

2	Population and Water Demands	2-1
2.1	Population Projections	2-2
2.2	Historical and Projected Water Demands	2-5
2.2.1	Municipal Water Demand Projections	2-10
2.2.2	Manufacturing Demand Projections	2-14
2.2.3	Irrigation Demand Projections	2-15
2.2.4	Steam Electric Power Demand Projections	2-16
2.2.5	Mining Demand Projections	2-18
2.2.6	Livestock Watering	2-20
2.3	Major Water Providers	2-22
2.3.1	Colorado River Municipal Water District	2-22
2.3.2	Brown County Water Improvement District No. 1	2-24
2.3.3	City of Odessa	2-25
2.3.4	City of Midland	2-26
2.3.5	City of San Angelo	2-26
	Attachment 2A Water Demands by Decade and Category of Use for Major Water Providers	2-27
	List of References	2-29
Table 2-1	Projected Population by County	2-2
Table 2-2	Water Demand Projections for Region F by Use Category	2-7
Table 2-3	Total Projected Water Demand by County	2-8
Table 2-4	Comparison of Per Capita Water Use and Municipal Conservation Trends	2-11
Table 2-5	Municipal Water Demand Projections for Region F Counties	2-12
Table 2-6	Expected Savings from Implementation of Plumbing Code for Region F Counties	2-13
Table 2-7	Manufacturing Water Demand Projections for Region F Counties	2-14
Table 2-8	Comparison of Region F Irrigation Demand Projections to Statewide Projections	2-15
Table 2-9	Irrigation Water Demand Projections for Region F Counties	2-16
Table 2-10	Steam Electric Water Demand Projections for Region F Counties	2-17
Table 2-11	Comparison of Region F Mining Projections to Statewide Totals	2-19
Table 2-12	Mining Water Demand Projections for Region F Counties	2-20
Table 2-13	Livestock Water Demand Projections for Region F Counties	2-21
Table 2-14	Lake Ivie Non-System Demands for the Colorado River Municipal Water District	2-22
Table 2-15	Expected Main System Demands for the Colorado River Municipal Water District	2-23
Table 2-16	Expected Demands for the Brown County Water Improvement District No. 1	2-24
Table 2-17	Expected Demands for the City of Odessa	2-25
Table 2-18	Expected Demands for the City of Midland	2-26
Table 2-19	Expected Demands for the City of San Angelo	2-26
Figure 2-1	Historical and Projected Population of Region F	2-3
Figure 2-2	Projected Population Distribution by County 2030 – 2080	2-4

Figure 2-3 2030 Water Demand in Region F by Use.....2-6
Figure 2-4 2080 Water Demand in Region F by Use.....2-6
Figure 2-5 Projected Water Demand in Region F by Use Category.....2-7
Figure 2-6 Total Water Demands by County 2030-2080.....2-9
Figure 2-7: Permian Basin Locations of Unconventional Oil and Gas Wells 18

DRAFT

2 POPULATION AND WATER DEMANDS

In November 2023¹, the Texas Water Development Board (TWDB) approved population and water demand projections for Region F for use in the 2026 Regional Water Plan. The water demand projections include both municipal and non-municipal water use over the planning period of 2030 to 2080. The Region F RWPG reviewed and revised the projections as needed to more accurately reflect the expected water demands for the region.

Continued interest in oil and gas production in the Permian Basin resulted in significant increases in projected mining water demand in parts of Region F over the 2021 Plan. Population projections are slightly lower than in the 2021 Region F Plan but still increase steadily to over 1 million people by 2080. In most cases, the baseline per capita usage from the 2021 Plan was maintained for the 2026 Plan, which was based on 2011 per capita use to represent dry year demands. However, due to prolonged extreme drought, some users experienced restricted deliveries during 2011, and the historical use was not representative of a dry year demand and was thus adjusted. Furthermore, some entities have experienced a declining trend in per capita usage in recent years due to permanent conservation measures implemented as a response to the recent drought. These include conservation-oriented rate structures and changed behavior patterns. These entities' baseline per capita use numbers were adjusted downward to capture the recent trends. Municipal water demands for the region decreased slightly from the previous plan in 2030 but are slightly higher later in the planning horizon.

Overall, water demand projections in Region F are estimated to be roughly 859,700 acre-feet in 2030 and decrease to about 837,100 acre-feet in 2080. Irrigation, steam electric power, and livestock are predicted to remain steady over the planning horizon. Manufacturing demands are projected to slight increase over the planning horizon. Mining demands start at over 216,000 acre-feet and remain high through 2040. However, mining demand is projected to begin to decline after 2040 as recoverable resources with current technology in the Midland Basin reduce. However, the demand remains sizeable at over 134,800 acre-feet in 2080. Despite the increase in population and municipal demand over the planning horizon, the reduction in heavy mining demand results in an overall slightly decreasing trend in total water demand over the planning horizon.

More detailed discussion of the development of population and water demands is presented in the following subsections. To understand the data development and presentation, it is important to understand the terminology used for regional water planning. The TWDB distributes its population and demand projections into Water User Groups (WUGs). Each WUG has an associated water demand. Only municipal WUGs have population projections.

The Region F Water Plan also recognizes wholesale water providers (WWPs) and major water providers (MWP). A wholesale water provider is an entity that sells water wholesale to another water provider. These providers are considered in the development and understanding of how water is distributed in the region. However, demands for wholesale water providers are not specifically developed and presented in this chapter unless the WWP is also identified by the region as a MWP. The MWP is an entity selected by the RWPG as having a significant role in providing water in the region. A MWP may be a WUG or WWP. Region F has identified five MWPs for the 2026 Plan. Projected water demands for each MWP are discussed in Section 2.3.

To simplify the presentation of these data, all WUG projections in this chapter are aggregated by county. Projections divided by WUG, county and basin may be found in Appendix I, *Database (DB27) Reports*. The projections were developed by decade and cover the period from 2030 to 2080.

2.1 Population Projections

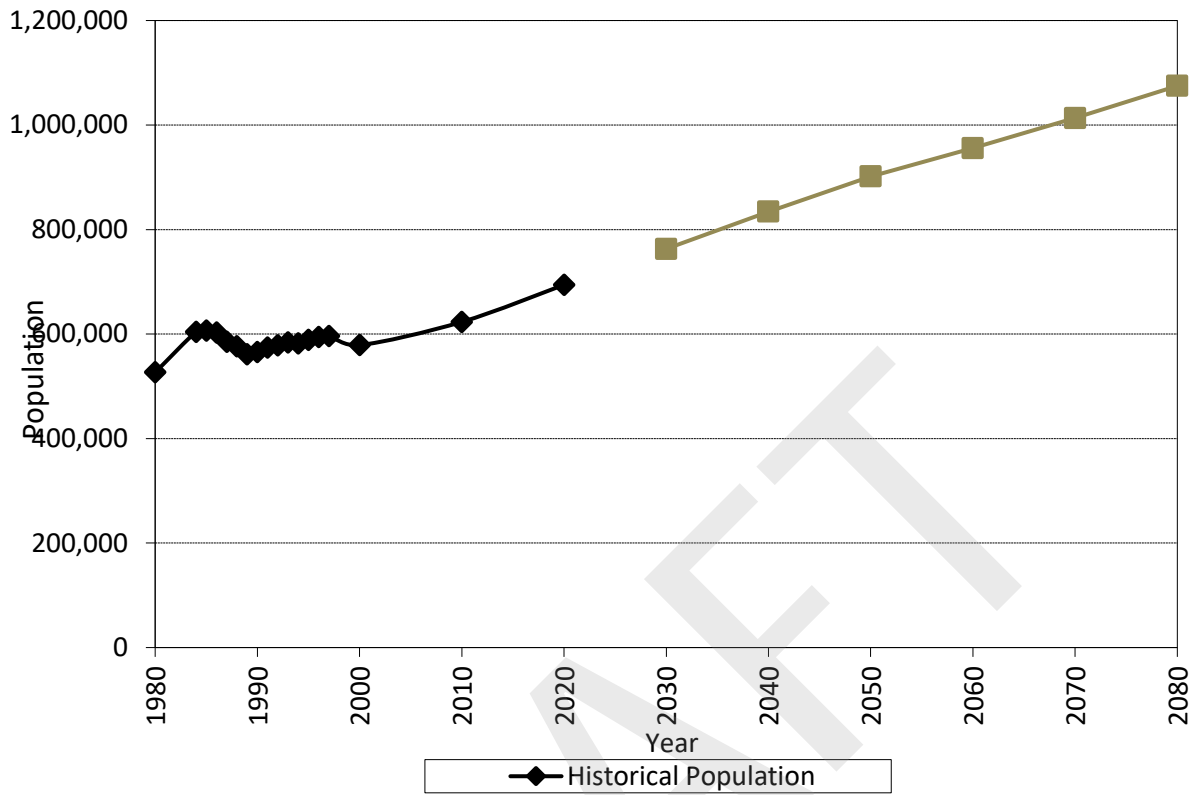
Table 2-1 presents the projected populations for the counties in Region F. Figure 2-1 compares the region’s historical population from 1980 to 2020 and the projected population through 2080. Figure 2-2 shows the geographical distribution of the population projections for the years 2030 and 2080. Population projections divided by WUG, county and basin are included in Appendix 2A at the end of this chapter.

