

# Texas Water Conditions Report

October 2021

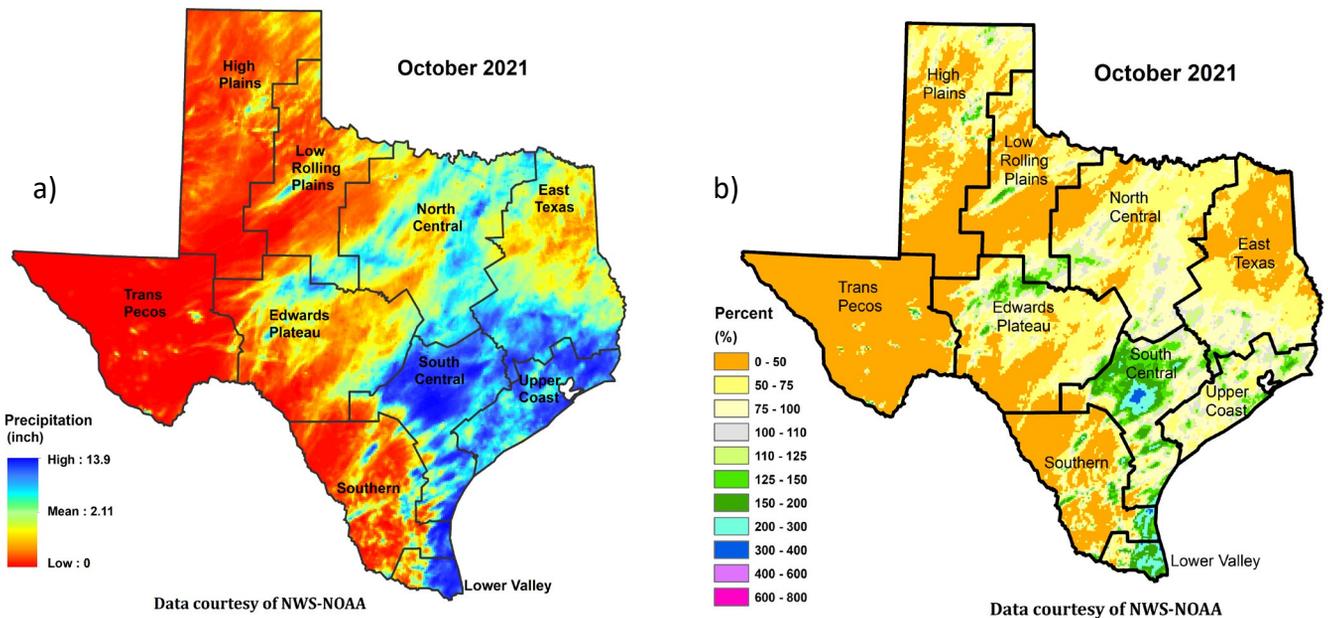
## Surface Water News:

In October, the TWDB deployed evaporation buoys on Red Bluff Reservoir (Pecos River Basin) and Lake Meredith (Canadian River Basin), which will provide improved datasets with daily estimates of evaporative water loss.

# RAINFALL

This month little to no rain [yellow, orange, and red shading, Figure 1(a)] fell over two thirds of the state, while some areas of Texas received much above average rainfall, reaching 13.9 inches in the coastal regions [dark blue shading, Figure 1(a)]. Some rainfall [light blue and dark blue shading, Figure 1(a)] was recorded in very small areas of the High Plains, Trans Pecos, portions of central and southern Low Rolling Plains, northern and eastern Edwards Plateau, North Central, Southern, Lower Valley, East Texas, and much of South Central, and the Upper Coast climate divisions.

Monthly rainfall for October was below average, compared to historical data from 1981–2010, for much of the state [yellow and orange shading, Figure 1(b)], although above average rainfall [green and light blue shading, Figure 1(b)] was seen in areas of the High Plains, Trans Pecos, northern Edwards Plateau, central and southern Low Rolling Plains, portions of North Central, southern East Texas, the Upper Coast, eastern Lower Valley, Southern, and South Central climate divisions.

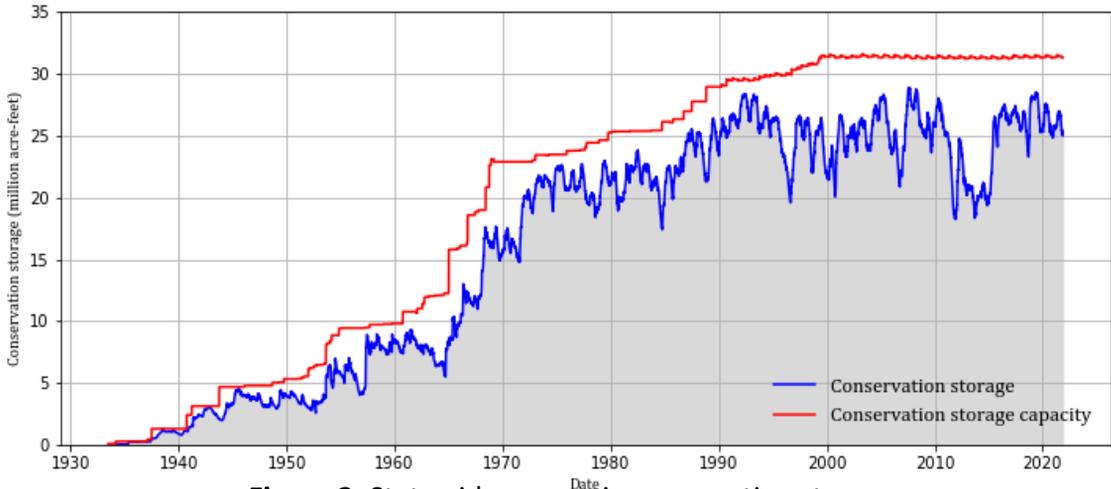


**Figure 1:** (a) Monthly accumulated rainfall and (b) Percent of normal rainfall

## **RESERVOIR STORAGE**

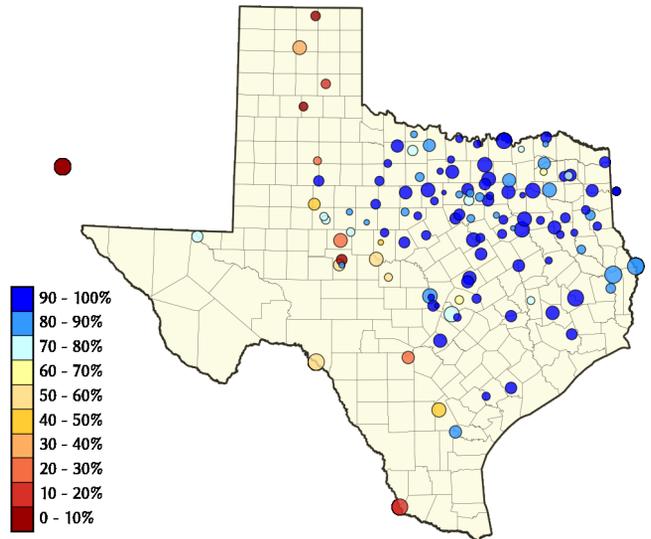
At the end of October 2021, total conservation storage\* in 122 of the state’s major water supply reservoirs was 25.09 million acre-feet or 78 percent of total conservation storage capacity (Figure 2). This is approximately 0.36 million acre-feet less than a month ago and approximately 0.13 million acre-feet less than at the end of October 2020.

