

Plateau Underground Water Conservation & Supply District

Management Plan

2014-2024

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Plateau Underground Water
Conservation & Supply District
Management Plan
Mission Statement

The Plateau Underground Water Conservation & Supply District was created by Acts of the 59th Texas Legislature in 1965. The District was created to provide for the conservation, preservation, protection, recharge and prevention of waste of the underground water reservoirs located under the District , consistent with Article XVI, Section 59, of the Texas Constitution, and Chapter 36 of the Texas Water Code. The District strives to bring about conservation, preservation, and the efficient, beneficial and wise use of water for the benefit of the citizens and economy of the District through monitoring and protecting the quality of the groundwater. The District also strives to maintain groundwater ownership and rights of landowners as provided in Texas Water Code 36.002.

Time Period for This Plan

This plan becomes effective upon certification by the Texas Water Development Board and replaces the existing management plan adopted by the Board of Directors. The new plan remains in effect until a revised plan is certified. This plan will be reviewed and amended at least once every five years.

General Description

The District is governed by a Board of five Directors elected by local voters. Serving on the current Board are Ray Lewis Ballew, Chairman, Phil McCormick, Vice-Chairman, Cindy Cawley, Secretary, Johnny Powell, and Steve Williams. District rules have been in effect since 1992 which will effectuate the management plan. The District encompasses Schleicher County, Texas. Schleicher County's economy is based in agriculture with a significant contribution from the oil and gas industry.

Management of Groundwater Supplies

The District aids in the management of groundwater in order to conserve the resource while seeking to maintain the economic viability of all resource user groups, public and private. In consideration of the economic and cultural activities occurring within the District, the District will identify and engage in such activities and practices that could result in a reduction of groundwater use. An observation network shall be maintained in order to monitor changing quality and storage conditions of groundwater supplies within the District. The District will employ all technical resources at its disposal to evaluate the resources available within the District and to determine the effectiveness of management or conservation measures.

The District has adopted rules to manage groundwater withdrawals by means of spacing and production limits. The District may deny a well construction permit or limit groundwater withdrawals in accordance with the guidelines stated in the rules of the District. In making a decision to approve or deny a permit or limit groundwater withdrawals, the District will consider public benefit against individual hardship after considering all appropriate testimony. The relevant factors to be considered in making a determination to deny a permit or limit groundwater withdrawals include: the purpose of District rules, legal rights, equitable distribution of resource, and economic hardship to both individual surface owners and surrounding community.

