



**White Deer**

A new housing development of 50 homes is currently being planned in the City of White Deer. Using an estimated 2.5 people per connection, this development was projected to bring 125 additional people. Thus, the population estimate for year 2020 was increased by 125 people from the 2010 Census. Future decades were calculated based on the revised 2020 projection and the original average annual growth rates provided by the TWDB.

<b>WHITE DEER</b>	<b>Census 2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>TWDB Draft</b>							
Population	1,000	1,016	1,054	1,073	1,073	1,073	1,073
Annual Growth Rate		0.16%	0.37%	0.18%	0.00%	0.00%	0.00%
<b>Proposed</b>							
Population	1,000	<b>1,141</b>	<b>1,184</b>	<b>1,205</b>	<b>1,205</b>	<b>1,205</b>	<b>1,205</b>
Annual Growth Rate		1.32%	0.37%	0.18%	0.00%	0.00%	0.00%

**County-Other**

To balance the change of population within the county, some population assigned to County-Other was incorporated into the increase for White Deer. However, it did not seem reasonable to assume that the County-Other population would decrease in the upcoming decade. Therefore, the population for County-Other was held constant for 2020 and then increased slightly until there was a zero net population change in the county by 2040.

<b>COUNTY OTHER</b>	<b>Census 2010</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>TWDB Draft</b>							
Population	1662	1686	1747	1782	1782	1782	1782
Annual Growth Rate		0.14%	0.36%	0.20%	0.00%	0.00%	0.00%
<b>Proposed</b>							
Population	1662	<b>1662</b>	<b>1675</b>	<b>1709</b>	<b>1709</b>	<b>1709</b>	<b>1709</b>
Annual Growth Rate		0.00%	0.08%	0.08%	0.00%	0.00%	0.00%

A summary of the proposed populations in Carson County is presented below. There is a proposed slight net increase in population from the draft TWDB population estimates for the county in 2020 and 2030. There is no change in the total county populations from the TWDB draft estimates beginning in 2040.

**Carson County Summary**

CARSON COUNTY	Census 2010	Population 2020	Population 2030	Population 2040	Population 2050	Population 2060	Population 2070
COUNTY-OTHER	1,662	<b>1,662</b>	<b>1,675</b>	<b>1,709</b>	<b>1,709</b>	<b>1,709</b>	<b>1,709</b>
GROOM	574	<b>574</b>	<b>574</b>	<b>574</b>	<b>574</b>	<b>574</b>	<b>574</b>
HI TEXAS WATER COMPANY	494	502	521	530	530	530	530
PANHANDLE	2,452	2,491	2,583	2,631	2,631	2,631	2,631
WHITE DEER	1,000	<b>1,125</b>	<b>1,167</b>	<b>1,188</b>	<b>1,188</b>	<b>1,188</b>	<b>1,188</b>
PROPOSED TOTAL	6,182	<b>6,354</b>	<b>6,520</b>	6,632	6,632	6,632	6,632
TWDB DRAFT TOTAL	6,182	6,279	6,510	6,632	6,632	6,632	6,632
NUMERICAL CHANGE	-	<b>75</b>	<b>10</b>	0	0	0	0
PERCENT CHANGE	-	1.19%	0.15%	0.00%	0.00%	0.00%	0.00%

**Dallam County**

Dallam County has three WUGs: City of Dalhart, City of Texline and Dallam County-Other. The TWDB draft projections currently use the same average annual growth rates for all three WUGs. Dallam County-Other requested reduced population based on speculation that any population growth would occur in the cities, not in rural county-other. However, the cities of Dalhart and Texline did not indicate any expected increased growth from the draft TWDB projections. At this time, no changes have been made.

DALLAM COUNTY		2000 Census	2010 Census	2020	2030	2040	2050	2060	2070
COUNTY-OTHER	Population	1,063	1,015	1,172	1,319	1,475	1,628	1,776	1,918
	Annual Growth Rate		-0.46%	1.44%	1.18%	1.12%	0.99%	0.87%	0.77%
DALHART	Population	4,648	5,181	5,986	6,741	7,534	8,317	9,069	9,794
	Annual Growth Rate		1.09%	1.44%	1.19%	1.11%	0.99%	0.87%	0.77%
TEXLINE	Population	511	507	586	660	738	814	888	959
	Annual Growth Rate		-0.08%	1.45%	1.19%	1.12%	0.98%	0.87%	0.77%

**Hansford County**

Hansford County contains three WUGs: City of Gruver, City of Spearman and Hansford County-Other. The City of Spearman requested a reduction in the population projections.