Statewide monitored major water supply reservoir conservation storage



**Figure 2:** Statewide reservoir conservation storage

Out of 122 reservoirs in the state, 12 reservoirs held 100 percent of conservation storage capacity (Figure 3). Additionally, 59 were at or above 90 percent full. Eight reservoirs remained below 30 percent full: E.V. Spence (26 percent full), Greenbelt (17 percent full), Mackenzie (8 percent full), O. C. Fisher (7 percent full), Palo Duro Reservoir (1 percent full), Falcon (20 percent full), Medina Lake (28 percent full), and White River (21 percent full). Elephant Butte Reservoir (located in New Mexico) was 6 percent full.

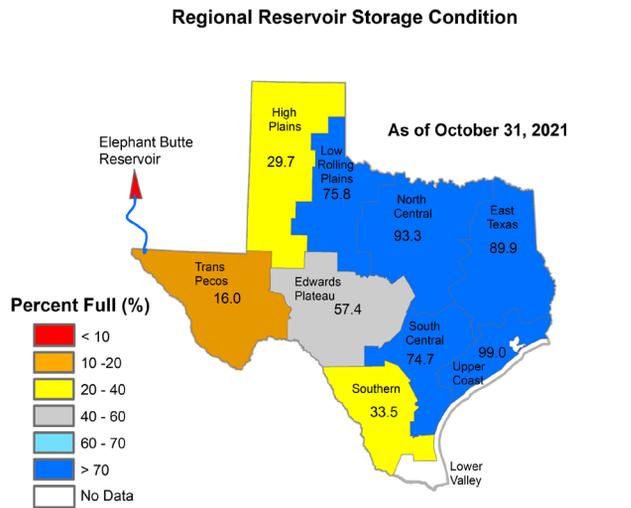


**Figure 3:** Reservoir conservation storage at end-October expressed as percent full (%)

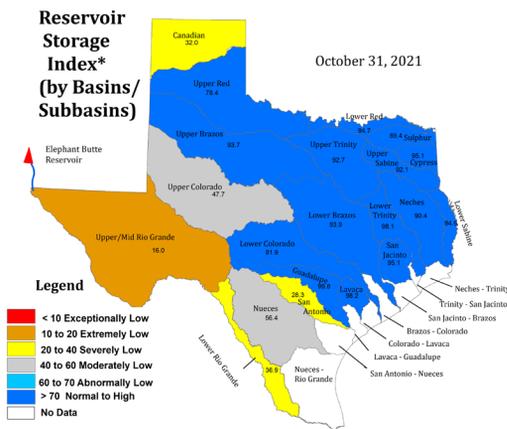
\*Storage is based on end of the month data in 122 major reservoirs that represent 96 percent of the total conservation storage capacity of 188 major water supply reservoirs in Texas plus Elephant Butte Reservoir in New Mexico. Major reservoirs are defined as having a conservation storage capacity of 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  $\geq 70$  percent full) in the Low Rolling Plains (75.8 percent full), East Texas (89.9 percent full), North Central (93.3 percent full), South Central (74.7 percent full), and Upper Coast (99.0 percent full) climate divisions (Figure 4). The Edwards Plateau climate division had moderately low conservation storage (57.4 percent full). The High Plains (29.7 percent full) and Southern (33.5 percent full) climate divisions had severely low storage, and Trans Pecos climate division (16.0 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 10/31/2021**



**Figure 5: Reservoir Storage Index\* by river basin/sub-basin at 10/31/2021**  
 \*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-October 2021		Storage change from end-Sep 2021		Storage change from end-Oct 2020	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Abilene, Lake	7,900	6,565	83	-305	-4	613	8
Alan Henry Reservoir	96,207	89,637	93	-1,804	-2	2,338	2
*Amistad Reservoir (Texas & Mexico)	3,275,532	1,140,888	35	-12,131	0	-72,469	-2
*Amistad Reservoir (Texas)	1,840,849	941,030	51	-19,279	-1	-251,197	-14
Amon G Carter, Lake	19,266	19,266	100	0	0	814	4
Aquilla Lake	43,243	41,654	96	1,170	3	1,349	3
Arlington, Lake	40,157	33,476	83	2,423	6	903	2
Arrowhead, Lake	230,359	204,678	89	-4,915	-2	-25,537	-11
Athens, Lake	29,503	29,245	99	73	0	-258	0
*Austin, Lake	23,972	22,849	95	46	0	-31	0
B A Steinhagen Lake	69,186	63,698	92	-1,370	-2	-291	0
Bardwell Lake	46,122	45,185	98	868	2	124	0
Belton Lake	435,225	418,771	96	-4,171	0	-10,891	-3
Benbrook Lake	85,648	60,171	70	-4,607	-5	-10,626	-12
Bob Sandlin, Lake	192,417	178,703	93	-3,188	-2	-7,452	-4
Bonham, Lake	11,027	8,530	77	-359	-3	-2,079	-19
Brady Creek Reservoir	28,808	17,126	59	-307	-1	-3,218	-11
Bridgeport, Lake	366,236	340,143	93	-14,512	-4	10,376	3
*Brownwood, Lake	130,868	125,765	96	-1,665	-1	9,536	7
Buchanan, Lake	816,904	760,688	93	3,806	0	24,788	3
Caddo, Lake	29,898	29,898	100	0	0	no data	
Canyon Lake	378,781	378,370	100	23,622	6	34,013	9
Cedar Creek Reservoir in Trinity	644,686	600,908	93	-13,529	-2	-25,637	-4
Champion Creek Reservoir	41,580	29,892	72	-522	-1	5,066	12
Cherokee, Lake	40,094	36,334	91	-1,925	-5	-2,710	-7
Choke Canyon Reservoir	662,820	302,172	46	-10,241	-2	59,275	9
*Cisco, Lake	29,003	26,041	90	-312	-1	2,557	9
Coleman, Lake	38,075	36,852	97	-143	0	3,380	9
Colorado City, Lake	31,040	31,040	100	938	3	11,053	36
*Coletto Creek Reservoir	30,758	23,602	77	-471	-2	11,968	39
Conroe, Lake	410,988	384,794	94	-740	0	8,822	2
Corpus Christi, Lake	256,062	216,266	84	-1,669	0	73,769	29
Crook, Lake	9,195	7,949	86	30	0	-1,246	-14
Cypress Springs, Lake	66,756	62,426	94	-976	-1	-2,085	-3
E. V. Spence Reservoir	517,272	134,734	26	-3,380	0	13,123	3
Eagle Mountain Lake	179,880	169,707	94	919	1	2,252	1
Elephant Butte Reservoir (Texas)	852,491	50,303	6	2,552	0	12,604	1
Elephant Butte Reservoir (Total Storage)	1,985,900	116,442	6	5,907	0	29,175	1
*Falcon Reservoir (Texas & Mexico)	2,646,817	401,221	15	-19,804	0	-149,521	-6
*Falcon Reservoir (Texas)	1,551,007	311,049	20	-3,693	0	-187,466	-12
Fork Reservoir, Lake	605,061	545,335	90	-12,349	-2	-8,379	-1
Fort Phantom Hill, Lake	70,030	68,049	97	230	0	3,725	5
Georgetown, Lake	36,823	25,527	69	521	1	4,148	11
Gibbons Creek Reservoir	25,721	20,418	79	995	4	-109	0
Graham, Lake	45,288	40,499	89	-752	-2	-2,880	-6
Granbury, Lake	132,949	130,999	99	2,010	2	-1,787	-1

