District Management Plan

NORTH PLAINS
GROUNDWATER
Conservation District

2018 - 2028

Adopted: _____

603 East 1st Street
P.O. Box 795
Dumas, Texas 79029
www.northplainsgcd.org

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I. District Mission Statement

The mission of the North Plains Groundwater Conservation District as adopted by the Board of Directors:

> *Maintaining our way of life through conservation, protection, and preservation of our groundwater resources.*

II. Purpose of Management Plan

During the 1997 Texas legislative session, the legislature enacted into law Senate Bill 1 (SB 1) which established a comprehensive statewide water planning process.

SB 1 requires groundwater conservation districts to prepare and have approved by the Texas Water Development Board a 50-year management plan. The management plan establishes the framework to achieve aquifer Desired Future Conditions (DFC), identifies water supply resources and needs, identifies management strategies, and specifies the management goals of the District. The management plan must be readopted or revised at least every five years, and serves as a guide to the District when making decisions.

Senate Bill 2 (SB 2) was enacted by the Texas Legislature in 2001, and House Bill 1763 (HB 1763) was enacted in 2005 building on the planning requirements of SB 1 and to further clarify the actions necessary for districts to manage and conserve the groundwater resources in the State of Texas. The management plan must address the following management goals, as applicable:

1. Providing the most efficient use of groundwater;
2. Controlling and preventing waste of groundwater;
3. Controlling and preventing subsidence;
4. Addressing conjunctive surface water management issues;
5. Addressing natural resource issues;
6. Addressing drought conditions;
7. Addressing conservation, recharge enhancement, rainwater harvesting, precipitation enhancement, or brush control, where appropriate and cost-effective; and
8. Addressing the desired future conditions (DFC) adopted by the district.

North Plains Groundwater Conservation District's (District) management plan satisfies the requirements of SB 1, SB 2, HB 1763, the statutory requirements of Chapter 36 of the Texas Water Code, and the administrative requirements of the TWDB Rules.

III. Criteria for Plan Certification [1, 2, 3]

This management plan will be in effect upon approval of the Texas Water Development Board (TWDB) and will remain in force until it is replaced by a revised management plan approved by

the TWDB. The District is required to review and readopt with or without amendment at least once every five years, or more frequently if the District deems necessary or appropriate.

Proposal of Plan

The District's Board of Directors (Board) proposed the management plan at the Board meeting held on _____.

Public Hearings

The District held two public hearings on _____ and _____. A total of _____ stakeholders attended the meetings. Copies of the notice of hearing and transcripts of the hearings are in Appendix B and C respectively.

Plan Adoption

The Board approved the adoption of the management plan on _____, and a copy of the resolution is in Appendix A.

Coordination with Surface Management Entities

Three water management entities, Palo Duro Water District (PDWD) Red River Authority of Texas and the Canadian River Municipal Water Authority (CRMWA, have a portion of their jurisdiction located within the District's jurisdiction. The District coordinated with the Canadian River Municipal Water Authority, The Red River Authority and Palo Duro Water District. Copies of the correspondences between the District and the other entities are in Appendix D.

IV. District Information

Creation

In 1949, the Texas Legislature authorized the creation of underground water conservation districts to perform certain prescribed duties, functions, and hold specific powers as outlined in Article 7880-3c, Texas Civil Statutes. The Legislature codified this portion of the Texas Civil Statutes into Chapter 52 of the Texas Water Code. Later, the Legislature amended the Texas Water Code and moved the statutes into Chapter 36. In 1955, voters created the District through a confirmation election. The District was established under Texas Constitution, Article III, Section 52 or Article XVI, Section 59. The District has the authority to regulate the spacing of water wells, the production from water wells, or both, with the goals of conserving and protecting the underground water resources of Texas and preventing the waste of groundwater.

Location and Extent

The District's area of management responsibility extends over 7,335 square miles in the northern Texas Panhandle encompassing all of Dallam, Hansford, Lipscomb, Ochiltree, and Sherman

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Counties, as well as parts of Hartley, Hutchinson, and Moore Counties. The District is located north of Amarillo and north of the Canadian River.

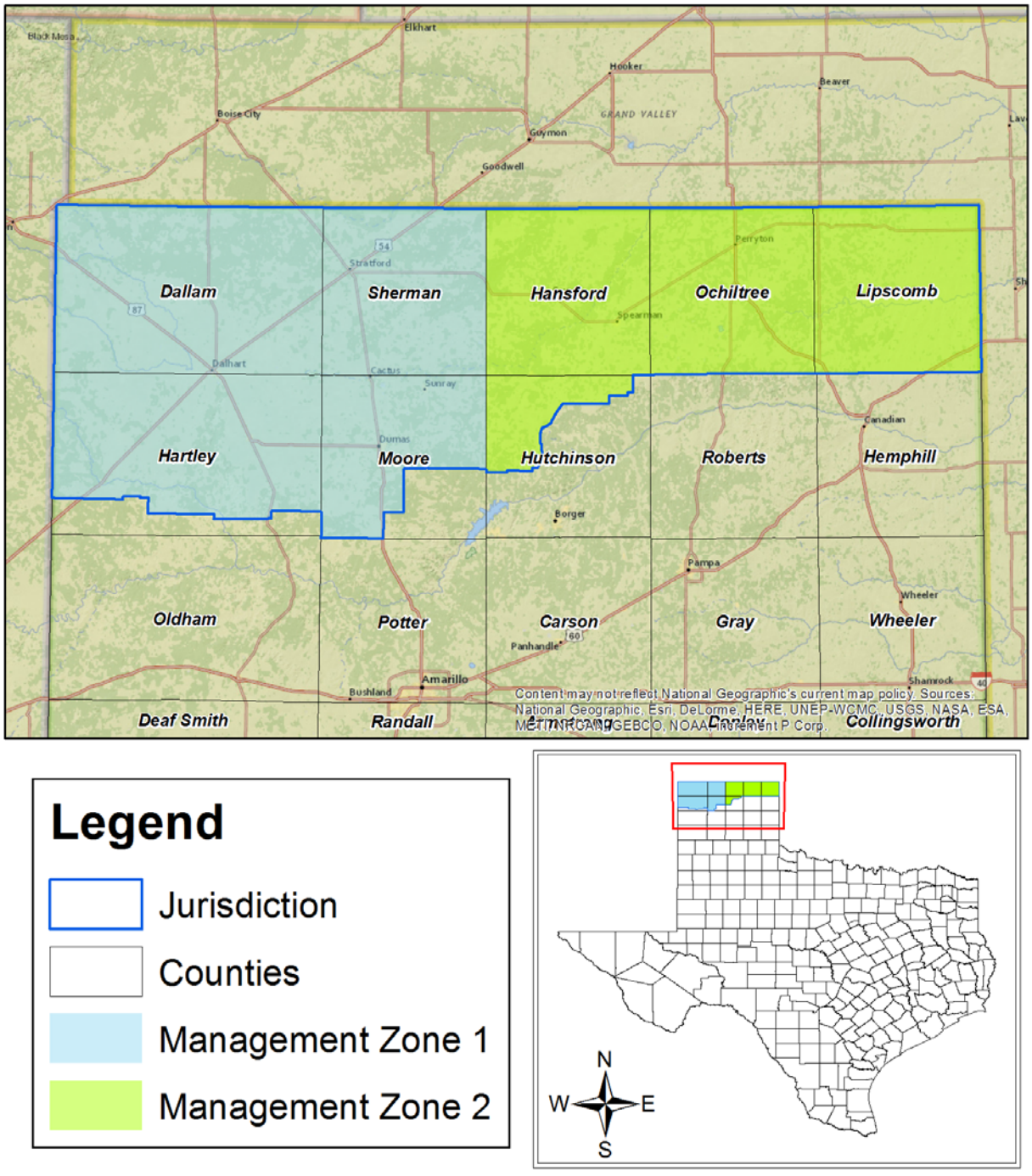

Figure 1: Map of the District's Jurisdiction.

Since the District does not cover all of Hartley, Hutchison, and Moore counties, data provided by the TWDB was used for all estimates related to demand based on a proportional area percentage. This percentage was derived by dividing the number of acres or square miles covered by the

District by the total number of acres or square miles contained within each county. The entire county areas, the total county areas in the District, and the TWDB computation of the percentage of county areas within the District are as follows:

Table 1: The Area of the District in Square Miles.

County	County Area	Area in District	Percent
Dallam	1,505	1,505	100.00%
Hartley	1,463	1,244	83.56%
Moore	914	699	76.51%
Sherman	916	916	100.00%
Hutchinson	894	278	30.55%
Lipscomb	934	934	100.00%
Hansford	907	907	100.00%
Ochiltree	907	907	100.00%
West	4,798	4,365	
East	3,642	3,026	
Totals	8,440	7,390	

Groundwater is the primary water supply source for an agricultural economy within the eight counties of the District. In 2014, the value of agriculture within the region was $2.847 billion. The TWDB provided population projections for each of the counties, and the projected population in the District's counties totaled 76,662 people for 2020 and projected to grow to 105,413 people by 2070. The following table reflects the TWDB projected population for each of the District's counties.

Table 2: Projected Population for the District [4].

County	2020	2030	2040	2050	2060	2070
Dallam	7,744	8,720	9,747	10,759	11,733	12,671
Hartley	5,248	5,541	5,696	5,807	5,907	5,986
Moore	19,714	22,471	25,407	28,388	31,497	34,680
Sherman	3,294	3,571	3,720	3,853	3,949	4,020
Hansford	1,740	1,859	1,959	2,049	2,140	2,229
Hutchinson	24,017	24,877	25,098	25,098	25,098	25,098
Lipscomb	3,599	3,858	4,011	4,211	4,350	4,465
Ochiltree	11,305	12,158	13,075	14,061	15,122	16,264
West	36,000	40,303	44,571	48,808	53,086	57,357
East	40,661	42,753	44,143	45,419	46,710	48,056
Total	76,662	83,056	88,714	94,227	99,797	105,413

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Background

The District's main office is located at 603 East 1st Street, Dumas, Texas 79029. The District's office hours are from 8:00 am to 12:00 pm and from 1:00 pm to 5:00 pm Monday through Friday except holidays.

The District is governed by an elected seven-member Board of Directors. Each Director is elected from a defined area within the District for a four-year term. The elections are held in November of each even-numbered year in accordance with Chapter 36 and the Texas Election Code. The Board elect's officers after each Director election and these officers serve for two-year terms. The Board of Directors holds regular meetings at the Richard S. Bowers Conservation Learning Center located at 6045 W Road E, Dumas, Texas 79029.

The Board develops and adopts the Rules and programs, establishes practices, hires the general manager, sets the annual budget, and determines the tax rate necessary to carry out the operations of the District. The Directors conduct themselves in a manner consistent with sound ethical and business practices; consider the public interest in conducting District business; avoid impropriety, or the appearance of impropriety, ensure and maintain public confidence in the District; and control and manage the affairs of the District lawfully, fairly, impartially, and without discrimination, and in accordance with the stated purposes of the District. In September 2005, the Board developed and adopted a document which sets forth the District's Director Policies.

The District employs a general manager to manage the administrative affairs of the District and who, in the absence of the Secretary of the Board, may act as secretary to the Board and may attest on behalf of the District. The general manager performs all duties outlined in the Rules, personnel policies, and the job description of the general manager to the reasonable satisfaction of the Board of Directors. The general manager's duties specifically include the employment and supervision of personnel, oversight of the financial matters, attendance of Board and Board committee meetings, and the submission of reports to the Board concerning all phases of the services and operations of the District. Further, the general manager's duties include the continued review, development, and enforcement of the Rules. The general manager also performs any other duties which may be assigned to him by the Board from time-to-time.

The District maintains a qualified staff to assist water users in protecting, preserving, and conserving the aquifers. The Directors bases its decisions on the best data available and treats all water users equitably and equally. The Directors determine the programs and activities that the District shall undertake to provide the best possible management of the area. The Rules are enforced to protect the quality of the groundwater and to prevent the waste of this precious resource.

Authority and Framework

The District derives its authority to manage groundwater within its jurisdiction by the powers granted and authorized under Section 59, Article XVI, Texas Constitution, Texas Water Code,

Chapter 36, and Government Code Chapter 8870. The District, acting under such authority, assumes all the rights and responsibilities of a groundwater conservation district specified in TWC Chapter 36. The District's goal is to provide sound management of groundwater resources and make every effort to ensure that an abundant supply of potable water will be available for many future generations.

Groundwater Management Area and Joint Planning

TWC Chapter 36 requires joint planning among groundwater conservation districts (GCDs) that are in the same Groundwater Management Area (GMA). These GCDs must establish the DFCs of the aquifers within their respective GMA every five years. Through this process, the GCDs consider the varying uses and conditions of the aquifer within the management area that differs substantially from one geographic area to another. The District is entirely in Groundwater Management Area 1 (GMA-1), which also includes Hemphill County Underground Water Conservation District, Panhandle Groundwater Conservation District, and part of High Plains Underground Water Conservation District. This management plan utilizes information from GMA-1 joint planning cycle completed by the districts in 2017.

