

North Texas Groundwater Conservation District  
Management Plan

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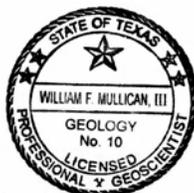
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The North Texas Groundwater Conservation District Management Plan was adopted, after notice and hearing, on April 19, 2012.

Hydrologic data developed for this Management Plan were developed and reviewed by William F. Mullican III

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4/19/2012

A review of the Management Plan by the Executive Administrator of the Texas Water Development Board has determined that the plan is administratively complete and in compliance with Texas Water Code §36.1071 and 31 Texas Administrative Code 356.

Insert Date of Approval here.

Insert copy of Approval Certificate here

Table of Contents

1.0 INTRODUCTION ..... 3

    1.1 District Mission ..... 3

    1.2 Guiding Principles ..... 3

    1.3 Creation and History of the District ..... 3

    1.4 Planning Horizon ..... 5

2.0 ACTIONS, METHODOLOGIES, PROCEDURES, PERFORMANCE, AND  
AVOIDANCE ..... 6

    Goal 1 – Providing the most efficient use of groundwater ..... 7

    Goal 2 – Controlling and preventing the waste of groundwater ..... 10

    Goal 3 – Controlling and preventing subsidence ..... 11

    Goal 4 – Addressing conjunctive surface water management issues ..... 11

    Goal 5 – Addressing natural resource issues ..... 12

    Goal 6 – Addressing drought conditions ..... 13

    Goal 7 – Address conservation, recharge enhancement, rainwater harvesting,  
precipitation enhancement, and brush control ..... 13

    Goal 8 – Achieving desired future conditions of groundwater resources ..... 14

3.0 POPULATION, WATER USE, AND WATER DEMAND ..... 20

4.0 GROUNDWATER RESOURCES ..... 32

5.0 SURFACE WATER RESOURCES ..... 51

6.0 WATER SUPPLY PLANS ..... 69

7.0 REFERENCES CITED ..... 140

APPENDICES

Appendix A Texas Water Development Board Administrative Checklist ..... 142

Appendix B Electronic copy of the Management Plan ..... Transmitted separately

Appendix C .District rules ..... Separate attachment

Appendix D Resolution adopting Management Plan ..... 148

Appendix E Evidence that the Management Plan was adopted after notice and  
Hearing ..... 152

Appendix F Evidence that the District coordinated development of the Management  
Plan with surface water entities ..... 163

LIST OF FIGURES

Figure 1.1 – Boundaries of the District ..... 5

Figure 3.1 – Collin County population projections ..... 21

Figure 3.2 – Cooke County population projections ..... 21

Figure 3.3 – Denton County population projections ..... 22

Figure 3.4 – District population projections .....	22
Figure 3.5 – Historical groundwater use estimates by water use sector for the District.	27
Figure 3.6 – Water demand projections by county .....	32
Figure 4.1 – Location of wells flowing at the land surface in 1900 .....	35
Figure 4.2 – Location of wells having water level measurements taken in 1955.....	36
Figure 4.3 – Map of the primary aquifers in the North Texas GCD .....	38
Figure 4.4 – Cross section of the Trinity and Woodbine aquifers .....	39
Figure 4.5 – Location of wells having water level measurements taken in 1976.....	40
Figure 4.6 – Location of wells having pumping test data .....	41
Figure 4.7 – Location of wells having water-level measurements in the TWDB groundwater database.....	42
Figure 4.8 – Location of wells having water-level measurements taken in 2000 .....	48
Figure 5.1 – Projected surface water supply in the District .....	69
Figure 6.1 – Total projected water needs in the District .....	74
LIST OF TABLES	
Table 2.1 – Desired future conditions and estimates of modeled available groundwater for pumping in the Woodbine Aquifer .....	16
Table 2.2 – Desired future conditions and estimates of modeled available groundwater for pumping in the Northern Trinity Aquifer .....	16
Table 2.3 – Estimates of exempt use for the Northern Trinity and Woodbine aquifers..	17
Table 2.4 – Estimates of the amount of groundwater available for non-exempt (permitted use) for the Northern Trinity and Woodbine aquifers in the District .....	18
Table 3.1 – Population projections included in 2011 Region C Water Plan and updated population from 2010 Census.....	20
Table 3.2 – Estimated historical groundwater use for the District.....	23
Table 3.3 – Water demand projections for the District.....	28
Table 4.1 – Relationship between model layers in the Northern Trinity/Woodbine aquifer GAM and formations in the District .....	39
Table 4.2 – Groundwater budget information for the Northern Trinity/Woodbine aquifers from GAM Run 10-034.....	50
Table 4.3 – Groundwater flow between aquifers in the District.....	51
Table 5.1 – Projected surface water supplies from 2012 State Water Plan.....	53
Table 6.1 – Total projected water needs .....	71
Table 6.2 – Projected water management strategies by water user group.....	75

## **NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT MANAGEMENT PLAN**

### **1.0 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.

#### **1.1 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.

#### **1.2 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.

#### **1.3 Creation and History of the District**

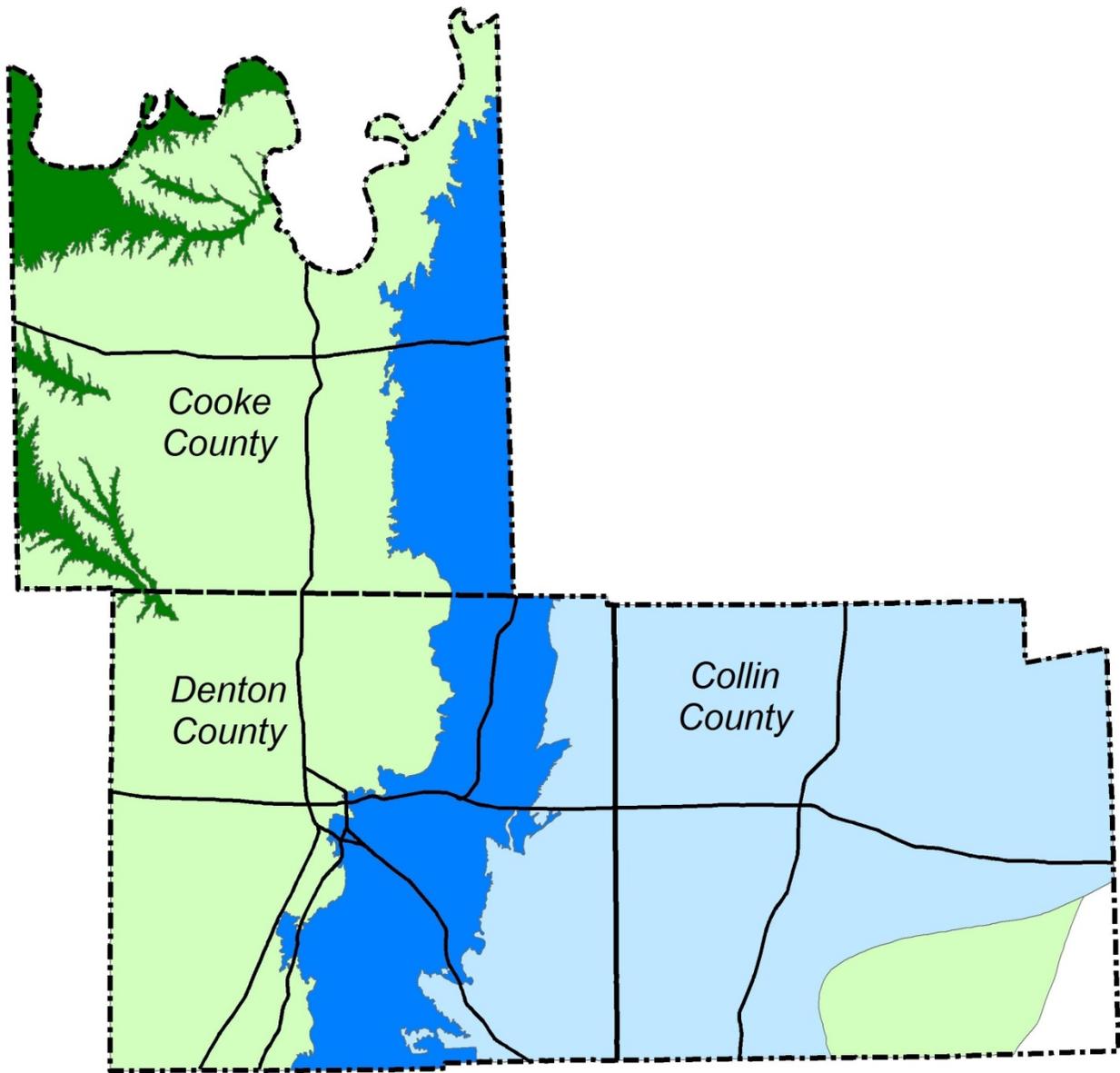
The District was created by the 81<sup>st</sup> Texas Legislature under the authority of Section 59, Article XVI, of the Texas Constitution, and in accordance with Chapter 36 of the Texas Water Code by the Act of May 19, 2009, 81<sup>st</sup> Leg., R.S., ch. 248, 2009 Tex. Gen. Laws 686, codified at TEX. SPEC. DIST. LOC. LAWS CODE ANN. ch. 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 (see Figure 1.1), 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.

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.



**WOODBINE AQUIFER TRINITY AQUIFER**



Figure 1.1 – Boundaries of the District

**1.4 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).

## **2.0 ACTIONS, METHODOLOGIES, PROCEDURES, PERFORMANCE, AND AVOIDANCE**

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. A copy of the District's rules may be found on the District's website located at [www.northtexasgcd.org/](http://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)(1-9) 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 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 new or existing well of any size or capacity used solely for domestic use, livestock use, or poultry use; (2) any new or existing well 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; or (3) 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 permanent 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. Key programs designed, developed, and implemented by the District to ensure the most efficient use of groundwater in order to achieve the District's adopted desired future conditions centers on three key activities: (1) well registration, (2) well monitoring, and (3) water use reporting and tracking. These activities are described in the following management objectives.

#### **Management Objective 1.1A**

Current rules adopted by the District require owners of all new wells drilled on or after April 1, 2011, and all existing wells that are non-exempt to be registered with the District. The accurate and timely reporting to the District of activities governed by the rules is a critical component of the District's ability to effectively and efficiently conserve, preserve, protect, and manage the groundwater resources that the District has been charged by law in Texas Water Code §36.001 to achieve. Well registration is to be accomplished by well owners primarily through the use of an online geodatabase created by the District. Beginning at the first regularly scheduled meeting of the Board of Directors in 2012 subsequent to the adoption of this Plan, and on a quarterly basis forward, the General Manager shall present the number of current wells registered in the District, the aquifer(s) in which the wells have been completed, and other statistics, as requested by the Board of Directors.

**Performance standard 1.1A** Beginning in 2012, subsequent to the adoption of this Plan, the Board of Directors will receive quarterly briefings by the General Manager regarding the District's well registration program.

**Management Objective 1.1B** Beginning in April 2011, the District launched an online registration program in order to register and collect important information regarding all non-exempt wells and exempt wells drilled on or after April 1, 2011. In order to ensure that all wells required to be registered are registered, the District will develop an ongoing media outreach program to educate the citizens of the requirement to register wells. As part of this effort, a series of Public Service Announcements will be developed in 2012, subsequent to the adoption of this Plan, and circulated by the General Manager to identified local and regional media outlets on a quarterly basis. A summary of this outreach effort will be included in the Annual Report presented by the General Manager to the Board of Directors at the first regularly scheduled meeting each calendar year beginning in 2013.

**Performance Standard 1.1B** Number of media outlets for which Public Service Announcements were distributed on a quarterly basis is included in the Annual Report presented by the General Manager at the first regularly scheduled meeting of the year beginning in 2013.

**Management Objective 1.1C** It is the goal of the District that all non-exempt wells and exempt wells drilled on or after April 1, 2011, be registered. In order to ensure that all wells required by District rules to be registered have been accurately registered, beginning in November 2011 the District initiated a field inspection/audit program, with the objective of conducting field inspections of 5 wells per month. These inspections/audits will confirm that a well has been registered, accuracy of well location, and accuracy of certain other required well registration information. The identification of potential well sites to inspect/audit will be based on historic maps, aerial photos, and other local information.

**Performance Standard 1.1C** Beginning in 2012, subsequent to the adoption of this Plan, the Board of Directors will receive quarterly briefings by the General Manager regarding the number of well sites inspected/audited each month to confirm well registration requirements have been met.

**Management Objective 1.2A** In order to evaluate continually the effectiveness of the District's rules in meeting the goal of ensuring the efficient use of groundwater, beginning in 2013 the District will launch 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 monitor wells. For the first two years subsequent to the adoption of this Plan, District staff will work with Texas Water Development Board staff to monitor water levels in wells that the Texas Water Development Board staff currently monitors on an annual basis. District staff will accompany Texas Water Development Board representatives in the monitoring of the wells currently being observed in the three counties in

the District. After a two-year period, the District staff will assume the responsibility of monitoring these 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. 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. The results of the monitoring program will be included in the Annual Report presented by the General Manager at the first regularly scheduled meeting of the year beginning in 2014.

**Performance Standard 1.2A (1)** 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 at the first regularly scheduled meeting of the year beginning in 2014.

**Performance Standard 1.2A (2)** Number of wells in Collin, Cooke, and Denton counties for which water samples were collected for the testing of water quality as reported in the Annual Report presented by the General Manager at the first regularly scheduled meeting of the year beginning in 2014.

**Management Objective 1.2B** 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 into the future. As groundwater availability modeling capabilities improve over time, the need for increased data sampling temporally (water level responses to measured stresses) in certain areas of the aquifers in the District is recognized. Monitoring wells will be established by the District on a schedule determined by the Board of Directors as funds are available. Number of wells for which continuous time information on water levels in targeted locations will be available for viewing on the District's website as they are established.

**Performance Standard 1.2B** The number of wells for which water levels in targeted locations will be available for viewing on the District's website as they are established

**Management Objective 1.3A** 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 by the well owner/operator twice a year on March 1 and September 1. All water use information will be entered and maintained in the District's geodatabase. The General Manager will report to the Board of Directors at the first meeting practicable at the conclusion

of each reporting period. 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 1.3A** Percent of registered non-exempt wells meeting reporting requirements of water use.

**Management Objective 1.3B** In order to ensure that registered non-exempt wells have been equipped with District-approved meters and that water use is being accurately reported, beginning in October 2012, a meter inspection program will be implemented so that all registered non-exempt wells will be inspected on at least a five-year cycle (20 percent of all registered non-exempt wells per year) 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. This information containing annual water use, by registered well, by county, and by aquifer, will be included in the Annual Report presented by the General Manager at the June scheduled meeting of the year beginning in 2014. This report will include a comparison of reported water use versus the estimate of modeled available groundwater (the sum of exempt and permitted groundwater) established as a result of the adopted Desired Future Conditions for aquifers in the District.

**Performance Standard 1.3B (1)** Percentage of registered non-exempt wells inspected by District personnel annually, as reported in the Annual Report presented by the General Manager at the first regularly scheduled meeting of the year beginning in 2014.

**Performance Standard 1.3B (2)** Comparison of annual water use versus estimates of modeled available groundwater established as a result of the adopted Desired Future Conditions is included in the Annual Report presented by the General Manager at the first regularly scheduled meeting of the year beginning in 2014.

## **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. As a practical matter, it is sometimes difficult to differentiate Goal 2 from Goal 1. For example, certain objectives such as the water use reporting program described in **Management Objective 1.3A and 1.3B** could also be viewed as strategies to prevent and control the waste of groundwater, in addition to the stated goal of providing the most efficient use of groundwater. To address Goal 2, the District adopts the following management objectives more specifically targeted to control and prevent the waste of groundwater.

**Management Objective 2.1A** In order to increase public awareness of the need to control and prevent the waste of groundwater, the District will develop, implement, and operate an

integrated waste prevention outreach strategy subsequent to the approval of this Plan. This outreach strategy will initially focus on three activities. The District website will provide a routinely updated link containing Best Management Practices and helpful tips to control and prevent the waste of groundwater. The District will work to identify outreach opportunities with regional and local water providers so as to increase public awareness for the prevention of groundwater waste. Finally, the Board of Directors and staff will deliver presentations to civic groups and other public opportunities regarding the mission of the District with a focus on the need to prevent the waste of groundwater.

**Performance Standard 2.1A** Link on District website to Best Management Practices and helpful tips to control and prevent the waste of groundwater is operational subsequent to approval of this Plan.

**Performance Standard 2.1B** All efforts to participate and partner with other regional and local water providers in public outreach opportunities will be reported in the Annual Report presented by the General Manager at the first regularly scheduled meeting of the year beginning in 2013.

**Performance Standard 2.1C** Number of presentations made by Board of Directors and staff regarding the mission of the District with a focus on the control and prevention of waste is reported in the Annual Report presented by the General Manager at the first regularly scheduled meeting of the year beginning in 2013.

### **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 manger to attend and coordinate on water supply and management issues with the Region C Water Planning Group.

In addition, ongoing efforts to update the Northern Trinity/Woodbine Groundwater Availability Model will provide a better technical understanding of the interactions between surface water and groundwater availability in the District. The District will participate in this ongoing modeling update and any future modeling efforts at the TWDB in order to ensure that questions regarding the conjunctive management of surface water and groundwater are addressed.

**Management Objective 4.1A** Coordination with surface water management agencies.

The designated board member or general manager will represent groundwater management interests of the District at a minimum of 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 4.1A** 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 and significant actions of the planning group in the Annual Report presented by the General Manager at the first regularly scheduled meeting of the year beginning in 2013.

**Management Objective 4.2A** The designated technical representative of the District will monitor and participate in all stakeholder meetings of the ongoing and future Northern Trinity/Woodbine Aquifer and other meetings as necessary.

**Performance Standard 4.2A** The designated technical representative will report on activities of ongoing Northern Trinity/Woodbine Aquifer stakeholder meetings is presented at the first regularly scheduled meeting of the year beginning in 2013.

#### **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 A Assessing potential impacts**

In order to better understand the potential impact of historic and ongoing oil and gas exploration and production activities, the General Manager will contact representatives of the Texas Railroad Commission, Texas Commission on Environmental Quality, Bureau of Economic Geology, and other organizations as appropriate during 2012 to understand better these potential impacts. During the first quarter of 2013, the General Manager will present findings from these contacts along with any recommendations as to how the District should work to address these issues. Contacts need to be renewed on a bi-annual basis.

**Performance Standard 5.1A** The General Manager will present findings and any recommendations resulting from contacts with the Texas Railroad Commission, Texas Commission on Environmental Quality, Bureau of Economic Geology, and other organizations as appropriate to the Board of Directors for consideration in the first quarter of 2013.

**Performance Standard 5.1 B** The District will initiate and implement an injection well monitoring program by entering into an agreement with a firm that will monitor all injection well applications and notify the District of any potential impacts.

**Goal 6 - Addressing drought conditions**

Drought conditions in recent years have continued to remind us of how dependent we are on precipitation and underscore the importance of water conservation for all water use sectors. Droughts occur and reoccur in the area, as do cycles of above average precipitation. A well informed public can best respond to developing drought conditions by adopting best management practices appropriate for drought conditions.

**Management Objective 6.1A Provide ongoing and relevant drought-related meteorological information**

Subsequent to the approval of this Plan, 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 <http://www.twdb.texas.gov/data/drought/> .

**Performance Standard 6.1A**

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 by end of first quarter of 2012.

**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 reviewed this goal and determined that only conservation, rainwater harvesting and brush control are applicable to the District. 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 7.1A Provide for water conservation**

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. As such, several management objectives included in this plan in Goals 1–2 and 4–6 are important elements of the District's plan to conserve groundwater resources. In addition to these water conservation-related goals, management objectives, and performance standards included in Goals 1–2 and

4–6, the District, upon approval of this Plan, 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 7.1A**

Link to the electronic library of water conservation resources supported by the Water Conservation Advisory Council is available on the District’s website by the end of the last quarter of 2012.

**Management Objective 7.2A Addressing rainwater harvesting**

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 provided on the District’s website by the end of the last quarter in 2012.

**Performance Standard 7.2A**

Link to rainwater harvesting resources at the TWDB is established on the District’s website by the end of the first quarter in 2012.

**Management Objective 7.3A**

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

**Performance Standard 7.3A**

Link to information concerning brush control is available on the District’s website by the end of the last quarter of 2012.

**Goal 8 Achieving desired future conditions of groundwater resources**

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. The District is committed to developing this management plan in accordance with the statutory requirements and then moving forward to develop a comprehensive system to manage the groundwater resources within its boundaries in conjunction with the next round of desired future conditions adoption. 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.

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 as specified in the 2006 Region C Water Plan. Specific to the District, the adopted desired future conditions are reported in Table 2.1 below. With each adopted desired future condition, there is a corresponding estimate for the volume of total available groundwater for pumping on an annual basis (modeled available groundwater). The modeled available groundwater for pumping represents the sum of exempt use and non-exempt groundwater use (permitted use).

Table 2.1 - Desired future conditions and estimates of modeled available groundwater for pumping in the Woodbine Aquifer (Wade, 2008).

County	Desired future condition - feet of water level decline after 50 years	Modeled available groundwater— acre feet per year
Collin	154	2,509
Cooke	0	154
Denton	16	4,126
District Total		6,789

Table 2.2 - Desired future conditions and estimates of modeled available groundwater for pumping in the Northern Trinity Aquifer (Oliver and Bradley, 2011).

County	Desired future condition - feet of water level decline after 50 years	Modeled available groundwater for pumping – acre feet per year
Collin	Paluxy – 298 ft	1,762
Collin	Glen Rose – 247 ft	0
Collin	Hensell – 224	103
Collin	Hosston – 236 ft	239
Collin	County Total	2,104
Cooke	Paluxy – 26 ft	3,528
Cooke	Glen Rose – 42 ft	0
Cooke	Hensell – 60 ft	1,611
Cooke	Hosston – 78 ft	1,711
Cooke	County Total	6,850
Denton	Paluxy – 98 ft	9,822
Denton	Glen Rose – 134 ft	0
Denton	Hensell – 180 ft	3,112
Denton	Hosston – 214 ft	6,399
Denton	County Total	19,333
District Total		28,287

The District conducted an extensive review of draft estimates of annual exempt use provided by the TWDB (Mullican, 2011). This review included, for example, a comparison between the methodologies utilized by the TWDB and the Region C Water Planning Group. After significant

deliberation, the District determined at the June 21, 2011 meeting that the most appropriate methodology for estimating exempt use is a uniform 20 percent reduction of the exempt use estimates developed by the Region C Water Planning Group for county other and livestock water user groups. Exempt use estimates for mining included in the 2011 Region C Water Plan were not included in these estimates, in part due to their temporal variability (Table 2.3).

Table 2.3 - Estimates of exempt use, in acre-feet per year, for the Northern Trinity and Woodbine aquifers in the district (Mullican, 2011; Note - at some point the TWDB will produce a final GAM Run with these estimates of exempt use. Once that report is finalized, a reference to that GAM Run will need to be included with this table.).

County-Aquifer	2010	2020	2030	2040	2050	2060
Collin-Woodbine	498	498	498	498	498	498
Collin-Paluxy	524	524	524	524	524	524
Collin-Glen Rose	0	0	0	0	0	0
Collin-Hensell	0	0	0	0	0	0
Collin-Hosston	0	0	0	0	0	0
Collin-Total Exempt	1,022	1,022	1,022	1,022	1,022	1,022
Cooke-Woodbine	123	123	123	123	123	123
Cooke-Paluxy	1,275	1,275	1,275	1,275	1,275	1,275
Cooke-Glen Rose	0	0	0	0	0	0
Cooke-Hensell	0	0	0	0	0	0
Cooke-Hosston	0	0	0	0	0	0
Cooke-Total Exempt	1,398	1,398	1,398	1,398	1,398	1,398
Denton-Woodbine	1,085	1,085	1,085	1,085	1,085	1,085
Denton-Paluxy	2,237	2,237	2,237	2,237	2,237	2,237
Denton-Glen Rose	0	0	0	0	0	0
Denton-Hensell	0	0	0	0	0	0
Denton-Hosston	0	0	0	0	0	0
Denton-Total Exempt	3,322	3,322	3,322	3,322	3,322	3,322
District Exempt Total	5,742	5,742	5,742	5,742	5,742	5,742

Based on the difference between the estimate of modeled available groundwater for pumping (Tables 2.1 and 2.2) and estimates of exempt use (Table 2.3), the amount of groundwater available for non-exempt use (permitted use) has been calculated and is presented in Table 2.4 below.

Table 2.4 - Estimates of the amount of groundwater available for non-exempt (permitted) use, in acre-feet per year, for the Northern Trinity and Woodbine aquifers in the District.

County-Aquifer	2010	2020	2030	2040	2050	2060
Collin-Woodbine	2,011	2,011	2,011	2,011	2,011	2,011
Collin-Paluxy	1,238	1,238	1,238	1,238	1,238	1,238
Collin-Glen Rose	0	0	0	0	0	0
Collin-Hensell	103	103	103	103	103	103
Collin-Hosston	239	239	239	239	239	239
Collin-Total Non-Exempt	3,591	3,591	3,591	3,591	3,591	3,591
Cooke-Woodbine	31	31	31	31	31	31
Cooke-Paluxy	2,253	2,253	2,253	2,253	2,253	2,253
Cooke-Glen Rose	0	0	0	0	0	0
Cooke-Hensell	1,611	1,611	1,611	1,611	1,611	1,611
Cooke-Hosston	1,711	1,711	1,711	1,711	1,711	1,711
Cooke-Total Non-Exempt	5,606	5,606	5,606	5,606	5,606	5,606
Denton-Woodbine	3,041	3,041	3,041	3,041	3,041	3,041
Denton-Paluxy	7,585	7,585	7,585	7,585	7,585	7,585
Denton-Glen Rose	0	0	0	0	0	0
Denton-Hensell	3,112	3,112	3,112	3,112	3,112	3,112
Denton-Hosston	6,399	6,399	6,399	6,399	6,399	6,399
Denton-Total Non-Exempt	20,137	20,137	20,137	20,137	20,137	20,137
District Non-Exempt Total	29,334	29,334	29,334	29,334	29,334	29,334

In order to achieve this goal, 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 8.1A Continuous review to work towards achieving desired future conditions**

Statute requires GCDs to review, amend as necessary, and readopt management plans at least every five years. Beginning with the Annual Report presented by the General Manager at the first regularly scheduled meeting in 2013, and every year thereafter, the General Manager will present a summary report on the status of achieving the adopted desired future conditions. Four years from the adoption date of this management plan (in 2015), 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. The possible results of this five-year review are (1) determination that 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).

**Performance Standard 8.1A**

Beginning in the Annual Report presented by the General Manager at the first regularly scheduled meeting in 2013 and every year thereafter, the General Manager will include a summary report on the status of achieving the adopted desired future conditions. This summary report will primarily be based on data collected from the District's monitoring program (discussed in Goal 1).

**Performance Standard 8.1B**

Beginning in 2015, four years since the adoption of this management plan, and based on the 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 no later than five years from the adoption date of this management plan.

### 3.0 POPULATION, WATER USE, AND WATER DEMANDS

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 75<sup>th</sup> 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 2011 Region C Water Plan, the population projection for the District for 2010 was 1,505,644, increasing 156 percent to 3,848,902 in 2060 (Table 3.1). The population projections for 2010 included in the 2011 Region C Water Plan were actually based on statistical updates of the 2000 Census. For comparison, the 2010 Census for the District was 1,483,392, or 1.5 percent less than the estimate included in the 2011 Region C Water Plan.

