Texas Water Conditions Report

July 2023

Water News:

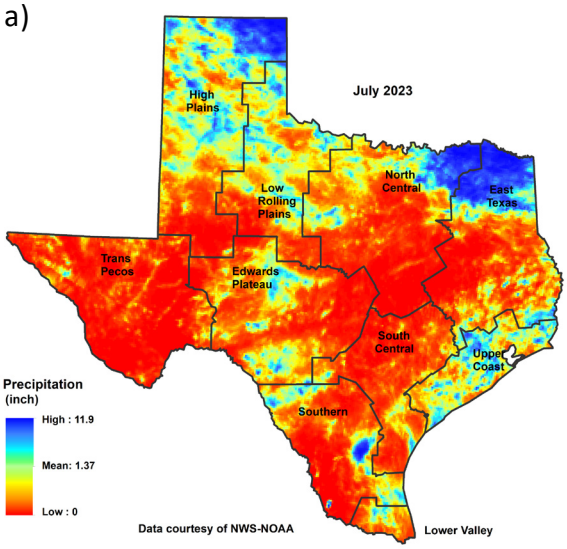
The TWDB Coastal Science staff attended the annual Gulf of Mexico Alliance conference to learn about regional collaboration aimed at enhancing the environmental and economic health of the Gulf of Mexico and to plan projects that implement the Governors' Action Plan IV.

RAINFALL

In July, much of the state received below average rainfall [yellow, orange, and red shading, Figure 1(a)]. Above average rainfall [light and dark blue shading, Figure 1(a)] was seen in the northern and central High Plains, Low Rolling Plains, northern North Central, northern and southern East Texas, central Edwards Plateau, southern South Central, northern and eastern Southern, Lower Valley, and the Upper Coast climate divisions.

Compared to historical data from 1991–2020, a large portion of the state received 0–75 percent of normal rainfall [yellow, orange shading, Figure 1(b)]. 125–200 percent of normal rainfall
[green shading, Figure 1(b)] was received in the northern and central High Plains, Low Rolling Plains, western and northeastern North Central, northern East Texas, areas of the Edwards Plateau, southeastern and a portion of western Trans Pecos, small areas of western and southern South Central, northwestern and southeastern portions of the Southern, and northern Lower Valley climate divisions. 200–400 percent of normal rainfall [light to dark blue shading, Figure 1(b)] was received in northeastern High Plains, northeastern North Central, eastern portions of the Southern, and northern East Texas climate divisions. 400–600 percent of normal rainfall [light purple shading, Figure 1(b)] was seen at opposite ends of the state, in the northeastern High Plains and the eastern Southern climate divisions.

a)



b)

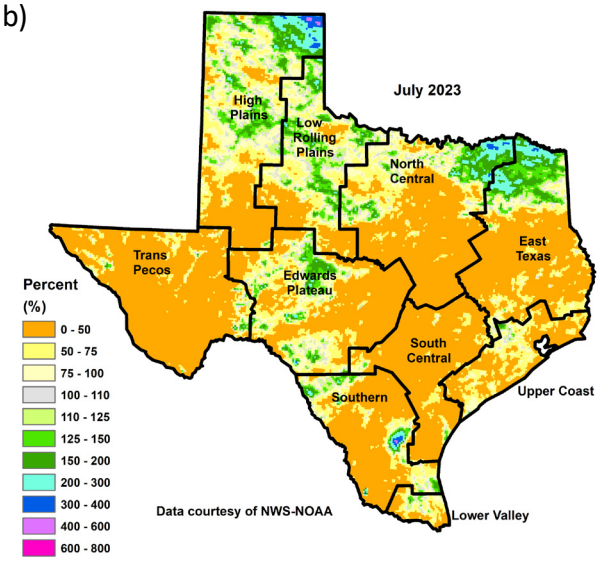
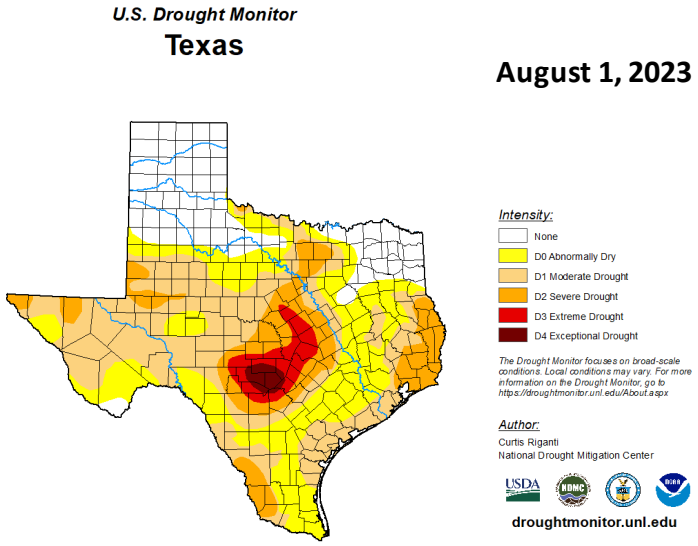


Figure 1: (a) Monthly accumulated rainfall, and (b) Percent of normal rainfall

DROUGHT

At the end of July, 78.8% of the state was in the D0 (abnormally dry) through D4 (exceptional drought) categories (**Figure 2**). That is an increase of 9.51 % from the end of June.



Date	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
2023-08-01	21.20	78.80	52.09	19.26	4.81	1.06

Figure 2. The percentage of drought in Texas according to the U.S. Drought Monitor map as of August 1, 2023.

RESERVOIR STORAGE

Out of 119 reservoirs in the state, only 9 reservoirs held 100 percent conservation storage capacity (Figure 3). Additionally, 45 reservoirs were at or above 90 percent full. Fourteen reservoirs remained below 30 percent full: Abilene (24.6 percent full), Choke canyon (29.3 percent full), Hords Creek (26.9 percent full), New Terrell City (22.2 percent full), E.V. Spence (16.8 percent full), O. C. Fisher (2.7 percent full), J.B. Thomas (20.6 percent full), Falcon (12.9 percent full), Greenbelt (12.3 percent full), Mackenzie (10.5 percent full), Medina Lake (4.7 percent full), Palo Duro Reservoir (8.6 percent full), Twin Buttes (21.5 percent full), and the White River Lake (21.3 percent full). Elephant Butte Reservoir (New Mexico) was 23.2 percent full (Figure 3).

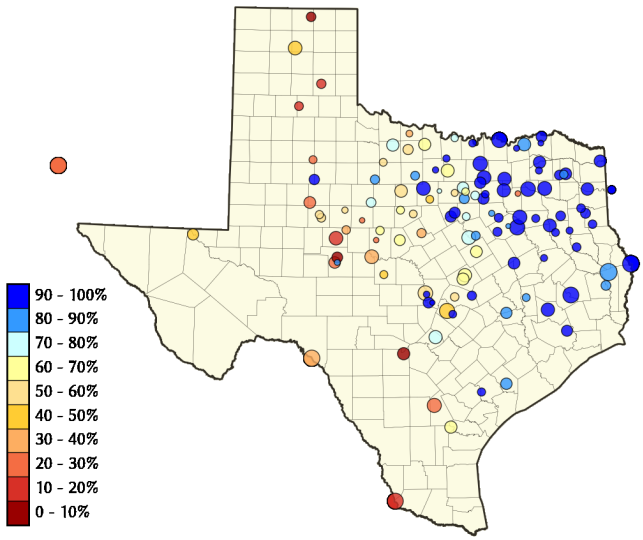


Figure 3. Reservoir conservation storage at end-July expressed as percent full (%)

Reservoir conservation storage by climate division was at or above normal [storage ≥70 percent full, Figure 4(a)] for East Texas (92.3 percent full), North Central (87.8 percent full), and the Upper Coast (90.8 percent full) climate divisions. Conservation storage was moderately low (Figure 4(a)) for the Low Rolling Plains (56.7 percent full), and South Central (47.7 percent full) climate divisions. The High Plains (39.9 percent full), Edwards Plateau (37.7 percent full), Southern (22.4 percent full), and the Trans Pecos climate divisions (27.1 percent full) had severely low conservation storage (Figure 4(a)).

