

Texas Water Conditions Report

September 2021

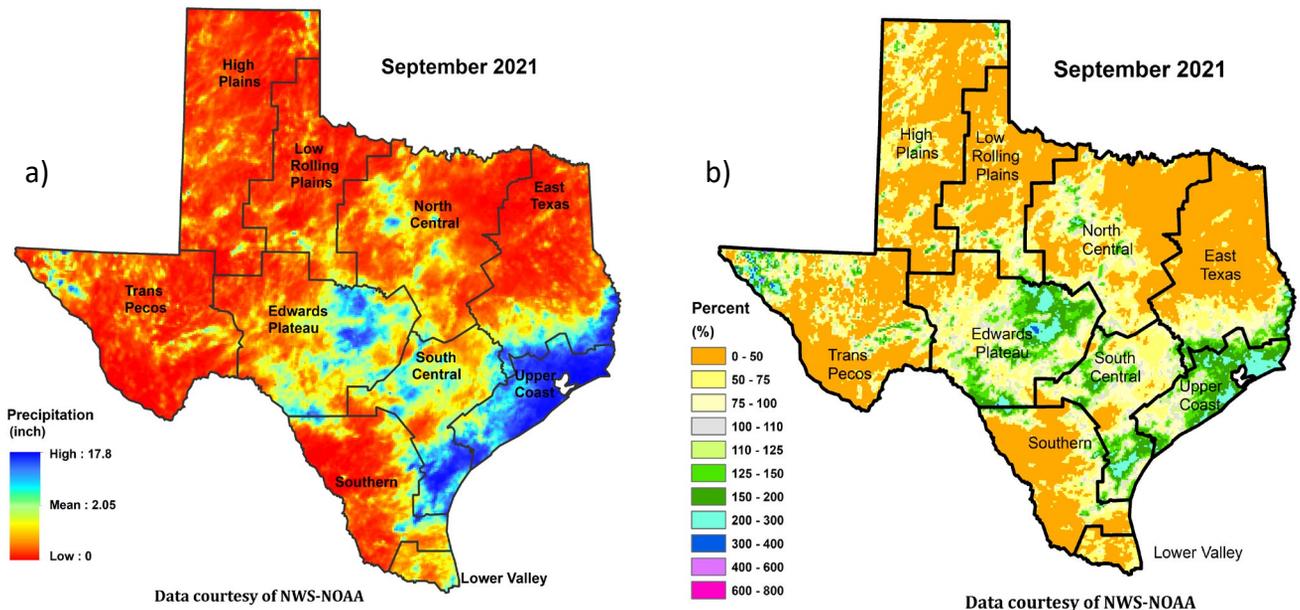
Surface Water News:

On September 8, the TWDB launched an evaporation buoy on Lake Buchanan, which will provide improved datasets with daily estimates of evaporative water loss. Installations are planned for Lake Meredith and Red Bluff in October 2021.

RAINFALL

Little to no rain [yellow, orange, and red shading, Figure 1(a)] fell over the Texas High Plains, Low Rolling Plains, Trans Pecos, North Central, much of East Texas, Southern, Lower Valley, portions of Edwards Plateau, and South Central climate divisions. Other areas of Texas received well above average rainfall, reaching 17.8 inches along the coast [dark blue shading, Figure 1(a)]. Some rainfall [light blue and dark blue shading, Figure 1(a)] was recorded in northwestern Trans Pecos, southern and eastern Edwards Plateau, southern and portions of northern South Central, areas of North Central, northern and eastern Southern, areas of the Lower Valley, southern East Texas, and much of the Upper Coast climate divisions.

Monthly rainfall for September was below average, compared to historical data from 1981–2010, for much of the state [yellow and orange shading, Figure 1(b)]. Above average rainfall [green and light blue shading, Figure 1(b)] was seen in northern and western Trans Pecos, northeastern and southern Edwards Plateau, central North Central, southern and eastern East Texas, areas of northern and eastern Southern, portions of northern and southern South Central, and central and eastern Upper Coast climate divisions. Well above average rainfall [dark blue shading, Figure 1(b)] fell over northwestern Trans Pecos and northeastern Edwards Plateau. Portions of northwestern Trans Pecos received 4-6 times the average rain fall [light purple shading, Figure 1(b)].



RESERVOIR STORAGE

At the end of September 2021, total conservation storage* in 118 of the state’s major water supply reservoirs was 25.5 million acre-feet or 78.9 percent of total conservation storage capacity (Figure 2). This is approximately 1.02 million acre-feet less than a month ago and approximately 0.27 million acre-feet less than at the end of September 2020.

Statewide monitored major water supply reservoir conservation storage

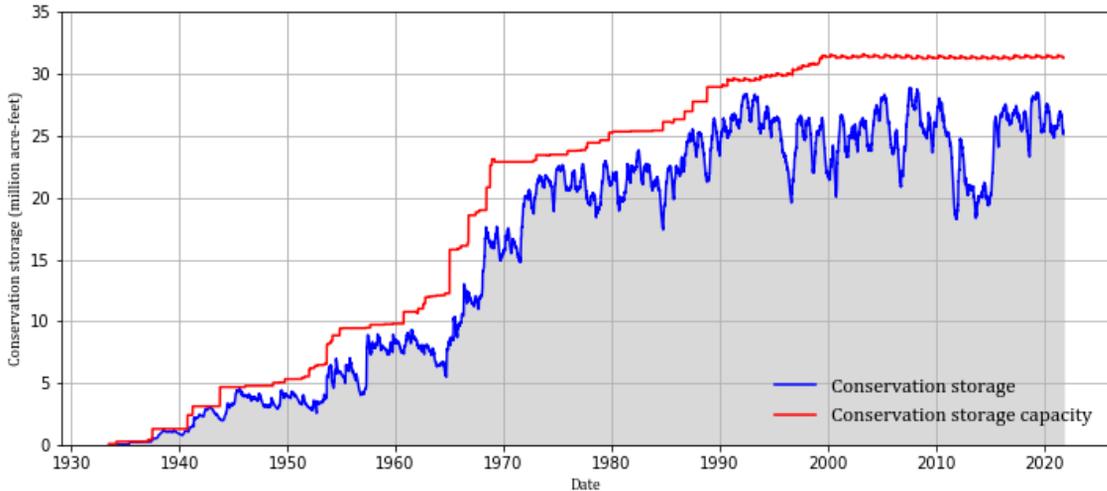


Figure 2: Statewide reservoir conservation storage

Out of 118 reservoirs in the state, 7 reservoirs held 100 percent of conservation storage capacity (Figure 3). Additionally, 75 were at or above 90 percent full. Eight reservoirs remained below 30 percent: E.V. Spence (26.7 percent full), Greenbelt (17.8 percent full), Mackenzie (8.1 percent full), O. C. Fisher (6.6 percent full), Palo Duro Reservoir (1.1 percent full), Falcon (20.3 percent full), Medina Lake (29.1 percent full), and White River (22.9 percent full). Elephant Butte Reservoir (located in New Mexico) was 5.6 percent full.