**Spearman**

The City of Spearman grew by 1.09 percent between the 2000 and 2010 Census. However, as a mostly agricultural based town, growth is expected to slow in coming decades. The 2011 and 2012 State Data Center (SDC) population estimates show 0.56 percent and 0.41 percent growth rates respectively (Hoque, 2012). Assuming similar growth to the recent past two years, a growth rate of 0.40 percent was used from 2010 to 2030. The growth rate was then dropped to 0.30 percent in subsequent decades.

SPEARMAN	Census 2000	Census 2010	SDC 2011	SDC 2012	2020	2030	2040	2050	2060	2070
<b>TWDB Draft</b>										
Population	3,021	3,368	3,387	3,394	3,684	4,082	4,429	4,717	5,010	5,283
Annual Growth Rate		1.09%	0.56%	0.41%	0.90%	1.03%	0.82%	0.63%	0.60%	0.53%
<b>Proposed</b>										
Population	3,021	3,368	3,387	3,394	<b>3,505</b>	<b>3,648</b>	<b>3,759</b>	<b>3,873</b>	<b>3,991</b>	<b>4,113</b>
Annual Growth Rate		1.09%	0.56%	0.41%	<b>0.40%</b>	<b>0.40%</b>	<b>0.30%</b>	<b>0.30%</b>	<b>0.30%</b>	<b>0.30%</b>

### *Hansford County Summary*

HANSFORD COUNTY	Census 2010	Population 2020	Population 2030	Population 2040	Population 2050	Population 2060	Population 2070
COUNTY-OTHER	1,051	1,148	1,273	1,381	1,471	1,562	1,648
GRUVER	1,194	1,306	1,447	1,570	1,673	1,777	1,873
SPEARMAN	3,368	<b>3,505</b>	<b>3,648</b>	<b>3,759</b>	<b>3,873</b>	<b>3,991</b>	<b>4,113</b>
PROPOSED TOTAL	5,613	<b>5,959</b>	<b>6,368</b>	<b>6,710</b>	<b>7,017</b>	<b>7,330</b>	<b>7,634</b>
TWDB DRAFT TOTAL	5,613	6,138	6,802	7,380	7,861	8,349	8,804
NUMERICAL CHANGE	-	-179	-434	-670	-844	-1,019	-1,170
PERCENT CHANGE	-	-2.92%	-6.38%	-9.08%	-10.74%	-12.21%	-13.29%

### **Moore County**

Moore County has five WUGs: City of Cactus, City of Dumas, City of Fritch (partial), City of Sunray and Moore County-Other. An increased population growth rate is suggested for the City of Cactus.

#### *Cactus*

The City of Cactus indicated that it is expected to grow at a higher rate than projected due to increased industrial activities and a 200 lot annexation that is expected to occur between 2014 and 2016. A review of the 2010 Census data and 2012 State Data Center population indicates that the city has grown at an annual rate of 2.25% over the last decade, but growth may be slightly slowing as indicated by the 2012 population estimate. Considering the City's input, 500 people were added to the growth calculation for 2020 (this assumes 2.5 people per lot for 200 lots). The annual growth rates were not changed; however, the calculated growth rate for 2020 is 2.86% due to the annexation. The growth rates projected by the TWDB were used for subsequent decades.

CACTUS	Census 2000	Census 2010	SDC 2012	2020	2030	2040	2050	2060	2070
<b>TWDB Draft</b>									
Population	2,538	3,179	3,229	3,657	4,168	4,713	5,266	5,842	6,433
Annual Growth Rate		2.25%	0.78%	1.40%	1.31%	1.23%	1.11%	1.04%	0.96%
<b>Proposed</b>									
Population	2,538	3,179	3,229	<b>4,232</b>	<b>4,824</b>	<b>5,455</b>	<b>6,095</b>	<b>6,763</b>	<b>7,444</b>
Annual Growth Rate		2.25%	0.78%	<b>2.86%</b>	1.31%	1.23%	1.11%	1.04%	0.96%