Combined conservation storage by river basin or sub-basin was exceptionally low (<10 percent full, red shading, Figure 4(b)) in the San Antonio river basin and severely low (20–40 percent full, brown shading, Figure 4(b)) in the Upper/Mid Rio Grande, Lower Rio Grande, Nueces, and Upper Colorado river basins. The Canadian, Upper Red, and Lower Colorado river basins had moderately low conservation storage (40–60 percent full, orange shading, Figure 4(b)). Normal to high conservation storage (>70 percent full, blue shading, Figure 4(b)) was observed in the Lower Red, Sulphur, Cypress, Upper and Lower Sabine, Upper and Lower Trinity, Upper and Lower Brazos, Neches, San Jacinto, Lavaca, and Guadalupe river basins.

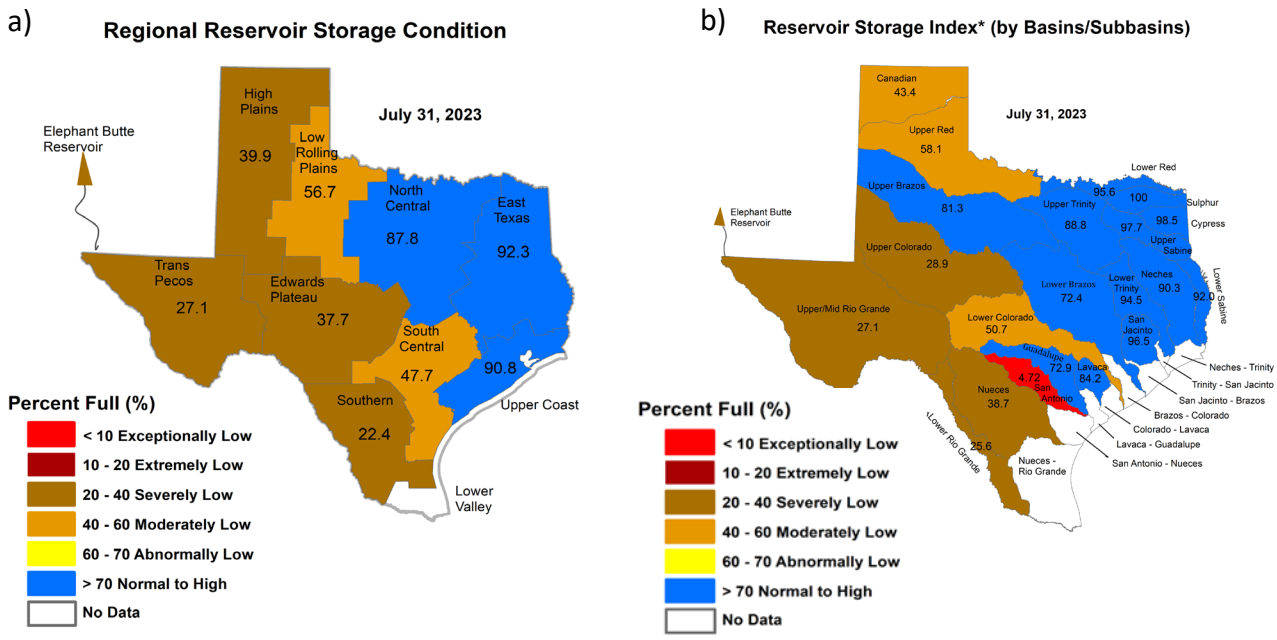


Figure 4: (a) Reservoir Storage Index* by climate division, and (b) Reservoir Storage Index* by basin/sub-basin.

*Reservoir Storage Index is defined as the percent full of conservation storage capacity.
Percent full is calculated as the combined conservation storage of all reservoirs in a climate region or a basin/subbasin, excluding dead pool storage.

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of lake or reservoir	Storage capacity	Storage at end-July 2023		Storage change from end-Jun 2023		Storage change from end-Jul 2022	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Abilene, Lake	7,900	1,945	24.6	27	0.3	-1,827	-23.1
Alan Henry Reservoir	96,207	87,171	90.6	409	0.4	12,759	13.3
*Amistad Reservoir (Texas & Mexico)	3,275,532	1,051,607	32.1	-52,469	-1.6	298,488	9.1
*Amistad Reservoir (Texas)	1,840,849	670,439	36.4	-43,916	-2.4	83,782	4.6
Amon G Carter, Lake	19,266	17,973	93.3	-989	-5.1	-15	0.0
Aquilla Lake	43,243	37,469	86.6	-879	-2.0	-7,742	-17.9
Arlington, Lake	40,157	29,167	72.6	-3,369	-8.4	-2,434	-6.1
Arrowhead, Lake	230,359	144,416	62.7	-7,281	-3.2	-28,091	-12.2
Athens, Lake	29,503	28,466	96.5	-1,037	-3.5	1,055	3.6
*Austin, Lake	23,972	22,972	95.8	138	0.6	215	0.9
B A Steinhagen Lake	69,186	58,026	83.9	-11,160	-16.1	-6,944	-10.0
Bardwell Lake	43,856	43,495	99.2	-361	0.0	7,051	16.1
Belton Lake	432,631	268,709	62.1	-16,500	-3.8	-77,631	-17.9
Benbrook Lake	85,648	74,932	87.5	-9,909	-11.6	12,915	15.1
Bob Sandlin, Lake	192,417	189,847	98.7	-1,150	0.0	10,371	5.4
Bois d'Arc Lake	367,609	295,396	80.4	0	0.0	154,882	42.1
Bonham, Lake	11,027	10,692	97.0	-135	-1.2	1,339	12.1
Brady Creek Reservoir	28,808	11,589	40.2	-216	0.0	-1,606	-5.6
Bridgeport, Lake	372,183	259,258	69.7	-16,130	-4.3	-48,390	-13.0
*Brownwood, Lake	130,868	91,529	69.9	-6,433	-4.9	-1,985	-1.5
Buchanan, Lake	822,207	446,929	54.4	-56,202	-6.8	-109,346	-13.3
Caddo, Lake	29,898	29,898	100.0	0	0.0	-1,937	-6.5
Canyon Lake	378,781	270,767	71.5	-11,021	-2.9	-68,972	-18.2
Cedar Creek Reservoir in Trinity	644,686	587,551	91.1	-33,877	-5.3	66,411	10.3
Champion Creek Reservoir	41,580	22,648	54.5	-795	-1.9	-2,792	-6.7
Cherokee, Lake	40,094	37,909	94.6	-2,185	-5.4	3,032	7.6
Choke Canyon Reservoir	662,820	194,509	29.3	-11,877	-1.8	-33,654	-5.1
*Cisco, Lake	29,003	19,545	67.4	-555	-1.9	-2,886	-10.0
Coleman, Lake	38,075	26,426	69.4	-1,292	-3.4	-4,036	-10.6
Colorado City, Lake	31,040	28,280	91.1	-2,197	-7.1	3,267	10.5
*Coleto Creek Reservoir	30,758	16,214	52.7	-823	-2.7	-2,271	-7.4
Conroe, Lake	417,577	400,086	95.8	-12,930	-3.1	10,022	2.4
Corpus Christi, Lake	256,062	161,625	63.1	-22,934	-9.0	44,013	17.2
Crook, Lake	9,195	8,965	97.5	10	0.1	823	9.0
Cypress Springs, Lake	66,756	66,304	99.3	-452	0.0	7,868	11.8
E. V. Spence Reservoir	517,272	87,106	16.8	-3,670	0.0	-19,145	-3.7
Eagle Mountain Lake	179,880	130,865	72.8	-15,088	-8.4	-13,018	-7.2
Elephant Butte Reservoir (Texas)	852,491	197,726	23.2	-48,310	-5.7	161,654	19.0
Elephant Butte Reservoir (Total Storage)	1,960,900	457,700	23.3	-111,828	-5.7	374,199	19.1
*Falcon Reservoir (Texas & Mexico)	2,646,817	450,150	17.0	-86,983	-3.3	150,170	5.7
*Falcon Reservoir (Texas)	1,551,007	199,538	12.9	-62,119	-4.0	44,708	2.9
Fork Reservoir, Lake	605,061	587,540	97.1	-4,660	0.0	151,961	25.1
Fort Phantom Hill, Lake	70,030	53,127	75.9	-932	-1.3	2,209	3.2
Georgetown, Lake	38,005	21,407	56.3	-2,331	-6.1	-1,081	-2.8
Gibbons Creek Reservoir	25,721	21,521	83.7	-1,454	-5.7	1,797	7.0
Graham, Lake	45,288	36,579	80.8	-2,553	-5.6	-2,852	-6.3
Granbury, Lake	132,949	129,790	97.6	6,539	4.9	12,307	9.3

