Bluebonnet Groundwater Conservation District

Groundwater Management Plan

September 19, 2018

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Bluebonnet Groundwater Conservation District Groundwater Management Plan – 2018

The Bluebonnet Groundwater Conservation District (the "District") was created by the 77th Texas Legislature under the authority of Section 59, Article XVI, of the Texas Constitution, and in accordance with Chapter 36 of the Texas Water Code ("Water Code"), by the Act of May 21, 2001, 77th Leg., R.S., ch. 1361, 2001 Tex. Gen. and Spec. Laws, codified May 29, 2009, 81st Leg., R.S., ch. 1139. sec. 8825 ("the District Act").

The District is a governmental agency and a body politic and corporate. The District was created to serve a public use and benefit, and is essential to accomplish the objectives set forth in Section 59, Article XVI, of the Texas Constitution. The District's boundaries are coextensive with the boundaries of Austin, Grimes, Walker, and Waller Counties, Texas, and lands and other property within these boundaries will benefit from the works and projects that will be accomplished by the District.

District Mission and 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 contained 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 districts (GCDs) in each Groundwater Management Area (GMA) are required to meet and determine the Desired Future Conditions (DFCs) for the groundwater resources within their boundaries by September 1, 2010. In addition, HB 1763 required GCDs, to share management plans with the other GCDs in the GMA for review by the other GCDs.

The Bluebonnet 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 (TWDB) rules.

Technical District Information Required by Texas Administrative Code

Estimate of Modeled Available Groundwater in District Based on Desired Future Conditions

Texas Water Code § 36.001 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 Section 36.108".

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 on April 29, 2016. The adopted DFCs were approved as administratively complete by the TWDB. The submittal package and explanatory report for the DFCs can be found here:

http://www.twdb.texas.gov/groundwater/dfc/docs/summary/GMA14_DFC_2016.pdf
http://www.twdb.texas.gov/groundwater/dfc/docs/GMA14_DFCExpRep.pdf

Desired future conditions and modeled available groundwater values applicable for the District are summarized below (MAG values for the Gulf Coast Aquifer (Chicot, Evangeline, Burkeville, and Jasper) were documented in TWDB GAM Run 16-024 (Wade, December 15, 2016). Please refer to Appendix G.):

Aquifer	County	Base Year	Desired Future Condition: Drawdown (2009 to 2070) (ft)	Modeled Available Groundwater (MAG) AF/yr						
				2010	2020	2030	2040	2050	2060	2070
Gulf Coast - Chicot	Austin	2009	39	1,300	1,300	1,300	1,300	1,300	1,300	1,300
Gulf Coast - Chicot	Grimes	2009	5	0	0	0	0	0	0	0
Gulf Coast - Chicot	Walker	2009	n/a	0	0	0	0	0	0	0
Gulf Coast - Chicot	Waller	2009	39	300	300	300	300	300	300	300
Gulf Coast - Evangeline	Austin	2009	23	19,998	19,998	19,998	19,998	19,998	19,998	19,998
Gulf Coast - Evangeline	Grimes	2009	5	2,999	2,999	2,999	2,999	2,999	2,999	2,999
Gulf Coast - Evangeline	Walker	2009	9	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Gulf Coast - Evangeline	Waller	2009	39	40,994	40,994	40,994	40,994	40,994	40,994	40,994
Gulf Coast - Burkeville	Austin	2009	23	0	0	0	0	0	0	0
Gulf Coast - Burkeville	Grimes	2009	6	0	0	0	0	0	0	0
Gulf Coast - Burkeville	Walker	2009	4	0	0	0	0	0	0	0
Gulf Coast - Burkeville	Waller	2009	40	0	0	0	0	0	0	0
Gulf Coast - Jasper	Austin	2009	76	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Gulf Coast - Jasper	Grimes	2009	52	10,998	10,998	10,998	10,998	10,998	10,998	10,998
Gulf Coast - Jasper	Walker	2009	42	15,972	15,972	15,972	15,972	15,972	15,972	15,972
Gulf Coast - Jasper	Waller	2009	101	300	300	300	300	300	300	300

Aquifer	County	Base Year	Desired Future Condition: Maximum Subsidence by 2070 from Estimated 1890 Conditions	Modeled Available Groundwater (MAG) AF/yr						
				2010	2020	2030	2040	2050	2060	2070
Gulf Coast	Austin	1890	2.83	22,298	22,298	22,298	22,298	22,298	22,298	22,298
	Grimes	1890	0.12	13,997	13,997	13,997	13,997	13,997	13,997	13,997
	Walker	1890	0.04	17,972	17,972	17,972	17,972	17,972	17,972	17,972
	Waller	1890	4.73	41,594	41,594	41,594	41,594	41,594	41,594	41,594

MAG values for the Gulf Coast Aquifer (Chicot, Evangeline, Burkeville, and Jasper) were documented in TWDB GAM Run 16-024 (Wade, December 15, 2016). Please refer to Appendix G.

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

Please refer to Appendix A.

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

Please refer to Appendix B.

Estimate of the Annual Volume of Water that Discharges from the Aquifer to Springs and Any Surface Water Bodies

Please refer to Appendix B.

Estimate of the Annual Volume of Flow into the District and out of the District Within Each Aquifer, and Between Aquifers in the District

Please refer to Appendix B.

Estimate of the Projected Surface Water Supply within the District

Please refer to Appendix A.

Estimate of the Projected Total Demand for Water within the District

Please refer to Appendix A.

Water Supply Needs

The TWDB 2017 State Water Plan identifies water supply needs for water user groups County-other, Manufacturing, Mining, and San Felipe in Austin County; Mining and Steam Electric Power in Grimes County; Riverside, The Consolidated WSC, and Trinity Rural WSC in Walker County; County-other, Hempstead, Manufacturing, and Pine Island in Waller County. The District will continue to work with both Region G and H Regional Water Planning Groups in the identification of projected water supply needs. Please refer to Appendix A.

Water Management Strategies

The District continues to encourage conservation, water loss reduction, and reuse to meet the projected strategies of the TWDB 2017 State Water Plan. Please refer to Appendix A.

Water management strategies identified for water user groups within Austin, Grimes, Walker, and Waller Counties fall into one of the following categories (number of individual strategies):

- Municipal conservation (18)
- Expanded use of groundwater (13)

- Irrigation conservation (4)
- Industrial conservation (6)
- Water loss reduction (8)
- Carrizo aquifer development (4)
- Municipal water conservation (1)
- Gibbons Creek Reservoir expansion (2)
- Gulf Coast aquifer development (2)
- Industrial water conservation (6)
- Reuse – Bryan (2)
- Reuse – College Station (2)
- HCWC Permit amendment (1)

These specific water management strategies were considered and included in the overall preparation of this management plan as most of the water user groups are solely dependent on groundwater. The surface water dependent strategies were considered in relation to their expanded use or development of groundwater. These strategies are considered feasible by TWDB and the Regional Water Planning Groups to be included in the TWDB 2017 State Water Plan. The actual feasibility and usefulness of these, and other, strategies will not be realized until, or if, they are implemented by the individual water user group.

42 of 69 (61%) account for less than or equal to 100 acre-feet of water attributable to individual strategies, with an additional 14 strategies falling between 100 acre-feet and 1,000 acre-feet. Water management strategies are considered as part of the desired future condition development criteria in TWC 36.108(d)(2) the District participates in with GMA 14. These considerations contribute to the MAG values exceeding current production to accommodate existing and future groundwater users. The District continues to encourage conservation, water loss reduction, and reuse to meet the projected needs of the TWDB 2017 State Water Plan.

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 this 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.

Permits are reviewed individually and independently. The District reviews and analyzes any potential impacts to existing or future users of groundwater. The District requires the submittal of Phase I and Phase II hydrogeologic reports for non-exempt wells with an inside casing diameter of eight (8) inches or greater as part of the permit application process. In general, the Phase I report in intended to evaluate the impacts of pumping, such as drawdown, well interference, potential for measurable subsidence and other relevant impacts, using existing data

and the existing regional groundwater flow model of the area for the aquifer in which the well is to be completed. The Phase II report is intended to be a final report that relies on site specific data, information, test results and analyses. The District-provided guideline document sets standards and expectations for the investigations and reports. The District 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 by the District to process the permit application. The data and analyses are used to address production limits, monitoring requirements, and permit conditions.

Production of groundwater in any manner, including volumes, rate, frequency, duration, or within a concentrated area, that causes the potential for measurable subsidence is prohibited. Controlling and preventing measurable subsidence will be addressed during review and processing of new, renewed, and amended permit applications. If numerical modeling, local hydrogeological conditions including subsurface clay content, aquifer testing or other reliable data demonstrate 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.

Methodology for Tracking Progress

An annual report ("Annual Report") will be created by the general manager and staff of the District and provided to the members of the Board of the District. The Annual Report will cover the activities of the District including information on the District's performance in regard to achieving the District's management goals and objectives. The Annual Report will be delivered to the Board each year coordinating collection of permitted pumping data, downloaded available drought information, and water level monitoring. A copy of the Annual Report will be kept on file and available for public inspection at the District's offices upon adoption.

Actions, Procedures, Performance, and Avoidance for District Implementation of Management Plan

The District will implement the provisions of this management plan and will utilize the objectives of the plan as a guide for District actions, operations and decision-making. The District will ensure that planning efforts, activities and operations are consistent with the provisions of this plan.

The District has adopted rules in accordance with Chapter 36 of the Texas Water Code. The development of rules is based on the scientific information and technical evidence available to the District. Current rules are available under Appendix C and at:

http://www.bluebonnetgroundwater.org/wp-content/uploads/2012/06/APPROVED-Bluebonnet-GCD-Rules-21-096.pdf

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

Management Goals

1. Providing for the Most Efficient Use of Groundwater in the District

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 with the District in accordance with the District rules.

1.1 Performance Standard – The number of exempt and non-exempt wells registered by the District will be incorporated into the Managers Report submitted to the Board of Directors of the District at each regular meeting.

2. Controlling and Preventing the Waste of Groundwater in the District

2.1 Objective – 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.

2.1 Performance Standard – The District will include a discussion of the annual evaluation of the District Rules and whether any amendments to the rules are recommended to prevent the waste of groundwater in a report to the District provided to the Board of Directors at a regular meeting.

2.2 Objective – The District will provide information to the public on eliminating and reducing wasteful practices in the use of groundwater.

2.2 Performance Standard – The District will post and maintain an article or a link to an article relevant to the public on eliminating and reducing wasteful practices in the use of groundwater.

3. Controlling and Preventing Subsidence

3.1 Objective – Controlling and preventing subsidence will be addressed during the review and processing of new, renewed, and amended permit applications.

3.1 Performance Standard – If review results demonstrate potential subsidence, the District will implement actions ranging from reducing requested permitted pumping to including permit conditions imposing subsidence monitoring requirements and establishment of threshold limits that could result in reduced production based on monitoring results.

4. Addressing Conjunctive Surface Water Management Issues

4.1 Objective – The District will attend, either in-person or through recording, 75% of the Region G and Region H Regional Water Planning Group meetings.

4.1 Performance Standard – The minutes for all attended, either in-person or through recording, Region G and Region H Regional Water Planning Group meetings will be maintained at the District for a period of three (3) years from their accepted date. A report of all attended meetings will be given to the Board at the regular meeting.

5. Addressing Natural Resource Issues Affecting the Use and Availability of Groundwater or affected by the Use of Groundwater

Joint Planning in GMA 14

5.1 Objective – By attending GMA 14 meetings, there is the opportunity to participate in discussions, planning, and education concerning the interrelationship of groundwater with other natural resource issues. A District appointed representative will attend 75% of the GMA 14 meetings annually.

5.1 Performance Standard – The minutes for all attended meetings of GMA 14 will be maintained at the District for a period of (3) years from their accepted date. A report of all attended meetings will be given to the Board at the regular meeting.

6. Addressing Drought Conditions

6.1 Objective – Each month, the District will download available drought information, for the counties in the District, from available websites on the internet, such as https://waterdatafortexas.org/drought, etc..

6.1 Performance Standard – Quarterly, the District will make an assessment of the status of drought in the District and prepare a quarterly briefing for the Board of Directors. The downloaded maps, reports and information will be included with copies of the quarterly briefings and combined with results of groundwater monitoring data and permitted pumping data in the regular meeting of the Board.

7. Addressing Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, and Brush Control

Conservation

7A.1 Objective – The District will provide information relevant to public education and awareness regarding groundwater conservation.

7A.1 Performance Standard – The District will post and maintain an article or a link to an article listed under water conservation on the District website.

Recharge Enhancement

This management goal is not applicable to the District as there is not a recharge enhancement program unique to the District.

Rainwater Harvesting

7C.1 Objective – The District will provide information relevant to public education and awareness regarding rainwater harvesting.

7C.1 Performance Standard – The District will post and maintain an article or a link to an article listed under rainwater harvesting on the District website.

Precipitation Enhancement

This management goal is not applicable to the District as there is not a precipitation enhancement program unique to the District.

Brush Control

This management goal is not applicable to the District as there is not a brush control program unique to the District. Brush control initiatives are focused by the Texas State Soil and Water Conservation Board and through the TWDB State Water Plan where applicable.

8. Addressing the desired future conditions (DFC) of the groundwater resources in the District

8.1 Objective – The desired future conditions established for the District were based on GMA 14 Northern Gulf Coast GAM Run 2. The model results include cell by cell estimates of groundwater elevations and drawdown for each year of the predictive period (2009 to 2070). To assess the desired future condition in the District, these model results will be compared annually to groundwater monitoring data that are available from the TWDB groundwater database.

8.1 Performance Standard –Each year, the District will download groundwater data from Austin, Grimes, Walker and Waller counties from the Texas Water Development Board groundwater database. The comparison of model results will be on a well-by-well basis for data that are available. 21 wells met the following comparison criteria for the Gulf Coast Aquifer: 1) the well was located within the District, 2) the TWDB database included data on the well's depth, and completion interval, 3) the well completion placed the well entirely within one model layer, and 4) the most recent groundwater elevation data from late 2010/early 2011 (the established starting point for drawdown calculations). These 21 wells and pertinent data are summarized below. The data downloaded from the database will be compared to model results each year and presented at a regular meeting in the form of tables and graphs as appropriate. These comparisons will be supplemented by data and information related to drought conditions and permitted pumping data.

State Well Number	County	TWDB Aquifer Code	Well Depth (ft)	Depth to Top of Well Screen (ft)	Depth to Bottom of Well Screen (ft)	Year with Earliest Data	Year with Most Recent Data	Model Row	Model Column	Model Layer
5940707	Grimes	122CTHL	272	210	260	1948	2017	14	90	4
5948106	Grimes	122CTHL	358	316	343	1970	2017	15	90	4
5948111	Grimes	122CTHL	365	295	355	2009	2017	15	90	4
5948207	Grimes	122CTHL	430	382	420	2009	2017	16	91	4
5948405	Grimes	111ABZR	83	63	83	1997	2018	17	86	3
5948707	Grimes	111ABZR	78	59	78	1997	2018	20	86	2
5956301	Grimes	121EVGL	292	282	292	1970	2017	23	88	2
5964201	Waller	121EVGL	728	694	724	1956	2016	30	79	2
6025804	Grimes	122CTHL	153	138	153	1970	2018	11	105	4
6029707	Walker	122JSPR	600	540	584	1985	2017	26	126	4
6057103	Waller	121EVGL	576	475	570	1930	2016	33	84	2
6057402	Waller	121EVGL	645	610	630	1977	2017	34	83	2
6057509	Waller	121EVGL	609	330	350	1985	2018	37	85	2
6604601	Austin	122JSPR	119	105	119	1965	2018	22	51	2
6606614	Austin	121EVGL	850	764	830	1986	2018	32	65	3
6614204	Austin	121EVGL	118	110	118	1982	2018	35	57	1
6615905	Austin	121EVGL	462	320	452	1971	2018	45	63	2
6616407	Austin	112CHCT	165	147	165	1966	2018	45	67	2
6623401	Austin	121EVGL	824	60	190	1956	2018	47	57	1
6624801	Austin	121EVGL	610	586	606	1957	2012	57	62	2
6624805	Austin	121EVGL	725	530	702	1973	2012	56	62	2

Appendices

Appendix A – Estimated Historical Water Use And 2017 State Water Plan Datasets: Bluebonnet Groundwater Conservation District

APPENDIX A

Estimated Historical Water Use And 2017 State Water Plan Datasets:

Bluebonnet Groundwater Conservation District

by Stephen Allen

Texas Water Development Board

Groundwater Division

Groundwater Technical Assistance Section

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(512) 463-7317

July 18, 2018

Estimated Historical Water Use And 2017 State Water Plan Datasets:

Bluebonnet Groundwater Conservation District

by Stephen Allen
Texas Water Development Board
Groundwater Division
Groundwater Technical Assistance Section
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July 18, 2018

GROUNDWATER MANAGEMENT PLAN DATA:

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

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

The five reports included in this part are:

1. Estimated Historical Water Use (checklist item 2)

   from the TWDB Historical Water Use Survey (WUS)
2. Projected Surface Water Supplies (checklist item 6)
3. Projected Water Demands (checklist item 7)
4. Projected Water Supply Needs (checklist item 8)
5. Projected Water Management Strategies (checklist item 9)

   from the 2017 Texas State Water Plan (SWP)

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

DISCLAIMER:

The data presented in this report represents the most up-to-date WUS and 2017 SWP data available as of 7/18/2018. Although it does not happen frequently, either of these datasets are subject to change pending the availability of more accurate WUS data or an amendment to the 2017 SWP. District personnel must review these datasets and correct any discrepancies in order to ensure approval of their groundwater management plan.

The WUS dataset can be verified at this web address:

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

The 2017 SWP dataset can be verified by contacting Sabrina Anderson (sabrina.anderson@twdb.texas.gov or 512-936-0886).

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

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

Groundwater and surface water historical use estimates are currently unavailable for calendar year 2017. TWDB staff anticipates the calculation and posting of these estimates at a later date.

AUSTIN COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2016	GW	3,782	14	0	0	4,894	366	9,056
	SW	0	0	13	0	0	854	867
2015	GW	3,785	14	0	0	4,951	359	9,109
	SW	0	0	45	0	0	836	881
2014	GW	4,107	23	0	0	6,007	354	10,491
	SW	0	0	179	0	0	823	1,002
2013	GW	4,350	28	0	0	7,101	326	11,805
	SW	0	0	678	0	0	760	1,438
2012	GW	4,369	35	11	0	4,514	297	9,226
	SW	0	0	186	0	80	695	961
2011	GW	5,322	51	6	0	5,303	339	11,021
	SW	0	0	4	0	0	792	796
2010	GW	4,351	106	8	0	3,986	346	8,797
	SW	0	0	6	0	0	807	813
2009	GW	4,003	112	4	0	3,083	438	7,640
	SW	0	0	3	0	0	1,023	1,026
2008	GW	3,349	86	0	0	3,634	379	7,448
	SW	0	0	0	0	0	885	885
2007	GW	2,954	73	0	0	3,364	521	6,912
	SW	0	2	0	0	0	1,214	1,216
2006	GW	3,373	74	0	0	3,101	485	7,033
	SW	0	2	0	0	0	1,133	1,135
2005	GW	3,561	100	0	0	6,479	461	10,601
	SW	0	0	0	0	0	1,076	1,076
2004	GW	3,011	64	0	0	8,251	96	11,422
	SW	0	0	0	0	0	1,492	1,492
2003	GW	3,273	59	0	0	5,808	96	9,236
	SW	0	0	0	0	0	1,490	1,490
2002	GW	3,196	67	0	0	4,255	98	7,616
	SW	0	0	0	0	751	1,525	2,276
2001	GW	3,140	78	0	0	8,191	96	11,505
	SW	0	0	0	0	1,445	1,493	2,938

GRIMES COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2016	GW	2,832	156	29	1	376	596	3,990
	SW	0	0	7	9,100	0	1,389	10,496
2015	GW	2,852	236	15	1	206	574	3,884
	SW	0	0	4	10,536	0	1,341	11,881
2014	GW	3,110	295	175	1	517	545	4,643
	SW	0	0	44	6,859	0	1,272	8,175
2013	GW	4,218	302	35	1	176	515	5,247
	SW	0	0	8	15,015	391	1,201	16,615
2012	GW	4,074	327	59	1	215	510	5,186
	SW	0	0	13	12,326	361	1,189	13,889
2011	GW	4,601	324	106	2	49	820	5,902
	SW	0	0	0	13,185	1,085	1,912	16,182
2010	GW	4,162	216	17	1	75	796	5,267
	SW	0	0	0	13,535	200	1,857	15,592
2009	GW	4,855	202	0	1	0	453	5,511
	SW	0	0	0	11,840	0	1,056	12,896
2008	GW	4,712	349	0	1	275	436	5,773
	SW	0	0	0	12,405	33	1,017	13,455
2007	GW	4,378	274	0	2	333	502	5,489
	SW	0	0	0	9,210	0	1,168	10,378
2006	GW	4,737	365	0	3	612	421	6,138
	SW	0	0	0	4,188	27	982	5,197
2005	GW	4,855	298	0	4	89	445	5,691
	SW	0	0	0	5,305	21	1,039	6,365
2004	GW	4,244	269	0	2	60	227	4,802
	SW	6	0	0	7,794	208	1,107	9,115
2003	GW	4,501	214	0	2	53	243	5,013
	SW	0	0	0	9,162	123	1,185	10,470
2002	GW	4,359	221	0	2	176	265	5,023
	SW	0	0	0	10,365	52	1,291	11,708
2001	GW	4,143	254	0	2	252	256	4,907
	SW	0	0	0	8,743	75	1,251	10,069

WALKER COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2016	GW	3,876	57	0	0	124	234	4,291
	SW	13,276	186	0	0	124	547	14,133
2015	GW	4,069	40	11	0	119	230	4,469
	SW	13,499	188	3	0	112	537	14,339
2014	GW	5,848	42	84	0	198	272	6,444
	SW	9,282	188	21	0	138	635	10,264
2013	GW	6,319	60	45	0	242	256	6,922
	SW	12,538	184	10	0	140	595	13,467
2012	GW	5,166	48	15	0	172	162	5,563
	SW	11,707	168	3	0	223	376	12,477
2011	GW	5,851	38	3	0	117	221	6,230
	SW	7,159	169	2	0	443	514	8,287
2010	GW	5,461	47	7	0	570	221	6,306
	SW	6,671	202	6	0	0	514	7,393
2009	GW	4,409	34	0	0	377	181	5,001
	SW	7,193	214	0	0	298	421	8,126
2008	GW	3,241	35	0	0	0	190	3,466
	SW	4,242	20	0	0	241	445	4,948
2007	GW	2,841	47	0	0	34	199	3,121
	SW	3,621	20	0	0	141	464	4,246
2006	GW	3,740	45	0	0	153	222	4,160
	SW	7,382	16	0	0	247	518	8,163
2005	GW	4,476	40	0	0	0	187	4,703
	SW	6,936	32	0	0	276	435	7,679
2004	GW	3,655	209	0	0	1	122	3,987
	SW	3,244	18	0	0	7	487	3,756
2003	GW	2,788	220	0	0	0	122	3,130
	SW	2,941	2	0	0	105	489	3,537
2002	GW	3,047	290	0	0	0	125	3,462
	SW	4,562	2	0	0	0	499	5,063
2001	GW	2,938	290	0	0	0	129	3,357
	SW	3,706	2,081	0	0	0	518	6,305

WALLER COUNTY

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2016	GW	5,043	28	0	0	12,167	612	17,850
	SW	0	0	0	0	229	612	841
2015	GW	4,836	29	0	0	8,771	594	14,230
	SW	0	0	0	0	252	594	846
2014	GW	4,418	55	9	0	9,203	575	14,260
	SW	0	0	1	0	314	575	890
2013	GW	4,695	61	0	0	12,323	496	17,575
	SW	0	0	0	0	217	496	713
2012	GW	5,841	54	1	0	18,016	392	24,304
	SW	0	0	0	0	313	392	705
2011	GW	6,641	55	2	0	23,599	753	31,050
	SW	0	0	2	0	85	753	840
2010	GW	5,578	55	4	0	21,937	732	28,306
	SW	0	0	4	0	107	732	843
2009	GW	4,854	40	2	0	20,070	459	25,425
	SW	0	0	2	0	233	460	695
2008	GW	4,556	34	0	0	19,639	482	24,711
	SW	0	0	0	0	117	482	599
2007	GW	4,396	26	110	0	12,518	538	17,588
	SW	0	0	0	0	4,419	538	4,957
2006	GW	4,657	26	86	0	17,785	627	23,181
	SW	0	0	0	0	104	627	731
2005	GW	4,538	26	442	0	20,990	567	26,563
	SW	0	0	0	0	108	567	675
2004	GW	4,231	21	44	0	24,384	372	29,052
	SW	0	0	0	0	343	666	1,009
2003	GW	4,533	21	175	0	23,111	381	28,221
	SW	0	0	0	0	183	682	865
2002	GW	4,554	35	452	0	26,551	305	31,897
	SW	0	0	0	0	0	546	546
2001	GW	4,509	37	921	0	25,896	319	31,682
	SW	0	0	0	0	0	570	570

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

GRIMES COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
G	LIVESTOCK, GRIMES	BRAZOS	BRAZOS LIVESTOCK LOCAL SUPPLY	873	873	873	873	873	873
G	LIVESTOCK, GRIMES	SAN JACINTO	SAN JACINTO LIVESTOCK LOCAL SUPPLY	370	370	370	370	370	370
G	LIVESTOCK, GRIMES	TRINITY	TRINITY LIVESTOCK LOCAL SUPPLY	260	260	260	260	260	260
G	MANUFACTURING, GRIMES	BRAZOS	BRAZOS RUN-OF-RIVER	100	100	100	100	100	100
G	STEAM ELECTRIC POWER, GRIMES	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	2,520	2,460	2,399	2,339	2,278	2,218
G	STEAM ELECTRIC POWER, GRIMES	BRAZOS	GIBBONS CREEK LAKE/RESERVOIR	9,740	9,740	9,740	9,740	9,740	9,740
G	STEAM ELECTRIC POWER, GRIMES	BRAZOS	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	4,704	4,704	4,704	4,704	4,704	4,704
G	STEAM ELECTRIC POWER, GRIMES	SAN JACINTO	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	1,080	1,054	1,028	1,002	976	950
G	STEAM ELECTRIC POWER, GRIMES	SAN JACINTO	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	2,016	2,016	2,016	2,016	2,016	2,016
	Sum of Projected Surface Water Supplies (acre-feet)			**21,663**	**21,577**	**21,490**	**21,404**	**21,317**	**21,231**

WALKER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
H	COUNTY-OTHER, WALKER	SAN JACINTO	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	1,603	1,640	1,666	1,691	1,709	1,723
H	COUNTY-OTHER, WALKER	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	1,397	1,360	1,334	1,309	1,291	1,277

Projected Surface Water Supplies
TWDB 2017 State Water Plan Data

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
H	HUNTSVILLE	SAN JACINTO	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	16,101	16,101	16,101	16,102	16,101	16,100
H	HUNTSVILLE	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	3,299	3,299	3,299	3,298	3,299	3,300
H	IRRIGATION, WALKER	TRINITY	TRINITY RUN-OF-RIVER	102	102	102	102	102	102
H	LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	14	12	12	11	10	10
H	MANUFACTURING, WALKER	TRINITY	TRINITY RUN-OF-RIVER	337	337	337	337	337	337
H	RIVERSIDE	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	10	10	10	10	10	10
H	RIVERSIDE WSC	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	67	67	67	67	67	67
H	THE CONSOLIDATED WSC	TRINITY	HOUSTON COUNTY LAKE/RESERVOIR	9	10	11	11	12	12
H	TRINITY RURAL WSC	TRINITY	LIVINGSTON-WALLISVILLE LAKE/RESERVOIR SYSTEM	27	28	29	31	31	31
	Sum of Projected Surface Water Supplies (acre-feet)			**22,966**	**22,966**	**22,968**	**22,969**	**22,969**	**22,969**

WALLER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
H	IRRIGATION, WALLER	BRAZOS	BRAZOS RIVER AUTHORITY MAIN STEM LAKE/RESERVOIR SYSTEM	50	50	50	50	50	50
H	IRRIGATION, WALLER	BRAZOS	BRAZOS RUN-OF-RIVER	61	61	61	61	61	61
	Sum of Projected Surface Water Supplies (acre-feet)			**111**	**111**	**111**	**111**	**111**	**111**

Projected Water Demands
TWDB 2017 State Water Plan Data

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

AUSTIN COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	BELLVILLE	BRAZOS	1,217	1,286	1,366	1,468	1,588	1,722
H	COUNTY-OTHER, AUSTIN	BRAZOS	1,856	2,148	2,475	2,883	3,348	3,869
H	COUNTY-OTHER, AUSTIN	BRAZOS-COLORADO	437	504	579	672	779	898
H	COUNTY-OTHER, AUSTIN	COLORADO	39	43	49	55	63	72
H	IRRIGATION, AUSTIN	BRAZOS	2,398	2,398	2,398	2,398	2,398	2,398
H	IRRIGATION, AUSTIN	BRAZOS-COLORADO	4,080	4,080	4,080	4,080	4,080	4,080
H	LIVESTOCK, AUSTIN	BRAZOS	1,171	1,171	1,171	1,171	1,171	1,171
H	LIVESTOCK, AUSTIN	BRAZOS-COLORADO	329	329	329	329	329	329
H	LIVESTOCK, AUSTIN	COLORADO	23	23	23	23	23	23
H	MANUFACTURING, AUSTIN	BRAZOS	89	96	103	109	119	130
H	MANUFACTURING, AUSTIN	BRAZOS-COLORADO	19	21	23	24	26	28
H	MINING, AUSTIN	BRAZOS	97	243	195	147	100	68
H	MINING, AUSTIN	BRAZOS-COLORADO	28	70	57	43	29	20
H	MINING, AUSTIN	COLORADO	2	7	5	4	3	2
H	SAN FELIPE	BRAZOS	231	263	298	341	389	443
H	SEALY	BRAZOS	1,377	1,514	1,667	1,859	2,081	2,329
H	SEALY	BRAZOS-COLORADO	3	3	4	4	5	5
H	WALLIS	BRAZOS-COLORADO	161	165	171	180	193	207
	Sum of Projected Water Demands (acre-feet)		**13,557**	**14,364**	**14,993**	**15,790**	**16,724**	**17,794**

GRIMES COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	COUNTY-OTHER, GRIMES	BRAZOS	917	915	912	933	951	968
G	COUNTY-OTHER, GRIMES	SAN JACINTO	526	524	520	531	540	549
G	COUNTY-OTHER, GRIMES	TRINITY	346	365	378	401	420	438
G	DOBBIN-PLANTERSVILLE WSC	BRAZOS	44	49	53	58	62	66
G	DOBBIN-PLANTERSVILLE WSC	SAN JACINTO	138	156	170	185	198	210
G	G & W WSC	BRAZOS	385	501	591	688	769	841
G	G & W WSC	SAN JACINTO	51	67	78	91	102	111
G	LIVESTOCK, GRIMES	BRAZOS	873	873	873	873	873	873
G	LIVESTOCK, GRIMES	SAN JACINTO	370	370	370	370	370	370

Projected Water Demands
TWDB 2017 State Water Plan Data

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

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	LIVESTOCK, GRIMES	TRINITY	260	260	260	260	260	260
G	MANUFACTURING, GRIMES	BRAZOS	361	408	455	497	539	585
G	MINING, GRIMES	BRAZOS	210	391	306	221	136	83
G	MINING, GRIMES	SAN JACINTO	94	175	137	99	61	37
G	MINING, GRIMES	TRINITY	19	36	28	20	12	8
G	NAVASOTA	BRAZOS	1,428	1,439	1,446	1,466	1,493	1,518
G	STEAM ELECTRIC POWER, GRIMES	BRAZOS	22,232	23,212	24,262	25,662	27,762	30,034
G	STEAM ELECTRIC POWER, GRIMES	SAN JACINTO	9,528	9,948	10,398	10,998	11,898	12,871
G	WICKSON CREEK SUD	BRAZOS	302	316	327	342	356	368
G	WICKSON CREEK SUD	TRINITY	41	43	45	47	49	51
	Sum of Projected Water Demands (acre-feet)		**38,125**	**40,048**	**41,609**	**43,742**	**46,851**	**50,241**

WALKER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	COUNTY-OTHER, WALKER	SAN JACINTO	1,727	1,764	1,786	1,818	1,851	1,880
H	COUNTY-OTHER, WALKER	TRINITY	1,505	1,462	1,430	1,408	1,399	1,394
H	HUNTSVILLE	SAN JACINTO	6,554	6,715	6,817	6,957	7,101	7,226
H	HUNTSVILLE	TRINITY	1,343	1,376	1,397	1,425	1,455	1,481
H	IRRIGATION, WALKER	SAN JACINTO	320	320	320	320	320	320
H	IRRIGATION, WALKER	TRINITY	355	355	355	355	355	355
H	LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	TRINITY	27	28	29	30	30	31
H	LIVESTOCK, WALKER	SAN JACINTO	306	306	306	306	306	306
H	LIVESTOCK, WALKER	TRINITY	346	346	346	346	346	346
H	MANUFACTURING, WALKER	SAN JACINTO	293	293	293	293	293	293
H	MANUFACTURING, WALKER	TRINITY	19	19	19	19	19	19
H	MINING, WALKER	SAN JACINTO	5	5	5	5	5	5
H	MINING, WALKER	TRINITY	6	6	6	6	6	6
H	NEW WAVERLY	SAN JACINTO	181	184	185	188	192	195
H	RIVERSIDE	TRINITY	55	57	58	60	62	63
H	RIVERSIDE WSC	TRINITY	350	386	412	436	455	470

Projected Water Demands
TWDB 2017 State Water Plan Data

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

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	THE CONSOLIDATED WSC	TRINITY	17	18	19	20	21	22
H	TRINITY RURAL WSC	TRINITY	41	44	46	48	50	52
H	WALKER COUNTY SUD	SAN JACINTO	447	461	470	483	495	506
H	WALKER COUNTY SUD	TRINITY	596	615	627	643	661	676
	Sum of Projected Water Demands (acre-feet)		**14,493**	**14,760**	**14,926**	**15,166**	**15,422**	**15,646**

WALLER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	BROOKSHIRE	BRAZOS	663	782	921	1,080	1,262	1,460
H	COUNTY-OTHER, WALLER	BRAZOS	1,470	1,756	2,085	2,456	2,879	3,340
H	COUNTY-OTHER, WALLER	SAN JACINTO	1,575	1,817	2,099	2,422	2,790	3,194
H	G & W WSC	BRAZOS	111	146	187	231	281	335
H	G & W WSC	SAN JACINTO	339	448	571	709	861	1,028
H	HEMPSTEAD	BRAZOS	1,304	1,490	1,703	1,944	2,218	2,518
H	IRRIGATION, WALLER	BRAZOS	7,012	7,012	7,012	7,012	7,012	7,012
H	IRRIGATION, WALLER	SAN JACINTO	14,084	14,084	14,084	14,084	14,084	14,084
H	KATY	SAN JACINTO	354	434	527	628	742	866
H	LIVESTOCK, WALLER	BRAZOS	824	824	824	824	824	824
H	LIVESTOCK, WALLER	SAN JACINTO	245	245	245	245	245	245
H	MANUFACTURING, WALLER	BRAZOS	115	128	141	152	165	179
H	MANUFACTURING, WALLER	SAN JACINTO	19	21	23	25	27	29
H	MINING, WALLER	BRAZOS	4	4	4	4	4	4
H	MINING, WALLER	SAN JACINTO	3	3	3	3	3	3
H	PINE ISLAND	BRAZOS	152	167	184	205	230	256
H	PRAIRIE VIEW	BRAZOS	1,436	1,669	1,934	2,232	2,567	2,933
H	PRAIRIE VIEW	SAN JACINTO	131	152	176	202	233	266
H	WALLER	SAN JACINTO	356	379	407	440	479	523
	Sum of Projected Water Demands (acre-feet)		**30,197**	**31,561**	**33,130**	**34,898**	**36,906**	**39,099**

