SOUTHEAST TEXAS GROUNDWATER CONSERVATION DISTRICT

GROUNDWATER MANAGEMENT PLAN 2022

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(Revised and Re-adopted: September 13, 2012)
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(Amended March 9, 2023)

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Table of Contents

1. **INTRODUCTION/PURPOSE** 1

2. **DESCRIPTION OF THE DISTRICT** 2

   2.1 Creation and Organization 2

   2.2 Legal Authority 3

   2.3 Purpose of Management Plan 3

   2.4 Rules and Regulations 5

   2.5 How the District Will Manage Groundwater Supplies 6

3. **GROUNDWATER RESOURCES OF THE DISTRICT TECHNICAL INFORMATION AS REQUIRED BY TEXAS ADMINISTRATIVE CODE** 7

   3.1 Modeled Available Groundwater 7

   3.2 Amount of Groundwater Being Used within the District on an Annual Basis 9

   3.3 Annual Amount of Recharge from Precipitation to the Groundwater Resources within the District 9

   3.4 Annual Amount of Water that Discharges from Aquifers to Springs and Surface Water Bodies 9

   3.5 Estimate of the Annual Volume of Flow into the District, Out of the District, and Between Aquifers in the District 10

   3.6 Projected Surface Water Supply within the District 10

   3.7 Projected Total Demand for Water within the District 10

   3.8 Water Supply Needs 10

   3.9 Water Management Strategies 10

4. **MANAGEMENT GOALS, PERFORMANCE STANDARDS, MANAGEMENT OBJECTIVES, AND METHODOLOGY** 11

   4.1 Providing the Most Efficient Use of Groundwater 11

   4.2 Controlling and Preventing the Waste of Groundwater in the District 11

   4.3 Controlling and Preventing Subsidence 12

   4.4 Addressing Conjunctive Surface Water Management Issues 13

   4.5 Natural Resource Issues Affecting the Use and Availability of Groundwater or Affected by the Use of Groundwater 14

   4.6 Addressing Drought Conditions 14

   4.7 Addressing Conservation, Recharge Enhancement, Rainwater Harvesting Precipitation Enhancement, or Brush Control 14

4.8 Water Supply Needs 15

5. **ACTIONS, PROCEDURE, PERFORMANCE, AND AVOIDANCE FOR IMPLEMENTATION OF MANAGEMENT PLAN**.....16

APPENDICES:

APPENDIX A: Estimated Historical Groundwater Use and 2022 State Water Plan Datasets

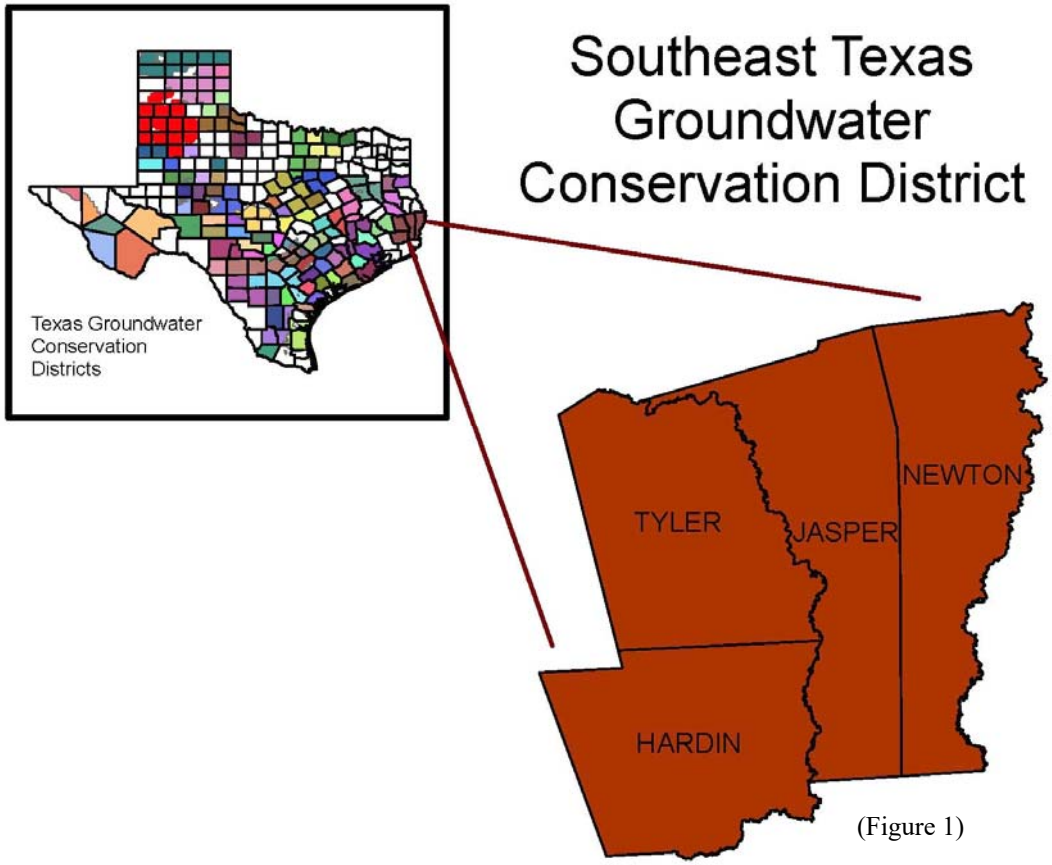
APPENDIX B: GAM Run 22-002 – Southeast Texas Groundwater Conservation District Management Plan

APPENDIX C: GAM Run 21-019 MAG – Modeled Available Groundwater for the Gulf Coast Aquifer System in Groundwater Management Area 14

APPENDIX D: Southeast Texas Groundwater Conservation District Rules

1. INTRODUCTION/PURPOSE

The Southeast Texas Groundwater Conservation District (the "District") was created to conserve, preserve, protect, recharge, and prevent the waste of groundwater and to control subsidence caused by the withdrawal of groundwater within its boundaries which are coextensive with the boundaries of Jasper, Newton, Hardin and Tyler Counties, Texas as shown in *Figure 1*. As part of the process of accomplishing its purposes, the District is required to adopt a management plan which, after adoption, must be reviewed and approved by the Texas Water Development Board. The District is located in Groundwater Management Area 14 which covers the Upper Gulf Coast Aquifer. The District is also included in the Region I, Regional Water Planning Group.



(Figure 1)

2. DESCRIPTION OF THE DISTRICT

2.1 Creation and Organization. The 78th Texas Legislature, in its regular session of 2003, enacted Senate Bill 1888 which created the District in Jasper and Newton Counties, subject to approval of a confirmation election. On November 2, 2004 the voters of Jasper and Newton Counties confirmed the creation of the District. Subsequently, the Commissioners' Courts of Hardin and Tyler Counties, Texas, adopted resolutions requesting that Hardin and Tyler County be added to the District. The voters of Hardin and Tyler County confirmed the inclusion of the Counties into the District at an election held on November 8, 2005.

The District is governed by a thirteen (13) member board of directors (the "Board"). The Jasper County Commissioners' Court appoints two directors, one of whom represents rural water utilities and small water supply interests and one director who represents the large industrial groundwater supply interests and large municipal utilities. The Newton County Commissioners' Court appoints two directors, one of whom represents rural water utilities and small municipal water supply interests and one director who represents forestry or agricultural groundwater supply interests in the Counties. Both the Jasper City Council and the Newton City Council each appoint one director. The Hardin County Commissioners' Court appoints three directors, one representing rural water utilities and small municipal groundwater supply interests, one director representing the forestry, industrial, agricultural or landowner groundwater supply interests, and one director representing large municipal groundwater supply interests. The Tyler County Commissioners' Court appoints three directors, one representing rural water utilities and small municipal groundwater supply interests, one director representing the forestry, industrial, agricultural or landowner groundwater supply interests, and one director representing large municipal groundwater supply interests.

The Commissioners' Courts of Jasper, Newton, Hardin, and Tyler Counties shall jointly appoint one director to represent the forestry, agricultural, or landowner groundwater supply interest. The jointly appointed director shall serve as the presiding officer of the Board.

2.2 Legal Authority. The Act creating the District, Senate Bill 1888, confers upon the District all of the powers of a groundwater conservation district under Texas Water Code Chapter 36, except as limited by the Act. The District was created under Texas Constitution Article 16, Section 59 and is a governmental agency and political subdivision of the State. Senate Bill 1888 prohibits the District from imposing a tax, limits pumpage fees charged by the District to not exceed $0.01 (one cent) per thousand gallons of groundwater withdrawn for any purpose. The Act further denies the District the power of eminent domain, the power to issue bonds or other obligations that pledge revenue derived from taxation, and the power to purchase groundwater lot rights unless the rights purchased are for conservation purposes and are permanently held in trust not to be produced.

2.3 Purpose of Management Plan. The 75th Texas Legislature in 1997 enacted Senate Bill 1 ("SB 1") to establish a comprehensive statewide water planning process. In particular, SB 1 contains provisions that required groundwater conservation districts to prepare management plans to identify the water supply resources and water demands that will shape the decisions of each district. SB 1 designed the management plans to include management goals for each district to manage and conserve the groundwater resources within their boundaries.

In 2001, the Texas Legislature enacted Senate Bill 2 ("SB 2") to build on the planning requirements of SB 1 and to further clarify the actions necessary for districts to manage and conserve the groundwater resources of the state of Texas.

The Texas Legislature enacted significant changes to the management of groundwater resources in Texas with the passage of House Bill 1763 ("HB 1763") in 2005. HB 1763 created a long-term planning process in which groundwater conservation district ("GCDs") in each Groundwater Management Area ("GMA") are required to meet and determine the desired future conditions ("DFCs") for groundwater resources within their boundaries by September 1, 2010. HB 1763 also requires that GCDs share their management plans with other GCDs within their respective GMA. The Southeast Texas Groundwater Conservation District is located within GMA 14 along with the following GCDs *(see figures 2a and 2b)*:

Bluebonnet Groundwater Conservation District;
Brazoria County Groundwater Conservation District;
Lone Star Groundwater Conservation District; and
Lower Trinity Groundwater Conservation District

TEXAS GROUNDWATER MANAGEMENT AREAS

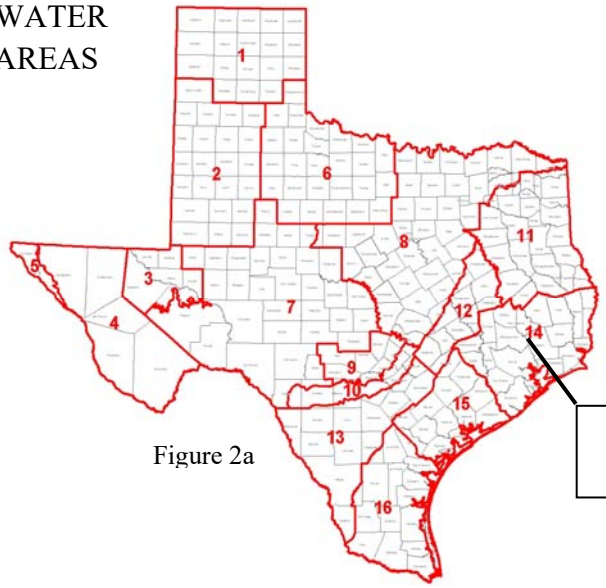


Figure 2a

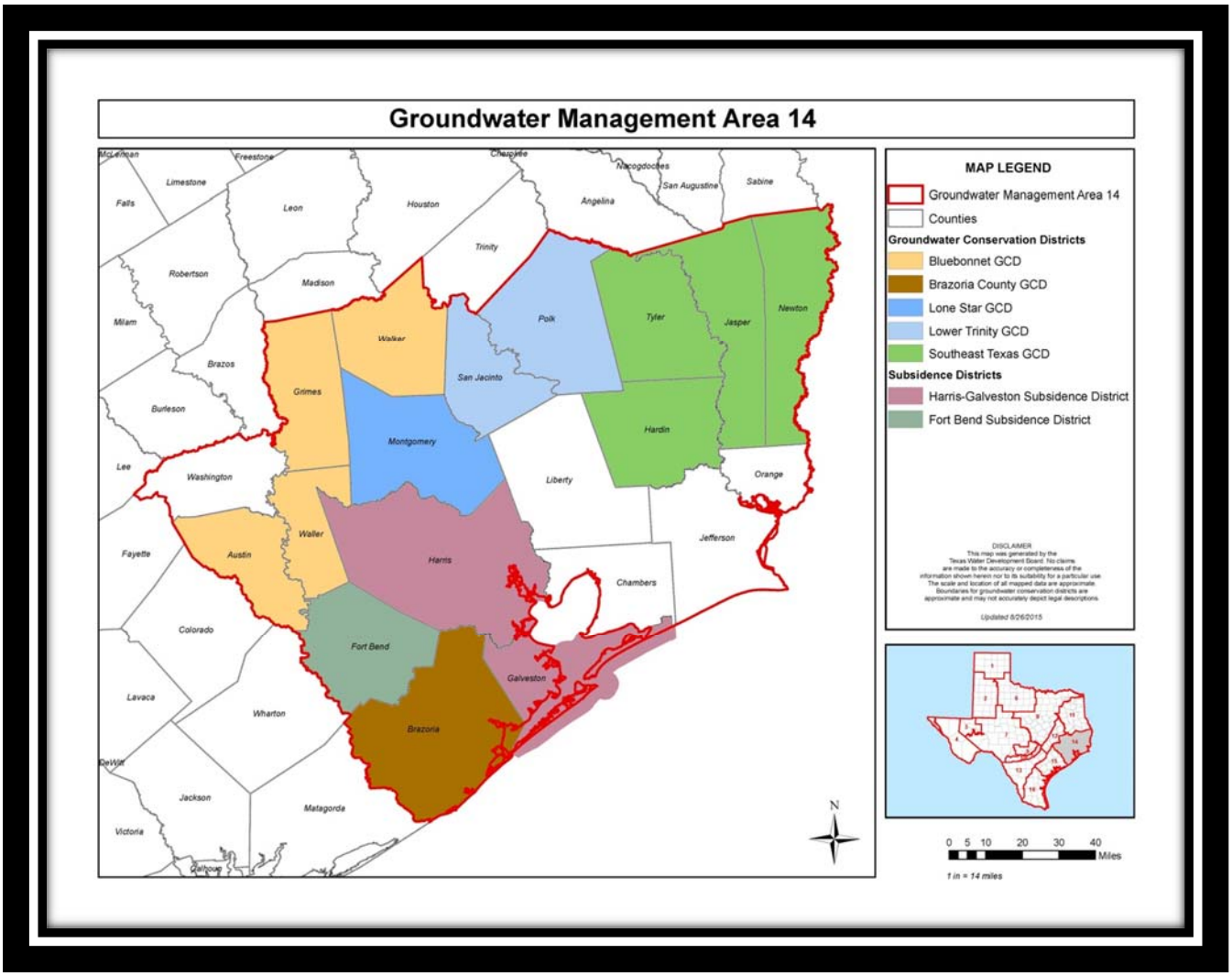


Figure 2b

The Southeast Texas Groundwater Conservation District's management plan satisfies the requirements of SB 1, SB 2, HB 1763, the statutory requirements of Chapter 36 of the Texas Water Code, and the administrative requirements of the Texas Water Development Board's rules.

2.4 Rules and Regulations. After public notice and a public hearing, the District adopted its substantive rules which became effective July 1, 2005 (amended October 2009, July 2010, April 2012, October 2014, and November 2020). The District also adopted Rules for Hearing which became effective July 1, 2005 (amended November 2020). A copy of the District

Rules, incorporated herein as Appendix D, and Rules for Hearing can be found at the District's website at: http://www.setgcd.org.

2.5 How the District Will Manage Groundwater Supplies: The District's management plan is promulgated under the District's statutory authority to protect private property rights, balance the conservation and development of groundwater to meet the needs of the state, use the best available science in the conservation and development of groundwater and to achieve the following objectives; to provide for conserving, preserving, protecting, and recharging of the groundwater or of a groundwater reservoir of its subdivisions in order to control subsidence, prevent degradation of water quality, or prevent waste of groundwater. The District's orders, rules, regulation, requirements, resolutions, policies, guidelines, or similar measures have been implemented to fulfill these objectives to minimize as far as practicable the drawdown of the water table or the reduction of artesian pressure, to prevent or control subsidence, to prevent interference between wells, to prevent degradation of water quality, and to prevent waste.

Non-Exempt Permits are reviewed individually and independently. The District reviews and analyzes any potential impacts to the groundwater resources. The District requires the submittal of a hydrogeologic report for non-exempt wells with a daily maximum capacity of 250,000 gallons or more as part of the permit application process. In general, the hydrogeologic report is intended to evaluate the impacts of pumping, such as drawdown, impacts to neighboring wells, potential for measurable subsidence and other relevant impacts. The hydrogeologic report must include the results of a simulation of the groundwater availability model of the area for the aquifer in which the well is to be completed. The District's Rules, attached as Appendix D, provide Guidelines for Hydrogeologic Reports setting standards and expectations for the reports.

The data and analyses the hydrogeologic report are used to address production limits, monitoring requirements, and permit conditions.

Controlling and preventing measurable subsidence will be addressed during review and processing of new, renewed, and amended permit applications. Prior to approval of a new Non-Exempt Permit, if the hydrogeological report indicates conditions including compaction of subsurface clay content, aquifer testing or other reliable data demonstrating the potential for measurable subsidence, the District will implement actions to address subsidence that may include (a) permit denial, revocation, suspension, cancellation, modification, or amendment, (b) production limits, (c) spacing requirements, (d) permit conditions requiring extensometer installation, subsidence monitoring and reporting, (e) the establishment of threshold limits that trigger reduces production based on monitoring results and (f) any other action reasonably necessary to control and prevent measurable subsidence. If the District has reason to believe that a Non-Exempt well has the potential to cause measurable subsidence, the District may take all actions it deems necessary to address the potential subsidence.

3. GROUNDWATER RESOURCES OF THE DISTRICT AND TECHNICAL INFORMATION AS REQUIRED BY TEXAS ADMINISTRATIVE CODE

The Texas Gulf Coast area includes the Gulf Coast Aquifer System, Yegua-Jackson Aquifer, and the Brazos River Alluvium aquifers. Only the Chicot, Evangeline, Burkeville Confined, Jasper, and the Yegua-Jackson Aquifers are present within the District. The boundaries of these aquifers have been defined by the Texas Water Development Board ("TWDB"). See the TWDB GAM Run 21-019 MAG attached as Appendix C.

3.1 <u>Modeled Available Groundwater ("MAG")</u>. The Texas Water Code defines modeled available groundwater as "the amount of water that the executive administrator

determines may be produced on an average annual basis to achieve a desired future condition established under Texas Water Code §36.108.

On January 5, 2022, the Members of Groundwater Management Area 14 approved Resolution 2021-10-5 adopting new desired future conditions with the groundwater management area. The desired future conditions that were approved are:

> *In each county in Groundwater Management Area 14, no less than 70 percent median available drawdown remaining in 2080 or no more than an average of 1.0 additional foot of subsidence between 2009 and 2080.*

The joint planning process set forth in Texas Water Code §36.108 must be collectively conducted by all groundwater conservation districts within the same GMA. The District is a member of GMA 14. GMA 14 adopted DFCs for the Gulf Coast Aquifer System on January 5, 2022:

As provided for by Texas Administrative Code, Rule §356.31(b), GMA 14 declared the following aquifers as non-relevant for the purposes of joint planning: Carrizo-Wilcox Aquifer; Queen City Aquifer; Sparta Aquifer; Yegua-Jackson Aquifer, Brazos River Alluvium Aquifer, Navasota River Alluvium Aquifer, San Bernard River Alluvium Aquifer, San Jacinto River Alluvium Aquifer, and Trinity River Alluvium Aquifer occurring within the bounds of GMA 14.

The adopted DFCs were then forwarded to the TWDB for development of the modeled available groundwater ("MAG") calculations. On September 8, 2022 the TWDB issued draft GAM Run 21-019 MAG for review which received final approval on October 6, 2022, attached as Appendix C. A summary of the desired future conditions and modeled available groundwater, relative to the Southeast Texas Groundwater Conservation District, are summarized in *Tables 1*.

DESIRED FUTURE CONDITION AND MODELED AVAILABLE GROUNDWATER FOR THE SOUTHEAST TEXAS GROUNDWATER CONSERVATION DISTRICT

The Desired Future Conditions for all of GMA 14 (with the exception of the Harris-Galveston, and Fort Bend Subsidence Districts), including the four counties of the Southeast Texas Groundwater Conservation District, are: *In each county in Groundwater Management Area 14, no less than 70 percent median available drawdown remaining in 2080 or no more than an average of 1.0 additional foot of subsidence between 2009 and 2080.*

The pumping volumes associated with the adopted DFCs for the period 2020 – 2080, as outlined in GR21-019 MAG, split by model/aquifer layer are as follows:

	MODELED AVAILABLE GROUNDWATER ANNUAL AF/YR				
	CHICOT AQUIFER	EVANGELINE AQUIFER	BURKEVILLE AQUIFER	JASPER AQUIFER	TOTAL
Hardin County	1,492	36,229	0	0	37,721
Jasper County	10,858	43,842	8	18,657	73,365
Newton County	547	23,162	0	13,800	37,509
Tyler County	0	18,519	0	15,871	34,390
TOTAL	12,897	121,752	8	48,328	**182,985**

*The Yegua-Jackson Aquifer is declared non-relevant within the Southeast Texas Groundwater Conservation District.

3.2 Amount of Groundwater Being Used within the District on an Annual Basis. Please refer to Appendix A.

3.3 Annual Amount of Recharge from Precipitation to the Groundwater Resources within the District. Please refer to Appendix B.

3.4 Annual Volume of Water that Discharges from the Aquifer to Springs and Surface Water Bodies. Please refer to Appendix B.

3.5 **Estimate of the Annual Volume of Flow into the District, out of the District, and Between Aquifers in the District**. Please refer to Appendix B.

3.6 **Projected Surface Water Supply within the District**. Please refer to Appendix A.

3.7 **Projected Total Demand for Water within the District**.

Please refer to Appendix A.

3.8 **Water Supply Needs**. The District reviewed, considered, and included the Water Supply Needs from the 2022 State Water Plan, adopted on July 7, 2021, and as provided by the Texas Water Development Board in the Estimated Historical Water User 2022 State Water Plan Datasets Report incorporated herein as Appendix A. The water supply needs as shown in the 2022 State Water Plan for the four counties of the Southeast Texas Groundwater Conservation District are overall nominal. Hardin and Tyler Counties show no water supply needs and Newton County indicates only a very minimal need. The 2022 State Water Plan shows a rather substantive need in Jasper County due to the water needs of the John D. Parker East Texas State Fish Hatchery.

