

Workshop Item #5
Proposed Groundwater Management
Plan Changes



*Clearwater Underground Water
Conservation District*

District Groundwater Management Plan

Original Plan Adopted October 24, 2000

(Certified by TWDB February 21, 2001)

Revisions Adopted

December 13, 2005 (Approved by TWDB March 6, 2006)

February 8, 2011 (Approved by TWDB April 13, 2011)

January 13, 2016 (Approved by TWDB February 19, 2016)

January 9, 2019 (Approved by TWDB March 12, 2019)

November 11, 2020 (Approved by CUWCD Board)

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October 11, 2023 (Approved by CUWCD Board)

TWDB Approval Pending

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TABLE OF CONTENTS

I. DISTRICT MISSION.....	3
II. PURPOSE OF THE GROUNDWATER MANAGEMENT PLAN.....	3
III. DISTRICT INFORMATION	4
A. Creation.....	5
B. Directors.....	6
C. Authority.....	6
D. Location and Extent.....	6
E. Topography and Drainage.....	6
F. Groundwater Resources of Bell County.....	6
IV. Statement of guiding principles.....	8
V. CRITERIA FOR PLAN APPROVAL.....	8
A. Planning Horizon.....	8
B. Board Resolution.....	8
C. Plan Adoption.....	8
D. Coordination with Surface Water Management Entities.....	9
VI. ESTIMATES OF TECHNICAL INFORMATION REQUIRED BY TWC § 36.1071 / 31TAC 356.52(a).....	9
A. Modeled Available Groundwater based on the Desired Future Condition of Aquifers in the District.....	9
1. Edwards (BFZ) Aquifer.....	9
2. Trinity Aquifer.....	10
B. Amount of Groundwater Being Used Within the District.....	11
C. Annual Amount of Recharge From Precipitation to the Groundwater Resources within the District.....	12
1. Edwards (BFZ) Aquifer.....	12
2. Trinity Aquifer.....	12
D. Annual Volume of Discharge from the Aquifer to springs and surface. Water Bodies.....	12
1. Edwards (BFZ) Aquifer.....	12
2. Trinity Aquifer.....	12
E. Annual Volume of Flow Into and Out of the District within each Aquifer and Between Aquifers in the District.....	12
1. Edwards (BFZ) Aquifer.....	13
2. Trinity Aquifer.....	13
F. Projected Surface Water Supply in the District.....	13
G. Projected Total Demand for Water in the District.....	13

VII.	WATER SUPPLY NEEDS AND WATER MANAGEMENT STRATEGIES.....	14
A.	Water Shortages.....	14
B.	Water Surplus.....	15
VIII.	MANAGEMENT OF GROUNDWATER SUPPLIES.....	15
IX.	ACTIONS, PROCEDURES, PERFORMANCE AND AVOIDANCE FOR PLAN IMPLEMENTATION.....	17
X.	METHODOLOGY FOR TRACKING DISTRICT PROGRESS IN ACHIEVING MANAGEMENT GOALS.....	17
XI.	GOALS, MANAGEMENT OBJECTIVES AND PERFORMANCE STANDARDS.....	17
A.	Providing Efficient Use of Groundwater.....	17
B.	Controlling and Preventing Waste of Groundwater.....	18
C.	Addressing Conjunctive Surface Water Management Issues.....	18
D.	Addressing Natural Resource Issues.....	19
E.	Addressing Drought Conditions.....	19
F.	Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement and Brush Control.....	20
G.	Addressing Desired Future Conditions of the Groundwater Resources.....	20
H.	Controlling and preventing Subsidence.....	21
XII.	MANAGEMENT GOALS DETERMINED NOT-APPLICABLE.....	21
B.	Precipitation Enhancement.....	21

APPENDICES & EXHIBITS

Appendix A1	Groundwater Resources of Bell County	
Appendix A2	Delineation of Proposed Management Zones within Bell County, Texas	
Appendix B	CUWCD - Bell County Historical Groundwater Use (2016-2020)	
Appendix C	TWDB Estimated Historical Water Use and 2017 State Water Plan Dataset	
Appendix D	TWDB Dataset Definitions	
Appendix E	CUWCD Resolution Approving Management Plan	
Appendix F	CUWCD Notice of Public Hearing Proposed Management Plan	
Appendix G	CUWCD Notice to Surface Water Management Entities	
Appendix H	TWDB Map of the GMA Boundaries	
Appendix I	TWDB GAM Run 17-029-MAG 21-1321-013 MAG	
Appendix J	TWDB GAM Run 15-003	
Appendix K	Table 3.1-1 Major Reservoirs of the Brazos River Basin	
Exhibit A	Clearwater Underground Water Conservation District Boundary.....	5
Exhibit B	Major Aquifers in Bell County.....	7

I. DISTRICT MISSION

The mission of the Clearwater Underground Water Conservation District (District) is to develop and implement an efficient, economical and environmentally sound groundwater management program to protect and enhance the water resources of the District.

II. PURPOSE OF THE GROUNDWATER MANAGEMENT PLAN

Senate Bill 1 (SB 1), enacted by the 75th Texas Legislature in 1997, and Senate Bill 2 (SB 2), enacted by the 77th Texas Legislature in 2001, established a comprehensive statewide planning process and the actions necessary for districts to manage and conserve the groundwater resources of the state of Texas. These bills required all underground water conservation districts to develop a management plan which defines the water needs and supply within each district and the goals each district will use to manage the underground water in order to meet their needs. In addition, the 79th Texas Legislature enacted HB 1763 in 2005 that requires joint planning among districts that are in the same groundwater management area (GMA). These districts must establish the desired future conditions of the aquifers within their respective GMAs. Through this process, the districts will submit the desired future conditions to the Executive Administrator of the Texas Water Development Board (TWDB) who will provide each district with the modeled available groundwater in the [groundwater](#) management area based on the desired future conditions of the aquifers in the area. Technical information, such as the desired future conditions of the aquifers within the District's jurisdiction and the amount of modeled available groundwater from such aquifers is required to be included in the District's management plan and will guide the District's regulatory and management policies.

