

# Summary of the 2016 Panhandle (A) Regional Water Plan<sup>1</sup>

## Texas' regional water plans

Regional water plans are funded by the Texas Legislature and developed every five years based on conditions that each region would face under a recurrence of a historical drought of record. The 16 regional water plans are developed by local representatives in a public, bottom-up process. The regional plans are reviewed and approved by the TWDB and become the basis for the state water plan. Regional and state water plans are developed to

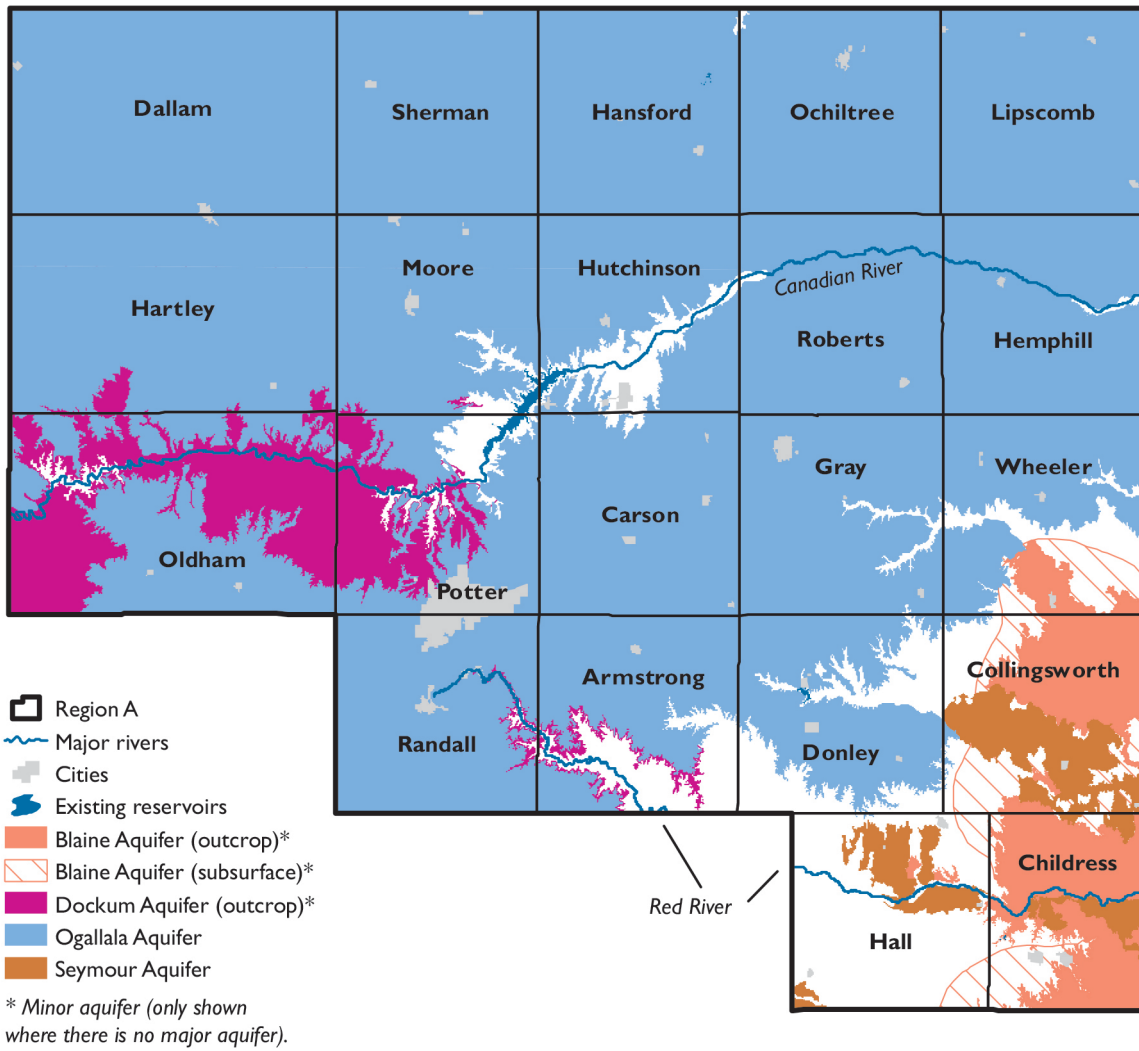
- provide for the orderly development, management, and conservation of water resources,
- prepare for and respond to drought conditions, and
- make sufficient water available at a reasonable cost to ensure public health, safety, and welfare and further economic development while protecting the agricultural and natural resources of the entire state.

