MGCD

Mesquite Groundwater Conservation District

Management Plan

Approved January 23, 2014

DISTRICT MISSION

The mission of the Mesquite Groundwater Conservation District is to develop, promote and implement water conservation, augmentation, and management strategies to protect groundwater resources for the, present and future, benefit of the citizens, economy, and environment of the District.

TIME PERIOD FOR THIS PLAN

This plan uses a ten-year planning horizon, becomes effective upon adoption by the Board of Directors, and remains in effect until a revised plan is approved, or until October 1, 2024, whichever is earlier. This plan will be readopted with or without changes by the District and submitted to the TWDB for approval at least every 5 years.

STATEMENT OF GUIDING PRINCIPLES

The District recognizes that the water resources of the region are of vital importance. The utilization of this most valuable resource can be managed in a prudent and cost effective manner through a variety of actions, including education, cooperation, monitoring, permitting and regulation. The District's overall management standard is to have 50% of underground water supplies (saturated thickness) that was available in the year 2008 still available fifty (50) years later, in 2058. A basic understanding of the aquifers and their hydrogeologic properties, as well as a quantification of resources is the foundation from which to build prudent planning measures. This management document is intended as a tool to focus the thoughts and actions of those given the responsibility for the execution of district activities throughout the ten-year period that is the focus of this plan, i.e. (2014-2024).

GENERAL DESCRIPTION

The District was originally created as Collingsworth County Underground Water Conservation District, by the citizens of Collingsworth County through election in November 1986. Selected parcels from Childress County were added by individual landowner petition in May 2007. Hall County also joined the District by petition with a conformation election in May 2007. The present District name was adopted in October 2007. Selected parcels from Briscoe County were added by individual landowner petition in the fall of 2012. The Mesquite Groundwater Conservation District (MGCD) encompasses all of Collingsworth and Hall Counties and parts of northern Childress County and eastern Briscoe County. The District has an economy dominated by agricultural production. Agricultural income is derived primarily from peanuts, cotton, wheat, and beef production. About 65 percent of the District is rangeland, 30 percent is cropland and the rest is urban, transportation, or water areas. Recreational hunting leases and production of petroleum also contribute to the income of the District. According to current District records, there are more than 800 active irrigation wells in the District. The District has several Municipal or public supply wells. The remaining wells are non-permitted water supplies for household and livestock consumption.

LOCATION AND EXTENT

Mesquite GCD has an area of 1,870 square miles, or 1,196,358 acres, and is located in the southeastern Panhandle of the State of Texas. The District is bounded on the east by Beckham and Harmon Counties of the State of Oklahoma; on the north by Wheeler County; on the west by Donley County & the remainder of Briscoe County and on the south by Motley County and the remainder of Childress County. The principal towns within the District are Wellington and Dodson in Collingsworth County, and Memphis, Estelline and Turkey in Hall County. There are no towns within the Childress or Briscoe County portions of the District.

TOPOGRAPHY AND DRAINAGE

The District consists of rolling plains heavily dissected by Red River drainage. The elevation of the land surface ranges from 1,576 to 2,817 feet above mean sea level.

The Mesquite GCD lies entirely within the drainage systems of the Red River Basin. The Salt Fork and the Prairie Dog Town Fork of the Red River enter the District in the west, traverse the District and exit through the east. The Southern part of Hall County drains into the North Pease River. The Elm Creek watershed lies in the northeastern portion of the District, and the Buck Creek watershed in Collingsworth and Childress counties, is located in the southern portion.

GROUNDWATER RESOURCES OF MESQUITE GCD

The Seymour and Blaine Aquifers are the primary sources of groundwater in the District. The Seymour Strata typically overlies the Blaine or Whitehorse Group.

The Seymour Aquifer is a major aquifer in Texas, and consists of isolated areas of alluvium that are erosional remnants of a larger area. The aquifer is found in parts of many north-central and Panhandle counties of Texas, and in the District is located in three distinct and separate areas referred to as "Pods". Its formation consists of discontinuous beds of poorly sorted gravel, conglomerate, sand, and silt clay deposited during the Quaternary Period by eastward-flowing streams. Saturated thickness is typically between 5 and 80 feet. Formation thickness may exceed 250 feet in isolated spots in the western portion of Collingsworth County. The thickness in the eastern portion of the county is generally too thin to support irrigation. The formation is also generally thinner in Hall County but does support irrigation. This aquifer is under water-table conditions in most of its extent, but artesian conditions may occur where the water-bearing zone is overlain by clay. The lower, more permeable part of the aquifer produces the greatest amount of groundwater. Water quality is generally fresh to slightly saline, but some high saline problems occur. Nitrate concentrations in excess of drinking water standards are common.

The Seymour Aquifer comprises about 23% of the District area and provides about 77% of the irrigation water in the District. Yields of wells range from 5 gallons per minute to as much as 1,000 gallons per minute depending upon saturated thickness, with yields averaging about 300 gallons per minute.

The Blaine Aquifer is composed of anhydrite and gypsum with interbedded dolomite and clay and is an important source of groundwater in the District. The Blaine formation crops out in a band from Wheeler County south through Collingsworth and Childress Counties to King County, and extends westward in the subsurface to adjacent counties. In Collingsworth County the Blaine is found along the Salt Fork of Red River north to Wheeler County and east to the Oklahoma state line. The Blaine is also found South and East of Wellington, extending east to the Oklahoma State Line and south to the Prairie Dog Town Fork of the Red River. There are also small areas in the northeast and southeast corners of Hall County. Recharge occurs fairly rapidly, and travels primarily in the numerous solution channels of the Blaine under water-table conditions. Overall water quality is poor and salinity may be high, limiting the use of water for human and livestock consumption. Average depth to water ranges from a few feet to approximately 100 feet. Well depths range up to 200 feet below ground surface. Well yields vary from a few gallons per minute up to 1,000 gallons per minute. Although water in storage is generally under water-table conditions, larger yields are often associated with those areas of the aquifer that are confined by relatively impervious beds. Dry holes or wells of low yield are commonly found adjacent to wells of moderate to high yields because of the uneven nature in confining beds and the occurrence of the water in solution zones. Groundwater not intercepted by wells tends to discharge naturally in areas of lower topography through seeps and springs. The Blaine Aquifer comprises about 24% of the District area and provides about 19% of the irrigation water pumped in the District.

The Whitehorse Group is a Permian formation occurring in beds of shale, sand, gypsum, anhydrite, and dolomite. It constitutes the remainder of the District not occupied by the Seymour and Blaine, generally located in the south and west portions of Hall county and the western part of Collingsworth county. It has many of the same characteristics as the Blaine formation. Recharge values were calculated using procedures from the Panhandle Regional Plan and Panhandle GCD. Water quality is fair to poor, and well yields vary greatly. Principal use is for livestock water, with some irrigation use in Hall County. The Whitehorse comprises about 53% of the land area of the District and provides approximately 4% of the irrigation water within the District.