GMA-1 and the District adopted DFCs relative to the area during the joint planning process. Based on the specified DFCs, TWDB's executive administrator provides each district with the modeled available groundwater (MAG) in the management area. TWC Chapter 36 requires these management plans to include the aquifers' DFCs within the district's jurisdiction and the MAG for each aquifer. Well owners within the District withdraw groundwater from three aquifers: Ogallala, Rita Blanca, and Dockum Aquifers.

Ogallala and Rita Blanca Aquifers' Desired Future Conditions

GMA 1 included the Rita Blanca Aquifer in the Ogallala Aquifer DFC. In places, the Rita Blanca Aquifer is hydraulically connected to the Ogallala Aquifer and the underlying Dockum Aquifer. Though the report goes on to say that irrigation accounts for most of the groundwater use from this aquifer, Texline being the only community that uses the aquifer for municipal water supply. GMA-1 and the District adopted Ogallala Aquifer DFCs inclusive of the Rita Blanca Aquifer within the District's jurisdiction as follows:

- 40% volume in storage remaining in 50 years in Dallam, Hartley, Sherman and Moore Counties; and
- 50% volume in storage remaining in 50 years in Hansford, Hutchinson, Ochiltree and Lipscomb Counties.

Dockum Aquifer's Desired Future Conditions

GMA-1 and the District adopted a DFC for the Dockum Aquifer in Dallam, Hartley, Moore and Sherman counties in the District that at least 40 percent of the available drawdown will remain in the next 50 years.

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V. District Rules and Management of Groundwater [5]

With substantial input and feedback from stakeholders the District's Board of Directors established the District's Rules in accordance with state law to successfully implement the management plan. The Rules are strictly and fairly enforced. The District may amend the Rules as necessary to comply with changes to Texas law and to ensure the best management of the groundwater within the District. The Rules govern the management strategies of the District, including, but not limited to, well permitting, well spacing, production reporting, annual allowable production, waste of groundwater, achieving DFCs, and establishing a groundwater conservation reserve. The District executes its responsibilities with transparency and places stakeholder involvement as a priority, exceeding the legal requirements for notice and hearings on meetings and other District activities. All District documents are made available to the public pursuant to the Texas Public Information Act. In addition to the District's management plan, the District's Rules can be obtained online from the District's website: http://northplainsgcd.org/aquifer-management-Rules/district-Rules/ and from the District's office.

Applications, Permits, and Registrations of Wells

The District requires all wells must be registered or have a test hole permit or well permit issued by the District prior to the construction of a well. District Rules require all newly permitted wells or modification to the original permit require a flow meter be installed on the permitted well and all other wells located within the water rights owner's groundwater production unit. Each permitted well must be fitted with a check valve to prevent aquifer contamination.

Classification, Spacing, and Density of Wells

The District allows a groundwater rights owner one well per 64 acres in a groundwater production unit. All new non-exempted wells are required to be spaced at least fifty yards away from an existing exempted well. All non-exempted wells are subjected to the following classification and spacing Rules:

Table 3: Classification, and Spacing Rules for all Non-Exempt Wells in the District.

Pumping Capacity (gallons per minute)	Classification	Minimum Distance from Nearest Permitted Well (Yards)	Minimum Distance from Property Line (Yards)
0 - 17	S	50	17
18 - 100	A	150	100
101 – 400	B	250	100
401 – 800	C	400	100
Greater than 801	D	500	100

Groundwater Production Units

An owner may join contiguous parcels of groundwater rights within the District's jurisdiction in one single unit of groundwater rights called a groundwater production unit (GPU). A GPU cannot contain more than 1,600 acres, and the most distant diagonal corners of the GPU cannot exceed 25,000 feet apart.

Allowable Annual Production, and Reporting

A groundwater user may pump up to 1.5 acre-feet of groundwater per acre of the GPU per year, termed allowable annual production. Additional production may be added from the owner's groundwater conservation reserve, up to 0.5 acre-feet of groundwater per acre of the GPU per year. An owner accumulates any unused allowable annual production in a groundwater conservation reserve program. If the reserve is not utilized within a five-year period, any accumulated reserve for that year is terminated. Annually, an owner will file a production report on all the owner's GPUs by March 1st immediately following the end of the calendar year. The District allows six different methods to measure groundwater production, flow meters, center pivot nozzle package, hour meter, CAFOs, natural gas consumption, and electric consumption. The District's preferred method for measuring groundwater production is flow meters.

Achieving Desired Future Conditions

To achieve the DFCs, the Board added Chapter 8 to the District's Rules. The allowable annual production limit will be reviewed if the average annual production in a management zone exceeds the average MAG amount for the first three years after the beginning of a GMA joint planning cycle. If the mean annual production did exceed the average MAG amounts, the Board may choose to lower the allowable annual production limit for a management zone based on the MAG data.

Waste of Groundwater

Chapter 9 in the District's Rules outline the District enforcement for the control and prevention of the waste of groundwater as defined by the Texas Water Code.

VI. General Geology and Hydrology

The Ogallala Aquifer is the primary groundwater source within the District. Water-bearing areas of the Ogallala formation are hydraulically connected except where the Canadian River has partly or wholly eroded through the formation to separate the North and South Plains. The Rita Blanca Aquifer in the western part of Dallam and Hartley Counties underlies the Ogallala Aquifer. The Dockum Aquifer in Dallam, Hartley, Moore and Sherman counties underlie the Rita Blanca where present and the Ogallala Aquifer. These aquifers are hydraulically connected.

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Local Aquifers

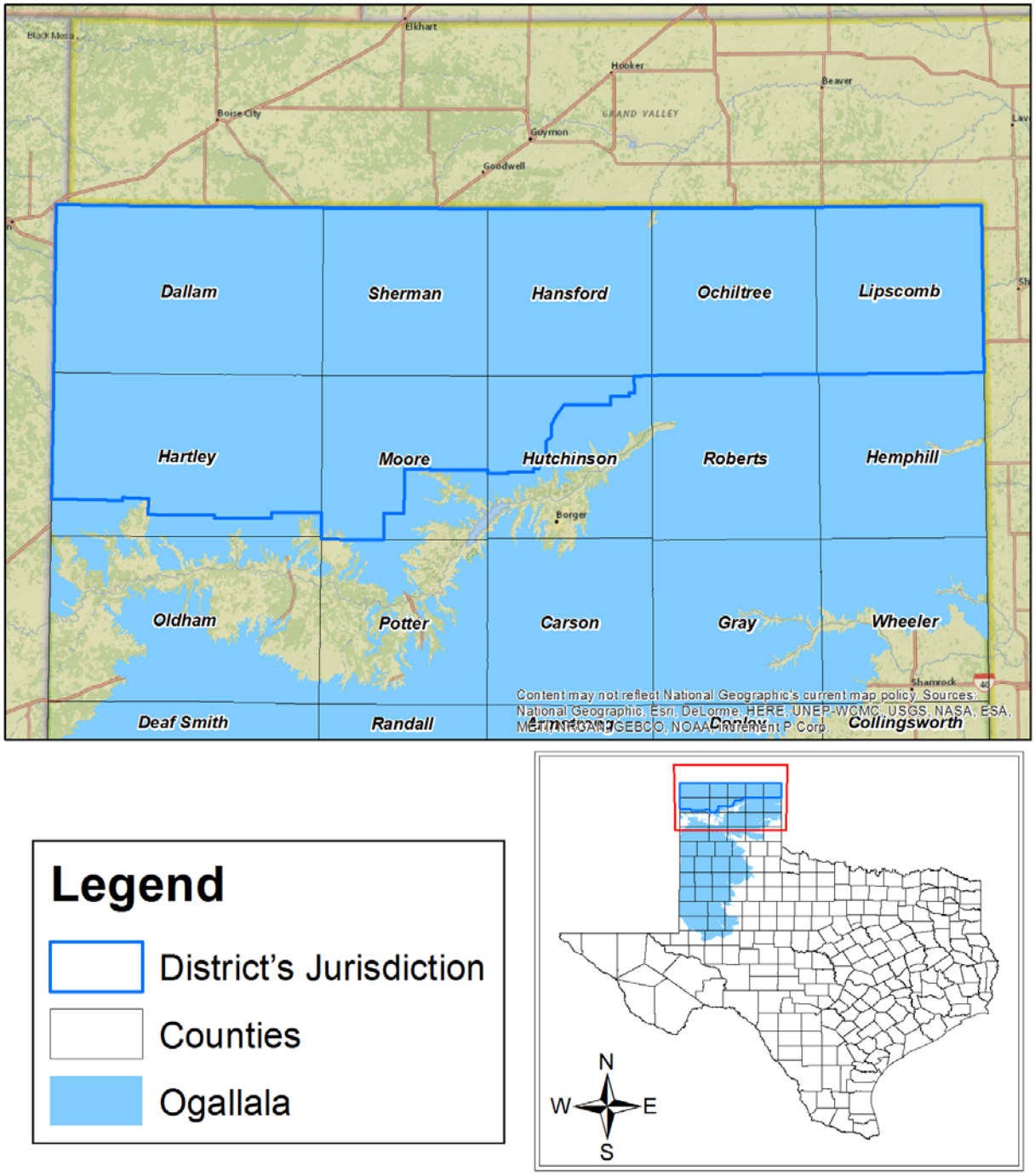
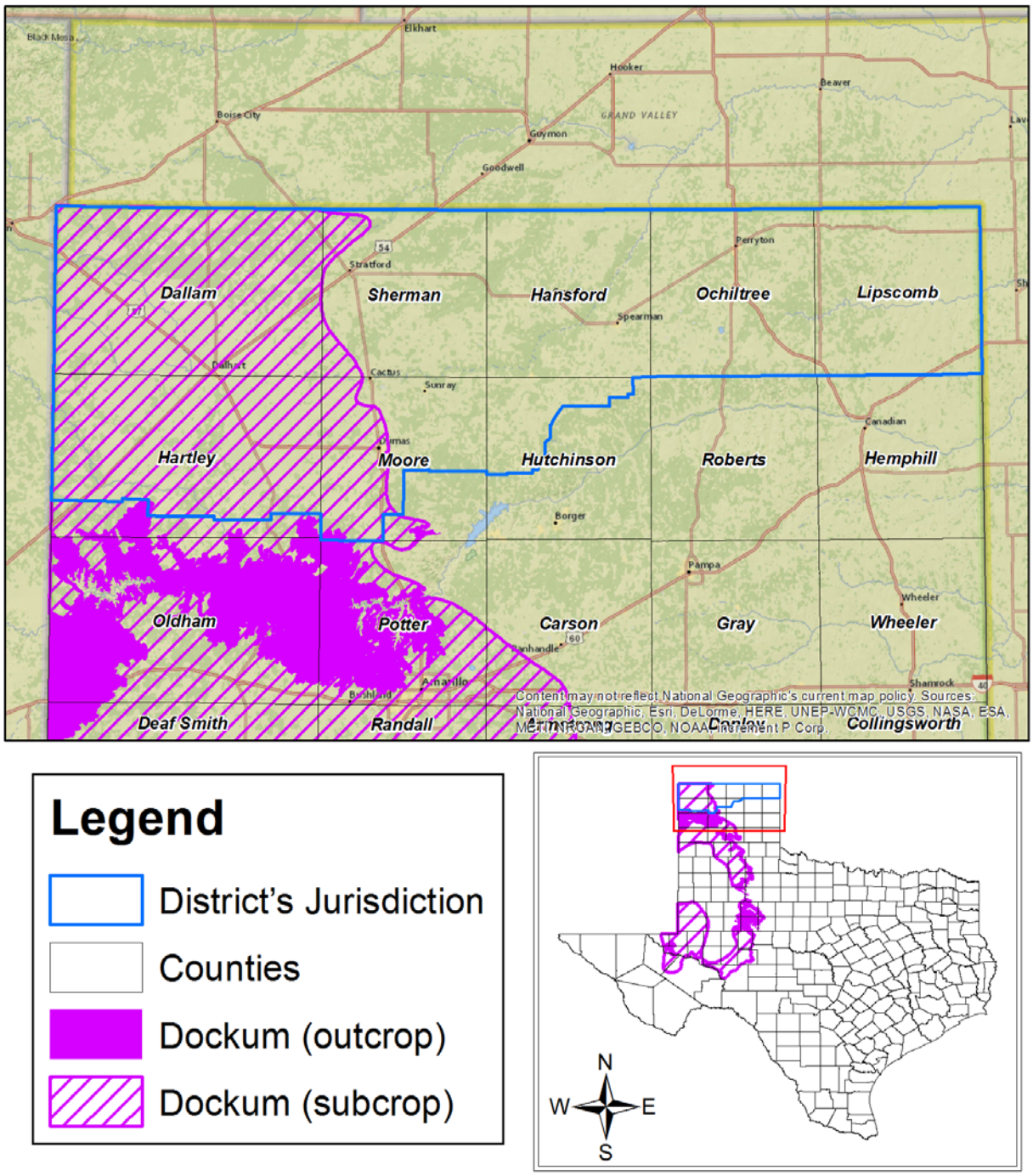


Figure 2: The Ogallala Aquifer.