The District's management plan satisfies the requirements of SB 1, SB 2, HB 1763, the statutory requirements of Texas Water Code (TWC) Chapter 36, and the rules and requirements of the TWDB.

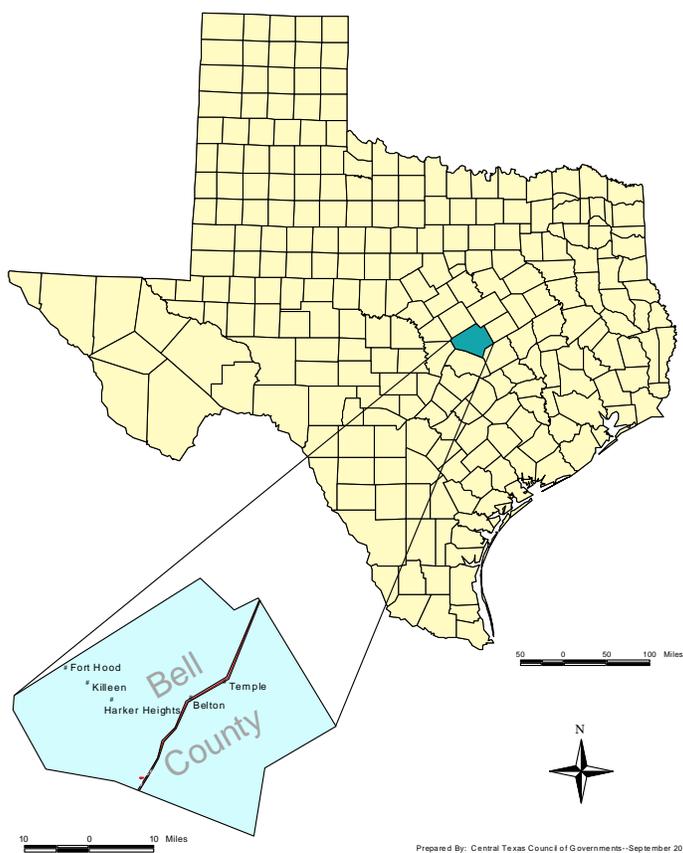
III. DISTRICT INFORMATION

A. Creation

Clearwater Underground Water Conservation District (CUWCD) is a political subdivision of the State of Texas and underground water conservation district created and operating under and by virtue of Article XVI, Section 59, of the Texas Constitution; Texas Water Code Chapter 36; the District's enabling act, Act of May 27, 1989, 71st Legislature, Regular Session, Chapter 524 (House Bill 3172), as amended by Act of April 25, 2001, 77th Legislature, Regular Session, Chapter 22 (Senate Bill 404), Act of May 7, 2009, 81st Legislature, Regular Session, Chapter 64 (Senate Bill 1755), and Act of May 27, 2015, 84th Legislature, Regular Session, Chapter 1196, Section 2 (Senate Bill 1336)(omnibus districts bill); and the applicable general laws of the State of Texas; and confirmed by voters of Bell County on August 21, 1999.

The District was formed to protect the underground water resources for the citizens of Bell County. Beyond its enabling legislation, the District is governed primarily by the provisions of Chapter 36 of the Texas Water Code, the District's groundwater management plan, and the District's rules.

Exhibit A
**CLEARWATER UNDERGROUND WATER
CONSERVATION DISTRICT BOUNDARY**



Prepared By: Central Texas Council of Governments--September 2000

B. Directors

The Board of Directors consists of five members. These five directors are elected by the voters of Bell County and serve a four-year term. CUWCD observes the same precincts as the Bell County Commissioners—four precincts with one at-large position. Director terms are staggered with a two-year interval. Directors from Precincts 1 and 3 serve the same term while directors from Precincts 2, 4 and the at-large position serve the same term. Elections are held in November in even numbered years.

C. Authority

CUWCD is governed by the provisions of TWC Chapter 36. CUWCD has the power and authority to undertake various hydrogeological studies, to adopt a management plan, to establish a program for the permitting of certain water wells, and to implement programs to achieve its statutory mandates. CUWCD has rule-making authority to implement its policies and procedures and to help ensure the management of the groundwater resources of Bell County.

D. Location and Extent

The jurisdiction of CUWCD includes all territory located within Bell County (Exhibit A). This area encompasses approximately 1,088 square miles. CUWCD is bounded by McLennan County to the north; Falls and Milam Counties to the east; Williamson County to the south; and Burnet, Lampasas, and Coryell Counties to the west. Bell County has a vibrant economy dominated by the military, medical, manufacturing, and agricultural communities. Based on the 2012 Census of Agriculture, approximately 421,362 of Bell County's 675,200 acres, or 62.4% of this area, is farmland.

E. Topography and Drainage

Bell County is divided into two separate ecological regions by the Balcones Escarpment, which runs from the southeast part of the county to the northwest. The region east of the Balcones Escarpment is the Blackland Prairie while the Grand Prairie is located to the west.

In the Grand Prairie area drainage flows to the Little River and its tributaries. The Leon and Lampasas rivers and Salado Creek converge at Three Forks.

F. Groundwater Resources of Bell County

Bell County enjoys a variety of groundwater resources. The two primary sources of groundwater in Bell County are the Edwards Balcones Fault Zone (BFZ) Aquifer and the Trinity Aquifer. These aquifers are recognized as major aquifers by the TWDB. The Edwards (BFZ) Aquifer is the source of Salado Springs and is the primary source of water supply for the City of Salado. The Trinity Aquifer consists of three distinct subdivisions. It is the primary source of groundwater in much of western Bell County. The deepest subdivision of the Trinity Aquifer also serves or has served the Cities of Rogers, Holland,

and Bartlett in eastern Bell County. The portion of Bell County east of IH-35 also has a number of groundwater sources that are not widely recognized as aquifers outside of the County but are of vital importance. Approximately 40 percent of the wells registered with the District are located in eastern Bell County and produce water from alluvium, the Lake Waco Formation (Fm), the Kemp Formation, the Ozan Formation, the Pecan Gap Formation, the Austin Chalk, or the Buda Limestone. Additionally, there are wells which produce water from the Edwards Formation and associated limestones outside of the recognized limits of the Edwards (BFZ) Aquifer which are recognized by CUWCD as producing water from the Edwards Equivalent Aquifer.