3.9 **Water Management Strategies**. The District reviewed, considered, and included the Water Management Strategies from the 2022 State Water Plan, adopted on July 7, 2021, and as provided by the Texas Water Development Board in the Estimated Historical Water User 2022 State Water Plan Datasets Report incorporated herein as Appendix A.

Because there is no projected need in Hardin and Tyler Counties, the 2022 State Water Plan Projected Water Management Strategies do no include any strategy for additional water supplies, surface or groundwater, for these counties. The two counties with projected needs, Newton and Jasper, have Projected Water Management Strategies that do not rely on groundwater. The water

need for Newton County is met by the Projected Water Management Strategy of obtaining addition surface water from Toledo Bend Reservoir. The strategy to meet the need in Jasper County is to obtain additional surface water from Sam Rayburn Reservoir.

4. MANAGEMENT GOALS, PERFORMANCE STANDARDS, MANAGEMENT OBJECTIVES, AND METHODOLOGY

Each year, an annual report will be created by the general manager and staff of the District and will be provided to the members of the Board. The annual report will cover the activities of the District including information on the District's performance in regards to achieving the District's management plan goals and objectives. The annual report will be delivered to the Board within one hundred and eighty (180) days following the completion of the District's fiscal year. A copy of the Annual Report will be kept on file and be made available for public inspection at the District's office upon adoption of the report by the Board.

4.1 Providing the Most Efficient Use of Groundwater:

4.1.1 Objective - Each year, the District will require all new exempt or non-exempt wells that are constructed within the boundaries of the District to be registered or permitted with the District in accordance with the District's Rules.

4.1.2 Performance Standard - The number of exempt and non-exempt wells registered or permitted by the District for the year will be incorporated into the District's Annual Report.

4.2 Controlling and Preventing the Waste of Groundwater in the District

4.2.1 Objectives - Each year, the District will make an evaluation of the District Rules to determine whether any amendments are recommended to decrease the amount of waste of groundwater within the District.

4.2.2 Performance Standard - The District will include a copy of the meeting notice/agenda as well as the minutes of the meeting at which the District Rules were discussed and the determination of whether any amendments to the rules are recommended to prevent the waste of groundwater in the District's Annual Report.

4.2.3 Objective - Each year, the District will provide information to the public on eliminating and reducing wasteful practices in the use of groundwater by posting an article or newsletter on groundwater waste reduction on the District's website.

4.2.4 Performance Standard - Each year, a copy of the information provided in the groundwater waste reduction article or newsletter posted on the District's website will be included in the District's Annual Report.

4.3 Controlling and Preventing Subsidence.

4.3.1 Objective – The District has reviewed the pertinent portions (Section 4.1.1 and 4.2.4) of the Texas Water Development Board's subsidence risk report: ***Identification of the Vulnerability of the Major and Minor Aquifers of Texas to Subsidence with Regard to Groundwater Pumping,*** – as well as other sources for applicability to the Southeast Texas Groundwater Conservation District in an effort to better proactively manage subsidence.

At this time, there are no known occurrences of subsidence within the District. The District proactively strives to prevent subsidence from occurring by applying its Rules, meeting the goals of its management plan, and participating in joint planning efforts in both GMA 14 and the Region I Water Planning Group. Subsidence is one of the main considerations in groundwater management area planning and must be taken into consideration in the desired future conditions process prior to adopting

new desired future conditions. The District will participate in this process by attending at least one Groundwater Management Area 14 meeting each year.

4.3.1 Performance Standard – A copy of the Groundwater Management Area 14's meeting notice/agenda and sign-in sheets (or any other available evidence of attendance) will be included in the District's annual report.

4.3.2 Objective - Each year, the District will review the data from subsidence monitoring locations within the District boundaries and may pursue installation of additional PAM or CORs subsidence monitoring locations.

4.3.2. Performance Standard - Each year, a summary of the data related to subsidence monitoring stations within the District and installation of additional sites will be included in the Annual Report submitted to the Board of Directors of the District.

4.4 Addressing Conjunctive Surface Water Management Issues.

4.4.1 Objective - The District will coordinate conjunctive surface water issues with the Angelina and Neches River Authority (ANRA), Lower Neches Valley Authority (LNVA), the Sabine River Authority (SRA), and the East Texas Regional Water Planning Group (also known as Region I), by either inviting the officials from the Planning Group and river authorities to attend a District meeting at least once a year or by attending at least one of the East Texas Regional Water Planning Group meetings each year.

4.4.2 Performance Standard. - A copy of the invitation letters to the Planning Group and the surface water providers, as well as evidence that the letters have been sent, via either U.S. Postal Service (registered/return receipt) or e-mail will be included in the District's annual report, or a copy of the East Texas Regional Water

Planning Group meeting notice(s) and sign in sheet(s) indicating a representative of the District was present will be included in the District's Annual Report.

4.5 Natural Resource Issues Affecting the Use and Availability of Groundwater or Affected by the Use of Groundwater.

4.4.1 Objective - The District requires that all water wells used in conjunction with the exploration of hydrocarbons be registered with the District.

4.4.2 Performance Standard – Each month the Board will be provided information pertaining to any new water well registered and drilled for the purpose of hydrocarbon exploration and a summary of all these wells will be included in the District's Annual Report.

4.6 Addressing Drought Conditions.

4.6.1 Objectives - The District will post an article and/or drought index maps regarding drought conditions in the District at least annually on the District's website.

4.6.2 Performance Standard - A copy of the article and/or drought index maps posted on the District's website regarding drought conditions will be included in the District's annual report.

4.7 Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, or Brush Control.

Conservation is the only practice which is practicable in the District. The District does not consider recharge enhancement, precipitation enhancement, or brush control to be either necessary or practical at this time. Rainwater harvesting is not necessary due to the very high rainfall rate in the District. Therefore, these four goals are not applicable.

4.7.1 Objective - The District will annually submit an article regarding water conservation for publication to at least one newspaper of general circulation in Jasper, Newton, Hardin and Tyler Counties.

4.7.2 Performance Standard - A copy of the article submitted by the District for publication to a newspaper of general circulation in Jasper, Newton, Hardin and Tyler Counties regarding water conservation will be included in the District's annual report.

4.7.3 Objective - The District will publish and mail or email, at least once annually, an informative flier or newsletter on water conservation and related issues to groundwater use permit holders. A copy of the flier or newsletter shall also be made available on the District's website.

4.7.4 Performance Standard – A copy of the flier or newsletter on water conservation and related issues, along with the mailing/emailing list of the permit holders to whom it was provided shall be included in the District's annual report.

4.8 Addressing in a Quantitative Manner the Desired Future Conditions

4.8.1 Objective - The District will monitor groundwater conditions within the District by measuring the static water levels in at least fifteen (15) monitor wells annually.

4.8.2 Performance Standard – The recorded static water levels of the fifteen (15) monitor wells will be included in the District's annual report.

5. ACTIONS, PROCEDURES, PERFORMANCE, AVOIDANCE FOR IMPLEMENTATION OF MANAGEMENT PLAN, AND DETAILS ON MANAGING GROUNDWATER SUPPLIES IN THE DISTRICT.

The District will implement the goals and provisions of this management plan as a guideline in its decision making. The District will ensure that its planning efforts, operations, and activities will be consistent with the provisions of this plan.

The District has adopted rules in accordance with Chapter 36 of the Texas Water Code, and all rules will be followed and enforced. The District Rules are available at https://setgcd.org/rules/The District may amend the District Rules as necessary to comply with changes to Chapter 36 of the Texas Water Code or a revised management plan to ensure the best management of groundwater within the District according to present aquifer conditions. The development and enforcement of the district rules will be based on best scientific and technical evidence available to the District.

The District will encourage cooperation and coordination in the implementation of this plan. All operations and activities of the District will be performed in a manner that encourages cooperation with the appropriate state, regional or local water entity.

APPENDIX A

Estimated Historical Groundwaterater Use And 2022 State Water Plan Datasets:

Texas Water Development Board
Groundwater Division
Groundwater Technical Assistance Section
(512) 462-7317
February 28, 2022

Estimated Historical Groundwater Use And 2022 State Water Plan Datasets:

Southeast Texas Groundwater Conservation District

Texas Water Development Board
Groundwater Division
Groundwater Technical Assistance Section
stephen.allen@twdb.texas.gov
(512) 463-7317
February 28, 2022

GROUNDWATER MANAGEMENT PLAN DATA:

This package of water data reports (part 1 of a 2-part package of information) is being provided to groundwater conservation districts to help them meet the requirements for approval of their five-year groundwater management plan. Each report in the package addresses a specific numbered requirement in the Texas Water Development Board's groundwater management plan checklist. The checklist can be viewed and downloaded from this web address:

http://www.twdb.texas.gov/groundwater/docs/GCD/GMPChecklist0113.pdf

The five reports included in this part are:

1. Estimated Historical Groundwater Use (checklist item 2)
   from the TWDB Historical Water Use Survey (WUS)
2. Projected Surface Water Supplies (checklist item 6)
3. Projected Water Demands (checklist item 7)
4. Projected Water Supply Needs (checklist item 8)
5. Projected Water Management Strategies (checklist item 9)
   from the 2022 Texas State Water Plan (SWP)

Part 2 of the 2-part package is the groundwater availability model (GAM) report for the District (checklist items 3 through 5). The District should have received, or will receive, this report from the Groundwater Availability Modeling Section. Questions about the GAM can be directed to Dr. Shirley Wade, shirley.wade@twdb.texas.gov, (512) 936-0883.

DISCLAIMER:

The data presented in this report represents the most up to date WUS and 2022 SWP data available as of 2/28/2022. Although it does not happen frequently, either of these datasets are subject to change pending the availability of more accurate WUS data or an amendment to the 2022 SWP. District personnel must review these datasets and correct any discrepancies in order to ensure approval of their groundwater management plan.

The WUS dataset can be verified at this web address:

http://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/

The 2022 SWP dataset can be verified by contacting Sabrina Anderson (sabrina.anderson@twdb.texas.gov or 512-936-0886).

The values presented in the data tables of this report are county-based. In cases where groundwater conservation districts cover only a portion of one or more counties the data values are modified with an apportioning multiplier to create new values that more accurately represent conditions within district boundaries. The multiplier used in the following formula is a land area ratio: (data value * (land area of district in county / land area of county)). For two of the four SWP tables (Projected Surface Water Supplies and Projected Water Demands) only the county-wide water user group (WUG) data values (county other, manufacturing, steam electric power, irrigation, mining and livestock) are modified using the multiplier. WUG values for municipalities, water supply corporations, and utility districts are not apportioned; instead, their full values are retained when they are located within the district and eliminated when they are located outside (we ask each district to identify these entity locations).

The remaining SWP tables (Projected Water Supply Needs and Projected Water Management Strategies) are not modified because district-specific values are not statutorily required. Each district needs only "consider" the county values in these tables.

In the WUS table every category of water use (including municipal) is apportioned. Staff determined that breaking down the annual municipal values into individual WUGs was too complex.

TWDB recognizes that the apportioning formula used is not perfect but is the best available process with respect to time and staffing constraints. If a district believes it has data that is more accurate it can add those data to the plan with an explanation of how the data were derived. Apportioning percentages that the TWDB used are listed above each applicable table.

For additional questions regarding this data, please contact Stephen Allen (stephen.allen@twdb.texas.gov or 512-463-7317).

Estimated Historical Water Use
TWDB Historical Water Use Survey (WUS) Data

Groundwater and surface water historical use estimates are currently unavailable for calendar year 2020. TWDB staff anticipates the calculation and posting of these estimates at a later date.

HARDIN COUNTY

100% (multiplier)

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2019	GW	5,396	37	0	0	183	41	5,657
	SW	0	0	265	0	0	123	388
2018	GW	5,398	52	0	1	238	41	5,730
	SW	0	0	0	0	0	123	123
2017	GW	5,222	36	0	1	176	40	5,475
	SW	0	0	0	0	0	120	120
2016	GW	5,528	42	7	1	76	50	5,704
	SW	0	0	2	0	94	151	247
2015	GW	5,691	30	0	0	42	50	5,813
	SW	0	0	0	0	89	150	239
2014	GW	5,822	30	0	0	18	61	5,931
	SW	0	0	0	0	135	184	319
2013	GW	5,901	28	1	0	612	46	6,588
	SW	0	0	0	0	165	140	305
2012	GW	5,921	30	0	0	826	35	6,812
	SW	0	0	0	0	159	106	265
2011	GW	6,674	35	0	0	1,284	52	8,045
	SW	0	0	0	0	114	155	269
2010	GW	6,412	40	12	0	1,436	52	7,952
	SW	0	0	2	0	197	158	357
2009	GW	5,938	51	23	0	866	41	6,919
	SW	0	2	3	0	192	124	321
2008	GW	5,733	55	35	0	2,245	44	8,112
	SW	0	0	4	0	184	133	321
2007	GW	5,680	90	0	0	1,769	40	7,579
	SW	0	0	0	0	169	120	289
2006	GW	6,002	137	3	0	789	40	6,971
	SW	0	0	0	0	189	120	309
2005	GW	5,954	146	3	0	166	40	6,309
	SW	0	0	0	0	174	121	295
2004	GW	5,460	200	3	0	136	16	5,815
	SW	0	0	0	0	171	136	307

JASPER COUNTY

100% (multiplier)

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2019	GW	3,615	46,588	0	0	26	109	50,338
	SW	5	6,023	0	0	117	287	6,432
2018	GW	3,963	44,057	0	0	33	109	48,162
	SW	42	8,128	0	0	85	417	8,672
2017	GW	3,758	41,816	0	0	59	105	45,738
	SW	24	6,423	0	0	417	410	7,274
2016	GW	3,949	46,056	0	0	33	109	50,147
	SW	520	5,963	0	0	622	426	7,531
2015	GW	3,860	44,069	2	0	25	108	48,064
	SW	498	5,808	0	0	99	363	6,768
2014	GW	4,291	37,210	19	0	69	125	41,714
	SW	572	7,099	2	0	75	288	8,036
2013	GW	4,838	39,391	1	0	33	124	44,387
	SW	538	6,582	0	0	110	323	7,553
2012	GW	4,924	37,435	0	0	110	95	42,564
	SW	468	7,307	0	0	108	143	8,026
2011	GW	5,460	33,828	0	0	0	143	39,431
	SW	0	8,137	0	0	100	548	8,785
2010	GW	5,402	36,124	13	0	0	144	41,683
	SW	0	7,798	2	0	0	646	8,446
2009	GW	5,061	39,400	0	0	0	417	44,878
	SW	0	7,405	0	0	0	181	7,586
2008	GW	4,740	42,682	0	0	30	123	47,575
	SW	0	7,954	0	0	0	641	8,595
2007	GW	4,680	44,467	0	0	30	197	49,374
	SW	0	8,419	0	0	0	643	9,062
2006	GW	4,823	45,740	0	0	36	192	50,791
	SW	0	9,826	0	0	0	666	10,492
2005	GW	4,684	50,452	0	0	0	162	55,298
	SW	0	139	0	0	0	591	730
2004	GW	4,871	34,395	0	0	0	73	39,339
	SW	0	14,175	0	0	0	647	14,822

NEWTON COUNTY

100% (multiplier)

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2019	GW	1,583	0	0	0	42	31	1,656
	SW	0	0	0	6,430	0	58	6,488
2018	GW	1,597	0	0	0	42	31	1,670
	SW	0	0	0	6,808	0	58	6,866
2017	GW	1,553	0	0	0	42	30	1,625
	SW	0	0	0	5,466	0	56	5,522
2016	GW	1,593	0	0	0	42	40	1,675
	SW	0	0	0	3,893	0	74	3,967
2015	GW	1,552	0	0	0	42	39	1,633
	SW	0	0	0	5,778	0	73	5,851
2014	GW	1,682	0	0	0	50	51	1,783
	SW	0	0	0	0	0	94	94
2013	GW	1,814	0	3	0	83	45	1,945
	SW	0	0	1	0	0	83	84
2012	GW	1,887	0	0	0	83	30	2,000
	SW	0	0	0	0	0	57	57
2011	GW	2,185	0	1	0	50	83	2,319
	SW	0	0	0	0	100	155	255
2010	GW	2,098	52	77	0	137	84	2,448
	SW	0	0	78	0	0	157	235
2009	GW	2,020	52	73	0	0	37	2,182
	SW	0	0	75	0	0	68	143
2008	GW	2,116	52	69	0	0	37	2,274
	SW	0	0	72	0	0	68	140
2007	GW	2,197	52	0	0	50	49	2,348
	SW	0	0	0	0	317	90	407
2006	GW	2,341	32	0	0	264	49	2,686
	SW	0	0	0	0	111	90	201
2005	GW	4,297	7	0	0	248	43	4,595
	SW	0	0	0	0	127	79	206
2004	GW	2,110	61	0	0	292	51	2,514
	SW	0	236	0	0	208	77	521

TYLER COUNTY

100% (multiplier)

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2019	GW	3,788	106	27	0	267	54	4,242
	SW	0	0	7	0	0	214	221
2018	GW	3,893	29	1	3	260	54	4,240
	SW	0	0	0	0	0	214	214
2017	GW	3,753	0	32	0	256	52	4,093
	SW	0	0	8	0	0	208	216
2016	GW	3,713	0	2	0	276	47	4,038
	SW	0	0	1	0	0	190	191
2015	GW	3,793	0	0	0	293	47	4,133
	SW	0	0	0	0	0	187	187
2014	GW	3,850	0	0	0	313	45	4,208
	SW	0	0	0	0	0	182	182
2013	GW	4,255	0	0	0	258	43	4,556
	SW	0	0	0	0	92	172	264
2012	GW	4,430	0	0	0	279	42	4,751
	SW	0	0	0	0	0	167	167
2011	GW	4,851	0	0	0	437	60	5,348
	SW	0	0	0	0	0	239	239
2010	GW	4,458	0	14	0	393	59	4,924
	SW	0	0	1	0	0	236	237
2009	GW	4,012	2	18	0	0	80	4,112
	SW	0	0	2	0	675	320	997
2008	GW	3,232	2	22	0	19	46	3,321
	SW	0	0	3	0	0	186	189
2007	GW	3,834	1	0	0	175	60	4,070
	SW	0	0	0	0	0	239	239
2006	GW	3,480	1	0	0	500	56	4,037
	SW	0	0	0	0	0	225	225
2005	GW	3,337	4	0	0	500	46	3,887
	SW	0	0	0	0	0	185	185
2004	GW	3,129	5	0	0	434	87	3,655
	SW	0	0	0	0	0	130	130

Projected Surface Water Supplies
TWDB 2022 State Water Plan Data

HARDIN COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
I	IRRIGATION, HARDIN	NECHES	NECHES RUN-OF-RIVER	57	57	57	57	57	57
I	LIVESTOCK, HARDIN	NECHES	NECHES LIVESTOCK LOCAL SUPPLY	155	155	155	155	155	155
	Sum of Projected Surface Water Supplies (acre-feet)			**212**	**212**	**212**	**212**	**212**	**212**

JASPER COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
I	LIVESTOCK, JASPER	NECHES	NECHES LIVESTOCK LOCAL SUPPLY	332	332	332	332	332	332
I	LIVESTOCK, JASPER	SABINE	SABINE LIVESTOCK LOCAL SUPPLY	215	215	215	215	215	215
I	MANUFACTURING, JASPER	NECHES	NECHES RUN-OF-RIVER	546	546	546	546	546	546
I	MANUFACTURING, JASPER	NECHES	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM	45,841	57,200	57,200	57,200	57,200	57,200
I	MANUFACTURING, JASPER	SABINE	NECHES RUN-OF-RIVER	2	2	2	2	2	2
I	MANUFACTURING, JASPER	SABINE	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM	132	164	164	164	164	164
	Sum of Projected Surface Water Supplies (acre-feet)			**47,068**	**58,459**	**58,459**	**58,459**	**58,459**	**58,459**

NEWTON COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
I	IRRIGATION, NEWTON	SABINE	SABINE RUN-OF-RIVER	50	50	50	50	50	50
I	LIVESTOCK, NEWTON	SABINE	SABINE LIVESTOCK LOCAL SUPPLY	155	155	155	155	155	155
I	MANUFACTURING, NEWTON	SABINE	SABINE RUN-OF-RIVER	135	135	135	135	135	135
I	MINING, NEWTON	SABINE	SABINE OTHER LOCAL SUPPLY	158	158	158	158	158	158
I	STEAM ELECTRIC POWER, NEWTON	SABINE	SABINE RUN-OF-RIVER	13,442	13,442	13,442	13,442	13,442	13,442
	Sum of Projected Surface Water Supplies (acre-feet)			**13,940**	**13,940**	**13,940**	**13,940**	**13,940**	**13,940**

TYLER COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
I	IRRIGATION, TYLER	NECHES	NECHES RUN-OF-RIVER	88	88	88	88	88	88
I	LIVESTOCK, TYLER	NECHES	NECHES LIVESTOCK LOCAL SUPPLY	239	239	239	239	239	239
I	MINING, TYLER	NECHES	NECHES OTHER LOCAL SUPPLY	8	8	8	8	8	8
I	STEAM ELECTRIC POWER, TYLER	NECHES	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM	838	838	838	838	838	838
I	WOODVILLE	NECHES	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM	4,762	4,762	4,762	4,762	4,762	4,762
	Sum of Projected Surface Water Supplies (acre-feet)			**5,935**	**5,935**	**5,935**	**5,935**	**5,935**	**5,935**

Projected Water Demands
TWDB 2022 State Water Plan Data

Please note that the demand numbers presented here include the plumbing code savings found in the Regional and State Water Plans.

