

Summary of the 2016 Llano Estacado (O) Regional Water Plan¹

Texas' regional water plans

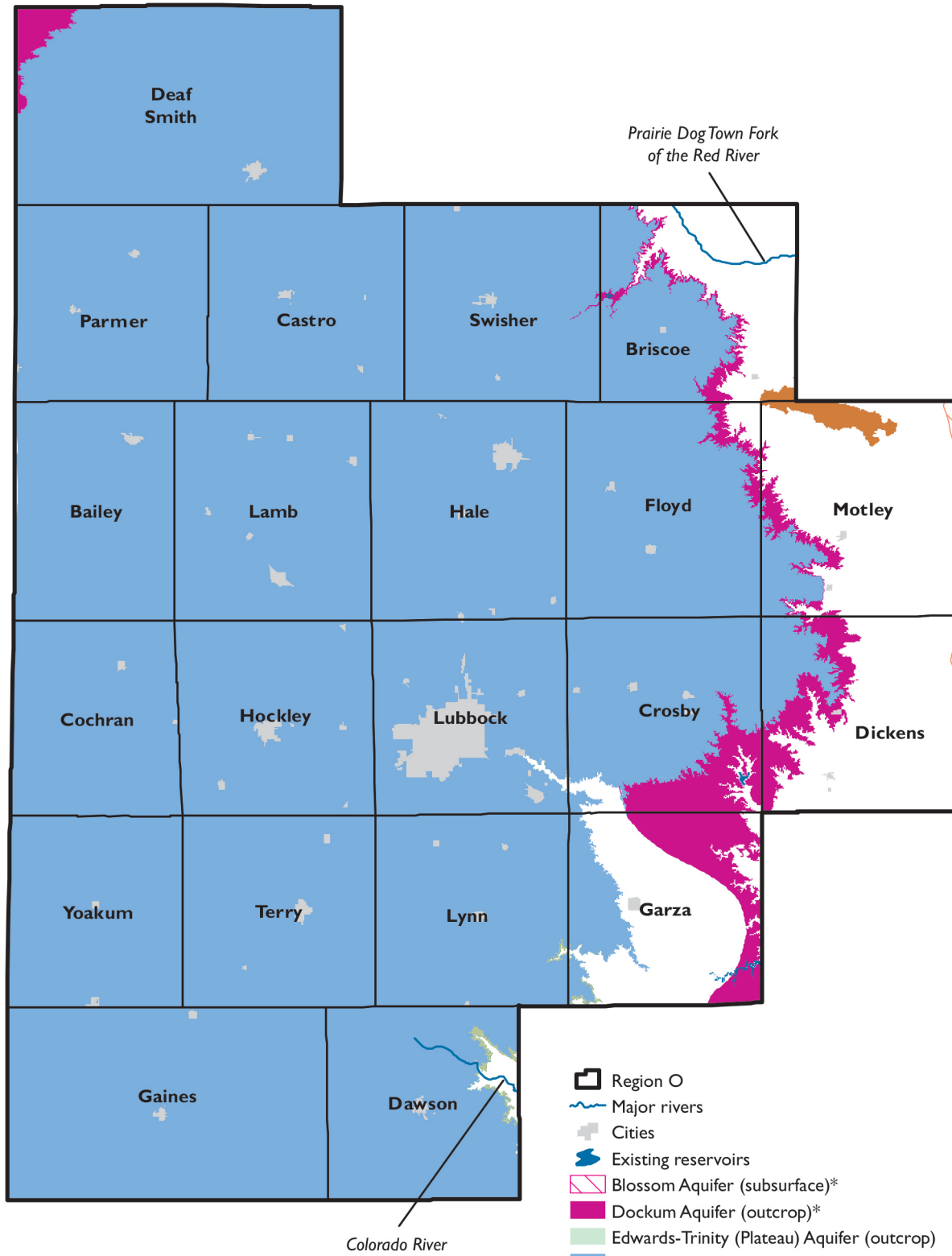
Regional water plans are funded by the Texas Legislature and developed every five years based on conditions that each region would face under a recurrence of a historical drought of record. The 16 regional water plans are developed by local representatives in a public, bottom-up process. The regional 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 Llano Estacado (O) Regional Water Planning Area includes all or parts of 21 counties (Figure O.1). The region lies within the upstream parts of four major river basins (Canadian, Red, Brazos, and Colorado). 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 largest economic sector in the region is agriculture. Major cities in the region include Lubbock, Plainview, Levelland, Lamesa, Hereford, and Brownfield. The 2016 Region O Regional Water Plan can be found on the TWDB Web site at <http://www.twdb.texas.gov/waterplanning/rwp/plans/2016/#region-o>

