Groundwater Management Plan

Adopted on _____

Texas Water Development Board Executive Administrator
approval on _____

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NORTHERN TRINITY GROUNDWATER CONSERVATION DISTRICT GROUNDWATER MANAGEMENT PLAN

I. District's Mission

The mission of the Northern Trinity Groundwater Conservation District ("District") is to manage, preserve, and protect the groundwater resources of Tarrant County, Texas. The District will work to minimize the further drawdown of water levels, prevent the waste of groundwater, prevent interference between wells, protect the existing and historic use of groundwater, prevent the degradation of the quality of groundwater, use public education to promote water conservation, give consideration to the needs of municipal water utilities and the agricultural community, and carry out the powers and duties conferred under Chapter 36 of the Texas Water Code ("TWC"). 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.

II. Purpose of the Management Plan

The purpose of the management plan is to provide a planning tool for the District as it moves forward with its efforts to manage and conserve groundwater resources of Tarrant County. The Management Plan contains the hydrogeological and technical information provided by the Texas Water Development Board ("TWDB") regarding the groundwater resources of Tarrant County. As the District obtains more site-specific groundwater information, the District will update and amend the Management Plan.

The development of the Management Plan ~~for the District~~ will enable the District to comply with the requirements of state law. The Texas Legislature created a statewide water planning process with the passage of Senate Bill 1 ("SB 1") in 1997 and Senate Bill 2 ("SB 2") in 2001. The development of management plans by each groundwater conservation district ("GCD") in Texas is an integral part of the statewide planning process. The District's Management Plan satisfies all requirements established for GCDs by SB 1, SB 2, the statutory requirements Chapter 36 of the Texas Water Code, and the administrative requirements of the rules of the TWDB.

III. District Information

A. Creation

The District was created in 2007 by the 80th Texas Legislature with the enactment of House Bill 4028 (Appendix A). In its enabling legislation, the District was provided the powers and duties provided by the general law of the State of Texas, including Chapter 36 of the Texas Water Code, applicable to ~~groundwater conservation districts~~GCDs created under Section 59, Article XVI, of the Texas Constitution. The District's Rules and Management Plan provide the means to conserve, preserve, protect, and prevent waste of the groundwater resources of Tarrant County, Texas, and to promote recharge of the aquifers within Tarrant County.

B. Directors

The District Board of Directors consists of five directors, each serving ~~four~~ four-year, staggered terms. The Tarrant County Commissioners Court shall appoint one director from each of the four commissioner's precincts in the county to represent the precinct in which the director resides. The Tarrant County Judge shall appoint one director in the District to represent the District at large.

C. Authority

The District has the rights and responsibilities provided for in TWC Chapter 36 and 31 Texas Administrative Code (TAC) Chapter 356. The District is charged with conducting hydrogeological studies, adopting a management plan, providing for the permitting of certain water wells, and implementing programs to achieve statutory mandates. The District has rule-making authority to implement the policies and procedures needed to manage the groundwater resources of Tarrant County.

D. Location and Extent

The District's boundaries are coextensive with the boundaries of Tarrant County, and all lands and other property within these boundaries will benefit from the works and projects that will be accomplished by the District. The District covers an area of approximately 863.42 square miles. Figure 1 is a map of the District showing major roads, incorporated areas and major surface water bodies.

E. Groundwater Resources of Tarrant County

Groundwater resources in Tarrant County, which makes up the District, include the Cretaceous-age northern Trinity and Woodbine aquifers (Figure 2). Sediments in the Washita and Fredericksburg Groups and the Paleozoic-age sediments are general confining units but do produce water locally. A generalized stratigraphic section representative of the hydrogeology of the District is provided in Table 1. The northern Trinity and Woodbine aquifers are recognized by the TWDB as a major and minor aquifer in Texas, respectively. The TWDB defines a major aquifer as one that supplies large quantities of water over large areas of the state and a minor aquifer as one that supplies relatively small quantities of water over large areas of the state or supplies large quantities of water over small areas of the state (George and others, 2011).

Major Aquifer –Trinity Aquifer

The northern Trinity Aquifer is composed of several individual aquifers contained within the Trinity Group. In the District, the northern Trinity Aquifer consists of the aquifers of the Paluxy and Twin Mountains formations separated by the predominantly confining Glen Rose Formation (Figure 3). South of the District, the upper and lower sands of the Twin Mountains Formation are locally referred to as the Hensell and Hosston aquifers and the middle portion of the aquifer, which contains more shale relative to the upper and lower sands, is locally referred to as the Pearsall Formation (see Figure 3). The Fredericksburg and Washita groups are considered confining units, although they can be locally productive, and overlie the downdip portion of the northern Trinity Aquifer in the central portion of the District (see Figures 3 and 4). The northern Trinity Aquifer is underlain by Paleozoic-age sediments, which can be locally productive.