HARDIN COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	COUNTY-OTHER, HARDIN	NECHES	699	686	674	678	681	687
I	COUNTY-OTHER, HARDIN	TRINITY	11	10	10	10	10	10
I	HARDIN COUNTY WCID 1	NECHES	131	134	136	138	141	143
I	IRRIGATION, HARDIN	NECHES	989	989	989	989	989	989
I	KOUNTZE	NECHES	255	246	238	234	234	234
I	LAKE LIVINGSTON WSC	TRINITY	7	8	8	9	10	11
I	LIVESTOCK, HARDIN	NECHES	196	196	196	196	196	196
I	LIVESTOCK, HARDIN	TRINITY	2	2	2	2	2	2
I	LUMBERTON MUD	NECHES	2,610	2,805	2,929	3,032	3,137	3,222
I	MANUFACTURING, HARDIN	NECHES	40	45	45	45	45	45
I	MINING, HARDIN	NECHES	12	12	12	12	12	12
I	NORTH HARDIN WSC	NECHES	543	561	586	604	619	630
I	SILSBEE	NECHES	944	931	918	913	919	925
I	SOUR LAKE	NECHES	279	285	288	292	297	301
I	STEAM ELECTRIC POWER, HARDIN	NECHES	1	1	1	1	1	1
I	WEST HARDIN WSC	NECHES	235	236	237	237	238	238
I	WEST HARDIN WSC	TRINITY	3	3	3	3	3	3
I	WILDWOOD POA	NECHES	156	160	162	164	166	168
	Sum of Projected Water Demands (acre-feet)		**7,113**	**7,310**	**7,434**	**7,559**	**7,700**	**7,817**

JASPER COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	BROOKELAND FWSD	NECHES	39	38	37	36	36	36
I	COUNTY-OTHER, JASPER	NECHES	877	861	836	821	817	817
I	COUNTY-OTHER, JASPER	SABINE	821	806	784	769	766	766
I	IRRIGATION, JASPER	NECHES	94	94	94	94	94	94
I	IRRIGATION, JASPER	SABINE	57	57	57	57	57	57
I	JASPER	NECHES	1,963	1,963	1,937	1,918	1,915	1,915
I	JASPER COUNTY WCID 1	SABINE	204	192	188	188	188	188
I	KIRBYVILLE	SABINE	402	401	395	391	390	390
I	LIVESTOCK, JASPER	NECHES	6,354	6,354	6,354	6,354	6,354	6,354
I	LIVESTOCK, JASPER	SABINE	3,646	3,646	3,646	3,646	3,646	3,646
I	MANUFACTURING, JASPER	NECHES	45,841	57,200	57,200	57,200	57,200	57,200

I	MANUFACTURING, JASPER	SABINE	132	164	164	164	164	164
I	MAURICEVILLE SUD	SABINE	30	30	30	30	30	30
I	MINING, JASPER	NECHES	70	56	42	27	13	7
I	MINING, JASPER	SABINE	78	62	46	31	15	7
I	RAYBURN COUNTRY MUD	NECHES	178	174	170	167	167	167
I	RURAL WSC	NECHES	107	105	102	101	100	100
I	SOUTH JASPER COUNTY WSC	NECHES	31	30	28	28	28	28
I	SOUTH JASPER COUNTY WSC	SABINE	88	84	82	82	82	82
I	UPPER JASPER COUNTY WATER AUTHORITY	NECHES	145	143	140	139	139	139
I	UPPER JASPER COUNTY WATER AUTHORITY	SABINE	55	55	54	53	53	53
	Sum of Projected Water Demands (acre-feet)		**61,212**	**72,515**	**72,386**	**72,296**	**72,254**	**72,240**

NEWTON COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	BROOKELAND FWSD	SABINE	104	101	99	97	97	97
I	COUNTY-OTHER, NEWTON	SABINE	886	846	811	803	800	800
I	IRRIGATION, NEWTON	SABINE	101	101	101	101	101	101
I	LIVESTOCK, NEWTON	SABINE	168	168	168	168	168	168
I	MANUFACTURING, NEWTON	SABINE	52	56	56	56	56	56
I	MAURICEVILLE SUD	SABINE	27	26	26	26	26	26
I	MINING, NEWTON	SABINE	429	373	279	209	146	107
I	NEWTON	SABINE	443	433	425	421	420	420
I	SOUTH NEWTON WSC	SABINE	167	167	167	167	167	167
I	STEAM ELECTRIC POWER, NEWTON	SABINE	5,778	5,778	5,778	5,778	5,778	5,778
	Sum of Projected Water Demands (acre-feet)		**8,155**	**8,049**	**7,910**	**7,826**	**7,759**	**7,720**

TYLER COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	CHESTER WSC	NECHES	151	151	151	152	154	155
I	COLMESNEIL	NECHES	252	247	243	241	241	241
I	COUNTY-OTHER, TYLER	NECHES	793	764	736	719	714	711
I	CYPRESS CREEK WSC	NECHES	117	115	113	112	112	112
I	IRRIGATION, TYLER	NECHES	354	354	354	354	354	354
I	LAKE LIVINGSTON WSC	NECHES	2	2	2	3	3	3
I	LIVESTOCK, TYLER	NECHES	249	249	249	249	249	249
I	MINING, TYLER	NECHES	160	198	150	103	55	29
I	MOSCOW WSC	NECHES	2	2	3	3	3	3
I	STEAM ELECTRIC POWER, TYLER	NECHES	200	200	200	200	200	200
I	TYLER COUNTY WSC	NECHES	660	638	617	606	604	604
I	WARREN WSC	NECHES	185	180	175	173	172	172
I	WILDWOOD POA	NECHES	116	119	120	122	123	125

I	WOODVILLE	NECHES	1,241	1,218	1,196	1,184	1,182	1,182
		Sum of Projected Water Demands (acre-feet)	**4,482**	**4,437**	**4,309**	**4,221**	**4,166**	**4,140**

Projected Water Supply Needs
TWDB 2022 State Water Plan Data

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

HARDIN COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	COUNTY-OTHER, HARDIN	NECHES	4	3	3	3	3	3
I	COUNTY-OTHER, HARDIN	TRINITY	5	6	6	6	6	6
I	HARDIN COUNTY WCID 1	NECHES	102	99	97	95	92	90
I	IRRIGATION, HARDIN	NECHES	0	0	0	0	0	0
I	KOUNTZE	NECHES	0	0	0	0	0	0
I	LAKE LIVINGSTON WSC	TRINITY	3	3	4	3	3	2
I	LIVESTOCK, HARDIN	NECHES	18	18	18	18	18	18
I	LIVESTOCK, HARDIN	TRINITY	0	0	0	0	0	0
I	LUMBERTON MUD	NECHES	0	0	0	0	0	0
I	MANUFACTURING, HARDIN	NECHES	6	6	6	6	6	6
I	MINING, HARDIN	NECHES	0	0	0	0	0	0
I	NORTH HARDIN WSC	NECHES	0	0	0	0	0	0
I	SILSBEE	NECHES	673	686	699	704	698	692
I	SOUR LAKE	NECHES	95	89	86	82	77	73
I	STEAM ELECTRIC POWER, HARDIN	NECHES	0	0	0	0	0	0
I	WEST HARDIN WSC	NECHES	3	3	3	3	3	3
I	WEST HARDIN WSC	TRINITY	0	0	0	0	0	0
I	WILDWOOD POA	NECHES	0	0	0	0	0	0
	Sum of Projected Water Supply Needs (acre-feet)		**0**	**0**	**0**	**0**	**0**	**0**

JASPER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	BROOKELAND FWSD	NECHES	0	0	0	0	0	0
I	COUNTY-OTHER, JASPER	NECHES	319	307	291	280	278	278
I	COUNTY-OTHER, JASPER	SABINE	187	163	113	87	81	81
I	IRRIGATION, JASPER	NECHES	0	0	0	0	0	0
I	IRRIGATION, JASPER	SABINE	0	0	0	0	0	0
I	JASPER	NECHES	0	0	26	45	48	48
I	JASPER COUNTY WCID 1	SABINE	0	0	0	0	0	0
I	KIRBYVILLE	SABINE	0	0	0	0	0	0
I	LIVESTOCK, JASPER	NECHES	-5,577	-5,577	-5,577	-5,577	-5,577	-5,577
I	LIVESTOCK, JASPER	SABINE	-3,355	-3,355	-3,355	-3,355	-3,355	-3,355
I	MANUFACTURING, JASPER	NECHES	31,776	31,777	31,777	31,777	31,777	31,777

I	MANUFACTURING, JASPER	SABINE	92	91	91	91	91	91
I	MAURICEVILLE SUD	SABINE	43	43	41	40	38	38
I	MINING, JASPER	NECHES	0	0	0	0	0	1
I	MINING, JASPER	SABINE	0	0	0	0	0	1
I	RAYBURN COUNTRY MUD	NECHES	333	337	341	344	344	344
I	RURAL WSC	NECHES	143	145	148	149	150	150
I	SOUTH JASPER COUNTY WSC	NECHES	0	0	0	0	0	0
I	SOUTH JASPER COUNTY WSC	SABINE	0	0	0	0	0	0
I	UPPER JASPER COUNTY WATER AUTHORITY	NECHES	0	0	0	0	0	0
I	UPPER JASPER COUNTY WATER AUTHORITY	SABINE	0	0	0	0	0	0
	Sum of Projected Water Supply Needs (acre-feet)		**-8,932**	**-8,932**	**-8,932**	**-8,932**	**-8,932**	**-8,932**

NEWTON COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	BROOKELAND FWSD	SABINE	0	0	0	0	0	0
I	COUNTY-OTHER, NEWTON	SABINE	0	0	0	0	0	0
I	IRRIGATION, NEWTON	SABINE	279	279	279	279	279	279
I	LIVESTOCK, NEWTON	SABINE	91	91	91	91	91	91
I	MANUFACTURING, NEWTON	SABINE	516	588	665	735	802	875
I	MAURICEVILLE SUD	SABINE	41	39	38	36	36	35
I	MINING, NEWTON	SABINE	-115	-59	35	105	168	207
I	NEWTON	SABINE	40	50	58	62	63	63
I	SOUTH NEWTON WSC	SABINE	175	175	175	175	175	175
I	STEAM ELECTRIC POWER, NEWTON	SABINE	7,664	7,664	7,664	7,664	7,664	7,664
	Sum of Projected Water Supply Needs (acre-feet)		**-115**	**-59**	**0**	**0**	**0**	**0**

TYLER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
I	CHESTER WSC	NECHES	75	75	75	74	72	71
I	COLMESNEIL	NECHES	103	108	112	114	114	114
I	COUNTY-OTHER, TYLER	NECHES	0	0	0	0	0	0
I	CYPRESS CREEK WSC	NECHES	0	0	0	0	0	0
I	IRRIGATION, TYLER	NECHES	293	293	293	293	293	293
I	LAKE LIVINGSTON WSC	NECHES	3	3	3	2	2	2
I	LIVESTOCK, TYLER	NECHES	65	65	65	65	65	65
I	MINING, TYLER	NECHES	0	0	0	0	0	0
I	MOSCOW WSC	NECHES	0	0	0	0	0	0
I	STEAM ELECTRIC POWER, TYLER	NECHES	829	829	829	829	829	829
I	TYLER COUNTY WSC	NECHES	0	0	0	0	0	0
I	WARREN WSC	NECHES	410	415	420	422	423	423
I	WILDWOOD POA	NECHES	0	0	0	0	0	0

I	WOODVILLE	NECHES	4,680	4,703	4,725	4,737	4,739	4,739
	Sum of Projected Water Supply Needs (acre-feet)		**0**	**0**	**0**	**0**	**0**	**0**

Projected Water Management Strategies
TWDB 2022 State Water Plan Data

HARDIN COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
WILDWOOD POA, NECHES (I)							
WILDWOOD POA - MUNICIPAL CONSERVATION	DEMAND REDUCTION [HARDIN]	2	3	4	4	5	5
		2	**3**	**4**	**4**	**5**	**5**
Sum of Projected Water Management Strategies (acre-feet)		**2**	**3**	**4**	**4**	**5**	**5**

JASPER COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
JASPER, NECHES (I)							
WUG-CONS-MUNICIPAL CONSERVATION-JASPER	DEMAND REDUCTION [JASPER]	75	124	141	158	178	196
		75	**124**	**141**	**158**	**178**	**196**
KIRBYVILLE, SABINE (I)							
KIRBYVILLE - MUNICIPAL CONSERVATION	DEMAND REDUCTION [JASPER]	6	9	10	11	11	12
		6	**9**	**10**	**11**	**11**	**12**
LIVESTOCK, JASPER, NECHES (I)							
JASP-LTK-PURCHASE FROM LOWER NECHES VALLEY AUTHORITY (SAM RAYBURN)	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM [RESERVOIR]	5,577	5,577	5,577	5,577	5,577	5,577
		5,577	**5,577**	**5,577**	**5,577**	**5,577**	**5,577**
LIVESTOCK, JASPER, SABINE (I)							
JASP-LTK-PURCHASE FROM LOWER NECHES VALLEY AUTHORITY (SAM RAYBURN)	SAM RAYBURN-STEINHAGEN LAKE/RESERVOIR SYSTEM [RESERVOIR]	3,355	3,355	3,355	3,355	3,355	3,355
		3,355	**3,355**	**3,355**	**3,355**	**3,355**	**3,355**
Sum of Projected Water Management Strategies (acre-feet)		**9,013**	**9,065**	**9,083**	**9,101**	**9,121**	**9,140**

NEWTON COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
MINING, NEWTON, SABINE (I)							

NEWTON MINING - TRANSFER FROM SRA	TOLEDO BEND LAKE/RESERVOIR [RESERVOIR]	115	59	0	0	0	0
		115	**59**	**0**	**0**	**0**	**0**
NEWTON, SABINE (I)							
NEWTON - MUNICIPAL CONSERVATION	DEMAND REDUCTION [NEWTON]	6	10	10	11	12	12
		6	**10**	**10**	**11**	**12**	**12**
Sum of Projected Water Management Strategies (acre-feet)		**121**	**69**	**10**	**11**	**12**	**12**

TYLER COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CHESTER WSC, NECHES (I)							
CHESTER WSC - MUNICIPAL CONSERVATION	DEMAND REDUCTION [TYLER]	2	4	4	4	5	5
		2	**4**	**4**	**4**	**5**	**5**
COLMESNEIL, NECHES (I)							
COLMESNEIL - MUNICIPAL CONSERVATION	DEMAND REDUCTION [TYLER]	4	6	6	7	7	8
		4	**6**	**6**	**7**	**7**	**8**
CYPRESS CREEK WSC, NECHES (I)							
CYPRESS CREEK WSC - MUNICIPAL CONSERVATION	DEMAND REDUCTION [TYLER]	2	3	3	3	3	4
		2	**3**	**3**	**3**	**3**	**4**
WILDWOOD POA, NECHES (I)							
WILDWOOD POA - MUNICIPAL CONSERVATION	DEMAND REDUCTION [TYLER]	2	3	3	3	3	3
		2	**3**	**3**	**3**	**3**	**3**
WOODVILLE, NECHES (I)							
WOODVILLE - MUNICIPAL CONSERVATION	DEMAND REDUCTION [TYLER]	17	28	30	32	34	36
		17	**28**	**30**	**32**	**34**	**36**
Sum of Projected Water Management Strategies (acre-feet)		**27**	**44**	**46**	**49**	**52**	**56**

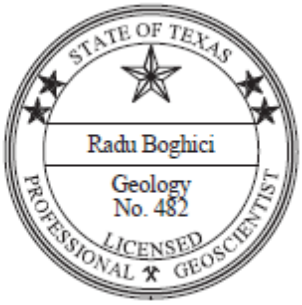
APPENDIX B

GAM Run 22-002:
Southeast Texas Groundwater Conservation District Management Plan:

Texas Water Development Board
Groundwater Division
Groundwater Availability Modeling Section
(512) 936-0883

GAM RUN 22-002: SOUTHEAST TEXAS GROUNDWATER CONSERVATION DISTRICT GROUNDWATER MANAGEMENT PLAN

Radu Boghici, P.G.
Texas Water Development Board
Groundwater Division
Groundwater Availability Modeling Department
512-463-5808
March 10, 2022



Radu Boghici
03/10/2022

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GAM RUN 22-002: SOUTHEAST TEXAS GROUNDWATER CONSERVATION DISTRICT MANAGEMENT PLAN

Radu Boghici, P.G.
Texas Water Development Board
Groundwater Division
Groundwater Modeling Department
(512) 463-5808
March 10, 2022

EXECUTIVE SUMMARY:

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

The TWDB provides data and information to the Southeast Texas Groundwater Conservation District in two parts. Part 1 is the Estimated Historical Water Use/State Water Plan dataset report, which will be provided to you separately by the TWDB Groundwater Technical Assistance Section. Please direct questions about the water data report to Mr. Stephen Allen at (512) 463-7317 or stephen.allen@twdb.texas.gov. Part 2 is the required groundwater availability modeling information and this information includes:

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

The groundwater management plan for the Southeast Texas Groundwater Conservation District should be adopted by the district on or before May 5, 2022 and submitted to the Executive Administrator of the TWDB on or before June 4, 2022.

The current management plan for the Southeast Texas Groundwater Conservation District expires on August 3, 2022.

We used two groundwater availability models to estimate the management plan information for the aquifers within the Southeast Texas Groundwater Conservation District. Information for the Yegua-Jackson Aquifer is from version 1.01 of the groundwater availability model for the Yegua-Jackson Aquifer (Deeds and others, 2010). Information for the Gulf Coast Aquifer System is from version 3.01 of the groundwater availability model for the northern portion of Gulf Coast Aquifer System (Kasmarek, 2013).

This report discusses the methods, assumptions, and results from the model runs described above. This report replaces the results of GAM Run 16-012 (Wade, 2016). Values may differ from the previous report resulting from routine updates to the spatial grid file used to define county, groundwater conservation district, and aquifer boundaries, which impact the calculated water budget values. This report also includes a new figure to help groundwater conservation districts better visualize water budget components that was not included in the previous report. Tables 1 and 2 summarize the groundwater availability model data required by statute. Figures 1 and 3 show the area of the models from which the values in the tables were extracted. Figures 2 and 4 provide generalized diagrams of the groundwater flow components provided in Tables 1 and 2. If after review of the figures, the Southeast Texas Groundwater Conservation District determines that the district boundaries used in the assessment do not reflect current conditions, please notify the TWDB at your earliest convenience.

METHODS:

In accordance with the provisions of the Texas State Water Code, Section 36.1071, Subsection (h), the groundwater availability models for the Yegua-Jackson Aquifer and the northern portion of the Gulf Coast Aquifer System were used to estimate information for the Southeast Texas Groundwater Conservation District management plan. Water budgets were extracted for the historical model periods (1980 through 1997 for the Yegua-Jackson Aquifer and 1980 through 2009 for the Gulf Coast Aquifer System) using ZONEBUDGET Version 3.01 (Harbaugh, 2009). The average annual water budget values for recharge, surface-water outflow, inflow to the district, and outflow from the district for the aquifers within the district are summarized in this report.

PARAMETERS AND ASSUMPTIONS:

Yegua-Jackson Aquifer

- We used version 1.01 of the groundwater availability model for the Yegua-Jackson Aquifer. See Deeds and others (2010) for assumptions and limitations of the groundwater availability model.
- This groundwater availability model includes five layers which all represent the Yegua-Jackson Aquifer in the outcrop. Outside the footprint of the Yegua-Jackson Aquifer the model layers represent the Catahoula Formation and other younger overlying units (Layer 1), the upper portion of the Jackson Group (Layer 2), the lower portion of the Jackson Group (Layer 3), the upper portion of the Yegua Group (Layer 4), and the lower portion of the Yegua Group (Layer 5).
- An overall water budget for the district was determined for the Yegua-Jackson Aquifer (Layer 1 through Layer 5, collectively, for the portions of the model that represent the Yegua-Jackson Aquifer). In separate water budget calculations we calculated groundwater flow between the Catahoula Formation and the Yegua-Jackson Aquifer.
- The model was run with MODFLOW-2000 (Harbaugh and others, 2000).

Gulf Coast Aquifer System

- We used version 3.01 of the groundwater availability model for the northern portion of the Gulf Coast Aquifer System for this analysis. See Kasmarek (2013) for assumptions and limitations of the model.
- The model has four layers which represent the Chicot Aquifer (Layer 1), the Evangeline Aquifer (Layer 2), the Burkeville Confining Unit (Layer 3), and the Jasper Aquifer and parts of the Catahoula Formation in direct hydrologic communication with the Jasper Aquifer (Layer 4).
- Water budgets for the district were determined for the Gulf Coast Aquifer System (Layers 1 through 4 collectively).
- The model was run with MODFLOW-2000 (Harbaugh and others, 2000).
- Because this model assumes a no-flow boundary condition at the base we also used version 1.01 of the groundwater availability model for the Yegua-Jackson Aquifer to investigate groundwater flows between the Catahoula Formation and the Yegua-Jackson Aquifer and between the Catahoula Formation and the base of

the Gulf Coast Aquifer System. See Deeds and others (2010) for assumptions and limitations of the groundwater availability model.

RESULTS:

A groundwater budget summarizes the amount of water entering and leaving the aquifer according to the groundwater availability model. Selected groundwater budget components listed below were extracted from the groundwater availability models for the Yegua-Jackson Aquifer and the northern portion of the Gulf Coast Aquifer System within Southeast Texas Groundwater Conservation District and averaged over the historical calibration periods, as shown in Table 1 and 2.

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

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

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

4. Flow between aquifers—the net vertical flow between the aquifer and adjacent aquifers or confining units. This flow is controlled by the relative water levels in each aquifer and aquifer properties of each aquifer or confining unit that define the amount of leakage that occurs.

The information needed for the district's management plan is summarized in Tables 1 and 2. It is important to note that sub-regional water budgets are not exact. This is due to the size of the model cells and the approach used to extract data from the model. To avoid double accounting, a model cell that straddles a political boundary, such as a district or county boundary, is assigned to one side of the boundary based on the location of the centroid of the model cell. For example, if a cell contains two counties, the cell is assigned to the county where the centroid of the cell is located.

TABLE 1: SUMMARIZED INFORMATION FOR THE YEGUA-JACKSON AQUIFER FOR THE SOUTHEAST TEXAS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST ONE ACRE-FOOT.