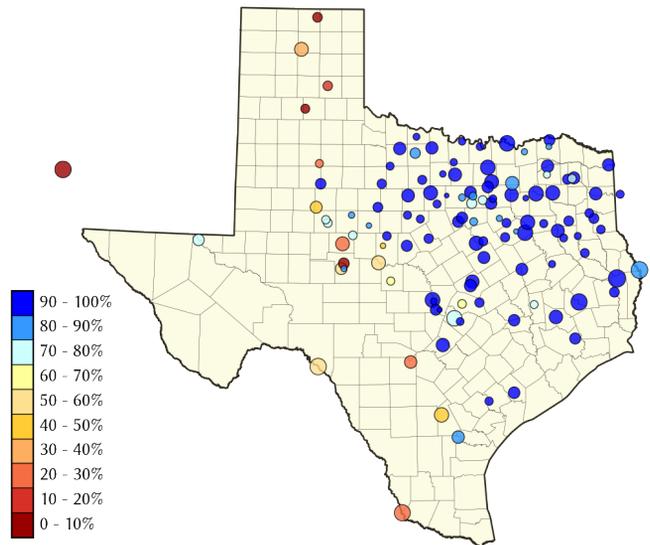


Figure 3: Reservoir conservation storage at end-September expressed as percent full (%)

*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.

Total regionally combined conservation storage was at or above-normal (storage ≥ 70 percent full) in the Low Rolling Plains (77.6 percent full), East Texas (91.0 percent full), North Central (94.2 percent full), South Central (73.2 percent full), and Upper Coast (96.4 percent full) climate divisions (Figure 4). The Edwards Plateau climate division had moderately low conservation storage (57.9 percent full). The High Plains (30.6 percent full) and Southern (34.2 percent full) climate divisions had severely low storage, and Trans Pecos climate division (15.8 percent full) had extremely low storage (Figure 4).

Combined conservation storage by river basin or sub-basin showed normal to high (>70 percent full, Figure 5) conservation storage in the Upper and Lower Red, Sulphur, Cypress, Upper and Lower Sabine, Neches, Upper and Lower Trinity, San Jacinto, Upper and Lower Brazos, Lower Colorado, Lavaca, and Guadalupe river basins. The Nueces and Upper Colorado river basins had moderately low conservation storage (40–60 percent full, Figure 5), and the Canadian, San Antonio, and Lower Rio Grande river basins had severely low conservation storage (20–40 percent full, Figure 5). The Upper/Mid Rio Grande river basin had extremely low conservation storage (10–20 percent full, Figure 5).

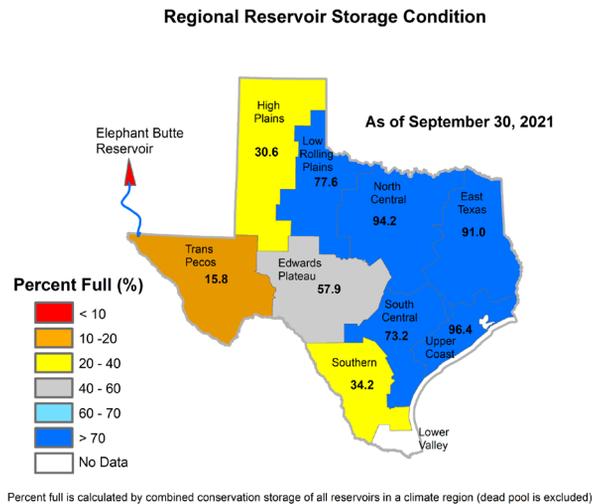


Figure 4: Reservoir Storage Index* by climate division at 9/30/2021

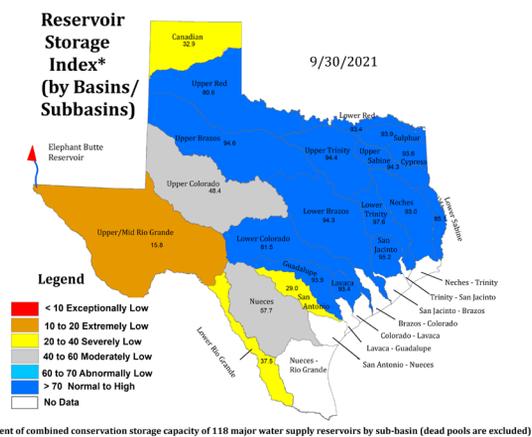


Figure 5: Reservoir Storage Index* by river basin/sub-basin at 9/30/2021

*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	Storage capacity	Storage at end-September 2021		Storage change from end-Aug 2021		Storage change from end-Sep 2020	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Abilene, Lake	7,900	6,870	87.0	-482	-6.1	534	6.8
Alan Henry Reservoir	96,207	91,441	95.0	-2,795	-2.9	2,381	2.5
*Amistad Reservoir (Texas & Mexico)	3,275,532	1,153,019	35.2	-2,900	0.0	-34,526	-1.1
*Amistad Reservoir (Texas)	1,840,849	960,309	52.2	-16,328	0.0	-161,170	-8.8
Amon G Carter, Lake	19,266	19,266	100.0	0	0.0	362	1.9
Aquilla Lake	43,243	40,484	93.6	-2,297	-5.3	-1,382	-3.2
Arlington, Lake	40,157	31,053	77.3	-5,739	-14.3	-2,737	-6.8
Arrowhead, Lake	230,359	209,593	91.0	-8,342	-3.6	-19,030	-8.3
Athens, Lake	29,503	29,172	98.9	-331	-1.1	-331	-1.1
*Austin, Lake	23,972	22,803	95.1	-123	0.0	-200	0.0
B A Steinhagen Lake	69,186	65,068	94.0	-693	-1.0	1,079	1.6
Bardwell Lake	46,122	44,317	96.1	-1,805	-3.9	-1,805	-3.9
Belton Lake	435,225	422,942	97.2	-10,707	-2.5	-12,283	-2.8
Benbrook Lake	85,648	64,778	75.6	-8,713	-10.2	-4,859	-5.7
Bob Sandlin, Lake	192,417	181,891	94.5	-5,228	-2.7	-6,458	-3.4
Bonham, Lake	11,027	8,889	80.6	-611	-5.5	-2,138	-19.4
Brady Creek Reservoir	28,808	17,433	60.5	-438	-1.5	-3,671	-12.7
Bridgeport, Lake	366,236	354,655	96.8	-11,581	-3.2	12,468	3.4
*Brownwood, Lake	130,868	127,430	97.4	-3,438	-2.6	7,104	5.4
Buchanan, Lake	816,904	756,882	92.7	-23,590	-2.9	-2,114	0.0
Caddo, Lake	29,898	29,898	100.0	0	0.0	no data	
Canyon Lake	378,781	354,748	93.7	-2,849	0.0	3,461	0.9
Cedar Creek Reservoir in Trinity	644,686	614,437	95.3	-25,026	-3.9	-23,076	-3.6
Champion Creek Reservoir	41,580	30,414	73.1	-830	-2.0	4,985	12.0
Cherokee, Lake	40,094	38,259	95.4	-1,835	-4.6	-1,592	-4.0
Choke Canyon Reservoir	662,820	312,413	47.1	-9,733	-1.5	59,804	9.0
*Cisco, Lake	29,003	26,353	90.9	-765	-2.6	2,393	8.3
Coleman, Lake	38,075	36,995	97.2	-1,080	-2.8	2,584	6.8
Colorado City, Lake	31,040	30,102	97.0	-844	-2.7	9,833	31.7
*Coletto Creek Reservoir	30,758	24,073	78.3	-781	-2.5	12,084	39.3
Conroe, Lake	410,988	385,534	93.8	-6,137	-1.5	555	0.1
Corpus Christi, Lake	256,062	217,935	85.1	-14,284	-5.6	67,646	26.4
Crook, Lake	9,195	7,919	86.1	-478	-5.2	-1,276	-13.9
Cypress Springs, Lake	66,756	63,402	95.0	-1,714	-2.6	-1,523	-2.3
E. V. Spence Reservoir	517,272	138,114	26.7	-5,182	-1.0	12,468	2.4
Eagle Mountain Lake	179,880	168,788	93.8	-9,115	-5.1	-1,588	0.0
Elephant Butte Reservoir (Texas)	852,491	47,751	5.6	2,703	0.3	12,036	1.4
Elephant Butte Reservoir (Total Storage)	1,960,900	110,535	5.6	6,258	0.3	27,860	1.4
*Falcon Reservoir (Texas & Mexico)	2,646,817	421,025	15.9	-61,194	-2.3	-146,447	-5.5
*Falcon Reservoir (Texas)	1,551,007	314,742	20.3	-52,402	-3.4	-131,797	-8.5
Fork Reservoir, Lake	605,061	557,684	92.2	-20,883	-3.5	-6,987	-1.2
Fort Phantom Hill, Lake	70,030	67,819	96.8	-2,211	-3.2	1,218	1.7
Georgetown, Lake	36,823	25,006	67.9	-3,663	-9.9	2,942	8.0
Gibbons Creek Reservoir	25,721	19,423	75.5	-690	-2.7	-1,809	-7.0
Graham, Lake	45,288	41,251	91.1	-1,501	-3.3	-3,298	-7.3
Granbury, Lake	132,949	128,989	97.0	-3,063	-2.3	-3,226	-2.4