Some maps indicate small areas of the Ogallala Aquifer present in extreme western and northwestern areas of the District. Data from wells in this area is not consistent with typical Ogallala characteristics, and indicate that these wells are actually pumping from the underlying formations.

TECHNICAL INFORMATION

All technical information required by the Texas Administrative Code can be found in the Appendix and the Groundwater Management Plan Data packet provided by TWDB. Both are attached at the end of this Management Plan.

MANAGEMENT OF GROUNDWATER SUPPLIES

For twenty-nine years, the District has managed and will continue to manage the supply of groundwater within the District in order to conserve and protect the limited resource while seeking to maintain the economic viability of all resource user groups, both public and private. The static water level observation network will continue to be implemented in order to monitor changing conditions of groundwater supplies within the District. The District will make periodic assessment of groundwater supplies and storage conditions, will cooperate with investigations of groundwater resources within the District, and will report these to the Texas Water Development Board and to the public.

The District uses all available sources to obtain aquifer recharge, supply and usage information for long-range planning purposes. This includes providing local data input and actively participating in meetings of the Seymour Aquifer Groundwater Availability Modeling (GAM) program. The District also participates in the Panhandle Regional Water Planning Area and uses published data available from it as well as that available from the Texas Water Development Board. Finally, the District relies most heavily on specific local data obtained by District personnel in monitoring water levels and quality, irrigation usage, crops and other local conditions and activities.

The District supports brush control as a management practice to maintain and improve groundwater supplies in the District and region.

In pursuit of the District's mission, in the future the District may require reduction of groundwater withdrawals to amounts that would lessen adverse effects to the aquifers. The District will enforce its rules by enjoining water users in a court of competent jurisdiction, as provided in TWC 36.102, if required, after exhausting other voluntary or cooperative remedies.

The District will utilize all technical resources at its disposal to evaluate the groundwater resources available within the District and to determine the effectiveness of conservation or regulatory measures.

Actions, Procedures, Performance and Avoidance for Plan Implementation

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

The District has, and will amend as necessary, rules relating to the permitting of wells, depletion, and the production of groundwater. The rules adopted by the District shall be pursuant to Texas Water Code, Chapter 36, and the provisions of this plan. They can be found online at http://www.mesquitegcd.org/2012_Final_Mesquite_Rules_all_signed.pdf.
The relevant factors to be considered in making a determination to grant or deny a permit, or limit groundwater withdrawals will include:

1. The purpose of the District and its rules;
2. The equitable conservation and preservation of the resource; and
3. The economic hardship resulting from granting or denying a permit or the terms prescribed by the rules.

The District shall treat all citizens with equality. A public or private user may appeal to the District Board for discretion in enforcement of the provisions of the rules or contingency plans on grounds of economic hardship or unique local conditions. In granting of discretion to any rule, the District Board shall consider the potential for adverse effect on adjacent owners and aquifer conditions. The exercise of said discretion by the Board shall not be construed as limiting the power of the District Board of Directors.

The District will seek cooperation and coordination with local landowners and operators, and appropriate local, regional and state management entities in the implementation of this plan.

Modeled Available Groundwater

The District is located in Groundwater Management Area (GMA) 6. The District is participating in the GMA process. The Desired Future Conditions for the Aquifers within the District and the GMA were established July 22, 2013. The Desired Future Condition for the Blaine Aquifer in MGCD is that condition whereby 50% of the current volume in storage will remain in 50 years (2060). The Desired Future Condition of the Seymour Aquifer in MGCD is that condition whereby 50% of the current volume in storage will remain in 50 years (2060). There is no Desired Future Condition set for the Trinity Group Aquifers in GMA 6, because it has been determined to be not relevant. There is no Desired Future Condition set for the Dockum or Ogallala Aquifers in MGCD because those aquifers do not supply water within the district's boundary.

GOALS, MANAGEMENT OBJECTIVES AND PERFORMANCE STANDARDS

Tracking Progress in Achieving Goals and Management Objectives:

The District manager will prepare an annual report to the Board of Directors on District performance with regards to achieving each stated management goal and objective during the preceding fiscal year. This annual report will be presented to the Board of Directors at the regular monthly meeting no later than January of the following year. The annual report will be maintained on file at the District office.

Goal l.0 Implement measures to provide for conservation of the groundwater resources of the District:

1.2 Management Objective: Conduct water quality analyses of requested wells.

1.2a. Performance Standard: Conduct water quality analyses as requested within 48 hours of request.

1.3 Management Objective: Publicize groundwater conservation issues through local newspapers, group presentations, schools, and other media opportunities.

1.3a. Performance Standard: Publicize groundwater conservation issues using the above outlets on at least one occasion by September 30 each year. Use the TWDB conservation page and best management practices where applicable. (http://www.twdb.texas.gov/conservation/BMPs/index.asp)

Goal 2.0 Provide for the most efficient use of groundwater within the District:

2.1 Management Objective: Monitor flow-meters on wells to facilitate water usage efficiency studies.

2.1a. Performance Standard: Read and record pumping data from at least 90% of flow-meter locations by December 31 each year.

2.2 Management Objective: Publicize the need for efficient use of groundwater through local newspapers, group presentations, schools, and other media opportunities.

2.2a. Performance Standard: Publicize groundwater efficiency issues using the above outlets on at least one occasion by September 30 each year.

Goal 3.0 Implement management strategies that will control and prevent waste and contamination of groundwater:

3.1 Management Objective: Identify and address local irrigation practices which are wasteful of groundwater resources.

3.1a. Performance Standard: Educate the public on wasteful irrigation practices with at least one news article, group presentation, or other local publicity opportunity by September 30 each year.

3.2 Management Objective: Maintain a program to identify, locate and obtain closures of abandoned wells.

3.2a Perform site inspections and complete an open or uncovered well report for each well reported or located by the District within 30 days of receipt of the report of such well. A summary of these site inspections and results will be in the Annual Report to the District Board.

Goal 4.0 Implement strategies to address drought conditions:

4.1 Management Objective: Maintain the District drought contingency plan.

4.1a. Performance Standard: Review and update the District's Drought Contingency Plan by September 30, at least once, annually.

4.1b. Performance Standard: Incorporate newly annexed areas into the District's Drought Contingency Plan within a year of annexation.

TWDB's drought information page is http://waterdatafortexas.org/drought/

Goal 5.0 Implement Strategies to enhance water supplies.

5.1 Management Objective: Recharge enhancement.

5.1a. Performance Standard: Conduct a feasibility study of Recharge enhancement for the District by September 30, 2016.

5.1b. Performance Standard: Review the Recharge Enhancement Feasibility Study annually. A summary of the Feasibility Study review will be included in the annual report to the District Board.

5.2 Management Objective: Rainwater Harvesting.

5.2a. Performance Standard: Construct a demonstration project within the District by September 30, 2014.

5.2b. Performance Standard: Include an annual summary of the results of the Rainwater Harvesting Demonstration Project in the annual report to the District Board.

