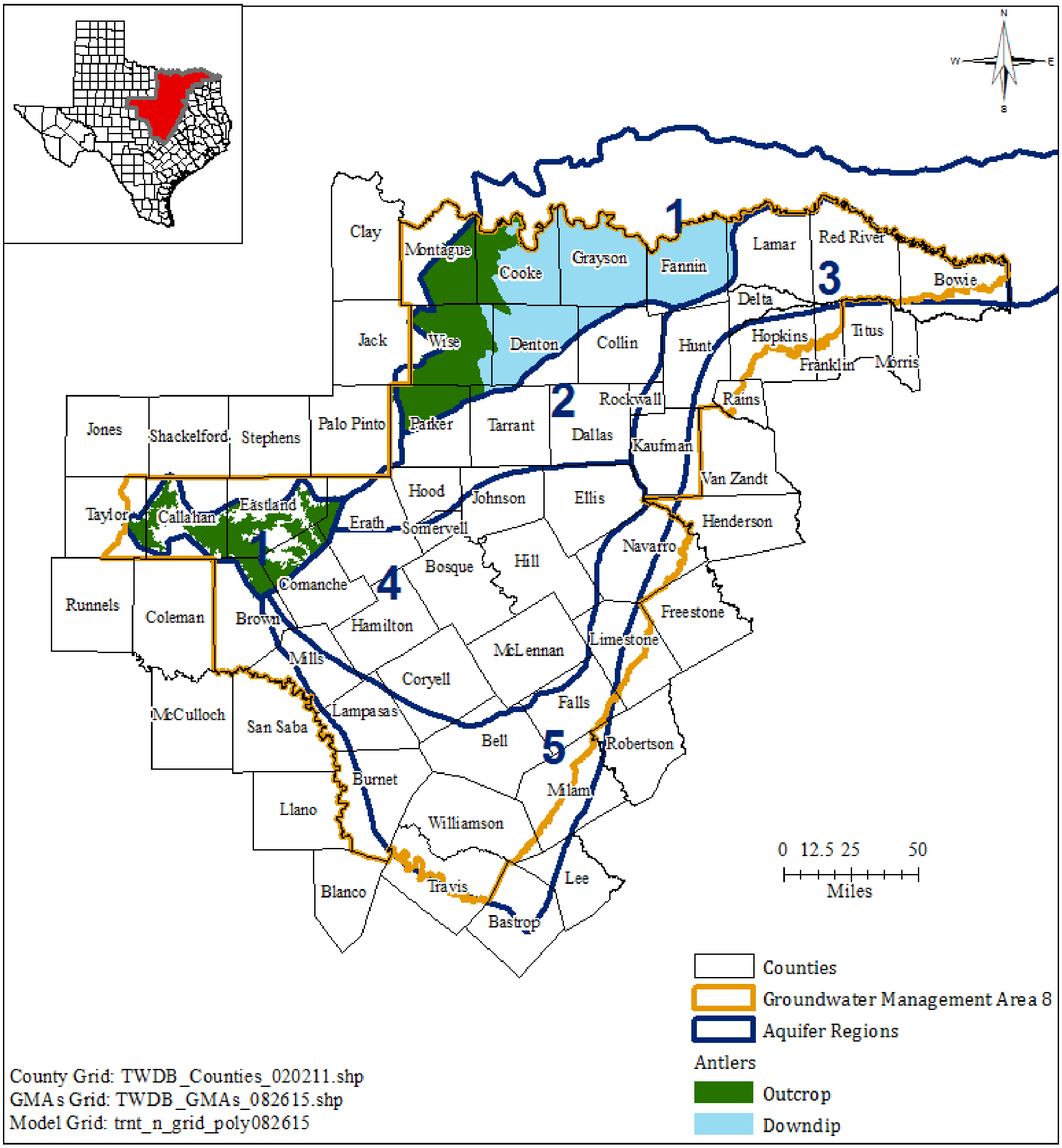

FIGURE 7. MAP SHOWING THE TRINITY AQUIFER (ANTLERS) WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

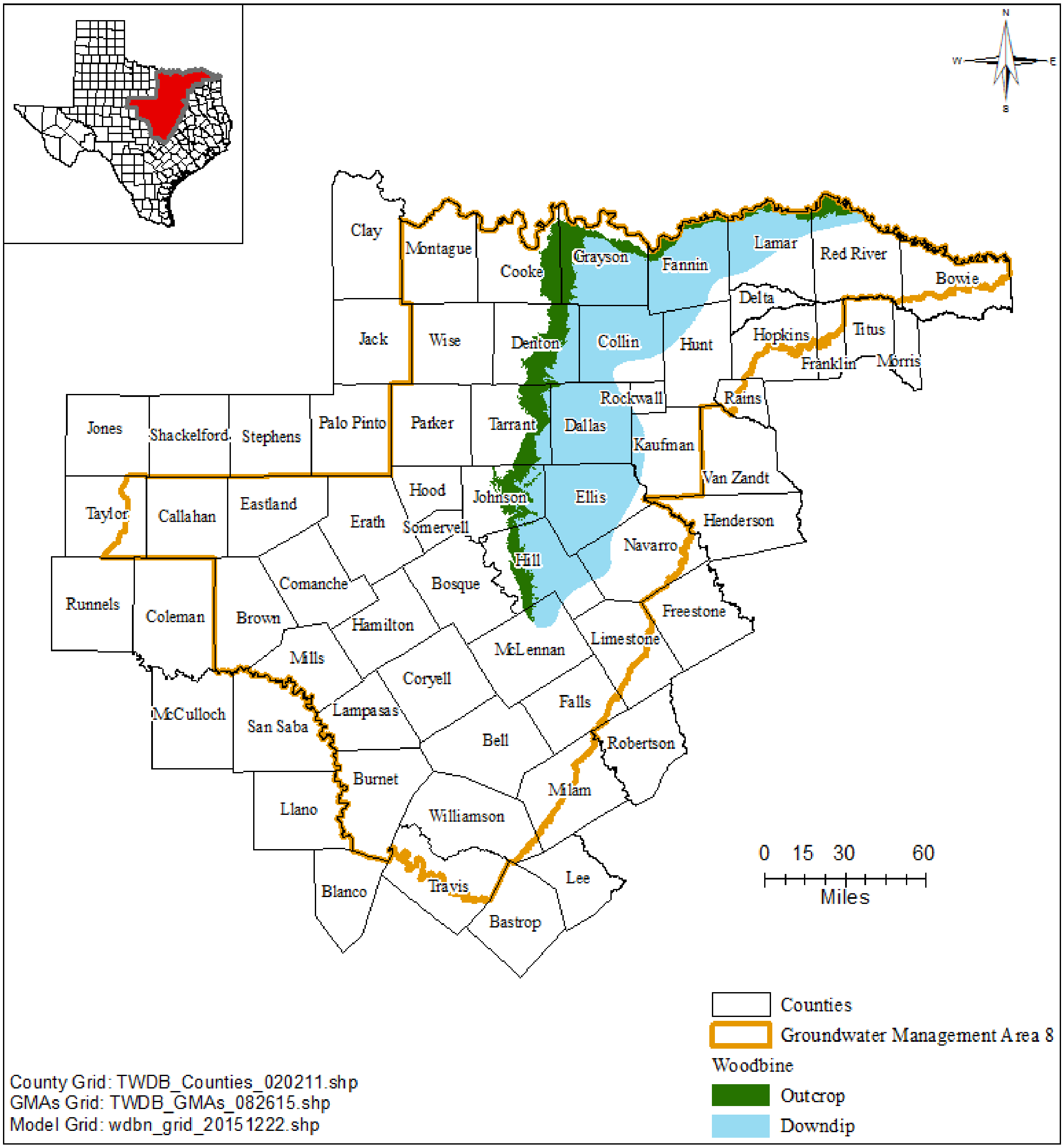

FIGURE 8. MAP SHOWING THE WOODBINE AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PORTION OF THE TRINITY AND WOODBINE AQUIFERS.

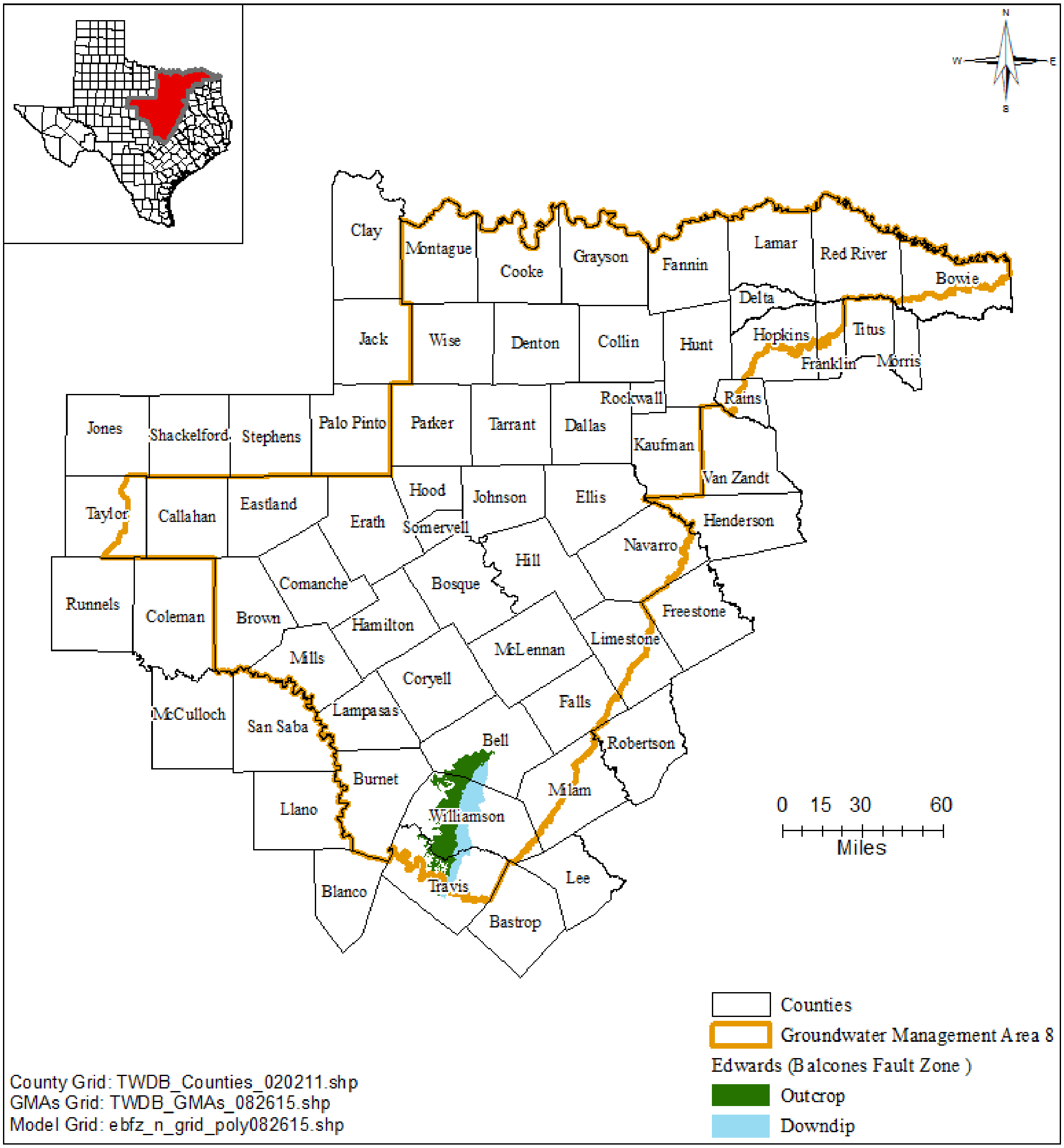

FIGURE 9. MAP SHOWING THE EDWARDS (BALCONES FAULT ZONE) AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN SEGMENT OF THE EDWARDS (BALCONES FAULT ZONE) AQUIFER.

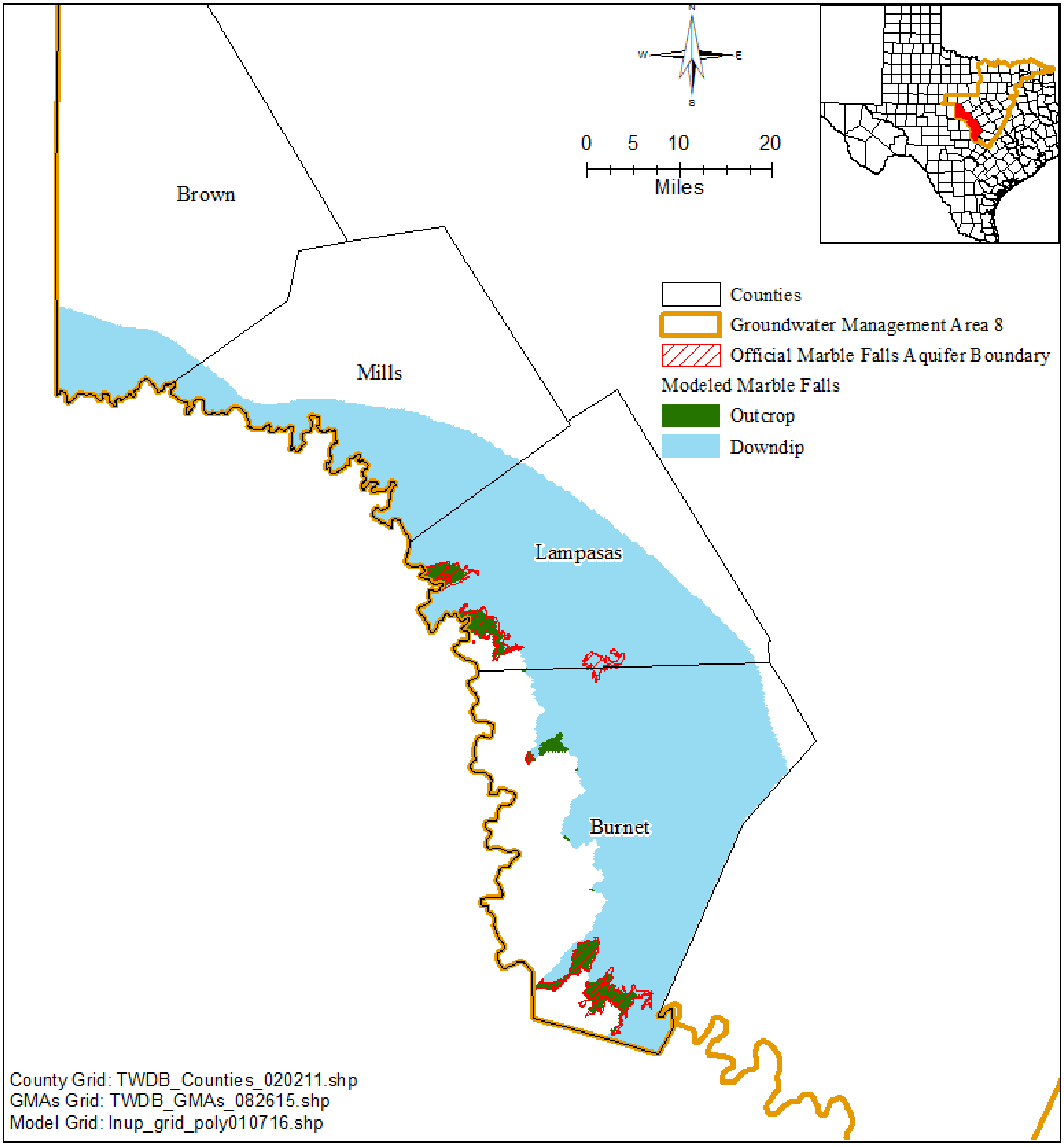

FIGURE 10. **MAP SHOWING THE MARBLE FALLS AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE MINOR AQUIFERS IN LLANO UPLIFT REGION.**

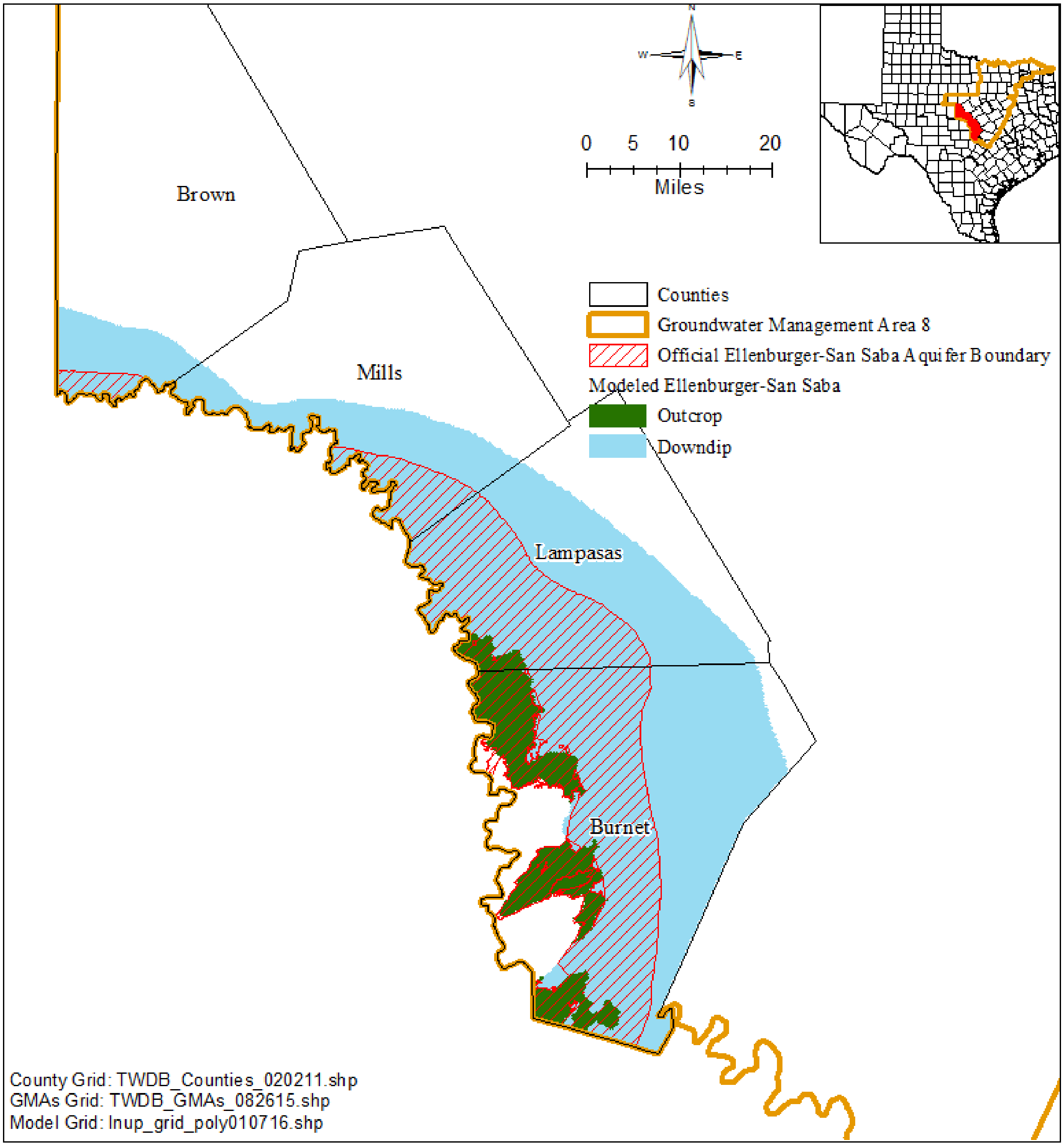

FIGURE 11. MAP SHOWING THE ELLENBURGER-SAN SABA AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE MINOR AQUIFERS IN LLANO UPLIFT REGION.