See Appendix A1: Groundwater Resources of Bell County

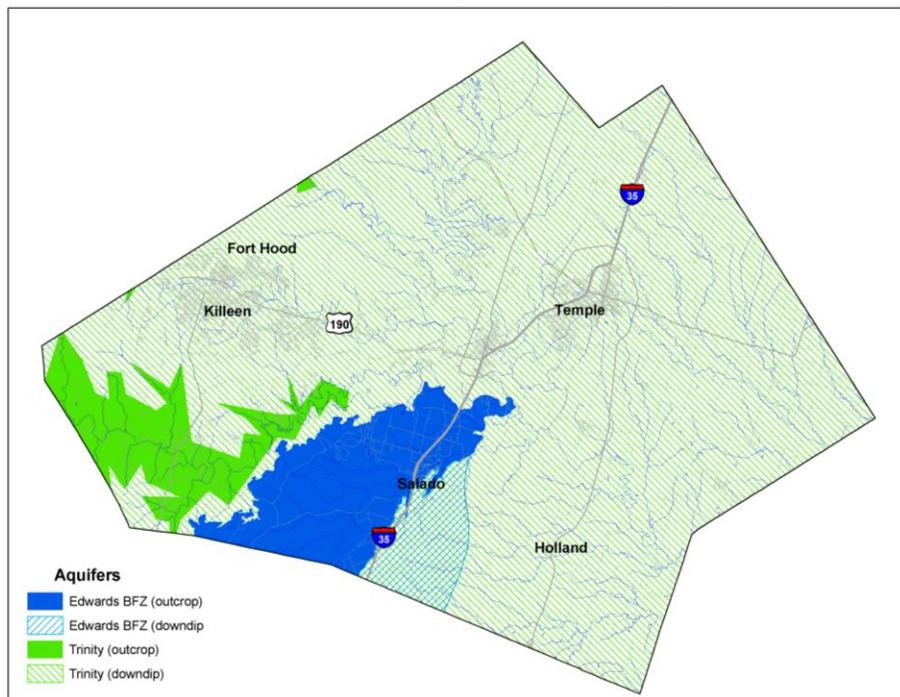
See Appendix A2: Delineation of Proposed Management Zones within Bell County, Texas

See Appendix B: CUWCD - Bell County Historical Groundwater use (2011-2015).

See Appendix C: TWDB Estimated Historical Water Use for Bell County.

See Appendix D: TWDB Data Definitions

Exhibit B -- Major Aquifers in Bell County



IV. STATEMENT OF GUIDING PRINCIPLES

CUWCD recognizes that the groundwater resources of Bell County and the Central Texas region are of vital importance and that local management provides essential localized leadership, local discernment, local accountability, based on local oversight, and local expert understanding of the resource. Preservation of this most valuable resource can be managed in a prudent and cost-effective manner through education, cooperation, and developing a comprehensive understanding of the aquifers. The greatest threat to CUWCD in achieving its stated mission is the misunderstanding of the resource by elected officials, property owners, and water users. Scientific understanding can support localized management of the groundwater resources if the District continues to invest in science-based research to bolster understanding of local conditions. CUWCD's management plan is intended to serve as a tool to focus the thoughts and actions of those given the responsibility for the execution of the District's activities.

V. CRITERIA FOR PLAN APPROVAL

A. Planning Horizon

The time period for this plan is five years from the date of approval by the Executive Administrator or, if appealed, on approval by the TWDB. The original management plan was approved by the TWDB in February 2001. The District's Board of Directors adopted a revised groundwater management plan on December 13, 2005 and approved by TWDB in March 2006. This plan was revised and amended by the Board of Directors on February 8, 2011 and approved by TWDB April 13, 2011, will expire on April 13, 2016. The current plan was revised and amended by the Board of Directors on January 13, 2016 and approved by TWDB February 19, 2016 and will expire on February 19, 2021. The previous plan was amended for the sole purpose of incorporating the language of the second round of joint planning by GMA 8, effective December 12, 2018. ~~This plan is being amended for the sole purpose of incorporating the language of the third round of joint planning by GMA8, effective August 23, 2023~~ This plan is being and submitted as part of the next five year review for final approval by TWDB Executive Administrator 60 days and re-adoption process as required by TWC 36.1072(e). This groundwater management plan will remain in effect until a revised management plan is approved by the Executive Administrator of the TWDB. The plan shall be reviewed (annually) and updated and readopted in accordance with the requirements of the Texas Water Code and remain effective for five years from the approval date by the Executive Administrator.

B. Board Resolution

Copy of the Clearwater Underground Water Conservation District resolution adopting the plan.

A copy of the Clearwater Underground Water Conservation District resolution adopting the plan is located. *See Appendix E: CUWCD Resolution*

C. Plan Adoption

Evidence that the plan was adopted after notice and hearing.

Public notices documenting that the plan was adopted following appropriate public meetings and hearings are located. *See Appendix F: CUWCD Notice of Public Hearing*

D. Coordination with Surface Water Management Entities

Evidence that following notice and hearing the District coordinated in the development of its management plan with surface water management entities.

CUWCD reference letter documenting transmitting a copy of this plan to surface water management entities after adoption of the plan. *See Appendix G: Notice to Surface Water Management Entities.*

VI ESTIMATES OF TECHNICAL INFORMATION REQUIRED BY TEXAS WATER CODE CHAPTER 36.

A. Modeled available groundwater in the district based on the desired future condition established

Modeled available groundwater is defined in TWC §36.001 as the amount of water the Executive Administrator 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 groundwater conservation districts (GCDs) in the same groundwater management area (GMA) as required by the 79th Legislature with the passage of HB 1763 into law. The District is in GMA 8. The GCDs of GMA 8 have completed the joint planning process to determine the desired future condition of the aquifers in the GMA.

