# Calhoun County Groundwater Conservation District Groundwater Management Plan

Calhoun County Groundwater Conservation District Groundwater Management Plan Adoption:	
Texas Water Development Board Administrative Approval:	

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### **DISTRICT MISSION**

The mission of the Calhoun County Groundwater Conservation District is to develop sound water conservation and management strategies designed to conserve, preserve, protect, and prevent waste of groundwater resources for long-term sustainability within Calhoun County for the benefit of the landowners, citizens, economy, and environment of Calhoun County.

The district will implement these strategies through the acquisition and dissemination of hydrogeological information, the development of programs and incentives to conserve and protect groundwater resources, and the adoption and enforcement of fair and appropriate rules governing the production and use of the groundwater resources within the Calhoun County.

#### PURPOSE OF THE GROUNDWATER MANAGEMENT PLAN

Senate Bill 1, enacted by the 75th Texas Legislature in 1997, and Senate Bill 2, enacted by the 77th Texas Legislature in 2001, established a comprehensive statewide water resource planning process and the actions necessary for groundwater conservation districts to manage and conserve the groundwater resources of the state of Texas. These bills required all groundwater conservation districts to develop a management plan which defines the groundwater needs and groundwater supplies within each district and the goals each district has set to achieve its mission.

In addition, the 79th Texas Legislature enacted House Bill 1763 in 2005 that requires joint planning among districts that are in the same groundwater management area. These districts must jointly agree upon and establish the desired future conditions of the aquifers within their respective groundwater management areas. Through this process, the groundwater conservation districts will submit the desired future conditions to the Executive Administrator of the Texas Water Development Board who, in turn, will provide each district within the groundwater management area with estimates of modeled available groundwater within each district. The modeled available groundwater will be based on the desired future conditions jointly established for each aquifer within the groundwater management area.

Technical information, such as the desired future conditions within the jurisdiction of the district and the amount of modeled available groundwater from such aquifers is required by statute to be included in the management plan of the district and will guide the regulatory and management policies of the district. This management plan is intended to satisfy the requirements of Senate Bill 1, Senate Bill 2, House Bill 1763, the statutory requirements of Chapter 36 of the Texas Water Code, and the rules and requirements of the Texas Water Development Board.

#### DISTRICT INFORMATION

#### Creation

The district was created by Senate Bill 1290, 82nd Legislature and continued by Senate Bill 1835, 83rd Legislature, and codified as Chapter 8860, Special District and Local Laws Code. The citizens of Calhoun County through a confirmation election held on November 6, 2014, ratified the district. The district was formed to protect, conserve, and prevent waste of the groundwater resources beneath the area of Calhoun County. To manage the groundwater resources under its jurisdiction, the district is charged with the rights and responsibilities specified in its enabling legislation; the provisions of Chapter 36 of the Texas Water Code; this groundwater management plan, and the rules of the district.

#### **Directors**

The Calhoun County Groundwater Conservation District Board of Directors consists of five members. These directors are elected by the voters of Calhoun County and serve a four-year term. The district observes the same four precincts as the Calhoun County Commissioners with an at-large position. The terms of the director positions are staggered on a two-year election interval in even numbered years.

### Authority

The district has the rights and responsibilities provided in Chapter 36 of the Texas Water Code and Chapter 356 of Title 31 of the Texas Administrative Code. The district has the authority to undertake hydrogeological studies, adopt a groundwater management plan, provide for the permitting of certain water wells, and implement programs to achieve statutory requirements. The district has rulemaking authority to implement its policies and procedures to manage the groundwater resources of Calhoun County.

#### **Location and Extent**

The boundaries of the district are conterminous with those of Calhoun County, Texas. This area encompasses approximately 1,032 square miles. The district is bounded by Refugio County, Victoria County, Jackson County, and Matagorda County.

### GROUNDWATER RESOURCES OF JACKSON COUNTY

Depositions from sediment-laden rivers, currents from the Gulf of Mexico, and storm waves have influenced the geologic formations in Calhoun County. The fluctuation of the coastline over geologic eons contributed to the deposition of sediments within the Calhoun County as well. The geologic formations in the Calhoun County according to their depositional age are summarized in Figure 1. The Gulf Coast Aquifer underlies Calhoun County.