Table 2-1
Projected Population by County

County	2030	2040	2050	2060	2070	2080
Andrews	22,997	28,993	35,825	42,717	50,229	58,417
Borden	608	603	601	607	614	622
Brown	39,717	40,383	40,459	40,599	40,752	40,919
Coke	3,454	3,690	3,932	4,317	4,737	5,195
Coleman	7,087	6,424	5,759	5,254	4,724	4,168
Concho	3,905	3,810	3,718	3,629	3,536	3,438
Crane	5,027	5,493	5,887	6,205	6,552	6,930
Crockett	2,845	2,633	2,409	2,250	2,083	1,908
Ector	185,779	207,148	225,963	239,926	254,560	269,935
Glasscock	1,049	985	946	869	788	703
Howard	36,259	37,313	37,885	37,115	36,276	35,361
Irion	1,429	1,357	1,332	1,279	1,223	1,164
Kimble	4,063	3,821	3,650	3,625	3,599	3,572
Loving	64	64	64	64	64	64
Martin	5,543	5,896	6,311	6,530	6,769	7,030
Mason	3,821	3,708	3,666	3,661	3,656	3,651
McCulloch	7,430	7,136	6,817	6,638	6,450	6,253
Menard	1,767	1,637	1,524	1,496	1,467	1,437
Midland	192,470	216,809	241,697	259,762	278,739	298,635
Mitchell	10,837	11,020	11,250	11,361	11,474	11,594
Pecos	15,637	16,195	16,587	16,933	17,296	17,677
Reagan	3,490	3,592	3,633	3,641	3,649	3,657
Reeves	16,015	17,702	19,284	20,384	21,583	22,890
Runnels	9,842	9,786	9,662	9,620	9,576	9,530
Schleicher	2,107	1,806	1,522	1,291	1,049	795
Scurry	17,450	18,006	18,344	18,517	18,699	18,890
Sterling	1,704	2,226	2,923	3,824	4,806	5,876
Sutton	3,067	2,778	2,482	2,266	2,039	1,801
Tom Green	132,573	145,445	156,800	168,070	180,354	193,744
Upton	3,349	3,475	3,550	3,627	3,708	3,793
Ward	12,954	14,666	16,450	18,013	19,717	21,574
Winkler	8,646	9,744	10,757	11,653	12,630	13,695
Total	762,985	834,344	901,689	955,743	1,013,398	1,074,918

Source: Data are from the TWDB. ³

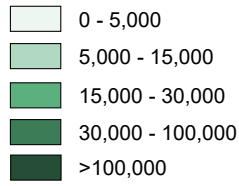
Figure 2-1
Historical and Projected Population of Region F



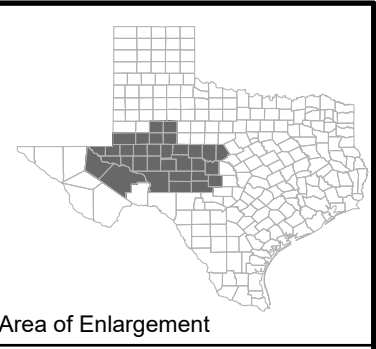
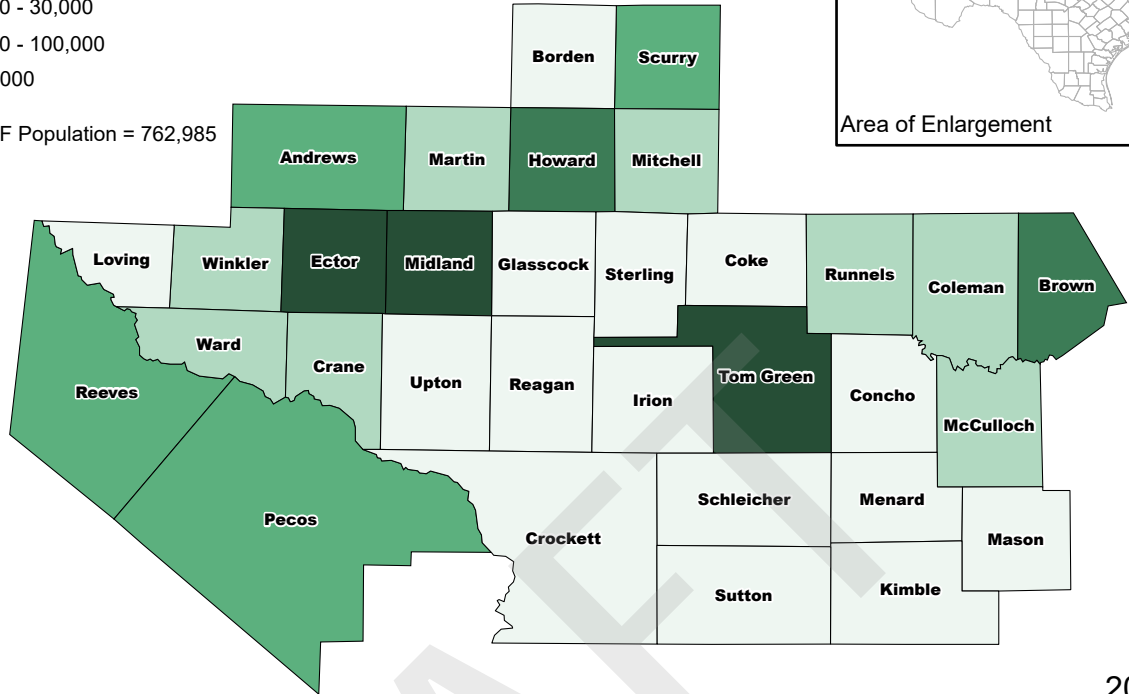
Historical data provided by the Texas Water Development Board². Some historical data are not available. Projected population was approved by TWDB for this round of regional water planning and adopted for this plan.

Legend

Projected Population (2030)



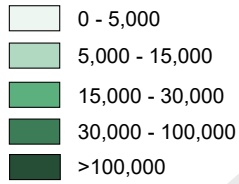
Total Region F Population = 762,985



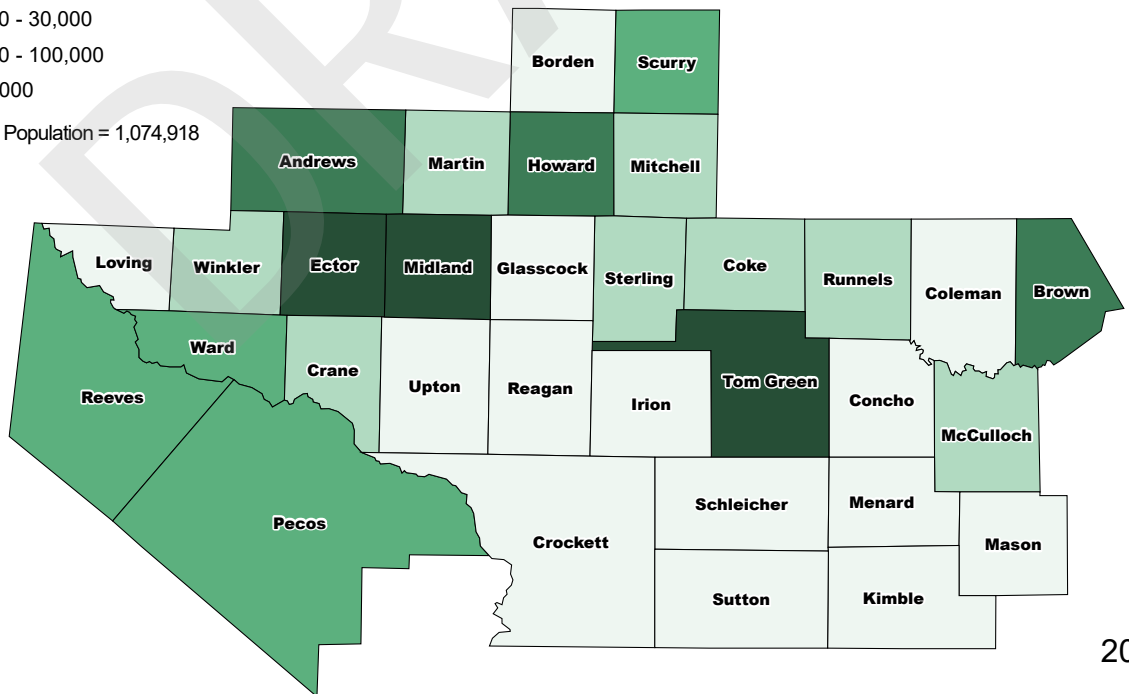
2030

Legend

Projected Population (2080)



Total Region F Population = 1,074,918



2080

Region F

**Population Distribution by County
2030-2080**

FN JOB NO	CMD21867
FILE	ChaptersMaps.mxd
DATE	8/28/2024
SCALE	1:3,500,000
DESIGNED	DML
DRAFTED	DML/AJA

2-2

FIGURE

For the 2026 regional water plans, municipal water users are defined based on the service area boundary rather than city boundaries. For most of the cities in Region F, the city boundary and service area boundary are the same or very similar. TWDB projects the region's total population to increase from 762,985 in 2030 to 1,074,918 in 2080, an average growth rate of 0.7 percent per year. TWDB projects the total population for Texas to increase from 34.2 million in 2030 to 52.3 million in 2080, an average growth rate of 0.85 percent per year.

The relative distribution of population in Region F is expected to remain stable throughout the 50-year planning period. Almost 80 percent of the people in Region F live in urban areas or small- to moderate-sized rural communities. Three counties, Midland, Ector and Tom Green, account for more than half of the region's population. These counties contain the cities of Midland, Odessa and San Angelo, respectively.

Twenty-nine of the thirty-two counties that comprise Region F are generally rural. Twenty-one counties have populations of less than 10,000. Two of these counties, Loving and Borden, have populations of less than 1,000. These twenty-nine counties are expected to remain primarily rural throughout the planning period. The Permian and Delaware Basin portions of Region F are experiencing or are expected to experience a population increase due to interest in the exploration and production of oil. Because the TWDB population methodology is based on historical growth rates and not economic drivers, population growth is shown to continue throughout the planning horizon despite a reduction in mining demands beginning in 2040. Mining demands may continue as technology improves to make more resources recoverable, the region may diversify its economy overtime, or the population may not grow as projected by TWDB. This should continue to be monitored and updated in future planning cycles.

2.2 Historical and Projected Water Demands

Municipal water use is the only category subdivided into individual water utilities. All other categories are aggregated into county/basin units.

Each category has annual water demand projections for the years 2030, 2040, 2050, 2060, 2070 and 2080. These projections are not the same as the average day and peak-day projections used in planning for municipal water supply distribution systems.

The average day projection is the amount of water expected to be delivered during a normal day. A peak-day projection is the maximum amount of water expected to be delivered during the highest demand day, typically expressed in million gallons per day (MGD). The TWDB water demand projections are the volumes of water expected to be used during a dry year and are usually expressed in acre-feet per year (one acre-foot equals 325,851 gallons). These projections would be comparable to a year's worth of average day deliveries. The water demand projections for the 2026 Region F Plan were developed in conjunction with the TWDB and regional stakeholders. The Region F RWPG solicited input from retail

Water Demand by Use Category in Region F

Irrigated agriculture is by far the largest water use category in Region F throughout the planning horizon. **Mining** is a significant water use in the early decades but is expected to decline over time as oil and gas deposits are fully developed. **Municipal water** use is also a major water use category, and it is projected to grow over time and eventually be the second largest use category. **Manufacturing, livestock, and steam electric power** are all relatively small use categories in Region F over the planning horizon.

water providers, including cities, water supply corporations, special utility districts, and other providers identified as a WUG. Region F representatives for non-municipal water use were also contacted for input on non-municipal demands. The projections were then compared to historical data and other projections and evaluated for anomalies such as recent water use exceeding future predictions, changes in trends in per capita water use, etc. The final recommended demands were approved by the region and the TWDB for the 2026 Region F Water Plan.