To determine the desired future conditions, the District conducted a series of simulations using the TWDB's Groundwater Availability Models (GAMs) for the Northern Edwards (BFZ) and the Northern Trinity/Woodbine aquifers. Each series of GAM simulations was conducted by iteratively applying varying amounts of simulated groundwater pumping from the aquifer over a predictive period that included a simulated repeat of the drought of record. Pumping was increased until the amount of pumping that could be sustained by the aquifer without impairing the aquifer conditions selected for consideration as the indicator of the aquifer desired future condition was identified.

See Appendix H: TWDB Map of the GMA boundaries

1. Edwards (BFZ) Aquifer

a. Desired Future Conditions

The desired future condition of the Edwards (BFZ) Aquifer is based on maintaining Salado Spring discharge into Salado Creek during a repeat of conditions like those in the 1950's drought of record. Under the drought of record conditions, a spring

discharge of 200 acre-feet per month is preferred and 100 acre-feet per month is the minimum acceptable spring flow.

b. Modeled Available Groundwater

The modeled available groundwater value for the Edwards (BFZ) Aquifer in Bell County, as given in TWDB GAM Run ~~17-02921-013~~ MAG for the ~~current~~ decades ~~2010-2020-2020-2080~~, is 6,469 acre-feet per year, and is based on the desired future condition discussed above. CUWCD estimates that by year 2070, exempt use of the Edwards (BFZ) Aquifer may reach approximately 825 acre-feet per year and that volume of water is allocated for exempt well users on an annual basis. This leaves approximately 5,644 acre-feet per year as the volume of groundwater available for permitting in the Edwards (BFZ) aquifer.

See Appendix I: TWDB GAM Run ~~17-02921-013~~ MAG

See Appendix J: TWDB GAM Run 15-003 MAG

2. Trinity Aquifer

a. Desired Future Conditions

There are three recognized subdivisions in the Trinity Aquifer: the Upper, Middle and Lower Trinity aquifers. In Bell County the three subdivisions of the Trinity Aquifer are made up of several geologic units. The geologic units are: the Paluxy Sand; the Glen Rose Limestone and; the Hensell Sand and Hosston Conglomerate of the Travis Peak Formation. GMA 8 developed a desired future condition for each of the water-bearing geologic units which make up the Trinity Aquifer in Bell County. The desired future conditions for the several water-bearing units describe the amount of water-level draw down which may occur after ~~60~~70 years when the draw down is averaged across the area of occurrence of the water bearing unit in the District. The amount of draw down described in the desired future conditions is indexed to year 2010 water levels.

- From estimated year 2010 conditions, the average draw down of the Paluxy Aquifer should not exceed approximately ~~4~~90 feet after ~~60~~70 years.
- From estimated year 2010 conditions, the average draw down of the Glen Rose Aquifer should not exceed approximately 83 feet after ~~60~~70 years.
- From estimated year 2010 conditions, the average draw down of the Hensell Aquifer should not exceed approximately ~~137~~ 145 feet after ~~60~~70 years.
- From estimated year 2010 conditions, the average draw down of the Hosston Aquifer should not exceed approximately ~~330~~375 feet after ~~60~~70 years.

For the purpose of managing groundwater in the District, CUWCD subdivides the water-bearing geologic units into the three Trinity Aquifer subdivisions as follows: the Upper Trinity (Glen Rose Limestone); the Middle Trinity (Hensell Sand); and the Lower Trinity (Hosston Conglomerate) aquifers.

b. Modeled Available Groundwater 2020

The total of modeled available groundwater values for the Trinity Aquifer in Bell County, as given in GAM Run ~~17-02921-013~~ MAG for ~~the current decade 2010-~~

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~~decades from 2020 through 2070,~~ is ~~9,266~~ 9,275 acre-feet per year which is based on the amounts of groundwater that could be pumped while maintaining the desired future conditions in each water-bearing geologic unit discussed above. CUWCD estimates that by year ~~2070~~2080, ~~total~~ exempt use of the Trinity Aquifer may reach approximately 1,419 acre-feet per year, and that volume of water is allocated for exempt well users on an annual basis. The subdivision allocation ~~for exempt use~~ is currently at 400 acre feet for the Glen Rose Limestone, 650 acre feet for the Hensell Sand and 369 acre feet for the Hosston Conglomerate. This leaves ~~a total of~~ approximately ~~7,847~~856 acre-feet per year as ~~the an estimate of the~~ volume of groundwater available ~~for permitting that could be pumped to comply with the~~ ~~dDesired fFuture cConditions~~ in the Trinity Aquifer.

The modeled available groundwater values of the several water-bearing geologic units of the Trinity Aquifer in Bell County, as given in TWDB GAM Run ~~17-02921-1321-013~~ MAG, are as follows:

- a. Paluxy – 0 ac-ft per year
- b. Glen Rose – ~~974~~275 ac-ft per year
- c. Hensell – ~~1,099~~1,100 ac-ft per year
- d. Hosston – ~~7,193~~7,900 ac-ft per year

~~These~~ modeled available groundwater values are for 2020, ~~for~~ For a full listing of values for every year, please refer to the MAG report TWDB GAM Run ~~17-02921-1321-013~~ MAG in Appendix I. CUWCD ~~intends~~ through its rules ~~to regulate~~ ~~manages~~ the Trinity Aquifer within the District by aquifer subdivision ~~and~~ ~~geographic~~ “management zones” established and identified by CUWCD’s rules adopted in accordance with TWC § 36.116(d), and according to the finding of the report commissioned by CUWCD (see *Appendix A2: Delineation of Proposed Management Zones within Bell County, Texas*). ~~While management is by subdivision the district reserves the right to implement management areas and management zones by geologic unit through the District’s rules. The modeled available groundwater values for each Trinity Aquifer subdivision and management areas zone within the water bearing unit that has a required separate allocation of water for exempt well use.~~

See Appendix I: TWDB GAM Run ~~17-02921-1321-013~~ MAG

3. Other Water Bearing Formations

Other groundwater sources in Bell County include Alluvium, the Austin Chalk, the Buda Limestone, the Edwards Group and equivalent rocks outside the recognized bounds of the Edwards (BFZ) Aquifer (Edwards Equivalent Aquifer), the Kemp, Lake Waco, Ozan, and Pecan Gap formations. These sources of groundwater produce limited water supply in limited areas in the District. GMA 8 did not find these aquifers relevant for planning purposes at the present time or develop desired future conditions for them; as a result, there are no modeled available groundwater values for these sources of groundwater. See *Appendix A1 and A2* for a more detailed discussion of these water bearing formations.