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

Figure O.1 - Llano Estacado (O) regional water planning area



Plan highlights

- Additional supply needed in 2070—2,240,000 acre-feet per year
- Recommended water management strategy volume in 2070—253,000 acre-feet per year
- 112 recommended water management strategy projects with a total capital cost of \$814 million
- Conservation accounts for 63 percent of 2070 strategy volumes
- Groundwater development accounts for 20 percent of 2070 strategy volumes

Population and water demands

Approximately 2 percent of the state's 2020 population will reside in the Llano Estacado (O) Region. Between 2020 and 2070, the region's population is projected to increase approximately 48 percent (Table O.4, Figure O.2). By 2070, the total water demands for the region are projected to decrease 13 percent (Table O.4).

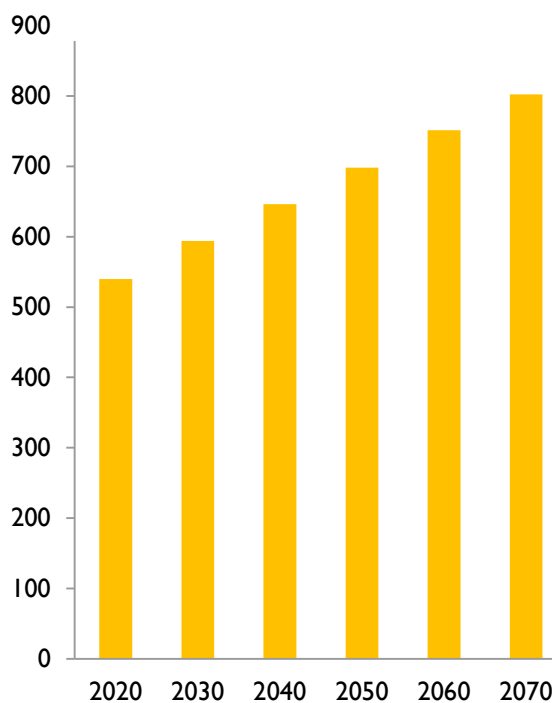
Existing water supplies

The Llano Estacado (O) Region has a variety of surface water and groundwater supply sources, with nearly all of the existing water supply in the region associated with groundwater (Table O.1, Figure O.3). By 2070 the total water supply is projected to decline 51 percent (Table O.4). This projected decline in supply is primarily a result of reduced availability from the Ogallala and Edwards-Trinity (Plateau) aquifers.

Needs

On a region-wide basis the Llano Estacado (O) Region has water supply deficits from 2020 and 2070. The majority of needs are associated with irrigation water users (Table O.4). In the event of drought, Region O is projected to have a total water supply need of 1,732,000 acre-feet in 2020 (Table O.4). The vast majority of unmet water needs in the region are associated with irrigation, and there are no unmet municipal needs.

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



Recommended water management strategies and cost

The Llano Estacado (O) Planning Group recommended a variety of water management strategies and projects that would provide less water than is required to meet future needs (Figures O.4 and O.5, Tables O.2 and O.3). In all, the 124 strategies and 112 projects would provide 253,000 acre-feet of additional water supply by the year 2070 at a total capital cost of \$814 million.

Conservation

Conservation strategies represent 63 percent of the total volume of water associated with all recommended strategies in 2070. Water conservation was recommended for every irrigation water user group in the region and municipal water user groups that had a water use greater than 140 gallons per capita per day, or that specifically mentioned a municipal water conservation strategy in their water user group survey.