Management Plan requirement	*Aquifer or confining unit*	*Results*
Estimated annual amount of recharge from precipitation to the district	Yegua-Jackson Aquifer	5
Estimated annual volume of water that discharges from the aquifer to springs and any surface-water body including lakes, streams, and rivers	Yegua-Jackson Aquifer	152
Estimated annual volume of flow into the district within each aquifer in the district	Yegua-Jackson Aquifer	405
Estimated annual volume of flow out of the district within each aquifer in the district	Yegua-Jackson Aquifer	849
Estimated net annual volume of flow between each aquifer in the district	From the Yegua-Jackson subcrop into the Yegua-Jackson Aquifer (outcrop)	459
	From the Catahoula Formation and other overlying units into the Yegua-Jackson Aquifer	118

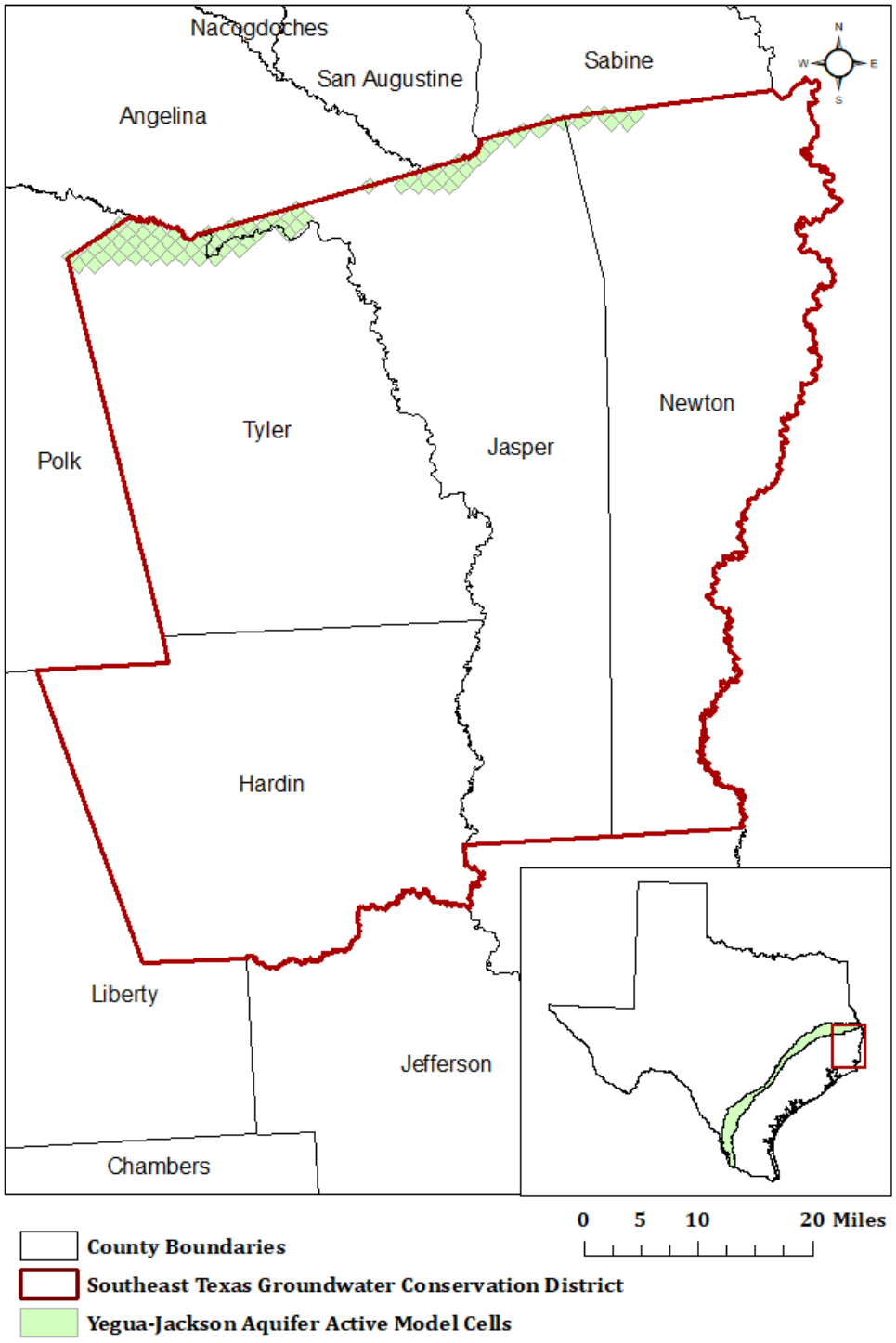
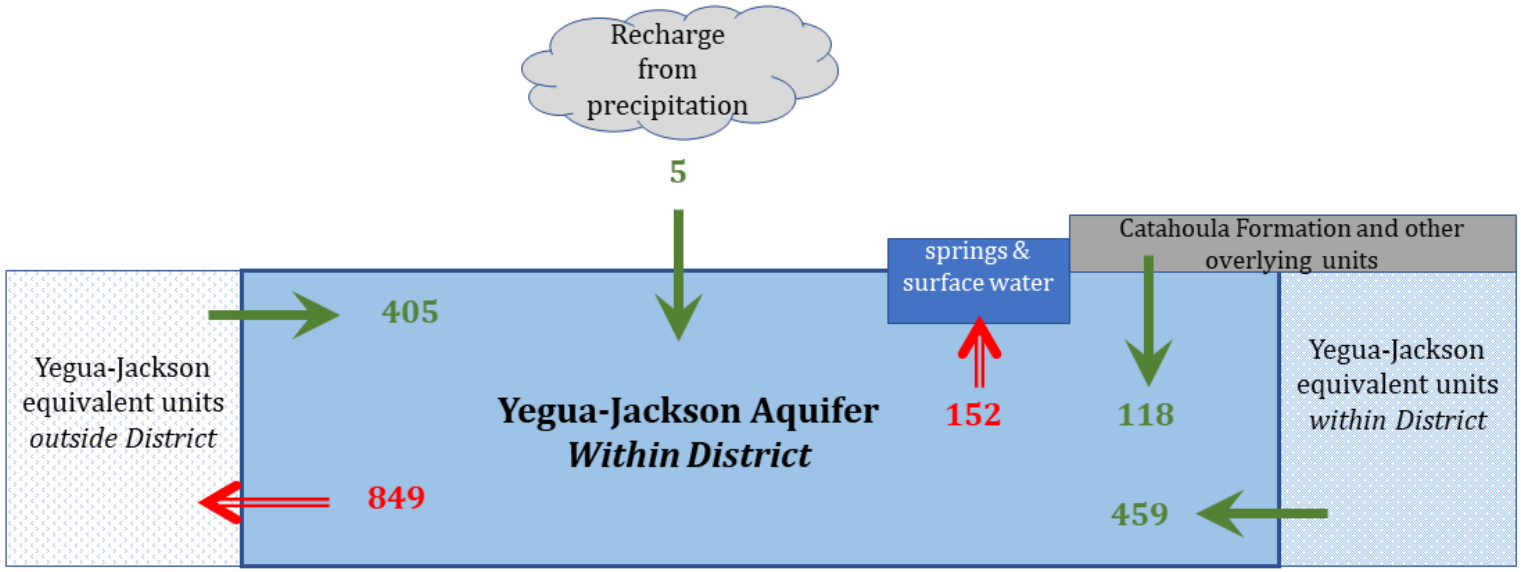


FIGURE 1: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE YEGUA-JACKSON AQUIFER FROM WHICH THE INFORMATION IN TABLE 1 WAS EXTRACTED (THE AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).



Note: This diagram only includes the water budget items provided in Table 1. If the District requires values for additional water budget items, please contact TWDB.

TABLE 2: SUMMARIZED INFORMATION FOR THE GULF COAST AQUIFER SYSTEM FOR THE SOUTHEAST TEXAS GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST ONE ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Gulf Coast Aquifer System	60,705
Estimated annual volume of water that discharges from the aquifer to springs and any surface-water body including lakes, streams, and rivers	Gulf Coast Aquifer System	10,496
Estimated annual volume of flow into the district within each aquifer in the district	Gulf Coast Aquifer System	15,480
Estimated annual volume of flow out of the district within each aquifer in the district	Gulf Coast Aquifer System	15,679
Estimated net annual volume of flow between each aquifer in the district[1]	From the Catahoula Formation into the Gulf Coast Aquifer	414
	From the Catahoula portion of the Gulf Coast Aquifer into the Yegua-Jackson Aquifer	118

[1] This information was obtained from the Yegua-Jackson groundwater availability model.

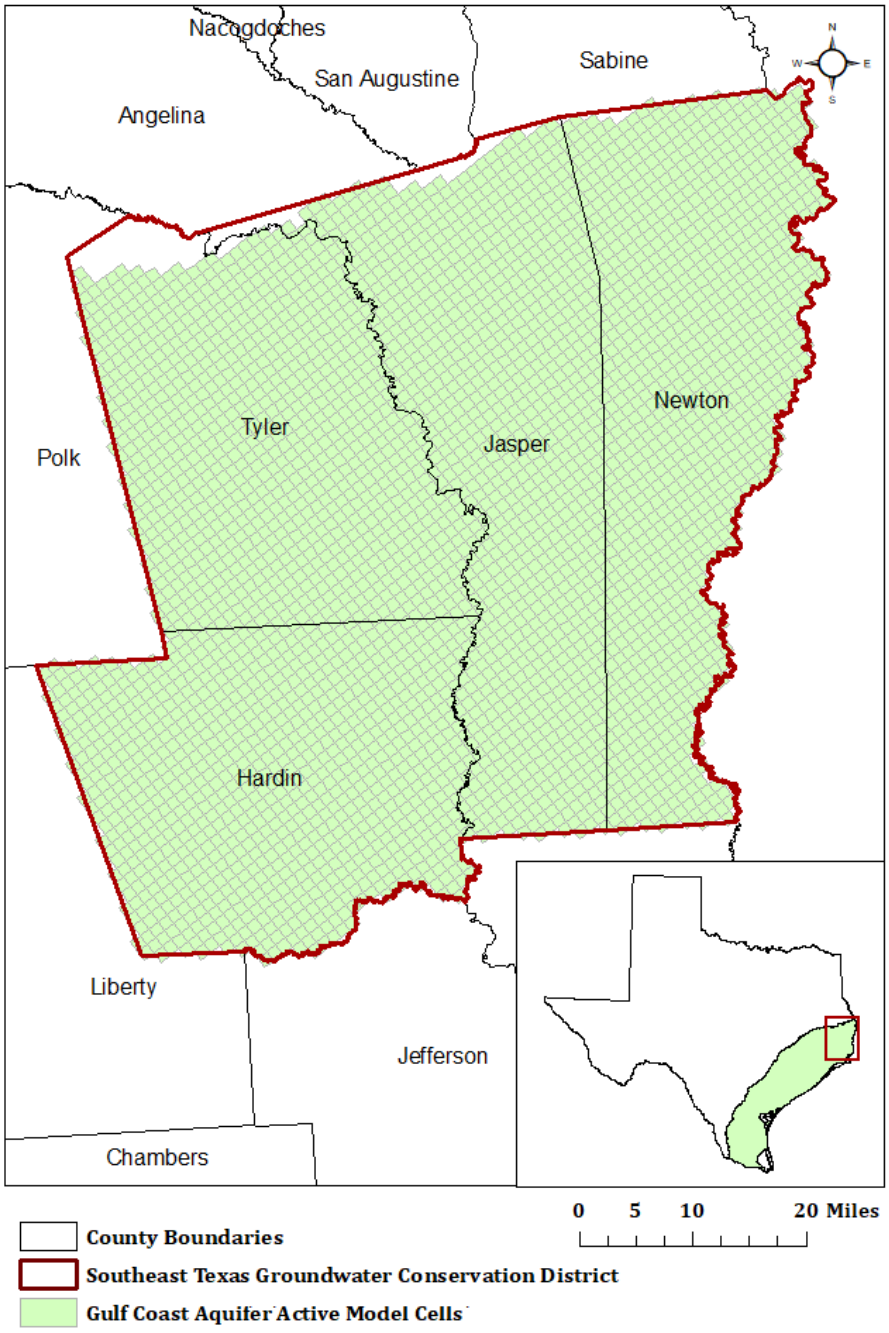
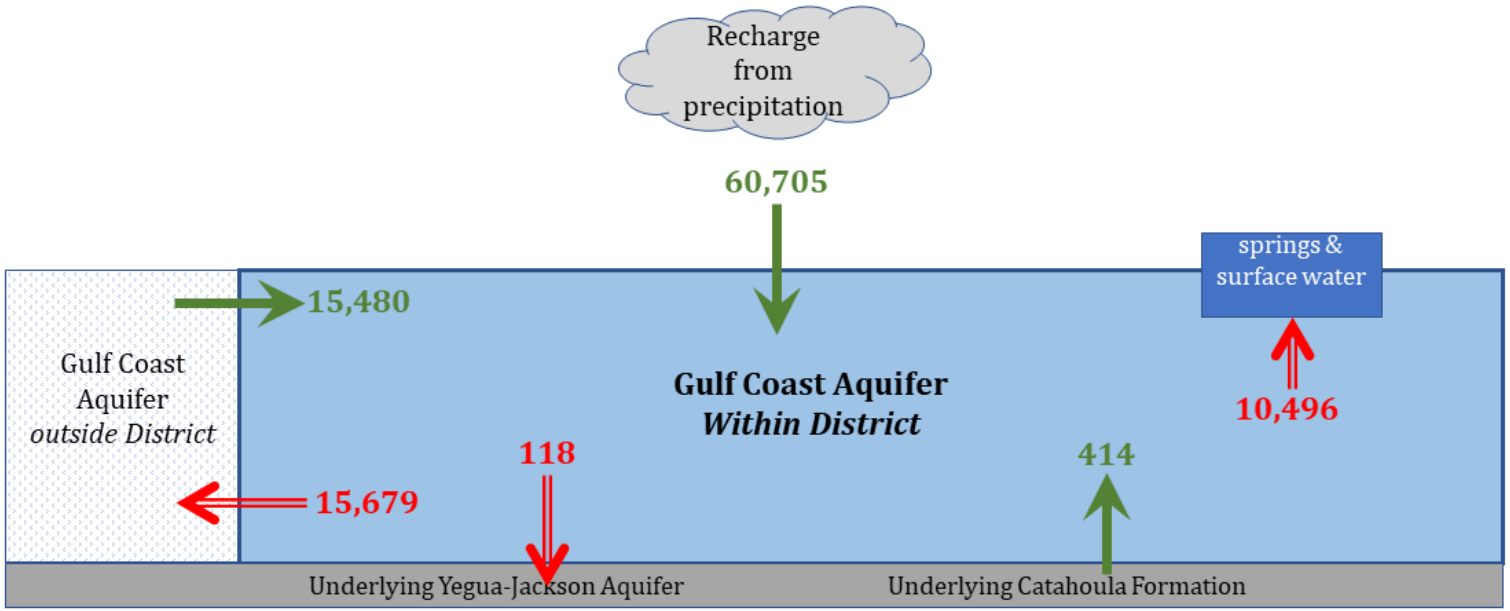


FIGURE 3: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE GULF COAST AQUIFER SYSTEM FROM WHICH THE INFORMATION IN TABLE 2 WAS EXTRACTED (THE AQUIFER SYSTEM EXTENT WITHIN THE DISTRICT BOUNDARY).



Note: This diagram only includes the water budget items provided in Table 2. If the District requires values for additional water budget items, please contact TWDB.

FIGURE 4: GENERALIZED DIAGRAM OF THE SUMMARIZED BUDGET INFORMATION FROM TABLE 2, REPRESENTING DIRECTIONS OF FLOW FOR THE GULF COAST AQUIFER WITHIN SOUTHEAST TEXAS GROUNDWATER CONSERVATION DISTRICT. FLOW VALUES EXPRESSED IN ACRE-FEET PER YEAR.

LIMITATIONS:

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

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

A key aspect of using the groundwater model to evaluate historic groundwater flow conditions includes the assumptions about the location in the aquifer where historic pumping was placed. Understanding the amount and location of historic pumping is as important as evaluating the volume of groundwater flow into and out of the district, between aquifers within the district (as applicable), interactions with surface water (as applicable), recharge to the Aquifer System (as applicable), and other metrics that describe the impacts of that pumping. In addition, assumptions regarding precipitation, recharge, and interaction with streams are specific to particular historic time periods.

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

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

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APPENDIX C

GAM Run 21-019 MAG: Modeled Available Groundwater For The Gulf Coast Aquifer System in Groundwater Management Area 14

By Shirley Wade, PH.D., P.G.
Texas Water Development Board Groundwater Division
Groundwater Availability Modeling Section (512) 936-0883
September 8, 2022

GAM RUN 21-019 MAG: MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14

Shirley C. Wade, Ph.D., P.G.
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512-936-0883
September 8, 2022

Shirley C. Wade
10/6/2022

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GAM RUN 21-019 MAG: MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14

Shirley C. Wade, Ph.D., P.G.
Texas Water Development Board
Groundwater Division
Groundwater Modeling Department
512-936-0883
September 8, 2022

EXECUTIVE SUMMARY:

The combined value of modeled available groundwater in Groundwater Management Area 14 and the projected groundwater pumpage in subsidence districts in Groundwater Management Area 14 for the Gulf Coast Aquifer System ranges from a maximum of 1,327,135 acre-feet per year in 2020 to a minimum of 1,107,263 acre-feet per year in 2040 (Tables 1 and 2). Table 1 presents the modeled available groundwater summarized by decade from 2020 to 2080 for groundwater conservation districts. Table 2 presents the projected groundwater pumpage in regulatory plans adopted by subsidence districts and factored into the development of desired future conditions adopted by groundwater conservation districts. Table 3 summarizes the modeled available groundwater (for groundwater conservation district and non-district counties) and the projected groundwater pumpage (for subsidence district counties) by decade from 2030 to 2080 and by county, regional water planning area, and river basin for use in the regional water planning process. The estimates are based on the desired future conditions for the Gulf Coast Aquifer System adopted by groundwater conservation districts in Groundwater Management Area 14 on January 5, 2022. The explanatory report and other materials submitted to the Texas Water Development Board (TWDB) were determined to be administratively complete on June 15, 2022.

REQUESTOR:

Mr. John Martin, chair and technical coordinator of Groundwater Management Area 14.

DESCRIPTION OF REQUEST:

Mr. John Martin provided the TWDB with the desired future conditions of the Gulf Coast Aquifer System on behalf of Groundwater Management Area (GMA) 14. These desired future conditions were adopted by the groundwater conservation districts in Groundwater

Management Area 14 on January 5, 2022. The desired future conditions, as described in Resolution 2021-10-5 (GMA 14 and Oliver, 2022; Appendix G) are:

- "In each county in GMA 14, no less than 70 percent median available drawdown remaining in 2080 or no more than an average of 1.0 additional foot of subsidence between 2009 and 2080."

The Carrizo-Wilcox, Queen City, Sparta, Yegua-Jackson, and Brazos River Alluvium aquifers were declared not relevant for purposes of joint planning by Groundwater Management Area 14 in Resolution 2021-10-5 (GMA 14 and Oliver, 2022; Appendix G).

On March 4, 2022, Mr. John Martin, technical coordinator of Groundwater Management Area 14, submitted the desired future conditions packet for Groundwater Management Area 14. TWDB staff reviewed the model files associated with the desired future conditions and received clarification on assumptions from the Groundwater Management Area 14 technical coordinator on March 23, 2022. In Resolution 2021-10-5, the desired future condition is defined for "each county in GMA 14"; however, Groundwater Management Area 14 clarified that it is their intent per pages 15 and 38 of the explanatory report that the subsidence district counties are not to be included in the county-specific desired future condition definition. For this reason, the TWDB did not consider subsidence district counties during the desired future conditions evaluation. An additional clarification from Groundwater Management Area 14 was a request that the modeled available groundwater values and modeled pumping values be provided by model aquifer layer in addition to the total values for the entire Gulf Coast Aquifer System. These additional splits are included in the current report in Appendix A.

Harris, Galveston, and Fort Bend counties (Subsidence Districts)

Harris-Galveston Subsidence District and Fort Bend Subsidence District are not subject to the provisions of Section 36.108 of the Texas Water Code and, therefore, have not specified desired future conditions. Because desired future conditions were not adopted for the counties in the subsidence districts, the TWDB does not provide "modeled available groundwater" values for those counties. However, the districts in Groundwater Management Area 14 incorporated the groundwater pumpage projections made by the subsidence districts in their regulatory plans so that all known regional groundwater pumping was factored into the joint planning process. Therefore, the subsidence district "groundwater pumpage projections" are still provided in this report (Table 2 and Table 3) even though these values are not official "modeled available groundwater" values.

METHODS:

The TWDB ran the groundwater availability model (version 3.01; Kasmarek, 2013) for the northern part of the Gulf Coast Aquifer System (Figure 1) using the predictive model files

submitted with the explanatory report (GMA 14 and Oliver, 2022; Appendix R) on March 4, 2022. The modeled available groundwater values were determined by extracting pumping rates by decade from the model results using ZONEBUDGET Version 3.01 (Harbaugh, 2009). Annual pumping rates were divided by county, river basin, regional water planning area, and groundwater conservation district within Groundwater Management Area 14 (Figures 1 and 2; Tables 1 through 3).

As part of the process to calculate modeled available groundwater, the TWDB checked the model files submitted by Groundwater Management Area 14 to determine if the groundwater pumping scenario was compatible with the adopted desired future conditions. The TWDB used these model files to extract model-calculated water levels for 2009 (stress period 78) and 2080 (stress period 149), and to calculate the available drawdown according to the methodology described in the explanatory report (GMA 14 and Oliver, 2022; Appendix R). The TWDB applied this methodology to a dataset submitted as part of the explanatory report, which contained well locations and well depths for 61,880 wells. The ratio of available drawdown in 2080 to available drawdown in 2009 was calculated for each well and the median was determined for each county. As specified in the explanatory report (GMA 14 and Oliver, 2022; Appendix R), if the water level in a model cell dropped below the base of the cell the available drawdown for wells located in that model cell was set to zero.

The subsidence values were also extracted from the model results for 2009 (stress period 78) and 2080 (stress period 149) and average change in subsidence was calculated for each county. The median percent available drawdown and average change in subsidence for each county were compared to the desired future conditions to confirm that the model scenario was compatible with the desired future conditions.

Modeled Available Groundwater and Permitting

As defined in Chapter 36 of the Texas Water Code (2011), “modeled available groundwater” is the estimated average amount of water that may be produced annually to achieve a desired future condition. Groundwater conservation districts are required to consider modeled available groundwater, along with several other factors, when issuing permits in order to manage groundwater production to achieve the desired future condition(s). The other factors districts must consider include annual precipitation and production patterns, the estimated amount of pumping exempt from permitting, existing permits, and a reasonable estimate of actual groundwater production under existing permits.

PARAMETERS AND ASSUMPTIONS:

The parameters and assumptions for the modeled available groundwater estimates are described below:

- Version 3.01 of the groundwater availability model for the northern portion of the Gulf Coast Aquifer System was used for this analysis. See Kasmarek (2013) for assumptions and limitations of the model.
- The model has four layers which represent the Chicot aquifer (Layer 1), the Evangeline aquifer (Layer 2), the Burkeville Confining Unit (Layer 3), and the Jasper aquifer and parts of the Catahoula Formation in direct hydrologic communication with the Jasper aquifer (Layer 4).
- The model was run with MODFLOW-2000 (Harbaugh and others, 2000).
- Available drawdown for cells with water levels below the base elevation of the cell ("dry" cells) was set to zero for the analysis.
- Cells with water levels below the base are "dry" in terms of water level. However, the transmissivity of those cells remains constant and pumping from those cells continues. Therefore, pumping is included in the modeled available groundwater values for those cells.
- The subsidence district counties (Harris, Galveston, and Fort Bend) were not included in the evaluation of the desired future condition.
- The evaluation of the desired future condition for available drawdown was based on the 61,880 observation well locations and the MODFLOW pumping file submitted by Groundwater Management Area 14.
- The evaluation of the desired future condition for subsidence was based on the extent of the official TWDB boundary for the Gulf Coast Aquifer System within the groundwater model and the MODFLOW pumping file submitted by Groundwater Management Area 14.
- The calculation of modeled available groundwater values was based on the extent of the official TWDB boundary for the Gulf Coast Aquifer System within the groundwater model and the MODFLOW pumping file submitted by Groundwater Management Area 14.
- The most recent TWDB model grid file dated June 10, 2020 (glfc_n_01062020.csv), was used to determine model cell entity assignment (county, groundwater management area, groundwater conservation district, river basin, regional water planning area).