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Storage capacity	Storage at end-September 2021		Storage change from end-Aug 2021		Storage change from end-Sep 2020		
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)	
<i>Continued</i>								
Granger Lake	51,822	51,822	100.0	0	0.0	4,269	8.2	
Grapevine Lake	163,064	158,186	97.0	-4,878	-3.0	-3,694	-2.3	
Greenbelt Lake	59,968	10,673	17.8	-597	0.0	59	0.1	
*Halbert, Lake	6,033	5,009	83.0	-167	-2.8	-309	-5.1	
Hords Creek Lake	8,109	3,660	45.1	-161	-2.0	-1,236	-15.2	
Houston County Lake	17,113	16,727	97.7	-373	-2.2	-296	-1.7	
Houston, Lake	130,147	130,147	100.0	0	0.0	1,686	1.3	
Hubbard Creek Reservoir	313,298	296,490	94.6	-11,968	-3.8	1,814	0.6	
Hubert H Moss Lake	24,058	22,821	94.9	-625	-2.6	-817	-3.4	
Inks, Lake	13,962	12,802	91.7	-218	-1.6	-60	0.0	
J. B. Thomas, Lake	199,931	88,390	44.2	-4,038	-2.0	53,686	26.9	
Jacksonville, Lake	25,670	25,151	98.0	-472	-1.8	-519	-2.0	
Jim Chapman Lake (Cooper)	260,332	235,054	90.3	-15,623	-6.0	21,656	8.3	
Joe Pool Lake	175,800	172,922	98.4	-2,878	-1.6	960	0.5	
Kemp, Lake	245,307	242,714	98.9	-2,593	-1.1	37,606	15.3	
Kickapoo, Lake	86,345	70,713	81.9	-3,658	-4.2	-4,251	-4.9	
Lavon Lake	406,388	341,531	84.0	-40,399	-9.9	-45,460	-11.2	
Leon, Lake	27,762	25,414	91.5	-1,190	-4.3	-2,016	-7.3	
Lewisville Lake	563,228	539,727	95.8	-23,501	-4.2	-21,611	-3.8	
Limestone, Lake	203,780	188,779	92.6	-10,188	-5.0	-13,885	-6.8	
*Livingston, Lake	1,741,867	1,700,932	97.6	-40,935	-2.4	-40,935	-2.4	
*Lost Creek Reservoir	11,950	11,723	98.1	-193	-1.6	289	2.4	
Lyndon B Johnson, Lake	115,249	109,783	95.3	-1,220	-1.1	-976	0.0	
Mackenzie Reservoir	46,450	3,757	8.1	-129	0.0	-631	-1.4	
Marble Falls, Lake	6,901	6,734	97.6	-135	-2.0	-59	0.0	
Martin, Lake	75,726	69,016	91.1	-4,159	-5.5	1,495	2.0	
Medina Lake	254,823	74,107	29.1	-7,976	-3.1	-54,694	-21.5	
Meredith, Lake	500,000	184,383	36.9	-5,636	-1.1	-1,262	0.0	
Millers Creek Reservoir	26,768	25,248	94.3	-1,520	-5.7	-1,520	-5.7	
*Mineral Wells, Lake	5,273	5,184	98.3	-89	-1.7	-89	-1.7	
Monticello, Lake	34,740	27,532	79.3	-1,050	-3.0	-1,278	-3.7	
Mountain Creek, Lake	22,850	22,850	100.0	0	0.0	0	0.0	
Murvault, Lake	38,285	36,989	96.6	-1,296	-3.4	102	0.3	
Nacogdoches, Lake	39,522	36,432	92.2	-1,499	-3.8	895	2.3	
Nasworthy	9,615	8,122	84.5	37	0.4	-74	0.0	
Navarro Mills Lake	49,827	45,763	91.8	-3,360	-6.7	-3,969	-8.0	
New Terrell City Lake	8,583	7,994	93.1	-486	-5.7	-42	0.0	
Nocona, Lake (Farmers Crk)	21,444	20,174	94.1	-644	-3.0	-525	-2.4	
North Fork Buffalo Creek Reservoir	15,400	13,740	89.2	-625	-4.1	-1,135	-7.4	
O' the Pines, Lake	268,566	251,883	93.8	-16,683	-6.2	-9,834	-3.7	
O. C. Fisher Lake	115,742	7,629	6.6	-541	0.0	-352	0.0	
*O. H. Ivie Reservoir	554,340	313,707	56.6	-11,884	-2.1	-35,006	-6.3	
Oak Creek Reservoir	39,210	28,968	73.9	-1,278	-3.3	-3,301	-8.4	

