Texas Water Conditions Report

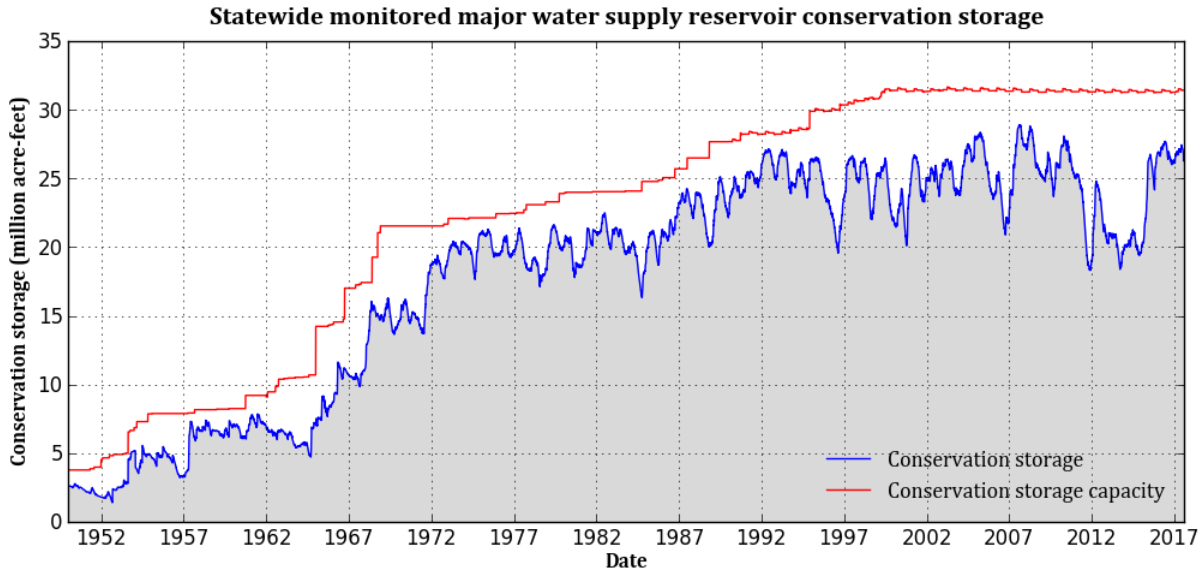
Texas Water Development Board

*July 2017 RESERVOIR STORAGE**

At the end of July 2017, total conservation storage* in 118 of the state's major water supply reservoirs was 26.8 million acre-feet or 83 percent of total conservation storage capacity. This is approximately 0.6 million acre-feet less than a month ago and 0.29 million acre-feet less than storage at this time last year.

Twenty-three (23) reservoirs held 100 percent of conservation storage capacity, primarily in the North Central (11 reservoirs) and East (9 reservoirs) regions. One reservoir, Palo Duro (1 percent), remained below 10 percent full.

Total combined storage was at or above normal (storage ≥70 percent) in the East (98 percent), North Central (97 percent), Upper Coast (94 percent), South Central (89 percent), and Low Rolling Plains (75 percent) regions. The High Plains (21 percent), Trans-Pecos (26 percent), and Southern (32 percent) regions had the lowest percentage of storage. Overall, storage decreased in all nine regions over the past month.



*Storage is based on end of the month data in 117 major reservoirs that represent 96 percent of the total conservation storage capacity of 188 major water supply reservoirs in Texas plus Elephant Butte reservoir in New Mexico. Major reservoirs are defined as having a conservation storage capacity of 5,000 acre-feet or greater. Only the Texas share of storage in border reservoirs is counted.

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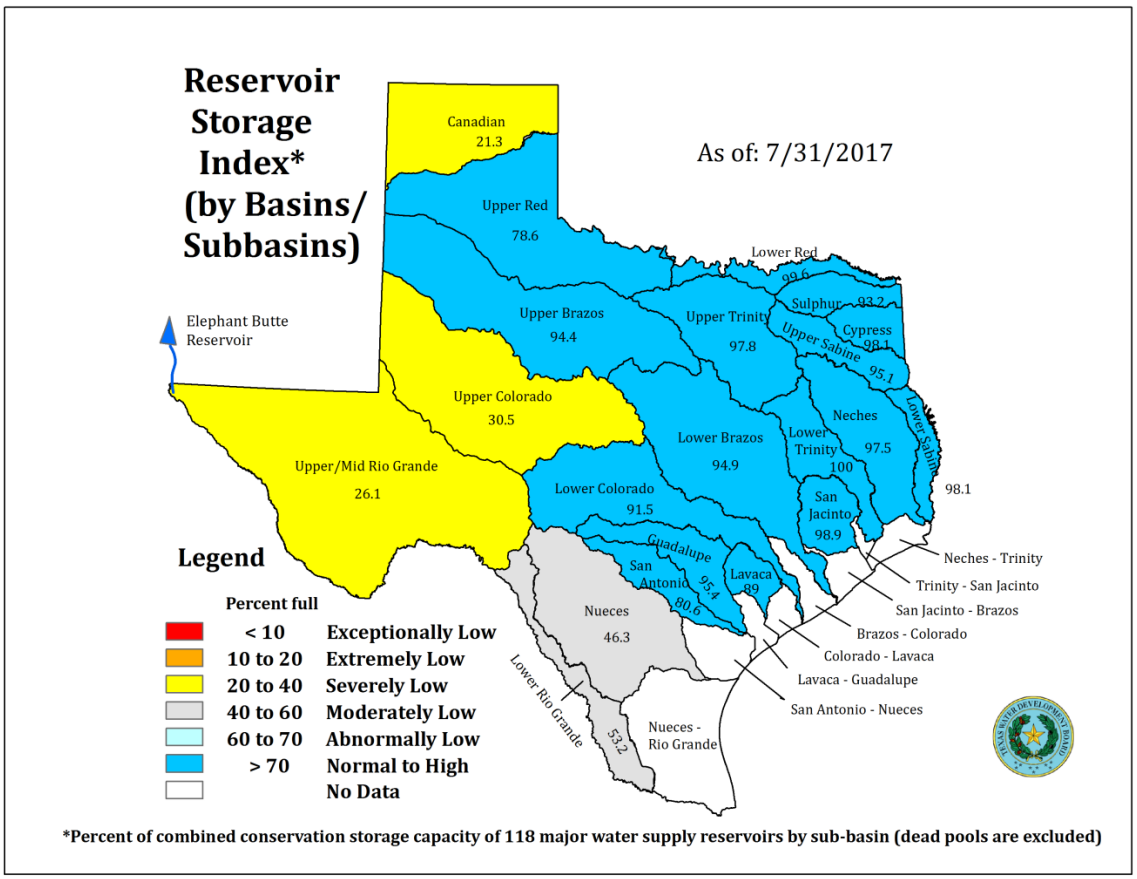
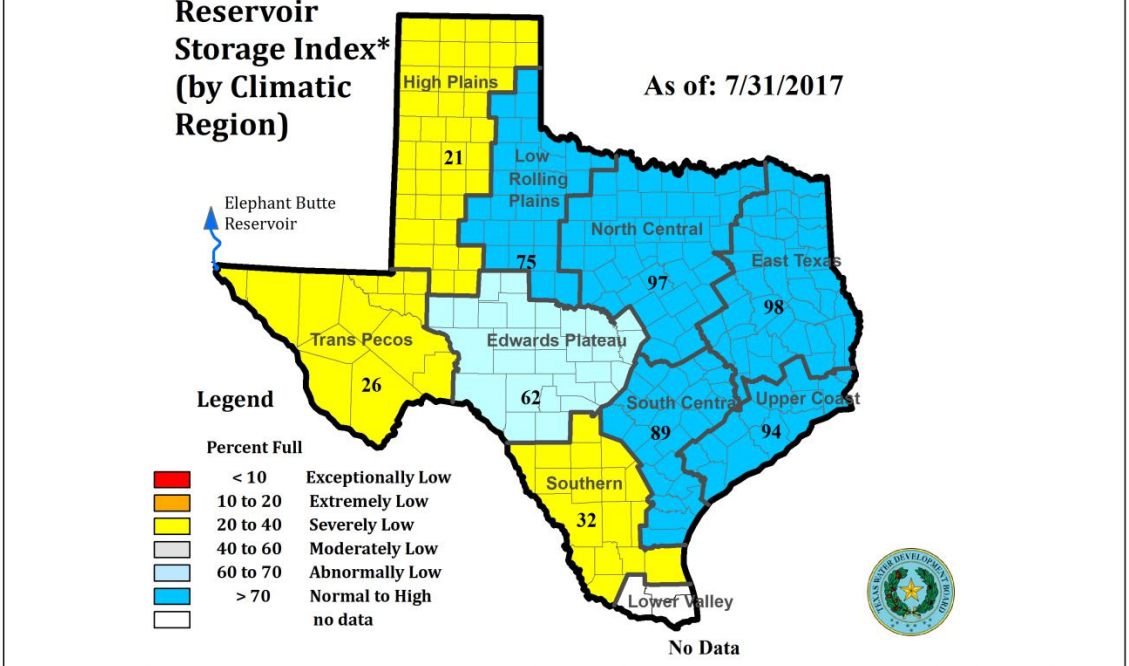
JULY 2017 RESERVOIR CONDITIONS