Figure 1: Geologic and Hydrogeological Units of the Gulf Coast Aquifer in Calhoun County.

<b>J</b>				
Stratigraphic Unit		Hydrogeologic Unit		
Alluvium				
Beaumont Clay				
Montgomery				
Formation	Lissie	Chicot Aquifer		
Bentley	Formation			
Formation				
Willis Sand				
Goliad Sand		Evangeline Aquifer		
Fleming Formation				
		Burkeville Confining Unit		
Oakville Sandstone		laanan Assifan		
Catahoula Sa	andstone (Tuff)	Jasper Aquifer		

The Gulf Coast Aquifer System is conceptualized to comprise of four distinct aquifer components: Chicot, Evangeline, Burkeville Confining Unit, and the Jasper Aquifer (Baker, 1979). These aquifer components are included within the Central Gulf Coast Groundwater Availability Model developed by the Texas Water Development Board (Chowdhury and Mace, 2004). The Chicot Aquifer are utilized the most within Calhoun County. The Chicot Aquifer crops out across the entirety of Calhoun County. The thickness of the Chicot Aquifer ranges up to approximately 1,200 feet in Calhoun County. The thickness of the Evangeline Aquifer ranges from 1,100 feet to 1,600 feet in Calhoun County. The Chicot Aquifer and Evangeline Aquifer consist of interbedded sands, silts, and clays. The sand content is higher in the Evangeline Aquifer compared to the Chicot Aquifer. The water quality in the Gulf Coast Aquifer generally deteriorates along the coast.

#### STATEMENT OF GUIDING PRINCIPLES

The district recognizes that the groundwater resources of Calhoun County and the region are of vital importance to the many users who are dependent on these valuable resources. In addition, the district recognizes that landowners have an ownership right in the groundwater resources associated with their properties and are the primary stewards of the groundwater resources associated with their properties. The district will work with interested parties, especially landowners, in Calhoun County to conserve, preserve, protect, and prevent waste of this most valuable resource, for the benefit of the landowners, the public, the local economy, and the environment.

The groundwater management plan of the district is intended to serve as a tool to focus the thoughts and actions of those given the responsibility for the execution of the activities of the district as well as to provide information to the staff of the district, landowners, and others responsible for the execution of, or compliance with, the policies and rules of the district. The district will carry out its programs and responsibilities in implementing this groundwater management plan in a prudent and cost-effective manner. The district, with public input, will adopt and enforce rules necessary to implement this groundwater management plan.

#### CRITERIA FOR PLAN APPROVAL

### **Planning Horizon**

The planning period for this plan is ten years from the date of approval by the Texas Water Development Board. This plan will be reviewed within five years as required by §36.1072(e) of the Texas Water Code. The district will consider the necessity to amend the plan and re-adopt this groundwater management plan with or without amendments as required by §36.1072(e) of the Texas Water Code.

This groundwater management plan will remain in effect until replaced by a revised management plan approved by the Texas Water Development Board.

### Notice and Hearing Related to Plan Adoption - TWC §36.1071(a)

Public notices documenting that this plan was considered and adopted following appropriate public hearings are included in Appendix D.

### Coordination with Regional Surface Water Management Entities - TWC §36.1071(a)

Letters transmitting this plan to the surface water management entities of the Calhoun County region for coordination purposes are included in Appendix E.

### Calhoun County Groundwater Conservation District Board of Director Resolution Adopting Management Plan TWC §36.1071(a)

A copy of the resolution approved by the Board of Directors of the Calhoun County Groundwater Conservation District adopting this plan is included in Appendix F.