Goal 6.0 Implement Strategies to Achieve Desired Future Conditions

Since the Desired Future Condition of the Mesquite Groundwater Conservation District is to have 50% of the water supplies left in 50 years, and water volume calculations must begin with measuring how much water is in place, the strategies to implement the DFC's are geared towards measuring the water in place, and analyzing that data to assure continued compliance with our stated DFC's.

6.1 Management Objective: Monitor static water levels in selected wells.

6.1a. Performance Standard: Measure the static water level in at least 100 wells within the District by April 1 each year.

6.2 **Management Objective: Complete hydrographs in monitored wells.**

6.2a. Performance Standard: Complete hydrographs in monitored wells by July 1 each year and deliver hydrograph reports to the Board at their next regularly scheduled meeting.

SB-1 MANAGEMENT GOALS
DETERMINED NOT APPLICABLE

The following five goals mandated to be addressed by Senate Bill 1 of the 75th Texas Legislature, 1997, have been determined not to apply to the Mesquite Groundwater Conservation District for the reasons stated below.

1.0 Cooperative resolution of natural resources management issues.

The District has no documented occurrences of endangered or threatened species dependent upon groundwater resources.

2.0 Control and prevention of subsidence.

The rigid geologic framework of the region precludes significant subsidence due to groundwater pumping. Subsidence in the District is caused by groundwater dissolving the gypsum commonly found in the Blaine formation, forming local sinkholes. There are no available measures to prevent water from dissolving gypsum

3.0 Addressing conjunctive surface water issues.

There are not currently any surface water impoundments within the District.

4.0 Addressing Precipitation Enhancement.

Presently not cost effective.

5.0 Addressing Brush Control.
The District plans to work cooperatively with the NRCS and the local Soil Conservation Board on brush control projects in the future when conservation funds are made available for such practices.

APPROVAL AND ADOPTION

Be it resolved that the Board of Directors of the Mesquite Groundwater Conservation District does hereby approve and adopt this Groundwater Management Plan in open meeting on January 23, 2014.

_____	_____
President	Member
_____	_____
Vice-President	Member
_____	_____
Secretary	Member
_____	_____
Member	Member

Appendix XX

Modeled Available Groundwater based on the current Desired Future Condition (Dist Total).

Modeled Available Groundwater – Seymour Aquifer; Year & ac-ft/yr
Source: TWDB GAM 10-058 MAG, Dec 7, 2011

2010	2020	2030	2040	2050	2060
30016	28084	25766	24247	22447	21446

Modeled Available Groundwater – Blaine Aquifer; Year & ac-ft/yr
Source: TWDB GAM 10-056 MAG, Dec 6, 2011

2010	2020	2030	2040	2050	2060
204995	204995	204995	204995	204995	204995

Amount of Groundwater being used – ac-ft/yr
Source: Panhandle Water Planning Area Regional Water Plan, September 2010, Chapter 1.6, Tables 1-10, 1-12, 1-14, 1-15, 1-16; District calculations (Briscoe County)

County	2010	2020	2030	2040	2050	2060
Childress						
Irr (67% of Cty use)	4971	3698	3585	3396	3018	2641
Ls (6% of Cty use)	20	25	25	25	25	25
TOTAL	4991	3723	3610	3421	3043	2666
Collingsworth						
Municipal	690	691	666	631	605	561
Irrigation	28693	21907	21236	20118	17883	15648
Livestock	447	547	549	552	554	557
TOTAL	29830	23145	22451	21301	19042	16766
Hall						
Municipal	50	50	50	50	50	50
Industrial	15	14	14	14	14	14
Irrigation	16719	10731	10403	9855	8760	7665
Livestock	319	320	321	322	324	325
TOTAL	17103	11115	10788	10241	9148	8054
Briscoe (District calculation)						
Irrigation	2000	2000	2000	2000	2000	2000
DISTRICT TOTAL	53924	39983	38849	36963	33233	29486

Recharge from Precipitation - GAM RUN 13-017, Aug 7, 2013
Seymour Aquifer – 42904 ac-ft/yr
Blaine Aquifer – 24209 ac-ft/yr

Water Discharged from the Aquifer - GAM RUN 13-017, Aug 7, 2013
Seymour Aquifer – 4308 ac-ft/yr
Blaine Aquifer – 21605 ac-ft/yr

Flow into the District - GAM RUN 13-017, Aug 7, 2013
Seymour Aquifer – 1705 ac-ft/yr
Blaine Aquifer – 12947 ac-ft/yr

Flow out of the District - GAM RUN 13-017, Aug 7, 2013
Seymour Aquifer – 1041 ac-ft/yr
Blaine Aquifer – 15637 ac-ft/yr

Flow Between Aquifers - GAM RUN 13-017, Aug 7, 2013
Seymour Aquifer to Blaine - 13371 ac-ft/yr
Blaine Aquifer from Seymour - 13371 ac-ft/yr

Note: All of these Aquifer Flow values do not include the Ogallala Aquifer. The Ogallala GAM is included in Appendix data. The District does not believe the Ogallala is present in the District in the 4 sections the map shows it to be present. There have been test holes drilled in these sections and none of them ever produced any water.

Projected Surface Water Supplies - None

Total Water Demand - 2012 State Water Plan Web Site, 22 October 2013; Year and ac-ft/yr

Briscoe (Calculated, based on 2000 acres)

2010	2020	2030	2040	2050	2060
2400	2400	2400	2400	2400	2400

Childress (6% of County Livestock, 67% of Irrigation, zero municipal & mining)

2010	2020	2030	2040	2050	2060
4992	3726	3613	3424	3047	2670

Collingsworth

2010	2020	2030	2040	2050	2060
29844	23162	22468	21318	19059	16783

Hall

2010	2020	2030	2040	2050	2060
17058	11895	11583	11023	9935	8819

Water Supply Needs –

Shortages are identified in Panhandle Water Planning Area Regional Water Plan, September 2010,Tables 3-25 through 3-28; and in the 2011 State Water Plan web site, DB12 Tables

The identified Water Supply Need in the District is shown in Table 3-28, page 3-46, Panhandle Area Regional Water Plan.

Hall County (Memphis):

YEAR	2020	2030	2040	2050	2060
Ac-ft/yr	80	140	140	140	140

The strategy for meeting the need is in Section 4.4.9, page 4-20, Panhandle Area Regional Water Plan.

Estimated Historical Groundwater Use And 2012 State Water Plan Datasets:

Mesquite Groundwater Conservation District

by Stephen Allen
Texas Water Development Board
Groundwater Resources Division
Groundwater Technical Assistance Section
stephen.allen@twdb.texas.gov
(512) 463-7317
December 6, 2013

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.state.tx.us/groundwater/doc/GCD/GMPChecklist0113.pdf

The five reports included in part 1 are:

1. Estimated Historical Groundwater Use (checklist Item 2)
   from the TWDB Historical Water Use Survey (WUS)
2. Projected Surface Water Supplies (checklist Item 6)
3. Projected Water Demands (checklist Item 7)
4. Projected Water Supply Needs (checklist Item 8)
5. Projected Water Management Strategies (checklist Item 9)
   reports 2-5 are from the 2012 State Water Plan (SWP)

Part 2 of the 2-part package is the groundwater availability model (GAM) report. 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 updated Historical Groundwater Use and 2012 State Water Planning data available as of 12/6/2013. Although it does not happen frequently, neither of these datasets are static and are subject to change pending the availability of more accurate data (Historical Water Use Survey data) or an amendment to the 2012 State Water Plan (2012 State Water Planning data). District personnel must review these datasets and correct any discrepancies in order to ensure approval of their groundwater management plan.

