

Texas Water Conditions Report

June 2020

RAINFALL

Little to no rain fell over the majority of the Trans Pecos, High Plains, Low Rolling Plains, Edwards Plateau, Southern, southern, northeastern, and portions of western North Central, western and northeastern East Texas and northern portions of the South Central climate divisions [yellow, orange and red shading, Figure 1(a)].

Some rainfall [light blue and dark blue shading, Figure 1(a)] was recorded over portions of northeastern and southeastern High Plains, southeastern Trans Pecos, scattered areas of northern, eastern and southwestern Low Rolling Plains, eastern and scattered portions of western Southern, southern and portions of northern South Central, the majority of northern North Central, East Texas, Lower Valley, and the Upper Coast climate divisions, reaching 13.89 inches in portions of the state [dark blue shading, Figure 1(a)].

Monthly rainfall for June was below-average [yellow and orange shading, Figure 1(b)], compared to historical data from 1981–2010, in much of the state, including the majority of the Trans Pecos, High Plains, Low Rolling Plains, North Central, Edwards Plateau, Southern, South Central, East Texas and Upper Coast climate divisions.

Above average rainfall fell in portions of the northern and eastern Trans Pecos, northern High Plains, southern Low Rolling Plains, northern North Central, southern East Texas, central Upper Coast, southern and central South Central, southeastern Southern, and the majority of the Lower Valley climate divisions [green and blue shading, Figure 1(b)]. Additionally, small portions of southern Texas received 3–4 times the average amount of rainfall.

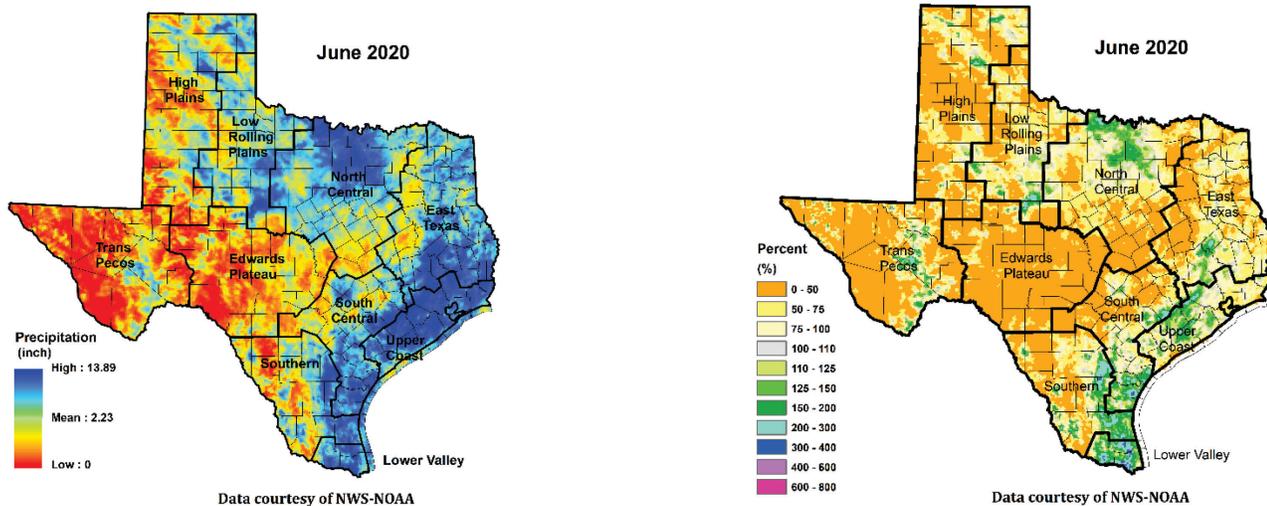


Figure 1: (a) Monthly accumulated rainfall, (b) Percent of normal rainfall

RESERVOIR STORAGE

At the end of June 2020, total conservation storage* in 118 of the state’s major water supply reservoirs plus Elephant Butte Reservoir in New Mexico was 26.99 million acre-feet or 84 percent of total conservation storage capacity (Figure 2). This is approximately 0.56 million acre-feet less than a month ago and approximately 1.56 million acre-feet less than the end of June 2019.

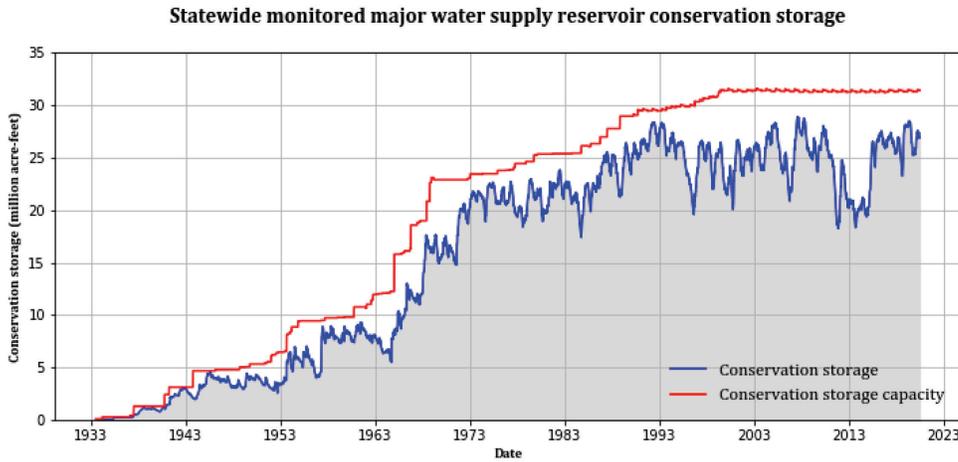


Figure 2: Statewide reservoir conservation storage

Out of 118 reservoirs in the state, 43 reservoirs held 100 percent of conservation storage capacity (Figure 3). Additionally, 44 were at or above 90 percent full. Eight reservoirs [E.V. Spence (25 percent full), Greenbelt (20 percent full), J.B. Thomas (22 percent full), Mackenzie (10 percent full), O. C. Fisher (8 percent full), Palo Duro Reservoir (3 percent full), and White River (18 percent full), Falcon Reservoir (29 percent full)] remained below 30 percent full. Elephant Butte Reservoir (located in New Mexico) was at 15 percent full.

