Real and Edwards County Conservation and Reclamation Water District

Management Plan

1999 - 2009

Real and Edwards County Conservation and Reclamation Water District

Table of Contents

Real and Edwards County Conservation and Reclamation Water District

Management Plan

Mission Statement

The Real and Edwards County Conservation and Reclamation Underground Water District was created by House Bill 447 in the 56th Texas Legislature in 1959. 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 the economy of the District through monitoring and protecting the quantity and quality of the groundwater. The District also strives to maintain groundwater ownership and rights of the landowners as provided in the 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. This new plan remains in effect until a revised plan is certified or September 1, 2009, whichever is earlier.

General Description

The District is governed by nine Directors who are elected by local voters and serve a two-year staggered term of office. District rules have been in effect since 1959, which will effect the management plan. The District encompasses the total of Real and Edwards County, which is

located in the southwestern part of Texas with Leakey and Rocksprings, Texas as the county seats. Real and Edwards Counties economy is primarily based on agriculture and the tourism and hunting industry.

Management of Groundwater Supplies

The district will manage the supply of groundwater within the District 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 if implemented would result in the most efficient use of groundwater. The District will monitor an on-going TWDB and USGS observation network in order to gain additional information regarding changing storage conditions of groundwater supplies within the District. The District will work cooperatively with investigations of the groundwater resources within the District and will make the results of investigations available to the public upon adoption by the Board. The District will employ all technical resources at its disposal to evaluate the groundwater resources available within the District and to determine the effectiveness of conservation measures.

Geographical Information

The District lies within the Edwards Plateau and consists of approximately 1,810,169 acres in Real and Edwards Counties. The land is generally rolling to mountainous with elevations from 1500 to 4000 ft. The District is included in three different river basins, the Nueces, Colorado, and the Rio Grande. The western half of Edwards County slopes

southwestward into the Devils River. The eastern part of Edwards County drains into the Nueces River, the western part drains into the Devil's River, and the northern part drains into the Llano River. Real County drains into the Nueces and Frio River. The land also includes shallow depressions that catch rainfall and runoff to be either evaporated or infiltrated into the soil.

Groundwater Resources

The Edwards-Trinity (Plateau) aquifer is the fresh water source for Edwards and Real Counties. Limestone is the predominant rock underlying the Edwards Plateau soils. The permeability of the limestone is not necessarily due to intergranular pore space as in sandstone, but more to joints, crevices, and solution openings that have been enlarged by solvent action of water charged with carbon dioxide. The Edwards Formation is a granular to crystalline, dolomitic limestone called brown lime or brown sand on local well driller's logs. Caverns or caves and smaller solution channels are common in the Edwards. Alluvial deposits of Pleistocene and Recent age occur along nearly all the stream courses on the Edwards Plateau. These deposits consist of sand, gravel, silt and clay derived from the erosion of the underlying rocks, and occur primarily as terrace and flood plain alluvium.

Groundwater Resource Estimates

All estimates of groundwater availability, usage, supplies, recharge, storage and future demands are from data supplied by the Texas Water Development Board unless otherwise noted. Data sources include "Water for Texas, Today and Tomorrow, August 1997"; aquifer parameters derived from pumping tests performed by TWDB, and TWDB personnel. These estimates do not constitute endorsement by the District.

Useable Amount of Groundwater

Projected Water Used

Projected Water Used (Expressed in Acre Feet) for Edwards County

Year	2000	2010
Total	1,292	1,301

(*source of data- Water for Texas, Today and Tomorrow, Texas Water Development Board, 1996.)

Basins include: Colorado, Nueces, and Rio Grande

Projected Water Used (Expressed in Acre Feet) for Real County

Year	2000	2010
Total	1,624	1,572

(*source of data- Water for Texas, Today and Tomorrow, Texas Water Development Board, 1996.)

Basins include: Nueces and Colorado

It should be noted that there are areas where agricultural activity is sustained on wells producing as little as 1 gallon per minute which limits proper grazing distribution and other agricultural enterprises. Although most of the District has available groundwater, the quantity of groundwater dictates surface activities or the limitations thereof. Currently the District consists of 1,810,169 acres with the total useable amount of groundwater being 2,916[1] acre-feet of water.