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

Water supply source	2020	2070
Surface water		
Remaining surface water sources providing less than 2% each	8,000	8,000
Surface water subtotal:	8,000	8,000
Groundwater		
Ogallala Aquifer	1,889,000	872,000
Other Aquifer	42,000	42,000
Remaining groundwater sources providing less than 2% each	18,000	17,000
Groundwater subtotal:	1,949,000	931,000
Reuse		
	44,000	38,000
Region total	2,001,000	977,000

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

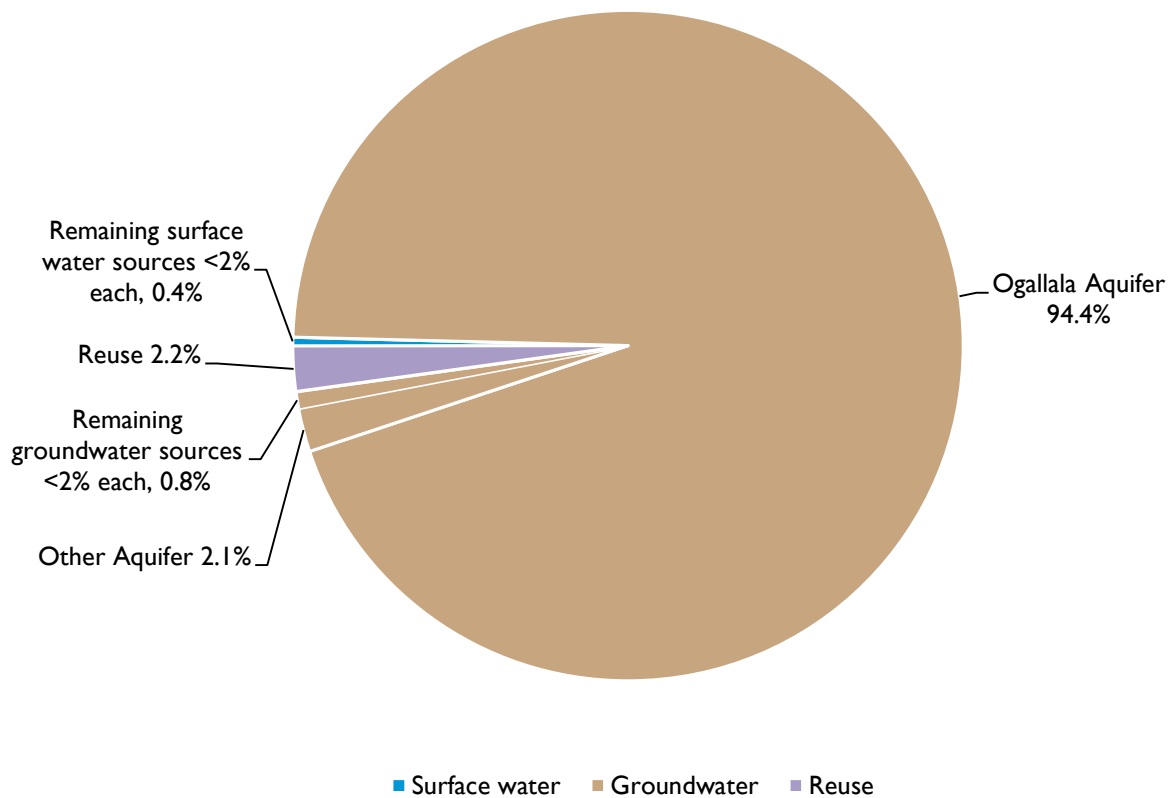


Table O.2 - Ten recommended water management strategy projects with largest capital cost