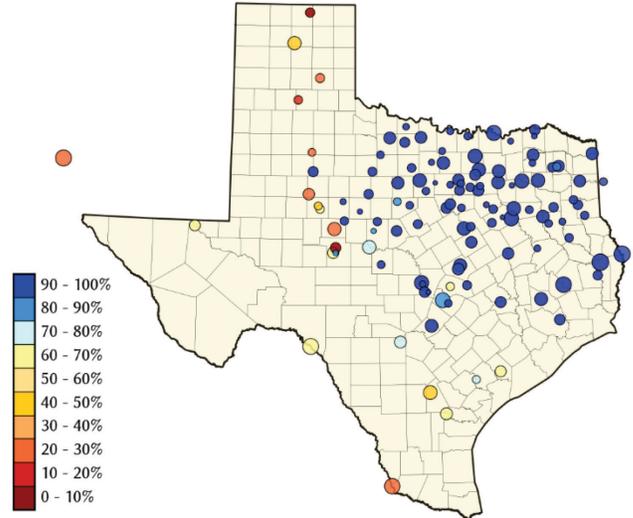


Figure 3: Reservoir conservation storage at end-June expressed as percent full (%)

*Storage is based on end of the month data in 118 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.

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Storage capacity	Storage at end-June		Storage change from end-May 2020		Storage change from end-Jun 2019	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Abilene, Lake	7,900	7,178	91	-52	0	-722	-9
Alan Henry Reservoir	96,207	96,207	100	0	0	3,065	3
*Amistad Reservoir (Texas & Mexico)	3,275,532	1,151,423	35	3,206	0	-557,199	-17
*Amistad Reservoir (Texas)	1,840,849	1,079,561	59	-548	0	-434,531	-24
Amon G Carter, Lake	19,266	19,266	100	0	0	0	0
Aquilla Lake	43,243	43,212	100	-31	0	-31	0
Arlington, Lake	40,157	39,657	99	-269	0	688	2
Arrowhead, Lake	230,359	229,056	99	-1,303	0	866	0
Athens, Lake	29,503	29,190	99	-313	-1	-313	-1
*Austin, Lake	23,972	23,158	97	93	0	46	0
B A Steinhagen Lake	69,186	67,158	97	5,959	9	8,673	13
Bardwell Lake	46,122	46,122	100	0	0	0	0
Belton Lake	435,225	432,076	99	-3,149	0	-3,149	0
Benbrook Lake	85,648	85,648	100	0	0	0	0
Bob Sandlin, Lake	192,417	192,417	100	0	0	0	0
Bonham, Lake	11,027	10,558	96	-469	-4	-469	-4
Brady Creek Reservoir	28,808	24,481	85	-1,244	-4	-4,295	-15
Bridgeport, Lake	366,236	366,236	100	0	0	0	0
*Brownwood, Lake	130,868	116,293	89	-4,292	-3	-14,575	-11
Buchanan, Lake	816,904	807,152	99	-8,452	-1	-9,752	-1
Caddo, Lake	29,898	29,898	100	0	0	no data	
Canyon Lake	378,781	368,818	97	-730	0	-9,963	-3
Cedar Creek Reservoir in Trinity	644,686	629,114	98	-15,572	-2	-15,572	-2
Champion Creek Reservoir	41,580	26,175	63	-648	-2	-4,040	-10
Cherokee, Lake	40,094	40,094	100	0	0	0	0
Choke Canyon Reservoir	662,820	276,431	42	-8,396	-1	-75,097	-11
*Cisco, Lake	29,003	24,802	86	-478	-2	-3,789	-13
Coleman, Lake	38,075	36,085	95	-392	-1	-1,792	-5
Colorado City, Lake	31,040	22,747	73	-1,231	-4	-7,472	-24
*Coletto Creek Reservoir	30,758	12,398	40	-597	-2	-4,144	-13
Conroe, Lake	410,988	401,642	98	6,225	2	1,135	0
Corpus Christi, Lake	256,062	172,061	67	-9,245	-4	-83,014	-32
Crook, Lake	9,195	9,174	100	-21	0	-11	0
Cypress Springs, Lake	66,756	66,626	100	-130	0	-130	0
E. V. Spence Reservoir	517,272	130,009	25	-4,787	0	-33,012	-6
Eagle Mountain Lake	179,880	179,880	100	0	0	0	0
Elephant Butte Reservoir (Texas)	852,491	124,759	15	-49,902	-6	-112,699	-13
Elephant Butte Reservoir (Total Storage)	1,960,900	288,795	15	-115,513	-6	-260,878	-13
*Falcon Reservoir (Texas & Mexico)	2,646,817	551,444	21	-8,105	0	-233,524	-9
*Falcon Reservoir (Texas)	1,551,007	454,466	29	-39,371	-3	-113,505	-7
Fork Reservoir, Lake	605,061	594,281	98	-10,780	-2	-10,780	-2
Fort Phantom Hill, Lake	70,030	68,666	98	-894	-1	-1,364	-2
Georgetown, Lake	36,823	25,734	70	-405	-1	-11,089	-30
Graham, Lake	45,288	45,288	100	0	0	0	0
Granbury, Lake	132,949	132,949	100	1,221	1	1,221	1