- Estimates of modeled available groundwater from the model simulation were rounded to the nearest whole number.

RESULTS:

The modeled available groundwater for the Gulf Coast Aquifer System that achieves the desired future conditions adopted by Groundwater Management Area 14 ranges from 781,781 to 781,753 acre-feet per year between 2020 and 2080 (Table 1). Projected Gulf Coast Aquifer System groundwater pumpage from the three counties in the Harris Galveston Subsidence District and Fort Bend Subsidence District ranges between 545,354 and 325,510 acre-feet per year during the period 2020 to 2080 (Table 2). The combination of modeled available groundwater and projected groundwater pumpage values in the Gulf Coast Aquifer System has also been summarized by county, river basin, and regional water planning area in order to be consistent with the format used in the regional water planning process. (Table 3).

The modeled available groundwater values and projected groundwater pumpage values are also tabulated by model aquifer layer in Appendix A.

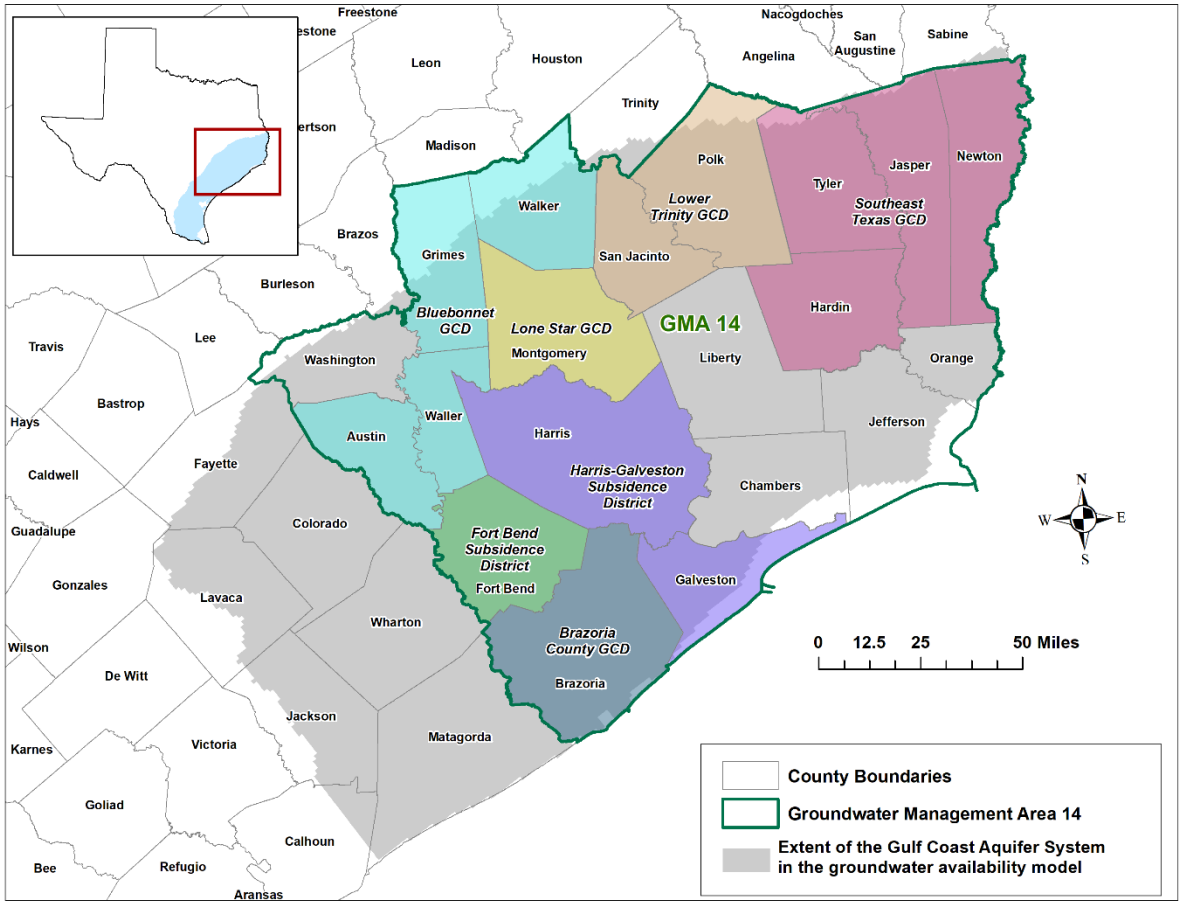

FIGURE 1. THE EXTENT OF THE GULF COAST AQUIFER SHOWN WITH GROUNDWATER CONSERVATION DISTRICTS AND SUBSIDENCE DISTRICTS IN GROUNDWATER MANAGEMENT AREA 14.

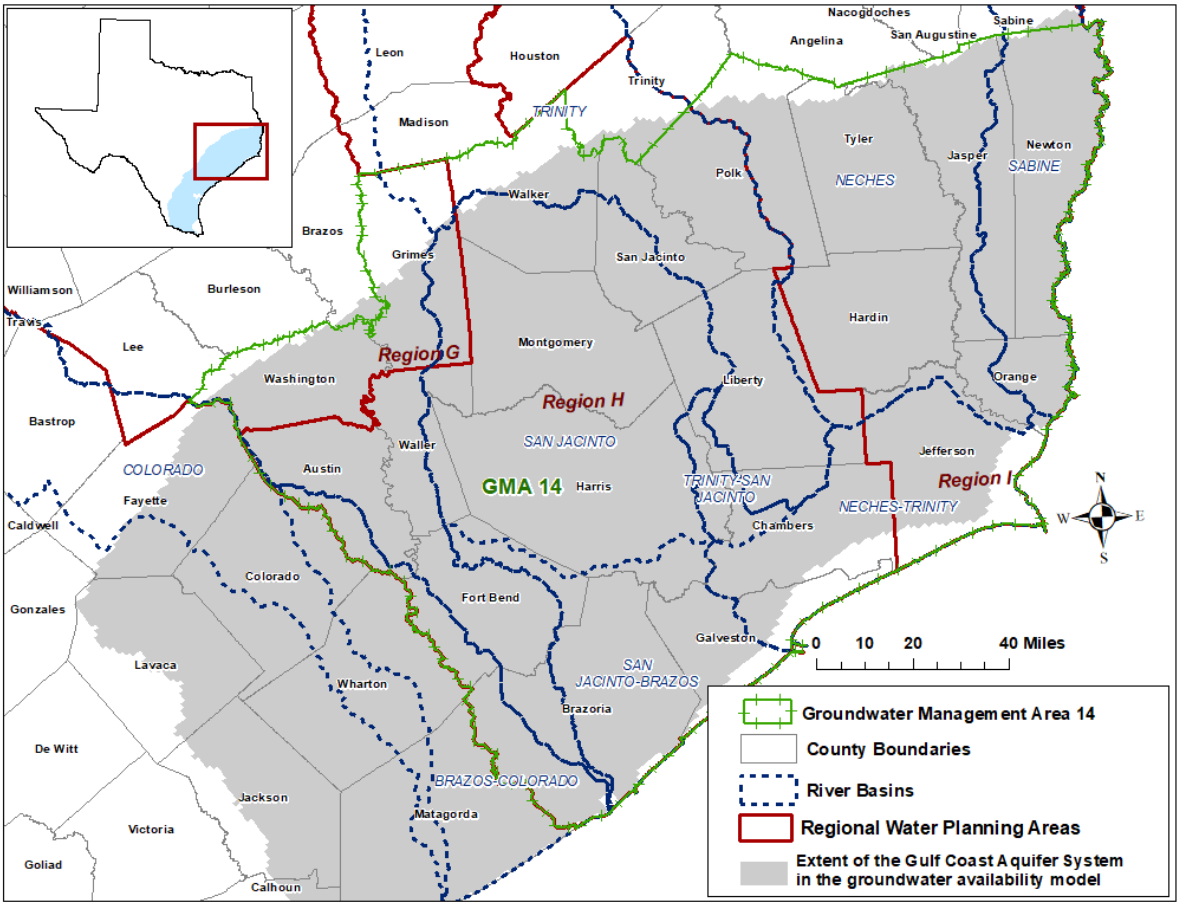

FIGURE 2. LOCATION OF REGIONAL WATER PLANNING AREAS AND RIVER BASINS IN GROUNDWATER MANAGEMENT AREA 14.

TABLE 1. MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES EXCLUDE SUBSIDENCE DISTRICTS. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Bluebonnet GCD	Austin	Gulf Coast Aquifer	46,560	46,560	46,560	46,560	46,560	46,560	46,560
Bluebonnet GCD	Grimes	Gulf Coast Aquifer	51,487	51,487	51,487	51,487	51,487	51,487	51,487
Bluebonnet GCD	Walker	Gulf Coast Aquifer	42,504	42,504	42,504	42,504	42,504	42,504	42,504
Bluebonnet GCD	Waller	Gulf Coast Aquifer	55,533	55,533	55,533	55,533	55,533	55,533	55,533
Bluebonnet GCD Total		**Gulf Coast Aquifer System**	**196,084**	**196,084**	**196,084**	**196,084**	**196,084**	**196,084**	**196,084**
Brazoria County	Brazoria	Gulf Coast Aquifer	54,955	54,930	54,908	54,895	54,888	54,886	54,886
Brazoria County GCD Total		**Gulf Coast Aquifer System**	**54,955**	**54,930**	**54,908**	**54,895**	**54,888**	**54,886**	**54,886**
Lone Star GCD	Montgomery	Gulf Coast Aquifer	96,965	96,954	96,945	96,930	96,916	96,873	96,873
Lone Star GCD Total		**Gulf Coast Aquifer System**	**96,965**	**96,954**	**96,945**	**96,930**	**96,916**	**96,873**	**96,873**
Lower Trinity GCD	Polk	Gulf Coast Aquifer	40,746	40,746	40,746	40,746	40,746	40,746	40,746
Lower Trinity GCD	San Jacinto	Gulf Coast Aquifer	35,037	35,048	35,057	35,071	35,086	35,128	35,128
Lower Trinity GCD Total		**Gulf Coast Aquifer System**	**75,783**	**75,794**	**75,803**	**75,817**	**75,832**	**75,874**	**75,874**

TABLE 1 (CONTINUED). MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES EXCLUDE SUBSIDENCE DISTRICTS. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Southeast Texas	Hardin	Gulf Coast Aquifer System	37,721	37,721	37,721	37,721	37,721	37,721	37,721
Southeast Texas	Jasper	Gulf Coast Aquifer System	73,365	73,365	73,365	73,365	73,365	73,365	73,365
Southeast Texas	Newton	Gulf Coast Aquifer System	37,508	37,508	37,508	37,508	37,508	37,508	37,508
Southeast Texas	Tyler	Gulf Coast Aquifer System	34,390	34,390	34,390	34,390	34,390	34,390	34,390
Southeast Texas GCD Total		**Gulf Coast Aquifer System**	**182,984**	**182,984**	**182,984**	**182,984**	**182,984**	**182,984**	**182,984**
All District Total		**Gulf Coast Aquifer System**	**606,771**	**606,746**	**606,724**	**606,710**	**606,704**	**606,701**	**606,701**
No District-County	Chambers	Gulf Coast Aquifer System	22,321	22,332	22,343	22,352	22,353	22,355	22,355
No District-County	Jefferson	Gulf Coast Aquifer System	15,425	15,425	15,425	15,425	15,425	15,425	15,425
No District-County	Liberty	Gulf Coast Aquifer System	71,661	71,660	71,658	71,659	71,660	71,660	71,660
No District-County	Orange	Gulf Coast Aquifer System	25,205	25,205	25,205	25,205	25,205	25,205	25,205
No District-County	Washington	Gulf Coast Aquifer System	40,398	40,398	40,398	40,398	40,398	40,398	40,398
No District Total		**Gulf Coast Aquifer System**	**175,010**	**175,020**	**175,029**	**175,039**	**175,041**	**175,043**	**175,043**
GMA 14	**Total**	**Gulf Coast Aquifer System**	**781,781**	**781,766**	**781,753**	**781,749**	**781,745**	**781,744**	**781,744**

TABLE 2. GROUNDWATER PUMPAGE PROJECTIONS FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 FOR SUBSIDENCE DISTRICT COUNTIES FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

Subsidence District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Fort Bend	Fort Bend	Gulf Coast Aquifer System	129,845	103,942	119,557	135,158	151,334	169,347	169,347
Fort Bend Subsidence District Total		**Gulf Coast Aquifer System**	**129,845**	**103,942**	**119,557**	**135,158**	**151,334**	**169,347**	**169,347**
Harris-Galveston	Galveston	Gulf Coast Aquifer System	6,032	6,788	7,435	8,060	8,646	9,181	9,181
Harris-Galveston	Harris	Gulf Coast Aquifer System	409,477	290,583	198,518	211,370	220,049	228,828	228,828
Harris-Galveston Subsidence District Total		**Gulf Coast Aquifer System**	**415,509**	**297,371**	**205,953**	**219,430**	**228,695**	**238,009**	**238,009**
GMA 14	**Total**	**Gulf Coast Aquifer System**	**545,354**	**401,313**	**325,510**	**354,588**	**380,029**	**407,356**	**407,356**

TABLE 3. MODELED AVAILABLE GROUNDWATER AND PROJECTED GROUNDWATER PUMPAGE VALUES (*IN ITALICS*) BY DECADE FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Austin	H	Brazos-Colorado	Gulf Coast	20,652	20,652	20,652	20,652	20,652	20,652
Austin	H	Brazos	Gulf Coast	25,243	25,243	25,243	25,243	25,243	25,243
Austin	H	Colorado	Gulf Coast	665	665	665	665	665	665
Brazoria	H	Brazos-Colorado	Gulf Coast	10,049	9,846	9,582	9,324	9,072	9,072
Brazoria	H	Brazos	Gulf Coast	3,641	3,578	3,510	3,454	3,407	3,407
Brazoria	H	San Jacinto-Brazos	Gulf Coast	41,240	41,483	41,803	42,110	42,408	42,408
Chambers	H	Neches-Trinity	Gulf Coast	9,968	9,968	9,968	9,968	9,968	9,968
Chambers	H	Trinity-San Jacinto	Gulf Coast	2,142	2,152	2,161	2,163	2,164	2,164
Chambers	H	Trinity	Gulf Coast	10,222	10,222	10,222	10,222	10,222	10,222
Fort Bend	*H*	*Brazos-Colorado*	*Gulf Coast*	*7,891*	*9,586*	*12,056*	*15,660*	*20,927*	*20,927*
Fort Bend	*H*	*Brazos*	*Gulf Coast*	*37,845*	*46,525*	*55,134*	*64,011*	*73,732*	*73,732*
Fort Bend	*H*	*San Jacinto-Brazos*	*Gulf Coast*	*40,844*	*45,913*	*50,471*	*54,218*	*57,258*	*57,258*
Fort Bend	*H*	*San Jacinto*	*Gulf Coast*	*17,362*	*17,532*	*17,497*	*17,445*	*17,430*	*17,430*
Galveston	*H*	*Neches-Trinity*	*Gulf Coast*	*0*[1]	*0*	*0*	*0*	*0*	*0*
Galveston	*H*	*San Jacinto-Brazos*	*Gulf Coast*	*6,788*	*7,435*	*8,060*	*8,646*	*9,181*	*9,181*
Grimes	G	Brazos	Gulf Coast	31,117	31,117	31,117	31,117	31,117	31,117
Grimes	G	San Jacinto	Gulf Coast	19,087	19,087	19,087	19,087	19,087	19,087
Grimes	G	Trinity	Gulf Coast	1,283	1,283	1,283	1,283	1,283	1,283
Hardin	I	Neches	Gulf Coast	37,571	37,571	37,571	37,571	37,571	37,571
Hardin	I	Trinity	Gulf Coast	150	150	150	150	150	150
Harris	*H*	*San Jacinto-Brazos*	*Gulf Coast*	*6,956*	*7,617*	*8,282*	*8,819*	*9,463*	*9,463*
Harris	*H*	*San Jacinto*	*Gulf Coast*	*280,676*	*187,992*	*199,990*	*208,033*	*216,067*	*216,067*

[1] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE 3 (CONTINUED). MODELED AVAILABLE GROUNDWATER AND PROJECTED GROUNDWATER PUMPAGE VALUES (*IN ITALICS*) BY DECADE FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Harris	*H*	*Trinity-San Jacinto*	*Gulf Coast*	*2,952*	*2,909*	*3,097*	*3,198*	*3,297*	*3,297*
Jasper	I	Neches	Gulf Coast	40,821	40,821	40,821	40,821	40,821	40,821
Jasper	I	Sabine	Gulf Coast	32,544	32,544	32,544	32,544	32,544	32,544
Jefferson	I	Neches-Trinity	Gulf Coast	13,571	13,571	13,571	13,571	13,571	13,571
Jefferson	I	Neches	Gulf Coast	1,853	1,853	1,853	1,853	1,853	1,853
Liberty	H	Neches-Trinity	Gulf Coast	2,053	2,053	2,053	2,053	2,053	2,053
Liberty	H	Neches	Gulf Coast	8,732	8,732	8,732	8,732	8,732	8,732
Liberty	H	San Jacinto	Gulf Coast	11,299	11,299	11,299	11,299	11,299	11,299
Liberty	H	Trinity-San Jacinto	Gulf Coast	10,544	10,543	10,543	10,544	10,544	10,544
Liberty	H	Trinity	Gulf Coast	39,032	39,031	39,032	39,032	39,032	39,032
Montgomery	H	San Jacinto	Gulf Coast	96,954	96,945	96,930	96,916	96,873	96,873
Newton	I	Neches	Gulf Coast	199	199	199	199	199	199
Newton	I	Sabine	Gulf Coast	37,309	37,309	37,309	37,309	37,309	37,309
Orange	I	Neches-Trinity	Gulf Coast	280	280	280	280	280	280
Orange	I	Neches	Gulf Coast	6,266	6,266	6,266	6,266	6,266	6,266
Orange	I	Sabine	Gulf Coast	18,659	18,659	18,659	18,659	18,659	18,659
Polk	I	Neches	Gulf Coast	16,765	16,765	16,765	16,765	16,765	16,765
Polk	H	Trinity	Gulf Coast	23,981	23,981	23,981	23,981	23,981	23,981
San Jacinto	H	San Jacinto	Gulf Coast	18,443	18,452	18,467	18,482	18,524	18,524
San Jacinto	H	Trinity	Gulf Coast	16,604	16,604	16,604	16,604	16,604	16,604
Tyler	I	Neches	Gulf Coast	34,390	34,390	34,390	34,390	34,390	34,390
Walker	H	San Jacinto	Gulf Coast	26,622	26,622	26,622	26,622	26,622	26,622
Walker	H	Trinity	Gulf Coast	15,881	15,881	15,881	15,881	15,881	15,881

TABLE 3 (CONTINUED). MODELED AVAILABLE GROUNDWATER AND PROJECTED GROUNDWATER PUMPAGE VALUES (*IN ITALICS*) BY DECADE FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), AND RIVER BASIN.

County	RWPA	River Basin	Aquifer	2030	2040	2050	2060	2070	2080
Waller	H	Brazos	Gulf Coast	23,397	23,397	23,397	23,397	23,397	23,397
Waller	H	San Jacinto	Gulf Coast	32,136	32,136	32,136	32,136	32,136	32,136
Washington	G	Brazos	Gulf Coast	40,164	40,164	40,164	40,164	40,164	40,164
Washington	G	Colorado	Gulf Coast	233	233	233	233	233	233
GMA 14 Total			**Gulf Coast Aquifer System**	**1,183,076**	**1,107,256**	**1,136,332**	**1,161,772**	**1,189,096**	**1,189,096**

LIMITATIONS:

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

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

A key aspect of using the groundwater model to evaluate historic groundwater flow conditions includes the assumptions about the location in the aquifer where historic pumping was placed. Understanding the amount and location of historic pumping is as important as evaluating the volume of groundwater flow into and out of the district, between aquifers within the district (as applicable), interactions with surface water (as applicable), recharge to the aquifer system (as applicable), and other metrics that describe the impacts of that pumping. In addition, assumptions regarding precipitation, recharge, and streamflow are specific to a particular historic time period.