[1] This is the total amount of projected water used today for Edwards and Real County (see charts above).

Amount of Groundwater Being Used in the Past

Edwards County

Year	1991	1992	1993	1994	1995
Total Amount	852	878	1030	1054	1012

(*source of data- Water for Texas, Today and Tomorrow, Texas Water Development Board, 1996.)

Real County

Year	1991	1992	1993	1994	1995
Total Amount	777	477	672	664	647

(*source of data- Water for Texas, Today and Tomorrow, Texas Water Development Board, 1996.)

Estimate of Projected Water Supply

Estimated Amount of Groundwater Supplied for Edwards County from the years 2000- 2050

Year	2000	2010	2020	2030	2040	2050
Total Amount	27,736	27,736	27,736	27,736	27,736	28,075

(*source of data- Water for Texas, Today and Tomorrow, Texas Water Development Board, 1996)

Estimated Amount of Groundwater Supplied for Real County from the years 2000-2050

Year	2000	2010	2020	2030	2040	2050
Total Amount	2,463	2,463	2,463	2,463	2,463	2,493

(*source of data- Water For Texas, Today and Tomorrow, Texas Water Development Board, 1996)

Estimate of Projected Water Demand

(expressed in acre feet)

Estimated Amount of Groundwater Used for Edwards County from the years 2000- 2050.

Year	2000	2010	2020	2030	2040	2050
Municipal	430	451	460	473	484	498

Mining	8	6	4	3	1	0
Irrigation	239	229	219	210	201	192
Livestock	614	615	615	615	615	615
Total	1,291	1,301	1,298	1,301	1,301	1,305

(*source of data- Water for Texas, Today and Tomorrow, Texas Water Development Board, 1996.)

Estimated Amount of Groundwater Used for Real County from the years 2000- 2050.

Year	2000	2010	2020	2030	2040	2050
Municipal	602	590	586	594	604	620
Mining	13	9	5	2	0	0
Irrigation	835	799	765	732	701	670
Livestock	174	174	174	174	174	174
Total	1,624	1,572	1,530	1,502	1,479	1,464

(*source of data- Water for Texas, Today and Tomorrow, Texas Water Development Board, 1996.)

These figures do not include the water consumption of invasive vegetation. Real and Edwards Counties is made up of 65% juniper or cedar.[2] A juniper has a transpiration rate of about 33 gal/day[3] or 12,045 gal/yr. or 0.04 ac-ft/year. At a density equivalent to only one mature juniper per acre, an estimated loss of 38,220 ac-ft/year occurs within the District.

Annual Effective Recharge and Recoverable Storage

(expressed in acre feet)

---

[2] Natural Resource Conservation Service, Edwards County, 1999.

[3] "Biology and Ecology of Redberry Juniper," By Darrell N. Uehert, Technical Report 97-1, Juniper Symposium 1997, Texas Agricultural Experiment Station, TAMU.

County	River Basins	Aquifer	Total Recharge
Real	Colorado and Nueces	Edwards-Trinity	2,463
Edwards	Colorado, Nueces and Rio Grande	Edwards-Trinity	27,736

***source of data- Water for Texas, Today and Tomorrow, Texas Water Development Board, 1996.**

Rainfall is the only source of recharge for the District. Many parameters affect the amount of water that actually reaches the aquifer. Vegetative growth, soil construction and rate of rainfall are some of the parameters affecting the amount of water reaching the aquifer.

In the Edwards Plateau region, the annual rate of evaporation is three times greater than the annual rate of precipitation, thus creating a perpetual low soil moisture content that retards percolation except under the most ideal conditions. Percolation usually occurs during relative short periods after rainfall. Soil permeability is an expression of the ability of water to pass through pore spaces of the soil and varies throughout the Edwards Plateau from less than 0.06 to 0.63 inches per hour. Rain intensities greater than these will produce surface runnoff.[4]

Additional Recharge

The estimate of the annual amount of additional natural or artificial recharge of groundwater within the District, that could result from implementation of feasible methods for increasing the natural or artificial recharge is difficult to determine due to the direct correlation to rainfall. There are several feasible methods of additional recharge:

---

[4] Occurrence, Availability, and Chemical Quality of Ground Water in the Edwards Plateau Region of Texas, Report 235, Texas Department of Water Resources, Lloyd A. Walker, 1979.