Figure 2-3 and Figure 2-4 present the TWDB-approved total water demand projections for the region by water-use type for 2030 and 2080. Table 2-2 and Figure 2-5 summarize the water demand projections in the region by use category.

Figure 2-3
2030 Water Demand in Region F by Use

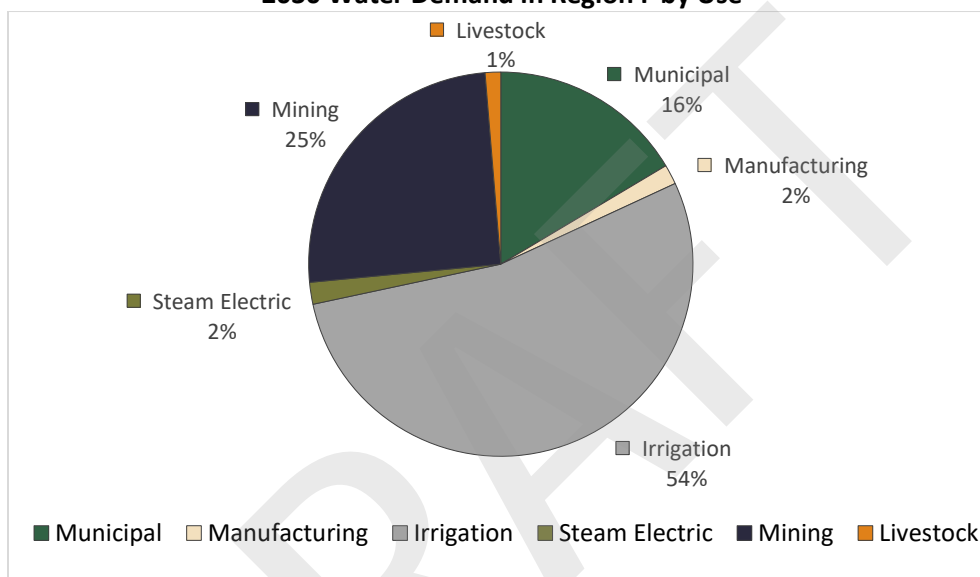


Figure 2-4
2080 Water Demand in Region F by Use

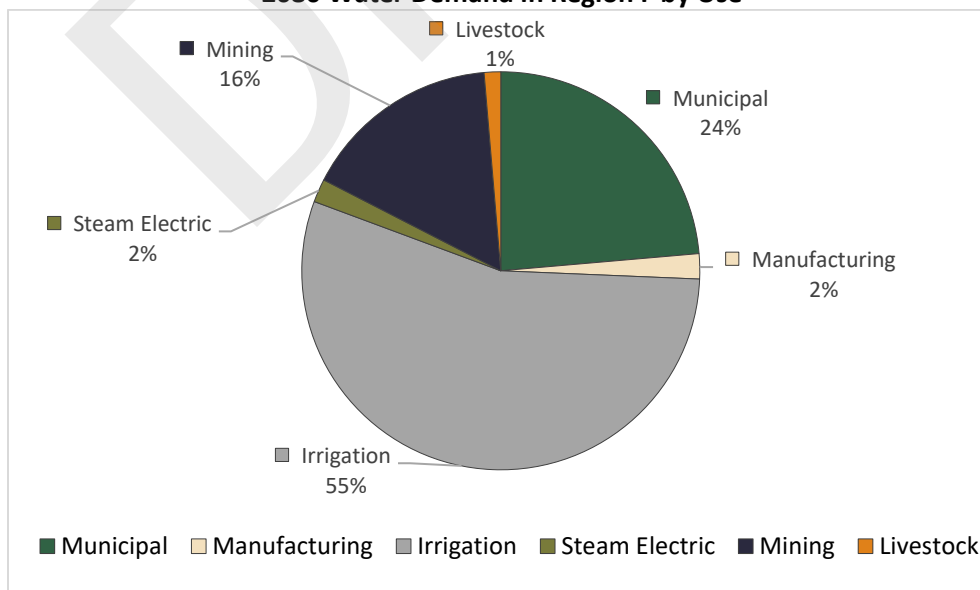


Table 2-2
Water Demand Projections for Region F by Use Category
 -Values in Acre-Feet per Year-

Use Category	2030	2040	2050	2060	2070	2080
Municipal	141,387	153,631	166,113	175,942	186,455	197,714
Manufacturing	14,276	14,802	15,347	15,913	16,500	17,109
Irrigation	460,341	460,341	460,341	460,341	460,341	460,341
Steam Electric	15,798	15,798	15,798	15,798	15,798	15,798
Mining	216,716	217,652	207,969	187,463	159,337	134,865
Livestock	11,228	11,228	11,228	11,228	11,228	11,228
<i>Total</i>	<i>859,746</i>	<i>873,452</i>	<i>876,796</i>	<i>866,685</i>	<i>849,659</i>	<i>837,055</i>

Source: Data are from the TWDB³.

Figure 2-5
Projected Water Demand in Region F by Use Category

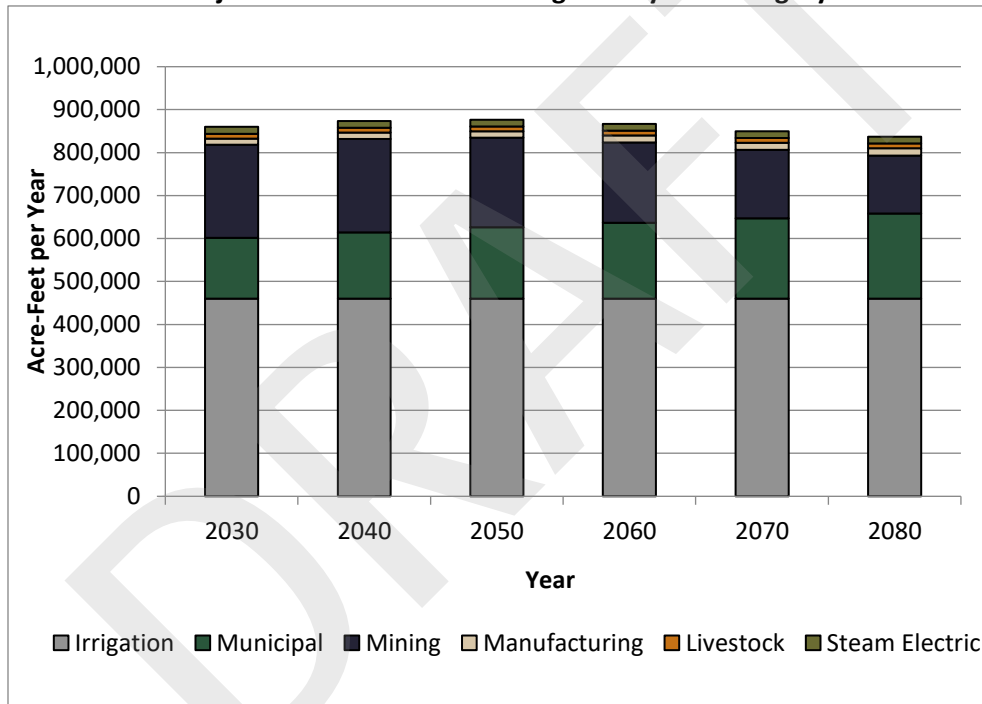


Table 2-3 summarizes the projected water use by county. Figure 2-6 shows the geographical distribution of the years 2030 and 2080 total water demand projections by county from Table 2-3. A discussion of the demand projections by each use type is presented in Sections 2.3.1 through 2.3.6.

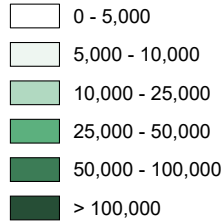
Table 2-3
Total Projected Water Demand by County
 -Values in Acre-Feet per Year-

County	2030	2040	2050	2060	2070	2080
Andrews	27,876	29,165	30,297	31,094	31,796	32,747
Borden	6,349	6,357	6,092	5,554	4,838	4,217
Brown	16,374	16,447	16,478	16,519	16,563	16,610
Coke	1,691	1,737	1,787	1,864	1,949	2,043
Coleman	2,673	2,528	2,390	2,284	2,176	2,056
Concho	6,664	6,641	6,621	6,601	6,584	6,568
Crane	4,966	5,253	5,516	5,736	5,349	5,525
Crockett	7,734	7,655	7,069	6,004	4,608	3,361
Ector	41,973	45,589	49,078	51,082	53,050	55,154
Glasscock	57,548	57,541	56,385	54,069	51,002	48,281
Howard	30,643	30,990	30,235	28,170	25,427	22,983
Irion	12,133	12,124	11,233	9,450	7,089	4,993
Kimble	3,697	3,661	3,638	3,635	3,632	3,631
Loving	12,050	12,049	12,049	12,049	12,049	12,049
Martin	50,468	50,525	49,216	46,499	42,888	39,700
Mason	6,571	6,581	6,600	6,602	6,604	6,606
McCulloch	5,129	5,054	4,987	4,946	4,906	4,868
Menard	4,113	4,088	4,066	4,062	4,056	4,051
Midland	69,922	73,967	76,995	77,735	77,843	78,487
Mitchell	22,900	22,918	22,903	22,863	22,805	22,758
Pecos	159,999	160,104	160,212	160,421	160,655	160,910
Reagan	42,446	42,467	40,825	37,523	33,147	29,268
Reeves	100,755	101,357	101,933	102,325	102,751	103,218
Runnels	5,748	5,733	5,717	5,712	5,707	5,703
Schleicher	6,521	6,446	6,082	5,436	4,594	3,837
Scurry	10,359	10,425	10,453	10,435	10,401	10,377
Sterling	4,593	4,738	4,672	4,410	4,006	3,707
Sutton	2,737	2,633	2,529	2,451	2,368	2,282
Tom Green	74,043	76,003	77,740	79,388	81,151	83,123
Upton	25,571	25,611	24,325	21,728	18,278	15,232
Ward	16,551	17,121	17,713	18,225	18,772	19,353
Winkler	18,949	19,944	20,960	21,813	22,615	23,357
Total	859,746	873,452	876,796	866,685	849,659	837,055