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	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
<i>Continued</i>							
Granger Lake	51,822	51,822	100	82	0	5,692	11
Grapevine Lake	163,064	155,321	95	-2,865	-2	-4,735	-3
Greenbelt Lake	59,968	10,388	17	-285	0	136	0
*Halbert, Lake	6,033	5,068	84	59	1	-233	-4
Hords Creek Lake	8,109	3,647	45	-13	0	-1,013	-12
Houston County Lake	17,113	16,791	98	64	0	-219	-1
Houston, Lake	130,147	130,147	100	0	0	4,803	4
Hubbard Creek Reservoir	313,298	288,976	92	-7,514	-2	2,527	1
Hubert H Moss Lake	24,058	22,832	95	11	0	-497	-2
Inks, Lake	13,962	12,915	93	113	1	-90	0
J. B. Thomas, Lake	199,931	85,211	43	-3,179	-2	53,240	27
Jacksonville, Lake	25,670	25,014	97	-137	0	-528	-2
Jim Chapman Lake (Cooper)	260,332	223,476	86	-11,578	-4	21,754	8
Joe Pool Lake	175,800	172,036	98	-886	0	4,480	3
Kemp, Lake	245,307	236,365	96	-6,349	-3	29,043	12
Kickapoo, Lake	86,345	68,079	79	-2,634	-3	-4,476	-5
Lavon Lake	406,388	334,355	82	-7,176	-2	-39,514	-10
Leon, Lake	27,762	25,431	92	17	0	-1,071	-4
Lewisville Lake	563,228	526,595	93	-13,132	-2	-25,349	-5
Limestone, Lake	203,780	185,552	91	-3,227	-2	-10,724	-5
*Livingston, Lake	1,741,867	1,709,938	98	9,006	1	-5,731	0
*Lost Creek Reservoir	11,950	11,782	99	59	0	444	4
Lyndon B Johnson, Lake	115,249	110,697	96	914	1	-674	0
Mackenzie Reservoir	46,450	3,686	8	-71	0	-614	-1
Marble Falls, Lake	6,901	6,744	98	10	0	-125	-2
Martin, Lake	75,726	65,907	87	-3,109	-4	1,456	2
Medina Lake	254,823	72,289	28	-1,818	0	-46,182	-18
Meredith, Lake	500,000	179,234	36	-5,149	-1	-2,218	0
Millers Creek Reservoir	26,768	24,302	91	-946	-4	-2,466	-9
*Mineral Wells, Lake	5,273	5,273	100	89	2	0	0
Monticello, Lake	34,740	27,013	78	-519	-1	-1,342	-4
Mountain Creek, Lake	22,850	22,850	100	0	0	0	0
Murvaul, Lake	38,285	36,213	95	-776	-2	268	1
Nacogdoches, Lake	39,522	35,316	89	-1,116	-3	874	2
Nasworthy	9,615	8,073	84	-49	0	-184	-2
Navarro Mills Lake	49,827	46,172	93	409	1	-1,881	-4
New Terrell City Lake	8,583	7,753	90	-241	-3	-174	-2
Nocona, Lake (Farmers Crk)	21,444	19,732	92	-442	-2	-612	-3
North Fork Buffalo Creek Reservoir	15,400	13,495	88	-245	-2	-1,348	-9
O' the Pines, Lake	241,363	239,778	99	-12,105	-5	-1,585	0
O. C. Fisher Lake	115,742	7,558	7	-71	0	-78	0
*O. H. Ivie Reservoir	554,340	311,751	56	-1,956	0	-28,510	-5
Oak Creek Reservoir	39,210	28,226	72	-742	-2	-3,089	-8

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	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
<i>Continued</i>							
Palestine, Lake	367,303	348,205	95	-7,427	-2	-12,662	-3
Palo Duro Reservoir	61,066	564	1	-113	0	-634	-1
Palo Pinto, Lake	26,766	26,679	100	-87	0	1,854	7
Pat Cleburne, Lake	26,008	22,382	86	-616	-2	-646	-2
*Pat Mayse Lake	113,683	106,061	93	-55	0	-7,622	-7
Possum Kingdom Lake	538,139	527,828	98	-883	0	-4,248	0
Proctor Lake	54,762	49,701	91	354	1	-4,051	-7
Ray Hubbard, Lake	439,559	410,026	93	3,200	1	-801	0
Ray Roberts, Lake	788,167	765,964	97	-8,102	-1	-5,303	0
Red Bluff Reservoir	151,110	110,630	73	-1,152	0	40,671	27
Richland-Chambers Reservoir	1,087,839	1,014,564	93	-18,729	-2	-30,036	-3
Sam Rayburn Reservoir	2,857,077	2,559,538	90	-79,628	-3	123,007	4
Somerville Lake	150,293	150,180	100	3,134	2	22,863	15
Squaw Creek, Lake	151,250	151,250	100	0	0	0	0
Stamford, Lake	51,570	47,268	92	-2,245	-4	-4,302	-8
Stillhouse Hollow Lake	227,771	221,957	97	-1,459	0	-5,814	-3
Striker, Lake	16,934	16,322	96	94	1	-612	-4
Sweetwater, Lake	12,267	10,037	82	-201	-2	-263	-2
*Sulphur Springs, Lake	17,747	11,219	63	-1,462	-8	-1,799	-10
Tawakoni, Lake	871,685	818,797	94	-17,161	-2	-4,272	0
Texana, Lake	159,566	156,819	98	7,653	5	4,074	3
Texoma, Lake (Texas & Oklahoma)	2,487,601	2,367,967	95	38,906	2	105,267	4
Texoma, Lake (Texas)	1,243,801	1,183,983	95	19,453	2	52,633	4
Toledo Bend Reservoir (Texas & Louisiana)	4,472,900	3,788,943	85	-24,017	0	-41,599	0
Toledo Bend Reservoir (Texas)	2,236,450	1,892,422	85	-12,008	0	-20,799	0
Travis, Lake	1,113,348	804,652	72	3,406	0	35,116	3
Twin Buttes Reservoir	182,454	97,426	53	273	0	-1,911	-1
Tyler, Lake	72,073	68,419	95	-1,325	-2	-3,277	-5
Waco, Lake	189,418	175,603	93	-4,860	-3	-6,998	-4
Waxahachie, Lake	10,780	9,083	84	-371	-3	746	7
Weatherford, Lake	17,812	15,365	86	-620	-3	-898	-5
White River Lake	29,880	6,410	21	-441	-1	2,553	9
Whitney, Lake	553,344	510,355	92	1,490	0	7,201	1
Worth, Lake	24,419	20,985	86	593	2	1,019	4
Wright Patman Lake	135,069	135,069	100	-95,847	-71	0	0
<b>STATEWIDE TOTAL</b>							
<b>STATEWIDE TOTAL</b>	<b>32,137,610</b>	<b>25,089,910</b>	<b>78</b>	<b>-359,620</b>	<b>-1</b>	<b>-133,039</b>	<b>-0.4</b>