**The Panhandle (A) Regional Water Planning Area** includes all or parts of 21 counties (Figure A.1). The region is split between portions of the Canadian and Red River basins. The major cities in the region include Amarillo, Pampa, Borger, and Dumas. Groundwater from the Ogallala Aquifer is the region's primary source of water, providing approximately 94 percent of the region's water supply in 2020. The economy of this region is grounded in agribusiness. The 2016 Panhandle (A) Regional Water Plan can be found on the TWDB Web site at <http://www.twdb.texas.gov/waterplanning/rwp/plans/2016/#region-a>

---

<sup>1</sup> Planning numbers presented throughout this document and as compared to the 2017 Interactive State Water Plan may vary due to rounding.

**Figure A.1 - Panhandle (A) regional water planning area**



## Plan highlights

- Additional supply needed in 2070—253,000 acre-feet per year
- Recommended water management strategy volume in 2070—637,000 acre-feet per year
- 81 recommended water management strategy projects with a total capital cost of \$866 million
- Conservation accounts for 80 percent of 2070 strategy volumes, with 79 percent associated with irrigation conservation
- Groundwater development accounts for 17 percent of 2070 strategy volumes

## Population and water demands

Approximately 1 percent of the state's 2020 population will reside in the Panhandle (A) Region. Between 2020 and 2070, the region's population is projected to increase 53 percent (Table A.4, Figure A.2). By 2070, the total water demands for the region are projected to decrease approximately 33 percent (Table A.4).

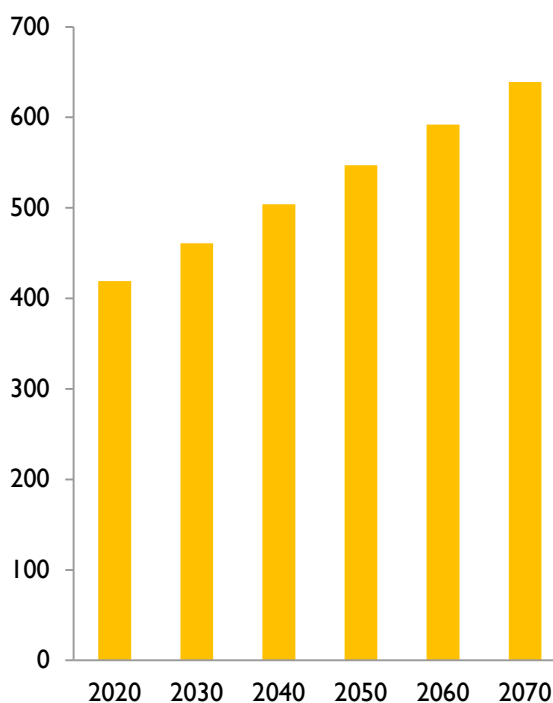
## Existing water supplies

The Panhandle (A) Region has surface water and groundwater supply sources, with nearly all of the existing water supply in the region associated with groundwater (Table A.1, Figure A.3). By 2070 the total water supply is projected to decline 41 percent (Table A.4). This projected decline in supply is primarily a result of reduced availability from the Ogallala Aquifer.

## Needs

On a region-wide basis, the Panhandle (A) Region has water supply deficits from 2020 to 2070. The majority of needs are associated with irrigation water users (Table A.4). Large irrigation needs occurred in Dallam and Hartley counties, primarily due to spatial constraints of water supplies. In the event of drought, Region A is projected to have a total water supply need of 171,000 acre-feet in 2020 (Table A.4). A relatively small volume of municipal needs remain unmet in the region, however an unmet need does not prevent an associated entity from pursuing development of additional water supply.