Table 3.1 Population projections included in 2011 Region C Water Plan and updated population from 2010 Census (U.S. Census website).

County	Population projections from 2011 Region C Water Plan						2010 Census
	2010	2020	2030	2040	2050	2060	
Collin	790,648	1,046,601	1,265,373	1,526,407	1,761,082	1,938,067	782,341
Cooke	40,674	46,141	51,749	56,973	65,099	71,328	38,437
Denton	674,322	889,705	1,118,010	1,347,185	1,573,994	1,839,507	662,614
Total	1,505,644	1,982,447	2,435,132	2,930,565	3,400,175	3,848,902	1,483,392

Figures 3.1 – 3.4 illustrate population trends, both at a county level and for the District as a whole. On each graph, the value for 2010 used in the 2011 Region C Water Plan and the 2012 Texas State Water Plan is included along with the recently released population estimates from the 2010 Census.

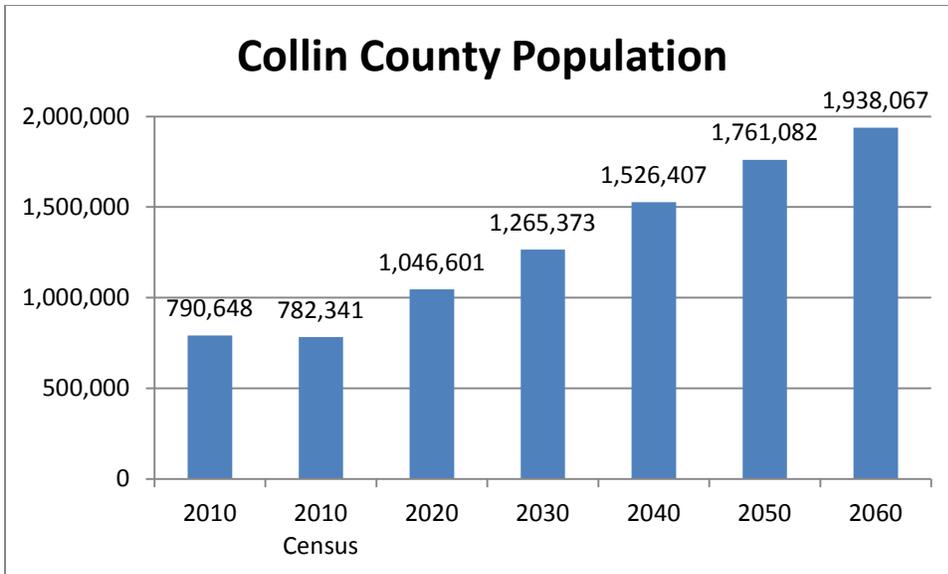


Figure 3.1 Collin County population projections.

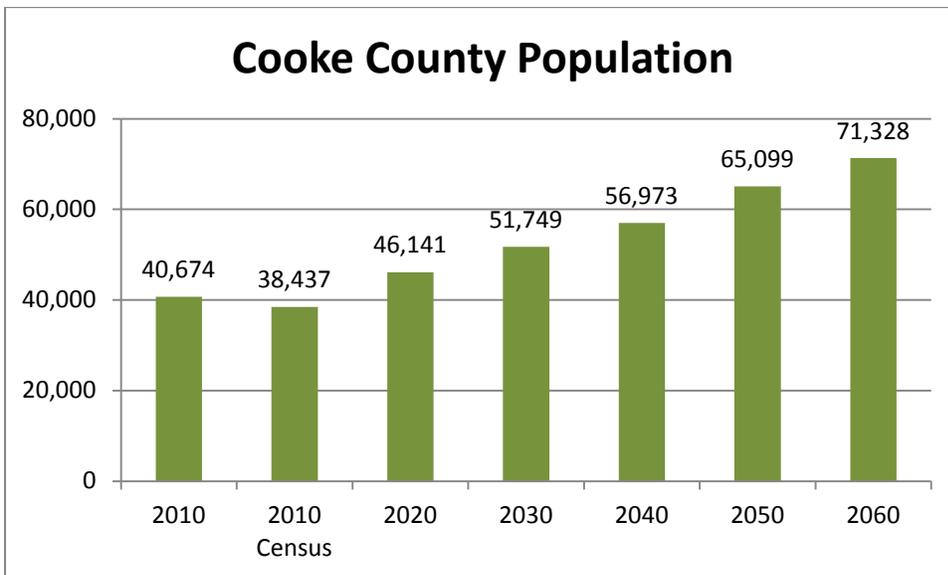


Figure 3.2 Cooke County population projections.

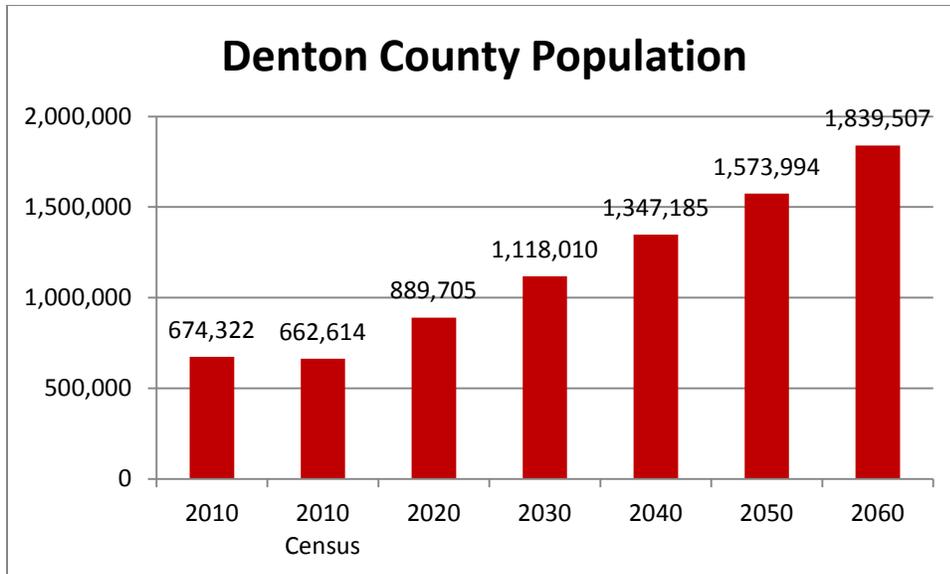


Figure 3.3 Denton County population projections.

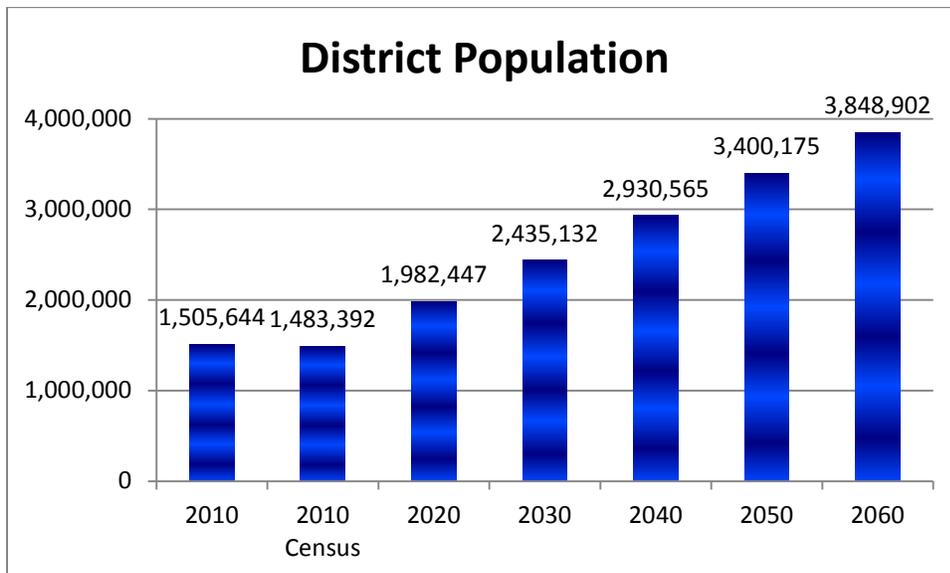


Figure 3.4 District population projections.

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 from 1980 and 1984–2008 for the six primary water use sectors from the TWDB Water Use Survey are presented in Table 3.2 and Figure 3.5.

Table 3.2 – Estimated historical groundwater use for the District (provided by the TWDB Water Use Survey (Allen, 2011a). \* - Years **2006-2008** come from a different category of data than the values used in years 1974, 1980, and 1984-2004. They are “estimated historical pumping” values rather than “estimated historical water use” values).

Year	County	Estimated Historical Groundwater Use (acre-feet per year)*						
		Municipal	Manufacturing	Power	Irrigation	Mining	Livestock	Total
1980	Collin	1,614	161	303	0	0	228	2,306
	Cooke	4,544	308	0	100	599	869	6,420
	Denton	7,586	11	0	200	1	870	8,668
	<b>Total</b>	<b>13,744</b>	<b>480</b>	<b>303</b>	<b>300</b>	<b>600</b>	<b>1,967</b>	<b>17,394</b>
1984	Collin	1,833	122	457	0	0	134	2,546
	Cooke	4,537	231	0	365	243	949	6,325
	Denton	9,301	62	0	502	37	726	10,628
	<b>Total</b>	<b>15,671</b>	<b>415</b>	<b>457</b>	<b>867</b>	<b>280</b>	<b>1,809</b>	<b>19,499</b>
1985	Collin	1,962	204	482	0	0	118	2,766
	Cooke	4,421	185	0	429	534	944	6,513
	Denton	7,862	12	0	500	0	681	9,055
	<b>Total</b>	<b>14,245</b>	<b>401</b>	<b>482</b>	<b>929</b>	<b>534</b>	<b>1,743</b>	<b>18,334</b>
1986	Collin	1,606	183	758	0	0	114	2,661
	Cooke	4,247	187	0	900	504	909	6,747
	Denton	8,979	14	0	750	91	609	10,443
	<b>Total</b>	<b>14,832</b>	<b>384</b>	<b>758</b>	<b>1,650</b>	<b>595</b>	<b>1,632</b>	<b>19,851</b>
1987	Collin	2,467	159	294	0	0	118	3,038
	Cooke	3,988	186	0	473	474	899	6,020
	Denton	9,067	13	0	533	79	657	10,349
	<b>Total</b>	<b>15,522</b>	<b>358</b>	<b>294</b>	<b>1,006</b>	<b>553</b>	<b>1,674</b>	<b>19,407</b>
1988	Collin	2,016	169	1,208	0	0	116	3,509
	Cooke	4,554	198	0	479	451	887	6,569
	Denton	8,258	13	0	533	75	716	9,595
	<b>Total</b>	<b>14,828</b>	<b>380</b>	<b>1,208</b>	<b>1,012</b>	<b>526</b>	<b>1,719</b>	<b>19,673</b>
1989	Collin	3,009	177	692	0	0	105	3,983
	Cooke	4,141	181	0	320	421	862	5,925
	Denton	8,550	0	0	822	70	690	10,132
	<b>Total</b>	<b>15,700</b>	<b>358</b>	<b>692</b>	<b>1,142</b>	<b>491</b>	<b>1,657</b>	<b>20,040</b>
1990	Collin	2,854	93	559	0	0	109	3,615
	Cooke	4,309	304	0	300	421	1,009	6,343

	Denton	8,569	21	0	750	70	704	10,114
	<b>Total</b>	<b>15,732</b>	<b>418</b>	<b>559</b>	<b>1,050</b>	<b>491</b>	<b>1,822</b>	<b>20,072</b>
1991	Collin	1,769	176	818	0	0	111	2,874
	Cooke	4,598	226	0	300	400	1,010	6,534
	Denton	7,873	48	0	667	49	714	9,351
	<b>Total</b>	<b>14,240</b>	<b>450</b>	<b>818</b>	<b>967</b>	<b>449</b>	<b>1,835</b>	<b>18,759</b>
1992	Collin	2,464	69	373	0	0	110	3,016
	Cooke	4,487	367	0	300	400	1,128	6,682
	Denton	8,136	43	0	667	49	628	9,523
	<b>Total</b>	<b>15,087</b>	<b>479</b>	<b>373</b>	<b>967</b>	<b>449</b>	<b>1,866</b>	<b>19,221</b>
1993	Collin	2,311	65	79	0	0	109	2,564
	Cooke	5,307	233	0	288	388	1,017	7,233
	Denton	9,840	41	0	486	49	604	11,020
	<b>Total</b>	<b>17,458</b>	<b>339</b>	<b>79</b>	<b>774</b>	<b>437</b>	<b>1,730</b>	<b>20,817</b>
1994	Collin	2,479	149	115	0	0	111	2,854
	Cooke	5,469	218	0	208	388	1,187	7,470
	Denton	7,825	40	0	582	49	753	9,249
	<b>Total</b>	<b>15,773</b>	<b>407</b>	<b>115</b>	<b>790</b>	<b>437</b>	<b>2,051</b>	<b>19,573</b>
1995	Collin	2,807	145	115	0	0	106	3,173
	Cooke	5,150	204	0	233	52	1,164	6,803
	Denton	9,322	69	0	670	49	711	10,821
	<b>Total</b>	<b>17,279</b>	<b>418</b>	<b>115</b>	<b>903</b>	<b>101</b>	<b>1,981</b>	<b>20,797</b>
1996	Collin	2,928	115	2	0	0	87	3,132
	Cooke	5,355	223	0	288	52	1,059	6,977
	Denton	10,525	63	0	472	49	935	12,044
	<b>Total</b>	<b>18,808</b>	<b>401</b>	<b>2</b>	<b>760</b>	<b>101</b>	<b>2,081</b>	<b>22,153</b>
1997	Collin	2,756	228	2	0	0	109	3,095
	Cooke	5,660	159	0	288	52	991	7,150
	Denton	10,054	65	0	472	49	868	11,508
	<b>Total</b>	<b>18,470</b>	<b>452</b>	<b>2</b>	<b>760</b>	<b>101</b>	<b>1,968</b>	<b>21,753</b>
1998	Collin	3,067	429	80	0	0	82	3,658
	Cooke	5,873	178	0	288	52	912	7,303
	Denton	12,507	59	0	472	49	543	13,630
	<b>Total</b>	<b>21,447</b>	<b>666</b>	<b>80</b>	<b>760</b>	<b>101</b>	<b>1,537</b>	<b>24,591</b>
1999	Collin	3,557	481	80	0	0	99	4,217
	Cooke	5,154	181	0	288	52	949	6,624
	Denton	10,912	57	0	472	49	646	12,136
	<b>Total</b>	<b>19,623</b>	<b>719</b>	<b>80</b>	<b>760</b>	<b>101</b>	<b>1,694</b>	<b>22,977</b>

2000	Collin	4,089	139	570	1,718	0	88	6,604
	Cooke	5,287	221	0	0	52	881	6,441
	Denton	13,290	38	0	2,108	0	315	15,751
	<b>Total</b>	<b>22,666</b>	<b>398</b>	<b>570</b>	<b>3,826</b>	<b>52</b>	<b>1,284</b>	<b>28,796</b>
2001	Collin	4,042	205	2	1,481	0	79	5,809
	Cooke	4,528	141	0	0	38	487	5,194
	Denton	15,563	61	0	1,792	49	635	18,100
	<b>Total</b>	<b>24,133</b>	<b>407</b>	<b>2</b>	<b>3,273</b>	<b>87</b>	<b>1,201</b>	<b>29,103</b>
2002	Collin	3,732	103	1	1,481	0	76	5,393
	Cooke	4,139	124	0	0	38	499	4,800
	Denton	15,270	23	0	2,042	49	570	17,954
	<b>Total</b>	<b>23,141</b>	<b>250</b>	<b>1</b>	<b>3,523</b>	<b>87</b>	<b>1,145</b>	<b>28,147</b>
2003	Collin	3,972	261	1	950	0	71	5,255
	Cooke	4,888	110	0	60	38	489	5,585
	Denton	14,119	30	0	1,096	49	499	15,793
	<b>Total</b>	<b>22,979</b>	<b>401</b>	<b>1</b>	<b>2,106</b>	<b>87</b>	<b>1,059</b>	<b>26,633</b>
2004	Collin	3,865	161	1	824	0	75	4,926
	Cooke	5,398	127	0	82	38	475	6,120
	Denton	14,957	32	0	1,080	49	500	16,618
	<b>Total</b>	<b>24,220</b>	<b>320</b>	<b>1</b>	<b>1,986</b>	<b>87</b>	<b>1,050</b>	<b>27,664</b>
2005	Collin	4,243	157	0	750	0	0	5,150
	Cooke	5,488	3	0	73	0	233	5,797
	Denton	10,199	49	0	1,215	0	322	11,785
	<b>Total</b>	<b>19,930</b>	<b>209</b>	<b>0</b>	<b>2,038</b>	<b>0</b>	<b>555</b>	<b>22,732</b>
2006	Collin	4,527	157	0	938	0	0	5,622
	Cooke	5,621	4	0	82	268	204	6,179
	Denton	10,094	17	0	1,337	2,019	348	13,815
	<b>Total</b>	<b>20,242</b>	<b>178</b>	<b>0</b>	<b>2,357</b>	<b>2,287</b>	<b>552</b>	<b>25,616</b>
2007	Collin	3,595	186	0	244	0	0	4,025
	Cooke	4,249	2	0	38	268	235	4,792
	Denton	8,120	10	0	696	2,019	357	11,202
	<b>Total</b>	<b>15,964</b>	<b>198</b>	<b>0</b>	<b>978</b>	<b>2,287</b>	<b>592</b>	<b>20,019</b>
2008	Collin	3,837	182	0	0	0	0	4,019
	Cooke	4,521	3	0	0	268	228	5,020
	Denton	8,686	10	0	0	2,019	265	10,980
	<b>Total</b>	<b>17,044</b>	<b>195</b>	<b>0</b>	<b>0</b>	<b>2,287</b>	<b>493</b>	<b>20,019</b>

In 2008, total groundwater use was 4,019 acre-feet in Collin County, 5,020 acre-feet in Cooke County, 10,980 acre-feet in Denton County, and 20,019 acre-feet for the entire District.

Estimated groundwater use in the District by category in 2008 was 85 percent for municipal use, 1 percent for manufacturing use, 11 percent for mining use, 2 percent for livestock use, and zero percent for power and irrigation 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 17,000 acre-feet in 1980, around 20,000 acre-feet per year from 1984 through 1996, generally increased between 1996 and 2001 to a maximum of about 29,000 acre-feet in 2001, generally decreased from 2001 through 2006, and returned to about 20,000 acre-feet per year in 2007 and 2008. Pumpage for irrigation purposes was greatest from 2000 through 2006 and decreased to zero in 2008. Pumpage for mining purposes increased significantly in 2006 through 2008. Livestock pumpage remained between about 1,000 and 2,000 acre-feet per year from 1984 through 2004 and then decreased by about half to around 500 acre-feet per year from 2006 through 2008. Pumpage for steam-electric power generation varied from 1 to over 1,000 acre-feet per year from 1984 through 2004 and was zero for 2005 through 2008. Generally, municipal pumpage has been greater than about 15,000 acre-feet per year throughout the historical record with maximum pumpage in 1998 through 2006.

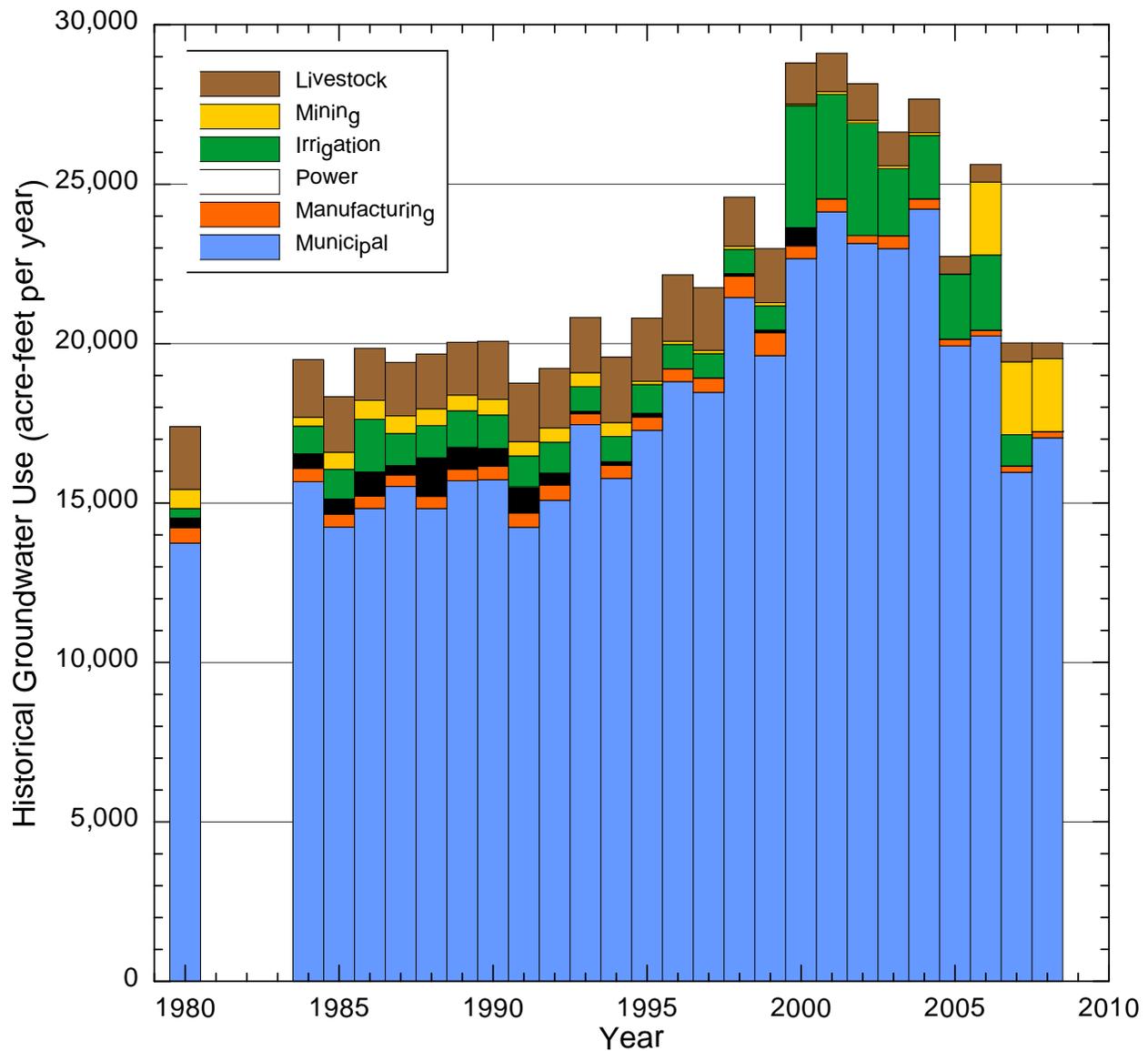


Figure 3.5 - Historical groundwater use estimates by water use sector for the District

The next step in developing a water resources management plan is to correlate current and projected populations with per capita water use along with current trends in water use in the other major water use sectors (manufacturing, steam-electric power generation, irrigation, mining, and livestock) to determine water demands over the planning horizon; in Texas, the planning horizon is established as 50-years with discrete analysis occurring on a decadal basis. 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 2012 Texas State Water Plan are presented in Table 3.3. The projected total demand for the District increases significantly from

394,533 acre-feet per year in 2010 to 977,576 acre-feet per year in 2060. Projected demands are significantly higher in Collin and Denton counties than in Cooke County (Figure 3.6).

Table 3.3 – Water demand projections for the District as adopted in the 2012 Texas State Water Plan (in acre-feet per year).