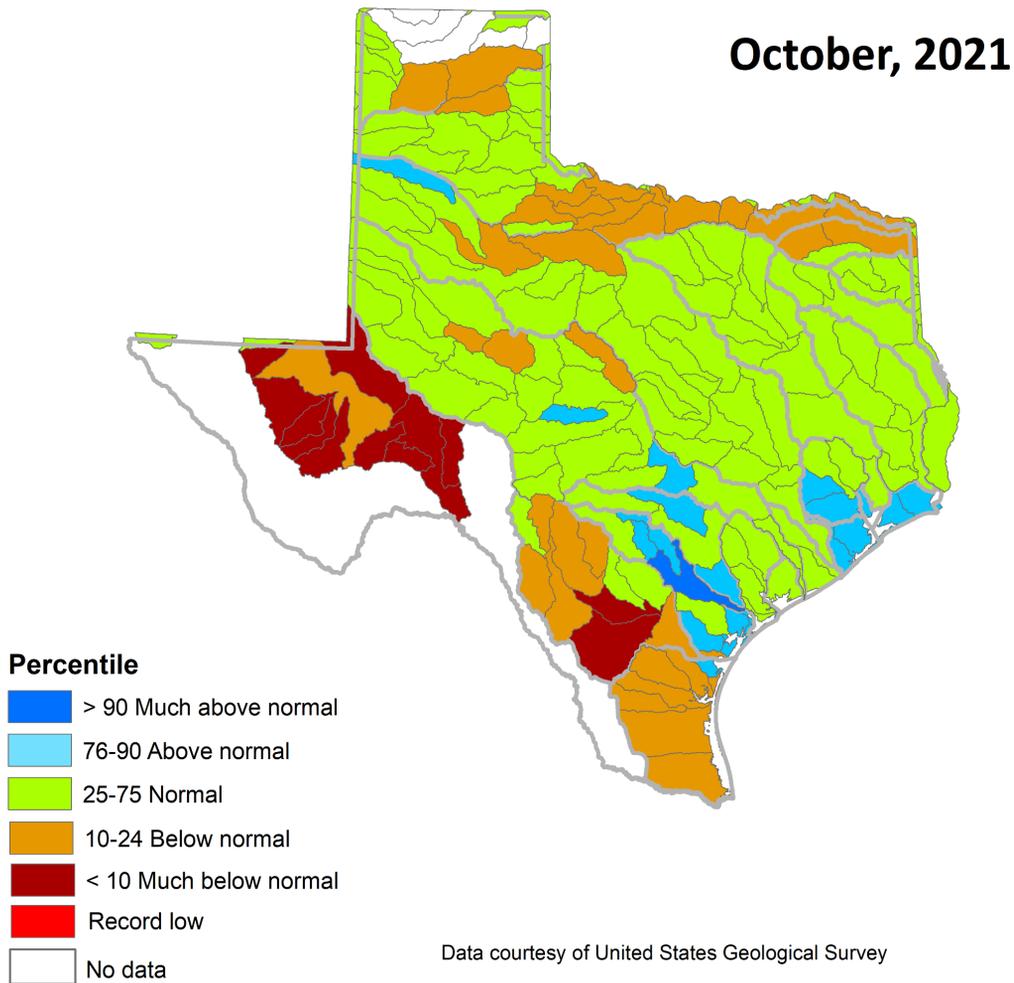
\*Total volume below elevation of conservation pool top is used as conservation storage capacity, because the dead pool storage is unknown.

\*\*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 October 2021 (25–75th percentile, green shading, Figure 6). Above normal streamflow (76–90th percentile, light blue shading in Figure 6) was seen in the upper Brazos, Mid-Colorado, San Jacinto, San Jacinto-Brazos, Trinity-San Jacinto, Neches-Trinity, Guadalupe, San Antonio, San-Antonio-Nueces, and lower Nueces river basins.

Below normal streamflow (10–24th percentile, orange shading in Figure 6) was recorded in the Canadian, upper and lower Red, Sulphur, upper Colorado, Nueces, Nueces-Rio Grande, and the Pecos river basins. Much below normal streamflow (< 10th percentile, dark red shading in Figure 6) was recorded in the Pecos and upper Nueces river basins.



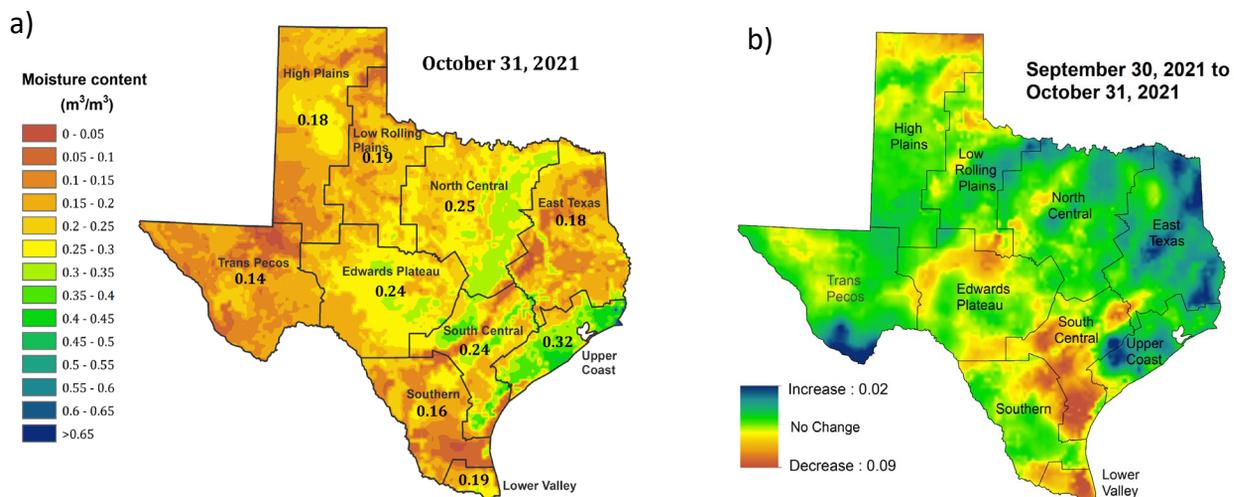
**Figure 6:** Runoff percentiles by the U.S. Geological Survey’s Hydrologic Unit Code

## SOIL MOISTURE

Root zone soil moisture at the end of October 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 the High Plains, Low Rolling Plains, Trans Pecos, Edwards Plateau, Southern, Lower Valley, East Texas, North Central, northern and western Upper Coast, central and southern South Central, and stretching across the climate division from the northwest to the northeast.