## OF THE TEXAS WATER CODE AND RULE 356.52 OF TITLE 31 OF THE TEXAS ADMINISTRATIVE CODE

### Estimate of Modeled Available Groundwater in the DISTRICT based on Desired Future Conditions – TWC §36.1071(e)(3)(A) and 31 TAC 356.52(a)(5)(A)

Modeled available groundwater is defined in §36.001 of the Texas Water Code 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." Desired future condition (DFC) is defined in §36.001 of the Texas Water Code as "a quantitative description, adopted in accordance with §36.108 of the Texas Water Code, of the desired condition of the groundwater resources in a management area at one or more specified future times." The desired future condition of an aquifer may only be determined through joint planning with other groundwater conservation districts in the same groundwater management area as specified under §36.108 of the Texas Water Code.

The district is located in Groundwater Management Area 15. The representatives of the member district of Groundwater Management Area 15 adopted, by resolution, the desired future condition for Gulf Coast Aquifer within Groundwater Management Area 15 on October 14, 2021.

The resolution adopting the desired future condition for Groundwater Management Area 15 states the gma-specific DFC "for the counties in the groundwater management area (gma-specific DFC) shall not exceed an average drawdown of 13 feet for the Gulf Coast Aquifer System at December 2080;"

The resolution adopting the desired future condition for Groundwater Management Area 15 states the county-specific DFC for Calhoun County shall not exceed "5 feet of drawdown of the Gulf Coast Aquifer System."

The technical consultant of Groundwater Management Area 15 submitted the adopted desired future conditions and explanatory report for Groundwater Management Area 15 on December 13, 2021, to Texas Water Development Board.

The Texas Water Development Board reported the modeled available groundwater for Groundwater Management Area 15 in GAM Run 16-025 MAG which is incorporated into this management plan as Appendix C.

The modeled available groundwater, in acre-feet per year (AFY), of the Gulf Coast Aquifer within the district per Table 1 of the GAM Run 16-025 MAG report is as follows:

Year						
2020	2030	2040	2050	2060	2069	
7,565	7,565	7,565	7,565	7,565	7,565	

All values in acre-feet/year (AFY)

### Estimate of amount of groundwater being used within the district on an annual basis – TWC §36.1071(e)(3)(B) and 31 TAC 356.52(a)(5)(B)

The district recognizes the estimate of the amount of groundwater being used within the district on an annual basis, according to information provided by the Texas Water Development Board, totals 1,284 acre-feet in year 2019. Please refer to Appendix A and the 2022 State Water Plan Datasets for additional information.

## Estimate of annual amount of recharge from precipitation to the groundwater resources within the district – TWC §36.1071(e)(3)(C) and 31 TAC 356.52(a)(5)(C)

The district recognizes the estimate of the amount of water recharging the groundwater resources within the district from precipitation, according to information provided by the Texas Water Development Board, totals 2,573 acre-feet. Please refer to Appendix B for additional information.

## Estimate for each aquifer, annual volume of water that discharges from the aquifer to springs and any surface water bodies, including lakes, streams, and rivers – TWC §36.1071(e)(3)(D) and 31 TAC 356.52(a)(5)(D)

The district recognizes the estimate of the annual volume of water discharging from the aquifer to springs and any surface water bodies for each aquifer, including lakes, streams, and rivers within the district, according to information provided by the Texas Water Development Board, totals 13,511 acre-feet. This estimate includes 11,313 acre-feet of water per year discharging to the bays and 2,198 acre-feet of water per year discharging to springs and streams within the Calhoun County Groundwater Conservation District. Please refer to Appendix B for additional information.

## Estimate of annual volume of flow into and out of the district within each aquifer and between aquifers in the district – TWC §36.1071(e)(3)(E) and 31 TAC 356.52(a)(5)(E)

The district recognizes the estimate of the annual volume of groundwater flowing into the district within each aquifer, according to information provided by the Texas Water Development Board, totals 11,133 acre-feet. The district recognizes the estimate of the annual volume of groundwater flowing out of the district within each aquifer, according to information provided by the Texas Water Development Board, totals 4,909 acre-feet. The estimated net annual volume of flow between each aquifer in the district is not applicable because the model assumes a no flow barrier at the base of the Gulf Coast Aquifer System. Please refer to Appendix B for additional information.