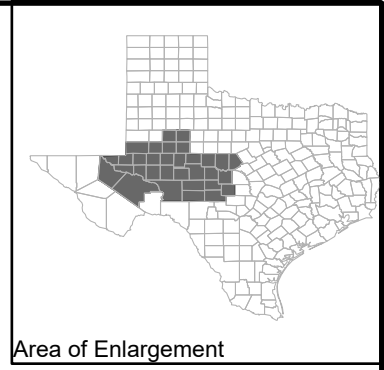
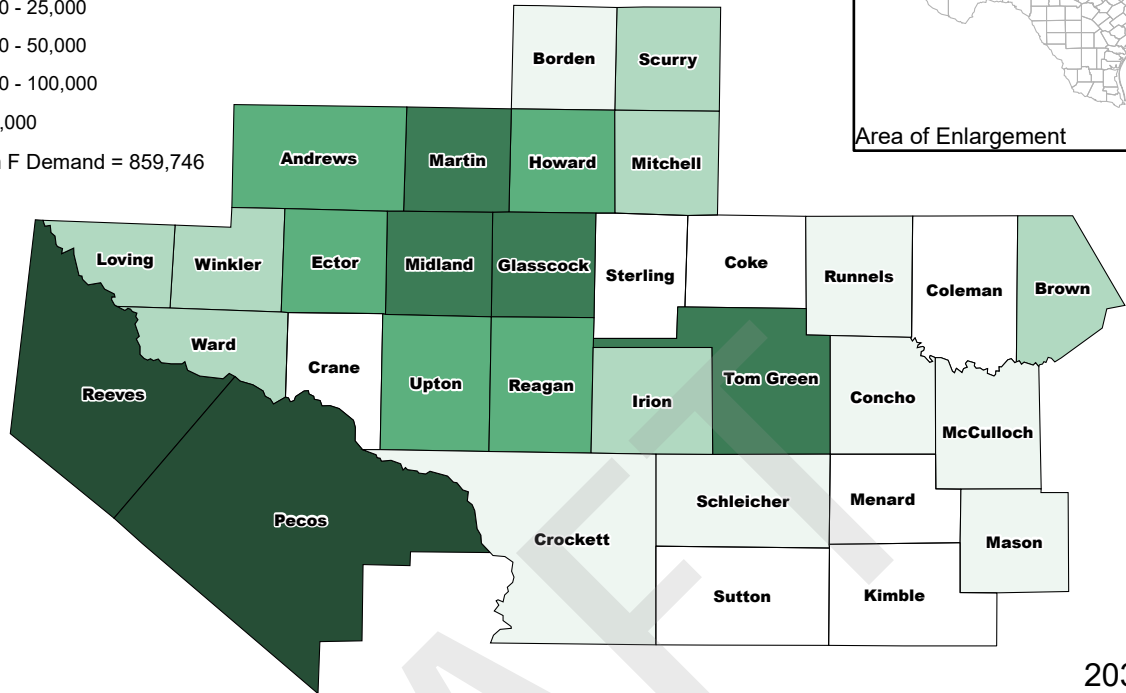
Source: Data are from the TWDB.³

Legend

Estimated Demand (2030)
Ac-Ft

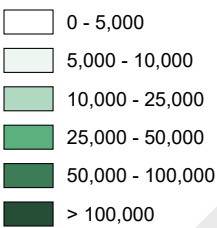


Total Region F Demand = 859,746

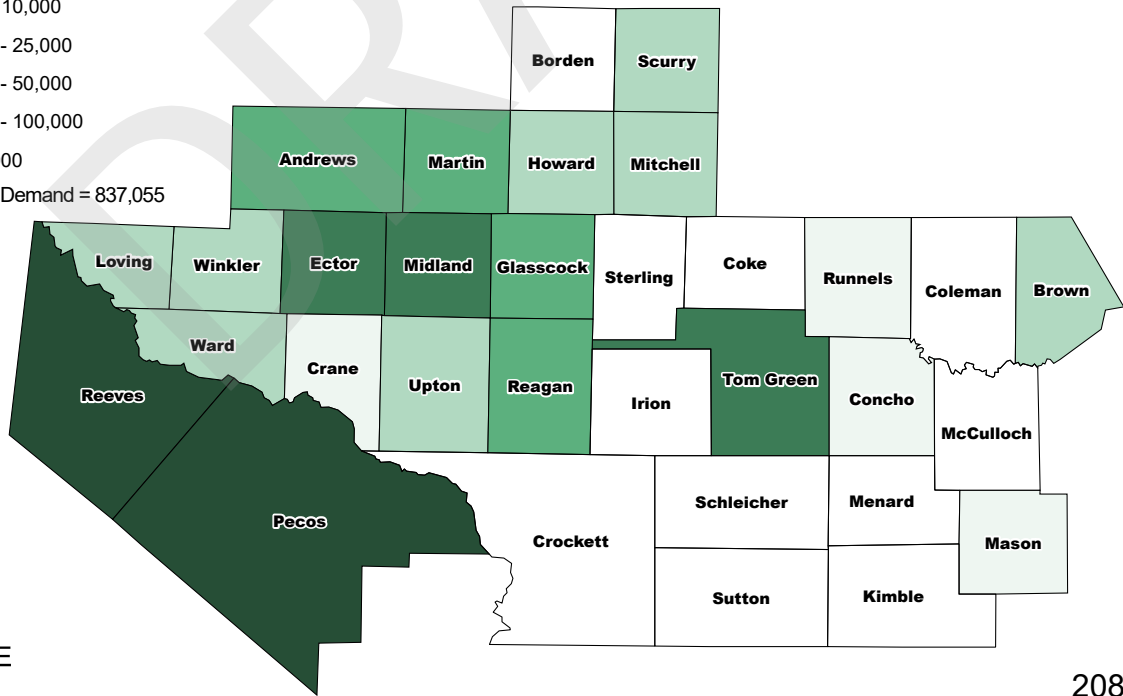


Legend

Estimated Demand (2080)
Ac-Ft



Total Region F Demand = 837,055



Region F

Water Demand Distribution by County 2030-2080

FN JOB NO	CMD21867
FILE	ChaptersMaps.mxd
DATE	8/28/2024
SCALE	1:3,500,000
DESIGNED	DML
DRAFTED	DML/AJA

2-6

FIGURE

2.2.1 Municipal Water Demand Projections

Municipal water demand consists of both residential and commercial use, including water used for landscape irrigation. Residential use includes water used in single and multi-family households. Commercial use includes business establishments, public spaces and institutions, but does not include most industrial water use. Industrial water demand projections are included in the manufacturing category.

Municipal projections were developed for each retail water provider that provided an average of 100 acre-feet per year or more of municipal water supplies. TWDB aggregates rural populations that use less than 100 acre-feet per year into the County Other classification. The municipal projections are the only projections developed for individual water providers such as cities and other retail water providers. TWDB aggregates all other demand categories by county and river basin.

TWDB used a four-step process to calculate municipal water demands. First, population projections were developed for each municipal WUG. (Population projections are discussed in Section 2.2). Second, per capita water use projections were developed based on historical water use. Third, estimates of water savings associated with implementation of plumbing fixtures were calculated and per capita use was adjusted. Finally, the adjusted per capita water demand projections were multiplied by the population projections to determine the annual municipal water demand for each WUG.

Municipal Water Demand

$$= \text{projected population} \times (\text{historical gpcd} - \text{estimated water savings})$$

Per Capita Water Use Projections

Future water use is calculated by multiplying the population of a region, county or city by a calculated per capita water use. Per capita water use, expressed in gallons per capita per day (gpcd), is the average daily municipal water use divided by the population of the area. It includes the amount of water used by each person in their daily activities, water used for commercial purposes, and landscape watering. This definition of per capita water use does not include water used for manufacturing or other non-municipal purposes (if it can be distinguished from other uses), or water sold to another entity. (This definition of per capita use is not the same as the definition adopted by the Water Conservation Implementation Task Force. The Task Force definition does not differentiate between municipal use and non-municipal use or outside sales.⁴)

2011 was the worst single year drought for the State of Texas. The TWDB based the per capita water demand projections on year 2011 annual municipal water use divided by the 2011 population. In some cases, the per capita water use was adjusted if the year 2011 water use was not indicative of historical water use by a WUG. In Region F, some WUGs were under water use restrictions in 2011 and their per capita water use was adjusted based on use in other years. For some WUGs in Region F, the drought of 2011 caused water conservation-oriented behavior changes, resulting in a trend towards lower per capita

usage. This trend is even greater than the expected plumbing code savings already incorporated into these plans. This is partially caused by the implementation of increasing rate structures by some providers to encourage water conservation. Thus, in some cases, the base per capita usage was lowered to reflect these changes.

The TWDB assumes that per capita water use will show a downward trend over the planning period as a result of the State Water-Efficiency Plumbing Act⁵. Among other things, the Plumbing Act requires that only water-saving plumbing fixtures be sold in Texas. The TWDB determined the per capita water demand savings based upon the expected rate of replacement of old plumbing fixtures with water-conserving models and the number of new housing units expected in the region. The actual amount of estimated savings can vary somewhat depending upon the age of housing units in a WUG's service area.

Table 2-4 shows the average per capita water use for each decade in Region F and compares these values to average values for the state. Average per capita water use for Region F is expected to decline from 165 gpcd in 2030 to 164 gpcd in 2080. This compares to the statewide average of 156 gpcd in 2030 declining to 151 gpcd by 2080.

Demand

The TWDB calculated the municipal water demand projections by multiplying the population projections by the per capita water use projections. As shown in Table 2-5, the total municipal water demand for Region F is expected to increase from 141,387 acre-feet per year in 2030 to 197,714 acre-feet per year in 2080, an increase of 40 percent over the planning period. This compares to an expected 48 percent increase in municipal demand statewide.

The total estimated water savings associated with the implementation of the State Water-Efficiency Plumbing Act by county is presented in Table 2-6. Water-saving plumbing fixtures are expected to save over 6,200 acre-feet per year by 2080.