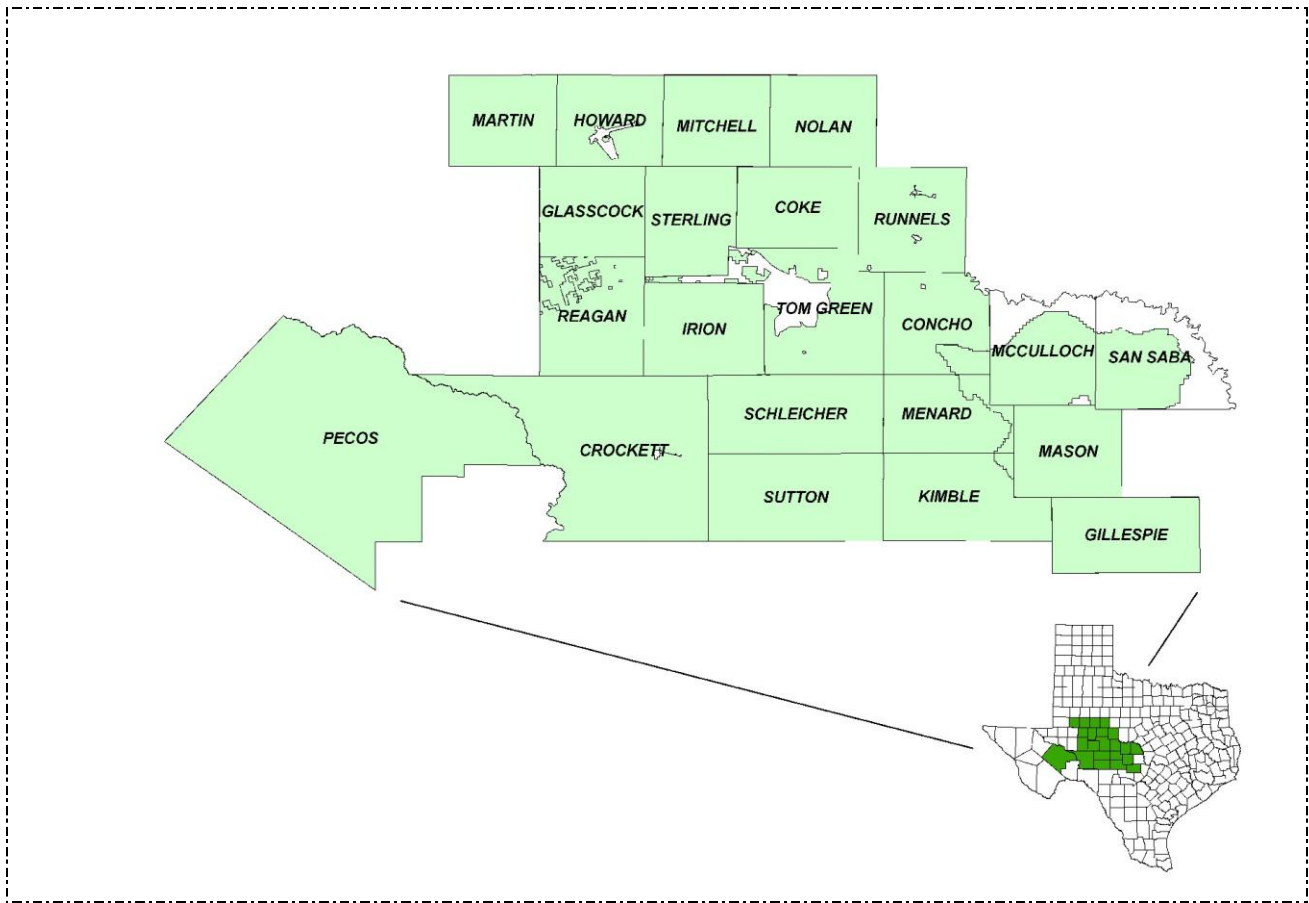
Regional Cooperation and Coordination

In 1988, four groundwater conservation districts, Coke County UWCD, Glasscock County UWCD, Irion County WCD, and Sterling County UWCD signed an original Cooperative Agreement. More districts came in and signed this agreement, and in the fall of 1996, the original Cooperative Agreement was redrafted and the West Texas Regional Groundwater Alliance was created. The WTRGA now consists of eighteen locally created and locally funded groundwater conservation districts that encompass twenty-nine thousand eight hundred square miles of West Texas. Due to the diversity of the region, each member district provides its own unique programs to best serve its constituents.

The following districts are currently members of the WTRGA: Coke County UWCD, Crockett

County GCD, Glasscock GCD, Hill Country UWCD, Hickory UWCD, Irion County WCD, Jeff Davis County UWCD, Kimble County GCD, Lipan-Kickapoo WCD, Lone Wolf GCD, Menard County UWD, Middle Pecos GCD, Permian Basin UWCD, Plateau UWC&SD, Santa Rita UWCD, Sterling County UWCD, Sutton County UWCD, and Wes-Tex GCD.

This Alliance was created because the local districts have a common objective to facilitate the conservation, preservation, and beneficial use of water and related resources. Local districts monitor water-related activities of the state's largest industries, such as farming and ranching, oil and gas, and municipalities. The Alliance provides coordination essential to effect region wide planning in an area which has common water resource allocation problems that are unique to this part of Texas.



West Texas Regional Groundwater Alliance

Geographical Information

The District lies within the Edwards Plateau and consists of approximately 838,000 acres in Schleicher County, Texas.

Groundwater Resources

The Edwards-Trinity (Plateau) aquifer underlies the Edwards Plateau east of the Pecos River and the Stockton Plateau west of the Pecos River, extending from the Hill Country of Central Texas to the Trans-Pecos region of West Texas, providing water to all or parts of 38 counties. The aquifer consists of saturated sediments of lower Cretaceous age Trinity Group formations and overlying limestone and dolomites of the Comanche Peak, Edwards, and Georgetown formations.