Water User Group (WUG)	WUG Basin	Projected Total Water Demands (acre-feet per year)					
		2010	2020	2030	2040	2050	2060
<b>Collin County</b>							
Allen	Trinity	20,207	24,699	27,663	27,694	27,694	27,694
Anna	Trinity	1,653	2,948	4,399	5,865	7,541	12,568
Blue Ridge	Trinity	305	627	1,090	1,700	2,473	2,782
Caddo Basin SUD	Sabine	415	517	644	774	909	1,054
Caddo Basin SUD	Trinity	192	239	298	358	420	487
Celina	Trinity	1,238	5,562	11,667	20,566	31,454	36,293
County-Other	Sabine	12	11	10	9	8	7
County-Other	Trinity	806	732	667	604	546	497
Culleoka WSC	Trinity	908	1,350	1,625	1,883	2,185	2,506
Dallas	Trinity	16,086	17,766	18,650	19,146	19,449	20,005
Danville WSC	Trinity	845	1,153	1,417	1,693	1,990	2,306
East Fork SUD	Trinity	1,116	1,252	1,373	1,506	1,643	1,802
Fairview	Trinity	3,469	3,992	5,012	6,593	6,593	6,593
Farmersville	Trinity	627	1,176	1,680	2,520	3,696	5,041
Frisco	Trinity	23,730	34,735	39,927	48,413	54,480	54,480
Hickory Creek SUD	Trinity	12	16	19	22	25	29
Irrigation	Trinity	2,995	2,995	2,995	2,995	2,995	2,995
Josephine	Trinity	256	343	411	495	574	660
Lavon WSC	Trinity	293	873	1,276	1,855	2,637	3,596
Livestock	Sabine	27	27	27	27	27	27
Livestock	Trinity	857	857	857	857	857	857
Lowry Crossing	Trinity	366	458	541	554	551	551
Lucas	Trinity	1,032	1,533	1,828	2,344	3,327	4,537
Manufacturing	Trinity	3,607	4,137	4,654	5,170	5,633	6,115
Marilee SUD	Trinity	450	645	837	997	1,173	1,360
McKinney	Trinity	34,366	53,767	73,929	94,092	102,157	102,157
Melissa	Trinity	807	4,972	7,527	10,753	15,055	16,570
Milligan WSC	Trinity	202	196	191	185	183	183

Mining	Trinity	341	341	341	341	341	341
Murphy	Trinity	4,234	8,556	8,556	8,556	8,556	8,556
<b>Table 3.3 continued Water User Group (WUG)</b>	<b>WUG Basin</b>	<b>Projected Total Water Demands (acre-feet per year)</b>					
		<b>2010</b>			<b>2010</b>		
Nevada	Sabine	177	352	421	836	1,393	3,484
Nevada	Trinity	70	176	210	418	697	1,742
New Hope	Trinity	267	383	632	944	1,416	3,148
North Collin WSC	Trinity	876	1,116	1,321	1,525	1,757	2,005
Parker	Trinity	1,494	4,078	5,950	9,669	14,132	19,338
Plano	Trinity	73,602	74,618	75,125	75,386	75,642	75,921
Princeton	Trinity	1,329	2,657	3,871	6,452	10,753	16,130
Prosper	Trinity	1,998	3,239	5,669	7,829	12,688	13,498
Richardson	Trinity	6,925	10,588	10,550	10,435	10,359	10,359
Royse City	Sabine	286	858	1,676	2,514	3,351	4,307
Sachse	Trinity	1,055	1,384	1,376	1,362	1,362	1,362
Saint Paul	Trinity	192	468	930	1,479	1,756	1,848
South Grayson WSC	Trinity	212	215	219	220	222	225
Steam Electric Power	Trinity	771	715	1,000	1,200	1,600	2,000
Weston	Trinity	251	672	1,482	4,234	7,410	12,702
Wylie	Trinity	6,553	8,378	10,138	12,052	12,052	12,052
<b>Collin County Total</b>		<b>217,512</b>	<b>286,372</b>	<b>340,681</b>	<b>405,122</b>	<b>461,762</b>	<b>502,770</b>
<b>Cooke County</b>							
Bolivar WSC	Trinity	205	244	286	285	285	285
County-Other	Red	237	272	276	272	269	270
County-Other	Trinity	837	960	975	962	952	952
Gainesville	Red	2	2	2	2	2	2
Gainesville	Trinity	3,385	3,744	4,169	4,576	5,025	5,520
Irrigation	Red	288	288	288	288	288	288
Irrigation	Trinity	156	156	156	156	156	156
Kiowa Homeowners WSC	Trinity	875	931	955	952	948	947
Lindsay	Trinity	154	161	164	162	160	160
Livestock	Red	608	608	608	608	608	608
Livestock	Trinity	1,290	1,290	1,290	1,290	1,290	1,290
Manufacturing	Trinity	273	306	335	364	389	421
Mining	Red	147	197	172	175	178	180

Mining	Trinity	214	287	249	253	257	261
Muenster	Trinity	339	351	366	379	395	414
Two Way SUD	Red	10	11	11	11	11	11
Table 3.3 continued Water User Group (WUG)	WUG Basin	Projected Total Water Demands (acre-feet per year)					
		2010	2020	2030	2040	2050	2060
Valley View	Trinity	187	363	594	808	1,371	1,714
Woodbine WSC	Red	13	14	14	13	13	13
Woodbine WSC	Trinity	643	685	735	776	829	889
<b>Cooke County Total</b>		<b>9,863</b>	<b>10,870</b>	<b>11,645</b>	<b>12,332</b>	<b>13,426</b>	<b>14,381</b>
<b>Denton County</b>							
Argyle	Trinity	1,227	2,902	4,217	4,710	5,271	5,827
Argyle WSC	Trinity	1,263	1,259	1,239	1,219	1,212	1,212
Aubrey	Trinity	396	855	1,373	1,819	2,445	3,285
Bartonville	Trinity	282	943	1,042	1,042	1,042	1,042
Bartonville WSC	Trinity	307	347	380	410	439	466
Bolivar WSC	Trinity	887	1,221	2,782	6,138	9,975	13,504
Carrollton	Trinity	15,083	15,373	15,980	16,282	16,522	16,686
Celina	Trinity	0	672	1,409	2,484	3,799	4,384
Coppell	Trinity	119	164	201	233	260	283
Copper Canyon	Trinity	357	432	507	582	661	740
Corinth	Trinity	4,665	5,269	5,679	6,085	6,519	6,845
County-Other	Trinity	8,905	11,571	13,262	14,863	16,492	18,169
Cross Roads	Trinity	575	1,234	1,230	1,230	1,230	1,230
Dallas	Trinity	7,489	7,955	8,134	8,203	8,237	8,270
Denton	Trinity	24,612	34,884	45,594	58,158	71,679	98,275
Denton County FWSD #1A	Trinity	991	1,581	2,132	2,704	3,286	3,894
Double Oak	Trinity	716	706	699	696	692	692
Flower Mound	Trinity	17,325	23,189	32,085	32,085	32,085	32,085
Fort Worth	Trinity	1,386	8,409	12,810	18,394	25,802	33,069
Frisco	Trinity	12,423	13,175	22,523	29,570	34,280	34,280
Hackberry	Trinity	142	210	275	304	319	326
Hebron	Trinity	114	111	110	109	109	109
Hickory Creek	Trinity	753	1,004	1,158	1,405	1,405	1,405
Highland Village	Trinity	3,733	4,100	4,302	4,295	4,274	4,274
Irrigation	Trinity	2,108	2,108	2,108	2,108	2,108	2,108
Justin	Trinity	587	1,012	1,614	2,636	3,218	3,551

Krugerville	Trinity	204	228	257	331	428	613
Krum	Trinity	640	721	773	838	945	1,066
Lake Dallas	Trinity	1,354	1,580	1,702	1,691	1,680	1,680
Lewisville	Trinity	19,262	21,316	23,505	26,050	29,516	33,612
Table 3.3 continued Water User Group (WUG)	WUG Basin	Projected Total Water Demands (acre-feet per year)					
		2010	2020	2030	2040	2050	2060
Lincoln Park	Trinity	102	132	155	178	202	234
Little Elm	Trinity	4,731	6,061	7,348	8,321	8,321	8,321
Livestock	Trinity	1,235	1,235	1,235	1,235	1,235	1,235
Manufacturing	Trinity	1,068	1,239	1,408	1,579	1,731	1,880
Mining	Trinity	1,571	751	751	751	751	751
Mustang SUD	Trinity	921	1,474	1,939	3,623	5,323	6,949
Northlake	Trinity	268	808	934	1,796	2,658	3,197
Oak Point	Trinity	585	1,377	2,067	2,318	2,585	2,868
Pilot Point	Trinity	763	1,124	1,895	2,069	2,195	2,335
Plano	Trinity	1,606	2,210	2,193	2,184	2,176	2,176
Ponder	Trinity	250	913	1,815	2,903	3,357	3,448
Prosper	Trinity	0	2,160	3,779	5,669	6,209	6,749
Roanoke	Trinity	1,756	2,732	3,538	4,348	5,787	7,013
Sanger	Trinity	1,302	2,114	2,935	3,476	3,871	4,033
Shady Shores	Trinity	357	510	613	608	604	604
Southlake	Trinity	262	451	529	825	1,215	1,306
Steam Electric Power	Trinity	644	744	844	944	1,044	1,144
The Colony	Trinity	5,761	7,778	8,609	8,810	9,006	9,087
Trophy Club	Trinity	2,847	3,190	3,477	3,732	4,019	4,306
<b>Denton County Total</b>		<b>153,934</b>	<b>201,534</b>	<b>255,146</b>	<b>302,043</b>	<b>348,219</b>	<b>400,618</b>
<b>District Total</b>		<b>381,309</b>	<b>498,776</b>	<b>607,472</b>	<b>719,497</b>	<b>823,407</b>	<b>917,769</b>

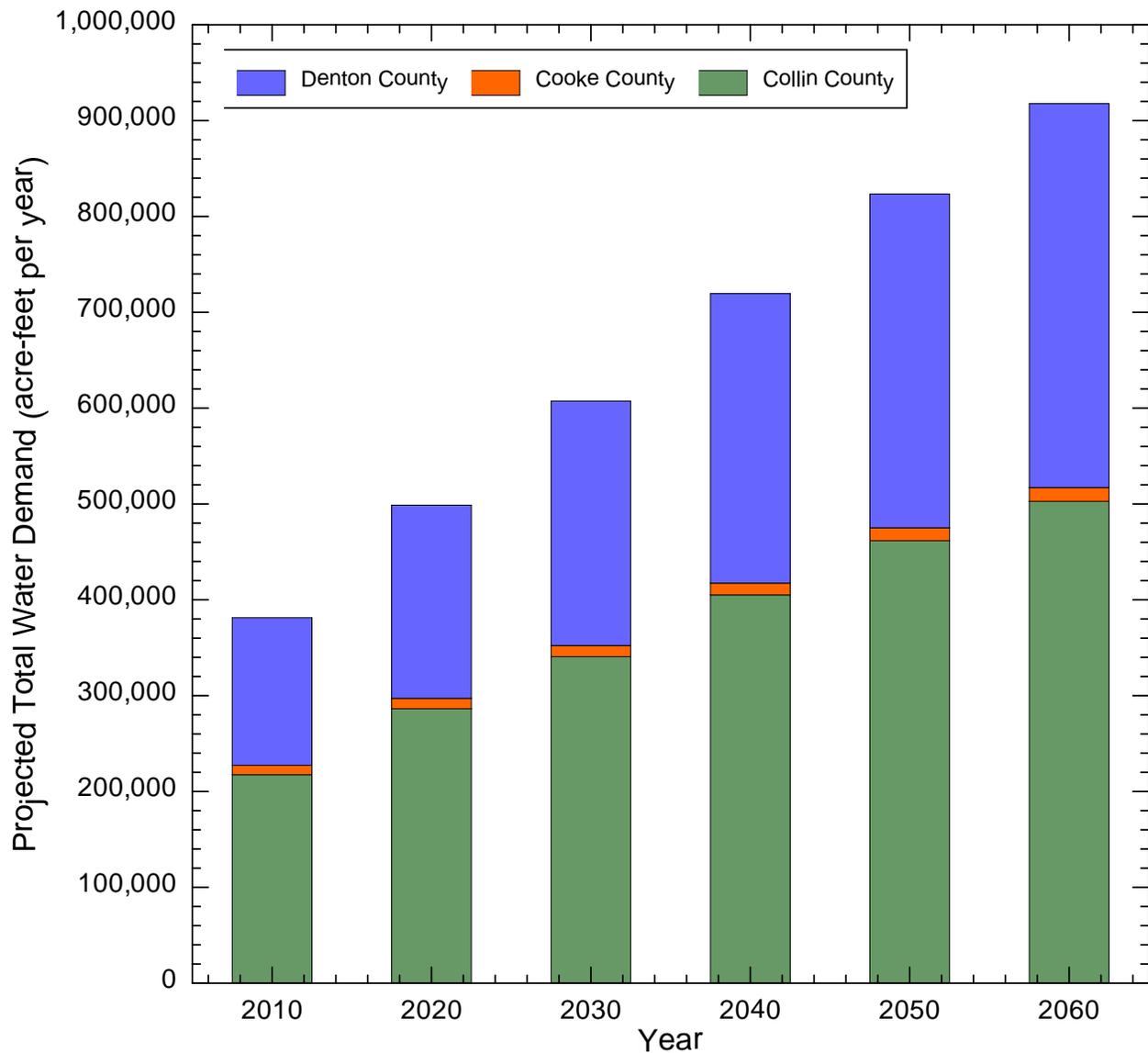


Figure 3.6 Water demand projections by county, in acre-feet per year

#### 4.0 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.

#### **4.1 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 4.1). 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 4.2).

# NORTH TEXAS GCD

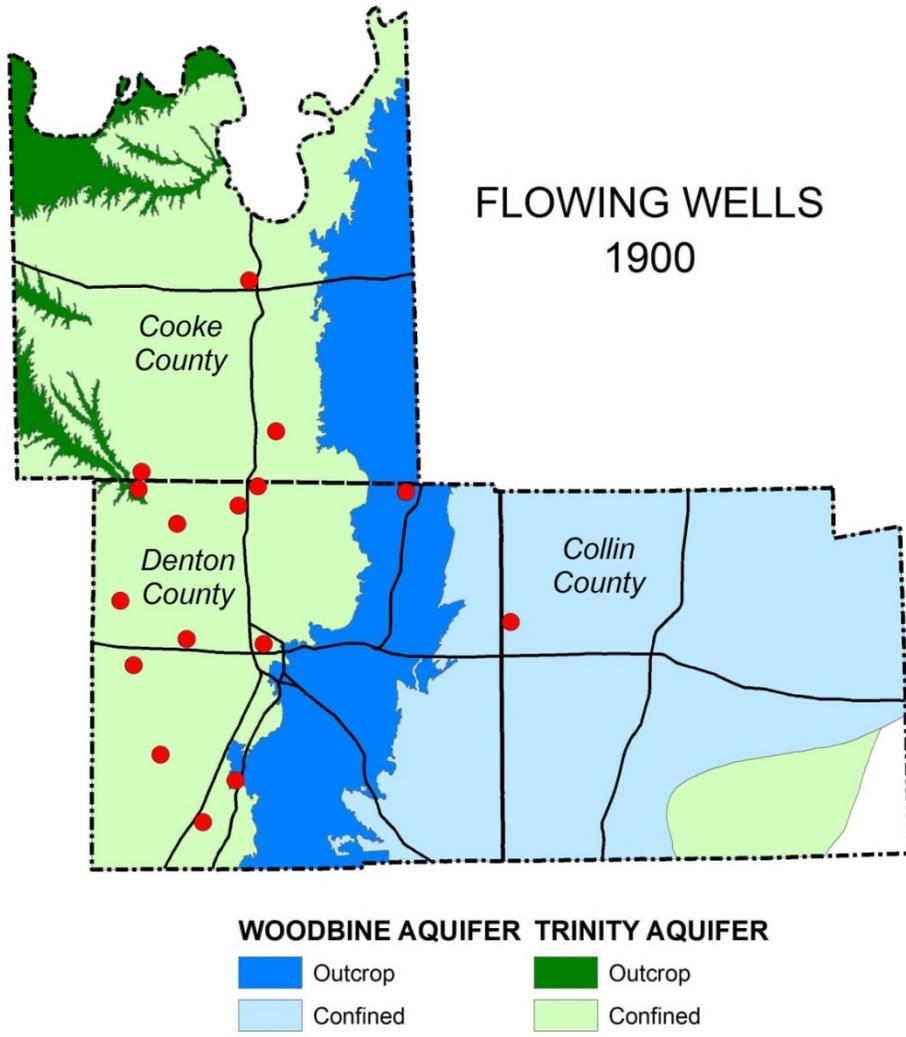


Figure 4.1 - Location of wells flowing at the land surface in 1900 (Hill, 1901).

# NORTH TEXAS GCD

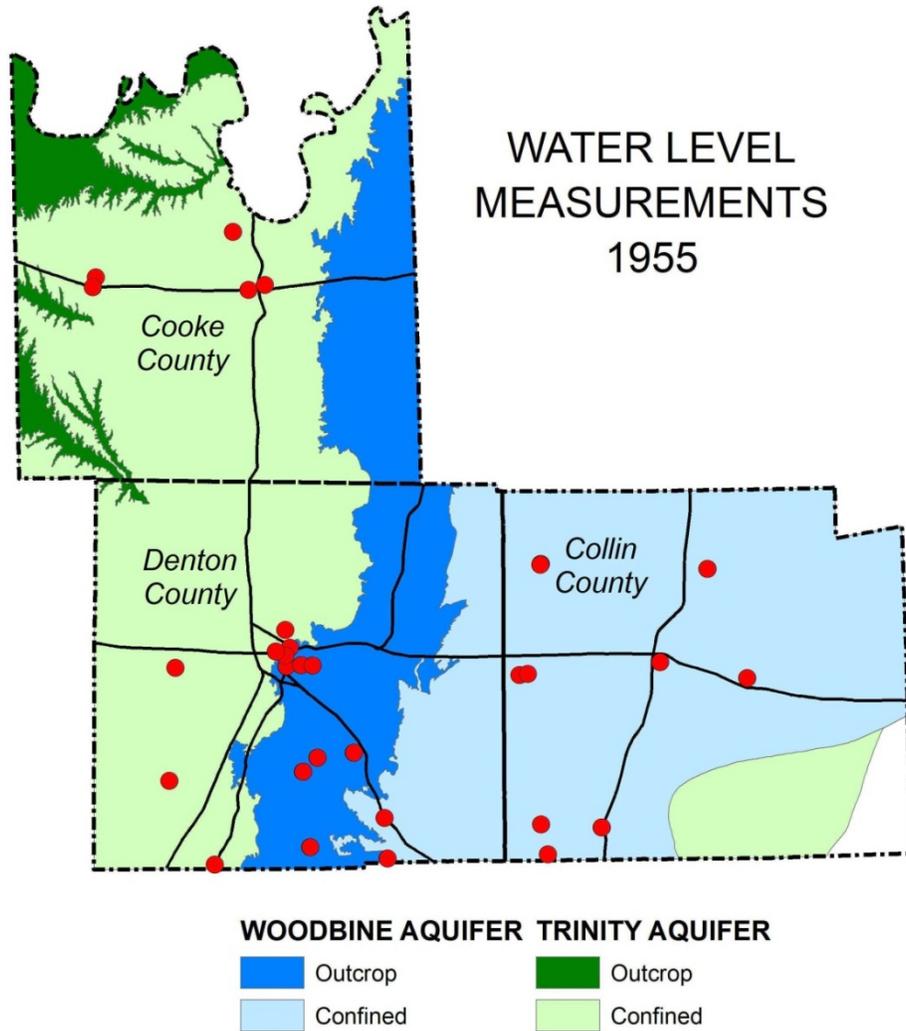


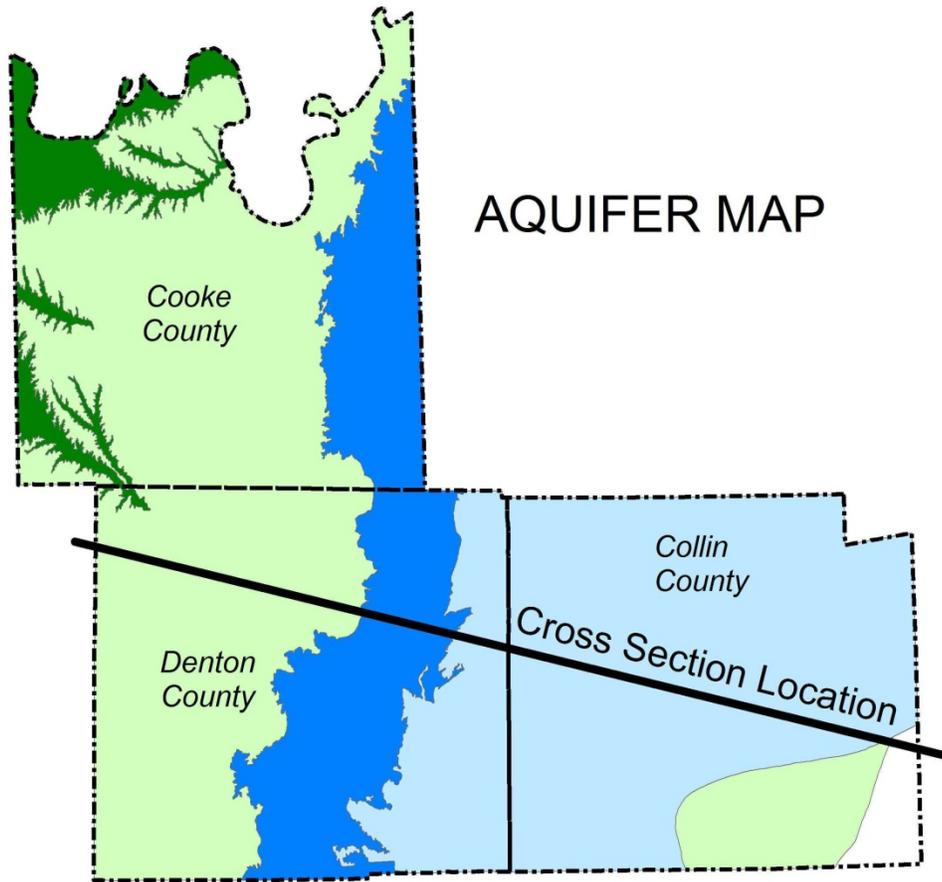
Figure 4.2 - Location of wells having water-level measurements taken in 1955 (Nordstrom, 1982).

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 4.3 and 4.4). 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 4.5). 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 4.6). 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.

# NORTH TEXAS GCD



## WOODBINE AQUIFER TRINITY AQUIFER



Figure 4.3 - Map of the primary aquifers in the North Texas GCD, including outcrop areas and confined areas down to the limits of fresh to slightly saline groundwater in southeast Collin County. The Woodbine Aquifer overlies the Trinity Aquifer, masking part of the Trinity Aquifer confined area on the map (Cross section is illustrated in Figure 4.4). Aquifer locations developed From TWDB major and minor aquifer maps.

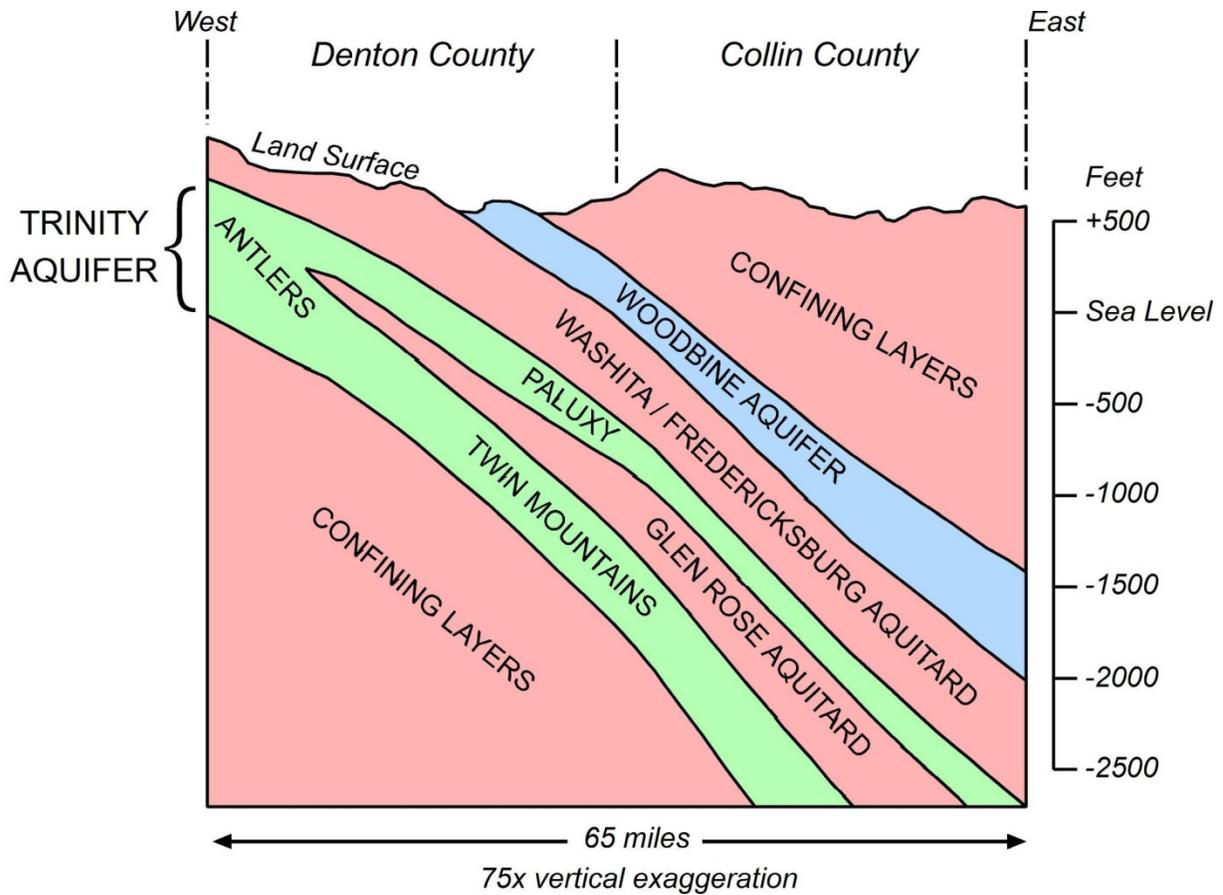


Figure 4.4 - Cross section of the Trinity and Woodbine aquifers in the North Texas GCD. The Trinity Aquifer is composed of several member aquifers separated by aquitards. This figure has been modified from Nordstrom (1982). For complete hydrostratigraphy of District used in Northern Trinity/Woodbine GAM, see Table 4.1.

Table 4.1 Relationship between Model Layers in the Northern Trinity/Woodbine Aquifer GAM and Formations in the District

District	Northern Trinity /Woodbine GAM Model	
	Model Stratigraphy	Model Layer
Woodbine Formation	Woodbine Aquifer	1
Washita and Fredericksburg Groups	Washita and Fredericksburg confining unit	2
	Paluxy Aquifer	3
	Glen Rose Aquifer	4
Antlers Formation of the Trinity Group	Hensell Aquifer	5
	Pearsall/Cow Creek/Hammett/Sligo confining unit	6
	Hosston Aquifer	7

# NORTH TEXAS GCD

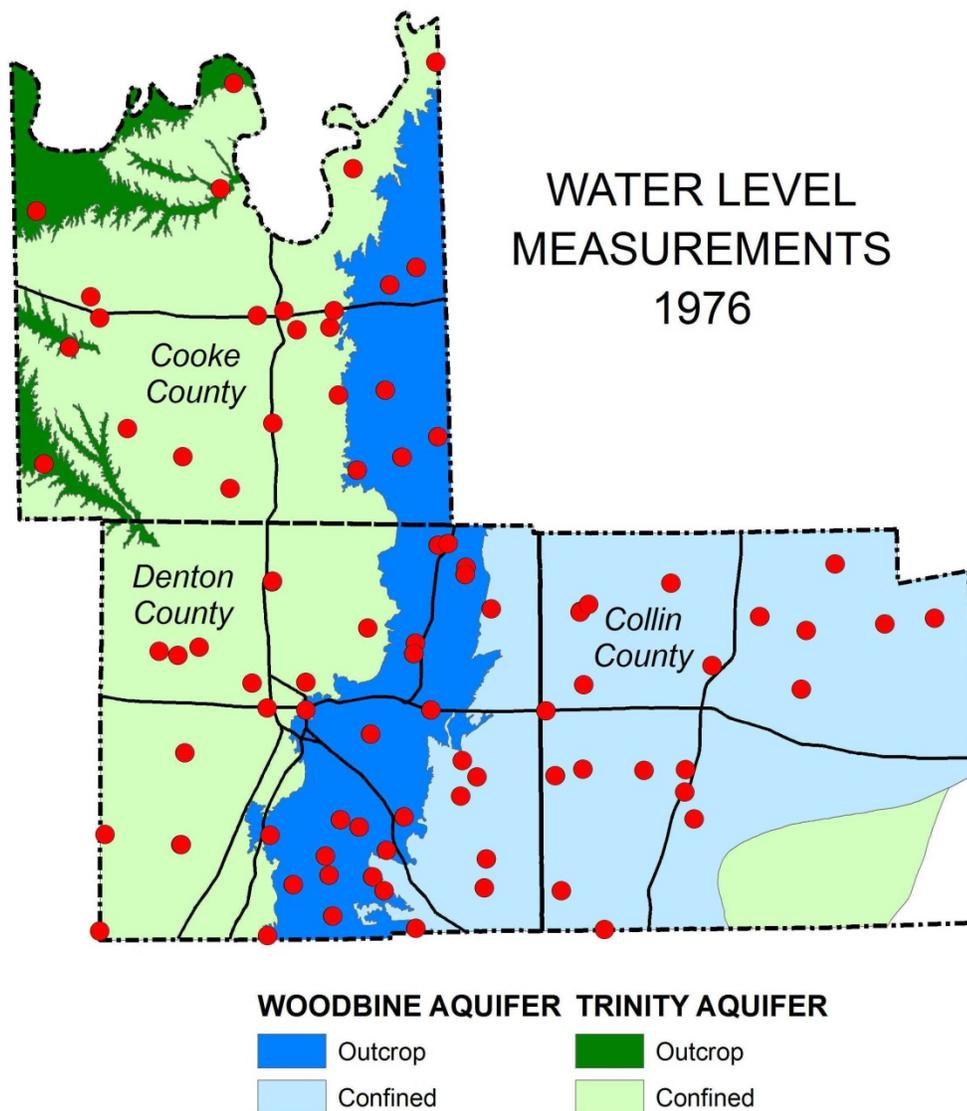


Figure 4.5 - Location of wells having water-level measurements taken in 1976 (Nordstrom, 1982).

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 (8,599 water levels from GCDs in 2008). The counties of the District contain 555 wells having water levels in the TWDB database, but only 39 of these are current observation wells (Figure 4.7).