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

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

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APPENDIX A

Total Pumping Associated with Modeled Available Groundwater Run for the Gulf Coast Aquifer System Split by Model Layers for Groundwater Management Area 14

TABLE A.1. MODELED AVAILABLE GROUNDWATER FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 SPLIT BY MODEL LAYER AND SUMMARIZED BY GROUNDWATER CONSERVATION DISTRICT (GCD) AND COUNTY FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Bluebonnet GCD	Austin	Chicot aquifer	2,894	2,894	2,894	2,894	2,894	2,894	2,894
Bluebonnet GCD	Austin	Evangeline aquifer	41,695	41,695	41,695	41,695	41,695	41,695	41,695
Bluebonnet GCD	Austin	Burkeville confining	0[2]	0	0	0	0	0	0
Bluebonnet GCD	Austin	Jasper aquifer	1,972	1,972	1,972	1,972	1,972	1,972	1,972
Bluebonnet GCD	Grimes	Chicot aquifer	0	0	0	0	0	0	0
Bluebonnet GCD	Grimes	Evangeline aquifer	15,917	15,917	15,917	15,917	15,917	15,917	15,917
Bluebonnet GCD	Grimes	Burkeville confining	0	0	0	0	0	0	0
Bluebonnet GCD	Grimes	Jasper aquifer	35,570	35,570	35,570	35,570	35,570	35,570	35,570
Bluebonnet GCD	Walker	Chicot aquifer	0	0	0	0	0	0	0
Bluebonnet GCD	Walker	Evangeline aquifer	3,143	3,143	3,143	3,143	3,143	3,143	3,143
Bluebonnet GCD	Walker	Burkeville confining	0	0	0	0	0	0	0
Bluebonnet GCD	Walker	Jasper aquifer	39,361	39,361	39,361	39,361	39,361	39,361	39,361
Bluebonnet GCD	Waller	Chicot aquifer	791	791	791	791	791	791	791
Bluebonnet GCD	Waller	Evangeline aquifer	54,413	54,413	54,413	54,413	54,413	54,413	54,413
Bluebonnet GCD	Waller	Burkeville confining	0	0	0	0	0	0	0
Bluebonnet GCD	Waller	Jasper aquifer	329	329	329	329	329	329	329
Bluebonnet GCD Total		**Gulf Coast Aquifer System**	**196,085**	**196,085**	**196,085**	**196,085**	**196,085**	**196,085**	**196,085**
Brazoria County	Brazoria	Chicot aquifer	43,086	43,060	43,040	43,027	43,021	43,018	43,018
Brazoria County	Brazoria	Evangeline aquifer	11,869	11,870	11,868	11,868	11,868	11,868	11,868

[2] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.1. (CONTINUED)

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Brazoria County GCD Total		**Gulf Coast Aquifer System**	**54,955**	**54,930**	**54,908**	**54,895**	**54,889**	**54,886**	**54,886**
Lone Star GCD	Montgomery	Chicot aquifer	20,868	22,117	22,136	23,202	22,878	21,030	21,030
Lone Star GCD	Montgomery	Evangeline aquifer	41,172	41,160	41,397	40,200	40,269	39,815	39,815
Lone Star GCD	Montgomery	Burkeville confining	0[3]	0	0	0	0	0	0
Lone Star GCD	Montgomery	Jasper aquifer	34,925	33,676	33,412	33,527	33,769	36,028	36,028
Lone Star GCD Total		**Gulf Coast Aquifer System**	**96,965**	**96,953**	**96,945**	**96,929**	**96,916**	**96,873**	**96,873**
Lower Trinity GCD	Polk	Chicot aquifer	0	0	0	0	0	0	0
Lower Trinity GCD	Polk	Evangeline aquifer	9,486	9,486	9,486	9,486	9,486	9,486	9,486
Lower Trinity GCD	Polk	Burkeville confining	828	828	828	828	828	828	828
Lower Trinity GCD	Polk	Jasper aquifer	30,432	30,432	30,432	30,432	30,432	30,432	30,432
Lower Trinity GCD	San Jacinto	Chicot aquifer	0	0	0	0	0	0	0
Lower Trinity GCD	San Jacinto	Evangeline aquifer	15,110	15,116	15,120	15,127	15,135	15,156	15,156
Lower Trinity GCD	San Jacinto	Burkeville confining	2,762	2,762	2,762	2,762	2,762	2,762	2,762
Lower Trinity GCD	San Jacinto	Jasper aquifer	17,164	17,170	17,174	17,182	17,189	17,210	17,210
Lower Trinity GCD Total		**Gulf Coast Aquifer System**	**75,782**	**75,794**	**75,802**	**75,817**	**75,832**	**75,874**	**75,874**
Southeast Texas	Hardin	Chicot aquifer	1,492	1,492	1,492	1,492	1,492	1,492	1,492
Southeast Texas	Hardin	Evangeline aquifer	36,229	36,229	36,229	36,229	36,229	36,229	36,229
Southeast Texas	Hardin	Burkeville confining	0	0	0	0	0	0	0
Southeast Texas	Hardin	Jasper aquifer	0	0	0	0	0	0	0
Southeast Texas	Jasper	Chicot aquifer	10,858	10,858	10,858	10,858	10,858	10,858	10,858
Southeast Texas	Jasper	Evangeline aquifer	43,842	43,842	43,842	43,842	43,842	43,842	43,842
Southeast Texas	Jasper	Burkeville confining	8	8	8	8	8	8	8

[3] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.1 (CONTINUED)

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Southeast Texas	Jasper	Jasper aquifer	18,657	18,657	18,657	18,657	18,657	18,657	18,657
Southeast Texas	Newton	Chicot aquifer	547	547	547	547	547	547	547
Southeast Texas	Newton	Evangeline aquifer	23,162	23,162	23,162	23,162	23,162	23,162	23,162
Southeast Texas	Newton	Burkeville confining	0[4]	0	0	0	0	0	0
Southeast Texas	Newton	Jasper aquifer	13,800	13,800	13,800	13,800	13,800	13,800	13,800
Southeast Texas	Tyler	Chicot aquifer	0	0	0	0	0	0	0
Southeast Texas	Tyler	Evangeline aquifer	18,519	18,519	18,519	18,519	18,519	18,519	18,519
Southeast Texas	Tyler	Burkeville confining	0	0	0	0	0	0	0
Southeast Texas	Tyler	Jasper aquifer	15,871	15,871	15,871	15,871	15,871	15,871	15,871
Southeast Texas GCD Total		**Gulf Coast Aquifer System**	**182,985**	**182,985**	**182,985**	**182,985**	**182,985**	**182,985**	**182,985**
District Total		**Gulf Coast Aquifer System**	**606,772**	**606,747**	**606,725**	**606,711**	**606,707**	**606,703**	**606,703**
No District-County	Chambers	Chicot aquifer	21,935	21,946	21,957	21,966	21,967	21,968	21,968
No District-County	Chambers	Evangeline aquifer	386	386	386	386	386	386	386
No District-County	Jefferson	Chicot aquifer	15,214	15,214	15,214	15,214	15,214	15,214	15,214
No District-County	Jefferson	Evangeline aquifer	211	211	211	211	211	211	211
No District-County	Liberty	Chicot aquifer	18,594	18,594	18,593	18,594	18,594	18,594	18,594
No District-County	Liberty	Evangeline aquifer	51,924	51,923	51,922	51,922	51,923	51,924	51,924
No District-County	Liberty	Burkeville confining	243	243	243	243	243	243	243
No District-County	Liberty	Jasper aquifer	900	900	900	900	900	900	900
No District-County	Orange	Chicot aquifer	22,854	22,854	22,854	22,854	22,854	22,854	22,854

[4] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.1 (CONTINUED)

GCD	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
No District-County	Orange	Evangeline aquifer	2,351	2,351	2,351	2,351	2,351	2,351	2,351
No District-County	Washington	Evangeline aquifer	11,231	11,231	11,231	11,231	11,231	11,231	11,231
No District-County	Washington	Burkeville confining	421	421	421	421	421	421	421
No District-County	Washington	Jasper aquifer	28,746	28,746	28,746	28,746	28,746	28,746	28,746
No District Total		**Gulf Coast Aquifer System**	**175,010**	**175,020**	**175,029**	**175,039**	**175,041**	**175,043**	**175,043**
GMA 14	**Total**	**Gulf Coast Aquifer System**	**781,782**	**781,767**	**781,754**	**781,750**	**781,748**	**781,746**	**781,746**

TABLE A.2. GROUNDWATER PUMPAGE PROJECTIONS FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 SPLIT BY MODEL LAYER FOR SUBSIDENCE DISTRICT COUNTIES FOR EACH DECADE BETWEEN 2020 AND 2080. VALUES ARE IN ACRE-FEET PER YEAR.

Subsidence District	County	Aquifer	2020	2030	2040	2050	2060	2070	2080
Fort Bend	Fort Bend	Chicot aquifer	58,273	52,870	62,897	73,277	84,381	97,154	97,154
Fort Bend	Fort Bend	Evangeline aquifer	71,572	51,072	56,659	61,881	66,953	72,193	72,193
Fort Bend	Fort Bend	Burkeville confining	0[5]	0	0	0	0	0	0
Fort Bend	Fort Bend	Jasper aquifer	0	0	0	0	0	0	0
Fort Bend Subsidence District Total		**Gulf Coast Aquifer System**	**129,845**	**103,942**	**119,556**	**135,158**	**151,334**	**169,347**	**169,347**
Harris-Galveston	Galveston	Chicot aquifer	5,817	6,535	7,151	7,746	8,301	8,807	8,807
Harris-Galveston	Galveston	Evangeline aquifer	215	254	284	314	346	373	373
Harris-Galveston	Harris	Chicot aquifer	136,644	108,688	80,496	86,816	90,263	93,781	93,781
Harris-Galveston	Harris	Evangeline aquifer	264,622	176,464	114,859	121,185	126,268	131,389	131,389
Harris-Galveston	Harris	Burkeville confining	0	0	0	0	0	0	0
Harris-Galveston	Harris	Jasper aquifer	8,212	5,432	3,164	3,368	3,519	3,658	3,658
Harris-Galveston Subsidence District Total		**Gulf Coast Aquifer System**	**415,510**	**297,373**	**205,954**	**219,429**	**228,697**	**238,008**	**238,008**
GMA 14	**Total**	**Gulf Coast Aquifer System**	**545,355**	**401,315**	**325,510**	**354,587**	**380,031**	**407,355**	**407,355**

[5] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3. MODELED AVAILABLE GROUNDWATER AND PROJECTED GROUNDWATER PUMPAGE VALUES (*IN ITALICS*) BY DECADE FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 SPLIT BY MODEL LAYER. RESULTS ARE IN ACRE-FEET PER YEAR AND ARE SUMMARIZED BY COUNTY, REGIONAL WATER PLANNING AREA (RWPA), RIVER BASIN, AND AQUIFER.

County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Austin	H	Brazos-Colorado	Chicot aquifer	1,432	1,432	1,432	1,432	1,432	1,432
Austin	H	Brazos-Colorado	Evangeline aquifer	19,027	19,027	19,027	19,027	19,027	19,027
Austin	H	Brazos-Colorado	Burkeville confining unit	0[6]	0	0	0	0	0
Austin	H	Brazos-Colorado	Jasper aquifer	192	192	192	192	192	192
Austin	H	Brazos	Chicot aquifer	1,462	1,462	1,462	1,462	1,462	1,462
Austin	H	Brazos	Evangeline aquifer	22,217	22,217	22,217	22,217	22,217	22,217
Austin	H	Brazos	Burkeville confining unit	0	0	0	0	0	0
Austin	H	Brazos	Jasper aquifer	1,565	1,565	1,565	1,565	1,565	1,565
Austin	H	Colorado	Chicot aquifer	0	0	0	0	0	0
Austin	H	Colorado	Evangeline aquifer	450	450	450	450	450	450
Austin	H	Colorado	Burkeville confining unit	0	0	0	0	0	0
Austin	H	Colorado	Jasper aquifer	214	214	214	214	214	214
Brazoria	H	Brazos-Colorado	Chicot aquifer	10,044	9,842	9,577	9,319	9,066	9,066
Brazoria	H	Brazos-Colorado	Evangeline aquifer	4	5	5	5	5	5
Brazoria	H	Brazos	Chicot aquifer	3,641	3,578	3,510	3,454	3,407	3,407
Brazoria	H	Brazos	Evangeline aquifer	0	0	0	0	0	0
Brazoria	H	San Jacinto-Brazos	Chicot aquifer	29,375	29,620	29,940	30,248	30,545	30,545
Brazoria	H	San Jacinto-Brazos	Evangeline aquifer	11,865	11,863	11,863	11,863	11,863	11,863
Chambers	H	Neches-Trinity	Chicot aquifer	9,968	9,968	9,968	9,968	9,968	9,968
Chambers	H	Neches-Trinity	Evangeline aquifer	0	0	0	0	0	0
Chambers	H	Trinity-San Jacinto	Chicot aquifer	1,756	1,766	1,775	1,777	1,778	1,778
Chambers	H	Trinity-San Jacinto	Evangeline aquifer	386	386	386	386	386	386
Chambers	H	Trinity	Chicot aquifer	10,222	10,222	10,222	10,222	10,222	10,222

[6] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Chambers	H	Trinity	Evangeline aquifer	*0*[7]	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*Brazos-Colorado*	*Chicot aquifer*	*7,162*	*8,504*	*10,466*	*13,339*	*17,547*	*17,547*
Fort Bend	*H*	*Brazos-Colorado*	*Evangeline aquifer*	*729*	*1,082*	*1,590*	*2,321*	*3,380*	*3,380*
Fort Bend	*H*	*Brazos-Colorado*	*Burkeville confining unit*	*0*[i]	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*Brazos-Colorado*	*Jasper aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*Brazos*	*Chicot aquifer*	*24,308*	*30,446*	*36,552*	*42,837*	*49,691*	*49,691*
Fort Bend	*H*	*Brazos*	*Evangeline aquifer*	*13,537*	*16,080*	*18,582*	*21,174*	*24,041*	*24,041*
Fort Bend	*H*	*Brazos*	*Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*Brazos*	*Jasper aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*San Jacinto-Brazos*	*Chicot aquifer*	*15,320*	*17,795*	*20,101*	*22,054*	*23,759*	*23,759*
Fort Bend	*H*	*San Jacinto-Brazos*	*Evangeline aquifer*	*25,524*	*28,118*	*30,370*	*32,165*	*33,499*	*33,499*
Fort Bend	*H*	*San Jacinto-Brazos*	*Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*San Jacinto-Brazos*	*Jasper aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*San Jacinto*	*Chicot aquifer*	*6,081*	*6,153*	*6,157*	*6,151*	*6,156*	*6,156*
Fort Bend	*H*	*San Jacinto*	*Evangeline aquifer*	*11,282*	*11,379*	*11,340*	*11,293*	*11,273*	*11,273*
Fort Bend	*H*	*San Jacinto*	*Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*San Jacinto*	*Jasper aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Galveston	*H*	*Neches-Trinity*	*Chicot aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Galveston	*H*	*Neches-Trinity*	*Evangeline aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Galveston	*H*	*San Jacinto-Brazos*	*Chicot aquifer*	*6,535*	*7,151*	*7,746*	*8,301*	*8,807*	*8,807*
Galveston	*H*	*San Jacinto-Brazos*	*Evangeline aquifer*	*254*	*284*	*314*	*346*	*373*	*373*
Grimes	G	Brazos	Chicot aquifer	0	0	0	0	0	0
Grimes	G	Brazos	Evangeline aquifer	8,670	8,670	8,670	8,670	8,670	8,670
Grimes	G	Brazos	Burkeville confining unit	0	0	0	0	0	0
Grimes	G	Brazos	Jasper aquifer	22,446	22,446	22,446	22,446	22,446	22,446

[7] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Grimes	G	San Jacinto	Chicot aquifer	0[8]	0	0	0	0	0
Grimes	G	San Jacinto	Evangeline aquifer	7,247	7,247	7,247	7,247	7,247	7,247
Grimes	G	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
Grimes	G	San Jacinto	Jasper aquifer	11,840	11,840	11,840	11,840	11,840	11,840
Grimes	G	Trinity	Jasper aquifer	1,283	1,283	1,283	1,283	1,283	1,283
Hardin	I	Neches	Chicot aquifer	1,492	1,492	1,492	1,492	1,492	1,492
Hardin	I	Neches	Evangeline aquifer	36,079	36,079	36,079	36,079	36,079	36,079
Hardin	I	Neches	Burkeville confining unit	0	0	0	0	0	0
Hardin	I	Neches	Jasper aquifer	0	0	0	0	0	0
Hardin	I	Trinity	Chicot aquifer	0	0	0	0	0	0
Hardin	I	Trinity	Evangeline aquifer	150	150	150	150	150	150
Hardin	I	Trinity	Burkeville confining unit	0	0	0	0	0	0
Hardin	I	Trinity	Jasper aquifer	0	0	0	0	0	0
Harris	*H*	*San Jacinto-Brazos*	*Chicot aquifer*	*4,859*	*5,406*	*5,959*	*6,383*	*6,906*	*6,906*
Harris	*H*	*San Jacinto-Brazos*	*Evangeline aquifer*	*2,097*	*2,212*	*2,323*	*2,436*	*2,557*	*2,557*
Harris	*H*	*San Jacinto*	*Chicot aquifer*	*101,266*	*72,533*	*78,138*	*81,077*	*83,988*	*83,988*
Harris	*H*	*San Jacinto*	*Evangeline aquifer*	*173,978*	*112,296*	*118,483*	*123,437*	*128,422*	*128,422*
Harris	*H*	*San Jacinto*	*Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Harris	*H*	*San Jacinto*	*Jasper aquifer*	*5,432*	*3,164*	*3,368*	*3,519*	*3,658*	*3,658*
Harris	*H*	*Trinity-San Jacinto*	*Chicot aquifer*	*2,563*	*2,557*	*2,718*	*2,803*	*2,887*	*2,887*
Harris	*H*	*Trinity-San Jacinto*	*Evangeline aquifer*	*389*	*351*	*379*	*395*	*410*	*410*
Harris	*H*	*Trinity-San Jacinto*	*B Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Harris	*H*	*Trinity-San Jacinto*	*Jasper aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Jasper	I	Neches	Chicot aquifer	7,740	7,740	7,740	7,740	7,740	7,740
Jasper	I	Neches	Evangeline aquifer	18,534	18,534	18,534	18,534	18,534	18,534

[8] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Jasper	I	Neches	Burkeville confining unit	0[9]	0	0	0	0	0
Jasper	I	Neches	Jasper aquifer	14,546	14,546	14,546	14,546	14,546	14,546
Jasper	I	Sabine	Chicot aquifer	3,118	3,118	3,118	3,118	3,118	3,118
Jasper	I	Sabine	Evangeline aquifer	25,308	25,308	25,308	25,308	25,308	25,308
Jasper	I	Sabine	Burkeville confining unit	8	8	8	8	8	8
Jasper	I	Sabine	Jasper aquifer	4,111	4,111	4,111	4,111	4,111	4,111
Jefferson	I	Neches-Trinity	Chicot aquifer	13,571	13,571	13,571	13,571	13,571	13,571
Jefferson	I	Neches-Trinity	Evangeline aquifer	0	0	0	0	0	0
Jefferson	I	Neches	Chicot aquifer	1,643	1,643	1,643	1,643	1,643	1,643
Jefferson	I	Neches	Evangeline aquifer	211	211	211	211	211	211
Liberty	H	Neches-Trinity	Chicot aquifer	1,397	1,397	1,397	1,397	1,397	1,397
Liberty	H	Neches-Trinity	Evangeline aquifer	656	656	656	656	656	656
Liberty	H	Neches	Chicot aquifer	2,860	2,860	2,860	2,860	2,860	2,860
Liberty	H	Neches	Evangeline aquifer	5,872	5,872	5,872	5,872	5,872	5,872
Liberty	H	Neches	Burkeville confining unit	0	0	0	0	0	0
Liberty	H	Neches	Jasper aquifer	0	0	0	0	0	0
Liberty	H	San Jacinto	Chicot aquifer	973	973	973	973	973	973
Liberty	H	San Jacinto	Evangeline aquifer	9,183	9,183	9,183	9,183	9,184	9,184
Liberty	H	San Jacinto	Burkeville confining unit	243	243	243	243	243	243
Liberty	H	San Jacinto	Jasper aquifer	900	900	900	900	900	900
Liberty	H	Trinity-San Jacinto	Chicot aquifer	3,330	3,329	3,330	3,330	3,330	3,330
Liberty	H	Trinity-San Jacinto	Evangeline aquifer	7,214	7,213	7,214	7,214	7,215	7,215
Liberty	H	Trinity-San Jacinto	Burkeville confining unit	0	0	0	0	0	0
Liberty	H	Trinity-San Jacinto	Jasper aquifer	0	0	0	0	0	0
Liberty	H	Trinity	Chicot aquifer	10,034	10,034	10,034	10,034	10,034	10,034

[9] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Liberty	H	Trinity	Evangeline aquifer	28,997	28,997	28,997	28,997	28,997	28,997
Liberty	H	Trinity	Burkeville confining unit	0	0	0	0	0	0
Liberty	H	Trinity	Jasper aquifer	0	0	0	0	0	0
Montgomery	H	San Jacinto	Chicot aquifer	22,117	22,136	23,202	22,878	21,030	21,030
Montgomery	H	San Jacinto	Evangeline aquifer	41,160	41,397	40,200	40,269	39,815	39,815
Montgomery	H	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
Montgomery	H	San Jacinto	Jasper aquifer	33,676	33,412	33,527	33,769	36,028	36,028
Newton	I	Neches	Jasper aquifer	199	199	199	199	199	199
Newton	I	Sabine	Chicot aquifer	547	547	547	547	547	547
Newton	I	Sabine	Evangeline aquifer	23,162	23,162	23,162	23,162	23,162	23,162
Newton	I	Sabine	Burkeville confining unit	0	0	0	0	0	0
Newton	I	Sabine	Jasper aquifer	13,600	13,600	13,600	13,600	13,600	13,600
Orange	I	Neches-Trinity	Chicot aquifer	280	280	280	280	280	280
Orange	I	Neches-Trinity	Evangeline aquifer	0[10]	0	0	0	0	0
Orange	I	Neches	Chicot aquifer	4,039	4,039	4,039	4,039	4,039	4,039
Orange	I	Neches	Evangeline aquifer	2,228	2,228	2,228	2,228	2,228	2,228
Orange	I	Sabine	Chicot aquifer	18,535	18,535	18,535	18,535	18,535	18,535
Orange	I	Sabine	Evangeline aquifer	124	124	124	124	124	124
Polk	I	Neches	Chicot aquifer	0	0	0	0	0	0
Polk	I	Neches	Evangeline aquifer	4,247	4,247	4,247	4,247	4,247	4,247
Polk	I	Neches	Burkeville confining unit	142	142	142	142	142	142
Polk	I	Neches	Jasper aquifer	12,376	12,376	12,376	12,376	12,376	12,376
Polk	H	Trinity	Chicot aquifer	0	0	0	0	0	0
Polk	H	Trinity	Evangeline aquifer	5,239	5,239	5,239	5,239	5,239	5,239
Polk	H	Trinity	Burkeville confining unit	687	687	687	687	687	687

[10] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

County	RWPA	River Basin	Gulf Coast Aquifer System	2030	2040	2050	2060	2070	2080
Polk	H	Trinity	Jasper aquifer	18,055	18,055	18,055	18,055	18,055	18,055
San Jacinto	H	San Jacinto	Chicot aquifer	0	0	0	0	0	0
San Jacinto	H	San Jacinto	Evangeline aquifer	10,472	10,476	10,484	10,491	10,512	10,512
San Jacinto	H	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
San Jacinto	H	San Jacinto	Jasper aquifer	7,972	7,976	7,983	7,991	8,012	8,012
San Jacinto	H	Trinity	Chicot aquifer	0	0	0	0	0	0
San Jacinto	H	Trinity	Evangeline aquifer	4,644	4,644	4,644	4,644	4,644	4,644
San Jacinto	H	Trinity	Burkeville confining unit	2,762	2,762	2,762	2,762	2,762	2,762
San Jacinto	H	Trinity	Jasper aquifer	9,198	9,198	9,198	9,198	9,198	9,198
Tyler	I	Neches	Chicot aquifer	0	0	0	0	0	0
Tyler	I	Neches	Evangeline aquifer	18,519	18,519	18,519	18,519	18,519	18,519
Tyler	I	Neches	Burkeville confining unit	0	0	0	0	0	0
Tyler	I	Neches	Jasper aquifer	15,871	15,871	15,871	15,871	15,871	15,871
Walker	H	San Jacinto	Chicot aquifer	0	0	0	0	0	0
Walker	H	San Jacinto	Evangeline aquifer	3,143	3,143	3,143	3,143	3,143	3,143
Walker	H	San Jacinto	Burkeville confining unit	0[11]	0	0	0	0	0
Walker	H	San Jacinto	Jasper aquifer	23,479	23,479	23,479	23,479	23,479	23,479
Walker	H	Trinity	Jasper aquifer	15,881	15,881	15,881	15,881	15,881	15,881
Waller	H	Brazos	Chicot aquifer	632	632	632	632	632	632
Waller	H	Brazos	Evangeline aquifer	22,437	22,437	22,437	22,437	22,437	22,437
Waller	H	Brazos	Burkeville confining unit	0	0	0	0	0	0
Waller	H	Brazos	Jasper aquifer	329	329	329	329	329	329
Waller	H	San Jacinto	Chicot aquifer	159	159	159	159	159	159

[11] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

TABLE A.3 (CONTINUED)

County	RWPA	River Basin	Gulf Coast Aquifer	2030	2040	2050	2060	2070	2080
Waller	H	San Jacinto	Evangeline aquifer	31,976	31,976	31,976	31,976	31,976	31,976
Waller	H	San Jacinto	Burkeville confining unit	0[12]	0	0	0	0	0
Waller	H	San Jacinto	Jasper aquifer	0	0	0	0	0	0
Washington	G	Brazos	Evangeline aquifer	11,231	11,231	11,231	11,231	11,231	11,231
Washington	G	Brazos	Burkeville confining unit	421	421	421	421	421	421
Washington	G	Brazos	Jasper aquifer	28,512	28,512	28,512	28,512	28,512	28,512
Washington	G	Colorado	Jasper aquifer	233	233	233	233	233	233
GMA 14 Total			**Gulf Coast Aquifer System**	**1,183,076**	**1,107,258**	**1,136,330**	**1,161,773**	**1,189,095**	**1,189,095**

[12] A zero value in the table indicates the groundwater availability model pumping scenario did not include any pumping in that part of the aquifer.