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

AUSTIN COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	BELLVILLE	BRAZOS	0	0	0	0	0	0
H	COUNTY-OTHER, AUSTIN	BRAZOS	0	0	0	0	-329	-850
H	COUNTY-OTHER, AUSTIN	BRAZOS-COLORADO	0	-17	-92	-185	-292	-411
H	COUNTY-OTHER, AUSTIN	COLORADO	0	0	0	0	0	0
H	IRRIGATION, AUSTIN	BRAZOS	0	0	0	0	0	0
H	IRRIGATION, AUSTIN	BRAZOS-COLORADO	0	0	0	0	0	0
H	LIVESTOCK, AUSTIN	BRAZOS	0	0	0	0	0	0
H	LIVESTOCK, AUSTIN	BRAZOS-COLORADO	0	0	0	0	0	0
H	LIVESTOCK, AUSTIN	COLORADO	0	0	0	0	0	0
H	MANUFACTURING, AUSTIN	BRAZOS	0	-7	-14	-20	-30	-41
H	MANUFACTURING, AUSTIN	BRAZOS-COLORADO	0	0	0	0	0	0
H	MINING, AUSTIN	BRAZOS	0	-146	-98	-50	-3	0
H	MINING, AUSTIN	BRAZOS-COLORADO	0	-42	-29	-15	-1	0
H	MINING, AUSTIN	COLORADO	0	-5	-3	-2	-1	0
H	SAN FELIPE	BRAZOS	-23	-55	-90	-133	-181	-235
H	SEALY	BRAZOS	0	0	0	0	0	0
H	SEALY	BRAZOS-COLORADO	0	0	0	0	0	0
H	WALLIS	BRAZOS-COLORADO	0	0	0	0	0	0
	Sum of Projected Water Supply Needs (acre-feet)		**-23**	**-272**	**-326**	**-405**	**-837**	**-1,537**

GRIMES COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	COUNTY-OTHER, GRIMES	BRAZOS	167	160	156	124	96	66
G	COUNTY-OTHER, GRIMES	SAN JACINTO	65	57	55	32	14	0
G	COUNTY-OTHER, GRIMES	TRINITY	0	0	0	0	0	0
G	DOBBIN-PLANTERSVILLE WSC	BRAZOS	0	0	0	0	0	0
G	DOBBIN-PLANTERSVILLE WSC	SAN JACINTO	0	0	0	0	0	0
G	G & W WSC	BRAZOS	0	0	0	0	0	0
G	G & W WSC	SAN JACINTO	0	0	0	0	0	0
G	LIVESTOCK, GRIMES	BRAZOS	0	0	0	0	0	0
G	LIVESTOCK, GRIMES	SAN JACINTO	0	0	0	0	0	0

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
G	LIVESTOCK, GRIMES	TRINITY	0	0	0	0	0	0
G	MANUFACTURING, GRIMES	BRAZOS	154	107	59	17	0	0
G	MINING, GRIMES	BRAZOS	-210	-391	-306	-221	-136	-83
G	MINING, GRIMES	SAN JACINTO	-61	-142	-104	-66	-28	-4
G	MINING, GRIMES	TRINITY	-19	-36	-28	-20	-12	-8
G	NAVASOTA	BRAZOS	661	650	643	623	572	502
G	STEAM ELECTRIC POWER, GRIMES	BRAZOS	-5,263	-6,303	-7,414	-8,874	-11,035	-13,367
G	STEAM ELECTRIC POWER, GRIMES	SAN JACINTO	-6,402	-6,848	-7,324	-7,950	-8,876	-9,875
G	WICKSON CREEK SUD	BRAZOS	467	377	283	196	119	54
G	WICKSON CREEK SUD	TRINITY	64	51	39	26	17	7
	Sum of Projected Water Supply Needs (acre-feet)		**-11,955**	**-13,720**	**-15,176**	**-17,131**	**-20,087**	**-23,337**

WALKER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	COUNTY-OTHER, WALKER	SAN JACINTO	1,603	1,640	1,650	1,643	1,628	1,613
H	COUNTY-OTHER, WALKER	TRINITY	1,397	1,360	1,334	1,309	1,291	1,277
H	HUNTSVILLE	SAN JACINTO	9,547	9,386	9,284	9,145	9,000	8,874
H	HUNTSVILLE	TRINITY	1,956	1,923	1,902	1,873	1,844	1,819
H	IRRIGATION, WALKER	SAN JACINTO	0	0	0	0	0	0
H	IRRIGATION, WALKER	TRINITY	0	0	0	0	0	0
H	LAKE LIVINGSTON WATER SUPPLY & SEWER SERVICE COMPANY	TRINITY	14	12	12	11	10	10
H	LIVESTOCK, WALKER	SAN JACINTO	0	0	0	0	0	0
H	LIVESTOCK, WALKER	TRINITY	0	0	0	0	0	0
H	MANUFACTURING, WALKER	SAN JACINTO	0	0	0	0	0	0
H	MANUFACTURING, WALKER	TRINITY	337	337	337	337	337	337
H	MINING, WALKER	SAN JACINTO	0	0	0	0	0	0
H	MINING, WALKER	TRINITY	0	0	0	0	0	0
H	NEW WAVERLY	SAN JACINTO	0	0	0	0	0	0
H	RIVERSIDE	TRINITY	0	-2	-3	-5	-7	-8
H	RIVERSIDE WSC	TRINITY	67	67	67	67	67	67
H	THE CONSOLIDATED WSC	TRINITY	-8	-8	-8	-9	-9	-10

Projected Water Supply Needs
TWDB 2017 State Water Plan Data

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

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	TRINITY RURAL WSC	TRINITY	-14	-16	-17	-17	-19	-21
H	WALKER COUNTY SUD	SAN JACINTO	0	0	0	0	0	0
H	WALKER COUNTY SUD	TRINITY	0	0	0	0	0	0
	Sum of Projected Water Supply Needs (acre-feet)		**-22**	**-26**	**-28**	**-31**	**-35**	**-39**

WALLER COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
H	BROOKSHIRE	BRAZOS	0	0	0	0	0	0
H	COUNTY-OTHER, WALLER	BRAZOS	0	0	-31	-324	-747	-1,208
H	COUNTY-OTHER, WALLER	SAN JACINTO	0	0	0	0	0	-348
H	G & W WSC	BRAZOS	0	0	0	0	0	0
H	G & W WSC	SAN JACINTO	0	0	0	0	0	0
H	HEMPSTEAD	BRAZOS	0	0	0	0	-207	-507
H	IRRIGATION, WALLER	BRAZOS	0	0	0	0	0	0
H	IRRIGATION, WALLER	SAN JACINTO	0	0	0	0	0	0
H	KATY	SAN JACINTO	0	0	0	0	0	0
H	LIVESTOCK, WALLER	BRAZOS	0	0	0	0	0	0
H	LIVESTOCK, WALLER	SAN JACINTO	0	0	0	0	0	0
H	MANUFACTURING, WALLER	BRAZOS	0	-13	-26	-37	-50	-64
H	MANUFACTURING, WALLER	SAN JACINTO	0	0	0	0	0	0
H	MINING, WALLER	BRAZOS	0	0	0	0	0	0
H	MINING, WALLER	SAN JACINTO	0	0	0	0	0	0
H	PINE ISLAND	BRAZOS	-8	-23	-40	-61	-86	-112
H	PRAIRIE VIEW	BRAZOS	0	0	0	0	0	0
H	PRAIRIE VIEW	SAN JACINTO	0	0	0	0	0	0
H	WALLER	SAN JACINTO	0	0	0	0	0	0
	Sum of Projected Water Supply Needs (acre-feet)		**-8**	**-36**	**-97**	**-422**	**-1,090**	**-2,239**

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

AUSTIN COUNTY

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
BELLVILLE, BRAZOS (H)							
MUNICIPAL CONSERVATION, BELLVILLE	DEMAND REDUCTION [AUSTIN]	3	7	12	16	19	23
		3	**7**	**12**	**16**	**19**	**23**
COUNTY-OTHER, AUSTIN, BRAZOS (H)							
EXPANDED USE OF GROUNDWATER, AUSTIN COUNTY	GULF COAST AQUIFER [AUSTIN]	0	0	0	0	800	800
MUNICIPAL CONSERVATION, COUNTY-OTHER - AUSTIN COUNTY	DEMAND REDUCTION [AUSTIN]	4	12	22	30	41	50
		4	**12**	**22**	**30**	**841**	**850**
COUNTY-OTHER, AUSTIN, BRAZOS-COLORADO (H)							
EXPANDED USE OF GROUNDWATER, AUSTIN COUNTY	GULF COAST AQUIFER [AUSTIN]	0	100	100	300	300	400
MUNICIPAL CONSERVATION, COUNTY-OTHER - AUSTIN COUNTY	DEMAND REDUCTION [AUSTIN]	1	3	5	7	10	12
		1	**103**	**105**	**307**	**310**	**412**
COUNTY-OTHER, AUSTIN, COLORADO (H)							
MUNICIPAL CONSERVATION, COUNTY-OTHER - AUSTIN COUNTY	DEMAND REDUCTION [AUSTIN]	0	0	0	1	1	1
		0	**0**	**0**	**1**	**1**	**1**
IRRIGATION, AUSTIN, BRAZOS (H)							
IRRIGATION CONSERVATION, AUSTIN COUNTY	DEMAND REDUCTION [AUSTIN]	1,124	1,124	1,124	1,124	1,124	1,124
		1,124	**1,124**	**1,124**	**1,124**	**1,124**	**1,124**
IRRIGATION, AUSTIN, BRAZOS-COLORADO (H)							
IRRIGATION CONSERVATION, AUSTIN COUNTY	DEMAND REDUCTION [AUSTIN]	1,911	1,911	1,911	1,911	1,911	1,911
		1,911	**1,911**	**1,911**	**1,911**	**1,911**	**1,911**
MANUFACTURING, AUSTIN, BRAZOS (H)							
EXPANDED USE OF GROUNDWATER, AUSTIN COUNTY	GULF COAST AQUIFER [AUSTIN]	0	100	100	100	100	100
INDUSTRIAL CONSERVATION, AUSTIN COUNTY	DEMAND REDUCTION [AUSTIN]	1	2	4	5	7	9
		1	**102**	**104**	**105**	**107**	**109**
MANUFACTURING, AUSTIN, BRAZOS-COLORADO (H)							
INDUSTRIAL CONSERVATION, AUSTIN COUNTY	DEMAND REDUCTION [AUSTIN]	0	1	1	1	2	2

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
		0	**1**	**1**	**1**	**2**	**2**
MINING, AUSTIN, BRAZOS (H)							
EXPANDED USE OF GROUNDWATER, AUSTIN COUNTY	GULF COAST AQUIFER [AUSTIN]	0	150	150	150	150	150
		0	**150**	**150**	**150**	**150**	**150**
MINING, AUSTIN, BRAZOS-COLORADO (H)							
EXPANDED USE OF GROUNDWATER, AUSTIN COUNTY	GULF COAST AQUIFER [AUSTIN]	0	100	100	100	100	100
		0	**100**	**100**	**100**	**100**	**100**
MINING, AUSTIN, COLORADO (H)							
EXPANDED USE OF GROUNDWATER, AUSTIN COUNTY	GULF COAST AQUIFER [AUSTIN]	0	100	100	100	100	100
		0	**100**	**100**	**100**	**100**	**100**
SAN FELIPE, BRAZOS (H)							
EXPANDED USE OF GROUNDWATER, AUSTIN COUNTY	GULF COAST AQUIFER [AUSTIN]	100	100	100	250	250	250
MUNICIPAL CONSERVATION, SAN FELIPE	DEMAND REDUCTION [AUSTIN]	0	2	3	4	5	6
		100	**102**	**103**	**254**	**255**	**256**
SEALY, BRAZOS (H)							
MUNICIPAL CONSERVATION, SEALY	DEMAND REDUCTION [AUSTIN]	3	9	14	20	25	31
		3	**9**	**14**	**20**	**25**	**31**
WALLIS, BRAZOS-COLORADO (H)							
MUNICIPAL CONSERVATION, WALLIS	DEMAND REDUCTION [AUSTIN]	0	1	1	2	2	3
WATER LOSS REDUCTION, WALLIS	DEMAND REDUCTION [AUSTIN]	3	6	8	11	14	18
		3	**7**	**9**	**13**	**16**	**21**
Sum of Projected Water Management Strategies (acre-feet)		**3,150**	**3,728**	**3,755**	**4,132**	**4,961**	**5,090**

GRIMES COUNTY

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
MANUFACTURING, GRIMES, BRAZOS (G)							
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [GRIMES]	0	0	0	0	38	41
		0	**0**	**0**	**0**	**38**	**41**

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
MINING, GRIMES, BRAZOS (G)							
CARRIZO AQUIFER DEVELOPMENT	CARRIZO-WILCOX AQUIFER [GRIMES]	224	383	430	222	265	92
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [GRIMES]	6	19	21	16	10	5
		230	**402**	**451**	**238**	**275**	**97**
MINING, GRIMES, SAN JACINTO (G)							
CARRIZO AQUIFER DEVELOPMENT	CARRIZO-WILCOX AQUIFER [GRIMES]	58	133	94	59	24	1
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [GRIMES]	3	9	10	7	4	3
		61	**142**	**104**	**66**	**28**	**4**
MINING, GRIMES, TRINITY (G)							
CARRIZO AQUIFER DEVELOPMENT	CARRIZO-WILCOX AQUIFER [GRIMES]	18	34	26	19	11	7
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [GRIMES]	1	2	2	1	1	1
		19	**36**	**28**	**20**	**12**	**8**
NAVASOTA, BRAZOS (G)							
MUNICIPAL WATER CONSERVATION (SUBURBAN) - NAVASOTA	DEMAND REDUCTION [GRIMES]	55	158	238	229	231	235
		55	**158**	**238**	**229**	**231**	**235**
STEAM ELECTRIC POWER, GRIMES, BRAZOS (G)							
CARRIZO AQUIFER DEVELOPMENT	CARRIZO-WILCOX AQUIFER [GRIMES]	343	343	343	343	343	343
GIBBONS CREEK RESERVOIR EXPANSION	GIBBONS CREEK LAKE/RESERVOIR [RESERVOIR]	1,823	1,823	1,823	1,823	1,823	1,824
GULF COAST AQUIFER DEVELOPMENT	GULF COAST AQUIFER [GRIMES]	1,362	1,361	1,360	1,360	1,361	1,359
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [GRIMES]	667	1,161	1,698	1,796	1,943	2,102
REUSE- BRYAN	DIRECT REUSE [BRAZOS]	536	809	1,095	1,777	2,783	3,870
REUSE- COLLEGE STATION	DIRECT REUSE [BRAZOS]	536	809	1,095	1,777	2,783	3,870
		5,267	**6,306**	**7,414**	**8,876**	**11,036**	**13,368**
STEAM ELECTRIC POWER, GRIMES, SAN JACINTO (G)							
GIBBONS CREEK RESERVOIR EXPANSION	GIBBONS CREEK LAKE/RESERVOIR [RESERVOIR]	782	782	782	782	782	781
GULF COAST AQUIFER DEVELOPMENT	GULF COAST AQUIFER [GRIMES]	4,874	4,875	4,876	4,876	4,875	4,877

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
INDUSTRIAL WATER CONSERVATION	DEMAND REDUCTION [GRIMES]	286	497	728	770	833	901
REUSE- BRYAN	DIRECT REUSE [BRAZOS]	230	347	469	761	1,193	1,658
REUSE- COLLEGE STATION	DIRECT REUSE [BRAZOS]	230	347	469	761	1,193	1,658
		6,402	**6,848**	**7,324**	**7,950**	**8,876**	**9,875**
Sum of Projected Water Management Strategies (acre-feet)		**12,034**	**13,892**	**15,559**	**17,379**	**20,496**	**23,628**

WALKER COUNTY

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
COUNTY-OTHER, WALKER, SAN JACINTO (H)							
WATER LOSS REDUCTION, COUNTY-OTHER - WALKER COUNTY	DEMAND REDUCTION [WALKER]	26	50	72	94	103	105
		26	**50**	**72**	**94**	**103**	**105**
COUNTY-OTHER, WALKER, TRINITY (H)							
WATER LOSS REDUCTION, COUNTY-OTHER - WALKER COUNTY	DEMAND REDUCTION [WALKER]	22	41	58	72	77	77
		22	**41**	**58**	**72**	**77**	**77**
MANUFACTURING, WALKER, SAN JACINTO (H)							
INDUSTRIAL CONSERVATION, WALKER COUNTY	DEMAND REDUCTION [WALKER]	4	7	11	14	18	21
		4	**7**	**11**	**14**	**18**	**21**
MANUFACTURING, WALKER, TRINITY (H)							
INDUSTRIAL CONSERVATION, WALKER COUNTY	DEMAND REDUCTION [WALKER]	0	0	1	1	1	1
		0	**0**	**1**	**1**	**1**	**1**
RIVERSIDE, TRINITY (H)							
WATER LOSS REDUCTION, RIVERSIDE	DEMAND REDUCTION [WALKER]	2	3	5	6	8	9
		2	**3**	**5**	**6**	**8**	**9**
THE CONSOLIDATED WSC, TRINITY (H)							
EXPANDED USE OF GROUNDWATER, WALKER COUNTY	YEGUA-JACKSON AQUIFER [WALKER]	100	100	100	100	100	100
HCWC PERMIT AMENDMENT	HOUSTON COUNTY LAKE/RESERVOIR [RESERVOIR]	5	5	6	6	7	8
		105	**105**	**106**	**106**	**107**	**108**

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
TRINITY RURAL WSC, TRINITY (H)							
EXPANDED USE OF GROUNDWATER, WALKER COUNTY	YEGUA-JACKSON AQUIFER [WALKER]	60	60	60	60	60	60
WATER LOSS REDUCTION, TRINITY RURAL WSC	DEMAND REDUCTION [WALKER]	2	3	5	7	8	10
		62	**63**	**65**	**67**	**68**	**70**
Sum of Projected Water Management Strategies (acre-feet)		**221**	**269**	**318**	**360**	**382**	**391**

WALLER COUNTY

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
BROOKSHIRE, BRAZOS (H)							
MUNICIPAL CONSERVATION, BROOKSHIRE	DEMAND REDUCTION [WALLER]	1	3	5	8	10	12
		1	**3**	**5**	**8**	**10**	**12**
COUNTY-OTHER, WALLER, BRAZOS (H)							
EXPANDED USE OF GROUNDWATER, WALLER COUNTY	GULF COAST AQUIFER [WALLER]	0	0	0	500	500	850
MUNICIPAL CONSERVATION, COUNTY-OTHER - WALLER COUNTY	DEMAND REDUCTION [WALLER]	2	7	13	17	22	28
WATER LOSS REDUCTION, COUNTY-OTHER - WALLER COUNTY	DEMAND REDUCTION [WALLER]	33	75	128	191	267	355
		35	**82**	**141**	**708**	**789**	**1,233**
COUNTY-OTHER, WALLER, SAN JACINTO (H)							
MUNICIPAL CONSERVATION, COUNTY-OTHER - WALLER COUNTY	DEMAND REDUCTION [WALLER]	2	8	13	17	21	27
WATER LOSS REDUCTION, COUNTY-OTHER - WALLER COUNTY	DEMAND REDUCTION [WALLER]	35	78	128	188	259	340
		37	**86**	**141**	**205**	**280**	**367**
G & W WSC, BRAZOS (H)							
MUNICIPAL CONSERVATION, G & W WSC	DEMAND REDUCTION [WALLER]	0	0	1	2	2	3
		0	**0**	**1**	**2**	**2**	**3**
G & W WSC, SAN JACINTO (H)							
MUNICIPAL CONSERVATION, G & W WSC	DEMAND REDUCTION [WALLER]	1	2	3	5	7	8
		1	**2**	**3**	**5**	**7**	**8**

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
HEMPSTEAD, BRAZOS (H)							
EXPANDED USE OF GROUNDWATER, WALLER COUNTY	GULF COAST AQUIFER [WALLER]	0	0	0	0	300	300
MUNICIPAL CONSERVATION, HEMPSTEAD	DEMAND REDUCTION [WALLER]	2	6	10	14	17	21
WATER LOSS REDUCTION, HEMPSTEAD	DEMAND REDUCTION [WALLER]	22	49	79	115	157	199
		24	**55**	**89**	**129**	**474**	**520**
IRRIGATION, WALLER, BRAZOS (H)							
IRRIGATION CONSERVATION, WALLER COUNTY	DEMAND REDUCTION [WALLER]	2,963	2,963	2,963	2,963	2,963	2,963
		2,963	**2,963**	**2,963**	**2,963**	**2,963**	**2,963**
IRRIGATION, WALLER, SAN JACINTO (H)							
IRRIGATION CONSERVATION, WALLER COUNTY	DEMAND REDUCTION [WALLER]	5,610	5,610	5,610	5,610	5,610	5,610
		5,610	**5,610**	**5,610**	**5,610**	**5,610**	**5,610**
KATY, SAN JACINTO (H)							
MUNICIPAL CONSERVATION, KATY	DEMAND REDUCTION [WALLER]	1	2	3	4	6	7
		1	**2**	**3**	**4**	**6**	**7**
MANUFACTURING, WALLER, BRAZOS (H)							
EXPANDED USE OF GROUNDWATER, WALLER COUNTY	GULF COAST AQUIFER [WALLER]	0	100	100	100	100	100
INDUSTRIAL CONSERVATION, WALLER COUNTY	DEMAND REDUCTION [WALLER]	1	3	5	7	10	13
		1	**103**	**105**	**107**	**110**	**113**
MANUFACTURING, WALLER, SAN JACINTO (H)							
INDUSTRIAL CONSERVATION, WALLER COUNTY	DEMAND REDUCTION [WALLER]	0	1	1	1	2	2
		0	**1**	**1**	**1**	**2**	**2**
PINE ISLAND, BRAZOS (H)							
EXPANDED USE OF GROUNDWATER, WALLER COUNTY	GULF COAST AQUIFER [WALLER]	100	100	100	100	100	200
MUNICIPAL CONSERVATION, PINE ISLAND	DEMAND REDUCTION [WALLER]	0	1	1	1	2	2
		100	**101**	**101**	**101**	**102**	**202**
PRAIRIE VIEW, BRAZOS (H)							
MUNICIPAL CONSERVATION, PRAIRIE VIEW	DEMAND REDUCTION [WALLER]	3	6	11	16	20	24
		3	**6**	**11**	**16**	**20**	**24**

Projected Water Management Strategies
TWDB 2017 State Water Plan Data

WUG, Basin (RWPG) All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
PRAIRIE VIEW, SAN JACINTO (H)							
MUNICIPAL CONSERVATION, PRAIRIE VIEW	DEMAND REDUCTION [WALLER]	0	1	1	1	2	2
		0	**1**	**1**	**1**	**2**	**2**
WALLER, SAN JACINTO (H)							
MUNICIPAL CONSERVATION, WALLER	DEMAND REDUCTION [WALLER]	1	2	2	3	4	4
		1	**2**	**2**	**3**	**4**	**4**
Sum of Projected Water Management Strategies (acre-feet)		**8,777**	**9,017**	**9,177**	**9,863**	**10,381**	**11,070**

Appendix B – GAM Run 17-020: Bluebonnet Groundwater Conservation District Groundwater Management Plan

APPENDIX B

GAM RUN 17-020: BLUEBONNET GROUNDWATER CONSERVATION DISTRICT GROUNDWATER MANAGEMENT PLAN

Shirley C. Wade, Ph.D., P.G.
Texas Water Development Board

Groundwater Division

Groundwater Availability Modeling Section
(512) 936-0883
December 15, 2017

GAM Run 17-020: Bluebonnet Groundwater Conservation District Groundwater Management Plan

Shirley C. Wade, Ph.D., P.G.
Texas Water Development Board
Groundwater Division
Groundwater Availability Modeling Department
512-936-0883
December 15, 2017

Shirley C. Wade
12/15/17

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GAM RUN 17-020: BLUEBONNET GROUNDWATER CONSERVATION DISTRICT GROUNDWATER MANAGEMENT PLAN

Shirley C. Wade, Ph.D., P.G.
Texas Water Development Board
Groundwater Division
Groundwater Availability Modeling Department
512-936-0883
December 15, 2017

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 Bluebonnet 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 Department. 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 Bluebonnet Groundwater Conservation District should be adopted by the district on or before September 3, 2018, and submitted to the Executive Administrator of the TWDB on or before October 3, 2018. The current

management plan for the Bluebonnet Groundwater Conservation District expires on December 2, 2018.

We used four groundwater availability models to estimate the management plan information for the aquifers within the Bluebonnet Groundwater Conservation District. Information for the Carrizo-Wilcox, Queen City, and Sparta aquifers is from version 2.02 of the groundwater availability model for the central part of the Carrizo-Wilcox, Queen City, and Sparta aquifers (Kelley and others, 2004). 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 the Gulf Coast Aquifer System (Kasmarek, 2013). Information for the Brazos River Alluvium Aquifer is from version 1.01 of the groundwater availability model for the Brazos River Alluvium Aquifer (Ewing and Jigmond, 2016).

This report replaces the results of GAM Run 13-028 (Kohlrenken, 2013). GAM Run 17-020 includes results from recently released groundwater availability models for the northern portion of the Gulf Coast Aquifer System (Kasmarek, 2013) and for the Brazos River Alluvium Aquifer (Ewing and Jigmond, 2016). Tables 1 through 6 summarize the groundwater availability model data required by statute and Figures 1 through 6 show the area of the models from which the values in the tables were extracted. If, after review of the figures, the Bluebonnet 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 four groundwater availability models mentioned above were used to estimate information for the Bluebonnet Groundwater Conservation District management plan. Water budgets were extracted for the historical model periods for the Carrizo-Wilcox, Queen City, and Sparta aquifers (1980 through 1999), Yegua-Jackson Aquifer (1980 through 1997) and Gulf Coast Aquifer System (1980 through 2009) using ZONEBUDGET Version 3.01 (Harbaugh, 2009). The water budget for the Brazos River Alluvium Aquifer was extracted for the historical model period (1980 through 2012) using ZONEBUDGET-USG (Panday and others, 2013). 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:

Carrizo-Wilcox, Queen City, and Sparta aquifers

- We used version 2.02 of the groundwater availability model for the central part of the Carrizo-Wilcox, Queen City, and Sparta aquifers. See Dutton and others (2003) and Kelley and others (2004) for assumptions and limitations of the groundwater availability model for the central part of the Carrizo-Wilcox, Queen City, and Sparta aquifers.

- This groundwater availability model includes eight layers, which generally represent the Sparta Aquifer (Layer 1), the Weches Formation confining unit (Layer 2), the Queen City Aquifer (Layer 3), the Reklaw Formation confining unit (Layer 4), the Carrizo Formation (Layer 5), the Calvert Bluff Formation (Layer 6), the Simsboro Formation (Layer 7), and the Hooper Formation (Layer 8).

- Individual water budgets for the district were determined for the Sparta Aquifer (Layer 1), the Queen City Aquifer (Layer 3), and the Carrizo-Wilcox Aquifer (Layers 5 through 8, collectively).

- The model was run with MODFLOW-96 (Harbaugh and McDonald, 1996).

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 represent the outcrop of the Yegua-Jackson Aquifer and younger overlying units—the Catahoula Formation (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).

- 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 used version 1.01 of the groundwater availability model for the Yegua-Jackson Aquifer to investigate groundwater flows 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 for the Yegua-Jackson Aquifer.

Brazos River Alluvium Aquifer

- We used version 1.01 of the groundwater availability model for the Brazos River Alluvium Aquifer released on December 16, 2016. See Ewing and Jigmond (2016) for assumptions and limitations of the model.
- The groundwater availability model for the Brazos River Alluvium Aquifer contains three layers. Layers 1 and 2 represent the Brazos River Alluvium Aquifer and Layer 3 represents the surficial portions of the Carrizo-Wilcox, Queen City, Sparta, Yegua-Jackson, and Gulf Coast aquifers as well as various geologic units of the Cretaceous System.
- In Bluebonnet Groundwater Conservation District flow between the Gulf Coast Aquifer System and the Brazos River Alluvium Aquifer is represented by flow between model layers 2 and 3.
- Perennial rivers and streams were simulated using the MODFLOW Streamflow-Routing package and ephemeral streams were simulated using the MODFLOW River package. Springs were simulated using the MODFLOW Drain package.

- The model was run with MODFLOW-USG (unstructured grid; Panday and others, 2013).

RESULTS:

A groundwater budget summarizes the amount of water entering and leaving the aquifers according to the groundwater availability model. Selected groundwater budget components listed below were extracted from the groundwater availability model results for the Carrizo-Wilcox, Queen City, Sparta, Yegua-Jackson, and Brazos River Alluvium aquifers and the Gulf Coast Aquifer System, located within Bluebonnet Groundwater Conservation District and averaged over the historical calibration periods, as shown in Tables 1 through 6.

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 through 6. 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 CARRIZO-WILCOX AQUIFER FOR BLUEBONNET GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Carrizo-Wilcox Aquifer	0
Estimated annual volume of water that discharges from the aquifer to springs and any surface-water body including lakes, streams, and rivers	Carrizo-Wilcox Aquifer	0
Estimated annual volume of flow into the district within each aquifer in the district	Carrizo-Wilcox Aquifer	2,699
Estimated annual volume of flow out of the district within each aquifer in the district	Carrizo-Wilcox Aquifer	379
Estimated net annual volume of flow between each aquifer in the district	Flow from Carrizo-Wilcox Aquifer into the overlying Reklaw Confining Unit	17
	Flow from Carrizo-Wilcox Aquifer to brackish Carrizo-Wilcox units	2,322

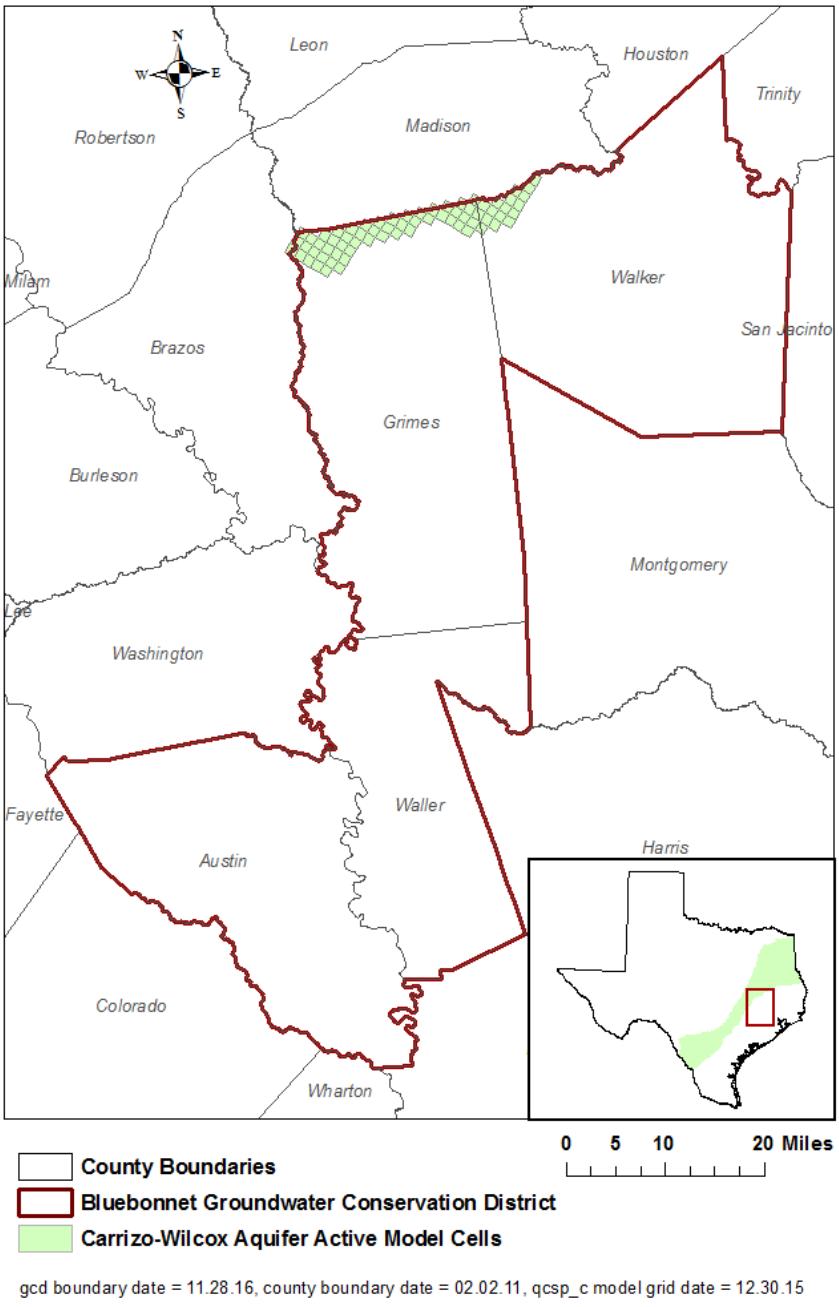

FIGURE 1. AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE CARRIZO-WILCOX AQUIFER FROM WHICH THE INFORMATION IN TABLE 1 WAS EXTRACTED (THE AQUIFER SYSTEM EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 2. SUMMARIZED INFORMATION FOR THE QUEEN CITY AQUIFER FOR BLUEBONNET GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Queen City Aquifer	0
Estimated annual volume of water that discharges from the aquifer to springs and any surface-water body including lakes, streams, and rivers	Queen City Aquifer	0
Estimated annual volume of flow into the district within each aquifer in the district	Queen City Aquifer	134
Estimated annual volume of flow out of the district within each aquifer in the district	Queen City Aquifer	98
Estimated net annual volume of flow between each aquifer in the district	Flow into Queen City Aquifer from the underlying Reklaw Confining Unit	55
	Flow from Queen City Aquifer into the overlying Weches Confining Unit	190
	Flow into Queen City Aquifer from brackish Queen City units	49

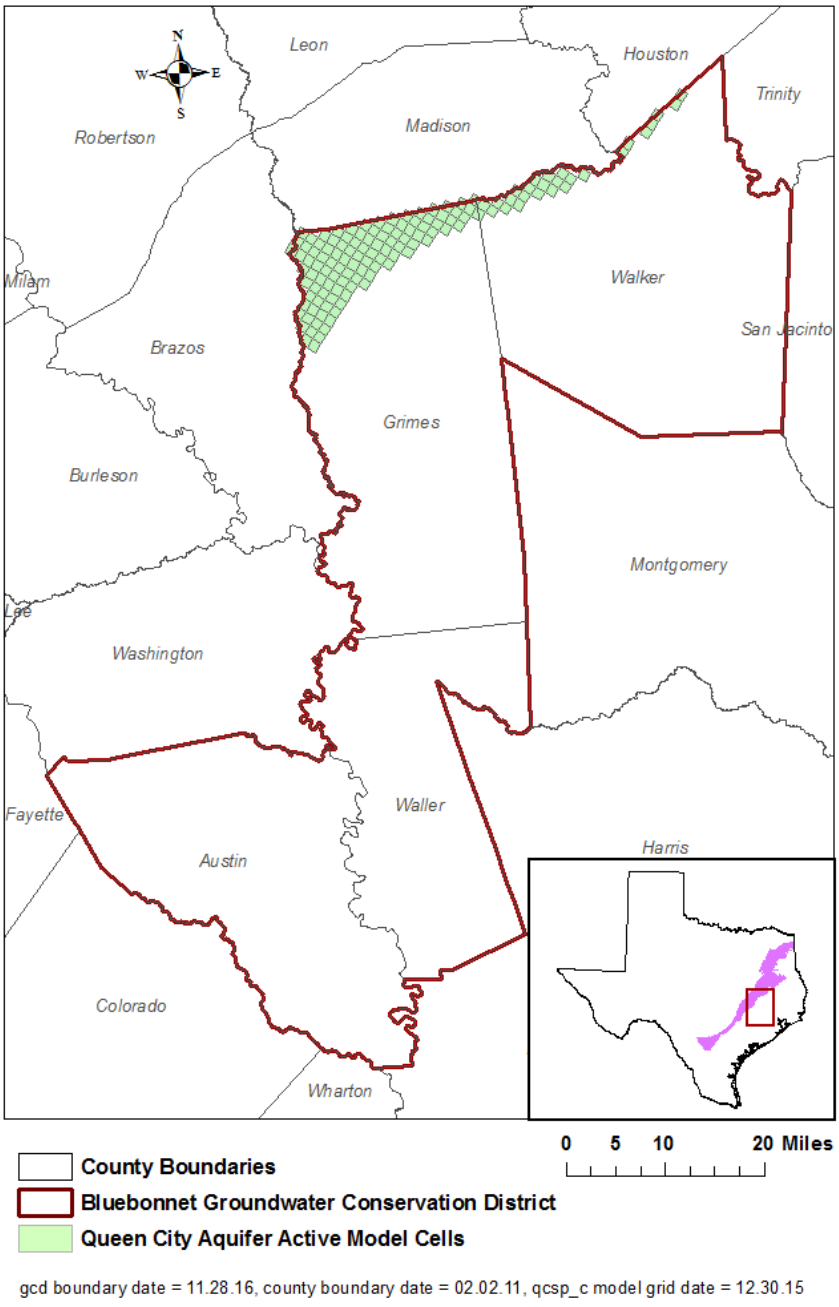

FIGURE 2. AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE QUEEN CITY AQUIFER FROM WHICH THE INFORMATION IN TABLE 2 WAS EXTRACTED (THE AQUIFER SYSTEM EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 3. SUMMARIZED INFORMATION FOR THE SPARTA AQUIFER FOR BLUEBONNET GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Sparta Aquifer	0
Estimated annual volume of water that discharges from the aquifer to springs and any surface-water body including lakes, streams, and rivers	Sparta Aquifer	0
Estimated annual volume of flow into the district within each aquifer in the district	Sparta Aquifer	338
Estimated annual volume of flow out of the district within each aquifer in the district	Sparta Aquifer	482
Estimated net annual volume of flow between each aquifer in the district	Flow from Sparta Aquifer into the overlying units	31
	Flow into Sparta Aquifer from the underlying Weches Confining Unit	208
	Flow from Sparta Aquifer to brackish Sparta units	49