**Figure A.2 - Projected population for 2020–2070 (in thousands)**



## Recommended water management strategies and cost

The Panhandle (A) Planning Group recommended a variety of water management strategies and projects that would overall provide more water than is required to meet future needs (Figures A.4 and A.5, Tables A.2 and A.3). In all, the 140 strategies and 81 projects would provide 637,000 acre-feet of additional water supply by the year 2070 at a total capital cost of \$866 million.

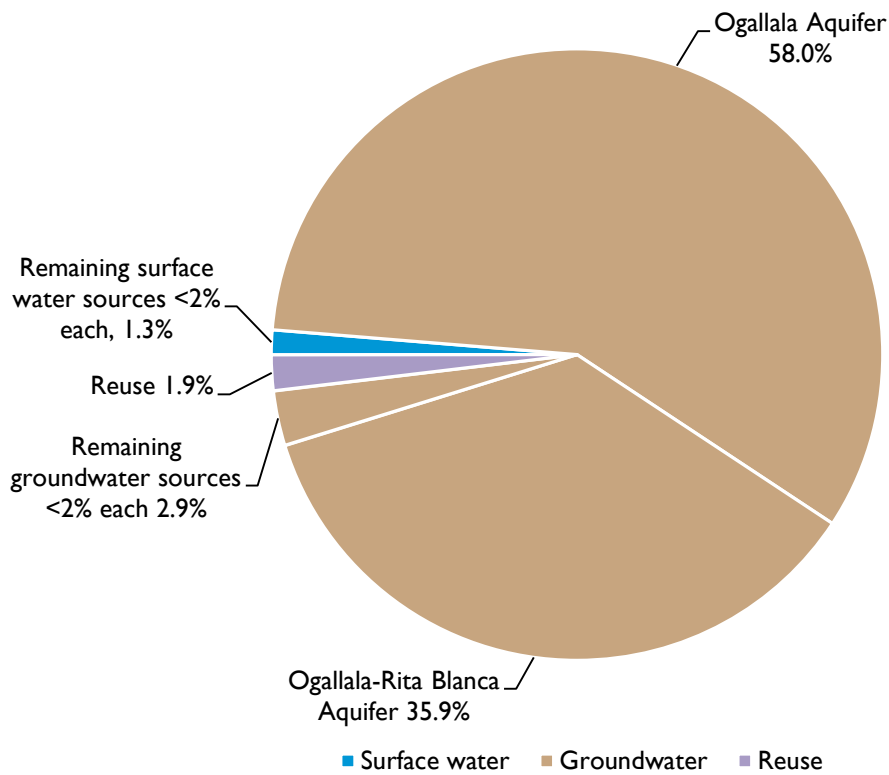
## Conservation

Conservation strategies represent 80 percent of the total volume of water associated with all recommended strategies in 2070. Water conservation was recommended for every county-other water user group with a need, and every municipal and irrigation water user group in the region, regardless of whether the user had a need.

**Table A.1 - Existing water supplies for 2020 and 2070 (acre-feet per year)**

Water supply source	2020	2070
<b>Surface water</b>		
Remaining surface water sources providing less than 2% each	21,000	21,000
<b>Surface water subtotal:</b>	<b>21,000</b>	<b>21,000</b>
<b>Groundwater</b>		
Ogallala Aquifer	912,000	546,000
Ogallala-Rita Blanca Aquifer	565,000	279,000
Remaining groundwater sources providing less than 2% each	45,000	31,000
<b>Groundwater subtotal:</b>	<b>1,522,000</b>	<b>856,000</b>
<b>Reuse</b>	<b>30,000</b>	<b>42,000</b>
<b>Region total</b>	<b>1,573,000</b>	<b>919,000</b>