*Moore County Summary*

MOORE COUNTY	Census 2010	Population 2020	Population 2030	Population 2040	Population 2050	Population 2060	Population 2070
CACTUS	3,179	<b>4,232</b>	<b>4,824</b>	<b>5,455</b>	<b>6,095</b>	<b>6,763</b>	<b>7,444</b>
COUNTY-OTHER	2,100	2,413	2,752	3,111	3,476	3,857	4,247
DUMAS	14,691	16,897	19,260	21,777	24,331	26,995	29,725
FRITCH	8	10	11	12	14	15	17
SUNRAY	1,926	2,216	2,525	2,855	3,190	3,540	3,897
PROPOSED TOTAL	19,970	<b>25,768</b>	<b>29,372</b>	<b>33,210</b>	<b>37,106</b>	<b>41,170</b>	<b>45,330</b>
TWDB DRAFT TOTAL	19,970	25,193	28,716	32,468	36,277	40,249	44,319
NUMERICAL CHANGE	-	575	656	742	829	921	1,011
PERCENT CHANGE	-	2.28%	2.28%	2.29%	2.29%	2.29%	2.28%

**Ochiltree County**

Ochiltree County has three WUGs: City of Booker (partial), City of Perryton and Ochiltree County-Other. Decreased population growth rates are suggested for Perryton and Ochiltree County-Other.

*Perryton*

The City of Perryton experienced 1.24 percent annual population growth in the most recent decade due to oil and gas activity in the area. However, this type of growth is unsustainable and inconsistent with long term historical trends. From 1970-1990, the population of Perryton declined. From 1990-2000, the population grew a mere 0.2 percent (Perryton, 2013). While recent years indicate a continued growth trend, the City does not believe it is reasonable to project continued annual growth rates greater than 1 percent for the next 50 years. The proposed population projections were calculated using an average annual growth rate of 1% through the current decade (2010-2020), and then using the average annual growth rate from 1990-2010 (0.72%).

PERRYTON	Census 1970	Census 1980	Census 1990	Census 2000	Census 2010	SDC 2011	SDC 2012	2020	2030	2040	2050	2060	2070
<b>TWDB Draft</b>													
Population	7,810	7,791	7,619	7,774	8,802	8,937	8,994	10,353	12,416	14,680	17,306	20,451	24,148
Annual Growth Rate		-0.02%	-0.22%	0.20%	1.24%	1.52%	1.28%	1.62%	1.82%	1.68%	1.65%	1.67%	1.66%
<b>Proposed</b>													
Population	7,810	7,791	7,619	7,774	8,802	8,937	8,994	<b>9,728</b>	<b>10,454</b>	<b>11,234</b>	<b>12,073</b>	<b>12,974</b>	<b>13,943</b>
Annual Growth Rate		-0.02%	-0.22%	0.20%	1.24%	1.52%	1.28%	<b>1.00%</b>	<b>0.72%</b>	<b>0.72%</b>	<b>0.72%</b>	<b>0.72%</b>	<b>0.72%</b>

***Ochiltree County-Other***

Ochiltree County-Other population growth rates were reduced to match those of the City of Perryton.

OCHILTREE COUNTY-OTHER	Census 2010	2020	2030	2040	2050	2060	2070
<b>TWDB Draft</b>							
Population	1,407	1,684	2,052	2,456	2,925	3,487	4,148
Average Annual Growth Rate		1.80%	1.98%	1.80%	1.75%	1.76%	1.74%
<b>Proposed</b>							
Population	1,407	<b>1,555</b>	<b>1,671</b>	<b>1,796</b>	<b>1,930</b>	<b>2,074</b>	<b>2,229</b>
Average Annual Growth Rate		<b>1.00%</b>	<b>0.72%</b>	<b>0.72%</b>	<b>0.72%</b>	<b>0.72%</b>	<b>0.72%</b>

***Ochiltree County Summary***

OCHILTREE COUNTY SUMMARY	Census 2010	2020	2030	2040	2050	2060	2070
BOOKER	14	22	33	45	58	74	92
COUNTY-OTHER	1,407	<b>1,555</b>	<b>1,671</b>	<b>1,796</b>	<b>1,930</b>	<b>2,074</b>	<b>2,229</b>
PERRYTON	8,802	<b>9,728</b>	<b>10,454</b>	<b>11,234</b>	<b>12,073</b>	<b>12,974</b>	<b>13,943</b>
PROPOSED TOTAL	10,223	<b>11,305</b>	<b>12,158</b>	<b>13,075</b>	<b>14,061</b>	<b>15,122</b>	<b>16,264</b>
TWDB DRAFT TOTAL	10,223	12,059	14,501	17,181	20,289	24,012	28,388
NUMERICAL CHANGE	-	(754)	(2,343)	(4,106)	(6,228)	(8,890)	(12,124)
PERCENT CHANGE	-	-6.25%	-16.16%	-23.90%	-30.70%	-37.02%	-42.71%

## Randall County

Randall County has five WUGs: City of Amarillo (partial), City of Canyon, City of Happy (partial), City of Lake Tanglewood and Randall County-Other. A decrease in population is suggested for the City of Lake Tanglewood.