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Name of lake or reservoir	Storage capacity	Storage at end-September 2021		Storage change from end-Aug 2021		Storage change from end-Sep 2020		
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)	
<i>Continued</i>								
Palestine, Lake	367,303	355,632	96.8	-11,671	-3.2	-11,671	-3.2	
Palo Duro Reservoir	61,066	677	1.1	-174	0.0	-664	-1.1	
Palo Pinto, Lake	26,766	26,766	100.0	196	0.7	629	2.3	
Pat Cleburne, Lake	26,008	22,998	88.4	-1,645	-6.3	-864	-3.3	
*Pat Mayse Lake	113,683	106,116	93.3	-4,930	-4.3	-7,567	-6.7	
Possum Kingdom Lake	538,139	528,711	98.2	-9,428	-1.8	-7,104	-1.3	
Proctor Lake	54,762	49,347	90.1	-5,415	-9.9	-5,415	-9.9	
Ray Hubbard, Lake	439,559	406,826	92.6	-25,065	-5.7	-14,877	-3.4	
Ray Roberts, Lake	788,167	774,066	98.2	-14,101	-1.8	-7,594	0.0	
Red Bluff Reservoir	151,110	111,782	74.0	-2,519	-1.7	39,457	26.1	
Richland-Chambers Reservoir	1,087,839	1,033,293	95.0	-34,936	-3.2	-42,586	-3.9	
Sam Rayburn Reservoir	2,857,077	2,639,166	92.4	-158,451	-5.5	141,508	5.0	
Somerville Lake	150,293	147,046	97.8	-3,247	-2.2	16,072	10.7	
Squaw Creek, Lake	151,250	151,250	100.0	0	0.0	0	0.0	
Stamford, Lake	51,570	49,513	96.0	-2,057	-4.0	-2,057	-4.0	
Stillhouse Hollow Lake	227,771	223,416	98.1	-4,355	-1.9	-4,355	-1.9	
Striker, Lake	16,934	16,228	95.8	-706	-4.2	-706	-4.2	
Sweetwater, Lake	12,267	10,238	83.5	-356	-2.9	-333	-2.7	
*Sulphur Springs, Lake	17,747	12,681	71.5	-1,228	-6.9	-1,288	-7.3	
Tawakoni, Lake	871,685	835,958	95.9	-24,312	-2.8	7,175	0.8	
Texana, Lake	159,566	149,166	93.5	-7,380	-4.6	-10,400	-6.5	
Texoma, Lake (Texas & Oklahoma)	2,487,601	2,329,061	93.6	-135,455	-5.4	20,639	0.8	
Texoma, Lake (Texas)	1,243,801	1,164,530	93.6	-67,728	-5.4	10,320	0.8	
Toledo Bend Reservoir (Texas & Louisiana)	4,472,900	3,812,960	85.2	-122,951	-2.7	-54,386	-1.2	
Toledo Bend Reservoir (Texas)	2,236,450	1,904,430	85.2	-61,476	-2.7	-27,193	-1.2	
Travis, Lake	1,113,348	801,246	72.0	-40,864	-3.7	10,441	0.9	
Twin Buttes Reservoir	182,454	97,153	53.2	-5,068	-2.8	-4,150	-2.3	
Tyler, Lake	72,073	69,744	96.8	-2,329	-3.2	-2,281	-3.2	
Waco, Lake	189,418	180,463	95.3	-8,955	-4.7	-8,065	-4.3	
Waxahachie, Lake	10,780	9,454	87.7	-718	-6.7	1,190	11.0	
Weatherford, Lake	17,812	15,985	89.7	-1,021	-5.7	-810	-4.5	
White River Lake	29,880	6,851	22.9	-601	-2.0	2,646	8.9	
Whitney, Lake	553,344	508,865	92.0	-25,615	-4.6	-32,069	-5.8	
Worth, Lake	24,419	20,392	83.5	-527	-2.2	-1,090	-4.5	
Wright Patman Lake	231,496	230,916	99.7	-580	0.0	-580	0.0	
STATEWIDE TOTAL								
STATEWIDE TOTAL	32,261,240	25,449,612	78.9	-1,017,694	-3.2	-268,013	-0.8	

*Total volume below elevation of conservation pool top is used as conservation storage capacity because the dead pool storage is unknown.

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

STREAMFLOW CONDITIONS

Much of the state had near normal to much above normal streamflow in September 2021. Above normal streamflow (76–90th percentile, light blue shading in Figure 6) was seen in the Upper Brazos, Cypress, Neches, San Jacinto, and San Jacinto-Brazos river basins.

Below normal streamflow (10–24th percentile, orange shading in Figure 6) was recorded in the Canadian, Red, Upper and Lower Brazos, Neches, Upper and lower Colorado, Lavaca, Guadalupe, San Antonio, Nueces, and Nueces-Rio Grande river basins. The Upper Red, Upper and Lower Colorado, Brazos-Colorado, Nueces, and Pecos river basins had much below normal streamflow (< 10th percentile, dark red shading in Figure 6). Record lows (bright red shading in Figure 6) were seen in the Upper Red and Pecos river basins.