**Figure A.3 - Share of existing water supplies by water source in 2020**



**Table A.2 - Ten recommended water management strategy projects with largest capital cost**

Recommended water management strategy project	Online decade	Sponsor(s)	Associated capital cost
Expansion of Roberts County Well Field (Ogallala Aquifer) in 2024 - CRMWA2	2030	Canadian River Municipal Water Authority	\$250,299,000
Develop Roberts County Well Field (Ogallala Aquifer) - Amarillo	2070	Amarillo	\$170,217,000
ASR - CRMWA	2030	Canadian River Municipal Water Authority	\$67,649,000
Develop Potter County Well Field (Ogallala Aquifer) - Amarillo	2020	Amarillo	\$53,397,000
Develop Carson County Well Field (Ogallala Aquifer) - Amarillo	2040	Amarillo	\$37,528,000
Develop New Well Field (Ogallala Aquifer) - Borger	2020	Borger	\$26,070,000
Develop New Well Field (Ogallala Aquifer) - Cactus	2020	Cactus	\$18,192,000
Replace Capacity of Roberts County Well Field (Ogallala Aquifer) in 2040 - CRMWA2	2040	Canadian River Municipal Water Authority	\$16,534,000
Irrigation Conservation - Dallam County	2020	Irrigation, Dallam	\$13,597,000
Municipal Conservation - Potter County-Other	2020	County-Other, Potter	\$13,410,000
<i>Other recommended projects</i>	<i>various</i>	<i>71 various</i>	<i>\$198,688,000</i>
		<b>Total capital cost</b>	<b>\$865,581,000</b>

**Table A.3 - Ten recommended water management strategies with largest supply volume**

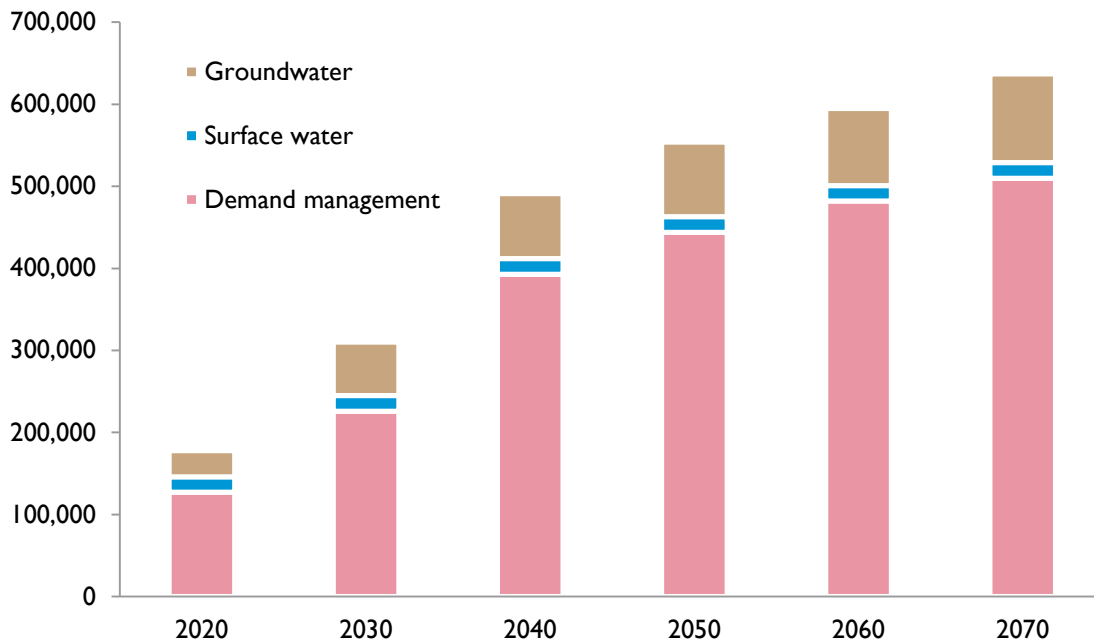
Recommended water management strategy name	Population served by strategy*	Number of water user groups served	Supply in acre-feet per year in 2070
Irrigation Conservation - Dallam County	na	1	141,000
Irrigation Conservation - Hartley County	na	1	121,000
Irrigation Conservation - Sherman County	na	1	84,000
Irrigation Conservation - Moore County	na	1	55,000
Irrigation Conservation - Hansford County	na	1	37,000
Expand Capacity CRMWA II	388,000	3	24,000
Irrigation Conservation - Ochiltree County	na	1	16,000
Irrigation Conservation - Carson County	na	1	15,000
Replace Well Capacity for CRMWA I	388,000	4	14,000
Weather Modification (Precipitation Enhancement)	na	8	14,000
<i>Other recommended strategies</i>		<i>118</i>	<i>114,000</i>
		<b>Total annual water volume</b>	<b>635,000</b>