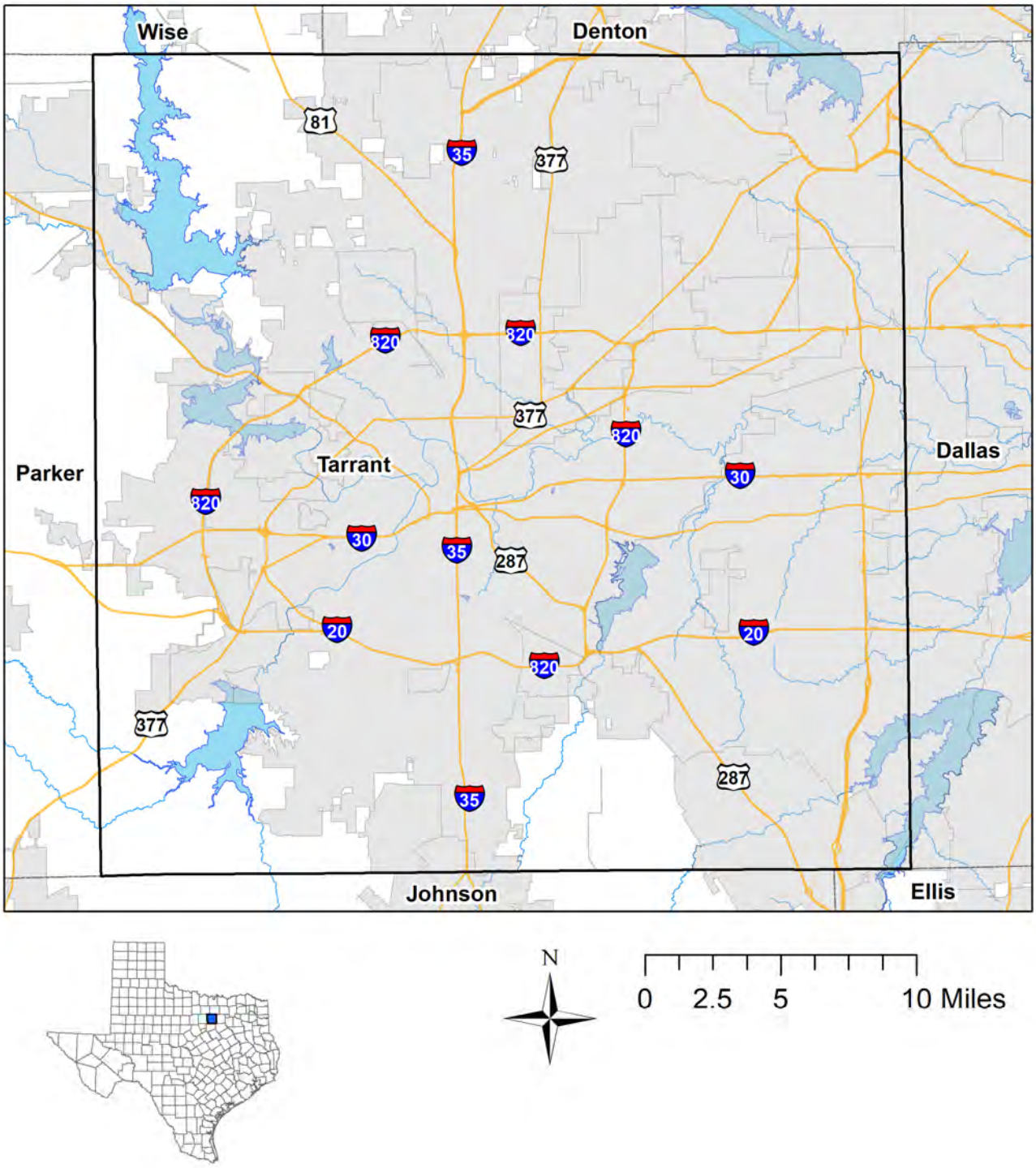


Figure 1 **Map showing the location and boundaries of the District along with cities, major roads, lakes, and major rivers in the District.**

