Texas Water Conditions Report

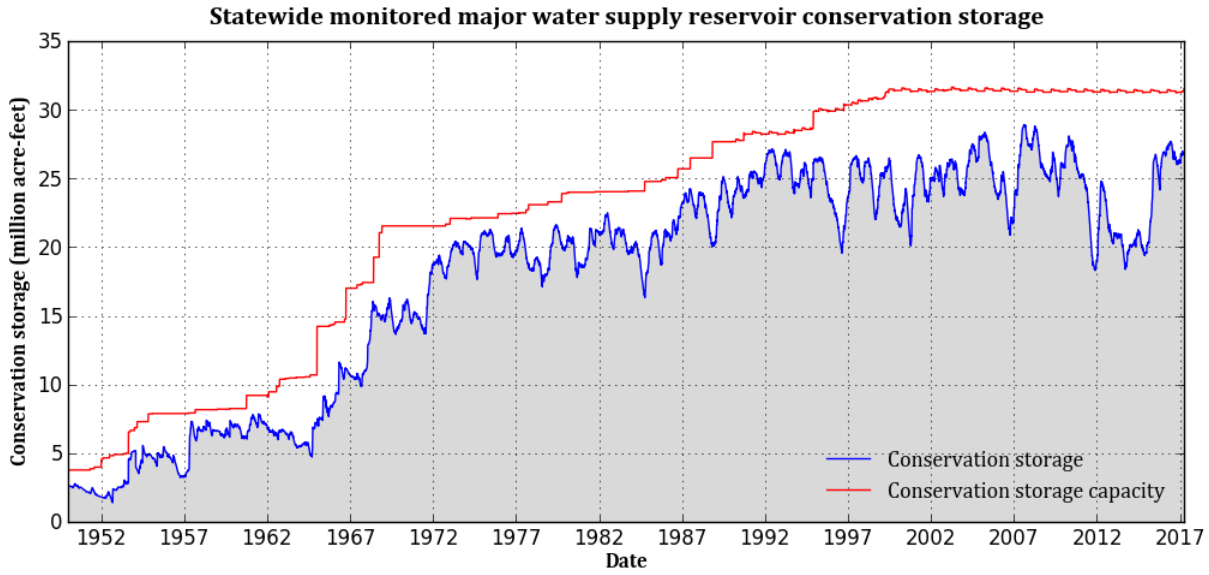
Texas Water Development Board

*MARCH 2017 RESERVOIR STORAGE**

At the end of March 2017, total conservation storage* in 118 of the state's major water supply reservoirs was at 26.9 million acre-feet or 84 percent of total conservation storage capacity. This is approximately 0.19 million acre-feet less than a month ago and 0.5 million acre-feet less than storage at this time last year.

Forty-eight (48) reservoirs held 100 percent of conservation storage capacity, primarily in the North Central (26 reservoirs) and East (14 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 Upper Coast (100 percent), South Central (99 percent), North Central (96 percent), East (96 percent), and Low Rolling Plains (80 percent) regions. The region with the lowest percentage of storage was the High Plains (21 percent) region. Overall, storage increased in five regions but declined in four 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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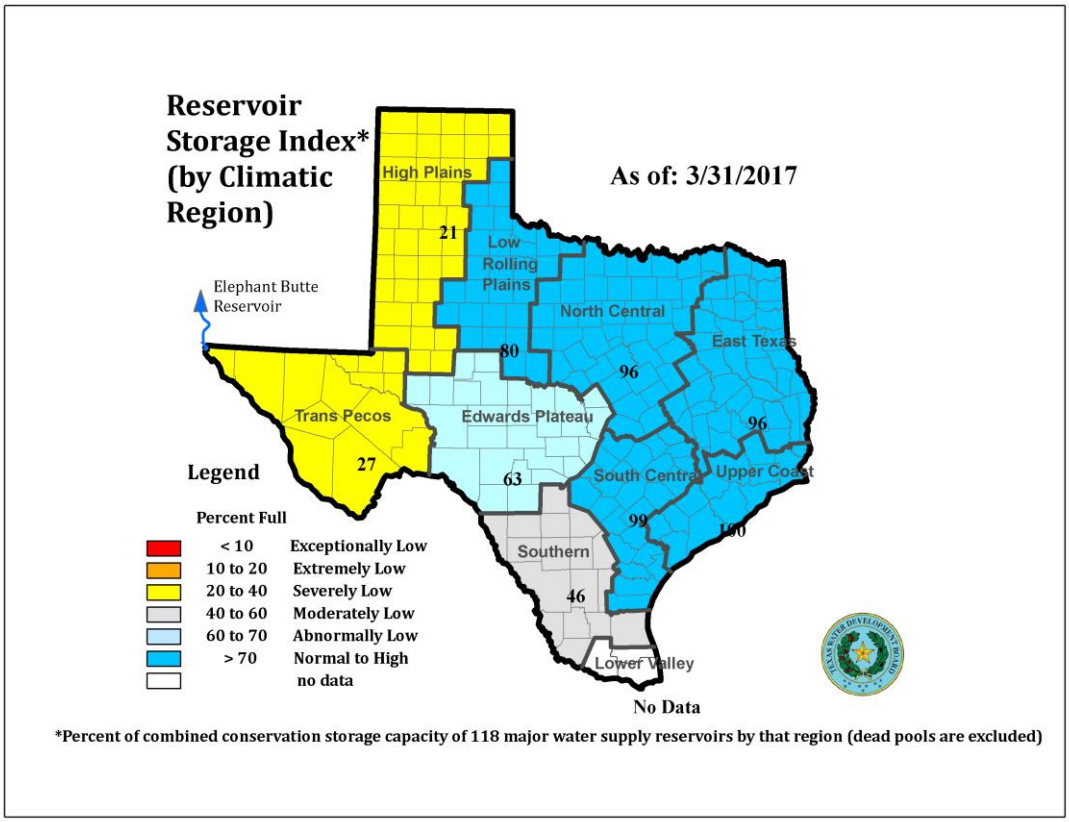
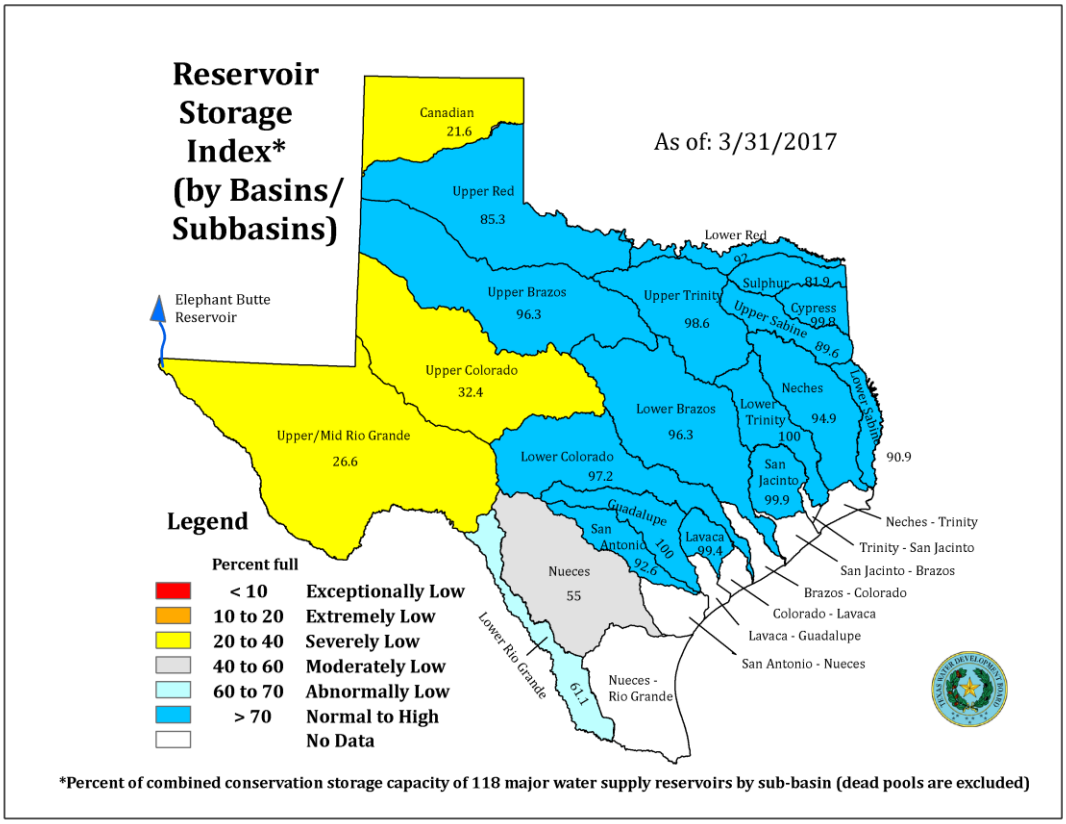
MARCH 2017 RESERVOIR CONDITIONS