**Table 2-4
Comparison of Per Capita Water Use and Municipal Conservation Trends**

Region F	2030	2040	2050	2060	2070	2080
Per Capita Use (gpcd)	165	164	164	164	164	164
Statewide	2030	2040	2050	2060	2070	2080
Per Capita Use (gpcd)	156	154	153	152	151	151

Source: Data are from TWDB.³

Table 2-5
Municipal Water Demand Projections for Region F Counties
 -Values in Acre-Feet per Year-

County	2030	2040	2050	2060	2070	2080
Andrews	5,317	6,584	8,043	9,516	11,120	12,868
Borden	241	249	265	289	319	358
Brown	6,704	6,760	6,774	6,797	6,822	6,850
Coke	703	749	799	876	961	1,055
Coleman	1,513	1,368	1,230	1,124	1,016	896
Concho	981	958	938	918	901	885
Crane	1,366	1,428	1,477	1,513	1,553	1,597
Crockett	1,061	981	898	839	778	714
Ector	30,413	34,002	37,635	39,953	42,346	44,823
Glasscock	123	114	110	101	92	82
Howard	7,951	8,153	8,276	8,112	7,932	7,737
Irion	168	159	156	150	144	136
Kimble	737	701	678	675	672	671
Loving	8	7	7	7	7	7
Martin	870	927	1,000	1,048	1,101	1,162
Mason	903	913	932	934	936	938
McCulloch	1,830	1,753	1,679	1,636	1,595	1,557
Menard	333	308	286	282	276	271
Midland	30,582	34,387	38,392	41,326	44,414	47,661
Mitchell	2,500	2,518	2,534	2,555	2,578	2,603
Pecos	5,323	5,419	5,518	5,717	5,941	6,186
Reagan	827	848	858	860	861	864
Reeves	5,390	5,990	6,564	6,954	7,378	7,843
Runnels	1,548	1,533	1,517	1,512	1,507	1,503
Schleicher	555	480	410	352	290	224
Scurry	2,426	2,485	2,530	2,555	2,581	2,608
Sterling	443	588	776	1,022	1,291	1,588
Sutton	1,169	1,065	961	883	800	714
Tom Green	21,788	23,719	25,508	27,290	29,239	31,371
Upton	1,053	1,088	1,118	1,158	1,203	1,256
Ward	3,935	4,443	4,985	5,458	5,975	6,537
Winkler	2,626	2,954	3,259	3,530	3,826	4,149
Total	141,387	153,631	166,113	175,942	186,455	197,714

Source: Data are from the TWDB.³

Table 2-6
Expected Savings from Implementation of Plumbing Code for Region F Counties
 -Values in Acre-Feet per Year-

County	2030	2040	2050	2060	2070	2080
Andrews	112	159	197	235	276	321
Borden	3	3	3	3	3	3
Brown	189	250	250	251	252	253
Coke	19	22	24	26	29	31
Coleman	39	40	36	33	29	26
Concho	21	23	22	22	21	20
Crane	25	31	34	36	38	40
Crockett	15	16	15	14	13	12
Ector	931	1,180	1,293	1,372	1,455	1,542
Glasscock	5	6	6	5	5	4
Howard	195	227	230	225	220	215
Irion	8	8	8	8	7	7
Kimble	23	24	23	23	23	22
Loving	0	1	1	1	1	1
Martin	28	33	36	37	38	40
Mason	21	23	23	23	23	23
McCulloch	41	44	42	41	39	38
Menard	10	10	9	9	9	9
Midland	1,037	1,264	1,409	1,518	1,633	1,755
Mitchell	58	65	67	67	68	69
Pecos	82	97	99	101	103	105
Reagan	18	22	22	22	22	22
Reeves	82	104	113	119	126	134
Runnels	53	59	58	58	58	57
Schleicher	11	11	9	8	6	5
Scurry	93	109	111	112	113	114
Sterling	9	12	16	21	26	32
Sutton	17	17	15	14	13	11
Tom Green	707	870	937	1,003	1,076	1,155
Upton	18	21	22	22	23	23
Ward	66	85	95	104	114	125
Winkler	43	56	61	66	72	78
Total	3,981	4,893	5,285	5,599	5,934	6,291

Source: Data are from the TWDB.³

2.2.2 Manufacturing Demand Projections

Manufacturing use is the water used by industries in producing various products. In Region F, much of the manufacturing water use is associated with the generation of products from sand and gravel operations and the energy industry. Manufacturing demands for 2030 are estimated by the TWDB based on highest historical reported use from 2015 to 2019 and employment growth data over the last ten years. For each planning decade after 2030, a statewide manufacturing growth rate of 0.37 percent was applied.

Manufacturing water demand accounts for only two percent of the region’s total water use and is concentrated in a few counties. Total manufacturing water use is expected to slightly increase from about 14,300 acre-feet in 2030 to about 17,100 acre-feet by 2080, an increase of about 20 percent (see Table 2-7). Ector, Howard, Midland, and Tom Green Counties are expected to have the largest manufacturing demands for the region.

Table 2-7
Manufacturing Water Demand Projections for Region F Counties
 -Values in Acre-Feet per Year-

County	2030	2040	2050	2060	2070	2080
Andrews	596	618	641	665	690	716
Borden	0	0	0	0	0	0
Brown	454	471	488	506	525	544
Coke	0	0	0	0	0	0
Coleman	1	1	1	1	1	1
Concho	0	0	0	0	0	0
Crane	469	486	504	523	542	562
Crockett	36	37	38	39	40	41
Ector	719	746	774	803	833	864
Glasscock	42	44	46	48	50	52
Howard	3,916	4,061	4,211	4,367	4,529	4,697
Irion	7	7	7	7	7	7
Kimble	50	50	50	50	50	50
Loving	0	0	0	0	0	0
Martin	0	0	0	0	0	0
Mason	0	0	0	0	0	0
McCulloch	0	0	0	0	0	0
Menard	0	0	0	0	0	0
Midland	6,462	6,701	6,949	7,206	7,473	7,750
Mitchell	4	4	4	4	4	4
Pecos	243	252	261	271	281	291
Reagan	0	0	0	0	0	0
Reeves	45	47	49	51	53	55
Runnels	4	4	4	4	4	4
Schleicher	0	0	0	0	0	0
Scurry	199	206	214	222	230	239
Sterling	0	0	0	0	0	0
Sutton	3	3	3	3	3	3
Tom Green	791	820	850	881	914	948
Upton	128	133	138	143	148	153

County	2030	2040	2050	2060	2070	2080
Ward	0	0	0	0	0	0
Winkler	107	111	115	119	123	128
<i>Total</i>	<i>14,276</i>	<i>14,802</i>	<i>15,347</i>	<i>15,913</i>	<i>16,500</i>	<i>17,109</i>

Source: Data are from the TWDB.³

2.2.3 Irrigation Demand Projections

Irrigation use for agriculture is the largest user of water in Region F. Irrigation use can vary substantially from year to year depending on the number of irrigated acres, weather, crop prices, government programs, and other factors.

The irrigation projections proposed for Region F by the TWDB for 2026 were based on a five-year average (2015-2019) of the historical TWDB annual irrigation water use estimates. Region F modified the irrigation demands to be annual average from the past ten years (2010-2019). This period includes years with lower annual rainfall, which are important to consider when estimating future dry year water demands for Regional Water Planning. Table 2-8 summarizes the irrigation demands for the region for each decade and compares these to statewide totals. Table 2-9 shows the irrigation water demands by county in Region F.

In 2080, irrigation is expected to still be a major water use and could be as much as 55 percent of the region’s total water demand. The counties with the largest irrigation water use are Andrews, Glasscock, Martin, Midland, Pecos, Reagan, Reeves, and Tom Green. These counties are expected to account for 83 percent of the region’s irrigation demand in 2080. Pecos County alone is expected to have 30 percent of the regional irrigation demand.

**Table 2-8
Comparison of Region F Irrigation Demand Projections to Statewide Projections**

Region F	2030	2040	2050	2060	2070	2080
Irrigation (ac-ft)	460,341	460,341	460,341	460,341	460,341	460,341
Statewide	2030	2040	2050	2060	2070	2080
Irrigation (ac-ft)	8,375,529	8,001,557	7,313,180	6,642,983	6,384,027	6,187,571
Decline from Year 2030	0	373,972	1,062,349	1,732,546	1,991,502	2,187,958
% Decline	0%	4%	13%	21%	24%	26%

Source: Data are from the TWDB.³

Irrigation Water Demand

Irrigation is the largest category of water use in Region F, accounting for over 475,000 acre-feet per year of water demand, which represents over 60 percent of the water demand for the Region. It accounts for over 475,000 acre-feet of water demand. Most of this demand is centered in Andrews, Glasscock, Martin, Midland, Pecos, Reagan, Reeves, and Tom Green counties.

Table 2-9
Irrigation Water Demand Projections for Region F Counties
 -Values in Acre-Feet per Year-

County	2030	2040	2050	2060	2070	2080
Andrews	17,563	17,563	17,563	17,563	17,563	17,563
Borden	2,495	2,495	2,495	2,495	2,495	2,495
Brown	7,684	7,684	7,684	7,684	7,684	7,684
Coke	617	617	617	617	617	617
Coleman	418	418	418	418	418	418
Concho	5,204	5,204	5,204	5,204	5,204	5,204
Crane	0	0	0	0	0	0
Crockett	77	77	77	77	77	77
Ector	751	751	751	751	751	751
Glasscock	43,413	43,413	43,413	43,413	43,413	43,413
Howard	5,096	5,096	5,096	5,096	5,096	5,096
Irion	1,054	1,054	1,054	1,054	1,054	1,054
Kimble	2,602	2,602	2,602	2,602	2,602	2,602
Loving	0	0	0	0	0	0
Martin	32,933	32,933	32,933	32,933	32,933	32,933
Mason	4,804	4,804	4,804	4,804	4,804	4,804
McCulloch	2,074	2,074	2,074	2,074	2,074	2,074
Menard	3,465	3,465	3,465	3,465	3,465	3,465
Midland	17,995	17,995	17,995	17,995	17,995	17,995
Mitchell	12,985	12,985	12,985	12,985	12,985	12,985
Pecos	137,672	137,672	137,672	137,672	137,672	137,672
Reagan	21,502	21,502	21,502	21,502	21,502	21,502
Reeves	60,025	60,025	60,025	60,025	60,025	60,025
Runnels	3,517	3,517	3,517	3,517	3,517	3,517
Schleicher	2,015	2,015	2,015	2,015	2,015	2,015
Scurry	6,983	6,983	6,983	6,983	6,983	6,983
Sterling	855	855	855	855	855	855
Sutton	1,123	1,123	1,123	1,123	1,123	1,123
Tom Green	49,600	49,600	49,600	49,600	49,600	49,600
Upton	8,418	8,418	8,418	8,418	8,418	8,418
Ward	4,333	4,333	4,333	4,333	4,333	4,333
Winkler	3,068	3,068	3,068	3,068	3,068	3,068
<i>Total</i>	<i>460,341</i>	<i>460,341</i>	<i>460,341</i>	<i>460,341</i>	<i>460,341</i>	<i>460,341</i>

Source: Data are from the TWDB.³

2.2.4 Steam Electric Power Demand Projections

Steam Electric Power demands represent water used for all types of power generation, including other technologies such as combined cycle combustion. The demands are based on the highest use in the five year period from 2015-2019 plus specific projected facilities. In Region F, the RWPG revised the Mitchell County demand to reflect the retired steam generation units at the Morgan Creek Power Plant that were operating during a portion of the historic period used to set the demands.