The Historical Water Use dataset can be verified at this web address:

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

The 2012 State Water Planning dataset can be verified by contacting Sabrina Anderson (sabrina.anderson@twdb.texas.gov or 512-936-0886).

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

The two other SWP tables (Projected Water Supply Needs and Projected Water Management Strategies) are not apportioned because district-specific values are not statutorily required. Each district needs only “consider” the county values in those tables.

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

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

For additional questions regarding this data, please contact Stephen Allen (stephen.allen@twdb.texas.gov or 512-463-7317) or Rima Petrossian (rima.petrossian@twdb.texas.gov or 512-936-2420).

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

Groundwater historical use estimates are currently unavailable for calendar years 2005, 2011 and 2012. TWDB staff anticipates the calculation and posting of these estimates at a later date.

CHILDRESS COUNTY

6.05 % (multiplier)

All values are in acre-feet/year

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	7	0	0	568	1	6	582
1980	GW	8	0	0	605	0	2	615
1984	GW	0	0	0	605	0	3	608
1985	GW	0	0	0	439	0	2	441
1986	GW	0	0	0	316	0	2	318
1987	GW	0	0	0	398	0	2	400
1988	GW	0	0	0	407	0	2	409
1989	GW	0	0	0	353	0	2	355
1990	GW	0	0	0	353	0	2	355
1991	GW	0	0	0	433	0	2	435
1992	GW	0	0	0	295	0	4	299
1993	GW	0	0	0	282	0	4	286
1994	GW	0	0	0	420	0	3	423
1995	GW	9	0	0	445	0	3	457
1996	GW	10	0	0	285	0	3	298
1997	GW	9	0	0	191	0	3	203
1998	GW	0	0	0	284	0	2	286
1999	GW	7	0	0	192	0	2	201
2000	GW	7	0	0	477	0	2	486
2001	GW	10	0	0	690	0	2	702
2002	GW	12	0	0	756	0	2	770
2003	GW	11	0	0	615	0	2	628
2004	GW	11	0	0	646	0	2	659
2006	GW	9	0	0	600	0	18	627
2007	GW	9	0	0	568	0	22	599
2008	GW	7	0	0	831	0	18	856
2009	GW	5	0	0	1,066	0	17	1,088
2010	GW	4	0	0	572	0	17	593

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

Groundwater historical use estimates are currently unavailable for calendar years 2005, 2011 and 2012. TWDB staff anticipates the calculation and posting of these estimates at a later date.

COLLINGSWORTH COUNTY

100.00 % (multiplier)

All values are in acre-feet/year

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	583	1	0	17,378	0	236	18,198
1980	GW	843	0	0	5,598	0	100	6,541
1984	GW	1,033	0	0	5,839	0	76	6,948
1985	GW	918	0	0	7,449	0	50	8,417
1986	GW	798	0	0	7,067	0	57	7,922
1987	GW	782	0	0	8,500	0	45	9,327
1988	GW	804	0	0	10,133	0	48	10,985
1989	GW	764	0	0	12,917	0	47	13,728
1990	GW	726	0	0	20,324	0	49	21,099
1991	GW	667	0	0	23,738	0	51	24,456
1992	GW	649	0	0	17,090	0	68	17,807
1993	GW	640	0	0	21,954	0	72	22,666
1994	GW	754	0	0	29,872	0	80	30,706
1995	GW	651	0	0	15,023	0	80	15,754
1996	GW	698	0	0	32,380	0	89	33,167
1997	GW	900	0	0	29,390	0	78	30,368
1998	GW	734	0	0	38,932	0	80	39,746
1999	GW	693	0	0	41,626	0	85	42,404
2000	GW	701	0	0	24,437	0	65	25,203
2001	GW	726	0	0	36,037	0	65	36,828
2002	GW	766	0	0	36,460	0	64	37,290
2003	GW	837	0	0	41,093	0	55	41,985
2004	GW	667	0	0	56,751	0	57	57,475
2006	GW	673	0	0	51,085	0	780	52,538
2007	GW	630	0	0	35,393	0	276	36,299
2008	GW	659	0	0	67,840	0	521	69,020
2009	GW	659	0	0	46,736	0	540	47,935
2010	GW	608	0	0	48,566	0	465	49,639

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

Groundwater historical use estimates are currently unavailable for calendar years 2005, 2011 and 2012. TWDB staff anticipates the calculation and posting of these estimates at a later date.

HALL COUNTY *100.00 % (multiplier)* All values are in acre-feet/year

Year	Source	Municipal	Manufacturing	Steam Electric	Irrigation	Mining	Livestock	Total
1974	GW	844	8	0	25,213	0	161	26,226
1980	GW	819	20	0	21,501	0	38	22,378
1984	GW	820	20	0	12,324	0	40	13,204
1985	GW	779	20	0	8,969	0	34	9,802
1986	GW	780	20	0	6,958	25	29	7,812
1987	GW	704	0	0	5,882	20	37	6,643
1988	GW	655	0	0	9,308	21	40	10,024
1989	GW	650	0	0	11,763	20	41	12,474
1990	GW	692	0	0	12,560	20	40	13,312
1991	GW	653	0	0	9,642	22	42	10,359
1992	GW	619	0	0	8,487	22	40	9,168
1993	GW	642	0	0	6,949	22	40	7,653
1994	GW	655	0	0	12,414	22	33	13,124
1995	GW	573	0	0	10,184	22	36	10,815
1996	GW	581	0	0	11,764	22	35	12,402
1997	GW	518	0	0	11,380	22	35	11,955
1998	GW	635	0	0	21,987	22	34	22,678
1999	GW	545	0	0	18,823	22	35	19,425
2000	GW	612	0	0	15,977	22	33	16,644
2001	GW	555	0	0	21,183	22	32	21,792
2002	GW	552	0	0	28,216	22	31	28,821
2003	GW	529	0	0	25,736	22	27	26,314
2004	GW	537	0	0	28,148	22	26	28,733
2006	GW	509	0	0	22,909	0	268	23,686
2007	GW	473	0	0	22,101	0	228	22,802
2008	GW	514	0	0	36,468	0	295	37,277
2009	GW	485	0	0	28,342	0	295	29,122
2010	GW	595	0	0	34,122	0	301	35,018

Projected Surface Water Supplies
TWDB 2012 State Water Plan Data

CHILDRESS COUNTY

6.05 % (multiplier)