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



*Percent of combined conservation storage capacity of 118 major water supply reservoirs by sub-basin (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 March 2017 (acre-feet)	(%)	Change since end of February 2017 (acre-feet)**	(%)	Change since end of March 2016 (acre-feet)**	(%)
HIGH PLAINS							
MacKenzie Reservoir	46,450	6,835	15	-58	-0	-592	-1
Meredith, Lake	500,000	120,331	24	1,258	0	-11,740	-2
Palo Duro Reservoir	61,066	880	1	-56	-0	-830	-1
White River Lake	29,880	7,412	25	-119	-0	-2,149	-7
TOTAL	**637,396**	**135,458**	**21**	**1,025**	**0**	**-15,311**	**-2**
LOW ROLLING PLAINS							
Abilene, Lake	7,900	7,650	97	-166	-2	5,116	65
Alan Henry Reservoir	94,808	89,888	95	-862	-1	2,247	2
Champion Creek Reservoir	41,580	15,683	38	-91	-0	6,357	15
Coleman, Lake	38,075	37,498	98	-343	-1	5,917	16
Colorado City, Lake	30,758	14,414	47	-151	-0	6,119	20
Fort Phantom Hill, Lake	70,030	70,030	100	0	0	0	0
Greenbelt Lake	59,968	16,658	28	224	0	2,549	4
Hords Creek Lake	8,443	7,201	85	-159	-2	3,024	36
J. B. Thomas, Lake	199,931	124,133	62	-2,237	-1	-15,452	-8
Kemp, Lake	245,307	245,307	100	0	0	29,380	12
Millers Creek Reservoir	26,768	26,768	100	0	0	0	0
North Fork Buffalo Creek Reservoir	15,400	11,982	78	-439	-3	-218	-1
Stamford, Lake	51,570	48,139	93	-1,324	-3	-3,431	-7
Sweetwater, Lake	12,267	2,939	24	82	1	1,140	9
TOTAL	**902,805**	**718,290**	**80**	**-5,466**	**-1**	**42,748**	**5**
NORTH CENTRAL							
Amon G Carter, Lake	19,266	19,266	100	0	0	0	0
Aquilla Lake	43,243	43,243	100	0	0	0	0
Arlington, Lake	40,188	37,843	94	-2,076	-5	-2,191	-5
Arrowhead, Lake	230,359	224,455	97	-5,904	-3	-143	-0
Bardwell Lake	46,122	46,122	100	0	0	0	0
Belton Lake	435,225	435,225	100	0	0	0	0
Benbrook Lake	85,648	66,012	77	-8,920	-10	-19,636	-23
Bonham, Lake	11,027	7,979	72	-255	-2	-3,047	-28
Bridgeport, Lake	366,236	366,236	100	0	0	0	0
*Brownwood, Lake	128,839	128,839	100	0	0	0	0
*Cisco, Lake	25,895	25,792	100	-103	-0	6,142	24
Crook, Lake	9,195	9,007	98	31	0	-136	-1
Eagle Mountain Lake	179,880	179,880	100	0	0	0	0
Georgetown, Lake	36,823	36,823	100	0	0	0	0
Graham, Lake	45,288	44,869	99	-419	-1	172	0
Granbury, Lake	132,949	132,215	99	-326	-0	0	0
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	5,004	83	-446	-7	-270	-4
Hubbard Creek Reservoir	318,067	312,916	98	-2,198	-1	169,346	53
Hubert H Moss Lake	24,058	23,821	99	-53	-0	2,223	9
Jim Chapman Lake (Cooper)	260,332	190,875	73	-9,105	-3	-69,457	-27
Joe Pool Lake	175,358	175,358	100	0	0	0	0
Kickapoo, Lake	86,345	78,247	91	-2,348	-3	-6,697	-8
Lavon Lake	406,388	366,253	90	4,393	1	-40,135	-10
Leon, Lake	27,762	23,478	85	-485	-2	-4,074	-15
Lewisville Lake	563,228	563,228	100	0	0	0	0
Limestone, Lake	203,780	203,780	100	0	0	0	0
*Lost Creek Reservoir	11,950	11,912	100	-38	-0	-38	-0
*Mineral Wells, Lake	5,273	5,273	100	0	0	0	0
Mountain Creek, Lake	22,850	22,850	100	0	0	692	3