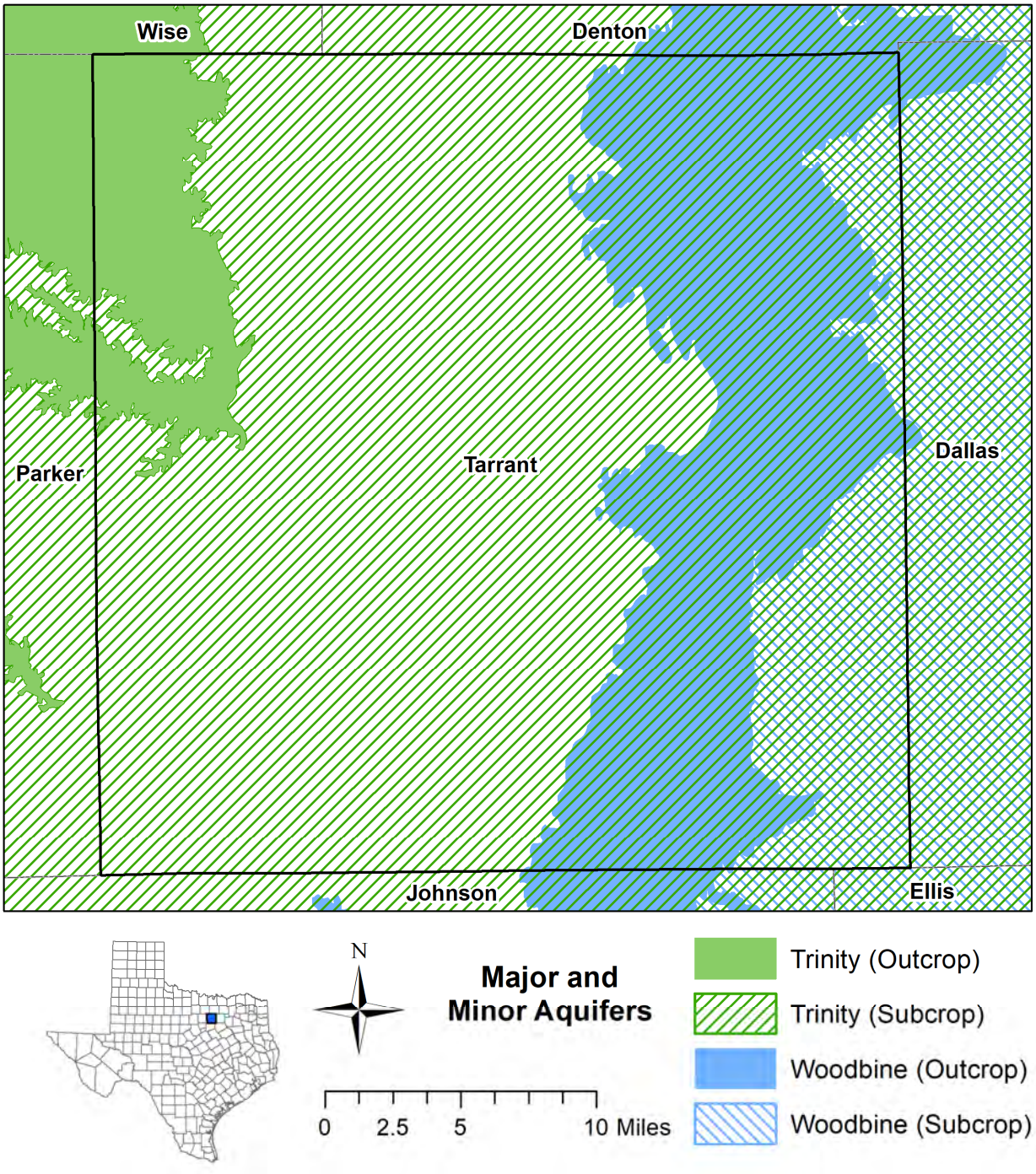
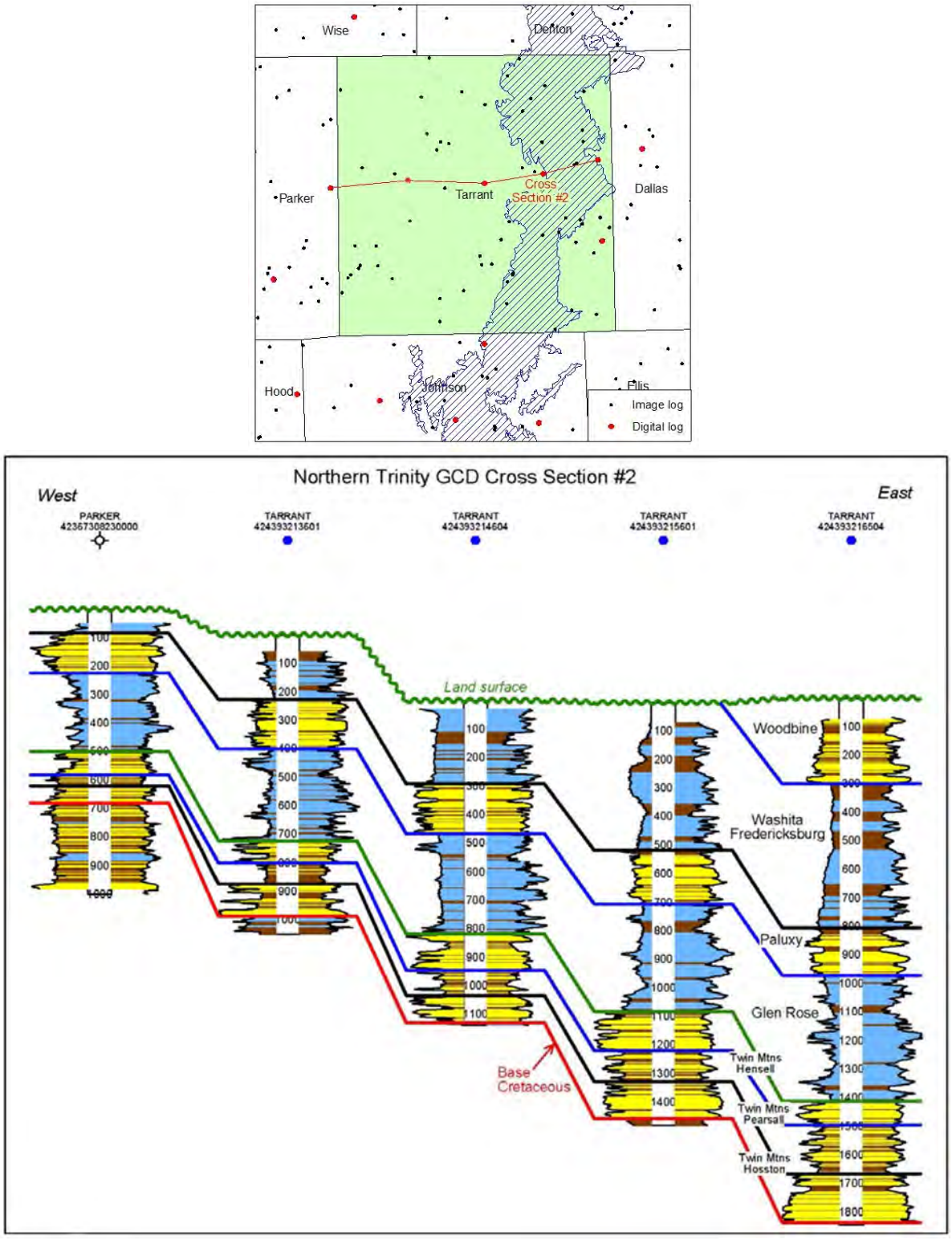


Figure 2 **Outcrop and subcrop of the northern Trinity and Woodbine aquifers in the District.**

Table 1 General stratigraphy and hydrogeology of the District (after Kelley and others, 2014).

System	Hydrogeologic Characteristic	Group	Formation	
Quaternary	Water-Bearing		alluvial deposits	
Cretaceous	Confining Unit	Eagle Ford	undifferentiated	
	Woodbine Aquifer	Woodbine	Lewisville	
			Dexter	
	Confining Unit (locally productive)	Washita	Grayson	
			Mainstreet	
			PawPaw	
			Weno	
			Denton	
			Fort Worth	
			Duck Creek	
	Confining Unit (locally productive)	Fredericksburg	Kiamichi	
			Edwards	
			Comanche Peak	
			Walnut	
	Trinity Aquifer	Trinity	Paluxy	
			Glen Rose	
			Twin Mountains	Hensell
				Pearsall
				Hosston
Paleozoic	Confining Unit (locally productive)	undifferentiated		

Blue highlight indicates aquifers.



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

Figure 3 Digital cross section showing the stratigraphy in the District from ground surface to the base of the northern Trinity Aquifer.