Recommended water management strategy project	Online decade	Sponsor(s)	Associated capital cost
Lubbock County - Lubbock North Fork Scalping Operation	2020	Lubbock	\$119,825,000
Lubbock County - Lubbock Jim Bertram Lake 7	2020	Lubbock	\$82,066,000
Lubbock County - Lubbock CRMWA Aquifer Storage and Recovery	2030	Lubbock	\$62,345,000
Lubbock County - Lubbock Lake Alan Henry Phase 2	2020	Lubbock	\$57,799,000
Lubbock County - Lubbock South Lubbock Well Field	2030	Lubbock	\$53,856,000
Lubbock County - Lubbock Brackish Well Field at the South Water Treatment Plant	2020	Lubbock	\$34,532,000
Gaines County - Seminole Local Groundwater Development	2030	Seminole	\$32,754,000
Gaines County - Seminole Groundwater Desalination	2020	Seminole	\$31,572,000
Lubbock County - Wolfforth Potable Reuse	2030	Wolfforth	\$21,822,000
Lubbock County - Lubbock Bailey County Well Field Initial Capacity Maintenance	2020	Lubbock	\$19,620,000
<i>Other recommended projects</i>	<i>various</i>	<i>102 various</i>	<i>\$298,095,000</i>
Total capital cost			\$814,286,000

Table O.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
Expand Capacity CRMWA II	478,000	8	24,000
Hale County Irrigation Water Conservation	na	1	17,000
Floyd County Irrigation Water Conservation	na	1	15,000
Crosby County Irrigation Water Conservation	na	1	14,000
Lubbock County - Lubbock Jim Bertram Lake 7	400,000	1	14,000
Replace Well Capacity for CRMWA I	478,000	8	14,000
Dawson County Irrigation Water Conservation	na	1	13,000
Lubbock County Irrigation Water Conservation	na	1	11,000
Lynn County Irrigation Water Conservation	na	1	10,000
Gaines County Irrigation Water Conservation	na	1	10,000
<i>Other recommended strategies</i>		<i>100</i>	<i>107,000</i>
Total annual water volume			249,000

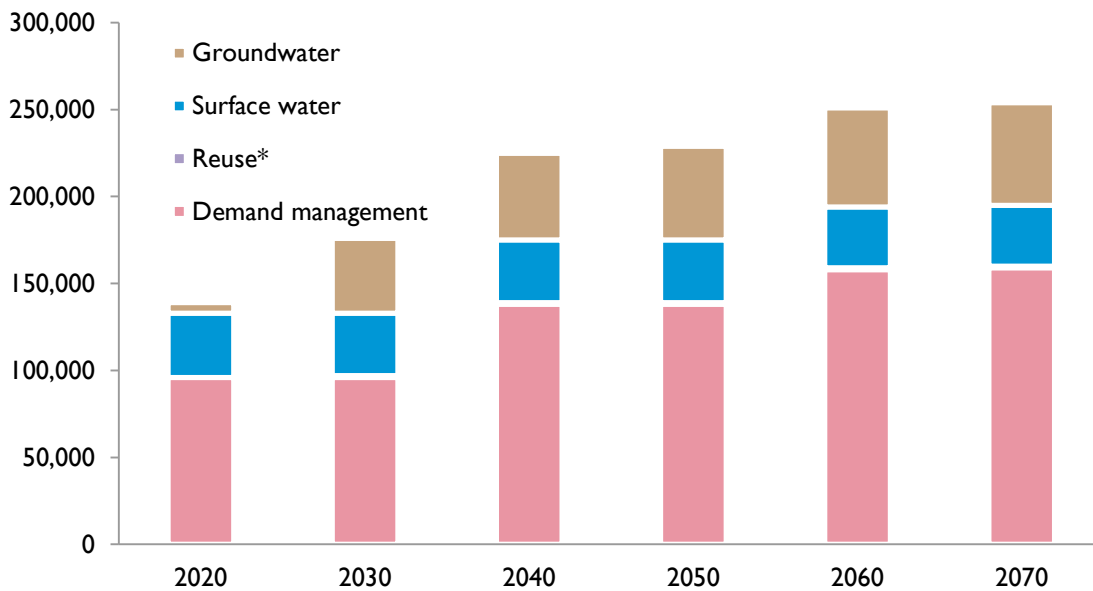
* Multiple strategies may serve portions of the same population