## Estimate of projected surface water supply in the district according to the most recently adopted state water plan – TWC §36.1071(e)(3)(F) and 31 TAC 356.52(a)(5)(F)

The district recognizes the sum of projected surface water supplies, according to information provided by the Texas Water Development Board, is 66,289 acre-feet for year 2030 and 66,289 acre-feet for year 2070. Please refer to Appendix A and the 2022 State Water Plan for additional information.

## Estimate of projected total demand for water in the district according to the most recently adopted state water plan – TWC §36.1071(e)(3)(G) and 31 TAC 356.52(a)(5)(G)

The district recognizes the sum of projected surface water demands, according to information provided by the Texas Water Development Board, is 71,934 acre-feet for year 2030 and 73,004 acre-feet for year 2070. Please refer to Appendix A and the 2022 State Water Plan for additional information.

## CONSIDER THE WATER SUPPLY NEEDS AND WATER MANAGEMENT STRATEGIES INCLUDED IN THE ADOPTED STATE WATER PLAN – TWC §36.1071(e)(4)

The district recognizes the sum of projected water supply needs within the district, according to information provided by the Texas Water Development Board, is 14,088 acre-feet in 2030 and 14,207 acre-feet in 2070. Please refer to Appendix A and the 2022 State Water Plan for additional information.

The district recognizes the GBRA Lower Basin Storage Project, the FE - Hays County Pipeline Project, the GBRA - MBWSP - Surface Water W/ ASR, the GBRA Lower Basin Storage Project, and the Municipal Water Conservation water management strategies are projected to supply 58,499 acre-feet of water in the district in 2030.

The district recognizes the Local Gulf Coast Aquifer Development, GBRA Lower Basin Storage Project, the FE - Western Canyon Expansion, the GBRA - MBWSP - Surface Water W/ ASR, the GBRA Lower Basin Storage Project, and the Municipal Water Conservation water management strategies are projected to supply 50,898 acre-feet of water in the district in 2070.

The district recognizes that persons possessing groundwater rights may seek authorization to produce groundwater from within Calhoun County for many purposes including supplying water to activities projected by TWDB to create water supply needs and the water management strategies identified in the 2022 State Water Plan.

#### DETAILS ON THE DISTRICT MANAGEMENT OF GROUNDWATER

The Texas Legislature established that groundwater conservation districts are the preferred method of groundwater management in §36.0015 of the Texas Water Code. The district will manage the production of groundwater within Calhoun County in order to protect, preserve, conserve, and prevent waste of the resource while seeking to maintain the economic viability of all resource user groups, public and private. The district seeks to manage the groundwater resources of Calhoun County as practicably as possible as established in the plan. In consideration of the economic and cultural activities occurring within Calhoun County, the district will identify and engage in such activities and practices, that if implemented may result in the reasonable and effective protection, preservation, conservation, waste prevention of groundwater in Calhoun County. The district will manage groundwater resources through rules developed and implemented in accordance with Chapter 36 of the Texas Water Code and the provisions of the enabling legislation of the district.

For the purposes of this management plan, the following definitions are used:

- Protection of groundwater is the activity and practice of seeking to prevent harm or injury to a groundwater resource.
- Preservation of groundwater is the activity and practice of seeking to extend the useful longevity or life of a groundwater resource.
- Conservation of groundwater is the activity and practice of seeking to use a groundwater resource in a manner that appropriately balances the impacts associated with consuming the resource and preserving the resource for the future.
- Waste prevention of groundwater is the activity and practices seeking to prevent the use of groundwater in any manner defined as waste in §36.001 of the Texas Water Code.

The district will monitor aquifer conditions in and around Calhoun County in order to monitor changing water levels and water quality of groundwater resources within Calhoun County. The district will make periodic assessments of aquifer conditions and will report those conditions to the Board of Directors of the district and to the public. The district may undertake, as necessary, investigations of the groundwater resources within Calhoun County and will make the results of investigations available to the public. The district will cooperate with investigations of the groundwater resources of Calhoun County undertaken by other local political subdivisions or agencies of the State of Texas.