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Conservation storage capacity (acre-feet)	Conservation storage end of March 2017 (acre-feet)	(%)	Change since end of February 2017 (acre-feet)**	(%)	Change since end of March 2016 (acre-feet)**	(%)
		(North Central continued)					
Navarro Mills Lake	49,827	49,827	100	0	0	0	0
New Terrell City Lake	8,583	8,531	99	-52	-1	-52	-1
Nocona, Lake (Farmers Crk)	21,444	21,444	100	0	0	0	0
Palo Pinto, Lake	26,766	24,569	92	-556	-2	-2,197	-8
Pat Cleburne, Lake	26,008	26,008	100	0	0	0	0
*Pat Mayse Lake	113,683	100,745	89	-1,059	-1	-12,938	-11
Possum Kingdom Lake	523,873	521,752	100	-816	-0	-1,632	-0
Proctor Lake	54,762	54,210	99	-552	-1	-552	-1
Ray Hubbard, Lake	439,559	426,168	97	-1,834	-0	-13,391	-3
Ray Roberts, Lake	788,167	788,167	100	0	0	0	0
Richland-Chambers Reservoir	1,087,839	1,087,839	100	2,569	0	0	0
Squaw Creek, Lake	151,250	148,953	98	-1,696	-1	344	0
Stillhouse Hollow Lake	227,771	227,771	100	0	0	0	0
Tawakoni, Lake	871,685	763,927	88	-11,038	-1	-107,758	-12
Texoma, Lake (Texas)	1,258,113	1,159,496	92	-84,491	-7	-48,811	-4
Texoma, Lake (Texas & Oklahoma)	2,525,281	2,318,999	92	-168,982	-7	-97,621	-4
Waco, Lake	189,418	189,418	100	0	0	0	0
Waxahachie, Lake	10,780	10,780	100	0	0	0	0
Weatherford, Lake	17,812	17,401	98	-140	-1	-411	-2
Whitney, Lake	553,344	484,238	88	-41,225	-7	-69,106	-12
Worth, Lake	33,495	31,192	93	-2,303	-7	-2,303	-7
TOTAL	**10,618,311**	**10,145,762**	**96**	**-171,445**	**-2**	**-226,056**	**-2**
		EAST					
Athens, Lake	29,503	29,503	100	0	0	0	0
B A Steinhagen Lake	66,961	60,869	91	-3,892	-6	1,104	2
Bob Sandlin, Lake	190,822	190,822	100	0	0	0	0
Caddo, Lake	29,898	29,898	100	0	0	0	0
Cedar Creek Reservoir in Trinity	644,686	643,705	100	-654	-0	-981	-0
Cherokee, Lake	40,094	40,094	100	0	0	no data	
Conroe, Lake	410,988	410,988	100	0	0	384	0
Cypress Springs, Lake	66,756	65,661	98	-353	-1	-1,095	-2
Fork Reservoir, Lake	605,061	551,983	91	-742	-0	-49,638	-8
Houston County Lake	17,113	17,113	100	0	0	0	0
Jacksonville, Lake	25,670	25,670	100	0	0	0	0
*Livingston, Lake	1,785,348	1,785,348	100	0	0	0	0
Martin, Lake	75,726	69,439	92	-3,202	-4	-6,287	-8
Monticello, Lake	34,740	34,740	100	0	0	0	0
Murvaul, Lake	38,285	36,314	95	-438	-1	-1,971	-5
Nacogdoches, Lake	39,522	38,377	97	-493	-1	-687	-2
O' the Pines, Lake	241,363	241,363	100	0	0	0	0
Palestine, Lake	367,303	367,303	100	0	0	0	0
Sam Rayburn Reservoir	2,857,077	2,687,940	94	-7,693	-0	-169,137	-6
Striker, Lake	16,934	16,664	98	152	1	no data	
*Sulphur Springs, Lake	17,747	14,831	84	-131	-1	-1,239	-7
Toledo Bend Reservoir (Texas)	2,236,450	2,033,267	91	19,803	1	-203,183	-9
Toledo Bend Reservoir (Texas & Louisiana)	4,472,900	4,070,634	91	39,606	1	-513,303	-11
Tyler, Lake	72,073	72,073	100	0	0	0	0
Wright Patman Lake	122,593	122,593	100	0	0	0	0
TOTAL	**10,032,713**	**9,586,558**	**96**	**2,357**	**0**	**-432,730**	**-4**

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Conservation storage capacity (acre-feet)	Conservation storage end of March 2017 (acre-feet)	(%)	Change since end of February 2017 (acre-feet)**	(%)	Change since end of March 2016 (acre-feet)**	(%)
TRANS-PECOS							
Elephant Butte Reservoir (Texas)	852,491	134,208	16	7,363	1	-42,468	-5
Elephant Butte Reservoir (Texas & New Mexico)	1,973,358	310,667	16	17,043	1	-98,305	-5
Red Bluff Reservoir	151,110	132,557	88	-898	-1	-6,296	-4
TOTAL	**1,003,601**	**266,765**	**27**	**6,465**	**1**	**-48,764**	**-5**
EDWARDS PLATEAU							
*Amistad Reservoir (Texas)	1,840,849	1,451,811	79	-48,528	-3	76,189	4
*Amistad Reservoir (Texas & Mexico)	3,275,532	2,082,192	64	-46,460	-1	132,312	4
Brady Creek Reservoir	28,808	18,882	66	15	0	6,848	24
Buchanan, Lake	860,607	817,122	95	0	0	45,396	5
E. V. Spence Reservoir	517,272	69,878	14	-1,025	-0	22,629	4
Inks, Lake	13,962	12,885	92	15	0	-30	-0
Lyndon B Johnson, Lake	115,249	110,209	96	0	0	-672	-1
Marble Falls, Lake	6,901	6,798	99	32	0	-43	-1
Nasworthy	9,615	7,564	79	35	0	-157	-2
Oak Creek Reservoir	39,210	23,256	59	370	1	9,302	24
O. C. Fisher Lake	119,445	17,046	14	-366	-0	-3,469	-3
*O. H. Ivie Reservoir	554,340	135,281	24	-1,758	-0	66,819	12
Twin Buttes Reservoir	182,454	25,063	14	94	0	13,629	7
TOTAL	**4,288,712**	**2,695,795**	**63**	**-51,116**	**-1**	**236,441**	**6**
SOUTH CENTRAL							
*Austin, Lake	23,972	22,665	95	-277	-1	77	0
Canyon Lake	378,781	378,781	100	0	0	0	0
*Coleto Creek Reservoir	31,040	30,899	100	1,055	3	-141	-0
Medina Lake	254,823	235,971	93	291	0	76,964	30
Somerville Lake	147,104	147,104	100	0	0	0	0
Travis, Lake	1,113,348	1,113,348	100	0	0	0	0
TOTAL	**1,949,068**	**1,928,768**	**99**	**1,069**	**0**	**76,900**	**4**
UPPER COAST							
Houston, Lake	120,686	120,686	100	0	0	0	0
Texana, Lake	159,566	158,556	99	-459	-0	915	1
TOTAL	**280,252**	**279,242**	**100**	**-459**	**-0**	**915**	**0**
SOUTHERN							
Choke Canyon Reservoir	662,820	263,222	40	2,237	0	41,623	6
Corpus Christi, Lake	256,961	243,017	95	8,936	3	42,708	17
*Falcon Reservoir (Texas)	1,551,007	620,103	40	18,148	1	-219,580	-14
*Falcon Reservoir (Texas & Mexico)	2,646,817	791,239	30	-10,065	-0	-657,798	-25
TOTAL	**2,470,788**	**1,126,342**	**46**	**29,321**	**1**	**-135,249**	**-5**
STATEWIDE TOTAL							
STATEWIDE TOTAL	**32,183,646**	**26,882,980**	**84**	**-188,249**	**-1**	**-501,106**	**-2**