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

	Decade	2020	2030	2040	2050	2060	2070	change
Population		540,000	594,000	646,000	698,000	751,000	802,000	49%
Existing supplies	Surface water	8,000	8,000	8,000	8,000	8,000	8,000	0%
	Groundwater	1,948,000	1,716,000	1,450,000	1,276,000	1,143,000	931,000	-52%
	Reuse	44,000	44,000	44,000	44,000	41,000	38,000	-14%
	Total water supplies	2,001,000	1,769,000	1,503,000	1,329,000	1,192,000	977,000	-51%
Demands	Municipal	81,000	87,000	92,000	99,000	106,000	113,000	40%
	County-other	14,000	15,000	16,000	17,000	18,000	20,000	43%
	Manufacturing	17,000	17,000	18,000	19,000	20,000	21,000	24%
	Mining	16,000	17,000	16,000	13,000	11,000	9,000	-44%
	Irrigation	3,518,000	3,396,000	3,272,000	3,153,000	3,039,000	2,938,000	-16%
	Steam-electric	26,000	30,000	36,000	42,000	50,000	59,000	127%
	Livestock	39,000	45,000	46,000	48,000	49,000	51,000	31%
	Total water demand	3,711,000	3,608,000	3,496,000	3,391,000	3,293,000	3,211,000	-13%
Needs	Municipal	13,000	24,000	30,000	37,000	46,000	54,000	315%
	County-other	<500	1,000	1,000	2,000	2,000	2,000	100%*
	Manufacturing	5,000	5,000	4,000	5,000	7,000	7,000	40%
	Mining	10,000	12,000	11,000	10,000	9,000	7,000	-30%
	Irrigation	1,684,000	1,796,000	1,948,000	2,004,000	2,025,000	2,140,000	27%
	Steam-electric	8,000	7,000	3,000	4,000	5,000	12,000	50%
	Livestock	12,000	15,000	13,000	16,000	19,000	18,000	50%
	Total water needs	1,732,000	1,858,000	2,011,000	2,078,000	2,112,000	2,240,000	29%
Strategy supplies	Municipal	46,000	84,000	89,000	93,000	95,000	98,000	113%
	County-other	1,000	1,000	2,000	2,000	3,000	3,000	200%
	Irrigation	92,000	92,000	133,000	133,000	153,000	153,000	66%
	Total strategy supplies	139,000	177,000	224,000	228,000	251,000	253,000	82%

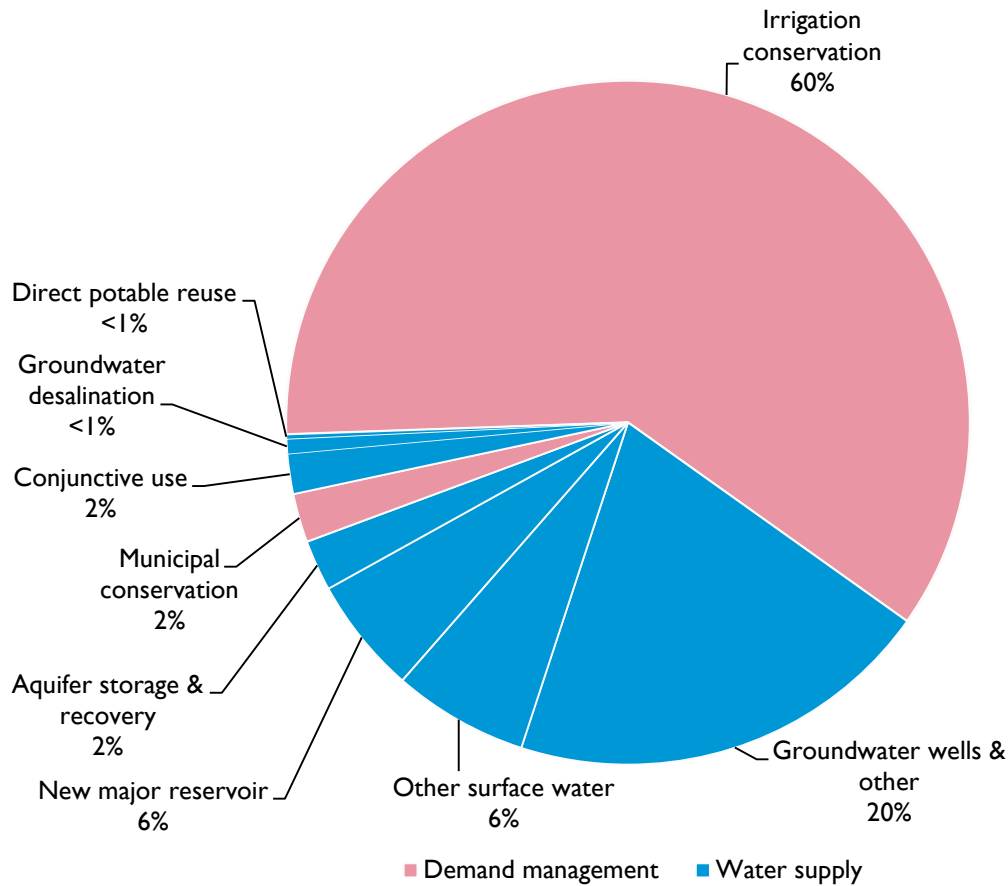
* Based on change from the earliest decade of volumes ≥ 500 acre-feet per year