APPENDIX D

DISTRICT RULES:
Southeast Texas Groundwater
Conservation District District Rules
District Rules Adopted April 14, 2022

SOUTHEAST TEXAS GROUND WATER

CONSERVATION DISTRICT

DISTRICT RULES

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SOUTHEAST TEXAS GROUNDWATER CONSERVATION DISTRICT

TABLE OF CONTENTS: **PAGE**

RULE 1 - Definitions and Concepts 1
RULE 2 - Waste 6
RULE 3 - Permit and Registration Required 7
RULE 4 - Fees and Reports 9
RULE 5 - Issuance of Permits 10
RULE 6 – Well Driller License and Completion Standards 15
RULE 7 – Requirement of Driller's Log, Casing and Pump Data 16
RULE 8 - Exception to Spacing Rule – *No Longer Applicable* 16
RULE 9 - Place of Drilling Well 16
RULE 10 - Right to Inspect and Test Wells 16
RULE 11 - Open Wells to be Capped 17
RULE 12 - General Rules of Procedure for Hearing 18
RULE 13 - Well Validation – *No Longer Applicable* 18
RULE 14 - Transfer of Groundwater Out of the District - *No Longer Applicable* 18
RULE 15 - Enforcement 18
RULE 16 - Conditional Exemption 18

RULES OF THE SOUTHEAST TEXAS GROUNDWATER CONSERVATION DISTRICT

In accordance with Section 59 of Article 16 of the Texas Constitution and with the Acts of the 78th Legislature (2003), S.B. 1888 (the "District Act") and Chapter 36 of the Texas Water Code, Southeast Texas Groundwater Conservation District adopts the following rules as the Rules of the District. Each Rule as set out below has been in effect since the date of adoption and as may be amended.

The Rules, regulations, and modes of procedure contained below are and have been adopted for the purposes of achieving the goals of the District Act and the Management Plan, to prevent waste, and to protect rights of owners of interest in Groundwater while simplifying procedure, avoiding delays, saving expense, and facilitating the administration of the Groundwater laws of the State and the Rules of this District. To the end that these objectives be attained, these Rules shall be so construed.

These Rules may be used as guides in the exercise of discretion, where discretion is vested. However, under no circumstances and in no particular case shall they, or any of them, be construed as a limitation or restriction upon the exercise of any discretion of the Board, where such exists; nor shall they in any event be construed to deprive the Board of an exercise of powers, duties and jurisdiction conferred by law, nor to limit or restrict the amount and character of data or information which may be required for the proper administration of the law. Any reference to the Texas Water Code includes the section referenced and any subsequent amendments.

RULE 1 - DEFINITIONS AND CONCEPTS

1.1 Unless the context indicates a contrary meaning, the words defined below shall have the following meaning in these Rules:

(a) "Agriculture" means any of the following activities:

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

(ii) the practice of floriculture, viticulture, silviculture, and horticulture, including the cultivation of plants in containers or non-soil media, by a nursery grower;

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

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

(v) wildlife management; and

(vi) raising or keeping equine animals.

(b) "Artesian Well" shall mean an artificial water well in which the water, when properly cased, will rise by natural pressure above the first impervious stratum below the surface of the ground. It is considered a flowing artesian well if the natural pressure is great enough to cause the water to rise to the surface without being pumped.

(c) "Beneficial use" means:

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

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

(iii) any other purposes that is useful and beneficial to the user and approved by the Board.

(d) The "Board" shall mean the Board of Directors of the Southeast Texas Groundwater Conservation District, consisting of thirteen (13) members.

(e) "Church" means the land, building, buildings, or other facilities used exclusively for religious purposes and which are exempt from ad valorem taxes.

(f) "Dewatering Well" shall mean a well used to remove groundwater from a construction site or temporary excavation, or to relieve the hydrostatic uplift on Toledo Bend Dam. The Dewatering well shall not exceed 75 feet in depth unless approved by the District prior to drilling.

(g) "District" shall mean Southeast Texas Groundwater Conservation District.

(h) "District Office or Offices" shall mean the location or locations as may be established by resolution of the Board.

(i) "Domestic Use" means the use of water at a single-family or duplex household to support domestic activities including drinking, washing, and sanitation. Domestic use does not include use for any commercial purpose or at any commercial establishment. Domestic use does not include a use at any commercial establishment with a single-family household.

(j) "Drilling" includes drilling, equipping, or completing wells or modifying the size of wells or well pumps to change pumpage volume.

(k) "Drilling Permit" means a permit issued by the District allowing a water well to be drilled.

(l) "Exempt Well" shall mean any well for which the District is prohibited to require a permit under the District Act, Texas Water Code §36.117 or these District Rules including a well conditionally exempt under Rule 16. Exempt wells include wells used solely for domestic use, agriculture use or for providing water for livestock or poultry, or to provide Groundwater to a Church, or a well utilized by a local emergency management agency (these uses constitute "Exempt Purposes") that is either drilled, completed, or equipped so that it is incapable of producing more than 100,000 gallons per day, and certain wells for hydrocarbon production.

Wells to supply water for a subdivision of land for which plat approval is required by law or regulation are not exempt. For all purposes, an Exempt Well shall be exempt from permitting requirements and production fees but shall not be exempt from registration requirements.

Aquifer Storage and Recovery (ASR) wells shall be exempt unless the recovery well produces more groundwater than authorized by the Texas Commission on Environmental Quality (TCEQ). A permit for additional groundwater from the District will be required.

Any well, excluding a well utilized by a local emergency management agency or hydrocarbon exploration wells as defined in Chapter 36.117 of the Texas Water Code, that is capable of producing more than 100,000 gallons per day, shall be considered Non-Exempt and be required to be permitted as such.

(m) "Fee or Fees" means the amount required to be paid as established by the Board of Directors.

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

(o) "Hearing Body" means the Board, any committee of the Board, or a hearing examiner at any hearing held under the authority of the District Act.

(p) "Hearing Examiner" means a person appointed by the Board pursuant to the District Rules for Hearing to conduct a hearing or other proceeding.

(q) "Management Plan" means the plan for managing the Groundwater in the District, as it may be amended from time to time, adopted by the Board under Texas Water Code Section 36.1071, et seq.

(r) "Monitor Well", means any well used for the sampling or measurement of any chemical or physical property of subsurface strata or their contained fluids.

(s) "Non-Exempt Well" shall mean any well that the does not fall within the exclusions or exemptions in 1.1(l).

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

(u) "Operating Permit" means a permit issued by the District for a water well, allowing Groundwater to be withdrawn from a water well for a designated period.

(v) "Operator" shall mean the person who operates a well.

(w) "Owner" shall mean and include any person that has the right to produce water from the land either by ownership, contract, lease or easement.

(x) "Permit" shall mean the written authorization issued by the District to drill or operate a Well or to transfer Groundwater out of the District.

(y) "Permittee" shall mean the person named in a Permit.

(z) "Person" shall mean any individual, partnership, firm, or corporation, limited liability company, or other legal entity.

(aa) "Production Fee" shall mean the fee established on the withdrawal of Groundwater as provided in Section 7(e) of the District Act and Texas Water Code Section 36.205(c) and as set in Rule 4 below.

(bb) "Register, Registering, and Registration" means, as the use may indicate, a well registered in compliance with Rule 3 and 13 and as otherwise provided in these Rules.

(cc) "Remediation Well" means any well used to produce contaminated water from a subsurface strata pursuant to a plan approved by the Texas Commission on Environmental Quality or other agency with applicable jurisdiction.

(dd) "Rules" shall mean these Rules of the District and the Hearing Rules and Procedures as they may be supplemented or amended from time to time.

(ee) "Rules for Hearings" means the "Rules for Hearings" setting out the rules and procedures for hearings and other matters of the District, as the may be supplemented or amended from time to time.

(ff) "TDLR Rules" means the administrative rules, as may be amended from time to time, by the Texas Department of Licensing and Regulation for water well drillers and pump installers found at 16 Texas Administrative Code Chapter 76: (www.license.state.tx.us/wwd/wwdrules.utm)

(gg) "Test Well" means a well that is drilled to determine subsurface conditions.

(hh) "Waste" means any one or more of the following:

(i) withdrawal of Groundwater at a rate and in an amount that causes or threatens to cause intrusion into a reservoir of water unsuitable for agricultural, gardening, domestic, or stock raising purposes;

(ii) the flowing or producing of Groundwater from a well if the water produced is not used for a Beneficial Purpose;

(iii) escape of Groundwater from a Groundwater reservoir to any other reservoir or geologic strata not containing Groundwater;

(iv) pollution or harmful alteration of Groundwater by saltwater or by other deleterious matter from another stratum or from the surface of the ground;

(v) willfully or negligently causing, suffering, or allowing Groundwater to escape into any river, creek, natural watercourse, depression, lake, reservoir, drain, sewer, street, highway, road, or road ditch, or onto any land unless such discharge is authorized by permit, rule, or order issued by the Commission under Chapter 26, Texas Water Code; Groundwater released on well startup or well development in order to improve water quality shall not constitute waste as defined above;

(vi) Groundwater pumped for irrigation that escapes as irrigation tailwater onto land other than that of the owner of the well unless permission has been granted by the occupant of the land receiving the discharge; or

(vii) for water produced from an artesian well, "waste" has the meaning assigned by Section 11.205, Texas Water Code.

(ii) "Well" or "Water Well" shall mean and include any artificial excavation constructed for the purpose of exploring for or producing Groundwater.

(jj) "Well Field" shall mean:

(a) two or more wells connected to a common piping or gathering system that are operated by one or more persons or entities for delivery to an end point.

(b) two or more wells used on the same tract of land for the same purpose that are capable of a combined total of more than 100,000 gallons per day and that are less than 330 feet apart.

1.2 Definitions. The definitions contained in Texas Water Code Section 36.001 shall also be included to the extent that they are used in these Rules.

1.3 Purpose of Rules. The Rules are the foundation for achieving the goals of the District Act and Management Plan.

1.4 Use and Effect of Rules. The District uses these Rules as guides in the exercise of the powers conferred by law and in the accomplishment of the purposes of the District Act and Management Plan.

1.5 Amendment of Rules. The Board may amend these Rules or adopt new Rules from time to time in accordance with Texas Water Code Section 36.101. Any such amendment must be approved by a majority of the duly appointed and qualified members of the Board.

1.6 Headings and Captions. The section and other headings and captions contained in these Rules are for reference purposes only. They do not affect the meaning or interpretation of these Rules in any way.

1.7 Construction. A reference to a title, chapter or section without further identification is a reference to a title, chapter, or section of the Water Code. Construction of words and phrases are governed by the Code Construction Act, Subchapter B, Chapter 311, Texas Government Code.

1.8 Method of Service under these Rules.

(a) Except as otherwise expressly provided in these Rules, any notice or documents required by these Rules to be served or delivered may be delivered to the recipient or the recipient's authorized representative by First Class U.S. Mail. Service may also be completed by electronic transfer, if the recipient has filed their electronic data address with the District in the form of a facsimile ("fax") number or email address.

(b) Service by mail is deemed complete three days after deposit in a post office or other official depository of the United States Postal Service. Service by electronic document transfer is complete upon transfer, except that any transfer occurring after 5:00 p.m. will be deemed complete on the following business day.

(c) If the District prepares a newspaper notice that is required by these Rules and the applicant does not cause the notice to be published within 30 days of receipt of the notice from the District, the District may cause the notice to be published and the applicant shall reimburse the District for the cost of publication within 30 days of publication.

(d) When these Rules require an applicant to publish notice, the applicant must file a publisher's affidavit with the District certifying the facts that constitute compliance with the requirement. The deadline to file the affidavit is the day of the public meeting for notice of public meeting, two days before a public hearing for notice of a public hearing, and 30 days after the last publication for other published notices. For notice of a public meeting, the applicant must also submit the publisher's affidavit to the General Manager no later than

the day of the public meeting. Filing an affidavit certifying facts that constitute compliance with notice requirements creates a rebuttable presumption of compliance with the requirement to publish notice.

(e) When these Rules require notice to be published according to this subsection, the applicant shall publish notice in a newspaper of the largest general circulation that is published in the county in which the facility is located or proposed to be located.

(f) When notice by publication or by mail is required by these Rules, the text of the notice must include:

(i) the name and address of the District;

(ii) the name and address of the applicant and, if different, the location of the facility or activity to be regulated by the permit;

(iii) a brief description of the business conducted at the facility or activity described in the application or the draft permit;

(iv) for notices of public meetings or hearings, the date, time, and place of the meeting or hearing, and a brief description of the nature and purpose of the meeting or hearing, including the applicable rules and procedures; and

(v) the application or permit number.

(g) When these Rules require mailed notice under this section, the District shall mail notice to:

(i) the landowners or well owners named on the application map or supplemental map, or the sheet attached to the application map or supplemental map;

(ii) any other person the District may elect to include; and

(iii) persons who filed public comment or hearing requests on or before the deadline for filing public comment or hearing requests.

(h) The applicant shall pay the costs of mailing and publishing all notices.

1.9 Severability. If any one or more of the provisions contained in these Rules are for any reason held to be invalid, illegal, or unenforceable in any respect, the invalidity, illegality, or unenforceability may not affect any other Rules or provisions of these Rules, and these Rules must be construed as if such invalid, illegal or unenforceable Rule(s) or provision had never been contained in these Rules.

1.10 Burden of Proof. In all matters regarding applications for permits, exceptions, and other matters for which District approval is required, the burden shall be upon the applicant or other persons seeking a permit, exception, or other authority to establish that all conditions, criteria, standards, or prerequisites have been met.

RULE 2 - WASTE

2.1 Groundwater shall not be produced within, or used within or without the District, in such a manner or under such conditions as to constitute waste as defined in Rule 1.1 (hh).

2.2 Any person producing or using Groundwater shall use every possible precaution, in accordance with the most approved methods, to stop and prevent waste of such water.

2.3 No person shall pollute or harmfully alter the character of Groundwater of the District by means of salt water or other deleterious matter admitted from other stratum or strata or from the surface of the ground.

2.4 No person shall commit waste as that term is defined by Rule 1.1 (hh).

RULE 3 - PERMIT AND REGISTRATION REQUIRED

3.1 No person shall drill, modify, complete, change type of use, plug, abandon, or alter the size of a well within the District without first Registering the well with the District, or making application for a new well even though the well may be exempt from the requirement of a permit under Texas Water Code Section 36.117 or Rule 1.1 (l).

3.2 The District staff will review the application for Registration Permitting and make a preliminary determination on whether the well meets the requirements, exclusions, or exemptions.

3.3 No permit shall be required for a well incapable of producing more than 25,000 gallon of groundwater a day (17.36 gallons per minute) if the well owner or operator complies with Rule 16 below and submits the following information:

(a) Maximum capability of the well as equipped;

(b) A statement of acknowledgement by the well owner that the well's capability cannot be altered so that it is capable of more than 25,000 gallons of groundwater a day (17.36 gallons per minute) without first applying to the District for an Operating Permit; and

(c) a statement that the well owner will adhere to the District Management Plan, District Rules and Plugging guidelines as established by the District and State of Texas.

3.4 No permit shall be required for the drilling of wells exempt by Texas Water Code §36.117 or Rule 1.1(l).

3.5 Exempted Wells shall be registered with the District before drilling. All exempt wells shall be equipped and maintained so as to conform to the District's Rules requiring installation of casing, pipe and fittings to prevent the escape of Groundwater from a Groundwater reservoir to any reservoir not containing Groundwater and to prevent the pollution or harmful alteration of the character of the water in any Groundwater reservoir. Forms for Registrations and applications for permits shall be provided by the District.

3.6 Non-exempt well grandfathering into district. – *No longer applicable.*

3.7 A water well used solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the Railroad Commission of Texas is exempt from District Fees provided (1) the person holding the Railroad Commission permit is responsible for drilling and operating the water well and (2) the well is located on the same lease with the drilling rig.

3.8 A well exempted under provision of Rule 1.1(l) above must either be plugged or be permitted and comply with all Rules within 30 days of the change in well status if:

(a) the purpose of the well is no longer solely to supply water for a rig that is actively engaged in drilling or exploration operations for an oil or gas well permitted by the Railroad Commission of Texas;

(b) the withdrawals are no longer necessary for mining activities or are greater than the amount necessary for mining activities specified in the permit issued by the Railroad Commission of Texas under Chapter 134, Natural Resources Code;

(c) the water from the well is no longer solely used for an Exempt use;

(d) the drilling or completion rig is removed from the lease; or

(e) the exempt well is part of a "Well Field" as defined in Rule 1.1(jj).

3.9 All Permits are granted subject to these Rules, Orders of the Board, and the laws of the State of Texas. In addition to any special provisions or other requirements incorporated into the Permit, each Permit is issued subject to the following standard Permit provisions:

(a) The acceptance of the Permit constitutes an acknowledgment and agreement that the Permittee will comply with the Rules, Orders of the Board, and the laws of the State of Texas.

(b) The Permit confers only the right to operate and its terms may be modified or amended. To protect the Permittee from the illegal use by a new landowner, within 30 days after the date of sale, transfer, lease, assignment or other change in the use or possession of the Permitted Well, the Operating Permit holder must notify the District in writing with the name of the new owner or operator of a Permitted Well. Any person who becomes the owner or operator of a Permitted Well must, within 45 calendar days from the date of the change in ownership or operation , file an application for a permit amendment to effect a transfer of the Permit. Until the District has issued a new Permit, the Permittee remains responsible for compliance with all applicable Rules and laws.

(c) The application pursuant to which the Permit has been issued is incorporated in the Permit, and the Permit is granted on the basis of, and contingent upon, the accuracy of the information supplied in that application. A finding that false information has been supplied is grounds for immediate revocation of the Permit.

(d) Violation of a Permit's terms, conditions, requirements, or special provisions is punishable by civil penalties as provided by the District Rules and by law.

(e) The Permit may also contain provisions relating to the means and methods of transportation of water produced within the District.

3.10 Except as provided below, a Permit is not required for a Monitor Well or a Remediation Well. A copy of the Driller's Report must be filed with the District within thirty (30) days. If the use of Monitor Well or Remediation Well is changed to produce non-contaminated water, it then becomes subject to the permitting or registration requirements of these Rules depending upon use and volume.

3.11 The General Manager may, without notice or board action, issue a permit to drill a Test Well after an application for it has been submitted and all fees, if any, paid. If the General Manager denies a permit for a test well, then the matter shall be processed as otherwise provided in these rules.

A test well shall be plugged within 60 days from the commencement of drilling unless the permittee has applied for an "Operating Permit". The authorization of a "Test Well" does not constitute a

Drilling or Operating Permit nor does it guarantee that an Operating Permit will be granted when applied for.

3.12 Temporary Dewatering wells used for construction or excavation shall not be required to be registered if the well is less than 75 feet in depth. Any temporary Dewatering well shall be closed no less than 30 days after the completion of the construction or excavation project unless approved by the District.

Any permanent Dewatering well, as defined in 1.1(f), shall be exempt from permitting requirements and production fees but shall not be exempt from registration requirements. The owner of permanent Dewatering well shall report to the District annually the total amount of water produced from the well.

RULE 4 - FEES AND REPORTS

4.1 In accordance with the District Act and Section 36.205 of the Texas Water Code, and except as provided below, the Board shall, from time to time, adopt a schedule of fees for water use, production, transport, registrations, permits and administrative functions, and any other lawful purpose or business of the District. The fees, rates and charges will be established in a schedule of fees and charges adopted by the Board, and each such schedule of fees and charges shall thereafter be and remain in effect until amended by the Board.

4.2 The Production Fee is payable on water produced on or after January 1, 2005, except the increase in fees for Recreational Use is payable for Groundwater produced after December 31, 2008. Operators of non-exempt wells shall provide payment to the District each quarter. Payment shall be due within ninety (90) days of the last day of March, June, September, and December with their quarterly reports. Operators shall provide monthly production records to document payment amount. The payment shall be accompanied by the report form specified by the District.

If the total amount of water pumped for a non-exempt well exceeds the permitted amount, the fee for the amount that exceeds the permitted annual production rate shall be charged at the District's maximum production fee. The District may also assess penalties for non-compliance with District Rules for failure to comply with the conditions of the permit issued by the District.

Owners of wells subject to the production fees as described above are not required to pay the production fee if the annual amount of groundwater produced from the well is less than 1,500,000 gallons per year. Owners of wells not required to pay the production fees under this provision are required to comply with the reporting requirement and must provide the District monthly production records after the end of each calendar quarter.

4.3 In accordance with Section 36.122 of the Texas Water Code, the District adopts a transfer fee of $0.005 per 1,000 gallons for all water transported out of the District in addition to the Production Fee for water transported out of the District.

4.4 Each application for a Permit to drill and operate a new Non-Exempt well shall be accompanied by the fee or fees as established herein or by resolution of the Board. An application processing fee, sufficient to cover all reasonable and necessary costs to the District of processing the application, will be charged. The application must be accompanied by the Fee. If the Fee is determined by the General Manager or the Board to be insufficient to cover anticipated costs of processing the application, the applicant may be required to post a deposit in an amount determined by the General Manager or the Board's representative to be sufficient to cover anticipated processing costs. As costs are incurred by the District in processing the application, those costs may be reimbursed from funds deposited by the applicant. The applicant shall be provided a monthly accounting of billings against the application processing deposit. Any funds remaining on deposit after the conclusion of

application processing shall be returned to the applicant. If initially deposited funds are determined by the General Manager to be insufficient to cover costs incurred by the District in processing the application, an additional deposit may be required. If the applicant fails to deposit funds as required by the District, the application may be dismissed.