All values are in acre-feet/year

RWPG	WUG	WUG Basin	Source Name	2010	2020	2030	2040	2050	2060
A	CHILDRESS	RED	GREENBELT LAKE/RESERVOIR						
A	COUNTY-OTHER	RED	GREENBELT LAKE/RESERVOIR	12	12	12	12	12	12
A	IRRIGATION	RED	RED RIVER RUN-OF-RIVER IRRIGATION	2	2	2	2	2	2
A	LIVESTOCK	RED	LIVESTOCK LOCAL SUPPLY	18	18	18	18	18	18
A	MINING	RED	OTHER LOCAL SUPPLY	1	1	1	1	1	1
	Sum of Projected Surface Water Supplies (acre-feet/year)			**33**	**33**	**33**	**33**	**33**	**33**

COLLINGSWORTH COUNTY

100.00 % (multiplier)

All values are in acre-feet/year

RWPG	WUG	WUG Basin	Source Name	2010	2020	2030	2040	2050	2060
A	IRRIGATION	RED	RED RIVER COMBINED RUN-OF-RIVER IRRIGATION	798	798	798	798	798	798
A	LIVESTOCK	RED	LIVESTOCK LOCAL SUPPLY	750	750	750	750	750	750
	Sum of Projected Surface Water Supplies (acre-feet/year)			**1,548**	**1,548**	**1,548**	**1,548**	**1,548**	**1,548**

HALL COUNTY

100.00 % (multiplier)

All values are in acre-feet/year

RWPG	WUG	WUG Basin	Source Name	2010	2020	2030	2040	2050	2060
A	COUNTY-OTHER	RED	GREENBELT LAKE/RESERVOIR	152	152	152	152	152	152
A	IRRIGATION	RED	RED RIVER RUN-OF-RIVER IRRIGATION	59	59	59	59	59	59
A	LIVESTOCK	RED	LIVESTOCK LOCAL SUPPLY	301	301	301	301	301	301
A	MEMPHIS	RED	GREENBELT LAKE/RESERVOIR	100	100	100	100	100	100
	Sum of Projected Surface Water Supplies (acre-feet/year)			**612**	**612**	**612**	**612**	**612**	**612**

Projected Water Demands
TWDB 2012 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.

CHILDRESS COUNTY

6.05 % (multiplier)

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
A	CHILDRESS	RED						
A	MINING	RED	1	1	1	1	1	1
A	IRRIGATION	RED	449	334	324	307	273	238
A	LIVESTOCK	RED	22	28	29	29	29	29
A	COUNTY-OTHER	RED	12	12	12	12	12	12
	Sum of Projected Water Demands (acre-feet/year)		**484**	**375**	**366**	**349**	**315**	**280**

COLLINGSWORTH COUNTY

100.00 % (multiplier)

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
A	LIVESTOCK	RED	461	564	566	569	571	574
A	IRRIGATION	RED	28,693	21,907	21,236	20,118	17,883	15,648
A	WELLINGTON	RED	456	457	446	431	420	401
A	COUNTY-OTHER	RED	234	234	220	200	185	160
	Sum of Projected Water Demands (acre-feet/year)		**29,844**	**23,162**	**22,468**	**21,318**	**19,059**	**16,783**

HALL COUNTY

100.00 % (multiplier)

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
A	MEMPHIS	RED	442	441	440	440	440	442
A	IRRIGATION	RED	16,719	10,731	10,403	9,855	8,760	7,665
A	MINING	RED	15	14	14	14	14	14
A	LIVESTOCK	RED	329	330	331	332	334	335
A	COUNTY-OTHER	RED	353	379	395	382	387	363
	Sum of Projected Water Demands (acre-feet/year)		**17,858**	**11,895**	**11,583**	**11,023**	**9,935**	**8,819**

Projected Water Supply Needs
TWDB 2012 State Water Plan Data

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

CHILDRESS COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
A	CHILDRESS	RED	0	0	0	0	0	0
A	COUNTY-OTHER	RED	20	20	20	20	20	20
A	IRRIGATION	RED	236	238	240	241	241	237
A	LIVESTOCK	RED	232	230	228	227	225	223
A	MINING	RED	4	5	5	5	5	5
	Sum of Projected Water Supply Needs (acre-feet/year)		**0**	**0**	**0**	**0**	**0**	**0**

COLLINGSWORTH COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
A	COUNTY-OTHER	RED	13	13	27	47	62	87
A	IRRIGATION	RED	955	1,541	1,412	1,530	1,465	1,500
A	LIVESTOCK	RED	398	295	293	290	288	285
A	WELLINGTON	RED	44	43	54	69	80	99
	Sum of Projected Water Supply Needs (acre-feet/year)		**0**	**0**	**0**	**0**	**0**	**0**

HALL COUNTY

All values are in acre-feet/year

RWPG	WUG	WUG Basin	2010	2020	2030	2040	2050	2060
A	COUNTY-OTHER	RED	76	50	34	47	42	66
A	IRRIGATION	RED	59	59	59	59	59	59
A	LIVESTOCK	RED	18	17	14	13	11	10
A	MEMPHIS	RED	0	-81	-140	-140	-140	-142
A	MINING	RED	7	8	8	8	8	8
	Sum of Projected Water Supply Needs (acre-feet/year)		**0**	**-81**	**-140**	**-140**	**-140**	**-142**

Projected Water Management Strategies
TWDB 2012 State Water Plan Data

CHILDRESS COUNTY

WUG, Basin (RWPG)

All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
IRRIGATION, RED (A)							
IRRIGATION CONSERVATION	CONSERVATION [CHILDRESS]	0	1,640	1,704	1,819	1,883	1,946
Sum of Projected Water Management Strategies (acre-feet/year)		**0**	**1,640**	**1,704**	**1,819**	**1,883**	**1,946**

COLLINGSWORTH COUNTY

WUG, Basin (RWPG)

All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
IRRIGATION, RED (A)							
IRRIGATION CONSERVATION	CONSERVATION [COLLINGSWORTH]	0	2,879	3,021	3,276	3,418	3,560
Sum of Projected Water Management Strategies (acre-feet/year)		**0**	**2,879**	**3,021**	**3,276**	**3,418**	**3,560**

HALL COUNTY

WUG, Basin (RWPG)

All values are in acre-feet/year

Water Management Strategy	Source Name [Origin]	2010	2020	2030	2040	2050	2060
COUNTY-OTHER, RED (A)							
DRILL ADDITIONAL GROUNDWATER WELL	OGALLALA AQUIFER [DONLEY]	50	50	50	100	100	100
DRILL ADDITIONAL GROUNDWATER WELL	OGALLALA AQUIFER [BRISCOE]	100	100	100	100	100	100
IRRIGATION, RED (A)							
IRRIGATION CONSERVATION	CONSERVATION [HALL]	0	3,220	3,354	3,595	3,728	3,862
MEMPHIS, RED (A)							
DRILL ADDITIONAL GROUNDWATER WELL	OGALLALA AQUIFER [DONLEY]	0	100	100	100	100	100
MUNICIPAL CONSERVATION	CONSERVATION [HALL]	0	13	22	22	22	22
VOLUNTARY TRANSFER FROM OTHER USERS	GREENBELT LAKE/RESERVOIR [RESERVOIR]	0	0	100	100	100	100
Sum of Projected Water Management Strategies (acre-feet/year)		**150**	**3,483**	**3,726**	**4,017**	**4,150**	**4,284**

GAM Run 13-017: Mesquite Groundwater Conservation District Management Plan

by William Kohlrenken
Texas Water Development Board
Groundwater Resources Division
Groundwater Availability Modeling Section
(512) 463-8279
August 7, 2013

Cynthia K. Ridgeway is the Manager of the Groundwater Availability Modeling Section and is responsible for oversight of work performed by William Kohlrenken under her direct supervision. The seal appearing on this document was authorized by Cynthia K. Ridgeway, P.G. 471 on August 7, 2013.