## NORTH TEXAS GCD

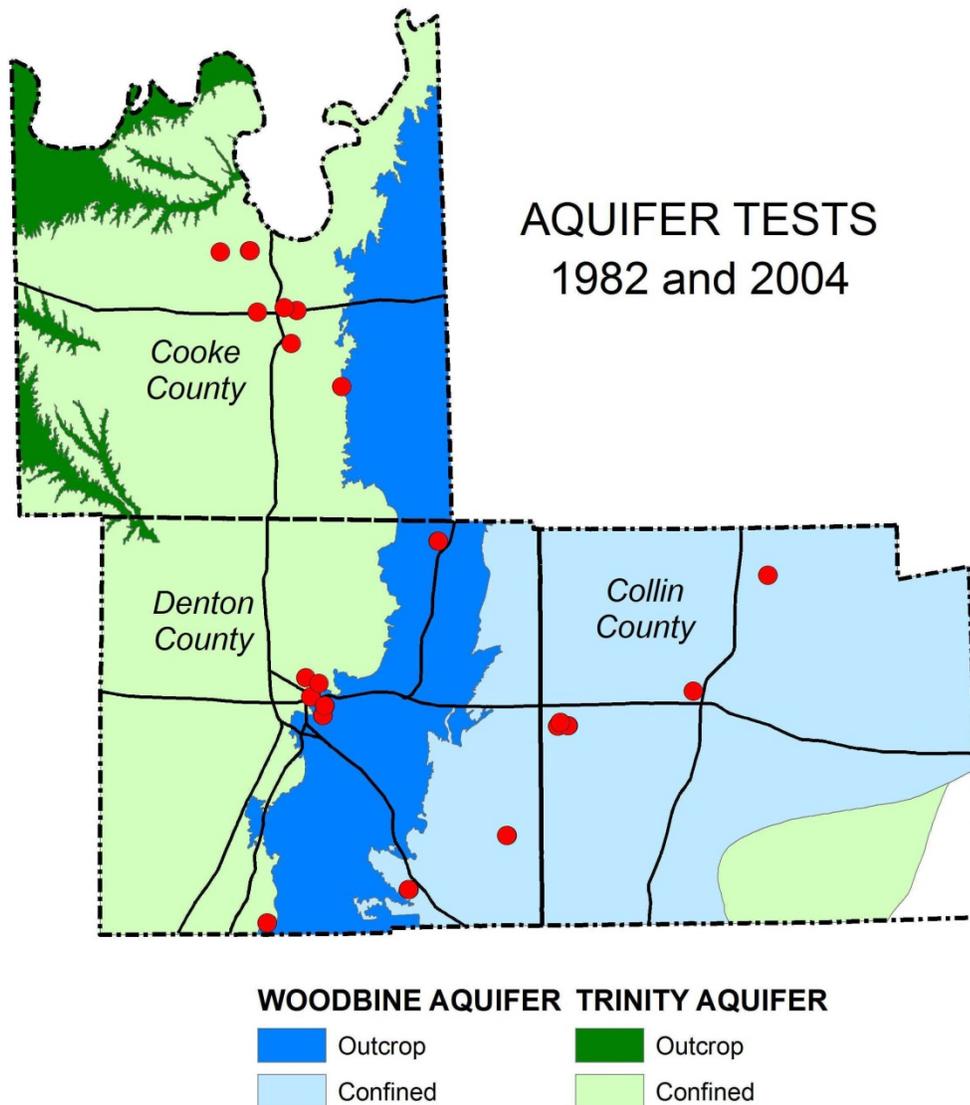


Figure 4.6 - Location of wells having pumping test data reported by Nordstrom (1982) and used by Bene and others (2004) in the Northern Trinity/Woodbine GAM.

# NORTH TEXAS GCD

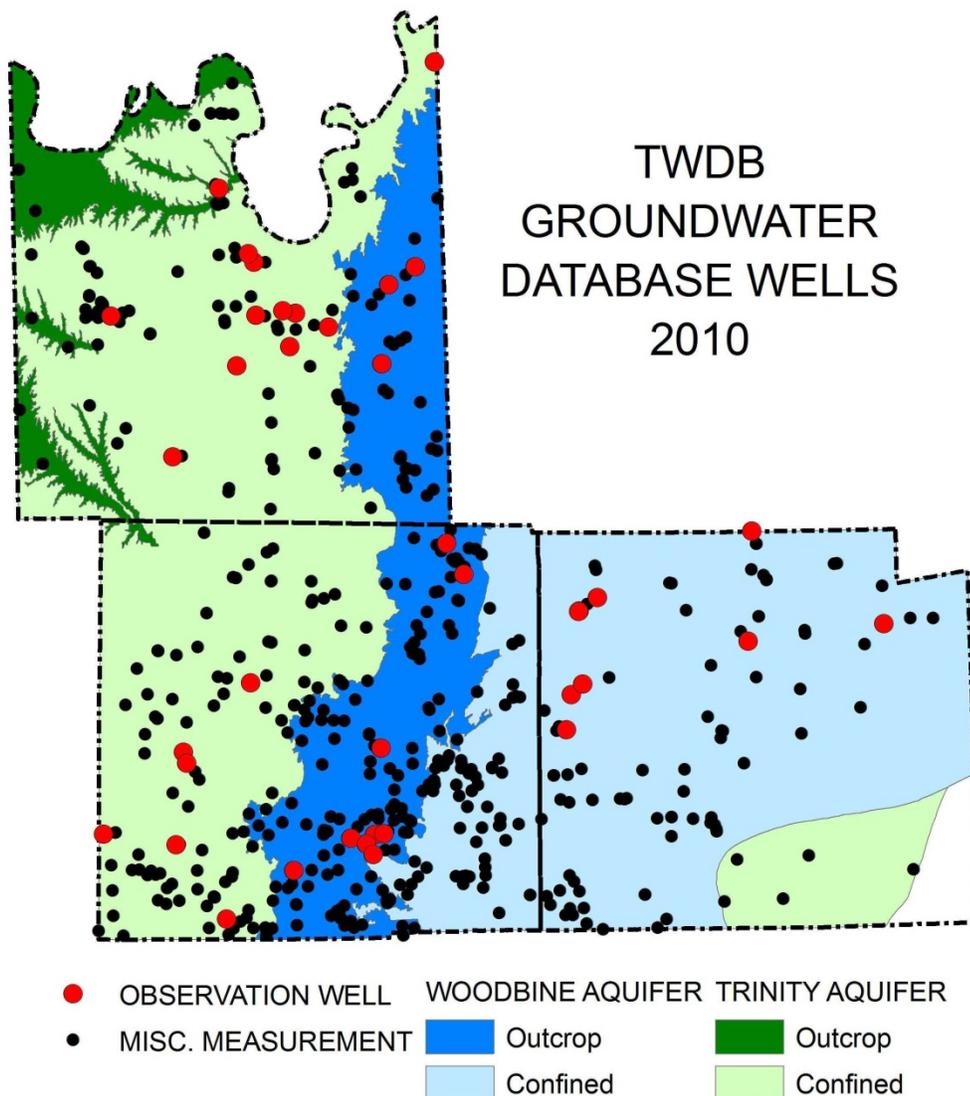


Figure 4.7 - Location of wells having water-level measurements in the TWDB groundwater database. Observation wells that are monitored annually are shown in red.

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.

The area covered by the District has now been the subject of three regional water plans, the 2001, 2006, and 2011 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 next 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) will not be 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 will have to be revised so that a conflict will not exist.

Development of brackish groundwater is considered in the 2011 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 three Region C Water Plans (2001, 2006, and 2011) describe the **current** state of fresh groundwater use to be close to long-term sustainable availability. Most water management strategies in these three Region C Water Plans emphasize increasing surface water supplies while conserving groundwater supplies.

## **4.2 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. For example, a GAM can be used to answer the question of how much regional drawdown would result if we pumped 10,000 acre-feet per year from the Northern Trinity Aquifer in Denton County. Similarly, what is the projected total availability (water budget) for the Northern Trinity and Woodbine aquifers in Collin County in 2050?

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 4.3 and 4.4 and Table 4.1). 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 4.5 and 4.8), and the GAM used the same aquifer pumping tests reported by Nordstrom (1982).

Issues have been raised concerning the reliability of the Northern Trinity and Woodbine GAM to predict future groundwater availability in Groundwater Management Area 8 (GMA 8). All TWDB GAMs must be calibrated and verified by “predicting the past.” For the Northern Trinity and Woodbine GAM, the large model size and sparsely distributed input data resulted in a poor match between model simulations and actual water levels during the historical period (Young and Budge, 2008). Because of the way recharge and aquifer properties were calculated, the Northern Trinity and Woodbine GAM may significantly over predict the amount of groundwater that can be produced from some outcrop areas and under predict groundwater availability in some confined areas (INTERA, 2008). To address these problems and uncertainties in the existing Northern Trinity and Woodbine GAM, TWDB is currently funding research (1) to improve recharge and evapotranspiration parameter calculations and spatial distribution and (2) to improve our understanding of aquifer properties through the collection and analysis of new well data from a variety of data sources. The District will have an opportunity to help guide this effort to update the Northern Trinity and Woodbine GAM through the stakeholder process that will begin early in 2011.

# NORTH TEXAS GCD

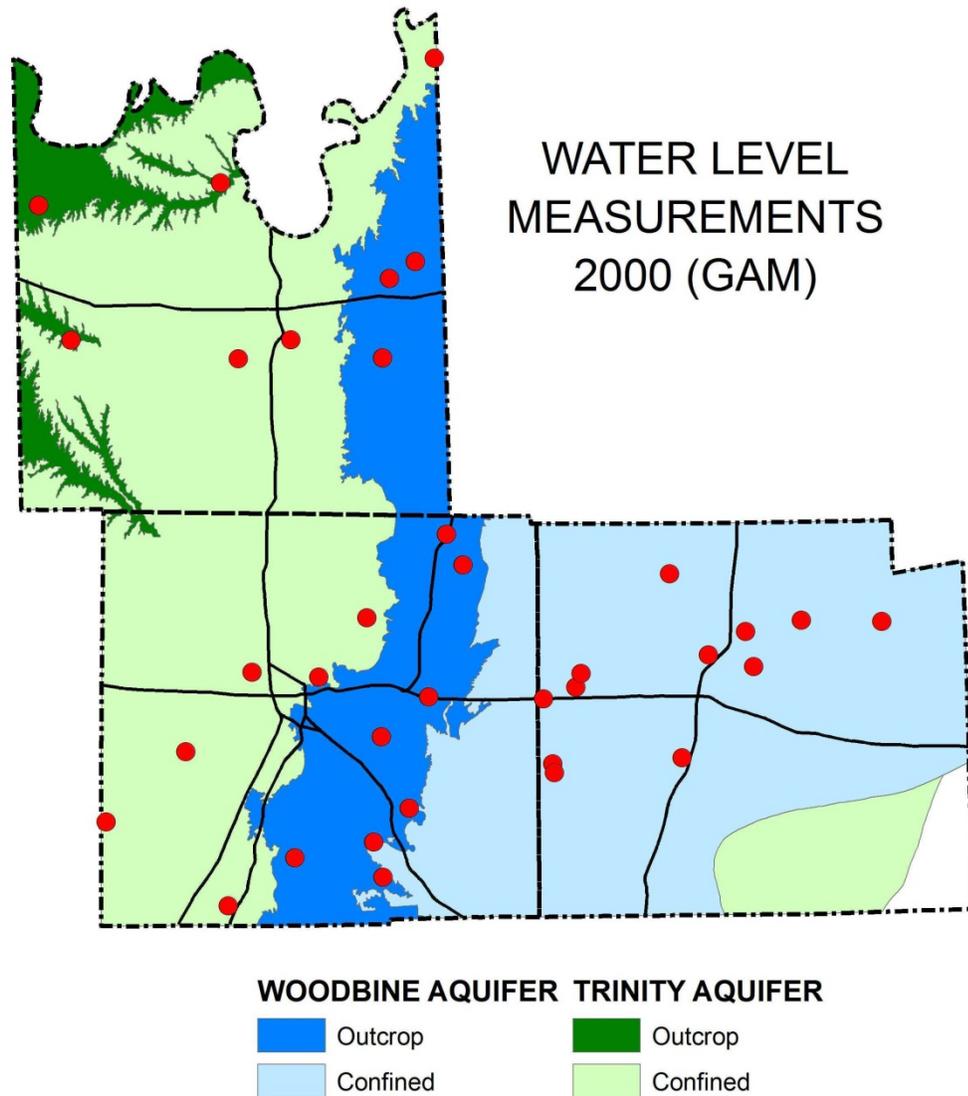


Figure 4.8 - Location of wells having water-level measurements taken in 2000 that were used in the Northern Trinity/Woodbine GAM (Bene and others, 2004).

Since the development of the Northern Trinity/Woodbine GAM, TWDB scientists have been using the model to estimate the volume of managed available groundwater for GMA 8. The desired future conditions, which in this case, are specific amounts of water-level decline after 50 years, are input to the GAM, and then the computer calculates how much pumpage it would take over time to result in that much drawdown. GAM run reports were produced that describe the results of each simulation (Wade 2007, 2008a, 2008b).

In order to better understand groundwater resources within a groundwater conservation district, Texas Water Code §36.1071 now 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.

Within its boundaries, the District has one TWDB-designated major aquifer - the Northern Trinity Aquifer, and one TWDB-designated minor aquifer – the Woodbine Aquifer. GMA-8 provided the desired future conditions for the Woodbine Aquifer to the TWDB in a letter dated December 26, 2007 and requested that the TWDB estimate managed available groundwater for the aquifer. A memorandum dated December 20, 2010 developed by the TWDB provides draft managed available groundwater for the Woodbine Aquifer within GMA-8 (Oliver, 2010). Desired future conditions for the Northern Trinity Aquifer were provided to the TWDB by GMA 8 in a letter dated October 6, 2008. That letter also requested that the TWDB estimate managed available groundwater for the aquifer based on those desired future conditions. The TWDB provided modeled available groundwater for the Northern Trinity Aquifer within GMA 8 in a report dated December 14, 2011 (Oliver and Bradley, 2011). The desired future conditions and the subsequent modeled available groundwater estimates for the Woodbine and Northern Trinity aquifers are described above in Section 2.0, Goal 8 of this Management Plan.

The TWDB provided the District with groundwater budget information from the available Northern Trinity/Woodbine Aquifers GAM as stipulated in the Texas Water Code §36,1071(h), which states that “In developing its management plan, the district shall use the groundwater availability modeling information provided by the executive administrator [of the TWDB] together with any available site-specific information that has been provided by the district to the executive administrator for review and comment before being used in the plan.” The Northern Trinity/Woodbine Aquifers GAM was developed by Bené and others (2004) and the model run conducted by the TWDB for the District (GAM Run 10-034) was performed by Hassan (2010).

A groundwater budget is a summary of water flow into the aquifer system (inflows) and water flow out of the aquifer system (outflows) over a specified time period. The water budget information provided to the District by the TWDB in GAM Run 10-034 (Hassan, 2010) consists of the average of the annual inflows to and outflows from the Woodbine and Northern Trinity aquifers for the time period 1980 through 1999.

The estimated amount of annual recharge to the Woodbine and Northern Trinity aquifers in the District from precipitation based on GAM Run 10-034 (simulation time period from 1980 through 1999) provided by the TWDB is given in Table 4.2. Hassan (2010) does not provide a

breakdown of recharge by precipitation into the sub-aquifers of the Northern Trinity Aquifer; rather he provides a single value for the entire aquifer. Estimated recharge from precipitation is 43,743 acre-feet per year for the Woodbine Aquifer and 11,846 acre-feet per year for the Northern Trinity Aquifer.

Table 4.2 - Groundwater Budget Information for the Northern Trinity/Woodbine aquifers from GAM Run 10-034 (Hassan, 2010).

Information from Groundwater Availability Models	Volume (acre-feet per year) <sup>1</sup>	
	Woodbine Aquifer	Northern Trinity Aquifer
Annual Recharge from Precipitation	43,743	11,846
Annual Discharge into Springs and other Surface Water Bodies	13,191 <sup>2</sup>	2,640 <sup>2,3</sup>
Annual Flow into the District	1,805	19,824
Annual Flow out of the District	1,777	15,555 <sup>4</sup>

<sup>1</sup>from GAM Run 10-034 (Hassan, 2010)

<sup>2</sup>value includes the results from the evapotranspiration package for model grid cells containing springs and streams not modeled by the streamflow-routing package

<sup>3</sup>value does not include the 1,103 acre-feet per year that discharges to the Red River along the District's northern boundary (see footnote 4 below)

<sup>4</sup>value includes 1,103 acre-feet per year that discharges to the Red River along the District's northern boundary

The estimated amount of annual discharge from the Woodbine and Northern Trinity aquifers to surface water bodies in the District based on GAM Run 10-034 (simulation time period of 1980 through 1999) provided by the TWDB is also given in Table 4.2. Hassan (2010) does not provide a breakdown of discharge to surface water bodies from the sub-aquifers of the Northern Trinity Aquifer; rather he provides a single value for the entire aquifer. These values include the results from the evapotranspiration package for model grid cells' containing springs and streams not modeled by the streamflow-routing package (Hassan, 2010). In addition, Hassan (2010) states that the value for the Northern Trinity Aquifer does not include 1,103 acre-feet per year of water that discharges from the aquifer to the Red River located along the District's northern boundary. That discharge is accounted for in the estimated annual flow out of the District. Estimated annual discharge to surface water bodies from the Woodbine and Northern Trinity aquifers is 13,191 and 2,640 acre-feet per year, respectively.

The estimated amount of annual flow into and out of the District for the Woodbine and Northern Trinity aquifers based on GAM Run 10-034 (simulation time period of 1980 through 1999) provided by the TWDB are given in Table 4.2. Hassan (2010) does not provide a breakdown of flow into and out of the sub-aquifers of the Northern Trinity Aquifer; rather he provides a single value for the entire aquifer. For the Woodbine Aquifer, estimated annual flow into and out of the District is 1,805 and 1,777 acre-feet per year, respectively. These volumes indicate that the District gains slightly more 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 19,824 and 15,555 acre-feet per year, respectively. Note that the estimated flow out of the District in the Northern Trinity Aquifer includes 1,103 acre-feet per year that discharges from the aquifer into the Red River located along the northern boundary of the District. These volumes indicate that the District gains more 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 10-034 (simulation time period of 1980 through 1999) provided by the TWDB are given in Table 4.3. The GAM run estimates flow of 109 acre-feet per year from overlying units into the underlying Woodbine Aquifer (model layer 1), flow of 85 acre-feet per year from the underlying Washita Fredericksburg Confining Unit (model layer 2) into the overlying Woodbine Aquifer (model layer 1), and flow of 761 acre-feet per year from the overlying Washita Fredericksburg Confining Unit (model layer 2) into the underlying Northern Trinity Aquifer (model layers 3 through 7). Hassan (2010) does not provide a breakdown of flow between the sub-aquifers of the Northern Trinity Aquifer.

Table 4.3 - Groundwater Flow between Aquifers in the District from GAM Run 10-034 (Hassan, 2010).

Unit Groundwater is Flowing From	Aquifer Groundwater is Flowing To	Volume of Flow <sup>1</sup> (acre-feet per year)
Overlying younger units	Underlying Woodbine Aquifer (model layer 1)	109
Underlying Washita Fredericksburg Confining Unit (model layer 2)	Overlying Woodbine Aquifer (model layer 1)	85
Overlying Washita Fredericksburg Confining Unit (model layer 2)	Underlying Northern Trinity Aquifer (model layers 3 through 7)	761

<sup>1</sup>from GAM Run 10-034 (Hassan, 2010)

## 5.0 SURFACE WATER RESOURCES

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. Table 5.1 summarizes the projected surface water supplies in the District based on the 2012 Texas State Water Plan, as provided by Allen (2011b). This table is

organized by county and water user groups and provides projected values for every decade from 2010 to 2060. Total projected surface water supplies by county are illustrated in Figure 5.1. The estimated projections range from a maximum of 166,773 acre-feet per year in 2010 to a minimum of 140,947 acre-feet per year in 2060 for Collin County, from a maximum of 2,815 acre-feet per year in 2010 to a minimum of 2,681 acre-feet per year in 2060 for Cooke County, and from a maximum of 119,300 acre-feet per year in 2010 to a minimum of 109,691 acre-feet per year in 2020 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 260,000 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.

Table 5.1 Projected surface water supplies from 2012 State Water Plan

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
<b>Collin County - RWPG C</b>									
Allen	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	2,760	2,608	2,346	2,039	1,850	1,725
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	6,561	6,129	5,450	4,683	4,198	3,868
	Texoma Lake/Reservoir North Texas MWD System	C	Red	4,527	4,277	3,847	3,344	3,034	2,828
Anna	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	196	216	216	216	216	216
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	466	509	509	509	509	509
	Texoma Lake/Reservoir North Texas MWD System	C	Red	322	355	355	355	355	355
Caddo Basin SUD	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	0	0	6	13	23	35
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	0	0	13	29	53	78
	Tawakoni Lake/Reservoir	D	Sabine	411	421	408	383	323	264
	Texoma Lake/Reservoir North Texas MWD System	C	Red	0	0	9	20	38	57
	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	0	0	3	6	11	16
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	0	0	6	13	24	36
	Tawakoni Lake/Reservoir	D	Sabine	190	195	189	177	149	122
	Texoma Lake/Reservoir North Texas MWD System	C	Red	0	0	4	9	18	26
Celina	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	297	318	442	542	562	601
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	91	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	186	876	1,422	1,685	1,655	1,596

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
County-Other	Tawakoni Lake/Reservoir	D	Sabine	12	11	10	9	8	7
	Tawakoni Lake/Reservoir	D	Sabine	391	291	229	185	151	128
Culleoka WSC	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	124	143	138	139	146	156
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	295	335	320	318	331	350
	Texoma Lake/Reservoir North Texas MWD System	C	Red	203	234	226	227	239	256
Dallas	Ray Hubbard Lake/Reservoir	C	Trinity	2,870	1,455	1,423	1,347	1,237	1,121
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	4,565	3,988	3,644	3,305	2,899	2,280
	Tawakoni Lake/Reservoir	D	Sabine	6,489	6,652	6,719	6,486	6,059	5,554
Danville WSC	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	116	122	120	125	133	144
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	276	286	279	286	302	322
	Texoma Lake/Reservoir North Texas MWD System	C	Red	191	200	197	204	218	236
East Fork SUD	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	165	132	119	113	109	109
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	402	342	296	277	269	273
	Texoma Lake/Reservoir North Texas MWD System	C	Red	228	203	181	174	174	178
Fairview	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	474	422	426	486	440	411
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	1,123	991	987	1,115	1,000	921
	Texoma Lake/Reservoir North Texas MWD System	C	Red	775	691	697	796	722	673
Farmersville	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	87	124	143	186	247	314
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	206	292	331	426	560	704
	Texoma Lake/Reservoir North Texas MWD System	C	Red	142	204	234	304	405	515

**Table 5.1 Continued**

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Frisco	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	2,782	3,496	3,204	3,306	3,407	3,183
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	6,612	8,216	7,443	7,593	7,733	7,138
	Texoma Lake/Reservoir North Texas MWD System	C	Red	7,845	5,734	5,254	5,423	5,588	5,220
Irrigation	Ray Hubbard Lake/Reservoir	C	Trinity	2,713	2,216	2,116	1,986	1,833	1,611
	Trinity River Combined Run-Of-River Irrigation	C	Trinity	408	408	408	408	408	408
Josephine	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	36	37	35	37	39	42
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	85	86	82	84	88	93
	Texoma Lake/Reservoir North Texas MWD System	C	Red	59	60	58	60	64	68
Lavon WSC	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	40	92	108	137	176	224
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	95	216	251	314	399	502
	Texoma Lake/Reservoir North Texas MWD System	C	Red	66	151	178	224	289	367
Livestock	Livestock Local Supply	C	Sabine	31	31	31	31	31	31
	Livestock Local Supply	C	Trinity	971	971	971	971	971	971
Lowry Crossing	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	50	48	46	41	37	34
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	120	114	106	94	83	78
	Texoma Lake/Reservoir North Texas MWD System	C	Red	83	79	75	67	60	56
Lucas	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	142	162	155	173	222	283
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	337	380	361	396	505	634
	Texoma Lake/Reservoir North Texas MWD System	C	Red	233	266	254	283	364	463

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Manufacturing	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	457	402	367	357	354	360
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	1,086	945	852	819	804	808
	Texoma Lake/Reservoir North Texas MWD System	C	Red	750	660	602	585	581	591
Marilee SUD	Texoma Lake/Reservoir Non-System Portion	C	Red	127	100	203	195	241	255
McKinney	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	3,930	5,677	6,269	6,928	6,823	6,361
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	9,343	13,343	14,564	15,910	15,485	14,267
	Texoma Lake/Reservoir North Texas MWD System	C	Red	11,946	9,311	10,282	11,363	11,191	10,433
Melissa	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	96	514	629	784	998	1,025
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	228	1,207	1,462	1,800	2,266	2,299
	Texoma Lake/Reservoir North Texas MWD System	C	Red	157	842	1,032	1,286	1,637	1,681
Milligan WSC	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	28	21	16	14	12	11
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	67	48	37	31	28	26
	Texoma Lake/Reservoir North Texas MWD System	C	Red	45	34	27	22	20	19
Mining	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	21	15	12	11	10	9
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	48	36	29	25	22	20
	Other Local Supply	C	Trinity	195	195	195	195	195	195
	Texoma Lake/Reservoir North Texas MWD System	C	Red	33	25	20	18	16	15

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Murphy	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	584	903	725	630	571	533
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	1,388	2,123	1,685	1,447	1,297	1,195
	Texoma Lake/Reservoir North Texas MWD System	C	Red	958	1,482	1,190	1,033	937	874
Nevada	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	0	0	0	0	31	155
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	0	0	0	0	71	347
	Tawakoni Lake/Reservoir	D	Sabine	176	286	298	531	533	533
	Texoma Lake/Reservoir North Texas MWD System	C	Red	0	0	0	0	51	254
	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	0	0	0	0	16	77
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	0	0	0	0	35	174
	Tawakoni Lake/Reservoir	D	Sabine	69	143	148	265	267	267
	Texoma Lake/Reservoir North Texas MWD System	C	Red	0	0	0	0	25	127
New Hope	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	37	40	54	70	95	196
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	88	95	125	160	215	440
	Texoma Lake/Reservoir North Texas MWD System	C	Red	61	66	88	114	155	321
North Collin WSC	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	120	118	112	112	117	125
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	287	277	260	259	267	280
	Texoma Lake/Reservoir North Texas MWD System	C	Red	197	193	184	184	192	205
Parker	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	206	431	505	712	944	1,204
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	491	1,012	1,172	1,635	2,142	2,700
	Texoma Lake/Reservoir North Texas MWD System	C	Red	339	706	827	1,168	1,548	1,975

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Plano	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	5,209	6,525	6,370	5,551	5,053	4,727
	Fork Lake/Reservoir	D	Sabine	19,573	9,713	0	0	0	0
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	12,383	15,334	14,800	12,747	11,466	10,602
	Tawakoni Lake/Reservoir	D	Sabine	16,147	728	0	0	0	0
	Texoma Lake/Reservoir North Texas MWD System	C	Red	8,544	10,701	10,448	9,104	8,286	7,754
Princeton	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	184	281	328	475	718	1,004
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	435	659	762	1,091	1,631	2,253
	Texoma Lake/Reservoir North Texas MWD System	C	Red	301	460	538	779	1,178	1,647
Prosper	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	40	109	117	134	142	144
	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	271	342	481	576	847	841
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	646	805	1,117	1,326	1,924	1,884
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	12	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	26	300	375	418	418	382
	Texoma Lake/Reservoir North Texas MWD System	C	Red	445	561	788	945	1,390	1,379
Richardson	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	948	1,118	895	768	692	645
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	2,252	2,627	2,079	1,765	1,571	1,447
	Texoma Lake/Reservoir North Texas MWD System	C	Red	1,554	1,834	1,467	1,260	1,135	1,058