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B. Amount of groundwater being used within the district on an annual basis.

The amount of groundwater used in Bell County from 2016 to 2020~~2~~ is shown in the *Appendix B*. Data from 2002-2017 is provided by the Texas Water Development Board from their Water Use Survey database, *Appendix C*. The CUWCD data, *Appendix B*, does distinguish between exempt and non-exempt wells. Exempt wells are wells that are used for domestic use or livestock watering (including certain additional uses defined in State law) and not capable of producing more than approximately 17 gallons per minute. Groundwater use data for 2016 through 2020 is provided from the District's records. The District began registering wells in February 2002 and began recording production from non-exempt wells during 2003. At the end of September 2019, approximately 5,794 wells were registered. Although CUWCD has made considerable progress in registering wells, it is likely there are still 1-2% of wells in Bell County that are not registered, and are therefore not considered in *Appendix B*. The District requires monthly production reports for all Classification 2 non-exempt wells (commercial). Classification 1 non-exempt wells are wells that would otherwise be considered exempt but are located on a tract of land of less than 10 acres and greater than 2 acres subdivided after March 1, 2004. Production reports are not required for Classification 1 wells; however, production cannot exceed 25,000 gallons per day. In 2004, the District began estimating production from exempt wells. See *Appendix B: CUWCD - Bell County Historical Groundwater Use (2015-20192015-2022)*

C. Annual amount of recharge from precipitation to the groundwater resources within the district.

The estimates of the annual amount of recharge to the groundwater resources of the District that are recognized as Major Aquifers by TWDB are based on the GAM simulations provided by TWDB to the District for use in this plan. The District has made no estimate of the amount of annual recharge to the local sources of groundwater in the District.

1. Edwards (BFZ) Aquifer Recharge 27,565 acre-feet per year
2. Trinity Aquifer Recharge 2,816 acre-feet per year

See *Appendix J: Estimate source: TWDB GAM Run 15-003; November 24, 2015*

D. For each aquifer, annual volume of water that discharges from the aquifer to springs and any surface water bodies, including lakes, streams, and rivers.

The estimates of the annual amount of water discharged to surface water systems by the groundwater resources of the District recognized as Major Aquifers by TWDB are based on the GAM simulations provided by TWDB to the District for use in this plan. The District has made no estimate of the amount of the annual discharge to surface water systems by the minor sources of groundwater in the District.

1. Edwards (BFZ) Aquifer 27,566 acre-feet per year

2. Trinity Aquifer 11,131 acre-feet per year

See Appendix J: Estimate source: TWDB GAM Run 15-003; November 24, 2015

E. Annual volume of flow into and out of the district within each aquifer and between aquifers in the district, if a groundwater availability model is available

There are two aquifers in the District for which a TWDB GAM is available; the Trinity and the Edwards (BFZ) Aquifers. The estimates of the amount of water flowing into and out of the District within each aquifer and between aquifers in the District are based on the GAM simulations provided by TWDB to the District for use in this plan.

1. Edwards (BFZ) Aquifer

Flow into the aquifer within the District: 5,853 acre-feet/year

Flow out of the aquifer in the District: 1,090 acre-feet/year

Net flow out of the aquifer to overlying units in the District: 121 acre-feet/year

Net flow to downdip* Edwards (BFZ) Aquifer: 3,957 acre-feet/year

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2. Trinity Aquifer

Flow into the aquifer within the District: 7,230 acre-feet/year

Flow out of the aquifer within the District: 5,659 acre-feet/year

Net flow into the aquifer from the overlying Washita-Fredericksburg Confining Unit in the District: 5,587 acre-feet/year

Estimate source: TWDB GAM Run 15-003; November 24, 2015

**The model extends beyond the TWDB official Edwards (Balcones Fault Zone) Aquifer boundary. This is the amount of brackish and/or saline groundwater (greater than 1,000 total dissolved solid) that exits the downdip boundary limit of the [official] aquifer within the district boundaries and into deeper portions of the Edwards Group formations.*

F. Projected surface water supply in the district, according to the most recently adopted state water plan.

The most recently adopted state water plan is the 2017 State Water Plan. The 2017 State Water Plan indicates a projected surface water supply for Bell County of 93,515 acre-feet/year for year 2070.

Two major water reservoirs located in Bell County are Lake Belton and Lake Stillhouse Hollow. The 2016 Brazos G Initially Prepared Regional Water Plan (*Appendix L: Table 3.1-1, Major Reservoirs of the Brazos River Basin*) identifies 100,257 acre-feet/year as the authorized diversion, or permitted yield, from Lake Belton, and 67,768 acre-feet/year for Lake Stillhouse Hollow. This provides a total yield of 168,025 acre-feet/year for the two lakes. Currently, the Brazos River Authority has under contract approximately 113,906 acre-feet/year to Bell County entities. The US Corps of Engineers is the owner and operator of Lakes Belton and Stillhouse Hollow. The Brazos River Authority manages water rights in both lakes. The Department of the Army (Fort Hood) also manages the water rights from Lake Belton.

Source Appendix C: TWDB 2017 State Water Plan Datasets for Bell County

G. Projected total demand for water in the district according to the most recently adopted state water plan.

The most recently adopted state water plan is the 2017 State Water Plan. The 2017 State Water Plan indicates a projected total water demand for Bell County of 134,411 acre-feet/year for year 2070. The projections are from year 2020 to 2070 and include demands that may be met by water from either or both surface water and groundwater. District records indicate that actual groundwater usage in Bell County during year 2019 by the Water Utility Groups totaled 2,417 acre-feet or approximately 3.18% of the County's projected 2020 total demand for water in the 2017 State Water Plan.