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GAM RUN 13-017: MESQUITE GROUNDWATER CONSERVATION DISTRICT MANAGEMENT PLAN

by William Kohlrenken
Texas Water Development Board
Groundwater Resources Division
Groundwater Availability Modeling Section
(512) 463-8279
August 7, 2013

EXECUTIVE SUMMARY:

Texas State Water Code, Section 36.1071, Subsection (h), 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. Information derived from groundwater availability models that shall be included in the groundwater management plan includes:

- the annual amount of recharge from precipitation to the groundwater resources within the district, if any;
- 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
- the annual volume of flow into and out of the district within each aquifer and between aquifers in the district.

This report—Part 2 of a two-part package of information from the TWDB to Mesquite Groundwater Conservation District—fulfills the requirements noted above. Part 1 of the two-part package is the Historical Water Use/State Water Plan data report. The District should have received, or will receive, this data report from the TWDB Groundwater Technical Assistance Section. Questions about the data report can be directed to Mr. Stephen Allen, stephen.allen@twdb.texas.gov, (512) 463-7317.

The groundwater management plan for the Mesquite Groundwater Conservation District should be adopted by the district on or before February 10, 2014 and submitted to the executive administrator of the TWDB on or before March 12, 2014. The current management plan for the Mesquite Groundwater Conservation District expires on May 11, 2014.

This report discusses the methods, assumptions, and results from model runs using the groundwater availability models for the Ogallala, the Seymour, and Blaine aquifers. This model run replaces the results of GAM Run 08-54 (Oliver, 2008). GAM Run 13-017 meets current standards set after the release of GAM Run 08-54 including use of the extent of the official aquifer boundaries within the district rather than the entire active area of the model within the district. Tables 1 through 3 summarize the groundwater availability model data required by the statute, and Figures 1 through 3 show the area of the model from which the values in the table were extracted. If after review of the figures, Mesquite Groundwater Conservation District determines that the district boundaries used in the assessment do not reflect current conditions, please notify the Texas Water Development Board immediately.

METHODS:

In accordance with the provisions of the Texas State Water Code, Section 36.1071, Subsection (h), the groundwater availability model for the northern portion of the Ogallala Aquifer and the groundwater availability model for the Seymour and Blaine aquifers were run for this analysis. Mesquite Groundwater Conservation District water budgets were extracted for the historical model periods (1980-1999) using ZONEBUDGET Version 3.01 (Harbaugh, 2009). The average annual water budget values for recharge, surface water outflow, inflow to the district, outflow from the district, net inter-aquifer flow (upper), and net inter-aquifer flow (lower) for the portion of the aquifer located within the district is summarized in this report.

PARAMETERS AND ASSUMPTIONS:

Ogallala Aquifer

- Version 3.01 of the groundwater availability model for the northern portion of the Ogallala Aquifer was used for this analysis. This model is an update to the previously developed groundwater availability model for the northern portion of the Ogallala Aquifer described in Dutton and others (2001) and Dutton (2004). See Kelley and others (2010), Dutton (2004), and Dutton and others (2001) for assumptions and limitations of the model.

- The model for the northern portion of the Ogallala Aquifer has one layer which collectively represents the Ogallala and Rita Blanca aquifers. The Rita Blanca Aquifer does not exist within the district boundaries so the information extracted from the model represents just the Ogallala Aquifer.

- The model was run with MODFLOW-2000 (Harbaugh and McDonald, 2000).

Seymour and Blaine aquifers

- We used version 1.01 of the groundwater availability model for the Seymour and Blaine aquifers. See Ewing and others (2004) for assumptions and limitations of the groundwater availability model.
- This groundwater availability model includes two layers, representing the Seymour (layer 1) and Blaine (layer 2) aquifers. In areas where the Blaine Aquifer does not exist the model roughly replicates the various Permian units located in the study area.
- The model was run with MODFLOW-2000 (Harbaugh and McDonald, 2000).

RESULTS:

A groundwater budget summarizes the amount of water entering and leaving the aquifer according to the groundwater availability model. Selected groundwater budget components listed below were extracted from the model results for the aquifers located within the district and averaged over the duration of the calibration and verification portion of the model run in the district, as shown in Table 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.

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

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

- Flow between aquifers—The net vertical flow between aquifers or confining units. This flow is controlled by the relative water levels in each aquifer or confining unit and aquifer properties of each aquifer or confining unit that define the amount of leakage that occurs. “Inflow” to an aquifer from an

overlying or underlying aquifer will always equal the "Outflow" from the other aquifer.

The information needed for the District's management plan is summarized in Tables 1 through 3. 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 (Figures 1 through 3).

TABLE 1: SUMMARIZED INFORMATION FOR THE OGALLALA AQUIFER THAT IS NEEDED FOR THE MESQUITE 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	Ogallala Aquifer	252
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Ogallala Aquifer	1,643
Estimated annual volume of flow into the district within each aquifer in the district	Ogallala Aquifer	1,390
Estimated annual volume of flow out of the district within each aquifer in the district	Ogallala Aquifer	0
Estimated net annual volume of flow between each aquifer in the district	Not Applicable	Not Applicable[1]

[1] Model assumes no flow with underlying units.