1. Flood Prevention Sites- Along the headwaters of the Frio and Nueces River there are numerous privately owned dams that catch and retain water. On the Nueces, there is a public dam along the Uvalde and Real County line. There are a few privately owned dams on the Llano River as well.
2. Weather Modification- Weather Modification is another tool considered effective for increased aquifer recharge. Real and Edwards County is part of the Edwards Aquifer Precipitation Enhancement Program, as of April 1999. The average rainfall for the District is 24[5] inches per year. A modest 10% increase of rainfall would result in 301 acre/feet of additional recharge per year. During the growing season results in a reduction of pumpage 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.
3. Range Management Through Brush Control- Brush control can be accomplished by mechanical control, prescribed burning, combination of mechanical and burn, or chemical application. Brush control may be considered more as a conservation method than an additional recharge method. Effective brush control could play a major role in conserving ground water.

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, all agreements entered into by the District and any additional planning

[5] Historical data collected from Prade Ranch and Norris Fischer, Real County.

efforts in which the District may participate will be consistent with the provisions of this plan. The District will utilize any specification and proposed rules to efficient this plan. The District shall treat all citizens with equality.

The District will seek cooperation in the implementation of this plan and the management of groundwater supplies within the district. All activities of the District will be undertaken in cooperation and coordination with the appropriate state, regional, and local water management entities.

The methodology the District will use to track progress on an annual basis in achieving all management goals.

19
15
27
31

The District manager will prepare an annual report on District performance in achieving the management goals. The annual report will be presented to the Board of Directors during the first quarterly Board of Directors meeting each fiscal year, beginning January 2001. The report will include the number of instances each objective activity was engaged in during the year, referenced to the expenditure of staff time and budget so that the effectiveness and efficiency of each activity may be evaluated. The annual report will be maintained on file at the District office and made available to the public upon adoption by the Board.

MANAGEMENT GOALS, OBJECTIVES and PERFORMANCE STANDARDS

Goal 1.0 - To Control and Prevent the Waste of Groundwater.

Management Objectives

18
20
21

Each year the District provides education materials to the newspapers and to the general public on at least six occasions concerning waste which is prohibited under the District rules.

Performance Standards

- The District will furnish at least six newspaper articles and/or public service announcements on an annual basis.
- The District will investigate all reports of waste of groundwater within 24 hours.

Goal 2.0 – Addressing natural resource issues that impact the use and availability of groundwater and are impacted by the use of groundwater.

30
32
33

Management Objectives

Each year the District will work with all interested parties and appropriate agencies to develop additional information on aquifer storage and recovery projects and will require permits for all aquifer storage and recovery projects.

Performance Standards

- Each year the District will require permits for all aquifer and storage projects.
- The District will make all possible information on such projects available to the general public and to permit applicants annually.

Management Objective

Each year the District will require issuance of a well construction permit prior to drilling all new wells.

Performance Standard

- Each year all well construction permits in compliance with the District rules will be issued within 5 working days. Well construction permits not in compliance will be considered at the next regular board meeting.

14
16
17

Goal 3.0 - Providing for the efficient use of groundwater within the District

Management Objective

Each year the District will provide water measuring devices to the public in response to all requests in an effort to increase the efficiency of irrigating lawns.

Performance Standard

- The District will make water measuring devices available to the public through civic organizations, at least 1 time per year. These devices will be made continuously available, within budgetary constraints, to the public upon request at the District office each year.

Management Objective

Each year, the District will provide informative speakers to schools and civic groups to raise public awareness of practices which insure the efficient use of groundwater.

Performance Standard

- The District will make at least 2 public speaking appearances to promote the efficient use of groundwater per year.

26
28
29

Goal 4.0 – Addressing conjunctive surface water management issues.