*Percent of combined conservation storage capacity of 118 major water supply reservoirs by sub-basin (dead pools are excluded)



*Percent of combined conservation storage capacity of 118 major water supply reservoirs by that region (dead pools are excluded)

*Reservoir Storage Index is defined as the percent full of conservation storage capacity.

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Conservation storage capacity (acre-feet)	Conservation storage end of July 2017 (acre-feet)	(%)	Change since end of June 2017 (acre-feet)**	(%)	Change since end of July 2016 (acre-feet)**	(%)
HIGH PLAINS							
MacKenzie Reservoir	46,450	6,787	15	-139	-0	-285	-1
Meredith, Lake	500,000	119,013	24	-1,980	-0	-7,120	-1
Palo Duro Reservoir	61,066	616	1	-88	-0	-922	-2
White River Lake	29,880	6,536	22	199	1	-1,843	-6
TOTAL	**637,396**	**132,952**	**21**	**-2,008**	**-0**	**-10,170**	**-2**
LOW ROLLING PLAINS							
Abilene, Lake	7,900	6,781	86	-559	-7	-536	-7
Alan Henry Reservoir	94,808	84,104	89	-1,327	-1	-3,204	-3
Champion Creek Reservoir	41,580	20,987	50	-686	-2	10,423	25
Coleman, Lake	38,075	36,245	95	-1,001	-3	-321	-1
Colorado City, Lake	30,758	13,640	44	-666	-2	5,995	19
Fort Phantom Hill, Lake	70,030	67,704	97	-2,326	-3	191	0
Greenbelt Lake	59,968	15,533	26	-745	-1	549	1
Hords Creek Lake	8,443	6,334	75	-326	-4	-1,256	-15
J. B. Thomas, Lake	199,931	110,998	56	-4,339	-2	-19,104	-10
Kemp, Lake	245,307	226,266	92	-19,041	-8	-11,000	-4
Millers Creek Reservoir	26,768	26,768	100	0	0	1,984	7
North Fork Buffalo Creek Reservoir	15,400	11,631	76	-805	-5	-598	-4
Stamford, Lake	51,570	51,570	100	0	0	3,965	8
Sweetwater, Lake	12,267	2,707	22	-165	-1	-48	-0
TOTAL	**902,805**	**681,268**	**75**	**-31,986**	**-4**	**-12,960**	**-1**
NORTH CENTRAL							
Amon G Carter, Lake	19,266	18,116	94	-832	-4	-1,150	-6
Aquilla Lake	43,243	43,243	100	0	0	0	0
Arlington, Lake	40,188	36,486	91	-828	-2	1,272	3
Arrowhead, Lake	230,359	205,764	89	-8,673	-4	-7,977	-3
Bardwell Lake	46,122	45,372	98	-750	-2	-124	-0
Belton Lake	435,225	432,922	99	-2,303	-1	-2,303	-1
Benbrook Lake	85,648	81,430	95	4,764	6	-1,453	-2
Bonham, Lake	11,027	8,690	79	678	6	-998	-9
Bridgeport, Lake	366,236	359,966	98	-6,270	-2	-6,270	-2
*Brownwood, Lake	128,839	123,608	96	-4,588	-4	-1,457	-1
*Cisco, Lake	29,003	25,823	89	-696	-2	-1,427	-5
Crook, Lake	9,195	9,153	100	229	2	746	8
Eagle Mountain Lake	179,880	170,041	95	-6,241	-3	-8,377	-5
Georgetown, Lake	36,823	26,275	71	-4,886	-13	-10,317	-28
Graham, Lake	45,288	44,060	97	-1,228	-3	1,356	3
Granbury, Lake	132,949	131,241	99	-1,708	-1	-1,626	-1
Granger Lake	51,822	51,822	100	0	0	0	0
Grapevine Lake	164,703	164,703	100	0	0	0	0
*Halbert, Lake	6,033	5,047	84	-189	-3	-238	-4
Hubbard Creek Reservoir	318,067	301,885	95	-9,571	-3	4,880	2
Hubert H Moss Lake	24,058	23,276	97	-555	-2	-127	-1
Jim Chapman Lake (Cooper)	260,332	225,939	87	18,804	7	-21,122	-8
Joe Pool Lake	175,358	174,620	100	-738	-0	443	0
Kickapoo, Lake	86,345	71,604	83	-3,468	-4	-11,092	-13
Lavon Lake	406,388	392,069	96	-4,485	-1	5,483	1
Leon, Lake	27,762	26,689	96	-1,073	-4	1,010	4
Lewisville Lake	563,228	555,959	99	-7,269	-1	-7,269	-1
Limestone, Lake	203,780	189,980	93	-9,602	-5	-2,653	-1
*Lost Creek Reservoir	11,950	11,426	96	-222	-2	-293	-2
*Mineral Wells, Lake	5,273	5,208	99	-65	-1	70	1
Mountain Creek, Lake	22,850	22,850	100	0	0	0	0