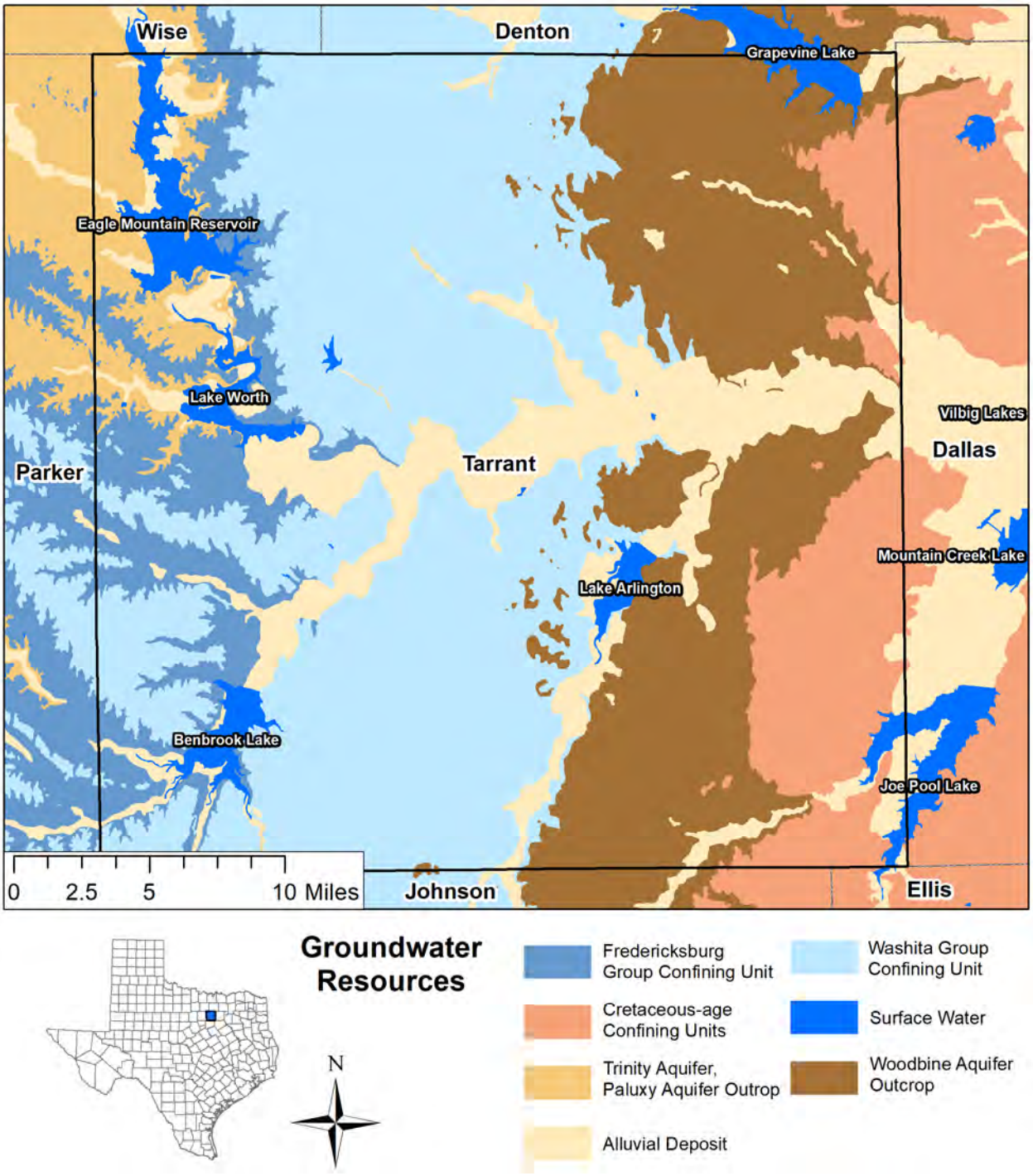


Figure 4 Surface expression of groundwater resources in the District.

The Paluxy Aquifer consists of sand, silt, and clay, with fine-grained sand dominating, and the Twin Mountains Aquifer consists predominately of medium- to coarse-grained sand, silty clay, and conglomerates. ~~The following description of the aquifers is taken from Kelley and others (2014).~~ The sandstones in both aquifers are well developed in the District, comprising greater than 60 percent of the aquifers everywhere except in the northwest corner of the District (Kelley and others, 2014).

Sandstones in the Paluxy Aquifer are located at surface to depths of 1,000 feet and in the Twin Mountains Aquifer at depths of 500 to 2,000 feet. The depth to sandstone increases from west to east across the District following the structure dip of the Trinity Group. Major, east-oriented, fluvial channel axes in the Paluxy and Twin Mountains aquifers are expressed as thick-bedded sandstones (see Figure 3). The sandstones of the Paluxy Aquifer and the lowermost sands of the Twin Mountains Formation (Hosston Aquifer equivalent) form the most hydraulically conductive and transmissive units in the District. The limestones of the Glen Rose Formation in the northern Trinity Aquifer are well developed confining layers throughout the District. However, the formation does yield small quantities of water in localized areas.

Groundwater samples from wells in the District indicate that the water quality in the northern Trinity Aquifer is fresh, with total dissolved solids concentrations typically less than 1,~~000~~ 000 milligrams per liter. ~~The composition of the groundwater throughout the vertical extent of the aquifer is predominately sodium-bicarbonate in the District.~~ Groundwater quality in the Woodbine in the District is generally fresh water, with total dissolved solids concentrations also generally less than 1,000 ~~miligrams~~milligrams per liter.~~is highly variable with measured groundwater concentrations exceeding 1,500 milligrams per liter.~~

~~IV.~~

~~V. Groundwater use in the District is dominated by the Municipal Water User Group (WUG). According to the TWDB Water Use Survey Data, municipal groundwater use comprised approximately 80% of pumping in 2017. During this same time period, rural and domestic pumping has been estimated to be about 1 to 2 percent of total groundwater use in the District (Kelley and others, 2014). Mining related pumping has increased significantly as a percent of total pumping because of oil and gas related activities. In 2000, there was zero reported mining groundwater use in Tarrant County, but that grew to approximately 14% of all groundwater use by 2011. It has since declined, making up less than 1% in 2017. Groundwater usage for irrigation was essentially zero for the period from 2000-2007, but has been steadily increasing since~~

~~2008, reaching approximately 20% of total groundwater use in the District in 2017.~~

~~VI.~~IV. Statement of Guiding Principles

The District recognizes that the groundwater resources of Tarrant County and the local region are of vital importance. The District will strive to manage and conserve this most valuable resource in a prudent and cost-effective manner through education, cooperation, and development of a comprehensive understanding of the aquifers. The District's management plan is intended to serve as a tool to focus the objectives and of those given the responsibility for the execution of the District's activities.

~~VII.~~V. Criteria for Plan Approval

A. Planning Horizon

The original management plan was approved by the TWDB on July 9~~th~~, 2010. The management plan for the District was re-adopted by the District and approved by the TWDB on June 11, 2015. The District also revised and re-adopted management plan in 2018, and again in 2023, to incorporate the new Desired Future Conditions for the aquifers within Tarrant County by Groundwater Management Area 8. The plan remains in effect for five (5) years after the date of approval or until a revised plan is readopted and reapproved. The original management plan and all subsequent plans shall be reviewed and updated and readopted in accordance with the requirements of the Texas Water Code as part of the five-year review and re-adoption process as required by TWC 36.1072(e). The effective time period for this plan is 5 years from the date of approval by the TWDB Executive Administrator or, if appealed, on approval by the TWDB. This management plan will become effective upon adoption by the Northern Trinity Groundwater Conservation District Board of Directors and approved as administratively complete by the TWDB.