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Storage capacity	Storage at end-June		Storage change from end-May 2020		Storage change from end-Jun 2019		
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)	
<i>Continued</i>								
Granger Lake	51,822	51,822	100	0	0	0	0	
Grapevine Lake	163,064	163,064	100	0	0	0	0	
Greenbelt Lake	59,968	11,882	20	-14	0	-1,322	-2	
*Halbert, Lake	6,033	5,176	86	-213	-4	-197	-3	
Hords Creek Lake	8,109	5,703	70	-342	-4	-2,062	-25	
Houston County Lake	17,113	16,881	99	-232	-1	-232	-1	
Houston, Lake	130,147	117,841	91	-2,257	-2	-2,041	-2	
Hubbard Creek Reservoir	313,298	295,431	94	-7,620	-2	-17,867	-6	
Hubert H Moss Lake	24,058	24,047	100	-11	0	216	1	
Inks, Lake	13,962	12,885	92	-120	0	-60	0	
J. B. Thomas, Lake	199,931	43,846	22	-2,204	-1	-20,927	-10	
Jacksonville, Lake	25,670	25,450	99	-220	0	-220	0	
Jim Chapman Lake (Cooper)	260,332	254,679	98	-5,653	-2	-5,653	-2	
Joe Pool Lake	175,800	175,800	100	0	0	0	0	
Kemp, Lake	245,307	245,307	100	0	0	0	0	
Kickapoo, Lake	86,345	81,954	95	-2,990	-3	-4,391	-5	
Lavon Lake	406,388	406,388	100	0	0	0	0	
Leon, Lake	27,762	25,596	92	-1,213	-4	-2,026	-7	
Lewisville Lake	563,228	563,228	100	0	0	0	0	
Limestone, Lake	203,780	198,967	98	-4,813	-2	-4,813	-2	
*Livingston, Lake	1,741,867	1,741,867	100	0	0	0	0	
*Lost Creek Reservoir	11,950	11,950	100	0	0	38	0	
Lyndon B Johnson, Lake	115,249	111,371	97	674	1	1,101	1	
Mackenzie Reservoir	46,450	4,871	10	-151	0	-933	-2	
Marble Falls, Lake	6,901	6,809	99	-43	0	-81	-1	
Martin, Lake	75,726	73,759	97	-1,967	-3	-1,967	-3	
Medina Lake	254,823	164,142	64	-9,243	-4	-90,681	-36	
Meredith, Lake	500,000	199,544	40	-5,493	-1	-10,620	-2	
Millers Creek Reservoir	26,768	26,768	100	0	0	0	0	
*Mineral Wells, Lake	5,273	5,273	100	0	0	0	0	
Monticello, Lake	34,740	29,882	86	-511	-1	-364	-1	
Mountain Creek, Lake	22,850	22,850	100	0	0	0	0	
Murvaul, Lake	38,285	37,874	99	-411	-1	-411	-1	
Nacogdoches, Lake	39,522	38,206	97	-449	-1	-621	-2	
Nasworthy	9,615	8,282	86	-111	-1	-111	-1	
Navarro Mills Lake	49,827	47,868	96	-1,959	-4	-1,959	-4	
New Terrell City Lake	8,583	8,583	100	0	0	0	0	
Nocona, Lake (Farmers Crk)	21,444	21,444	100	0	0	0	0	
North Fork Buffalo Creek Reservoir	15,400	14,795	96	-605	-4	-504	-3	
O' the Pines, Lake	268,566	268,566	100	0	0	0	0	
O. C. Fisher Lake	115,742	9,450	8	-615	0	-4,901	-4	
*O. H. Ivie Reservoir	554,340	381,012	69	-11,878	-2	-47,521	-9	
Oak Creek Reservoir	39,210	34,282	87	-1,406	-4	-4,928	-13	

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	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)	
<i>Continued</i>								
Palestine, Lake	367,303	358,586	98	-8,717	-2	-8,717	-2	
Palo Duro Reservoir	61,066	1,678	3	-265	0	-6,434	-11	
Palo Pinto, Lake	26,766	25,318	95	300	1	-1,296	-5	
Pat Cleburne, Lake	26,008	26,008	100	0	0	0	0	
*Pat Mayse Lake	113,683	113,683	100	0	0	0	0	
Possum Kingdom Lake	538,139	538,139	100	4,819	1	0	0	
Proctor Lake	54,762	49,258	90	-4,448	-8	-5,504	-10	
Ray Hubbard, Lake	439,559	438,932	100	-209	0	-627	0	
Ray Roberts, Lake	788,167	788,167	100	0	0	0	0	
Red Bluff Reservoir	151,110	85,936	57	-9,349	-6	-12,216	-8	
Richland-Chambers Reservoir	1,087,839	1,077,583	99	-10,256	0	-10,256	0	
Sam Rayburn Reservoir	2,857,077	2,763,055	97	-82,773	-3	-94,022	-3	
Somerville Lake	150,293	148,831	99	-1,462	0	-1,462	0	
Squaw Creek, Lake	151,250	151,250	100	0	0	0	0	
Stamford, Lake	51,570	51,570	100	0	0	0	0	
Stillhouse Hollow Lake	227,771	226,806	100	-965	0	-965	0	
Striker, Lake	16,934	16,934	100	0	0	0	0	
Sweetwater, Lake	12,267	11,521	94	-469	-4	-746	-6	
*Sulphur Springs, Lake	17,747	17,109	96	-638	-4	-638	-4	
Tawakoni, Lake	871,685	870,206	100	-1,479	0	-1,479	0	
Texana, Lake	159,566	159,382	100	459	0	4,923	3	
Texoma, Lake (Texas & Oklahoma)	2,487,601	2,728,468	100	82,585	3	-332,156	-13	
Texoma, Lake (Texas)	1,243,801	1,243,801	100	0	0	0	0	
Toledo Bend Reservoir (Texas & Louisiana)	4,472,900	4,290,069	96	-186,261	-4	-10,545	0	
Toledo Bend Reservoir (Texas)	2,236,450	2,142,984	96	-93,131	-4	-5,273	0	
Travis, Lake	1,113,348	911,009	82	-55,277	-5	-202,339	-18	
Twin Buttes Reservoir	182,454	114,741	63	-6,298	-3	-22,758	-12	
Tyler, Lake	72,073	71,228	99	-845	-1	-845	-1	
Waco, Lake	189,418	187,640	99	-1,778	0	-1,778	0	
Waxahachie, Lake	10,780	10,556	98	-224	-2	-224	-2	
Weatherford, Lake	17,812	17,791	100	22	0	66	0	
White River Lake	29,880	5,341	18	-536	-2	-2,222	-7	
Whitney, Lake	553,344	528,967	96	-660	0	-18,482	-3	
Worth, Lake	24,419	24,419	100	0	0	308	1	
Wright Patman Lake	231,496	231,496	100	-78,886	-34	0	0	
STATEWIDE TOTAL								
STATEWIDE TOTAL	32,235,519	26,992,043	84	-565,338	-2	-1,558,660	-5	

STREAMFLOW CONDITIONS

Much of the state had near normal (25–75th percentile, green shading in Figure 6) streamflow in June 2020 (green shading in Figure 6). Above normal streamflow (76–90th percentile, light blue shading in Figure 6) was seen in the mid-Red, Colorado-Lavaca, upper-Trinity, San Jacinto, and San Antonio-Nueces river basins. Below normal (10–24th percentile, orange shading in Figure 6) streamflow was recorded in the Canadian, upper Red, upper and lower Brazos, upper and lower Colorado, and Nueces river basins. Some sub-watersheds had much below normal (less than the 10th percentile, dark brown shading in Figure 6) streamflow. These include the upper and mid-Colorado, lower Brazos, and upper/mid Rio Grande river basins.