In order to better manage groundwater resources, the district may establish management zones for; and adopt different rules for:

- 1. Each aquifer, subdivision of an aquifer, or geologic strata located in whole or in part within Calhoun County; or
- 2. Each geographic area overlying an aquifer or subdivision of an aquifer located in whole or in part within Calhoun County.

For the purpose of managing the use of groundwater within Calhoun County, the district may define sustainable use as the use of an amount of groundwater in Calhoun County

as a whole or any management zone established by the district that does not exceed any of the following conditions:

- the long-term average historical groundwater production from aquifers in Calhoun County established by the district prior to the establishment of the desired future condition of aquifers in a groundwater management area in which the district is located; or
- 2. the desired future conditions of aquifers in Calhoun County established by a groundwater management area in which the district is located; or
- 3. The amount of modeled available groundwater resulting from the establishment of a desired future aquifer condition by the district or a groundwater management area in which the district is located; or
- the estimated long-term average historical amount of annual recharge of the aquifer or aquifer subdivision in which the use occurs as recognized by the district; or
- 5. any other criteria established by the district as being a threshold of use beyond which further use of the aquifer or aquifer subdivision may result in a specified undesirable or injurious condition.

The district may adopt rules that protect historic use of groundwater in Calhoun County to the maximum extent practical and consistent with this plan and the goals and objectives set forth herein. The district may impose more restrictive conditions on non-historic-use permits and non-historic-use permit amendments to increase use by historic users if the limitations:

- 1. apply to all non-historic-use permits and non-historic-use permit amendments to increase use by historic users, regardless of the type or location of use;
- 2. bear a reasonable relationship to the Desired Future Condition of the district; and
- 3. are reasonably necessary to protect historic use.

The district may adopt rules to regulate groundwater withdrawals by means of spacing and production limits. The relevant factors to be considered in making a determination to grant or deny a permit or limit groundwater withdrawals shall include those set forth in the enabling legislation of the district, Chapter 36 of the Texas Water Code, and the rules of the district. The district may employ technical resources at its disposal, as needed, to evaluate the groundwater resources available within Calhoun County and to determine the effectiveness of regulatory or conservation measures. In consideration of particular individual, localized, or district-wide conditions, including without limitation climatic conditions, the district may, by rule, allow an increase or impose a decrease in the total production in a management zone above or below the sustainable amount for a period of time considered necessary by the district in order to accomplish the purposes set forth in Chapter 36 of the Texas Water Code, or the enabling legislation of the district. The exercise of said discretion by the Board of Directors of the Calhoun County Groundwater Conservation District shall not be construed as limiting the power of the Board of Directors of the Calhoun County Groundwater Conservation District.

## ACTIONS, PROCEDURES, PERFORMANCE AND AVOIDANCE FOR PLAN IMPLEMENTATION – TWC §36.1071(e)(2)

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

The Rules of the district adopted by the Board of Directors of the Calhoun County Groundwater Conservation District shall comply with Chapter 36 of the Texas Water Code, including §36.113 of the Texas Water Code, and the provisions of this management plan. All rules will be adhered to and enforced. The promulgation and enforcement of the rules will be based on the best technical evidence available to the district.

The rules of the district are available at the following website address: https://calhouncountygcd.org/groundwater-policy.html

## METHODOLOGY FOR TRACKING DISTRICT PROGRESS IN ACHIEVING MANAGEMENT GOALS – 31TAC 356.52(a)(4)

The staff of the district will prepare and present an annual report to the members of the Board of Directors regarding the performance of the district in achieving management goals and objectives. The report will be presented within 180 days following the completion of each fiscal year. The district will maintain the report on file for public inspection at the office of the district upon adoption at a meeting of the Calhoun County Groundwater Conservation District Board of Directors.

## GOALS, MANAGEMENT OBJECTIVES AND PERFORMANCE STANDARDS

Providing the most efficient use of groundwater – TWC §36.1071(a)(1) and 31 TAC 356.52(a)(1)(A)

**Objective:** Develop and maintain a program for processing permitting requests submitted to the district and tracking well registrations and permits issued by the district authorizing groundwater production during the fiscal year.