(1)

The Edwards-Trinity (Plateau) aquifer is the fresh water source for Schleicher County and includes all rocks from the base of the Antlers to the top of the Georgetown Formation (Washita Group). Limestone is the predominant rock underlying the Edwards Plateau soils. The permeability of the limestone is not necessarily due to inter granular pore space as in sandstones, but more to joints, crevices, and solution openings that have been enlarged by solvent action of water charged with carbon dioxide.

Permian limestone contains fresh to slightly saline water in the area of the common corners of Kimble, Menard, Schleicher, and Sutton Counties. The Permian is overlain by the Edwards and associated limestone in this area and is recharged by water from the Cretaceous. (2)

Technical Information Required by Texas Administrative Code

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

The Desired Future Conditions for the aquifers located within the District boundaries and Groundwater Management Area 7 were adopted on July 29, 2010. 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 Lipan aquifer was deemed by GMA 7 as not relevant for planning purposes in the Plateau UWC&SD. The adopted DFCs were forwarded to the TWDB

for development of the MAG calculations. The submittal package for the DFCs can be found here:
http://www.twdb.texas.gov/groundwater/docs/DFC/GMA7_DFC_Adopted_2010-0729.pdf

A summary of the desired future conditions and the modeled available groundwater are summarized below.

Edwards-Trinity (Plateau) Aquifer. An average drawdown of 7 feet for the Edwards-Trinity (Plateau) Aquifer, except for the Kinney County GCD, based on scenario 10 of the TWDB GAM Run 09-35.

Lipan Aquifer—not relevant for planning purposes within the boundaries of Plateau UWC&SD.

Estimated Modeled Available Groundwater for Plateau UWCSD In acre feet/year:

County	Year					
	2010	2020	2030	2040	2050	2060
Schleicher	8,050	8,050	8,050	8,050	8,050	8,050

Modeled Available Groundwater in the District

Please refer to appendix A

Amount of Groundwater being used within the District on an Annual Basis

Please refer to Appendix B

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

Please refer to Appendix C

Annual Amount of Water that Discharges from the Aquifer to Springs and Surface Water Bodies

Please refer to Appendix C

Estimate of the Annual volume of flow into the District, out of the District, and between Aquifers in the District

Please refer to Appendix C

Projected Surface Water Supplies within the District

Please refer to Appendix B

Projected total Demand for Water within the District

Please refer to Appendix B

Water Supply Needs

Please refer to Appendix B

Water Management Strategies

Please refer to Appendix B

Additional Recharge

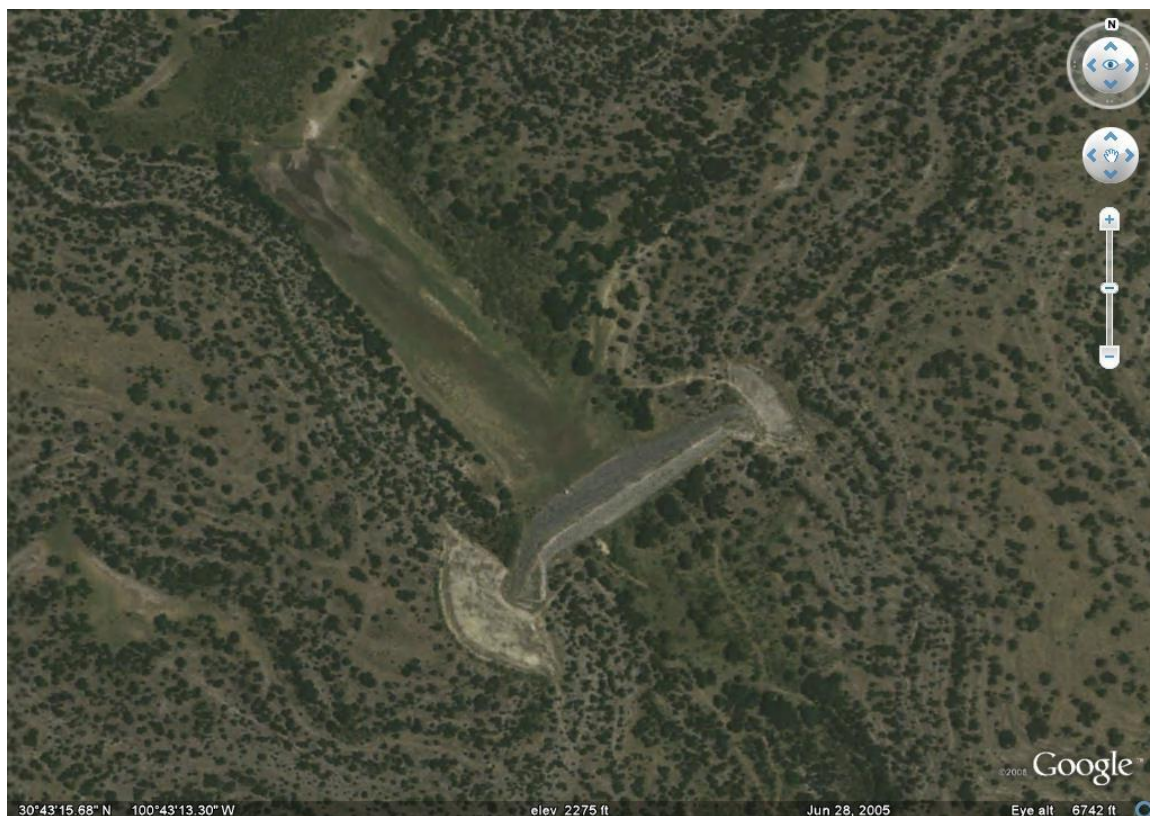
Methods of additional recharge:

1. **Flood Prevention Sites - In 1962, Public Law 566 mandated the construction of thirteen dam sites on the Dry Devil's River Draw for the prevention of flooding in Sonora, Texas. Of the two site located within Schleicher County, site #1 is capable of detaining 4,866 acre feet, and site #2 is capable of detaining 5000 acre feet.(1) The dams were designed to regulate flow of floodwater, thereby releasing water at a predetermined rate to prevent flooding. Since construction of the sites, the only storm event to produce enough water to fill structures 9, 10, 11, and 12 occurred in 1990. Structures 1-8 have never been filled to capacity.**

Site 1

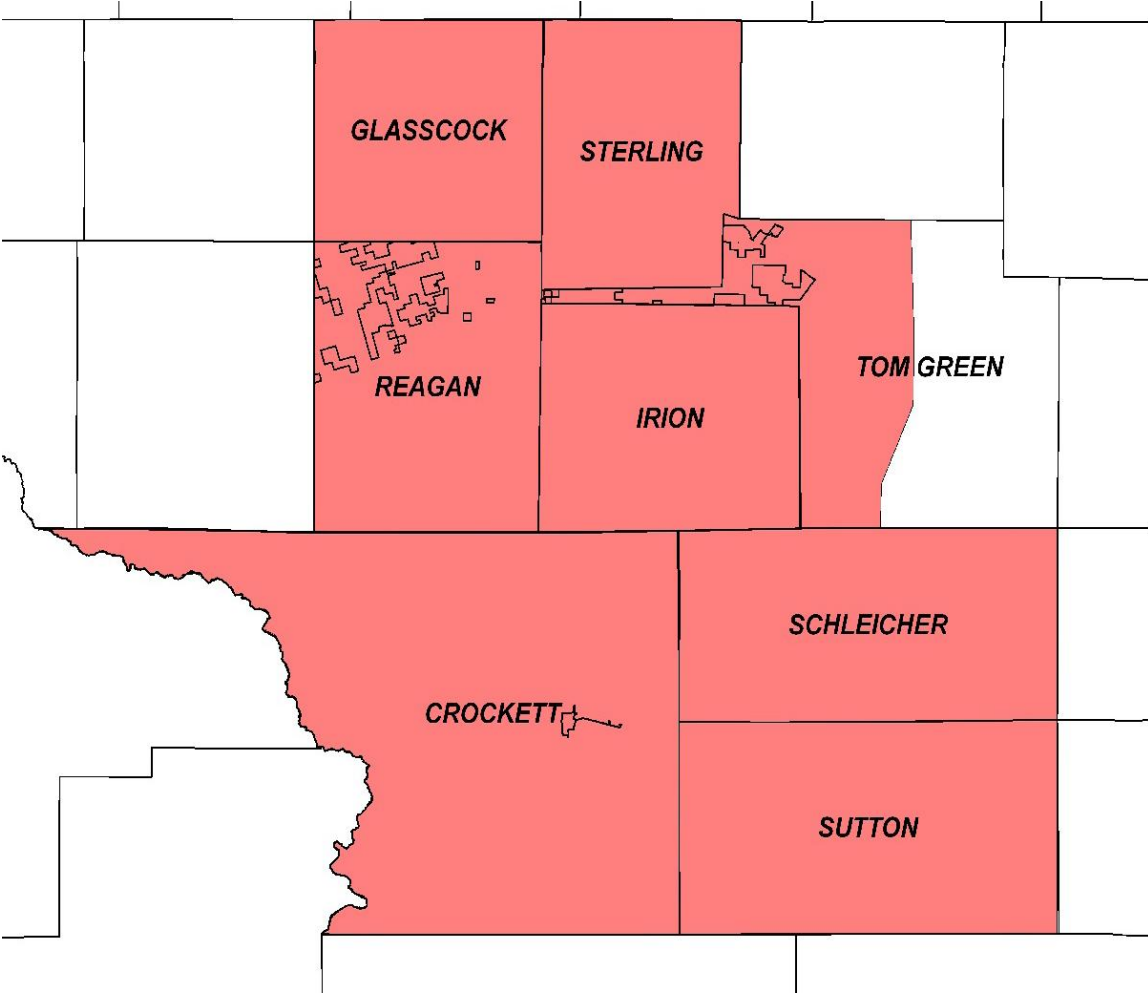


Site 2



2. Weather Modification – Weather modification is another tool considered effective for increased aquifer recharge. The Colorado River Municipal Water District Weather Modification Program indicates a 23% increase in rainfall within the target area over a 26 year period. San Angelo conducted a weather enhancement program from 1985 to 1989 with a result of 15% increase in rainfall. The Plateau UWC&SD has been a member of the West Texas Weather Modification Association since the initial season of 1996. The average rainfall for the District is 19.0 in/yr and 11.2 from May to September when weather modification activities occur.(2)

A 10% increase of one inch of rainfall during the growing season results on a reduction of pumping for all users, potential increase in runoff, increases productivity of crops and rangeland, provides additional moisture infiltration below root depth available for recharge and increases spring flow. One inch of rainfall distributed over the entire District is equal to 69,833 ac-ft of rainwater.



Area covered by West Texas Weather Modification Association

(1) Workplan for Watershed Protection and Flood Protection, U.S. Department of Agriculture Soil Conservation Service, 1958.

(2) Texas Almanac, 2007



Under ideal conditions, with 20% of rainfall infiltrating beyond the root zone for potential recharge, increased rainfall would result in additional potential recharge from May 1 to Sept. 30 as follows:

<u>10% Increase</u>	<u>15% Increase</u>	<u>23% Increase</u>
1.12 inches	1.68 inches	2.58 inches
15,642 ac-ft	23,464 ac-ft	36,034 ac-ft

Actions, Procedures, Performance and Avoidance for Plan Implementation

The District will implement the provisions of this plan and will utilize the provisions of this plan as a guidepost for determining the direction or priority for all District activities. All operations of the District and all agreements entered into by the District will be consistent with this plan.

The District has adopted and will amend as necessary rules relating to the permitting of wells and the production of groundwater. The rules adopted by the District shall be pursuant to TWC Chapter 36 and the provisions of this 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.

The District shall treat all citizens equally. Citizens may apply to the District for discretion in enforcement of the rules on grounds of adverse economic effect or unique local character. In granting of discretion to any rule, the Board shall consider the potential for adverse effect on adjacent landowners. The exercise of said discretion by the Board shall not be construed as limiting the power of the Board. The District will seek the cooperation in the implementation of this plan and the management of groundwater supplies within the District.

In an effort to recognize all potential contamination sources, the District will work to promote capping and plugging of abandoned water wells. The District will also coordinate efforts with the Railroad Commission in identifying abandoned oil and gas wells that pose potential threats to the integrity of the groundwater.

District Rules: <http://www.plateauwcd.com/files/RULES.pdf>

Methodology for Tracking Progress

The methodology that the District will use to track its progress on an annual basis in achieving its management goals will be as follows: The District manager will prepare and present an annual report to the Board of Directors on District performance in regards to achieving management goals and objectives. The annual report will be maintained at the District office.