\* Multiple strategies may serve portions of the same population

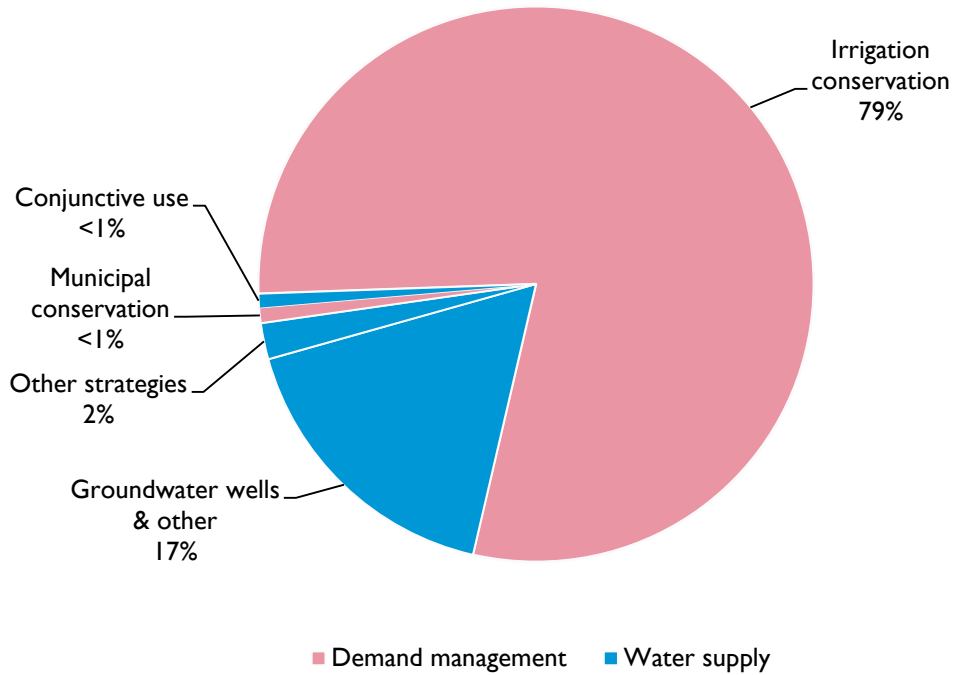
**Table A.4 - Population, existing water supplies, demands, needs, and strategies 2020–2070 (acre-feet per year)**