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Royse City	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	0	0	41	73	102	137
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	0	0	95	167	230	308
	Tawakoni Lake/Reservoir	D	Sabine	282	698	844	968	1,052	1,122
	Texoma Lake/Reservoir North Texas MWD System	C	Red	0	0	67	119	167	225
Sachse	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	145	146	117	100	91	85
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	345	343	271	230	206	190
	Texoma Lake/Reservoir North Texas MWD System	C	Red	238	239	191	164	149	139
Saint Paul	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	26	49	79	109	117	115
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	63	116	183	250	266	258
	Texoma Lake/Reservoir North Texas MWD System	C	Red	43	81	129	179	192	189
Steam Electric Power	Texoma Lake/Reservoir North Texas MWD System	C	Red	771	0	0	0	0	0
Wylie	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	893	885	860	888	805	751
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	2,124	2,079	1,997	2,038	1,827	1,683
	Texoma Lake/Reservoir North Texas MWD System	C	Red	1,466	1,451	1,410	1,456	1,320	1,231
<b>Collin County Total</b>				<b>166,773</b>	<b>155,219</b>	<b>143,900</b>	<b>144,502</b>	<b>144,131</b>	<b>140,947</b>
<b>Cooke County</b>									
Bolivar WSC	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	52	24	19	15	12	11
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	16	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	33	65	61	47	35	30

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Gainesville	Hubert H Moss Lake/Reservoir	C	Red	2	2	2	2	2	2
	Hubert H Moss Lake/Reservoir	C	Red	1,050	1,048	1,058	1,058	1,060	1,061
Irrigation	Red River Run-Of-River Irrigation	C	Red	23	23	23	23	23	23
	Trinity River Combined Run-Of-River Irrigation	C	Trinity	0	0	0	0	0	0
Livestock	Livestock Local Supply	C	Red	380	380	380	380	380	380
	Livestock Local Supply	C	Trinity	807	807	807	807	807	807
Manufacturing	Hubert H Moss Lake/Reservoir	C	Red	215	194	158	152	137	130
Mining	Other Local Supply	C	Red	77	77	77	77	77	77
	Other Local Supply	C	Trinity	160	160	160	160	160	160
<b>Cooke County Total</b>				<b>2,815</b>	<b>2,780</b>	<b>2,745</b>	<b>2,721</b>	<b>2,693</b>	<b>2,681</b>
<b>Denton County</b>									
Argyle	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	302	204	195	177	168	177
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	93	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	189	563	627	552	495	471
Argyle WSC	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	429	90	55	44	37	35
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	132	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	268	247	176	135	108	93

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Aubrey	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	42	47	57	65	76	99
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	13	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	26	131	184	202	225	264
Bartonville	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	88	74	51	41	34	32
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	27	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	56	204	163	126	100	86
Bartonville WSC	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	79	20	15	13	12	13
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	24	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	50	55	46	41	37	34
Bolivar WSC	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	225	122	197	322	417	515
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	69	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	141	336	634	1,002	1,230	1,369
Carrollton	Ray Hubbard Lake/Reservoir	C	Trinity	2,692	1,259	1,219	1,146	1,051	935
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	4,281	3,451	3,122	2,811	2,462	1,902
	Tawakoni Lake/Reservoir	D	Sabine	6,085	5,756	5,757	5,515	5,147	4,633

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Celina	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	0	38	53	65	68	73
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	0	106	172	204	200	193
Coppell	Ray Hubbard Lake/Reservoir	C	Trinity	22	13	15	16	17	16
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	34	37	39	40	39	32
	Tawakoni Lake/Reservoir	D	Sabine	48	61	72	79	81	79
Copper Canyon	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	100	27	21	20	20	22
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	31	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	63	75	68	64	59	57
Corinth	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	1,729	443	292	249	222	219
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	530	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	1,081	1,221	940	774	654	581
County-Other	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	2,452	727	540	501	477	507
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	752	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	1,532	2,003	1,735	1,557	1,406	1,346
	TRWD Lake/Reservoir System	C	Trinity	439	531	517	501	488	468

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Cross Roads	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	114	76	51	44	38	37
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	35	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	71	209	165	137	113	98
Dallas	Ray Hubbard Lake/Reservoir	C	Trinity	1,336	652	621	577	524	463
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	2,125	1,786	1,589	1,416	1,228	943
	Tawakoni Lake/Reservoir	D	Sabine	3,021	2,978	2,930	2,779	2,566	2,296
Denton	Lewisville Lake/Reservoir Non-system Portion	C	Trinity	7,778	7,664	7,579	7,490	7,400	7,319
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	14,576	14,904	12,364	11,156	11,466	11,801
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	0	0	2,690	3,251	3,924	4,708
Denton County FWSD #1A	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	358	89	74	74	75	84
	Ray Hubbard Lake/Reservoir	C	Trinity	18	43	54	63	69	72
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	110	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	252	362	373	385	383	367
	Tawakoni Lake/Reservoir	D	Sabine	40	195	254	302	337	357
Double Oak	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	219	45	28	23	19	19
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	66	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	138	124	90	71	58	50

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Flower Mound	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	3,477	1,073	1,017	808	673	632
	Ray Hubbard Lake/Reservoir	C	Trinity	1,546	855	940	867	784	690
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	1,066	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	4,631	5,299	5,679	4,641	3,819	3,082
	Tawakoni Lake/Reservoir	D	Sabine	3,494	3,907	4,438	4,173	3,838	3,421
Fort Worth	TRWD Lake/Reservoir System	C	Trinity	1,256	7,016	8,936	11,263	14,002	15,811
Frisco	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	1,456	1,326	1,807	2,020	2,144	1,992
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	3,462	3,117	4,198	4,638	4,865	4,468
	Texoma Lake/Reservoir North Texas MWD System	C	Red	4,106	2,175	2,964	3,312	3,516	3,268
Hackberry	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	9	15	17	17	16	16
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	22	34	40	39	37	35
	Texoma Lake/Reservoir North Texas MWD System	C	Red	15	24	28	28	27	26
Hebron	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	0	0	0	0	0	0
	Ray Hubbard Lake/Reservoir	C	Trinity	20	9	8	8	7	6
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	32	25	22	19	16	13
	Tawakoni Lake/Reservoir	D	Sabine	46	41	40	37	34	30
Hickory Creek	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	263	76	55	53	45	43
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	44	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	202	209	176	167	133	113

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Highland Village	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	1,056	252	170	140	119	116
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	324	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	660	695	548	434	351	307
Irrigation	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	2,207	1,802	1,722	1,616	1,491	1,311
Justin	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	176	73	76	103	106	111
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	54	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	110	200	245	320	312	294
Krugerville	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	40	14	11	12	13	19
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	12	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	26	39	35	37	39	49
Krum	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	85	25	20	20	22	26
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	26	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	54	68	64	64	65	69
Lake Dallas	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	475	119	80	65	54	51
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	79	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	363	329	259	201	158	136

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Lewisville	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	17,712	16,009	16,860	17,541	18,337	18,361
Lincoln Park	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	28	8	6	6	6	7
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	8	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	18	25	20	20	18	18
Little Elm	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	531	567	564	561	509	475
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	1,263	1,332	1,310	1,289	1,156	1,065
	Texoma Lake/Reservoir North Texas MWD System	C	Red	871	929	925	921	835	779
Livestock	Livestock Local Supply	C	Trinity	935	935	935	935	935	935
Manufacturing	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	72	25	15	11	10	11
	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	7	6	6	6	6	6
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	18	15	14	13	13	13
	Lewisville Lake/Reservoir Non-system Portion	C	Trinity	140	153	136	123	112	91
	Ray Hubbard Lake/Reservoir	C	Trinity	76	41	43	45	44	42
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	357	368	326	293	267	217
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	166	181	158	144	133	114
	Tawakoni Lake/Reservoir	D	Sabine	172	186	203	214	216	209
	Texoma Lake/Reservoir North Texas MWD System	C	Red	12	11	10	10	10	10

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Mining	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	221	22	14	11	9	8
	Other Local Supply	C	Trinity	103	103	103	103	103	103
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	68	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	138	61	44	34	27	22
Mustang SUD	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	182	90	81	130	166	209
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	55	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	114	250	260	403	488	555
Northlake	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	0	34	24	37	45	51
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	0	94	77	114	133	135
	TRWD Lake/Reservoir System	C	Trinity	265	371	364	606	785	824
Oak Point	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	115	85	86	83	81	86
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	35	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	73	233	277	258	237	229
Plano	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	114	193	186	161	145	136
	Fork Lake/Reservoir	D	Sabine	427	287	0	0	0	0
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	270	454	432	369	330	304
	Tawakoni Lake/Reservoir	D	Sabine	352	22	0	0	0	0
	Texoma Lake/Reservoir North Texas MWD System	C	Red	186	317	305	264	238	222

Table 5.1 Continued

Water User Group	Source Name	Water Source RWPG	Water Source Basin	Projected Surface Water Supplies (acre-feet per year)					
				2010	2020	2030	2040	2050	2060
Prosper	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	0	73	78	97	69	72
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	0	200	250	303	205	191
Roanoke	TRWD Lake/Reservoir System	C	Trinity	1,482	2,271	2,558	2,760	3,267	3,481
Shady Shores	Chapman/Cooper Lake/Reservoir Non-System Portion	D	Sulphur	125	39	29	23	20	18
	Ray Roberts Lake/Reservoir Non-System Portion	C	Trinity	21	0	0	0	0	0
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	95	106	94	71	57	49
Southlake	TRWD Lake/Reservoir System	C	Trinity	255	414	412	556	718	673
The Colony	Chapman/Cooper Lake/Reservoir North Texas MWD System	D	Sulphur	79	82	73	65	60	57
	Lavon Lake/Reservoir North Texas MWD System	C	Trinity	188	193	170	149	136	127
	Ray Hubbard Lake/Reservoir	C	Trinity	926	573	591	558	515	458
	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	C	Trinity	1,471	1,571	1,514	1,369	1,208	932
	Tawakoni Lake/Reservoir	D	Sabine	2,092	2,621	2,791	2,686	2,525	2,270
	Texoma Lake/Reservoir North Texas MWD System	C	Red	130	135	120	106	99	93
Trophy Club	TRWD Lake/Reservoir System	C	Trinity	2,057	2,221	2,111	1,999	1,920	1,822
<b>Denton County Total</b>				<b>119,300</b>	<b>109,691</b>	<b>113,994</b>	<b>114,579</b>	<b>116,409</b>	<b>114,480</b>
<b>District Total</b>				<b>288,888</b>	<b>267,690</b>	<b>260,639</b>	<b>261,802</b>	<b>263,233</b>	<b>258,108</b>

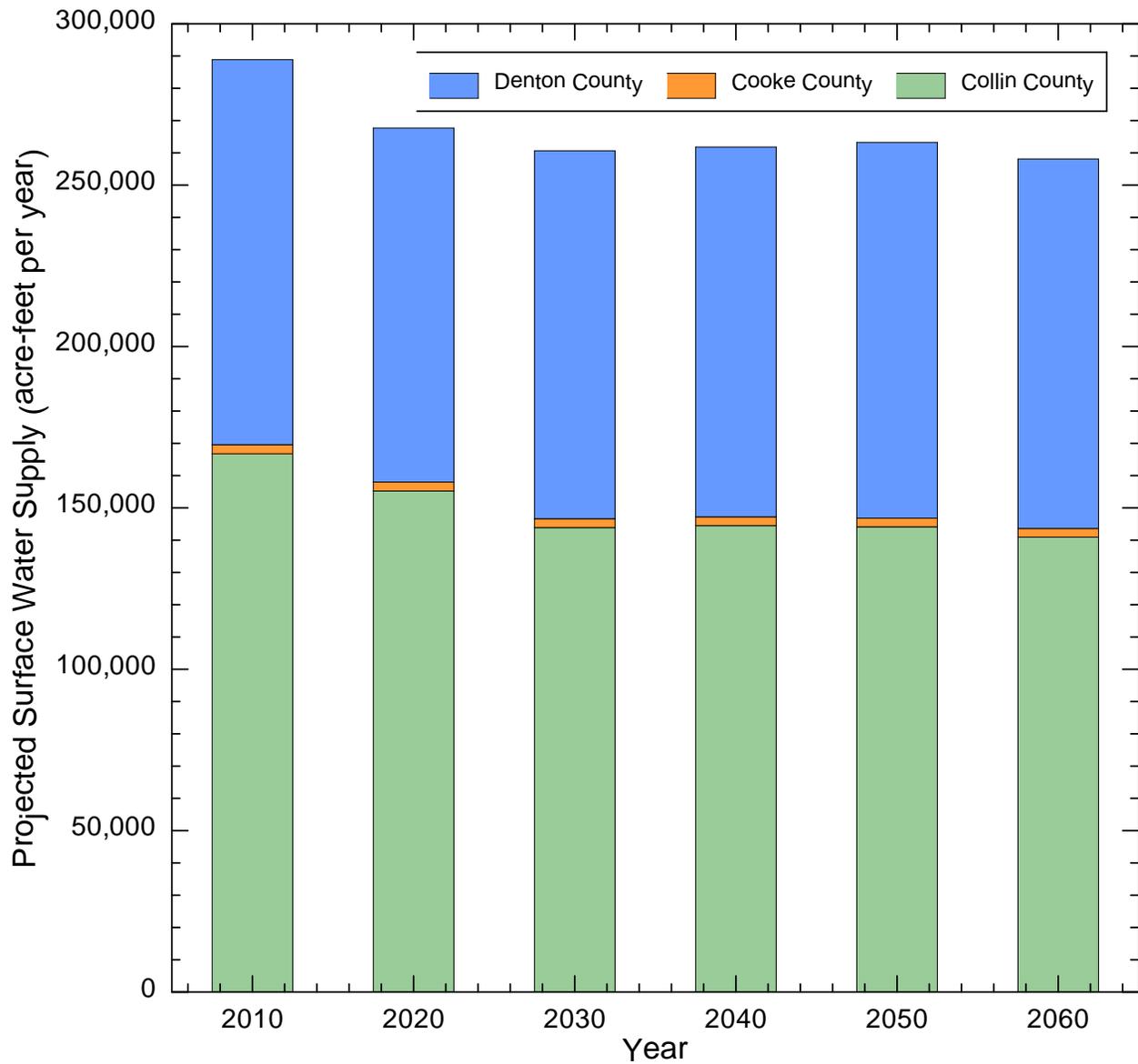


Figure 5.1 – Projected surface water supply in the District

## 6.0 WATER SUPPLY PLANS

Projected water needs for the counties in the District have been developed for inclusion in the 2012 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 2010 through 2060 on a county-basin level. Table 6.1 summarizes the projected water needs

for the District based on the database for the 2012 Texas State Water Plan received from Allen (2011b). Data in this table are organized by county, water user group, and basin. The projected total water needs by county are illustrated in Figure 6.1.

Data for the 2012 State Water Plan projects future water needs for all three of the counties in the District. There are 46 water user groups in Collin County. A water need at some point between 2010 and 2060 is projected for all but six of those water user groups. The projected need in this county increases significantly from 3,906 acre-feet per year in 2010 to 262,220 acre-feet per year in 2060. Of the 19 water user groups in Cooke County, a need at some point between 2010 and 2060 is projected for 13. The projected need in Cooke County increases from 353 acre-feet per year in 2010 to 4,557 acre-feet per year in 2060. Forty-nine user groups are listed for Denton County. Of those, a need at some point between 2010 and 2060 is projected for all but four of those water user groups. The need in Denton County significantly increases from 7,099 acre-feet per year in 2010 to 239,581 acre-feet per year in 2060. For the District as a whole, the total projected water need increases from 11,358 acre-feet per year in 2010 to 506,358 acre-feet per year in 2060.

The database for the upcoming 2012 Texas State Water Plan also includes recommended water management strategies to meet the identified water needs in the District for every decade from 2010 through 2060. 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. Water management strategies were estimated for all water user groups for every decade from 2010 through 2060 on a county-basin level. Table 6.2 summarizes the water management strategies for the District based on the database for the 2012 Texas State Water Plan received from Allen (2011b). This table is organized by county, water user group, and basin. Several water management strategies are identified for almost every water user group in the District.

Table 6.1 - Total Projected Water Needs.

Water User Group (WUG)	WUG Basin	Total Projected Water Needs (acre-feet per year)					
		2010	2020	2030	2040	2050	2060
<b>Collin County</b>							
Allen	Trinity	-398	-4,597	-8,108	-10,105	-11,788	-12,911
Anna	Trinity	-33	-1,068	-2,519	-3,985	-5,661	-10,688
Blue Ridge	Trinity	23	-299	-762	-1,372	-2,145	-2,454
Caddo Basin SUD	Sabine	-4	-96	-191	-283	-387	-492
Caddo Basin SUD	Trinity	-2	-44	-87	-131	-179	-227
Celina	Trinity	38	-3,709	-9,077	-17,558	-28,439	-33,274
County-Other	Sabine	0	0	0	0	0	0
County-Other	Trinity	745	719	722	741	765	791
Culleoka WSC	Trinity	-18	-251	-476	-688	-930	-1,168
Dallas	Trinity	-1,295	-4,424	-5,271	-6,254	-7,366	-9,078
Danville WSC	Trinity	-11	-215	-416	-618	-846	-1,075
East Fork SUD	Trinity	-22	-240	-405	-550	-700	-839
Fairview	Trinity	-77	-742	-1,469	-2,406	-2,806	-3,074
Farmersville	Trinity	-5	-218	-492	-919	-1,573	-2,350
Frisco	Trinity	-483	-7,788	-13,220	-19,892	-25,183	-27,197
Hickory Creek SUD	Trinity	0	-1	-1	-2	-2	-3
Irrigation	Trinity	2,919	2,422	2,322	2,192	2,039	1,817
Josephine	Trinity	1	-61	-117	-178	-240	-303
Lavon WSC	Trinity	-6	-164	-374	-677	-1,123	-1,677
Livestock	Sabine	8	8	8	8	8	8
Livestock	Trinity	227	227	227	227	227	227
Lowry Crossing	Trinity	-4	-85	-159	-202	-235	-257
Lucas	Trinity	-14	-285	-536	-855	-1,416	-2,115
Manufacturing	Trinity	0	-710	-1,268	-1,766	-2,260	-2,699
Marilee SUD	Trinity	129	-93	-182	-350	-480	-653
McKinney	Trinity	-658	-10,006	-21,668	-34,331	-43,486	-47,627
Melissa	Trinity	-11	-905	-2,173	-3,884	-6,362	-7,676
Milligan WSC	Trinity	-3	-36	-56	-68	-78	-85
Mining	Trinity	0	-28	-43	-53	-62	-68
Murphy	Trinity	-42	-1,593	-2,509	-3,122	-3,642	-3,988
Nevada	Sabine	-1	-66	-123	-305	-593	-1,624
Nevada	Trinity	-1	-33	-62	-153	-296	-812
New Hope	Trinity	-1	-72	-184	-343	-602	-1,468
North Collin WSC	Trinity	-12	-208	-387	-556	-748	-935
Parker	Trinity	-12	-759	-1,745	-3,527	-6,016	-9,017
Plano	Trinity	-496	-13,885	-22,020	-27,505	-32,199	-35,396
Princeton	Trinity	-12	-494	-1,135	-2,354	-4,577	-7,520
Prosper	Trinity	653	466	-507	-1,632	-4,165	-5,090
Richardson	Trinity	-125	-1,970	-3,092	-3,807	-4,409	-4,829

Table 6.1, continued

Water User Group (WUG)	WUG Basin	Total Projected Water Needs (acre-feet per year)					
		2010	2020	2030	2040	2050	2060
Royse City	Sabine	-4	-160	-491	-918	-1,425	-2,009
Sachse	Trinity	-13	-259	-403	-498	-580	-636
Saint Paul	Trinity	-3	-88	-273	-539	-748	-862
South Grayson WSC	Trinity	0	0	0	0	0	0
Steam Electric Power	Trinity	0	-715	-1,000	-1,200	-1,600	-2,000
Weston	Trinity	25	-396	-1,206	-3,958	-7,134	-12,426
Wylie	Trinity	-140	-1,559	-2,971	-4,397	-5,130	-5,618
<b>Collin County Total Need</b>		<b>-3,906</b>	<b>-58,322</b>	<b>-107,178</b>	<b>-161,941</b>	<b>-217,611</b>	<b>-262,220</b>
<b><i>Cooke County</i></b>							
Bolivar WSC	Trinity	148	83	30	10	-6	-12
County-Other	Red	0	0	0	0	0	0
County-Other	Trinity	100	-58	-77	-60	-47	-48
Gainesville	Red	0	0	0	0	0	0
Gainesville	Trinity	-122	-488	-882	-1,288	-1,732	-2,224
Irrigation	Red	-53	-53	-53	-53	-53	-53
Irrigation	Trinity	-87	-87	-87	-87	-87	-87
Kiowa Homeowners WSC	Trinity	12	-44	-68	-65	-61	-60
Lindsay	Trinity	11	4	1	3	5	5
Livestock	Red	0	0	0	0	0	0
Livestock	Trinity	0	0	0	0	0	0
Manufacturing	Trinity	-8	-62	-127	-162	-202	-241
Mining	Red	-28	-78	-53	-56	-59	-61
Mining	Trinity	-47	-120	-82	-86	-90	-94
Muenster	Trinity	0	-12	-27	-40	-56	-75
Two Way SUD	Red	0	0	0	0	0	0
Valley View	Trinity	176	0	-231	-445	-1,008	-1,351
Woodbine WSC	Red	0	-1	-2	-2	-3	-4
Woodbine WSC	Trinity	-8	-49	-97	-136	-188	-247
<b>Cooke County Total Need</b>		<b>-353</b>	<b>-1,052</b>	<b>-1,786</b>	<b>-2,480</b>	<b>-3,592</b>	<b>-4,557</b>
<b><i>Denton County</i></b>							
Argyle	Trinity	-18	-1,559	-2,823	-3,418	-4,050	-4,616
Argyle WSC	Trinity	148	-510	-614	-651	-682	-699
Aubrey	Trinity	142	-217	-667	-1,084	-1,670	-2,436
Bartonville	Trinity	-5	-566	-741	-793	-829	-846
Bartonville WSC	Trinity	-5	-153	-203	-240	-275	-304
Bolivar WSC	Trinity	282	-178	-1,185	-3,767	-7,122	-10,306
Carrollton	Trinity	-1,212	-3,827	-4,518	-5,318	-6,258	-7,571
Celina	Trinity	0	-456	-1,109	-2,139	-3,461	-4,050
Coppell	Trinity	-9	-41	-58	-77	-98	-128
Copper Canyon	Trinity	-6	-209	-300	-381	-465	-543
Corinth	Trinity	-181	-3,103	-4,021	-4,658	-5,252	-5,656

Table 6.1, continued

Water User Group (WUG)	WUG Basin	Total Projected Water Needs (acre-feet per year)					
		2010	2020	2030	2040	2050	2060
County-Other	Trinity	876	-4,566	-6,820	-8,674	-10,502	-12,215
Cross Roads	Trinity	-43	-655	-732	-771	-804	-820
Dallas	Trinity	-603	-1,980	-2,299	-2,679	-3,119	-3,753
Denton	Trinity	-977	-3,856	-11,805	-23,755	-36,564	-62,303
Denton County FWSD #1A	Trinity	-29	-810	-1,280	-1,761	-2,280	-2,845
Double Oak	Trinity	-13	-343	-396	-420	-434	-443
Flower Mound	Trinity	-906	-10,786	-18,450	-20,063	-21,439	-22,729
Fort Worth	Trinity	-51	-1,012	-3,402	-6,575	-11,157	-16,582
Frisco	Trinity	-254	-2,953	-7,458	-12,150	-15,845	-17,201
Hackberry	Trinity	-3	-24	-59	-84	-106	-118
Hebron	Trinity	-10	-28	-31	-35	-41	-49
Hickory Creek	Trinity	33	-527	-761	-1,035	-1,097	-1,136
Highland Village	Trinity	246	-1,616	-2,088	-2,240	-2,333	-2,382
Irrigation	Trinity	3,534	3,129	3,049	2,943	2,818	2,638
Justin	Trinity	-9	-553	-1,105	-2,012	-2,597	-2,941
Krugerville	Trinity	10	-52	-90	-160	-253	-420
Krum	Trinity	-5	-189	-252	-317	-420	-531
Lake Dallas	Trinity	60	-830	-1,105	-1,200	-1,271	-1,323
Lewisville	Trinity	-1,550	-5,307	-6,645	-8,509	-11,179	-15,251
Lincoln Park	Trinity	15	-46	-77	-100	-126	-157
Little Elm	Trinity	-633	-1,407	-2,361	-3,193	-3,656	-3,964
Livestock	Trinity	477	477	477	477	477	477
Manufacturing	Trinity	86	-129	-363	-575	-767	-1,007
Mining	Trinity	640	1,017	988	973	963	957
Mustang SUD	Trinity	242	-368	-837	-2,304	-3,865	-5,360
Northlake	Trinity	215	-74	-239	-803	-1,454	-1,943
Oak Point	Trinity	-235	-948	-1,592	-1,866	-2,158	-2,441
Pilot Point	Trinity	-90	-451	-1,222	-1,396	-1,522	-1,662
Plano	Trinity	-11	-412	-642	-797	-926	-1,014
Ponder	Trinity	109	-554	-1,456	-2,544	-2,998	-3,089
Prosper	Trinity	0	-1,851	-3,412	-5,220	-5,900	-6,450
Roanoke	Trinity	-16	-203	-722	-1,330	-2,262	-3,274
Sanger	Trinity	-198	-1,010	-1,831	-2,372	-2,794	-2,993
Shady Shores	Trinity	16	-268	-406	-439	-463	-481
Southlake	Trinity	-7	-37	-117	-269	-497	-633
Steam Electric Power	Trinity	589	1,498	1,846	2,307	2,880	3,564
The Colony	Trinity	510	-955	-1,508	-1,976	-2,520	-3,202
Trophy Club	Trinity	-20	-199	-596	-963	-1,329	-1,714
<b>Denton County Total Need</b>		<b>-7,099</b>	<b>-55,818</b>	<b>-98,398</b>	<b>-141,113</b>	<b>-184,840</b>	<b>-239,581</b>
<b>District Total Needs</b>		<b>-11,358</b>	<b>-115,192</b>	<b>-207,362</b>	<b>-305,534</b>	<b>-406,043</b>	<b>-506,358</b>

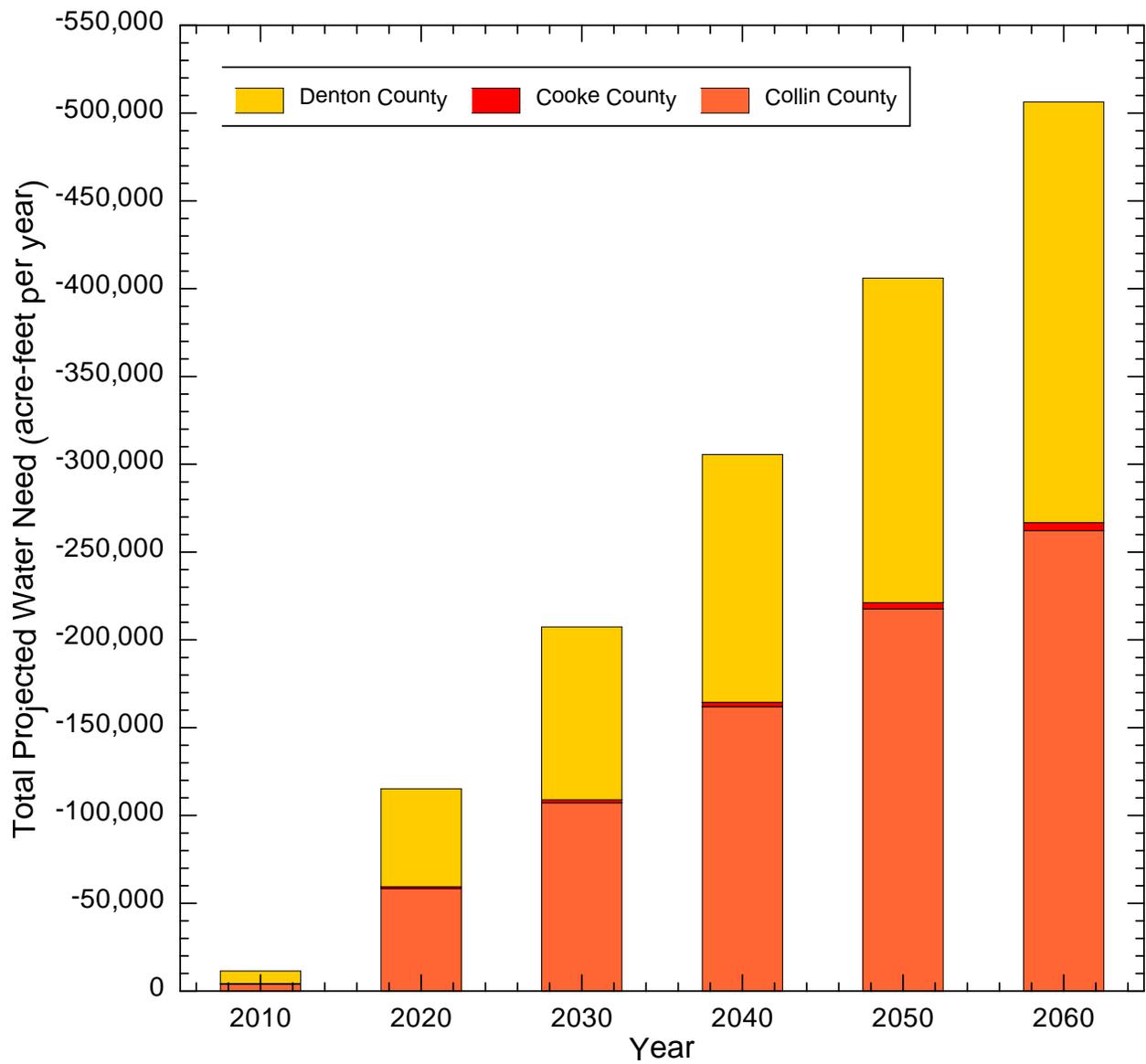


Figure 6.1 - Total projected water needs in the District by county.