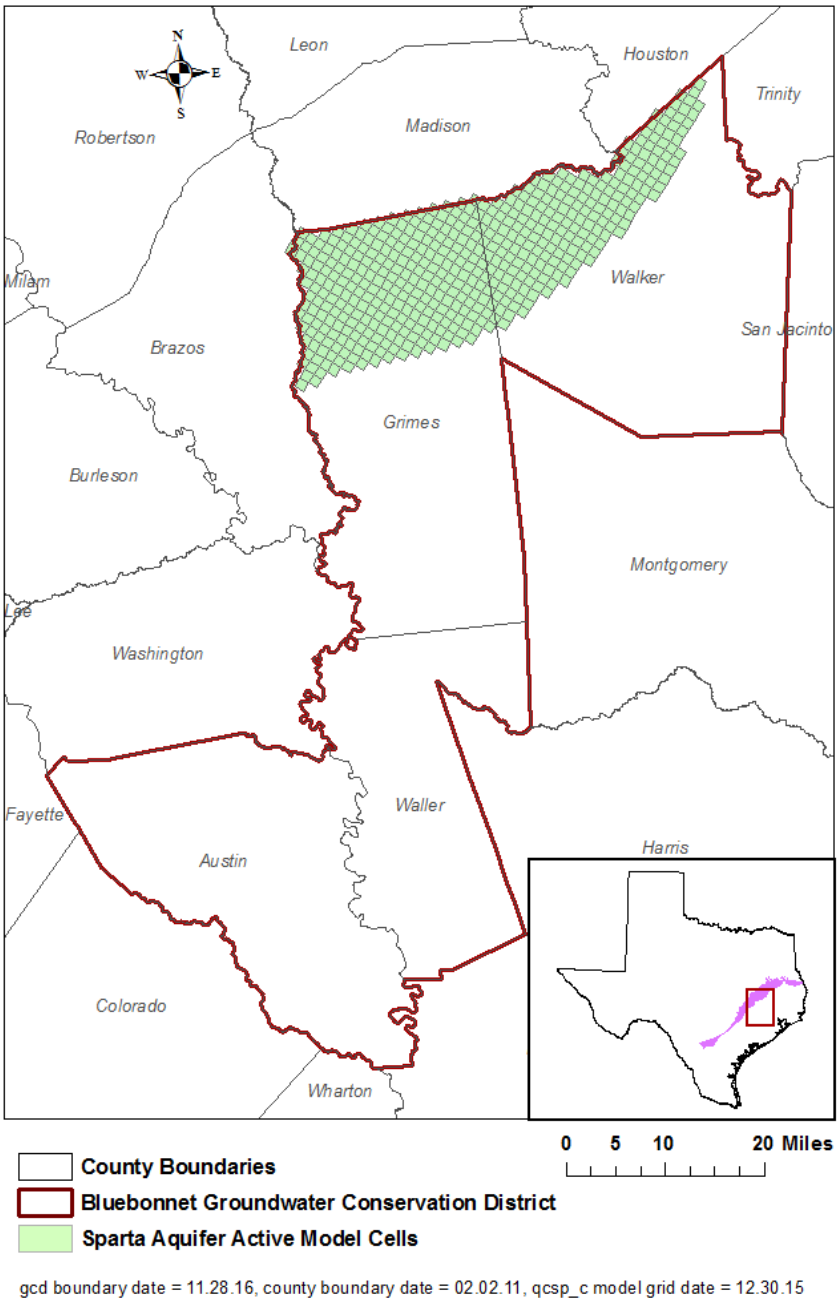

FIGURE 3. AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE SPARTA AQUIFER FROM WHICH THE INFORMATION IN TABLE 3 WAS EXTRACTED (THE AQUIFER SYSTEM EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 4. SUMMARIZED INFORMATION FOR THE YEGUA-JACKSON AQUIFER FOR BLUEBONNET GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Yegua-Jackson Aquifer	47,258
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	38,660
Estimated annual volume of flow into the district within each aquifer in the district	Yegua-Jackson Aquifer	6,829
Estimated annual volume of flow out of the district within each aquifer in the district	Yegua-Jackson Aquifer	14,759
Estimated net annual volume of flow between each aquifer in the district	Flow to Yegua-Jackson Aquifer from the Catahoula and younger units	160
	Flow from the confined portion of the Yegua-Jackson units into the Yegua-Jackson Aquifer	512

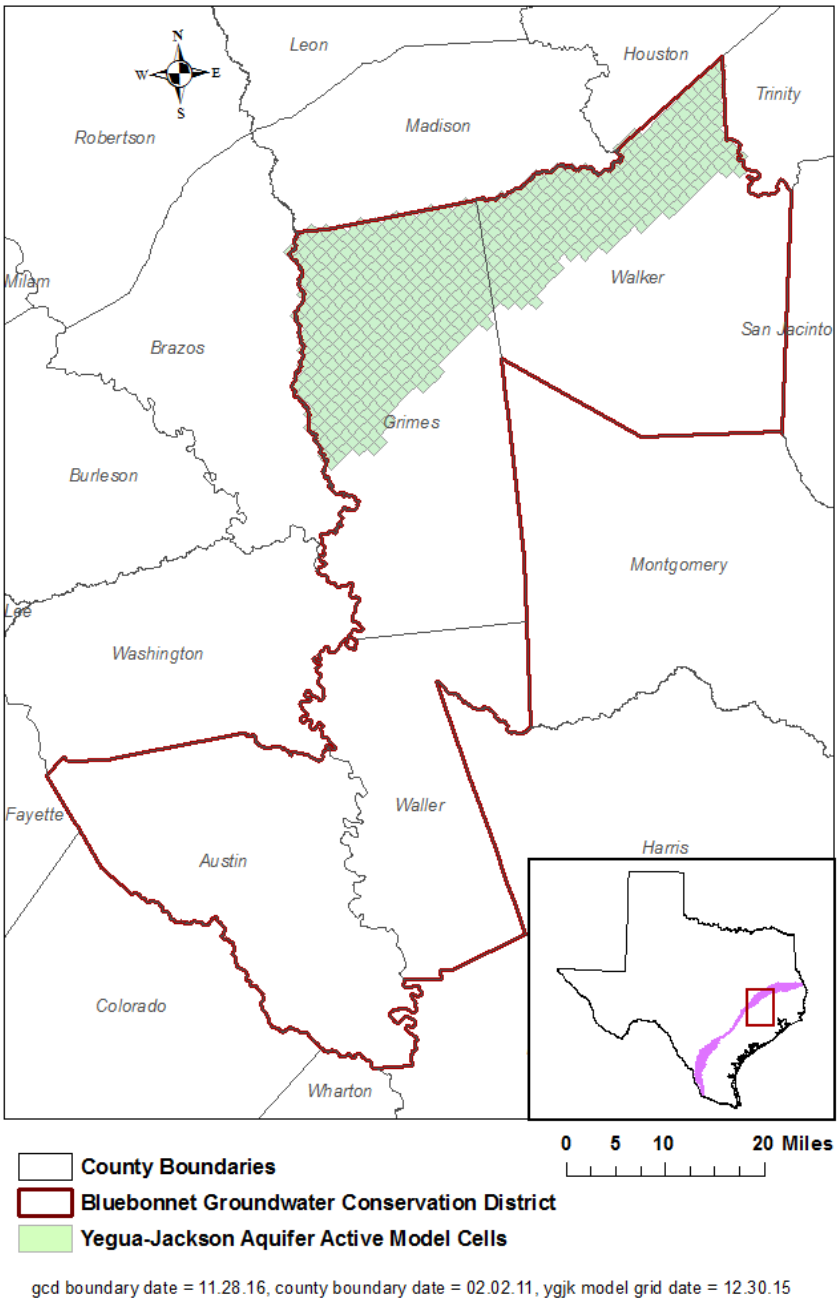

FIGURE 4. AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE YEGUA-JACKSON AQUIFER FROM WHICH THE INFORMATION IN TABLE 4 WAS EXTRACTED (THE AQUIFER SYSTEM EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 5. SUMMARIZED INFORMATION FOR THE GULF COAST AQUIFER SYSTEM FOR BLUEBONNET GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Gulf Coast Aquifer System	46,741
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	5,731
Estimated annual volume of flow into the district within each aquifer in the district	Gulf Coast Aquifer System	12,583
Estimated annual volume of flow out of the district within each aquifer in the district	Gulf Coast Aquifer System	48,940
Estimated net annual volume of flow between each aquifer in the district	Flow from the Catahoula unit into the Jasper Aquifer[1]	1,630
	Flow from the Gulf Coast Aquifer System to the Brazos River Alluvium	9,465

[1] Based on the general head boundary flux from the Groundwater Availability model for the Yegua-Jackson Aquifer. A part of the flow from the Catahoula confining system to the Jasper Aquifer represents flow to the Gulf Coast Aquifer System from deeper units and part represents flow within the Gulf Coast Aquifer System.

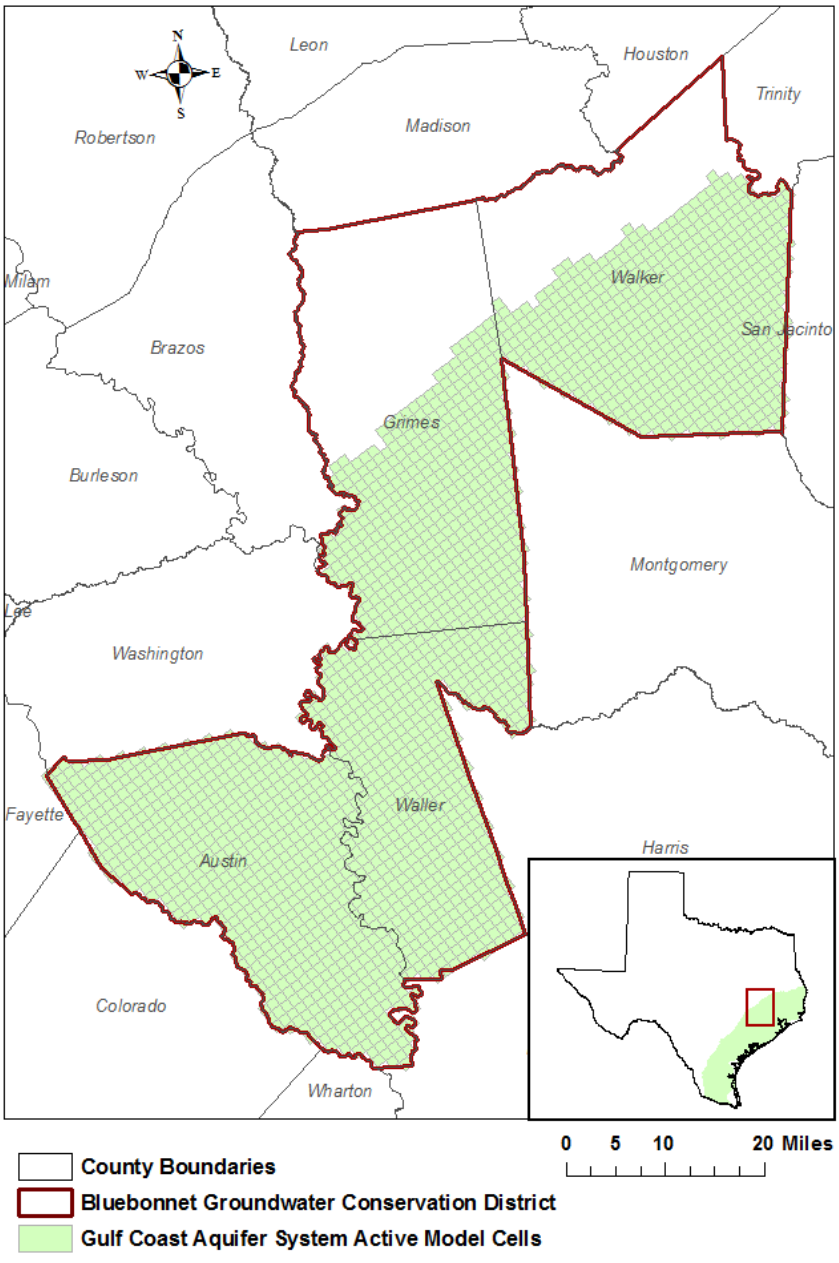

FIGURE 5. AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE GULF COAST AQUIFER SYSTEM FROM WHICH THE INFORMATION IN TABLE 5 WAS EXTRACTED (THE AQUIFER SYSTEM EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 6. SUMMARIZED INFORMATION FOR THE BRAZOS RIVER ALLUVIUM AQUIFER FOR BLUEBONNET GROUNDWATER CONSERVATION DISTRICT'S GROUNDWATER MANAGEMENT PLAN. ALL VALUES ARE REPORTED IN ACRE-FEET PER YEAR AND ROUNDED TO THE NEAREST 1 ACRE-FOOT.

Management Plan requirement	Aquifer or confining unit	Results
Estimated annual amount of recharge from precipitation to the district	Brazos River Alluvium Aquifer	14,890
Estimated annual volume of water that discharges from the aquifer to springs and any surface-water body including lakes, streams, and rivers	Brazos River Alluvium Aquifer	59,521
Estimated annual volume of flow into the district within each aquifer in the district	Brazos River Alluvium Aquifer	12,266
Estimated annual volume of flow out of the district within each aquifer in the district	Brazos River Alluvium Aquifer	11,103
Estimated net annual volume of flow between each aquifer in the district	Flow from the Gulf Coast Aquifer System to the Brazos River Alluvium	9,465

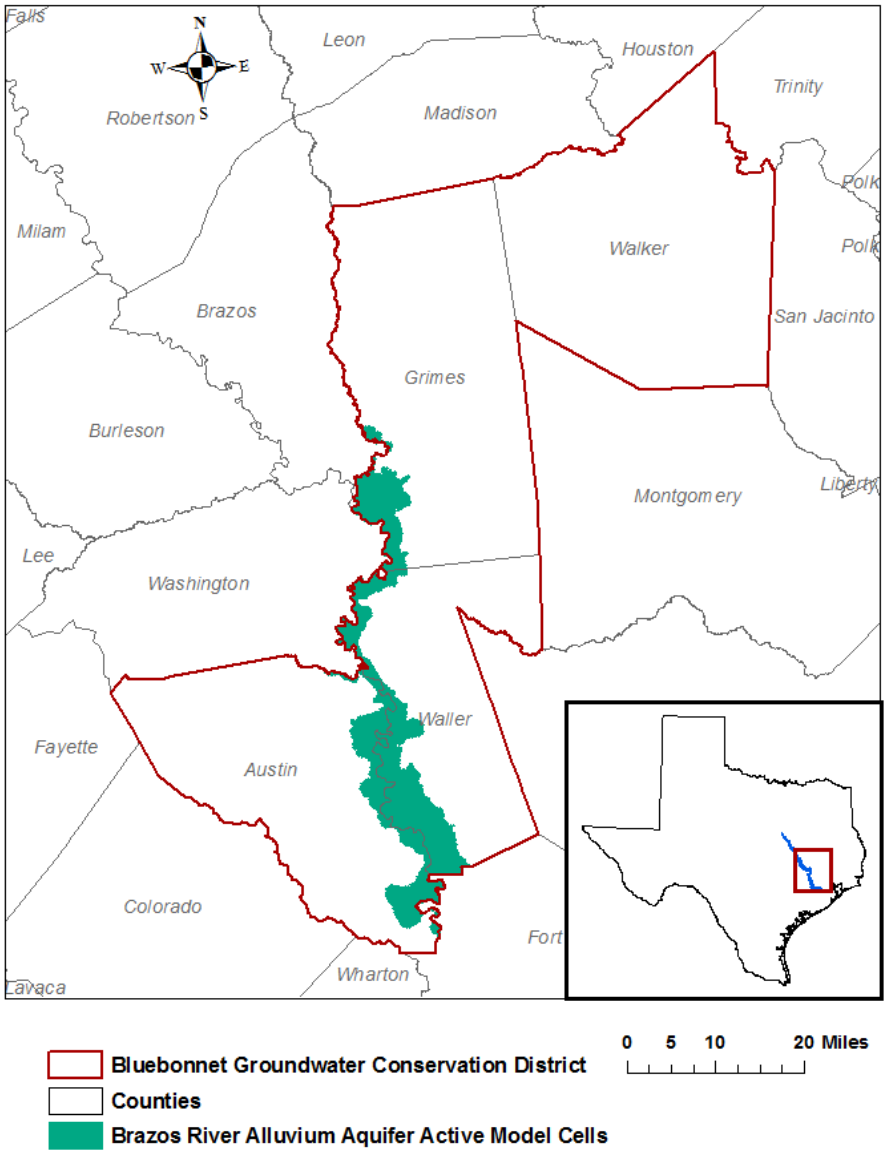

FIGURE 6. AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE BRAZOS RIVER ALLUVIUM AQUIFER FROM WHICH THE INFORMATION IN TABLE 6 WAS EXTRACTED (THE AQUIFER SYSTEM EXTENT WITHIN THE DISTRICT BOUNDARY).

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 – Rules of the Bluebonnet Groundwater Conservation District

APPENDIX C

Rules of the Bluebonnet Groundwater Conservation District

RULES OF THE BLUEBONNET GROUNDWATER CONSERVATION DISTRICT

RULE ADOPTION AND EFFECTIVE DATE HISTORY

Notice Date(s)	Hearing Date(s)	Adopted Date	Effective Date
Nov. 6, 7, 13, 14, 2003	Nov. 18, 19, 2003; Dec. 4, 2003	Jan. 21, 2004	July 1, 2004
Jan. 8, 9, 2004	Jan. 21, 2004	Jan. 21, 2004	July 1, 2004
June 16, 17, 18, 2004	June 23, 2004	June 23, 2004	July 1, 2004
Aug. 10, 11, 12, 2005	Aug. 17, 2005	Aug. 17, 2005	Sept. 1, 2005
Aug. 24, 2012	Sept. 19, 2012	Sept. 19, 2012	Sept. 19. 2012
March 26, 2014	April 17, 2013	April 17, 2013	April 17, 2013
Sept. 25, 2014	Oct. 15, 2014	Oct. 15, 2014	Oct. 15, 2014
Sept. 30, 2015; Oct. 1, 2015	Oct. 21, 2015	Oct. 21, 2015	Oct. 21, 2015
Sept. 28, 29, 2016	Oct. 19, 2016	Oct. 19, 2016	Oct. 19, 2016

In accordance with Section 59 of Article XVI of the Texas Constitution and Act of May 26, 2001, 77th Leg., R.S., ch. 36, September 1, 2001 Tex. Gen. Laws (HB 3655) now codified as Chapter 8825 Special District Local Laws Code, and the non-conflicting provisions of Chapter 36, Water Code the following rules are hereby ratified and adopted as the rules of this District by its Board. Each Rule as worded herein has been in effect since the date of passage and as may be hereafter amended.

The Rules, regulations, and modes of procedure herein contained are and have been adopted to simplify procedures, avoid delays, and facilitate the administration of the water laws of the State and the Rules of this District. To the end that these objectives are attained, these Rules will 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 may these Rules be construed as a limitation or restriction upon the exercise of powers, duties, and jurisdiction conferred by law. These Rules will not limit or restrict the amount and accuracy of data or information that may be required for the proper administration of the law.

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BLUEBONNET GROUNDWATER CONSERVATION DISTRICT

DISTRICT RULES

The District's Rules are promulgated under the District's statutory authority (primarily House Bill 3655 and Texas Water Code Chapter 36) to protect private property rights, balance the conservation and development of groundwater to meet the needs of this 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 or 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.

SECTION 1. DEFINITIONS AND CONCEPTS

RULE 1.1 DEFINITIONS OF TERMS

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

"Abandoned Well" – a well that has not been used for a beneficial purpose for at least one year and/or a well not registered with the District. A well is considered to be in use in the following cases:

1. A non-deteriorated well which contains the casing, pump and pump column in good condition;

2. A non-deteriorated well which has been capped; or

3. An artesian flowing well with casing in good condition.

"Acre-foot" – means the amount of water necessary to cover one acre of land one foot deep, or 325,851 gallons of water.

"Act" – the District's enabling legislation, H.B. No. 3655 of the 77th Texas Legislature, now codified as Chapter 8825 Special District Local Laws Code, in conjunction with Chapter 36, Texas Water Code.

"Actual and Necessary Expenses" – expenses incurred while performing duties associated with District business or representing the District for purposes of the District.

"Administratively Complete" – an application containing the information described in Rule 8.5B

"Aggregate Wells" – a well system comprised of two or more wells that are owned and operated by the same permittee and serve the same subdivision, facility, or area served by a Certificate of Convenience and Necessity (CNN) issued by the Texas Commission on Environmental Quality (TCEQ).

"Aggregate Withdrawal" – the amount of water withdrawn from two or more registered wells in a water system that is permitted under a single permit for a total pumpage volume of all wells in the aggregate system.

"Applicant" – means a person who is applying for a permit or permit amendment.

"Agricultural Well" – means a well used for agricultural activities listed under section 36.001 (19) of the Texas Water Code.

"Aquifer" – a geologic formation that will yield water to a well in sufficient quantities to make the production of water from this formation feasible for beneficial use.

"Beneficial Use" or "Beneficial Purpose" – means use of groundwater for:

1. Agricultural, gardening, domestic (including lawn-watering), stock raising, municipal, mining, manufacturing, industrial, commercial, or recreational purposes;

2. Exploring for, producing, handling, or treating oil, gas, sulfur, lignite, or other minerals; or

3. For any other non-speculative purpose that is useful and beneficial to the users that does not constitute waste.

"Best available science" means conclusions that are logically and reasonable derived using statistical or quantitative data, techniques, analyses, and studies that are publicly available to reviewing scientists and can be employed to address a specific scientific question.

"Board" – means the Board of Directors of the District.

"Capping" – equipping a well with a securely affixed, removable device that will prevent the entrance of surface pollutants into the well.

"Casing" – a tubular structure installed in the excavated or drilled borehole to maintain the well opening.

"Cement Grout" – a mixture of water and cement, which may also include a bentonite clay compound.

"Certificate of Convenience and Necessity" (CCN) – a permit issued by TCEQ which authorizes and obligates a retail utility to furnish, to make available, to render or extend continuous and adequate retail public water or sewer services to a specified geographic area.

"Cistern" – an in-ground storage facility for water. Abandoned or deteriorated facilities will be treated as hand dug wells for sealing, capping, or plugging purposes.

"Closed Loop Well" – a well constructed for circulating water through a continuous length of tubing, generally for earth coupled-heat exchange purposes. See also Earth Coupled Heat Exchange-Closed Loop System. (An exempt well)

"Column Pipe Diameter" – shall refer to the inside diameter of the pump (discharge) column pipe.

"Commercial Use" – the use associated with supplying water to properties or establishments which are in business to build, supply, or sell products; or provide goods, services or repairs and that use water in those processes or use water primarily for employee and customer conveniences (i.e. flushing of toilets, sanitary purposes, and limited landscape watering). This includes use in any other business enterprise for which monetary consideration is given or received, which will typically increase water demand compared to typical, domestic use.

"Commercial Well" – a well producing groundwater for commercial use. (A nonexempt well.)

"Conservation" – those water saving practices, techniques, and technologies that will reduce the consumption of water, reduce the loss or waste of water, improve the efficiency in the use of water, or increase the recycling and reuse of water so that a water supply is made available for future or alternative uses.

"Contested Application" or "Contested Hearing" – means a proceeding where an application has been properly contested and for which a hearing is granted under Section 14 of these Rules.

"Desired Future Condition" – means a quantitative description, adopted in accordance with Section 36.108, of the desired condition of the groundwater resources in a management area at one or more specified future times.

"Deteriorated Well" – means a well, the condition of which will cause or is likely to cause waste of groundwater in the District.

"De-watering Well" – means a well used to remove water from a construction site or excavation, or to relieve hydrostatic uplift on permanent structures.

"Director" – means a person appointed to the Board of Directors of the District.

"Discharge" – means the amount of water that leaves an aquifer by natural or artificial means.

"District" – means the Bluebonnet Groundwater Conservation District.

"District Act" – means the Act of May 26, 2001, 77th Leg., R.S., Ch. 1361, September 1, 2001 Tex. Gen. Laws (HB 3655) now codified as Chapter 8825 Tex. Special District Local Law Code and the non-conflicting provisions of Chapter 36, Water Code.

"District Office" – means the office of the District as established by the Board.

"District April 17, 2002 Rules" – means rules adopted by the District April 17, 2002 pursuant to resolution No. 2002-01, as amended by Resolution 2003-04 adopted April 16, 2003 which establish exemptions and user fees. Nonexempt existing wells are subject to fees under the District April 17, 2002 rules as amended April 16, 2003 until fees are assessed pursuant to individual permit under these Rules.

"Domestic Purposes (Use)" – means the use of groundwater by a person or a household to support domestic activity and includes the following: water for drinking, washing or culinary purposes; for residential landscape watering, or watering of a family garden and/or orchard; for watering of domestic animals; and for residential water recreation uses (e.g., swimming pool, hot tub). Domestic use does not include water used to support activities for which consideration is given or received or for which the product of the activity is sold. Domestic use does not include use by or for a public water system.

"Drilling Authorization" – means authorization issued or to be issued by the District allowing a water well to be drilled.

"Drought" – an aquifer-based determination by the Board of Directors represented by conditions of significant declines in groundwater levels over multiple years.

"Earth Coupled Heat Exchange" or "Closed Loop System" – a well system drilled and equipped for the purpose of utilizing the subsurface as a source of energy for heat exchange in heating and cooling systems. These are sealed systems; no water is to be produced or injected. (An exempt well)

"Evidence of historic or existing use" – means the amount of water that an applicant can reasonably demonstrate to the District which was used prior to July 1, 2004.

"Existing Well" – a well completed before the effective date of these Rules.

"Federal Conservation Program" – the Conservation Reserve Program of the United States Department of Agriculture or any successor program.

"Groundwater" – means water located beneath the earth's surface within the District but does not include water produced with oil in the production of oil and gas.

"Groundwater Reservoir" – a specific subsurface water-bearing reservoir having ascertainable boundaries and containing groundwater.

"Hazardous Conditions" – any groundwater quality condition that may be detrimental to public health or affect the beneficial use of water from the aquifer.

"Hearing" – means a contested hearing when used in the context of a permit or permit amendment application or a show cause proceeding.

"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.

"Hearing Examiner" – means a person appointed by the Board of Directors to conduct a hearing or other proceeding.

"Hydraulic Fracturing" – a process used in the production of oil and gas where water and water mixed with additives injected into the subsurface to hydraulically induce cracks in a target formation through which oil and/or natural gas can be produced.

"Hydrogeological Report" – a report, by a Texas licensed geoscientist or a Texas licensed engineer, that identifies the availability of groundwater in a particular area and formation, addresses the issues of quantity and quality of that water, the impacts of pumping that water on the surrounding environment including impacts to nearby or adjacent wells, and subsidence. The report also will include field data from aquifer testing and geologic samples.

"Inflows" – means the amount of water that leaves an aquifer by natural or artificial means.

"Injection well" – includes:

1. An air conditioning return flow well used to return water used for heating or cooling in a heat pump to the aquifer that supplied the water;

2. A cooling water return flow well used to inject water previously used for cooling;

3. A drainage well used to drain surface fluid into a subsurface formation;

4. A recharge well used to replenish the water in an aquifer;

5. A saltwater intrusion barrier well used to inject water into a freshwater aquifer to prevent the intrusion of salt water into the freshwater;

6. A sand backfill well used to inject a mixture of water and sand, mill tailings, or other solids into subsurface mines;

7. A subsidence control well used to inject fluids into a non-oil or gas producing zone to reduce or eliminate subsidence associated with the overdraft of fresh water.

"Landowner" – means the person who bears ownership of the land surface.

"Landscape Irrigation at Athletic and Recreational Facilities" – means wells producing water for use in landscape and recreational facilities including, but not limited to, golf courses, water parks, campgrounds, athletic fields, and parks. Such wells are not exempt from registration, permitting, and user fees.

"Leachate Well" – means a well used to remove contamination from soil or groundwater.

"Modeled Available Groundwater" – means 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 Section 36.108 of the Texas Water Code.

"Monitoring Well" – means a well installed to measure some property of the groundwater or aquifer it penetrates, and does not produce more than 25,000 gallons of groundwater per year.

"New Well Application" – means an application for a permit for a water well that has not yet been drilled.

"Open Meetings Law" – means Chapter 551, Texas Government Code.

"Operating Permit" – means a permit issued by the District for a water well, allowing groundwater to be withdrawn from a non-exempt water well for a designated period.

"Part of a Manufactured Product" – water used in a process occurring within the District where water is a basic material or ingredient and its form, adaptability, or use is transformed from its original state. Subsequent to the transformation, the product for which water is used is transported outside the District. The term includes, but is not limited to, water used in or as a packaged food product. Examples of the term include canned, bottled or packaged water; soft drinks; alcoholic beverages; medicines; paints; cleaning products; and, concrete. The term does not include unpackaged, raw or treated water transported in bulk out of the District via a water course, pipeline, truck or rail; or, raw or treated water transported and used as a part of a manufactured product created outside the District.

"Potential for Measurable Subsidence" -- a threshold estimate based upon results from local and regional scale model simulations and/or actual field conditions used by the District to determine that subsidence would occur.

"Public Information Act" – means Chapter 552, Texas Government Code.

"Person" – includes corporation, individual, organization, government or governmental subdivision or agency, business trust, estate, trust, partnership, association, or any other legal entity.

"Presiding Officer" – means the President, Vice-President, Secretary, or other Board member presiding at any hearing or other proceeding or a Hearing Examiner conducting any hearing or other proceeding.

"Recharge" – means the amount of water that infiltrates the water table of an aquifer.

"Recreational Water Use" – wells producing water for recreational use, including but not limited to water parks, golf courses, water hazard ponds, and recreational ponds at parks and campgrounds. Such wells are not exempt from registration, permitting and user fees.

"Rules" – means the standards and rules promulgated by the District.

"Section" – means the number section of a survey or block as shown in "Texas Country Farm Plats", 1996 Edition, (Smith Publishing Co.).
"Subsidence" – means the lowering in elevation of the surface of land by the withdrawal of groundwater.

"Texas Commission on Environmental Quality" – TCEQ.

"Texas Rules of Civil Procedure" and "Texas Rules of Civil Evidence" – means the civil procedure and evidence rules as amended and in effect at the time of the action or proceeding. Except as modified by the Rules of the District, the rights, duties, and responsibilities of the presiding officer acting under the Texas Rules of Civil Procedure or the Texas Rules of Evidence are the same as a court, without a jury acting under those rules.

"Total Aquifer Storage" – means the total calculated volume of groundwater that an aquifer is capable of producing.

"Transport" – means pumping, transferring, exporting or moving water outside the District without regard to the manner the water is transferred or moved, including but not limited to discharges into water courses. The terms "transfer" or "export" of groundwater are used interchangeably within Chapter 36, Texas Water Code and these Rules.

"Transport Permit" – means an authorization issued by the District allowing the transfer or transport of a specific quantity of groundwater outside the District for a designated time period. All applicable permit rules apply to transport permits.

"Uncontested Application" – means an application for which a contested hearing is not held before the Board or presiding officer appointed by the Board.

"Variance" – an authorized exception to requirements or provisions of the Rules, granted by the District's Board of Directors.

"Waste" – means Chapter 36.001 (8) Definitions and Section 13 herein.

"Water Meter" – means a water flow measuring device that can accurately record the amount of water produced during a measured time.

"Water Station Well" – means a well from which water is sold for a use that is not connected with the property where the well is located. It is a non-exempt well requiring an individual

permit.

"Well" – means any facility, device, or method used to withdraw groundwater from the groundwater supply within the District.

"Well Abandonment" – leaving a well unused, unattended, and improperly protected from contamination and/or sources of pollution. Abandoned wells must be capped, permanently closed, or plugged in accordance with approved District standards.

"Well Owner" or "Well Operator" – means the person who owns the groundwater where a well is located or is to be located or the person who operates a well or a water distribution system supplied by a well.

"Well System" – means a well or group of wells tied to the same distribution system.

"Withdraw" or "Withdrawal" – means extracting groundwater by pumping or by any other method other than the discharge of natural springs.

"Windmill" – means a wind-driven or hand-driven device that uses a piston pump to remove groundwater.

RULE 1.2 PURPOSE OF RULES

These Rules are adopted to achieve the provisions of the District Act and accomplish its purposes.

RULE 1.3 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. They may not be construed as a limitation or restriction on the exercise of any discretion nor be construed to deprive the District or Board of the exercise of any powers, duties, or jurisdiction conferred by law, nor be construed to limit or restrict the amount and character of data or information that may be required to be collected for the proper administration of the District Act.

RULE 1.4 AMENDING OF RULES

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

RULE 1.5 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.

RULE 1.6 GENDER

Use of masculine pronouns for convenience purposes in these Rules and Bylaws shall include references to persons of feminine gender where applicable. Words of any gender used in these Rules and Bylaws shall be held and construed to include any other gender, and words in singular number shall be held to include the plural and vice versa, unless context requires otherwise.

RULE 1.7 METHODS OF SERVICE UNDER THE RULES

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, in person, by agent, by courier receipted delivery, by certified mail sent to the recipient's last known address, or by telephonic document transfer to the recipient's current telecopier number. Service by mail is complete upon deposit in a post office or other official depository of the United States Postal Service. Service by telephonic 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. If service or delivery is by mail, and the recipient has the right, or is required, to do some act within a prescribed time after service, three (3) days will be added to the prescribed period. Where service by one of more methods has been attempted and failed, the service is complete upon notice publication in the designated official newspapers for the District in Austin, Grimes and Walker Counties.

RULE 1.8 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 rules or provision had never been contained in these Rules.

RULE 1.9 SAVINGS CLAUSE

If any section, sentence, paragraph, clause, or part of these Rules or Bylaws should be held or declared invalid for any reason by a final judgment of the courts of this state or of the United States, such decision or holding shall not affect the validity of the remaining portions of these Rules or Bylaws, and the Board does hereby declare that it would have adopted and promulgated such remaining portions irrespective of the fact that any other sentence, section, paragraph, clause, or part thereof may be declared invalid.

RULE 1.10 REGULATORY COMPLIANCE

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

RULE 1.11 COMPUTING TIME

In computing any period of time prescribed or allowed by these Rules and Bylaws, by order of

the Board, or by any applicable statute, the day of the act, event, or default from which the designated period of time begins to run, is not to be included, but the last day of the period so computed is to be included, unless it be a Saturday, Sunday or legal holiday, in which event the period runs until the end of the next day which is neither a Saturday, Sunday nor a legal holiday.