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Conservation storage capacity (acre-feet)	Conservation storage end of July 2017 (acre-feet)	(%)	Change since end of June 2017 (acre-feet)**	(%)	Change since end of July 2016 (acre-feet)**	(%)
		(North Central continued)					
Navarro Mills Lake	49,827	48,749	98	-1,078	-2	-1,078	-2
New Terrell City Lake	8,583	8,583	100	0	0	164	2
Nocona, Lake (Farmers Crk)	21,444	20,686	96	-318	-1	-13	-0
Palo Pinto, Lake	26,766	25,382	95	-1,384	-5	-842	-3
Pat Cleburne, Lake	26,008	25,587	98	621	2	466	2
*Pat Mayse Lake	113,683	113,683	100	0	0	2,861	3
Possum Kingdom Lake	523,873	517,520	99	-6,353	-1	-326	-0
Proctor Lake	54,762	53,523	98	-1,239	-2	-687	-1
Ray Hubbard, Lake	439,559	430,250	98	-7,429	-2	2,044	0
Ray Roberts, Lake	788,167	775,189	98	-11,844	-2	-12,978	-2
Richland-Chambers Reservoir	1,087,839	1,070,351	98	-17,488	-2	-7,658	-1
Squaw Creek, Lake	151,250	151,250	100	0	0	0	0
Stillhouse Hollow Lake	227,771	227,385	100	-386	-0	-386	-0
Tawakoni, Lake	871,685	812,765	93	0	0	-44,578	-5
Texoma, Lake (Texas)	1,258,113	1,256,621	100	-1,492	-0	-1,492	-0
Texoma, Lake (Texas & Oklahoma)	2,525,281	2,513,249	100	-131,361	-5	-82,263	-3
Waco, Lake	189,418	183,953	97	-5,465	-3	-4,413	-2
Waxahachie, Lake	10,780	10,209	95	-552	-5	-303	-3
Weatherford, Lake	17,812	16,669	94	-959	-5	125	1
Whitney, Lake	553,344	492,556	89	-45,254	-8	-27,686	-5
Worth, Lake	33,495	30,226	90	-1,739	-5	-399	-1
TOTAL	**10,621,419**	**10,256,404**	**97**	**-154,124**	**-1**	**-168,192**	**-2**
		EAST					
Athens, Lake	29,503	29,356	100	-147	-0	657	2
B A Steinhagen Lake	66,961	61,072	91	-1,320	-2	-3,792	-6
Bob Sandlin, Lake	190,822	190,130	100	-692	-0	4,628	2
Caddo, Lake	29,898	28,638	96	-1,260	-4	-1,260	-4
Cedar Creek Reservoir in Trinity	644,686	633,951	98	-10,735	-2	16,977	3
Cherokee, Lake	40,094	40,094	100	0	0	no data	
Conroe, Lake	410,988	405,251	99	-2,672	-1	4,555	1
Cypress Springs, Lake	66,756	65,853	99	-903	-1	2,956	4
Fork Reservoir, Lake	605,061	589,348	97	-14,653	-2	15,102	2
Houston County Lake	17,113	16,907	99	-206	-1	561	3
Jacksonville, Lake	25,670	25,577	100	-93	-0	242	1
*Livingston, Lake	1,785,348	1,785,348	100	0	0	0	0
Martin, Lake	75,726	72,448	96	-1,996	-3	3,009	4
Monticello, Lake	34,740	34,740	100	0	0	0	0
Murvaul, Lake	38,285	36,989	97	-1,261	-3	1,145	3
Nacogdoches, Lake	39,522	38,698	98	449	1	2,225	6
O' the Pines, Lake	268,566	261,533	97	-7,033	-3	-7,033	-3
Palestine, Lake	367,303	361,783	98	-5,520	-2	11,337	3
Sam Rayburn Reservoir	2,857,077	2,784,212	97	-72,865	-3	-2,232	-0
Striker, Lake	16,934	16,934	100	0	0	no data	
*Sulphur Springs, Lake	17,747	17,674	100	219	1	693	4
Toledo Bend Reservoir (Texas)	2,236,450	2,193,482	98	-13,676	-1	38,233	2
Toledo Bend Reservoir (Texas & Louisiana)	4,472,900	4,391,064	98	-27,351	-1	76,466	2
Tyler, Lake	72,073	70,113	97	-1,960	-3	2,283	3
Wright Patman Lake	231,496	231,496	100	0	0	0	0
TOTAL	**10,168,819**	**9,991,627**	**98**	**-136,324**	**-1**	**90,286**	**1**

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Conservation storage capacity (acre-feet)	Conservation storage end of July 2017 (acre-feet)	(%)	Change since end of June 2017 (acre-feet)**	(%)	Change since end of July 2016 (acre-feet)**	(%)
TRANS-PECOS							
Elephant Butte Reservoir (Texas)	852,491	158,893	19	-45,096	-5	76,203	9
Elephant Butte Reservoir (Texas & New Mexico)	1,973,358	367,808	19	-104,389	-5	176,395	9
Red Bluff Reservoir	151,110	103,476	68	-7,397	-5	-16,345	-11
TOTAL	**1,003,601**	**262,369**	**26**	**-52,493**	**-5**	**59,858**	**6**
EDWARDS PLATEAU							
*Amistad Reservoir (Texas)	1,840,849	1,433,706	78	10,522	1	64,369	3
*Amistad Reservoir (Texas & Mexico)	3,275,532	1,640,054	50	27,973	1	-310,115	-9
Brady Creek Reservoir	28,808	17,708	61	-616	-2	3,111	11
Buchanan, Lake	816,904	793,772	97	-11,650	-1	-16,628	-2
E. V. Spence Reservoir	517,272	73,496	14	-2,568	-0	22,195	4
Inks, Lake	13,962	12,967	93	-8	-0	-8	-0
Lyndon B Johnson, Lake	115,249	110,453	96	-428	-0	304	0
Marble Falls, Lake	6,901	6,847	99	43	1	43	1
Nasworthy	9,615	7,709	80	-181	-2	-597	-6
Oak Creek Reservoir	39,210	21,364	54	-1,031	-3	3,011	8
O. C. Fisher Lake	119,445	14,547	12	-748	-1	-4,242	-4
*O. H. Ivie Reservoir	554,340	121,697	22	-7,803	-1	-2,668	-0
Twin Buttes Reservoir	182,454	18,823	10	-2,435	-1	1,338	1
TOTAL	**4,245,009**	**2,633,089**	**62**	**-16,903**	**-0**	**70,228**	**2**
SOUTH CENTRAL							
*Austin, Lake	23,972	22,726	95	30	0	76	0
Canyon Lake	378,781	364,785	96	-8,585	-2	-13,996	-4
*Coleto Creek Reservoir	31,040	26,376	85	-1,782	-6	-2,624	-8
Medina Lake	254,823	205,465	81	-14,039	-6	-46,877	-18
Somerville Lake	147,104	142,047	97	-5,057	-3	-5,057	-3
Travis, Lake	1,113,348	974,419	88	-68,913	-6	-101,924	-9
TOTAL	**1,949,068**	**1,735,818**	**89**	**-98,346**	**-5**	**-170,402**	**-9**
UPPER COAST							
Houston, Lake	120,686	120,686	100	0	0	0	0
Texana, Lake	159,566	141,950	89	-8,732	-5	-9,001	-6
TOTAL	**280,252**	**262,636**	**94**	**-8,732**	**-3**	**-9,001**	**-3**
SOUTHERN							
Choke Canyon Reservoir	662,820	227,758	34	-10,811	-2	-2,437	-0
Corpus Christi, Lake	256,961	197,928	77	-15,614	-6	37,114	14
*Falcon Reservoir (Texas)	1,551,007	369,832	24	-70,481	-5	-178,616	-12
*Falcon Reservoir (Texas & Mexico)	2,646,817	531,493	20	-93,238	-4	-199,285	-8
TOTAL	**2,470,788**	**795,518**	**32**	**-96,906**	**-4**	**-143,939**	**-6**
STATEWIDE TOTAL							
STATEWIDE TOTAL	**32,279,157**	**26,751,681**	**83**	**-597,822**	**-2**	**-294,292**	**-1**