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS							
Name of lake or reservoir	Storage capacity	Storage at end-July 2023		Storage change from end-Jun 2023		Storage change from end-Jul 2022	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Continued							
Granger Lake	51,822	47,437	91.5	-4,098	-7.9	2,481	4.8
Grapevine Lake	163,064	149,832	91.9	-7,267	-4.5	-6,567	-4.0
Greenbelt Lake	59,968	7,357	12.3	-367	0.0	-1,034	-1.7
*Halbert, Lake	6,033	4,929	81.7	-356	-5.9	237	3.9
Hords Creek Lake	8,109	2,181	26.9	-161	-2.0	-530	-6.5
Houston County Lake	17,113	15,968	93.3	-939	-5.5	559	3.3
Houston, Lake	132,318	130,835	98.9	-1,483	-1.1	4,631	3.5
Hubbard Creek Reservoir	313,298	183,822	58.7	-9,875	-3.2	-53,484	-17.1
Hubert H Moss Lake	24,058	22,821	94.9	-742	-3.1	199	0.8
Inks, Lake	13,729	12,974	94.5	-173	-1.3	-118	0.0
J. B. Thomas, Lake	199,931	41,117	20.6	-2,185	-1.1	-17,240	-8.6
Jacksonville, Lake	25,670	24,843	96.8	-734	-2.9	543	2.1
Jim Chapman Lake (Cooper)	260,332	260,332	100.0	0	0.0	60,352	23.2
Joe Pool Lake	149,629	146,975	98.2	-2,654	-1.8	15,777	10.5
Kemp, Lake	245,307	184,205	75.1	-10,960	-4.5	29,346	12.0
Kickapoo, Lake	86,345	51,037	59.1	-2,832	-3.3	-6,310	-7.3
Lavon Lake	409,757	376,700	91.9	-25,868	-6.3	29,151	7.1
Leon, Lake	27,762	16,059	57.8	-541	-1.9	-2,928	-10.5
Lewisville Lake	563,228	522,685	92.8	-19,157	-3.4	10,624	1.9
Limestone, Lake	203,780	184,482	90.5	-12,771	-6.3	17,660	8.7
*Livingston, Lake	1,603,504	1,516,258	94.6	-87,246	-5.4	27,355	1.7
*Lost Creek Reservoir	11,950	11,234	94.0	-317	-2.7	171	1.4
Lyndon B Johnson, Lake	112,778	111,557	98.9	576	0.5	320	0.3
Mackenzie Reservoir	46,450	4,864	10.5	-68	0.0	1,835	4.0
Marble Falls, Lake	7,597	7,227	95.1	24	0.3	42	0.6
Martin, Lake	75,726	68,313	90.2	-5,202	-6.9	2,498	3.3
Medina Lake	254,823	12,037	4.7	-883	0.0	-15,036	-5.9
Meredith, Lake	500,000	238,330	47.7	4,311	0.9	83,813	16.8
Millers Creek Reservoir	26,768	14,120	52.7	-980	-3.7	-5,463	-20.4
*Mineral Wells, Lake	5,273	3,831	72.7	-308	-5.8	-881	-16.7
Monticello, Lake	34,740	29,110	83.8	-214	0.0	2,014	5.8
Mountain Creek, Lake	22,850	22,850	100.0	0	0.0	859	3.8
Murvaul, Lake	38,285	35,144	91.8	-2,320	-6.1	-299	0.0
Nacogdoches, Lake	39,522	36,309	91.9	-1,876	-4.7	1,808	4.6
Nasworthy	9,615	8,159	84.9	-12	0.0	-86	0.0
Navarro Mills Lake	49,827	47,177	94.7	-2,650	-5.3	6,390	12.8
New Terrell City Lake	8,583	1,904	22.2	-229	-2.7	-4,887	-56.9
Nocona, Lake (Farmers Crk)	21,444	16,794	78.3	-964	-4.5	-595	-2.8
North Fork Buffalo Creek Reservoir	15,400	5,790	37.6	-463	-3.0	-2,766	-18.0
O' the Pines, Lake	268,566	268,566	100.0	0	0.0	39,208	14.6
O. C. Fisher Lake	115,742	3,104	2.7	-154	0.0	-1,526	-1.3
*O. H. Ivie Reservoir	554,340	187,536	33.8	-11,225	-2.0	-59,204	-10.7
Oak Creek Reservoir	39,210	15,654	39.9	-763	-1.9	-6,322	-16.1