	Decade	2020	2030	2040	2050	2060	2070	change
<b>Population</b>		<b>419,000</b>	<b>461,000</b>	<b>504,000</b>	<b>547,000</b>	<b>592,000</b>	<b>639,000</b>	<b>53%</b>
<b>Existing supplies</b>	Surface water	21,000	21,000	21,000	21,000	21,000	21,000	<b>0%</b>
	Groundwater	1,522,000	1,398,000	1,268,000	1,126,000	990,000	857,000	<b>-44%</b>
	Reuse	30,000	31,000	33,000	35,000	39,000	42,000	<b>40%</b>
	<b>Total water supplies</b>	<b>1,573,000</b>	<b>1,450,000</b>	<b>1,322,000</b>	<b>1,182,000</b>	<b>1,050,000</b>	<b>921,000</b>	<b>-41%</b>
<b>Demands</b>	Municipal	80,000	86,000	93,000	100,000	108,000	117,000	<b>46%</b>
	County-other	12,000	13,000	14,000	15,000	16,000	17,000	<b>42%</b>
	Manufacturing	50,000	53,000	55,000	58,000	61,000	65,000	<b>30%</b>
	Mining	11,000	10,000	7,000	4,000	3,000	3,000	<b>-73%</b>
	Irrigation	1,513,000	1,426,000	1,312,000	1,167,000	1,021,000	875,000	<b>-42%</b>
	Steam-electric	27,000	29,000	31,000	33,000	37,000	41,000	<b>52%</b>
	Livestock	41,000	41,000	43,000	45,000	47,000	49,000	<b>20%</b>
	<b>Total water demand</b>	<b>1,734,000</b>	<b>1,658,000</b>	<b>1,555,000</b>	<b>1,421,000</b>	<b>1,293,000</b>	<b>1,166,000</b>	<b>-33%</b>
<b>Needs</b>	Municipal	9,000	22,000	36,000	49,000	63,000	76,000	<b>744%</b>
	County-other	1,000	2,000	3,000	3,000	4,000	5,000	<b>400%</b>
	Manufacturing	4,000	7,000	10,000	14,000	18,000	23,000	<b>475%</b>
	Irrigation	157,000	185,000	193,000	180,000	165,000	149,000	<b>-5%</b>
	<b>Total water needs</b>	<b>171,000</b>	<b>216,000</b>	<b>241,000</b>	<b>247,000</b>	<b>250,000</b>	<b>253,000</b>	<b>48%</b>
<b>Strategy supplies</b>	Municipal	34,000	64,000	74,000	78,000	79,000	90,000	<b>165%</b>
	County-other	3,000	3,000	4,000	5,000	5,000	6,000	<b>100%</b>
	Manufacturing	5,000	7,000	11,000	18,000	20,000	23,000	<b>360%</b>
	Irrigation	137,000	235,000	402,000	453,000	491,000	518,000	<b>278%</b>
	<b>Total strategy supplies</b>	<b>178,000</b>	<b>310,000</b>	<b>490,000</b>	<b>554,000</b>	<b>595,000</b>	<b>637,000</b>	<b>258%</b>

**Figure A.4 - Volume of recommended water management strategies by water resource (thousands of acre-feet per year)**



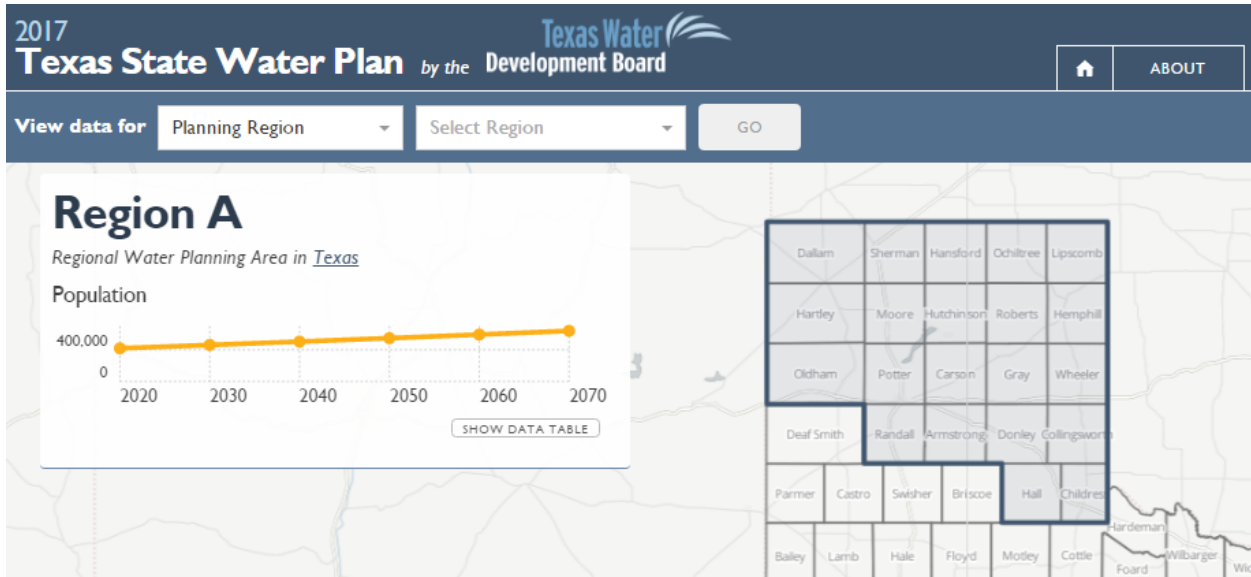
**Figure A.5 - Share of recommended water management strategies by strategy type in 2070**