* 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:

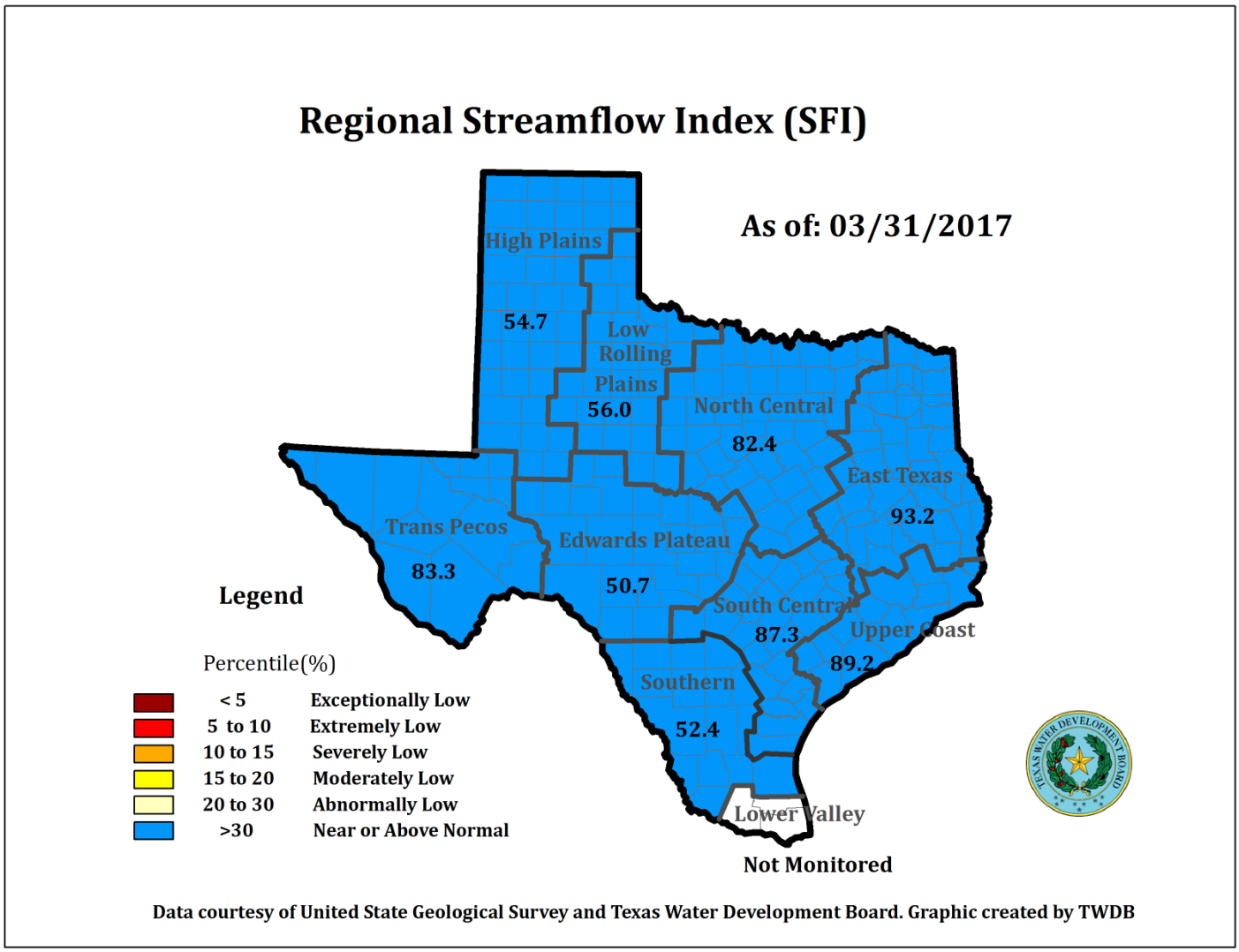
Conservation storage capacity is the space available to store water above the lowest outlet and below the top of conservation pool, or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included is any water in flood control 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. Values shown are for the Texas share of conservation storage in all reservoirs.

MARCH 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 17 index stations and decreased at 12 stations.

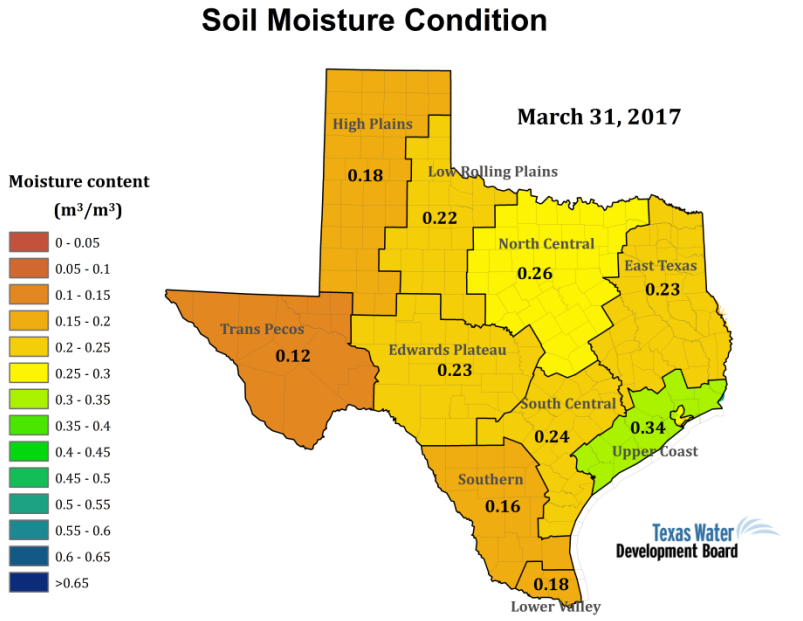
Streamflow Status	Number of Stations
Near or Above Normal (>30%)	26
Abnormally Low (20-30%)	2
Moderately Low (15-20%)	1
Severely Low (10-15%)	0
Extremely Low (5-10%)	0
Exceptionally Low (<5%)	0