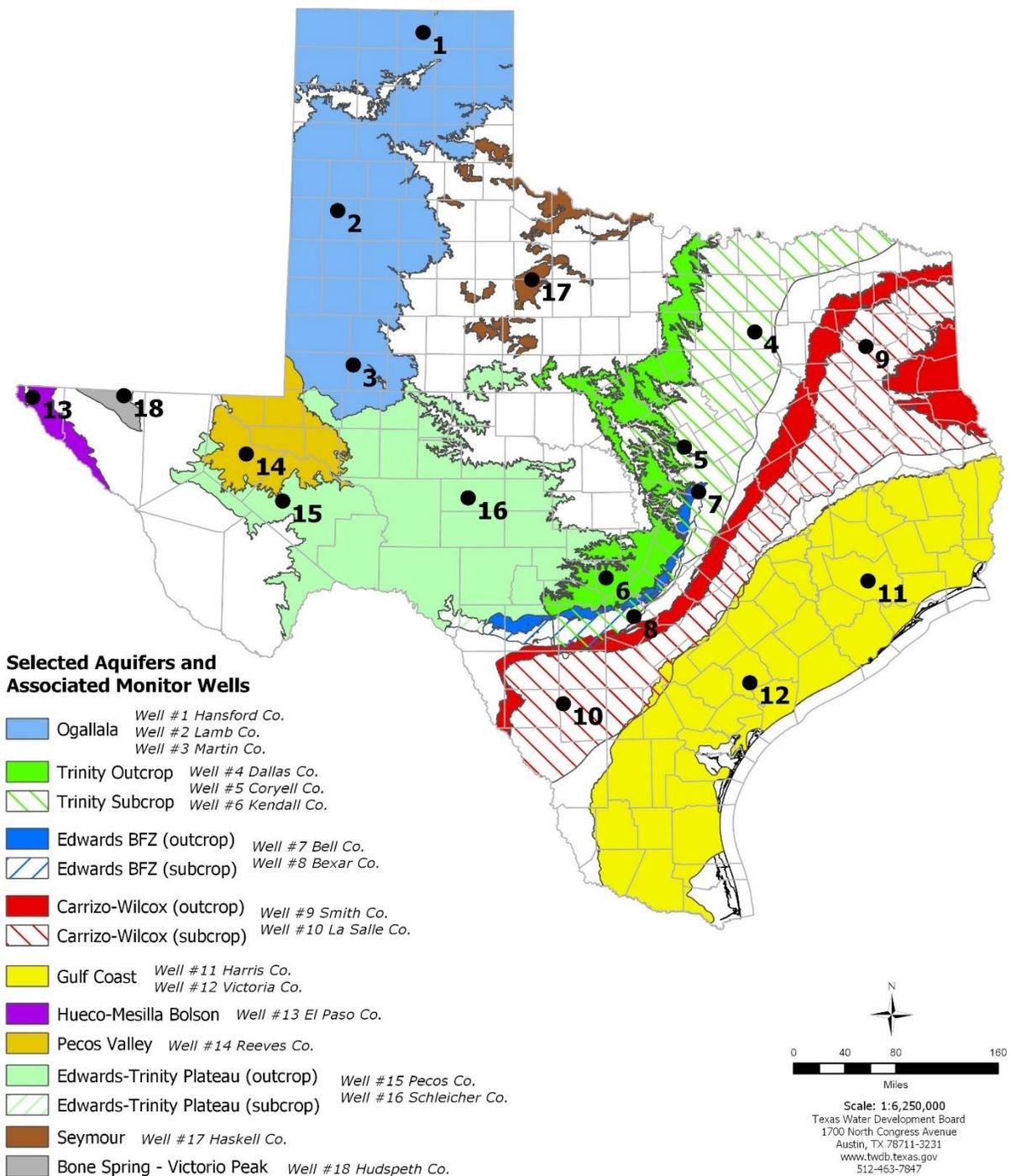
Soil moisture was high [ $> 0.3$  cubic meters of water per bulk cubic meter soil ( $m^3/m^3$ )] in areas of central Edwards Plateau, eastern North Central, northern and southern South Central, southeastern Southern, southcentral Lower Valley, and much of the Upper Coast climate divisions. Very high soil moisture [ $> 0.6$  cubic meters of water per bulk cubic meter soil ( $m^3/m^3$ )] was found in portions of eastern Upper Coast [Figure 7(a)].

Compared to conditions at the end of September 2021, soil moisture content increased [green to blue shading in Figure 7(b)] in most areas of the state including the High Plains, Low Rolling Plains, North Central, Trans Pecos, Edwards Plateau, East Texas, Southern, Upper Coast, and northeastern South Central climate divisions. Soil moisture content decreased [yellow, orange, and brown shading in Figure 7(b)] in the northern High Plains, western North Central, southwestern East Texas, Lower Valley, northern Southern, South Central, western Upper Coast, portions of the Low Rolling Plains, Trans Pecos, and the Edwards Plateau 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 October 2021 and (b) the difference in root zone soil moisture between end-September 2021 and end-October 2021