Table 6.2 - Projected Water Management Strategies by Water User Group.

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
<b>Collin County - RWPG C</b>										
Allen	Trinity	Municipal Conservation - Basic	Conservation	Collin	192	1,115	1,672	1,914	2,145	2,376
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	206	344	418	433	434	434
	Trinity	Purchase from Water Provider/Other surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	926
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	2,809	3,627	3,824	2,084	2,093
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	1,844	1,852
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	128	164	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	201	1,280	2,233	2,058	1,992
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	947	1,701	3,223	3,238
Anna	Trinity	Municipal Conservation - Basic	Conservation	Collin	24	141	261	397	574	1,061
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	9	24	38	51	66	108
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	73	139	200	273	553
	Trinity	Purchase from Water Provider/Other Surface Water	Lavon Lake/Reservoir North Texas MWD System	Reservoir	0	170	316	447	602	1,216

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Anna	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	421
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	119	449	736	1,009	1,859
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	497	842
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	133	48	0	0	0
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Kaufman	0	104	348	593	751	1,357
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse Lavon	Collin	0	94	262	355	467	893
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	210	379	685	554	906
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	280	521	868	1,472
	Trinity	Supplemental Wells	Trinity Aquifer	Collin	0	0	0	0	0	0
	Trinity	Supplemental Wells	Woodbine Aquifer	Collin	0	0	0	0	0	0
Blue Ridge	Trinity	Conveyance Project/Other Surface Water	Texoma Lake/Reservoir Non-System Portion	Reservoir	0	0	202	375	499	515
	Trinity	Conveyance Project/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	442	456
	Trinity	Conveyance Project/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	213	345	629	493	491
	Trinity	Conveyance Project/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	255	479	772	797

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Blue Ridge	Trinity	Municipal Conservation - Basic	Conservation	Collin	5	23	47	80	125	150
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	2	5	8	13	19	21
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	228
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	135	44	0	0	0
	Trinity	Supplemental Wells	Woodbine Aquifer	Collin	0	0	0	0	0	0
Caddo Basin SUD	Sabine	Municipal Conservation - Basic	Conservation	Collin	8	27	38	48	59	72
	Sabine	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	133
	Sabine	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	82	141	209	301
	Sabine	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	185	267
	Sabine	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	93	26	0	0	0
	Sabine	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	101	139	236	207	287
	Sabine	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	103	180	324	466
	Trinity	Municipal Conservation - Basic	Conservation	Collin	4	12	17	22	27	33

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Caddo Basin SUD	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	62
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	38	65	97	139
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	86	123
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	0	0	0	0	0
	Trinity	Purchase from Water Provider/New Major Res.	Lower Bois D Arc Lake/Reservoir	Reservoir	0	46	64	109	96	133
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	48	83	150	215
Celina	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	165	753	2,144	2,957	2,844
	Trinity	Municipal Conservation – Basic	Conservation	Collin	37	271	693	1,401	2,405	3,077
	Trinity	Municipal Conservation – Expanded	Conservation	Collin	0	2	10	20	33	43
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	203	476	866	1,285	1,146
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir North Texas MWD System	Reservoir	0	141	227	328	298	277
	Trinity	Purchase from Water Provider/Other Surface Water	Lavon Lake/Reservoir North Texas MWD System	Reservoir	0	332	527	755	676	623

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Celina	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	2,796
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	822	2,393	4,704	7,565	9,663
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	232	521	873	840	807
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	311	311
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	245	791	2,151	5,967	2,853
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	108	256	473	708	644
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Kaufman	0	202	419	711	645	601
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse Lavon	Collin	0	183	346	501	454	424
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	111	254	559	347	334
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	188	426	3,697	3,624
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	764	1,386	1,952	306	3,260
	Trinity	Supplemental Wells	Trinity Aquifer	Collin	0	0	0	0	0	0
	Trinity	Supplemental Wells	Woodbine Aquifer	Collin	0	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
County-Other	Sabine	Municipal Conservation – Basic	Conservation	Collin	0	1	1	1	1	1
	Sabine	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	20	4	0	0	0
	Sabine	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	0	0	1	0	0
	Sabine	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	0	1
	Trinity	Municipal Conservation – Basic	Conservation	Collin	11	36	42	41	39	37
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	18	23	22	20
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	19	18
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	20	4	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	31	32	36	22	19
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	23	29	34	40
	Trinity	Supplemental Wells	Trinity Aquifer	Collin	0	0	0	0	0	0
	Trinity	Supplemental Wells	Woodbine Aquifer	Collin	0	0	0	0	0	0
Culleoka WSC	Trinity	Municipal Conservation – Basic	Conservation	Collin	18	74	103	127	154	185

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Culleoka WSC	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	90
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	89	142	176	204
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	155	180
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	69	19	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	108	152	238	173	194
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	113	181	272	315
Dallas	Trinity	Fastrill Replacement (Region C Component)	Neches River Run-Of-River	Anderson	0	0	0	0	0	2,184
	Trinity	Municipal Conservation - Basic	Conservation	Collin	791	1,180	1,259	1,478	1,661	1,870
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	0	0	0	0	0
	Trinity	Purchase from Water Provider/Other Surface Water	Fork Lake/Reservoir	Reservoir	0	1,062	1,360	1,100	1,360	1,352
	Trinity	Purchase from Water Provider/Other Surface Water	Palestine Lake/Reservoir	Reservoir	0	1,523	1,987	1,635	2,068	2,095
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Hubbard Lake/Reservoir	Reservoir	281	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Dallas	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	281	-598	-805	-1,015	-1,338	-2,028
	Trinity	Purchase from Water Provider/Other Surface Water	Wright Patman Lake/Reservoir	Reservoir	0	0	0	1,676	2,132	2,190
	Trinity	Purchase from Water Provider/Reuse	Direct Reuse	Dallas	0	826	829	792	718	615
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	431	643	590	765	800
Danville WSC	Trinity	Municipal Conservation - Basic	Conservation	Collin	11	68	99	133	172	220
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	4	9	11	12	13
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	77
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	74	120	150	174
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	133	154
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	56	16	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	87	126	201	148	166
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	93	153	232	271

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
East Fork SUD	Trinity	Municipal Conservation - Basic	Conservation	Collin	22	60	77	92	105	121
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	66
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	78	116	135	149
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	119	132
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	74	19	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	106	133	194	133	142
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	98	148	208	231
Fairview	Trinity	Municipal Conservation - Basic	Conservation	Collin	29	179	312	469	523	578
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	48	73	97	128	130	130
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	217
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	253	458	487	490
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	431	434

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Fairview	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	190	55	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	300	432	767	481	467
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	320	584	754	758
Farmersville	Trinity	Municipal Conservation - Basic	Conservation	Collin	6	59	103	176	290	437
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	175
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	93	188	290	396
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	257	351
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	62	20	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	97	159	315	287	377
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	117	240	449	614
Frisco	Trinity	Direct Reuse - Frisco	Direct Reuse	Denton	0	1,624	2,147	3,508	3,467	3,468
	Trinity	Municipal Conservation - Basic	Conservation	Collin	204	2,376	4,895	6,346	7,595	8,049
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	281	569	695	848	960	970

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Frisco	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	1,354
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	2,881	3,304	4,529	2,978	3,059
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	2,635	2,707
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	132	150	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	206	1,166	2,646	2,942	2,912
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	863	2,015	4,606	4,678
Hickory Creek SUD	Trinity	Additional Woodbine Aquifer - Existing Wells	Woodbine Aquifer	Hunt	0	0	0	0	0	0
	Trinity	Municipal Conservation - Basic	Conservation	Collin	0	1	1	2	2	3
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	0	0	0	0	0
Irrigation	Trinity	Golf Course Conservation	Conservation	Collin	6	99	190	238	283	328
	Trinity	Supplemental Wells	Trinity Aquifer	Collin	0	0	0	0	0	0
Josephine	Trinity	Municipal Conservation - Basic	Conservation	Collin	2	15	22	31	41	52
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	24

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Josephine	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	24	38	46	54
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	41	47
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	19	5	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	30	40	64	46	51
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	30	49	72	83
Lavon WSC	Trinity	Municipal Conservation - Basic	Conservation	Collin	6	49	79	122	183	260
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	130
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	71	141	213	294
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	188	260
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	45	15	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	70	120	235	210	279

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Lavon WSC	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	89	179	329	454
Livestock	Sabine	Supplemental Wells	Other Aquifer	Collin	0	0	0	0	0	0
	Trinity	Supplemental Wells	Other Aquifer	Collin	0	0	0	0	0	0
Lowry Crossing	Trinity	Municipal Conservation - Basic	Conservation	Collin	4	22	33	39	44	48
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	19
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	30	41	43	44
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	38	39
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	24	7	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	39	51	69	43	41
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	38	53	67	67
Lucas	Trinity	Municipal Conservation - Basic	Conservation	Collin	14	57	84	116	175	254
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	171
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	108	187	281	386

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Lucas	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	249	341
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	89	24	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	139	185	313	278	367
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	137	239	435	597
Manufacturing	Trinity	Manufacturing Conservation	Conservation	Collin	0	6	72	108	119	130
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	236
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	286	420	484	532
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	429	471
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	273	62	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	431	488	703	479	507
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	361	535	749	823
	Trinity	Supplemental Wells	Woodbine Aquifer	Collin	0	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Marilee SUD	Trinity	Grayson County Project	Texoma Lake/Reservoir Non-System Portion	Reservoir	0	50	146	288	499	720
	Trinity	Municipal Conservation - Basic	Conservation	Collin	9	42	53	66	82	100
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	5	7	8	10	11	13
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	0	0
	Trinity	Supplemental Wells	Trinity Aquifer	Collin	0	0	0	0	0	0
McKinney	Trinity	Municipal Conservation - Basic	Conservation	Collin	303	3,347	7,621	10,503	12,257	13,108
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	356	762	1,120	1,430	1,569	1,579
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	3,020
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	5,279	7,790	11,040	6,711	6,826
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	5,939	6,040
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	240	352	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	378	2,751	6,448	6,630	6,496
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	2,035	4,911	10,381	10,559

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Melissa	Trinity	Conveyance Project/Other Surface Water	Lavon Lake/Reservoir North Texas MWD System	Reservoir	0	0	0	0	0	0
	Trinity	Municipal Conservation - Basic	Conservation	Collin	12	146	255	401	916	1,151
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	0	0	0	51	67
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	592
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	458	881	1,221	1,338
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	1,080	1,184
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	295	100	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	464	782	1,477	1,206	1,274
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	578	1,125	1,888	2,070
	Trinity	Supplemental Wells	Woodbine Aquifer	Collin	0	0	0	0	0	0
Milligan WSC	Trinity	Municipal Conservation - Basic	Conservation	Collin	3	11	13	13	13	14
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	10	14	15	15
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Milligan WSC	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	10	2	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	15	18	23	15	14
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	13	18	36	43
Mining	Trinity	Conveyance Project/Other Surface Water	Texoma Lake/Reservoir Non-System Portion	Reservoir	0	0	10	13	14	14
	Trinity	Conveyance Project/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	17	18	23	14	14
	Trinity	Conveyance Project/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	13	17	34	40
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	11	2	0	0	0
Murphy	Trinity	Municipal Conservation - Basic	Conservation	Collin	42	367	452	524	595	667
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	44	55	56	56	56
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	299
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	478	643	677	677
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	599	599
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	459	104	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Murphy	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	723	816	1,078	669	644
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	604	821	1,047	1,047
Nevada	Sabine	Municipal Conservation - Basic	Conservation	Collin	2	14	21	49	93	261
	Sabine	Municipal Conservation - Expanded	Conservation	Collin	0	1	1	2	4	9
	Sabine	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	124
	Sabine	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	24	64	112	281
	Sabine	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	99	248
	Sabine	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	20	5	0	0	0
	Sabine	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	31	41	108	111	267
	Sabine	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	31	82	174	434
	Trinity	Municipal Conservation - Basic	Conservation	Collin	1	7	10	25	46	131
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	0	1	1	2	4

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Nevada	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	62
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	12	32	56	140
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	50	124
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	10	3	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	16	21	54	55	134
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	15	41	87	217
New Hope	Trinity	Municipal Conservation - Basic	Conservation	Collin	2	16	33	57	98	244
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	1	2	4	6	12
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	111
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	36	71	113	251
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	100	222
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	21	8	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
New Hope	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	34	61	120	112	239
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	45	91	175	389
North Collin WSC	Trinity	Municipal Conservation - Basic	Conservation	Collin	12	67	95	123	157	196
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	4	7	9	10	11
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	67
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	68	108	132	151
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	117	134
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	53	15	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	84	116	180	130	144
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	86	137	204	234
Parker	Trinity	Municipal Conservation - Basic	Conservation	Collin	12	162	292	555	929	1,433
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	23	39	61	91	126

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Parker	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	684
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	338	737	1,130	1,545
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	1,000	1,368
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	223	74	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	352	576	1,234	1,117	1,471
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	426	940	1,749	2,391
Plano	Trinity	Municipal Conservation - Basic	Conservation	Collin	496	2,852	3,769	4,448	5,099	5,751
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	344	460	462	464	466
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	2,675
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	9,558	10,712	11,138	6,027	6,046
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	5,333	5,351
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	447	498	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Plano	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	684	3,783	6,504	5,954	5,754
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	2,798	4,953	9,322	9,353
Princeton	Trinity	Municipal Conservation - Basic	Conservation	Collin	12	120	215	413	777	1,300
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	570
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	220	491	860	1,289
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	761	1,141
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	145	48	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	229	375	823	850	1,227
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	277	627	1,330	1,994
Prosper	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	56	196	423	472	423
	Trinity	Municipal Conservation - Basic	Conservation	Collin	23	107	308	492	903	1,073
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	28	62	112	157	254	274

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Prosper	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	684
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	0	294	628	941	1,067
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	178	324	645	683
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	571	605
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	37	67	93	101	84
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	46	70	234	18	8
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	225	414	1,489	1,503
	Trinity	Supplemental Wells	Woodbine Aquifer	Collin	0	0	0	0	0	0
Richardson	Trinity	Municipal Conservation - Basic	Conservation	Collin	42	410	545	630	713	799
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	83	179	196	194	193	193
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	352
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	561	755	793	795

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Richardson	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	701	704
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	536	123	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	845	958	1,265	783	757
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	709	963	1,226	1,230
Royse City	Sabine	Municipal Conservation - Basic	Conservation	Collin	4	42	100	173	257	367
	Sabine	Municipal Conservation - Expanded	Conservation	Collin	0	3	7	11	15	19
	Sabine	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	149
	Sabine	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	92	186	261	336
	Sabine	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	231	298
	Sabine	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	45	19	0	0	0
	Sabine	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	70	157	311	258	320
	Sabine	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	116	237	404	520

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Sachse	Trinity	Municipal Conservation - Basic	Conservation	Collin	13	74	102	114	124	136
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	6	8	8	8	8
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	45
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	70	95	101	102
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	90	90
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	71	16	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	108	120	160	100	97
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	89	121	157	158
Saint Paul	Trinity	Municipal Conservation - Basic	Conservation	Collin	3	24	58	106	140	163
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	64
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	51	110	138	145
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	122	128

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Saint Paul	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	25	11	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	39	88	184	136	138
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	65	140	213	224
South Grayson WSC	Trinity	Municipal Conservation - Basic	Conservation	Collin	3	10	12	13	14	15
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	0	0
	Trinity	Supplemental Wells	Trinity Aquifer	Collin	0	0	0	0	0	0
	Trinity	Supplemental Wells	Woodbine Aquifer	Collin	0	0	0	0	0	0
Steam Electric Power	Trinity	Conveyance Project/Other Surface Water	Texoma Lake/Reservoir Non-System Portion	Reservoir	0	0	239	304	362	414
	Trinity	Conveyance Project/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	437	408	509	358	394
	Trinity	Conveyance Project/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	302	387	560	641
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	184
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	320	367
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	278	52	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Weston	Trinity	Municipal Conservation - Basic	Conservation	Collin	5	39	92	299	584	1,108
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	3	11	25	72	128	219
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	1,034
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	289	952	1,493	2,337
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	1,321	2,068
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	162	63	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	255	494	1,596	1,475	2,224
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	366	1,215	2,309	3,615
	Trinity	Supplemental Wells	Woodbine Aquifer	Collin	0	0	0	0	0	0
Wylie	Trinity	Municipal Conservation - Basic	Conservation	Collin	85	528	1,025	1,332	1,431	1,531
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	55	102	132	157	159	159
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	360
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	432	736	801	814

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Wylie	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	709	720
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	370	98	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	559	738	1,233	791	775
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	546	939	1,239	1,259
<b>Collin County Total</b>					<b>4,116</b>	<b>59,216</b>	<b>109,190</b>	<b>164,635</b>	<b>220,715</b>	<b>266,161</b>
<b>Cooke County - RWPG C</b>										
Bolivar WSC	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	3	16	31	30	26
	Trinity	Municipal Conservation - Basic	Conservation	Cooke	3	10	14	15	16	17
	Trinity	Municipal Conservation - Expanded	Conservation	Cooke	2	2	2	2	2	2
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	3	10	12	12	9
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	21
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	14	51	67	69	78
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	2	5	7	6	5

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Bolivar WSC	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	29	25
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	16	45	57	56	48
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
County-Other	Red	Municipal Conservation - Basic	Conservation	Cooke	3	10	14	15	16	17
	Trinity	Municipal Conservation - Basic	Conservation	Cooke	14	37	50	54	57	61
	Trinity	Purchase from Water Provider/Other Surface Water	Hubert H Moss Lake/Reservoir	Reservoir	0	125	125	125	125	125
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
Gainesville	Red	Municipal Conservation - Basic	Conservation	Cooke	0	0	0	0	0	0
	Red	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
	Trinity	Cooke County Project	Hubert H Moss Lake/Reservoir	Reservoir	0	394	645	982	1,353	1,762
	Trinity	Municipal Conservation - Basic	Conservation	Cooke	27	94	224	288	359	440
	Trinity	Municipal Conservation - Expanded	Conservation	Cooke	0	0	13	19	20	22
	Trinity	Overdraft Trinity Aquifer - Existing Wells	Trinity Aquifer	Cooke	103	0	0	0	0	0
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
Irrigation	Red	Cooke County Project	Hubert H Moss Lake/Reservoir	Reservoir	0	25	25	25	25	25
	Red	Direct Reuse	Direct Reuse	Cooke	0	25	25	25	25	25
	Red	Golf Course Conservation	Conservation	Cooke	0	3	4	5	6	8

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Irrigation	Red	Overdraft Trinity Aquifer - Existing Wells	Trinity Aquifer	Cooke	140	0	0	0	0	0
	Trinity	Direct Reuse	Direct Reuse	Cooke	0	45	45	45	45	45
	Trinity	Golf Course Conservation	Conservation	Cooke	0	4	7	10	12	14
	Trinity	Purchase from Water Provider/Other Surface Water	Hubert H Moss Lake/Reservoir	Reservoir	0	46	46	46	46	46
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
Kiowa Homeowners WSC	Trinity	Municipal Conservation - Basic	Conservation	Cooke	6	20	28	31	34	38
	Trinity	Purchase from Water Provider/Other Surface Water	Hubert H Moss Lake/Reservoir	Reservoir	0	100	100	100	100	100
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
Lindsay	Trinity	Municipal Conservation - Basic	Conservation	Cooke	2	5	7	8	8	9
	Trinity	Purchase from Water Provider/Other Surface Water	Hubert H Moss Lake/Reservoir	Reservoir	0	40	50	50	50	50
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
Livestock	Red	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
Manufacturing	Trinity	Manufacturing Conservation	Conservation	Cooke	0	1	7	10	11	12
	Trinity	Purchase from Water Provider/Other Surface Water	Hubert H Moss Lake/Reservoir	Reservoir	8	61	60	91	128	164
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
	Trinity	Water Treatment Plant - New	Muenster Lake/Reservoir	Reservoir	0	0	60	61	63	65

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Mining	Red	Cooke County Project	Hubert H Moss Lake/Reservoir	Reservoir	0	39	27	28	30	31
	Red	Direct Reuse	Direct Reuse	Cooke	0	39	26	28	29	30
	Red	Overdraft Trinity Aquifer - New Wells	Trinity Aquifer	Cooke	28	0	0	0	0	0
	Trinity	Cooke County Project	Hubert H Moss Lake/Reservoir	Reservoir	0	60	41	43	45	47
	Trinity	Direct Reuse	Direct Reuse	Cooke	0	60	41	43	45	47
	Trinity	Overdraft Trinity Aquifer - New Wells	Trinity Aquifer	Cooke	47	0	0	0	0	0
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
Muenster	Trinity	Municipal Conservation - Basic	Conservation	Collin	3	9	13	23	27	32
	Trinity	Municipal Conservation - Expanded	Conservation	Collin	0	0	0	2	2	3
	Trinity	Subordination Agreement - Future-Only Sources	Muenster Lake/Reservoir	Reservoir	0	280	220	219	217	215
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
Two Way SUD	Red	Municipal Conservation - Basic	Conservation	Cooke	0	0	1	1	1	1
Valley View	Trinity	Facility Improvements	Hubert H Moss Lake/Reservoir	Reservoir	0	150	400	650	1,200	1,600
	Trinity	Municipal Conservation - Basic	Conservation	Cooke	3	16	31	46	83	110
	Trinity	Purchase from Water Provider/Other Surface Water	Hubert H Moss Lake/Reservoir	Reservoir	0	150	400	650	1,200	1,600
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	0	0
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Woodbine WSC	Red	Municipal Conservation - Basic	Conservation	Cooke	0	1	1	1	1	1
	Red	Purchase from Water Provider/Other Surface Water	Hubert H Moss Lake/Reservoir	Reservoir	0	1	2	2	3	5
	Trinity	Municipal Conservation - Basic	Conservation	Cooke	8	26	36	42	48	55
	Trinity	Purchase from Water Provider/Other Surface Water	Hubert H Moss Lake/Reservoir	Reservoir	0	39	78	118	167	225
	Trinity	Supplemental Wells	Trinity Aquifer	Cooke	0	0	0	0	0	0
<b>Cooke County Total</b>					<b>397</b>	<b>1,955</b>	<b>2,995</b>	<b>4,077</b>	<b>5,801</b>	<b>7,261</b>
<b>Denton County - RWPG C</b>										
Argyle	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	129	358	589	578	531
	Trinity	Municipal Conservation - Basic	Conservation	Denton	34	135	238	307	386	475
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	0	0	1	2	2	2
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	159	226	238	225	189
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	434
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	644	1,138	1,293	1,325	1,589
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	85	122	130	124	106

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Argyle	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	552	506
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	412	795	966	1,009	986
Argyle WSC	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	25	70	115	113	103
	Trinity	Municipal Conservation - Basic	Conservation	Denton	14	38	50	78	90	98
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	0	0	0	5	6	6
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	31	45	47	44	36
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	85
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	126	222	252	258	310
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	16	23	25	24	21
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	108	99
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	449	397	343	275	192
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Aubrey	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	23	98	210	264	306
	Trinity	Municipal Conservation - Basic	Conservation	Denton	6	48	61	88	126	181
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	2	6	7	9	13	17
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	245
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	160	414	503	681	1,112
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	15	33	46	57	61
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	213	286
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	124	264	314	414	556
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Bartonville	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	38	85	128	114	95
	Trinity	Municipal Conservation - Basic	Conservation	Denton	9	55	71	80	88	97
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	47	54	52	44	34
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	78

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Bartonville	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	190	271	281	260	284
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	0	0	0	0	0
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	25	29	28	24	19
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	108	92
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	213	238	238	211	176
Bartonville WSC	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	11	25	43	45	35
	Trinity	Municipal Conservation - Basic	Conservation	Denton	5	10	15	18	20	33
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	0	0	0	0	0	2
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	13	16	17	17	13
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	29
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	53	80	95	103	106
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	7	8	10	10	7

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Bartonville WSC	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	43	34
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	59	70	80	83	66
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Bolivar WSC	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	13	149	661	1,052	1,239
	Trinity	Municipal Conservation - Basic	Conservation	Denton	13	50	134	319	551	791
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	7	10	23	50	81	109
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	15	94	367	410	440
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	1,013
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	63	474	1,451	2,411	3,710
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	8	51	146	226	247
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	1,005	1,182
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	70	415	1,227	1,954	2,299
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Carrollton	Trinity	Conveyance Project/Other Surface Water	Fork Lake/Reservoir	Reservoir	0	988	1,107	853	1,001	912
	Trinity	Conveyance Project/Other Surface Water	Palestine Lake/Reservoir	Reservoir	0	1,418	1,618	1,268	1,523	1,412
	Trinity	Conveyance Project/Other Surface Water	Wright Patman Lake/Reservoir	Reservoir	0	0	0	1,299	1,569	1,476
	Trinity	Conveyance Project/Reuse	Indirect Reuse	Dallas	0	402	523	458	563	540
	Trinity	Fastrill Replacement (Region C Component)	Neches River Run-Of-River	Anderson	0	0	0	0	0	1,471
	Trinity	Municipal Conservation - Basic	Conservation	Denton	439	770	1,009	1,174	1,332	1,487
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	172	250	261	266	270	273
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Hubbard Lake/Reservoir	Reservoir	301	0	0	0	0	0
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	301	0	0	0	0	0
Celina	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	20	91	259	399	390
	Trinity	Municipal Conservation - Basic	Conservation	Denton	0	45	87	170	290	372
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	0	0	1	2	4	5
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	25	58	105	155	138
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir North Texas MWD System	Reservoir	0	17	27	40	36	34