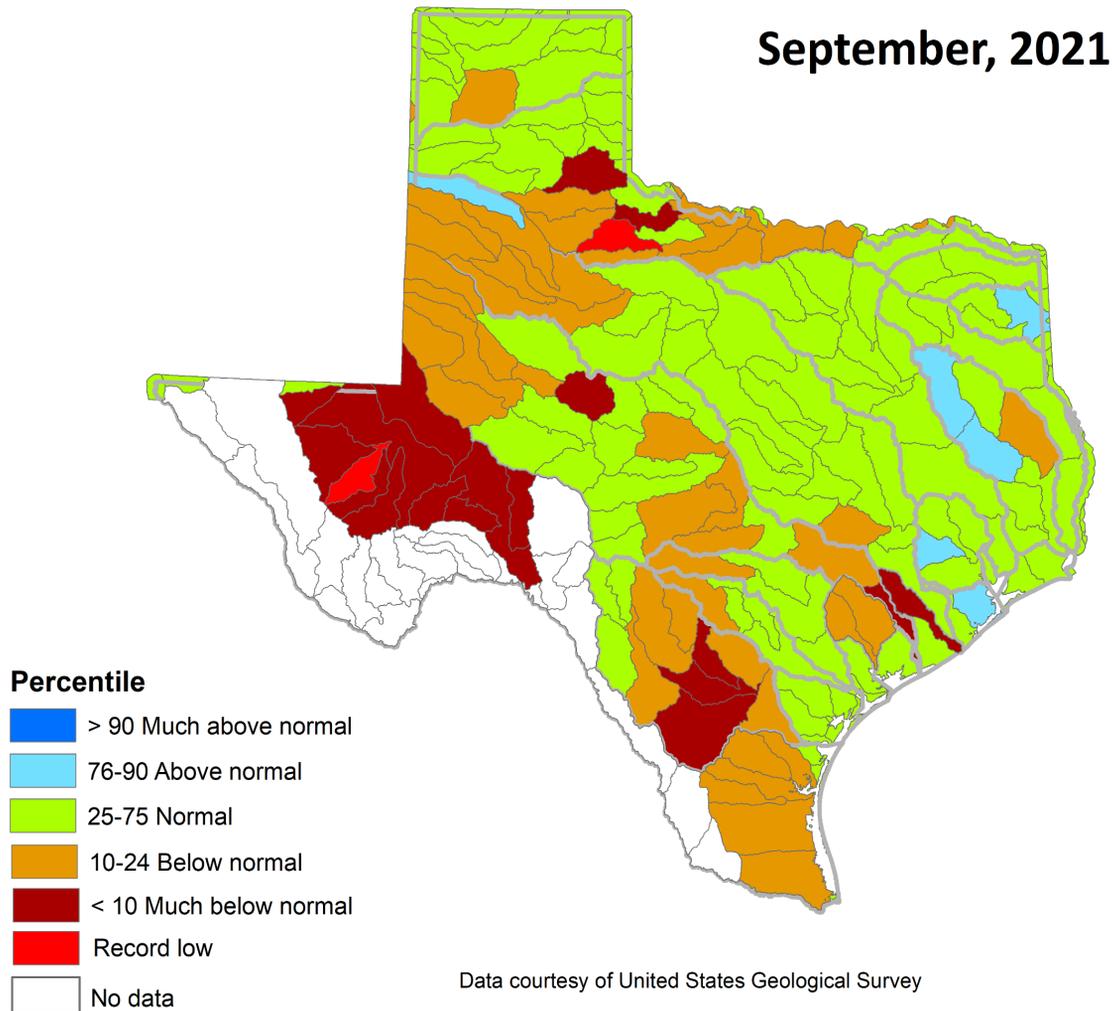


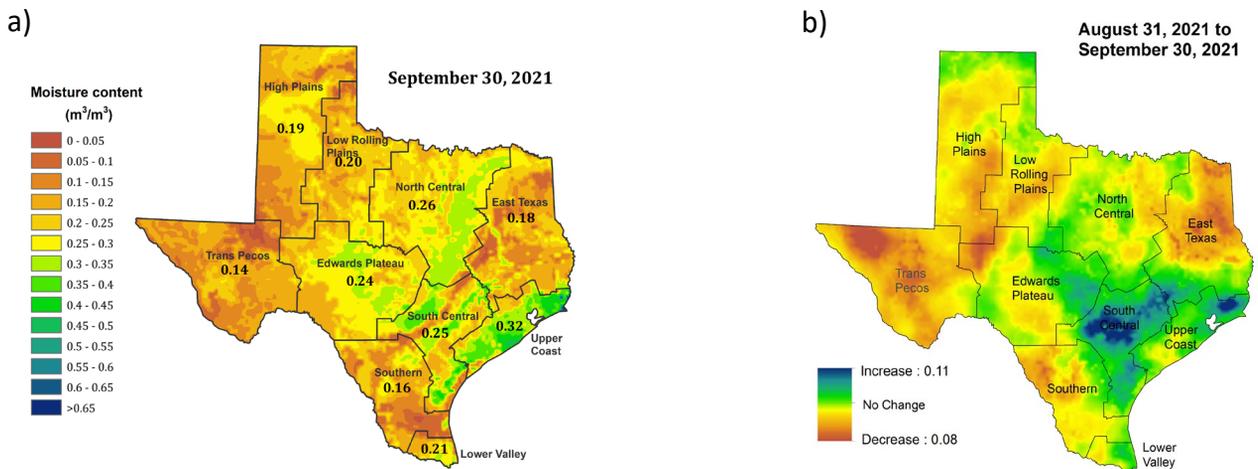
Figure 6: Runoff percentiles by the U.S. Geological Survey's Hydrologic Unit Code

SOIL MOISTURE

Root zone soil moisture at the end of September 2021 [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. There were areas of low soil moisture [< 0.15 cubic meters of water per bulk cubic meter soil (m^3/m^3)] in portions of several climate regions including the High Plains, Low Rolling Plains, Trans Pecos, Southern, northern Lower Valley, East Texas, and a distinct band from western to northeastern South Central, as well as southern portions of the climate division.

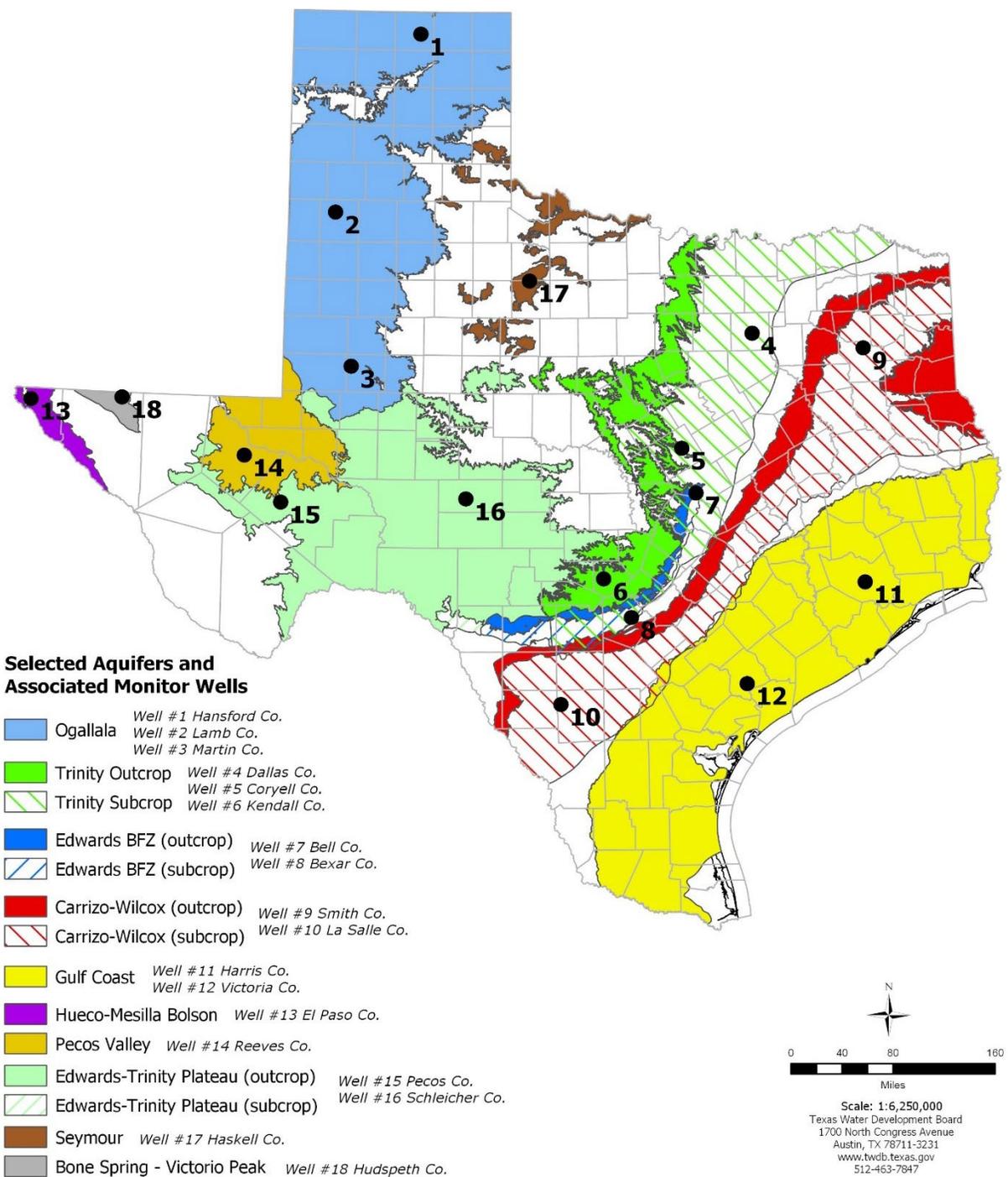
Soil moisture was high [> 0.3 cubic meters of water per bulk cubic meter soil (m^3/m^3)] in areas of the Edwards Plateau, eastern North Central, portions of southern East Texas, South Central, Lower Valley, and much of the Upper Coast climate divisions, with very high soil moisture [> 0.6 cubic meters of water per bulk cubic meter soil (m^3/m^3)] in the eastern portions of Upper Coast [Figure 7(a)].