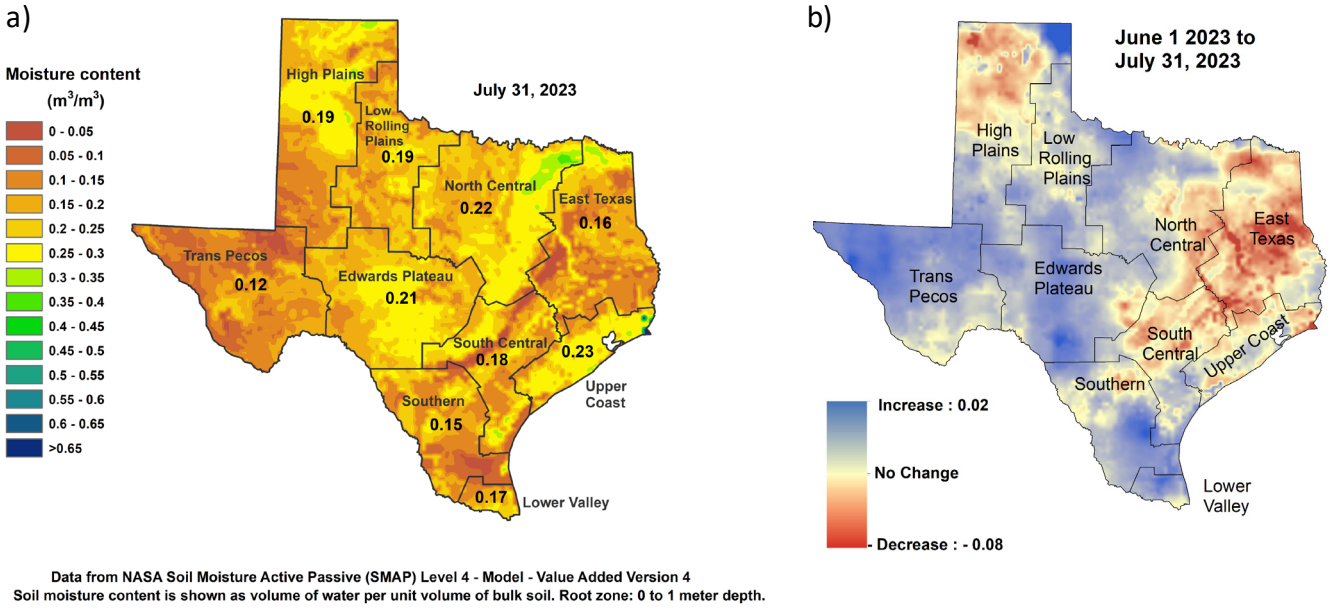
CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS							
Name of lake or reservoir	Storage capacity	Storage at end-July 2023		Storage change from end-Jun 2023		Storage change from end-Jul 2022	
	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
Continued							
Palestine, Lake	367,303	349,099	95.0	-15,208	-4.1	16,979	4.6
Palo Duro Reservoir	61,066	5,270	8.6	-1,093	-1.8	4,995	8.2
Palo Pinto, Lake	26,766	11,247	42.0	-1,918	-7.2	-7,732	-28.9
Pat Cleburne, Lake	26,008	20,134	77.4	-1,563	-6.0	4,999	19.2
*Pat Mayse Lake	113,683	113,683	100.0	0	0.0	6,246	5.5
Possum Kingdom Lake	538,139	528,534	98.2	-9,605	-1.8	47,480	8.8
Proctor Lake	54,762	18,771	34.3	-3,603	-6.6	-12,674	-23.1
Ray Hubbard, Lake	439,559	409,225	93.1	-15,723	-3.6	11,552	2.6
Ray Roberts, Lake	788,167	769,590	97.6	-15,178	-1.9	6,688	0.8
Red Bluff Reservoir	151,110	74,546	49.3	-6,332	-4.2	-20,851	-13.8
Richland-Chambers Reservoir	1,087,839	1,038,731	95.5	-42,691	-3.9	117,412	10.8
Sam Rayburn Reservoir	2,857,077	2,561,645	89.7	-209,194	-7.3	116,868	4.1
Somerville Lake	150,293	134,142	89.3	-16,151	-10.7	9,822	6.5
Squaw Creek, Lake	151,250	150,934	99.8	-316	0.0	0	0.0
Stamford, Lake	51,570	43,791	84.9	-646	-1.3	7,548	14.6
Stillhouse Hollow Lake	229,796	144,416	62.8	-8,486	-3.7	-40,954	-17.8
Striker, Lake	16,934	15,774	93.1	-1,160	-6.9	488	2.9
Sweetwater, Lake	12,267	6,517	53.1	-241	-2.0	-1,656	-13.5
*Sulphur Springs, Lake	17,747	17,747	100.0	0	0.0	6,305	35.5
Tawakoni, Lake	871,685	865,410	99.3	-6,275	0.0	109,374	12.5
Texana, Lake	158,975	133,926	84.2	-10,965	-6.9	17,255	10.9
Texoma, Lake (Texas & Oklahoma)	2,487,601	2,609,886	100.0	131,220	5.3	164,734	6.6
Texoma, Lake (Texas)	1,243,801	1,243,801	100.0	4,469	0.4	21,225	1.7
Toledo Bend Reservoir (Texas & Louisiana)	4,472,900	4,121,446	92.1	-194,897	-4.4	298,900	6.7
Toledo Bend Reservoir (Texas)	2,236,450	2,058,673	92.1	-97,449	-4.4	149,450	6.7
Travis, Lake	1,098,044	456,473	41.6	-19,572	-1.8	-123,699	-11.3
Twin Buttes Reservoir	182,454	39,144	21.5	-6,853	-3.8	-26,123	-14.3
Tyler, Lake	72,073	68,147	94.6	-3,831	-5.3	3,736	5.2
Waco, Lake	189,418	122,970	64.9	-9,060	-4.8	-5,911	-3.1
Waxahachie, Lake	11,060	9,041	81.7	-1,053	-9.5	524	4.7
Weatherford, Lake	17,812	9,728	54.6	-724	-4.1	-646	-3.6
White River Lake	29,880	6,352	21.3	-184	0.0	2,217	7.4
Whitney, Lake	564,808	442,107	78.3	-20,972	-3.7	17,923	3.2
Worth, Lake	24,419	15,888	65.1	123	0.5	-185	0.0
Wright Patman Lake	231,496	231,496	100.0	0	0.0	0	0.0
STATEWIDE TOTAL							
STATEWIDE TOTAL	**32,479,882**	**23,295,757**	**71.7**	**-1,146,179**	**-3.5**	**956,717**	**2.9**

*Total volume below elevation of conservation pool top is used as the conservation storage capacity, because the dead pool storage is unknown.
**Monthly and yearly changes do not include reservoirs that did not have data in the last month or last year, respectively.

SOIL MOISTURE

At the end of July 2023, root zone soil moisture was low [yellow, orange, Figure 5(a)] across the state. Areas of more severe dryness [brown shading, Figure 5(a)] were in the northern and southern High Plains, Trans Pecos, Low Rolling Plains, western and eastern Edwards Plateau, Southern, Lower Valley, South Central, western and southeastern North Central, and East Texas climate divisions. Average soil moisture [green shading, Figure 5(a)] was seen in portions of the northern High Plains, northeastern North Central, an area in northern East Texas, portions of southern South Central, and areas of the eastern Upper Coast climate divisions. Small areas of higher soil moisture [blue shading, Figure 5 (a)] were seen in the eastern Upper Coast climate division.

Compared to conditions at the end of June 2023, soil moisture increased [blue shading in Figure 5(b)] slightly in areas of the Trans Pecos, Edwards Plateau, Southern, Lower Valley, southern South Central, western North Central, Low Rolling Plains, and southern and northeastern High Plains. Soil moisture decreased [red shading in Figure 5(b)] most significantly in the northern High Plains, eastern North Central, eastern Edwards Plateau, East Texas, northern South Central, northeastern Southern, and the eastern Upper Coast 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 5: (a) Root zone soil moisture conditions in June 2023 and (b) the difference in root zone soil moisture between end-May 2023 and end-June 2023.

STREAMFLOW CONDITIONS

Normal streamflow (25–75th percentile, green shading, Figure 6) was recorded in parts of the Panhandle, Northern, Eastern, and Southern regions of Texas this month. Above normal streamflow (76–90th percentile, light blue shading, Figure 6) was seen in the Canadian, Upper Red (South Witchita watershed), Upper Brazos, Sulphur, Nueces-Rio Grande (San Fernando watershed) and Cypress (Little Cypress watershed) river basins. Much above normal streamflow (> 90th percentile, dark blue shading, Figure 6) was seen in the Canadian (Middle Canadian Spring and Washita watersheds), Upper Brazos (Paint watershed), and the Cypress (Lake O' the Pines watershed) river basins. Record highs were noted in the Canadian river basin (Lower Beaver and Lower Wolf watersheds).