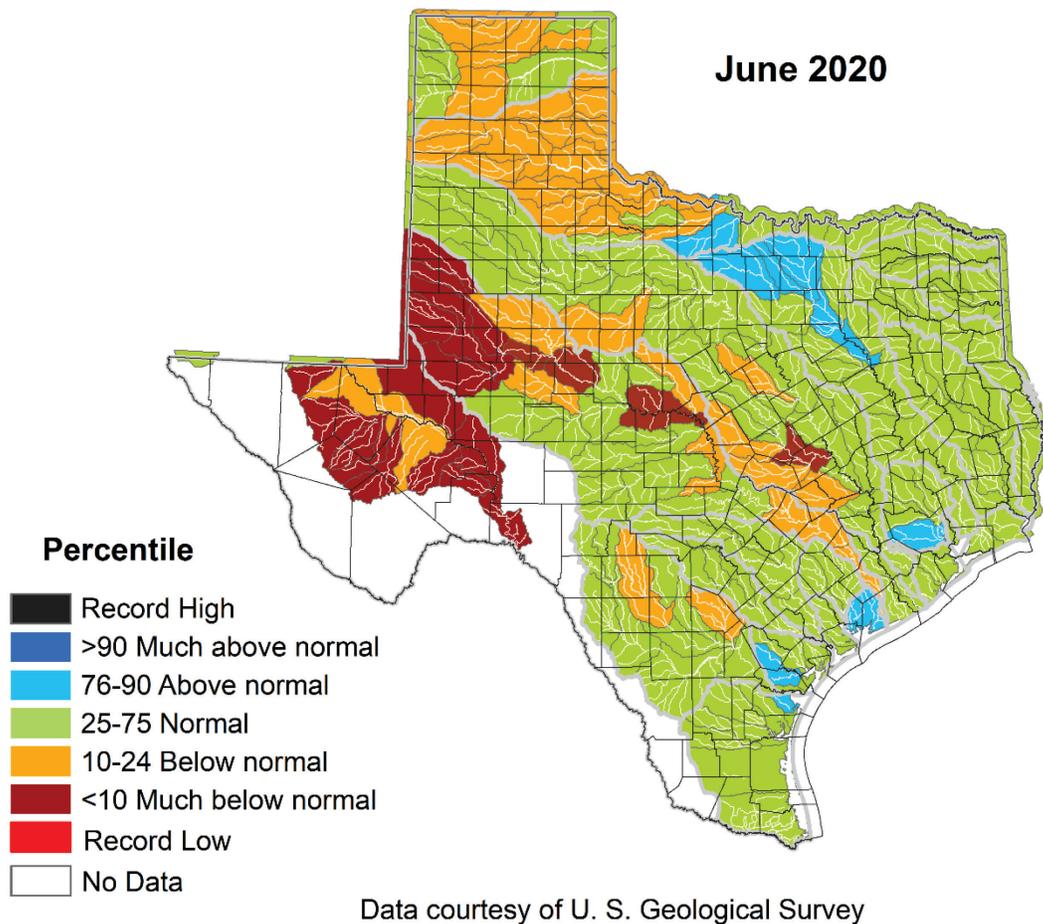


Figure 6: Runoff percentiles by the U.S. Geological Survey’s Hydrologic Unit Code

SOIL MOISTURE CONDITIONS

Root zone soil moisture at the end of June 2020 [Figure 7(a)] was moderate [> 0.20 cubic meters of water per bulk cubic meter soil (m^3/m^3)] in much of the state. Soil moisture was low [< 0.15 cubic meters of water per bulk cubic meter soil (m^3/m^3)] in portions of the Trans Pecos, High Plains, Low Rolling Plains, Edwards Plateau, Southern, Lower Valley, northeastern and southern South Central, and southwestern East Texas climate divisions.

Soil moisture was high [< 0.3 cubic meters of water per bulk cubic meter soil (m^3/m^3)] in small areas of eastern Low Rolling Plains, portions of North Central, northern and southcentral East Texas, small portions of central Edwards Plateau, areas of northern central, and southern South Central, northeastern Southern, and the majority of the Upper Coast climate divisions [Figure 7(a)].

Compared to conditions at the end of May 2020, soil moisture content increased [green to blue shading in Figure 7(b)] in the majority of the High Plains, Trans Pecos, Low Rolling Plains, North Central, Lower Valley, Upper Coast, southwestern Edwards Plateau, eastern and southern portions of the Southern, northcentral, northeastern and southern South Central, and southern East Texas climate divisions.

Soil moisture content decreased in central-east High Plains, northern and eastern Edwards Plateau, western parts of the Southern, northern and central South Central, northeastern North Central, and northern East Texas [yellow, orange, and brown shading in Figure 7(b)] climate divisions.