Compared to conditions at the end of August 2021, soil moisture content increased [green to blue shading in Figure 7(b)] in the northern High Plains, northern and southern Low Rolling Plains, portions of North Central, northwestern and southern East Texas, southern and eastern Southern, eastern Lower Valley, much of South Central, and the Upper Coast climate divisions. Soil moisture content decreased [yellow, orange, and brown shading in Figure 7(b)] in much of the Trans Pecos, High Plains, Low Rolling Plains, East Texas, Southern, central Edwards Plateau, southwestern Upper Coast, western Lower Valley, areas of North Central, and northwestern South Central climate divisions.



Data from NASA Soil Moisture Active Passive (SMAP) Level 4 - Model - Value Added Version 4
Soil moisture content is shown as volume of water per unit volume of bulk soil. Root zone: 0 to 1 meter depth.

Figure 7: (a) Root zone soil moisture conditions in September 2021 and (b) the difference in root zone soil moisture between end-August 2021 and end-September 2021



September 2021 GROUNDWATER LEVELS IN MONITORING WELLS

Water-level measurements were available for 16 key monitoring wells in the state. Recorders in 2 wells (#1 and #18 on map) were temporarily offline and scheduled for repair. Water levels rose in 3 monitoring wells since the beginning of September, ranging from an increase of 0.25 feet in the Victoria County Gulf Coast Aquifer well (#12 on map) to 1.11 feet in the Bell County Edwards (Balcones Fault Zone) Aquifer well (#7 on map). Water levels declined in 13 monitoring wells, ranging from a decline of -0.09 feet in the Reeves County Pecos Valley Aquifer well (#14 on map) to -14.25 feet in the Kendall County Trinity Aquifer well (#6 on map). The J-17 well (#8 on map) in San Antonio recorded a water level of 72.20 feet below land surface or 658.80 feet above mean sea level. Water levels are 1.20 feet below the Stage I 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 - 18) are different than the TWDB's seven-digit state well number.

Monitoring Well	September (depth to water, feet)	August (depth to water, feet)	Month Change	Year Change	Historical Change*	First Measured (year)
(1) Hansford 0354301	NA	NA	NA	NA	-91.74	1951
(2) Lamb 1053602	152.28	152.18	-0.10	-1.17	-124.11	1951
(3) Martin 2739903	144.39	144.29	-0.10	-0.36	-39.50	1964
(4) Dallas 3319101	495.09	493.41	-1.68	-5.83	-273.09	1954
(5) Coryell 4035404	534.41	533.26	-1.15	-2.73	-242.41	1955**
(6) Kendall 6802609	157.74	143.49	-14.25	1.43	-97.74	1975
(7) Bell 5804816	121.33	122.44	1.11	3.29	2.18	2008
(8) Bexar 6837203	72.20	70.70	-1.50	-3.80	-25.56	1932
(9) Smith 3430907	439.47	438.25	-1.22	-2.50	-139.47	1977**
(10) La Salle 7738103	499.14	497.50	-1.64	15.09	-246.07	2003
(11) Harris 6514409	186.21	185.78	-0.43	3.40	-50.71*	1947**
(12) Victoria 8017502	32.21	32.46	0.25	0.93	1.79	1958**
(13) El Paso 4913301	298.66	297.93	-0.73	-2.58	-66.76	1964**
(14) Reeves 4644501	158.91	158.82	-0.09	6.64	-66.82	1952
(15) Pecos 5216802	219.15	215.30	-3.85	-0.50	27.73	1976
(16) Schleicher 5512134	275.33	275.76	0.43	13.99	26.57	2003
(17) Haskell 2135748	44.87	NA	NA	0.05	-1.87	2002
(18) Hudspeth 4807516	NA	NA	NA	NA	-50.79	1966

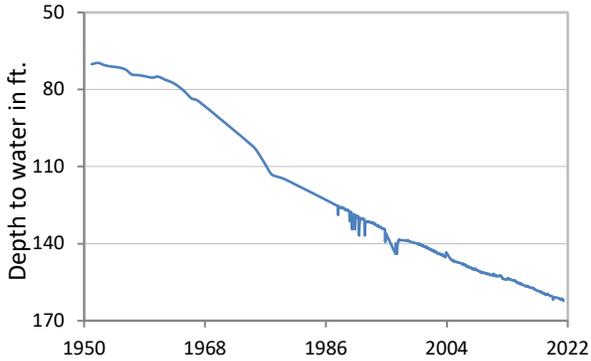
* Change since the original measurement taken on the date indicated in the last column. The historical changes shown for recorder wells #1 and #18 are based off the most recent water level records from May and June 2021, respectively.

** Measurement not shown on the hydrograph.

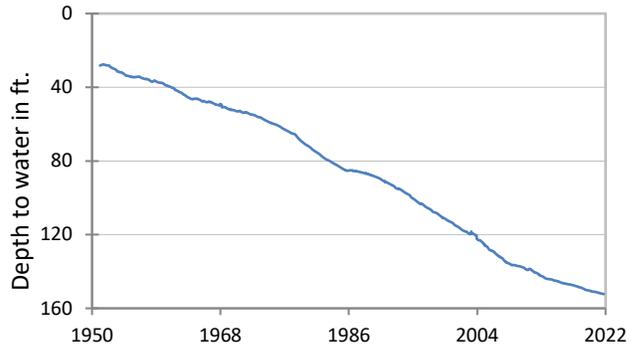
NA (not available)

September 2021 MONITORING WELL HYDROGRAPHS

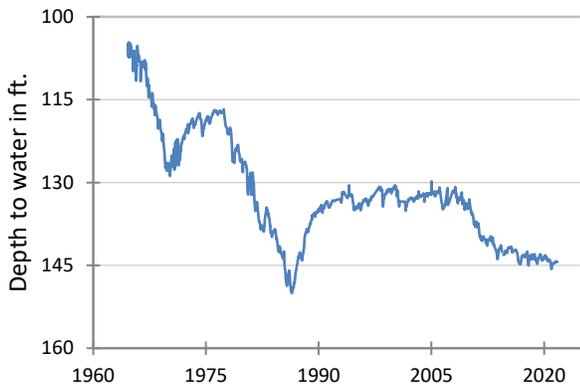
***(1) State Well #03-54-301
Near Spearman, Hansford County
Ogallala Aquifer**