Source Appendix C: TWDB 2017 State Water Plan Datasets for Bell County

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

The most recently adopted state water plan is the 2017 State Water Plan. In the 2017 State Water Plan, water needs were identified for sixteen Water User Groups (WUGs) in Bell County. Water needs are identified when the projected water demand of a WUG exceeds the projected water supplies of the WUG, *Appendix C*. Positive values given in the tables indicate a water surplus and negative values (expressed as values with a “ – “ symbol) indicate a water need.

In the 2017 State Water Plan twenty water management strategies (WMSs) were recommended for the sixteen Bell County WUGs with identified water needs. Seven of the WMSs involved conservation of existing water supplies. Four have recommended WMSs involve the redistribution and/or increase of surface water supplies of the respective WUGs. There is the conjunctive use strategy for [Georgetown Utilities/Chisholm Trail SUD](#), to increase groundwater with surface water based on the WMS, yet [Georgetown Utilities/Chisholm Trail SUD](#) has no groundwater wells in Bell County with no delivery of public water supply to the 65,000 acres of their respective CCN that lies in Bell County. This strategy is recommended in the 2012 and is stated as the WTP expansion in the

2017 State Water plan may enhance the WUGs in Bell County who serve in other counties with conjunctive use of groundwater and surface water from Bell County. The desired future conditions and amounts of groundwater available for annual use in modeled available groundwater values for the Edwards (BFZ) and Trinity Aquifers in the District will not prevent the implementation of any recommended WMS or restrict the amount of groundwater considered available in the 2017 State Water Plan.

Source Appendix C: TWDB 2017 State Water Plan Datasets for Bell County

A. Water Shortages

Of the 30 Bell County WUGs identified in the 2017 State Water Plan, sixteen were projected to have water shortages by the year 2070. The projected shortage of water for these sixteen users ranges from approximately 10,026 acre-feet/year in 2020 to approximately 43,762 acre-feet/year in 2070. Nine of these users use only surface water (439 WSC, City of Belton, Kempner WSC, City of Nolanville, City of Temple; , County-Other Bell, Steam Electric Power). Four of these WUGs use a mixture of groundwater and surface water (City of Little River-Academy, ~~Georgetown Utilities~~~~Chisholm Trail SUD~~, Elm Creek WSC, Salado WSC, Manufacturing), and three use only groundwater (City of Bartlett, Mining, Agriculture Irrigation). The source of groundwater for these users is identified as the Other Alluvial groundwater formation, Trinity Aquifer and the Edwards (BFZ) Aquifer. Some of the management strategies involve purchasing additional surface water, implementing conservation measures, Trinity ASR, direct reuse and groundwater from the Carrizo-Wilcox Aquifer in both Burleson and Milam Counties. Additional use of groundwater from the Trinity and Edwards BFZ Aquifers within CUWCD's jurisdiction been identified as strategies for the named as County-Other (identified as Edwards Aquifer Development, small Municipal Water Conservation, purchases from Central Texas WSC and Williamson County ASR).

Jarrell-Schwertner WSC's service area includes southern Bell County and northern Williamson County and is in the State Water Plan identified as a water user in Williamson County. Their primary water supply is both surface and groundwater in Bell County from the Edwards (BFZ) Aquifer. Their recommended management strategies include implementing conservation measures and purchasing surface water. Additional use of groundwater in Bell County is not identified as part of the management strategies. Through participation in a local water supply planning initiative, Jarrell-Schwertner WSC is participating in the Lake Granger Conjunctive Use Project.

Source Appendix C: TWDB 2017 State Water Plan Datasets for Bell County

B. Water Surplus

Fourteen of the Water User Groups identified in the Brazos G Regional Water Plan are projected to have surplus water through the year 2070. Eight of these are identified as using both surface water and groundwater (Armstrong WSC, Bell-Milam-Falls WSC, City of Holland, East Bell WSC, Morgan's Point Resort, Pendleton WSC, City of Rogers Moffat WSC; City of Troy). The source of groundwater is identified as the Hensell Layer of the

Trinity Aquifer. Since these users are projected to have a surplus of water or no projected needs, no changes in water supply are recommended.

Source Appendix C: TWDB 2017 State Water Plan Datasets for Bell County

VIII. MANAGEMENT OF GROUNDWATER SUPPLIES

TWC Section 36.0015 states that groundwater conservation districts (GCDs) are the state's preferred method of groundwater management and establishes that GCDs will manage groundwater resources through rules developed and implemented in accordance with TWC Chapter 36. Chapter 36 gives directives to GCDs and the statutory authority to carry out such directives, so that GCDs are provided the proper tools to protect and manage the groundwater resources within their boundaries.

CUWCD will manage the supply of groundwater within the District in order to conserve the groundwater resources while seeking to maintain the economic viability of all groundwater user groups - public and private. In consideration of the economic and cultural activities occurring within the District, CUWCD will identify and engage in such activities and practices which, if implemented, would result in a reduction of groundwater use. The existing observation network of groundwater wells will be used to monitor the changing conditions of the groundwater resources within the District. The observation network has been expanded on an annual basis as opportunities for the District to fund new wells and include permitted wells on the network.

The regulatory tools granted to GCDs by TWC Chapter 36 enable GCD's to preserve historic and existing users of groundwater. CUWCD protects historic and existing users by granting such groundwater users historic and existing use permits that have priority over operating permits. TWC Chapter 36 also allows GCDs to establish management zones within an aquifer or aquifer subdivision. The District's rules provide for the designation of "management areas-zones" as needed to better manage and regulate the groundwater resources of Bell County.

CUWCD may deny a water well drilling permit or limit groundwater withdrawals in accordance with the requirements stated in the rules of the District. In making a determination to deny a permit or limit groundwater withdrawals, the District will consider criteria identified in TWC Section 36.113.

In accordance with CUWCD's mission of protecting the groundwater resources of Bell County, the District may require reduction of groundwater withdrawals to amounts that will not cause harm to the aquifer when considering the desired future condition of the District's aquifers and the amount of modeled available groundwater within the District. To achieve this purpose, the District may, at the discretion of the Board, amend or revoke any permits after notice and hearing. The determination to seek the amendment or revocation of a permit by the District will be based on aquifer conditions as observed by the District. The District will enforce the terms and conditions of permits and the rules of the District by injunction or other appropriate relief in a court of competent jurisdiction as provided for in TWC §36.102.