Table 2-10
Steam Electric Water Demand Projections for Region F Counties
 -Values in Acre-Feet per Year-

County	2030	2040	2050	2060	2070	2080
Andrews	0	0	0	0	0	0
Borden	0	0	0	0	0	0
Brown	0	0	0	0	0	0
Coke	0	0	0	0	0	0
Coleman	0	0	0	0	0	0
Concho	0	0	0	0	0	0
Crane	0	0	0	0	0	0
Crockett	0	0	0	0	0	0
Ector	7,889	7,889	7,889	7,889	7,889	7,889
Glasscock	0	0	0	0	0	0
Howard	1,141	1,141	1,141	1,141	1,141	1,141
Irion	0	0	0	0	0	0
Kimble	0	0	0	0	0	0
Loving	0	0	0	0	0	0
Martin	0	0	0	0	0	0
Mason	0	0	0	0	0	0
McCulloch	0	0	0	0	0	0
Menard	0	0	0	0	0	0
Midland	0	0	0	0	0	0
Mitchell	6,725	6,725	6,725	6,725	6,725	6,725
Pecos	0	0	0	0	0	0
Reagan	0	0	0	0	0	0
Reeves	0	0	0	0	0	0
Runnels	0	0	0	0	0	0
Schleicher	0	0	0	0	0	0
Scurry	0	0	0	0	0	0
Sterling	0	0	0	0	0	0
Sutton	0	0	0	0	0	0
Tom Green	0	0	0	0	0	0
Upton	0	0	0	0	0	0
Ward	43	43	43	43	43	43
Winkler	0	0	0	0	0	0
Total	15,798	15,798	15,798	15,798	15,798	15,798

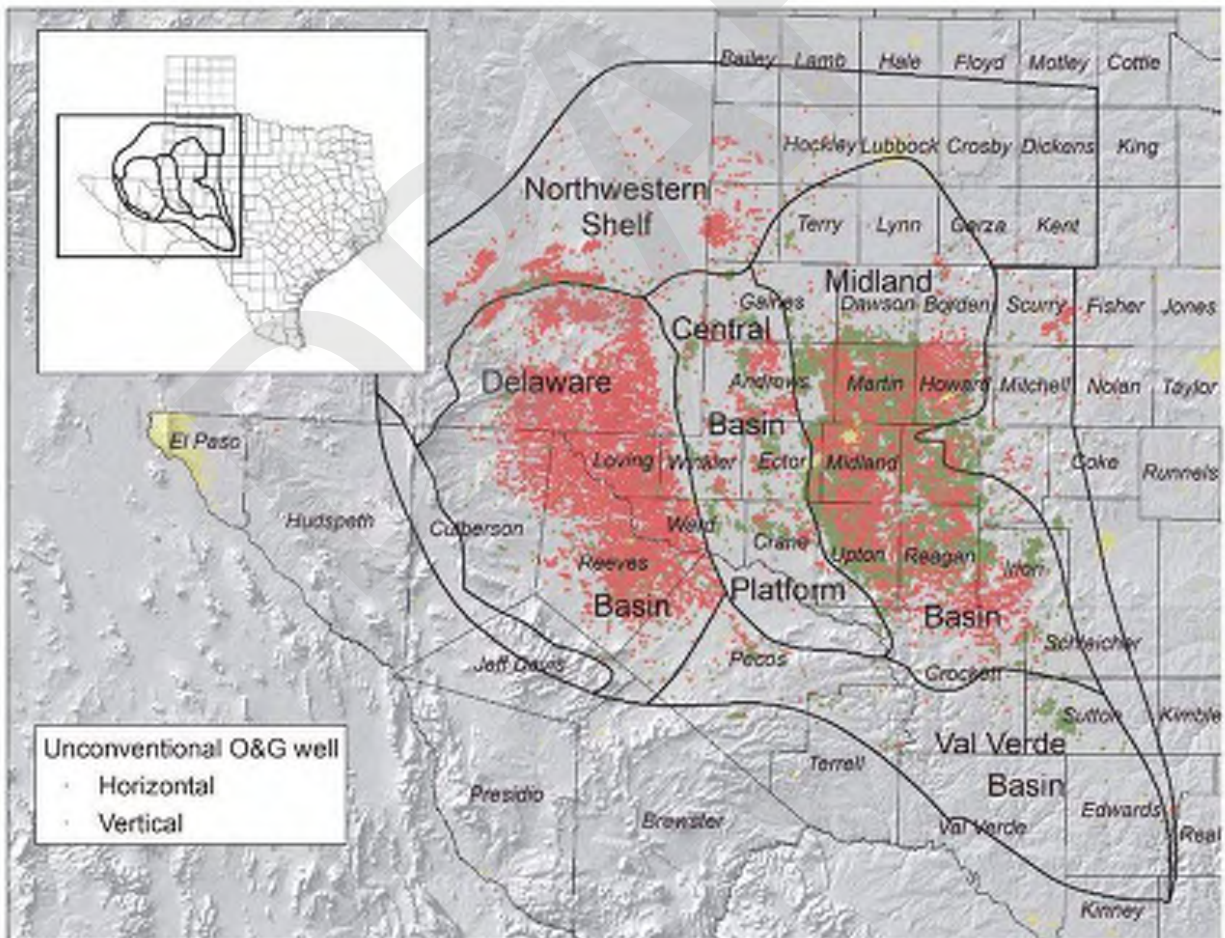
Source: Data are from the TWDB.³

2.2.5 Mining Demand Projections

The mining category includes water used in both the production of minerals and the production of oil and gas. (Water used in the processing of minerals or oil and gas into a finished product is considered under the manufacturing use category.) The TWDB mining water demand projections are based on a 2022 study conducted by the Bureau of Economic Geology (BEG) Report⁶. The BEG based its projections on the technically recoverable resources (TRR) measured in the number of wells, the estimated volume of water used per well, and then the number of wells to be drilled per year based on the 2018 to 2019 rate.

Region F lies in the heart of the Permian Basin, which is one of the largest oil and gas shale formations in the country. The Delaware and Midland sub-basins are major oil and gas demand centers in Region F and the state as a whole. Figure 2-7 shows the unconventional oil and gas wells completed from 2005 to 2020 from the BEG report. Based on the initial TWDB projections, the Midland Basin TRR was projected to be exhausted starting in the 2070 decade. This assumed a constant development rate from 2030 to 2060. Region F revised the mining demands to decline more gradually starting in 2040 through 2080 but did not exceed the total TRR projection from the BEG study. The Delaware basin is projected to continue to have development throughout the entire region. The BEG estimate of TRR is based on current technology and may change over time as new mining methods are developed, which could serve to increase the TRR and associated mining demands. This should be monitored and updated as part of future plans.

Figure 2-7: Permian Basin Locations of Unconventional Oil and Gas Wells



Source: Bureau of Economic Geology⁶. Data show unconventional oil and gas wells completed from 2005-2020

Other mining activities, such as sand, gravel and stone production, represent a small portion of the region’s economy and water demands.

The mining demands for Region F are projected to be 216,716 acre-feet in 2030 (nearly double the 2030 projection in the 2021 plan), and then decrease to a still substantial amount of 134,865 acre-feet in 2080. This water use represents about 25 percent of the total water demand in Region F in 2030, reducing to 16 percent in 2080. Table 2-11 compares Region F’s mining projections to statewide projections. A summary of the projected mining demands by county is presented in Table 2-12.

**Table 2-11
Comparison of Region F Mining Projections to Statewide Totals**

Region F	2030	2040	2050	2060	2070	2080
Mining (ac-ft)	216,716	217,652	207,969	187,463	159,337	134,865
Change from Year 2030	0	936	-8,747	-29,253	-57,379	-81,851
% Change	0%	0%	-4%	-13%	-26%	-38%
Statewide	2030	2040	2050	2060	2070	2080
Mining (ac-ft)	410,204	415,411	410,611	398,520	372,722	295,557
Change from Year 2030	0	5,207	407	-11,684	-37,482	-114,647
% Change	0%	2%	0%	-5%	-17%	-53%

Source: Data are from the TWDB.³

Table 2-12
Mining Water Demand Projections for Region F Counties
 -Values in Acre-Feet per Year-