## October 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 5 monitoring wells since the beginning of October, ranging from an increase of 0.60 feet in the Victoria County Gulf Coast Aquifer well (#12 on map) to 9.59 feet in the Kendall County Trinity Aquifer well (#6 on map). Water levels declined in 11 monitoring wells, ranging from a decline of -0.03 feet in the Martin County Ogallala Aquifer well (#3 on map) to -4.21 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 64.10 feet below land surface or 666.90 feet above mean sea level. Water levels are 6.90 feet above 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	October (depth to water, feet)	September (depth to water, feet)	Month Change	Year Change	Historical Change*	First Measured (year)
(1) Hansford 0354301	NA	NA	NA	NA	<b>-91.74</b>	1951
(2) Lamb 1053602	152.48	152.28	<b>-0.20</b>	NA	<b>-124.31</b>	1951
(3) Martin 2739903	144.42	144.39	<b>-0.03</b>	<b>-0.11</b>	<b>-39.53</b>	1964
(4) Dallas 3319101	495.39	495.09	<b>-0.30</b>	<b>-5.46</b>	<b>-273.39</b>	1954
(5) Coryell 4035404	533.45	534.41	<b>0.96</b>	<b>-3.70</b>	<b>-241.45</b>	1955**
(6) Kendall 6802609	148.15	157.74	<b>9.59</b>	<b>11.33</b>	<b>-88.15</b>	1975
(7) Bell 5804816	121.58	121.33	<b>-0.25</b>	<b>2.96</b>	<b>1.93</b>	2008
(8) Bexar 6837203	64.10	72.20	<b>8.10</b>	<b>6.70</b>	<b>-17.46</b>	1932
(9) Smith 3430907	439.75	439.47	<b>-0.28</b>	<b>-3.14</b>	<b>-139.75</b>	1977**
(10) La Salle 7738103	503.35	499.14	<b>-4.21</b>	<b>13.56</b>	<b>-250.28</b>	2003
(11) Harris 6514409	186.43	186.21	<b>-0.22</b>	<b>3.01</b>	<b>-50.93*</b>	1947**
(12) Victoria 8017502	31.61	32.21	<b>0.60</b>	<b>2.01</b>	<b>2.39</b>	1958**
(13) El Paso 4913301	298.90	298.66	<b>-0.24</b>	<b>-2.52</b>	<b>-67.00</b>	1964**
(14) Reeves 4644501	158.02	158.91	<b>0.89</b>	NA	<b>-65.93</b>	1952
(15) Pecos 5216802	219.28	219.15	<b>-0.13</b>	<b>1.17</b>	<b>27.60</b>	1976
(16) Schleicher 5512134	279.52	275.33	<b>-4.19</b>	<b>6.27</b>	<b>22.38</b>	2003
(17) Haskell 2135748	45.03	44.87	<b>-0.16</b>	<b>-0.22</b>	<b>-2.03</b>	2002
(18) Hudspeth 4807516	NA	NA	NA	NA	<b>-50.79</b>	1966

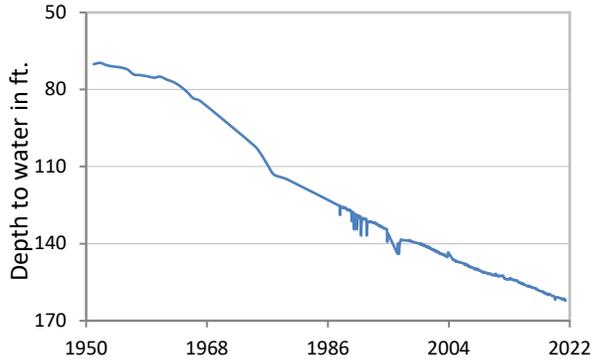
\* Change since the original measurement taken on the date indicated in the last column. The historical changes shown for recorder wells #1 and #18 are based off the most recent water level records from May and June 2021, respectively.

\*\* Measurement not shown on the hydrograph.

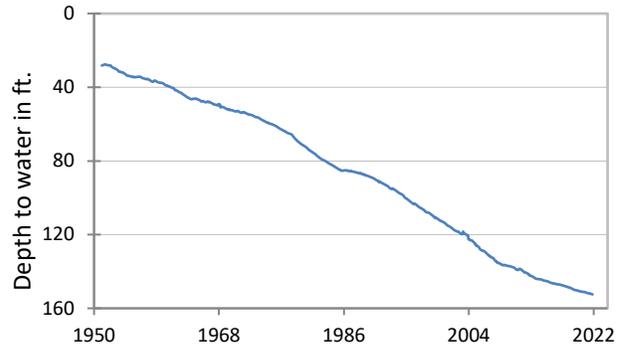
NA (not available)

# October 2021 MONITORING WELL HYDROGRAPHS

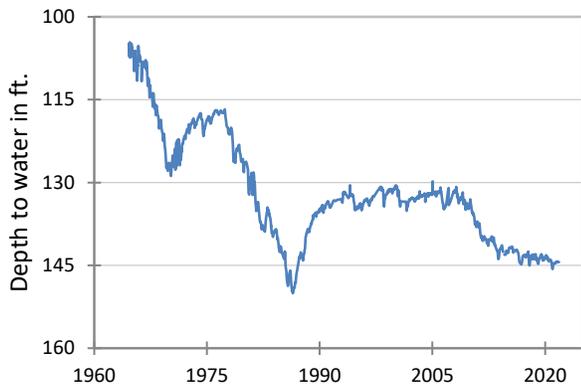
**\*(1) State Well #03-54-301**  
Near Spearman, Hansford County  
Ogallala Aquifer



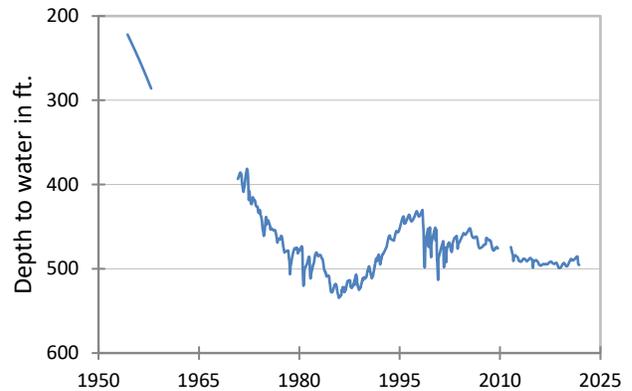
**(2) State Well #10-53-602**  
Near Earth, Lamb County  
Ogallala Aquifer



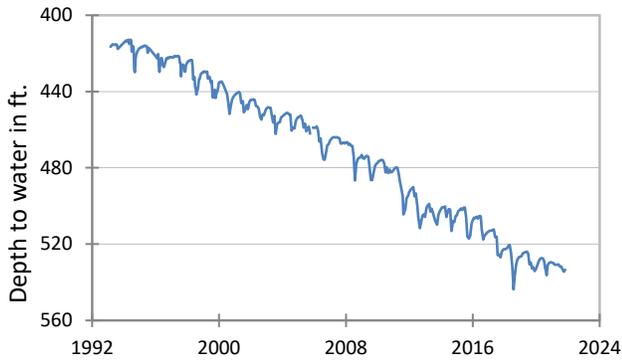
**(3) State Well #27-39-903**  
Northwest Martin County  
Ogallala Aquifer



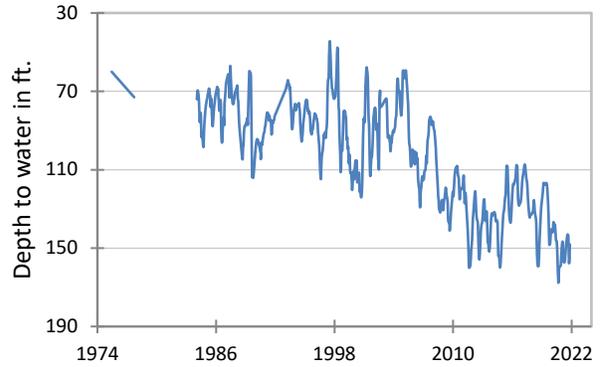
**(4) State Well #33-19-101**  
Southeast Dallas, Dallas County  
Twin Mountains Formation-Trinity Aquifer