Below normal streamflow (10–24th percentile, orange shading, Figure 6) was recorded in the Lower Red (Farmers-Mud watershed), Upper Trinity (Lower West Fork Trinity and Chambers watersheds), Neches (Village watershed), Mid and Lower Trinity, Upper and Lower Colorado, Brazos-Colorado (East Matagorda Bay watershed), Lavaca, Colorado-Lavaca, Middle and Lower Guadalupe, Upper and Lower San Antonio, San Antonio-Nueces, and Nueces river basins. Much below normal stream flow (< 10th percentile, dark red shading, Figure 6) was seen in the Mid and Lower Colorado, Lower Brazos, San Jacinto-Brazos, Trinity- San Jacinto, Lower Sabine, Neches (Lower Angelina watershed), Pecos, San Antonio-Nueces (Mission watershed), Middle Nueces, and Nueces-Rio Grande (South Corpus Christi Bay watershed) river basins. Record lows (bright red shading, Figure 6) were recorded in the Neches-Trinity (Pine Island Bayou watershed), and Brazos-Colorado (San Bernard watershed) river basins.

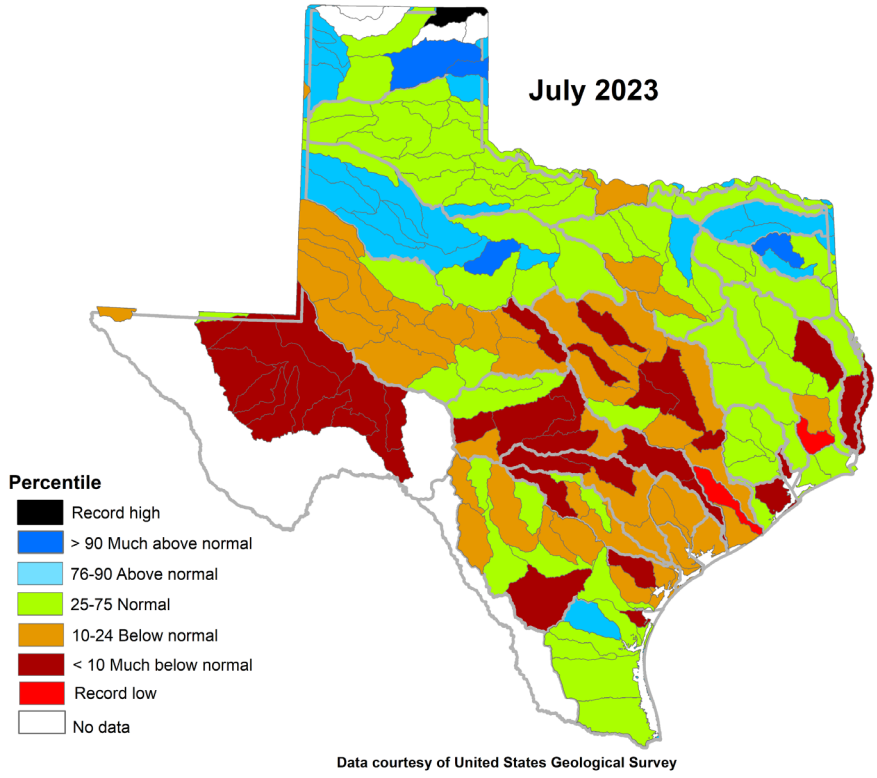
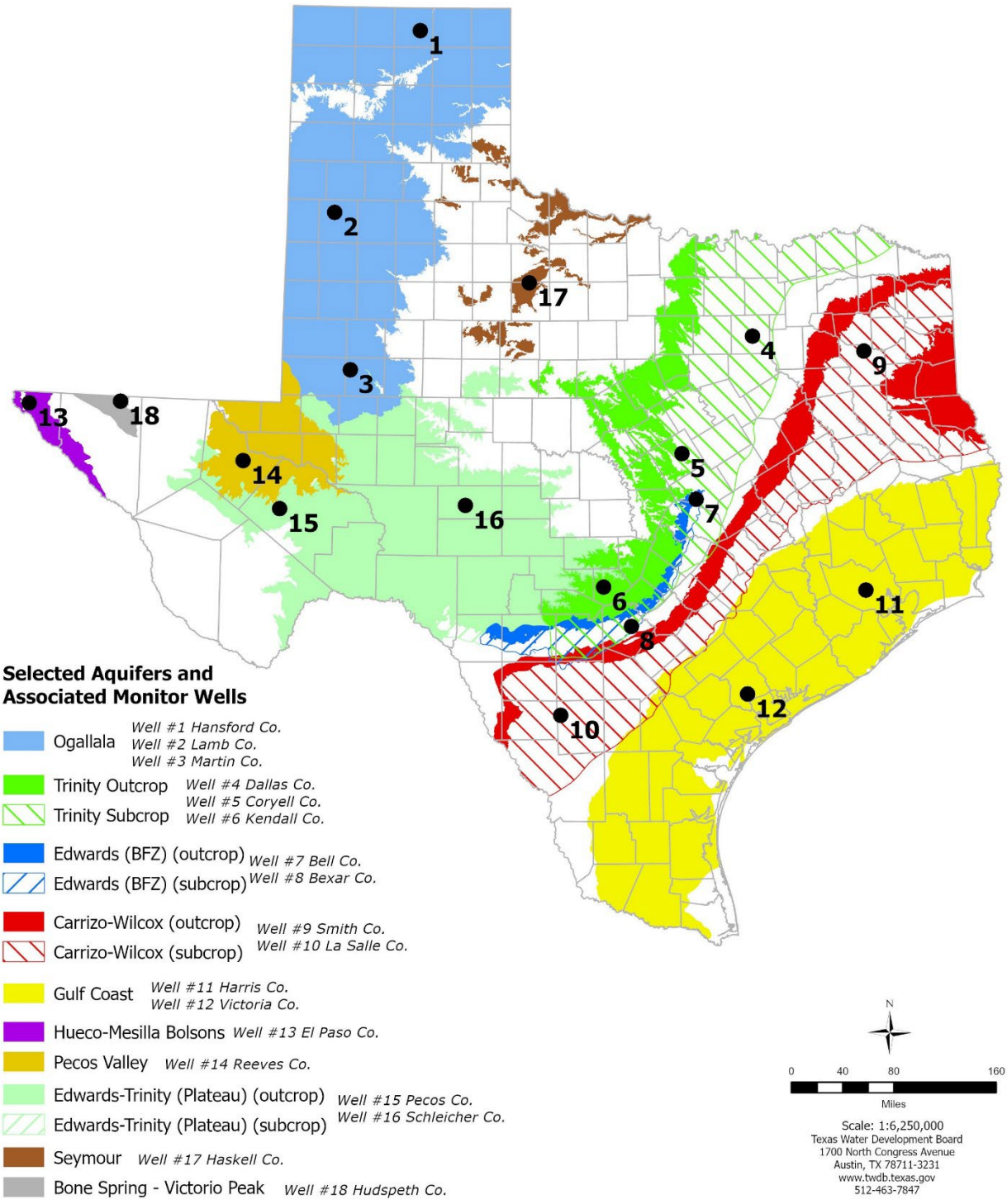


Figure 6: Runoff percentiles by the U.S. Geological Survey's Hydrologic Unit Code



JULY 2023 GROUNDWATER LEVELS IN MONITORING WELLS

Water-level measurements were available for 17 key monitoring wells in the state. The recorder in one well (#9 on map) was offline during the reporting period. Water levels rose in one monitoring well since the beginning of July, with an increase of 0.26 feet in the Victoria County Gulf Coast Aquifer well (#12 on map). Water levels declined in 15 monitoring wells, ranging from a decline of -0.03 feet in the Martin County Ogallala Aquifer well (#3 on map) to -7.03 feet in the Kendall County Trinty Aquifer well (#6 on map). There was no monthly change in water levels in the Reeves County Pecos Valley Aquifer well (#14 on map). The J-17 well (#8 on map) in San Antonio recorded a water level of 102.40 feet below land surface or 628.60 feet above mean sea level. Water levels are 1.40 feet below the Stage 4 critical management levels for the San Antonio portion of the Edwards (Balcones Fault Zone) Aquifer. The Edwards Aquifer Authority declared a move to Stage 4 water restrictions effective July 21, 2023, as a result of well J-17 water levels and area spring flow levels.