RULE 1.12 TIME LIMITS

Applications, requests, or other papers or documents required or permitted to be filed under these Rules, Bylaws, or by law must be received for filing at the District within the time limit, if any, for such filing. The date of receipt and not the date of posting are determinative.

RULE 1.13 WORD USAGE

The verbs may, can, might, should, or could are used when an action is optional or may not apply in every case.

The verbs will, shall, or must are used when an action is required.

The verb cannot is used when an action is not allowed or is unachievable.

Words not specifically defined herein shall be defined by their standard usage.

SECTION 2. BOARD

RULE 2.1 PURPOSE OF BOARD

The Board was created to determine policy and regulate the withdrawal of groundwater within the boundaries of the District for managing, conserving, preserving, protecting, and recharging the groundwater within the District, and to exercise its rights, powers, and duties in a way that will effectively and expeditiously accomplish the purposes of the District Act. The Board's responsibilities include, but are not limited to, the adoption and enforcement of reasonable rules and other orders.

RULE 2.2 BOARD STRUCTURE, OFFICERS

The Board consists of the members appointed and qualified as required by the District Act. The Board will elect one of its members to serve as President, to preside over Board meetings and proceedings; two to serve as Vice President to preside in the absence of the President; and one to serve as Secretary to keep a true and complete account of all meetings and proceedings of the Board. The Board may elect officers annually, but must elect officers at the first meeting following the date upon which Board members assume office. Members and officers serve until their successors are elected or appointed and sworn in accordance with the District Act and these Rules.

RULE 2.3 MEETINGS

The Board will hold a regular meeting at least once each quarter as the Board may establish from time to time. At the request of the President, or by written request of at least three members, the Board may hold special meetings. All Board meetings will be held according to the applicable law.

RULE 2.4 COMMITTEES

The President may establish committees for formulation of policy recommendations to the Board, and appoint the chair and membership of the committees. Committee members serve at the pleasure of the President.

SECTION 3. DISTRICT STAFF

RULE 3.1 GENERAL MANAGER

The Board may employ a person to manage the District, and title this person General Manager. The Board delegates to the General Manager full authority to manage and operate the affairs of the District in accordance with the orders, rules, policies and directives of the Board. The Board will determine the General Manager's salary annually as a part of the budget process and review the position of General Manager each year at the end of the third or beginning of the fourth quarter of every fiscal year. The General Manager, consistent with the budget approved by the Board, may employ all persons necessary for the proper handling of business and operation of the District and their salaries will be set by the Board.

If the Board has not appointed a General Manager, the Board shall act to manage the District and may perform any function of the General Manager identified by these Rules.

SECTION 4. DISTRICT

RULE 4.1 MINUTES AND RECORDS OF THE DISTRICT

All documents, reports, records, and minutes of the District are available for public inspection and copying following the Texas Public Information Act. Upon written application of any person, the District will furnish copies of its public records. A copying charge may be required pursuant to policies established by the District. A list of the charges for copies will be furnished by the District.

RULE 4.2 CERTIFIED COPIES

Requests for certified copies must be in writing. Certified copies will be made under the direction of the General Manager. A certification charge and copying charge may be assessed, pursuant to policies established by the Board of directors.

SECTION 5. SPACING REQUIREMENTS

RULE 5.1 REQUIRED SPACING

To minimize as far as practicable the drawdown of the water table, the reduction of artesian pressure, to control subsidence, to prevent interference between wells, to prevent degradation of water quality, or to prevent waste, the District by rule may regulate the spacing of water wells.

A. All wells drilled prior to the effective date of these Rules, shall be drilled in accordance with state law in effect, if any, on the date such drilling commenced.

B. All new wells must comply with the spacing and location requirements set forth under the Texas Water Well Drillers and Pump Installers Administration Rules, Title 16, Part 4, Chapter 76, Texas Administrative Code, unless a written variance is granted by the Texas Department of Licensing and Regulation and a copy of the variance is forwarded to the District by the applicant or registrant.

C. After authorization to drill a well has been granted under a registration or a permit, the well, if drilled, must be drilled within ten (10) yards (30 feet) of the location specified in the permit, and not elsewhere. 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, and these Rules.

D. In addition to the requirements of Rule 5.1B and C, spacing of nonexempt wells may be required to prevent interference between wells and impacts to neighboring wells and to prevent measurable subsidence and shall be determined based on a hydrogeological reports required under Rule 8.5F.The Board may, among other things, require wells to be spaced a certain distance from property lines or adjoining wells.

RULE 5.2 EXCEPTIONS TO SPACING REQUIREMENTS

A. If the applicant presents waivers signed by the adjoining landowner(s) stating that they have no objection to the proposed location of the well site, the spacing requirements may be waived for the new proposed well location.

B. Providing an applicant can show, by clear and convincing evidence, good cause why a new well should be allowed to be drilled closer than the required spacing of Rule 5.1, the issue of spacing requirements will be considered during the contested case process. If the Board chooses to grant a permit to drill a well that does not meet the spacing requirements, the Board must limit the production of the well to ensure no injury is done to adjoining landowners or the aquifer.

C. The Board or General Manager if authorized by the Board, may, if good cause is shown by clear and convincing evidence, enter special orders or add special permit conditions increasing or decreasing spacing requirements.

SECTION 6. PRODUCTION LIMITATIONS

RULE 6.1 MAXIMUM ALLOWABLE PRODUCTION

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, or to prevent waste, the District by rule may regulate the production of groundwater.

A. Before granting or denying a permit for a new well, the District shall consider whether to regulate the production of groundwater by:

1. Setting production limits on wells;

2. Limiting the amount of water produced based on acreage or tract size;

3. Limiting the amount of water that may be produced from a defined number of acres assigned to an authorized well site;

4. Limiting the maximum amount of water that may be produced on the basis of acre-feet per acre or gallons per minute per well site per acre;

5. Managed depletion;

6 Controlling and preventing measurable subsidence; or,

7. Any combination of the methods listed above in paragraphs (1) through (6).

B. The District may impose more restrictive permit conditions on new permit applications and permit amendment applications to increase use by historic or existing users, provided that:

1. Such limitations apply to all subsequent new permit applications and increased use by historic or existing users, regardless of type or location of use;

2. Such limitations bear a reasonable relationship to the existing District management plan; and

3. Such limitations are reasonably necessary to protect existing use.

C. In regulating the production of groundwater based on tract size or acreage, the District may consider the service needs of a retail public water utility as defined in these Rules.

D. To the extent possible, the District shall issue permits up to the point that the total volume of exempt and permitted groundwater production will achieve an applicable desired future condition. In issuing permits, the District shall manage total groundwater production on a long-term basis to achieve an applicable desired future condition and consider;

1. The modeled available groundwater determined by the executive administrator;

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

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

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

5. Yearly precipitation and production patterns.

E. In issuing a permit for a production volume based upon existing or historic use, the District will not discriminate between volume associated with land or wells on land irrigated for production and land or wells on land that was irrigated for production or participating in a federal conservation program.

SECTION 7. OTHER DISTRICT ACTIONS AND DUTIES

RULE 7.1 DISTRICT MANAGEMENT PLAN

A. Following notice and hearing, the District adopted a comprehensive management plan which was submitted and certified by the Texas Water Development Board on November 18, 2004 and April 7, 2010. The Management Plan was amended and approved by the Texas Water Development Board in October 2013. The management plan was adopted and addresses:

1. Providing the most efficient use of groundwater;

2. Controlling and preventing waste of groundwater;

3. Controlling and preventing subsidence;

4. Addressing conjunctive surface water management issues;

5. Addressing natural resource issues;

6. Addressing drought conditions;

7. Addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control, where appropriate and cost-effective; and.

8. Addressing the desired future conditions adopted by the District under Section 36.108.

The District will review the plan at least every fifth year and shall adopt amendments as necessary, after notice and hearing, that address, among other things:

1. Recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control, where appropriate and cost effective; and,

2. The desired future conditions of groundwater resources after desired future conditions of the relevant aquifers within the District are adopted during joint planning in the management area as described in Rule 7.2.

B. The District Management Plan, and any amendments thereto, shall be developed using the District's best available data and forwarded to the regional water planning group for use in their planning process. The District Management Plan must also use the groundwater availability modeling information provided by the Texas Water Development Board together with any available site-specific information that has been provided by the District to the Executive Administrator of the Texas Water Development Board for review and comment before being used in the plan. The District shall use the Rules of the District to implement the Management Plan.

RULE 7.2 JOINT PLANNING IN MANAGEMENT AREA

A. Upon completion and approval of the District's comprehensive management plan, as required by §§36.1071 and 36.1072, Texas Water Code, the District shall forward a copy of the new or revised management plan to the other groundwater districts in its Texas Commission on Environmental Quality designated management area. The Board shall consider the plans of the other districts individually and shall compare them to other management plans then in force in the management area.

B. The Board President, or in his absence, the General Manager, along with the other districts in the management area, shall meet at least annually to conduct joint planning with the other districts in the management area and to review the management plans and accomplishments for the management area.

C. The requirements of joint planning are governed by Texas Water Code Section 36.108.

SECTION 8. REGISTRATION AND PERMITTING

RULE 8.1 REGISTRATION, AUTHORIZATION AND PERMITS

A. All wells within the District are required to be registered with or permitted by the District on Forms approved by the General Manager.

B. All water wells exempt under these Rules from the requirement to obtain a permit must be registered with the District by either the well owner or the well operator.

C. Information on the registration form shall include the owner's name, mailing address, well location, well size, use and any other information the General Manager may determine to be of need. Registration forms for exempt wells need not be sworn.

D. If the exempt well is in existence before July 1, 2004, the well owner or operator shall file with the District on form(s) prescribed by the General Manager an application for certificate of registration. After review and the determination by the General Manager that the well is exempt, the owner or operator shall be issued a certificate of registration. All registrations for existing exempt wells shall be filed with the District on or before July 1, 2005.

E. For all new exempt wells (not in existence before July 1, 2004) the owner shall apply for a drilling authorization and request that the well be registered. The General Manager shall review the drilling application and make a preliminary determination on whether the well meets the exemptions provided in these Rules. If it is concluded that the applicant seeks a drilling authorization for a well that will be exempt, the General Manager shall issue the drilling authorization to the applicant. After the exempt well is drilled and upon filing of the drillers log and completion report with the District, the General Manager shall issue to the owner or operator a registration certificate.

F. No fee will be charged for the registration of exempt wells.

G. A District well registration identification (ID) number will be issued to each well registered with or permitted by the District.

RULE 8.2 AUTHORIZATION TO DRILL, INSTALL PUMPS AND EQUIPMENT

A. DISTRICT AUTHORIZATION REQUIRED

No person shall construct, drill, modify, complete, change type of use, perform dye-tracing operations, plug, abandon, or alter the size of a well in the District without District authorization. Maintenance or repair of a well which does not increase production capability of the well to more than its authorized or permitted production rate does not require District authorization.

B. DISTRICT APPROVAL REQUIREMENTS

A District-approved well drilling authorization, application to construct, drill, or modify a well must be obtained prior to drilling, removing casing, boring, altering the size of the bore, re-boring the existing hole, or performing other modification activities. A person who requests authorization to construct, drill, or modify a well that will be used for nonexempt purposes or to transport groundwater out of the District must also obtain a pumpage permit or a transport permit. No drilling or modification activities authorized by the District shall commence until the District has been provided with twenty-four (24) hour advance notification. Upon approval of the application, the General Manager or the General Manager's designated representative shall advise the applicant of the well use classification and whether a permit is necessary. If the well does not have an existing state well number, a temporary well number will be issued along with authorization to drill, plug or modify.

C. DRILLING AUTHORIZATION TERM

Unless the Board specifies otherwise, an approved well drilling authorization application for an exempt well is effective for one (1) year from date of issuance provided no change in ownership or proposed use occurs prior to drilling. Authorizations may be extended by action of the General Manager upon request of the applicant but not for a period to extend beyond three (3) years total time.

Unless the Board specifies otherwise, an approved well drilling authorization application for a non-exempt well is effective for two (2) years from date of issuance provided no change in ownership or proposed use occurs prior to drilling. Authorizations may be extended by action of the General Manager upon request of the applicant but not for a period to extend beyond three (3) additional years.

D. DRILLING RECORDS

Complete records shall be kept and reports thereof made to the District concerning the drilling, equipping, and completion of all wells drilled in the District. Such records shall include an accurate driller's log, depth to water, any

electric log that shall have been made, and such additional data concerning the description of the well, its discharge, and its equipment as may be required by the Board. Such records shall be filed with the District within sixty (60) days after drilling and/or completion of the well.

No person shall operate any well drilled and equipped within the District, except operations necessary to the drilling and testing of such well and equipment, unless or until the District has been furnished an accurate driller's log, any special purpose log or data which have been generated during well development, and a registration of the well correctly furnishing all available information required on the forms furnished by the District.

E. DRILLING AND COMPLETION OF WELLS

Drilling and completion of wells must satisfy applicable requirements of the TCEQ, the Texas Department of Licensing and Regulation's Water Well Drillers and Pump Installers Program, and the District Well Construction Standards. The Board of Directors shall adopt, and may periodically amend, Well Construction Standards for wells drilled within the District. Approved Well Construction Standards will be made available to the public at the District office.

F. INSTALLATION OF WELL PUMPS AND EQUIPMENT

Well pumps and equipment shall only be installed or serviced in wells registered with the District.

G. SUSPENSION

The General Manager may suspend an authorization for a well permit, a permit amendment, or a transport permit for failure to comply with the requirements of Rule 8.2

H. APPLICABILITY TO EXEMPT WELLS

The requirements of Rule 8.2 are applicable to all wells drilled in the District, including exempt wells.

I. GROUNDWATER TRACING OPERATIONS PLAN

Prior to performing any type of dye tracing or other form of groundwater tracing operations within the District's jurisdictional boundary where materials are introduced into surface water or groundwater, the person proposing such operations must submit an operations plan for the proposed tracer study to the District for approval at least 30 days before the proposed starting date of the study. This plan must describe the entire proposal including: the responsible party; type of tracer and any visual, taste, chemical, or health considerations;

rationale or need for the proposed study; injection and recovery points; methods to be employed; expected flow paths; expected project term; method of notification of affected well, spring, and property owners; any contingency plans; and any other information involving the proposed study. These studies must not conflict with any part of Rule 13 concerning pollution. District approval of any tracing plan may be denied if the District determines that the proposed plan is in conflict with other ongoing tracing studies.

J. AQUIFER STORAGE AND RECOVER WELLS

ASR recovery wells that are associated with an aquifer storage and recovery project require an operating permit if the amount of groundwater recovered from the wells exceed the volume authorized by TCEQ to be recovered under the project.

RULE 8.3 PERMITS AND EXEMPTIONS

A. No person shall drill, pump, or operate a well without first submitting and obtaining approval of a well development/registration application, pumpage permit, or transport permit from the District. A violation occurs on the first day the drilling, alteration, or operation begins and continues each day thereafter until the appropriate authorization or permits are approved.

B. The following wells are required to be registered and to obtain approval for drilling, but are not required to have a pumpage or transport permit from the District:

1. A well or wells used for domestic use on a single tract of land.

2. Agricultural wells.

3. 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, provided that the person holding the permit is responsible for drilling and operating the water well and the well is located on the same lease or field associated with the drilling rig. Note, if the sole purpose of the well is no longer to supply water for a rig that is actively engaged in drilling or exploration operations, the well is no longer exempt and must be permitted by the District.

4. The drilling of a water well authorized under a permit issued by the Railroad Commission of Texas under Chapter 134, Natural Resources Code, or for production from any such well to the extent the withdrawals are required for mining activities regardless of any subsequent use of the water. An entity holding a permit issued by the Railroad Commission of

Texas under Chapter 134, Natural Resources Code that authorizes 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.

Note, if the withdrawals from the well are no longer necessary for mining activities or are a greater amount than necessary for mining activities, then the well is no longer exempt and must be permitted by the District. Such well remains exempt from District spacing requirements.

5. Monitoring wells.

6. Aquifer storage and recovery injection wells and recovery wells (unless the well recovers more than authorized by the TCEWQ, which then requires a permit from the District).

C. The District may not restrict the production of any well that is exempt from permitting under Subsection (B).

D. The District may not deny an application for an authorization to drill and a permit to produce water for hydrocarbon production activities if the application meets all applicable Rules as promulgated by the District.

E. A water well exempted under Subsection B shall:

1. Be registered in accordance with Rules promulgated by the District; and

2. 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

F. The driller of a well exempted under Subsection B shall file the drilling log with the District.

G. A well to supply water for a subdivision of land for which a plat approval is required by Chapter 232, Local Government Code, is not exempted under Subsection C.

H. Groundwater withdrawn from a well exempt from permitting or regulation under this section and subsequently transported outside the boundaries of the District is subject to any applicable District production and export fees. When groundwater is transported outside the District from an exempt well, the owner is responsible

for paying production and transport fees under Rule 9 and must provide monthly water use to the District to be used in calculating fees.

I. This Rule applies to water wells, including water wells used to supply water for activities related to the exploration or production of hydrocarbons or minerals. This Rule does not apply to production or injection wells drilled for oil, gas, sulphur, uranium, or brine, or for core tests, or for injection of gas, saltwater, or other fluids, under permits issued by the Railroad Commission of Texas.

RULE 8.4 TRANSFER OF GROUNDWATER OUT OF THE DISTRICT

A. Transport Permit Required

1. Before any person transports any water out of the District from a well that is located within the District, the person must obtain a transport permit from the District. Application for and the granting of a transport permit shall be in accordance with Section 10 of these Rules.

RULE 8.5 APPLICATION FOR REGISTRATION, PERMITS, WELL PLUGGING, WELL DRILLING, OR WELL MODIFICATION AUTHORIZATION

A. Application Requirements for Non-Exempt Wells

1. Each original application for well registration, pumpage permits, transport permits, well plugging, well drilling, amendments, or well modification authorization requires a separate application. Application forms will be provided by the District and provided to the applicant by request. An application for a pumpage permit and transport permit shall be in writing and sworn. Applications shall contain:
   a. The name and mailing address of the applicant and the name and address of the owner of the land, if different from the applicant, on which the well is to be located;
   b. If the applicant is not the owner of the property, documentation establishing the applicable authority to construct and operate a well on the owner's property for the proposed use;
   c. A statement of the nature and purpose of the proposed use and the amount of water to be used for each purpose.
   d. Availability of feasible and practicable alternative supplies to the applicant.
   e. A statement of the projected effect of the proposed withdrawal on the aquifer or aquifer conditions, depletion, subsidence, and effects on existing permit holders or other groundwater users in the District; if required under Rule 8.5F an applicant shall submit Phase I and Phase II hydrogeological reports prepared by a Texas licensed geoscientist or Texas licensed engineer to evaluate these factors in accordance with Rule 8.5F;

f. The applicant's water conservation plan and, if any subsequent user of the water is a municipality or entity providing retail public water services, the water conservation plan of that municipality or entity shall also be provided. In lieu of a water conservation plan, a declaration that the applicant and/or a subsequent user if any subsequent user is a municipality or entity providing retail public water services will comply with the District's management plan, when one is adopted;

g. The location of the well(s), the estimated rate at which water will be withdrawn, the production capacity of the well(s), and where the water is proposed to be used;

h. A well closure plan or a declaration that the applicant will comply with well plugging guidelines and report closure to the applicable authorities, including the District;

i. The identity of the well driller, including the well driller's license number;

j. The names and addresses of the property owners, and the location of water wells within a half-mile radius of the location of the well(s) from which water is to be produced;

k. To the extent required under Rule 8.5D, proof of notification of the application to all landowners within a half (1/2) mile radius of the property where the well or wells are located and to all well owners and political subdivisions within a half (1/2) mile radius of any of the proposed production wells, along with the publisher's affidavit and tear sheet showing publication of the notice;

l. For wells requiring hydrogeological reports under Rule 8.5F, an analysis explaining how the groundwater production proposed in the application will impact the desired future conditions applicable to the District; and,

m. Any other information required by the General Manager or Board.

2. Applications for well registration, pumpage permits, transport permits, well plugging, well drilling, amendments, or well modification authorization shall be made in the name of the well owner or property owner on a form or forms provided by the District. The sworn, original application must be submitted and signed by the owner or an authorized agent of the owner, who may be required to provide the District with a notarized authorization from the owner. This agent may be the well driller, lessee or renter of the property or well, power of attorney, trustee, or other appropriate agent. District staff will determine if an application is administratively complete.

B. Completeness of Applications for Non-Exempt Wells

1. An administratively complete application will consist of the submission to the District of an original, completed, signed, and notarized application,

payment of all applicable application fees, inspection fees, water use fees, and other District-imposed fees, submission of any required maps, documents, ownership information, or supplementary information required by the District, the Board, the General Manager, or the General Manager's designated representative, the completion of any 20-day public response period initiated through a public notice requirement, mailed notice to the extent required under Rule 8.5D below, and the submission of a hydrogeological report if required by Rule 8.5F, and any other documentation required by the District as part of the application. The District will not take action on an application which is not administratively complete or which has preceded in a manner not consistent with District Rules. Applicants submitting incomplete applications will be notified by the District in writing. Moreover, as described under Rule 8.5B3 the General Manager will continue a technical review of the application even after it is declared administratively complete.

2. An application for a permit will not be complete until the applicant has provided the District with proof of notice by publication and mail to the extent required by Rule 8.5D below and a twenty (20) day public response period has passed (a) since the first day of publication in a newspaper, designated by the District for the publication of legal notices, in the county where the permit is requested or (b) since the date individual notice is mailed to property and well owners as required under Rule 8.5D, whichever is later.

3. After an application has been determined to be administratively complete, the General Manager will conduct a technical review of the application to determine whether the application satisfies state and District regulatory requirements. If the General Manager determines that additional materials are necessary to complete technical review, the General Manager will notify the applicant by mail of any such deficiencies. Within 10 days of receipt of the letter, the applicant shall submit the additional information. For good cause shown, the General Manager may grant an extension of time for submission of additional information if a request is made within 5 days of the receipt of the General Manager's request. If the additional information is not timely received, and without the information the General Manager is unable to form a recommendation on the application, the General Manager will recommend application denial. If additional information is not required to complete the technical review, the General Manager will provide a statement of position and draft permit including any special conditions for the Board's consideration prior to or at the time the Board acts on an application.

C. Fees Included with Application for Non-Exempt Wells

1. The application must be accompanied by all applicable fees described under Rule 9. The application must be submitted and all applicable fees must be paid to the District before notice is published and mailed, to the extent required by Rule 8.5D below. Payment of all fees, including water use fees, remain the responsibility of the property owner.

D. Notice for Non-Exempt Wells

1. Notice is required for any application to permit new wells or modify existing wells to increase production capacity when the well will be completed with an inside casing diameter of eight (8) inches or greater and will be used for public water supply, municipal, commercial, industrial, or other non-exempt purposes. Such notices shall be published by the Applicant in a newspaper designated by the District for the publication of legal notices in the county where the permit is issued in a form approved by the District. All permit applications described above must provide notice by certified mail, return receipt requested, to all property owners within a half (1/2) mile radius of the well that is the subject of the application and to all well owners and political subdivisions within a half (1/2) mile radius of any of the proposed production wells. Notification of any property owner served by a retail public water utility is not required of any applicant if notice is provided to the retail public water utility.

2. Prior to providing public notice, an applicant must submit the permit application and any District required documents to the District and pay all appropriate fees. All public notice requirements must be completed at least 185 days prior to the applicants anticipated need for groundwater production to allow for public response, scheduling and holding a public hearing, and Board consideration and action.

3. All public notices covered by this section must contain at least the following information:

    a. The name and address of the applicant,
    b. The date the application was filed,
    c. The location and a description of the well that is the subject of the application, and,
    d. A brief summary of the information in the application.

4. The District must be provided with:
    a. Proof of publication of public notice,
    b. Proof of public notice to property and well owners and political subdivisions by certified mail; and

c. A list of the names and addresses of the property and well owners notified by certified mail.

E. Decision to Hold Contested Hearing in Connection with Non-Exempt Wells

1. On any application for well permits, the General Manager will schedule a contested hearing if the General Manager determines that a contested hearing will be beneficial to the District's consideration of the application, if the Applicant request a hearing, or if directed by the Presiding Officer following the receipt of timely requests for a contested hearing from any affected person in accordance with Section 14 of these Rules. The General Manager shall make a determination whether to schedule a preliminary hearing on an application within sixty (60) days of the date the application is complete or, if required, the expiration of the twenty (20) day public response period. A preliminary hearing on an application will be held within thirty-five (35) days of the date the determination to schedule a hearing is made. Under no circumstances will any public hearing be held prior to the termination of the 20 day public response period. The District shall act on the application within sixty (60) days after the conclusion of the final hearing. Except for hearings referred to the State Office of Administrative Hearings, the final hearing may occur at the same time and immediately following the preliminary hearing. The failure of the District to comply with these deadlines shall not affect the District's jurisdiction over or the merits of an application. Action by the District Board may be taken at a regular, special or called Board meeting.

2. The District's Board or the General Manager may consolidate any hearings or actions on an application for a transport permit with any hearings or actions on applications for other permits filed by the same applicant or property owner.

F. Hydrogeological Reports Required for Non-Exempt Wells

1. Applicants seeking to (a) permit a nonexempt well completed with an inside casing diameter of eight (8) inches or greater, (b) permit wells to be completed as an aggregate well system_or (c) increase production or production capacity of a Public Water Supply, Municipal, Commercial, or Industrial, well with an inside casing diameter of eight (8) inches or greater, shall submit to the District a current Phase I and Phase II hydrogeological report addressing the area of influence, draw down, recovery time, subsidence and other pertinent information in accordance with the guidelines developed and required by the District. Phase I and Phase II reports must include the information required by *Guidelines for Preparation of Hydrogeologic Reports for Submission in Support of Applications for the Permitted Use Of Groundwater*, originally adopted October 15, 2014, as amended, Hydrogeological reports must be prepared

and sealed by a Texas licensed professional geoscientist or a Texas licensed engineer.

2. The Phase I and Phase II reports must include hydrogeologic information addressing, and specifically related to, the proposed water pumpage rate intended for the well. Applicants may not rely solely on reports previously filed with or prepared by the District. If a Phase I hydrogeological report is required by this section, the hydrogeological report is a required component of all administratively complete permit applications.

3. Phase I hydrogeological reports may be supplemented with information such as test-hole, monitor well, and aquifer testing data. An applicant, who incurs the cost to include such supplemental information in a Phase I hydrogeological report, bears the risk that the Board may deny the permit application even with the supplemental data.

4. Phase II hydrogeological reports, if required, must be submitted after permit issuance and must address permitted well(s) equipped and tested for ultimate permitted volume and use. Phase II hydrogeological reports must be submitted within 180 days of well construction. Data and analysis from the Phase II testing will be used to update and refine the analysis of permitted pumpage impacts from the Phase I report. These Phase II data and analyses will also be used to address production parameters and permit conditions.

5. After notice to the applicant and affected persons and an opportunity for a hearing, the Board will consider the results of the Phase II hydrogeological report may modify a permit with special conditions and changes to the permitted volume of groundwater. A Phase II hydrogeological report must address any special conditions in a permit.

G. Registration of Exempt Wells

Owners of wells exempted under the Rules from obtaining a permit must still submit a District-approved form for District well registration and well drilling and pay applicable fees. Such exempted wells are still subject to District Well Construction Standards. The form shall be in writing, may be unsworn, and shall contain:

1. The name and mailing address of the applicant and the name and address of the owner of the land, if different from the applicant, on which the well is to be located;

2. If the applicant is not the owner of the property, documentation establishing the applicable authority to construct and operate a well on the owner's property for the proposed use;

3. A statement regarding the basis for asserting that the well will be exempt under Rule 8.3.

4. A statement of the nature and purpose of the proposed use and the amount of water to be used for each purpose.

5. The location of the well(s), the estimated rate at which water will be withdrawn, the production capacity of the well(s), and where the water is proposed to be used;

6. A well closure plan or a declaration that the applicant will comply with well plugging guidelines and report closure to the applicable authorities, including the District;

7. The identity of the well driller, including the well driller's license number; and

8. Any other information required by the General Manager or Board.

RULE 8.6 PERMITS FOR EXISTING WELLS

A. Any well existing on or before July 1, 2004, which has not been permitted and which is not exempted from permitting under Rule 8.3 (B), is entitled to obtain a permit from the District in the manner provided by this Rule.

B. Applications for permits for existing nonexempt wells must be filed with the District. For the administrative convenience of the District, and to aid the District in the performance of its duties, the filing and District acceptance of an application for existing nonexempt well permits should be scheduled with the General Manager in accordance with due dates set by the Board. Failure of the District to provide notice of the requirements imposed by District Rules shall not be grounds for existing wells failing to meet the requirements. Any owner of an existing nonexempt well that was not scheduled for permitting by the District and who failed to apply for a permit by one year after the effective date of these Rules, may make application for a permit pursuant to Rule 8.6; provided, however, if the well was in operation during the period from the effective date of these Rules, until the application was made, in addition to the normal requirements, past water use fees shall be paid for each year of operation.

C. Upon completion of a sworn application under Rule 8.5 containing the information required under Subsection 8.5A.(1), and such other information as may be required by the District, and upon payment of the applicable processing

fee, and any required past water use fees, the District will issue a permit to the applicant in accordance with the applicable provisions of these Rules.

RULE 8.7 ACTION ON PERMITS

A. Permits. Before approving, modifying, delaying, or denying a permit, the District shall, at a minimum, consider whether:

1. The application conforms to the requirements of these Rules and is accompanied by the appropriate fees;

2. The proposed use of water is dedicated to non-speculative, beneficial use at all times;

3. The proposed use of water would not cause or contribute to waste and the applicant has agreed to avoid waste and achieve water conservation;

4. The proposed use of water would not present the possibility of unreasonable interference with the production of water from exempt, existing, or previously permitted wells or other surface water resources;

5 The application satisfies District Rule 8.18 regarding prevention and control of subsidence

6. The proposed use of water would not be otherwise contrary to the public welfare;

7. The proposed use of water is consistent with the District's approved Management Plan or an approved regional water supply plan; and

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

9. The water is used within the term of the permit.

B. In order to protect the public health and welfare and to conserve and manage the groundwater resources in the District during times of District-declared drought, the District may, place special requirements on, modify, delay, or deny a pumpage permit for a new well during a District-declared drought.

C. The District may impose more restrictive permit conditions on new permit applications and permit amendment applications to increase use by historic users if the limitations:

1. Apply to all subsequent new permit applications and permit amendment applications to increase use by historic users, regardless of type or location of use;

2. Bear a reasonable relationship to the existing District Management Plan; and

3. Are reasonably necessary to protect existing use.

D. Time for Action

After the application is administratively complete the District shall promptly consider and act on each administratively complete application (see Rule 8.5B.). If a hearing is called to consider any of the foregoing applications, the District will conduct a preliminary hearing within thirty-five (35) days after the General Manager determines that a hearing is necessary, and the District's Board will act to approve, modify, delay, or deny the application within sixty (60) days after the date of the final hearing. Except for hearings referred to the State Office of Administrative Hearings, the final hearing may occur at the same time and immediately following the preliminary hearing. The failure of the District to act within this time period shall not affect the District's jurisdiction over or the merits of an application. An administratively complete application requires submission of all information set forth within these Rules. If any applications for nonexempt wells are administratively incomplete 90 days after receipt of the application by the District, the District, by certified mail, return receipt requested, will notify the applicant of the missing documentation and the need to complete the application. Applications that remain administratively incomplete will expire 90 days following the above-mentioned notice to the applicant. Well development/registration applications for exempt wells expire one year from the date of approval (see Rule 8.2 C). The General Manger may extend the review period in this paragraph for a reasonable period upon written notice to the applicant if the General Manager determines that some specific aspect of the application requires a review of more than the two ninety-day periods. Upon expiration of the application, the applicant may request reconsideration by the Board within ten (10) days of receiving notice of an expired application.

E. Action by General Manager

The Board or District's General Manager shall act for the District in approving any application for which a contested hearing is not required. The General Manager will schedule a hearing for permit applications if the General Manager determines that a contested case hearing will be beneficial to the District's consideration of the application or if the General Manager receives timely requests for a contested hearing from any affected person in accordance with Section 14 of these Rules.

F. Action by the District Board

For all applications for which a contested hearing is required, the Board shall act on a permit or permit amendment application no later than the 60th day after the date the final hearing on the application is concluded. For a hearing conducted by the State Office of Administrative Hearings, the final hearing on the application concludes on the date the State Office of Administrative Hearings proposal for decision, any exceptions to the proposal for decision, and any replies to exceptions to the proposal for decision are presented to the Board of Directors. Hearings will be conducted in accordance with Section 14 of these Rules.

RULE 8.8 TERM OF PERMITS

A. Except as provided for in Section C below, all permits are effective for a period of thirty years (30 years) from the date of issuance, unless otherwise stated on the permit. A permit may be issued for a term longer than thirty (30) years, except as provided for in Section C below, when to do so aids the District in the performance of its duties and accomplishing the goals of the Act. The District may stagger permit terms. Permits are subject to modification during the permit term as provided by permit conditions.

B. A transport permit shall specify the period for which water may be exported. The period specified by the transport permit shall be:

1. At least three years if construction of a conveyance system has not been initiated prior to the issuance of the permit; or

2. At least 30 years if construction of a conveyance system has been initiated prior to the issuance of the permit.

C. Notwithstanding the period specified in Subsection B during which water may be exported under a permit, the District may periodically review the amount of water that may be exported under the permit and may limit the amount if additional factors considered in Rule 10.4E warrant the limitation, subject to Rule 10.4C. The review described by this subsection may take place not more frequently than the period provided for the review or renewal of regular permits issued by the District. In its determination of whether to renew a permit issued under this section, the District shall consider relevant and current data for the conservation of groundwater resources and shall consider the permit in the same manner it would consider any other permit in the District.

RULE 8.9 PERMIT REVIEW AND RENEWAL

The General Manager without hearing may renew a permit for wells if the terms and conditions of the permit (including maximum authorized withdrawal) are not changed in accordance with Section 36.1145 of the Water Code. The General Manager will review all permits on an annual basis.

RULE 8.10 PERMIT AMENDMENTS

A. Minor amendments include:

1. Transfers of ownership without any change in use;

2. Reductions in use or changing use of a well from nonexempt to exempt;

3. Increases in use of 10% or less of permitted pumpage for users permitted for more than 12,000,000 gallons annually;

4. Increases of up to 2,000,000 gallons annually for users permitted for 12,000,000 gallons or less; and

5. Converting two or more wells individually permitted by the same permittee into an aggregate system under one permit.

All other amendments, including all amendments pertaining to transport permits, are major amendments.

B. The General Manager (or the General Manager's designated representative) may grant minor amendments without public notice and hearing. If two or more minor amendments are requested during any fiscal year for an increase in pumpage, and the combined increase in volume requested in the amendments exceeds the limits described in Section 8.10A, then the amendment which results in a pumpage increase in excess of the limits specified in Rule 8.10A will be considered a major amendment subject to Rule 8.10C.

C. Major amendments shall be subject to all the requirements and procedures applicable to issuance of a pumpage permit for a new well or, if applicable, a transport permit.

D. Application for a permit amendment shall be made upon forms supplied by the District and must be accompanied by an application processing fee established by the Board. No application-processing fee will be required from permittees requesting a decrease in permitted pumpage or changing use of a well from nonexempt to exempt.

E. Permittees requesting an increase in pumpage volume must have a District approved User Conservation Plan and a District approved User Drought Contingency Plan (UDCP) on file at the District office, and must be in compliance with District Rules and policies regarding conservation-oriented rate structures. Permittees will be required to update their UDCP to reflect their new permitted pumpage amount and/or new ownership within ninety (90) days of permit approval.

F. Amendments to Operating Permits at Time of Renewal.

1. If a permittee, in connection with the renewal of a permit or otherwise, requests a change that requires an amendment to the permit under District rules, the permit as it existed before the permit amendment process remains in effect until the later of:
   a. The conclusion of the permit amendment or renewal process, as applicable; or
   b. Final settlement or adjudication on the matter of whether the change to the permit requires a permit amendment.