* Conservation volume is used as conservation storage capacity, because the dead storage is unknown.

**Monthly and yearly changes do not include reservoirs that did not have data in last month or last year, respectively.

Note:

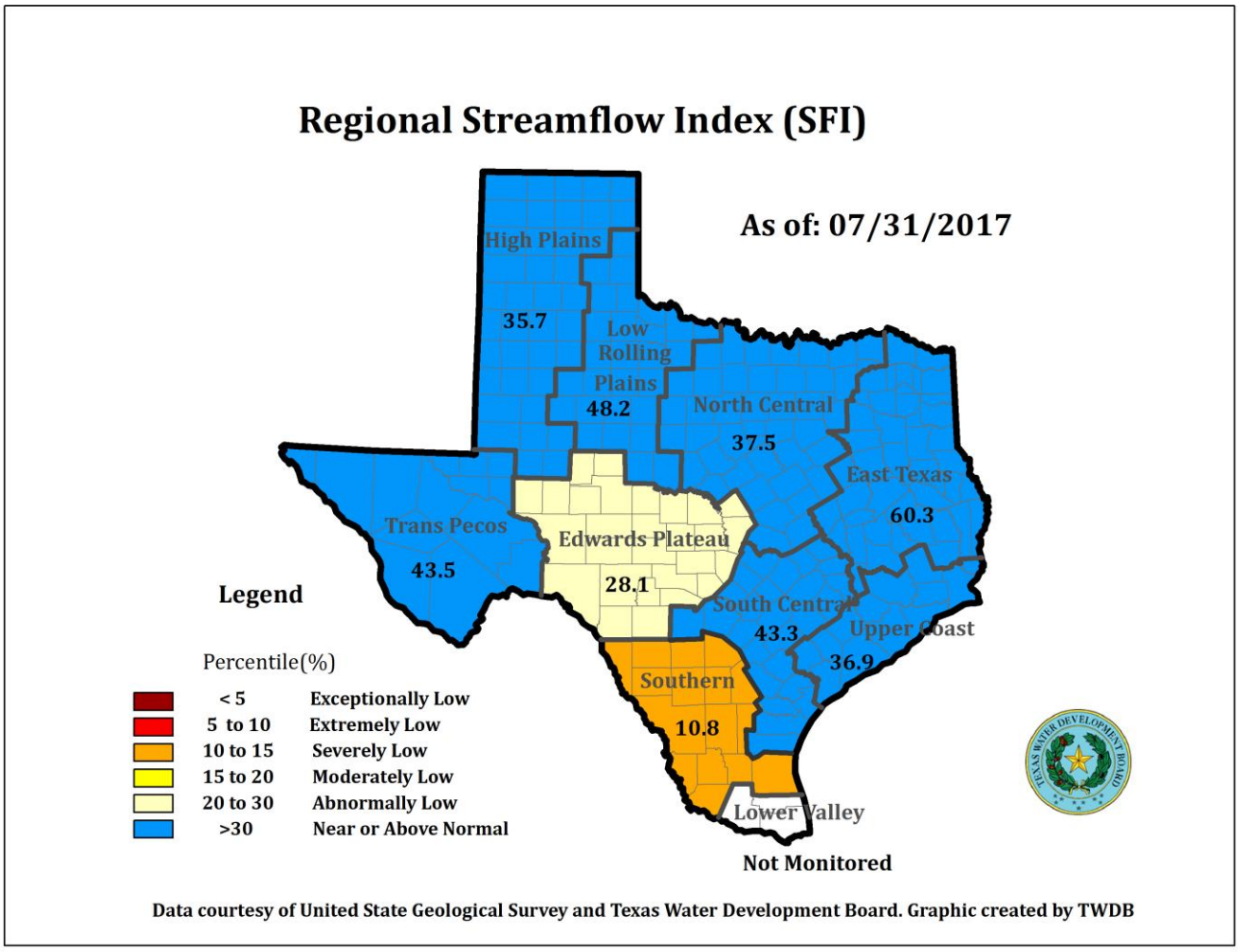
Conservation storage capacity is the space available to store water above the lowest outlet and below the top of conservation pool (some may have seasonal variations), or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included is any water in flood control storage (above the top of conservation pool or normal maximum operating level) or any water in the dead pool storage. Conservation storage percentage is based on the conservation storage capacity of the reservoir and the conservation storage in the reservoir on date shown. Percent change is given by 100 * (current conservation storage - past conservation storage)/conservation storage capacity.

JULY 2017 STREAMFLOW CONDITIONS

The computed 30-day mean flow status for 29 reporting index stations monitored this month is presented below. Mean flow increased at 15 index stations and decreased at 12 stations.

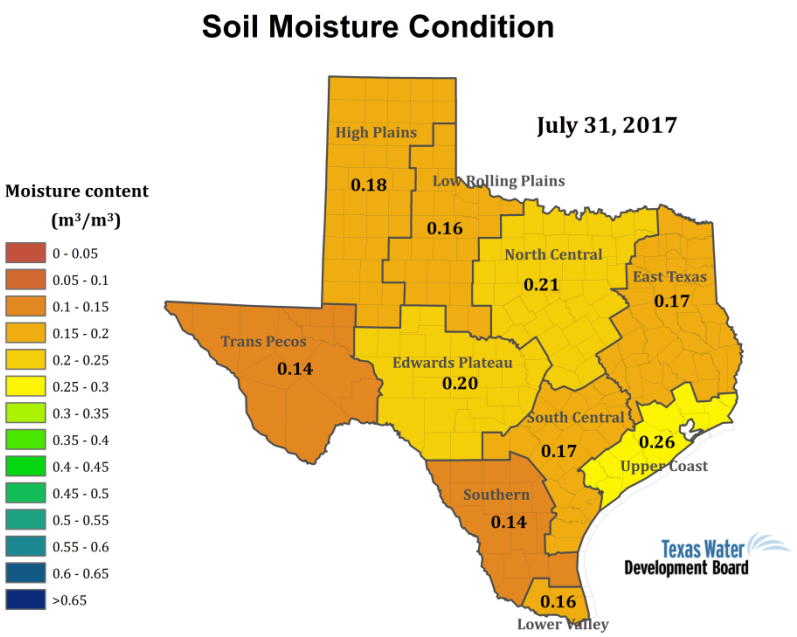
Streamflow Status	Number of Stations
Near or Above Normal (>30%)	19
Abnormally Low (20-30%)	2
Moderately Low (15-20%)	2
Severely Low (10-15%)	2
Extremely Low (5-10%)	1
Exceptionally Low (<5%)	3