B. Board Resolution

A certified copy of the District Board of Directors' resolution adopting the plan is located in Appendix B - District Resolution.

C. Plan Adoption

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

D. Coordination with Surface Water Management Entities

Letters transmitting copies of this plan to the Trinity River Authority, the North Texas Municipal Water District, the Tarrant Regional Water District as well as other Surface Water Management Entities are located in Appendix D – Correspondence to Surface Water Management Entities.

~~VIII.~~VI. Estimates of Technical Information as Required by TWC §

36.1071 and 31 TAC § 356.52

A. Modeled Available Groundwater in the District based on the Desired Future Condition established under 31 TAC §356.52(a)(5)(A) and TWC §36.1071(e)(3)(A).

Modeled available groundwater (MAG) is defined in Section 36.001 of the Texas Water Code as "the amount of water that the executive administrator [of TWDB] determines may be produced on an average annual basis to achieve a desired future condition established under Section 36.108." The desired future condition of the aquifer may only be determined through joint planning with other GCDs in the same groundwater management area (GMA) as required by the 79th Legislature with the enactment of HB 1763. The District is part of GMA 8. The GCDs of GMA 8 completed the third round of the joint planning process and adopted DFCs for the Trinity and Woodbine Aquifers on November 11, 2021. The explanatory report for the DFCs can be found at the following URL:

https://www.twdb.texas.gov/groundwater/dfc/docs/2021/GMA8_DFCExpRep_2021.pdf?d=3198702.2999999523

The DFCs adopted by the District and GMA 8 represent the quantified, measurable conditions of the groundwater resources of the District in 61 years defined in terms of average water level decline (drawdown) from 2020 through 2080. The DFCs are summarized by aquifer in Table 2.

Table 2 Desired future conditions submitted to TWDB

Average Water Level Decrease in Tarrant County from 2010 through 2080 (feet)				
Paluxy	Glen Rose	Twin Mountains	Antlers	Woodbine
105	163	348	177	6

With the DFCs defined by GMA-8, the TWDB used the state approved GAM to estimate the MAG. The MAGs are documented in TWDB GAM Run 21-013 MAG (Appendix F). This MAG run can be found at the following link:

https://www.twdb.texas.gov/groundwater/docs/GAMruns/ GR21-013_MAG.pdf?d=3198702.2999999523

The MAGs for the northern Trinity and Woodbine aquifers in Tarrant County are summarized below in Table 3.

Table 3 Modeled available groundwater estimates from TWDB GAM Run 21-013 MAG

Aquifer	MAG for 2020 (acre-feet per year)	MAG for 2080 (acre-feet per year)
Paluxy	8,963	8,963
Glen Rose	793	793
Twin Mountains	6,922	6,922
Antlers	1,248	1,248
Woodbine	1,139	1,139

B. Estimate of the Amount of Groundwater Being Used within the District on an Annual Basis—31 TAC §356.52(a)(5)(B) and TWC § 36.1071(e)(3)(B)

To estimate the annual amount of groundwater being used in the District, the District has considered its own metered production totals, an internal estimate of rural domestic use, and used the ~~TWDB~~ Annual Water Use Survey Data provided by the TWDB ~~and~~ attached on Page 3 of Appendix E – Groundwater Management Plan Data. Appendix E summarizes groundwater and surface water use for years 2012 through 2021 by water user group. Additional Water Use Survey data for 2022 w~~as~~ere collected from the TWDB's online Historical Water Use Estimates dataset, which can be located at the link below: ~~Appendix E summarizes groundwater and surface water use for years 2002 through 2017 by water user group. The only water user group not included in this survey is rural and domestic groundwater use which is a small percentage of groundwater use in Tarrant County.~~

https://www3.twdb.texas.gov/apps/reports/WU_REP/SumFinal_CountyReportWithReuse

According to TWDB Water Use Survey Data, average annual groundwater use in the District from 2018~~-~~ to 2022 was 10,958 acre-feet per year (afy), with the Municipal Water User Group accounting for the majority (80%) of that figure. According to District metered production estimates, average annual metered groundwater use in the District from 2018~~-~~ to 2022 was 10,426~~-~~ afy. Volumetric estimates of groundwater produced for domestic use is not included in Appendix E~~,~~ and is not considered to be significantly represented in the District's metered production totals. There are 3,275 registered domestic wells in the District, and average domestic

groundwater production in the District between 2018 and 2022 is estimated to be approximately 1,018 afy.

~~C.~~

~~D.~~

~~The TWDB estimate of the amount of groundwater being used in the District on an annual basis is 12,073 acre-feet per year. The estimate is from the TWDB Annual Water Use Survey for the Year 2017 which is the most recent data provided. The average groundwater use from 2002through 2017 is 15,963 acre-feet per year. For comparison, the average surface water use from 2002 through 2017 is 324,626 acre-feet per year.~~

~~E.~~A. ~~through 2017 is 15,963 acre-feet per year. For comparison, the average surface water use from 2002 through 2017 is 324,626 acre-feet per year.~~

~~F.~~C. Estimate of the Annual Amount of Recharge from Precipitation to the Groundwater Resources within the District—31 TAC § 356.52(a)(5)(C) and TWC 36.1071(e)(3)(C)

The estimated total amount of annual recharge from precipitation within the District is estimated by the TWDB to be 3,735 ~~acre-feet per year~~afy for ~~the Paluxy Formation within~~ the Trinity Aquifer and 16,545 ~~acre-feet per year~~afy for the Woodbine Aquifer. These estimates are from the updated northern Trinity and Woodbine aquifers groundwater availability model (GAM) (Kelley and others, 2014) and can be found in Tables 1 and 2 of ~~GAM~~ GAM Run 14-001, attached as Appendix G. ~~-~~The recharge to the northern Trinity Aquifer ~~(Paluxy Formation)~~ is small relative to the Woodbine Aquifer because of the small area of outcrop of the northern Trinity Aquifer in Tarrant County (see Figure 2).