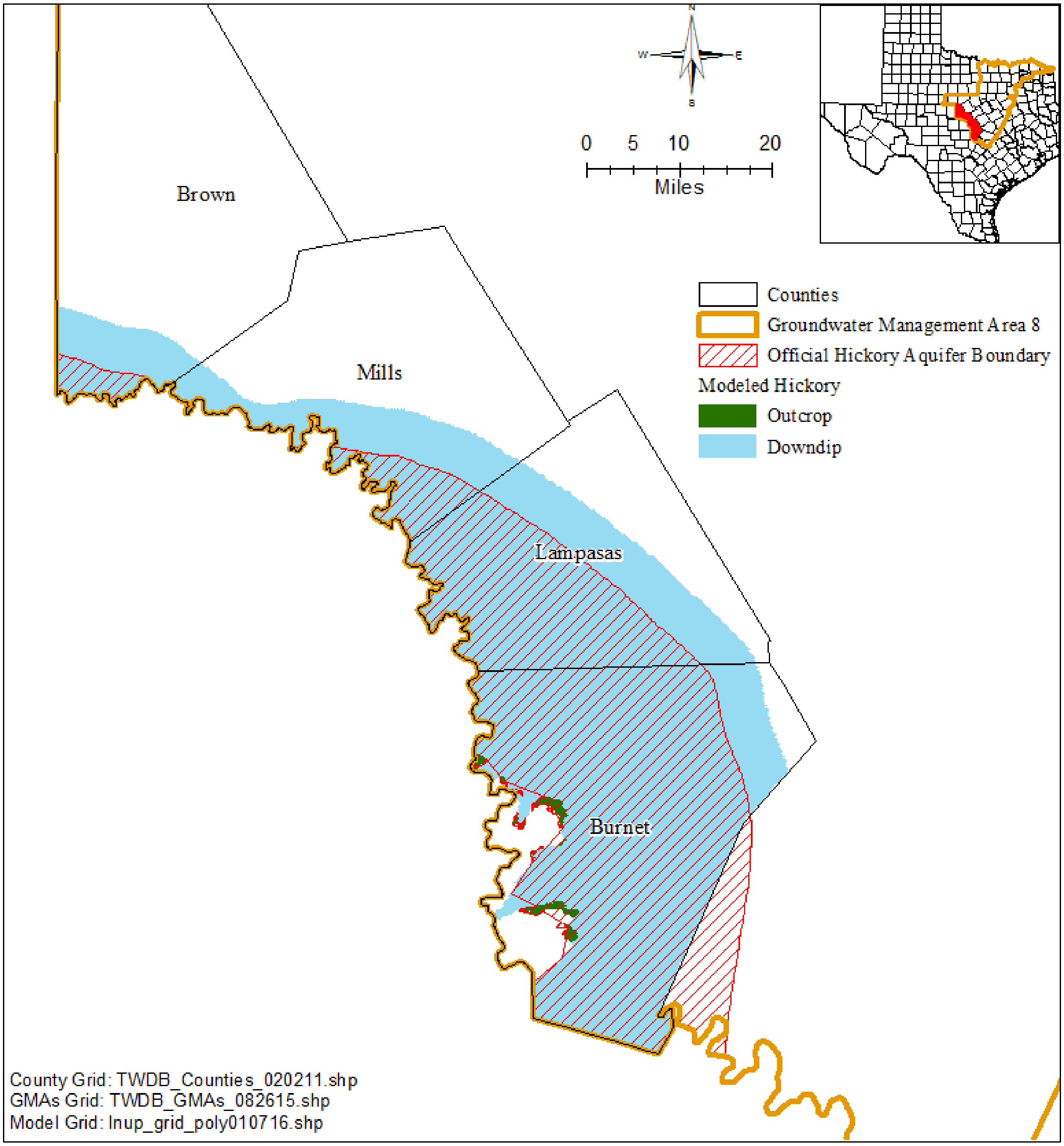

FIGURE 12. MAP SHOWING THE HICKORY AQUIFER WITHIN GROUNDWATER MANAGEMENT AREA 8 FROM THE GROUNDWATER AVAILABILITY MODEL FOR THE MINOR AQUIFERS IN LLANO UPLIFT REGION.

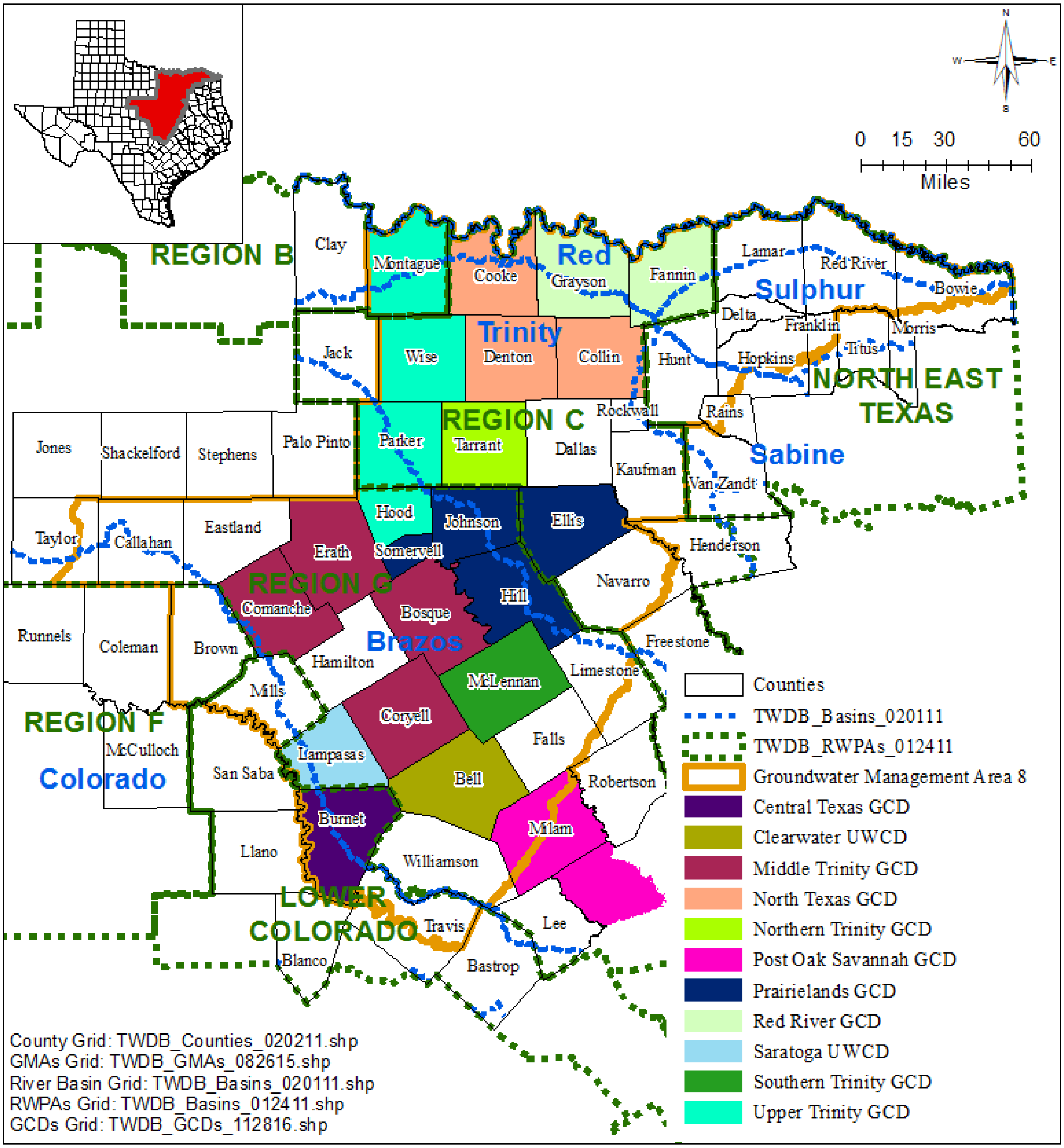

FIGURE 13. MAP SHOWING REGIONAL WATER PLANNING AREAS (RWPAS), GROUNDWATER CONSERVATION DISTRICTS (GCDS), AND RIVER BASINS ASSOCIATED WITH GROUNDWATER MANAGEMENT AREA 8.

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 colspan="2">Region 4</th><th colspan="2">Region 5</th></tr>
<tr><td>2</td><td colspan="4">Woodbine</td><td colspan="3">Woodbine (no sand)</td></tr>
<tr><td>3</td><td colspan="7">Washita/Fredericksburg</td></tr>
<tr><td>4</td><td rowspan="5">Antlers</td><td colspan="4">Paluxy</td><td colspan="2">Paluxy (no sand)</td></tr>
<tr><td>5</td><td colspan="6">Glen Rose</td></tr>
<tr><td>6</td><td rowspan="3">Twin Mountains</td><td rowspan="3" colspan="2">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 F

Estimated Historical Water Use and 2017 State Water Plan Data Sets

Estimated Historical Water Use And 2017 State Water Plan Datasets:

North Texas Groundwater Conservation District

by Stephen Allen
Texas Water Development Board
Groundwater Division
Groundwater Technical Assistance Section
stephen.allen@twdb.texas.gov
(512) 463-7317
January 19, 2017

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 1/19/2017. 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) or Rima Petrossian (rima.petrossian@twdb.texas.gov or 512-936-2420).

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

Groundwater and surface water historical use estimates are currently unavailable for calendar year 2015. TWDB staff anticipates the calculation and posting of these estimates at a later date.

COLLIN COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2014	GW	3,963	205	0	0	1,807	39	6,014
	SW	163,730	1,860	0	37	1,364	732	167,723
2013	GW	6,477	199	0	0	210	35	6,921
	SW	181,120	1,896	0	13	3,282	694	187,005
2012	GW	6,591	315	0	0	849	30	7,785
	SW	207,698	609	0	40	3,200	570	212,117
2011	GW	7,525	322	0	0	1,068	62	8,977
	SW	213,995	624	0	40	1,550	1,173	217,382
2010	GW	4,767	199	0	0	112	61	5,139
	SW	161,918	556	0	28	612	1,158	164,272
2009	GW	4,145	197	0	0	220	33	4,595
	SW	143,738	578	0	32	430	625	145,403
2008	GW	4,298	361	0	0	0	36	4,695
	SW	153,953	611	59	150	552	688	156,013
2007	GW	4,280	376	0	0	245	52	4,953
	SW	140,650	714	59	332	455	987	143,197
2006	GW	5,320	326	0	0	938	45	6,629
	SW	155,399	1,674	99	525	0	863	158,560
2005	GW	4,928	256	0	0	750	49	5,983
	SW	151,813	896	99	528	0	923	154,259
2004	GW	3,964	244	0	0	824	75	5,107
	SW	126,203	1,093	99	736	676	730	129,537
2003	GW	4,059	325	0	210	950	71	5,615
	SW	125,801	937	99	713	1,050	690	129,290
2002	GW	3,801	270	0	337	1,481	76	5,965
	SW	125,096	1,045	99	858	1,117	743	128,958
2001	GW	3,631	244	0	336	1,481	79	5,771
	SW	126,640	1,249	113	942	1,117	774	130,835
2000	GW	3,870	138	0	570	1,718	88	6,384
	SW	113,739	1,266	234	1,245	1,277	796	118,557

COOKE COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2014	GW	4,753	120	25	0	967	212	6,077
	SW	0	0	98	0	151	1,202	1,451
2013	GW	4,509	108	99	0	1,023	187	5,926
	SW	459	6	399	0	177	1,066	2,107
2012	GW	4,803	96	296	0	1,141	178	6,514
	SW	656	0	899	0	205	1,010	2,770
2011	GW	5,294	104	793	0	609	211	7,011
	SW	591	0	871	0	585	1,198	3,245
2010	GW	4,535	75	153	0	123	206	5,092
	SW	703	0	168	0	207	1,176	2,254
2009	GW	4,492	91	184	0	56	220	5,043
	SW	600	0	203	0	59	1,244	2,106
2008	GW	4,643	94	216	0	0	229	5,182
	SW	615	0	237	0	183	1,296	2,331
2007	GW	4,340	106	0	0	37	235	4,718
	SW	571	0	0	0	123	1,329	2,023
2006	GW	5,738	125	0	0	82	205	6,150
	SW	425	0	0	0	218	1,161	1,804
2005	GW	5,432	112	0	0	98	232	5,874
	SW	294	0	0	0	169	1,318	1,781
2004	GW	4,699	130	0	0	82	475	5,386
	SW	196	0	0	0	118	1,202	1,516
2003	GW	5,376	141	0	0	60	489	6,066
	SW	199	0	0	0	40	1,239	1,478
2002	GW	4,723	138	0	0	0	499	5,360
	SW	0	0	0	0	0	1,263	1,263
2001	GW	5,306	141	0	0	0	487	5,934
	SW	0	0	0	0	0	1,233	1,233
2000	GW	5,323	224	0	0	0	881	6,428
	SW	0	0	0	0	0	881	881

DENTON COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2014	GW	11,864	0	238	0	1,816	243	14,161
	SW	104,624	289	953	5	1,162	568	107,601
2013	GW	12,897	0	292	0	2,167	224	15,580
	SW	108,277	294	1,168	55	782	524	111,100
2012	GW	15,070	1	372	0	2,817	205	18,465
	SW	118,073	291	1,096	86	611	479	120,636
2011	GW	17,100	1	1,663	0	2,534	239	21,537
	SW	124,060	302	2,847	23	750	559	128,541
2010	GW	12,327	7	1,209	0	967	240	14,750
	SW	100,694	358	2,070	80	1,124	559	104,885
2009	GW	10,478	8	1,366	0	1,445	275	13,572
	SW	96,094	403	2,340	129	1,055	643	100,664
2008	GW	10,288	13	1,523	0	0	265	12,089
	SW	99,989	442	2,609	122	1,475	618	105,255
2007	GW	7,537	13	0	0	696	357	8,603
	SW	87,322	365	0	200	762	833	89,482
2006	GW	9,512	30	0	0	1,337	348	11,227
	SW	104,655	410	0	639	1,413	812	107,929
2005	GW	9,923	59	0	0	1,136	322	11,440
	SW	103,027	355	0	384	1,364	751	105,881
2004	GW	8,442	78	0	0	1,080	500	10,100
	SW	87,944	352	0	415	920	500	90,131
2003	GW	10,646	53	0	0	1,096	499	12,294
	SW	97,967	388	0	346	704	499	99,904
2002	GW	9,980	55	0	0	2,042	570	12,647
	SW	80,217	486	0	158	0	570	81,431
2001	GW	10,531	44	0	0	1,792	635	13,002
	SW	102,552	510	0	0	0	635	103,697
2000	GW	11,252	43	0	0	2,108	315	13,718
	SW	81,653	754	0	19	0	315	82,741

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

COLLIN COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	ALLEN	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	2,249	1,947	1,677	1,486	1,349	1,228
C	ALLEN	TRINITY	FORK LAKE/RESERVOIR	1,139	0	0	0	0	0
C	ALLEN	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	4,725	4,080	3,507	3,099	2,806	2,549
C	ALLEN	TRINITY	TAWAKONI LAKE/RESERVOIR	1,749	530	461	411	375	343
C	ALLEN	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	3,857	3,355	2,904	2,585	2,357	2,156
C	ANNA	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	107	121	196	185	179	176
C	ANNA	TRINITY	FORK LAKE/RESERVOIR	54	0	0	0	0	0
C	ANNA	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	225	255	410	386	374	367
C	ANNA	TRINITY	TAWAKONI LAKE/RESERVOIR	83	33	54	51	50	49
C	ANNA	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	183	209	339	322	313	310
C	CADDO BASIN SUD	SABINE	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	20	21	23	26	28	29
C	CADDO BASIN SUD	SABINE	FORK LAKE/RESERVOIR	11	0	0	0	0	0
C	CADDO BASIN SUD	SABINE	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	43	43	48	54	58	62
C	CADDO BASIN SUD	SABINE	TAWAKONI LAKE/RESERVOIR	16	6	6	7	8	8

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	CADDO BASIN SUD	SABINE	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	36	36	40	43	48	52
C	CADDO BASIN SUD	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	10	10	11	13	14	14
C	CADDO BASIN SUD	TRINITY	FORK LAKE/RESERVOIR	5	0	0	0	0	0
C	CADDO BASIN SUD	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	21	22	24	26	29	30
C	CADDO BASIN SUD	TRINITY	TAWAKONI LAKE/RESERVOIR	8	3	3	4	4	4
C	CADDO BASIN SUD	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	16	17	20	22	24	25
C	CARROLLTON	TRINITY	FORK LAKE/RESERVOIR	0	0	0	0	0	0
C	CARROLLTON	TRINITY	RAY HUBBARD LAKE/RESERVOIR	0	0	0	0	0	0
C	CARROLLTON	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	0	0	0	0	0	0
C	CARROLLTON	TRINITY	TAWAKONI LAKE/RESERVOIR	0	1	1	1	1	1
C	CELINA	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	680	591	559	533	552	112
C	CELINA	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	2,012	1,914	1,706	1,521	1,486	1,457
C	COPEVILLE SUD	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	35	36	38	44	70	108
C	COPEVILLE SUD	TRINITY	FORK LAKE/RESERVOIR	18	0	0	0	0	0
C	COPEVILLE SUD	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	73	76	78	91	144	225
C	COPEVILLE SUD	TRINITY	TAWAKONI LAKE/RESERVOIR	27	10	10	12	19	30

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	COPEVILLE SUD	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	60	62	65	77	122	190
C	COUNTY-OTHER, COLLIN	SABINE	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	5	3	2	2	2	1
C	COUNTY-OTHER, COLLIN	SABINE	FORK LAKE/RESERVOIR	2	0	0	0	0	0
C	COUNTY-OTHER, COLLIN	SABINE	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	10	7	5	5	4	3
C	COUNTY-OTHER, COLLIN	SABINE	TAWAKONI LAKE/RESERVOIR	4	1	1	1	1	0
C	COUNTY-OTHER, COLLIN	SABINE	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	8	6	4	4	3	2
C	COUNTY-OTHER, COLLIN	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	117	101	87	346	463	694
C	COUNTY-OTHER, COLLIN	TRINITY	FORK LAKE/RESERVOIR	60	0	0	0	0	0
C	COUNTY-OTHER, COLLIN	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	246	210	179	722	965	1,442
C	COUNTY-OTHER, COLLIN	TRINITY	TAWAKONI LAKE/RESERVOIR	91	27	23	95	129	194
C	COUNTY-OTHER, COLLIN	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	202	173	149	601	810	1,219
C	CULLEOKA WSC	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	36	35	50	55	54	62
C	CULLEOKA WSC	TRINITY	FORK LAKE/RESERVOIR	18	0	0	0	0	0
C	CULLEOKA WSC	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	75	75	105	113	112	128
C	CULLEOKA WSC	TRINITY	TAWAKONI LAKE/RESERVOIR	28	10	14	15	15	17
C	CULLEOKA WSC	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	62	61	87	95	95	108

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	DALLAS	TRINITY	FORK LAKE/RESERVOIR	1,778	1,814	1,771	1,719	1,680	1,685
C	DALLAS	TRINITY	RAY HUBBARD LAKE/RESERVOIR	1,751	1,603	1,416	1,246	1,108	1,013
C	DALLAS	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	4,215	3,529	3,020	2,587	2,224	1,951
C	DALLAS	TRINITY	TAWAKONI LAKE/RESERVOIR	6,174	5,571	4,842	4,209	3,705	3,357
C	EAST FORK SUD	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	31	32	34	36	39	42
C	EAST FORK SUD	TRINITY	FORK LAKE/RESERVOIR	16	0	0	0	0	0
C	EAST FORK SUD	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	64	68	70	74	80	88
C	EAST FORK SUD	TRINITY	TAWAKONI LAKE/RESERVOIR	24	9	9	10	11	12
C	EAST FORK SUD	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	52	55	59	62	69	75
C	FAIRVIEW	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	508	510	589	523	475	433
C	FAIRVIEW	TRINITY	FORK LAKE/RESERVOIR	258	0	0	0	0	0
C	FAIRVIEW	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	1,069	1,070	1,230	1,091	990	897
C	FAIRVIEW	TRINITY	TAWAKONI LAKE/RESERVOIR	396	139	162	145	132	121
C	FAIRVIEW	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	872	879	1,019	909	830	760
C	FARMERSVILLE	SABINE	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	0	0	0	0	0	0
C	FARMERSVILLE	SABINE	FORK LAKE/RESERVOIR	0	0	0	0	0	0