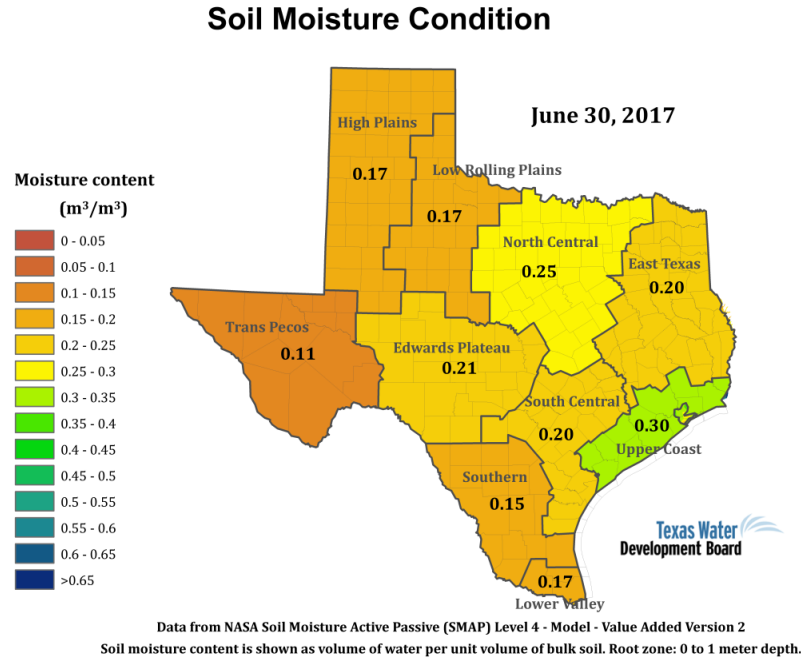
On a regional basis, as shown below, flows were abnormally low in the Edwards Plateau region and severely low in the Southern region but at or above normal in all other regions. Streamflow in the Lower Valley region is not monitored.



*Streamflow Index is defined as the percentile flow that exceeds a given percent of observed flows.

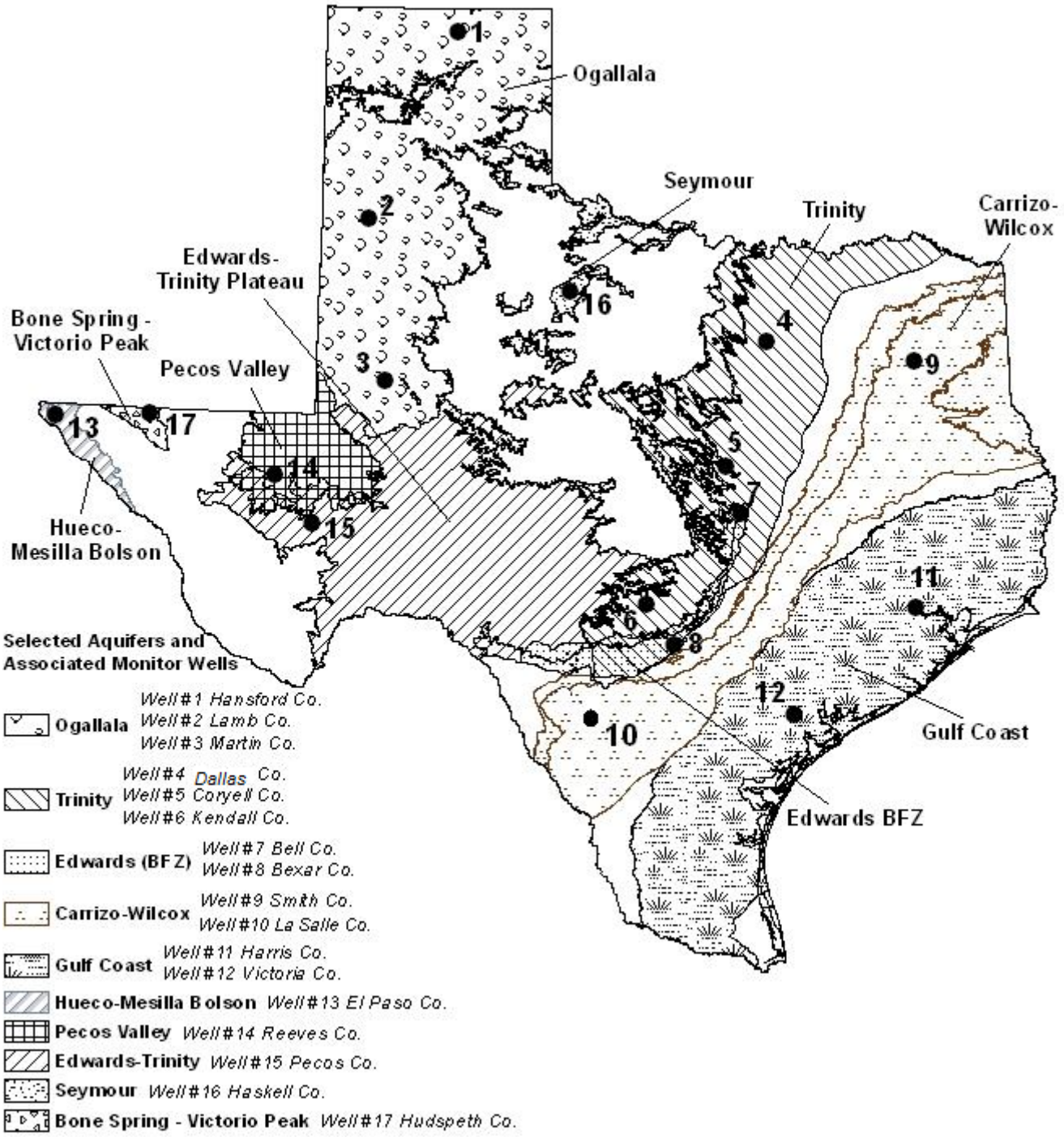
JULY 2017 SOIL MOISTURE CONDITIONS





Soil moisture in the past 31 days (*top image*, end of July 2017), as compared to soil moisture at the end of June 2017 (*bottom image*), declined in the Low Rolling Plains, North Central, East Texas, Edwards Plateau, South Central, Upper Coast, Southern, and Lower Valley regions. Soil moisture increased in the Trans-Pecos and High Plains regions.