Coordination with Surface Water Entities

There are three adjudication certificates held by water users within the District. The District has no authority over surface water.

Goals

1.0 To provide for the most efficient use of groundwater.

Management Objective (1.1) The District realizes the importance of public education of groundwater use and conservation practices. Each year, the District will publish at least one educational article identifying conservation practices for the efficient use of groundwater. Each year, the District will respond to invitations to speak on groundwater topics to at least one group, if requested.

Performance Effectiveness Standard (1.1a) Number of articles published identifying conservation practices for the efficient use of groundwater each year.

Performance Effectiveness Standard (1.1b) Number of requests for speaking engagements and the number of speaking engagements responded to on groundwater topics each year.

Management Objective (1.2) According to District Rules, wells within the District are required to be registered and/or permitted. As part of daily operations, all wells will be registered with the District upon notification by well drillers or landowners. The District will permit all wells after determination by District personnel that all well construction criteria have been met. Upon request by the Board, District personnel shall evaluate total water usage on the requested section(s) including permitted wells and exempt wells.

Performance Effectiveness Standard (1.2a) Number of wells registered annually will be reported in the annual report to the District Board.

Performance Effectiveness Standard (1.2b) Number of wells permitted annually will be reported in the annual report to the District Board.

Performance Effectiveness Standard (1.2c) Number of evaluations performed will be reported in the annual report to the District Board.

Management Objective (1.3) The District is included in Region F Regional Planning Group. Each year that District personnel serve on the Region f RWPG Board, any committee, or office, the District will actively participate in Region F Regional Planning and attend at least 50% of meetings.

Performance Effectiveness Standard (1.3a) Percentage of Region F Regional Planning meetings attended each year.

Performance Effectiveness Standard (1.3b) Number of committees, offices, duties performed by the District each year will be reported in the annual report to the District Board.

Management Objective (1.4) The District has entered into a Cooperative Management Agreement with the West Texas Regional Groundwater Alliance. The purpose of the WTRGA is to facilitate the conservation, preservation, protection, and most efficient use of groundwater. Each year, the District will attend at least 80% of WTRGA meetings.

Performance Effectiveness Standard (1.4a) Percentage of West Texas Regional Groundwater Alliance meetings attended each year.

Management Objective (1.5) A water quality baseline will be established for the District through a monitor well program of approximately sixty wells. At least 33% of these wells will be sampled each year. All test results will be entered into the database and a copy mailed to landowners within 30 days of testing.

Performance Effectiveness Standard(1.5a) Percentage of monitor wells sampled each year.

Performance Effectiveness Standard (1.5b) Number of days required to enter data into database and mail lab results to landowner each year.

Management Objective (1.6) The district realizes the importance of monitoring the aquifer level. An established groundwater level program of selected wells will be maintained by the District. If a well cannot be measured, the reason shall be stated in the water level report.

Performance Effectiveness Standard (1.6a) Number of water well levels obtained on an annual basis from selected monitor wells each year will be reported in the annual report to the District Board.

2.0 Implement strategies to control and prevent waste of groundwater.

Management Objective (2.1) Each year the District will identify and respond to reports of wasteful practices within five working days. Each year at least one article will be published on wasteful practices.

Performance Effectiveness Standard (2.1a) Number of reported wasteful practices identified and responded to each year will be reported in the annual report to the District Board .

Performance Effectiveness Standard (2.1b) Number of articles published on wasteful practices each year.

Management Objective (2.2) As a service to water well owners within the District, a field lab service for water analysis is available. Annually, at least, one article will be published advertising the availability of water analysis service performed by the District. Each year the District will continue to perform water quality analysis for residents of the District upon all requests.

Performance Effectiveness Standard (2.2a) Number of articles published advertising the availability of water analysis service performed by the District each year.

Performance Effectiveness Standard (2.2b) Number of water analyses requested and performed each year will be reported in the annual report to the District Board.

Management Objective(2.3) In order to prevent waste of groundwater within the District, the Board shall review annually all long term detected contamination sites to determine status and further needed activity by the District.