### Lake Tanglewood

The City of Lake Tanglewood is a gated community south of Amarillo. It is estimated to have a current population of 800 people. Due to limitation on growth (there are few undeveloped properties), the City does not expect to grow. To reflect these limitations, a small increase in population was estimated for Lake Tanglewood by 2020, followed by no increases in population through the planning cycle.

LAKE TANGLEWOOD	Census 2000	Census 2010	SDC 2012	2020	2030	2040	2050	2060	2070
<b>TWDB Draft</b>									
Population	825	796	800	886	991	1,096	1,203	1,317	1,436
Annual Growth Rate		-0.36%	0.25%	1.07%	1.12%	1.01%	0.93%	0.91%	0.87%
<b>Proposed</b>									
Population	825	796	800	<b>820</b>	<b>820</b>	<b>820</b>	<b>820</b>	<b>820</b>	<b>820</b>
Annual Growth Rate		-0.36%	0.25%	<b>0.30%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>

### Randall County Summary

RANDALL COUNTY	Census 2010	Population 2020	Population 2030	Population 2040	Population 2050	Population 2060	Population 2070
AMARILLO	85,209	94,816	106,024	117,243	128,735	140,962	153,663
CANYON	13,303	14,803	16,553	18,305	20,099	22,008	23,991
COUNTY-OTHER	21,356	23,762	26,571	29,383	32,263	35,328	38,510
HAPPY	61	68	76	84	93	101	111
LAKE TANGLEWOOD	796	<b>820</b>	<b>820</b>	<b>820</b>	<b>820</b>	<b>820</b>	<b>820</b>
PROPOSED TOTAL	119,868	<b>134,269</b>	<b>150,044</b>	<b>165,835</b>	<b>182,010</b>	<b>199,219</b>	<b>217,095</b>
TWDB DRAFT TOTAL	119,868	134,335	150,215	166,111	182,393	199,716	217,711
NUMERICAL CHANGE	-	-66	-171	-276	-383	-497	-616
PERCENT CHANGE	-	-0.05%	-0.11%	-0.17%	-0.21%	-0.25%	-0.28%

## Population Change Request Summary

Changes to the draft population projections are suggested for eight municipal water groups in five counties. The change requests are summarized by county in the table below. Hansford and Ochiltree counties both show a reduction in population to more closely align with long term historical growth rates. The populations of Carson and Moore Counties are shown to increase slightly due to on-going residential development. Overall, the population of the region is reduced by 0.08 percent in 2020 and nearly 2 percent in 2070. A summary table of the requested population changes is provided in the Appendix.

REGIONAL SUMMARY	Population 2020	Population 2030	Population 2040	Population 2050	Population 2060	Population 2070
Proposed Total	<b>418,626</b>	<b>461,008</b>	<b>503,546</b>	<b>547,060</b>	<b>592,266</b>	<b>639,220</b>
TWDB Draft Total	418,975	463,290	507,856	553,686	601,751	652,119
Numerical Change	(349)	(2,282)	(4,310)	(6,626)	(9,485)	(12,899)
Percent Change	-0.08%	-0.49%	-0.85%	-1.20%	-1.58%	-1.98%

## DEMAND CHANGE REQUESTS

### Baseline GPCD Changes

#### Errors and Corrections

##### *Cactus*

The City of Cactus' baseline GPCD was estimated by the TWDB at 299 gallons per person per day. This is considerably higher than historical per capita water use estimates. A review of the 2011 reporting data found that the per capita usage calculated by the TWDB used the sales to industrial users based on the buyer's report. The sales as reported by the City of Cactus were higher. Using the City's reported sales, the corrected GPCD in 2011 is calculated at 217. This is more consistent with historical usage. A corrected water use report is provided in the Appendix.

#### Alternate Dry Year

Year 2011 was a drought year for Panhandle Region and is generally the appropriate year for estimating dry year demands for municipal water users. There was concern expressed by the City of Amarillo that 2011 was an extreme dry year and may not be appropriate for long-term planning. Also, the planning group has expressed in the past that the dry year demand will place undue pressures on existing water supplies and an average year demand would be more appropriate. In the previous planning cycles, the Panhandle Region has used average year demands specifically for this concern.