2. If the permit amendment process results in the denial of an amendment, the permit as it existed before the permit amendment process shall be renewed under Rule 8.9 above without penalty, unless the applicant is delinquent in paying a fee or civil penalty or is subject to a pending enforcement action for a substantive violation of a District permit, order, or rule that has not been settled by agreement with the District or a final adjudication.

3. The District may initiate an amendment to an operating permit, in connection with the renewal of a permit or otherwise, in accordance with the District rules. If the District initiates an amendment to an operating permit, the permit as it existed before the permit amendment process shall remain in effect until the conclusion of the permit amendment or renewal process, as applicable.

RULE 8.11 PERMITS: ISSUANCE AND FORMAT

A. Permits. The permit shall include the following information in a format approved by the General Manager: the name and address of the person to whom the permit is issued; the state well number and/or District-assigned ID number of the well(s); the date the permit is to expire; the maximum withdrawal authorized; and any other terms and conditions necessary to accomplish the purposes of the Act.

B. Transport Permits. A transport permit may be issued as a consolidated permit, including consolidation with an aggregate permit under Rule 8.15 that authorizes drilling, production, and transporting of water from the District. The application

for and the granting of a transport permit shall be considered and granted in accordance with the provisions of Section 10 of these Rules.

RULE 8.12 PERMIT CONDITIONS AND REQUIREMENTS

All permits are granted subject to the Rules, regulations, orders, special provisions, and other requirements of the Board, and the laws of the State of Texas. In addition, each permit issued shall be subject to the following conditions and requirements:

A. The permit is granted in accordance with the provisions of the District Act in conjunction with Chapter 36, Texas Water Code, and the Rules, regulations and orders of the District as may be in effect from time to time, and acceptance of the permit constitutes an acknowledgment and agreement that the permittee will comply with all the terms, provisions, conditions, requirements, limitations, and restrictions embodied in the permit and with the Rules, regulations, and orders of the District.

B. The permit confers no vested rights in the holder and the permit is non-transferable. Written notice must be given to the District by the permittee prior to any sale or lease of the well covered by the permit. The permit may be revoked or suspended for failure to comply with its terms, which may be modified or amended pursuant to the requirements of the Act and any applicable Rules, regulations and orders of the District.

C. The drilling and operation of the well for the authorized use shall be conducted in such a manner as to avoid waste, pollution, or harm to the aquifer.

D. The permittee shall keep accurate records, on a monthly basis, of the amount of groundwater withdrawn, the purpose of the withdrawal, and, for any transporting of water outside the District, the amount of water transported and the identity and location of the recipients, and such records shall be submitted to the District office on a monthly basis, and shall also be available for inspection at the permittee's principal place of business by District representatives. Immediate written notice shall be given to the District in the event a withdrawal or transporting of water exceeds the quantity authorized by the permit or rules. Unless the permittee can present evidence that the pumpage or transport which exceeded the permitted amount is due to an isolated incident that is not likely to be repeated and/or would not result in continued higher demands, the permittee must immediately submit an application to increase the permitted pumpage or transport volume based on the amount of pumpage or transport which exceeded the permitted amount projected for the remainder of the fiscal year.

E. The well site or transport facilities shall be accessible to District representatives for inspection during normal business hours and during emergencies. The permittee agrees to cooperate fully in any reasonable inspection of the well site or transport facilities and related monitoring or sampling by District representatives.

The well owner shall provide a twenty-four (24) hour emergency contact to the District.

F. The application pursuant to which a permit has been issued is incorporated therein, and the permit is granted on the basis of and contingent upon the accuracy of the information supplied in that application and in any amendments thereof. A finding that false information has been supplied shall be grounds for immediate revocation of a permit. In the event of conflict between the provisions of the permit and the contents of the application, the provisions of the permit shall prevail.

G. Driller's logs must be submitted within sixty (60) days of the drilling of a well. Monitoring of groundwater pumpage is to be accomplished in the manner specified by the District.

H. Violation of the permit's terms, conditions, requirements, or special provisions, including pumping amounts in excess of authorized withdrawal or transporting amounts outside of the District in excess of the amount authorized for transport, shall be punishable by civil penalties as provided by the Act and these Rules.

I. If special provisions are inconsistent with other provisions or regulations of the District, the Special Provisions shall prevail.

J. Permittees with annual permitted pumpage volumes greater than 12,000,000 gallons requesting multiple minor amendment pumpage increases that total more than 20% of the permitted pumpage volume for the three years prior to the most recent amendment may be required to submit a current hydrogeological report to the District office. (Example: Permittee A is permitted for 50,000,000 gallons in 2004. He files three minor amendments between 2004 and 2006, one for 5,000,000 gallons, another for 3,000,000 gallons, and another for 4,000,000 gallons, a total of 12,000,000 gallons increase since 2004. The District may require a hydrogeological test as a special condition of the new amendment application.) A current hydrogeological report is one that has been completed within the three years preceding the date of the applications. Reports may be required at the General Manager's discretion based on aquifer condition, type of modification, status of adjacent wells, local water use trends, and other aquifer management considerations.

K. A permit may contain any term, condition, or limitation determined to be warranted by the District's Board.

L. Permittees will notify the District upon filing an application with the TCEQ to obtain or modify CCN to provide water or wastewater service in a service area that lies wholly or partly within the District or for which water shall be supplied from a well located inside the District.

M. If at any time the District receives competent evidence that a non-exempt well or aggregate well system is causing unreasonable interference with the production of water from exempt, existing, or previously permitted wells or other surface water resources, is causing or contributing to waste, or could cause the potential for measurable subsidence, the Board may, on its own motion, reopen the permit for additional consideration. After notice and opportunity for hearing, the Board may revoke, suspend, terminate, cancel, modify or amend the permit, in whole or in part, as needed. After notice and opportunity for hearing, the permit may be reduced or curtailed for failure to achieve the applicable DFC of the aquifer.

RULE 8.13 REVOCATION, TERMINATION, CANCELLATION, OR MODIFICATION OF PERMITS

A permit is not a vested right of the holder. After notice and an opportunity for hearing, a permit may be revoked, suspended, terminated, canceled, modified, or amended in whole or in part for cause, including, but not limited to:

A. Violation of any terms or conditions of the permit,

B. Obtaining the permit by misrepresentation or failure to disclose relevant facts, or

C. Failure to comply with any applicable Rules, regulations, Fee Schedule, special provisions, requirements, or orders of the District.

D. After notice and an opportunity for hearing, the permit may be reduced or curtailed if the authorized withdrawal is causing unreasonable interference with the production of water from exempt, existing, or previously permitted wells or other surface water resources, is causing or contributing to waste, or could cause the potential for measurable subsidence or failure to achieve the applicable DFC of the aquifer.

The permittee shall furnish to the District upon request, and within a reasonable time, any information to determine whether cause exists for revoking, suspending, terminating, canceling, modifying, or amending a permit.

RULE 8.14 AGGREGATION

Multiple wells that are part of an aggregate system that are owned and operated by the same permittee and serve the same end user, subdivision, facility, or area served by a TCEQ issued CCN may be authorized under a single permit. Separate applications and registrations may be authorized under a single permit. Separate applications shall be submitted for each well and the District will maintain separate records of each well's location and characteristics. Geographic location of wells and integrated distribution systems will be considered in determining whether or not to allow aggregation.

For the purpose of categorizing wells by the amount of groundwater production, when wells are permitted with an aggregate withdrawal, the aggregate value shall be assigned to the group, rather than allocating to each well its prorated share or estimated production.

RULE 8.15 REPORTS

A. Pumpage and Transport Reports. Permittees shall submit monthly records of meter readings and information on transporting groundwater outside the District, including all information recorded as required by Rule 8.12(D), to the District on forms approved by the District on or before the 15th day of the following month, even if there is zero pumpage or transport for the time period. Reports received after the 30th day of the month will be considered late.

B. Water Quality Reports

1. All permittees required by statute or regulation to conduct water quality analyses (including retail public water utilities) shall, at the time of obtaining results of the analyses, submit a duplicate copy to the District.

2. If a retail public water utility is required by the TCEQ to notify its customers that water fails to meet TCEQ standards, the permittee shall immediately notify the District and submit a copy of the TCEQ notice to the District.

RULE 8.16 EMERGENCY APPROVALS

A. Emergency Transfer of a Permit to another well. Upon application to the District, the General Manager shall authorize a permit, including a permit associated or consolidated with a transport permit, to be transferred to another well, or a replacement well, in the immediate vicinity of the permitted well upon a satisfactory demonstration by the applicant that:

1. The action is necessary in order to alleviate an immediate and serious threat to human life or health, or to prevent extensive or severe property damage to economic loss to the person proposing or requesting to make the transfer, and

2. The replacement or transfer well will not endanger human life or health, and will not cause what would, under the particular circumstance, be unreasonable property damages or economic loss to others.

The General Manager may issue a temporary order authorizing the withdrawal of water without notice and hearing, or with such notice and hearing as the General Manager, in his judgment, deems practical under the circumstances.

B. Emergency Withdrawals. Upon application to the District, the General Manager shall authorize withdrawal of water not covered by a permit upon a satisfactory demonstration by the applicant that:

1. An emergency exists due to acts of God or nature or other disaster,

2. The withdrawal of water not covered by a permit is necessary in order to alleviate an immediate and serious threat to human life or health or to prevent extensive and severe property damage or economic loss to the person requesting the withdrawals, and

3. The withdrawal will not endanger human life or health and will not cause what would under the particular circumstances be unreasonable property damage or economic loss to others.

The General Manager may issue a temporary order authorizing the withdrawal of water without notice and hearing, or with such notice and hearing as the General Manager, in his judgment, deems practical under the circumstances.

C. Procedural Requirements. A copy of every order entered by the General Manager under this Rule shall be sent by certified mail to the person or persons to whom it is directed. However, when the time factor is critical, the order may be delivered in person, transmitted by telephone or telegram, or delivered by any other satisfactory method; but it shall be promptly followed by the written order sent by certified mail. If the order authorizes a new, transfer, or replacement well, the person to whom the order is issued may not cause or undertake drilling of the well under the order except in strict compliance with its terms and conditions.

Any such emergency ruling by the General Manager shall be approved or disapproved by the Board at its next meeting. Pending the Board's action, the General Manager's order shall be given full effect.

Any applicant receiving a temporary order under this Rule shall make timely application for permit or permit amendment and pay all applicable fees. The application shall be processed in the manner provided in these Rules.

RULE 8.17 ABANDONED, OPEN, OR UNCOVERED WELLS

A. REGISTRATION

Any owner or lessee of land on which an abandoned, open, or uncovered well is located must register the well with the District. Any well not registered with the District shall be classified as abandoned.

B. ABANDONED WELL CAPPING

At a minimum, open or uncovered wells must be capped in accordance with the requirements of the TCEQ, the Texas Department of Licensing and Regulation's Water Well Drillers and Pump Installers Program, and the District Rules and Well Construction Standards. The owner or lessee shall keep the well permanently plugged or capped with a water tight covering capable of sustaining weight of at least 400 pounds, except when the well is in actual use. The covering for a capped well must be constructed with a water tight seal to prevent entrance of surface pollutants into the well itself, either through the well bore or well casing.

C. ABANDONED WELL PLUGGING

Unless granted an exception by the General Manager or Board, all abandoned wells that are not capped in accordance with Rule 8.17B must be plugged in accordance with the requirements of the TCEQ, the Texas Department of Licensing and Regulation's Water Well Drillers and Pump Installers Program, District Rule 8.17, and other applicable Rules and Well Construction Standards adopted by the Board of Directors. Prior to plugging a well, the District Well Construction Standards require as a minimum, registration of the well with the District, a site inspection by District staff, submission to the District for review and approval a Plug and Abandonment Plan by the owner or the well driller, and payment of the Well Abandonment Fee. The General Manager may require a water sample to be taken and have a water quality analysis conducted, at the District's expense, as part of or prior to the plugging operation.

D. REPORTING

In accordance with Section 76.700, Texas Water Well Drillers Rules, within 60 days of completing the plugging of a well located within the District, the well driller shall provide the District a copy of the Plugging Report.

E. ENFORCEMENT

If the owner or lessee fails or refuses to plug or cap the well in compliance with this Rule and District standards within ten (10) days after being requested to do so in writing by an officer, agent, or employee of the District, then, upon Board approval, any person, firm, or corporation employed by the District may go on the land (pursuant to Texas Water Code Chapter 36.118) and plug or cap the well safely and securely.

F. LIEN FOR RECOVERY OF EXPENSES INCURRED BY DISTRICT

1. Reasonable expenses incurred by the District in plugging or capping a well constitute a lien on the land on which the well is located.

2. The District shall perfect the lien by filing in the deed records of the county where the well is located an affidavit, executed by any person conversant with the facts, stating the following:
   i. The existence of the well;
   ii. The legal description of the property on which the well is located;
   iii. The approximate location of the well on the property;
   iv. The failure or refusal of the owner or lessee, after notification, to close the well within ten (10) days after the notification;
   v. The closing of the well by the District, or by an authorized agent, representative, or employee of the District; and
   vi. The expense incurred by the District in closing the well.

G. PENALTIES

Rule 15.6 penalties shall be applicable in cases of failure or refusal to plug abandoned wells or cap wells not currently in use.

RULE 8.18 SUBSIDENCE

Production of groundwater in any manner, including volumes, rate, frequency, duration, or within a concentrated area, that causes the potential for measurable subsidence is prohibited.

Controlling and preventing measurable subsidence will be addressed during review and processing of new, renewed, and amended permit applications. The potential for measurable subsidence must be addressed by applicants and permittees in Phase I and Phase II hydrogeological reports required under Rule 8.5F.

If numerical modeling, local hydrogeological conditions including subsurface clay content, aquifer testing, or other reliable data demonstrate 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 reduced production based on monitoring results and (f) any other action reasonable 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, after notice and the opportunity for hearing, take all actions it deems necessary, in accordance with this Rule 8.18, to address the potential subsidence.

RULE 8.19 GENERAL PERMITS BY RULE

For wells of certain characteristics and in certain prescribed situations, the District may issue several different types of permits by rule, generally with abbreviated application documentation and timelines. General permits by rule do not require notice and public hearings and are used for administrative convenience when their use is not inconsistent with the District's overall mission.

The District may issue a general permit by rule as an administrative action, provided the requirements of the permit are met.

A. General Requirements and Conditions for General Permits by Rule.

1. Unless otherwise prohibited by the District and subject to the conditions and eligibility requirements specified for each general permit, wells are authorized to operate pursuant to this Section without an individual permit from the District.

2. Wells authorized by this Section shall be registered and complete Well Registration form submitted with the appropriate fees in accordance with Rule 8.1.

3. A well authorized pursuant to this Rule is subject to Water Use fees.

4. In lieu of authorization pursuant to this Rule, the Board at its sole discretion may require authorization by obtaining an individual permit.

5. Wells authorized pursuant to this Rule are subject to the Rules, regulations, Orders, special provisions, and other requirements of the Board, and laws of the State of Texas.

B. Water Well for Hydraulic Fracturing of an Oil or Gas Well.

1. Conditions and Requirements. A general permit is authorized for a well used in connection with hydraulic fracturing. The water well must be located on the same lease or field associated with the oil and gas well that is subject to the hydraulic fracturing. This general permit authorization does not include a water station well, which would require an individual permit. Each authorization under this general permit shall be subject to the following conditions and requirements:
   a. The well shall be completed in accordance with the District completion standards Rule 12 and, at a minimum, shall not be open at the surface or allow water zones of different chemical quality to commingle;
   b. The well permittee shall keep accurate records and meter readings, on a monthly basis of the amount of groundwater withdrawn, the purpose of the withdrawal, and such records shall be submitted to the District office on a monthly basis;
   c. The District may require other conditions on the basis of site-specific or use specific circumstances;
   d. Authorization under the general permit shall be for one year and shall be renewed annually by submission of a letter of renewal in a form approved by the General Manager;
   e. Any other conditions that the District may require.

2. Wells authorized by this permit are subject to the permit conditions and requirements of Rule 8.12, the well spacing requirements of Rule 5, and the waste prohibitions of Rule 13.

SECTION 9. FEES AND DEPOSITS

RULE 9.1 WATER USE FEES

Water use fees authorized under the District Act shall be paid to the District for water developed from non-exempt wells and exempt wells used to transport water outside the District. The water use fee rate shall be established by Board resolution annually. Following issuance of operating permits, the rate shall be applied to the total actual annual pumpage for each permit (and amendments if appropriate) issued during the fiscal year the rate is in effect. The District will review the account of any permittee changing the use of a well from non-exempt to exempt to determine if additional water use fees are due or if a reimbursement of water use fees is warranted. Reimbursements exceeding $250 must receive Board approval. Water use fees may be waived by the General Manager in instances where the administrative cost of the District to process the fee exceeds the fees received.

A. Pursuant to the District Act, the initial water use fee may not exceed:

1. $1.00 per acre-foot for water for agricultural use; or

2. $0.17 per thousand gallon for water used for any other purpose

B. The District may impose a reasonable fee or surcharge for an export fee using one of the following methods:

1. A fee negotiated between the District and the transporter; or

2. A combined production and export fee not to exceed $0.17 per thousand gallons of water used.

C. The District is prohibited from using revenues obtained from export fees to prohibit the transfer of groundwater outside of the District, but may use export fees for paying expenses related to enforcement of Chapter 36 of the Texas Water Code or the District Rules.

RULE 9.2 APPLICATION, REGISTRATION, AND OTHER FEES

The Board, by resolution, shall establish a schedule of fees. The Board will attempt to set fees that do not unreasonably exceed the costs incurred by the District of performing the administrative function which the fee is charged. District Monitor Wells are exempt from application, registration, and well log deposits. The General Manager shall exempt District

Monitor Wells from any other fee if he determines that the assessment of the fee would result in the District charging itself a fee.

RULE 9.3 PAYMENT OF FEES

All fees are due at the time of application, registration, or permitting. Landowners are primarily responsible for payment of fees associated with wells on their property unless it is shown that the landowner has no interest in the well. The water use fee for a permit shall be paid monthly unless the General Manager determines it is in the best interest of the District for fees to be paid quarterly or annually. Following submission of monthly reports to the District as required under Rule 8.15A, the District will invoice permittees for payment based upon actual water use. Payments of fees are due as described below.

A. Monthly water use fee payments are based on actual water use in the previous month and are due within thirty (30) days of the invoice date.

B. Payments received within the ten (10) days following the due date will not be subject to a late payment fee. Thereafter, the late payment fees set forth in Rule 15.8 shall be imposed.

C. All fees other than water use fees are due at the time of assessment and are late after ten (10) days.

D. Fee payment procedures and schedules in effect at the time of the adoption of these Rules shall remain in effect until permits are issued and become effective in accordance with the procedures and schedules contained herein.

RULE 9.4 PERMIT APPLICATION PROCESSING

The Board, by resolution, may adopt a processing fee for aggregate, transport and permits requiring a Phase I or II hydrogeological report under Rule 8.5F to cover all reasonable and necessary costs to the District of processing the application, including, but not limited to, all costs to the District for application review. The District, in its sole discretion, may require full, up-front payment of the permit application processing fee or may provide for partial payments in installments over the period of application review. The permit processing fee for an application to transport groundwater out of the District may not exceed the fees that the District imposes for processing applications for the use of groundwater within the District.

RULE 9.5 MINIMUM WATER USE FEES

The Board may, by resolution, establish a minimum water use fee.

RULE 9.6 INSPECTION AND PLAN REVIEW FEES

The Board may, by resolution, establish fees for: the inspection of wells, meters, or other inspection activities; plan reviews; special inspection services requested by other entities; or

other similar services that require significant involvement of District personnel or its agents. Fees may be based on the amount of the District's time and involvement, number of wells, well production, well bore, casing size, size of transporting facilities, or amounts of water transported.

RULE 9.7 SPECIAL FEES

Wells drilled in aggregate, such as closed loop heat exchange wells, may qualify for reduced fees for review, registration, and inspection. The fee rate will be based on review and inspection time on a case by case basis.

RULE 9.8 EXCEPTIONS

If a regulated water utility is unable to pass through pumpage fees due to delay in obtaining regulatory approval, or in other unusual instances of hardship, the General Manager may grant exceptions and establish a payment schedule. Such exceptions shall be applied consistently.

RULE 9.9 EXCESS PUMPAGE FEES

To the extent permitted by the District Act, the Board may, by resolution, establish additional water use fees for any pumpage exceeding the permitted pumpage volume.

RULE 9.10 RETURNED CHECK FEE

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

RULE 9.11 ACCOUNTING FEE

The Board may, by resolution, establish a fee for permittee requested accounting of pumpage reports, water use fee payments, or other accounting matters pertaining to the permittee's account which the District does not routinely maintain in its accounting of a permittee's records. Should a District error be discovered, the accounting fee, if any, will be fully refunded. Permittee's may request one review of their account per fiscal year without charge.

RULE 9.12 WELL LOG DEPOSIT

The Board may, by resolution, establish a Well Log Deposit to be held by the District for return to the depositor if well logs are submitted to the District within sixty (60) days following surface completion of the well. The depositor will receive one-half the Well Log Deposit for well logs received by the District after the sixty (60) day period. The District will not refund a Well Log Deposit for well logs submitted after 120 days following completion of the well.

RULE 9.13 STATE OFFICE OF ADMINISTRATIVE HEARINGS HEARING DEPOSIT

A party requesting a hearing before the State Office of Administrative Hearings shall pay all costs associated with the contract for a State Office of Administrative Hearings hearing and shall deposit with the District an amount determined by the District to pay the contract amount on a date determined by the District before the hearing begins. At the conclusion of the hearing, the District shall refund any excess money to the paying party.

RULE 9.14 PERMIT REVIEW FEE

The Board may, by resolution, establish a fee to cover all the costs of the General Manager's annual permit review. The fee will be an annual fee that is divided by twelve and assessed monthly.

RULE 9.15 NON-EXEMPT UNPERMITTED WELL FEE

Any non-exempt well that is operating without a permit will be assessed a water use fee that is double the amount of the water use fee for a permitted well, not to exceed the amount authorized by law.

SECTION 10. TRANSFER OF GROUNDWATER OUT OF THE DISTRICT

RULE 10.1 PERMIT REQUIRED

Groundwater produced from within the District may not be transported outside the District's boundaries unless the Board has issued the well owner an operating permit. The requirements of this Rule are applicable without regard to the manner the water is exported out of the District and specifically includes discharges into watercourses to convey water as well as pipelines and aqueducts.

RULE 10.2 APPLICABILITY

A permit for the transport of water outside the District is not required for the transportation of groundwater that is part of a manufactured product, or if the groundwater is to be used on property that straddles the District boundary line, or if the groundwater is to be used within the service area of an existing retail public utility provided that such service area is contiguous to the boundaries of the District. Transportation of groundwater into an area created by the expansion of an existing public utility into non-contiguous counties would require a permit. Also transportation of groundwater into an area that is separated from the utility's service area and not contiguous to the District would require a permit.

RULE 10.3 APPLICATION

An application for a transportation permit must be filed in the District office and must include the information required under Rule 8.3 for a drilling or operating permit , as well as information required by the District to evaluate the proposed transport under the standards of Texas Water Code § 36.122. Except as permitted by the District Act, the application for a transportation permit is considered and processed by the District under the same procedure as a permit for in-District water and is combined with applications filed to obtain a permit for in-District water from the same applicant. The required information for an application include:

A. A separate application shall be filed for each permit. Applications shall be filed on the form or in the format approved by the District. Each application shall be in written form, sworn to by the applicant and contain:

1. The name and mailing address of the applicant and the name and address of the owner of the land, if different from the applicant, on which the well is to be located.

2. If the applicant is not the owner of the property, documentation owner's property for the proposed use.

3. A statement of the nature and purpose of the proposed use and the amount of water to be used for each purpose.

4. A statement of the availability of feasible and practicable alternative water supplies to the applicant.

5. The availability of water in the District and in the proposed receiving area during the period for which the water supply is requested for the District to consider under Texas Water Code § 36.122(f)(1).

6. A statement of the projected effect of the proposed withdrawal on the aquifer or aquifer conditions, depletion, subsidence, or effects on existing permit holders or other groundwater users in the District. For non-exempt wells to be completed as aggregate wells or an individual well completed with an inside casing diameter of eight (8) inches or greater, a Phase I and Phase II hydrogeological report by a Texas licensed geoscientist or Texas licensed engineer assessing the impact of the proposed well and transport of water on the existing wells, subsidence, and the aquifer shall be submitted as required under Rule 8.5F.

7. The applicant's water conservation plan and, if any subsequent user of the water is a municipality or entity providing retail public water services, the water conservation plan of that municipality or entity shall also be provided or a declaration shall be made that the applicant will comply with the District's management plan, when one is adopted.

8. The location of the well(s), the estimated rate at which water will be withdrawn, the production capacity of the well(s), and where the water is proposed to be used.

9. The names and addresses of the property owners, and the location of their wells, within a half mile radius of the location of the well(s) from which water is to be produced that is to be transported out of the District.

10. A well closure plan or a declaration that the applicant will comply with well plugging guidelines and report closure to the applicable authorities, including the District.

11, Proof of notification of the application to all landowners within one-half mile radius of the property where the well or wells are located and to all well owners, along with the publisher's affidavit showing publication of the notice of intent to make application for a permit to transport water outside the District.

12. A description of how the proposed transport is addressed in any approved regional water plan(s) and when adopted, the District management plan for the District to consider under Texas Water Code § 36.122(f)(3).

13. A technical description of the facilities to be used for transportation of water and a time schedule for any construction thereof, so that the District may determine the permit term as authorized under Texas Water Code § 36.122(h)(2) and (i).

14. The identity of the well driller, including the well driller's license number or any other information required by the General Manager of Board.

RULE 10.4 HEARING AND PERMIT ISSUANCE

A. Applications for transportation permits are subject to the hearing procedures provided by these Rules

B. In determining whether to issue a permit to transfer groundwater out of the District, the Board must be fair, impartial, and nondiscriminatory and shall consider the factors considered when deciding whether to issue a drilling or operating permit under Rule 8 and the following:

1. The availability of water in the District and in the proposed receiving area during the period for which the water supply is requested;

2. The projected effect of the proposed transfer on aquifer conditions, depletion, subsidence, or effects on existing permit holders or other groundwater users within the District; and

3. The approved regional water plan and approved District Management Plan.

C. The District may not deny a permit based on the fact that the applicant seeks to transfer groundwater outside of the District and may not impose more restrictive permit condition on transporters than the District imposes on existing in-District users, unless:

1. Such limitations apply to all subsequent new permit applications and increased use by historic users, regardless of type or location of use;

2. Such limitations bear a reasonable relationship to the existing District management plan; and

3. Such limitations are reasonably necessary to protect existing use.

D. In addition to conditions specified for in-District permits, the operating permit for transporting water out of the District shall specify:

1. The amount of water that may be transferred out of the District; and

2. The period for which the water may be transferred, which shall be:
   a. At least three years if construction of a conveyance system has not been initiated prior to the issuance of the permit, and shall be automatically extended to the terms 30 years if construction of a conveyance system is begun before the expiration of the initial term; or
   b. At least 30 years if construction of a conveyance system has been initiated prior to the issuance of the permit.

E. The District may periodically review the amount of water that may be transferred under an operating permit to transport water out of the District and may limit the amount after considering factors related to:

1. The availability of water in the District and in the proposed receiving area during the period for which the water supply is requested;

2. The projected effect of the proposed transfer on aquifer conditions, depletion, subsidence, or effects on existing permit holders or other groundwater users within the District; and

3. The approved regional water plan and the approved District Management Plan.

F. Such a review may not take place more frequently than once every five (5) years. After the review, more restrictive permit conditions may only be imposed if:

1. Such limitations apply to all subsequent new permit applications and increased use by historic users, regardless of type or location of use;

2. Such limitations bear a reasonable relationship to the existing District management plan; and

3. Such limitations are reasonably necessary to protect existing use.

G. In its determination of whether to renew a transport operating permit, the District shall consider the permit in the same manner it would consider any other permit in the District.

RULE 10.5 FEES INCLUDED WITH APPLICATION

The application must be accompanied by the application processing fee, inspection fee, or other fees as appropriate. Such fees must be paid before notice is published and mailed. Payment of all fees including water use fees remains the responsibility of the landowner.

SECTION 11. REWORKING AND REPLACING A WELL

RULE 11.1 PROCEDURES

A. An existing well may be reworked, re-drilled, or re-equipped in a manner that will not change the existing well status. The District does not require a permit amendment for maintenance or repair of a well if the maintenance or repair does not increase the production capabilities of the well to more than its authorized or permitted production rate.

B. A permit must be applied for and consideration given to approving the permit in accordance with Section 8 of these Rules, if a person wishes to increase the rate of production of an existing well to the point of increasing the size of the column pipe or g.p.m. rate by reworking, re-equipping, or re-drilling such well as described in this section.

C. A permit must be applied for and granted in accordance with Section 8 of these Rules if a person wishes to replace an existing well with a replacement well.

D. A replacement well must be completed in the same aquifer as the well it replaces, and shall not be drilled, equipped, or completed so as to increase the rate of

production of water from the well it replaces. A replacement well must not be located closer to any other well or authorized well site unless the new location complies with the minimum the spacing requirements of Section 5; otherwise, the well shall be considered a new well for which an application must be made.

E. In the event the application meets spacing and production requirements, and satisfies all requirements of these Rules, the General Manager may grant such application without further notice.

SECTION 12. WELL LOCATION AND COMPLETION

RULE 12.1 RESPONSIBILITY

After an application for a well permit has been granted, the well, if drilled, must be drilled within ten (10) yards (30 feet) of the location specified in the permit, and not elsewhere. 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 described in the Texas Water Well Drillers Rules, all well drillers and persons having a well drilled, deepened, or otherwise altered shall adhere to the provisions of the District Rule prescribing the location of wells and proper completion.

RULE 12.2 LOCATION OF DOMESTIC, INDUSTRIAL, INJECTION, AND IRRIGATION WELLS

With regard to potential sources of contamination, wells shall be located in conformity with the rules and regulations promulgated by the TCEQ and the Texas Department of Licensing and Regulation, as applicable.

RULE 12.3 STANDARDS OF COMPLETION FOR DOMESTIC, INDUSTRIAL, INJECTION, AND IRRIGATION WELLS

Water well drillers must indicate the method of completion performed on the Well Report (TCEQ-0199) Section 10 Surface Completion. Unless otherwise ordered by the Board, domestic, industrial, injection, and irrigation wells must be completed in accordance with all applicable State and local standards, including but not limited to 30 Texas Administrative Code Chapter 290 (TCEQ Water Hygiene Rules for Public Water Supply Systems) and 16 Texas Administrative Code Chapter 76 (Rules for Water Well Drillers and Water Well Pump Installers).

RULE 12.4 RE-COMPLETIONS

A. The landowner shall have the continuing responsibility of insuring that a well does not allow commingling of undesirable water and fresh water or the unwanted loss of water through the well bore to other porous strata.

B. If a well is allowing the commingling of undesirable water and fresh water or the unwanted loss of water, and the casing in the well cannot be removed and the well re-completed within the applicable Rules, the casing in the well shall be perforated and cemented in a manner that will prevent the commingling or loss of water. If such a well has no casing, then the well shall be cased and cemented, or plugged in a manner that will prevent such commingling or loss of water.

C. The Board may direct the landowner to take steps to prevent the commingling of undesirable water and fresh water, or the unwanted loss of water.

SECTION 13. WASTE AND BENEFICIAL USE

RULE 13.1 WASTE MEANS ANY ONE OR MORE OF THE FOLLOWING

A. Withdrawal of groundwater from a groundwater reservoir at a rate in an amount that causes or threatens to cause intrusion into the reservoir of water unsuitable for agricultural, gardening, domestic, or stock raising purposes.

B. The flowing or producing of wells from a groundwater reservoir if the water produced is not used for a beneficial purpose.

C. Escape of groundwater from a groundwater reservoir to any other reservoir or geologic strata.

D. Pollution or harmful alteration of groundwater in a groundwater reservoir by saltwater or by other deleterious matter admitted from another stratum or from the surface of the ground.

E. Willfully or negligently causing, suffering, or allowing groundwater to escape into any river, creek, natural watercourse, depression, lake, reservoir, drain, sewer, street, highway, road, or ditch, or onto any land other than that of the owner of the well unless such discharge is authorized by permit, rule, or order issued by the commission under Chapter 11 or 26.

F. 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.

G. For water produced from an artesian well, waste has the meaning assigned by Section 11.205 Texas Water Code.

H. Groundwater that is discharged into a watercourse for transit to another location when the losses in transit exceed 20%.

I. Potable groundwater shall not be used for secondary recovery of hydrocarbons.

RULE 13.2 WASTE PREVENTION

A. Groundwater shall not be produced within, or used within or outside of the District, in such a manner as to constitute waste as defined in these Rules.

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

C. No person shall commit waste as that term is defined in Section 13.

RULE 13.3 USE FOR A BENEFICIAL PURPOSE

A. Agricultural, gardening, domestic, stock raising, municipal, mining, manufacturing, industrial, commercial, recreational, or pleasure purposes;

B. Exploring for, producing, handling, or treating oil, gas, sulphur, or other minerals; or

C. Any other purpose that is useful and beneficial to the user.

RULE 13.4 ORDERS TO PREVENT WASTE/POLLUTION

After providing notice to affected parties and opportunity for a hearing, the Board may adopt orders to prohibit or prevent waste or pollution. If the factual basis for the order is disputed, the Board shall direct that an evidentiary hearing be conducted prior to entry of the order. If the General Manager determines that an emergency exists, requiring the immediate entry of an order to prohibit waste or pollution and protect the public health, safety, and welfare, the General Manager may enter a temporary order without notice and hearing provided, however, the temporary order shall continue in effect for the lesser of fifteen (15) days or until a hearing can be conducted.

SECTION 14. HEARINGS

RULE 14.1 APPLICABILITY

Except as provided by Rule 14.15, Section 14 of the Rules applies to the notice and hearing process used by the District for permit and permit amendment applications and show cause proceedings.

RULE 14.2 SCHEDULING OF HEARING

A. The General Manager or Board may schedule a hearing on permit or permit amendment applications received by the District as necessary, as provided by Rule 8.5.E.

B. The General Manager or Board may schedule more than one application for consideration at a hearing.

C. The location of any hearing held will be at the District office unless the Board or General Manager provides for hearings to be held at a different location. For a hearing conducted by the State Office of Administrative Hearings, the District may hold the hearing in Travis County.

D. A hearing may be held in conjunction with a regularly scheduled Board meeting.

RULE 14.3 NOTICE

A. If the General Manager or Board schedules a hearing on an application for a permit or permit amendment, the General Manager shall give notice of the hearing as provided by this section.

B. The notice must include:

1. The name of the applicant;

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

3. A brief explanation of the proposed permit or permit amendment, including any requested amount of groundwater, the purpose of the proposed use, and any change in use;

4. The time, date, and location of the hearing; and

5. Any other information the General Manager or Board considers relevant and appropriate.

C. Not later than the 10th day before the date of a hearing, the General Manager shall:

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

2. Provide notice to the county clerk of each county in the District; and

3. Provide notice by:
   a. Regular mail to the applicant;

b. Regular mail, facsimile, or electronic mail to any person who has requested notice under Subsection (D).

D. A person may request notice from the District of a hearing on a permit or a permit amendment application. The request must be in writing and is effective for the remainder of the calendar year in which the request is received by the District. To receive notice of a hearing in a later year, a person must submit a new request. An affidavit of an officer or employee of the District establishing attempted service by first class mail, facsimile, or e-mail to the person in accordance with the information provided by the person is proof that notice was provided by the District.

E. Failure to provide notice under Subsection C.3.(b) does not invalidate an action taken by the District at the hearing.

RULE 14.4 HEARING REGISTRATION

The District requires each person who participates in a hearing to submit a hearing registration form stating:

A. The person's name;

B. The person's address; and

C. Whom the person represents, if the person is not there in the person's individual capacity.

RULE 14.5 HEARING PROCEDURES

A. A hearing must be conducted by:

1. A quorum of the Board;

2. The Presiding Officer who is the Board President or an individual to whom the Board has delegated in writing the responsibility to preside as a hearings examiner over the hearing or matters related to the hearing; or,

3. The State Office of Administrative Hearings if requested and paid for by the requesting party.

B. Except as provided by Subsection C, the Board president or the hearings examiner shall serve as the presiding officer at the hearing.