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	FARMERSVILLE	SABINE	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	0	1	1	1	1	1
C	FARMERSVILLE	SABINE	TAWAKONI LAKE/RESERVOIR	0	0	0	0	0	0
C	FARMERSVILLE	SABINE	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	0	1	1	1	0	0
C	FARMERSVILLE	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	105	221	191	169	154	140
C	FARMERSVILLE	TRINITY	FORK LAKE/RESERVOIR	53	0	0	0	0	0
C	FARMERSVILLE	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	220	463	399	352	319	289
C	FARMERSVILLE	TRINITY	TAWAKONI LAKE/RESERVOIR	82	60	52	47	43	39
C	FARMERSVILLE	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	180	380	329	293	268	246
C	FRISCO	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	2,588	2,930	3,069	2,726	2,475	2,253
C	FRISCO	TRINITY	FORK LAKE/RESERVOIR	1,305	0	0	0	0	0
C	FRISCO	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	5,437	6,142	6,417	5,687	5,150	4,677
C	FRISCO	TRINITY	TAWAKONI LAKE/RESERVOIR	2,002	797	841	752	699	640
C	FRISCO	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	4,439	5,050	5,313	4,742	4,325	3,956
C	GARLAND	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	6	6	7	7	8	8
C	GARLAND	TRINITY	FORK LAKE/RESERVOIR	3	0	0	0	0	0
C	GARLAND	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	12	13	14	15	16	17

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	GARLAND	TRINITY	TAWAKONI LAKE/RESERVOIR	5	2	2	2	2	2
C	GARLAND	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	10	11	11	12	13	15
C	IRRIGATION, COLLIN	SABINE	RAY HUBBARD LAKE/RESERVOIR	39	36	32	29	27	26
C	IRRIGATION, COLLIN	SABINE	TRINITY RUN-OF-RIVER	9	9	9	9	9	9
C	IRRIGATION, COLLIN	TRINITY	RAY HUBBARD LAKE/RESERVOIR	1,680	1,528	1,364	1,258	1,177	1,121
C	IRRIGATION, COLLIN	TRINITY	TRINITY RUN-OF-RIVER	399	399	399	399	399	399
C	JOSEPHINE	SABINE	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	28	38	43	47	43	39
C	JOSEPHINE	SABINE	FORK LAKE/RESERVOIR	14	0	0	0	0	0
C	JOSEPHINE	SABINE	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	60	78	91	99	90	82
C	JOSEPHINE	SABINE	TAWAKONI LAKE/RESERVOIR	22	10	12	13	12	11
C	JOSEPHINE	SABINE	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	48	64	74	83	75	68
C	LAVON	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	61	68	90	103	210	429
C	LAVON	TRINITY	FORK LAKE/RESERVOIR	31	0	0	0	0	0
C	LAVON	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	129	142	187	214	436	891
C	LAVON	TRINITY	TAWAKONI LAKE/RESERVOIR	48	19	25	28	58	120
C	LAVON	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	105	117	155	179	366	753
C	LAVON SUD	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	39	35	36	35	75	170

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	LAVON SUD	TRINITY	FORK LAKE/RESERVOIR	20	0	0	0	0	0
C	LAVON SUD	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	82	73	75	74	156	353
C	LAVON SUD	TRINITY	TAWAKONI LAKE/RESERVOIR	30	10	10	10	20	47
C	LAVON SUD	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	67	61	62	62	131	299
C	LIVESTOCK, COLLIN	SABINE	SABINE LIVESTOCK LOCAL SUPPLY	3	3	3	3	3	3
C	LIVESTOCK, COLLIN	SABINE	TRINITY LIVESTOCK LOCAL SUPPLY	97	97	97	97	97	97
C	LIVESTOCK, COLLIN	TRINITY	SABINE LIVESTOCK LOCAL SUPPLY	28	28	28	28	28	28
C	LIVESTOCK, COLLIN	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	874	874	874	874	874	874
C	LOWRY CROSSING	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	24	25	26	23	20	19
C	LOWRY CROSSING	TRINITY	FORK LAKE/RESERVOIR	12	0	0	0	0	0
C	LOWRY CROSSING	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	52	51	54	47	43	38
C	LOWRY CROSSING	TRINITY	TAWAKONI LAKE/RESERVOIR	19	7	7	6	6	5
C	LOWRY CROSSING	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	42	42	44	39	36	33
C	LUCAS	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	233	230	263	260	261	238
C	LUCAS	TRINITY	FORK LAKE/RESERVOIR	118	0	0	0	0	0
C	LUCAS	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	491	483	548	543	544	494
C	LUCAS	TRINITY	TAWAKONI LAKE/RESERVOIR	182	63	72	72	73	66

Projected Surface Water Supplies
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RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	LUCAS	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	400	397	455	453	457	418
C	MANUFACTURING, COLLIN	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	359	355	341	329	324	322
C	MANUFACTURING, COLLIN	TRINITY	FORK LAKE/RESERVOIR	183	0	0	0	0	0
C	MANUFACTURING, COLLIN	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	756	740	711	687	679	669
C	MANUFACTURING, COLLIN	TRINITY	TAWAKONI LAKE/RESERVOIR	280	96	94	90	90	90
C	MANUFACTURING, COLLIN	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	616	609	589	575	569	565
C	MARILEE SUD	TRINITY	TEXOMA LAKE/RESERVOIR NON-SYSTEM PORTION	141	133	120	103	81	56
C	MCKINNEY	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	3,764	3,914	4,905	5,672	5,152	4,691
C	MCKINNEY	TRINITY	FORK LAKE/RESERVOIR	1,907	0	0	0	0	0
C	MCKINNEY	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	7,906	8,201	10,255	11,831	10,722	9,738
C	MCKINNEY	TRINITY	TAWAKONI LAKE/RESERVOIR	2,928	1,065	1,347	1,570	1,435	1,309
C	MCKINNEY	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	6,456	6,744	8,491	9,865	9,004	8,237
C	MELISSA	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	146	185	221	464	712	978
C	MELISSA	TRINITY	FORK LAKE/RESERVOIR	74	0	0	0	0	0
C	MELISSA	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	307	390	462	967	1,481	2,031
C	MELISSA	TRINITY	TAWAKONI LAKE/RESERVOIR	114	50	61	128	198	273

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	MELISSA	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	250	319	383	808	1,244	1,717
C	MURPHY	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	579	503	435	386	350	319
C	MURPHY	TRINITY	FORK LAKE/RESERVOIR	293	0	0	0	0	0
C	MURPHY	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	1,216	1,053	908	804	730	661
C	MURPHY	TRINITY	TAWAKONI LAKE/RESERVOIR	450	137	119	107	97	89
C	MURPHY	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	993	867	752	671	612	560
C	NEVADA	SABINE	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	1	1	1	4	10	16
C	NEVADA	SABINE	FORK LAKE/RESERVOIR	1	0	0	0	0	0
C	NEVADA	SABINE	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	3	3	3	9	21	34
C	NEVADA	SABINE	TAWAKONI LAKE/RESERVOIR	1	0	0	1	3	4
C	NEVADA	SABINE	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	2	2	2	8	17	29
C	NEVADA	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	10	10	10	35	78	129
C	NEVADA	TRINITY	FORK LAKE/RESERVOIR	4	0	0	0	0	0
C	NEVADA	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	19	20	21	72	163	266
C	NEVADA	TRINITY	TAWAKONI LAKE/RESERVOIR	7	3	3	10	22	36
C	NEVADA	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	16	16	17	60	137	225

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	NEW HOPE	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	13	14	14	15	17	18
C	NEW HOPE	TRINITY	FORK LAKE/RESERVOIR	7	0	0	0	0	0
C	NEW HOPE	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	28	28	30	33	35	38
C	NEW HOPE	TRINITY	TAWAKONI LAKE/RESERVOIR	10	4	4	4	5	5
C	NEW HOPE	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	22	24	25	27	29	32
C	NORTH COLLIN WSC	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	86	83	82	82	86	89
C	NORTH COLLIN WSC	TRINITY	FORK LAKE/RESERVOIR	43	0	0	0	0	0
C	NORTH COLLIN WSC	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	179	174	171	173	178	185
C	NORTH COLLIN WSC	TRINITY	TAWAKONI LAKE/RESERVOIR	67	23	22	23	24	25
C	NORTH COLLIN WSC	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	147	144	142	143	150	157
C	PARKER	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	281	350	329	311	301	296
C	PARKER	TRINITY	FORK LAKE/RESERVOIR	142	0	0	0	0	0
C	PARKER	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	589	734	689	648	627	616
C	PARKER	TRINITY	TAWAKONI LAKE/RESERVOIR	218	95	90	86	84	83
C	PARKER	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	481	604	570	540	527	520
C	PLANO	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	7,350	6,570	5,895	5,250	4,764	4,338

Projected Surface Water Supplies
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RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	PLANO	TRINITY	FORK LAKE/RESERVOIR	3,714	0	0	0	0	0
C	PLANO	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	15,444	13,771	12,326	10,951	9,915	9,005
C	PLANO	TRINITY	TAWAKONI LAKE/RESERVOIR	5,701	1,786	1,615	1,448	1,342	1,228
C	PLANO	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	12,609	11,323	10,206	9,132	8,326	7,617
C	PRINCETON	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	107	118	130	271	389	484
C	PRINCETON	TRINITY	FORK LAKE/RESERVOIR	54	0	0	0	0	0
C	PRINCETON	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	224	248	272	566	809	1,004
C	PRINCETON	TRINITY	TAWAKONI LAKE/RESERVOIR	83	32	36	75	108	135
C	PRINCETON	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	183	204	225	472	680	849
C	PROSPER	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	562	598	479	369	306	301
C	PROSPER	TRINITY	FORK LAKE/RESERVOIR	284	0	0	0	0	0
C	PROSPER	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	1,181	1,253	1,001	770	637	625
C	PROSPER	TRINITY	TAWAKONI LAKE/RESERVOIR	437	163	132	102	85	84
C	PROSPER	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	964	1,031	829	643	535	529
C	RICHARDSON	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	866	749	665	606	550	501
C	RICHARDSON	TRINITY	FORK LAKE/RESERVOIR	439	0	0	0	0	0

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	RICHARDSON	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	1,819	1,569	1,392	1,264	1,145	1,040
C	RICHARDSON	TRINITY	TAWAKONI LAKE/RESERVOIR	673	204	183	168	153	140
C	RICHARDSON	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	1,485	1,290	1,152	1,054	961	879
C	ROYSE CITY	SABINE	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	21	59	111	164	282	276
C	ROYSE CITY	SABINE	FORK LAKE/RESERVOIR	11	0	0	0	0	0
C	ROYSE CITY	SABINE	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	44	125	232	341	586	573
C	ROYSE CITY	SABINE	TAWAKONI LAKE/RESERVOIR	16	16	31	45	78	77
C	ROYSE CITY	SABINE	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	36	102	192	284	492	485
C	SACHSE	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	157	136	117	104	94	86
C	SACHSE	TRINITY	FORK LAKE/RESERVOIR	80	0	0	0	0	0
C	SACHSE	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	331	285	245	217	196	178
C	SACHSE	TRINITY	TAWAKONI LAKE/RESERVOIR	122	37	32	29	26	24
C	SACHSE	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	270	234	203	180	164	150
C	SEIS LAGOS UD	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	66	57	49	44	40	36
C	SEIS LAGOS UD	TRINITY	FORK LAKE/RESERVOIR	33	0	0	0	0	0
C	SEIS LAGOS UD	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	139	119	104	91	83	75

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	SEIS LAGOS UD	TRINITY	TAWAKONI LAKE/RESERVOIR	51	16	14	12	11	10
C	SEIS LAGOS UD	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	114	99	86	76	70	64
C	ST. PAUL	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	29	28	27	25	23	21
C	ST. PAUL	TRINITY	FORK LAKE/RESERVOIR	15	0	0	0	0	0
C	ST. PAUL	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	60	60	56	50	48	44
C	ST. PAUL	TRINITY	TAWAKONI LAKE/RESERVOIR	23	8	7	7	6	6
C	ST. PAUL	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	50	49	46	43	41	37
C	STEAM ELECTRIC POWER, COLLIN	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	92	60	63	45	54	46
C	STEAM ELECTRIC POWER, COLLIN	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	195	124	133	94	112	94
C	STEAM ELECTRIC POWER, COLLIN	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	159	103	110	79	95	80
C	WYLIE	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	695	678	628	586	549	515
C	WYLIE	TRINITY	FORK LAKE/RESERVOIR	353	0	0	0	0	0
C	WYLIE	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	1,461	1,420	1,310	1,225	1,144	1,069
C	WYLIE	TRINITY	TAWAKONI LAKE/RESERVOIR	541	185	172	163	152	144
C	WYLIE	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	1,193	1,168	1,086	1,019	960	904

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	WYLIE NORTHEAST SUD	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	28	31	33	58	88	127
C	WYLIE NORTHEAST SUD	TRINITY	FORK LAKE/RESERVOIR	14	0	0	0	0	0
C	WYLIE NORTHEAST SUD	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	60	63	69	120	181	264
C	WYLIE NORTHEAST SUD	TRINITY	TAWAKONI LAKE/RESERVOIR	22	8	9	16	24	36
C	WYLIE NORTHEAST SUD	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	48	53	57	101	153	224
			Sum of Projected Surface Water Supplies (acre-feet)	**150,370**	**124,355**	**123,068**	**121,257**	**116,056**	**112,754**

COOKE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	COUNTY-OTHER, COOKE	RED	HUBERT H MOSS LAKE/RESERVOIR	35	30	0	23	69	141
C	COUNTY-OTHER, COOKE	TRINITY	HUBERT H MOSS LAKE/RESERVOIR	127	108	0	106	300	810
C	GAINESVILLE	RED	HUBERT H MOSS LAKE/RESERVOIR	1	1	1	1	2	2
C	GAINESVILLE	TRINITY	HUBERT H MOSS LAKE/RESERVOIR	387	484	554	650	1,232	1,080
C	LIVESTOCK, COOKE	RED	RED LIVESTOCK LOCAL SUPPLY	180	180	180	180	180	180
C	LIVESTOCK, COOKE	RED	TRINITY LIVESTOCK LOCAL SUPPLY	382	382	382	382	382	382
C	LIVESTOCK, COOKE	TRINITY	RED LIVESTOCK LOCAL SUPPLY	200	200	200	200	200	200
C	LIVESTOCK, COOKE	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	425	425	425	425	425	425
C	MANUFACTURING, COOKE	TRINITY	HUBERT H MOSS LAKE/RESERVOIR	192	213	234	252	276	124
			Sum of Projected Surface Water Supplies (acre-feet)	**1,929**	**2,023**	**1,976**	**2,219**	**3,066**	**3,344**

DENTON 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
C	ARGYLE	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	191	247	323	276	261	235
C	ARGYLE	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	634	811	984	785	703	606
C	ARGYLE WSC	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	137	118	108	92	87	78
C	ARGYLE WSC	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	335	369	329	263	235	202
C	AUBREY	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	128	121	114	112	124	134
C	AUBREY	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	379	392	348	318	332	347
C	BARTONVILLE	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	148	125	104	87	82	74
C	BARTONVILLE	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	442	406	316	249	222	190
C	CARROLLTON	TRINITY	FORK LAKE/RESERVOIR	1,609	1,649	1,589	1,539	1,505	1,508
C	CARROLLTON	TRINITY	RAY HUBBARD LAKE/RESERVOIR	1,585	1,457	1,270	1,116	992	907
C	CARROLLTON	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	3,814	3,209	2,709	2,316	1,992	1,748
C	CARROLLTON	TRINITY	TAWAKONI LAKE/RESERVOIR	5,588	5,063	4,342	3,769	3,315	3,004
C	CELINA	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	21	66	123	178	184	38

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	CELINA	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	62	213	375	507	495	486
C	COPPELL	TRINITY	FORK LAKE/RESERVOIR	34	34	33	32	31	31
C	COPPELL	TRINITY	RAY HUBBARD LAKE/RESERVOIR	33	30	26	23	21	19
C	COPPELL	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	81	66	56	48	42	36
C	COPPELL	TRINITY	TAWAKONI LAKE/RESERVOIR	118	105	90	79	69	63
C	COPPER CANYON	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	21	19	22	22	24	24
C	COPPER CANYON	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	63	66	63	62	66	64
C	CORINTH	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	714	547	441	364	335	301
C	CORINTH	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	2,116	1,770	1,346	1,038	902	776
C	COUNTY-OTHER, DENTON	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	313	344	15	16	18	20
C	COUNTY-OTHER, DENTON	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	233	178	154	137	124	113
C	COUNTY-OTHER, DENTON	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	488	375	323	286	260	235
C	COUNTY-OTHER, DENTON	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	929	1,113	1,656	2,084	3,682	6,858

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	COUNTY-OTHER, DENTON	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	399	307	267	238	217	199
C	CROSS ROADS	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	103	103	101	84	78	70
C	CROSS ROADS	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	307	332	310	241	209	180
C	DALLAS	TRINITY	FORK LAKE/RESERVOIR	740	798	874	945	997	1,034
C	DALLAS	TRINITY	RAY HUBBARD LAKE/RESERVOIR	729	705	699	685	657	622
C	DALLAS	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	1,754	1,552	1,490	1,422	1,319	1,197
C	DALLAS	TRINITY	TAWAKONI LAKE/RESERVOIR	2,570	2,450	2,389	2,315	2,197	2,061
C	DENTON	TRINITY	LEWISVILLE LAKE/RESERVOIR NON-SYSTEM PORTION	7,817	7,715	7,613	7,512	7,410	7,308
C	DENTON	TRINITY	RAY ROBERTS LAKE/RESERVOIR NON-SYSTEM PORTION	17,830	17,787	17,716	17,657	17,637	17,531
C	DENTON COUNTY FWSD #10	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	338	536	430	353	326	290
C	DENTON COUNTY FWSD #10	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	999	1,677	1,285	996	868	746
C	DENTON COUNTY FWSD #1A	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	557	729	708	585	538	150
C	DENTON COUNTY FWSD #1A	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	2,800	4,220	4,118	3,416	3,031	2,828

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	DENTON COUNTY FWSD #7	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	777	565	459	380	351	315
C	DENTON COUNTY FWSD #7	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	2,299	1,826	1,399	1,084	943	812
C	DOUBLE OAK	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	54	42	36	35	36	31
C	DOUBLE OAK	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	156	135	115	97	93	81
C	FLOWER MOUND	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	2,373	2,373	1,919	1,586	1,460	1,312
C	FLOWER MOUND	TRINITY	FORK LAKE/RESERVOIR	725	810	888	942	931	933
C	FLOWER MOUND	TRINITY	RAY HUBBARD LAKE/RESERVOIR	714	715	710	683	614	561
C	FLOWER MOUND	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	8,744	9,248	7,364	5,938	5,165	4,468
C	FLOWER MOUND	TRINITY	TAWAKONI LAKE/RESERVOIR	2,518	2,487	2,429	2,308	2,052	1,859
C	FORT WORTH	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	4,491	5,781	6,874	8,449	9,621	10,434
C	FRISCO	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	1,726	1,954	2,046	1,818	1,650	1,502
C	FRISCO	TRINITY	FORK LAKE/RESERVOIR	870	0	0	0	0	0
C	FRISCO	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	3,625	4,095	4,278	3,792	3,434	3,118
C	FRISCO	TRINITY	TAWAKONI LAKE/RESERVOIR	1,335	531	560	501	466	426
C	FRISCO	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	2,960	3,367	3,542	3,161	2,884	2,637

Projected Surface Water Supplies

TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	HACKBERRY	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	40	39	43	47	52	57
C	HACKBERRY	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	84	82	89	97	108	119
C	HACKBERRY	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	69	67	74	81	91	100
C	HICKORY CREEK	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	110	103	105	110	103	91
C	HICKORY CREEK	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	327	330	319	314	277	238
C	HIGHLAND VILLAGE	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	564	457	384	331	318	285
C	HIGHLAND VILLAGE	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	1,672	1,478	1,169	943	857	737
C	IRRIGATION, DENTON	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	429	390	348	321	301	286
C	JUSTIN	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	47	129	181	156	148	133
C	JUSTIN	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	141	416	553	443	399	343
C	KRUGERVILLE	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	59	53	49	49	46	40
C	KRUGERVILLE	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	177	169	151	139	120	103