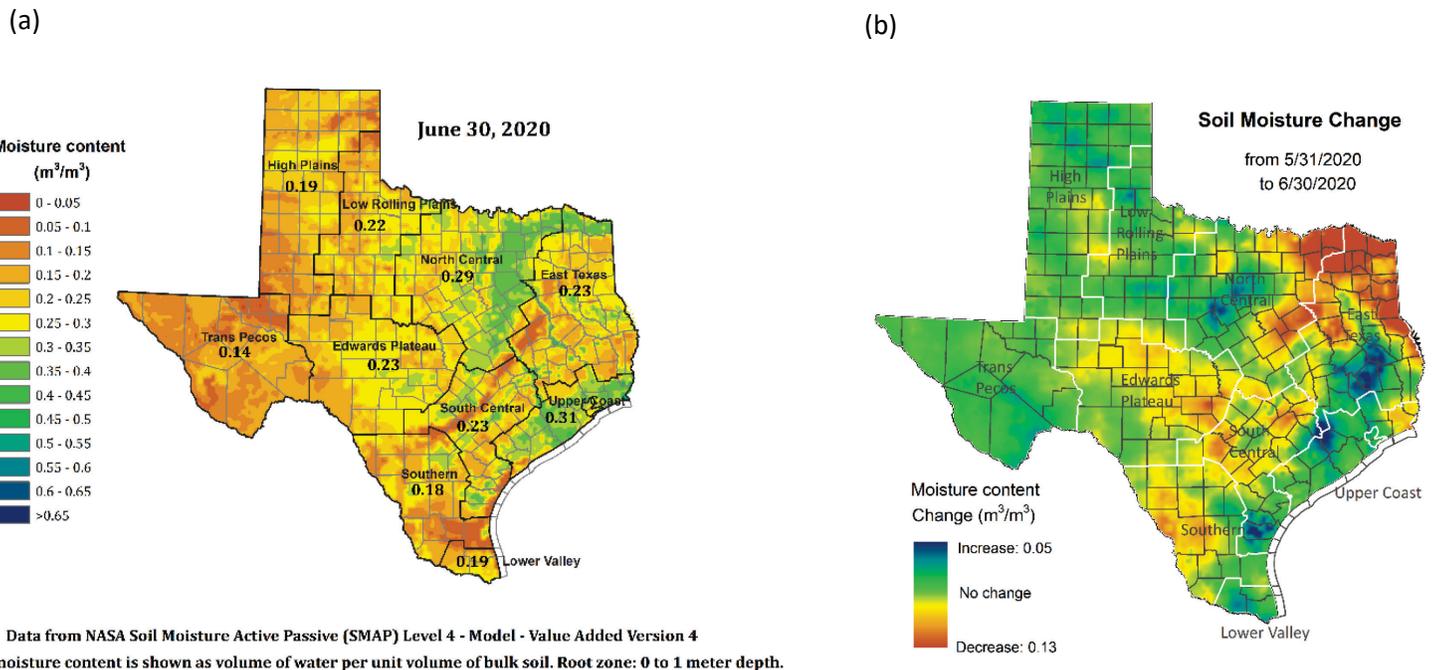
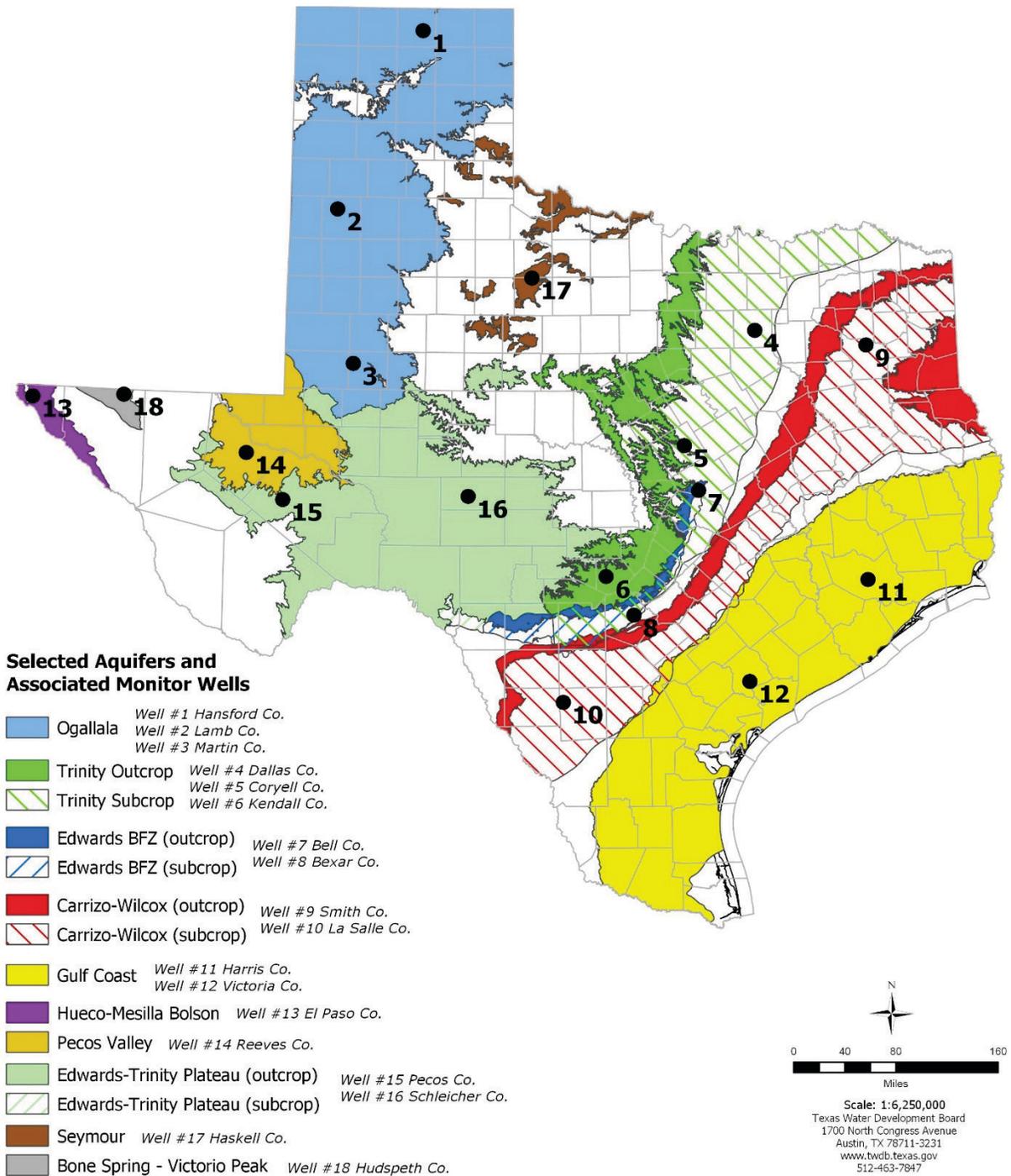


Figure 7: Root zone soil moisture conditions in June, 2020 (a) and the difference in root zone soil moisture between end-May 2020 and end-June 2020 (b)



June 2020 GROUNDWATER LEVELS IN OBSERVATION WELLS

Water-level measurements were available for 17 key monitoring wells in the state. Water levels rose in 4 monitoring wells since the beginning of June, ranging from an increase of 0.02 feet in the Martin County Ogallala Aquifer well (#3 on map) and Harris County Gulf Coast Aquifer well (#11 on map) to 4.35 feet in the La Salle County Carrizo-Wilcox Aquifer (#10 on map). Water levels declined in 13 monitoring wells, ranging from a decline of -0.07 feet in the Hansford County Ogallala Aquifer well (#1 on map) to -10.10 feet in the Bexar County Edwards (Balcones Fault Zone) Aquifer well (#8 on map). The J-17 well (#8 on map) in San Antonio recorded a water level of 69.50 feet below land surface or 661.50 feet above mean sea level. Water levels are 1.50 feet above the Stage 1 critical management level for the San Antonio portion of the Edwards (Balcones Fault Zone) Aquifer.