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Celina	Trinity	Purchase from Water Provider/Other Surface Water	Lavon Lake/Reservoir North Texas MWD System	Reservoir	0	40	64	91	82	75
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	338
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville- Grapevine Lake/Reservoir System	Reservoir	0	99	289	568	914	1,167
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	28	63	105	101	97
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	38	38
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	13	31	57	86	78
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Kaufman	0	24	51	86	78	73
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse Lavon	Collin	0	22	42	61	55	51
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	13	31	67	42	40
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	23	51	447	438
Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	111	253	481	741	724	

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Coppell	Trinity	Fastrill Replacement (Region C Component)	Neches River Run-Of-River	Anderson	0	0	0	0	0	25
	Trinity	Municipal Conservation - Basic	Conservation	Denton	4	9	14	19	21	26
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	2	3	4	4	5	5
	Trinity	Purchase from Water Provider/Other Surface Water	Fork Lake/Reservoir	Reservoir	0	10	14	12	16	15
	Trinity	Purchase from Water Provider/Other Surface Water	Palestine Lake/Reservoir	Reservoir	0	15	20	18	24	24
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Hubbard Lake/Reservoir	Reservoir	2	0	0	0	0	0
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	2	0	0	0	0	0
	Trinity	Purchase from Water Provider/Other Surface Water	Wright Patman Lake/Reservoir	Reservoir	0	0	0	18	24	25
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	4	6	6	9	9
Copper Canyon	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	14	35	64	65	63
	Trinity	Municipal Conservation - Basic	Conservation	Denton	10	20	30	40	51	63
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	17	22	26	25	22

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Copper Canyon	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	51
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	70	113	140	149	188
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	0	0	0	0	0
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	9	12	14	14	13
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	62	60
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	79	99	119	121	117
Corinth	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	225	483	772	728	636
	Trinity	Municipal Conservation - Basic	Conservation	Denton	142	271	366	445	531	616
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	68	97	108	120	128	136
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	508
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	1,574	2,047	2,230	2,168	2,308
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	147	164	170	156	127

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Corinth	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	677	593
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	1,221	1,308	1,392	1,317	1,154
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
County-Other	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	387	938	1,643	1,667	1,576
	Trinity	Marvin Nichols Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	119	209	1,889	1,811
	Trinity	Municipal Conservation - Basic	Conservation	Denton	113	378	543	661	788	929
	Trinity	New Wells - Woodbine Aquifer	Woodbine Aquifer	Denton	200	200	200	200	200	200
	Trinity	Oklahoma Water to NTMWD, TRWD, UTRWD	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	1,377
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	476	593	664	649	560
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	34	1,929	2,981	3,605	3,819	4,720
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	254	319	362	358	315
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	2,139	2,585	3,022	3,057	2,881
	Trinity	Supplemental Wells	Other Aquifer	Denton	0	0	0	0	0	0
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
	Trinity	Supplemental Wells	Woodbine Aquifer	Denton	0	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Cross Roads	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	44	86	130	117	100
	Trinity	Municipal Conservation - Basic	Conservation	Denton	16	55	67	77	88	98
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	3	9	9	9	9	9
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	54	55	53	46	36
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	82
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	24	220	274	285	268	299
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	29	29	29	25	20
	Trinity	Purchase from Water Provider/New Major Res.	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	112	95
	Trinity	Purchase from Water Provider/New Major Res.	Ralph Hall Lake/Reservoir	Reservoir	0	246	240	242	218	185
Dallas	Trinity	Fastrill Replacement (Region C Component)	Neches River Run-Of-River	Anderson	0	0	0	0	0	903
	Trinity	Municipal Conservation – Basic	Conservation	Denton	363	508	503	570	640	713
	Trinity	Municipal Conservation – Expanded	Conservation	Denton	5	20	46	64	63	60
	Trinity	Purchase from Water Provider/Other Surface Water	Fork Lake/Reservoir	Reservoir	0	476	593	471	576	559

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Dallas	Trinity	Purchase from Water Provider/Other Surface Water	Palestine Lake/Reservoir	Reservoir	0	682	866	700	876	866
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Hubbard Lake/Reservoir	Reservoir	131	0	0	0	0	0
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	131	-268	-351	-435	-567	-838
	Trinity	Purchase from Water Provider/Other Surface Water	Wright Patman Lake/Reservoir	Reservoir	0	0	0	718	903	905
	Trinity	Purchase from Water Provider/Reuse	Direct Reuse	Dallas	0	370	362	339	304	254
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	193	280	252	324	331
Denton	Trinity	Municipal Conservation – Basic	Conservation	Denton	186	1,514	2,651	3,904	5,428	8,290
	Trinity	Municipal Conservation – Expanded	Conservation	Denton	208	378	641	896	1,114	1,486
	Trinity	Purchase from Water Provider/Other Surface Water	Palestine Lake/Reservoir	Reservoir	0	0	534	2,307	2,881	3,564
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Hubbard Lake/Reservoir	Reservoir	289	0	0	0	0	0
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts Lake/Reservoir Non-System Portion	Reservoir	0	1,964	5,611	6,476	5,829	5,148
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	294	0	2,368	10,172	21,312	43,815

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Denton	Trinity	Water Treatment Plant – Expansion	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	0	0	0	0	0
Denton County FWSD #1A	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	44	122	231	247	243
	Trinity	Municipal Conservation – Basic	Conservation	Denton	30	78	127	184	251	330
	Trinity	Municipal Conservation – Expanded	Conservation	Denton	17	56	48	61	76	90
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	222
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	21	441	719	960	1,136	1,451
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	29	41	51	53	48
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	260	259
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	275	370	468	505	503
Double Oak	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	23	47	72	64	59
	Trinity	Municipal Conservation – Basic	Conservation	Denton	21	37	43	49	55	61
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	28	30	29	25	21

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Double Oak	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	48
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	115	149	157	147	178
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	15	16	16	14	12
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	61	57
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	128	130	133	119	110
Flower Mound	Trinity	Fastrill Replacement (Region C Component)	Neches River Run-Of-River	Anderson	0	0	0	0	0	1,059
	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	537	1,671	2,493	2,195	1,824
	Trinity	Municipal Conservation – Basic	Conservation	Denton	620	1,399	2,255	2,529	2,795	3,063
	Trinity	Municipal Conservation – Expanded	Conservation	Denton	240	399	568	595	598	598
	Trinity	Purchase from Water Provider/Other Surface Water	Fork Lake/Reservoir	Reservoir	0	629	818	622	723	657
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	1,459
	Trinity	Purchase from Water Provider/Other Surface Water	Palestine Lake/Reservoir	Reservoir	0	903	1,195	924	1,100	1,017

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Flower Mound	Trinity	Purchase from Water Provider/Other Surface Water	Ray Hubbard Lake/Reservoir	Reservoir	134	0	0	0	0	0
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	134	3,760	7,077	7,196	6,533	6,624
	Trinity	Purchase from Water Provider/Other Surface Water	Wright Patman Lake/Reservoir	Reservoir	0	0	0	946	1,133	1,063
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	256	386	333	407	389
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	352	568	550	471	364
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	2,039	1,702
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	2,916	4,523	4,492	3,968	3,311
Fort Worth	Trinity	Direct Reuse	Direct Reuse	Tarrant	13	363	761	897	1,037	1,090
	Trinity	Municipal Conservation – Basic	Conservation	Denton	38	389	742	1,226	1,937	2,758
	Trinity	Municipal Conservation – Expanded	Conservation	Denton	0	21	61	105	147	187
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	2,773
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Fort Worth	Trinity	Purchase from Water Provider/Other Surface Water	TRWD Lake/Reservoir System	Reservoir	0	0	0	0	0	0
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Navarro	0	239	0	95	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	1,838	4,252	8,036	9,774
Frisco	Trinity	Direct Reuse – Frisco	Direct Reuse	Denton	0	616	1,212	2,142	2,182	2,182
	Trinity	Municipal Conservation – Basic	Conservation	Denton	107	901	2,761	3,876	4,779	5,065
	Trinity	Municipal Conservation – Expanded	Conservation	Denton	147	216	392	518	604	610
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	852
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	1,093	1,863	2,767	1,873	1,925
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	1,658	1,704
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	49	85	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	78	658	1,616	1,851	1,832
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	487	1,231	2,898	3,031

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Hackberry	Trinity	Conveyance Project/Other Surface Water	Texoma Lake/Reservoir Non-System Portion	Reservoir	0	0	11	17	20	20
	Trinity	Conveyance Project/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	9	18	28	19	19
	Trinity	Conveyance Project/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	14	22	47	58
	Trinity	Municipal Conservation – Basic	Conservation	Denton	3	9	14	17	20	21
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	6	2	0	0	0
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Hebron	Trinity	Fastrill Replacement (Region C Component)	Neches River Run-Of-River	Anderson	0	0	0	0	0	10
	Trinity	Municipal Conservation – Basic	Conservation	Denton	0	5	6	8	8	9
	Trinity	Purchase from Water Provider/Other Surface Water	Fork Lake/Reservoir	Reservoir	0	8	9	6	7	6
	Trinity	Purchase from Water Provider/Other Surface Water	Palestine Lake/Reservoir	Reservoir	0	12	12	9	11	10
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Hubbard Lake/Reservoir	Reservoir	5	0	0	0	0	0
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	5	0	0	0	0	0
	Trinity	Purchase from Water Provider/Other Surface Water	Wright Patman Lake/Reservoir	Reservoir	0	0	0	9	11	10
Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	3	4	3	4	4	

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Hickory Creek	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	33	83	158	142	120
	Trinity	Municipal Conservation – Basic	Conservation	Denton	24	57	80	110	122	133
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	56	111	191	170	142
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	98
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	165	263	347	325	360
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	22	28	35	30	24
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	135	115
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	196	198	196	175	146
	Trinity	Supplemental Wells	Woodbine Aquifer	Denton	0	0	0	0	0	0
Highland Village	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	132	275	418	379	326
	Trinity	Municipal Conservation – Basic	Conservation	Denton	31	98	253	321	356	391
	Trinity	Municipal Conservation – Expanded	Conservation	Denton	47	52	75	81	80	80
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	261

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Highland Village	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	660	874	917	869	977
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	87	93	92	81	65
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	352	304
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	719	744	753	686	592
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Irrigation	Trinity	New Wells - Trinity Aquifer	Trinity Aquifer	Denton	200	200	200	200	200	200
	Trinity	Supplemental Wells	Woodbine Aquifer	Denton	0	0	0	0	0	0
	Trinity	TRA Denton Creek WWTP Reuse	Direct Reuse	Denton	0	3,750	3,750	3,750	3,750	3,750
Justin	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	35	123	313	342	316
	Trinity	Municipal Conservation – Basic	Conservation	Denton	23	69	130	235	313	375
	Trinity	Municipal Conservation – Expanded	Conservation	Denton	6	13	20	34	44	49
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	253
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	246	519	904	1,017	1,147
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	23	42	69	73	63

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Justin	Trinity	Purchase from Water Provider/New Major Res.	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	317	295
	Trinity	Purchase from Water Provider/New Major Res.	Ralph Hall Lake/Reservoir	Reservoir	0	191	332	564	618	573
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Krugerville	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	3	11	29	39	52
	Trinity	Municipal Conservation – Basic	Conservation	Denton	3	10	14	20	28	42
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	4	7	12	15	18
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	43
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	16	35	63	89	156
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	2	4	6	8	10
	Trinity	Purchase from Water Provider/New Major Res.	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	37	50
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	17	31	53	72	96
Krum	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	12	32	63	73	78
	Trinity	Municipal Conservation – Basic	Conservation	Denton	9	25	34	41	49	59

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Krum	Trinity	Municipal Conservation – Expanded	Conservation	Denton	6	6	7	7	8	9
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	62
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	83	136	180	218	282
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	8	11	14	16	16
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	68	72
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	64	87	113	133	141
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Lake Dallas	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	58	130	197	174	147
	Trinity	Municipal Conservation - Basic	Conservation	Denton	40	84	114	128	142	156
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	96	173	238	209	175
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	120
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	291	414	432	400	440
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	38	44	43	37	29

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Lake Dallas	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	167	140
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	346	311	245	215	179
Lewisville	Trinity	Conveyance Project/Other Surface Water	Palestine Lake/Reservoir	Reservoir	0	0	0	0	0	0
	Trinity	Conveyance Project/Other Surface Water	Wright Patman Lake/Reservoir	Reservoir	0	0	0	0	0	0
	Trinity	Municipal Conservation - Basic	Conservation	Denton	721	1,422	1,868	2,308	2,878	3,569
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	190	276	351	419	472	537
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	640	3,609	4,426	5,782	7,829	11,145
	Trinity	Water Treatment Plant - Expansion	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	0	0	0	0	0
	Trinity	Water Treatment Plant - New	Fork Lake/Reservoir	Reservoir	0	0	0	0	0	0
Lincoln Park	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	4	11	20	21	21
	Trinity	Municipal Conservation - Basic	Conservation	Denton	1	5	7	9	10	13
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	17
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	1	31	47	58	63	77

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Lincoln Park	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	3	4	4	5	4
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	20	20
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	24	30	36	38	38
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Little Elm	Trinity	Municipal Conservation - Basic	Conservation	Denton	179	371	540	684	753	823
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	44	74	92	105	106	106
	Trinity	New Wells - Trinity Aquifer	Trinity Aquifer	Denton	410	410	410	410	410	410
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	241
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	315	505	540	544
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	478	481
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	214	69	0	0	0
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	338	538	845	534	518

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Little Elm	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	398	644	835	841
	Trinity	Supplemental Wells	Woodbine Aquifer	Denton	0	0	0	0	0	0
Livestock	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
	Trinity	Supplemental Wells	Woodbine Aquifer	Denton	0	0	0	0	0	0
Manufacturing	Trinity	Fastrill Replacement (Region C Component)	Neches River Run-Of-River	Anderson	0	0	0	0	0	81
	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	14	27	39	36	34
	Trinity	Manufacturing Conservation	Conservation	Denton	0	2	29	44	49	53
	Trinity	New Wells - Trinity Aquifer	Trinity Aquifer	Denton	200	200	200	200	200	200
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	18	17	16	14	12
	Trinity	Purchase from Water Provider/Other Surface Water	Fork Lake/Reservoir	Reservoir	0	43	50	41	52	50
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	28
	Trinity	Purchase from Water Provider/Other Surface Water	Palestine Lake/Reservoir	Reservoir	0	62	73	61	79	78
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Hubbard Lake/Reservoir	Reservoir	18	0	0	0	0	0
Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	28	108	243	359	423	615	

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Manufacturing	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	5	7	8	8
	Trinity	Purchase from Water Provider/Other Surface Water	Wright Patman Lake/Reservoir	Reservoir	0	0	0	63	82	81
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	22	25	22	29	30
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	9	9	8	8	7
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	8	8	11	8	8
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	6	8	53	56
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	80	75	72	67	63
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Mining	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	13	25	38	33	28
	Trinity	New Wells - Trinity Aquifer	Trinity Aquifer	Denton	200	200	200	200	200	200
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	22
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	88	106	109	99	101
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	8	9	8	7	6

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Mining	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	31	26
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	68	68	68	60	53
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Mustang SUD	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	22	101	396	560	636
	Trinity	Municipal Conservation - Basic	Conservation	Denton	16	64	101	202	315	434
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	7	11	14	27	39	51
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	27	64	159	218	226
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	521
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	109	321	866	1,283	1,905
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	14	34	87	120	127
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	535	607
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	122	282	733	1,041	1,183
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Northlake	Trinity	Conveyance Project/Reuse	Indirect Reuse	Navarro	0	18	0	0	0	0
	Trinity	Conveyance Project/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	146	146
	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	18	41	118	153	153
	Trinity	Municipal Conservation - Basic	Conservation	Denton	3	29	57	125	207	276
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	22	26	48	60	54
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	264
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	91	131	258	351	458
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	29	54	142	184	180
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	12	14	26	33	31
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	74	229	440	496
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	102	115	219	285	284
	Trinity	Supplemental Wells	Woodbine Aquifer	Denton	0	0	0	0	0	0
Oak Point	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	66	183	298	290	266
	Trinity	Municipal Conservation - Basic	Conservation	Denton	9	77	140	177	219	267

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Oak Point	Trinity	Municipal Conservation - Expanded	Conservation	Denton	0	0	1	2	2	2
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	80	116	121	113	95
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	218
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	226	324	583	654	664	797
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	43	62	66	62	53
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	277	254
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	362	512	554	538	495
Pilot Point	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	17	128	231	225	210
	Trinity	Municipal Conservation - Basic	Conservation	Denton	9	58	122	90	103	117
	Trinity	New Wells - Trinity Aquifer	Trinity Aquifer	Denton	167	167	167	167	167	167
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	21	81	93	87	75
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	172

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Pilot Point	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	84	408	506	515	629
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	11	44	51	48	42
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	215	200
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	94	358	429	418	390
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Plano	Trinity	Municipal Conservation - Basic	Conservation	Denton	11	102	123	132	148	165
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	0	10	13	13	13	13
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	77
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	280	314	320	173	173
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	153	153
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	20	110	188	171	165
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	82	144	268	268

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Ponder	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	42	179	429	425	359
	Trinity	Municipal Conservation - Basic	Conservation	Denton	3	47	111	202	262	297
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	2	11	24	38	45	47
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	287
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	292	756	1,237	1,265	1,302
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	41	174	417	415	352
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	27	61	94	91	72
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	395	335
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	226	483	772	768	651
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Prosper	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	37	130	306	231	212
	Trinity	Municipal Conservation - Basic	Conservation	Denton	0	133	206	356	442	536
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	0	41	75	114	124	137
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	342

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Prosper	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	724	1,240	1,717	1,403	1,537
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	119	235	316	342
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	279	302
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Dallas	0	154	65	0	0	0
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	24	44	68	50	42
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	197	436	702	931	967
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	150	300	728	751
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	562	980	1,464	1,424	1,302
Roanoke	Trinity	Conveyance Project/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	662	761
	Trinity	Conveyance Project/Reuse	Indirect Reuse	Navarro	0	543	830	1,019	1,231	1,436
	Trinity	Conveyance Project/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	514	1,033	1,821	2,088
	Trinity	Municipal Conservation - Basic	Conservation	Denton	16	111	182	261	396	538
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	0	13	26	35	45	56
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Sanger	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	64	212	404	397	346
	Trinity	Municipal Conservation - Basic	Conservation	Denton	41	122	206	274	339	386
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	0	1	2	2	3	3
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	79	134	163	154	123
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	283
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	212	319	674	886	909	1,037
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	42	72	89	85	69
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	379	330
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	441	640	713	736	672
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Shady Shores	Trinity	Lake Ralph Hall - Indirect Reuse	Indirect Reuse	Denton	0	17	46	70	63	54
	Trinity	Municipal Conservation - Basic	Conservation	Denton	5	28	27	29	31	33
	Trinity	Purchase from Water Provider/Other Surface Water	Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir	0	29	61	85	75	63

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
Shady Shores	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	44
	Trinity	Purchase from Water Provider/Other Surface Water	Ray Roberts-Lewisville-Grapevine Lake/Reservoir System	Reservoir	0	84	147	154	144	161
	Trinity	Purchase from Water Provider/Reuse	Indirect Reuse	Denton	0	11	16	15	13	11
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	0	0	60	51
	Trinity	Purchase from Water Provider/New Major Reservoir	Ralph Hall Lake/Reservoir	Reservoir	0	100	110	87	78	65
Southlake	Trinity	Conveyance Project/Reuse	Indirect Reuse	Navarro	0	17	0	0	0	0
	Trinity	Conveyance Project/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	87	215	408	410
	Trinity	Municipal Conservation - Basic	Conservation	Denton	7	20	30	54	89	107
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	116
Steam Electric Power	Trinity	New Wells - Trinity Aquifer	Trinity Aquifer	Denton	200	200	200	200	200	200
The Colony	Trinity	Conveyance Project/Other Surface Water	Fork Lake/Reservoir	Reservoir	915	980	1,032	966	867	753
	Trinity	Conveyance Project/Other Surface Water	Palestine Lake/Reservoir	Reservoir	0	939	996	939	848	743
	Trinity	Conveyance Project/Other Surface Water	Wright Patman Lake/Reservoir	Reservoir	0	0	0	920	832	728
	Trinity	Conveyance Project/Reuse	Indirect Reuse	Dallas	279	784	1,491	1,463	1,391	1,281

Table 6.2, continued

Water User Group (WUG)	WUG Basin	Water Management Strategy	Source Name	Source County	Projected Water Management Strategies (acre-feet per year)					
					2010	2020	2030	2040	2050	2060
The Colony	Trinity	Municipal Conservation - Basic	Conservation	Denton	77	299	416	462	505	540
	Trinity	Purchase from Water Provider/Other Surface Water	Oklahoma Lake/Reservoir	Oklahoma	0	0	0	0	0	34
	Trinity	Purchase from Water Provider/Other Surface Water	Texoma Lake/Reservoir North Texas MWD System	Reservoir	0	0	50	70	75	77
	Trinity	Purchase from Water Provider/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	67	68
	Trinity	Purchase from Water Provider/New Major Reservoir	Lower Bois D Arc Lake/Reservoir	Reservoir	0	70	86	117	74	73
	Trinity	Purchase from Water Provider/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	63	89	117	119
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
Trophy Club	Trinity	Conveyance Project/Other Surface Water	Toledo Bend Lake/Reservoir	Reservoir	0	0	0	0	407	420
	Trinity	Conveyance Project/Reuse	Indirect Reuse	Navarro	0	732	786	769	758	793
	Trinity	Conveyance Project/New Major Reservoir	Marvin Nichols Lake/Reservoir	Reservoir	0	0	405	720	1,033	1,060
	Trinity	Municipal Conservation - Basic	Conservation	Denton	20	123	174	219	270	325
	Trinity	Municipal Conservation - Expanded	Conservation	Denton	0	9	17	24	26	28
	Trinity	Supplemental Wells	Trinity Aquifer	Denton	0	0	0	0	0	0
<b>Denton County Total</b>					<b>10,311</b>	<b>67,271</b>	<b>112,343</b>	<b>157,124</b>	<b>202,205</b>	<b>256,420</b>

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**Appendix A Statutorily Required Elements Checklist**

As required by Texas Water Code Chapter 36.1071, the North Texas Groundwater Conservation District submits this groundwater management plan to the Executive Administrator of the Texas Water Development Board for review and approval. The following table contains a checklist that is included to facilitate the administrative review of the management plan.

Requirement	Rule	Comments on Information Submitted	Location
Paper Copy of Plan	31 TAC §356.6 (a)(1)	NA	Enclosed herein
Electronic Copy of Plan	31 TAC §356.6 (a)(1)	NA	Appendix B
1. Estimate the <u>modeled available groundwater</u> in the district based on the desired future condition of the aquifers	31 TAC §356.5 (a)(5)(A) TWC §36.1071 (e)(3)(A)	Full text included in plan.	Section 2 Goal 8 Page 14
2. Estimate the amount of <u>groundwater being used</u> within the district on an annual basis for at least the most recent five years.	31 TAC §356.5 (a)(5)(B) 31 TAC §356.2(2) TWC §36.1071(e)(3)(B)	Full text included in plan.	Table 3.2 Page 21

3. Estimate the annual <u>amount of recharge, from precipitation,</u> to the groundwater resources within the district.	31 TAC §356.5 (a)(5)(C)  TWC §36.1071(e)(3)(C)	Full text included in plan.	Table 4.2  Page 50
4. For each aquifer, estimate the annual volume of <u>water that discharges from the aquifer</u> to springs and surface water bodies.	31 TAC §356.5 (a)(5)(D)  TWC §36.1071(e)(3)(D)	Full text included in plan.	Table 4.2  Page 50
5. For each aquifer, estimate the annual volume of <u>flow into, out of, and between aquifers</u> in the district.	31 TAC §356.5 (a)(5)(E)  TWC §36.1071(e)(3)(E)	Full text included in plan.	Tables 4.2  Page 50  Table 4.3  Page 51
<b>Requirement</b>	<b>Rule</b>	<b>Comments on Information Submitted</b>	<b>Location</b>
6. Estimate the <u>projected surface water supply</u> within the district according to the most recently adopted state water plan.	31 TAC §356.5 (a)(5)(F)  TWC §36.1071(e)(3)(F)	Full text included in plan	Table 5.1  Page 53

<p>7. Estimate the <u>projected total demand for water</u> within the district according to the most recently adopted state water plan.</p>	<p>31 TAC §356.5 (a)(5)(G)</p> <p>TWC §36.1071(e)(3)(G)</p>	<p>Full text included in plan</p>	<p>Table 3.3</p> <p>Page 22</p>
<p>8. Consider the <u>water supply needs</u> that are included in the state water plan.</p>	<p>31 TAC §356.5 (a)(7)</p> <p>TWC §36.1071(e)(4)</p>	<p>Full text included in plan</p>	<p>Table 6.1</p> <p>Page 71</p>
<p>9. Consider the <u>water management strategies</u> that are included in the state water plan.</p>	<p>31 TAC §356.5 (a)(7);</p> <p>TWC §36.1071(e)(4)</p>	<p>Full text included in plan.</p>	<p>Table 6.2</p> <p>Page 75</p>
<p>10. Develop actions, procedures, performance, and avoidance necessary to effectuate the plan, including specifications and proposed rules.</p>	<p>31 TAC §356.5 (a)(4); §356.6(a)(3); TWC §36.1071(e)(2)</p>	<p>Full text included in plan</p>	<p>Section 2.0</p> <p>Page 6</p>

11. Include a certified copy of the district's resolution adopting the plan.	31 TAC §356.6 (a)(2)		Appendix D Page 148
12. Provide evidence that the plan was adopted after notice and hearing.	31 TAC §356.6 (a)(5);  TWC §36.1071(a)		Appendix E
<b>Requirement</b>	<b>Rule</b>	<b>Comments on Information Submitted</b>	<b>Location</b>
13. Provide evidence that the district coordinated the development of the plan with all surface water management entities.	31 TAC §356.6 (a)(4);  TWC §36.1071(a)	A copy of the district's plan was sent to all surface water management entities.	Appendix F
14. Provide any site-specific information used in developing the plan	31 TAC §356.5 (b);  TWC §36.1071(h)	All hydrologic and planning data included in this plan was provided by the TWDB.	Not Applicable
Management goals required to be addressed:			

Provide the most efficient use of groundwater	31 TAC §356.5(a)(1)(A); TWC §36.1071(a)(1)	Full text included in plan.	Section 2.0 Page 7
Control and prevent waste of groundwater	31 TAC §356.5(a)(1)(B); TWC §36.1071(a)(2)	Full text included in plan.	Section 2.0 Page 10
Control and prevent subsidence	31 TAC §356.5(a)(1)(C); TWC §36.1071(a)(3)	NA - Full text included in plan.	Section 2.0 Page 11
Address conjunctive surface water management issues	31 TAC §356.5(a)(1)(D); TWC §36.1071(a)(4)	Full text included in plan.	Section 2.0 Page 11
Address natural resource issues that impact or are impacted by the use and availability of groundwater	31 TAC §356.5(a)(1)(E); TWC §36.1071(a)(5)	Full text included in plan.	Section 2.0 Page 12
Address drought conditions	31 TAC §356.5(a)(1)(F); TWC §36.1071(a)(6)	Full text included in plan.	Section 2.0 Page 13

Address conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, and brush control	31 TAC §356.5(a)(1)(G); TWC §36.1071(a)(7)	Full text included in plan.	Section 2.0 Page 13
Address the desired future conditions of the groundwater resources in the district	31 TAC §356.5(a)(1)(H); TWC §36.1071(a)(8)	Full text included in plan.	Section 2.0 Page 14
Identify the performance standards and management objectives for effecting the plan	31 TAC §356.5(a)(2)&(3); TWC §36.1071(e)(1)	Full text included in plan.	Section 2.0 Page 6

**APPENDIX D**  
**Resolution Adopting Plan**  
**CERTIFICATE OF SECRETARY**

**STATE OF TEXAS** §  
§  
**NORTH TEXAS GROUNDWATER** §  
**CONSERVATION DISTRICT** §

I, the undersigned, Secretary of the Board of Directors of the North Texas Groundwater Conservation District, DO HEREBY CERTIFY as follows:

1. That on the 19<sup>th</sup> day of April, 2012, the Board of Directors of the North Texas Groundwater Conservation District (the "Board"), convened a Public Hearing at its designated meeting place; the duly constituted members of the Board being as follows:

Ronny Young	President
Thomas L. Smith	Vice-President
Dan Collins	Secretary/Treasurer
Chris Boyd	Member
Eddy Daniels	Member
Evan Groeschel	Member
Kenny Klement	Member
Philip Sanders	Member
Ron Sellman	Member

All of said persons were present at said meeting, except the following: Dan Collins and Kenny Klement. Among other business considered at said meeting, the attached resolution entitled:

A RESOLUTION by the Board of Directors of the North Texas Groundwater Conservation District adopting District Management Plan

was submitted to the Board for passage and adoption. After presentation and due consideration of the resolution, and upon motion being made by Smith and seconded by Sellman, the resolution was finally passed to be effective immediately upon its adoption by the following vote:

7 voted "For"                      0 voted "Against"                      0 abstained

all as shown in the official Minutes of the Board for the meeting held on the aforesaid date.