*** Well numbers used in this publication on the aquifer map to indicate the monitoring well locations (numbers 1 to 18) are different than the TWDB's seven-digit state well number.**

Monitoring Well	July (depth to water, feet)	June (depth to water, feet)	Month Change	Year Change	Historical Change*	First Measured (year)
(1) Hansford 0354301	164.53	164.49	-0.04	-2.12	-94.41	1951
(2) Lamb 1053602	154.15	154.08	-0.07	-1.14	-125.98	1951
(3) Martin 2739903	145.85	145.82	-0.03	-0.93	-40.96	1964
(4) Dallas 3319101	505.10	503.10	-2.00	-5.14	-283.10	1954
(5) Coryell 4035404	545.28	542.84	-2.44	4.87	-253.28	1955
(6) Kendall 6802609	161.86	154.83	-7.03	NA	-101.86	1975
(7) Bell 5804816	126.40	125.87	-0.53	0.59	-2.89	2008
(8) Bexar 6837203	102.40	98.00	-4.40	-4.00	-55.76	1932
(9) Smith 3430907	NA	NA	NA	NA	-140.39	1977
(10) La Salle 7738103	535.35	531.49	-3.86	-5.68	-282.28	2003
(11) Harris 6514409	190.00	188.70	-1.30	-2.71	-54.50*	1947**
(12) Victoria 8017502	31.82	32.08	0.26	1.86	2.18	1958
(13) El Paso 4913301	299.70	299.50	-0.20	-0.38	-67.80	1964
(14) Reeves 4644501	156.35	156.35	0.00	0.11	-64.26	1952
(15) Pecos 5216802	222.12	217.68	-4.44	-0.77	24.76	1976
(16) Schleicher 5512134	320.20	319.21	-0.99	-1.91	-18.30	2003
(17) Haskell 2135748	47.23	47.13	-0.10	-0.29	-4.23	2002
(18) Hudspeth 4807516	151.97	150.99	-0.98	NA	-48.05	1966

*** Change since the original measurement taken on the date indicated in the last column. The historical change shown for recorder well #9 is based off the most recent water level record from April 2023. June 2023 data shown for recorder well #16 was corrected since the last report.**

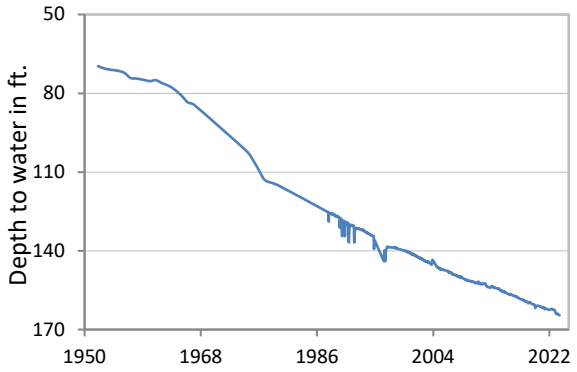
**** Measurement not shown on the hydrograph.**

NA (not available)

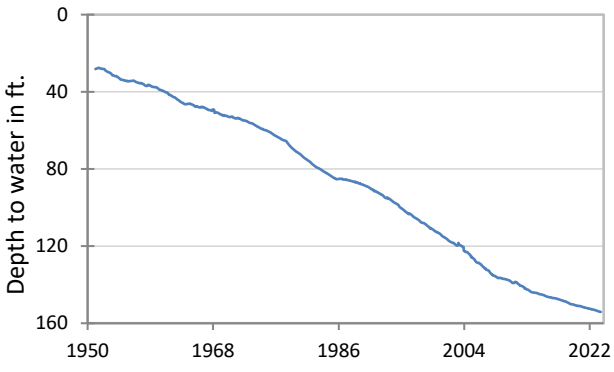
All data are provisional and subject to revision.

JULY 2023 MONITORING WELL HYDROGRAPHS

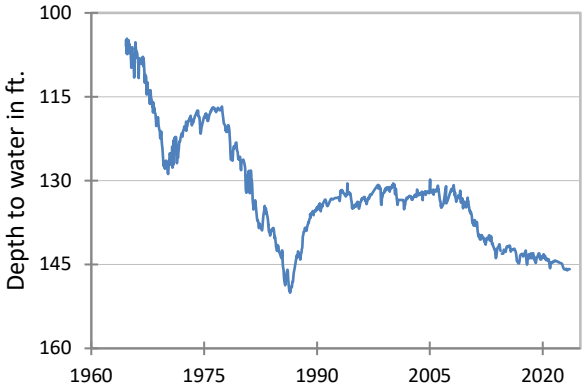
(1) State Well #03-54-301
Near Spearman, Hansford County
Ogallala Aquifer



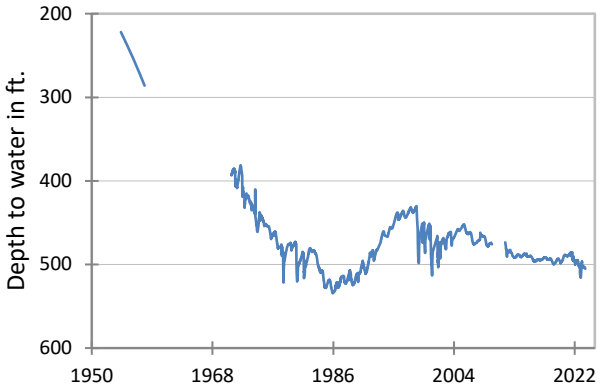
(2) State Well #10-53-602
Near Earth, Lamb County
Ogallala Aquifer



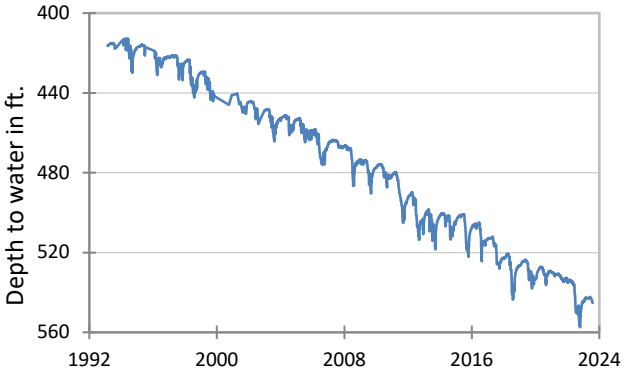
(3) State Well #27-39-903
Northwest Martin County
Ogallala Aquifer



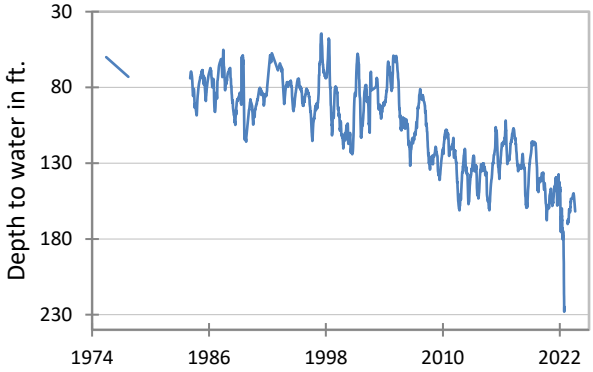
(4) State Well #33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer



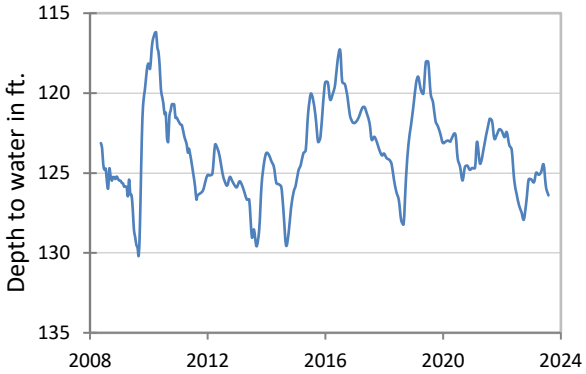
(5) State Well #40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer



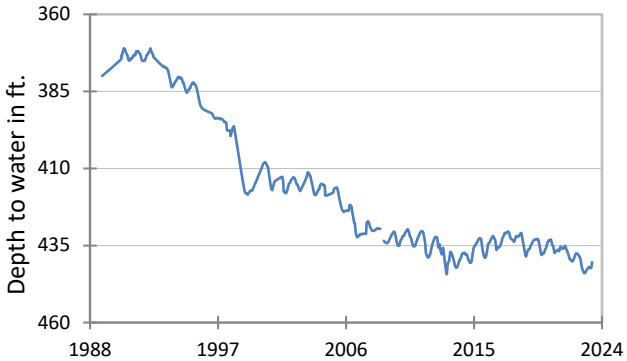
(6) State Well #68-02-609
Waring, Kendall County
Travis Peak Formation-Trinity Aquifer



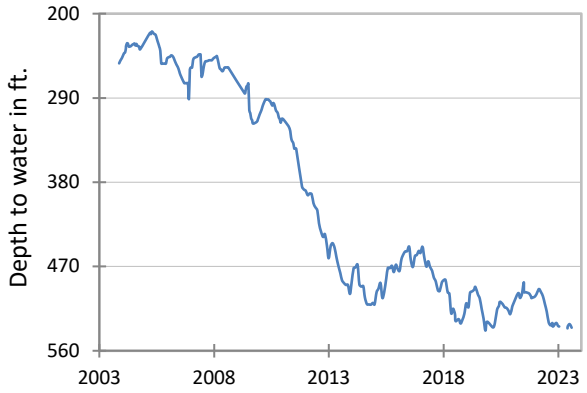
(7) State Well #58-04-816
Near Salado, Bell County
Edwards (Balcones Fault Zone) Aquifer



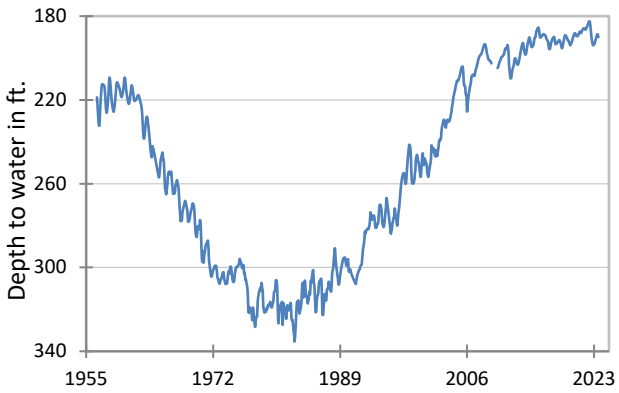
***(9) State Well #34-30-907**
Red Springs, Smith County
Carrizo-Wilcox Aquifer



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

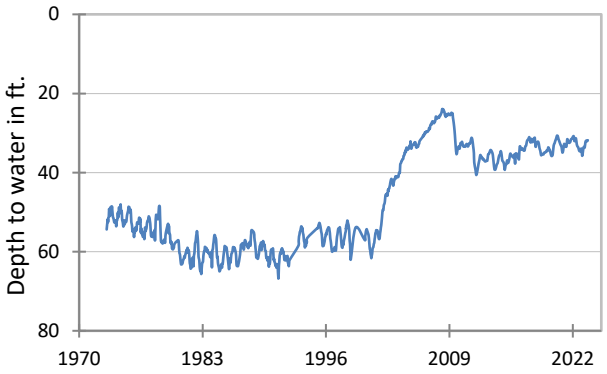


(11) State Well #65-14-409
North Houston, Harris County
Evangeline Formation-Gulf Coast Aquifer

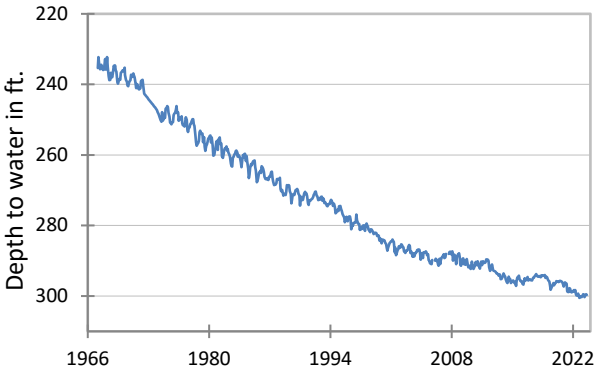


***Recorder well #9 has been offline since May 2023 and did not record data.**

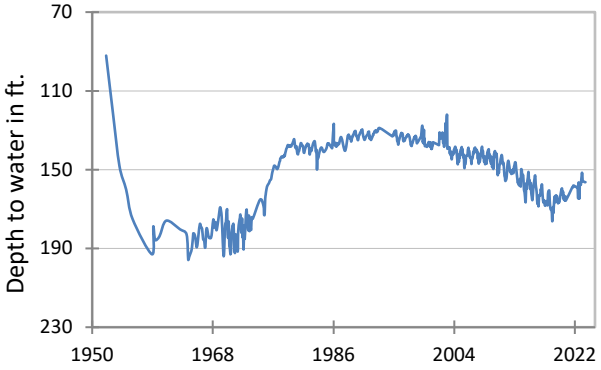
(12) State Well #80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



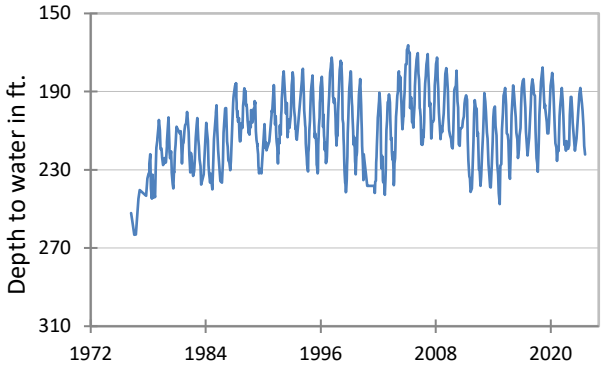
(13) State Well #49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolsons Aquifer



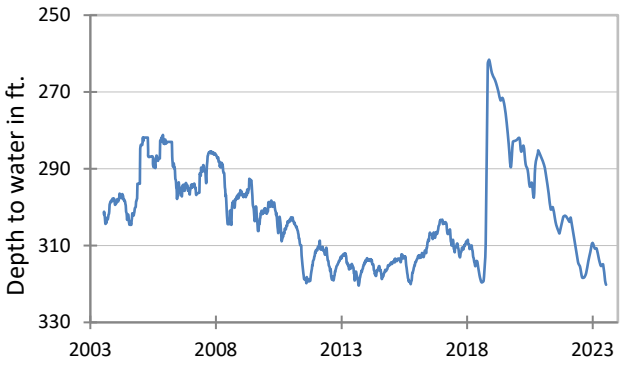
(14) State Well #46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