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	KRUM	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	160	168	185	199	232	253
C	KRUM	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	476	543	564	566	623	652
C	LAKE DALLAS	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	207	168	161	137	127	115
C	LAKE DALLAS	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	615	549	491	387	342	294
C	LEWISVILLE	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	19,056	19,308	19,223	19,447	19,624	19,624
C	LITTLE ELM	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	531	456	393	348	315	287
C	LITTLE ELM	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	1,117	955	822	726	658	596
C	LITTLE ELM	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	911	786	681	606	551	504
C	LIVESTOCK, DENTON	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	622	622	622	622	622	622
C	MANUFACTURING, DENTON	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	17	27	24	23	24	22
C	MANUFACTURING, DENTON	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	9	8	8	8	8	8
C	MANUFACTURING, DENTON	TRINITY	FORK LAKE/RESERVOIR	11	13	14	15	17	18
C	MANUFACTURING, DENTON	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	19	17	16	16	16	16
C	MANUFACTURING, DENTON	TRINITY	RAY HUBBARD LAKE/RESERVOIR	11	12	12	11	11	11

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	MANUFACTURING, DENTON	TRINITY	RAY ROBERTS LAKE/RESERVOIR NON-SYSTEM PORTION	1,072	946	848	738	589	526
C	MANUFACTURING, DENTON	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	75	113	100	88	84	78
C	MANUFACTURING, DENTON	TRINITY	TAWAKONI LAKE/RESERVOIR	40	41	40	38	36	35
C	MANUFACTURING, DENTON	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	16	14	14	13	13	13
C	MANUFACTURING, DENTON	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	13	13	13	13	13	12
C	MINING, DENTON	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	537	127	187	262	334	44
C	MINING, DENTON	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	1,590	411	568	746	900	1,597
C	MUSTANG SUD	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	162	391	265	581	494	153
C	MUSTANG SUD	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	472	1,325	2,046	2,014	2,479	2,267
C	NORTHLAKE	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	131	418	304	734	869	50
C	NORTHLAKE	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	389	1,352	2,264	2,093	2,342	3,147
C	NORTHLAKE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	160	573	905	1,140	1,340	1,233
C	OAK POINT	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	178	221	254	273	309	277

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	OAK POINT	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	531	715	775	777	832	715
C	PALOMA CREEK	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	582	576	468	388	358	321
C	PALOMA CREEK	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	1,723	1,862	1,426	1,105	962	828
C	PLANO	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	212	190	167	148	134	122
C	PLANO	TRINITY	FORK LAKE/RESERVOIR	107	0	0	0	0	0
C	PLANO	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	445	398	349	308	279	253
C	PLANO	TRINITY	TAWAKONI LAKE/RESERVOIR	164	52	46	41	38	35
C	PLANO	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	363	327	289	257	234	214
C	PROSPER	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	21	102	179	252	297	292
C	PROSPER	TRINITY	FORK LAKE/RESERVOIR	11	0	0	0	0	0
C	PROSPER	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	44	215	376	525	616	606
C	PROSPER	TRINITY	TAWAKONI LAKE/RESERVOIR	16	28	49	70	83	81
C	PROSPER	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	36	176	311	438	518	512
C	PROVIDENCE VILLAGE WCID	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	213	154	125	103	95	87

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	PROVIDENCE VILLAGE WCID	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	631	499	382	295	257	221
C	ROANOKE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	2,219	2,264	2,294	2,062	1,886	1,734
C	SANGER	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	18	73	117	149	193	218
C	SANGER	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	52	236	354	426	519	564
C	SHADY SHORES	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION	88	75	62	52	48	43
C	SHADY SHORES	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	258	240	188	148	130	112
C	SOUTHLAKE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	411	436	467	520	581	646
C	THE COLONY	TRINITY	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	155	198	189	183	180	176
C	THE COLONY	TRINITY	FORK LAKE/RESERVOIR	589	606	624	671	634	614
C	THE COLONY	TRINITY	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	326	415	394	381	374	366
C	THE COLONY	TRINITY	RAY HUBBARD LAKE/RESERVOIR	580	535	499	486	418	369
C	THE COLONY	TRINITY	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM	1,398	1,177	1,064	1,009	839	712
C	THE COLONY	TRINITY	TAWAKONI LAKE/RESERVOIR	2,044	1,862	1,707	1,643	1,399	1,223
C	THE COLONY	TRINITY	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM	266	342	327	318	314	309

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
C	TROPHY CLUB	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	4,951	4,598	3,884	3,492	3,194	2,936
C	WESTLAKE	TRINITY	TRWD LAKE/RESERVOIR SYSTEM	28	31	34	39	44	49
			Sum of Projected Surface Water Supplies (acre-feet)	**141,324**	**143,405**	**139,513**	**134,182**	**132,535**	**130,146**

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.

COLLIN COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	ALLEN	TRINITY	20,533	20,336	20,215	20,139	20,108	20,106
C	ANNA	TRINITY	1,898	2,190	3,588	4,826	9,167	13,820
C	BLUE RIDGE	TRINITY	92	185	362	1,412	3,221	5,461
C	CADDO BASIN SUD	SABINE	187	215	280	346	414	483
C	CADDO BASIN SUD	TRINITY	92	106	138	170	204	237
C	CARROLLTON	TRINITY	1	2	2	3	3	4
C	CELINA	TRINITY	4,574	8,900	15,008	23,121	23,119	23,117
C	COPEVILLE SUD	TRINITY	319	376	452	596	1,037	1,773
C	COUNTY-OTHER, COLLIN	SABINE	63	53	40	34	30	22
C	COUNTY-OTHER, COLLIN	TRINITY	1,550	1,529	1,520	5,179	7,404	11,863
C	CULLEOKA WSC	TRINITY	328	370	605	740	807	1,009
C	DALLAS	TRINITY	15,807	15,886	15,831	15,707	15,682	15,679
C	EAST FORK SUD	TRINITY	279	335	407	487	586	698
C	FAIRVIEW	TRINITY	4,644	5,329	7,094	7,087	7,084	7,083
C	FARMERSVILLE	SABINE	2	4	4	4	4	4
C	FARMERSVILLE	TRINITY	956	2,306	2,295	2,289	2,287	2,287
C	FRISCO	TRINITY	24,957	32,625	40,372	40,334	40,308	40,300
C	GARLAND	TRINITY	54	66	80	96	115	137
C	HICKORY CREEK SUD	TRINITY	7	7	8	8	9	10
C	IRRIGATION, COLLIN	SABINE	68	68	68	68	68	68
C	IRRIGATION, COLLIN	TRINITY	2,927	2,927	2,927	2,927	2,927	2,927
C	JOSEPHINE	SABINE	258	390	519	641	641	641
C	LAVON	TRINITY	559	711	1,081	1,392	3,125	7,025
C	LAVON SUD	TRINITY	354	367	430	481	1,115	2,783
C	LIVESTOCK, COLLIN	SABINE	86	86	86	86	86	86
C	LIVESTOCK, COLLIN	TRINITY	774	774	774	774	774	774
C	LOWRY CROSSING	TRINITY	222	257	308	306	305	305
C	LUCAS	TRINITY	2,132	2,406	3,165	3,528	3,896	3,896
C	MANUFACTURING, COLLIN	TRINITY	3,456	3,888	4,319	4,706	5,109	5,547
C	MARILEE SUD	TRINITY	541	532	517	515	506	506
C	MCKINNEY	TRINITY	34,365	40,877	59,112	76,866	76,818	76,814
C	MELISSA	TRINITY	1,535	2,133	2,869	6,493	10,814	16,216

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	MURPHY	TRINITY	5,285	5,253	5,238	5,228	5,222	5,220
C	NEVADA	SABINE	11	13	15	60	148	266
C	NEVADA	TRINITY	85	99	118	468	1,168	2,102
C	NEW HOPE	TRINITY	119	143	174	209	251	299
C	NORTH COLLIN WSC	TRINITY	782	871	987	1,117	1,279	1,464
C	PARKER	TRINITY	2,561	6,772	8,454	8,450	8,449	8,449
C	PLANO	TRINITY	67,088	68,626	71,043	71,153	71,061	71,061
C	PRINCETON	TRINITY	974	1,236	1,566	3,679	5,798	7,919
C	PROSPER	TRINITY	5,129	7,134	8,294	8,594	8,897	8,896
C	RICHARDSON	TRINITY	7,904	7,819	8,021	8,212	8,201	8,201
C	ROYSE CITY	SABINE	190	621	1,338	2,215	4,199	4,519
C	SACHSE	TRINITY	1,436	1,420	1,411	1,406	1,404	1,403
C	SEIS LAGOS UD	TRINITY	603	598	596	594	594	594
C	SOUTH GRAYSON WSC	TRINITY	143	175	230	267	307	349
C	ST. PAUL	TRINITY	265	298	322	334	348	347
C	STEAM ELECTRIC POWER, COLLIN	TRINITY	715	602	740	594	782	724
C	WESTON	TRINITY	506	1,060	4,814	11,768	18,723	18,721
C	WYLIE	TRINITY	6,349	7,080	7,562	7,943	8,196	8,434
C	WYLIE NORTHEAST SUD	TRINITY	257	319	396	785	1,305	2,086
		Sum of Projected Water Demands (acre-feet)	**224,022**	**256,375**	**305,795**	**354,437**	**384,105**	**412,735**

COOKE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	BOLIVAR WSC	TRINITY	146	150	153	159	164	169
C	COUNTY-OTHER, COOKE	RED	241	247	253	278	343	559
C	COUNTY-OTHER, COOKE	TRINITY	882	902	956	1,312	1,487	3,208
C	GAINESVILLE	RED	4	4	4	5	5	7
C	GAINESVILLE	TRINITY	2,488	2,585	2,655	2,750	3,333	4,656
C	IRRIGATION, COOKE	RED	90	90	90	90	90	90
C	IRRIGATION, COOKE	TRINITY	210	210	210	210	210	210
C	LAKE KIOWA SUD	TRINITY	786	790	800	813	826	826
C	LINDSAY	TRINITY	144	150	154	160	304	605
C	LIVESTOCK, COOKE	RED	708	708	708	708	708	708

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	LIVESTOCK, COOKE	TRINITY	786	786	786	786	786	786
C	MANUFACTURING, COOKE	TRINITY	226	247	268	286	310	336
C	MINING, COOKE	TRINITY	1,583	900	378	446	511	586
C	MOUNTAIN SPRING WSC	TRINITY	446	469	487	507	802	1,280
C	MUENSTER	TRINITY	266	259	261	258	265	265
C	TWO WAY SUD	RED	12	12	12	13	13	14
C	VALLEY VIEW	TRINITY	56	60	63	66	68	71
C	WOODBINE WSC	RED	52	56	61	67	73	79
C	WOODBINE WSC	TRINITY	599	651	706	769	839	911
		Sum of Projected Water Demands (acre-feet)	**9,725**	**9,276**	**9,005**	**9,683**	**11,137**	**15,366**

DENTON COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	ARGYLE	TRINITY	1,395	2,064	2,966	2,961	2,960	2,959
C	ARGYLE WSC	TRINITY	996	991	990	990	989	989
C	AUBREY	TRINITY	563	731	847	999	1,197	1,452
C	BARTONVILLE	TRINITY	825	907	903	900	900	899
C	BOLIVAR WSC	TRINITY	848	985	1,160	1,369	1,625	1,921
C	CARROLLTON	TRINITY	14,303	14,437	14,196	14,062	14,036	14,034
C	CELINA	TRINITY	142	989	3,295	7,707	7,707	7,706
C	COPPELL	TRINITY	302	298	295	294	293	293
C	COPPER CANYON	TRINITY	260	272	289	310	338	369
C	CORINTH	TRINITY	4,266	4,983	4,956	4,939	4,932	4,931
C	COUNTY-OTHER, DENTON	TRINITY	3,785	4,155	4,574	6,487	10,458	19,480
C	CROSS ROADS	TRINITY	457	619	756	755	754	754
C	DALLAS	TRINITY	6,579	6,987	7,812	8,638	9,301	9,625
C	DENTON	TRINITY	28,908	37,431	47,013	59,444	81,374	99,143
C	DENTON COUNTY FWSD #10	TRINITY	1,486	3,128	3,127	3,126	3,124	3,124
C	DENTON COUNTY FWSD #1A	TRINITY	3,659	6,494	7,777	7,774	7,771	7,769
C	DENTON COUNTY FWSD #7	TRINITY	3,418	3,405	3,403	3,401	3,399	3,397
C	DOUBLE OAK	TRINITY	558	547	539	534	533	533
C	FLOWER MOUND	TRINITY	18,988	23,080	22,955	22,881	22,857	22,855

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	FORT WORTH	TRINITY	7,139	10,766	15,447	21,678	27,750	33,837
C	FRISCO	TRINITY	16,638	21,750	26,915	26,890	26,872	26,867
C	HACKBERRY	TRINITY	309	394	498	615	752	908
C	HICKORY CREEK	TRINITY	583	709	865	1,078	1,076	1,076
C	HIGHLAND VILLAGE	TRINITY	3,832	3,968	3,924	3,899	3,893	3,893
C	IRRIGATION, DENTON	TRINITY	2,137	2,137	2,137	2,137	2,137	2,137
C	JUSTIN	TRINITY	695	1,212	1,733	1,729	1,728	1,727
C	KRUGERVILLE	TRINITY	263	315	368	435	434	434
C	KRUM	TRINITY	1,154	1,414	1,731	2,089	2,512	2,997
C	LAKE DALLAS	TRINITY	1,096	1,181	1,339	1,329	1,326	1,326
C	LAKEWOOD VILLAGE	TRINITY	83	102	125	151	182	218
C	LEWISVILLE	TRINITY	19,985	22,286	25,177	28,537	31,822	31,818
C	LITTLE ELM	TRINITY	4,108	4,600	4,586	4,574	4,564	4,564
C	LIVESTOCK, DENTON	TRINITY	1,045	1,045	1,045	1,045	1,045	1,045
C	MANUFACTURING, DENTON	TRINITY	1,446	1,643	1,843	2,020	2,194	2,383
C	MINING, DENTON	TRINITY	4,326	2,729	3,345	4,306	5,204	6,291
C	MOUNTAIN SPRING WSC	TRINITY	10	11	12	13	14	16
C	MUSTANG SUD	TRINITY	1,875	3,527	5,190	6,856	8,526	10,196
C	NORTHLAKE	TRINITY	911	3,402	6,198	8,591	10,986	10,986
C	OAK POINT	TRINITY	1,053	1,572	2,097	2,624	3,153	3,152
C	PALOMA CREEK	TRINITY	2,562	3,472	3,470	3,468	3,465	3,464
C	PILOT POINT	TRINITY	891	1,070	1,449	1,965	2,615	3,527
C	PLANO	TRINITY	1,932	1,982	2,011	2,000	1,998	1,998
C	PONDER	TRINITY	254	343	451	574	718	883
C	PROSPER	TRINITY	193	1,221	3,111	5,863	8,614	8,613
C	PROVIDENCE VILLAGE WCID	TRINITY	938	931	929	927	926	925
C	ROANOKE	TRINITY	2,263	2,807	3,356	3,350	3,348	3,348
C	SANGER	TRINITY	1,202	1,452	1,763	2,119	2,545	3,034
C	SHADY SHORES	TRINITY	461	516	511	508	507	506
C	SOUTHLAKE	TRINITY	421	541	683	844	1,032	1,247
C	STEAM ELECTRIC POWER, DENTON	TRINITY	646	733	819	906	993	1,088
C	THE COLONY	TRINITY	7,762	8,632	9,106	9,857	9,844	9,841
C	TROPHY CLUB	TRINITY	5,730	5,701	5,683	5,673	5,670	5,669
C	WESTLAKE	TRINITY	29	39	50	63	78	95

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.

Sum of Projected Water Demands (acre-feet)	**185,710**	**226,706**	**265,820**	**306,284**	**353,071**	**392,342**

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

COLLIN COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	ALLEN	TRINITY	-1,613	-4,753	-5,938	-6,732	-7,563	-8,495
C	ANNA	TRINITY	-77	-296	-998	-2,236	-6,577	-11,230
C	BLUE RIDGE	TRINITY	0	-93	-270	-1,320	-3,129	-5,369
C	CADDO BASIN SUD	SABINE	-15	-48	-83	-116	-155	-203
C	CADDO BASIN SUD	TRINITY	-8	-24	-40	-56	-75	-101
C	CARROLLTON	TRINITY	-1	-1	-1	-2	-2	-2
C	CELINA	TRINITY	-1,395	-5,951	-12,322	-20,663	-20,662	-21,114
C	COPEVILLE SUD	TRINITY	-25	-88	-133	-199	-390	-749
C	COUNTY-OTHER, COLLIN	SABINE	-2	-10	-8	-9	-10	-11
C	COUNTY-OTHER, COLLIN	TRINITY	-86	-244	-304	-1,567	-2,599	-4,800
C	CULLEOKA WSC	TRINITY	-26	-86	-178	-247	-304	-426
C	DALLAS	TRINITY	-735	-2,110	-3,571	-4,492	-5,209	-5,705
C	EAST FORK SUD	TRINITY	-21	-78	-119	-164	-223	-296
C	FAIRVIEW	TRINITY	-365	-1,245	-2,084	-2,369	-2,664	-2,992
C	FARMERSVILLE	SABINE	-2	0	0	0	-2	-2
C	FARMERSVILLE	TRINITY	-73	-540	-675	-767	-860	-966
C	FRISCO	TRINITY	-3,200	-9,170	-14,253	-15,740	-17,276	-18,983
C	GARLAND	TRINITY	-4	-15	-24	-32	-43	-59
C	HICKORY CREEK SUD	TRINITY	5	1	-2	-4	-5	-7
C	IRRIGATION, COLLIN	SABINE	57	54	50	47	45	44
C	IRRIGATION, COLLIN	TRINITY	2,486	2,334	2,170	2,064	1,983	1,927
C	JOSEPHINE	SABINE	-22	-91	-152	-214	-241	-271
C	LAVON	TRINITY	-44	-166	-318	-465	-1,175	-2,968
C	LAVON SUD	TRINITY	-26	-85	-125	-160	-419	-1,175
C	LIVESTOCK, COLLIN	SABINE	14	14	14	14	14	14
C	LIVESTOCK, COLLIN	TRINITY	128	128	128	128	128	128
C	LOWRY CROSSING	TRINITY	-17	-60	-90	-102	-115	-129
C	LUCAS	TRINITY	-168	-562	-930	-1,179	-1,465	-1,646
C	MANUFACTURING, COLLIN	TRINITY	-233	-855	-1,221	-1,532	-1,884	-2,302
C	MARILEE SUD	TRINITY	141	142	144	129	115	91
C	MCKINNEY	TRINITY	-2,700	-9,554	-17,363	-25,694	-28,891	-32,454
C	MELISSA	TRINITY	-105	-450	-785	-2,105	-3,992	-6,766