A contingency plan to cope with the effects of water supply deficits due to climatic or other conditions has been developed by CUWCD and adopted by the Board after notice and hearing. In developing the contingency plan, CUWCD considered the economic effect of conservation measures upon all water resource user groups, the local implications of the extent and effect of changes in water storage conditions, the unique hydrogeologic conditions of the aquifers within the District, and the appropriate conditions under which the voluntary drought contingency plan is implemented. CUWCD evaluates the groundwater resources available within the District and determines the effectiveness of regulatory or conservation measures.

A public or private user may appeal to the Board for discretion in enforcement of the provisions of the water supply deficit contingency plan on grounds of adverse economic hardship or unique local conditions. The exercise of said discretion by the Board shall not be construed as limiting the power of the Board.

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

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

Rules adopted by the District for the permitting of wells and the production of groundwater shall comply with TWC Chapter 36, including §36.113, and the provisions of this management plan. All rules will be adhered to and enforced. The promulgation and enforcement of the rules will be based on the best technical evidence available to the District. District Rules are available on the District website at <http://www.cuwcd.org/regulatory-program/district-rules/>.

X. METHODOLOGY FOR TRACKING DISTRICT PROGRESS IN ACHIEVING MANAGEMENT GOALS.

CUWCD general manager will prepare a draft Annual Report to the Board of Directors on District performance in regard to achieving management goals and objectives in each fiscal year for consideration for adoption by the Board of Directors. The report is to be presented within 180 days following the completion of each fiscal year of the District. The Board will maintain the report on file for public inspection at the District's offices and on the District Website upon adoption.

[Link to CUWCD-annual-reports](#)

XI. GOALS, MANAGEMENT OBJECTIVES and PERFORMANCE STANDARDS

The management goals, objectives, and performance standards of the District in the areas specified in **31TAC§356.5** are addressed below.

Management Goals

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

1. Objective: Each year, CUWCD will require the registration of all wells within the District’s jurisdiction.

Performance Standard: Each year, the number of new and existing wells registered with CUWCD will be presented in the District’s Annual Report located or public viewing on the district’s website <http://www.cuwcd.org/> and maintained data base management system as an internet webpage <https://clearwater.lre-up.com>

Field Code Changed

2. Objective: Each year, CUWCD will require permits for all non-exempt use of groundwater in the District as defined in the District rules, in accordance with adopted procedures.

Performance Standard: Each year, CUWCD will prepare a summary of the number of applications for the drilling of non-exempt wells, the number of applications for the permitted use of groundwater and the disposition of the applications will be presented in the District’s annual report.

3. Objective: Each year, CUWCD will maintain a groundwater database to include information relating to well location, production volume, and other pertinent information deemed necessary by the District to enable effective monitoring of groundwater in Bell County.

Performance Standard:

- a. Each year, CUWCD’s annual report will include a status report of the database repository and enhancements to the platform.
- b. Each year, CUWCD’s annual report will include a summary of changes in the water-level condition of the aquifers included in the district water-level monitoring program.

4. Objective: Each year, CUWCD will disseminate educational information on groundwater through publication of a District newsletter, Quarterly Webnews, and website.

Performance Standard: The CUWCD annual report will include a copy of the District newsletter published each year, with select examples of the Quarterly Webnews on Mailchimp/~~Twitter/Facebook~~.

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

Objective: Each year, CUWCD will disseminate educational information on controlling and preventing the waste of groundwater focusing on water quality

protection through at least one classroom or public presentations to civic organizations and invited opportunities to speak

Performance Standard: The CUWCD annual report will include a summary of the District presentations to disseminate educational information on controlling and preventing the waste of groundwater focusing on water quality protection.

C. Addressing Conjunctive Surface Water Management Issues-31TAC356.52 (a)(1)(D) ((Implementing TWC §36.1071(a)(4))

Objective: Each year, CUWCD will participate in the regional planning process by attending a minimum of two meetings of the Brazos G Regional Water Planning Group per fiscal year.

Performance Standard: Each year, CUWCD will report attendance at Region G meetings by a representative of the District will be reflected in the District's annual report and will include the number of meetings attended and the dates.

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

1) Objective: Each year CUWCD will monitor water quality within the District by obtaining water samples from all newly constructed wells and testing the water quality of a minimum 90% of newly constructed wells.

Performance Standard: Each year, CUWCD's Annual Report will provide a status report on the number of wells tested, by aquifers, aquifer subdivisions and the testing results. District will document the results and make them publicly available on the district web-maps for each well tested.

2) Objective: Each quarter of the year, CUWCD will monitor the water quality and spring-flow of the Salado Springs Complex and the Robertson springs of Salado in accordance with the necessary agreements under the Endanger Species Act (ESA) and a proposed, soon to be negotiated 4(d)rule with United States Fish and Wildlife Service (USFWS) and such, per Chapter 36.108 GMA8 Joint Planning, to manage to the Edwards BFZ Aquifer DFC.

Performance Standard: Each year, CUWCD's Annual Report will provide a status summary report of the quarterly water quality assessments for nitrate, nitrite and dissolved oxygen of the both Salado Spring Complex and groundwater flow from all seven of the downtown springs collectively known as the Salado Spring Complex.

3) Objective: Each year CUWCD, in accordance with the an agreed upon five year reimbursable-task-order with Texas Fish and Wildlife Conservation Office

(TXFWCO), will fund and support the efforts of the assigned research biologist, to assess the status the Threatened Salado Salamander by systematically monitoring under the federal permit TE676811-9 and state permit SPR-0111-03.

Performance Standard: Each year, CUWCD's Annual Report will provide a summary of the formal findings of the assigned research biologist and accordingly maintain such findings and formal report from TXFWCO on the district website in a defined location assessable to all parties.

E. Addressing Drought Conditions – 31TAC356.52 (a)(1)(F) ((Implementing TWC §36.1071(a)(6))

1. Objective: Each month, CUWCD will monitor drought conditions in the Edwards (BFZ) Aquifer through the process established in the drought management plan for the Edwards (BFZ) Aquifer adopted by the Board of Directors.