Performance Effectiveness Standard (2.3a) A report summarizing the annual review of contamination sites by the Board will be reported in the annual report to the District Board.

3.0 Control and prevent subsidence

The rigid geological framework of the region precludes significant subsidence from occurring. This goal is not applicable to operations of the District.

4.0 Address conjunctive surface water management issues

All surface water impoundments located within the District are used to supply water for livestock consumption. There are no surface water management entities with surface water storage located within the District. This management goal is not applicable to the operations of the District.

5.0 Address natural resources that impact the use and availability of groundwater or are impacted by the use of groundwater within the District.

The District has no documented occurrences of endangered or threatened species dependent on groundwater. Other issues related to resources – air, water, soil, etc. supplied by nature that are useful to life are likewise not documented. Therefore, this management goal is not applicable.

6.0 Address drought conditions

Management Objective The District will monitor the Palmer Drought Severity Index by Texas Climatic Divisions at least once a month by downloading the PDSI map. If PDSI indicates that the District will experience severe drought conditions, the District will notify all public water suppliers within the District. TWDB drought information: <http://waterdatafortexas.org/drought/>

Performance Effectiveness Standard Number of months the PDSI map was downloaded each year.

Performance Effectiveness Standard Number of times the district experienced severe drought according to the monthly PDSI downloaded maps and the number of times that notification was sent to public water suppliers will be included in the annual report to the District Board.

7.0 Address conservation

Management Objective The District personnel will meet with Eldorado personnel at least once annually to discuss water usage and conservation techniques implemented.

Performance Effectiveness Standard The number of annual meetings with Eldorado personnel to discuss water usage and conservation techniques implemented. TWDB conservation page: <http://www.twdb.texas.gov/conservation/BMPs/index.asp>

Management Objective The Board shall review the District rules and determine if there is a need to update rules at least every two years. The outcome of rule reviews and the determination for any needed rule updates will be provided in a statement included in the annual report every two years.

Performance Effectiveness Standard Number of rule review determination statements in the annual report every two years.

8.0 Address in a quantitative manner the desired future conditions of the groundwater resources

Management Objective To address the desired future conditions adopted by GMA 7, the District will measure water levels in at least 25 monitor wells in the District at least 5 times per year and evaluate whether the average change in water levels conforms with the DFCs adopted by the District. The District will estimate total annual groundwater production based on water use reports, estimated exempt use, and other relevant information and compare these production estimates to the MAG.

Performance Effectiveness Standard To record the water level data and average annual change in water levels and compare to the DFCs, and to include this information in the District's Annual Report. Also, to record the total estimated annual production and compare this to the MAG and include this information in the District's Annual Report.

9.0 Precipitation Enhancement The District will participate in weather enhancement for the purpose of aquifer recharge, reduction in groundwater use and economic benefit. Each year, at least one article will be published on weather modification. All flight paths, if provided by the West Texas Weather Modification Association, will be available at the District Office for public view. All rainfall data will be recorded on a monthly basis during the program schedule. An annual report of all program results will be given to the Board of Directors.

Performance Effectiveness Standard 9.1a Number of articles written on weather modification each year.

Performance Effectiveness Standard 9.1b Number of flight paths available for public view each year.

Performance Effectiveness Standard 9.1c Number of gauges with recorded rainfall each month.

Performance Effectiveness Standard 9.1d An Annual report of program results to the Board of Directors.

Management Goals Determined Non-Applicable

1. Recharge Enhancement is not within the District's ability to be cost effective.
2. Rainwater Harvesting is not within the District's ability to be cost effective.

3. Brush Control is not within the District's ability to be cost effective.
4. Controlling and Preventing Subsidence. Because of the rigid geological framework in this area, no significant subsidence occurs.
5. Addressing Natural Resource Issues. The District has no documented occurrence of endangered or threatened species dependent on groundwater.
6. Addressing conjunctive Surface Water Management Issues. There are no surface water management entities within the District.

APPENDIX A

https://www.twdb.texas.gov/groundwater/docs/GAMruns/GR10-043_MAG_v2.pdf

APPENDIX B

[Plateau GW Management Plan Data \(4\).pdf](#)

APPENDIX C

<https://www.twdb.texas.gov/groundwater/docs/GAMruns/GR13-009.pdf>