C. If the hearing is conducted by a quorum of the Board and the Board president is not present, the directors conducting the hearing may select a director to serve as the presiding officer.

D. The presiding officer may:

1. Convene the hearing at the time and place specified in the notice;

2. Set any necessary additional hearing dates;

3. Designate the parties regarding a contested application;

4. Permit the receipt of and rule on the admissibility of evidence consistent with Subchapter D, Chapter 2001, Texas Government Code;

5. Establish the order for presentation of evidence;

6. Administer oaths to all persons presenting testimony;

7. Examine and allow cross examination of persons presenting testimony;

8. Ensure that information and testimony are introduced as conveniently and expeditiously as possible without prejudicing the rights of any party;

9. Prescribe reasonable time limits for testimony and the presentation of evidence;

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

11. Issue subpoenas, require depositions, or order other discovery consistent with Subchapter D, Chapter 2001, Texas Government Code;

12. Determine how to apportion among the parties costs related to a contract for the services of a presiding officer and the preparation of the official hearing record; and

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

E. Except as provided by Rule 14.14, the District may allow any person, including the General Manager or a District employee, to provide comments at a hearing on an uncontested application.

F. The presiding officer may allow testimony to be submitted in writing and may require that written testimony be sworn to. On the motion of a party to the hearing, the presiding officer may exclude written testimony if the person who submits the testimony is not available for cross-examination by phone, a deposition before the hearing, or other reasonable means.

G. If the Board has not acted on the application, the presiding officer may allow a person who testifies at the hearing to supplement the testimony given at the hearing by filing additional written materials with the presiding officer not later than the 10th day after the date of the hearing. A person who files additional written material with the presiding officer under this subsection must also provide the material, not later than the 10th day after the date of the hearing, to any person who provided comments on an uncontested application or any party to a contested hearing. A person who receives additional written material under this subsection may file a response to the material with the presiding officer not later than the 10th day after the date the material was received.

H. The presiding officer, at the presiding officer's discretion, may issue an order at any time before Board action under Rule 14.10 that:

1. Refers parties to a contested hearing to an alternative dispute resolution procedure on any matter at issue in the hearing;

2. Determines how the costs of the procedure shall be apportioned among the parties; and

3. Appoints an impartial third party as provided by Section 2009.053, Government Code, to facilitate that procedure.

I. In general, the burden of proof is on the moving party by a preponderance of the evidence, except in an enforcement proceeding, the General Manager has the burden of proving by a preponderance of the evidence the occurrence of any violation and the appropriateness of any proposed technical ordering provisions. The respondent in an enforcement proceeding has the burden of proving by a preponderance of the evidence all elements of any affirmative defense asserted. The permit applicant bears the burden of proof by a preponderance of the evidence in an application proceeding.

RULE 14.6 EVIDENCE

A. The presiding officer shall admit evidence that is relevant to an issue at the hearing. Evidence may be admitted if it is of that quality upon which reasonable persons are accustomed to rely in the conduct of serious affairs. It is intended that needful and proper evidence shall be conveniently, inexpensively, and speedily provided while preserving the substantial rights of the parties to the proceeding.

B. The presiding officer may exclude evidence that is irrelevant, immaterial, or unduly repetitious.

RULE 14.7 RECORDING

A. Except as provided by Subsection B, the presiding officer shall prepare and keep a record of each hearing in the form of an audio or video recording or a court reporter transcription. On the request of a party to a contested hearing, the presiding officer shall have the hearing transcribed by a court reporter. The presiding officer may assess any court reporter transcription costs against the party that requested the transcription or among the parties to the hearing. Except as provided by this subsection, the presiding officer may exclude a party from further participation in a hearing for failure to pay in a timely manner costs assessed against that party under this subsection. The presiding officer may not exclude a party from further participation in a hearing as provided by this subsection if the parties have agreed that the costs assessed against that party will be paid by another party.

B. If a hearing is uncontested, the presiding officer may substitute minutes or the proposal for decision required under Rule 14.9 for a method of recording the hearing provided by Subsection (a).

RULE 14.8 CONTINUANCE

The presiding officer may continue a hearing from time to time and from place to place without providing notice under Rule 14.3. If the presiding officer continues a hearing without announcing at the hearing the time, date, and location of the continued hearing, the presiding officer must provide notice of the continued hearing by regular mail to the parties.

RULE 14.9 PROPOSAL FOR DECISION

A. Except as provided by Subsection E, the presiding officer shall submit a report to the Board not later than the 30th day after the date the evidentiary hearing is concluded.

B. The proposal for decision must include:

1. A summary of the subject matter of the hearing;

2. A summary of the evidence or public comments received; and

3. The presiding officer's recommendations for Board action on the subject matter of the hearing.

C. The presiding officer or General Manager shall provide a copy of the proposal for decision to:

1. The applicant; and

2. Each designated party.

D. A party may submit to the Board written exceptions to the proposal for decision.

E. If the hearing was conducted by a quorum of the Board and if the presiding officer prepared a record of the hearing as provided by Subsection A above, the presiding officer shall determine whether to prepare and submit a proposal for decision to the Board under this section.

F. The board shall consider the proposal for decision at a final hearing. Additional evidence may not be presented during a final hearing. For a hearing conducted by the State Office of Administrative Hearings (SOAH), the final hearing on the application concludes on the date the SOAH proposal for decision, exceptions and replies to exceptions to the proposal for decision are presented the Board of Directors. The parties may present oral argument at a final hearing to summarize the evidence, present legal argument, or argue an exception to the proposal for decision. A final hearing may be continued as provided by Rule 14.8.

G. In a proceeding for a permit application or amendment in which a district has contracted with the SOAH for a contested case hearing, the board has the authority to make a final decision on consideration of a proposal for decision issued by an administrative law judge consistent with Section 2001.058, Government Code. The board may change a finding of fact or conclusion of law made by the administrative law judge, or may vacate or modify an order issued by the administrative judge, only if the board determines:

1. That the administrative law judge did not properly apply or interpret applicable law, district rules, written policies provided under District Bylaw 14-15., or prior administrative decisions;

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

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

RULE 14.10 BOARD ACTION

The Board shall act on a permit or permit amendment application not later than the 60th day after the date the final hearing on the application is concluded.

The Board may take action on an uncontested application at a properly noticed public meeting held at any time after the public hearing at which the application is scheduled to be heard. The public hearing may be held in conjunction with a regularly scheduled or special called board meeting. The Board action may occur at the same board meeting as the public hearing. The board may issue a written order to grant an application, grant the application with special conditions, or deny the application.

Following an uncontested hearing, an applicant may, not later than the 20th day after the date the board issues an order granting the application, demand in writing a contested case hearing if the order:

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

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

RULE 14.11 REQUEST FOR REHEARING OR FINDINGS AND CONCLUSIONS

A. An applicant in a contested or uncontested hearing on an application or a party to a contested hearing may administratively appeal a decision of the Board on a permit or permit amendment application by requesting written findings and conclusions not later than the 20th day after the date of the Board's decision.

B. On receipt of a timely written request, the Board shall make written findings and conclusions regarding a decision of the Board on a permit or permit amendment application. The Board shall provide certified copies of the findings and conclusions to the person who requested them, and to each designated party, not later than the 35th day after the date the Board receives the request. A party to a contested hearing may request a rehearing before the Board not later than the 20th day after the date the Board issues the findings and conclusions.

C. A request for rehearing must be filed in the District office and must state the grounds for the request. If the original hearing was a contested hearing, the person requesting a rehearing must provide copies of the request to all parties to the hearing.

D. If the Board grants a request for rehearing, the Board shall schedule the rehearing not later than the 45th day after the date the request is granted.

E. The failure of the Board to grant or deny a request for rehearing before the 91st day after the date the request is submitted is a denial of the request.

RULE 14.12 DECISION; WHEN FINAL

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

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

2. If a request for rehearing is filed on time, on the date:
   a. The Board denies the request for rehearing; or

b. The Board renders a written decision after rehearing.

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

C. An applicant or a party to a contested hearing may not file suit against the District under Texas Water Code Section 36.251 if a request for rehearing was not filed on time.

RULE 14.13 CONSOLIDATED HEARING ON APPLICATIONS

A. Except as provided by Subsection B, the District may process applications from a single applicant under consolidated notice and hearing procedures on written request by the applicant for:

1. Drilling, equipping, operating, or completing a well or substantially altering the size of a well or well pump under Section 8;

2. The spacing of water wells or the production of groundwater under Section 5 and 6; or

3. Transferring groundwater out of the District under Section 10.

B. The District is not required to use consolidated notice and hearing procedures to process separate permit or permit amendment applications from a single applicant if the Board or General Manager determines it cannot adequately evaluate one application until it has acted on another application.

RULE 14.14 HEARING REQUEST AND AFFECTED PERSON DETERMINATION

A. Hearing Requests. The following may request a contested case hearing under these Rules:

1. The Board;

2. The General Manager;

3. The applicant; and

4. Effected persons (as determined in F. below).

B. Form of Request. A request for a contested case hearing by an affected person (as determined in F. below) must be in writing and be filed by United States mail, facsimile, e-mail, or hand delivery with the District within the time provided by subsection D. of this section.

C. Requirements for Request. A contested case hearing request by an affected person (as determined in F. below) must be in writing with a duplicate copy to the opposing party or parties and substantially comply with the following:

1. Give the name, address, and daytime telephone number of the person who files the request. If the request is made by a group or association, the request must identify one person by name, address, daytime telephone number, and, where possible, fax number, who shall be responsible for receiving all official communications and documents for the group;

2. Identify the person's personal justiciable interest affected by the application, or District action including a brief, but specific, written statement explaining in plain language the requestor's location and distance relative to the activity that is the subject of the application or District action and how and why the requestor believes he or she will be affected by the activity in a manner not common to members of the general public;

3. Request a contested case hearing;

4. If the party requesting a contested case hearing desires for the hearing to be referred to and conducted by the State Office of Administrative Hearings, then the hearing request must include a statement "I/we request that the State Office of Administrative Hearings conduct the contested case hearing."; [Please note that a party requesting a contested case hearing before SOAH shall pay all costs associated with the contract for a SOAH hearing in accordance with Rule 14.15] and,

5. If applicable, provide any other information specified in the public notice of application.

D. Deadline for hearing requests. A contested case hearing request by an affected person (as determined in F. below) must be filed with the District within 20 days after the last publication of the notice of application.

E. A request for a contested case hearing shall be granted

1. By the General Manager if the request is made by the applicant or the General Manager; or

2. By the Presiding Officer at a preliminary hearing if the request is made by

an affected person (as determined using the standards in F. below) other than the applicant or the General Manager and the request:

a. Is based solely on concerns within the jurisdiction and authority of the District;
b. Is supported by competent showing that the person requesting a hearing is likely to be impacted by the proposed regulated activity;
c. Complies with all of the requirements of A through D above; and,
d. Is timely filed with the District.

F. Determination of Affected Person and a Party's Right to participate in a Hearing to be made by the Presiding Officer. At a preliminary hearing conducted before the commencement of an evidentiary hearing, the Presiding Officer shall determine whether any person requesting a contested case hearing has standing to make the request, whether a personal justiciable issue related to an application has been raised, and a party's right to participate in a hearing. The preliminary hearing may be conducted as specified in accordance with Rule 14.5. Any "affected person", as determined under this section, may participate in a hearing.

1. For any application, an affected person is one who has a personal justiciable interest related to a legal right, duty, privilege, power, or economic interest affected by the application that is within the District's regulatory authority. An interest common to members of the general public does not qualify as a personal justiciable interest.

2. Governmental entities, including local governments and public agencies, with authority under state law over issues contemplated by the application may be considered affected persons.

3. Relevant factors shall be considered, including, but not limited to, the following:
   a. Whether the interest claimed is one protected by the Act or Texas Water Code Chapter 36;
   b. Distance between the regulated activity and the affected interest;
   c. Whether a reasonable relationship exists between the interest claimed and the activity regulated;
   d. Likely impact of the regulated activity on the use of groundwater interests of the person; and
   e. For governmental entities, their statutory authority over or interest in the issues relevant to the application.

4. An applicant is an affected person.

G. If it is determined at the preliminary hearing that no person who requested a contested case hearing had standing or that no justiciable issues were raised, the board may treat the matter as uncontested as described by Rule 14.10.

RULE 14.15 HEARINGS CONDUCTED BY STATE OFFICE OF ADMINISTRATIVE HEARINGS

A. If requested by an applicant or other party to a contested case, the District shall contract with the State Office of Administrative Hearings to conduct a contested case hearing. A person opposing an application who requests a hearing under Rule 14.14C must include in a timely hearing request the statement "I/we request that the State Office of Administrative Hearings conduct the hearing" in order for the hearing to be referred to and conducted by the State Office of Administrative Hearings.

B. An applicant desiring that the District refer a contested case to the State Office of Administrative Hearings must make a written request for the State Office of Administrative Hearings referral at the time the applicant requests a contested case or, when a contested case has been requested by a person other than an applicant and the applicant desires for the District to contract with SOAH to conduct the contested case, the applicant must request a SOAH hearing no later than 5 business days after the determination that the District will grant a hearing under rule 14.14E.2.

C. A party requesting a hearing before the State Office of Administrative Hearings shall pay all costs as provided in Rule 9.13. The cost of the SOAH hearing may be apportioned if multiple parties request a SOAH hearing.

D. If the District contracts with the State Office of Administrative Hearings to conduct a hearing, the hearing shall be conducted as provided by Subchapters C, D, and F, Chapter 2001, Government Code.

E. An administrative law judge who conducts a contested case hearing shall consider applicable district rules or policies in conducting the hearing, but the district deciding the case may not supervise the administrative law judge. The District shall provide the SOAH administrative law judge with a written statement of applicable rules and policies. The district may not attempt to influence the findings of fact or the administrative law judge's application of the law in a contested case except by proper evidence and legal argument.

RULE 14.16 DISCOVERY

The presiding officer may issue subpoenas, require deposition and order other discovery consistent with the authority granted to a state agency under Subchapters C, D, and F, Chapter 2001, Texas Government Code.

RULE 14.17. NOTICE AND HEARING IN AN APPEAL OF DESIRED FUTURE CONDITIONS; JUDICIAL APPEAL OF DESIRED FUTURE CONDITIONS.

A. An affected person may file a petition with the District requiring that the District contract with the SOAH to conduct a hearing appealing the reasonableness of the desired future condition. The petition must be filed not later than the 120th day after the date on which the District adopts a desired future condition under Water Code Section 36.108(d-4). The petition must provide evidence that the District did not establish a reasonable desired future condition of the groundwater resources in the management area.

B. In this Rule, "affected person" means:

1. An owner of land in Ground Water Management Area 14;

2. A groundwater conservation district or subsidence district in or adjacent to Ground Water Management Area 14:

3. A regional water planning group with a water management strategy in Ground Water Management Area 14;

4. A person who holds or is applying for a permit from a district in Ground Water Management Area 14;

5. A person with a legally defined interest in groundwater in Ground Water Management Area 14; or

6. Any other person defined as affected by Texas Commission on Environmental Quality rule.

C. Not later than the 10th day after receiving a petition, the District shall submit a copy of the petition to the Texas Water Development Board. The Texas Water Development Board shall conduct an administrative review and study required by Water Code section 36.1083(e), which must be completed and delivered to SOAH not later than 120 days after the date the Texas Water Development Board receives the petition. SOAH shall consider the study described and the desired future conditions explanatory report submitted to the development board under Water Code section 36.108(dd)(3) to be part of the administrative record in the SOAH hearing; and the Texas Water Development Board shall make available relevant staff as expert witnesses if requested by SOAH or a party to the hearing.

D. Not later than 60 days after receiving a petition appealing the reasonableness of the desired future conditions filed under Water Code section 36.1083(b), the District will submit to SOAH a copy of the petition and contract with SOAH to conduct a contested case hearing.

E. The petitioner shall pay the costs associated with the contract with SOAH and shall deposit with the District an amount determined by the District, after consultation with SOAH, that is sufficient to pay the contract amount. The deposit must be received within 15 days of written notification by the District to the petitioner specifying the amount of the deposit. Failure to timely pay the deposit may result in dismissal of the petition. After the hearing is completed and all costs paid to SOAH, the district shall refund any excess money to the petitioner.

F. Unless provided by SOAH, the District shall provide notice of a hearing appealing the reasonableness of the desired future conditions. Not later than the 10th day before the date of a hearing the general manager or board shall provide notice as follows (unless notice provide by SOAH):

1. General Notice:
    a. Post notice in a place readily accessible to the public at the District office;
    b. Provide notice to the county clerk of each county in the District; and

2. Individual notice by regular mail, facsimile, or electronic mail to:
    a. The petitioner;
    b. Any person who has requested notice;
    c. Each nonparty district and regional water planning group located in Groundwater Management Area 14;
    d. The Texas Water Development Board; and
    e. The Texas Commission on Environmental Quality.

G. After the hearing and within 60 days of receipt of the administrative law judge's findings of fact and conclusions of law in a proposal for decision, including a dismissal of a petition, the District shall issue a final order stating the District's decision on the contested matter and the District's findings of fact and conclusions of law. The District may change a finding of fact or conclusion of law made by the administrative law judge, or may vacate or modify an order issued by the administrative law judge, as provided by Section 2001.058(e), Government Code.

H. If the District vacates or modifies the proposal for decision, the District shall issue a report describing in detail the District's reasons for disagreement with the administrative law judge's findings of fact and conclusions of law. The report shall provide the policy, scientific, and technical justifications for the District's decision.

I. If the District in its final order finds that a desired future condition is unreasonable, not later than the 60th day after the date of the final order, the

District shall reconvene in a joint planning meeting with the other districts in Groundwater Management Area 14 for the purpose of revising the desired future condition. The District and other districts in Groundwater Management Area 14 shall follow the procedures in Section 36.108 to adopt new desired future conditions applicable to the District.

J. A final order by the District finding that desired future condition is unreasonable does not invalidate the adoption of a desired future condition by a district that did not participate as a party in the hearing conducted under this Rule.

L. A final District order issued under this Rule may be appealed to a district court with jurisdiction over any part of the territory of the District. An appeal under this subsection must be filed with the district court not later than the 45th day after the date the District issues the final order. The case shall be decided under the substantial evidence standard of review as provided by Section 2001.174, Government Code. If the court finds that a desired future condition is unreasonable, the court shall strike the desired future condition and order the districts in the Groundwater Management Area 14 to reconvene not later than the 60th day after the date of the court order in a joint planning meeting for the purpose of revising the desired future condition. The District and other districts in the management area shall follow the procedures in Water Code Section 36.108 to adopt new desired future conditions applicable to the District. A court's finding under this Rule does not apply to a desired future condition that is not a matter before the court.

SECTION 15. INVESTIGATIONS AND ENFORCEMENT

RULE 15.1 NOTICE AND ACCESS TO PROPERTY

Pursuant to Texas Water Code Section 36.123, any authorized officer, agent, employee, or representative of the District, when carrying out technical and other investigations necessary to the implementation of the Rules or the Act, and after reasonable notice to the owner or operator, may enter upon private property for the purpose of inspecting and investigating conditions relating to the withdrawal, waste, water quality, pollution, or contamination of groundwater or other acts covered by the these Rules or Texas Water Code.

Prior to entering upon property for the purpose of conducting an investigation, the person seeking access must give notice in writing or in person or by telephone to the owner, lessee, or operator, agent, or employee of the well owner or lessee, as determined by information contained in the application or other information on file with the District. Notice is not required if prior permission is granted to enter without notice.

Inhibiting or prohibiting access to any Board Member or District agents or employees who are attempting to conduct an investigation under the District Rules constitutes a violation and subjects the person who is inhibiting or prohibiting access, as well as any other person who

authorizes or allows such action, to the penalties set forth in the Texas Water Code Chapter 36.102.

RULE 15.2 SHOW CAUSE ORDERS AND COMPLAINTS

The Board, either on its own motion or upon receipt of sufficient written protest or complaint, may at any time, after due notice to all interested parties, cite any person owning or operating a well within the District, or any person in the District violating the Act, these Rules, or an Order of the Board. Under the citation, that person is ordered to appear before the Board in a public hearing and require him to show cause why an enforcement action should not be initiated or why his operating authority or permit should not be suspended, cancelled, or otherwise restricted and limited, for failure to abide by the terms and provisions of the permit, these Rules, or the Act. The Board or General Manager may conduct a show cause hearing under the Rules applicable to a contested application.

RULE 15.3 CONDUCT OF INVESTIGATION

When investigations or inspections require entrance upon private property, such investigations and such inspections shall be conducted at reasonable times, and shall be consistent with all applicable rules and regulations concerning safety, internal security, and fire protection. The persons conducting such investigations shall identify themselves and present District identification upon request by the owner, operator, lessee, management in-residence, or person in charge.

RULE 15.4 REQUEST FOR INJUNCTIVE RELIEF AND ASSESSMENT OF PENALTIES

If it appears that a person has violated, is violating, or is threatening to violate any provision of the Act or any Rule, regulation, permit, Board order, or other order of the District, the Board may institute and conduct a suit in the name of the District for injunctive relief, for recovery of a civil penalty, or for both injunctive relief and penalty.

RULE 15.5 SEALING OF WELLS

Following due-process, the District may, upon orders from the judge of the courts, seal wells that are prohibited from withdrawing groundwater within the District by the District Rules to ensure that a well is not operated in violation of the District Rules. A well may be sealed when: (1) no application has been made for a permit to drill a new water well which is not excluded or exempted; or (2) no application has been made for an operating permit to withdraw groundwater from an existing well that is not excluded or exempted from the requirement that a permit be obtained in order to lawfully withdraw groundwater; or (3) the Board has denied, canceled, or revoked a drilling permit or an operating permit.

The well may be sealed by physical means, and tagged to indicate that the well has been sealed by the District. Other appropriate action may be taken as necessary to preclude operation of the well or to identify unauthorized operation of the well.

Tampering with, altering, damaging, or removing the seal of a sealed well, or in any other way violating the integrity of the seal, or pumping of groundwater from a well that has been sealed constitutes a violation of these Rules and subjects the person performing that action, as well as any well owner or primary operator who authorizes or allows that action, to such penalties as provided by the District Rules.

RULE 15.6 CIVIL PENALTIES

A. If a person violates any District Rule or Order, the District may assess a civil penalty against that person as provided by this section.

B. Any person who violates any District Rule is subject to a civil penalty of not less than $50.00 or more than $10,000 for each act of violation, as a court of competent jurisdiction may deem proper

C. Nothing in this Rule shall be construed as a waiver of the District's right to seek other remedies as allowed by law, including, but not limited to the following:

1. Injunctive relief to prevent specific conduct that violates these Rules of to require specific conduct that is necessary for compliance with these Rules;

2. Mandatory injunctive relief; and

3. Any other appropriate remedy or penalty as provided by law.

D. All civil penalties recovered by the District shall be paid to the Bluebonnet Groundwater Conservation District.

E. The District may enforce this section by filing a complaint in the appropriate court of jurisdiction in the county where the District Offices are located.

F. If the District prevails in any suit to enforce its Rules, the District may seek and the court shall grant, in the same action, recovery for attorney's fees, costs for expert witnesses, and other costs incurred by the District before the court in accordance with Section 36.066 Texas Water Code.

RULE 15.7 FAILURE TO REPORT PUMPAGE AND/OR TRANSPORTED VOLUMES

The accurate reporting and timely submission of pumpage and/or transported volumes is necessary for the proper management of water resources. Failure of the permittee to submit complete, accurate, and timely pumpage, transport and water quality reports as required by District Rule may result in late payment fees, forfeiture of the permit, or payment of increased meter reading and inspection fees as a result of District inspections to obtain current and accurate pumpage and/or transported volumes and water quality reports.

RULE 15.8 LATE PAYMENT FEES FOR FAILURE TO PAY WATER USE FEES

Failure to make complete and timely payments of a fee within 30 days of the invoice date for the fee shall automatically result in a late payment fee of 1.5% (18% per annum) monthly service charge until paid in full. The fee payment plus the late payment fee must be made within thirty (30) days following the date the payment is due, otherwise the permit may be declared void by the Board.

RULE 15.9 EMERGENCY ORDERS

The District will develop Emergency Contingency Plans to deal with water quality or water quantity emergencies. Public hearings on Emergency Contingency Plans shall be conducted by the Board prior to adoption. To implement Emergency Contingency Plans, the Board, or the General Manager if specifically authorized by an Emergency Contingency Plan, may adopt emergency orders of either a mandatory or prohibitory nature, requiring remedial action by a permittee or other party responsible for the emergency condition.

SECTION 16. RULEMAKING

RULE 16.1 POLICY

Rulemaking hearings shall be conducted in the manner the Board deems most suitable to obtain all relevant information and testimony on proposed rules as conveniently, inexpensively, and expeditiously as possible without prejudicing the rights of any person.

RULE 16.2 NOTICE

A. Not later than the 20th day before the date of a rulemaking hearing, the general manager or Board shall:

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

2. Provide notice to the county clerk of each county in the District;

3. Publish notice in one or more newspapers of general circulation in the county or counties in which the District is located;

4. Provide notice by mail, facsimile, or electronic mail to any person who has requested notice under Subsection G; and

5. Make available a copy of all proposed rules at a place accessible to the public during normal business hours and, if the District has a website, post an electronic copy on a generally accessible Internet site.

B. The notice provided must include:

1. The time, date, and location of the rulemaking hearing;

2. A brief explanation of the subject of the rulemaking hearing; and

3. A location or Internet site at which a copy of the proposed rules may be reviewed or copied.

RULE 16.3 CONDUCT OF RULEMAKING PROCEEDING

A. The presiding officer shall conduct a rulemaking hearing in the manner the presiding officer determines to be most appropriate to obtain information and comments relating to the proposed rule as conveniently and expeditiously as possible. Comments may be submitted orally at the hearing or in writing within any deadline established by the District. The presiding officer may hold the record open for a specified period after the conclusion of the hearing to receive additional written comments.

B. The District requires each person who participates in a rulemaking hearing to submit a hearing registration form stating:

1. The person's name;

2. The person's address; and

3. Whom the person represents, if the person is not at the hearing in the person's individual capacity.

C. The presiding officer shall prepare and keep a record of each rulemaking hearing in the form of an audio or video recording or a court reporter transcription.

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

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

F. Failure to provide notice under Subsection A.4 does not invalidate an action taken by the District at a rulemaking hearing.

G. A person who participates in a rulemaking hearing and who is affected by the rule adopted by the Board may administratively appeal a rulemaking decision of the Board by requesting a rehearing before the Board not later than the 20th day after the date of the Board's decision. A request for rehearing must be written, filed in the District office, and must state the grounds for the request. If the Board grants a request for rehearing, the Board shall schedule the rehearing not later than the 45th day after the date the request is granted. The failure of the Board to grant or deny a request for rehearing before the 91st day after the date the request is submitted is a denial of the request.

A decision by the Board on a rulemaking is final:

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

2. If a request for rehearing is filed on time, on the date:
   a. The Board denies the request for rehearing, or
   b. The Board renders a written decision after rehearing.

Except as provided below, a person who participates in a rulemaking hearing and who is affected by the rule adopted by the Board may file a suit against the District under Section 36.251, Texas Water Code, to appeal a rulemaking decision not later than the 60th day after the date on which the decision becomes final.

A person who participates in a rulemaking hearing and who is affected by the rule adopted by the Board may not file suit against the District under Section 36.251, Texas Water Code, if a request for rehearing was not filed on time.

RULE 16.4 EMERGENCY RULES

A. The Board may adopt an emergency rule without prior notice or hearing, or with an abbreviated notice and hearing, if the Board:

1. Finds that a substantial likelihood of imminent peril to the public health, safety, or welfare, or a requirement of state or federal law, requires adoption of a rule on less than 20 days' notice; and

2. Prepares a written statement of the reasons for its finding under Subdivision (1).

B. Except as provided by Subsection C, a rule adopted under this section may not be effective for longer than 90 days.

C. If notice of a hearing on the final rule is given not later than the 90th day after the date the rule is adopted, the rule is effective for an additional 90 days.

D. A rule adopted under this section must be adopted at a meeting held as provided by Chapter 551, Government Code.

SECTION 17. AQUIFER STORAGE AND RECOVERY PROJECTS

17.1. DEFINITIONS

In this Rule, "aquifer storage and recovery project," "ASR injection well," "ASR recovery well," and "project operator" have the meanings assigned by Water Code Section 27.151.

17.2. REGISTRATION AND REPORTING OF WELLS

A. A project operator shall:

1. Register the ASR injection wells and ASR recovery wells associated with the aquifer storage and recovery project with the District;

2. Each calendar month by the deadline established by the Texas Commission on Environmental Quality (TCEQ) for reporting to the TCEQ, provide the District with a copy of the written or electronic report required to be provided to the TCEQ under Water Code Section 27.155; and

3. Annually by the deadline established by the TCEQ for reporting to the TCEQ, provide the District with a copy of the written or electronic report required to be provided to the TCEQ under Section 27.156.

B. If an aquifer storage and recovery project recovers an amount of groundwater that exceeds the volume authorized by the TCEQ to be recovered under the project, the project operator shall report to the District the volume of groundwater recovered that exceeds the volume authorized to be recovered in addition to providing the report required by Subsection A.2.

17.3. PERMITTING, SPACING, AND PRODUCTION REQUIREMENTS

A. Except as provided by Subsection B, the District may not require a permit for the drilling, equipping, operation, or completion of an ASR injection well or an ASR recovery well that is authorized by the TCEQ.

B. The ASR recovery wells that are associated with an aquifer storage and recovery project are subject to the permitting, spacing, and production requirements of the District if the amount of groundwater recovered from the wells exceeds the

volume authorized by the TCEQ to be recovered under the project. A project operator must submit an operating permit application with the District in accordance with Rule 8.5 within 60 days of the time that the amount of groundwater recovered from the wells exceeds the volume authorized by the TCEQ to be recovered under the project. The requirements of the District apply only to the portion of the volume of groundwater recovered from the ASR recovery wells that exceeds the volume authorized by the TCEQ to be recovered.

C. A project operator may not recover groundwater by an aquifer storage and recovery project in an amount that exceeds the volume authorized by the TCEQ to be recovered under the project unless the project operator complies with the applicable requirements of the District as described by this section.

17.4. FEES AND SURCHARGES

A. The District may not assess a production fee or a transportation or export fee or surcharge for groundwater recovered from an ASR recovery well, except to the extent that the amount of groundwater recovered under the aquifer storage and recovery project exceeds the volume authorized by the commission to be recovered.

B. The District may assess a well registration fee or other administrative fee for an ASR recovery well in the same manner that the District assesses such a fee for other wells registered with the District.

17.5. CONSIDERATION OF DESIRED FUTURE CONDITIONS

The District may consider hydrogeologic conditions related to the injection and recovery of groundwater as part of an aquifer storage and recovery project in the planning for and monitoring of the achievement of a desired future condition for the aquifer in which the wells associated with the project are located.

Bluebonnet Groundwater Conservation District

Guidelines for Preparation of Hydrogeologic Reports For Submission in Support of Applications for the Permitted Use of Groundwater

October 15, 2014

Table of Contents

1.0 Introduction

Under Rule 8.5F, the Bluebonnet Groundwater Conservation District requires the submittal of Phase I and Phase II hydrogeologic reports for non-exempt wells with an inside casing diameter of eight (8) inches or greater as part of the permit application process. 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).

In general, the Phase I report is intended to be a preliminary report that relies on existing regional information, and the Phase II report is intended to be a final report that relies on site specific data, information, test results and analyses. Phase I reports may be supplemented with information such as test-hole, monitor wells, and

aquifer tests. An applicant who incurs the cost to include such supplemental information in a Phase I report bears the risk that the Board may deny the permit application even with the supplemental data.

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 BGCD to insure acceptability. BGCD 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 by BGCD to process the permit application. The exercise of this discretion by BGCD shall not be construed as limiting the authority of BGCD in any other matter. BGCD should be notified at least 24 hours in advance of the anticipated conduct of any test-hole drilling, well construction, or pumping test conducted as part of the hydrogeologic investigation performed to meet the requirements of these guidelines.

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 Phase I Report

The Phase I 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. The data are available from BGCD upon request, and come in four files:

- 1chclaythk.csv (Layer 1, Chicot Aquifer)
- 2evclaythk.csv (Layer 2, Evangeline Aquifer)
- 3bvclaythk.csv (Layer 3, Burkeville Confining Unit)
- 4jaclaythk.csv (Layer 4, Jasper Aquifer)

These files contain estimates of clay thickness for each active cell in the model. The applicant must include the estimated clay thickness and clay content (expressed as a percentage of layer thickness) for all layers in and above the proposed water bearing zone of the well.

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
- Tables of drawdown and subsidence at the locations of existing registered and permitted wells contained in the BGCD database

2.4 Discussion of Results and Recommendations

A discussion of the results of the simulations is required, and should include detailed recommendations regarding the design of a drilling and testing program that would be completed as part of the Phase II report.

3.0 Phase II Report

Phase II reports are to be completed after an approved program of drilling and aquifer testing have been completed. The data obtained from the drilling and aquifer testing shall be used in the analyses of the Phase II report.

3.1 Results of Borehole Drilling and Well Construction

The following data and analyses must be included in the report:

- Geologist logs of all boreholes
- Geophysical logs of all boreholes
- Estimates of clay thickness and clay percentage for each borehole calculated based

on model layer intervals for comparison to regional data

3.2 Results of Aquifer Tests

In general, the aquifer tests shall consist of a pre-test phase where the static water levels of the test and monitor wells are measured on a regular basis for 24 hours prior to the test, a constant pumping phase of not less than 24 hours and a recovery phase of a period sufficient for a 90% recovery of beginning water levels the test and monitor well locations or at least a 24 hour period, unless an alternative procedure is found acceptable by BGCD. Existing private wells within ¼ mile of the test location or otherwise acceptable to BGCD may be used as monitor wells for the pumping test.

The following data and analyses must be included in this report:

- A map giving the location and elevation above mean sea level (NGVD 1929 or NAVD 1988) of the test well, any existing or newly constructed monitor wells and all surrounding wells that exist within a ½ mile radius of the test well. The map shall include streets, roads and the bounds of land tracts sufficient to determine the location of the test well within the tract of land on which it is located. The map shall also include recharge features, geologic features, other water system features (e.g. storage tanks, existing wells), and potential sources of contamination.
- Narrative describing the aquifer test (dates and times run, pumping rate, wells monitored during test, method of data collection, etc.).
- A discussion of the conduct of the test giving details of the significant events of the test, any equipment failures and any contingency measures that may have been employed.
- Analyses of the test results, including the method(s) of analysis, the calculated aquifer parameters should include the transmissivity, hydraulic conductivity and storage coefficient (storativity) values.
- A table giving the water-level drawdown and recovery data from the test and monitor wells, and figures giving the water level recovery curves from which the aquifer parameters were calculated.
- A discussion of the conclusions drawn from the analytical results of the calculation of the aquifer parameters at the test location including and the effects of any boundary conditions identified during the test.

In addition, electronic versions of all test data shall be submitted to BGCD as part of the report.

3.3 Well Construction Diagram

A diagram of the as-built completion details of all production and monitoring wells must be included that shows, at a minimum, well depths, borehole and casing diameters, depth interval of well screens, and gravel pack design. The State of Texas Water Well Report (Drillers Log) shall also be included, but should not be used as a substitute for the more detailed requirements listed above.

3.4 Updated Simulation of Pumping

The objective of the updated simulations the impacts of the proposed pumping is to update the Phase I simulation with the local scale information developed from the drilling and testing program. Depending on the results of the aquifer test analyses, this updated simulation may be run using analytical methods or numerical methods. The time frame of the analysis should be the same as the time frame of the simulation completed in Phase I.