Performance Standard: Each year, a summary of CUWCD's monthly monitoring of drought conditions in the Edwards (BFZ) Aquifer and the implementation of any conservation measures will be provided in the annual report, on the District website <http://cuwcd.org> as well as the TWDB drought resources <https://www.waterdatafortexas.org/drought> . The Salado Salamander is protected by the District per the drought contingency plan in accordance with agreements with all non-exempt permit holders producing from the Edwards (BFZ) Aquifer and in accordance with elements of the pending 4(d)rule under the Endangered Species Act.

2. Objective: Each month, CUWCD will monitor drought conditions in the Trinity Aquifer through the process established in the drought management plan for the Trinity Aquifer adopted by the Board of Directors.

Performance Standard: Each year, a summary of CUWCD's monthly monitoring of drought conditions in the Trinity Aquifer and the implementation of any conservation measures will be provided in the annual report.

F. Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, and Brush Control, Where Appropriate and Cost-Effective – 31TAC356.52 (a)(1)(G) (Implementing TWC §36.1071(a)(7))

Conservation

Objective: Each year, CUWCD will promote conservation by conducting and hosting educational events with AgriLife Extension Service and Texas 4-H2O Ambassadors on water conservation and by distributing conservation brochures and literature to the public at a minimum two educational events attended by district

staff and directors (ex. Bell County Annual Water Symposium, Bell County Annual Grounds Conference and Bell County Annual Crops Conference)

Performance Standard: Each year, CUWCD's annual report will include a summary of the District activity during the year to promote conservation.

Rainwater Harvesting

Objective: Each year, CUWCD will promote rainwater harvesting by posting information on rainwater harvesting on the District website.

Performance Standard: Each year, CUWCD's annual report will include a copy of the information on rainwater harvesting that is provided on the District website.

Brush Control

Objective: Each year, the District will provide information relating to brush control on the District website.

Performance Standard: Each year, the District annual report will include a copy of the information that has been provided on the District website relating to brush control.

Recharge Enhancement

Objective: Each year, CUWCD will provide information relating to recharge enhancement on the District website.

Performance Standard: Each year, CUWCD's annual report will include a copy of the information that has been provided on the District website relating to recharge enhancement.

G. Addressing in a Quantitative Manner the Desired Future Conditions of the Groundwater Resources – TWC §36.108, 31TAC 356.52(a)(1)(H), (Implementing TWC §36.1071(a)(8))

1. Objective – Each month, CUWCD will operate a gauge system on Salado Creek by contract with USGS Water Science Team in Austin Texas, to accurately record the estimates of the discharge from the Edwards (BFZ) Aquifer at the Salado Springs Complex, Robertson, Big Boiling, Little Bubbly, Side Spring, Critchfield, Benedict and Anderson Springs.

Performance Standard – Each month, CUWCD will include a summary of the monthly average discharge rate of Salado Springs and a discussion of the conservation measures implemented (if any are necessary) to avoid impairment of the Desired Future Conditions for the Edwards (BFZ) Aquifer established by GMA 8, and documented in the Annual Report to the Board of Directors.

2. Objective– Each month, CUWCD will collect at least 15 water-level measurements from the Trinity Aquifer monitor wells located in the District.

Performance Standard

- a. Each year, the CUWCD Annual Report to the Board of Directors will post the water-level measurements collected from the Trinity Aquifer by each confining layer and identify the aquifer subdivision from which the measurement is taken.
- b. Each year, the CUWCD Annual Report to the Board of Directors will include a discussion of the change in water-levels in each Trinity Aquifer subdivision for which a Desired Future Condition is established by GMA 8.
- b. Every year, the CUWCD Annual Report to the Board of Directors will include a discussion of the trends and changes of water-levels in each Trinity Aquifer subdivision for which a Desired Future Condition is established by GMA 8 comparing the change to the incremental time-appropriate change in water-levels indicated by the established Desired Future Condition of the aquifer.

H. Controlling and Preventing Subsidence 31TAC§356.52(a)(1)(C), TWC §36.1071(a)(6)

This category of management goal is now applicable to the District even though the major water producing formations in the District are composed primarily of competent limestone are thought to be very low risk because the structural competency of the aquifer materials significantly limits the potential for the occurrence of land surface subsidence in the District. In ~~2016-2017~~, the Texas Water Development Board (TWDB) ~~Contract Number 1648302062) contracted with LRE Water, LLC to identify and characterize areas within Texas' major and minor aquifers that are susceptible to land subsidence related to groundwater pumping~~ released a report "Identification of the Vulnerability of the Major and Minor Aquifers of Texas to Subsidence with Regard to Groundwater Pumping - TWDB Contract Number 1648302062". This TWDB resource also includes a subsidence calculation tool known as "Subsidence Prediction Tool and User Guide". These two resources are the basis for the subsidence review completed by the district.

<https://www.twdb.texas.gov/groundwater/models/research/subsidence/subsidence.asp>

- 1) Objective – Each year the district will apply the subsidence prediction tool for the purpose of identifying and characterizing the areas of the district that might be experiencing land subsidence

Performance Standard – Each year the district with the assistance of TWDB and LRE will deploy the tool and results after calculating subsidence predictions based on the results generated from the subsidence prediction tool and report the findings in the annual report.

XII. MANAGEMENT GOALS DETERMINED NOT-APPLICABLE TO THE DISTRICT

B. Precipitation Enhancement – 31TAC§356.52(a)(1)(G), TWC §36.107(a)(7)

Precipitation enhancement is not an appropriate or cost-effective program for the District at this time because there is not an existing precipitation enhancement program operating in nearby counties in which the District could participate and share costs. The cost of operating a single-county precipitation enhancement program is prohibitive and would require the District to increase taxes in Bell County.

APPENDIX A1

APPENDIX A2

APPENDIX B

APPENDIX C

APPENDIX D

APPENDIX E

APPENDIX F

APPENDIX G

APPENDIX H

APPENDIX I

APPENDIX J

APPENDIX K