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	MURPHY	TRINITY	-415	-1,228	-1,539	-1,748	-1,964	-2,205
C	NEVADA	SABINE	-1	-3	-5	-20	-55	-112
C	NEVADA	TRINITY	-7	-23	-34	-156	-440	-888
C	NEW HOPE	TRINITY	-9	-33	-51	-70	-94	-126
C	NORTH COLLIN WSC	TRINITY	-61	-204	-290	-373	-481	-619
C	PARKER	TRINITY	-201	-3,969	-5,651	-5,647	-5,646	-5,646
C	PLANO	TRINITY	-5,271	-16,040	-20,869	-23,787	-26,726	-30,022
C	PRINCETON	TRINITY	-76	-289	-460	-1,230	-2,180	-3,346
C	PROSPER	TRINITY	-402	-2,348	-4,218	-5,262	-6,049	-6,049
C	RICHARDSON	TRINITY	-620	-1,827	-2,356	-2,744	-3,085	-3,465
C	ROYSE CITY	SABINE	-14	-146	-392	-739	-1,580	-1,909
C	SACHSE	TRINITY	-112	-332	-414	-469	-529	-593
C	SEIS LAGOS UD	TRINITY	-47	-140	-175	-199	-223	-251
C	SOUTH GRAYSON WSC	TRINITY	71	66	38	22	3	-19
C	ST. PAUL	TRINITY	-21	-70	-95	-112	-131	-147
C	STEAM ELECTRIC POWER, COLLIN	TRINITY	-56	-141	-217	-199	-294	-306
C	WESTON	TRINITY	-71	-625	-4,379	-11,333	-18,288	-18,286
C	WYLIE	TRINITY	-498	-1,654	-2,222	-2,652	-3,084	-3,564
C	WYLIE NORTHEAST SUD	TRINITY	-20	-75	-116	-262	-491	-881
	Sum of Projected Water Supply Needs (acre-feet)		**-18,865**	**-65,722**	**-105,470**	**-145,168**	**-177,270**	**-207,655**

COOKE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	BOLIVAR WSC	TRINITY	3	-17	-36	-53	-71	-86
C	COUNTY-OTHER, COOKE	RED	0	0	52	0	0	-201
C	COUNTY-OTHER, COOKE	TRINITY	0	0	200	0	0	-1,154
C	GAINESVILLE	RED	0	0	0	0	0	-2
C	GAINESVILLE	TRINITY	0	0	0	0	0	-1,475
C	IRRIGATION, COOKE	RED	-20	-20	-20	-20	-20	-20
C	IRRIGATION, COOKE	TRINITY	-46	-46	-46	-46	-46	-46
C	LAKE KIOWA SUD	TRINITY	43	39	29	16	3	3
C	LINDSAY	TRINITY	14	8	4	-2	-146	-447
C	LIVESTOCK, COOKE	RED	29	29	29	29	29	29
C	LIVESTOCK, COOKE	TRINITY	31	31	31	31	31	31

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	MANUFACTURING, COOKE	TRINITY	0	0	0	0	0	-178
C	MINING, COOKE	TRINITY	-783	-150	-78	-146	-211	-286
C	MOUNTAIN SPRING WSC	TRINITY	63	39	20	0	-291	-766
C	MUENSTER	TRINITY	17	24	22	25	18	18
C	TWO WAY SUD	RED	0	-2	-4	-6	-7	-9
C	VALLEY VIEW	TRINITY	0	-4	-7	-10	-12	-15
C	WOODBINE WSC	RED	1	-4	-9	-14	-20	-26
C	WOODBINE WSC	TRINITY	6	-45	-100	-164	-234	-306
	Sum of Projected Water Supply Needs (acre-feet)		**-849**	**-288**	**-300**	**-461**	**-1,058**	**-5,017**

DENTON COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
C	ARGYLE	TRINITY	-36	-444	-1,058	-1,317	-1,416	-1,547
C	ARGYLE WSC	TRINITY	36	50	-2	-90	-123	-169
C	AUBREY	TRINITY	0	-163	-331	-515	-680	-902
C	BARTONVILLE	TRINITY	-1	-151	-266	-354	-387	-429
C	BOLIVAR WSC	TRINITY	6	-112	-267	-460	-700	-981
C	CARROLLTON	TRINITY	-642	-1,895	-3,180	-4,000	-4,640	-5,086
C	CELINA	TRINITY	-44	-661	-2,704	-6,888	-6,887	-7,036
C	COPPELL	TRINITY	-14	-39	-67	-85	-97	-107
C	COPPER CANYON	TRINITY	0	-11	-27	-49	-69	-101
C	CORINTH	TRINITY	-847	-2,143	-2,688	-3,087	-3,254	-3,426
C	COUNTY-OTHER, DENTON	TRINITY	1,059	642	217	-1,120	-3,638	-9,747
C	CROSS ROADS	TRINITY	-1	-137	-297	-389	-428	-468
C	DALLAS	TRINITY	-306	-928	-1,763	-2,471	-3,090	-3,503
C	DENTON	TRINITY	-3,076	-11,473	-20,957	-33,278	-55,059	-72,765
C	DENTON COUNTY FWSD #10	TRINITY	0	-680	-1,214	-1,608	-1,770	-1,939
C	DENTON COUNTY FWSD #1A	TRINITY	-57	-1,213	-2,619	-3,490	-3,934	-4,543
C	DENTON COUNTY FWSD #7	TRINITY	0	-758	-1,330	-1,753	-1,931	-2,109
C	DOUBLE OAK	TRINITY	0	-26	-46	-60	-62	-80
C	FLOWER MOUND	TRINITY	-2,399	-5,807	-8,139	-9,859	-10,935	-11,959
C	FORT WORTH	TRINITY	-265	-1,905	-4,758	-8,130	-11,810	-15,918
C	FRISCO	TRINITY	-2,132	-6,113	-9,502	-10,493	-11,516	-12,658

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	HACKBERRY	TRINITY	-24	-92	-146	-206	-283	-384
C	HICKORY CREEK	TRINITY	0	-133	-295	-504	-548	-603
C	HIGHLAND VILLAGE	TRINITY	0	-478	-844	-1,118	-1,213	-1,377
C	IRRIGATION, DENTON	TRINITY	995	956	914	887	867	852
C	JUSTIN	TRINITY	-244	-367	-672	-813	-865	-941
C	KRUGERVILLE	TRINITY	-1	-69	-145	-223	-246	-270
C	KRUM	TRINITY	0	-180	-448	-781	-1,095	-1,515
C	LAKE DALLAS	TRINITY	-1	-205	-429	-557	-612	-676
C	LAKEWOOD VILLAGE	TRINITY	135	116	93	67	36	0
C	LEWISVILLE	TRINITY	-929	-2,978	-5,954	-9,090	-12,198	-12,194
C	LITTLE ELM	TRINITY	-322	-1,075	-1,347	-1,529	-1,717	-1,929
C	LIVESTOCK, DENTON	TRINITY	307	307	307	307	307	307
C	MANUFACTURING, DENTON	TRINITY	-116	-383	-694	-992	-1,311	-1,569
C	MINING, DENTON	TRINITY	0	-170	-540	-1,208	-1,841	-2,687
C	MOUNTAIN SPRING WSC	TRINITY	1	1	1	0	-5	-10
C	MUSTANG SUD	TRINITY	4	-449	-1,436	-2,760	-3,977	-6,601
C	NORTHLAKE	TRINITY	-3	-699	-2,258	-4,099	-5,832	-6,386
C	OAK POINT	TRINITY	-1	-272	-685	-1,178	-1,594	-1,754
C	PALOMA CREEK	TRINITY	-1	-773	-1,357	-1,788	-1,967	-2,282
C	PILOT POINT	TRINITY	211	32	-347	-863	-1,513	-2,425
C	PLANO	TRINITY	-151	-462	-590	-668	-751	-844
C	PONDER	TRINITY	222	133	25	-98	-242	-407
C	PROSPER	TRINITY	-16	-402	-1,582	-3,590	-5,857	-5,855
C	PROVIDENCE VILLAGE WCID	TRINITY	0	-208	-363	-479	-526	-573
C	ROANOKE	TRINITY	-44	-543	-1,062	-1,288	-1,462	-1,614
C	SANGER	TRINITY	-3	11	-117	-351	-616	-1,019
C	SHADY SHORES	TRINITY	0	-91	-156	-207	-229	-253
C	SOUTHLAKE	TRINITY	-10	-105	-216	-324	-451	-601
C	STEAM ELECTRIC POWER, DENTON	TRINITY	0	0	0	0	0	0
C	THE COLONY	TRINITY	-336	-1,171	-1,904	-2,555	-2,943	-3,262
C	TROPHY CLUB	TRINITY	-218	-1,103	-1,799	-2,181	-2,476	-2,733
C	WESTLAKE	TRINITY	-1	-8	-16	-24	-34	-46
		Sum of Projected Water Supply Needs (acre-feet)	**-12,241**	**-47,075**	**-86,617**	**-128,970**	**-174,830**	**-216,283**

COLLIN COUNTY

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ALLEN, TRINITY (C)							
CONSERVATION - ALLEN	DEMAND REDUCTION [COLLIN]	660	851	1,002	1,048	1,113	1,180
CONSERVATION, WATER LOSS CONTROL - ALLEN	DEMAND REDUCTION [COLLIN]	103	103	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	200	442	475	558	390	276
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	149	2,499	2,844	3,484	2,553	1,899
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	472	788	599	384	15	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	836
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	936	1,161	1,493	1,120
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	1,439	1,671
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	32	73	82	98	72	52
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,091
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	488	370
		1,616	**4,756**	**5,938**	**6,733**	**7,563**	**8,495**
ANNA, TRINITY (C)							
CONSERVATION - ANNA	DEMAND REDUCTION [COLLIN]	25	48	36	64	153	276
CONSERVATION, WATER LOSS CONTROL - ANNA	DEMAND REDUCTION [COLLIN]	54	163	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	10	81	152	239	258
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	0	56	482	952	1,563	1,773

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	0	18	102	105	9	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	780
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	151	268	772	927
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	744	1,385
NTMWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [COLLIN]	0	0	32	174	609	953
NTMWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DALLAS]	0	0	38	211	828	276
NTMWD UNALLOCATED SUPPLY UTILIZATION	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	20	98	343	533
NTMWD UNALLOCATED SUPPLY UTILIZATION	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	43	206	711	1,106
NTMWD UNALLOCATED SUPPLY UTILIZATION	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	35	171	598	938
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	1	13	27	44	48
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,992
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	252	306
		79	**296**	**1,033**	**2,428**	**6,865**	**11,551**

BLUE RIDGE, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - BLUE RIDGE	DEMAND REDUCTION [COLLIN]	0	1	4	19	54	109
CONSERVATION, WATER LOSS CONTROL - BLUE RIDGE	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	13	30	134	190	201

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	0	72	177	835	1,242	1,381
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	0	23	37	92	7	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	608
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	58	278	726	814
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	700	1,216
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	1	6	24	35	39
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	794
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	237	269
		0	**110**	**312**	**1,382**	**3,191**	**5,431**

CADDO BASIN SUD, SABINE (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CHAPMAN RAW WATER PIPELINE AND NEW WTP(GREENVILLE)	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	0	13	62	128
CONSERVATION - CADDO BASIN SUD	DEMAND REDUCTION [COLLIN]	0	0	1	1	2	2
CONSERVATION, WATER LOSS CONTROL - CADDO BASIN SUD	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	3	6	8	11	9	8
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	2	33	47	70	61	53
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	8	10	10	7	0	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	23

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	15	24	35	31
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	40	46
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	1	1	2	2	1
WTP EXPANSION (GREENVILLE)	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	15	48	82	102	92	75
		29	**98**	**164**	**230**	**303**	**367**

CADDO BASIN SUD, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CHAPMAN RAW WATER PIPELINE AND NEW WTP(GREENVILLE)	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	0	6	30	63
CONSERVATION - CADDO BASIN SUD	DEMAND REDUCTION [COLLIN]	0	0	0	1	1	1
CONSERVATION, WATER LOSS CONTROL - CADDO BASIN SUD	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	2	3	4	6	5	4
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	2	16	23	35	30	25
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	4	5	5	4	0	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	11
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	8	11	18	15
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	20	23
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	1	1	1	1
WTP EXPANSION (GREENVILLE)	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	8	24	40	50	46	37

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
		16	**48**	**81**	**114**	**151**	**180**
CARROLLTON, TRINITY (C)							
CONSERVATION - CARROLLTON	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - CARROLLTON	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	1	1	1	2	2	2
		1	**1**	**1**	**2**	**2**	**2**
CELINA, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	673
CONSERVATION - CELINA	DEMAND REDUCTION [COLLIN]	61	193	450	771	847	925
CONSERVATION, WATER LOSS CONTROL - CELINA	DEMAND REDUCTION [COLLIN]	23	22	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	41	176	1,498	1,697	1,789
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	129	554	1,368	1,332	1,275
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	153	230	355	219	136
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	0	866	1,374	2,221	1,429	934
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	0	273	289	244	8	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	411
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	453	740	836	550
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	806	823
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	26	62	133	116	127
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	25	39	63	40	25

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	4,386
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	852	1,486
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	586	567
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	94	213	196	452
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	186	406	364	817
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	265	990	2,229	2,052	2,366
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	930	2,251	4,948	6,158	5,014
UTRWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [HOPKINS]	163	346	0	24	0	0
UTRWD UNALLOCATED SUPPLY UTILIZATION	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	234	473	0	0	0	0
UTRWD UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	998	2,209	5,248	5,480	3,180	0
		1,479	**5,951**	**12,396**	**20,693**	**20,718**	**22,756**

COPEVILLE SUD, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - COPEVILLE SUD	DEMAND REDUCTION [COLLIN]	1	3	5	8	17	35
CONSERVATION, WATER LOSS CONTROL - COPEVILLE SUD	DEMAND REDUCTION [COLLIN]	2	2	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	5	10	13	19	23	27
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	4	55	74	117	148	185
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	12	17	16	13	1	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	82

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	24	39	86	110
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	83	163
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	2	1	3	4	4
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	107
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	28	36
		25	**89**	**133**	**199**	**390**	**749**

COUNTY-OTHER, COLLIN, SABINE (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - COLLIN COUNTY	DEMAND REDUCTION [COLLIN]	0	0	0	0	1	0
CONSERVATION, WATER LOSS CONTROL - COLLIN COUNTY	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	1	1	1	1	0
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	1	8	5	6	4	6
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	1	1	1	1	1	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	1
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	1	2	2	1
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	2	2
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	1	0
		3	**10**	**8**	**10**	**12**	**11**

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
COUNTY-OTHER, COLLIN, TRINITY (C)							
CONSERVATION - COLLIN COUNTY	DEMAND REDUCTION [COLLIN]	5	11	16	70	123	238
CONSERVATION, WATER LOSS CONTROL - COLLIN COUNTY	DEMAND REDUCTION [COLLIN]	8	8	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	17	27	28	147	149	173
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	13	149	168	920	982	1,183
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	42	49	35	101	5	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	523
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	56	307	575	700
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	554	1,045
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	3	5	5	26	28	33
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	683
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	187	232
		88	**249**	**308**	**1,571**	**2,603**	**4,810**
CULLEOKA WSC, TRINITY (C)							
CONSERVATION - CULLEOKA WSC	DEMAND REDUCTION [COLLIN]	1	2	6	10	13	20
CONSERVATION, WATER LOSS CONTROL - CULLEOKA WSC	DEMAND REDUCTION [COLLIN]	2	2	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	5	9	16	24	18	15
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	4	54	99	145	115	105
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	13	17	21	16	1	0

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	46
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	33	48	67	62
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	1,075	93
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	2	3	4	3	4
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	716
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	22	21
		26	**86**	**178**	**247**	**1,314**	**1,082**

DALLAS, 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	633
CONSERVATION - DALLAS	DEMAND REDUCTION [COLLIN]	542	1,343	1,814	1,820	1,717	1,636
CONSERVATION, WATER LOSS CONTROL - DALLAS	DEMAND REDUCTION [COLLIN]	79	75	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	108	164	423	1,381	1,614	1,684
DWU UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DENTON]	0	0	0	5	11	5
DWU UNALLOCATED SUPPLY UTILIZATION	FORK LAKE/RESERVOIR [RESERVOIR]	0	0	0	6	11	4
DWU UNALLOCATED SUPPLY UTILIZATION	RAY HUBBARD LAKE/RESERVOIR [RESERVOIR]	0	0	0	4	7	2
DWU UNALLOCATED SUPPLY UTILIZATION	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	6	5	3	14	23	8
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	523	1,331	1,262	1,268	1,200
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	558	534
		735	**2,110**	**3,571**	**4,492**	**5,209**	**5,706**

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
EAST FORK SUD, TRINITY (C)							
CONSERVATION - EAST FORK SUD	DEMAND REDUCTION [COLLIN]	1	2	4	6	10	14
CONSERVATION, WATER LOSS CONTROL - EAST FORK SUD	DEMAND REDUCTION [COLLIN]	2	2	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	4	9	11	15	13	10
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	2	48	65	99	86	75
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	11	16	15	10	1	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	32
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	22	32	48	43
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	47	64
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	2	2	2	2	2
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	42
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	16	14
		21	**79**	**119**	**164**	**223**	**296**
FAIRVIEW, TRINITY (C)							
CONSERVATION - FAIRVIEW	DEMAND REDUCTION [COLLIN]	68	122	219	243	266	290
CONSERVATION, WATER LOSS CONTROL - FAIRVIEW	DEMAND REDUCTION [COLLIN]	23	23	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	64	128	179	208	145	102
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	48	723	1,075	1,303	950	701
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	152	228	226	144	6	0

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	309
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	354	434	555	414
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	535	617
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	10	21	31	37	26	19
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	403
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	181	137
		365	**1,245**	**2,084**	**2,369**	**2,664**	**2,992**

FARMERSVILLE, SABINE (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - FARMERSVILLE	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - FARMERSVILLE	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	2	0	0	0	2	2
		2	**0**	**0**	**0**	**2**	**2**

FARMERSVILLE, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - FARMERSVILLE	DEMAND REDUCTION [COLLIN]	3	15	23	31	38	46
CONSERVATION, WATER LOSS CONTROL - FARMERSVILLE	DEMAND REDUCTION [COLLIN]	5	5	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	16	60	63	72	50	34
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	10	342	376	451	324	237
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	37	108	79	50	2	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	105

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	124	150	191	141
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	184	211
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	2	10	10	13	9	8
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	138
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	62	47
		73	**540**	**675**	**767**	**860**	**967**

FRISCO, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - FRISCO	DEMAND REDUCTION [COLLIN]	913	1,463	2,143	2,276	2,410	2,543
CONSERVATION, WATER LOSS CONTROL - FRISCO	DEMAND REDUCTION [COLLIN]	125	125	0	0	0	0
FRISCO DIRECT REUSE	DIRECT REUSE [COLLIN]	1,344	2,016	3,390	3,390	3,390	3,390
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	191	647	838	988	694	493
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	143	3,660	5,026	6,174	4,543	3,388
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	454	1,154	1,059	680	26	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	1,491
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	1,654	2,058	2,657	1,998
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	2,561	2,982
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	31	107	143	174	127	94

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	1,947
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	868	659
		3,201	**9,172**	**14,253**	**15,740**	**17,276**	**18,985**

GARLAND, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - GARLAND	DEMAND REDUCTION [COLLIN]	1	1	1	1	2	3
CONSERVATION, WATER LOSS CONTROL - GARLAND	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	2	2	3	2	2
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	0	9	14	19	17	16
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	2	3	3	2	0	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	6
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	4	6	10	8
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	9	13
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	0	1	0	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	8
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	3	3
		4	**15**	**24**	**32**	**43**	**59**

HICKORY CREEK SUD, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - HICKORY CREEK SUD	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - HICKORY CREEK SUD	DEMAND REDUCTION [COLLIN]	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
DRILL NEW WELLS (HICKORY CREEK SUD, WOODBINE, SABINE)	WOODBINE AQUIFER [HUNT]	0	0	2	4	5	7
		0	**0**	**2**	**4**	**5**	**7**
IRRIGATION, COLLIN, SABINE (C)							
CONSERVATION, IRRIGATION - COLLIN COUNTY	DEMAND REDUCTION [COLLIN]	0	2	4	5	5	6
		0	**2**	**4**	**5**	**5**	**6**
IRRIGATION, COLLIN, TRINITY (C)							
CONSERVATION, IRRIGATION - COLLIN COUNTY	DEMAND REDUCTION [COLLIN]	5	81	155	194	232	269
		5	**81**	**155**	**194**	**232**	**269**
JOSEPHINE, SABINE (C)							
CONSERVATION - JOSEPHINE	DEMAND REDUCTION [COLLIN]	1	3	5	8	10	12
CONSERVATION, WATER LOSS CONTROL - JOSEPHINE	DEMAND REDUCTION [COLLIN]	1	1	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	5	10	14	20	14	10
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	4	58	85	126	91	67
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	10	18	18	14	1	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	29
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	28	42	53	39
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	51	59
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	1	2	4	3	3
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	39
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	18	13
		22	**91**	**152**	**214**	**241**	**271**