The Washita and Fredericksburg Groups lie between the top of the northern Trinity Aquifer and the Woodbine Aquifer and are generally considered confining units and are not recognized by the TWDB as either minor or major aquifers. However, most of the surface area in Tarrant County is the outcrop of the Washita and Fredericksburg Groups. These geologic units do receive recharge within the county and may act as a minor source of groundwater to wells within the District.

~~G.~~D. Estimate of the Annual Volume of Water that Discharges from the Aquifer to Springs and Surface Water Bodies—31 TAC § 356.52(a)(5)(D) and TWC § 36.1071(e)(3)(D)

The estimated total annual volume of groundwater that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers is 18,836 ~~acre-feet per year~~afy. Approximately 4,560 afy~~acre-feet per year~~ discharges from the northern Trinity Aquifer, and approximately 14,276 ~~acre-feet per year~~afy discharges from the Woodbine Aquifer within ~~the~~ District boundaries. These estimates are from the updated northern Trinity and Woodbine aquifers GAM (Kelley and others, 2014) and can be found in Table 1 and 2 of GAM Run 14-001, attached as Appendix G.

~~H.~~E. Estimate of the Annual Volume of Flow into the District, out of the District, and Between Aquifers in the District—31 TAC § 356.52(a)(5)(E) and TWC § 36.1071(e)(3)(E)

The estimates of annual volume of groundwater flow into the District, out of the District and between aquifers in the District are provided by the TWDB and documented in GAM Run

GR 14-001 which is attached as Appendix G to the Management Plan. All volumes are reported as acre-feet per year rounded to the nearest acre foot. Table 4 summarizes the reported groundwater flows for the District.

Table 4 Annual volume of flow into the District, out of the District within each aquifer, and between each aquifer in the District.

Management Plan Requirement	Aquifer or confining unit	Acre-feet per year
Estimated annual volume of flow into the district within each aquifer in the district	Woodbine Aquifer	1,135
	Northern Trinity Aquifer	13,750
Estimated annual volume of flow out of the district within each aquifer in the district	Woodbine Aquifer	1,916
	Northern Trinity Aquifer	5,785
Estimated net annual volume of flow between each aquifer in the district	Flow from overlying Younger Confining Units to the Woodbine Aquifer	70
	Flow from Woodbine Aquifer to underlying Washita and Fredericksburg Confining Units	1,816
	Flow from overlying Washita and Fredericksburg Confining Units into the Trinity Aquifer	7,228
	Flow from Trinity Aquifer to underlying Older Units (Paleozoic Aquifers)	NA(1)

(1) The model assumes a no flow boundary condition at the bottom of the Trinity Aquifer

~~I.~~F. Projected Surface Water Supply within the District—31 TAC § 356.52(a)(5)(F) and TWC § 36.1071(e)(3)(F)

The Projected Surface Water Supply within the District was provided by the TWDB and is attached on Pages ~~5~~4 through 8 of Appendix E – Groundwater Management Plan Data. The data is based upon the most current State Water Plan (SWP) data available as of ~~January~~ March ~~13~~27, ~~2020~~2025.

~~J.~~G. Projected Water Demand within the District—31 TAC § 356.52(a)(5)(G) and TWC`§ 36.1071(e)(3)(G)

The Projected Water Demand within the District was provided by the TWDB and is attached on Pages ~~9~~7 and ~~10~~ 8 of Appendix E – Groundwater Management Plan Data. The data is based upon the most current State Water Plan (SWP) data available as of March 27, 2025~~January 13, 2020~~.

~~K.~~H. Water Supply Needs and Water Management Strategies Included in the Adopted State Water Plan—TWC § 36.1071(e)(4)

The Water Supply Needs within the District were provided by the TWDB and is attached on Pages 9~~11~~ and ~~12~~ 10 of Appendix E – Groundwater Management Plan Data. The data is based upon the most current State Water Plan (SWP) data available as of March 27, 2025~~January 13, 2020~~. It is important to note that red numbers are needs representing a deficit in water based upon the balance between current supplies future demands. ~~-~~The deficits are projected to climb to ~~305,928~~286,599 acre-feet per year by 2070.

The Water Management Strategies to meet the future demand, including the projected supply deficits, were provided by the TWDB and are attached on Pages 1~~3~~1 through ~~40~~ 34 of Appendix E – Groundwater Management Plan Data. The data ~~is~~ are based upon the most current State Water Plan (SWP) data available as of March 27, 2025~~January 13, 2020~~. There are several groundwater-related management strategies included in Appendix E. These strategies include Aquifer Storage and Recovery (ASR) projects in the Trinity~~,~~ and utilizing water from other counties which overly the Carrizo-Wilcox and Queen City Aquifers. The District's rules require ASR projects to register the associated wells, subject them to spacing requirements, and request copies of the Texas Commission on Environmental Quality (TCEQ)-required reports.~~As can be seen in Appendix E, there is only one groundwater related management strategy – Johnson County SUD is to utilize unallocated Trinity Aquifer groundwater from the City of Grand Prairie.~~

~~IX.~~VII. Management of Groundwater Supplies—31 TAC § 356.52(a)(4) and TWC §36.1071(e)(4)

The Texas Legislature has established that GCDs are the state's preferred method of groundwater management. The Texas Legislature codified this policy decision in Section 36.0015 of the ~~Texas Water Code~~TWC, which establishes that districts will manage groundwater resources through rules developed and implemented in accordance with Chapter 36 of the ~~Texas Water Code~~TWC ("Chapter 36"). Chapter 36 gives districts the tools to protect and manage the groundwater resources within their boundaries. The District will use the regulatory tools provided by Chapter 36 and the Texas Legislature to manage the groundwater resources within its boundaries.

The District places a priority on prevention of the contamination of its groundwater resources through abandoned and deteriorated water wells. Wells that have been abandoned or not properly maintained provide direct conduits or pathways that allow contamination from the surface to quickly reach the groundwater resources of the District. To address the threats to the water quality of its groundwater resources, the District ~~intends to develop~~has developed rules which require the capping and plugging of wells that are abandoned or deteriorated. The District ~~plans to require~~requires that all abandoned, deteriorated, or replaced wells be plugged in compliance with the Water Well Drillers and Pump Installers Rules of the Texas Department of Licensing and Regulation.