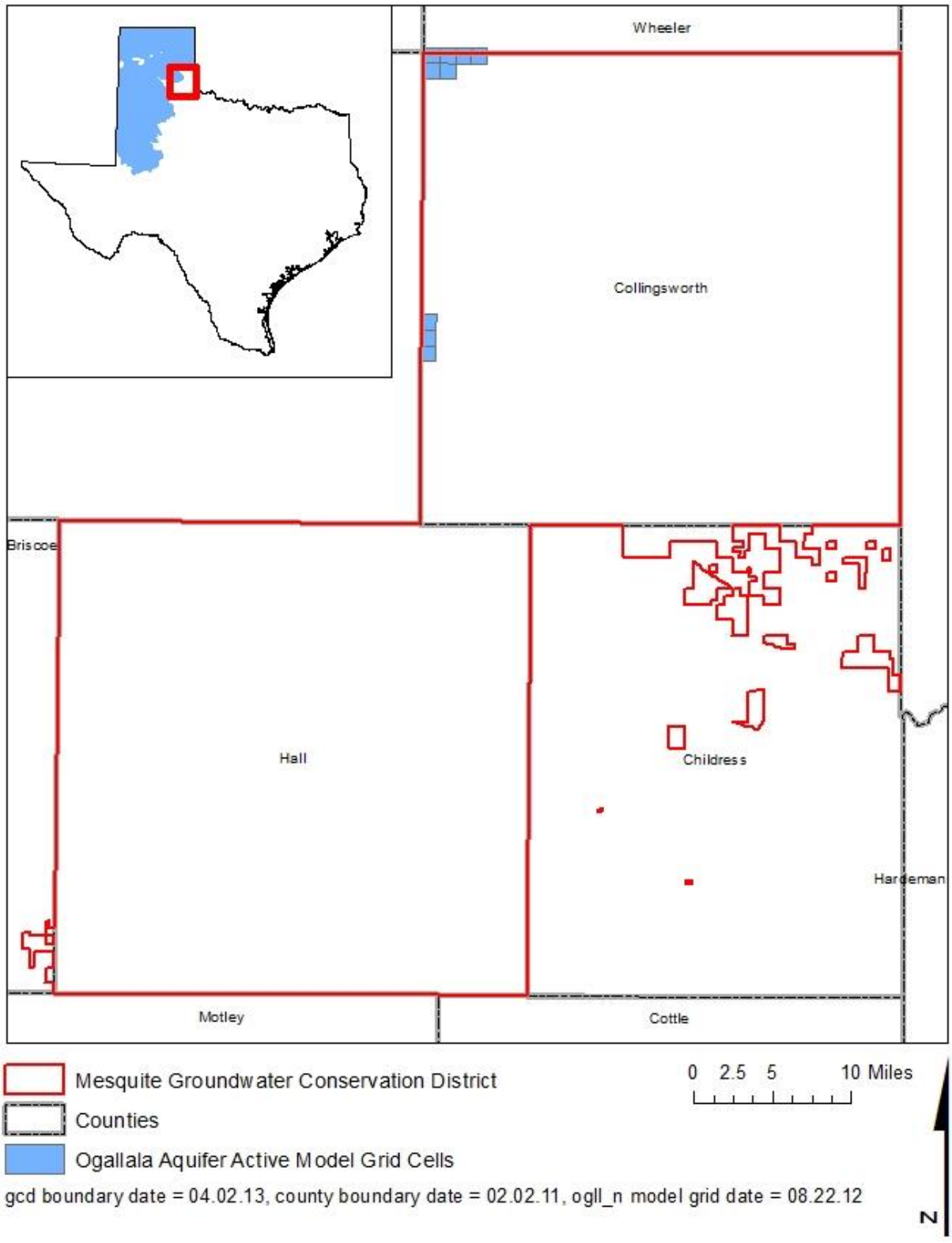

FIGURE 1: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE OGALLALA AQUIFER FROM WHICH THE INFORMATION IN TABLE 1 WAS EXTRACTED (THE OGALLALA AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 2: SUMMARIZED INFORMATION FOR THE SEYMOUR AQUIFER THAT IS NEEDED FOR THE MESQUITE 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	Seymour Aquifer	42,904
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Seymour Aquifer	4,308
Estimated annual volume of flow into the district within each aquifer in the district	Seymour Aquifer	1,705
Estimated annual volume of flow out of the district within each aquifer in the district	Seymour Aquifer	1,041
Estimated net annual volume of flow between each aquifer in the district[2]	Net flow from the Seymour Aquifer to the Blaine Aquifer	13,371

[2] The net flow from the Seymour Aquifer to the Blaine and other Permian Units is 4,605 acre-feet. The amount is less that the net flow from the Seymour Aquifer to the Blaine Aquifer because there is greater flow going into the Seymour Aquifer from the other Permian Units which lowers the net flow.

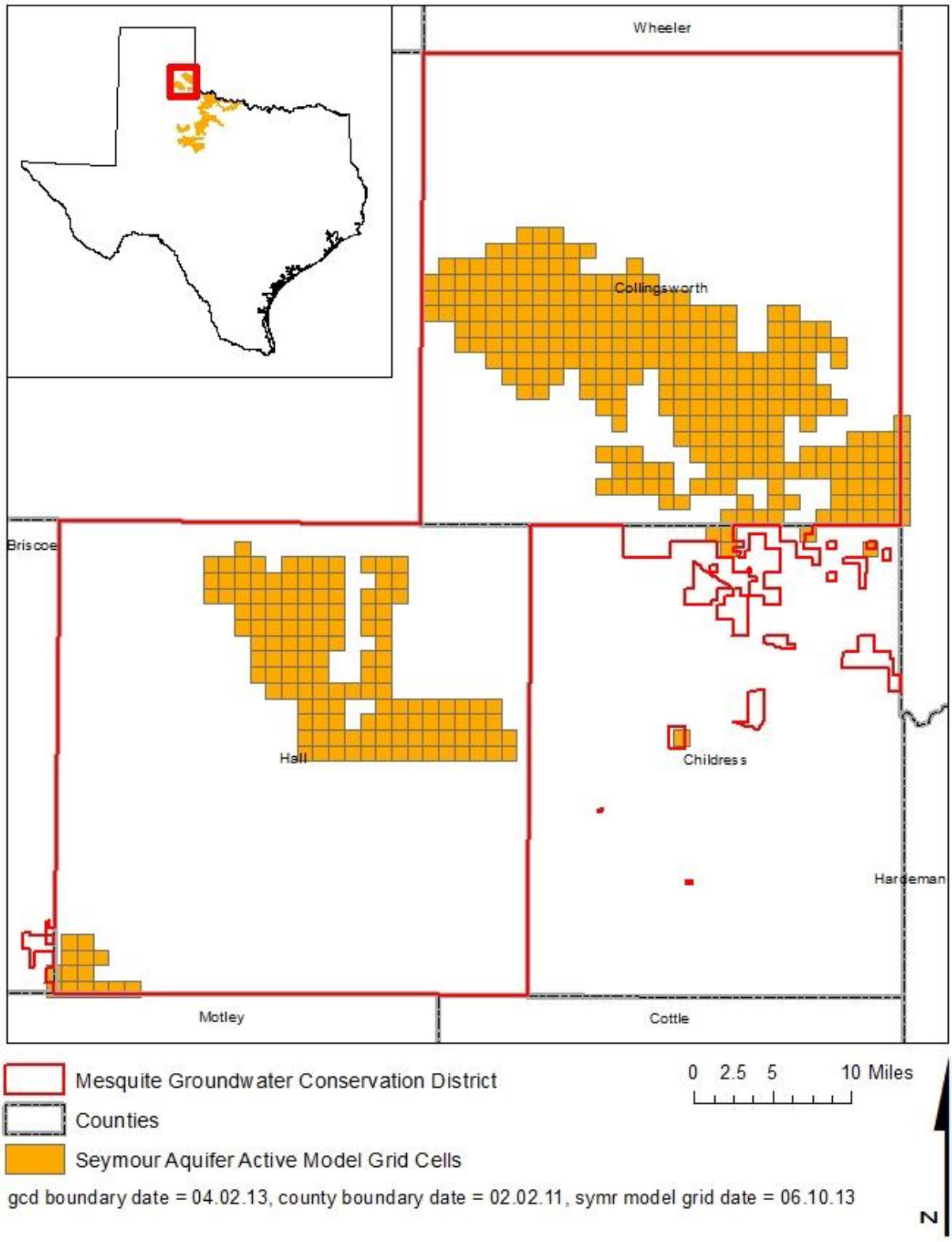

FIGURE 2: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE SEYMOUR AQUIFER FROM WHICH THE INFORMATION IN TABLE 2 WAS EXTRACTED (THE SEYMOUR AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