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
LAVON, TRINITY (C)							
CONSERVATION - LAVON	DEMAND REDUCTION [COLLIN]	8	16	33	19	52	141
CONSERVATION, WATER LOSS CONTROL - LAVON	DEMAND REDUCTION [COLLIN]	3	3	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	8	17	27	43	68	106
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	6	97	165	274	445	734
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	19	31	35	30	3	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	323
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	54	91	260	433
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	251	646
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	3	5	8	11	20
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	422
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	85	143
		45	**167**	**319**	**465**	**1,175**	**2,968**
LAVON SUD, TRINITY (C)							
CONSERVATION - LAVON SUD	DEMAND REDUCTION [COLLIN]	2	3	5	6	18	55
CONSERVATION, WATER LOSS CONTROL - LAVON SUD	DEMAND REDUCTION [COLLIN]	1	1	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	3	9	10	15	24	44
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	5	54	71	95	159	291
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	14	17	15	10	2	0

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	127
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	22	32	92	171
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	90	256
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	2	1	3	2	4	8
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	167
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	30	56
		27	**85**	**126**	**160**	**419**	**1,175**

LOWRY CROSSING, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - LOWRY CROSSING	DEMAND REDUCTION [COLLIN]	1	2	3	4	5	6
CONSERVATION, WATER LOSS CONTROL - LOWRY CROSSING	DEMAND REDUCTION [COLLIN]	1	1	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	3	6	8	10	7	5
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	3	38	50	60	44	33
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	9	12	11	7	0	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	14
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	17	20	25	19
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	24	28
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	1	1	1	2	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	18
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	8	6
		18	**60**	**90**	**102**	**115**	**129**

LUCAS, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - LUCAS	DEMAND REDUCTION [COLLIN]	28	52	95	118	143	156
CONSERVATION, IRRIGATION RESTRICTIONS – LUCAS	DEMAND REDUCTION [COLLIN]	3	7	10	11	13	13
CONSERVATION, WATER LOSS CONTROL - LUCAS	DEMAND REDUCTION [COLLIN]	50	145	176	196	217	217
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	20	41	62	83	66	47
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	16	236	374	524	432	327
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	47	74	79	58	3	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	144
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	123	175	253	193
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	244	288
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	4	7	11	14	12	9
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	188
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	83	64
		168	**562**	**930**	**1,179**	**1,466**	**1,646**

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
MANUFACTURING, COLLIN, TRINITY (C)							
COLLIN COUNTY MANUFACTURING ADDITIONAL GROUNDWATER (NEW WELLS)	WOODBINE AQUIFER [COLLIN]	0	78	78	78	78	78
CONSERVATION, MANUFACTURING - COLLIN COUNTY	DEMAND REDUCTION [COLLIN]	0	8	90	133	145	157
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	60	99	108	134	102	78
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	45	564	645	839	668	539
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	143	178	136	92	4	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	237
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	212	280	391	318
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	377	475
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	10	17	18	24	19	16
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	310
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	128	105
		258	**944**	**1,287**	**1,580**	**1,912**	**2,313**
MARILEE SUD, TRINITY (C)							
CONSERVATION - MARILEE SUD	DEMAND REDUCTION [COLLIN]	2	3	5	7	9	10
CONSERVATION, WATER LOSS CONTROL - MARILEE SUD	DEMAND REDUCTION [COLLIN]	3	3	0	0	0	0
GTUA - GRAYSON COUNTY WSP	TEXOMA LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	3	18	33	54	77
		5	**9**	**23**	**40**	**63**	**87**

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
MCKINNEY, TRINITY (C)							
CONSERVATION - MCKINNEY	DEMAND REDUCTION [COLLIN]	472	899	1,786	2,575	2,829	3,085
CONSERVATION, WATER LOSS CONTROL - MCKINNEY	DEMAND REDUCTION [COLLIN]	284	572	578	752	751	751
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	456	939	1,443	2,193	1,531	1,080
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	341	5,315	8,644	13,708	10,021	7,430
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	1,079	1,676	1,822	1,511	58	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	3,269
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	2,846	4,569	5,861	4,381
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	5,648	6,538
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	73	156	245	387	279	205
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	4,269
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	1,913	1,446
		2,705	**9,557**	**17,364**	**25,695**	**28,891**	**32,454**
MELISSA, TRINITY (C)							
CONSERVATION - MELISSA	DEMAND REDUCTION [COLLIN]	39	73	122	299	532	852
CONSERVATION, WATER LOSS CONTROL - MELISSA	DEMAND REDUCTION [COLLIN]	8	8	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	14	43	63	177	210	223
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	10	244	381	1,106	1,369	1,535
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	32	77	81	123	8	0

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	676
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	126	369	801	906
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	772	1,351
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	2	7	12	31	38	42
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	882
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	262	299
		105	**452**	**785**	**2,105**	**3,992**	**6,766**

MURPHY, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - MURPHY	DEMAND REDUCTION [COLLIN]	71	114	157	175	191	208
CONSERVATION – WASTE PROHIBITION, MURPHY	DEMAND REDUCTION [COLLIN]	27	53	53	53	53	53
CONSERVATION, WATER LOSS CONTROL - MURPHY	DEMAND REDUCTION [COLLIN]	26	26	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	68	120	128	149	104	73
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	51	680	766	932	681	505
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	161	214	161	103	4	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	222
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	252	311	398	297
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	384	444

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	11	21	22	26	19	15
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	290
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	130	98
		415	**1,228**	**1,539**	**1,749**	**1,964**	**2,205**

NEVADA, SABINE (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - NEVADA	DEMAND REDUCTION [COLLIN]	0	0	0	1	2	5
CONSERVATION, WATER LOSS CONTROL - NEVADA	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	0	2	3	4
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	1	2	3	12	21	29
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	0	1	1	1	0	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	12
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	1	4	12	16
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	12	24
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	0	0	1	1
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	16
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	4	5
		1	**3**	**5**	**20**	**55**	**112**

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
NEVADA, TRINITY (C)							
CONSERVATION - NEVADA	DEMAND REDUCTION [COLLIN]	0	1	1	6	20	42
CONSERVATION, WATER LOSS CONTROL - NEVADA	DEMAND REDUCTION [COLLIN]	0	0	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	2	3	3	14	26	32
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	1	15	19	92	166	218
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	4	4	4	10	1	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	97
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	6	31	97	129
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	94	194
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	1	3	5	7
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	126
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	32	43
		7	**23**	**34**	**156**	**441**	**888**
NEW HOPE, TRINITY (C)							
CONSERVATION - NEW HOPE	DEMAND REDUCTION [COLLIN]	0	1	2	3	4	6
CONSERVATION, WATER LOSS CONTROL - NEW HOPE	DEMAND REDUCTION [COLLIN]	1	1	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	2	3	5	6	5	5
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	1	21	28	41	36	31
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	5	7	6	5	0	0

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	14
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	9	14	21	18
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	20	27
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	1	1	1	1
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	0	7	6
		9	**33**	**51**	**70**	**94**	**126**

NORTH COLLIN WSC, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - NORTH COLLIN WSC	DEMAND REDUCTION [COLLIN]	3	6	10	15	21	29
CONSERVATION, WATER LOSS CONTROL - NORTH COLLIN WSC	DEMAND REDUCTION [COLLIN]	4	4	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	13	22	27	35	28	23
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	10	127	161	220	182	153
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	31	40	34	24	1	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	67
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	53	73	107	90
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	103	135
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	2	5	5	6	5	4

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	88
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	35	30
		63	**204**	**290**	**373**	**482**	**619**

PARKER, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - PARKER	DEMAND REDUCTION [COLLIN]	35	147	254	282	310	338
CONSERVATION, WATER LOSS CONTROL - PARKER	DEMAND REDUCTION [COLLIN]	13	13	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	36	356	342	342	216	145
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	27	2,013	2,046	2,138	1,415	993
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	86	635	431	236	8	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	437
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	552	563	727	543
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	700	811
NTMWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [COLLIN]	0	176	472	527	433	342
NTMWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DALLAS]	0	197	560	640	588	490
NTMWD UNALLOCATED SUPPLY UTILIZATION	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	129	300	298	244	192
NTMWD UNALLOCATED SUPPLY UTILIZATION	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	276	630	626	508	397
NTMWD UNALLOCATED SUPPLY UTILIZATION	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	222	523	518	425	337

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	6	58	58	59	41	28
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	530
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	237	179
		203	**4,222**	**6,168**	**6,229**	**5,852**	**5,762**

PLANO, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - PLANO	DEMAND REDUCTION [COLLIN]	1,084	1,740	2,567	2,390	2,624	2,861
CONSERVATION, WATER LOSS CONTROL - PLANO	DEMAND REDUCTION [COLLIN]	335	335	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	901	1,622	1,759	2,098	1,459	1,025
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	677	9,181	10,547	13,115	9,541	7,051
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	2,136	2,893	2,223	1,444	55	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	3,103
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	3,472	4,370	5,581	4,158
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	5,379	6,206
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	146	269	301	370	266	195
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	4,051
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	1,822	1,372
		5,279	**16,040**	**20,869**	**23,787**	**26,727**	**30,022**

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
PRINCETON, TRINITY (C)							
CONSERVATION - PRINCETON	DEMAND REDUCTION [COLLIN]	3	8	16	49	97	158
CONSERVATION, WATER LOSS CONTROL - PRINCETON	DEMAND REDUCTION [COLLIN]	5	5	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	16	32	43	115	126	121
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	12	181	256	724	825	828
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	38	57	54	80	5	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	364
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	84	241	483	488
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	465	728
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	3	6	7	21	22	23
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	475
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	158	161
		77	**289**	**460**	**1,230**	**2,181**	**3,346**
PROSPER, TRINITY (C)							
CONSERVATION - PROSPER	DEMAND REDUCTION [COLLIN]	165	289	405	448	494	523
CONSERVATION, WATER LOSS CONTROL - PROSPER	DEMAND REDUCTION [COLLIN]	26	23	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	49	212	267	316	219	147
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	36	1,199	1,598	1,976	1,437	1,010
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	118	377	337	218	8	0

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	445
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	458	532	730	549
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	704	820
NTMWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [COLLIN]	0	50	265	446	474	378
NTMWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DALLAS]	0	56	315	542	644	81
NTMWD UNALLOCATED SUPPLY UTILIZATION	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	37	169	252	267	211
NTMWD UNALLOCATED SUPPLY UTILIZATION	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	79	356	530	554	437
NTMWD UNALLOCATED SUPPLY UTILIZATION	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	63	294	439	465	371
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	9	35	45	56	41	27
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	995
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	238	181
		403	**2,420**	**4,509**	**5,755**	**6,275**	**6,175**

RICHARDSON, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - RICHARDSON	DEMAND REDUCTION [COLLIN]	142	205	276	309	336	363
CONSERVATION, WATER LOSS CONTROL - RICHARDSON	DEMAND REDUCTION [COLLIN]	40	39	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	103	184	200	239	166	117
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	77	1,041	1,198	1,492	1,090	805

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	244	328	253	164	6	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	354
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	395	498	636	475
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	613	709
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	17	30	34	42	30	22
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	463
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	208	157
		623	**1,827**	**2,356**	**2,744**	**3,085**	**3,465**

ROYSE CITY, SABINE (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - ROYSE CITY	DEMAND REDUCTION [COLLIN]	1	4	13	29	69	89
CONSERVATION, WATER LOSS CONTROL - ROYSE CITY	DEMAND REDUCTION [COLLIN]	1	2	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	3	17	36	70	92	69
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	1	92	217	434	599	472
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	7	29	47	48	3	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	208
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	73	146	350	279
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	337	416

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	2	6	12	16	13
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	271
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	114	92
		14	**146**	**392**	**739**	**1,580**	**1,909**

SACHSE, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - SACHSE	DEMAND REDUCTION [COLLIN]	19	31	42	47	51	56
CONSERVATION, WATER LOSS CONTROL - SACHSE	DEMAND REDUCTION [COLLIN]	7	7	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	20	34	36	42	29	20
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	15	193	214	257	190	140
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	48	61	45	29	1	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	61
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	71	87	110	82
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	106	123
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	3	6	6	7	6	4
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	80
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	36	27
		112	**332**	**414**	**469**	**529**	**593**

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
SEIS LAGOS UD, TRINITY (C)							
CONSERVATION - SEIS LAGOS UD	DEMAND REDUCTION [COLLIN]	31	36	41	43	45	47
CONSERVATION, WATER LOSS CONTROL - SEIS LAGOS UD	DEMAND REDUCTION [COLLIN]	3	3	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	3	11	13	16	11	8
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	2	66	77	96	71	53
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	7	21	16	11	0	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	23
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	25	32	42	32
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	40	47
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	3	3	2	1	1
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	31
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	14	10
		47	**140**	**175**	**200**	**224**	**252**
SOUTH GRAYSON WSC, TRINITY (C)							
CONSERVATION - SOUTH GRAYSON WSC	DEMAND REDUCTION [COLLIN]	1	1	2	4	5	7
CONSERVATION, WATER LOSS CONTROL - SOUTH GRAYSON WSC	DEMAND REDUCTION [COLLIN]	1	1	0	0	0	0
GTUA - GRAYSON COUNTY WSP	TEXOMA LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	25	27	30	32	32	33
		27	**29**	**32**	**36**	**37**	**40**

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
ST. PAUL, TRINITY (C)							
CONSERVATION - ST PAUL	DEMAND REDUCTION [COLLIN]	1	2	3	4	6	7
CONSERVATION, WATER LOSS CONTROL - ST. PAUL	DEMAND REDUCTION [COLLIN]	1	1	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	5	8	9	11	8	5
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	3	44	53	66	49	36
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	10	14	11	7	0	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	16
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	17	22	28	21
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	28	32
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	1	2	2	3	2
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	21
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	9	7
		21	**70**	**95**	**112**	**131**	**147**
STEAM ELECTRIC POWER, COLLIN, TRINITY (C)							
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	13	16	21	19	18	11
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	10	92	125	133	145	99
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	31	29	26	3	1	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	35

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
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	41	41	39	26
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	66	70
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	2	4	4	3	3	4
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	46
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	22	15
		56	**141**	**217**	**199**	**294**	**306**
WESTON, TRINITY (C)							
CONSERVATION - WESTON	DEMAND REDUCTION [COLLIN]	2	7	48	157	312	374
CONSERVATION, WATER LOSS CONTROL - WESTON	DEMAND REDUCTION [COLLIN]	3	3	0	0	0	0
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	0	829	4,600	11,501	18,301	18,237
WESTON - NEW WELLS IN WOODBINE AQUIFER	WOODBINE AQUIFER [COLLIN]	71	71	71	71	71	71
		76	**910**	**4,719**	**11,729**	**18,684**	**18,682**
WYLIE, TRINITY (C)							
CONSERVATION - WYLIE	DEMAND REDUCTION [COLLIN]	21	47	76	106	137	168
CONSERVATION, WATER LOSS CONTROL - WYLIE	DEMAND REDUCTION [COLLIN]	32	32	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	105	183	206	249	178	128
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	77	1,036	1,237	1,561	1,167	882
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	248	326	261	172	7	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	388

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	407	520	682	520
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	657	775
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	17	30	35	46	33	24
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	507
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	223	172
		500	**1,654**	**2,222**	**2,654**	**3,084**	**3,564**

WYLIE NORTHEAST SUD, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - WYLIE NORTHEAST SUD	DEMAND REDUCTION [COLLIN]	1	2	4	10	22	42
CONSERVATION, WATER LOSS CONTROL - WYLIE NORTHEAST SUD	DEMAND REDUCTION [COLLIN]	1	1	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	5	8	11	24	29	31
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	3	47	65	155	186	219
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	10	15	14	17	1	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	96
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	21	52	109	129
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	105	192
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	2	1	4	4	5
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	125

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	35	42
		20	**75**	**116**	**262**	**491**	**881**
Sum of Projected Water Management Strategies (acre-feet)		**19,074**	**66,651**	**107,178**	**147,429**	**180,115**	**211,626**

COOKE COUNTY

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
BOLIVAR WSC, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	2
CONSERVATION - BOLIVAR WSC	DEMAND REDUCTION [COOKE]	1	1	1	2	3	3
CONSERVATION, WATER LOSS CONTROL - BOLIVAR WSC	DEMAND REDUCTION [COOKE]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	1	5	7	6
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	6	8	9	10	11
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	2	5	5	4
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	0	0	1	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	14
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	2	5
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	2	2
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	0	1	1	2
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	1	1	1	3

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
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	1	4	8	8	8
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	3	10	17	25	17
UTRWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [HOPKINS]	0	2	3	4	5	5
UTRWD UNALLOCATED SUPPLY UTILIZATION	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	4	7	8	10	10
UTRWD UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	13	21	24	27	26
		2	**31**	**58**	**84**	**107**	**118**
COUNTY-OTHER, COOKE, RED (C)							
CONSERVATION - COOKE COUNTY	DEMAND REDUCTION [COOKE]	1	2	3	4	6	11
CONSERVATION, WATER LOSS CONTROL - COOKE COUNTY	DEMAND REDUCTION [COOKE]	1	1	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	190
		2	**3**	**3**	**4**	**6**	**201**
COUNTY-OTHER, COOKE, TRINITY (C)							
CONSERVATION - COOKE COUNTY	DEMAND REDUCTION [COOKE]	3	6	9	17	25	64
CONSERVATION, WATER LOSS CONTROL - COOKE COUNTY	DEMAND REDUCTION [COOKE]	5	5	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,090
		8	**11**	**9**	**17**	**25**	**1,154**
GAINESVILLE, RED (C)							
CONSERVATION - GAINESVILLE	DEMAND REDUCTION [COOKE]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - GAINESVILLE	DEMAND REDUCTION [COOKE]	0	0	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	2
		0	**0**	**0**	**0**	**0**	**2**

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
GAINESVILLE, TRINITY (C)							
CONSERVATION - GAINESVILLE	DEMAND REDUCTION [COOKE]	8	17	27	37	56	93
CONSERVATION, WATER LOSS CONTROL - GAINESVILLE	DEMAND REDUCTION [COOKE]	12	12	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,382
		20	**29**	**27**	**37**	**56**	**1,475**
IRRIGATION, COOKE, RED (C)							
GAINESVILLE ADDITIONAL DIRECT REUSE	DIRECT REUSE [COOKE]	21	21	21	21	21	21
		21	**21**	**21**	**21**	**21**	**21**
IRRIGATION, COOKE, TRINITY (C)							
GAINESVILLE ADDITIONAL DIRECT REUSE	DIRECT REUSE [COOKE]	49	49	49	49	49	49
		49	**49**	**49**	**49**	**49**	**49**
LAKE KIOWA SUD, TRINITY (C)							
CONSERVATION - LAKE KIOWA SUD	DEMAND REDUCTION [COOKE]	3	5	8	11	14	17
CONSERVATION, WATER LOSS CONTROL - LAKE KIOWA SUD	DEMAND REDUCTION [COOKE]	4	4	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	91	92	89	86	83
		7	**100**	**100**	**100**	**100**	**100**
LINDSAY, TRINITY (C)							
CONSERVATION - LINDSAY	DEMAND REDUCTION [COOKE]	0	1	2	2	5	12
CONSERVATION, WATER LOSS CONTROL - LINDSAY	DEMAND REDUCTION [COOKE]	1	1	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	141	435
		1	**2**	**2**	**2**	**146**	**447**
MANUFACTURING, COOKE, TRINITY (C)							
CONSERVATION, MANUFACTURING - COOKE COUNTY	DEMAND REDUCTION [COOKE]	0	0	5	8	8	9
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	169
		0	**0**	**5**	**8**	**8**	**178**