**Performance Standard:** The district will summarize within the annual report 1) the status of pending permitting requests and 2) the number of wells registered by the district, and 3) volume of groundwater authorized to be produced under production permits issued by the district, as of the last

day of the preceding fiscal year.

### Controlling and preventing waste of groundwater – TWC §36.1071(a)(2) and 31 TAC 356.52(a)(1)(B)

**Objective:** Develop and maintain a program for inspecting at least twelve (12) water wells within the district during the fiscal year.

**Performance Standard:** The district will summarize within the annual report the number of wells inspected during the preceding fiscal year and those wells requiring corrective action.

### Controlling and preventing subsidence – TWC §36.1071(a)(3) and 31 TAC 356.52(a)(1)(C)

This category of management goal is not applicable to the district at this time because no significant subsidence is occurring in Calhoun County. The district will monitor geological conditions for evidence of subsidence, particularly in high groundwater production areas near the coast and take appropriate action should significant subsidence develop.

The district reviewed the technical report titled *Final Report: Identification of the Vulnerability of the Major and Minor Aquifers of Texas to Subsidence with Regard to Groundwater Pumping; TWDB Contract Number 1648302062.* The report, in Section 4.2.4, characterizes all portions of Calhoun County as medium or higher risk of subsidence.

### Addressing conjunctive surface water management issues – TWC §36.1071(a)(4) and 31 TAC 356.52(a)(1)(D)

**Objective:** Participate in the regional water planning process by attending and participating in at least one (1) South Central Texas Regional Water Planning Group (Region L) meeting held during the fiscal year.

**Performance Standard:** The district will summarize within the annual report the dates of meetings of the South Central Texas Regional Water Planning Group attended by representatives of the district during the preceding fiscal year.

## Addressing natural resource issues which impact the use and availability of groundwater, and which are impacted by the use of groundwater – TWC §36.1071(a)(5) and 31 TAC §356.52(a)(1)(E)

**Objective:** Develop and maintain a program to monitor the water quality of at least

twelve (12) water wells within the district per year.

**Performance Standard:** The district will summarize within the annual report 1) the number of wells monitored and 2) the water quality measurements collected during the preceding fiscal year.

### Addressing drought conditions – TWC §36.1071(a)(6) and 31 TAC 356.52(a)(1)(F)

**Objective:** Review drought condition information related to the district and the surrounding region of Texas collected from the following website at least four meetings of the Board of Directors during the fiscal year: <a href="https://www.waterdatafortexas.org/drought/">https://www.waterdatafortexas.org/drought/</a>.

**Performance Standard:** The district will summarize within the annual report the number of instances drought condition information was considered by the Board of Directors during the preceding fiscal year.

Addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control, where appropriate and cost-effective – TWC §36.1071(a)(7) and 31 TAC 356.52(a)(1)(G)

**Objective:** Promote conservation, rainwater harvesting, or brush control within Calhoun County at least once during the fiscal year.

**Performance Standard:** The district will summarize within the annual report the number of instances the district promoted conservation, rainwater harvesting, or brush control during the preceding fiscal year.

Addressing recharge enhancement and precipitation enhancement are deemed to be neither appropriate nor cost-effective activities for the district. The costs of operating a recharge enhancement or precipitation enhancement program are prohibitive and would require the district to increase taxes. Therefore, these goals are not considered applicable to the district at this time.

### Addressing the desired future conditions adopted by the district under Section 36.108 – TWC §36.1071(a)(8) and 31 TAC 356.52(a)(1)(H)

**Objective:** Develop and maintain a program to monitor the water level of at least twelve (12) water wells within the district per year.

Performance Standard: The district will summarize within the annual

report 1) the number of wells monitored and 2) the water level measurements collected during the preceding fiscal year.

**Objective:** Analyze aquifer monitoring information to evaluate achievement of the desired future conditions of the district based on information available during the fiscal year.

**Performance Standard:** The district will summarize within the annual report 1) the aquifer monitoring information and 2) the conclusions regarding the achievement of the desired future conditions of the district during the preceding fiscal year.

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