July 2017 GROUNDWATER LEVELS IN OBSERVATION WELLS



Water-level measurements were available for all 17 key monitoring wells in the state. Water levels rose in three monitoring wells since the beginning of July, ranging from an increase of 0.19 feet in the Harris County Gulf Coast Aquifer well (#11 on map) to 0.38 feet in the El Paso County Hueco-Mesilla Bolson Aquifer well (#13 on map). Water levels declined in 13 monitoring wells, ranging from a decline of 0.10 feet in the Lamb County Ogallala Aquifer well (#2 on map) to 9.74 feet in the Coryell County Trinity Aquifer well (#5 on map), and remained the same in the Dallas County Trinity Aquifer well (#4 on map). The J-17 well (#8 on map) in San Antonio recorded a water level of 76.41 feet below land surface or 654.59 feet above mean sea level. There are currently restrictions in place for the San Antonio portion of the Edwards (Balcones Fault Zone) Aquifer, with water levels at 5.41 feet below the Stage I critical management level.

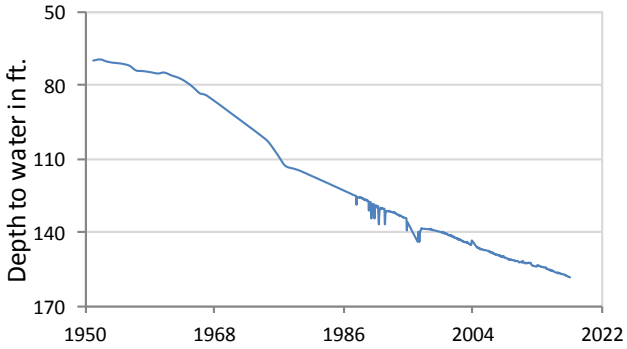
***IDs used in this publication on the aquifer map to indicate the monitoring well location (IDs 1 - 17) are different than the TWDB's six- or seven-digit state well identification number.**

Monitoring Well	July	June	Month Change	Year Change	Historical Change	First Measured
(1) Hansford 0354301	158.46	158.27	-0.19	-1.30	-88.34	1951
(2) Lamb 1053602	147.56	147.46	-0.10	-0.71	-119.39	1951
(3) Martin 2739903	143.05	143.26	0.21	1.33	-38.16	1964
(4) Dallas 3319101	491.67	491.67	0.00	2.56	-269.67	1954
(5) Coryell 4035404	525.80	516.06	-9.74	-13.47	-233.80	1955
(6) Kendall 6802609	124.40	117.14	-7.26	0.16	-64.40	1975
(7) Bell 5804816	122.92	121.89	-1.03	-3.63	0.59	2008
(8) Bexar 6837203	76.41	66.91	-9.50	-11.70	-29.77	1932
(9) Smith 3430907	432.64	431.32	-1.32	3.75	-132.64	1987
(10) La Salle 7738103	481.54	474.62	-6.92	-18.51	-228.47	2003
(11) Harris 6514409	190.18	190.37	0.19	-0.03	-54.68*	1947**
(12) Victoria 8017502	32.41	32.05	-0.36	1.79	1.59	1958
(13) El Paso 4913301	294.42	294.80	0.38	0.99	-62.52	1964
(14) Reeves 4644501	168.34	167.75	-0.59	0.30	-76.25	1952
(15) Pecos 5216802	222.68	217.79	-4.89	1.27	24.20	1976
(16) Haskell 2135748	46.63	46.34	-0.29	-0.09	-3.63	2002
(17) Hudspeth 4807516	153.97	152.48	-1.49	0.09	-50.05	1966

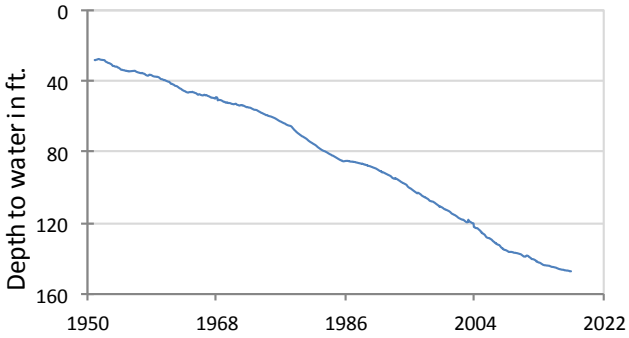
*Change since the original measurement of 135.5 feet below land surface in 1947 (**measurement not shown on the hydrograph)

July 2017 GROUNDWATER LEVELS IN OBSERVATION WELLS

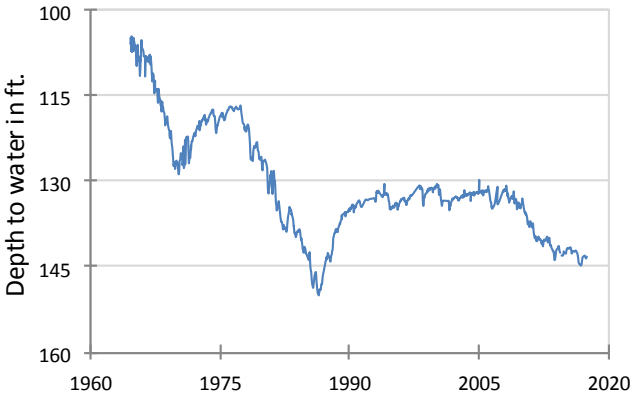
(1) State Well ID 03-54-301
Near Spearman, Hansford County
Ogallala Aquifer



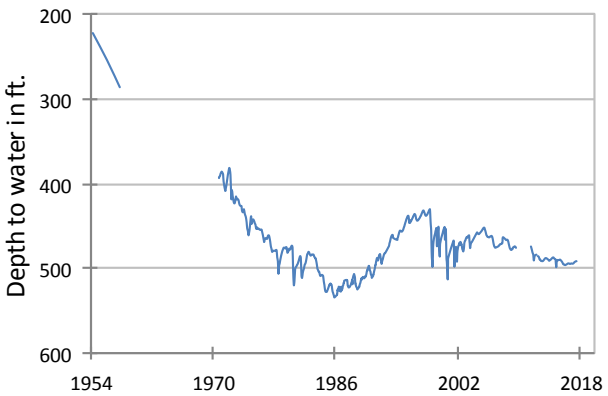
(2) State Well ID 10-53-602
Near Earth, Lamb County
Ogallala Aquifer



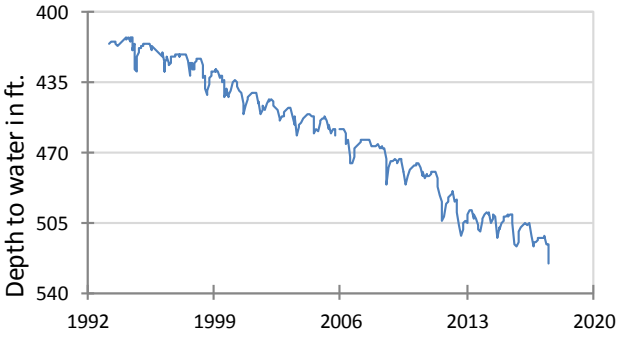
(3) State Well ID 27-39-903
Northwest Martin County
Ogallala Aquifer