Note: Outcrop indicates portion of a water-bearing rock unit exposed at the land surface, and subcrop indicates portion of a water-bearing rock unit existing below other rock units.

Figure 3: The Dockum Aquifer.

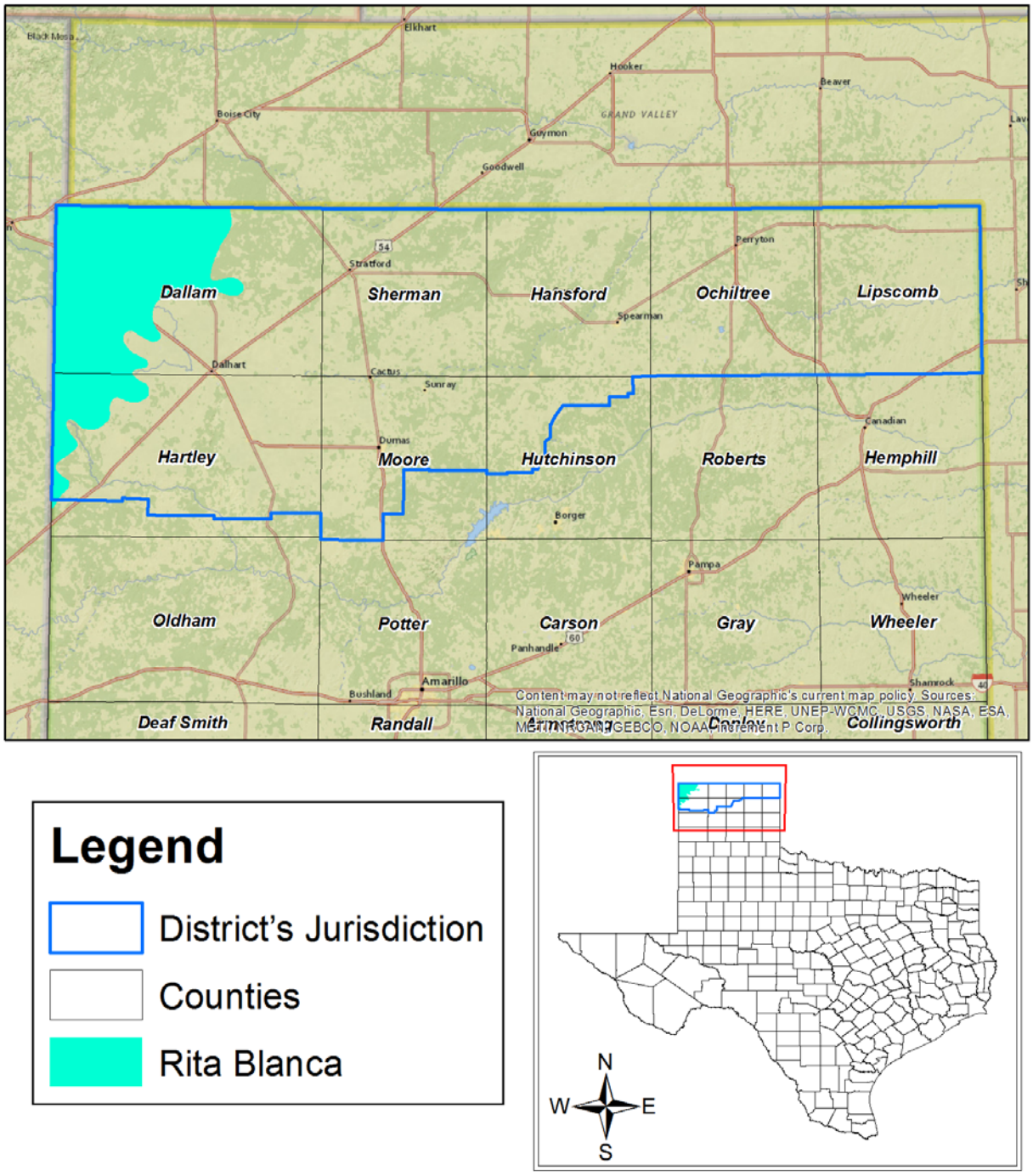


Figure 4: The Rita Blanca Aquifer.

VII. Available Groundwater and Projected Water Supply Needs

Modeled Available Groundwater [6, 7]

The District uses the groundwater availability modeling (GAM) along with information collected by the District and other resources during management planning. The TWDB's executive administrator provided the District with the data from the GAMs of the northern portion of the Ogallala Aquifer, which includes the Rita Blanca and Dockum Aquifers (TWDB GAM Run 16-029 MAG). The tables below are developed from the data provided.

Table 4: Modeled Available Groundwater in acre-feet for the Ogallala and Rita Blanca Aquifers [8].

County	2020	2030	2040	2050	2060	2062
Dallam	387,471	287,205	225,573	166,890	112,864	103,258
Hartley	397,585	271,523	212,321	154,433	100,407	90,842
Moore	214,853	172,621	139,322	105,016	73,384	67,650
Sherman	398,056	348,895	281,690	212,744	148,552	136,776
Hansford	275,016	272,656	271,226	270,281	269,589	269,479
Hutchinson	62,803	64,522	65,652	66,075	66,027	65,956
Ochiltree	243,778	243,932	244,002	244,051	244,082	244,085
Lipscomb	266,809	266,710	266,640	266,591	266,559	266,557
West	1,397,965	1,080,244	858,906	639,083	435,207	398,526
East	848,406	847,820	847,520	846,998	846,257	846,077
Total	2,246,371	1,928,064	1,706,426	1,486,081	1,281,464	1,244,603

Table 5: Modeled Available Groundwater in acre-feet for the Dockum Aquifer [8].

County	2020	2030	2040	2050	2060	2062
Dallam	14,192	14,188	14,186	14,184	14,184	14,184
Hartley	4,801	4,532	4,493	4,417	4,289	4,261
Moore	11,602	10,766	10,524	10,560	10,815	10,895
Sherman	127	127	127	127	95	93
Total	**30,722**	**29,613**	**29,330**	**29,288**	**29,383**	**29,433**

Estimated Groundwater Use [9, 10, 11]

Over the last five years, groundwater withdrawals in the district averaged 1.7 million acre-feet per year. The eastern four counties' (Hansford, Hutchinson, Lipscomb, and Ochiltree) groundwater production averaged 399 thousand acre-feet per year; while the western four counties' (Dallam, Hartley, Moore, and Sherman) production averaged 1.3 million acre-feet per year. The east and west groundwater pumping averaged 23.5%, and 76.5%, respectively, of the total groundwater production. Table 6 summarizes the groundwater production for the District in acre-feet.

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Table 6: Groundwater Production in acre-feet Collected through the District's Production Reporting Process.

County	2012	2013	2014	2015	2016	Average
Dallam	372,000	399,300	393,700	297,000	339,200	360,240
Hartley	458,700	459,000	442,100	332,700	391,600	416,820
Moore	234,700	228,300	210,000	156,700	185,700	203,080
Sherman	348,100	346,700	361,400	251,700	285,300	318,640
Hansford	218,800	202,000	211,700	148,800	170,400	190,340
Hutchinson	72,300	69,800	74,000	57,700	67,600	68,280
Lipscomb	55,600	42,600	48,800	39,400	42,300	45,740
Ochiltree	109,300	98,300	106,300	77,400	81,400	94,540
West	1,413,500	1,433,300	1,407,200	1,038,100	1,201,800	1,298,780
East	456,000	412,700	440,800	323,300	361,700	398,900
Total	1,869,500	1,846,000	1,848,000	1,361,400	1,563,500	1,697,680

Table 7: Average Non-Agriculture Groundwater Use Estimate in acre-feet for the District.

County	Municipal	Manufacturing	Mining	Steam Electric
Dallam	1,706.9	5.9	0.0	0.0
Hartley	1,084.6	0.0	4.6	0.0
Moore	3,387.8	5,980.7	15.9	1,319.0
Sherman	671.4	2.2	7.8	0.0
Hansford	1,171.9	279.1	17.2	0.0
Hutchinson	1,152.8	7,068.1	24.6	0.0
Lipscomb	658.6	179.4	99.5	0.0
Ochiltree	2,292.2	10.9	122.3	0.0
West	6,850.6	5,988.8	28.3	1,319.0
East	5,275.5	7,537.6	263.6	0.0
Total	12,126.1	13,526.3	291.8	1,319.0

Note: The data was averaged from 2000 through 2015. For more information on this data, see Appendix E.

Table 8: Average Agriculture Groundwater Use Estimate in acre-feet for the District.

County	Irrigation	Livestock
Dallam	408,052.1	5,471.6
Hartley	318,371.1	3,810.6
Moore	182,072.8	2,376.3
Sherman	323,985.6	4,573.7
Hansford	183,536.7	3,267.9
Hutchinson	15,475.4	88.1
Lipscomb	33,550.4	506.7
Ochiltree	79,772.8	1,628.6
West	1,232,481.7	16,232.2
East	312,335.4	5,491.2
Total	1,544,817.1	21,723.4

Note: The data was averaged from 2000 through 2015. For more information on this data, see Appendix E.

Estimated Surface Water Use [12, 13]

According to the 2017 State Water Plan's estimates of each county associated with the District, the estimated historical surface water use amounts in acre-feet are as follows:

Table 9: Estimated Historical Surface Water Use in acre-feet

County	Municipal	Manufacturing	Mining	Irrigation	Livestock	Total
Dallam	0.0	0.0	0.0	140.3	1,284.1	1,424.3
Hartley	0.0	0.0	1.1	0.0	1,694.4	1,695.5
Moore	0.0	0.0	1.1	38.8	481.7	521.6
Sherman	0.0	0.0	0.9	0.0	656.9	657.8
Hansford	0.0	0.0	3.0	192.8	1,810.1	2,005.9
Hutchinson	176.1	422.0	7.8	115.5	75.1	796.6
Lipscomb	0.0	0.0	29.6	1.3	283.3	314.1
Ochiltree	0.0	0.0	26.3	0.0	951.8	978.1
West	*0.0*	*0.0*	*3.1*	*179.0*	*4,117.1*	*4,299.2*
East	*176.1*	*422.0*	*66.7*	*309.6*	*3,120.3*	*4,094.7*
Total	*176.1*	*422.0*	*69.8*	*488.6*	*7,237.4*	*8,393.9*

Note: The data was averaged from 2000 through 2015. For more information on this data, see Appendix E.

Estimated Annual Aquifer Recharge(Source TWDB GAM Run 17-008) [14, 15]

The total annual recharge for the Ogallala Aquifer is 137,029 acre-feet from precipitation within the District. The total annual recharge for the Dockum Aquifer is 49 acre-feet from precipitation within the District.

Table 10: Annual Aquifer Recharge in the District (in acre-feet) [16].

Aquifer	Recharge
Ogallala	137,029
Rita Blanca	0
Dockum	49
Total	137,078

Estimated Annual Aquifer Discharge to Springs, Lakes, Streams, and Rivers (Source TWDB GAM Run 17-008) [17, 18]

The total estimated annual volume of water that discharges from the Ogallala Aquifer to springs and any surface water body including lakes, streams, and rivers is 26,368 acre-feet. The Dockum and Rita Blanca Aquifer currently have no discharge to springs or any other surface water bodies.

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Table 11: Annual Aquifer Discharge in the District (in acre-feet) [16].

Aquifer	Discharge
Ogallala	26,368
Rita Blanca	0
Dockum	0
Total	26,368

Estimated Aquifer Annual Flow Volume into and out of the District and Between Aquifers (Source TWDB GAM Run 17-008) [19, 20]

The estimated annual Ogallala Aquifer flow volume into and out of the District as well as the annual volume of flow between the Ogallala, Rita Blanca, and Dockum in the District is expressed in acre-feet as follows:

Table 12: Groundwater Flow in acre-feet for the Aquifers in the District [16].

Aquifer	Into the District	Out of the District	Between Aquifer
Ogallala	50,186	94,559	3,807[A]
Rita Blanca	902	229	3,464[B]
Dockum	4,097	2,293	1,997[C]

[A] Total flow from the Ogallala to the Rita Blanca and Dockum Aquifers.
[B] Total flow from the Ogallala and Dockum Aquifers into the Rita Blanca Aquifer.
[C] Total flow from the Dockum to the Ogallala and Rita Blanca Aquifers.

Projected Surface Water Supply [12, 13]

According to the 2017 State Water Plan's estimates of each county associated with the District, the projected surface water supply amounts in acre-feet are as follows:

Table 13: Projected Surface Water Supply in acre-feet for the East Management Zone

Years	Hansford	Hutchinson	Lipscomb	Ochiltree	Total
2020-2070	2,639	116	176	421	3,352

Note: For more information on this data, see Appendix E.

Table 14: Projected Surface Water Supply in acre-feet

Years	Dallam	Hartley	Moore	Sherman	Total
2020-2070	2,488	2,668	770	1,084	7,010

Note: For more information on this data, see Appendix E.