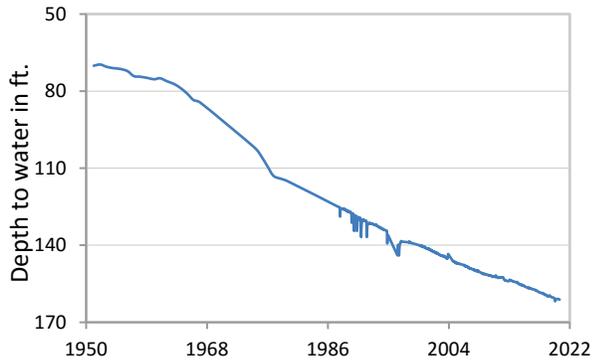
*Well numbers used in this publication on the aquifer map to indicate the monitoring well location (numbers 1 - 17) are different than the TWDB's seven-digit state well number.

Monitoring Well	June	May	Month Change	Year Change	Historical Change	First Measured
(1) Hansford 0354301	161.16	161.09	-0.07	-0.83	-91.04	1951
(2) Lamb 1053602	151.09	151.00	-0.09	-0.88	-122.92	1951
(3) Martin 2739903	144.18	144.20	0.02	-1.19	-39.29	1964
(4) Dallas 3319101	489.28	NA	NA	4.00	-267.28	1954
(5) Coryell 4035404	528.74	527.40	-1.34	-3.82	-236.74	1955
(6) Kendall 6802609	146.65	145.99	-0.66	-29.18	-86.65	1975
(7) Bell 5804816	124.09	122.56	-1.53	-6.04	-0.58	2008
(8) Bexar 6837203	69.50	59.40	-10.10	-21.50	-22.86	1932
(9) Smith 3430907	434.70	433.07	-1.63	-1.79	-134.70	1977
(10) La Salle 7738103	507.65	512.00	4.35	-7.90	-254.58	2003
(11) Harris 6514409	188.23	188.25	0.02	3.37	-52.73*	1947**
(12) Victoria 8017502	31.57	30.76	-0.81	2.41	2.43	1958
(13) El Paso 4913301	295.65	295.84	0.19	2.56	-63.75	1964
(14) Reeves 4644501	165.58	163.26	-2.32	1.54	-73.49	1952
(15) Pecos 5216802	216.46	208.54	-7.92	-18.23	30.42	1976
(16) Schleicher 5512134	294.60	290.35	-4.25	-20.80	7.30	2003
(17) Haskell 2135748	44.01	43.59	-0.42	0.69	-1.01	2002
(18) Hudspeth 4807516	153.91	151.37	-2.54	0.35	-49.99	1966

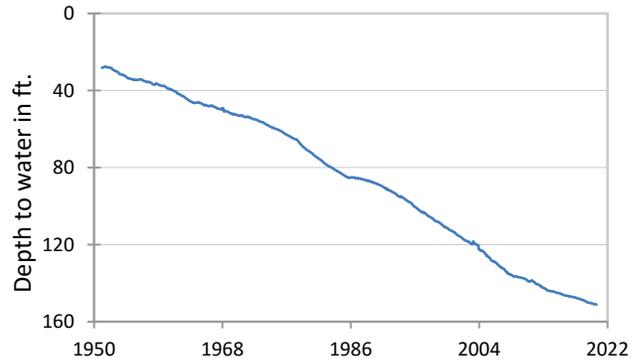
*Change since the original measurement of 135.5 feet below land surface in 1947 (**measurement not shown on the hydrograph)

June 2020 OBSERVATION WELL HYDROGRAPHS

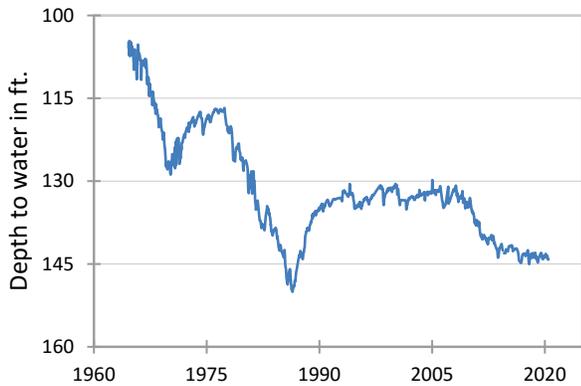
**(1) State Well #03-54-301
Near Spearman, Hansford County
Ogallala Aquifer**



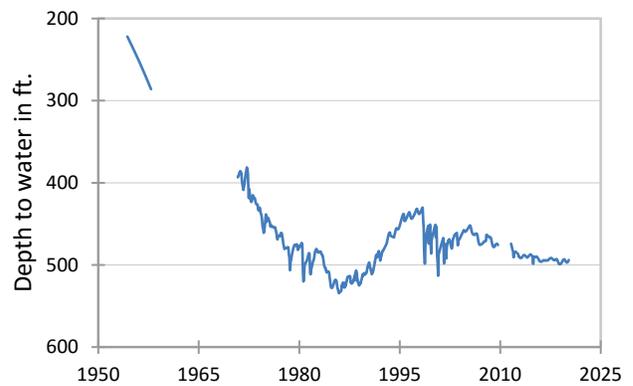
**(2) State Well #10-53-602
Near Earth, Lamb County
Ogallala Aquifer**