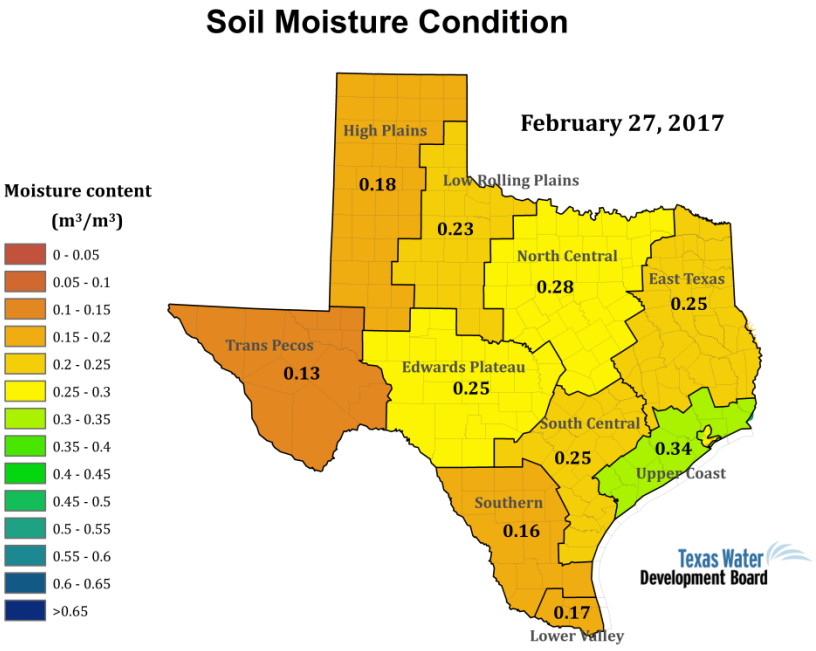
On a regional basis, as shown below, flows were near or above normal in all regions. Streamflow in the Lower Valley region is not monitored.



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

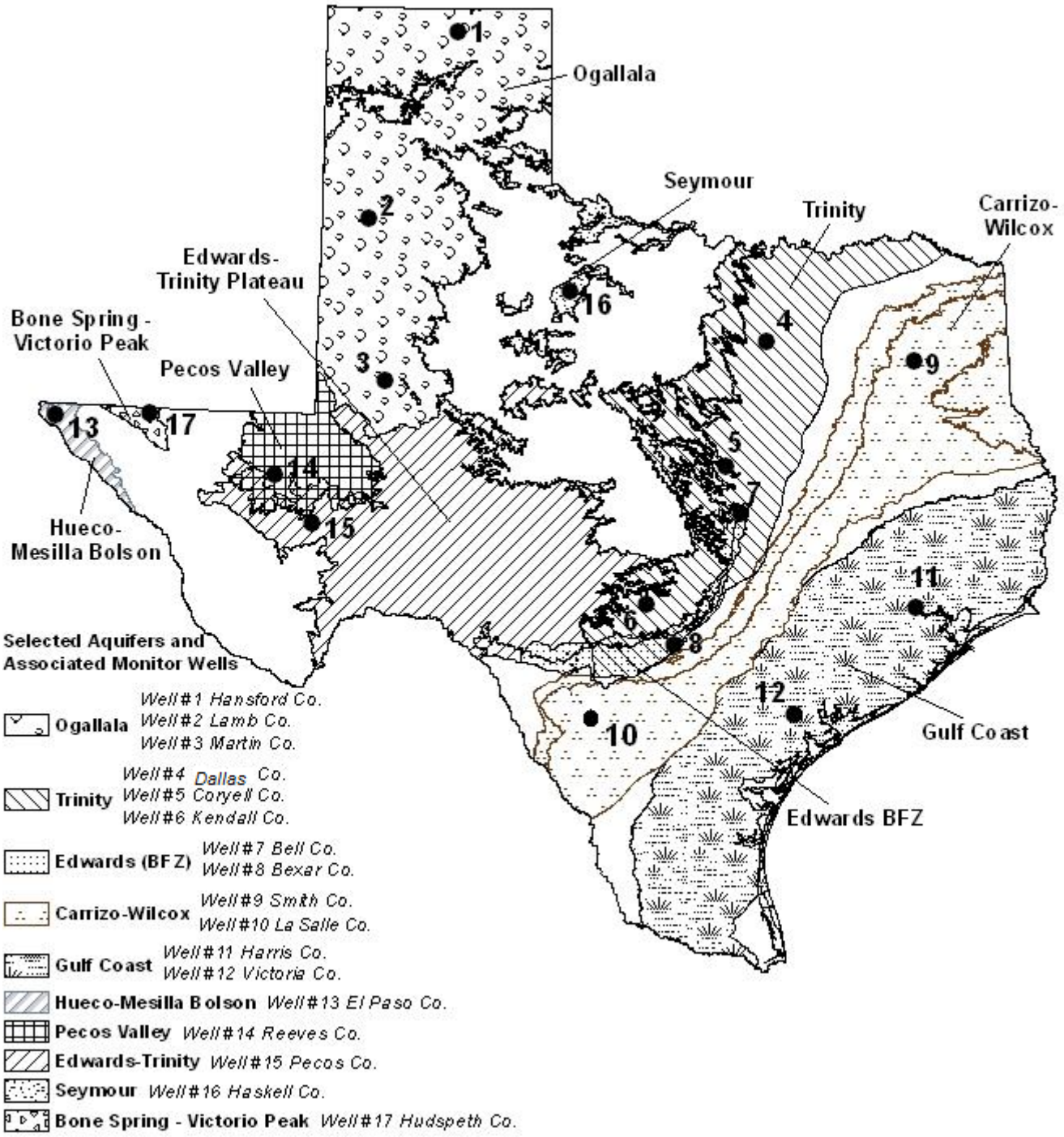
MARCH 2017 SOIL MOISTURE CONDITIONS





Soil moisture in the past 30 days (*top image*, March 31, 2017), as compared to soil moisture at the end of February 2017 (*bottom image*), had modest declines in all except the High Plains, Upper Coast, Southern, and Lower Valley regions.