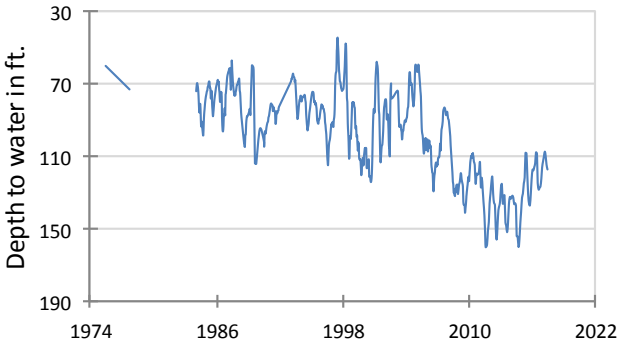
(4) State Well ID 33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer



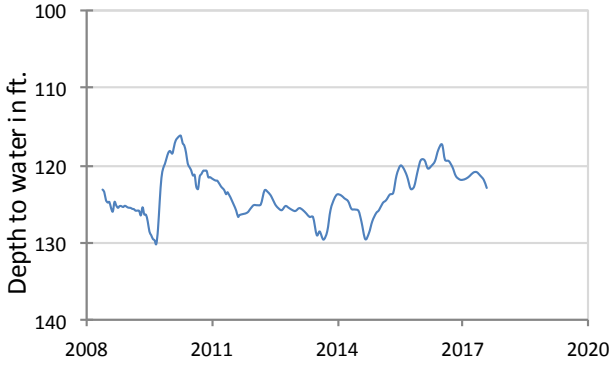
(5) State Well ID 40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer



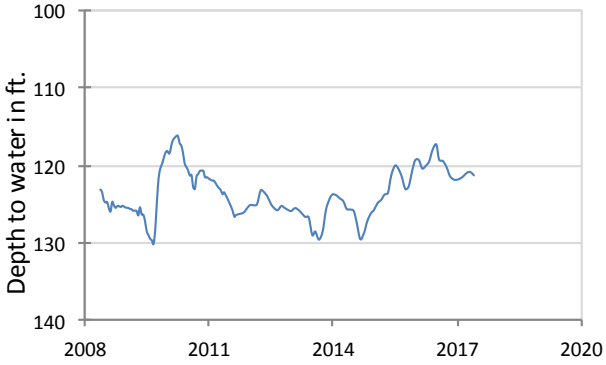
(6) State Well ID 68-02-609
Waring, Kendall County
Cow Creek Formation-Trinity Aquifer



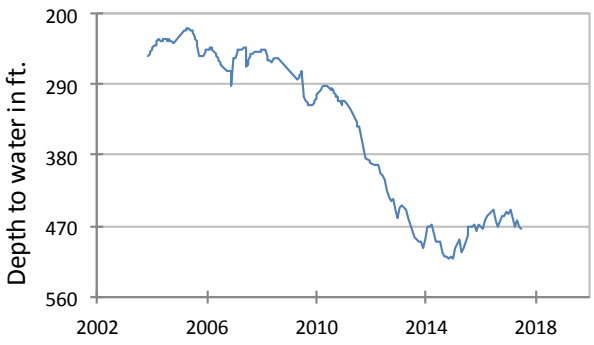
(7) State Well ID 58-04-816
Near Salado, Bell County
Edwards (Balcones Fault Zone) Aquifer



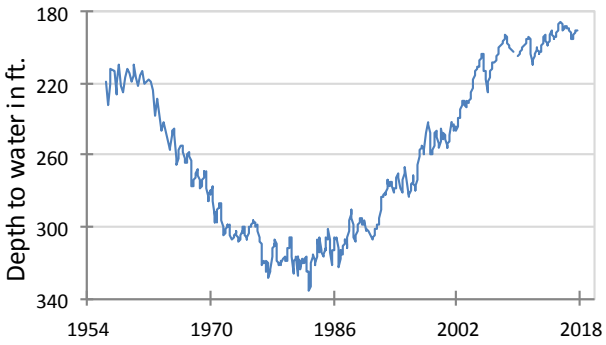
(9) State Well ID 34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer



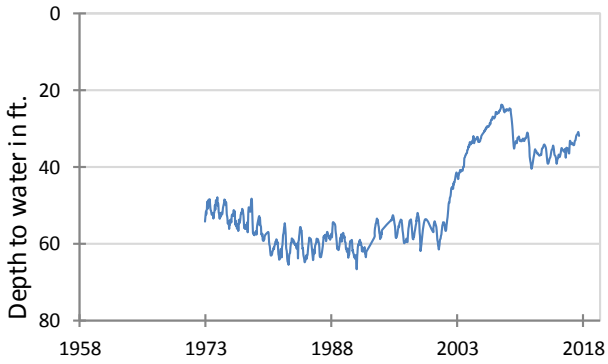
(10) State Well ID 77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer



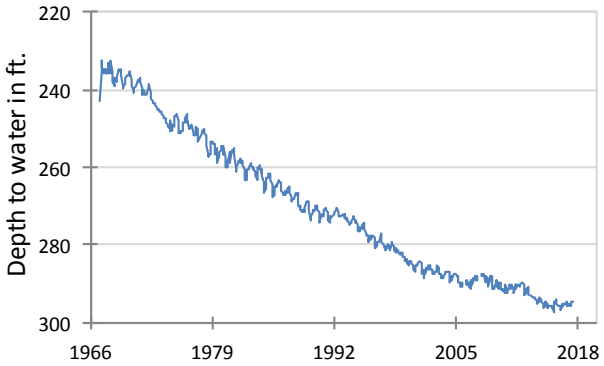
(11) State Well ID 65-14-409
Alief, Harris County
Evangeline Formation-Gulf Coast Aquifer



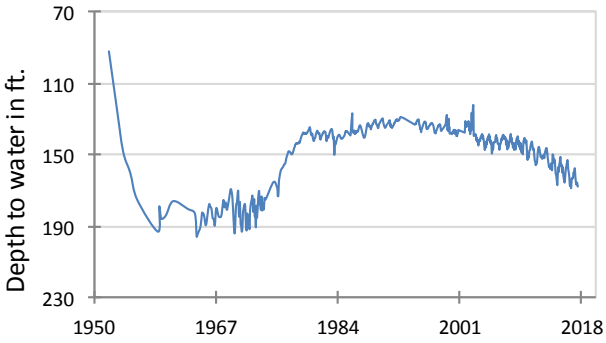
(12) State Well ID 80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



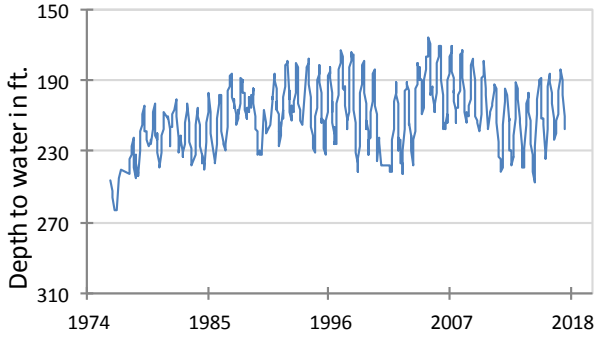
(13) State Well ID 49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolson Aquifer