Projected Total Water Demand [21]

According to "Estimated Historical Groundwater Use And 2017 State Water Plan Datasets" the projected total water demand in acre-feet is as follows:

Table 15: Projected Water Demand in acre-feet for the District [21].

County	2020	2030	2040	2050	2060	2070
Dallam	376,493	354,620	326,399	291,512	256,648	221,798
Hartley	295,428	279,595	258,663	231,273	203,930	176,631
Moore	124,614	119,021	111,763	102,536	93,607	84,759
Sherman	225,104	212,287	195,370	174,359	153,357	132,400
Hansford	140,089	132,184	121,356	108,403	95,471	82,824
Hutchinson	25,198	25,028	24,496	23,677	23,117	22,617
Lipscomb	23,142	21,891	20,273	18,089	16,086	14,184
Ochiltree	65,358	61,562	57,102	51,612	46,367	41,271
Total	1,275,426	1,206,188	1,115,422	1,001,461	888,583	776,484

Table 16: Summarized Projected Water Demand in acre-feet for the West Management Zone. [21]

Use	2020	2030	2040	2,050	2060	2070
Irrigation	988,848	930,414	854,733	759,762	664,793	569,822
Livestock	16,129	17,118	18,189	19,350	20,606	21,970
Manufacturing	6,939	7,319	7,694	8,024	8,568	9,148
Mining	53	225	168	113	58	34
Municipal	8,395	9,253	10,159	11,114	12,132	13,163
Steam Electric Power	153	0	0	0	0	0
Other	1,112	1,194	1,252	1,317	1,385	1,451
Total	1,021,639	965,523	892,195	799,680	707,542	615,588

Table 17: Summarized Projected Water Demand in acre-feet for the East Management Zone. [21]

Use	2020	2030	2040	2050	2060	2070
Irrigation	224,368	210,821	193,397	171,908	150,420	128,931
Livestock	8,854	8,442	8,722	9,018	9,334	9,668
Manufacturing	7,943	8,406	8,848	9,233	9,879	10,645
Mining	2,555	2,586	1,603	646	77	17
Municipal	9,150	9,472	9,695	9,9802	10,300	10,645
Other	917	938	962	996	1,031	1,067
Total	253,787	240,665	223,227	201,781	181,041	160,896

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Projected Water Supply Needs [22]

According to the 2017 State Water Plan, the estimated water supply needs in acre-feet are as follows:

Table 18: Estimated Water Supply Needs in acre-feet

County	2020	2030	2040	2050	2060	2070
Dallam	-79,908	-92,469	-95,342	-88,952	-79,729	-70,513
Hartley	-77,545	-93,712	-99,092	-93,227	-84,020	-74,803
Moore	-2,750	-4,376	-6,014	-8,940	-15,699	-20,761
Sherman	0	0	0	0	0	0
Hansford	0	0	-111	-479	-738	-978
Hutchinson	-167	-1,642	-3,066	-4,538	-5,834	-7,128
Lipscomb	0	0	-98	-326	-445	-558
Ochiltree	-478	-963	-1,440	-1,884	-2,352	-2,803
Total	-160,848	-193,162	-205,163	-198,346	-188,817	-177,544

Note: Negative numbers denote shortages the District is projected to experience unless Groundwater strategies are implemented. For more information on this data, see Appendix E.

VIII. Projected Water Management Strategies [22]

To meet the long-term water supply needs of the District, the 2017 State Water Plan recommends four water management strategies. Those management strategies and the county that they would be applicable to are as follows:

Table 19: Water Management Strategies [23].

Management Strategy	Dallam	Hansford	Hartley	Hutchinson	Lipscomb	Moore	Ochiltree	Sherman
Develop Groundwater Supply	✓	✓	✓	✓	✓	✓	✓	
Irrigation Conservation	✓	✓	✓	✓	✓	✓	✓	✓
Municipal Conservation	✓	✓	✓	✓	✓	✓	✓	✓
Water Audits and Leak Repair	✓	✓		✓		✓		✓
Weather Modification				✗				

Water Savings from Implementation of Management Strategies

According to the 2017 State Water Plan, if the above-listed management strategies are fully implemented, the water savings in acre-feet are as follows:

Table 20: Potential Water Savings in acre-feet if Management Strategies are Fully Implemented.

Management Strategy	2020	2030	2040	2050	2060	2070
Develop Groundwater Supply	10,285	12,000	13,785	22,192	23,073	24,160
Irrigation Conservation	113,063	203,034	355,380	402,316	437,791	463,479
Municipal Conservation	92	99	104	107	114	120
Water Audits and Leak Repair	361	400	437	478	517	557
Total	123,801	215,533	369,706	425,093	461,495	488,316

IX. Methodology to Track District Progress in Achieving Management Goals

The District staff will produce an annual report for the Board each year for providing information on the progress of District activities and programs. The report will specifically contain status updates on the management goals, objectives and standards as presented in this management plan. This report will be submitted to the Board in a timely manner, taking into consideration seasonal workloads and events, such as legislative sessions. The District will continue to enforce its Rules to conserve, preserve, protect, and prevent the waste of the groundwater resources under its jurisdiction. The Board periodically reviews the District's Rules and makes revisions as needed to manage the groundwater resources within the District under TWC Chapter 36. The Board will consider all groundwater uses and needs and will develop Rules which are fair and impartial to implement this management plan. A copy of the most current annual report and the current approved District Rules is available for public review on the District website at www.northplainsgcd.org and the District office.

X. Actions, Procedures, Performance, and Avoidance for District Implementation of Management Plan [24]

This management plan, as required by TWC Chapter 36, explains the goals, objectives and standards that will be used to conserve, protect and preserve the groundwater resources in the District. The District will implement and utilize the provisions of this management plan for determining the direction or priority for all District activities. District operations, all agreements entered by the District, and any additional planning efforts in which the District may participate will be consistent with the provisions of this plan. The District shall attempt to treat all citizens fairly. The District, as needed, shall seek the cooperation of state, regional, and local water management entities in the implementation of this plan and management of groundwater supplies within the District.

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XI. Groundwater Management Goals

A. *Providing for the Most Efficient use of Groundwater* [25, 26]

1. *Groundwater Reporting*

Management Objective: Monitor total annual groundwater withdrawals through water use reporting by all producing groundwater right owners that have a well capable of producing more than 25,000 gallons of groundwater a day.

Performance Standards: Annually, the District will collect production reports on all properties containing non-exempt wells and calculate annual groundwater withdrawals for the District.

2. *Well Registrations and Permitting*

Management Objective: All exempt and non-exempt wells constructed within the jurisdiction of the District are required to be registered or permitted in accordance to the District's Rules.

Performance Standards: District staff will verify all wells within a Groundwater Production Unit(s) are registered or permitted in accordance with the District Rules during any site visits.

3. *Conservation Demonstration and Education*

Management Objective: Provide support through the District's North Plains Water Conservation Center, demonstrations, and other district education programs to promote groundwater conservation.

Performance Standards: At least annually, conduct field days and/or other events to educate stakeholders regarding water use efficiency technologies and practices. The District will publish reports on the activities at the North Plains Water Conservation Center and other demonstrations and education programs.

4. *Financial Assistance*

Management Objective: The District will encourage the adoption of technologies that promote efficient use of groundwater and conserve water by providing the means to purchase the technology.

Performance Standards: At least annually, the District will seek financial assistance for stakeholders regarding conservation equipment and practices.

5. *Technical Assistance*

Management Objective: The District will assist stakeholders in collecting information and knowledge about practices and technologies that promote efficient use of groundwater.

Performance Standards: The District will provide technical assistance to stakeholders when requested, and the information is beneficial for the efficient use of groundwater.

B. *Controlling and Preventing the Waste of Groundwater* [27, 28]

Management Objective: Control and prevent the waste of groundwater as defined by State law.

Performance Standards: The District will pursue any reported violations of the District's Rules concerning groundwater waste.

C. *Controlling and Preventing Subsidence* [29, 30]

Due to the depth of the water and the nature of the geology within the District, subsidence is unlikely and the District's Board of Directors, upon recommendation from qualified staff, have determined that this goal is not applicable to the District.

D. *Addressing Conjunctive Surface Water Management Issues* [31, 32]

Management Objective: Address conjunctive water use issues with organizations that have relevant authority or jurisdiction.

Performance Standard: Annually, District's representatives will attend at least 75% of Region A: Panhandle Regional Water Planning Group's meetings. To further address conjunctive water use issues, The District will submit a copy of its Management Plan to The Canadian River Municipal Water Authority, Palo Duro Water District, and Red River Authority for their consideration and review.

E. *Addressing Natural Resource Issues that Impact the Use and Availability of Groundwater and which are Impacted by the Use of Groundwater* [33, 34]

1. *Aquifer Monitoring*

Management Objective: Monitor aquifer characteristics that affect utilization and availability of groundwater and which are affected by the use of groundwater through District programs by maintaining a network of monitor wells.

Performance Standards:

i. District staff will periodically collect and analyze water samples from appropriate monitor wells.

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ii. District staff will perform water quality analyses for select constituents for well owners upon request.
iii. Annually, District staff will summarize their water quality activities and make the information available to the Board and the public.
iv. District staff will collect aquifer water level measurements annually.
v. Annually, District staff will summarize groundwater level declines and average depth to water and make the information available to the Board and the public.
vi. At least on a two-year cycle, District staff will summarize or update aquifer saturated material information and make the information available to the Board and the public.

2. Deteriorated Wells

Management Objective: Investigate and address deteriorated wells that may pose a threat to water quality.

Performance Standard: District staff will pursue repair or plugging of deteriorated wells.

3. Aquifer Information

Management Objective: The District will provide easy access to public information available about the aquifers and wells within the District's jurisdiction.

Performance Standards: The District will maintain a web-based application for providing information about the groundwater resources in the region.

F. Addressing Drought Conditions [35, 36]

North Plains Groundwater Conservation District lies in an area of the state of Texas that has a year-round semi-arid climate. Semi-drought conditions are experienced year-round, and the District works to educate the public about methods to conserve water all year, but particularly during dry periods.

1. Current Drought Conditions

Management Objective: Provide information about the current drought conditions in the area.

Performance Standards: Maintain information about the current drought conditions on the District's website.

2. Conservation Education

Management Objective: Provide stakeholders with information and tools to conserve during dry and peak use periods.

Performance Standards: Annually, the District will conduct water conservation communications and education activities.

G. *Conservation, Recharge Enhancement, Rainwater Harvesting, Precipitation Enhancement, and Brush Control, Where Appropriate and Cost-Effective* [37, 38]

1. Conservation

a) Groundwater Conservation Reserve Program

Management Objective: Provide program allowing permitted well owners that timely report their groundwater production to retain any unused allowable annual production for future years, promoting the conservation of groundwater.

Performance Standards: Annually, District staff will report to permitted well owners the well owner's conservation reserve.

b) Conservation Education

Management Objective: Conduct conservation education activities to encourage water conservation and create informed and educated citizens who will be dedicated stewards of their resources.

Performance Standards: Annually, the District will disseminate groundwater conservation and waste prevention information through a variety of media, activities, and events.

c) Conservation Rule Compliance

Management Objective: Monitor and enforce compliance to District Rules

Performance Standards: The District staff will report the enforcement to the Board as needed.

2. Recharge Enhancement

The District has limited surface water resources to effectuate enhanced recharge through diversion or infiltration of surface water. The District explored recharge enhancement through its precipitation enhancement program, and the District discontinued funding for the program in 2006. The District could not quantify if, and to what extent, the program positively affected recharge or groundwater use in the District. The Board of Directors determined recharge enhancement through surface water diversion, infiltration, or precipitation enhancement is not currently viable or practical. For this management plan, this goal is not applicable to the District.

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3. *Rainwater Harvesting*

Management Objective: The District promotes rainwater harvesting by maintaining rainwater harvesting information at the District Office and provides literature about its benefits at a public meeting held at least once annually.

Performance Standards: Annually District staff will report to the Board of Directors the number of people who attended the rainwater harvesting meetings.

4. *Precipitation Enhancement*

The District discontinued its funding for the precipitation enhancement program in 2006. The District could not quantify if, and to what extent, the program positively affected recharge or groundwater use. The Board of Directors determined that precipitation enhancement is not currently viable or practical. For this management plan, this goal is non-applicable to the District.

5. *Brush Control*

The District has a semi-arid climate, has very little surface water, experiences low annual rainfall and has a depth to groundwater exceeding 300 feet. Considering the District's low rainfall, depth to groundwater and lack of surface water resources; brush control as a form of recharge enhancement or groundwater conservation is not practicable or effective. The District has determined that brush control is not a viable groundwater conservation goal for this area and is therefore non-applicable.

H. *Addressing the Desired Future Conditions* [39, 40]

1. *Compare DFCs to Aquifers' Conditions*

Management Objective: Monitor the condition of the aquifers and status of groundwater production compared to the adopted DFCs.

Performance Standards: Annually review groundwater production information, GAMs, and water level measurements to characterize aquifer conditions compared to the DFCs.