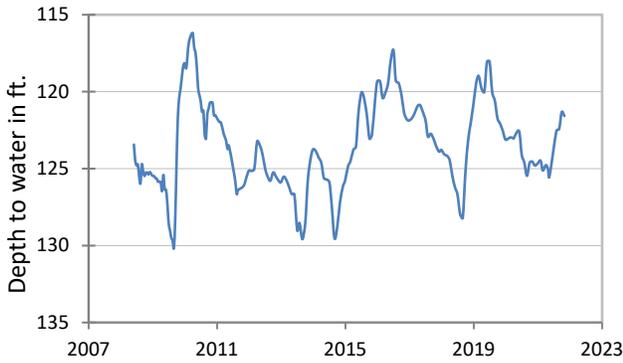
**(5) State Well #40-35-404  
Gatesville, Coryell County  
Hosston Formation-Trinity Aquifer**



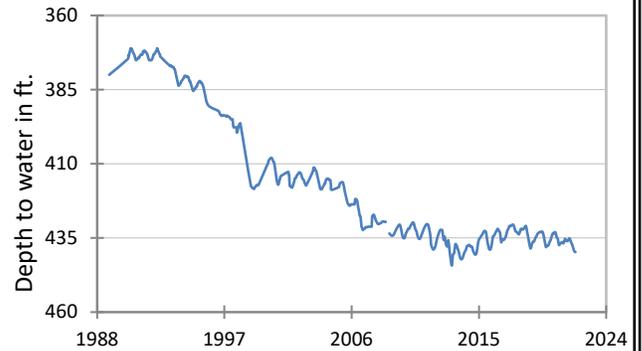
**(6) State Well #68-02-609  
Waring, Kendall County  
Travis Peak Formation-Trinity Aquifer**



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



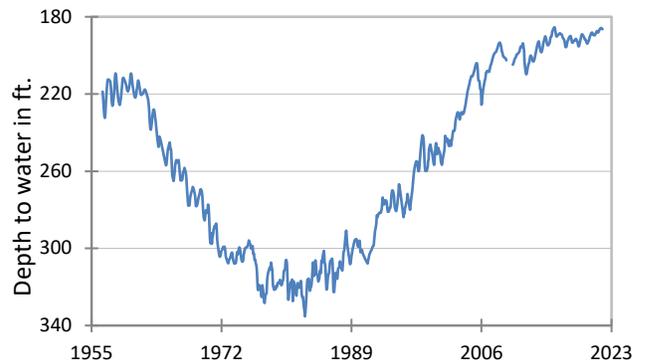
**(9) State Well #34-30-907  
Red Springs, Smith County  
Carrizo-Wilcox Aquifer**



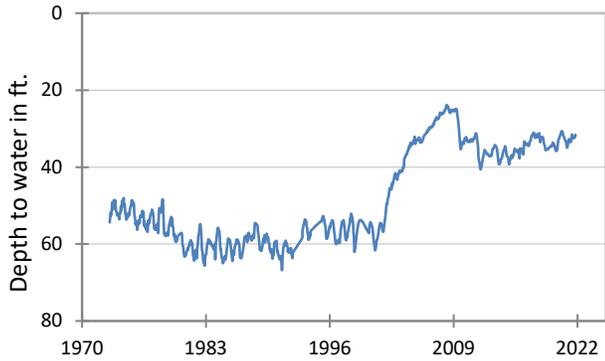
**(10) State Well #77-38-103  
Near Cotulla, La Salle County  
Carrizo-Wilcox Aquifer**



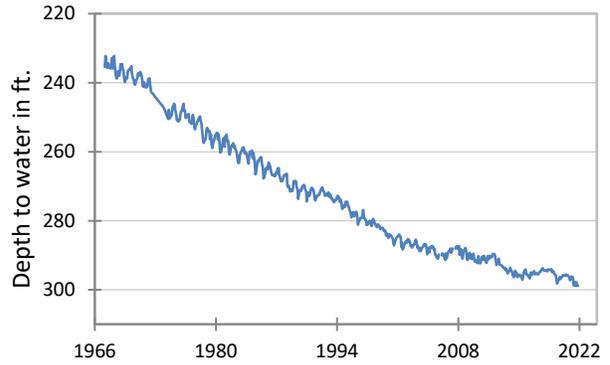
**(11) State Well #65-14-409  
North Houston, Harris County  
Evangeline Formation-Gulf Coast Aquifer**



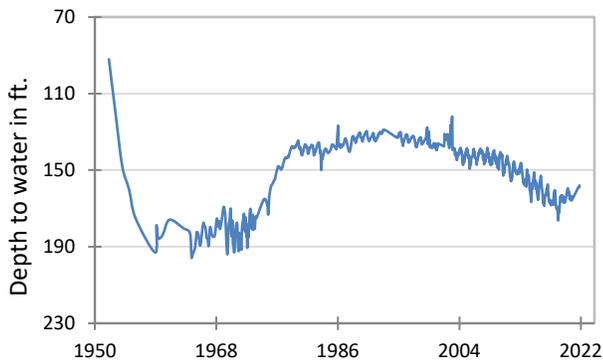
**(12) State Well #80-17-502**  
**Near Bloomington, Victoria County**  
**Lissie Formation-Gulf Coast Aquifer**



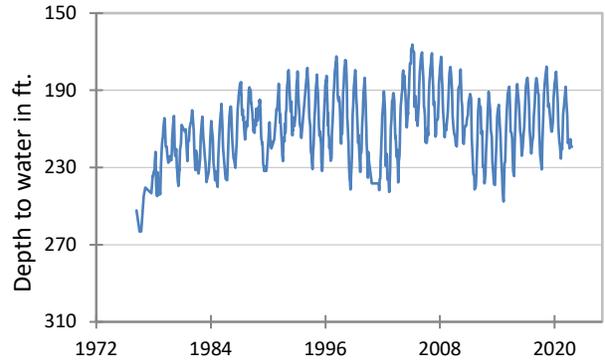
**(13) State Well #49-13-301**  
**El Paso, El Paso County**  
**Hueco-Mesilla Bolsons Aquifer**



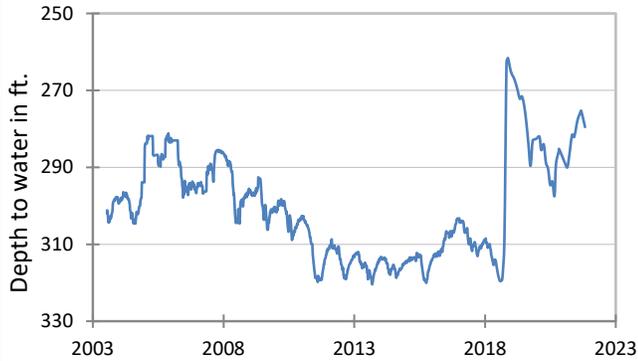
**(14) State Well #46-44-501**  
**Near Pecos, Reeves County**  
**Pecos Valley Aquifer**