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
MINING, COOKE, TRINITY (C)							
COOKE COUNTY MINING DIRECT REUSE	DIRECT REUSE [COOKE]	99	67	71	74	77	80
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	684	83	7	72	134	206
		783	**150**	**78**	**146**	**211**	**286**
MOUNTAIN SPRING WSC, TRINITY (C)							
CONSERVATION - MOUNTAIN SPRING WSC	DEMAND REDUCTION [COOKE]	2	3	5	7	14	26
CONSERVATION, WATER LOSS CONTROL - MOUNTAIN SPRING WSC	DEMAND REDUCTION [COOKE]	2	2	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	277	740
		4	**5**	**5**	**7**	**291**	**766**
MUENSTER, TRINITY (C)							
CONSERVATION - MUENSTER	DEMAND REDUCTION [COOKE]	1	2	6	7	9	10
CONSERVATION, WATER LOSS CONTROL - MUENSTER	DEMAND REDUCTION [COOKE]	1	1	0	0	0	0
DEVELOP LAKE MUENSTER SUPPLY	MUENSTER LAKE/RESERVOIR [RESERVOIR]	280	280	280	280	280	280
		282	**283**	**286**	**287**	**289**	**290**
TWO WAY SUD, RED (C)							
CONSERVATION - TWO WAY SUD	DEMAND REDUCTION [COOKE]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - TWO WAY SUD	DEMAND REDUCTION [COOKE]	0	0	0	0	0	0
GTUA - GRAYSON COUNTY WSP	TEXOMA LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	2	4	6	7	9
		0	**2**	**4**	**6**	**7**	**9**
VALLEY VIEW, TRINITY (C)							
CONSERVATION - VALLEY VIEW	DEMAND REDUCTION [COOKE]	0	0	1	1	1	1
CONSERVATION, WATER LOSS CONTROL - VALLEY VIEW	DEMAND REDUCTION [COOKE]	0	0	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	4	6	9	11	14

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
		0	**4**	**7**	**10**	**12**	**15**
WOODBINE WSC, RED (C)							
CONSERVATION - WOODBINE WSC	DEMAND REDUCTION [COOKE]	0	1	1	1	1	1
CONSERVATION, WATER LOSS CONTROL - WOODBINE WSC	DEMAND REDUCTION [COOKE]	0	0	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	3	8	13	19	25
		0	**4**	**9**	**14**	**20**	**26**
WOODBINE WSC, TRINITY (C)							
CONSERVATION - WOODBINE WSC	DEMAND REDUCTION [COOKE]	2	4	6	9	13	18
CONSERVATION, WATER LOSS CONTROL - WOODBINE WSC	DEMAND REDUCTION [COOKE]	3	3	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	38	94	155	221	288
		5	**45**	**100**	**164**	**234**	**306**
Sum of Projected Water Management Strategies (acre-feet)		**1,184**	**739**	**763**	**956**	**1,582**	**5,443**

DENTON COUNTY

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ARGYLE, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	57
CONSERVATION - ARGYLE	DEMAND REDUCTION [DENTON]	19	45	89	99	109	118
CONSERVATION, WATER LOSS CONTROL - ARGYLE	DEMAND REDUCTION [DENTON]	18	55	69	69	69	69
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	11	40	178	184	151
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	36	127	163	145	108
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	7	14	16	13	11

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	325
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	63	110
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	64	48
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	22	25	21	38
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	43	48	39	69
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	74	227	265	223	200
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	260	517	589	666	424
		37	**488**	**1,148**	**1,452**	**1,596**	**1,728**

ARGYLE WSC, 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	12
CONSERVATION - ARGYLE WSC	DEMAND REDUCTION [DENTON]	24	38	42	45	48	51
CONSERVATION – WASTE PROHIBITION, ARGYLE WSC	DEMAND REDUCTION [DENTON]	6	12	12	12	12	12
CONSERVATION, WATER LOSS CONTROL - ARGYLE WSC	DEMAND REDUCTION [DENTON]	5	5	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	2	27	36	31
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	8	25	28	22
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	1	2	2	2
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	67
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	12	23

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	12	10
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	1	4	4	8
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	3	7	8	14
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	0	14	40	43	41
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	0	31	90	129	87
		35	**55**	**114**	**252**	**334**	**380**

AUBREY, 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	32
CONSERVATION - AUBREY	DEMAND REDUCTION [DENTON]	2	5	8	13	20	29
CONSERVATION, WATER LOSS CONTROL - AUBREY	DEMAND REDUCTION [DENTON]	3	3	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	5	13	69	86	86
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	14	42	63	67	61
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	3	5	6	6	6
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	185
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	30	63
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	30	27
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	7	10	10	22
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	14	19	18	39

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	30	74	103	104	113
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	103	168	232	309	241
		5	**163**	**331**	**515**	**680**	**904**

BARTONVILLE, 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	17
CONSERVATION - BARTONVILLE	DEMAND REDUCTION [DENTON]	11	20	27	30	33	36
CONSERVATION, WATER LOSS CONTROL - BARTONVILLE	DEMAND REDUCTION [DENTON]	4	4	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	4	11	52	55	46
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	13	35	48	43	32
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	3	4	5	4	3
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	97
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	19	33
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	19	14
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	12	14	12	21
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	28	63	77	66	60
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	96	142	172	197	126
		15	**168**	**294**	**398**	**448**	**485**

BOLIVAR WSC, 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	27
CONSERVATION - BOLIVAR WSC	DEMAND REDUCTION [DENTON]	3	6	12	18	27	39

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, WATER LOSS CONTROL - BOLIVAR WSC	DEMAND REDUCTION [DENTON]	4	4	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	1	5	44	68	72
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	39	60	82	104	127
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	3	18	40	54	51
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	1	3	5	4	6
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	153
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	24	52
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	24	23
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	4	6	7	17
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	6	13	15	33
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	4	32	65	83	95
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	16	72	145	244	199
UTRWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [HOPKINS]	0	12	24	35	50	58
UTRWD UNALLOCATED SUPPLY UTILIZATION	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	26	52	73	100	114
UTRWD UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	86	159	208	268	294
		7	**198**	**447**	**734**	**1,072**	**1,360**

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
CARROLLTON, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	711
CONSERVATION - CARROLLTON	DEMAND REDUCTION [DENTON]	191	313	426	469	515	562
CONSERVATION, WATER LOSS CONTROL - CARROLLTON	DEMAND REDUCTION [DENTON]	72	72	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	402	366	669	1,858	1,946	1,889
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	1,166	2,108	1,696	1,528	1,347
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	673	599
		665	**1,917**	**3,203**	**4,023**	**4,662**	**5,108**
CELINA, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	224
CONSERVATION - CELINA	DEMAND REDUCTION [DENTON]	2	21	99	257	283	308
CONSERVATION, WATER LOSS CONTROL - CELINA	DEMAND REDUCTION [DENTON]	1	2	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	4	39	499	566	596
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	14	122	456	444	425
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	17	50	119	73	45
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	0	96	302	740	477	312
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	0	30	64	82	3	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	137
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	99	247	279	184
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	269	274

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	3	14	45	39	43
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	3	9	21	13	9
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,462
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	284	496
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	196	189
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	21	71	65	151
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	41	136	121	272
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	30	217	743	684	789
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	103	494	1,650	2,054	1,671
UTRWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [HOPKINS]	5	39	0	8	0	0
UTRWD UNALLOCATED SUPPLY UTILIZATION	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	7	53	0	0	0	0
UTRWD UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	31	246	1,152	1,827	1,060	0
		46	**661**	**2,723**	**6,901**	**6,910**	**7,587**

COPPELL, 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	15
CONSERVATION - COPPELL	DEMAND REDUCTION [DENTON]	4	6	9	10	11	12
CONSERVATION, WATER LOSS CONTROL - COPPELL	DEMAND REDUCTION [DENTON]	2	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
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	9	8	14	39	41	39
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	24	44	36	32	28
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	14	13
		15	**39**	**67**	**85**	**98**	**107**

COPPER CANYON, 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	6
CONSERVATION - COPPER CANYON	DEMAND REDUCTION [DENTON]	4	6	9	10	13	14
CONSERVATION, WATER LOSS CONTROL - COPPER CANYON	DEMAND REDUCTION [DENTON]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	1	2	13	16	14
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	2	7	11	13	11
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	1	1	1	1
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	32
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	5	11
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	6	5
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	2	3	3	7
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	4	12	18	19	20
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	14	26	41	58	41
		5	**28**	**59**	**97**	**134**	**162**

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
CORINTH, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	67
CONSERVATION - CORINTH	DEMAND REDUCTION [DENTON]	57	108	149	165	181	198
CONSERVATION, IRRIGATION RESTRICTIONS – CORINTH	DEMAND REDUCTION [DENTON]	5	13	13	13	13	13
CONSERVATION, WATER LOSS CONTROL - CORINTH	DEMAND REDUCTION [DENTON]	21	21	0	0	0	0
CORINTH NEW WELLS IN TRINITY AQUIFER-2020	TRINITY AQUIFER [DENTON]	561	561	561	561	561	561
CORINTH NEW WELLS IN TRINITY AQUIFER-2030	TRINITY AQUIFER [DENTON]	0	561	561	561	561	561
CORINTH UPSIZE EXISTING WELL	TRINITY AQUIFER [DENTON]	286	286	286	286	286	286
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	17	46	208	214	177
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	55	144	190	168	126
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	11	16	19	15	13
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	382
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	76	129
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	74	56
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	24	30	25	45
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	48	57	46	81
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	113	256	310	259	235
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	397	584	687	775	497
		930	**2,143**	**2,688**	**3,087**	**3,254**	**3,427**

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
COUNTY-OTHER, DENTON, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	407
CONSERVATION - DENTON COUNTY	DEMAND REDUCTION [DENTON]	13	28	46	86	174	390
CONSERVATION, WATER LOSS CONTROL - DENTON COUNTY	DEMAND REDUCTION [DENTON]	19	19	0	0	0	0
DENTON COUNTY OTHER NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [DENTON]	504	504	504	504	504	504
DENTON COUNTY OTHER NEW WELLS IN WOODBINE AQUIFER	WOODBINE AQUIFER [DENTON]	1,000	1,000	1,000	1,000	1,000	1,000
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	13	43	349	656	1,081
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	42	136	319	515	771
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	31	47	51	58	40	28
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	23	271	301	364	264	195
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	74	85	63	40	2	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	86
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	99	121	155	115
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	149	171
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	8	16	31	45	77
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	6	9	8	11	7	5
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	2,524
		1,670	**2,298**	**2,931**	**4,554**	**7,307**	**13,704**

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	321	855
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	227	343
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	24	51	77	276
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	44	92	138	488
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	87	243	520	794	1,430
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	185	353	1,008	2,239	2,958
		1,670	**2,298**	**2,931**	**4,554**	**7,307**	**13,704**

CROSS ROADS, 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	16
CONSERVATION - CROSS ROADS	DEMAND REDUCTION [DENTON]	7	13	23	25	28	30
CONSERVATION, WATER LOSS CONTROL - CROSS ROADS	DEMAND REDUCTION [DENTON]	2	2	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	4	11	51	52	43
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	11	35	46	41	31
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	2	4	4	4	3
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	92
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	18	31
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	18	14
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	6	7	6	11

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
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	12	14	11	20
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	24	63	75	63	58
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	81	143	167	187	119
		9	**137**	**297**	**389**	**428**	**468**

DALLAS, 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	389
CONSERVATION - DALLAS	DEMAND REDUCTION [DENTON]	226	591	895	1,001	1,018	1,004
CONSERVATION, WATER LOSS CONTROL - DALLAS	DEMAND REDUCTION [DENTON]	33	33	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	45	72	209	760	958	1,034
DWU UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DENTON]	0	0	0	3	7	3
DWU UNALLOCATED SUPPLY UTILIZATION	FORK LAKE/RESERVOIR [RESERVOIR]	0	0	0	3	6	2
DWU UNALLOCATED SUPPLY UTILIZATION	RAY HUBBARD LAKE/RESERVOIR [RESERVOIR]	0	0	0	2	4	1
DWU UNALLOCATED SUPPLY UTILIZATION	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	2	2	2	8	14	5
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	230	657	694	752	737
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	331	328
		306	**928**	**1,763**	**2,471**	**3,090**	**3,503**

DENTON, 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	3,291
CONSERVATION - DENTON	DEMAND REDUCTION [DENTON]	385	811	1,410	1,982	2,983	3,966
CONSERVATION, WATER LOSS CONTROL - DENTON	DEMAND REDUCTION [DENTON]	145	145	0	0	0	0
DENTON UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DENTON]	6,275	8,160	10,606	13,445	15,857	18,184

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
DENTON UNALLOCATED SUPPLY UTILIZATION	FORK LAKE/RESERVOIR [RESERVOIR]	0	291	1,082	2,151	4,369	6,217
DENTON UNALLOCATED SUPPLY UTILIZATION	RAY HUBBARD LAKE/RESERVOIR [RESERVOIR]	0	258	864	1,560	2,881	3,738
DENTON UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	567	1,845	3,237	5,782	7,198
DENTON UNALLOCATED SUPPLY UTILIZATION	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	0	896	2,957	5,268	9,630	12,388
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	87	539	2,953	6,375	8,778
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	258	1,654	2,684	4,989	6,237
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	2,196	2,774
		6,805	**11,473**	**20,957**	**33,280**	**55,062**	**72,771**

DENTON COUNTY FWSD #10, 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	67
CONSERVATION - DENTON COUNTY FWSD #10	DEMAND REDUCTION [DENTON]	20	68	94	105	114	124
CONSERVATION, IRRIGATION RESTRICTIONS – DENTON COUNTY FWSD #10	DEMAND REDUCTION [DENTON]	1	7	7	7	7	7
CONSERVATION, WATER LOSS CONTROL - DENTON COUNTY FWSD #10	DEMAND REDUCTION [DENTON]	7	7	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	18	45	208	214	177
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	55	143	189	168	126
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	11	16	19	14	13
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	382
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	73	129

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	74	56
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	24	29	24	45
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	48	56	46	81
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	114	256	309	259	235
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	400	581	686	777	497
		28	**680**	**1,214**	**1,608**	**1,770**	**1,939**

DENTON COUNTY FWSD #1A, 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	262
CONSERVATION - DENTON COUNTY FWSD #1A	DEMAND REDUCTION [DENTON]	49	140	234	259	285	310
CONSERVATION, WATER LOSS CONTROL - DENTON COUNTY FWSD #1A	DEMAND REDUCTION [DENTON]	18	18	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	34	80	196	711	756	697
DWU UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	1	29	33	40	19
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	253	620	651	594	496
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	16	27	31	25	24
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	729
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	122	247
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	262	220

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	41	49	41	86
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	80	94	77	155
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	157	426	516	433	448
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	549	969	1,146	1,300	948
		101	**1,214**	**2,622**	**3,490**	**3,935**	**4,641**

DENTON COUNTY FWSD #7, 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	73
CONSERVATION - DENTON COUNTY FWSD #7	DEMAND REDUCTION [DENTON]	45	74	102	113	125	136
CONSERVATION, IRRIGATION RESTRICTIONS – DENTON COUNTY FWSD #7	DEMAND REDUCTION [DENTON]	4	8	8	8	8	8
CONSERVATION, WATER LOSS CONTROL - DENTON COUNTY FWSD #7	DEMAND REDUCTION [DENTON]	17	17	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	19	50	226	233	193
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	61	157	207	183	137
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	13	18	20	16	14
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	415
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	80	141
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	81	61
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	27	32	27	49

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	53	61	51	88
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	126	280	337	282	255
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	440	635	749	845	540
		66	**758**	**1,330**	**1,753**	**1,931**	**2,110**

DOUBLE OAK, 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	7
CONSERVATION - DOUBLE OAK	DEMAND REDUCTION [DENTON]	8	12	16	18	20	22
CONSERVATION, WATER LOSS CONTROL - DOUBLE OAK	DEMAND REDUCTION [DENTON]	3	3	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	1	4	20	23	18
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	4	12	18	18	13
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	1	1	2	2	1
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	0	5	11
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	8	6
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	4	5	5	8
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	8	22	29	27	25
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	29	49	63	78	53
		11	**58**	**108**	**155**	**186**	**204**

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
FLOWER MOUND, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	744
CONSERVATION - FLOWER MOUND	DEMAND REDUCTION [DENTON]	252	500	688	763	838	913
CONSERVATION, WATER LOSS CONTROL - FLOWER MOUND	DEMAND REDUCTION [DENTON]	95	95	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	242	306	620	2,098	2,181	1,977
DWU UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DENTON]	152	130	78	10	0	0
DWU UNALLOCATED SUPPLY UTILIZATION	FORK LAKE/RESERVOIR [RESERVOIR]	234	189	117	12	0	0
DWU UNALLOCATED SUPPLY UTILIZATION	RAY HUBBARD LAKE/RESERVOIR [RESERVOIR]	230	165	94	9	0	0
DWU UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	556	345	0	0	0	0
DWU UNALLOCATED SUPPLY UTILIZATION	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	828	629	318	29	0	0
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	975	1,955	1,914	1,713	1,409
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	54	75	85	67	58
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,738
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	333	589
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	754	627
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	113	135	113	204
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	221	257	209	369
		2,589	**5,807**	**8,139**	**9,859**	**10,935**	**11,959**

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	538	1,180	1,411	1,183	1,070
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	1,881	2,680	3,136	3,544	2,261
		2,589	**5,807**	**8,139**	**9,859**	**10,935**	**11,959**

FORT WORTH, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - FORT WORTH	DEMAND REDUCTION [DENTON]	207	406	676	993	1,362	1,771
CONSERVATION, WATER LOSS CONTROL - FORT WORTH	DEMAND REDUCTION [DENTON]	714	951	463	434	277	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	321	0
FORT WORTH ALLIANCE DIRECT REUSE	DIRECT REUSE [TARRANT]	0	129	425	539	634	716
FORT WORTH DIRECT REUSE	DIRECT REUSE [TARRANT]	34	41	49	62	73	82
FORT WORTH FUTURE DIRECT REUSE	DIRECT REUSE [TARRANT]	0	320	443	561	661	745
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	391	905	936	688	263
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	5,888
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	2,116	3,263	2,163
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	48	26	414	445	287	162
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	31	6	106	135	249	523
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	65	828	1,331	2,381	2,626
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	911	629	1,541	1,179
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	73	0
		1,034	**2,335**	**5,220**	**8,181**	**11,810**	**16,118**

FRISCO, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - FRISCO	DEMAND REDUCTION [DENTON]	609	975	1,429	1,517	1,606	1,695
CONSERVATION, WATER LOSS CONTROL - FRISCO	DEMAND REDUCTION [DENTON]	83	83	0	0	0	0
FRISCO DIRECT REUSE	DIRECT REUSE [COLLIN]	896	1,344	2,260	2,260	2,260	2,260

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	128	431	559	658	463	328
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	96	2,440	3,349	4,116	3,028	2,261
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	303	769	706	454	18	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	994
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	1,103	1,372	1,772	1,332
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	1,707	1,988
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	21	72	96	116	85	62
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,298
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	578	440
		2,136	**6,114**	**9,502**	**10,493**	**11,517**	**12,658**

HACKBERRY, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - HACKBERRY	DEMAND REDUCTION [DENTON]	4	9	15	20	28	36
CONSERVATION, WATER LOSS CONTROL - HACKBERRY	DEMAND REDUCTION [DENTON]	2	2	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	5	9	13	18	16	13
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	3	54	76	114	101	90
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	10	17	16	12	1	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	40
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	25	38	59	53

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	57	79
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	2	1	4	2	4
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	52
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	19	18
		24	**93**	**146**	**206**	**283**	**385**

HICKORY CREEK, 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	23
CONSERVATION - HICKORY CREEK	DEMAND REDUCTION [DENTON]	5	8	9	14	18	22
CONSERVATION, WATER LOSS CONTROL - HICKORY CREEK	DEMAND REDUCTION [DENTON]	3	3	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	4	12	72	74	60
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	13	39	66	58	43
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	3	4	6	5	4
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	131
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	25	44
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	26	19
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	7	10	9	15
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	13	20	16	28

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
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	26	70	107	89	80
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	89	161	239	266	172
		8	**146**	**315**	**534**	**586**	**641**