The State recognizes that 2011 was an extreme year for much of the state. As a result of these extreme conditions, there were several water suppliers that encountered difficulties in meeting customers' needs, including several providers in the Panhandle Region. The dry year demands provide a means to verify that an entity can meet water demands under extreme conditions. Concerns regarding the impacts on supplies can be accounted for during the water supply allocation process, where it can be assumed that an extreme dry year occurs either once or twice during each decade and normal year demands occur in the other years.



Considering the State’s desire to show dry year demands and consideration of a combination of dry year demand and normal year demand on groundwater supplies, no changes to the baseline GPCD for Amarillo are recommended.

There are recommended changes to the baseline demand for the City of Shamrock.

***Shamrock***

The City of Shamrock has a reported GPCD of 390 in 2011. This is considerably higher than previous years, particularly prior to 2008. Discussions with City staff indicate that the City is providing water to the oil and gas industry but has not accurately recorded the amounts. Also, the construction of the CREZ lines brought in many temporary workers that placed additional demands on the water system in 2011. According to the City, both the sales for oil and gas and the temporary workers are not expected to continue in the future. Even if the City continues to supply water for oil and gas, this demand should not be included in the municipal demand.

Based on the historical GPCD estimates developed by the TWDB, it appears that sales to the oil and gas industry began in 2008. Therefore, it is recommended that year 2006 be used as the baseline dry year GPCD. Year 2006 was also another extremely dry year in Texas.

City of Shamrock <sup>1</sup>		
Year	GPCD	Recommended for Base GPCD
2006	168	<b><u>168</u></b>
2007	163	
2008	332	
2009	260	
2010	303	
2011	390	

**SUMMARY OF MUNICIPAL DEMAND CHANGES**

The Panhandle Region is suggesting changes for municipal water user groups based on changes growth rates and more representative dry year demands. A summary table of Panhandle Region’s suggested demand changes is shown below. Further data, calculations and summary tables are available in the Appendix.

Suggested WUG Demand Changes	Demand 2020	Demand 2030	Demand 2040	Demand 2050	Demand 2060	Demand 2070
<b>CACTUS</b>						
TWDB Draft Demand	1,191	1,342	1,508	1,679	1,861	2,048
Proposed Demand	991	1,108	1,247	1,386	1,530	1,684
<b>CARSON COUNTY-OTHER</b>						
TWDB Draft Demand	225	226	224	221	220	220

<b>Suggested WUG Demand Changes</b>	<b>Demand 2020</b>	<b>Demand 2030</b>	<b>Demand 2040</b>	<b>Demand 2050</b>	<b>Demand 2060</b>	<b>Demand 2070</b>
Proposed Demand	222	216	214	212	211	211
<b>GROOM</b>						
TWDB Draft Demand	182	185	186	186	185	185
Proposed Demand	179	176	174	174	172	172
<b>LAKE TANGLEWOOD</b>						
TWDB Draft Demand	344	380	416	455	497	542
Proposed Demand	319	314	311	310	310	310
<b>OCHILTREE COUNTY-OTHER</b>						
TWDB Draft Demand	257	303	354	419	499	592
Proposed Demand	237	247	260	277	297	317
<b>PERRYTON</b>						
TWDB Draft Demand	3,004	3,544	4,149	4,868	5,746	6,781
Proposed Demand	2,822	2,986	3,171	3,394	3,648	3,920
<b>SHAMROCK</b>						
TWDB Draft Demand	841	863	886	917	952	989
Proposed Demand	351	354	357	370	382	397
<b>SPEARMAN</b>						
TWDB Draft Demand	704	761	811	857	908	957
Proposed Demand	671	678	686	703	724	746
<b>WHITE DEER</b>						
TWDB Draft Demand	222	224	224	223	223	223
Proposed Demand	246	248	248	248	248	248

<b>PANHANDLE REGION TOTAL</b>						
TWDB Draft Demand	92,416	100,107	108,174	117,200	127,232	137,896
Proposed Demand	<b>91,484</b>	<b>98,606</b>	<b>106,084</b>	<b>114,449</b>	<b>123,663</b>	<b>133,364</b>
Numerical Difference	(932)	(1,501)	(2,090)	(2,751)	(3,569)	(4,532)
Percent Change	-1.01%	-1.50%	-1.93%	-2.35%	-2.81%	-3.29%

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