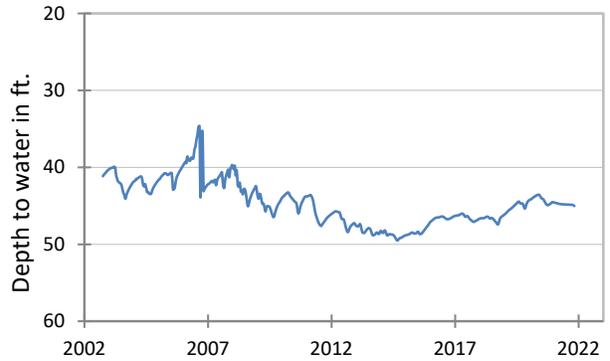
**(15) State Well #52-16-802**  
**Fort Stockton, Pecos County**  
**Edwards-Trinity (Plateau) Aquifer**



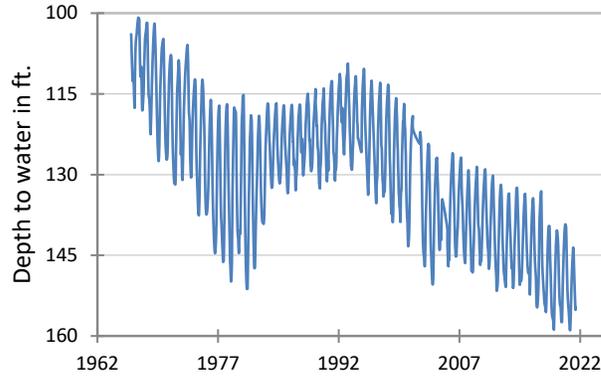
**(16) State Well #55-12-134**  
**Eldorado, Schleicher County**  
**Edwards-Trinity (Plateau) Aquifer**



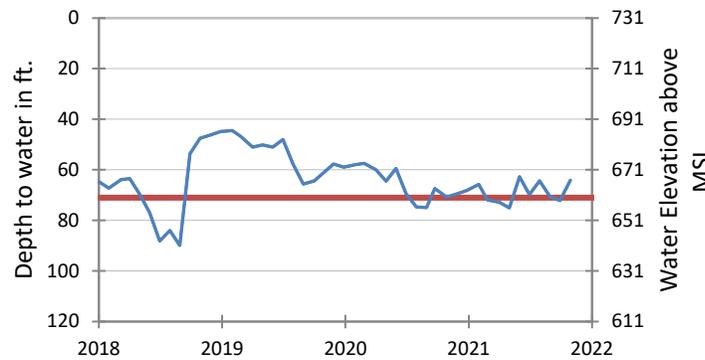
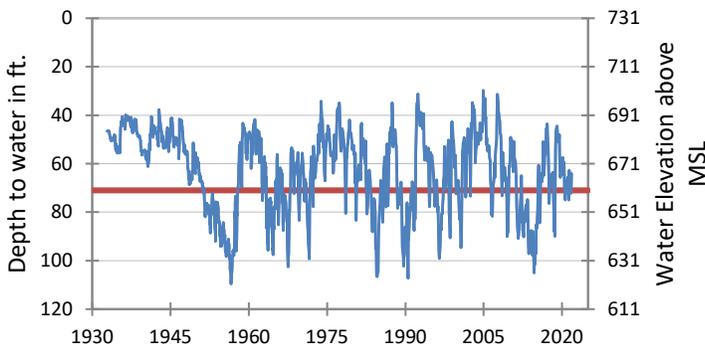
**(17) State Well #21-35-748**  
**Near O'Brien, Haskell County**  
**Seymour Aquifer**



**\*(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**

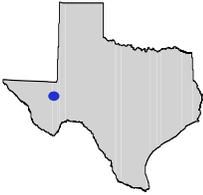


The late October water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, located at an elevation of 731 feet above mean sea level, was 64.10 feet below land surface, or 666.90 feet above mean sea level. This was 8.10 feet above last month's measurement, 6.70 feet above last year's measurement and 17.46 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 October 2021, Stage 1 drought restrictions were not in effect because the aquifer remained above the Stage 1 critical management level.**

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

## HYDROGRAPH OF THE MONTH

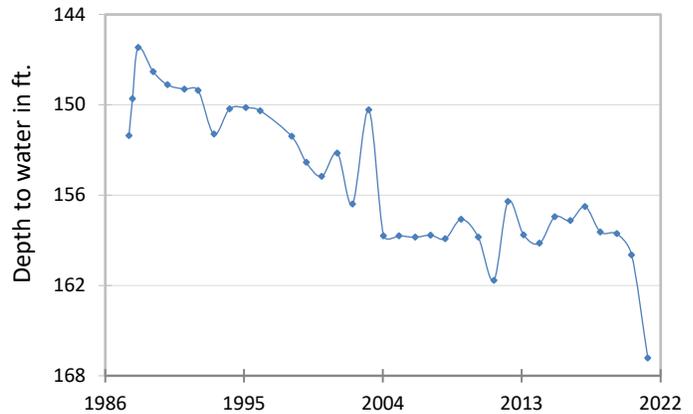


Each month this space features a new hydrograph (marked with the ● symbol on the map) depicting different aquifers and their conditions in Texas.

The Pecos Valley Aquifer is a major aquifer located in West Texas. Water bearing sediments include alluvial and windblown deposits in the Pecos River Valley. These sediments fill several structural basins, the largest of which are the Pecos Trough in the west and Monument Draw Trough in the east. Thickness of the alluvial fill reaches 1,500 feet, and freshwater saturated thickness averages 250 feet. The water quality is highly variable with the water being typically hard, and generally better in the Monument Draw Trough than in the Pecos Trough. Total dissolved solids in groundwater from the Monument Draw Trough are usually less than 1,000 milligrams per liter. The aquifer is characterized by high levels of chloride and sulfate in excess of secondary drinking water standards, resulting from previous oil field activities. In addition, naturally occurring arsenic and radionuclides occur in excess of primary drinking water standards. More than 80 percent of groundwater pumped from the aquifer is used for irrigation, and the rest is withdrawn for municipal supplies, industrial use, and power generation.

### Pecos Valley Aquifer

Well #46-24-703, 385 feet deep  
unused, Ward County



The initial measurement recorded by the TWDB was in July 1987 at 152.05 feet below land surface. Since then, the TWDB has continued to take near-annual measurements in the unused well. The period of record reveals a gradual decline in water level roughly equal to -0.43 ft/year. Sharp increases in water level in 2003 and 2012 may be attributed to temporary reductions in pumping. The most recent measurement of 166.83 feet in March 2021 is the lowest water level on record. This is 6.86 feet lower than the previous year's measurement and 14.78 feet lower than the initial measurement.



Far away (left), and close-up (right) images of well #46-24-703.