TABLE 3: SUMMARIZED INFORMATION FOR THE BLAINE AQUIFER THAT IS NEEDED FOR THE MESQUITE 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	Blaine Aquifer	24,209
Estimated annual volume of water that discharges from the aquifer to springs and any surface water body including lakes, streams, and rivers	Blaine Aquifer	21,605
Estimated annual volume of flow into the district within each aquifer in the district[3]	Blaine Aquifer	12,947
Estimated annual volume of flow out of the district within each aquifer in the district	Blaine Aquifer	15,637
Estimated net annual volume of flow between each aquifer in the district	Net flow from the Seymour Aquifer to the Blaine Aquifer	13,371

[3] The lateral flow from other Permian Units to the Blaine Aquifer is 5,614 acre-feet.

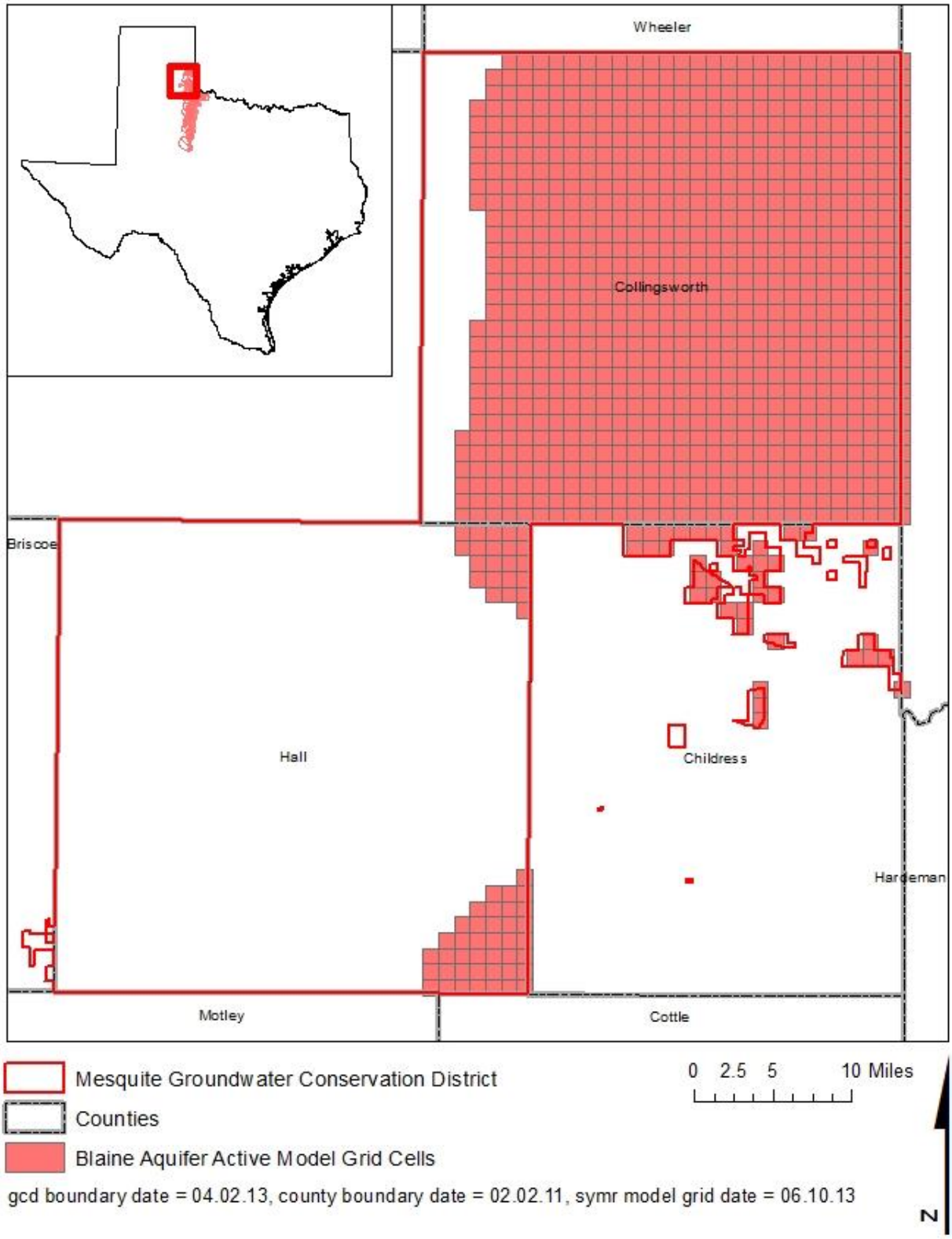

FIGURE 3: AREA OF THE GROUNDWATER AVAILABILITY MODEL FOR THE BLAINE AQUIFER FROM WHICH THE INFORMATION IN TABLE 3 WAS EXTRACTED (THE BLAINE AQUIFER EXTENT WITHIN THE DISTRICT BOUNDARY).

LIMITATIONS:

The groundwater model(s) used in completing this analysis is the best available scientific tool that can be used to meet the stated objective(s). 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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Open Meeting Submission

Success!

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TRD:	2014000047
Date Posted:	01/03/2014
Status:	Accepted
Agency Id:	1027
Date of Submission:	01/03/2014
Agency Name:	Mesquite Groundwater Conservation District
Board:	Mesquite GCD
Committee:	BOD
Liaison Id:	1
Date of Meeting:	01/23/2014
Time of Meeting:	06:30 PM **(##:## AM Local Time)**
Street Location:	802 9th Street
City Location:	Wellington
State Location:	TX
Liaison Name:	Amy Crowell
Additional Information Obtained From:	Amy Crowell, mgcd@windstream.net, 806-447-2800
Agenda:	Mesquite Groundwater Conservation District 1/23/2014 6:30 PM 802 9th Street Wellington, TX 79095 Hearing Agenda Opening Comments Jerry Lewis, President 1. Hear Comment and Discuss the Mesquite Groundwater Conservation District Proposed Management Plan Adjourn

TERRY CANADA
1500 CORSICANA STREET
WELLINGTON, TX 79095

New

Mesquite Groundwater Conservation District

1/23/2014
6:30 PM
802 9th Street
Wellington, TX 79095

Hearing Agenda

Opening Comments — Jerry Lewis, President

1. Hear Comment and Discuss the Mesquite Groundwater Conservation District Proposed Management Plan

Adjourn