2. *Joint Planning*

Management Objective: The District will participate in the joint planning process of the Groundwater Management Area 1 with other groundwater conservation districts.

Performance Standards: A District representative will participate in each GMA-1 joint planning meeting.

3. *Allowable Production Limitation*

Management Objective: Manage groundwater withdrawal amounts based on allowable production limits to achieve DFCs.

Performance Standards: The Board of Directors will review groundwater withdrawal amounts annually, and may modify annual allowable groundwater production limits consistent with its Rules to achieve the DFCs and preservation of the groundwater resurces in the region.

I. *Other Management Goals Included in The Plan by The District*

No other management goals are listed at this time.

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References

[1] *31 TAC §356.53(a)(3).*

[2] *TWC §36.1071(a).*

[3] *31 TAC §356.51.*

[4] "Population and Water Demand Projections," 15 May 2017. [Online]. Available: http://www.twdb.texas.gov/waterplanning/data/projections/index.asp.

[5] 3. T. §356.52(a)(4).

[6] *31 TAC §356.52(a)(5)(A).*

[7] *TWC §36.1071(e)(3)(A).*

[8] R. R. Goswami, "TWDB GAM Run 16-029 MAG: Modeled Available Groundwater for the Aquifers in Groundwater Management Area 1," Texas Water Development Board, Austin, Texas, 2017.

[9] *31 TAC §356.52(a)(5)(B).*

[10] *31 TAC §356.10(2).*

[11] *TWC §36.1071(e)(3)(B).*

[12] *31 TAC §356.52(a)(5)(F).*

[13] *TWC §36.1071(e)(3)(F).*

[14] *31 TAC §356.52(a)(5)(C).*

[15] *TWC §36.1071(e)(3)(C).*

[16] R. R. Goswami, "TWDB GAM Run 17-008: North Plains Groundwater Conservation District Groundwater Management Plan," Texas Water Development Board, Austin, Texas, 2017.

[17] *31 TAC §356.52(a)(5)(D).*

[18] *TWC §36.1071(e)(3)(D).*

[19] *31 TAC §356.52(a)(5)(E).*

[20] *TWC §36.1071(e)(3)(E).*

[21] Allen Stephen, TWDB, "Estimated Historical Groundwater Use And 2017 State Water Plan Datasets," Texas Water Development Board, Austin Texas, 2017.

[22] *TWC §36.1071(e)(4).*

[23] "2017 State Water Plan," Texas Water Development Board, Austin, TX, 2017.

[24] *TWC §36.1071(e)(2).*

[25] *31 TAC §356.52(a)(1)(A).*

[26] *TWC §36.1071(a)(1).*

[27] *31 TAC §356.52(a)(1)(B).*

[28] *TWC §36.1071(a)(2).*

[29] *31 TAC §356.52(a)(1)(C).*

[30] *TWC §36.1071(a)(3).*

[31] *31 TAC §356.52(a)(1)(D).*

[32] *TWC §36.1071(a)(4).*

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[33] *31 TAC §356.52(a)(1)(E).*

[34] *TWC §36.1071(a)(5).*

[35] *31 TAC §356.52(a)(1)(F).*

[36] *TWC §36.1071(a)(6).*

[37] *31 TAC §356.52(a)(1)(G).*

[38] *TWC §36.1071(a)(7).*

[39] *31 TAC §356.52(a)(1)(H).*

[40] *TWC §36.1071(a)(8).*

[41] *31 TAC §356.52(a)(5)(G).*

[42] *TWC §36.1071(e)(3)(G).*

XII. Appendix A: Board of Director's Resolution

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XIII. Appendix B: Notice of Public Hearings

XIV. Appendix C: Transcript of Public Hearings

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XV. Appendix D: Surface Water Management Entities

XVI. Appendix E: Management Plan Required Data Report for the District

Estimated Historical Groundwater Use And 2017 State Water Plan Datasets:

North Plains Groundwater Conservation District

by Stephen Allen

Texas Water Development Board

Groundwater Division

Groundwater Technical Assistance Section

stephen.allen@twdb.texas.gov

(512) 463-7317

October 25, 2017

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GROUNDWATER MANAGEMENT PLAN DATA:

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

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

The five reports included in this part are:

1. Estimated Historical 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)

from the 2017 Texas State Water Plan (SWP)

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

DISCLAIMER:

The data presented in this report represents the most up-to-date WUS and 2017 SWP data available as of 10/25/2017. Although it does not happen frequently, either of these datasets are subject to change pending the availability of more accurate WUS data or an amendment to the 2017 SWP. District personnel must review these datasets and correct any discrepancies in order to ensure approval of their groundwater management plan.

The WUS dataset can be verified at this web address:

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

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

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 conditions within district boundaries. The multiplier used in 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 SWP 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 entity locations).

The remaining SWP tables (Projected Water Supply Needs and Projected Water Management Strategies) are not modified because district-specific values are not statutorily required. Each district needs only "consider" the county values in these tables.

In the WUS 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.

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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 can add those data to the plan with an explanation of how the data were derived. Apportioning percentages that the TWDB used 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 Water Use

TWDB Historical Water Use Survey (WUS) Data

Groundwater and surface water historical use estimates are currently unavailable for calendar year 2016. TWDB staff anticipates the calculation and posting of these estimates at a later date.

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DALLAM COUNTY *100% (multiplier)* All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2015	GW	1,592	50	0	0	290,509	6,083	298,234
	SW	0	0	0	0	185	1,521	1,706
2014	GW	1,571	60	0	0	381,546	5,952	389,129
	SW	0	0	0	0	185	1,488	1,673
2013	GW	1,725	60	0	0	391,795	5,605	399,185
	SW	0	0	0	0	185	1,401	1,586
2012	GW	1,865	60	0	0	495,720	5,800	503,445
	SW	0	0	0	0	185	1,450	1,635
2011	GW	1,929	60	0	0	492,524	2,807	497,320
	SW	0	0	0	0	185	702	887
2010	GW	1,641	60	0	0	363,654	2,410	367,765
	SW	0	0	0	0	185	603	788
2009	GW	1,597	6	0	0	419,927	5,590	427,120
	SW	0	0	0	0	185	1,398	1,583
2008	GW	1,817	6	0	0	407,938	7,382	417,143
	SW	0	0	0	0	185	1,707	1,892
2007	GW	1,649	9	0	0	366,071	8,908	376,637
	SW	0	0	0	0	191	2,074	2,265
2006	GW	1,572	9	0	0	346,414	8,538	356,533
	SW	0	0	0	0	191	1,974	2,165
2005	GW	1,461	9	0	0	405,495	6,923	413,888
	SW	0	0	0	0	191	1,599	1,790

2004	GW	1,434	9	0	0	402,698	7,147	411,288
	SW	0	0	0	0	191	1,660	1,851
2003	GW	1,595	9	0	0	391,440	3,697	396,741
	SW	0	0	0	0	0	775	775
2002	GW	1,802	1	0	0	503,761	3,424	508,988
	SW	0	0	0	0	0	687	687
2001	GW	1,876	1	0	0	410,472	3,705	416,054
	SW	0	0	0	0	0	765	765
2000	GW	1,869	0	0	0	458,870	3,575	464,314
	SW	0	0	0	0	0	741	741

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HANSFORD COUNTY *100% (multiplier)* All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2015	GW	1,127	328	3	0	146,249	3,426	151,133
	SW	0	0	1	0	0	1,468	1,469
2014	GW	1,156	285	11	0	211,451	3,314	216,217
	SW	0	0	3	0	0	1,420	1,423
2013	GW	1,257	204	8	0	198,601	3,241	203,311
	SW	0	0	2	0	132	1,389	1,523
2012	GW	1,230	232	17	0	218,645	3,630	223,754
	SW	0	0	2	0	134	1,556	1,692
2011	GW	1,092	231	35	0	233,576	3,270	238,204
	SW	0	0	6	0	129	1,402	1,537
2010	GW	1,090	144	113	0	128,462	2,631	132,440
	SW	0	0	19	0	170	1,128	1,317
2009	GW	1,006	232	67	0	152,554	3,043	156,902
	SW	0	0	11	0	132	1,304	1,447
2008	GW	1,084	369	21	0	140,900	4,835	147,209
	SW	0	0	4	0	1,940	1,376	3,320
2007	GW	990	387	0	0	106,015	4,249	111,641
	SW	0	0	0	0	62	1,456	1,518
2006	GW	1,372	438	0	0	134,030	5,759	141,599
	SW	0	0	0	0	143	2,181	2,324
2005	GW	1,171	454	0	0	214,532	4,241	220,398
	SW	0	0	0	0	127	1,547	1,674

2004	GW	1,162	413	0	0	231,027	2,214	234,816
	SW	0	0	0	0	0	2,709	2,709
2003	GW	1,191	166	0	0	218,724	2,122	222,203
	SW	0	0	0	0	116	2,569	2,685
2002	GW	1,271	206	0	0	219,969	2,122	223,568
	SW	0	0	0	0	0	2,486	2,486
2001	GW	1,247	190	0	0	165,564	2,086	169,087
	SW	0	0	0	0	0	2,507	2,507
2000	GW	1,305	187	0	0	216,288	2,103	219,883
	SW	0	0	0	0	0	2,464	2,464

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HARTLEY COUNTY *83.56% (multiplier)* All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2015	GW	957	0	2	0	276,676	4,545	282,180
	SW	0	0	0	0	0	1,948	1,948
2014	GW	1,012	0	55	0	341,427	4,518	347,012
	SW	0	0	14	0	0	1,936	1,950
2013	GW	1,100	0	0	0	379,326	4,192	384,618
	SW	0	0	0	0	0	1,797	1,797
2012	GW	1,186	0	8	0	383,596	4,257	389,047
	SW	0	0	2	0	0	1,824	1,826
2011	GW	1,272	0	3	0	405,919	3,926	411,120
	SW	0	0	0	0	0	1,682	1,682
2010	GW	958	0	2	0	284,567	3,380	288,907
	SW	0	0	0	0	0	1,448	1,448
2009	GW	903	0	2	0	320,110	3,870	324,885
	SW	0	0	0	0	0	1,659	1,659
2008	GW	1,034	0	2	0	304,726	4,928	310,690
	SW	0	0	1	0	0	1,747	1,748
2007	GW	999	0	0	0	270,322	4,242	275,563
	SW	0	0	0	0	0	1,453	1,453
2006	GW	1,028	0	0	0	256,746	6,040	263,814
	SW	0	0	0	0	0	2,224	2,224
2005	GW	983	0	0	0	318,898	3,963	323,844
	SW	0	0	0	0	0	1,334	1,334

2004	GW	1,012	0	0	0	338,582	3,108	342,702
	SW	0	0	0	0	0	1,975	1,975
2003	GW	1,124	0	0	0	342,288	2,883	346,295
	SW	0	0	0	0	0	1,749	1,749
2002	GW	1,212	0	0	0	326,836	2,623	330,671
	SW	0	0	0	0	0	1,489	1,489
2001	GW	1,263	0	0	0	244,629	2,361	248,253
	SW	0	0	0	0	0	1,424	1,424
2000	GW	1,310	0	0	0	299,290	2,133	302,733
	SW	0	0	0	0	0	1,422	1,422

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HUTCHINSON COUNTY

30.53% (multiplier)

All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2015	GW	1,550	4,692	27	0	15,121	83	21,473
	SW	30	0	0	0	588	28	646
2014	GW	1,543	4,848	26	0	19,670	82	26,169
	SW	0	0	0	0	0	27	27
2013	GW	922	4,595	26	0	21,115	82	26,740
	SW	345	0	0	0	84	27	456
2012	GW	1,052	4,923	29	0	21,925	102	28,031
	SW	282	0	0	0	84	34	400
2011	GW	1,737	5,184	32	0	22,517	126	29,596
	SW	37	104	2	0	0	42	185
2010	GW	1,345	8,353	40	0	12,242	112	22,092
	SW	365	278	6	0	84	38	771
2009	GW	1,100	8,929	41	0	16,236	149	26,455
	SW	63	0	6	0	0	49	118
2008	GW	1,353	7,953	42	0	15,395	151	24,894
	SW	99	588	33	0	588	50	1,358
2007	GW	990	7,702	26	0	10,531	118	19,367
	SW	79	822	26	0	84	39	1,050
2006	GW	994	7,973	26	0	12,493	173	21,659
	SW	95	167	26	0	84	58	430
2005	GW	728	7,401	26	0	12,681	146	20,982
	SW	92	1,088	0	0	84	49	1,313

2004	GW	905	7,952	26	0	11,700	22	20,605
	SW	136	790	26	0	84	198	1,234
2003	GW	1,101	7,688	0	0	11,106	16	19,911
	SW	361	540	0	0	84	146	1,131
2002	GW	996	7,585	10	0	14,716	16	23,323
	SW	251	789	0	0	0	144	1,184
2001	GW	1,168	8,123	7	0	12,218	14	21,530
	SW	322	757	0	0	0	122	1,201
2000	GW	961	9,189	10	0	17,941	17	28,118
	SW	291	829	0	0	0	151	1,271