March 2017 GROUNDWATER LEVELS IN OBSERVATION WELLS



Water-level measurements were available for all 17 key monitoring wells in the state. Water levels rose in eight monitoring wells since the beginning of March, ranging from an increase of 0.14 feet in the Martin County Ogallala Aquifer well (#3 on map) to 2.72 feet in the Kendall County Cow Creek Formation - Trinity Aquifer well (#6 on map). Water levels declined in nine monitoring wells, ranging from a decline of 0.06 feet in the Hansford County Ogallala Aquifer well (#1 on map) to 9.57 feet in the La Salle County Carrizo-Wilcox Aquifer well (#10 on map). The J-17 well (#8 on map) in San Antonio recorded a water level of 48.61 feet below land surface or 682.39 feet above mean sea level. There are no restrictions currently in place for the San Antonio portion of the Edwards (Balcones Fault Zone) Aquifer, with water levels at 22 feet above the Stage I critical management level.

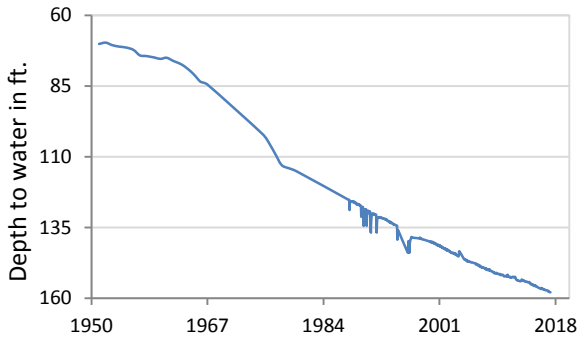
***IDs used in this publication on the aquifer map to indicate the monitoring well location (IDs 1 - 17) are different than the TWDB's six- or seven-digit state well identification number.**

Monitoring Well	March	February	Month Change	Year Change	Historical Change	First Measured
(1) Hansford 0354301	157.94	157.88	-0.06	-1.14	-87.82	1951
(2) Lamb 1053602	147.27	147.15	-0.12	-0.79	-119.10	1951
(3) Martin 2739903	143.08	143.22	0.14	-0.78	-38.19	1964
(4) Dallas 3319101	493.31	494.26	0.95	2.02	-271.31	1954
(5) Coryell 4035404	512.64	512.96	0.32	-7.06	-220.64	1955
(6) Kendall 6802609	107.31	110.03	2.72	8.20	-47.31	1975
(7) Bell 5804816	120.93	121.38	0.45	-0.97	2.58	2008
(8) Bexar 6837203	48.61	43.61	-5.00	17.20	-1.97	1932
(9) Smith 3430907	431.02	430.95	-0.07	1.55	-131.02	1987
(10) La Salle 7738103	470.20	460.63	-9.57	-13.51	-217.13	2003
(11) Harris 6514409	192.50	194.43	1.93	-3.93	-57.00*	1947**
(12) Victoria 8017502	31.70	32.14	0.44	4.53	2.30	1958
(13) El Paso 4913301	295.56	295.49	-0.07	1.20	-63.66	1964
(14) Reeves 4644501	165.51	161.78	-3.73	-5.66	-73.42	1952
(15) Pecos 5216802	190.33	183.50	-6.83	6.31	56.55	1976
(16) Haskell 2135748	46.04	46.21	0.17	0.49	-3.04	2002
(17) Hudspeth 4807516	144.02	133.10	-7.58	-4.89	-40.10	1966

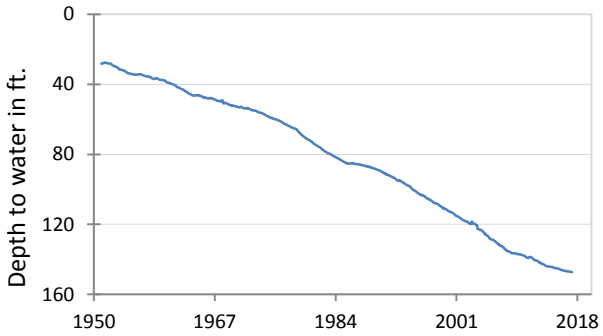
*Change since the original measurement of 135.5 feet below land surface in 1947 (**measurement not shown on the hydrograph)

March 2017 GROUNDWATER LEVELS IN OBSERVATION WELLS

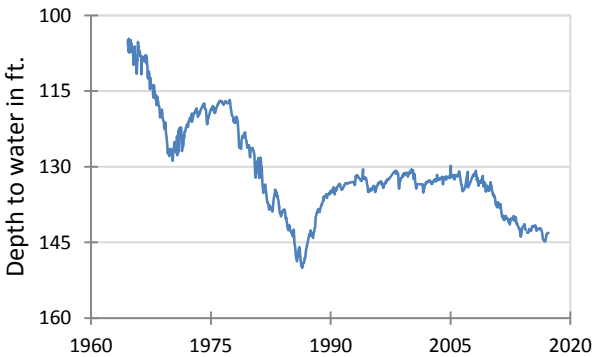
(1) State Well ID 03-54-301
Near Spearman, Hansford County
Ogallala Aquifer



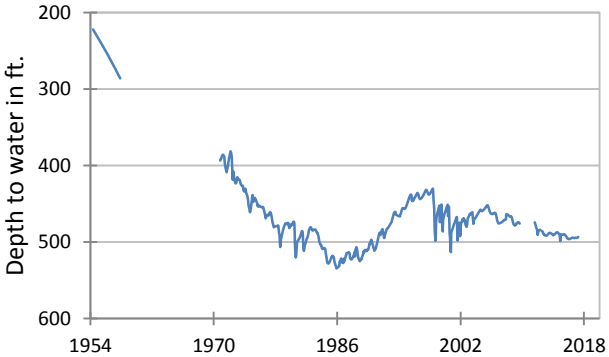
(2) State Well ID 10-53-602
Near Earth, Lamb County
Ogallala Aquifer