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



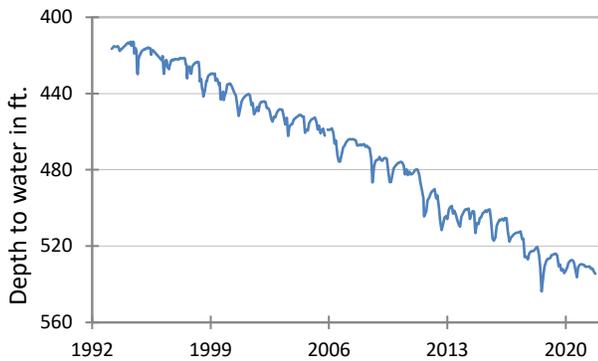
**(3) State Well #27-39-903
Northwest Martin County
Ogallala Aquifer**



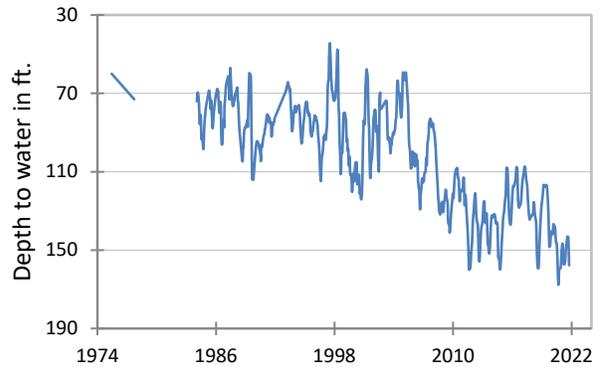
**(4) State Well #33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer**



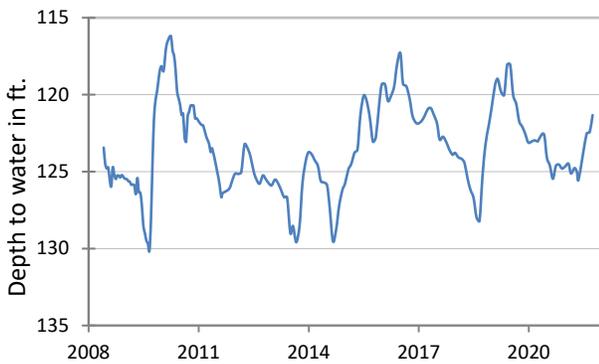
**(5) State Well #40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer**



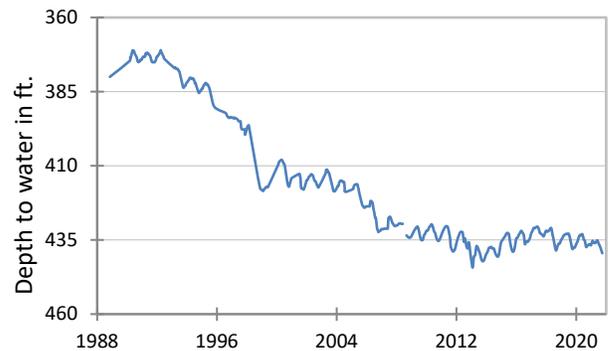
**(6) State Well #68-02-609
Waring, Kendall County
Travis Peak Formation-Trinity Aquifer**



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



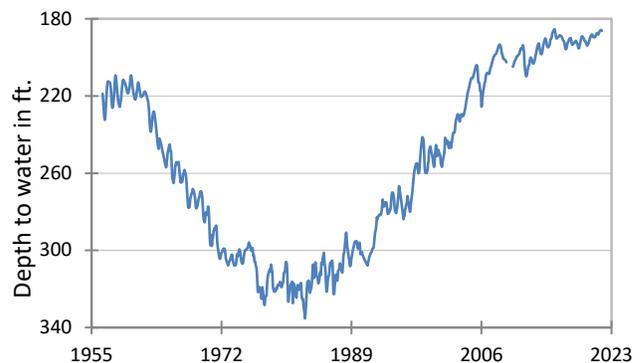
**(9) State Well #34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer**



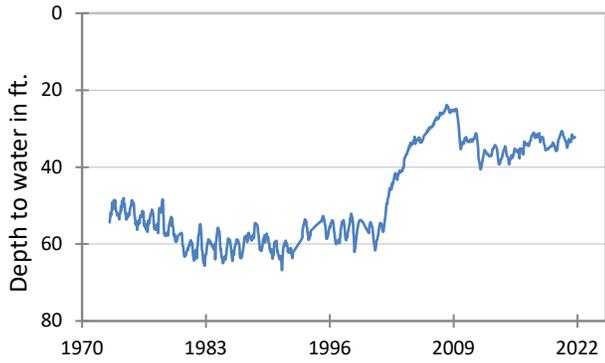
**(10) State Well #77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer**



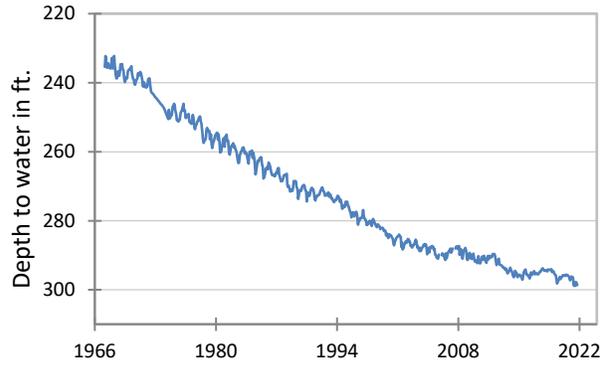
**(11) State Well #65-14-409
North Houston, Harris County
Evangeline Formation-Gulf Coast Aquifer**



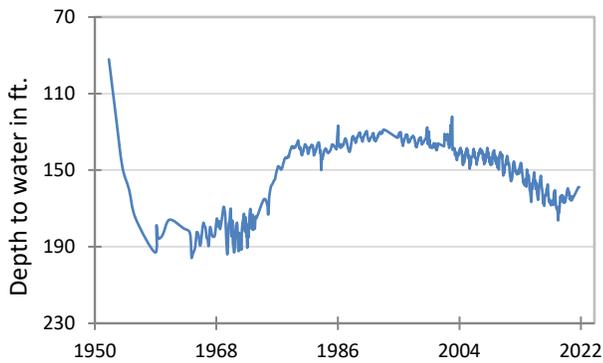
(12) State Well #80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



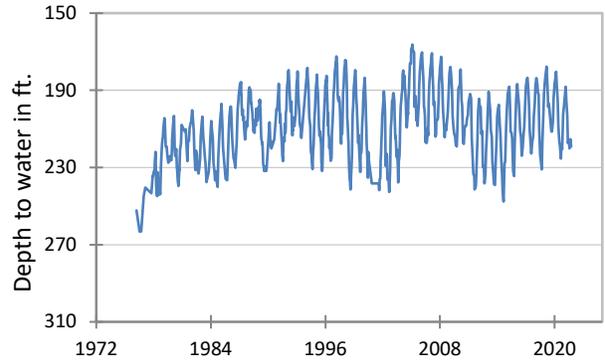
(13) State Well #49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolsons Aquifer



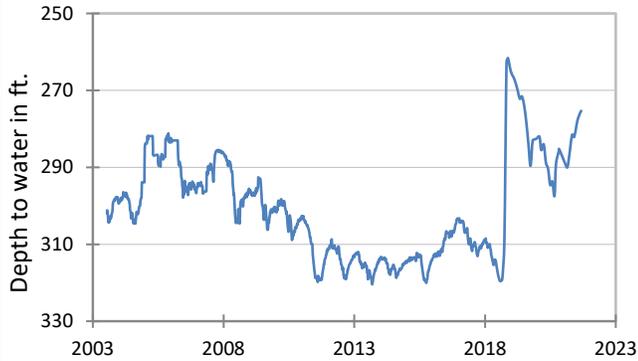
(14) State Well #46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