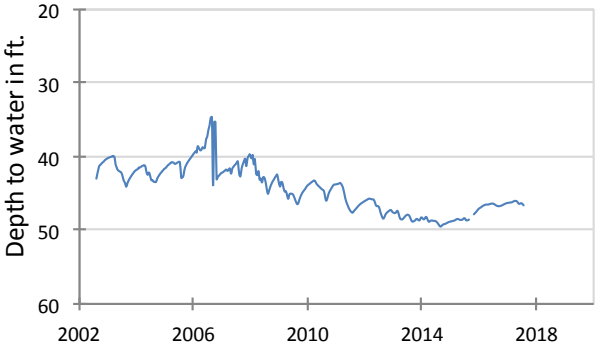
(14) State Well ID 46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



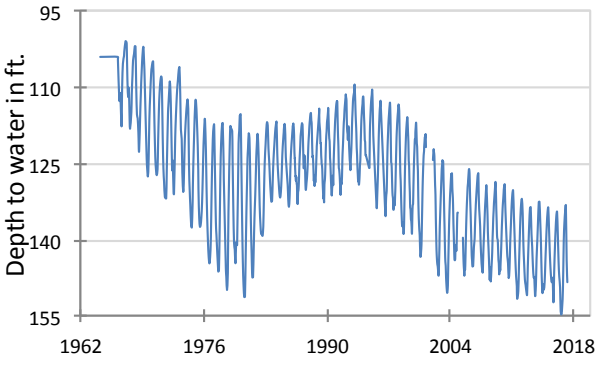
(15) State Well ID 52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



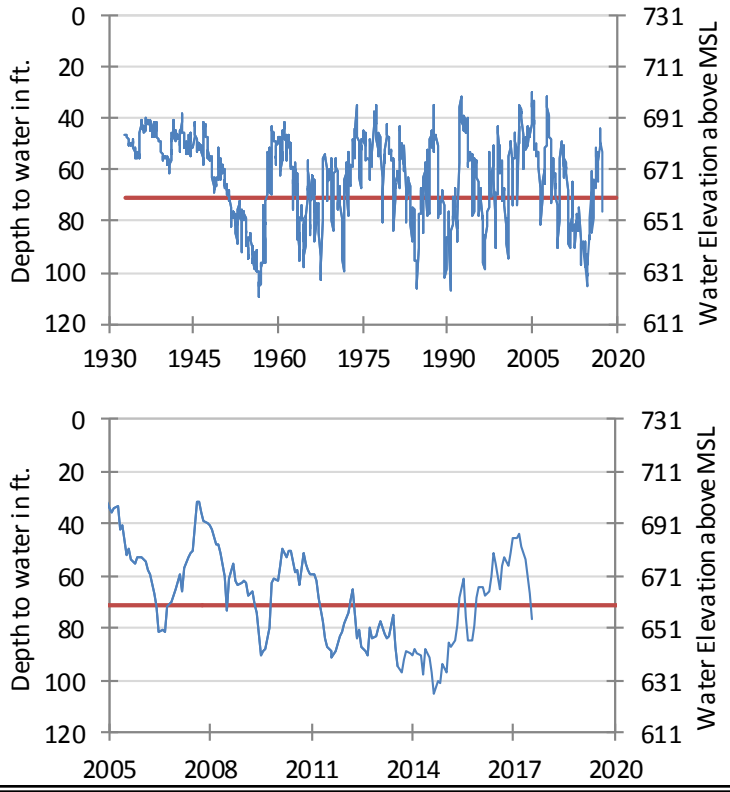
(16) State Well ID 21-35-748
Near O'Brien, Haskell County
Seymour Aquifer



(17) State Well ID 48-07-516
Dell City, Hudspeth County
Bone Spring - Victorio Peak Aquifer



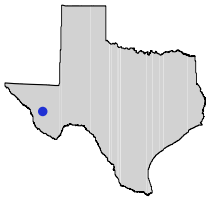
(8) State Well ID 68-37-203 (J-17)
In San Antonio, Bexar County
Edwards (Balcones Fault Zone) Aquifer



The late July water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, elevation 731 feet above mean sea level, was 76.41 feet below land surface, or 654.59 feet above mean sea level. This was 9.5 feet below last month's measurement, 11.70 feet below last year's measurement, and 29.77 feet below the initial measurement recorded in 1932.

***** Water levels below the red line indicate periods in which Edwards Aquifer Authority Stage I drought restrictions are in effect. *****

HYDROGRAPH OF THE MONTH

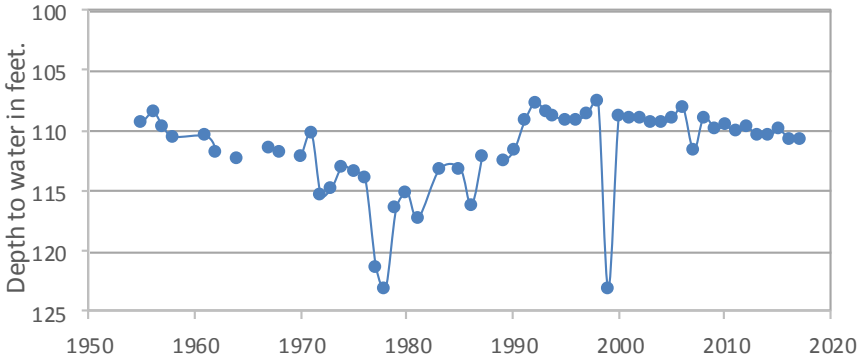


Each month this space features a new hydrograph (marked with the • symbol on the map) depicting different aquifers and their conditions in Texas.

West Texas Bolsons Aquifer

The West Texas Bolsons Aquifer is a minor aquifer located in several basins, or bolsons, in Far West Texas. The aquifer occurs as water-bearing, basin-fill deposits as much as 3,000 feet thick. It is composed of eroded materials that vary depending on the mountains bordering the basins and the manner in which the sediments were deposited. Sediments range from the fine-grained silt and clay of lake deposits to the coarse-grained volcanic rock and limestone, averaging at about 580 feet. Groundwater quality varies depending on the basin, ranging from freshwater, containing less than 1,000 milligrams per liter of total dissolved solids, to slightly to moderately saline water, containing between 1,000 and 4,000 milligrams per liter of total dissolved solids. Groundwater from the West Texas Bolsons is used for irrigation and livestock throughout the area. It is also used in some municipal supply. From the 1950s to the present, water levels in many Bolsons wells have been in decline.

Well #5119902, 142 feet deep
Unused Well, Jeff Davis County



The first recorded water-level measurement for this unused well was 109.35 feet below land surface, measured in 1955 by the U.S. Geological Survey. The TWDB has consistently measured this well every year since 1969. The lowest recorded water level measurement was 123.14 in 1999. The highest recorded water level measurement was 107.55 in 1998. The water level has remained relatively stable with minor fluctuations of generally no more than a few feet, with a few suspected pumping measurements showing fluctuations of up to 13 feet since 1969.