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LIPSCOMB COUNTY *100% (multiplier)* All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2015	GW	642	292	107	0	35,113	588	36,742
	SW	0	0	27	0	0	65	92
2014	GW	433	258	269	0	43,894	576	45,430
	SW	0	0	67	0	0	64	131
2013	GW	621	244	189	0	41,723	575	43,352
	SW	0	0	47	0	0	64	111
2012	GW	1,010	244	302	0	55,287	717	57,560
	SW	0	0	37	0	0	80	117
2011	GW	926	242	292	0	51,358	826	53,644
	SW	0	0	119	0	0	92	211
2010	GW	671	193	130	0	31,415	716	33,125
	SW	0	0	53	0	0	80	133
2009	GW	528	171	144	0	29,915	774	31,532
	SW	0	0	59	0	0	86	145
2008	GW	626	187	159	0	30,974	782	32,728
	SW	0	0	65	0	0	87	152
2007	GW	663	143	0	0	32,319	719	33,844
	SW	0	0	0	0	20	80	100
2006	GW	678	102	0	0	28,020	647	29,447
	SW	0	0	0	0	0	72	72
2005	GW	625	102	0	0	27,263	780	28,770
	SW	0	0	0	0	0	87	87

2004	GW	651	159	0	0	23,440	90	24,340
	SW	0	0	0	0	0	809	809
2003	GW	654	159	0	0	20,688	93	21,594
	SW	0	0	0	0	0	839	839
2002	GW	523	159	0	0	21,422	83	22,187
	SW	0	0	0	0	0	751	751
2001	GW	430	140	0	0	27,971	68	28,609
	SW	0	0	0	0	0	619	619
2000	GW	911	76	0	0	36,005	73	37,065
	SW	0	0	0	0	0	657	657

DRAFT

MOORE COUNTY *76.51% (multiplier)* All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2015	GW	2,778	6,692	6	1,303	114,822	2,212	127,813
	SW	0	0	2	0	0	390	392
2014	GW	3,065	6,731	6	1,896	158,960	2,182	172,840
	SW	0	0	2	0	0	385	387
2013	GW	3,404	6,623	0	2,606	170,581	2,098	185,312
	SW	0	0	0	0	0	370	370
2012	GW	3,477	6,842	2	3,016	179,790	2,376	195,503
	SW	0	0	0	0	0	419	419
2011	GW	3,898	6,135	50	2,389	204,633	1,815	218,920
	SW	0	0	8	0	0	320	328
2010	GW	2,785	5,544	10	1,834	124,401	1,550	136,124
	SW	0	0	2	0	0	274	276
2009	GW	3,314	5,704	12	2,096	150,351	2,178	163,655
	SW	0	0	2	0	0	384	386
2008	GW	3,122	5,623	39	2,086	143,173	2,401	156,444
	SW	0	0	2	0	620	424	1,046
2007	GW	3,185	5,532	18	2,632	191,572	1,969	204,908
	SW	0	0	0	0	0	347	347
2006	GW	3,706	6,489	19	83	139,103	3,611	153,011
	SW	0	0	0	0	0	637	637
2005	GW	3,368	6,563	9	109	222,704	2,005	234,758
	SW	0	0	0	0	0	353	353

2004	GW	3,266	5,240	7	83	224,076	1,924	234,596
	SW	0	0	0	0	0	480	480
2003	GW	3,810	5,376	13	416	223,549	2,829	235,993
	SW	0	0	0	0	0	707	707
2002	GW	3,786	5,538	21	177	245,225	2,914	257,661
	SW	0	0	0	0	0	728	728
2001	GW	3,353	5,744	22	75	197,107	2,956	209,257
	SW	0	0	0	0	0	738	738
2000	GW	3,887	5,318	20	303	223,118	3,001	235,647
	SW	0	0	0	0	0	751	751

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OCHILTREE COUNTY *100% (multiplier)* All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2015	GW	2,176	30	155	0	75,302	2,399	80,062
	SW	0	0	39	0	0	267	306
2014	GW	2,542	30	326	0	92,205	2,306	97,409
	SW	0	0	81	0	0	256	337
2013	GW	2,635	7	304	0	92,597	2,183	97,726
	SW	0	0	76	0	0	243	319
2012	GW	2,972	35	241	0	109,415	2,472	115,135
	SW	0	0	29	0	0	275	304
2011	GW	2,991	36	221	0	109,671	1,481	114,400
	SW	0	0	87	0	0	165	252
2010	GW	2,262	28	96	0	60,484	1,300	64,170
	SW	0	0	38	0	0	144	182
2009	GW	2,090	5	130	0	66,859	2,102	71,186
	SW	0	0	36	0	0	234	270
2008	GW	1,826	3	97	0	75,402	2,450	79,778
	SW	0	0	34	0	0	272	306
2007	GW	2,018	0	48	0	51,134	2,365	55,565
	SW	0	0	0	0	0	263	263
2006	GW	2,204	0	49	0	66,539	3,158	71,950
	SW	0	0	0	0	0	351	351
2005	GW	2,185	0	52	0	88,256	2,450	92,943
	SW	0	0	0	0	0	272	272

2004	GW	2,089	0	54	0	74,436	305	76,884
	SW	0	0	0	0	0	2,736	2,736
2003	GW	2,203	0	48	0	68,707	268	71,226
	SW	0	0	0	0	0	2,406	2,406
2002	GW	2,309	0	47	0	81,896	276	84,528
	SW	0	0	0	0	0	2,473	2,473
2001	GW	1,933	0	46	0	65,523	264	67,766
	SW	0	0	0	0	0	2,366	2,366
2000	GW	2,241	0	42	0	97,939	278	100,500
	SW	0	0	0	0	0	2,506	2,506

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SHERMAN COUNTY *100% (multiplier)* All values are in acre-feet

Year	Source	Municipal	Manufacturing	Mining	Steam Electric	Irrigation	Livestock	Total
2015	GW	537	1	2	0	246,920	4,874	252,334
	SW	0	0	1	0	0	542	543
2014	GW	622	2	0	0	336,265	4,712	341,601
	SW	0	0	0	0	0	524	524
2013	GW	524	2	2	0	344,067	4,410	349,005
	SW	0	0	0	0	0	490	490
2012	GW	658	2	1	0	347,939	4,840	353,440
	SW	0	0	0	0	0	538	538
2011	GW	687	2	16	0	396,637	2,274	399,616
	SW	0	0	2	0	0	253	255
2010	GW	630	2	32	0	236,631	1,947	239,242
	SW	0	0	4	0	0	216	220
2009	GW	638	3	34	0	282,660	4,853	288,188
	SW	0	0	4	0	0	539	543
2008	GW	581	2	37	0	274,019	6,488	281,127
	SW	0	0	4	0	0	721	725
2007	GW	699	2	0	0	222,185	7,217	230,103
	SW	0	0	0	0	0	802	802
2006	GW	651	2	0	0	259,255	7,896	267,804
	SW	0	0	0	0	0	877	877
2005	GW	641	2	0	0	358,343	6,507	365,493
	SW	0	0	0	0	0	723	723

2004	GW	742	2	0	0	386,966	5,980	393,690
	SW	0	0	0	0	0	1,496	1,496
2003	GW	780	2	0	0	357,560	2,812	361,154
	SW	0	0	0	0	0	703	703
2002	GW	774	2	0	0	404,395	2,793	407,964
	SW	0	0	0	0	0	699	699
2001	GW	784	5	0	0	336,219	2,752	339,760
	SW	0	0	0	0	0	688	688
2000	GW	795	2	0	0	393,710	2,797	397,304
	SW	0	0	0	0	0	699	699

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Projected Surface Water Supplies

TWDB 2017 State Water Plan Data

DALLAM COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
A	LIVESTOCK, DALLAM	CANADIAN	CANADIAN LIVESTOCK LOCAL SUPPLY	2,488	2,488	2,488	2,488	2,488	2,488
	Sum of Projected Surface Water Supplies (acre-feet)			**2,488**	**2,488**	**2,488**	**2,488**	**2,488**	**2,488**

HANSFORD COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
A	IRRIGATION, HANSFORD	CANADIAN	CANADIAN RUN-OF-RIVER	22	22	22	22	22	22
A	LIVESTOCK, HANSFORD	CANADIAN	CANADIAN LIVESTOCK LOCAL SUPPLY	2,617	2,617	2,617	2,617	2,617	2,617
	Sum of Projected Surface Water Supplies (acre-feet)			**2,639**	**2,639**	**2,639**	**2,639**	**2,639**	**2,639**

HARTLEY COUNTY

83.56% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
A	LIVESTOCK, HARTLEY	CANADIAN	CANADIAN LIVESTOCK LOCAL SUPPLY	2,668	2,668	2,668	2,668	2,668	2,668
	Sum of Projected Surface Water Supplies (acre-feet)			**2,668**	**2,668**	**2,668**	**2,668**	**2,668**	**2,668**

HUTCHINSON COUNTY

30.53% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
A	IRRIGATION, HUTCHINSON	CANADIAN	CANADIAN RUN-OF-RIVER	29	29	29	29	29	29

A	LIVESTOCK, HUTCHINSON	CANADIAN	CANADIAN LIVESTOCK LOCAL SUPPLY	86	86	86	86	86	86
A	MANUFACTURING, HUTCHINSON	CANADIAN	CANADIAN RUN-OF-RIVER	1	1	1	1	1	1
	Sum of Projected Surface Water Supplies (acre-feet)			**116**	**116**	**116**	**116**	**116**	**116**

LIPSCOMB COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
A	IRRIGATION, LIPSCOMB	CANADIAN	CANADIAN RUN-OF-RIVER	66	66	66	66	66	66
A	LIVESTOCK, LIPSCOMB	CANADIAN	CANADIAN LIVESTOCK LOCAL SUPPLY	110	110	110	110	110	110
	Sum of Projected Surface Water Supplies (acre-feet)			**176**	**176**	**176**	**176**	**176**	**176**

MOORE COUNTY

76.51% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
A	IRRIGATION, MOORE	CANADIAN	CANADIAN RUN-OF-RIVER	5	5	5	5	5	5
A	LIVESTOCK, MOORE	CANADIAN	CANADIAN LIVESTOCK LOCAL SUPPLY	765	765	765	765	765	765
	Sum of Projected Surface Water Supplies (acre-feet)			**770**	**770**	**770**	**770**	**770**	**770**

OCHILTREE COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
A	LIVESTOCK, OCHILTREE	CANADIAN	CANADIAN LIVESTOCK LOCAL SUPPLY	421	421	421	421	421	421
	Sum of Projected Surface Water Supplies (acre-feet)			**421**	**421**	**421**	**421**	**421**	**421**

SHERMAN COUNTY

100% (multiplier)

All values are in acre-feet

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RWPG	WUG	WUG Basin	Source Name	2020	2030	2040	2050	2060	2070
A	IRRIGATION, SHERMAN	CANADIAN	CANADIAN RUN-OF-RIVER	32	32	32	32	32	32
A	LIVESTOCK, SHERMAN	CANADIAN	CANADIAN LIVESTOCK LOCAL SUPPLY	1,052	1,052	1,052	1,052	1,052	1,052
	Sum of Projected Surface Water Supplies (acre-feet)			**1,084**	**1,084**	**1,084**	**1,084**	**1,084**	**1,084**

Projected Water Demands

TWDB 2017 State Water Plan Data

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

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DALLAM COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	COUNTY-OTHER, DALLAM	CANADIAN	141	151	166	183	199	214
A	DALHART	CANADIAN	1,815	2,014	2,228	2,447	2,666	2,878
A	IRRIGATION, DALLAM	CANADIAN	369,864	347,524	318,795	283,373	247,952	212,530
A	LIVESTOCK, DALLAM	CANADIAN	4,437	4,669	4,920	5,191	5,485	5,803
A	MANUFACTURING, DALLAM	CANADIAN	9	9	10	10	11	11
A	TEXLINE	CANADIAN	227	253	280	308	335	362
	Sum of Projected Water Demands (acre-feet)		**376,493**	**354,620**	**326,399**	**291,512**	**256,648**	**221,798**

HANSFORD COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	COUNTY-OTHER, HANSFORD	CANADIAN	138	145	157	167	176	186
A	GRUVER	CANADIAN	310	336	360	380	404	425
A	IRRIGATION, HANSFORD	CANADIAN	134,902	126,481	115,759	102,897	90,035	77,173
A	LIVESTOCK, HANSFORD	CANADIAN	3,432	3,574	3,724	3,881	4,046	4,219
A	MANUFACTURING, HANSFORD	CANADIAN	58	61	63	65	70	74
A	MINING, HANSFORD	CANADIAN	577	904	602	309	16	1
A	SPEARMAN	CANADIAN	672	683	691	704	724	746

	Sum of Projected Water Demands (acre-feet)		**140,089**	**132,184**	**121,356**	**108,403**	**95,471**	**82,824**