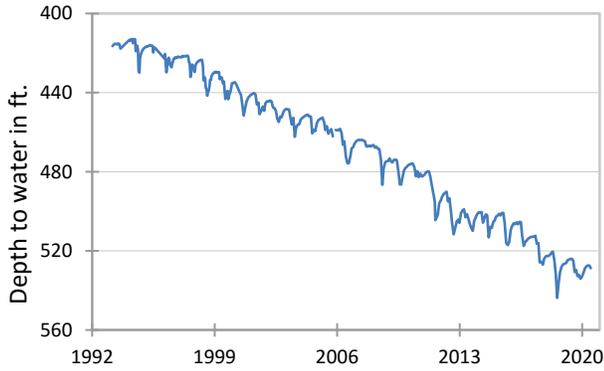
**(3) State Well #27-39-903
Northwest Martin County
Ogallala Aquifer**



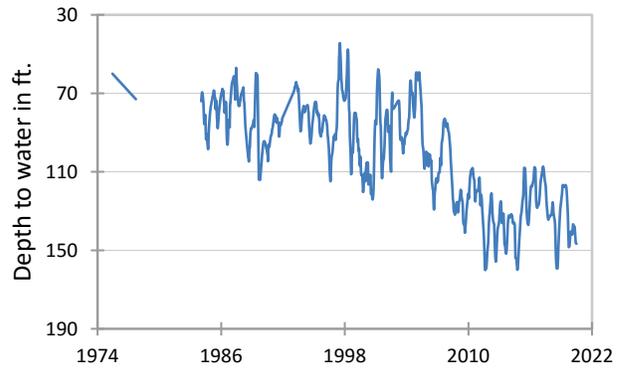
**(4) State Well #33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer**



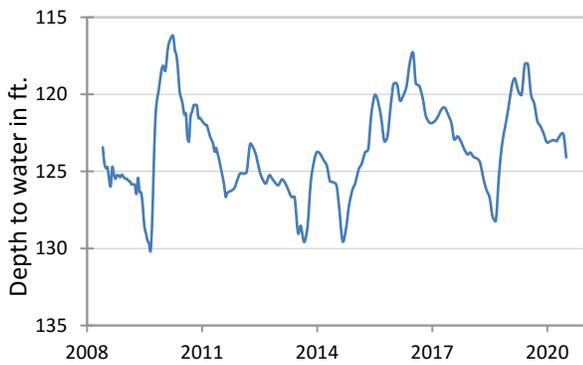
(5) State Well #40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer



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



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



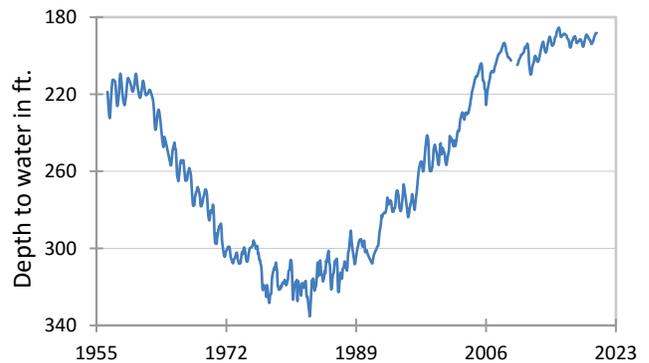
(9) State Well #34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer



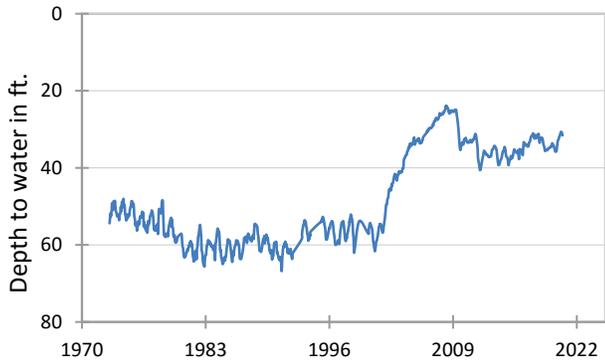
(10) State Well #77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer



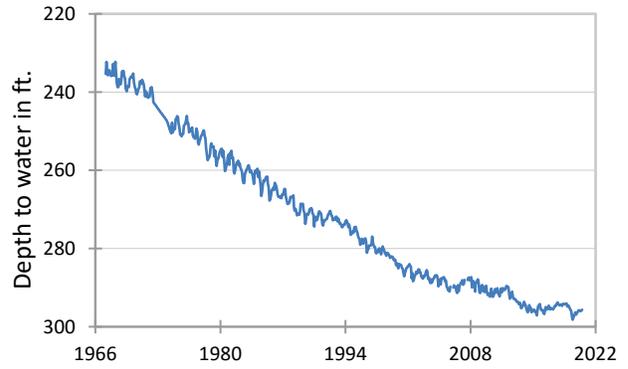
(11) State Well #65-14-409
Alief, Harris County
Evangeline Formation-Gulf Coast Aquifer



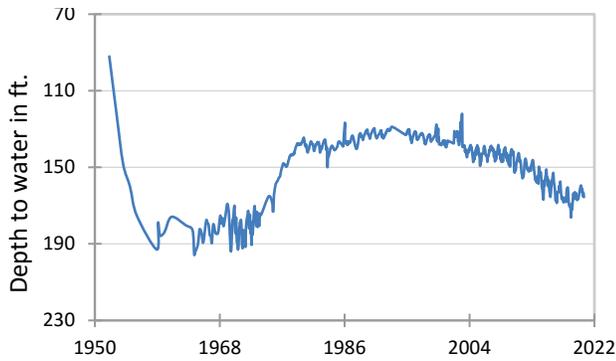
(12) State Well #80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



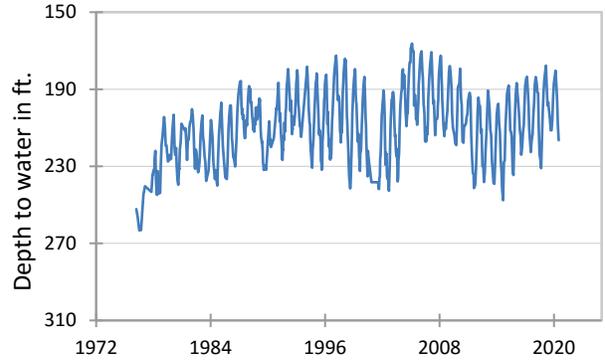
(13) State Well #49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolson Aquifer