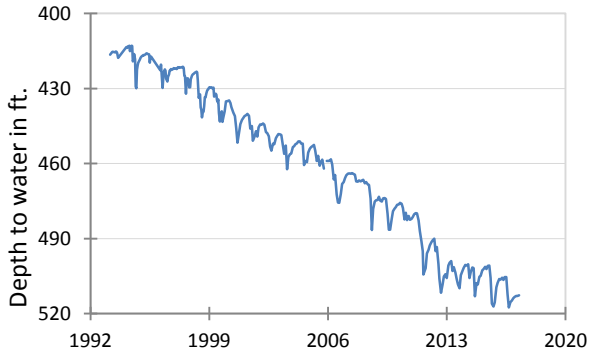
(3) State Well ID 27-39-903
Northwest Martin County
Ogallala Aquifer



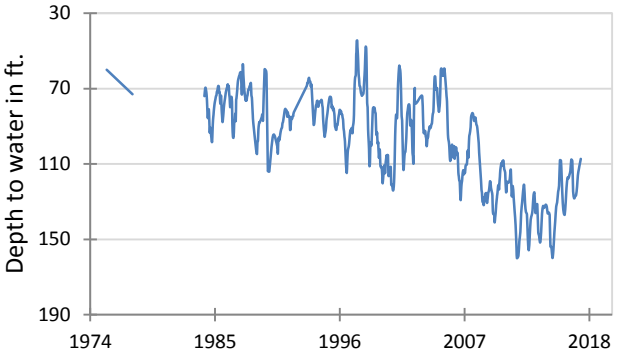
(4) State Well ID 33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer



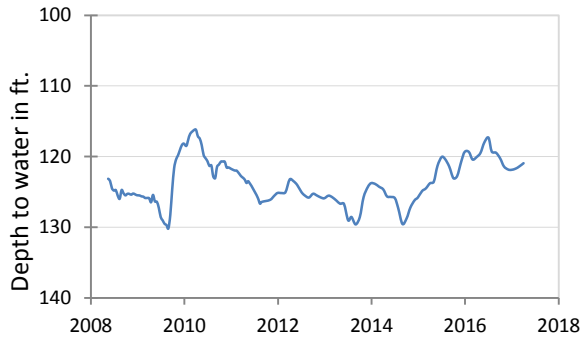
(5) State Well ID 40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer



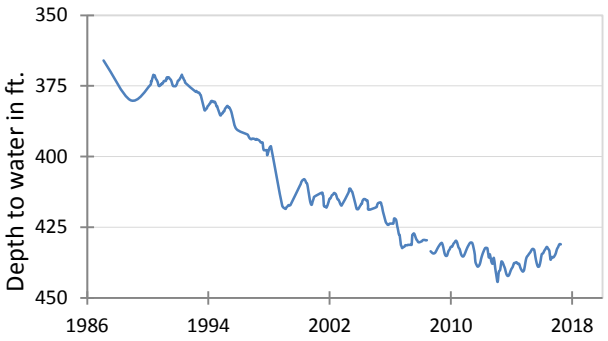
(6) State Well ID 68-02-609
Waring, Kendall County
Cow Creek Formation-Trinity Aquifer



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

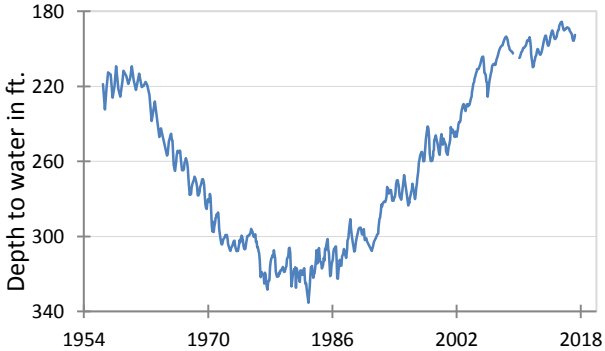


(9) State Well ID 34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer

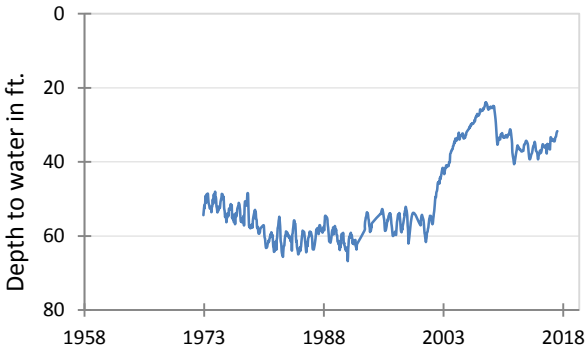


(10) State Well ID 77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer

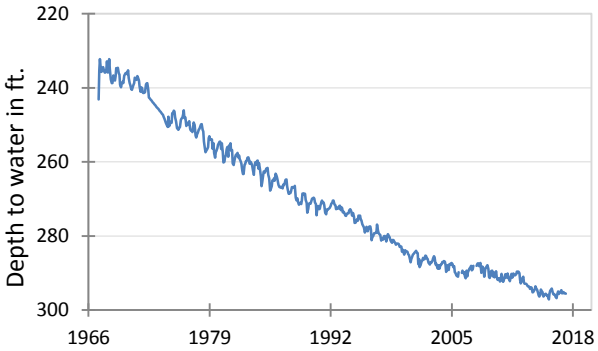
(11) State Well ID 65-14-409
Alief, Harris County
Evangeline Formation-Gulf Coast Aquifer



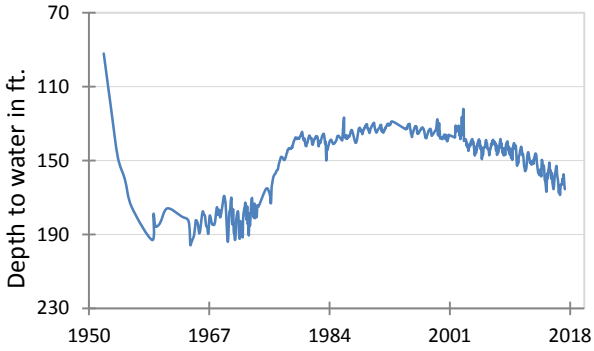
(12) State Well ID 80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



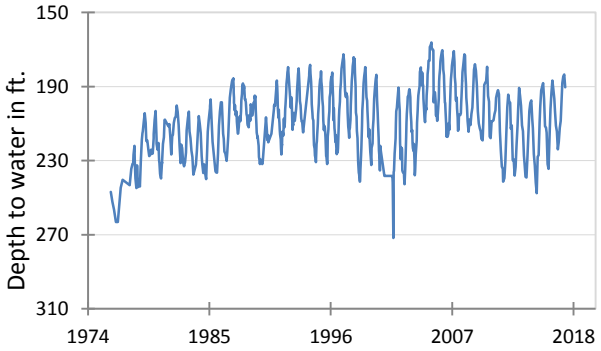
(13) State Well ID 49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolson Aquifer