HARTLEY COUNTY

83.56% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	COUNTY-OTHER, HARTLEY	CANADIAN	547	574	585	594	606	616
A	DALHART	CANADIAN	854	874	882	889	899	907
A	IRRIGATION, HARTLEY	CANADIAN	288,587	272,307	250,922	223,042	195,162	167,281
A	LIVESTOCK, HARTLEY	CANADIAN	5,430	5,830	6,265	6,740	7,256	7,820
A	MANUFACTURING, HARTLEY	CANADIAN	4	4	4	4	4	4
A	MINING, HARTLEY	CANADIAN	6	6	5	4	3	3
	Sum of Projected Water Demands (acre-feet)		**295,428**	**279,595**	**258,663**	**231,273**	**203,930**	**176,631**

HUTCHINSON COUNTY

30.53% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	BORGER	CANADIAN	3,215	3,254	3,234	3,229	3,225	3,224
A	COUNTY-OTHER, HUTCHINSON	CANADIAN	95	97	98	98	98	97
A	FRITCH	CANADIAN	437	441	436	434	433	433
A	IRRIGATION, HUTCHINSON	CANADIAN	12,214	11,501	10,574	9,399	8,224	7,049
A	LIVESTOCK, HUTCHINSON	CANADIAN	259	267	276	285	296	308
A	MANUFACTURING, HUTCHINSON	CANADIAN	7,738	8,190	8,624	9,001	9,629	10,301
A	MINING, HUTCHINSON	CANADIAN	56	71	52	34	17	10
A	STINNETT	CANADIAN	446	452	448	447	446	446
A	TCW SUPPLY INC	CANADIAN	738	755	754	750	749	749
	Sum of Projected Water Demands (acre-feet)		**25,198**	**25,028**	**24,496**	**23,677**	**23,117**	**22,617**

LIPSCOMB COUNTY *100% (multiplier)* All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	BOOKER	CANADIAN	496	547	576	618	648	674
A	COUNTY-OTHER, LIPSCOMB	CANADIAN	445	448	447	453	459	464
A	IRRIGATION, LIPSCOMB	CANADIAN	20,009	19,014	17,650	15,689	13,728	11,767
A	LIVESTOCK, LIPSCOMB	CANADIAN	947	969	993	1,020	1,050	1,083
A	MANUFACTURING, LIPSCOMB	CANADIAN	147	155	161	167	180	193
A	MINING, LIPSCOMB	CANADIAN	1,098	758	446	142	21	3
	Sum of Projected Water Demands (acre-feet)		**23,142**	**21,891**	**20,273**	**18,089**	**16,086**	**14,184**

MOORE COUNTY *76.51% (multiplier)* All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	CACTUS	CANADIAN	985	1,108	1,242	1,382	1,532	1,686
A	COUNTY-OTHER, MOORE	CANADIAN	250	275	304	336	372	409
A	DUMAS	CANADIAN	3,538	3,941	4,388	4,866	5,391	5,933
A	FRITCH	CANADIAN	2	3	3	3	3	4
A	IRRIGATION, MOORE	CANADIAN	109,431	102,826	94,329	83,848	73,367	62,886
A	LIVESTOCK, MOORE	CANADIAN	2,813	2,988	3,179	3,385	3,608	3,850
A	MANUFACTURING, MOORE	CANADIAN	6,926	7,306	7,680	8,010	8,553	9,133
A	MINING, MOORE	CANADIAN	12	12	12	11	11	11
A	STEAM ELECTRIC POWER, MOORE	CANADIAN	153	0	0	0	0	0
A	SUNRAY	CANADIAN	504	562	626	695	770	847
	Sum of Projected Water Demands (acre-feet)		**124,614**	**119,021**	**111,763**	**102,536**	**93,607**	**84,759**

OCHILTREE COUNTY *100% (multiplier)* All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070

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A	BOOKER	CANADIAN	7	10	13	17	21	26
A	COUNTY-OTHER, OCHILTREE	CANADIAN	239	248	260	278	298	320
A	IRRIGATION, OCHILTREE	CANADIAN	57,243	53,825	49,414	43,923	38,433	32,942
A	LIVESTOCK, OCHILTREE	CANADIAN	4,216	3,632	3,729	3,832	3,942	4,058
A	MINING, OCHILTREE	CANADIAN	824	853	503	161	23	3
A	PERRYTON	CANADIAN	2,829	2,994	3,183	3,401	3,650	3,922
	Sum of Projected Water Demands (acre-feet)		**65,358**	**61,562**	**57,102**	**51,612**	**46,367**	**41,271**

SHERMAN COUNTY

100% (multiplier)

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	COUNTY-OTHER, SHERMAN	CANADIAN	184	194	197	204	208	212
A	IRRIGATION, SHERMAN	CANADIAN	220,966	207,757	190,687	169,499	148,312	127,125
A	LIVESTOCK, SHERMAN	CANADIAN	3,449	3,631	3,825	4,034	4,257	4,497
A	MINING, SHERMAN	CANADIAN	35	207	151	98	44	20
A	STRATFORD	CANADIAN	470	498	510	524	536	546
	Sum of Projected Water Demands (acre-feet)		**225,104**	**212,287**	**195,370**	**174,359**	**153,357**	**132,400**

Projected Water Supply Needs

TWDB 2017 State Water Plan Data

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

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DALLAM COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	COUNTY-OTHER, DALLAM	CANADIAN	0	0	0	0	0	0
A	DALHART	CANADIAN	-509	-794	-1,116	-1,454	-1,794	-2,134
A	IRRIGATION, DALLAM	CANADIAN	-79,399	-91,675	-94,226	-87,452	-77,836	-68,218
A	LIVESTOCK, DALLAM	CANADIAN	0	0	0	0	0	0
A	MANUFACTURING, DALLAM	CANADIAN	0	0	0	0	0	0
A	TEXLINE	CANADIAN	0	0	0	-46	-99	-161
	Sum of Projected Water Supply Needs (acre-feet)		**-79,908**	**-92,469**	**-95,342**	**-88,952**	**-79,729**	**-70,513**

HANSFORD COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	COUNTY-OTHER, HANSFORD	CANADIAN	62	55	43	33	24	14
A	GRUVER	CANADIAN	61	2	-111	-196	-272	-344
A	IRRIGATION, HANSFORD	CANADIAN	22	22	22	22	22	22
A	LIVESTOCK, HANSFORD	CANADIAN	0	0	0	0	0	0
A	MANUFACTURING, HANSFORD	CANADIAN	32	30	30	36	41	46
A	MINING, HANSFORD	CANADIAN	0	0	0	0	0	0
A	SPEARMAN	CANADIAN	0	0	0	-283	-466	-634

	Sum of Projected Water Supply Needs (acre-feet)	**0**	**0**	**-111**	**-479**	**-738**	**-978**

HARTLEY COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	COUNTY-OTHER, HARTLEY	CANADIAN	0	0	0	0	0	0
A	DALHART	CANADIAN	-240	-344	-442	-528	-605	-673
A	IRRIGATION, HARTLEY	CANADIAN	-77,305	-93,368	-98,650	-92,699	-83,415	-74,130
A	LIVESTOCK, HARTLEY	CANADIAN	0	0	0	0	0	0
A	MANUFACTURING, HARTLEY	CANADIAN	0	0	0	0	0	0
A	MINING, HARTLEY	CANADIAN	0	0	0	0	0	0
	Sum of Projected Water Supply Needs (acre-feet)		**-77,545**	**-93,712**	**-99,092**	**-93,227**	**-84,020**	**-74,803**

HUTCHINSON COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	BORGER	CANADIAN	-92	-531	-952	-1,343	-1,647	-1,927
A	COUNTY-OTHER, HUTCHINSON	CANADIAN	143	129	120	113	106	102
A	FRITCH	CANADIAN	0	0	0	0	0	0
A	IRRIGATION, HUTCHINSON	CANADIAN	96	96	96	96	96	96
A	LIVESTOCK, HUTCHINSON	CANADIAN	0	0	0	0	0	0
A	MANUFACTURING, HUTCHINSON	CANADIAN	10	-860	-1,739	-2,614	-3,487	-4,416
A	MINING, HUTCHINSON	CANADIAN	0	0	0	0	0	0
A	STINNETT	CANADIAN	55	15	0	-115	-165	-216
A	TCW SUPPLY INC	CANADIAN	-75	-251	-375	-466	-535	-569
	Sum of Projected Water Supply Needs (acre-feet)		**-167**	**-1,642**	**-3,066**	**-4,538**	**-5,834**	**-7,128**

LIPSCOMB COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	BOOKER	CANADIAN	0	0	-77	-257	-348	-434
A	COUNTY-OTHER, LIPSCOMB	CANADIAN	28	25	26	20	14	9
A	IRRIGATION, LIPSCOMB	CANADIAN	66	66	66	66	66	66
A	LIVESTOCK, LIPSCOMB	CANADIAN	0	0	0	0	0	0
A	MANUFACTURING, LIPSCOMB	CANADIAN	0	0	-21	-69	-97	-124
A	MINING, LIPSCOMB	CANADIAN	0	0	0	0	0	0
	Sum of Projected Water Supply Needs (acre-feet)		**0**	**0**	**-98**	**-326**	**-445**	**-558**

MOORE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	CACTUS	CANADIAN	-583	-777	-974	-1,170	-1,347	-1,530
A	COUNTY-OTHER, MOORE	CANADIAN	35	16	2	-13	-21	-30
A	DUMAS	CANADIAN	-290	-1,021	-1,785	-2,679	-3,550	-4,437
A	FRITCH	CANADIAN	3	2	2	2	2	1
A	IRRIGATION, MOORE	CANADIAN	7	7	7	7	-3,882	-6,171
A	LIVESTOCK, MOORE	CANADIAN	0	0	0	0	0	0
A	MANUFACTURING, MOORE	CANADIAN	-1,877	-2,346	-2,754	-4,445	-6,147	-7,746
A	MINING, MOORE	CANADIAN	0	0	0	0	0	0
A	STEAM ELECTRIC POWER, MOORE	CANADIAN	0	0	0	0	0	0
A	SUNRAY	CANADIAN	105	-232	-501	-633	-752	-847
	Sum of Projected Water Supply Needs (acre-feet)		**-2,750**	**-4,376**	**-6,014**	**-8,940**	**-15,699**	**-20,761**

OCHILTREE COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	BOOKER	CANADIAN	0	0	-2	-7	-11	-17
A	COUNTY-OTHER, OCHILTREE	CANADIAN	24	25	26	28	30	32

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A	IRRIGATION, OCHILTREE	CANADIAN	0	0	0	0	0	0
A	LIVESTOCK, OCHILTREE	CANADIAN	0	0	0	0	0	0
A	MINING, OCHILTREE	CANADIAN	0	0	0	0	0	0
A	PERRYTON	CANADIAN	-478	-963	-1,438	-1,877	-2,341	-2,786
	Sum of Projected Water Supply Needs (acre-feet)		**-478**	**-963**	**-1,440**	**-1,884**	**-2,352**	**-2,803**

SHERMAN COUNTY

All values are in acre-feet

RWPG	WUG	WUG Basin	2020	2030	2040	2050	2060	2070
A	COUNTY-OTHER, SHERMAN	CANADIAN	0	0	0	0	0	0
A	IRRIGATION, SHERMAN	CANADIAN	32	32	32	32	32	32
A	LIVESTOCK, SHERMAN	CANADIAN	0	0	0	0	0	0
A	MINING, SHERMAN	CANADIAN	0	0	0	0	0	0
A	STRATFORD	CANADIAN	781	753	741	583	384	187
	Sum of Projected Water Supply Needs (acre-feet)		**0**	**0**	**0**	**0**	**0**	**0**

Projected Water Management Strategies

TWDB 2017 State Water Plan Data

DALLAM COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
DALHART, CANADIAN (A)							
DEVELOP OGALLALA AQUIFER SUPPLIES - DALHART	OGALLALA-RITA BLANCA AQUIFER [HARTLEY]	1,836	1,883	1,934	1,980	2,019	2,053
MUNICIPAL CONSERVATION - DALHART	DEMAND REDUCTION [DALLAM]	54	60	67	73	80	86
		1,890	**1,943**	**2,001**	**2,053**	**2,099**	**2,139**
IRRIGATION, DALLAM, CANADIAN (A)							
IRRIGATION CONSERVATION - DALLAM COUNTY	DEMAND REDUCTION [DALLAM]	34,218	61,174	106,343	121,011	132,167	140,612
		34,218	**61,174**	**106,343**	**121,011**	**132,167**	**140,612**
TEXLINE, CANADIAN (A)							
DEVELOP OGALLALA AQUIFER SUPPLIES - TEXLINE	OGALLALA-RITA BLANCA AQUIFER [DALLAM]	0	0	0	150	150	150
MUNICIPAL CONSERVATION - TEXLINE	DEMAND REDUCTION [DALLAM]	7	7	8	9	9	10
WATER AUDITS AND LEAK REPAIR - TEXLINE	DEMAND REDUCTION [DALLAM]	11	13	14	15	17	18
		18	**20**	**22**	**174**	**176**	**178**
Sum of Projected Water Management Strategies (acre-feet)		**36,126**	**63,137**	**108,366**	**123,238**	**134,442**	**142,929**