Management Projective

- Each year the District will work and meet with at least one other District to discuss the surface water management issues.

Performance Projective

- Annually meet with one other District at least once every year to discuss surface water management.

SB-1 MANAGEMENT GOALS DETERMINED NOT-APPLICABLE

Goal 5.0 - The control and prevention of subsidence.

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

REAL - EDWARDS
CONSERVATION & RECLAMATION DISTRICT

RESOLUTION ADOPTING MANAGEMENT PLAN

On this the 30th day of August, 1999, A.D., in the City of Camp Wood, County of Real and State of Texas, in the Special Meeting of the Board of Directors of the Real-Edwards Conservation & Reclamation District (hereinafter referred to as the "District"), it was moved by

10

MEL STAYTON and seconded by FRANKIE DELEON that the following Resolution be adopted, to-wit:

WHEREAS, the Board of Directors of the District has reviewed the Management Plan and has found that the plan satisfies the requirements of the Texas Water Board, the plan contains sufficient information regarding the District's rainfall, aquifers and other water sources, and that the plan provides appropriate and necessary actions, procedures and goals to carry out the duties of the District; and

WHEREAS, the plan should be approved and adopted;

THEREFORE, BE IT RESOLVED that the Board of Directors of the District hereby APPROVES, ACCEPTS, and ADOPTS the Management Plan.

Voting for: J. FORT SMITH, JR., LOREN M. ELGIN, FRANKIE DELEON, BERYL MITCHELL, PAULA COX, and MEL STAYTON

Voting against: None

Abstaining: None

Signed this August 30, 1999.

Mel Stayton
President

MEL STAYTON
(name typed or printed)

x J. Fort Smith, Jr.
(board member's signature)

J. Fort Smith, Jr.
(name typed or printed)

x Loren M Elgin
(board member's signature)

Loren M. Elgin
(name typed or printed)

x Frankie DeLeon
(board member's signature)

Frankie DeLeon
(name typed or printed)

x Mel Stayton
(board member's signature)

Mel Stayton
(name typed or printed)

x Beryl Mitchell
(board member's signature)

Beryl Mitchell
(name typed or printed)

(board member's signature)

(name typed or printed)

x Paula Cox
(board member's signature)

Paula Cox
(name typed or printed)

(board member's signature)

(name typed or printed)

REAL - EDWARDS
CONSERVATION & RECLAMATION WATER DISTRICT

NOTICE OF MEETING OF THE BOARD OF DIRECTORS

THIS NOTICE IS POSTED PURSUANT TO THE TEXAS OPEN MEETINGS ACT, V.T.C.A., GOVERNMENT CODE §551.002

The Board of Directors of the Real - Edwards Conservation & Reclamation Water District, of Real and Edwards Counties, Texas ("District") will hold a meeting on the following date and at the time indicated at the County Building, 104 East 5th St., Camp Wood, Real County, Texas:

TIME: 6:30 p.m. DATE: August 30, 1999 DAY: Monday

AGENDA

An OPEN MEETING will be held concerning the following subjects:

1. Call meeting to order and determination of quorum.
2. Old business.
3. New business.
   a) Consider adoption of resolution accepting a master Water Plan to be submitted to the Texas Water Board.
   b) Consider calling an election for places on the District's Board of Directors.
4. Adjournment.

Posted at 4:00 P.m. on the 27th day of August, 1999.

Sarah McNeely
County Clerk

W. B. SANSOM, JR.
REAL COUNTY JUDGE

P. O. Box 446
Leakey, Texas 78873

OFFICE (830) 232-5304
FAX (830) 232-6040

August 10, 1999

Nueces River Authority
NRC Suite 3100
6300 Ocean Drive
Corpus Christi, Texas 78412

12

To Whom It May Concern:

I am writing you in regards to the Real and Edwards County Conservation and Reclamation Water District. Attached is a proposed new water plan that has been sent to Austin for approval.

If we can be of any service to you please feel free to let us know.

Sincerely,

W.B. Sansom Jr.

W.B. Sansom, Jr.
Real County Judge