The report shall include the results of a simulation using a local scale analytical or numerical model, and the results compared to the results from the Phase I report simulation using the Groundwater Availability Model for the area. Results of the simulation must include:

- A discussion of the specific method used and the associated assumptions associated with the method
- A drawdown hydrograph at the location of the pumping well(s)
- A time series graph at the location of the pumping well(s) of subsidence
- Maps of drawdown and maximum subsidence
- Tables of drawdown and subsidence at the locations of existing registered and permitted wells contained in the BGCD database

3.5 Water Quality

The report shall include:

- A table of specific conductance, temperature, and pH measurements taken at regular intervals during the aquifer test giving the measured value and time of the measurement.
- Laboratory analysis of a water sample taken at the end of the pumping phase of the aquifer test.
- A discussion of the water quality analysis stating whether the sample was of a quality to meet Texas Commission on Environmental Quality Primary Drinking Water Standards.
- A discussion of expected changes in water quality that may be anticipated from future pumping either at the proposed well or any existing registered or permitted well within 1 mile of the proposed well

Appendix D – Resolution Adopting the Management Plan

APPENDIX D

Resolution adopting the Management Plan

BLUEBONNET GROUNDWATER CONSERVATION DISTRICT
RESOLUTION NO. 2018-01

RESOLUTION OF THE BOARD OF DIRECTORS OF THE BLUEBONNET GROUNDWATER CONSERVATION DISTRICT ADOPTING A DISTRICT MANAGEMENT PLAN

THE STATE OF TEXAS §
§
COUNTY OF GRIMES §

WHEREAS, Bluebonnet Groundwater Conservation District (District) is a duly created and existing groundwater conservation district created and operating under Chapter 8825 of the Texas Special District Laws Code and Chapter 36 of the Texas Water Code, as amended;

WHEREAS, the Management Plan of the District attached hereto as Attachment A, has been developed for the purpose of conserving, preserving, protecting, and recharging the aquifers in the District, and this action is taken under the District's statutory authority to prevent waste and protect rights of owners of interest in groundwater;

WHEREAS, after notice and hearing the Board of Directors ("Board") of the District revised and readopted a Management Plan on September 19, 2018; and

WHEREAS, the Management Plan meets the requirements of Texas Water Code § 36.1071 and § 36.1072 and 31 TAC §§ 356.5 and 356.6.

NOW THEREFORE, BE IT RESOLVED AND ORDERED BY THE BOARD OF DIRECTORS OF BLUEBONNET GROUNDWATER CONSERVATION DISTRICT THAT:

1. The facts and recitations found in the preamble of this Resolution are hereby found and declared to be true and correct, and are incorporated by reference herein and expressly made a part hereof, as if copied verbatim.

2. The Board of Directors of the District hereby adopts the attached Management Plan as the Management Plan for the District, subject to those amendments necessary based on comments received from the public at the public hearing or Board meeting, recommendations from the District Board, staff, or legal counsel, or to incorporate technical information received from the Texas Water Development Board and/or District consultants.

3. The General Manager and staff of the District are hereby authorized to take all steps necessary to implement this resolution and submit the Management Plan to TWDB for its approval.

4. The General Manager and staff of the District are further authorized to take any and all action necessary to coordinate with the TWDB as may be required in furtherance of TWDB's approval pursuant to the provisions of Section 36.1072 of the Texas Water Code.

PASSED AND APPROVED this the 19th day of September, 2018.

Jared Patout, President, Board of Directors

ATTEST:

Milton Beckendorff, Vice President, Board of Directors

Appendix E – Evidence the Management Plan was adopted after notice and hearing

APPENDIX E

Evidence the Management Plan was adopted after notice and hearing

Statement

The Bellville Times
P.O. Box 98
Bellville, TX 77418-0098
979-865-3131

Date
8/31/2018

To:
BLUEBONNET GROUNDWATER CONSERVATION DISTR P.O. BOX 269 NAVASOTA, TX 77868

Amount Due	Amount Enc.
$31.50	

Date	Transaction	Amount	Balance
07/31/2018	Balance forward		0.00
08/30/2018	#LEGAL. --- CLASSIFIED DISPLAY, 5 @ $6.30 = 31.50	31.50	31.50

CURRENT	1-30 DAYS PAST DUE	31-60 DAYS PAST DUE	61-90 DAYS PAST DUE	OVER 90 DAYS PAST DUE	Amount Due
31.50	0.00	0.00	0.00	0.00	$31.50

PUBLISHER'S AFFIDAVIT

"I solemnly swear that the above notice was published once in "*THE BELLVILLE TIMES*" newspaper, for the service of citation or notice of Publication, and the date borne by the issue of the newspaper in which said notice was published was August 30, 2018."

Bruce White
Publisher

SWORN TO AND SUBSCRIBED BEFORE ME by Bruce White
on this the 30th day of August 2018

Margaret Schneider
Notary Public, State of Texas

MARGARET SCHNEIDER
Notary Public, State of Texas
Commission Expires 01-22-2022
Notary ID 10551315

ellville nes ifieds

• Legal Notice • Legal Notice • Legal Notice

ance is provided).

- Applicants must rnish information re- uired for verification nd documentation f residency, income, esources and size of mily.
- Applicant's net in- ome cannot exceed ap- roximately 21% of the ederal Poverty Guidelines. Other actors may apply, such s size of household.
- Applicant's assets esources) for a family f one cannot exceed 2000 after exemp- ions.
- The resources for a amily of two (husband wife) cannot exceed 3000 after exemp- ions.
- Providers are reim- ursed for the Eligible ervices according to verage Medicaid pay- nent.

- Standards and Diagnostic Related Group (DRG) rates.
- Clients must use approved physicians.

Applications for the CIHC Program are available by writing or calling the Brazos Valley Council of Governments, P.O. Drawer 4128, Bryan, Texas 77805, (979) 595-2801 ext. 2267. Assistance with the Program is available in Austin County on the first and second Wednesday of the month at the Austin County Courthouse at 1 East Main St., Bellville, Texas. Contact our office for further information.

Liquor License

Application has been nade with the Texas Alcoholic Beverage Commission for a Wine and Beer Retailer's Permit by Ruffus Pleasant, LLC, to be located at 11 East Main Street, Bellville, Austin County, Texas. Officer of said corporation is Ross Farrell, President.

Notice of Hearing

TO: CONSUELA TOVAR AND TO ALL WHOM IT MAY CONCERN (IF THE NAME OF ANY PERSON TO BE SERVED WITH CITATION IS UNKNOWN), RESPONDENT(S):

YOU HAVE BEEN SUED. YOU MAY EMPLOY AN ATTORNEY. IF YOU OR YOUR ATTORNEY DO NOT FILE A WRITTEN ANSWER WITH THE CLERK WHO ISSUED THIS CITATION BY 10 A.M. ON THE MONDAY NEXT FOLLOWING THE EXPIRATION OF 20 DAYS AFTER YOU WERE SERVED THIS CITATION AND PETITION, A DEFAULT JUDGEMENT MAY BE TAKEN AGAINST YOU.

THE PETITION OF ANTHONY LEWIS, PETITIONER, WAS FILED IN THE COUNTY COURT AT LAW OF AUSTIN COUNTY, TEXAS ON AUGUST 09, 2018 AGAINST DANA BAKER, RESPONDENT(S), IN THIS CASE ON THE DOCKET OF SAID COURT NUMBERED AND STYLED:

NO. 2018L-7163

IN THE INTEREST OF E.L.L., A CHILD

IN THE COUNTY COURT AT LAW OF AUSTIN COUNTY, TEXAS

THIS SUIT REQUESTS ESTABLISHMENT OF THE PARENT-CHILD RELATIONSHIP.

THE ATTORNEY FOR THE PETITIONER IS: DANA BAKER, ATTORNEY AT LAW, FIVE EAST MAIN, BELLVILLE, TEXAS 77418, PHONE 979-865-0000.

THE DATE AND PLACE OF BIRTH OF THE CHILD (CHILDREN) WHO IS (ARE) THE SUBJECT OF THIS SUIT: E.L.L, 10/23/2007.

THE COURT HAS THE AUTHORITY IN THIS SUIT TO ENTER ANY JUDGEMENT OR DECREE IN THE CHILD'S (CHILDREN'S) INTEREST THAT WILL BE BINDING UPON YOU, INCLUDING THE TERMINATION OF THE PARENT-CHILD RELATIONSHIP, THE DETERMINATION OF PATERNITY AND THE APPOINTMENT OF A CONSERVATOR WITH AUTHORITY TO CONSENT TO THE CHILD'S (CHILDREN'S) ADOPTION.

ISSUED AND GIVEN UNDER MY HAND AND SEAL OF SAID COURT AT BELLVILLE, TEXAS ON AUGUST 22, 2018.

ATTEST: SUE MURPHY, DISTRICT CLERK

ONE EAST MAIN, BELLVILLE,

AUSTIN COUNTY, TEXAS 77418

(SEAL)

BY: CHRISTINA STOLARSKI,

Notice of Hearing

Notice is given that the Bluebonnet Groundwater Conservation District Board of Directors will hold a public hearing on the re-adoption of its Management Plan with proposed revisions at its regularly scheduled meeting on Wednesday, September 19, 2018, at the District Office, 303 East Washington, Suite B & C, Navasota TX 77868. The public meeting will begin at 6:00 p.m. and the public hearing will take place during the public meeting and will begin about but no earlier than 6:00 p.m.

A copy of the proposed Management Plan is available for inspection at the District office 303 East Washington, Suite D, Navasota TX 77868 and may be downloaded and copied from the District's website at www.bluebonnetgroundwater.org.

Tax Problems?

Real Estate

Navasota Examiner
PO Box 751
115 Railroad St
Navasota, Texas 77868

Invoice/Statement

8/31/2018

BLUEBONNET GROUNDWATER
CONSERVATION
PO BOX 269
NAVASOTA, TX 77868-0269

	Sales Rep	Account #	Amount Due
Net 10	99	100704	$48.60

Date	Description	Amount	Balance
07/31/2018	Balance forward		0.00
08/29/2018	INV #81669. LEGAL/DISPLAY-HEARING MANAGEMENT PLAN --- 25 LEGAL/DISPLAY, 9 @ $5.40 = 48.60	48.60	48.60

CURRENT	1-30 DAYS PAST DUE	31-60 DAYS PAST DUE	61-90 DAYS PAST DUE	OVER 90 DAYS PAST DUE	Amount Due
48.60	0.00	0.00	0.00	0.00	$48.60

We appreciate your business!

Phone # 936-825.6484

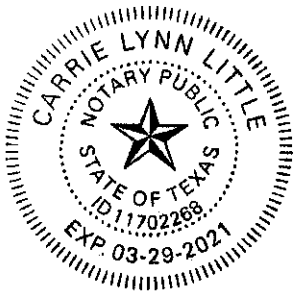
Fax # 936-825-2230

www.navasotaexaminer.com

Affidavit of Publication

The State of Texas
County of Grimes

Before me, the undersigned authority, on this day personally appeared Ana Cosme of the Navasota Examiner, who being by me duly sworn, upon oath deposes and says: that the attached notice was published in the Navasota Examiner; a newspaper published in the English language and of general circulation in Grimes County, Texas for more than one year prior to the date of first publication of said notice in the issue(s) of August 29 2018 and that the attached newspaper clipping is true and correct copy of said published notice.



Signed Ana I. Cosme

Sworn to and subscribed before me this 29 day of August 2018.

Carrie L Little

Notary Public in and for the State of Texas

rors – residential glass replacement - U-Haul Rentals & storage rental, 936-825-3202. Call Anytime.

FOR SALE TO BE MOVED: 43x56 Antique House. Excellent shape. Cypress siding. Composition Roof. Pine & hardwood floors. 2x2, side x side windows. Storm windows. Modern Kit and bath. 11' ceilings. Decorative molding/ accents, Willis, TX $85,000. Larry @ 936-825-4788.

FOR SALE: Boer goats, California rabbits (meat and show) and yard eggs, 936-870-6378 or 713-806-7410.

HOUSE FOR SALE: Needs to be moved, $40,000. 2 bedrooms 1½ baths, 9050 Glenn Ln, Navasota, TX. Email snrub57@gmail.com for information.

FOR SALE: 55 GALLON ink drums $10, wood pallets $5, and end rolls $10. Call Granite Printing, 512-352-3687, or come by, 2675 CR 374, Taylor, TX.

SERVICES

AGUILAR PAINT SERVICES: Interior & exterior. All types of fencing. Free estimates, 979-525-6461.

DOBERMAN PINSCHERS: Show quality. Pup and young adults. Uncropped: $500 or 2 for $800. Cropped: $900. Pick of the litter: $1,000. In Caldwell, 713-562-0396 or 979-567-3110.

and cattle to this beautiful acreage. Fenced & cross fenced with new well. Many nice home sites to choose from. Clusters of hardwoods & a small creek area. No Flood Plain. Priced to Sell! **$14,500/AC**

Iola: 20 acres: Ag exempt for Hay with 3-3-2 Home! New metal roof, fresh paint, wood burning fireplace, detached 2 car Carport, pond & a lily pond. **$425,000**

LEGAL NOTICES

SMALL TAXING UNIT NOTICE

The City of Iola will hold a meeting at 7:00 PM on September 11, 2018 at The Iola Community Center, 7264 Main Street, Iola, Texas 77861 to consider adopting a proposed tax rate for tax year 2018. The proposed tax rate is $0.125652 per $100 of value.

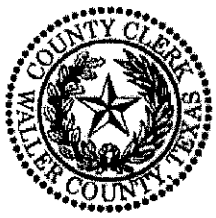
HAZARD MITIGATION GRANT SERVICES REQUEST FOR PROPOSALS

Grimes County is soliciting service providers for one or more Hazard Mitigation Assistance (HMA) grants from the Texas Division of Emergency Management, Texas Water Development Board and/ or other sources, including Hazard Mitigation Grant Program, Pre-Disaster Mitigation, and/or Flood Mitigation Assistance. Accordingly, the County seeks to contract with a qualified service provider for pre-award and post-award management of HMA project(s). Please submit 4 copies of your proposal of services and a statement of qualifications to Attn: Jessica Herrera, PO Box 510, Anderson, TX 77830. Proposals must be received by the County no later than 1:00pm on September 17, 2018 to be considered. The County reserves the right to negotiate with any and all proposers, as per the Texas Professional Services Procurement Act and the Uniform Grant and Contract Management Standards. Minority Business Enterprises, Small Business Enterprises, Women Business Enterprises, and labor surplus area firms are encouraged to submit proposals. Grimes County is an Affirmative Action/Equal Opportunity Employer.

NOTICE OF PUBLIC HEARING

Notice is given that the Bluebonnet Groundwater Conservation District Board of Directors will hold a public hearing on the re-adoption of its Management Plan with proposed revisions at its regularly scheduled meeting on Wednesday, September 19, 2018, at the District Office, 303 East Washington, Suite B & C, Navasota TX 77868. The public meeting will begin at 6:00 p.m. and the public hearing will take place during the public meeting and will begin about but no earlier than 6:00 p.m.

A copy of the proposed Management Plan is available for inspection at the District office 303 East Washington, Suite D, Navasota TX 77868 and may be downloaded and copied from the District's website at www.bluebonnetgroundwater.org.



Waller County
Debbie Hollan, County Clerk
836 Austin St.
Suite 217
Hempstead, TX 77445
979-826-7711

Receipt: 18-7115

Product	**Name**		**Extended**
POSTING	Posting		$2.00
		Pages	1
		Document #	18-333
Posting			$2.00
Total			$2.00
Tender (CHECK)			$2.00
Check Number	2163		
Paid By	ZACH HOLLAND		

Thank You for Your Business

8/27/18 2:30 PM jdeutrich

NOT COMPARED
AN ORIGINAL WAS

NOTICE OF PUBLIC HEARING

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18-333 POSTED
08/27/2018 02:30:29 PM Total Pages: 1 Fee: 2.00
Debbie Hollan, County Clerk - Waller County, TX

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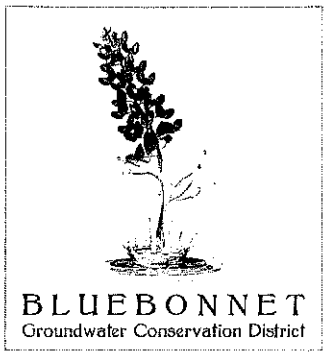
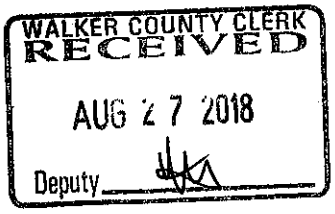


Bluebonnet Groundwater Conservation District
303 East Washington, Suite D, PO Box 269
Navasota, Texas 77868-0269
Phone: 936 825-7303 Fax: 936 825-7331
www.bluebonnetgroundwater.org



August 24, 2018

Ms. Kari French
Walker County Clerk
1100 University, Suite 201
Huntsville, Texas 77342

Re: Public Hearing Notice Posting for Bluebonnet Groundwater Conservation District.

Dear Ms. French:

Enclosed, please find copies of the notice for September 19, 2018 Bluebonnet Groundwater Conservation District public hearing for posting. Also, a check accompanies the item to cover the allocated costs of posting.

Please post the public hearing notice by Thursday August 30, 2018. If you would also mail the receipt and stamped copy of the original posted in the stamped and addressed envelope, I would be greatly appreciative.

If you have questions concerning this letter or the notices, please contact me at 936-825-7303.

Many thanks,

Zach Holland, General Manager
Bluebonnet Groundwater Conservation District

Enclosures

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FILED FOR POSTING
At 9:15 O'clock A. M
AUG 28 2018
Kari French, Walker County Texas
by Lou Kelly Deputy

NOTICE OF PUBLIC HEARING

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FILED FOR POSTING
At 9:15 O'clock A M
AUG 28 2018
Kari French, Walker County Texas
by Lori Lilley Deputy

OFFICIAL RECEIPT

Carrie Gregor, Austin County Clerk
One East Main
Bellville, Texas 77418
Phone Number: (979) 865-5911
Fax Number: (979) 865-0336

Payor
ZACH HOLLAND

Receipt No.
2018-197819

Transaction Date
08/27/2018

Description	Amount Paid
Miscellaneous Payment	
Copies	1.00
Notice of Meeting	3.00
SUBTOTAL	**4.00**

PAYMENT TOTAL **4.00**

Check (Ref #2160) Tendered	4.00
Total Tendered	**4.00**
Change	0.00

PL

08/27/2018	Cashier	Audit
04:52 PM	Station CC6	1148472

OFFICIAL RECEIPT

NOTICE OF PUBLIC HEARING

Notice is given that the Bluebonnet Groundwater Conservation District Board of Directors will hold a public hearing on the re-adoption of its Management Plan with proposed revisions at its regularly scheduled meeting on Wednesday, September 19, 2018, at the District Office, 303 East Washington, Suite B & C, Navasota TX 77868. The public meeting will begin at 6:00 p.m. and the public hearing will take place during the public meeting and will begin about but no earlier than 6:00 p.m.

A copy of the proposed Management Plan is available for inspection at the District office 303 East Washington, Suite D, Navasota TX 77868 and may be downloaded and copied from the District's website at www.bluebonnetgroundwater.org.

FILED

18 AUG 27 PM 4:24

Carrie Gregor

COUNTY CLERK
AUSTIN COUNTY, TEXAS

BLUEBONNET
Groundwater Conservation District

Bluebonnet Groundwater Conservation District
303 East Washington, Suite D, PO Box 269
Navasota, Texas 77868-0269
Phone: 936 825-7303 Fax: 936 825-7331
www.bluebonnetgroundwater.org

August 24, 2018

Ms. Carrie Gregor
Austin County Clerk
One East Main
Bellville, Texas 77418

Re: Public Hearing Notice Posting for Bluebonnet Groundwater Conservation District.

Dear Ms. Gergor:

Enclosed, please find copies of the notice for September 19, 2018 Bluebonnet Groundwater Conservation District public hearing for posting. Also, a check accompanies the item to cover the allocated costs of posting.

Please post the public hearing notice by Thursday August 30, 2018. If you would also mail the receipt and stamped copy of the original posted in the stamped and addressed envelope, I would be greatly appreciative.

If you have questions concerning this letter or the notice, please contact me at 936-825-7303.

Many thanks,

Zach Holland, General Manager
Bluebonnet Groundwater Conservation District

Enclosures

NOTICE OF PUBLIC HEARING

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A copy of the proposed Management Plan is available for inspection at the District office 303 East Washington, Suite D, Navasota TX 77868 and may be downloaded and copied from the District's website at www.bluebonnetgroundwater.org.

BLUEBONNET
Groundwater Conservation District

Bluebonnet Groundwater Conservation District
303 East Washington, Suite D, PO Box 269
Navasota, Texas 77868-0269
Phone: 936 825-7303 Fax: 936 825-7331
www.bluebonnetgroundwater.org

August 24, 2018

Mr. David Pasket
Grimes County Clerk
P.O. Box 209
Anderson, Texas 77830

Re: Public Hearing Notice Posting for Bluebonnet Groundwater Conservation District.

Dear Mr. Pasket:

Enclosed, please find copies of the notice for September 19, 2018 Bluebonnet Groundwater Conservation District public hearing for posting. Also, a check accompanies the item to cover the allocated costs of posting.

Please post the public hearing notice by Thursday August 30, 2018. If you would also mail the receipt and stamped copy of the original posted in the stamped and addressed envelope, I would be greatly appreciative.

If you have questions concerning this letter or the notices, please contact me at 936-825-7303.

Many thanks,

Zach Holland, General Manager
Bluebonnet Groundwater Conservation District

Enclosures

FILED FOR RECORD
AT 1:17 O'CLOCK PM
AUG 27 2018
DAVID PASKET
COUNTY CLERK, GRIMES COUNTY, TX
By _____ Deputy

NOTICE OF PUBLIC HEARING

Notice is given that the Bluebonnet Groundwater Conservation District Board of Directors will hold a public hearing on the re-adoption of its Management Plan with proposed revisions at its regularly scheduled meeting on Wednesday, September 19, 2018, at the District Office, 303 East Washington, Suite B & C, Navasota TX 77868. The public meeting will begin at 6:00 p.m. and the public hearing will take place during the public meeting and will begin about but no earlier than 6:00 p.m.

A copy of the proposed Management Plan is available for inspection at the District office 303 East Washington, Suite D, Navasota TX 77868 and may be downloaded and copied from the District's website at www.bluebonnetgroundwater.org.

Filed for Record in:
Grimes County
On: Aug 27,2018 at 01:17P
As a POSTING

Amount 3.00
Receipt Number - 99251
By: Barbara Kimich

STATE OF TEXAS COUNTY OF GRIMES
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the volume and page of the named records of:
Grimes County
as stamped hereon by me.
Aug 27,2018

David Pasket, Grimes County Clerk
Grimes County

Filed for Record in:
Grimes County
On: Aug 27,2018 at 01:17P
As a NOTICE

Amount 8.00
Receipt Number - 99251
By: Barbara Kimich

STATE OF TEXAS COUNTY OF GRIMES
I hereby certify that this instrument was filed on the date and time stamped hereon by me and was duly recorded in the volume and page of the named records of:
Grimes County
as stamped hereon by me.
Aug 27,2018

David Pasket, Grimes County Clerk
Grimes County

Zach Holland Log Off

Open Meeting Submission

TRD:	2018007644
Date Posted:	08/27/2018
Status:	Accepted
Agency Id:	1114
Date of Submission:	08/27/2018
Agency Name:	Bluebonnet Groundwater Conservation District
Board:	Bluebonnet Groundwater Conservation District
Date of Meeting:	09/19/2018
Time of Meeting:	06:00 PM **(##:## AM Local Time)**
Street Location:	303 E Washington Ave, Suite B&C
City:	NAVASOTA
State:	TX
Liaison Name:	Zach Holland
Liaison Id:	4
Additional Information Obtained From:	Zach Holland, General Manager 936-825-7303 zholland@bluebonnetgroundwater.org
	NOTICE OF PUBLIC HEARING

Agenda: Notice is given that the Bluebonnet Groundwater Conservation District Board of Directors will hold a public hearing on the re-adoption of its Management Plan with proposed revisions at its regularly scheduled meeting on Wednesday, September 19, 2018, at the District Office, 303 East Washington, Suite B & C, Navasota TX 77868. The public meeting will begin at 6:00 p.m. and the public hearing will take place during the public meeting and will begin about but no earlier than 6:00 p.m.

A copy of the proposed Management Plan is available for inspection at the District office 303 East Washington, Suite D, Navasota TX 77868 and may be downloaded and copied from the District's website at www.bluebonnetgroundwater.org.

New Submission

BLUEBONNET GROUNDWATER CONSERVATION DISTRICT

Board of Directors Meeting

Wednesday, September 19, 2018
6:00 PM

Bluebonnet Groundwater Conservation District
Board Room, Suite B & C
303 East Washington Avenue
Navasota, Texas

AGENDA

1. Call to order

2. Public Comment
   (Public comment is limited to a maximum of 3 minutes per speaker and/or 30 minutes total time for all speakers)

3. Public Hearing on proposed revisions to District Management Plan.

4. Discussion and possible action to approve revising and readopting the District Management Plan and adopting a resolution approving revising and readopting the District Management Plan.

5. Discussion and possible action to approve minutes of April 18, 2018 Board Meeting.

6. Discussion and possible action to approve amended Board Policies and Investment Policy and adopting a resolution approving the Investment Policy and appointing an Investment Officer.

7. Discussion and possible action to approve Resolution Authorizing Participation in the TexPool Investment Pools and Designating Authorized Representatives.

8. Discussion and possible action to approve Groundwater Management Area 14 Interlocal Agreement.

9. Discussion and possible action to approve quarterly Financial Report.

10. Discussion and possible action to approve quarterly Investment Report.

11. Discussion and possible action to accept quarterly Drought Status Assessment.

12. Discussion and possible action to approve employment contract for GM Holland.

13. Discussion and possible action to approve Amended FY 2018 District Budget.

14. Discussion and possible action to approve FY 2019 District Budget.

15. Discussion and possible action to approve designations for Money Market Account.

16. Discussion and possible action to designate dates and times for FY 2019 Board of Directors Meetings.

17. Discussion and possible action to approve membership to the Texas Ground Water Association.

18. Discussion and possible action to accept recommended MAG Peaking Factors for District to Region H Regional Water Planning Group.

19. Discussion and possible action to approve recommendations, budget and schedule with groundwater model development.

20. General Managers Report
    A. Well Registration/Permitting
    B. GMA 14
    C. TAGD & TWCA
        i. 2018 Texas Groundwater Summit, August 28-30, 2018 at the Hyatt-Hill Country in San Antonio
    D. Legislative & Case Law Update
    E. Region G & H RWPG
    F. Vehicle Summary
    G. HYDROS update

21. Date for next Board meeting October 17, 2018.

22. Adjourn

Agenda items may be considered, discussed and/or acted upon in a different order than the order set forth above.

Executive Session

The Board of Directors of the Bluebonnet Groundwater Conservation District reserves the right to adjourn into Executive (Closed) Session at any time during the course of this meeting to discuss any of the items listed on this agenda, as authorized by the Texas Government Code, Sections 551.071 (Consultations with Attorney), 551.072 (Deliberations about Real Property), 551.073 (Deliberations about Gifts and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations about Security Devices), and 551.086 (Economic Development). No final action will be taken in Executive Session.

Appendix F – Evidence District coordinated development of the Management Plan with Surface Water Entities

APPENDIX F

Evidence the District coordinated development of the Management Plan with Surface Water Entities

From: Zach Holland
To: "DavidC@Brazos.org"
Subject: Bluebonnet GCD Draft Management Plan
Date: Monday, June 18, 2018 12:47:00 PM
Attachments: Bluebonnet GCD - DRAFT MGMT Plan 11 068.pdf

Good afternoon Mr. Collinsworth,

Great to see you last week at TWCA. Please find attached a draft of our management plan for your consideration and review. If there is any information that you feel would be beneficial to include or provide greater coordination, please let me know. Greatly appreciate you sir and all that you do.

Many thanks,
Zach

Zach Holland
General Manager

Bluebonnet GCD
303 E. Washington Ave., Suite D
P.O. Box 269
Navasota, Texas 77868
Phone 936.825.7303
Fax 936.825.7331
www.bluebonnetgroundwater.org

From: Zach Holland
To: "Jace Houston"
Subject: Bluebonnet GCD Draft Management Plan
Date: Monday, June 18, 2018 12:51:00 PM
Attachments: Bluebonnet GCD - DRAFT MGMT Plan 11 068.pdf

Good afternoon Mr. Houston,

Great to see you last week at TWCA. Please find attached a draft of our management plan for your consideration and review. If there is any information that you feel would be beneficial to include or provide greater coordination, please let me know. Greatly appreciate you sir and all that you do.

Many thanks,
Zach

Zach Holland
General Manager

Bluebonnet GCD
303 E. Washington Ave., Suite D
P.O. Box 269
Navasota, Texas 77868
Phone 936.825.7303
Fax 936.825.7331
www.bluebonnetgroundwater.org

From: Zach Holland
To: "Kevin Ward (wardk@trinityra.org)"
Subject: Bluebonnet GCD Draft Management Plan
Date: Monday, June 18, 2018 3:06:00 PM
Attachments: Bluebonnet GCD - DRAFT MGMT Plan 11 068.pdf

Good afternoon Mr. Ward,

Great to see you last week at TWCA. Please find attached a draft of our management plan for your consideration and review. If there is any information that you feel would be beneficial to include or provide greater coordination, please let me know. Greatly appreciate you sir and all that you do.

Many thanks,
Zach

Zach Holland
General Manager

Bluebonnet GCD
303 E. Washington Ave., Suite D
P.O. Box 269
Navasota, Texas 77868
Phone 936.825.7303
Fax 936.825.7331
www.bluebonnetgroundwater.org

Appendix G – GAM Run 16-024 MAG: Modeled Available Groundwater for the Gulf Coast Aquifer System in Groundwater Management Area 14

APPENDIX G

GAM RUN 16-024 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 Availability Modeling Section
(512) 936-0883
December 15, 2016

GAM Run 16-024 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 Availability Modeling Section
(512) 936-0883
December 15, 2016

Shirley C. Wade
12/15/16

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GAM RUN 16-024 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 Availability Modeling Section
(512) 936-0883
December 15, 2016

EXECUTIVE SUMMARY:

The modeled available groundwater for Groundwater Management Area 14 and the projected groundwater pumpage in subsidence districts for the Gulf Coast Aquifer System ranges from approximately 1,020,000 acre-feet per year in 2010 to 950,000 acre-feet per year in 2070. Table 1 presents the modeled available groundwater summarized by the decades 2010 to 2070 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 districts and non-district counties, and the projected groundwater pumpage for subsidence districts by the decades 2020 to 2070 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 April 29, 2016. The explanatory report and other materials submitted to the Texas Water Development Board (TWDB) were determined to be administratively complete on July 12, 2016.

REQUESTOR:

Ms. Kathy Turner Jones, chair of Groundwater Management Area 14.

DESCRIPTION OF REQUEST:

In a letter dated May 5, 2016, Ms. Kathy Turner Jones provided the TWDB with the desired future conditions of the Gulf Coast Aquifer System adopted by the groundwater

conservation districts in Groundwater Management Area 14. The desired future conditions for the Gulf Coast Aquifer System, as described in Resolution No. 2016-01-01 and adopted April 29, 2016 by the groundwater conservation districts within Groundwater Management Area 14, are described below:

Groundwater Management Area 14 [all counties]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 28.3 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 23.6 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 18.5 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 66.2 feet after 61 years.

Austin County [Bluebonnet Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 39 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 23 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 23 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 76 feet after 61 years.
- From estimated year 1890 conditions, the maximum subsidence in Austin County should not exceed approximately 2.83 feet by the year 2070.

Brazoria County [Brazoria County Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 23 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 27 feet after 61 years.

Chambers County

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 32 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 30 feet after 61 years.

Grimes County [Bluebonnet Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 5 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 5 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 6 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 52 feet after 61 years.
- From estimated year 1890 conditions, the maximum subsidence in Grimes County should not exceed approximately 0.12 feet by the year 2070.

Hardin County [Southeast Texas Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 21 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 27 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 29 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 89 feet after 61 years.

Jasper County [Southeast Texas Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 23 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 41 feet after 61 years.

- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 46 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 40 feet after 61 years.

Jefferson County

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 15 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 17 feet after 61 years.

Liberty County

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 27 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 29 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 25 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 120 feet after 61 years.

Montgomery County [Lone Star Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 26 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately -4 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately -4 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 34 feet after 61 years.

Newton County [Southeast Texas Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 35 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 45 feet after 61 years.

- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 44 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 37 feet after 61 years.

Orange County

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 14 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 16 feet after 61 years.

Polk County [Lower Trinity Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 26 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 10 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 15 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 73 feet after 61 years.

San Jacinto County [Lower Trinity Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 22 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 19 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 19 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 108 feet after 61 years.

Tyler County [Southeast Texas Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 42 feet after 61 years.

- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 35 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 30 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 62 feet after 61 years.

Walker County [Bluebonnet Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 9 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 4 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 42 feet after 61 years.
- From estimated year 1890 conditions, the maximum subsidence in Walker County should not exceed approximately 0.04 feet by the year 2070.

Waller County [Bluebonnet Groundwater Conservation District]

- From estimated year 2009 conditions, the average drawdown of the Chicot Aquifer should not exceed approximately 39 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 39 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 40 feet after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 101 feet after 61 years.
- From estimated year 1890 conditions, the maximum subsidence in Waller County should not exceed approximately 4.73 feet by the year 2070.

Washington County

- From estimated year 2009 conditions, the average drawdown of the Evangeline Aquifer should not exceed approximately 1 foot after 61 years.
- From estimated year 2009 conditions, the average drawdown of the Burkeville confining unit should not exceed approximately 16 feet after 61 years.

- From estimated year 2009 conditions, the average drawdown of the Jasper Aquifer should not exceed approximately 48 feet after 61 years.

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, modeled available groundwater values were not determined for those counties. 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. The subsidence district groundwater pumpage projections are provided in Table 2 and are incorporated into the information relevant to regional water planning (Table 3).

METHODS:

The TWDB ran the groundwater availability model (version 3.01) for the northern part of the Gulf Coast Aquifer System (Figure 1) using the model files submitted with the explanatory report (GMA 14 and others, 2016; Appendix F) and an updated pumping file provided by the Groundwater Management Area 14 consultants on October 26, 2016. 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 (Figure 2 and 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 scenarios were compatible with the adopted desired future conditions. The TWDB used these model files to extract model-calculated water levels for 2009 and 2070, and drawdown was calculated as the difference between water levels in 2009 and water levels in 2070. The results of this evaluation are provided in the Appendix. Drawdown averages were calculated for each county by aquifer and for the entire groundwater management area by aquifer. As specified in the explanatory report (GMA 14 and others, 2016; Appendix F), drawdown for cells which became dry during the simulation (water level dropped below the base of the cell) were excluded from the averaging. The calculated drawdown averages compared well with the desired future conditions and verified that the pumping scenarios defined by the districts achieved the desired future conditions. The subsidence values were also extracted from the model

results and those were also compared to subsidence-based desired future conditions for the four counties where they were specified.

Modeled Available Groundwater and Permitting

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

PARAMETERS AND ASSUMPTIONS:

The parameters and assumptions for the groundwater availability 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).

- Drawdown averages and modeled available groundwater values are based on the extent of the model area rather than official aquifer boundaries (Figures 1 and 2).

- Drawdown for cells with water levels below the base elevation of the cell ("dry" cells) were excluded from the averaging per Appendix F of the explanatory report.

- 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.

- For those cells where water levels have dropped below the base we include pumping in the modeled available groundwater values.

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

- Starting conditions were assumed reasonable since 2009 was the final year of the calibrated model.

- A model tolerance of up to one foot was assumed when comparing desired future condition average drawdown values per county to model results (Appendix).

- A model tolerance of 0.1 foot was assumed when comparing desired future condition maximum subsidence values per county to model results (Appendix).

- Average drawdown per county may include some model cells that represent portions of surface water such as bays, reservoirs, and the Gulf of Mexico.

RESULTS:

The modeled available groundwater for the Gulf Coast Aquifer System that achieves the desired future conditions adopted by Groundwater Management Area 14 decreases from 571,007 to 544,220 acre-feet per year between 2010 and 2070 (Table 1). Projected groundwater pumpage from the three counties in the Harris Galveston Subsidence District and Fort Bend Subsidence District range between 325,226 and 545,246 acre-feet per year during the period 2010 to 2070 (Table 2). The combination of modeled available groundwater and projected groundwater pumpage has been summarized by county, river basin, and regional water planning area for use in the regional water planning process (Table 3). The modeled available groundwater is also summarized by groundwater conservation district and county (Table 1).