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HANSFORD COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
GRUVER, CANADIAN (A)							
DEVELOP OGALLALA AQUIFER SUPPLIES - GRUVER	OGALLALA AQUIFER [HANSFORD]	0	0	350	350	350	350
MUNICIPAL CONSERVATION - GRUVER	DEMAND REDUCTION [HANSFORD]	10	11	11	13	14	14
WATER AUDITS AND LEAK REPAIR - GRUVER	DEMAND REDUCTION [HANSFORD]	13	14	15	15	16	17
		23	**25**	**376**	**378**	**380**	**381**
IRRIGATION, HANSFORD, CANADIAN (A)							
IRRIGATION CONSERVATION - HANSFORD COUNTY	DEMAND REDUCTION [HANSFORD]	9,447	17,175	31,242	34,401	36,373	37,260
		9,447	**17,175**	**31,242**	**34,401**	**36,373**	**37,260**
SPEARMAN, CANADIAN (A)							
DEVELOP OGALLALA AQUIFER SUPPLIES - SPEARMAN	OGALLALA AQUIFER [HANSFORD]	0	0	0	650	650	650
MUNICIPAL CONSERVATION - SPEARMAN	DEMAND REDUCTION [HANSFORD]	24	24	25	25	26	27
		24	**24**	**25**	**675**	**676**	**677**
Sum of Projected Water Management Strategies (acre-feet)		**9,494**	**17,224**	**31,643**	**35,454**	**37,429**	**38,318**

HARTLEY COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
DALHART, CANADIAN (A)							
DEVELOP OGALLALA AQUIFER SUPPLIES - DALHART	OGALLALA-RITA BLANCA AQUIFER [HARTLEY]	864	817	766	720	681	647

MUNICIPAL CONSERVATION - DALHART	DEMAND REDUCTION [HARTLEY]	25	26	26	27	27	27
		889	**843**	**792**	**747**	**708**	**674**

IRRIGATION, HARTLEY, CANADIAN (A)

IRRIGATION CONSERVATION - HARTLEY COUNTY	DEMAND REDUCTION [HARTLEY]	29,197	52,161	90,476	103,095	113,047	120,509
		29,197	**52,161**	**90,476**	**103,095**	**113,047**	**120,509**
Sum of Projected Water Management Strategies (acre-feet)		**30,086**	**53,004**	**91,268**	**103,842**	**113,755**	**121,183**

HUTCHINSON COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
BORGER, CANADIAN (A)							
CONJUNCTIVE USE - CRMWA	MEREDITH LAKE/RESERVOIR [RESERVOIR]	702	652	620	582	581	581
DEVELOP NEW WELL FIELD (OGALLALA AQUIFER) - BORGER	OGALLALA AQUIFER [HUTCHINSON]	6,000	5,140	4,261	3,386	2,513	1,584
EXPAND CAPACITY CRMWA II	OGALLALA AQUIFER [ROBERTS]	0	3,128	2,974	2,793	2,790	2,787
MUNICIPAL CONSERVATION - BORGER	DEMAND REDUCTION [HUTCHINSON]	104	107	106	106	106	106
REPLACE WELL CAPACITY FOR CRMWA I	OGALLALA AQUIFER [ROBERTS]	0	586	805	1,106	1,337	1,626
		6,806	**9,613**	**8,766**	**7,973**	**7,327**	**6,684**

FRITCH, CANADIAN (A)

MUNICIPAL CONSERVATION - FRITCH	DEMAND REDUCTION [HUTCHINSON]	14	15	14	14	14	14
WATER AUDITS AND LEAK REPAIR - FRITCH	DEMAND REDUCTION [HUTCHINSON]	21	21	21	21	21	21
		35	**36**	**35**	**35**	**35**	**35**

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IRRIGATION, HUTCHINSON, CANADIAN (A)							
IRRIGATION CONSERVATION - HUTCHINSON COUNTY	DEMAND REDUCTION [HUTCHINSON]	2,692	4,694	8,578	9,459	10,010	10,281
WEATHER MODIFICATION (PRECIPITATION ENHANCEMENT)	WEATHER MODIFICATION [ATMOSPHERE]	2,960	2,960	2,960	2,960	2,960	2,960
		5,652	**7,654**	**11,538**	**12,419**	**12,970**	**13,241**
MANUFACTURING, HUTCHINSON, CANADIAN (A)							
DEVELOP NEW WELL FIELD (OGALLALA AQUIFER) - BORGER	OGALLALA AQUIFER [HUTCHINSON]	0	860	1,739	2,614	3,487	4,416
		0	**860**	**1,739**	**2,614**	**3,487**	**4,416**
STINNETT, CANADIAN (A)							
DEVELOP OGALLALA AQUIFER SUPPLIES - STINNETT	OGALLALA AQUIFER [HUTCHINSON]	0	0	0	225	225	225
MUNICIPAL CONSERVATION - STINNETT	DEMAND REDUCTION [HUTCHINSON]	15	15	15	15	15	15
WATER AUDITS AND LEAK REPAIR - STINNETT	DEMAND REDUCTION [HUTCHINSON]	22	23	22	22	22	22
		37	**38**	**37**	**262**	**262**	**262**
TCW SUPPLY INC, CANADIAN (A)							
DEVELOP OGALLALA AQUIFER SUPPLIES - TCW SUPPLY	OGALLALA AQUIFER [HUTCHINSON]	575	575	575	575	575	575
MUNICIPAL CONSERVATION - TCW SUPPLY	DEMAND REDUCTION [HUTCHINSON]	21	21	21	21	22	22
WATER AUDITS AND LEAK REPAIR - TCW SUPPLY	DEMAND REDUCTION [HUTCHINSON]	37	38	38	38	37	37
		633	**634**	**634**	**634**	**634**	**634**
Sum of Projected Water Management Strategies (acre-feet)		**13,163**	**18,835**	**22,749**	**23,937**	**24,715**	**25,272**

LIPSCOMB COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
BOOKER, CANADIAN (A)							
DEVELOP OGALALLA AQUIFER SUPPLIES - BOOKER	OGALLALA AQUIFER [LIPSCOMB]	0	0	517	468	439	555
MUNICIPAL CONSERVATION - BOOKER	DEMAND REDUCTION [LIPSCOMB]	15	17	18	18	19	20
		15	**17**	**535**	**486**	**458**	**575**
IRRIGATION, LIPSCOMB, CANADIAN (A)							
IRRIGATION CONSERVATION - LIPSCOMB COUNTY	DEMAND REDUCTION [LIPSCOMB]	936	1,702	2,945	3,268	3,555	3,706
		936	**1,702**	**2,945**	**3,268**	**3,555**	**3,706**
MANUFACTURING, LIPSCOMB, CANADIAN (A)							
DEVELOP OGALALLA AQUIFER SUPPLIES - BOOKER	OGALLALA AQUIFER [LIPSCOMB]	0	0	21	69	97	124
		0	**0**	**21**	**69**	**97**	**124**
Sum of Projected Water Management Strategies (acre-feet)		**951**	**1,719**	**3,501**	**3,823**	**4,110**	**4,405**

MOORE COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
CACTUS, CANADIAN (A)							
DEVELOP NEW WELL FIELD (OGALLALA AQUIFER) - CACTUS	OGALLALA AQUIFER [MOORE]	3,565	3,078	2,653	2,286	1,933	1,565
MUNICIPAL CONSERVATION - CACTUS	DEMAND REDUCTION [MOORE]	32	36	41	45	50	55
		3,597	**3,114**	**2,694**	**2,331**	**1,983**	**1,620**
COUNTY-OTHER, MOORE, CANADIAN (A)							

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DEVELOP NEW WELL FIELD (OGALLALA AQUIFER) - CACTUS	OGALLALA AQUIFER [MOORE]	58	76	93	112	128	145
MUNICIPAL CONSERVATION - MOORE COUNTY OTHER	DEMAND REDUCTION [MOORE]	14	15	17	19	21	23
		72	**91**	**110**	**131**	**149**	**168**
DUMAS, CANADIAN (A)							
DEVELOP OGALLALA AQUIFER SUPPLIES - DUMAS	OGALLALA-RITA BLANCA AQUIFER [HARTLEY]	2,000	2,000	2,000	4,500	4,500	4,500
MUNICIPAL CONSERVATION - DUMAS	DEMAND REDUCTION [MOORE]	133	152	171	190	210	231
		2,133	**2,152**	**2,171**	**4,690**	**4,710**	**4,731**
FRITCH, CANADIAN (A)							
MUNICIPAL CONSERVATION - FRITCH	DEMAND REDUCTION [MOORE]	1	1	1	1	1	1
WATER AUDITS AND LEAK REPAIR - FRITCH	DEMAND REDUCTION [MOORE]	1	1	1	1	1	1
		2	**2**	**2**	**2**	**2**	**2**
IRRIGATION, MOORE, CANADIAN (A)							
IRRIGATION CONSERVATION - MOORE COUNTY	DEMAND REDUCTION [MOORE]	13,308	24,120	41,895	47,571	52,037	55,406
		13,308	**24,120**	**41,895**	**47,571**	**52,037**	**55,406**
MANUFACTURING, MOORE, CANADIAN (A)							
DEVELOP NEW WELL FIELD (OGALLALA AQUIFER) - CACTUS	OGALLALA AQUIFER [MOORE]	1,877	2,346	2,754	3,102	3,439	3,790
DEVELOP NEW WELL FIELD (OGALLALA AQUIFER) - MANUFACTURING MOORE COUNTY	OGALLALA AQUIFER [MOORE]	0	0	0	4,000	4,000	4,000
		1,877	**2,346**	**2,754**	**7,102**	**7,439**	**7,790**
SUNRAY, CANADIAN (A)							
DEVELOP OGALLALA AQUIFER SUPPLIES - SUNRAY	OGALLALA AQUIFER [MOORE]	0	850	850	850	850	850

MUNICIPAL CONSERVATION - SUNRAY	DEMAND REDUCTION [MOORE]	16	19	20	24	26	28
WATER AUDITS AND LEAK REPAIR - SUNRAY	DEMAND REDUCTION [MOORE]	21	23	26	28	31	35
		37	**892**	**896**	**902**	**907**	**913**
Sum of Projected Water Management Strategies (acre-feet)		**21,026**	**32,717**	**50,522**	**62,729**	**67,227**	**70,630**

OCHILTREE COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
BOOKER, CANADIAN (A)							
DEVELOP OGALALLA AQUIFER SUPPLIES - BOOKER	OGALLALA AQUIFER [LIPSCOMB]	0	0	12	13	14	21
MUNICIPAL CONSERVATION - BOOKER	DEMAND REDUCTION [OCHILTREE]	0	0	0	1	1	1
		0	**0**	**12**	**14**	**15**	**22**
IRRIGATION, OCHILTREE, CANADIAN (A)							
IRRIGATION CONSERVATION - OCHILTREE COUNTY	DEMAND REDUCTION [OCHILTREE]	4,030	7,195	13,177	14,476	15,292	15,670
IRRIGATION CONSERVATION - OLDHAM COUNTY	DEMAND REDUCTION [OCHILTREE]	127	360	567	617	694	723
		4,157	**7,555**	**13,744**	**15,093**	**15,986**	**16,393**
PERRYTON, CANADIAN (A)							
DEVELOP OGALLALA AQUIFER SUPPLIES - PERRYTON	OGALLALA AQUIFER [OCHILTREE]	1,400	1,400	1,400	2,800	2,800	2,800
MUNICIPAL CONSERVATION - PERRYTON	DEMAND REDUCTION [OCHILTREE]	85	90	96	103	111	119
		1,485	**1,490**	**1,496**	**2,903**	**2,911**	**2,919**
Sum of Projected Water Management Strategies (acre-feet)		**5,642**	**9,045**	**15,252**	**18,010**	**18,912**	**19,334**

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SHERMAN COUNTY

WUG, Basin (RWPG)

All values are in acre-feet

Water Management Strategy	Source Name [Origin]	2020	2030	2040	2050	2060	2070
IRRIGATION, SHERMAN, CANADIAN (A)							
IRRIGATION CONSERVATION - SHERMAN COUNTY	DEMAND REDUCTION [SHERMAN]	20,156	36,498	63,651	72,285	78,846	83,721
		20,156	**36,498**	**63,651**	**72,285**	**78,846**	**83,721**
STRATFORD, CANADIAN (A)							
MUNICIPAL CONSERVATION - STRATFORD	DEMAND REDUCTION [SHERMAN]	15	17	17	18	18	19
WATER AUDITS AND LEAK REPAIR - STRATFORD	DEMAND REDUCTION [SHERMAN]	24	25	26	26	27	27
		39	**42**	**43**	**44**	**45**	**46**
Sum of Projected Water Management Strategies (acre-feet)		**20,195**	**36,540**	**63,694**	**72,329**	**78,891**	**83,767**

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