4.5 Each day that a payment remains unpaid after it is due shall constitute a separate violation of these Rules. The violator shall be subject to a civil penalty as provided in Rule 15, calculated in the District's Penalty Matrix, with a $50 base penalty.

4.6 An entity holding a permit issued by the Railroad Commission of Texas under Chapter 134, Natural Resources Code, that authorized the drilling of a water well shall report monthly to the District:

(a) the total amount of water withdrawn during the month;

(b) the quantity of water necessary for mining activities; and

(c) the quantity of water withdrawn for other purposes.

RULE 5 - ISSUANCE OF PERMITS

5.1 Every person who drills a water well after the effective date of these Rules, other than an Exempt Well, must file an Application for Permit on a form approved by the District. Each permit application must be accompanied by the fee. An Exempt Well must be registered with the District prior to it being drilled.

5.2 Drilling Permit Requirement. The well owner, well operator, or any other person acting on behalf of the well owner including, but not limited to, the water well driller, must obtain a drilling permit from the District prior to drilling a new water well other than an exempt well., developing a well field or perforating an existing well.

5.3 Operating Permit Requirement. The well owner, well operator, or any other person acting on behalf of the well owner including, but not limited to, the water well driller, must obtain a operating permit from the District prior to drilling a new water well other than an exempt well.

5.4 Permit Applications. Each original application for a water well drilling permit, operating permit, transport permit, and permit amendment requires a separate application and payment of the associated fee. Application forms will be provided by the District and furnished to the applicant upon request.

The application for a Permit shall be in writing and sworn to, and shall include the following:

(a) the name and mailing address of the applicant and the owner of the land on which the well will be located;

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

(c) the location of each well and the estimated rate at which water will be withdrawn;

(d) a statement of the nature and purpose of the proposed use and the amount of water to be used for each purpose;

(e) a map showing the location of all existing wells within a one quarter (1/4) mile radius of the proposed well or the existing well to be modified if requested by the District;

(f) a map from the county appraisal District indicating the location of the proposed well or the existing well to be modified, the subject property, and the physical addresses and mailing addresses of any person owning property within a one quarter (1/4) mile radius of the well or wells for which the application is filed;

(g) notice of any application to the Texas Commission on Environmental Quality to obtain or modify a Certificate of Convenience and Necessity to provide water or wastewater service with water obtained pursuant to the requested permit;

(h) a declaration that the applicant will comply with the District's Rules and all Groundwater use permits and plans promulgated pursuant to the District's Rules;

(i) a water conservation plan or a declaration that the applicant will comply with the Management Plan;

(j) a water well closure plan or a declaration that the applicant will comply with all Rules and/or TDLR Rules for well plugging and capping guidelines and report closure to the District;

(k) a hydrogeological report addressing the area of influence, draw down, recovery time, and other pertinent information required by the District (see Appendix A "Guidelines for Hydrogeologic Report") shall be required for the following:

(i) Requests to drill a well(s) or well field with a daily maximum capacity of more than 250,000 gallons; and

(l) additional information or documentation that may be requested by the District.

5.5 Action on Application.

(a) To the extent possible, the District shall issue permits to achieve applicable desired future conditions. In issuing permits, the District shall manage total groundwater production on a long-term basis to achieve an applicable desired future condition and consider:

(i). The modeled available groundwater determined by the executive administrator as defined by Texas Water Code Sec. 36.001(25);

(ii). The executive administrator's estimate of the current and projected amount of groundwater produced under exemptions granted by District Rules and Section 36.117;

(iii). The amount of groundwater authorized under permits previously issued by the District;

(iv). A reasonable estimate of the amount of groundwater that is actually produced under permits issued by the District; and,

(v). Yearly precipitation.

(b) Once the District has received a completed original application for a water well drilling permit, operating permit, or a permit amendment which the General Manager determines to be administratively complete as provided in subsection (c) below, and all associated fees including the costs of giving notice have been paid, the General Manager will issue written notice indicating a date and time for a hearing on the application in accordance with these

Rules. The District may schedule as many applications at one hearing as deemed necessary. If the application is for an amount exceeding 100,000 gallons per day, at least twenty (20) days prior to the hearing, written notice will be given to any person who, according to the application or the District's records, owns a well within one quarter (1/4) mile of the well that is the subject of the application. Notice shall include at least the following information:

(i) the name and address of the applicant;

(ii) the date the application was filed;

(iii) the time and place of the hearing;

(iv) the location of the proposed well(s) from which water to be transported is to be produced;

(v) a description of the production facility; and

(vi) a brief summary of the information in the application.

(c) If the application is for a well that is not capable of producing more than 250,000 gallons of water per day or if the annual permitted amount does not exceed 91,250,000 gallons per year, the General Manager may issue the permit without Board action if:

(i) there is no one who is entitled to the notice required under Rule 5.5(b) or if a "waiver of right to hearing" is obtained from all persons entitled to notice. The District shall promulgate the form and content of the waiver to be used; and,

(ii) the well will comply with all District Rules including but not limited to those concerning spacing and waste; and,

(iii) the General Manager makes an inspection of the proposed well location and verifies that the well complies with all District Rules, the information in the application is correct, and there is no well owner within one quarter (1/4) mile of the proposed location that is due notice; and,

(iv) the General Manager signs a written report stating the details of the inspection and all other criteria to document the findings under this subsection.

(d) If the General Manager determines that an application is not complete, that the information in it is incorrect, or that the proper fees have not been paid, the application will not be considered administratively complete. Within ten (10) days of determining that an application is not administratively complete, the General Manager shall advise the applicant in writing of the deficiencies. If the applicant does not cure the deficiencies within twenty (20) days, the application will be returned to the applicant. Any fees paid will be retained by the District.

(e) The Board shall also consider the requirements set out in Texas Water Code Section 36.113.

5.6 Permit Preferences.

(a) The Board shall give preference to applications in the order declared in Section 5.6(b).

(b) In order to conserve and properly utilize Groundwater in the District, the public welfare requires not only recognition of beneficial uses but also a constructive public policy regarding the preferences between these uses, and it is therefore declared to be the public policy of the District that in granting permits, water preference shall be given to the following uses in the order named:

(i) domestic and municipal uses, including water for sustaining human life and the life of domestic animals, it being the public policy of the District and for the benefit of the greatest number of people that in granting permits for Groundwater, the allocation of water for domestic and municipal uses shall be and remain superior to all other purposes;

(ii) agricultural uses and industrial uses, which means processes designed to convert materials of a lower order of value into forms having greater usability and commercial value, including the development of power by means other than hydroelectric;

(iii) mining and recovery of minerals;

(iv) recreation and pleasure; and

(v) other Beneficial Uses.

5.7 Drilling Permits. Unless specified otherwise by the Board or these Rules, drilling permits are effective for a term ending one (1) year after the date of issuance.

5.8 Transfer Permits. Unless specified otherwise by the Board or these Rules, transfer permits are effective for five (5) years from the date of issuance. Notwithstanding the period specified above, the District may periodically review the amount of water that may be transferred under the permit and may limit the amount.

5.9 Operating Permits. Unless specified otherwise by the Board or these Rules, operating permits are effective for five (5) years from the date of issuance. Notwithstanding the period specified above, the District may periodically review the amount of water that may be pumped under the permit and may limit the amount.

5.10 Effect of Acceptance of Permit. Acceptance of the permit by the person to whom it is issued constitutes acknowledgment of and agreement to comply with all of the terms, provisions, conditions, limitations, and restrictions thereof.

5.11 Reworking and Replacing a Well.

(a) An existing well may be reworked or re-equipped in a manner that will not change the permitted well status. A change in the permitted well status will require an operating permit amendment.

(b) A permit must be applied for if a party wishes to replace an existing well with a replacement well. An application for a new well to replace an existing permitted well, must be made on the Non-Exempt Permit Application form except for the information required by Rule 5.4(e), (f), and (k).

(c) A replacement well must be drilled within 100 feet of the existing well.

(d) The location of the well being replaced shall be protected in accordance with the spacing Rules of the District until the replacement well is drilled and tested. The landowner or his/her agent must within 120 days of the issuance of the Drilling Permit declare in writing to the District which one of these two wells will be used. If the landowner does not notify the District of his/her choice within 120 days, then it will be conclusively presumed that the new well is the well to be retained. Immediately after determining which well is retained for production, the other well shall be:

(i) properly equipped in such a manner that it cannot produce water; or

(ii) closed in accordance with applicable state law and regulations, Section 756.002, Texas Health and Safety Code; or

(iii) retained to be used as a backup and operated in the event of an emergency.

A permit to rework, re-equip, re-drill or replace an existing well may be granted by the General Manager without notice or hearing so long as the new well produces groundwater from the same production zone(s) as the existing well and the amount produced is equal to or less than the maximum annual amount provided in the Operating Permit for the existing well.

5.12 Emergency Authorization. An existing retail water utility, as defined in Texas Water Code Chapter 13, the owner of a well used for Agriculture, or the owner of a non-exempt well which has a Permit or Certificate of Registration from the District to operate the well, may apply to the District for emergency authorization to drill and operate a replacement well as set forth below. The authorization does not constitute a Permit as required above and does not relieve the person from applying for and obtaining one. The emergency authorization can be made by the General Manager and any Board officer.

The "emergency" must present an imminent threat to the public health and safety or to an agricultural activity and must be explained to the satisfaction of the District and include any documentation requested by the District.

The owner must submit a completed application within seven (7) days of the emergency authorization. Application must include all applicable fees and comply with provisions of a replacement well as specified in Rule 5.11.

5.13 Permit Amendments. From time to time an amendment to an existing permit may be needed. The amendment request is considered minor if it meets the following condition(s):

(a) Transfer of ownership without any changes in use;

(b) Reductions in use or changing use of a well from non-exempt to exempt;

(c) Increases to the gallon per minute rate without an increase to the annual production; and,

(d) Increases to the annual permitted amount, not to exceed the greater of: 1) 10% of the current operating permit, or 2) 36,500,000 million gallons annually.

All other amendments are considered major amendments.

The General Manager may grant minor amendments without public notice or hearing. If two or more minor amendment requests are made for the same permitted well within a three year period, the General Manager will place the amendment request on the next available agenda for consideration by the Board (unless the request is for a reduction in permitted capacities).

Major amendments must be placed on the next available agenda for consideration by the Board. In the event that the requested amendment is in excess of an additional 250,000 gallons per day or 175 gallons per minute, the board may at its discretion require a hydrogeologic report be provided.

5.14 Involuntary Amendment or Revocation. In accordance with the District's Rules for Hearing, after notice to the permit holder, the District may amend or revoke an operating permit if there is evidence of any one or more of the following:

(a) violation of the permit, District Rules, or Chapter 36 of the Texas Water Code;

(b) a change in the permit to prevent waste and achieve water conservation, minimize as far as practicable the drawdown of the water table or reduction of artesian pressure, lessen interference between wells, or control and prevent subsidence;

(c) failure to pay water use production fees; or

(e) other actions that the Board determines to be detrimental to the groundwater resources within the District.

5.15 Automatic Renewal. A permit subject to automatic renewal as defined in Section 36.1145 of the Texas Water Code will be issued upon receipt of a completed permit renewal application form. The General Manager will not approve a permit renewal if the applicant:

(a) is delinquent in paying fees required by the District;

(b) has failed to file quarterly reports;

(c) is the subject to a pending enforcement action for a substantive violation of a permit, order, or rule that has not been settled by agreement with the District or a final adjudication;

(d) has not paid a civil penalty or has otherwise failed to comply with an order resulting from a final adjudication of a violation of a district permit, order, or rule.

If a permit is not renewed or the permit term expires, a new permit application and applicable fees may be required prior to renewing a previously issued permit.

RULE 6 - WELL DRILLER LICENSE AND COMPLETION STANDARDS

6.1 License and Completion Requirements:

Any person drilling, modifying, completing, changing type of use, plugging, or alter the size of a well within the District shall comply with all standards and requirements in 16 Texas Administrative Code, Chapter 76 including, but not limited to:

(a) must be a licensed water well driller except for drilling a water well on property owned by the person operating the equipment;

(b) meet all requirements related to spacing of the well with regards to property lines and sources of potential contamination;

(c) meet all requirements pertaining to the proper sealing of annular space(s); and,

(d) meet all requirements pertaining to the surface completion of the well, including the surface slab or protective sleeve, to assure the safety of the well;

6.2 License and Completion Requirements for Landowners Drilling Their Own Water Well:

A landowner may drill, modify, complete, plug or alter the size of a well located on their own property without being a licensed water well driller or pump installer only if the landowner complies with the Rules of the District. Any landowner drilling, modifying, completing, changing type of use, plugging, or alter the size of a well within the District shall comply with all well completion standards in 16 Texas Administrative Code Section 76.100 – 76.104, including but not limited to:

(a) meet all requirements related to spacing of the well with regards to property lines and sources of potential contamination;

(b) meet all requirements pertaining to the proper sealing of annular space(s); and,

(c) meet all requirements pertaining to the surface completion of the well, including the surface slab or protective sleeve, to assure the safety of the well;

6.3 In the interest of protecting life and for the purpose of preventing waste, preventing overlapping cones of depression resulting from production rates, and preventing confiscation of property, the Board reserves the right to limit the number of wells on a tract of land or require a greater minimum distance between wells.

6.4 In the event an artesian flowing water well is drilled, as defined in Rule 1.1(b), the water well driller must, within 10 days of completion of the well, notify the District of the well. Additionally, the well driller must include on the State Well Report an accurate gallon per minute flow rate of the well.

Per Section 11.205 of the Texas Water Code, “Unless the water from an artesian well is used for a purpose and in a manner in which it may be lawfully used on the owner’s land, it is waste and unlawful to willfully cause or knowingly permit the water to run off the owners land or to percolate through the stratum above which the water is found” and will be considered a violation of these rules.

6.5 Change in Use of Well - Any well existing at the date of enactment of this Rule must comply with the provisions of this Rule if, after the date of enactment of this Rule, the ultimate use of the water produced from the well is changed in whole or in part, such that the water produced from the well annually is increased. Ultimate use of the water shall be defined as domestic, municipal, industrial, agricultural, or irrigation use.

RULE 7 - REQUIREMENT OF DRILLERS LOG, CASING AND PUMP DATA

7.1 Complete records shall be kept and reports thereof made to the District concerning the drilling, maximum production potential, equipping and completion of all wells drilled whether an Exempt Well or non-exempt. Such records shall include an accurate driller’s log, any electric log which shall have been made, and such additional data concerning the description of the well, its potential, hereinafter referred to as “maximum rate of production” and its actual equipment and rate of discharge permitted by said equipment as may be required by the Board. Such records shall be filed with the District within 60 days after completion of the well.

7.2 The well driller shall deliver either in person, by fax, email, or by first-class mail, a photocopy of the State Well Report or Plugging Report to the District within 60 days from the completion or cessation of drilling, deepening, or otherwise altering a well.

7.3 No person shall produce water from any well drilled and equipped within the District after the effective date of these Rules without first providing the District a completed registration form for any exempt well, or having an Operating Permit for a non-exempt well.

RULE 8 - EXCEPTION TO SPACING RULE – *No longer applicable*

RULE 9 - PLACE OF DRILLING WELL

After an application for a well permit has been granted or a Registration filed, the well, if drilled, must be drilled within fifty (50) feet of the location specified in the permit so long as that location does not violate any spacing requirements in these Rules. If the well should be commenced or drilled at a different location, the drilling or operation of such well may be enjoined by the Board pursuant to Chapter 36, Texas Water Code, as amended. The District shall have the right to confirm reported distances and inspect the wells or well locations.

RULE 10 - RIGHT TO INSPECT AND TEST WELLS

10.1 The District, directors, engineers, attorneys, agents, operators, and employees of the District may go on any land to inspect, make surveys, or perform tests to determine the condition, value, and usability of the property, with reference to the proposed location of works, improvements, plants, facilities, equipment, or appliances. The cost of restoration shall be borne by the District.

10.2 The District shall have the right to install or to require the installation of necessary metering equipment in order to determine well production capacity and monthly production rates.

10.3 The District employees and agents are entitled to enter any public or private property within the boundaries of the District or adjacent to any property owned by the District at any reasonable time for the purpose of inspecting and investigating conditions relating to the quality of water in the state or the compliance with any rule, regulation, permit, or other order of the District. District employees or agents acting under this authority who enter private property shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection and shall notify any occupant or management of their presence and shall exhibit proper credentials.

RULE 11 - OPEN WELLS TO BE CAPPED

11.1 In accordance with sections 1901.255 and 1901.256 of the Texas Occupations Code and 16 Texas Administrative Code Section 104 , every owner or operator of any land within the District upon which is located any open, uncovered, abandoned, or deteriorated well is, and shall be, required to plug or cap the same permanently with a covering capable of sustaining weight of not less than four hundred (400) pounds, except when said well is in actual use by the owner or operator thereof; and no such owner or operator shall permit or allow any open or uncovered well to exist in violation of this requirement.

Officers, agents and employees of the District are authorized to serve or cause to be served written notice upon any owner or operator of a well in violation of this Rule, thereby requesting such owner and/or operator to close or cap such well permanently with a covering in compliance herewith. In the event any owner or operator fails to comply with this Rule, all expenditures thereby incurred shall constitute a lien upon the land where such well is located, provided, however, no such lien shall exceed the actual cost for any single closing. Any officer, agent, or employee of the District is authorized to perfect said lien by the filing of the affidavit authorized by Section 36.118 of the Texas Water Code. All of the powers and authority granted in such section are hereby adopted by the District, and its officers, agents, and employees are hereby bestowed with all of such powers and authority.

11.2 An artesian flowing well, as defined in Rule 1.1(b), utilized in hydrocarbon exploration shall be plugged within 30 days of the completion of the oil or gas well.

RULE 12 - GENERAL RULES OF PROCEDURE FOR HEARING

All hearings whether conducted by the Board or before a Hearings Examiner shall be conducted in accordance with the Hearing Rules and Procedures as adopted by the Board and as they may be amended from time to time.

Hearing. If requested by the applicant, any affected person opposed to the application having a justifiable interest, or the General Manager, a contested case public hearing shall be conducted in accordance with provisions of the Texas Administrative Procedure Act, Texas Gov't Code 2000.01, et seq. If not requested by any party, the public hearing on the application may be conducted by the Board at a regular or special meeting.

RULE 13 – WELL VALIDATION– *No Longer Applicable.*

RULE 14 - TRANSFER OF GROUNDWATER OUT OF THE DISTRICT – *No Longer Applicable*

RULE 15 - ENFORCEMENT

In accordance with the Texas Water Code, 36.102, the District may enforce Chapter 36 of the Texas Water Code and its Rules by injunction, mandatory injunction or other appropriate remedy in a court of competent jurisdiction. The Board adopts civil penalties for breach of Chapter 36 of the Texas Water Code and any Rule of the District. Civil penalties shall not exceed $10,000 per day per violation, and each day of a continuing violation shall constitute a separate violation of the Rules.

RULE 16 - CONDITIONAL EXEMPTION

16.1 An owner of a well may claim an exemption for a well used solely for an Exempt Purpose, as defined by Rule 1.1(l) regardless of the capacity on a conditional basis by filing a "Conditional Exemption Affidavit" with the District. The Board shall promulgate the form and content of the Affidavit. The District may require a well owner to supply any additional information it determines is necessary for verifying and monitoring the exemption claim.

16.2 An owner of a Non-Exempt well incapable of producing more than 25,000 gallons of groundwater per day (17.36 gallons per minute) may claim a conditional exemption by filing an affidavit with the District. The Board shall promulgate the form and include the information required in Rule 3.3. The District may require a well owner to supply any additional information it determines is necessary for verifying and monitoring the exempt claim.

16.3 The District may revoke any Conditional Exemption if it determines that the information in the Affidavit is materially incorrect, that the water from the well is not being used solely for Exempt Purposes, or the capability of the well is modified to exceed more than 25,000 gallons per day (17.36 gallons per minute). Prior to revoking a Conditional Exemption, the Board shall give the well owner written notice of its intention to revoke with the reason or reasons for doing so and the well owner shall have 20 days to provide the District with evidence to establish entitlement to the exemption.

End of District Rules

APPENDIX “A”

GUIDELINES FOR HYDROGEOLOGICE REPORT

Guidelines for Hydrogeologic Reports

1.0 INTRODUCTION

Under Rule 5.4(k) and 14.4(k), the Southeast Texas Groundwater Conservation District requires the submittal of a hydrogeologic report for non-exempt wells or well fields with a daily maximum capacity of more than 250,000 gallons. These reports must include hydrogeologic information addressing, and specifically related to, the impacts of the proposed well (e.g. area of influence, drawdown, recovery time, subsidence).

This guideline document is intended to set standards and expectations for the investigations and reports. The planning and implementation of investigations should be coordinated with the Southeast Texas Groundwater Conservation District (SETGCD) to insure acceptability. SETGCD may exercise discretion in the application of the guidelines on an individual and site-specific basis in order to allow a practicable application of the guidelines while insuring a result yielding the information needed.

Hydrogeologic reports submitted with applications for the use of groundwater or applications for the increased use of groundwater must meet the standards set forth in these guidelines. Hydrogeologic reports must be sealed by a Professional Geoscientist (P.G.) or Professional Engineer (P.E.) licensed to practice in the State of Texas.

2.0 REPORT

The report is intended to evaluate the impacts of pumping using existing data and the existing regional groundwater flow model of the area for the aquifer in which the well is to be completed.

2.1 HYDROGEOLOGIC SETTING

The report shall give a description of the hydrogeologic setting that includes descriptions of:

- The surface geology
- The depth interval of the proposed water bearing zone
- The anticipated thickness of the water bearing zone(s)
- A statement of whether the water bearing zone is anticipated to be in unconfined or confined condition
- A description of any existing wells, hydrologic features, or geologic features located within ½ mile of the proposed well site.

In addition, if the proposed well is to be completed in the Gulf Coast Aquifer, the regional clay thickness used by the USGS in the development of the Houston Area Groundwater Model (HAGM) shall be used to estimate the clay thickness and clay percentage of the proposed well site.

2.2 PROPOSED WELL CONSTRUCTION DIAGRAM

A diagram of well completion details must be included that shows, at a minimum, the well depth, borehole and casing diameter, depth interval of well screen, and gravel pack design.

2.3 SIMULATION OF PROPOSED PUMPING

The report shall include the results of a simulation using the Groundwater Availability Model for the area that adds the proposed well to the then most recent model run that was used to establish the desired future condition. Results of the simulation must include:

- A drawdown hydrograph of the cell or cells in which pumping is proposed, including a comparison with the desired future condition drawdown of the subject cell or cells
- A time series graph that compares maximum subsidence under the DFC condition and the

maximum subsidence with the additional proposed pumping in the immediate area of the pumping.

- A county-aquifer level water budget that includes a comparison with the water budget of the desired future condition simulation.
- Maps of drawdown and maximum subsidence