County	2030	2040	2050	2060	2070	2080
Andrews	4,200	4,200	3,850	3,150	2,223	1,400
Borden	3,374	3,374	3,093	2,531	1,785	1,125
Brown	560	560	560	560	560	560
Coke	106	106	106	106	106	106
Coleman	0	0	0	0	0	0
Concho	0	0	0	0	0	0
Crane	3,071	3,279	3,475	3,640	3,194	3,306
Crockett	6,046	6,046	5,542	4,535	3,199	2,015
Ector	2,061	2,061	1,889	1,546	1,091	687
Glasscock	13,854	13,854	12,700	10,391	7,331	4,618
Howard	12,340	12,340	11,312	9,255	6,530	4,113
Irion	10,662	10,662	9,774	7,997	5,642	3,554
Kimble	1	1	1	1	1	1
Loving	12,002	12,002	12,002	12,002	12,002	12,002
Martin	16,590	16,590	15,208	12,443	8,779	5,530
Mason	176	176	176	176	176	176
McCulloch	673	675	682	684	685	685
Menard	0	0	0	0	0	0
Midland	14,703	14,704	13,479	11,028	7,781	4,901
Mitchell	368	368	337	276	195	123
Pecos	16,152	16,152	16,152	16,152	16,152	16,152
Reagan	19,823	19,823	18,171	14,867	10,490	6,608
Reeves	34,986	34,986	34,986	34,986	34,986	34,986
Runnels	0	0	0	0	0	0
Schleicher	3,529	3,529	3,235	2,647	1,867	1,176
Scurry	306	306	281	230	162	102
Sterling	3,047	3,047	2,793	2,285	1,612	1,016
Sutton	27	27	27	27	27	27
Tom Green	990	990	908	743	524	330
Upton	15,851	15,851	14,530	11,888	8,388	5,284
Ward	8,170	8,232	8,282	8,321	8,351	8,370
Winkler	13,048	13,711	14,418	14,996	15,498	15,912
<i>Total</i>	<i>216,716</i>	<i>217,652</i>	<i>207,969</i>	<i>187,463</i>	<i>159,337</i>	<i>134,865</i>

Source: Data are from the TWDB.³

2.2.6 Livestock Watering

Livestock watering accounts for about 1 percent of the projected demand in Region F in 2030 and is predicted to remain the same. The livestock projections are based on the water needs per head for each type of livestock and each type of livestock operation. The number of head in each county was estimated from information provided by the Texas Department of Agriculture and the National Agricultural Statistics Service. TWDB used the average of the 2015-2019 water use estimates as a base. Projections are only available for counties and are not available for specific livestock operations.

Livestock demand in Region F is expected to remain constant at 11,228 acre-feet per year throughout the planning period (see Table 2-13).

Table 2-13
Livestock Water Demand Projections for Region F Counties
 -Values in Acre-Feet per Year-

County	2030	2040	2050	2060	2070	2080
Andrews	200	200	200	200	200	200
Borden	239	239	239	239	239	239
Brown	972	972	972	972	972	972
Coke	265	265	265	265	265	265
Coleman	741	741	741	741	741	741
Concho	479	479	479	479	479	479
Crane	60	60	60	60	60	60
Crockett	514	514	514	514	514	514
Ector	140	140	140	140	140	140
Glasscock	116	116	116	116	116	116
Howard	199	199	199	199	199	199
Irion	242	242	242	242	242	242
Kimble	307	307	307	307	307	307
Loving	40	40	40	40	40	40
Martin	75	75	75	75	75	75
Mason	688	688	688	688	688	688
McCulloch	552	552	552	552	552	552
Menard	315	315	315	315	315	315
Midland	180	180	180	180	180	180
Mitchell	318	318	318	318	318	318
Pecos	609	609	609	609	609	609
Reagan	294	294	294	294	294	294
Reeves	309	309	309	309	309	309
Runnels	679	679	679	679	679	679
Schleicher	422	422	422	422	422	422
Scurry	445	445	445	445	445	445
Sterling	248	248	248	248	248	248
Sutton	415	415	415	415	415	415
Tom Green	874	874	874	874	874	874
Upton	121	121	121	121	121	121
Ward	70	70	70	70	70	70
Winkler	100	100	100	100	100	100
Total	11,228	11,228	11,228	11,228	11,228	11,228

Source: Data are from the TWDB.³

2.3 Major Water Providers

As part of the development of the 2026 Regional Water Plan, demands were identified for major water providers (MWP) in Region F. An MWP is defined by the TWDB as a water user group or a wholesale water provider of particular significance to the region’s water supply, as determined by the RWPG. The major water providers in Region F are the Colorado River Municipal Water District (CRMWD), the Brown County Water Improvement District Number 1 (BCWID), and the cities of Odessa, Midland, and San Angelo. The sections below contain descriptions of the identified demands and the associated volumes for each Region F MWP. Attachment 2A contains projected water demands for each of these MWPs broken down by category of use for each decade.

2.3.1 Colorado River Municipal Water District

The Colorado Municipal Water District (CRMWD) provides wholesale raw water supplies to multiple member cities and customers. CRMWD’s operations and contractual obligations are challenging to represent under the existing regional planning framework required by TWDB rule. For planning purposes, the demands on CRMWD are described as two separate systems: the Lake Ivie Non-System Demands and the CRMWD System demands.

The Lake Ivie Non-System Demands represent contractual demands from Midland, San Angelo, and Abilene for a percentage of the yield of Lake Ivie and an 1,100-acre-foot reservoir contract with Millersview-Doole WSC. These users can only be supplied by Lake Ivie and CRMWD would not provide them other water supplies if supply from Lake Ivie is inadequate. Table 2-14 shows the projected water demands CRMWD’s Lake Ivie Non-System customers.

Table 2-14
Lake Ivie Non-System Demands for the Colorado River Municipal Water District
 -Values in Acre-Feet per Year-

WUG Name	County(ies)	Basin	2030	2040	2050	2060	2070	2080
Abilene	Jones, Taylor	Brazos	4,721	4,588	4,456	4,324	4,191	4,059
San Angelo	Tom Green	Colorado	4,721	4,588	4,456	4,324	4,191	4,059
Midland	Midland	Colorado	4,721	4,588	4,456	4,324	4,191	4,059
Millersview-Doole WSC ^a	Concho, McCulloch, Runnels, Tom Green	Colorado	600	600	600	600	600	600
Ballinger	Runnels	Colorado	500	500	500	500	500	500
Ivie System Total			15,263	14,864	14,468	14,072	13,673	13,277

^a Millersview-Doole WSC contract expires in October 2041.

CRMWD’s System demands include both its member cities and others through various contracts. CRMWD operates its main system conjunctively using multiple groundwater, surface water, and reuse sources as needed. CRMWD provides all the water used by its member cities: Odessa, Big Spring and Snyder. The remaining municipal contract holders rely entirely on CRMWD for water. Manufacturing water is provided through municipal users. Table 2-15 shows the projected water demands for current CRMWD system customers. Potential future customers are discussed in Chapter 5D.

Table 2-15
Expected Main System Demands for the Colorado River Municipal Water District
 -Values in Acre-Feet per Year-

WUG Name	County(ies)	Basin	2030	2040	2050	2060	2070	2080
Odessa	Ector	Colorado	21,766	24,868	28,681	30,457	32,216	33,964
Odessa	Midland	Colorado	1,072	1,636	2,310	2,777	3,261	3,757
Ector County UD	Ector	Colorado	3,277	3,929	4,535	4,975	5,433	5,908
Greater Gardendal WSC	Ector	Colorado	61	140	315	341	368	396
Greater Gardendal WSC	Midland	Colorado	38	93	219	245	270	297
Manufacturing	Ector	Colorado	350	350	350	350	350	350
Irrigation	Ector	Colorado	403	403	403	403	403	403
Irrigation	Midland	Colorado	817	817	817	817	817	817
Steam Electric Power	Ector	Colorado	2,242	2,242	2,242	2,242	2,242	2,242
Big Spring	Howard	Colorado	6,566	6,728	6,826	6,697	6,556	6,402
Coahoma	Howard	Colorado	362	374	381	372	361	351
Manufacturing	Howard	Colorado	1,500	1,500	1,500	1,500	1,500	1,500
Steam Electric Power	Howard	Colorado	858	858	858	858	858	858
Snyder	Scurry	Colorado	1,709	1,738	1,765	1,784	1,804	1,825
County-Other, Scurry	Scurry	Colorado	90	90	90	90	90	90
Rotan	Fisher	Brazos	258	248	241	238	234	230
U and F WSC	Scurry	Colorado	5	5	5	5	5	5
Midland ^a	Midland	Colorado	11,200	11,200	11,200	11,200	11,200	11,200
Stanton ^b	Martin	Colorado	307	307	307	307	307	307
Irrigation	Ector	Colorado	400	400	400	400	400	400
Grandfalls	Ward	Rio Grande	225	255	287	315	344	377
CRMWD Total System Demand			53,506	58,181	63,732	66,373	69,019	71,679
Additional Supply for Odessa (Losses)			<i>To be completed after Odessa MWP Meeting</i>					
Ector County - Other (ECUD Expanded Service Area, Sales from Odessa)			<i>To be completed after Odessa MWP Meeting</i>					
CRMWD Potential Future Demand			<i>To be completed after Odessa MWP Meeting</i>					
CRMWD Total (Current and Potential Future)			53,506	58,181	63,732	66,373	69,019	71,679

a. Midland 1966 contract expires in December 2029, will continue for 3 months into 2030 but per CRMWD contract renewal is assumed at 10 MGD starting in 2030

b. Contract expires in 2029, assuming renewal for rest of planning period.

2.3.2 Brown County Water Improvement District No. 1

BCWID provides both raw and treated water for municipal, manufacturing, and irrigation purposes. Most BCWID customers are in Brown County. BCWID provides treated water to the Cities of Brownwood, Bangs, and Early and to Brookesmith SUD and Zephyr WSC. BCWID provides water to the City of Santa Anna in Coleman County, Coleman County SUD, and to users in Coleman and Mills Counties through Brookesmith SUD. Coleman County SUD has customers in Coleman, Brown, Runnels, Callahan and Taylor Counties. For the purposes of this plan, it is assumed that 90 percent of the demand for Coleman County SUD will be met by supplies from BCWID. BCWID also currently provides raw water to industries and irrigation. The demands in Table 2-16 are for current BCWID customers.