The District will manage the supply of groundwater within ~~the District in order~~its borders to conserve the groundwater resources while seeking to maintain the economic viability of all groundwater user groups. In consideration of the economic and cultural activities occurring within the District, the District will identify and engage in such activities and practices which, if implemented, would result in a reduction of groundwater use. The District ~~will~~ is developing a monitoring network ~~within the District~~ to monitor groundwater conditions and to be used to evaluate compliance with DFCs to the degree possible.

The District also has the authority to use the regulatory tools granted to districts by Chapter 36 to protect ~~the~~ its existing and historic users of groundwater ~~in the District~~. ~~The District specifically~~

~~has the authority to protect e~~Existing users of groundwater~~, which~~ are those individuals or entities currently invested in and using groundwater or the groundwater resources within the District for a beneficial purpose; historic users of groundwater ~~, and preserve historic use by historic users, which~~ are those individuals or entities who used groundwater beneficially in the past. In order to protect existing users, the District has implemented a permitting process pursuant to legislative authority, included Section §36.113 of the ~~Texas Water Code~~TWC, which imposes restrictions on applicants wishing to drill and/or operate a production well. There are permitting processes specific to Historic Users which consider historic production volumes. Production permits help to regulate groundwater usage and manage the groundwater resources of the District. ~~The District will strive to protect such use to the extent practicable under the goals and objectives of this Management Plan. One way the District can protect existing and historic use is to create a future permitting process for groundwater use that preserves and protects the existing and historic use of groundwater in the District. Pursuant to legislative authority, including Section 36.113(e) of the Texas Water Code, the District can protect existing use by imposing different permit conditions on new permit applications. In protecting existing users, the District may establish limitations that apply to new permit applications relative to historic use permit holders.~~

In order to better manage groundwater resources within its boundaries, the District may establish management zones and adopt different rules for: (1) each aquifer, subdivision of an aquifer, or geologic strata located in whole or in part within the boundaries of the District; or (2) each geographic area overlying an aquifer or subdivision of an aquifer located in whole or in part within the boundaries of the ~~district~~District.

~~X.~~VIII. Methodology to Track District Progress in Achieving Management Goals—31 TAC § 356.52(a)(4)

The District's General Manager and staff will prepare an annual report ("Annual Report") and will submit the Annual Report to members of the Board of the District. The Annual Report covers the activities of the District, including information on the District's performance in regards to achieving the District's management goals and objectives. The Annual Report will be delivered to the Board within 120 days following the completion of the District's fiscal year. A copy of the Annual Report will be kept on file and available for public inspection at the District's offices upon approval by the Board.

~~XI.~~IX. Actions, Procedures, Performance, and Avoidance for District Implementation of Management Plan – 31 TAC § 356.52(a)(3); 31 TAC § 356.52 (a)(4) / 36.1071(e)(2)

The District will implement this plan and will use the provisions of this plan as a means to determine the direction or priority for all District activities. All operations of the District and any additional planning efforts in which the District may participate will be consistent with the provisions of this plan. Rules adopted by the District for the permitting of wells and the production of groundwater shall comply with Chapter 36, including ~~§~~36.113(e), and the provisions of this plan. All rules developed by the District will be adhered to and enforced in

accordance with Chapter 36. The promulgation and enforcement of the rules will be based on the best scientific evidence available to the District. A copy of the District Rules (as of ~~June 30, 2022~~September 21, 2023) can be found in Appendix H and at the following link:

https://ntgcd.com/wp-content/uploads/2024/09/RULES-NTGCD-Amended-September-21-2023.pdf

The District will work to encourage public cooperation and coordination in the implementation of this plan, as it is amended. All operations and activities of the District have been and will be performed in a manner that best encourages cooperation with the appropriate state, regional or local water entity. The meetings of the Board of the District are noticed and conducted at all times in accordance with the Texas Open Meetings Act. The District also makes available for public inspection all official documents, reports, records and minutes of the District pursuant with the Texas Public Information Act and will continue to do so in the future.

~~XII.~~X. Management Goals and Performance Standards

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

1. Objective – The District will require all new water wells constructed within the District to be in accordance with the District Rules.

   Performance Standard – The number of water wells registered by the District for each year will be included in the Annual Report submitted to the Board of Directors of the District.

2. Objective – The District will regulate the production of groundwater by maintaining a database of groundwater usage for non-exempt wells through the collection of groundwater production reports each year pursuant to the District Rules.

   Performance Standard – The District will include a summary of the volume of water produced in the County from non-exempt wells annually that will be included in the Annual Report.

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

1. Objective – The District will annually provide information to the public on eliminating and reducing wasteful practices in the use of groundwater by one of the following methods:

   a. Provide newspaper articles for publication;
   b. Publish a newsletter;
   c. Conduct public presentations;
   d. Set up displays at public events;
   e. Distribute brochures/literature.

Performance Standard – The District's Annual Report will include information about the method and type of information supplied to the public.

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

   Performance Standard – Annual reporting of the total fees paid and the total volume used by users of non-exempt wells will be included in the Annual Report provided to the Board.

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

1. Objective – Each year, the District will participate in the regional planning process by attending at least one Region C Regional Water Planning Group meeting.

   Performance Standard – The attendance of a District representative at the Region C Regional Water Planning Group meeting(s) will be noted in the Annual Report presented to the Board and will provide the total number of meetings conducted by the Region C Regional Water Planning Group for that year.

D. Addressing Natural Resource Issues that Impact the Use and Availability of Groundwater and Which are Impacted by the Use of Groundwater—31 TAC § 356.52(a)(1)(E) and TWC § 36.1071(a)(6)

1. Objective – The District will collect and test groundwater quality samples from newly-drilled wells and existing wells.

   Performance Standard – Each year, District staff will sample and have analyzed the water quality in at least 5 wells. The General Manager will provide the lab analysis reports to the Board of Directors. The water quality results will also be summarized in the District Annual Report.

2. Objective – The District will submit at least one request annually to the Railroad Commission of Texas (RRC)~~Texas Railroad Commission~~ asking for the location of existing salt water and/or waste disposal injection wells which have been permitted by the Texas Railroad Commission within the District within the most recent fiscal year.