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



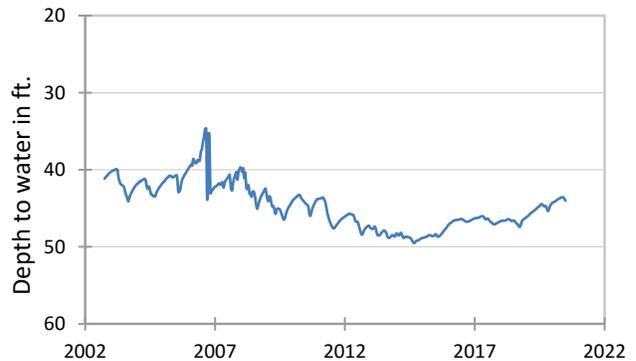
(15) State Well #52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



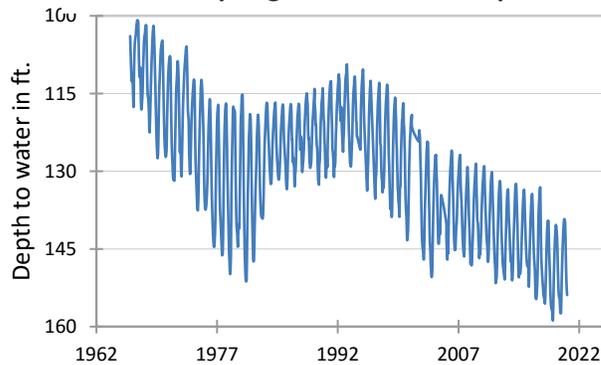
(16) State Well #55-12-134
Eldorado, Schleicher County
Trinity Aquifer



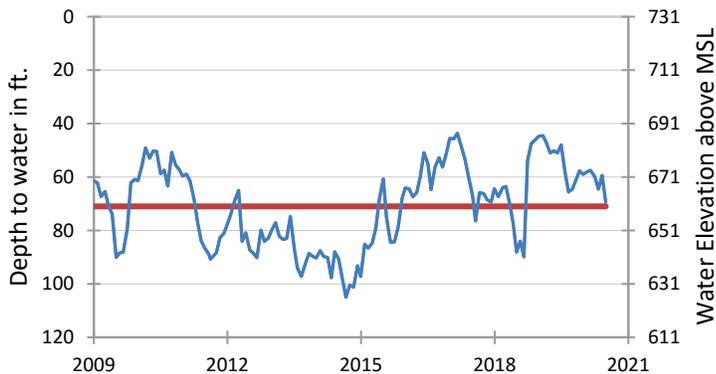
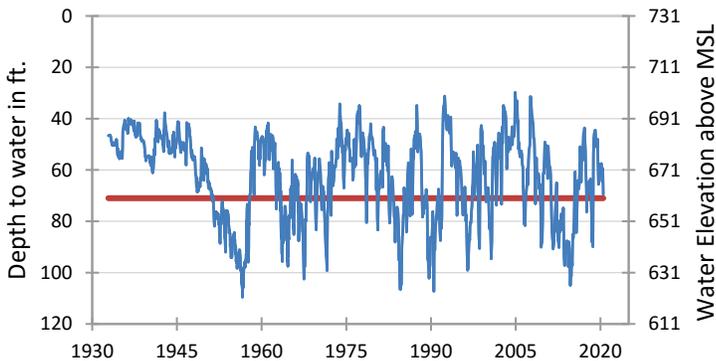
(17) State Well #21-35-748
Near O'Brien, Haskell County
Seymour Aquifer



**(18) State Well #48-07-516
Dell City, Hudspeth County
Bone Spring - Victorio Peak Aquifer**

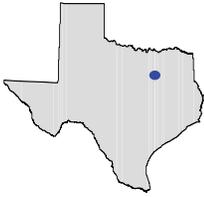


**(8) State Well #68-37-203 (J-17)
San Antonio, Bexar County
Edwards (Balcones Fault Zone) Aquifer**



The late June water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, elevation 731 feet above mean sea level, was 69.50 feet below land surface, or 661.50 feet above mean sea level. This was 10.10 feet below last month's measurement, 21.50 feet below last year's measurement and 22.86 feet below the initial measurement recorded in 1932.

Water levels below the red line indicate periods in which Edwards Aquifer Authority Stage 1 drought restrictions are in effect.



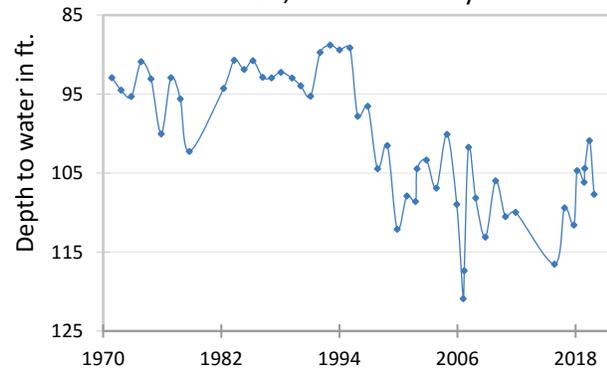
HYDROGRAPH OF THE MONTH

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

The Woodbine Aquifer is a minor aquifer located in northeast Texas. The aquifer overlies the Trinity Aquifer and consists of sandstone interbedded with shale and clay that form three distinct water bearing zones. The lower zones of the aquifer typically yield the most water, whereas the upper zone yields limited water and tends to be very high in iron. In general, water to a depth of 1,500 feet is fresh, containing less than 1,000 milligrams per liter of total dissolved solids. Water at depths below 1,500 feet is slight to moderately saline, containing from 1,000 to 4,000 milligrams per liter of total dissolved solids. The aquifer provides water for municipal, industrial, domestic, livestock, and small irrigation supplies. Large water level declines have moderated in the past decade as suppliers have switched to surface water sources.

Woodbine Aquifer

Well #32-31-301, 171 feet deep
unused, Tarrant County



The initial measurement of 92.92 feet below land surface was recorded by the TWDB in November of 1970. Since then, the TWDB has continued to record near-annual measurements in the unused well. The period of record reveals a negative trend in water level that is roughly equal to -0.30 ft/yr. Water levels have increased over the past 5 years which is possibly a result of water suppliers switching to surface water sources.



Far away (left), and close-up (right) images of well #32-31-301.