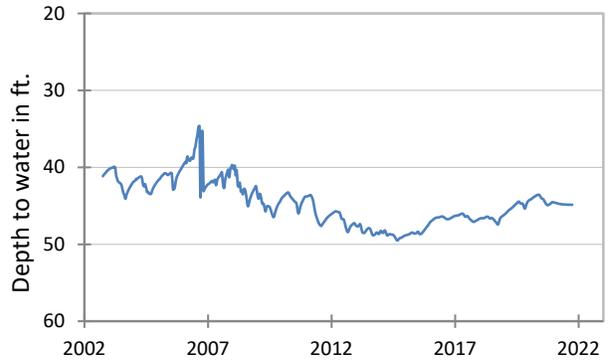
(15) State Well #52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



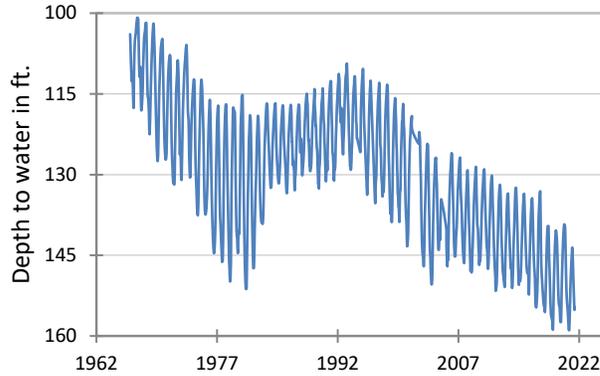
(16) State Well #55-12-134
Eldorado, Schleicher County
Edwards-Trinity (Plateau) Aquifer



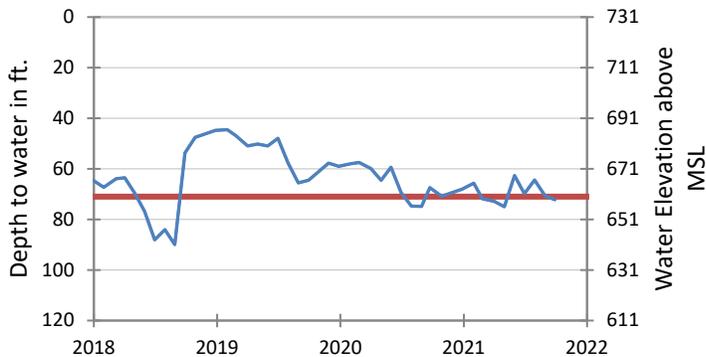
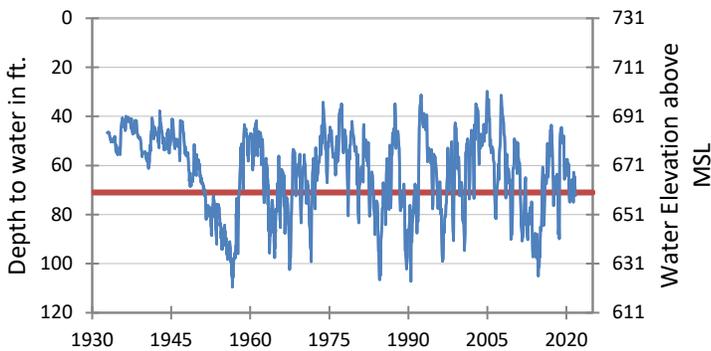
(17) State Well #21-35-748
Near O'Brien, Haskell County
Seymour Aquifer



***(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**

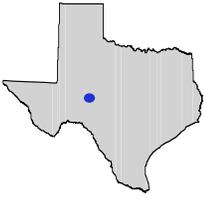


The late September water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, located at an elevation of 731 feet above mean sea level, was 72.20 feet below land surface, or 658.80 feet above mean sea level. This was 1.50 feet below last month's measurement, 3.80 feet below last year's measurement and 25.56 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. In September 2021, Stage 1 drought restrictions were in effect because the aquifer dropped 1.20 feet below the Stage 1 critical management level.

*Recorder wells #1 and #18 were temporarily offline in September 2021 and did not record data.

HYDROGRAPH OF THE MONTH

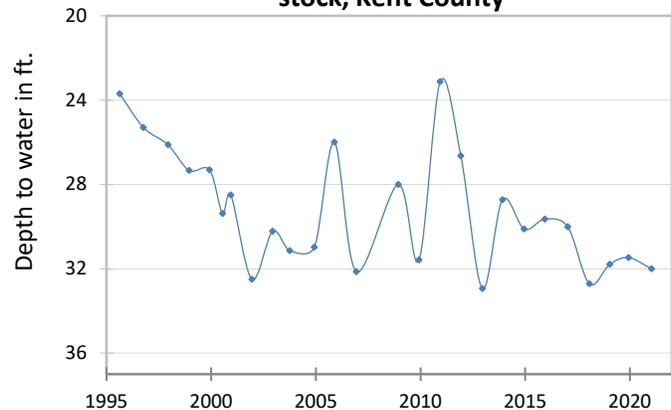


Each month this space features a new hydrograph (marked with the ● symbol on the map) depicting different aquifers and their conditions in Texas.

The Dockum Aquifer is a minor aquifer located in the northwest part of the state with a subcrop that extends beneath the Ogallala Aquifer in the High Plains. It is defined stratigraphically by the Dockum Group and includes, from youngest to oldest, the Santa Rosa Formation, the Tecovas Formation, the Trujillo Sandstone, and the Cooper Canyon Formation. The Dockum Group consists of gravel, sandstone, siltstone, mudstone, shale, and conglomerate. Groundwater located in the sandstone and conglomerate units is recoverable. The water quality in the aquifer is generally poor with freshwater outcrop areas in the east and brine in the western subsurface portions of the aquifer and the water is very hard. Naturally occurring radioactivity from uranium present within the aquifer has resulted in gross alpha radiation in excess of the state's primary drinking standard. Radium -226 and -228 also occur in amounts above acceptable standards. Groundwater from the aquifer is used for irrigation, municipal water supply, and oil field waterflooding operations, particularly in the southern high plains. Water level rises and declines have occurred in different areas of the aquifer.

Dockum Aquifer

Well #23-64-901, 59 feet deep
stock, Kent County



The initial measurement of 23.7 feet below land surface was recorded by the Texas Water Development Board in August of 1995. The TWDB has since taken yearly water level measurements in the well. The period of record reveals a gradual decline in water level with two major spikes from 2004 to 2005 (+4.98 ft) and from 2009 to 2010 (+8.46 ft). These spikes may be attributed to years with less pumping. Overall, water levels have remained within a 9.81 ft range with a high of 23.13 ft below land surface and low of 32.94 ft. The most recent measurement was from January of 2021 at 32 ft. This is 8.3 ft below the initial measurement in 1995.



Far away (left), and close-up (right) images of well #23-64-901.