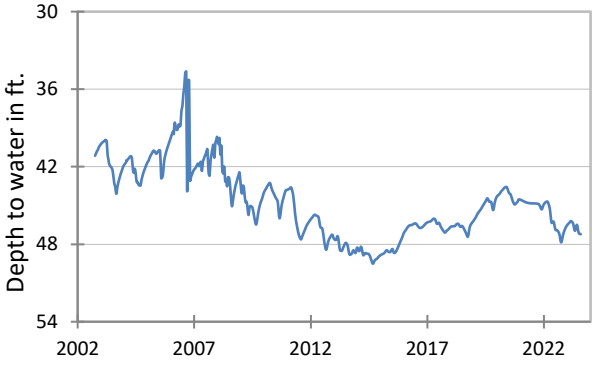
(15) State Well #52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



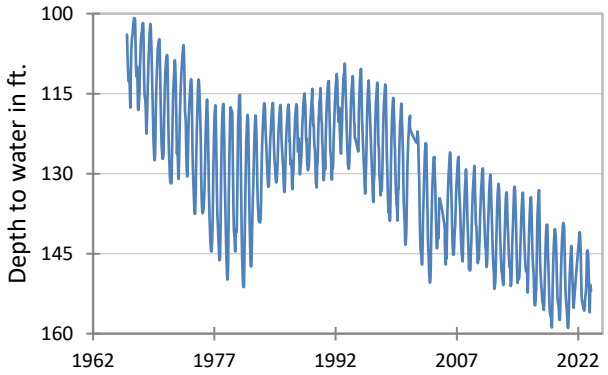
(16) State Well #55-12-134
Eldorado, Schleicher County
Edwards-Trinity (Plateau) Aquifer



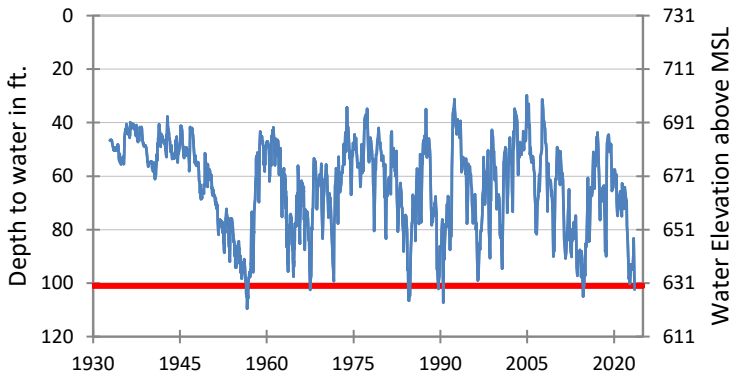
(17) State Well #21-35-748
Near O'Brien, Haskell County
Seymour Aquifer

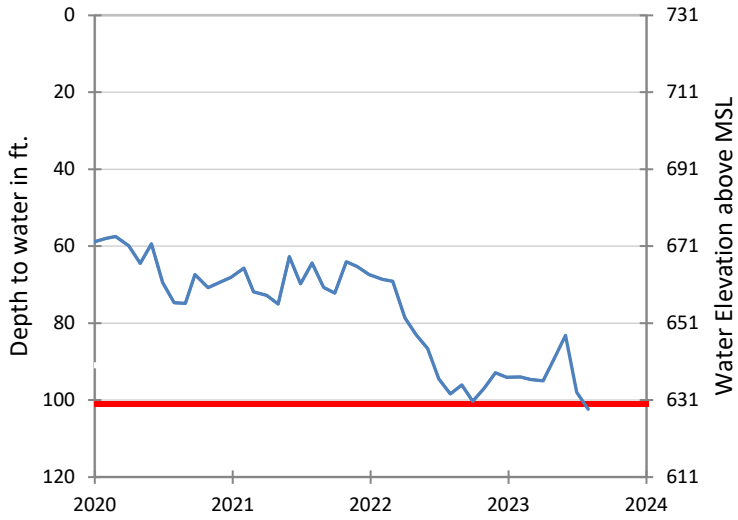


(18) State Well #48-07-516
Dell City, Hudspeth County
Bone Spring-Victorio Peak Aquifer



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

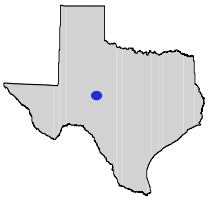




The late July water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, located at an elevation of 731 feet above mean sea level, was 102.40 feet below land surface, or 628.60 feet above mean sea level. This was 4.40 feet below last month's measurement, 4.00 feet below last year's measurement, and 55.76 feet below the initial measurement recorded in 1932.

Water levels below the red colored lines indicate periods in which Edwards Aquifer Authority Stage 4 drought restrictions for the J-17 well are triggered. In July 2023, the aquifer fell below the Stage 4 critical management level and the Edwards Aquifer Authority declared a move to Stage 4 water restrictions effective July 21, 2023, as a result of well J-17 water levels and area spring flow levels.

HYDROGRAPH OF THE MONTH



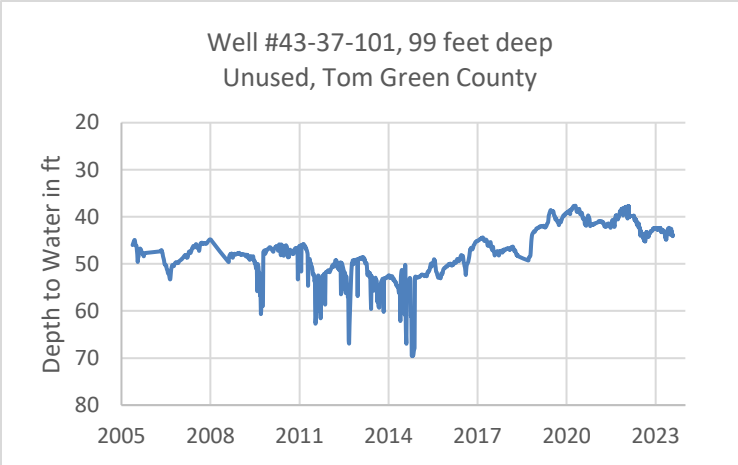
Each month this space features a new hydrograph (marked with the • symbol on the map) depicting different aquifers and their conditions in Texas.

Lipan Aquifer

The Lipan Aquifer is a minor aquifer in west central Texas. The aquifer includes water bearing alluvium and the up-dip portions of older, underlying strata. The alluvium includes as much as 125 feet of saturated sediments of the Quaternary Leona Formation.

The underlying strata include the San Angelo Sandstone of the Pease River Group and the Choza Formation, Bullwagon Dolomite, Vale Formation, Standpipe Limestone, and Arroyo Formation of the Clear Fork Group. These units are predominantly limestones and shales. Groundwater in the alluvial deposits and the upper parts of the older rocks is hydraulically connected, and most wells in the area are completed in both units.

Groundwater in the alluvium ranges from fresh to slightly saline, containing between 350 and 3,000 milligrams per liter of total dissolved solids, and is very hard. Water in the underlying parts of the Choza Formation and Bullwagon Dolomite tends to be moderately saline with total dissolved solids in excess of 3,000 milligrams per liter. The aquifer is primarily used for irrigation but also supports livestock, municipal, domestic, and manufacturing uses[1].



The initial water-level measurement of 46.00 feet below land surface was recorded by the TWDB in May 2005. An automatic water-level recorder was installed in this well by the TWDB in June 2005. The recorder continues to collect hourly measurements (available online) and daily measurements (in the TWDB Groundwater Database). The hydrograph shows relatively stable water levels over the period of record, interrupted by brief periods of sharp decline and recovery that correspond to times of drought and pumping. Overall, water levels have been on the rise in this well since 2015.

Image of well #43-37-101

1. Peter G. George, Ph.D., P.G., Robert E. Mace, Ph.D., P.G., Rima Petrossian, P.G. *Aquifers of Texas: Report 380.*; 2011. https://www.twdb.texas.gov/groundwater/aquifer/minors/lipan.asp