Table 2-16
Expected Demands for the Brown County Water Improvement District No. 1
 -Values in Acre-Feet per Year-

WUG Name	County(ies)	Basin	2030	2040	2050	2060	2070	2080
Bangs	Brown	Colorado	346	347	348	349	350	351
Brookesmith SUD	Brown	Colorado	1,227	1,244	1,247	1,252	1,257	1,262
Brookesmith SUD	Coleman	Colorado	5	4	3	2	2	1
Santa Anna	Coleman	Colorado	128	123	119	116	115	115
Coleman County SUD	Brown	Colorado	30	30	31	31	31	31
Coleman County SUD	Coleman	Colorado	586	551	520	498	477	455
Coleman County SUD	Runnels	Colorado	22	21	18	16	14	13
Coleman County SUD	Callahan	Colorado	40	41	43	45	47	49
Coleman County SUD	Taylor	Colorado	40	41	41	41	41	41
Brownwood	Brown	Colorado	3,827	3,854	3,862	3,875	3,889	3,906
Manufacturing	Brown	Colorado	454	471	488	506	525	544
Early	Brown	Colorado	454	455	455	457	459	460
Zephyr WSC	Brown	Colorado	572	580	581	582	584	587
Mining	Brown	Colorado	560	560	560	560	560	560
Irrigation	Brown	Colorado	6,000	6,000	6,000	6,000	6,000	6,000
BCWID Total			14,291	14,322	14,316	14,330	14,351	14,375

2.3.3 City of Odessa

Table 2-17 shows the expected demands for the City of Odessa. The City of Odessa is a CRMWD member city. Odessa sells treated water to the Ector County Utility District, Ector County-Other, and manufacturing and steam electric power in Ector County. A portion of the City’s wastewater is sold to the Gulf Coast Water Authority (GCA) who treats the effluent and sells the supply to the mining industry. The remainder of the City of Odessa’s effluent is treated by the City and sold to Pioneer Natural Resources (manufacturing). The City also provides water for manufacturing in Ector County, which is supplied by raw water. Odessa also provides raw water to irrigation customers in Ector and Midland counties. Potential future customers are discussed in Chapter 5D.

Table 2-17
Expected Demands for the City of Odessa

-Values in Acre-Feet per Year-

WUG Name	County(ies)	Basin	2030	2040	2050	2060	2070	2080
Odessa	Ector	Colorado	21,766	24,868	28,681	30,457	32,216	33,964
Odessa	Midland	Colorado	1,072	1,636	2,310	2,777	3,261	3,757
Ector County UD	Ector	Colorado	3,277	3,929	4,535	4,975	5,433	5,908
Greater Gardendale WSC	Ector	Colorado	61	140	315	341	368	396
Greater Gardendale WSC	Midland	Colorado	38	93	219	245	270	297
Manufacturing	Ector	Colorado	200	200	200	200	200	200
Steam Electric Power	Ector	Colorado	2,242	2,242	2,242	2,242	2,242	2,242
<i>Subtotal Treated Water Demand</i>			<i>28,656</i>	<i>33,108</i>	<i>38,502</i>	<i>41,237</i>	<i>43,990</i>	<i>46,764</i>
Manufacturing (Reuse, Odessa/Pioneer Meter Station)	Ector	Colorado	6,727	6,727	6,727	6,727	6,727	6,727
Mining (Reuse, Gulf Coast Authority)	Ector	Colorado	2,803	2,803	2,803	2,803	2,803	2,803
<i>Subtotal Reuse Demand</i>			<i>9,530</i>	<i>9,530</i>	<i>9,530</i>	<i>9,530</i>	<i>9,530</i>	<i>9,530</i>
Manufacturing	Ector	Colorado	150	150	150	150	150	150
Irrigation	Ector	Colorado	403	403	403	403	403	403
Irrigation	Midland	Colorado	817	817	817	817	817	817
<i>Subtotal Raw Demand</i>			<i>1,370</i>	<i>1,370</i>	<i>1,370</i>	<i>1,370</i>	<i>1,370</i>	<i>1,370</i>
Ector County - Other (ECUD Expanded Service Area)	<i>To be completed after Odessa MWP Meeting</i>							
Additional Supply for Odessa (Losses)	<i>To be completed after Odessa MWP Meeting</i>							
<i>Total Future Potable Demand</i>	<i>To be completed after Odessa MWP Meeting</i>							
<i>City of Odessa Total Demand</i>			<i>39,556</i>	<i>44,008</i>	<i>49,402</i>	<i>52,137</i>	<i>54,890</i>	<i>57,664</i>

2.3.4 City of Midland

The City of Midland is the largest city in Region F. It provides retail water service to over 145,000 people, and small quantities of water to manufacturing within the city limits. The City has experienced rapid growth within its service area in recent years, primarily due to increased oil and gas activities within the Permian Basin. The City is also home to many workers that commute from other areas of the State during the work week. While these workers are not considered in Midland’s permanent population estimate, they do contribute to the water demands on the City. Recent reports indicate the oil and gas activities will continue in the Permian Basin for several decades, contributing to the expected growth of the City and its water demands. Midland also has a contract to sell treated effluent to Pioneer Resources for mining use. The contract is for up to 15 MGD, but actual wastewater discharges average 10 MGD. As shown in Table 2-18, the expected demands on Midland are 34,386 acre-feet per year in 2030 and increase to 49,306 acre-feet year by 2080.

Table 2-18
Expected Demands for the City of Midland
 -Values in Acre-Feet per Year-

WUG Name	County(ies)	Basin	2030	2040	2050	2060	2070	2080
Midland	Midland	Colorado	23,104	25,190	27,583	30,595	34,050	38,024
Manufacturing	Midland	Colorado	72	72	72	72	72	72
<i>Subtotal Treated Water Demand</i>			<i>23,176</i>	<i>25,262</i>	<i>27,655</i>	<i>30,667</i>	<i>34,122</i>	<i>38,096</i>
Mining	Midland	Colorado	2,803	2,803	2,803	2,803	2,803	2,803
Mining	Martin	Colorado	2,803	2,803	2,803	2,803	2,803	2,803
Mining	Reagan	Colorado	2,803	2,803	2,803	2,803	2,803	2,803
Mining	Upton	Colorado	2,801	2,801	2,801	2,801	2,801	2,801
<i>Subtotal Reuse Demand</i>			<i>11,210</i>	<i>11,210</i>	<i>11,210</i>	<i>11,210</i>	<i>11,210</i>	<i>11,210</i>
City of Midland Total			34,386	36,472	38,865	41,877	45,332	49,306

2.3.5 City of San Angelo

Table 2-19 shows the expected demands for current customers of the City of San Angelo. The City provides water to the Upper Colorado River Authority (UCRA) in exchange for UCRA’s O.C. Fisher water rights. UCRA then sells to several entities outside of the City. The City also provides water to the Goodfellow Air Force Base located in San Angelo and about half of the water used for manufacturing in Tom Green County. In the near term, San Angelo supplies reuse to Irrigation in Tom Green County. This is anticipated to cease after 2030 when the City plans to repurpose their supplies for municipal use.

Table 2-19
Expected Demands for the City of San Angelo
 -Values in Acre-Feet per Year-

WUG Name	County(ies)	Basin	2030	2040	2050	2060	2070	2080
San Angelo	Tom Green	Colorado	17,593	18,903	20,114	21,305	22,606	24,026
UCRA			500	500	500	500	500	500
Goodfellow Air Force Base	Tom Green	Colorado	469	467	467	467	467	467
Manufacturing	Tom Green	Colorado	396	410	425	441	457	474
City of San Angelo Treated Total			18,958	20,280	21,506	22,713	24,030	25,467
Irrigation (Reuse)			8,300	0	0	0	0	0
City of San Angelo Total			27,258	20,280	21,506	22,713	24,030	25,467

ATTACHMENT 2A

**WATER DEMANDS BY DECADE AND CATEGORY OF USE FOR
MAJOR WATER PROVIDERS**

**Major Water Provider Demands by Category of Use in Each Decade
(acre-feet per year)**

Major Water Provider	Category of Use	2030	2040	2050	2060	2070	2080
BCWID #1	Irrigation	6,000	6,000	6,000	6,000	6,000	6,000
	Livestock	0	0	0	0	0	0
	Manufacturing	454	471	488	506	525	544
	Mining	560	560	560	560	560	560
	Municipal	7,277	7,291	7,268	7,264	7,266	7,271
	Steam Electric Power	0	0	0	0	0	0
	Total	14,291	14,322	14,316	14,330	14,351	14,375
CRMWD	Irrigation	1,620	1,620	1,620	1,620	1,620	1,620
	Livestock	0	0	0	0	0	0
	Manufacturing	1,850	1,850	1,850	1,850	1,850	1,850
	Mining	0	0	0	0	0	0
	Municipal	62,199	66,475	71,630	73,875	76,122	78,386
	Steam Electric Power	3,100	3,100	3,100	3,100	3,100	3,100
	Total	68,769	73,045	78,200	80,445	82,692	84,956
Midland	Irrigation	0	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	72	72	72	72	72	72
	Mining	11,210	11,210	11,210	11,210	11,210	11,210
	Municipal	23,104	25,190	27,583	30,595	34,050	38,024
	Steam Electric Power	0	0	0	0	0	0
	Total	34,386	36,472	38,865	41,877	45,332	49,306
Odessa	Irrigation	1,220	1,220	1,220	1,220	1,220	1,220
	Livestock	0	0	0	0	0	0
	Manufacturing	7,077	7,077	7,077	7,077	7,077	7,077
	Mining	2,803	2,803	2,803	2,803	2,803	2,803
	Municipal (To be updated after MWP Meeting)	19,487	23,939	29,333	32,068	34,821	37,595
	Steam Electric Power	2,242	2,242	2,242	2,242	2,242	2,242
	Total	39,556	44,008	49,402	52,137	54,890	57,664
San Angelo	Irrigation	8,300	0	0	0	0	0
	Livestock	0	0	0	0	0	0
	Manufacturing	396	410	425	441	457	474
	Mining	0	0	0	0	0	0
	Municipal	18,562	19,870	21,081	22,272	23,573	24,993
	Steam Electric Power	0	0	0	0	0	0
	Total	27,258	20,280	21,506	22,713	24,030	25,467

LIST OF REFERENCES

¹ Texas Water Development Board. *2026 Regional Water Plan Water Demand Projections*, November, 2023. <<http://www.twdb.texas.gov> >.

² Texas Water Development Board. *Historical Water Use Estimates*, August, 2024. <<https://www.twdb.texas.gov/waterplanning/waterusesurvey/estimates/>>

³ Texas Water Development Board. DB27 database, 2024.

⁴ Texas Water Development Board. *Water Conservation Implementation Task Force Report to the 79th Legislature*, November 2004.

⁵ Texas Health and Safety Code. *Water Saving Performance Standards*, Title 5, Subtitle B § 372.002, 2014.

⁶ Bureau of Economic Geology. *Water Use by the Mining Industry in Texas Final Report*, August 2022.

DRAFT