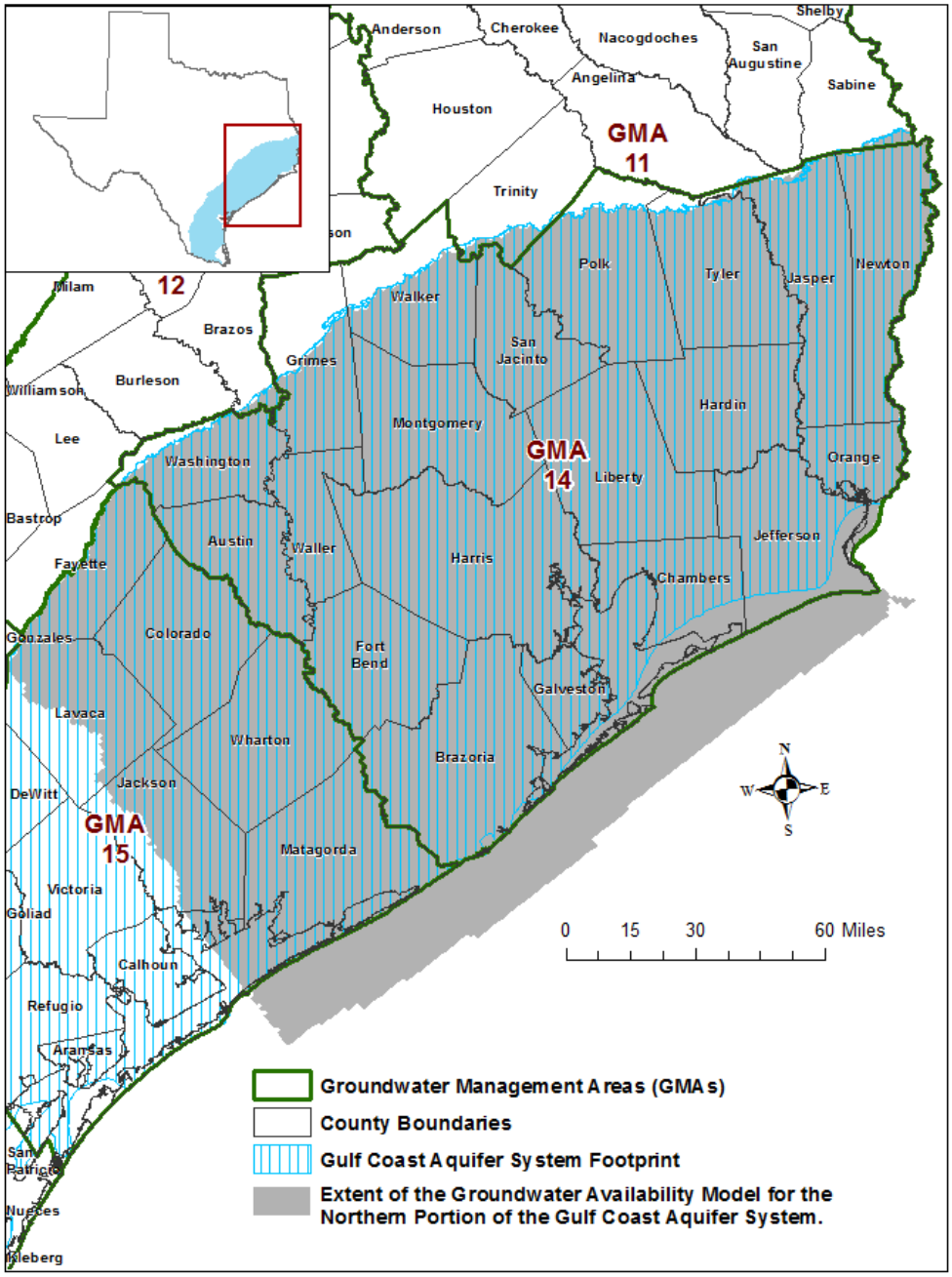

FIGURE 1. MAP SHOWING THE AREAS COVERED BY THE GROUNDWATER AVAILABILITY MODEL FOR THE NORTHERN PART OF THE GULF COAST AQUIFER SYSTEM.

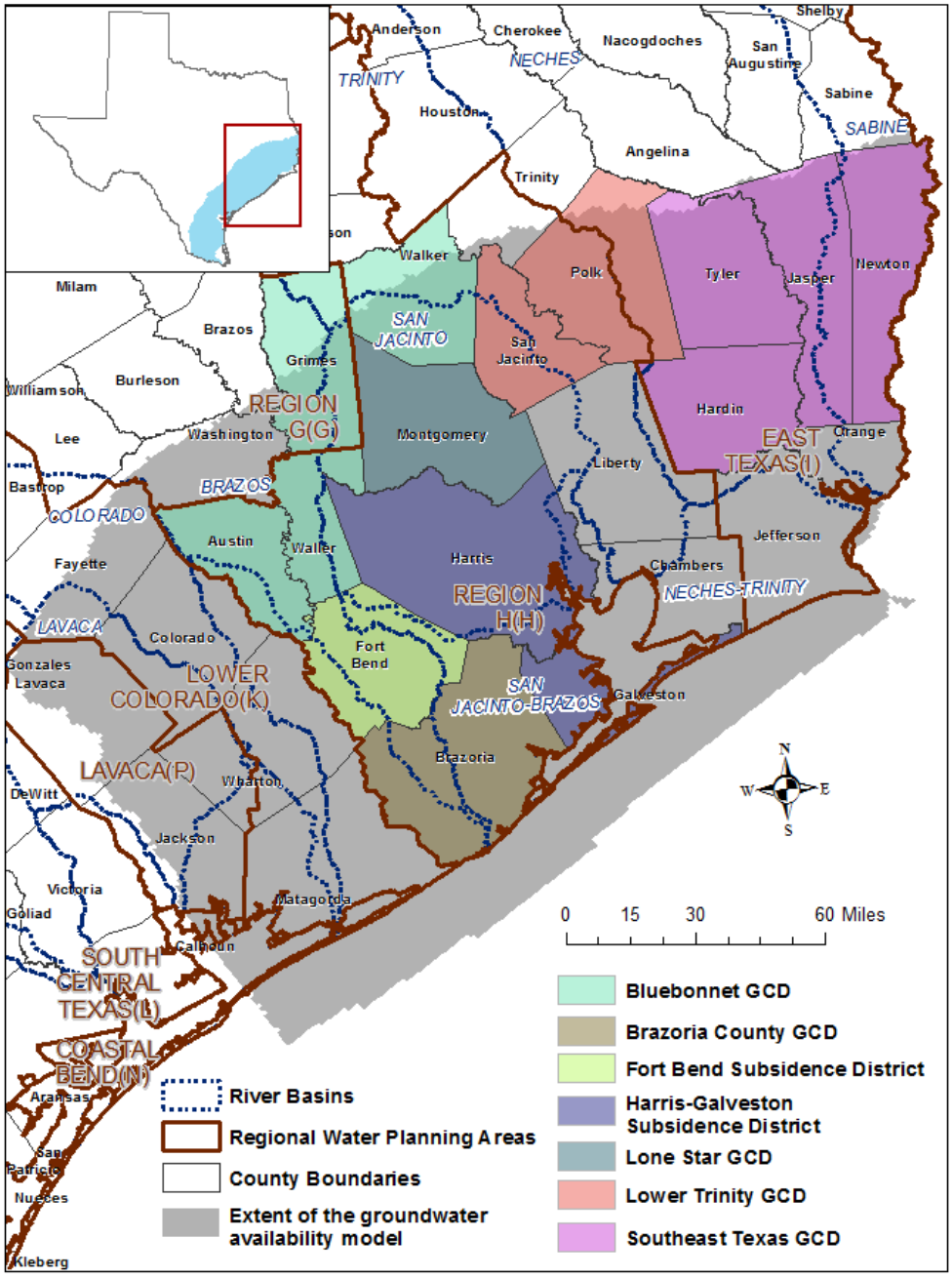

FIGURE 2. MAP SHOWING REGIONAL WATER PLANNING AREAS, GROUNDWATER CONSERVATION DISTRICTS (GCDS), SUBSIDENCE DISTRICTS, COUNTIES, AND RIVER BASINS IN GROUNDWATER MANAGEMENT AREA 14.

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 2010 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.

Groundwater Conservation District	County	Aquifer	2010	2020	2030	2040	2050	2060	2070
Bluebonnet GCD	Austin	Chicot Aquifer	1,300	1,300	1,300	1,300	1,300	1,300	1,300
Bluebonnet GCD	Austin	Evangeline Aquifer	19,998	19,998	19,998	19,998	19,998	19,998	19,998
Bluebonnet GCD	Austin	Burkeville confining	0	0	0	0	0	0	0
Bluebonnet GCD	Austin	Jasper Aquifer	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Bluebonnet GCD	Grimes	Chicot Aquifer	0	0	0	0	0	0	0
Bluebonnet GCD	Grimes	Evangeline Aquifer	2,999	2,999	2,999	2,999	2,999	2,999	2,999
Bluebonnet GCD	Grimes	Burkeville confining	0	0	0	0	0	0	0
Bluebonnet GCD	Grimes	Jasper Aquifer	10,998	10,998	10,998	10,998	10,998	10,998	10,998
Bluebonnet GCD	Walker	Chicot Aquifer	0	0	0	0	0	0	0
Bluebonnet GCD	Walker	Evangeline Aquifer	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Bluebonnet GCD	Walker	Burkeville confining	0	0	0	0	0	0	0
Bluebonnet GCD	Walker	Jasper Aquifer	15,972	15,972	15,972	15,972	15,972	15,972	15,972
Bluebonnet GCD	Waller	Chicot Aquifer	300	300	300	300	300	300	300
Bluebonnet GCD	Waller	Evangeline Aquifer	40,994	40,994	40,994	40,994	40,994	40,994	40,994
Bluebonnet GCD	Waller	Burkeville confining	0	0	0	0	0	0	0
Bluebonnet GCD	Waller	Jasper Aquifer	300	300	300	300	300	300	300
Bluebonnet GCD Total		**Gulf Coast Aquifer System**	**95,859**	**95,859**	**95,859**	**95,859**	**95,859**	**95,859**	**95,859**
Brazoria County	Brazoria	Chicot Aquifer	38,994	39,042	39,164	39,208	39,251	39,295	39,345
Brazoria County	Brazoria	Evangeline Aquifer	11,376	11,376	11,376	11,376	11,376	11,375	11,376
Brazoria County GCD Total		**Gulf Coast Aquifer System**	**50,369**	**50,418**	**50,540**	**50,583**	**50,626**	**50,670**	**50,721**
Lone Star GCD	Montgomery	Chicot Aquifer	11,922	12,600	13,870	13,944	15,026	14,717	14,175
Lone Star GCD	Montgomery	Evangeline Aquifer	37,734	27,525	27,553	27,773	26,575	26,615	26,529

Groundwater Conservation District	County	Aquifer	2010	2020	2030	2040	2050	2060	2070
Lone Star GCD	Montgomery	Burkeville confining	0	0	0	0	0	0	0
Lone Star GCD	Montgomery	Jasper Aquifer	41,491	23,880	22,582	22,288	22,404	22,673	23,301
Lone Star GCD Total		**Gulf Coast Aquifer System**	**91,146**	**64,004**	**64,004**	**64,004**	**64,004**	**64,004**	**64,004**
Lower Trinity GCD	Polk	Chicot Aquifer	0	0	0	0	0	0	0
Lower Trinity GCD	Polk	Evangeline Aquifer	8,302	8,302	8,302	8,302	8,302	8,302	8,302
Lower Trinity GCD	Polk	Burkeville confining	743	743	743	743	743	743	743
Lower Trinity GCD	Polk	Jasper Aquifer	27,663	27,663	27,663	27,663	27,663	27,663	27,663
Lower Trinity GCD	San Jacinto	Chicot Aquifer	0	0	0	0	0	0	0
Lower Trinity GCD	San Jacinto	Evangeline Aquifer	8,170	8,170	8,170	8,170	8,170	8,170	8,170
Lower Trinity GCD	San Jacinto	Burkeville confining	2,697	2,697	2,697	2,697	2,697	2,697	2,697
Lower Trinity GCD	San Jacinto	Jasper Aquifer	10,116	10,116	10,116	10,116	10,116	10,116	10,116
Lower Trinity GCD Total		**Gulf Coast Aquifer System**	**57,691**	**57,691**	**57,691**	**57,691**	**57,691**	**57,691**	**57,691**
Southeast Texas	Hardin	Chicot Aquifer	1,262	1,262	1,262	1,262	1,262	1,262	1,262
Southeast Texas	Hardin	Evangeline Aquifer	33,665	33,665	33,665	33,665	33,665	33,665	33,665
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	10,827	10,827	10,827	10,827	10,827	10,827	10,827
Southeast Texas	Jasper	Evangeline Aquifer	40,648	40,648	40,648	40,648	40,648	40,648	40,648
Southeast Texas	Jasper	Burkeville confining	1	1	1	1	1	1	1
Southeast Texas	Jasper	Jasper Aquifer	16,008	16,008	16,008	16,008	16,008	16,008	16,008
Southeast Texas	Newton	Chicot Aquifer	500	500	500	500	500	500	500
Southeast Texas	Newton	Evangeline Aquifer	21,343	21,343	21,343	21,343	21,343	21,343	21,343
Southeast Texas	Newton	Burkeville confining	0	0	0	0	0	0	0
Southeast Texas	Newton	Jasper Aquifer	12,376	12,376	12,376	12,376	12,376	12,376	12,376
Southeast Texas	Tyler	Chicot Aquifer	0	0	0	0	0	0	0

Groundwater Conservation District	County	Aquifer	2010	2020	2030	2040	2050	2060	2070
Southeast Texas	Tyler	Evangeline Aquifer	20,576	20,576	20,576	20,576	20,576	20,576	20,576
Southeast Texas	Tyler	Burkeville confining	1	1	1	1	1	1	1
Southeast Texas	Tyler	Jasper Aquifer	17,634	17,634	17,634	17,634	17,634	17,634	17,634
Southeast Texas GCD Total		**Gulf Coast Aquifer System**	**174,841**	**174,841**	**174,841**	**174,841**	**174,841**	**174,841**	**174,841**
Total (groundwater conservation districts)		**Gulf Coast Aquifer System**	**469,907**	**442,813**	**442936**	**442,979**	**443,022**	**443,066**	**443,117**
No District-County	Chambers	Chicot Aquifer	22,573	22,573	22,573	22,573	22,573	22,573	22,573
No District-County	Chambers	Evangeline Aquifer	378	378	378	378	378	378	378
No District-County	Jefferson	Chicot Aquifer	2,426	2,426	2,426	2,426	2,426	2,426	2,426
No District-County	Jefferson	Evangeline Aquifer	100	100	100	100	100	100	100
No District-County	Liberty	Chicot Aquifer	14,571	14,571	14,572	14,572	14,572	14,572	14,572
No District-County	Liberty	Evangeline Aquifer	27,654	27,654	27,656	27,655	27,656	27,656	27,656
No District-County	Liberty	Burkeville confining	215	215	215	215	215	215	215
No District-County	Liberty	Jasper Aquifer	787	787	787	787	787	787	787
No District-County	Orange	Chicot Aquifer	18,162	18,162	18,162	18,162	18,162	18,162	18,162
No District-County	Orange	Evangeline Aquifer	1,202	1,202	1,202	1,202	1,202	1,202	1,202
No District-County	Washington	Evangeline Aquifer	3,236	3,236	3,236	3,236	3,236	3,236	3,236
No District-County	Washington	Burkeville confining	367	367	367	367	367	367	367
No District-County	Washington	Jasper Aquifer	9,428	9,428	9,428	9,428	9,428	9,428	9,428
No District-County Total		**Gulf Coast Aquifer System**	**101,100**	**101,100**	**101,103**	**101,101**	**101,102**	**101,103**	**101,103**

Groundwater Conservation District	County	Aquifer	2010	2020	2030	2040	2050	2060	2070
GMA 14	**Total (all areas except subsidence districts)**	**Gulf Coast Aquifer System**	**571,007**	**543,913**	**544,039**	**544,080**	**544,124**	**544,169**	**544,020**

TABLE 2. GROUNDWATER PUMPAGE PROJECTIONS FOR THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14 FOR SUBSIDENCE DISTRICT COUNTIES FOR EACH DECADE BETWEEN 2010 AND 2070. VALUES ARE IN ACRE-FEET PER YEAR.

Subsidence District	County	Aquifer	2010	2020	2030	2040	2050	2060	2070
Fort Bend	Fort Bend	Chicot Aquifer	46,789	58,200	52,663	62,635	72,957	84,002	95,430
Fort Bend	Fort Bend	Evangeline Aquifer	75,249	71,572	51,072	56,656	61,875	66,942	71,651
Fort Bend	Fort Bend	Burkeville confining	0	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**	**122,038**	**129,772**	**103,735**	**119,291**	**134,832**	**150,944**	**167,081**
Harris-Galveston	Galveston	Chicot Aquifer	4,850	5,819	6,537	7,153	7,748	8,303	8,759
Harris-Galveston	Galveston	Evangeline Aquifer	167	215	254	284	314	346	371
Harris-Galveston	Harris	Chicot Aquifer	92,348	136,640	108,694	80,512	86,842	90,290	93,457
Harris-Galveston	Harris	Evangeline Aquifer	224,465	264,588	176,427	114,821	121,148	126,231	130,840
Harris-Galveston	Harris	Burkeville confining	0	0	0	0	0	0	0
Harris-Galveston	Harris	Jasper Aquifer	6,067	8,212	5,432	3,164	3,368	3,519	3,644
Harris-Galveston Subsidence District Total		**Gulf Coast Aquifer System**	**327,897**	**415,474**	**297,343**	**205,935**	**219,420**	**228,688**	**237,071**
GMA 14	**Total (subsidence districts)**	**Gulf Coast Aquifer System**	**449,935**	**545,246**	**401,078**	**325,226**	**354,252**	**379,632**	**404,152**

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), RIVER BASIN, AND AQUIFER.

County	RWPA	River Basin	Gulf Coast Aquifer System	2020	2030	2040	2050	2060	2070
Austin	H	Brazos-Colorado	Chicot Aquifer	1,005	1,005	1,005	1,005	1,005	1,005
Austin	H	Brazos-Colorado	Evangeline Aquifer	14,517	14,517	14,517	14,517	14,517	14,517
Austin	H	Brazos-Colorado	Burkeville confining unit	0	0	0	0	0	0
Austin	H	Brazos-Colorado	Jasper Aquifer	76	76	76	76	76	76
Austin	H	Brazos	Chicot Aquifer	295	295	295	295	295	295
Austin	H	Brazos	Evangeline Aquifer	5,458	5,458	5,458	5,458	5,458	5,458
Austin	H	Brazos	Burkeville confining unit	0	0	0	0	0	0
Austin	H	Brazos	Jasper Aquifer	826	826	826	826	826	826
Austin	H	Colorado	Chicot Aquifer	0	0	0	0	0	0
Austin	H	Colorado	Evangeline Aquifer	23	23	23	23	23	23
Austin	H	Colorado	Burkeville confining unit	0	0	0	0	0	0
Austin	H	Colorado	Jasper Aquifer	98	98	98	98	98	98
Brazoria	H	Brazos-Colorado	Chicot Aquifer	9,134	8,929	8,735	8,474	8,217	7,986
Brazoria	H	Brazos-Colorado	Evangeline Aquifer	1	1	2	2	2	2
Brazoria	H	Brazos	Chicot Aquifer	3,223	3,057	2,992	2,923	2,865	2,821
Brazoria	H	Brazos	Evangeline Aquifer	0	0	0	0	0	0
Brazoria	H	San Jacinto-Brazos	Chicot Aquifer	26,684	27,178	27,481	27,854	28,213	28,537
Brazoria	H	San Jacinto-Brazos	Evangeline Aquifer	11,375	11,374	11,374	11,374	11,374	11,374
Chambers	H	Neches-Trinity	Chicot Aquifer	10,798	10,798	10,798	10,798	10,798	10,798
Chambers	H	Neches-Trinity	Evangeline Aquifer	0	0	0	0	0	0
Chambers	H	Trinity-San Jacinto	Chicot Aquifer	1,671	1,671	1,671	1,671	1,671	1,671
Chambers	H	Trinity-San Jacinto	Evangeline Aquifer	378	378	378	378	378	378
Chambers	H	Trinity	Chicot Aquifer	10,104	10,104	10,104	10,104	10,104	10,104
Chambers	H	Trinity	Evangeline Aquifer	0	0	0	0	0	0
Fort Bend	*H*	*Brazos-Colorado*	*Chicot Aquifer*	*6,338*	*7,157*	*8,493*	*10,447*	*13,307*	*17,077*
Fort Bend	*H*	*Brazos-Colorado*	*Evangeline Aquifer*	*563*	*728*	*1,079*	*1,584*	*2,310*	*3,256*

County	RWPA	River Basin	Gulf Coast Aquifer System	2020	2030	2040	2050	2060	2070
Fort Bend	*H*	*Brazos-Colorado*	*Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*Brazos-Colorado*	*Jasper Aquifer*	*0*	*0*	*0*	*0*	*0*	*0*
Fort Bend	*H*	*Brazos*	*Chicot Aquifer*	*25,117*	*24,308*	*30,446*	*36,552*	*42,837*	*49,006*
Fort Bend	*H*	*Brazos*	*Evangeline Aquifer*	*17,216*	*13,537*	*16,080*	*18,582*	*21,174*	*23,754*
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*	*17,810*	*15,117*	*17,542*	*19,801*	*21,707*	*23,191*
Fort Bend	*H*	*San Jacinto-Brazos*	*Evangeline Aquifer*	*35,680*	*25,524*	*28,118*	*30,370*	*32,165*	*33,366*
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*	*8,936*	*6,081*	*6,153*	*6,157*	*6,151*	*6,156*
Fort Bend	*H*	*San Jacinto*	*Evangeline Aquifer*	*18,113*	*11,282*	*11,379*	*11,340*	*11,293*	*11,275*
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*	*1*
Galveston	*H*	*San Jacinto-Brazos*	*Chicot Aquifer*	*5,819*	*6,537*	*7,153*	*7,748*	*8,303*	*8,759*
Galveston	*H*	*San Jacinto-Brazos*	*Evangeline Aquifer*	*215*	*254*	*284*	*314*	*346*	*371*
Grimes	G	Brazos	Chicot Aquifer	0	0	0	0	0	0
Grimes	G	Brazos	Evangeline Aquifer	2,256	2,256	2,256	2,256	2,256	2,256
Grimes	G	Brazos	Burkeville confining unit	0	0	0	0	0	0
Grimes	G	Brazos	Jasper Aquifer	8,624	8,624	8,624	8,624	8,624	8,624
Grimes	G	San Jacinto	Chicot Aquifer	0	0	0	0	0	0
Grimes	G	San Jacinto	Evangeline Aquifer	743	743	743	743	743	743
Grimes	G	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
Grimes	G	San Jacinto	Jasper Aquifer	1,451	1,451	1,451	1,451	1,451	1,451
Grimes	G	Trinity	Jasper Aquifer	922	922	922	922	922	922
Hardin	I	Neches	Chicot Aquifer	1,262	1,262	1,262	1,262	1,262	1,262
Hardin	I	Neches	Evangeline Aquifer	33,527	33,527	33,527	33,527	33,527	33,527
Hardin	I	Neches	Burkeville confining unit	0	0	0	0	0	0

County	RWPA	River Basin	Gulf Coast Aquifer System	2020	2030	2040	2050	2060	2070
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	138	138	138	138	138	138
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*	*4,331*	*4,858*	*5,405*	*5,959*	*6,383*	*6,853*
Harris	*H*	*San Jacinto-Brazos*	*Evangeline Aquifer*	*1,975*	*2,096*	*2,211*	*2,323*	*2,435*	*2,544*
Harris	*H*	*San Jacinto*	*Chicot Aquifer*	*129,749*	*101,232*	*72,499*	*78,104*	*81,042*	*83,662*
Harris	*H*	*San Jacinto*	*Evangeline Aquifer*	*262,218*	*173,938*	*112,257*	*118,444*	*123,397*	*127,883*
Harris	*H*	*San Jacinto*	*Burkeville confining unit*	*0*	*0*	*0*	*0*	*0*	*0*
Harris	*H*	*San Jacinto*	*Jasper Aquifer*	*8,212*	*5,432*	*3,164*	*3,368*	*3,519*	*3,644*
Harris	*H*	*Trinity-San Jacinto*	*Chicot Aquifer*	*2,560*	*2,604*	*2,609*	*2,779*	*2,865*	*2,942*
Harris	*H*	*Trinity-San Jacinto*	*Evangeline Aquifer*	*395*	*393*	*353*	*382*	*398*	*412*
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	7,717	7,717	7,717	7,717	7,717	7,717
Jasper	I	Neches	Evangeline Aquifer	17,407	17,407	17,407	17,407	17,407	17,407
Jasper	I	Neches	Burkeville confining unit	0	0	0	0	0	0
Jasper	I	Neches	Jasper Aquifer	12,506	12,506	12,506	12,506	12,506	12,506
Jasper	I	Sabine	Chicot Aquifer	3,110	3,110	3,110	3,110	3,110	3,110
Jasper	I	Sabine	Evangeline Aquifer	23,241	23,241	23,241	23,241	23,241	23,241
Jasper	I	Sabine	Burkeville confining unit	1	1	1	1	1	1
Jasper	I	Sabine	Jasper Aquifer	3,502	3,502	3,502	3,502	3,502	3,502
Jefferson	I	Neches-Trinity	Chicot Aquifer	1,722	1,722	1,722	1,722	1,722	1,722
Jefferson	I	Neches-Trinity	Evangeline Aquifer	0	0	0	0	0	0
Jefferson	I	Neches	Chicot Aquifer	703	703	703	703	703	703
Jefferson	I	Neches	Evangeline Aquifer	100	100	100	100	100	100
Liberty	H	Neches-Trinity	Chicot Aquifer	327	327	327	327	327	327
Liberty	H	Neches-Trinity	Evangeline Aquifer	37	37	37	37	37	37

County	RWPA	River Basin	Gulf Coast Aquifer System	2020	2030	2040	2050	2060	2070
Liberty	H	Neches	Chicot Aquifer	2,804	2,804	2,804	2,804	2,804	2,804
Liberty	H	Neches	Evangeline Aquifer	2,267	2,267	2,267	2,267	2,267	2,267
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	753	754	753	754	754	754
Liberty	H	San Jacinto	Evangeline Aquifer	4,322	4,323	4,322	4,323	4,323	4,323
Liberty	H	San Jacinto	Burkeville confining unit	215	215	215	215	215	215
Liberty	H	San Jacinto	Jasper Aquifer	787	787	787	787	787	787
Liberty	H	Trinity-San Jacinto	Chicot Aquifer	3,160	3,160	3,160	3,160	3,160	3,160
Liberty	H	Trinity-San Jacinto	Evangeline Aquifer	5,690	5,690	5,690	5,690	5,690	5,690
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	7,528	7,528	7,528	7,528	7,528	7,528
Liberty	H	Trinity	Evangeline Aquifer	15,339	15,339	15,339	15,339	15,339	15,339
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	12,600	13,870	13,944	15,026	14,717	14,175
Montgomery	H	San Jacinto	Evangeline Aquifer	27,525	27,553	27,773	26,575	26,615	26,529
Montgomery	H	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
Montgomery	H	San Jacinto	Jasper Aquifer	23,880	22,582	22,288	22,404	22,673	23,301
Newton	I	Neches	Jasper Aquifer	176	176	176	176	176	176
Newton	I	Sabine	Chicot Aquifer	500	500	500	500	500	500
Newton	I	Sabine	Evangeline Aquifer	21,343	21,343	21,343	21,343	21,343	21,343
Newton	I	Sabine	Burkeville confining unit	0	0	0	0	0	0
Newton	I	Sabine	Jasper Aquifer	12,200	12,200	12,200	12,200	12,200	12,200
Orange	I	Neches-Trinity	Chicot Aquifer	256	256	256	256	256	256
Orange	I	Neches-Trinity	Evangeline Aquifer	0	0	0	0	0	0
Orange	I	Neches	Chicot Aquifer	2,162	2,162	2,162	2,162	2,162	2,162
Orange	I	Neches	Evangeline Aquifer	1,125	1,125	1,125	1,125	1,125	1,125

County	RWPA	River Basin	Gulf Coast Aquifer System	2020	2030	2040	2050	2060	2070
Orange	I	Sabine	Chicot Aquifer	15,744	15,744	15,744	15,744	15,744	15,744
Orange	I	Sabine	Evangeline Aquifer	77	77	77	77	77	77
Polk	I	Neches	Chicot Aquifer	0	0	0	0	0	0
Polk	I	Neches	Evangeline Aquifer	3,582	3,582	3,582	3,582	3,582	3,582
Polk	I	Neches	Burkeville confining unit	118	118	118	118	118	118
Polk	I	Neches	Jasper Aquifer	11,197	11,197	11,197	11,197	11,197	11,197
Polk	H	Trinity	Chicot Aquifer	0	0	0	0	0	0
Polk	H	Trinity	Evangeline Aquifer	4,720	4,720	4,720	4,720	4,720	4,720
Polk	H	Trinity	Burkeville confining unit	625	625	625	625	625	625
Polk	H	Trinity	Jasper Aquifer	16,465	16,465	16,465	16,465	16,465	16,465
San Jacinto	H	San Jacinto	Chicot Aquifer	0	0	0	0	0	0
San Jacinto	H	San Jacinto	Evangeline Aquifer	5,744	5,744	5,744	5,744	5,744	5,744
San Jacinto	H	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
San Jacinto	H	San Jacinto	Jasper Aquifer	4,636	4,636	4,636	4,636	4,636	4,636
San Jacinto	H	Trinity	Chicot Aquifer	0	0	0	0	0	0
San Jacinto	H	Trinity	Evangeline Aquifer	2,426	2,426	2,426	2,426	2,426	2,426
San Jacinto	H	Trinity	Burkeville confining unit	2,697	2,697	2,697	2,697	2,697	2,697
San Jacinto	H	Trinity	Jasper Aquifer	5,480	5,480	5,480	5,480	5,480	5,480
Tyler	I	Neches	Chicot Aquifer	0	0	0	0	0	0
Tyler	I	Neches	Evangeline Aquifer	20,576	20,576	20,576	20,576	20,576	20,576
Tyler	I	Neches	Burkeville confining unit	1	1	1	1	1	1
Tyler	I	Neches	Jasper Aquifer	17,634	17,634	17,634	17,634	17,634	17,634
Walker	H	San Jacinto	Chicot Aquifer	0	0	0	0	0	0
Walker	H	San Jacinto	Evangeline Aquifer	2,000	2,000	2,000	2,000	2,000	2,000
Walker	H	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
Walker	H	San Jacinto	Jasper Aquifer	7,107	7,107	7,107	7,107	7,107	7,107
Walker	H	Trinity	Jasper Aquifer	8,866	8,866	8,866	8,866	8,866	8,866
Waller	H	Brazos	Chicot Aquifer	256	256	256	256	256	256
Waller	H	Brazos	Evangeline Aquifer	14,363	14,363	14,363	14,363	14,363	14,363

County	RWPA	River Basin	Gulf Coast Aquifer System	2020	2030	2040	2050	2060	2070
Waller	H	Brazos	Burkeville confining unit	0	0	0	0	0	0
Waller	H	Brazos	Jasper Aquifer	300	300	300	300	300	300
Waller	H	San Jacinto	Chicot Aquifer	44	44	44	44	44	44
Waller	H	San Jacinto	Evangeline Aquifer	26,630	26,630	26,630	26,630	26,630	26,630
Waller	H	San Jacinto	Burkeville confining unit	0	0	0	0	0	0
Waller	H	San Jacinto	Jasper Aquifer	0	0	0	0	0	0
Washington	G	Brazos	Evangeline Aquifer	3,236	3,236	3,236	3,236	3,236	3,236
Washington	G	Brazos	Burkeville confining unit	367	367	367	367	367	367
Washington	G	Brazos	Jasper Aquifer	9,356	9,356	9,356	9,356	9,356	9,356
Washington	G	Colorado	Jasper Aquifer	72	72	72	72	72	72
GMA 14 Total			**Gulf Coast Aquifer System**	**1,089,160**	**945,116**	**869,306**	**898,377**	**923,801**	**948,373**

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.

Model "Dry" Cells

The predictive model run for this analysis results in water levels in some model cells dropping below the base elevation of the cell during the simulation. In terms of water level the cells have gone dry. However, as noted in the model assumptions the transmissivity of the cell remains constant and will produce water.

A total of 591cells out of 10,968 cells (five percent) go "dry" in the Chicot Aquifer (Layer 1) along the thinnest part of the outcrop. There are 19 dry cells out of 8,184 total cells (0.02 percent) in the thinnest part of the Burkeville confining unit (Layer 3), and 18 dry cells out of 10,815 total cells (0.02 percent) in the thinnest part of the Jasper Aquifer (Layer 4) outcrop. As noted in the model assumptions pumping from dry cells is included in the modeled available groundwater values. Total pumping from dry cells in the Chicot Aquifer in model year 2070 is 77 acre-feet in Montgomery County. There are no dry cells for the model run in the Evangeline Aquifer. Total pumping from dry cells in the Burkeville Confining unit in model year 2070 is 2,697 acre-feet in San Jacinto County. The total pumping from dry cells in the Jasper Aquifer in model year 2070 is 5,084 acre-feet in Grimes, Jasper, Newton, Polk, Trinity, Tyler, and Walker counties.

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APPENDIX

TABLE A.1 MODEL-CALCULATED AVERAGE DRAWDOWN VALUES (DDN) AND MODELED MAXIMUM SUBSIDENCE COMPARED WITH DESIRED FUTURE CONDITIONS (DFCS) BY COUNTY FOR THE NORTHERN PORTION OF THE GULF COAST AQUIFER SYSTEM IN GROUNDWATER MANAGEMENT AREA 14. ALL VALUES ARE IN FEET.

County	Chicot Aquifer DDN	Evangeline Aquifer DDN	Burkeville Confining Unit DDN	Jasper Aquifer DDN	Maximum Subsidence (model estimate)	Chicot Aquifer DFC	Evangeline Aquifer DFC	Burkeville Unit DFC	Jasper Aquifer DFC	Maximum Subsidence DFC
Austin	40	23	23	76	2.82	39	23	23	76	2.83
Brazoria	23	28	na	na	na	23	27	na	na	ns
Chambers	33	30	na	na	na	32	30	na	na	ns
Fort Bend*	54	56	60	108	na	ns	ns	ns	ns	ns
Galveston*	34	31	na	na	na	ns	ns	ns	ns	ns
Grimes	5	5	6	53	0.10	5	5	6	52	0.12
Hardin	21	27	29	90	na	21	27	29	89	ns
Harris*	30	5	-15	63	na	ns	ns	ns	ns	ns
Jasper	24	42	46	40	na	23	41	46	40	ns
Jefferson	16	17	na	na	na	15	17	na	na	ns
Liberty	28	29	25	121	na	27	29	25	120	ns
Montgomery	26	-4	-4	35	na	26	-4	-4	34	ns
Newton	35	45	45	37	na	35	45	44	37	ns

County	Chicot Aquifer DDN	Evangeline Aquifer DDN	Burkeville Confining Unit DDN	Jasper Aquifer DDN	Maximum Subsidence (model estimate)	Chicot Aquifer DFC	Evangeline Aquifer DFC	Burkeville Unit DFC	Jasper Aquifer DFC	Maximum Subsidence DFC
Orange	14	16	na	na	na	14	16	na	na	ns
Polk	26	10	16	73	na	26	10	15	73	ns
San Jacinto	22	19	20	109	na	22	19	19	108	ns
Tyler	42	36	30	62	na	42	35	30	62	ns
Walker	0	9	4	42	0.10	na	9	4	42	0.04
Waller	39	40	40	102	4.71	39	39	40	101	4.73
Washington	na	1	16	48	na	na	1	16	48	ns
GMA average	**28.7**	**23.9**	**18.7**	**66.7**	**na**	**28.3**	**23.6**	**18.5**	**66.2**	**ns**

*Desired Future Conditions were not specified for counties located in the subsidence districts

na = not applicable

ns = not specified

DFC = adopted desired future condition

DDN = average model calculated drawdown based on pumping scenario provided by districts in GMA 14