## Panhandle (A) voting planning group members (2012 – 2016)

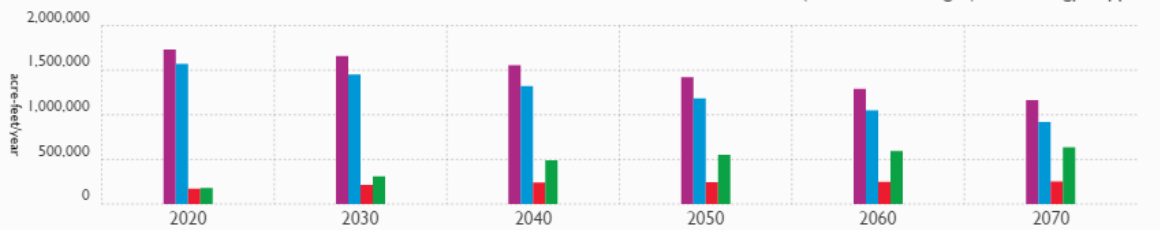
C.E. Williams, water districts (Chair); Emmett Autrey, municipalities; Tom Bailiff, water districts; Joe Baumgardner, agriculture; Nolan Clark, environment; Vernon Cook, counties; Charles Cooke, water utilities; Dean Cooke, water utilities; Amy Crowell, groundwater management areas; Jim Derington, river authorities; Rick Gibson, environment; Rusty Gilmore, industry; Glen Green, electric generating utilities; Janet Guthrie, public; Bill Hallerberg, industry; Sandy Keys, industry; Bobby Kidd, water districts; Tonya Kleuskens, environment; Danny Krienke, groundwater management areas; David Landis, municipalities; Robert Meyer, groundwater management areas; Kent Satterwhite, water districts; Grady Skaggs, environment; Lynn Smith, groundwater management areas; Beverly Stephens, industry; John M. Sweeten, higher education; Janet Tregellas, agriculture; Steve Walthour, water districts; Jay Weber, industry; Ben Weinheimer, agriculture; John C. Williams, water districts

For more information on Texas or specific regions, counties, or cities, please visit the 2017 Interactive State Water Plan website: [texasstatewaterplan.org](http://texasstatewaterplan.org)



The Panhandle (Region A) Regional Water Planning Area includes 21 counties split between the Canadian and Red River basins. The major cities in the region include Amarillo, Pampa, Borger, and Dumas. Groundwater from the Ogallala Aquifer is the region's primary source of water and is used at a rate that exceeds recharge. The economy of this region is grounded in agribusiness. The 2016 Panhandle (A) Regional Water Plan can be found on the TWDB Web site at <http://www.twdb.texas.gov/waterplanning/rwp/plans/2016/#region-a>

REGION A  
Totals by Decade (acre-feet/year)



	2020	2030	2040	2050	2060	2070
<b>Demands</b>	1,733,659	1,658,045	1,554,977	1,421,114	1,292,717	1,166,209
<b>Existing Supplies</b>	1,572,614	1,450,412	1,321,824	1,182,082	1,050,055	920,959
<b>Needs (Potential Shortages)</b>	170,795	216,171	241,445	247,018	250,349	252,616
<b>Strategy Supplies</b>	178,362	309,975	490,304	553,637	595,005	636,688



Texas Water Development Board  
1700 North Congress Avenue,  
Austin, Texas 78701  
512-463-7847  
[www.twdb.texas.gov](http://www.twdb.texas.gov)