HIGHLAND VILLAGE, 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	65
CONSERVATION - HIGHLAND VILLAGE	DEMAND REDUCTION [DENTON]	51	86	117	130	143	156
CONSERVATION, WATER LOSS CONTROL - HIGHLAND VILLAGE	DEMAND REDUCTION [DENTON]	19	19	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	15	40	194	209	172
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	47	128	177	164	123
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	10	14	17	14	12
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	371
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	71	126
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	72	55
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	22	28	24	44
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	43	53	45	79
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	97	228	288	252	228
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	339	518	639	756	484
		70	**613**	**1,110**	**1,526**	**1,750**	**1,915**

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
IRRIGATION, DENTON, TRINITY (C)							
CONSERVATION, IRRIGATION - DENTON COUNTY	DEMAND REDUCTION [DENTON]	2	37	72	90	107	124
UTRWD - ADDITIONAL DIRECT REUSE	DIRECT REUSE [DENTON]	0	560	1,121	2,240	2,240	2,240
		2	**597**	**1,193**	**2,330**	**2,347**	**2,364**
JUSTIN, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	32
CONSERVATION - JUSTIN	DEMAND REDUCTION [DENTON]	2	8	17	23	29	35
CONSERVATION, WATER LOSS CONTROL - JUSTIN	DEMAND REDUCTION [DENTON]	3	3	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	5	21	96	102	84
JUSTIN NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [DENTON]	244	244	244	244	244	244
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	15	65	88	80	60
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	3	7	9	7	6
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	181
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	35	61
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	35	27
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	11	14	12	21
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	22	26	22	38
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	31	117	143	123	111
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	106	266	318	370	236
		249	**415**	**770**	**961**	**1,059**	**1,136**

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
KRUGERVILLE, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	10
CONSERVATION - KRUGERVILLE	DEMAND REDUCTION [DENTON]	1	2	4	6	7	9
CONSERVATION, WATER LOSS CONTROL - KRUGERVILLE	DEMAND REDUCTION [DENTON]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	2	6	30	31	26
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	6	18	27	24	18
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	1	2	3	2	2
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	55
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	11	19
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	11	8
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	3	4	4	6
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	6	8	7	12
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	13	32	45	37	34
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	44	74	100	112	71
		2	**69**	**145**	**223**	**246**	**270**
KRUM, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	58
CONSERVATION - KRUM	DEMAND REDUCTION [DENTON]	16	30	52	70	92	120
CONSERVATION, WATER LOSS CONTROL - KRUM	DEMAND REDUCTION [DENTON]	6	6	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	5	20	117	153	155
KRUM NEW WELLS IN TRINITY AQUIFER	TRINITY AQUIFER [DENTON]	577	707	866	1,025	1,025	1,025
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	17	62	107	120	110
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	4	7	10	11	11
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	333
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	52	113
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	53	49
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	11	17	18	39
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	21	32	33	71
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	34	110	173	185	204
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	119	249	385	556	432
		599	**922**	**1,398**	**1,936**	**2,298**	**2,720**

LAKE DALLAS, 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	27
CONSERVATION - LAKE DALLAS	DEMAND REDUCTION [DENTON]	4	8	13	18	22	27
CONSERVATION, WATER LOSS CONTROL - LAKE DALLAS	DEMAND REDUCTION [DENTON]	5	5	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	6	18	82	86	71
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	19	58	75	68	51

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	4	7	7	6	5
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	153
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	29	52
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	30	23
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	10	12	10	18
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	19	22	18	32
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	40	103	123	104	94
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	138	234	274	310	198
		9	**220**	**462**	**613**	**683**	**751**

LAKEWOOD VILLAGE, 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
CONSERVATION - LAKEWOOD VILLAGE	DEMAND REDUCTION [DENTON]	0	1	1	2	3	4
CONSERVATION, WATER LOSS CONTROL - LAKEWOOD VILLAGE	DEMAND REDUCTION [DENTON]	0	0	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	0	0	4	5
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	3	4
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	0	1	4
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	1	2

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	0	0	0	1
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	0	0	1	2
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	0	0	0	4	7
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	12	14
		0	**1**	**1**	**2**	**29**	**56**

LEWISVILLE, 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	1,661
CONSERVATION - LEWISVILLE	DEMAND REDUCTION [DENTON]	266	484	755	952	1,166	1,272
CONSERVATION, IRRIGATION RESTRICTIONS – LEWISVILLE	DEMAND REDUCTION [DENTON]	13	32	39	47	55	55
CONSERVATION, WATER LOSS CONTROL - LEWISVILLE	DEMAND REDUCTION [DENTON]	100	100	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	550	560	1,177	4,041	4,918	4,420
DWU UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	19	274	361	499	236
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	1,784	3,709	3,689	3,861	3,150
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	1,699	1,400
		929	**2,979**	**5,954**	**9,090**	**12,198**	**12,194**

LITTLE ELM, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - LITTLE ELM	DEMAND REDUCTION [DENTON]	14	31	46	61	76	91
CONSERVATION, WATER LOSS CONTROL - LITTLE ELM	DEMAND REDUCTION [DENTON]	21	21	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	68	119	125	144	100	70
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	51	673	750	900	649	478

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	160	212	158	99	4	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	210
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	247	300	379	281
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	366	420
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	10	20	21	25	19	12
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	274
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	124	93
		324	**1,076**	**1,347**	**1,529**	**1,717**	**1,929**

MANUFACTURING, DENTON, 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	81
CONSERVATION, MANUFACTURING - DENTON COUNTY	DEMAND REDUCTION [DENTON]	0	3	38	57	62	68
DENTON COUNTY MANUFACTURING ADDITIONAL GROUNDWATER	WOODBINE AQUIFER [DENTON]	184	184	184	184	184	184
DENTON UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DENTON]	315	323	353	383	360	369
DENTON UNALLOCATED SUPPLY UTILIZATION	FORK LAKE/RESERVOIR [RESERVOIR]	0	12	36	61	99	126
DENTON UNALLOCATED SUPPLY UTILIZATION	RAY HUBBARD LAKE/RESERVOIR [RESERVOIR]	0	10	29	44	65	76
DENTON UNALLOCATED SUPPLY UTILIZATION	RAY ROBERTS-LEWISVILLE-GRAPEVINE LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	22	61	92	131	146
DENTON UNALLOCATED SUPPLY UTILIZATION	TAWAKONI LAKE/RESERVOIR [RESERVOIR]	0	35	98	150	219	252
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	7	9	27	120	185	215

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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	25	83	106	142	153
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	2	3	3	2	2
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	1	13	14	19	15	12
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	3	4	3	2	0	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	5
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	5	6	9	7
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	9	11
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	1	1	1	1	1
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	1	0	0	1	0	1
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	41
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	1	9	13
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	0	1	0	0	0
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	0	0	1	1	0
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	1	2	2	1	2
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	63	67
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	1	2	2	3
		512	**676**	**993**	**1,306**	**1,638**	**1,900**

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	3	4	3	6
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	7	15	20	19	18
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	25	35	45	56	40
		512	**676**	**993**	**1,306**	**1,638**	**1,900**

MINING, DENTON, 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	99
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	5	22	168	239	263
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	16	70	153	187	188
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	3	8	15	16	19
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	567
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	81	192
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	83	84
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	12	24	28	67
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	23	46	51	120
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	32	124	249	290	349
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	114	282	553	866	739
		0	**170**	**541**	**1,208**	**1,841**	**2,687**

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
MOUNTAIN SPRING WSC, TRINITY (C)							
CONSERVATION - MOUNTAIN SPRING WSC	DEMAND REDUCTION [DENTON]	0	0	0	0	0	0
CONSERVATION, WATER LOSS CONTROL - MOUNTAIN SPRING WSC	DEMAND REDUCTION [DENTON]	0	0	0	0	0	0
GAINESVILLE UNALLOCATED SUPPLY UTILIZATION	HUBERT H MOSS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	5	10
		0	**0**	**0**	**0**	**5**	**10**
MUSTANG SUD, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	253
CONSERVATION - MUSTANG SUD	DEMAND REDUCTION [DENTON]	6	24	52	91	142	204
CONSERVATION, WATER LOSS CONTROL - MUSTANG SUD	DEMAND REDUCTION [DENTON]	9	9	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	15	66	420	558	674
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	48	207	383	438	480
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	10	23	37	38	48
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,450
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	190	491
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	193	214
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	35	60	64	170
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	69	114	120	308
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	99	369	623	675	891
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	345	840	1,383	2,018	1,887

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
		15	**550**	**1,661**	**3,111**	**4,436**	**7,070**
NORTHLAKE, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	181
CONSERVATION - NORTHLAKE	DEMAND REDUCTION [DENTON]	12	74	186	287	403	440
CONSERVATION, WATER LOSS CONTROL - NORTHLAKE	DEMAND REDUCTION [DENTON]	5	5	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	15	69	439	581	480
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	76	163	178	170	115
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	46	218	401	734	342
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	10	25	39	40	34
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	1,469
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	56	323	497
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	12	40	42	58	39
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	3	10	12	24	53
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	32	114	236	225	181
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	54	131	73	86
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	201	152
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	37	62	67	121
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	73	119	125	219
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	95	388	653	711	636

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	334	882	1,450	2,101	1,348
		17	**702**	**2,259**	**4,105**	**5,836**	**6,393**

OAK POINT, 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	66
CONSERVATION - OAK POINT	DEMAND REDUCTION [DENTON]	4	10	21	35	53	63
CONSERVATION, WATER LOSS CONTROL - OAK POINT	DEMAND REDUCTION [DENTON]	5	5	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	8	29	170	213	176
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	26	92	155	168	126
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	5	10	15	15	13
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	379
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	73	129
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	74	56
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	16	24	25	45
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	31	46	46	80
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	54	164	252	258	233
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	189	374	561	774	494
		9	**297**	**737**	**1,258**	**1,699**	**1,860**

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
PALOMA CREEK, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	79
CONSERVATION - PALOMA CREEK	DEMAND REDUCTION [DENTON]	35	75	104	115	127	138
CONSERVATION, WATER LOSS CONTROL - PALOMA CREEK	DEMAND REDUCTION [DENTON]	13	13	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	20	51	232	239	210
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	63	161	212	187	150
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	13	18	21	16	15
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	452
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	81	153
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	82	67
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	27	33	28	53
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	54	63	51	96
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	131	287	346	290	280
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	458	655	766	866	589
		48	**773**	**1,357**	**1,788**	**1,967**	**2,282**
PILOT POINT, TRINITY (C)							
CONSERVATION - PILOT POINT	DEMAND REDUCTION [DENTON]	3	4	14	26	44	71
CONSERVATION, WATER LOSS CONTROL - PILOT POINT	DEMAND REDUCTION [DENTON]	4	4	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	14	137	227	258

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
PILOT POINT ADDITIONAL GROUNDWATER	TRINITY AQUIFER [DENTON]	269	269	269	269	269	269
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	5	12	16	18
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	556
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	77	188
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	78	82
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	7	19	26	65
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	15	37	49	118
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	0	77	203	275	342
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	0	176	451	827	726
		276	**277**	**577**	**1,154**	**1,888**	**2,693**

PLANO, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - PLANO	DEMAND REDUCTION [DENTON]	31	50	73	67	74	80
CONSERVATION, WATER LOSS CONTROL - PLANO	DEMAND REDUCTION [DENTON]	10	10	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	26	47	50	59	41	29
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	19	265	297	369	268	199
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	62	84	63	41	2	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	87
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	98	123	157	117

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	151	174
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	4	8	9	10	7	5
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	114
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	51	39
		152	**464**	**590**	**669**	**751**	**844**

PONDER, 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 - PONDER	DEMAND REDUCTION [DENTON]	1	2	5	8	12	18
CONSERVATION, WATER LOSS CONTROL - PONDER	DEMAND REDUCTION [DENTON]	1	1	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	0	1	16	31	35
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	3	15	24	25
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	0	1	2	2
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	75
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	10	25
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	10	11
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	1	2	3	9
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	1	4	6	16

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	0	48	142	225	273
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	0	12	55	110	97
		2	**3**	**71**	**243**	**433**	**599**

PROSPER, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - PROSPER	DEMAND REDUCTION [DENTON]	6	49	152	306	478	507
CONSERVATION, WATER LOSS CONTROL - PROSPER	DEMAND REDUCTION [DENTON]	1	4	0	0	0	0
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	2	36	100	216	213	142
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	3	205	600	1,348	1,391	978
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	4	65	126	148	8	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	430
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	172	363	707	532
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	681	793
NTMWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [COLLIN]	0	9	100	304	458	365
NTMWD UNALLOCATED SUPPLY UTILIZATION	INDIRECT REUSE [DALLAS]	0	10	118	370	623	78
NTMWD UNALLOCATED SUPPLY UTILIZATION	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	6	63	172	258	205
NTMWD UNALLOCATED SUPPLY UTILIZATION	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	14	134	361	536	423
NTMWD UNALLOCATED SUPPLY UTILIZATION	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	11	110	299	450	360
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	6	17	39	39	27

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	963
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	231	176
		16	**415**	**1,692**	**3,926**	**6,073**	**5,979**

PROVIDENCE VILLAGE WCID, 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	20
CONSERVATION - PROVIDNECE VILLAGE WCID	DEMAND REDUCTION [DENTON]	3	6	9	12	15	19
CONSERVATION, WATER LOSS CONTROL - PROVIDENCE VILLAGE WCID	DEMAND REDUCTION [DENTON]	5	5	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	6	14	65	66	55
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	18	46	59	52	39
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	4	5	6	5	4
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	117
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	25	40
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	23	17
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	8	9	8	14
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	15	18	14	25
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	38	81	96	80	72
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	131	185	214	238	151
		8	**208**	**363**	**479**	**526**	**573**

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
ROANOKE, TRINITY (C)							
CONSERVATION - ROANOKE	DEMAND REDUCTION [DENTON]	31	61	101	112	123	134
CONSERVATION, IRRIGATION RESTRICTIONS – ROANOKE	DEMAND REDUCTION [DENTON]	2	6	7	7	7	7
CONSERVATION, WATER LOSS CONTROL - ROANOKE	DEMAND REDUCTION [DENTON]	11	11	0	0	0	0
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	291	406	319	237	161
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	389	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	604
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	99	174	205
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	46	100	75	83	55
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	11	26	23	32	74
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	117	287	423	315	254
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	135	234	102	120
		44	**543**	**1,062**	**1,292**	**1,462**	**1,614**
SANGER, TRINITY (C)							
ANRA-COL - LAKE COLUMBIA	COLUMBIA LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	52
CONSERVATION - SANGER	DEMAND REDUCTION [DENTON]	4	10	18	28	42	61
CONSERVATION, WATER LOSS CONTROL - SANGER	DEMAND REDUCTION [DENTON]	6	6	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	2	13	92	133	138
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	8	40	84	104	98
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	2	5	8	9	10

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	296
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	45	100
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	46	44
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	7	13	15	35
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	14	25	28	63
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	16	73	136	160	182
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	55	167	302	481	385
		10	**99**	**337**	**688**	**1,063**	**1,464**

SHADY SHORES, 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	10
CONSERVATION - SHADY SHORES	DEMAND REDUCTION [DENTON]	2	3	5	7	8	10
CONSERVATION, WATER LOSS CONTROL - SHADY SHORES	DEMAND REDUCTION [DENTON]	2	2	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	0	3	7	31	32	27
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	8	21	28	25	19
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	2	2	3	2	2
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	58
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	11	20
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	11	8

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

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	INDIRECT REUSE [HOPKINS]	0	0	4	4	4	7
UTRWD - CONTRACT RENEWAL WITH COMMERCE FOR LAKE CHAPMAN WATER	CHAPMAN/COOPER LAKE/RESERVOIR NON-SYSTEM PORTION [RESERVOIR]	0	0	7	8	7	12
UTRWD - RALPH HALL RESERVOIR AND REUSE	INDIRECT REUSE [FANNIN]	0	18	38	46	39	35
UTRWD - RALPH HALL RESERVOIR AND REUSE	RALPH HALL LAKE/RESERVOIR [RESERVOIR]	0	60	87	103	119	76
		4	**96**	**171**	**230**	**258**	**284**

SOUTHLAKE, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - SOUTHLAKE	DEMAND REDUCTION [DENTON]	8	14	24	32	42	55
CONSERVATION, WATER LOSS CONTROL - SOUTHLAKE	DEMAND REDUCTION [DENTON]	2	2	0	0	0	0
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	56	83	80	73	60
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	119	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	224
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	99	53	76
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	9	20	19	25	20
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	2	5	6	10	27
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	22	58	61	96	94
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	26	28	33	45
		10	**105**	**216**	**325**	**451**	**601**

THE COLONY, 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	304
CONSERVATION - THE COLONY	DEMAND REDUCTION [DENTON]	26	58	91	131	164	197

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, WATER LOSS CONTROL - THE COLONY	DEMAND REDUCTION [DENTON]	39	39	0	0	0	0
DWU - MAIN STEM REUSE	INDIRECT REUSE [DALLAS]	190	152	288	867	869	809
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	485	906	792	683	577
NTMWD - ADDITIONAL LAKE LAVON	LAVON LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	19	52	60	75	56	42
NTMWD - LOWER BOIS D'ARC CREEK RESERVOIR	LOWER BOIS D ARC LAKE/RESERVOIR [RESERVOIR]	14	292	357	469	367	290
NTMWD - MAIN STEM PUMP STATION	INDIRECT REUSE [COLLIN]	46	92	75	52	2	0
NTMWD - OKLAHOMA	OKLAHOMA RUN-OF-RIVER [OKLAHOMA]	0	0	0	0	0	128
NTMWD - TEXOMA BLENDING	TEXOMA LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	0	0	118	156	214	171
NTMWD - TOLEDO BEND PHASE I	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	207	255
REMOVAL OF CHAPMAN SILT BARRIER	CHAPMAN/COOPER LAKE/RESERVOIR NORTH TEXAS MWD SYSTEM [RESERVOIR]	3	8	10	13	12	9
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	167
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	70	56
UNM-ROR-NECHES RUN OF RIVER	NECHES RUN-OF-RIVER [ANDERSON]	0	0	0	0	301	257
		337	**1,178**	**1,905**	**2,555**	**2,945**	**3,262**

TROPHY CLUB, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - TROPHY CLUB	DEMAND REDUCTION [DENTON]	189	236	283	301	320	339
CONSERVATION, WATER LOSS CONTROL - TROPHY CLUB	DEMAND REDUCTION [DENTON]	29	29	0	0	0	0
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	590	688	540	401	272
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	623	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	977
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	155	279	331
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	65	152	119	132	90
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	16	39	36	51	119
TRWD - CEDAR CREEK WETLANDS	INDIRECT REUSE [HENDERSON]	0	167	433	667	506	412
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	205	367	164	193
		218	**1,103**	**1,800**	**2,185**	**2,476**	**2,733**

WESTLAKE, TRINITY (C)

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CONSERVATION - WESTLAKE	DEMAND REDUCTION [DENTON]	1	1	1	2	3	4
CONSERVATION, WATER LOSS CONTROL - WESTLAKE	DEMAND REDUCTION [DENTON]	0	0	0	0	0	0
FORT WORTH UNALLOCATED SUPPLY UTILIZATION	TRWD LAKE/RESERVOIR SYSTEM [RESERVOIR]	0	4	6	6	5	5
LAKE PALESTINE	PALESTINE LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	9	0
SULPHUR BASIN SUPPLY	MARVIN NICHOLS LAKE/RESERVOIR [RESERVOIR]	0	0	0	0	0	17
SULPHUR BASIN SUPPLY	WRIGHT PATMAN LAKE/RESERVOIR [RESERVOIR]	0	0	0	2	5	6
TRWD - ADDITIONAL CEDAR CREEK AND RICHLAND-CHAMBERS	INDIRECT REUSE [NAVARRO]	0	1	2	1	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	2	4	9	7	7
TRWD - TEHUACANA	TEHUACANA LAKE/RESERVOIR [RESERVOIR]	0	0	3	4	3	3
		1	**8**	**16**	**24**	**34**	**46**
Sum of Projected Water Management Strategies (acre-feet)		**20,410**	**52,460**	**94,346**	**139,273**	**186,137**	**228,578**