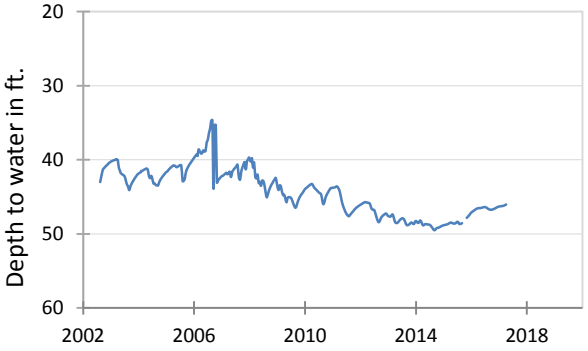
(14) State Well ID 46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



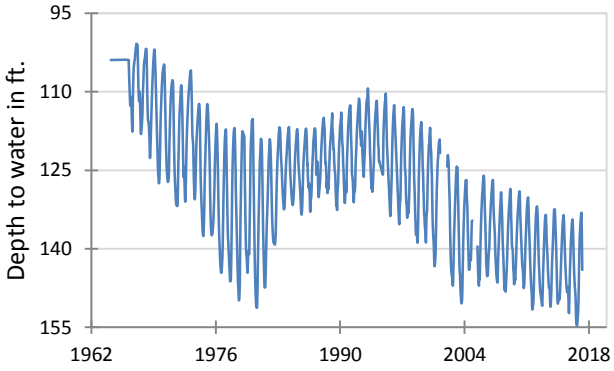
(15) State Well ID 52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



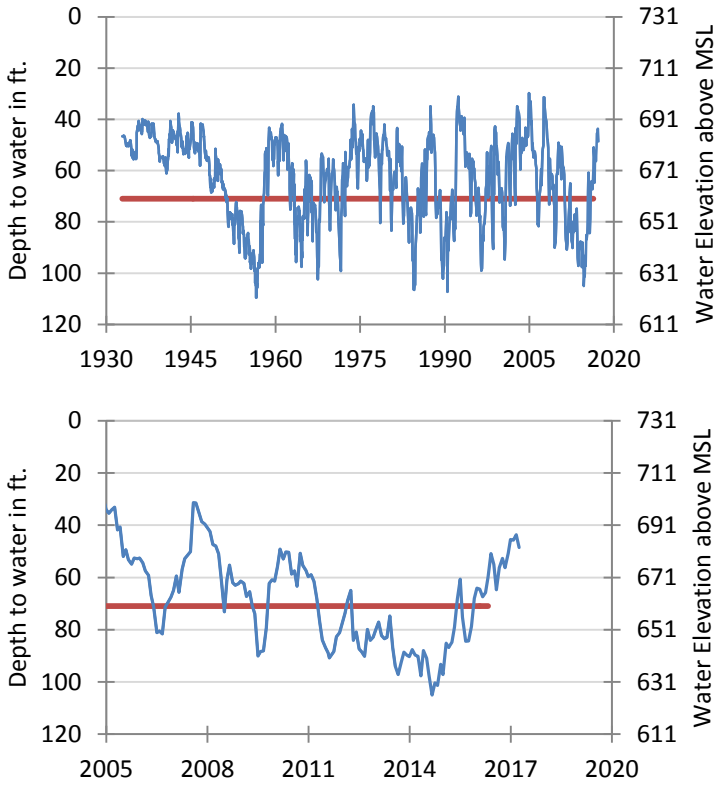
(16) State Well ID 21-35-748
Near O'Brien, Haskell County
Seymour Aquifer



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

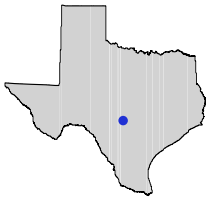


(8) State Well ID 68-37-203 (J-17)
In San Antonio, Bexar County
Edwards (Balcones Fault Zone) Aquifer



The late March water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, elevation 731 feet above mean sea level, was 48.61 feet below land surface, or 682.39 feet above mean sea level. This was 5.00 feet below last month's measurement, 17.20 feet above last year's measurement, and 1.97 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. *****



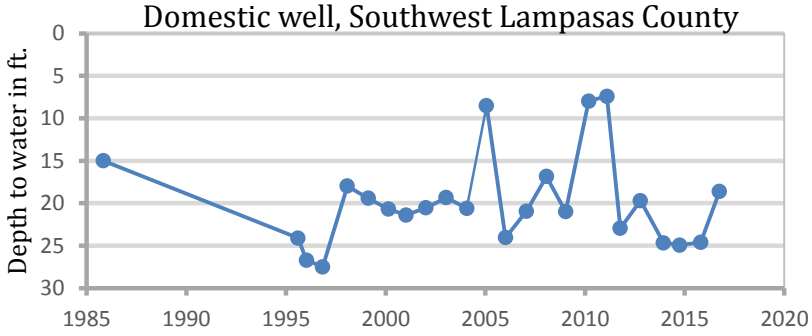
HYDROGRAPH OF THE MONTH

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

The Ellenburger-San Saba Aquifer is a minor aquifer that is found in parts of 15 counties located in the Llano Uplift area of Central Texas. The aquifer is made up of the Tanyard, Gorman, and Honeycut formations of the Ellenburger Group and the San Saba Limestone Member of the Wilberns Formation. The aquifer consists of a sequence of limestone and dolomite that crop out in a circular pattern around the Llano Uplift and dip radially into the subsurface away from the center of the uplift to depths of approximately 3,000 feet. The aquifer has a maximum thickness of about 2,700 feet. Water is held in fractures, cavities, and solution channels usually under confined conditions. The Ellenburger-San Saba is highly permeable in places, as shown by wells that yield as much as 1,000 gallons per minute and springs that flow from the aquifer. Water produced from the aquifer is inherently hard and usually has less than 1,000 milligrams per liter of total dissolved solids. Most of the groundwater is used for municipal purposes and the remainder for irrigation and livestock.

Ellenburger-San Saba Aquifer

Well # 4161303, 617 feet deep
Domestic well, Southwest Lampasas County



The first recorded water-level measurement for this domestic water well was 15 feet below land surface in 1985. The TWDB began measuring this well in 1995, with a measurement of 24.1 feet below land surface. TWDB has measured once a year ever since. The water-level has remained relatively constant with minor fluctuations due to seasonal weather patterns. The highest recorded water-level was 7.42 feet below land surface in 2011, and the lowest recorded water-level was 27.49 feet below land surface in 1996.