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



* Strategy volume at a scale not represented in the figure

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



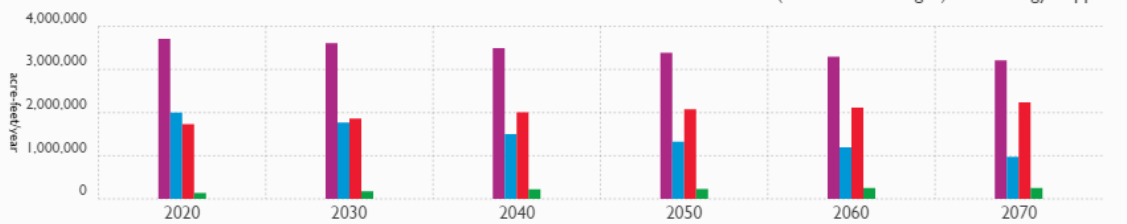
Llano Estacado (O) voting planning group members (2012 – 2016)

Harold P. "Bo" Brown (Chair), agriculture; Melanie Barnes, public; Delaine Baucum, agriculture; Bruce Blalack, municipalities; Jack Campsey, groundwater management areas; Jason Coleman, water districts; Jim Conkwright, water districts; Mike DeLoach, counties; Delmon Ellison, Jr., agriculture; Harvey Everhart, water districts; Tom Fulton, water districts; Richard Gillespie, industry; Bill Harbin, electric-generating utilities; Ronnie Hopper, groundwater management areas; Doug Hutcheson, water utilities; Bob Josserand, municipalities; Mark Kirkpatrick, agriculture; Richard Leonard, agriculture; Mike McClendon, river authorities; Don McElroy, small business; E.W. (Gene) Montgomery, industry; Charles Morris, counties; Ken Rainwater, public; Kent Satterwhite, water districts; Tom Simons, municipalities; Aubrey Spear, municipalities; Jim Steiert, environment; John Taylor, municipalities; Jimmy Wedel, agriculture

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

The Llano Estacado (Region O) Regional Water Planning Area encompasses 21 counties in the southern High Plains of Texas. The region lies within the upstream parts of four major river basins (Canadian, Red, Brazos, and Colorado). Groundwater from the Ogallala Aquifer is the region's primary source of water and is used at a rate that exceeds recharge. The largest economic sectors in the region are livestock and crop operations, producing about 60 percent of the state's total cotton crop. Major cities in the region include Lubbock, Plainview, Levelland, Lamesa, Hereford, and Brownfield. The 2016 Region O Regional Water Plan can be found on the TWDB Web site at <http://www.twdb.texas.gov/waterplanning/rwp/plans/2016/#region-o>

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



	2020	2030	2040	2050	2060	2070
Demands	3,710,638	3,607,623	3,495,840	3,390,545	3,293,186	3,210,784
Existing Supplies	2,000,640	1,768,802	1,502,503	1,328,537	1,192,191	976,717
Needs (Potential Shortages)	1,731,832	1,858,248	2,010,898	2,078,332	2,112,214	2,240,096
Strategy Supplies	138,863	176,880	224,276	228,065	250,694	253,043



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