   Performance Standard – A copy of each request letter that was submitted to the ~~Texas Railroad Commission~~RRC asking for the location of existing salt water or waste disposal wells permitted to operate within the District will be included in the Annual Report submitted to the Board of Directors of the District for each fiscal year and the Annual Report will also include the information supplied by the ~~Texas Railroad Commission~~RRC, if any.

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

1. Objective – Quarterly, the District will review drought conditions by going to TWDB Drought Page (http://www.waterdatafortexas.org/drought/) which compiles many sources

of valuable information on drought conditions in Texas.

Performance Standard – The District will make an assessment of the status of drought conditions in the District and will prepare a briefing to the Board of Directors at regular Board Meetings. Any information compiled and presented at Board Meetings will be in the District Annual Report.

F. Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, and Brush Control—31 TAC § 356.52(a)(1)(G) and TWC § 36.1071(a)(7)

~~1.~~ Objective – The District will address Conservation, as defined by ~~the Texas Water Code~~TWC §15.001, by facilitating the development of water resources within its jurisdictional boundaries and reducing the loss or waste of water. The District will provide public records of these activities once per year. ~~The District will submit at least one article regarding water conservation for publication each year to at least one newspaper of general circulation in Tarrant County.~~

1.

Performance Standard – The District will continue to adhere to its established permitting rules, which mitigate potential over-production of groundwater, including District rule 10.1(e) which requires operational float valves on any well which flows to a surface impoundment. This prevents the flow of well water when the impoundment is at capacity. The Annual Report will provide a count of new wells registered in the ~~d~~District in the previous year and any float valves installed in surface impoundments in accordance with District rule 10.1(e) in the previous year.

2. Objective – The District will provide information on the District website relating to recharge enhancement at least once each year.

   Performance Standard – The Annual Report will include a copy of the information provided by the District related to recharge enhancement.

3. Objective – The District will provide information on rainwater harvesting on the District website at least once a year.

   Performance Standard – The Annual Report will provide a copy of the information on rainwater harvesting that was posted by the District in the previous year.

4. Objective – The District will evaluate the State Brush Control Plan on an annual basis to determine the necessity of projects within the District and whether projects within the District would increase the groundwater resources of the District.

   Performance Standard –The Annual Report will include a copy of the most recent brush control information pertaining to the District and the District's conclusions regarding necessity of projects and whether certain projects would increase the District's groundwater resources.

G. Addressing the Desired Future Conditions—31 TAC § 356.52(a)(1)(H) and TWC § 36.1071(a)(8)

1. Objective – ~~Within 3 years of the adoption of this plan t~~The District ~~will~~ is developing a Groundwater Monitoring Program ~~within the District~~.

   Performance Standard – The District's Annual Report will include a discussion of the District's progress on developing and implementing a Groundwater Monitoring Program.

2. Objective – Once the Groundwater Monitoring Program is established, annually, the District will measure the water levels in at least five monitoring wells within the District. At least four of the monitoring wells will be located within the Trinity Aquifer and one will be ~~monitoring~~ located in the Woodbine Aquifer.

   Performance Standard – The District's Annual Report will include the water level measurement data from the monitoring wells and an assessment of water level trends and the adequacy of the monitoring network to monitor aquifer conditions within the District and comply with the aquifer Desired Future Conditions.

3. Objective – The District will estimate non-exempt pumping within the District for use in evaluating compliance with Desired Future Conditions.

Performance Standard – The District's Annual Report will include an estimate of groundwater use in the District by non-exempt wells.

~~XIII.~~XI. Management Goals Determined not to be Applicable to the District

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

This category of management goal is not considered applicable to the District. The Texas Water Development Board recently completed a statewide survey of the vulnerability of aquifers in Texas to subsidence (Furnans and others, 2017). This report can be found at the link below.

http://www.twdb.texas.gov/groundwater/models/research/subsidence/Final_Subsidence_Vulnerability_Report_final.pdf?d=8109.835000010207

While the report does indicate the downdip portions of the aquifer, including Tarrant County, have a somewhat higher risk of subsidence than the rest of the aquifer, as noted in Mace and others (1994), there has not been any observed subsidence in the Trinity Aquifer despite very substantial historical water level declines regionally. They conclude that even in the confined portions of the aquifer, where the largest declines have occurred, the subsidence expected would be only a small amount and would take a very long time to manifest itself.

B. Addressing Precipitation Enhancement—31 TAC § 356.52(a)(1)(G) and TWC § 36.1071(a)(7)

This management goal is not applicable to the District. Precipitation enhancement is not a cost effective or appropriate program for the District at this time ~~since~~ because there are not precipitation enhancement programs in nearby counties or ~~groundwater conservation districts~~GCDs that the District could participate with and allocate expenses for precipitation enhancement projects.

~~XIV.~~XII. References

Furnans, J., Keester, M., Colvin, D., Bauer, J., Barber, J., Gin, G., Danielson, V., Erickson, L., Ryan, R., Khorzad, K., Worsley, A., Snyder, G., 2017, Final Report: Identification of the Vulnerability of the Major and Minor Aquifers of Texas to Subsidence with Regard to Groundwater Pumping, TWDB Contract Number 1648302062, 434 p.

George, P.G, Mace, R.E., and Petrossian, R., 2011, Aquifers of Texas: TWDB, Report 380.

Kelley, V.A., Ewing, J., Jones, T.L., Young, S.C., Deeds, N. and Hamlin, S., 2014, Updated groundwater availability model of the northern Trinity and Woodbine aquifers, Final Report: prepared for the TWDB by INTERA, Inc, the University of Texas Bureau of Economic Geology, and LBG-Guyton Associates.

Mace, R.E., Dutton, A.R., and Nance, H.S., 1994, Water-Level Declines in the Woodbine, Paluxy, and Trinity Aquifers of North-Central Texas: Transactions of the Gulf Coast Association of Geological Societies, Vol. XLIV, pages 412-402.

APPENDIX A

House Bill 4028

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APPENDIX B

District Resolution Adopting Plan

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APPENDIX C

Notice of Hearings and Meetings

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APPENDIX D

Correspondence to Surface Water Management Entities

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APPENDIX E

Groundwater Management Plan Data from TWDB

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APPENDIX F

GAM Run 21-013 MAG

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APPENDIX G

GAM Run 14-001

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APPENDIX H

Adopted Rules of the District

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