2. That the attached resolution is a true and correct copy of the original on file in the official records of the Board; the duly qualified and acting members of the Board of said District on the date of the aforesaid meeting are those persons shown above and, according to the records of my office, each member of the Board was given actual notice that the matter would be considered; and that said meeting, and

deliberation of the aforesaid public business, was open to the public and written notice of said meeting, including the subject of the above-entitled resolution, was posted and given in advance thereof in compliance with the provisions of Chapter 551 of the Texas Government Code.

IN WITNESS WHEREOF, I have hereunto signed my name officially and affixed the seal of said District, this the 19<sup>th</sup> day of April 2012.

(Seal)

A handwritten signature in black ink, appearing to read "A. M. ...", written over a horizontal line.

Secretary, Board of Directors  
North Texas Groundwater Conservation District

**RESOLUTION ADOPTING DISTRICT MANAGEMENT PLAN**

**RESOLUTION 2012-04-19-2**

THE STATE OF TEXAS

§

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT

§

§

**WHEREAS**, North Texas Groundwater Conservation District (the "District") was created as a groundwater conservation district by the 81st Texas Legislature under the authority of Section 59, Article XVI, of the Texas Constitution, and in accordance with Chapter 36 of the Texas Water Code by the Act of May 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");

**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 the development of its Management Plan;

**WHEREAS**, Section 36.1085 of the Texas Water Code requires the District to ensure that its Management Plan contains the goals and objectives consistent with achieving the Desired Future Conditions ("DFCs") adopted through the joint planning process set forth in Chapter 36 of the Texas Water Code;

**WHEREAS**, Section 36.1071(a) requires the District, after notice and hearing, to develop a comprehensive Management Plan which addresses certain management goals;

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

**WHEREAS**, the Board, District staff, and the District's geoscientist have reviewed and analyzed the District's best available data, groundwater availability modeling information, and other information and data required by the TWDB;

**WHEREAS**, the District issued the notice in the manner required by state law and held a public hearing on April 19, 2012, at 10:00 a.m. in Denton, Texas to receive public and written comments on the Management Plan;

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

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

**WHEREAS**, after the public hearing, the Board of Directors met in a regular board meeting on April 19, 2012, properly noticed in accordance with state law, and considered adoption of the attached Management Plan and approval of this resolution after due consideration of all comments received.

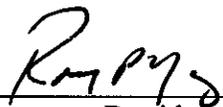
**NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT AS FOLLOWS:**

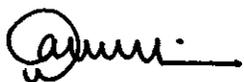
1. The above recitals are true and correct;
2. The Board of Directors of the District hereby adopts the attached Management Plan as the Management Plan for the District, subject to those amendments necessary based on comments received from the public at the public hearing or Board meeting, recommendations from the District Board, staff, or legal counsel, or to incorporate technical information received from the Texas Water Development Board and/or District geoscientist;
3. The Board President and the General Manager of the District are further authorized to take all steps necessary to implement this resolution and submit the Management Plan to the TWDB for its approval; and
4. The Board President and General Manager of the District are further authorized to take any and all action necessary to coordinate with the TWDB as may be required in furtherance of TWDB's approval pursuant to the provisions of Section 36.1072 of the Texas Water Code.

AND IT IS SO ORDERED.

PASSED AND ADOPTED on this 19<sup>th</sup> day of April, 2012.

**NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT**

By:  \_\_\_\_\_  
President

 \_\_\_\_\_  
Secretary

**APPENDIX E**  
**Evidence Mgmt Plan Adopted after Notice and**  
**Hearing**

**NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT**  
**NOTICE OF HEARING ON DISTRICT MANAGEMENT PLAN**  
**APRIL 19, 2012**

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

That the Board of Directors of the North Texas Groundwater Conservation District ("District") will hold a public hearing to discuss, consider, receive public comments, and potentially act upon adoption of the District Management Plan. All interested members of the public are invited to attend.

The hearing on the Management Plan will be held on Thursday, April 19, 2012, beginning at 10:00 a.m. at the City of Denton City Council Chambers, 215 E McKinney, Denton, Texas 76201. At the conclusion of the hearing or any time or date thereafter, the proposed Management Plan may be adopted in the form presented or as amended based upon comments received from the public, the Texas Water Development Board, District staff, attorneys, consultants, or members of the Board of Directors without any additional notice.

Any person who desires to appear at the hearing and present comment or other information on the proposed Management Plan may do so in person, by legal representative, or both. Limits may be placed on the amount of time that each person is allowed to present verbal comments. In addition, persons interested in submitting written comments on the proposed Management Plan may do so by sending any such comments to the North Texas Groundwater Conservation District, P.O. Box 508, Gainesville, Texas 76241. The hearing posted in this notice may be recessed from day to day or continued where appropriate.

At any time during the hearing and in compliance with Chapter 551, Government Code, the District Board may meet in executive session on the above hearing item for consultation concerning attorney-client matters. Any subject discussed in executive session may be subject to action during an open session of the District Board.

The District is committed to compliance with the Americans with Disabilities Act (ADA). Any person with a disability who needs special accommodations should contact Carmen Catterson at (855) 426-4433 at least 24 hours in advance if accommodation is needed.

A copy of the proposed Management Plan may be requested by email at [c.catterson@northtexasgcd.org](mailto:c.catterson@northtexasgcd.org), is available at the District's website at [www.northtexasgcd.org](http://www.northtexasgcd.org), and may be reviewed or copied at 5100 Airport Drive, Denison, Texas 75020. Any person who wishes to receive more detailed information on this notice should contact District staff at (855) 426-4433.

**END OF AD**

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# **NOTICE OF MEETING AND PUBLIC HEARING**

**OF THE  
BOARD OF DIRECTORS of the**

**NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT  
at the**

**City of Denton City Council Chambers  
215 E McKinney  
Denton, TX 76201  
Thursday, April 19, 2012**

## **Public Hearing**

**The Public 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 hold a public hearing, accept public comment, and may discuss, consider, and take all necessary action, including expenditure of funds, regarding development and adoption of the District's proposed Management Plan.**

## **Agenda:**

- 1. Call to Order; establish quorum; declare hearing open to the public; introduction of Board**
- 2. Summary presentation and review of proposed District Management Plan**
- 3. Public Comment on Proposed District Management Plan (verbal comments limited to three (3) minutes each; written comments may also be submitted for the Board's consideration).**
- 4. Adjourn or continue public hearing on the Management Plan.**

**At the conclusion of the hearing or any time or date thereafter, the proposed Management Plan may be adopted in the form presented or as amended based upon comments received from the public, the Texas Water Development Board, District staff, attorneys, consultants, or members of the Board of Directors without any additional notice.**

---

## **Board Meeting**

**The regular Board Meeting will begin at 10:30 a.m. or upon adjournment of the above-noticed Public Hearing, whichever is later.**

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

- 1. Call to order, establish quorum; declare meeting open to the public.**
- 2. Approval of minutes from the March 20, 2012, board meeting**
- 3. Public comment**
- 4. Consider and act upon approval of invoices and reimbursements**
- 5. Consider and act upon adoption of the District Management Plan**
- 6. Receive reports from the following Committees\*:**
  - a. Budget and Finance Committee**
    - 1. Discuss 2013 budget**
  - b. Investment Committee**
  - c. Rules and Bylaws Committee**
  - d. Groundwater Monitoring and Database Committee**
  - e. Policy and Personnel Committee**
  - f. Conservation and Public Awareness Committee**
  - g. Management Plan Committee**
- 7. Consider and act upon agreements regarding groundwater availability overhaul and aquifer characterization project:**
  - a. Interlocal contract with Northern Trinity, Upper Trinity, and Prairielands Groundwater Conservation Districts**
  - b. Consultant agreement with Intera Inc. to perform the project work**
  - c. Consultant agreement with Mullican & Associates to serve as a contract manager for the districts on the project**
  - d. Appointment of the District's Party Appointee to the Contract Management Committee under the interlocal contract**
- 8. Receive and consider acting upon GAM Run 10-063 MAG for the Trinity Aquifer**
- 9. Consider and act upon updating the Investment Policy**
- 10. Consider and discuss procedure for timely payment of expenses**
- 11. General Manager's Report: The General Manager will update the board on operational and other activities of the District.**
- 12. General Counsel's Report: The District's legal counsel will update the Board on legal issues and activities of interest to the District.**

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

**14. 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.

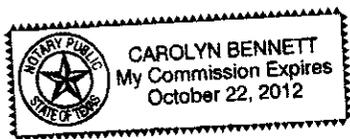
*The above agenda schedules represent an estimate of the order for the indicated items and is subject to change at any time. These public meetings are available to all persons regardless of disability. If you require special assistance to attend the meeting, please call (855) 426-4433 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements.*

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); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

This is to certify that I, Carmen Catterson, posted this Notice of Public Hearing on the west side of the Administrative Offices of the District by 5:00 p.m. on March 28, 2012. I provided this agenda to the County Clerks in Collin, Cooke and Denton Counties with a request that it be posted.

  
Carmen Catterson

Sworn and subscribed to before me this 28 day of March 2012.



(S E A L)

  
Notary Public

PERSONS WITH DISABILITIES WHO PLAN TO ATTEND THIS MEETING, AND WHO MAY NEED ASSISTANCE, ARE REQUESTED TO CONTACT CARMEN CATTERSON AT (855) 426-4433 TWO (2) WORKING DAYS PRIOR TO THE MEETING, SO THAT APPROPRIATE ARRANGEMENTS CAN BE MADE.

**NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT  
NOTICE OF HEARING ON DISTRICT MANAGEMENT PLAN  
APRIL 19, 2012**

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

That the Board of Directors of the North Texas Groundwater Conservation District ("District") will hold a public hearing to discuss, consider, receive public comments, and potentially act upon adoption of the District Management Plan. All interested members of the public are invited to attend.

The hearing on the Management Plan will be held on Thursday, April 19, 2012, beginning at 10:00 a.m. at the City of Denton City Council Chambers, 215 E McKinney, Denton, Texas 76201. At the conclusion of the hearing or any time or date thereafter, the proposed Management Plan may be adopted in the form presented or as amended based upon comments received from the public, the Texas Water Development Board, District staff, attorneys, consultants, or members of the Board of Directors without any additional notice.

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At any time during the hearing and in compliance with Chapter 551, Government Code, the District Board may meet in executive session on the above hearing item for consultation concerning attorney-client matters. Any subject discussed in executive session may be subject to action during an open session of the District Board.

The District is committed to compliance with the Americans with Disabilities Act (ADA). Any person with a disability who needs special accommodations should contact Carmen Catterson at (855) 426-4433 at least 24 hours in advance if accommodation is needed.

A copy of the proposed Management Plan may be requested by email at [c.catterson@northtexasgcd.org](mailto:c.catterson@northtexasgcd.org), is available at the District's website at [www.northtexasgcd.org](http://www.northtexasgcd.org), and may be reviewed or copied at 5100 Airport Drive, Denison, Texas 75020. Any person who wishes to receive more detailed information on this notice should contact District staff at (855) 426-4433.

**END OF AD**

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STACEY KEMP  
COUNTY CLERK  
COLLIN COUNTY, TEXAS  
BY:  DEPUTY

2012 MAR 28 AM 10:20

FILED

MAR. 28. 2012 9:35AM GTUR

**NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT  
NOTICE OF HEARING ON DISTRICT MANAGEMENT PLAN  
APRIL 19, 2012**

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That the Board of Directors of the North Texas Groundwater Conservation District ("District") will hold a public hearing to discuss, consider, receive public comments, and potentially act upon adoption of the District Management Plan. All interested members of the public are invited to attend.

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Any person who desires to appear at the hearing and present comment or other information on the proposed Management Plan may do so in person, by legal representative, or both. Limits may be placed on the amount of time that each person is allowed to present verbal comments. In addition, persons interested in submitting written comments on the proposed Management Plan may do so by sending any such comments to the North Texas Groundwater Conservation District, P.O. Box 808, Gainesville, Texas 76241. The hearing posted in this notice may be recessed from day to day or continued where appropriate.

At any time during the hearing and in compliance with Chapter 551, Government Code, the District Board may meet in executive session on the above hearing item for consultation concerning attorney-client matters. Any subject discussed in executive session may be subject to action during an open session of the District Board.

The District is committed to compliance with the Americans with Disabilities Act (ADA). Any person with a disability who needs special accommodations should contact Carmen Catterson at (856) 428-4433 at least 24 hours in advance if accommodation is needed.

A copy of the proposed Management Plan may be requested by email at [c.catterson@northtexasgcd.org](mailto:c.catterson@northtexasgcd.org), is available at the District's website at [www.northtexasgcd.org](http://www.northtexasgcd.org), and may be reviewed or copied at 5100 Airport Drive, Denton, Texas 76201. Any person who wishes to receive more detailed information on this notice should contact District staff at (856) 428-4433.

**END OF AD**

FILED FOR RECORD

12 MAR 28 AM 9:55

## Carmen Catterson

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**From:** publicnotices@dentoncounty.com  
**Sent:** Wednesday, March 28, 2012 10:25 AM  
**To:** carmenc@gtua.org  
**Subject:** Document Approved: New Public Notice Document

### Document Approved

<b>Filename</b>	20120419 Public Hearing Notice.pdf
<b>Entity</b>	North Texas GCD
<b>Description</b>	Public Hearing Notice
<b>Date &amp; Time Filed</b>	3/28/2012 10:25:01 AM
<b>Date &amp; Time Uploaded</b>	3/28/2012 9:57:10 AM
<b>Event Date</b>	4/19/2012
<b>Created By</b>	gtua



# McKinney Courier-Gazette

## AFFIDAVIT OF LEGAL NOTICE

I, Carolyn Nabors, Account Representative of the McKinney Courier-Gazette, 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 on the following dates, to-wit

**March 29, 2012**

<u>North Texas Groundwater Conservation Hearing</u>	<u>\$176.71</u>
(Description)	(Cost)

Carolyn Nabors

Account Rep. of the McKinney Courier-Gazette

Subscribed and sworn on this

30 day of March, 2012 BY: \_\_\_\_\_

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APR 02 2012  
NOTED

Jon Colvard  
Notary Public, Collin County, Texas



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940-387-3811

Publication(s): Denton Record-Chronicle

PROOF OF PUBLICATION

Being duly sworn (s)he is the Publisher/authorized designee of the 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 on the following dates. Publication of a neighborhood newspaper began on May 7, 2005: Lewisville/Flower Mound/ HighlandVillage NeighborsGo (name changed from Southern Denton County Neighbors effective 12/2008)

03/29/2012

(signature of Authorized Designee)

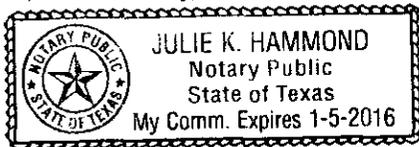
Subscribed and sworn to before me  
this 29 day of March by  
2012

(printed name of Designee)

Witness my hand and official seal:

(signature of notary public)

Notary Public, Denton County, Texas



NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT  
PO BOX 508  
GAINESVILLE, TX 76241

Ad Number: 0000766729-01

Ad Copy:

NORTH TEXAS  
GROUNDWATER  
CONSERVATION DISTRICT  
NOTICE OF HEARING ON  
DISTRICT MANAGEMENT PLAN  
APRIL 19, 2012

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

That the Board of Directors of the North Texas Groundwater Conservation District ("District") will hold a public hearing to discuss, consider, receive public comments, and potentially act upon adoption of the District Management Plan. All interested members of the public are invited to attend.

The hearing on the Management Plan will be held on Thursday, April 19, 2012, beginning at 10:00 a.m. at the City of Denton City Council Chambers, 215 E McKinney, Denton, Texas 76201. At the conclusion of the hearing or any time or date thereafter, the proposed Management Plan may be adopted in the form presented or as amended based upon comments received from the public, the Texas Water Development Board, District staff, attorneys, consultants, or members of the Board of Directors without any additional notice.

Any person who desires to appear at the hearing and present comment or other information on the proposed Management Plan may do so in person, by legal representative, or both. Limits may be placed on the amount of time that each person is allowed to present verbal comments. In addition, persons interested in submitting written comments on the proposed Management Plan may do so by sending any such comments to the North Texas Groundwater Conservation District, P.O. Box 508, Gainesville, Texas 76241. The hearing posted in this notice may be recessed from day to day or continued where appropriate.

At any time during the hearing and in compliance with Chapter 551, Government Code, the District Board may meet in executive session on the above hearing item for consultation concerning attorney-client matters. Any subject discussed in executive session may be subject to action during an open session of the District Board.

The District is committed to compliance with the Americans with Disabilities Act (ADA). Any person with a disability who needs special accommodations should contact Carmen Catterson at (855) 426-4433 at least 24 hours in advance if accommodation is needed.

A copy of the proposed Management Plan may be requested by email at [c.catterson@northtexasgcd.org](mailto:c.catterson@northtexasgcd.org), is available at the District's website at [www.northtexasgcd.org](http://www.northtexasgcd.org), and may be reviewed or copied at 5100 Airport Drive, Denison, Texas 75020. Any person who wishes to receive more detailed information on this notice should contact District staff at (855) 426-4433.

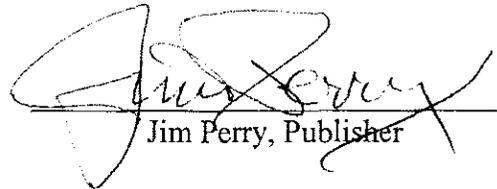
DRC 3/29/2012

RECEIVED  
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BY: NTECD

STATE OF TEXAS

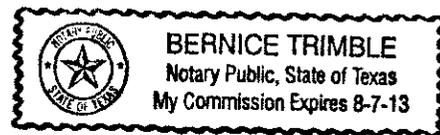
COUNTY OF COOKE

Before me, the undersigned, on this day personally appeared Jim Perry, the Publisher, 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: MARCH 29, 2012.

  
Jim Perry, Publisher

Subscribed and sworn to before me this 5TH day of APRIL, 2012.

  
Notary Public in and for the State of Texas



**RECEIVED**  
APR 09 2012  
BY: NTFCO

**NTG** NORTH TEXAS  
**CD** GROUNDWATER  
CONSERVATION  
DISTRICT  
COLLIN COUNTY - COOKE COUNTY - DENTON COUNTY

**MEMO**

**TO:** Surface Water Management Entities

**FROM:** Jerry Chapman, General Manager

**DATE:** May 8, 2012

**SUBJECT:** North Texas Groundwater Conservation District Management Plan

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Attached is a copy of the North Texas Groundwater Conservation District's Management Plan, adopted at the District's Public Hearing held April 19, 2012. This copy is being provided for your review and files. The North Texas Groundwater Conservation District is required to provide this document 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."

JC:cb

Attachment: North Texas GCD Management Plan

## APPENDIX F 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 BISCAVNE 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) 891-9448	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	charbier@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@crawlwaw.net; abenefield@crawlwaw.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@crawlwaw.net; kdabbs@crawlwaw.net
BELMONT FWSD 2 OF DENTON COUNTY	19 BRIAR HOLLOW LN STE 245; HOUSTON, TEXAS 77027-2858	(713) 621-3707	Denton	ccrawford@crawlwaw.net; kdabbs@crawlwaw.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	fgreen@costrose.com
CIRCLE T MUD 3	3 GREENWAY PLZ STE 2000; HOUSTON, TEXAS 77046-0307	(713) 651-0111	Denton	fgreen@costrose.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 110933; 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@fairviewtexas.org
CITY OF COPPELL	PO BOX 478; COPPELL, TEXAS 75019-0000	(972) 462-0022	Denton	utility@copelltx.gov
CITY OF DENTON	901-A TEXAS STREET; DENTON, TEXAS 76209-0000	(940) 345-8230	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@coqtx.org

NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT  
SURFACE WATER CONTACTS

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	mikte@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	bling@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	jcarwright@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	dmouse@oakpointtexas.com
CITY OF PARKER	5700 E PARKER RD, PARKER, TEXAS 75002-0000	(972) 442-6811	Collin	jfanigan@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	gentryz@plano.gov
CITY OF PLANO	PO BOX 860358; PLANO, TEXAS 75086-0000	(972)-769-4160	Denton	gentryz@plano.gov
CITY OF PRINCETON	306 N FRONT ST, PRINCETON, TEXAS 75407-0000	(972)-736-2711	Collin	lthornhill@princeton.tx.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	ttrown@ci.van-alstynetx.com
CITY OF WYLLIE	PO BOX 428, WYLLIE, TEXAS 75098-0000	(972) 516-6000	Collin	mike.sferra@wylietexas.gov
CLEAR CREEK WATERSHED AUTHORITY	201 S DIXON ST STE 208GAINESVILLE, TEXAS 76240	(940) 688-2404	Cooke/Denton	ccws-tx@aol.net
COLLIN COUNTY MUD 1	19 BRIAR HOLLOW LN STE 245, HOUSTON, TEXAS 77027-2858	(713) 621-3707	Collin	khabbs@crawlaw.net, ccrawford@crflaw.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@copevilwater.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@amcrt.com
CULLEOKA WSC	PO BOX 909PRINCETON, TEXAS 75407-0000	(972) 736-2592	Collin	culleoka@culleoka.org

**NORTH TEXAS GROUNDWATER CONSERVATION DISTRICT  
SURFACE WATER CONTACTS**

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	crawford@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	crawford@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 LLP FORT 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 LLP FORT 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 LLP FORT 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 LLP FORT 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 LLP FORT 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 LLP FORT WORTH, TEXAS 76102-3129	(817) 332-2504	Denton	ross.martin@kellyhart.com; rebecca.daniels@kellyhart.com
DENTON COUNTY FWSD 1-H	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLP FORT 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	glutze@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	crawford@crawlaw.net; kdabbs@crawlaw.net
DENTON COUNTY FWSD 7	19BRIAR HOLLOW LN STE 245; LAW OFFICES OF CLAY E CRAWFORD PC; HOUSTON, TEXAS 77027-2801	(713) 621-3707	Denton	crawford@crawlaw.net; kdabbs@crawlaw.net
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 LLP FORT 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
DENTON COUNTY MUD 5	1980 POST OAK BLVD STE 1380; HOUSTON, TEXAS 77056-3970	(713) 850-9000	Denton	kugle@sklaw.us
DENTON COUNTY MUD 6	5420 LBJ FWY STE 1300; COATS ROSE YALE RYMAN AND LEE PC; DALLAS, TEXAS 75240-6239	(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, WYLLIE, TEXAS 75098-6515	(972) 442-7572	Collin	dana@eastforksud.com
GREATER TEXOMA UTILITY AUTHORITY	5100 AIRPORT DR DENISON, 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	bwickers@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.marliestud@suddenlinkmail.com; Vicki.msud@suddenlink.com
MEADOW ROAD IMPROVEMENT DISTRICT	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLP FORT 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	gfleitag@swwc.com
MILLIGAN WSC	1400 S BRIDGEFARMER RD, MCKINNEY, TEXAS 75069-0000	(972) 542-1143	Collin	candi@milliganwater.com
MULTI COUNTY WSC	PO BOX 1006 GATESVILLE, TEXAS 76528-0000	(254) 865-2269	Cooke	mowscgv@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	sknight@northcollinwsc.com
NORTH FARMERSVILLE WSC	PO BOX 212, FARMERSVILLE, TEXAS 75442-0212	(972) 782-6257	Collin	No Email
NORTH FORT WORTH WCID 1	198RIAR 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, mrtckman@ntmwd.com, dhickey@ntmwd.com
NORTHWEST GRAYSON COUNTY WCID 1	PO BOX 715; GORDONVILLE, TEXAS 76245-0715	(803) 523-5886	Cooke	nwater@verizon.net
OAK POINT WCID 1	3100 MCKINNON ST STE 950; DALLAS, TEXAS 75201-7011	(214) 981-9090	Denton	glutze@crawlaw.net
OAK POINT WCID 2	3100 MCKINNON ST STE 950; DALLAS, TEXAS 75201-7011	(214) 981-9090	Denton	glutze@crawlaw.net
OAK POINT WCID 3	3100 MCKINNON ST STE 950; DALLAS, TEXAS 75201-7011	(214) 981-9090	Denton	glutze@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	198RIAR 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@rradst.tx.us
RED ROCK WSC	PO BOX 270103; FLOWER MOUND, TEXAS 75027-0103	no phone	Denton	no Email
SABINE RIVER AUTHORITY	PO BOX 579, ORANGE, TEXAS 77631-0579	(409) 746-2192	Collin	jtatum@rabt.org
SEIS LAGOS UTILITY DISTRICT	220 SEIS LAGOS TRIWYLE, TEXAS 75098-8222	(972) 442-6875	Collin	district@slud.us
SMILEY ROAD WCID	201 MAIN ST STE 2500; KELLY HART & HALLMAN LLP/PORT WORTH, TEXAS 76103-3129	(817) 382-2500	Denton	ross.martin@kellyhart.com; rebecca.daniels@kellyhart.com
SOUTH DENTON COUNTY WCID 1	198RIAR 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	gfiebag@swwc.com
SOUTHLAKE PARK SERVICE INC	3340 SOUTHLAKE PARK RD, SOUTHLAKE, TEXAS 76092-2506	(817) 874-3589	Denton	rc.charas@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 RWSD OF DENTON COUNTY	198RIAR 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	2122 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	kphillipe@litleelm.org
TOWN OF NORTHLAKE	1400 FM 407N/Orthlake, 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) 831-4665	Denton	jmcknight@trophyclub.org; llaight@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	198RIAR 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@wylie-northeastwater.com
WYLIE NORTHEAST SUD	PO BOX 1029, WYLIE, TEXAS 75098-1029	(972) 442-2075	Collin	chester@wylie-northeastwater.com