

JUNE 2016 RESERVOIR STORAGE

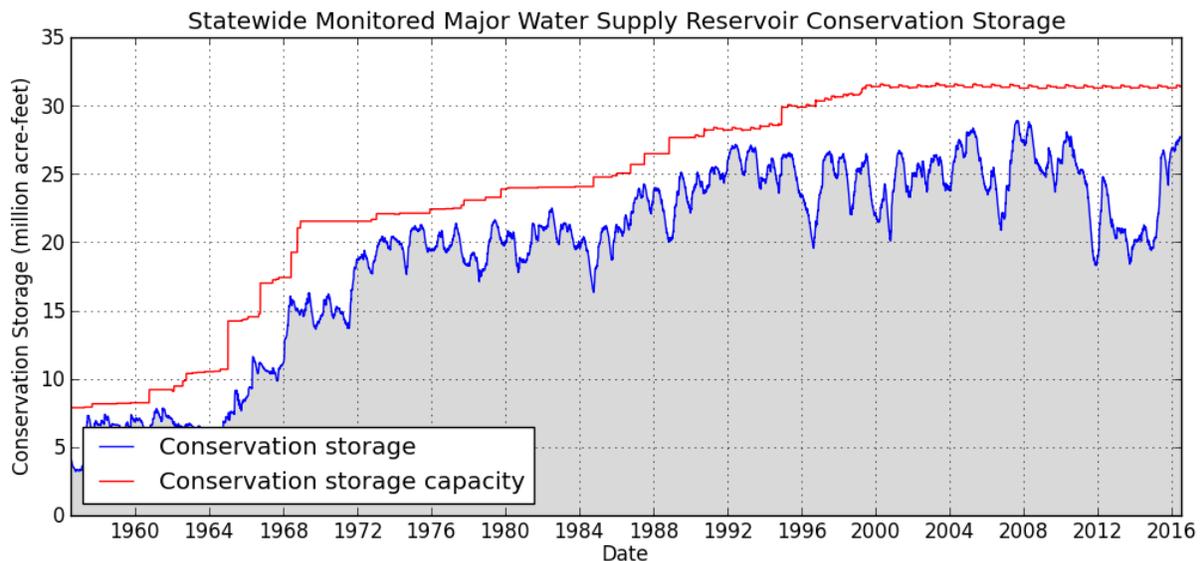
At the end of the month, total conservation storage in 114 of the state's major water supply reservoirs was at 27.63 million acre-feet or 88% of total conservation storage capacity. This is approximately 0.03 million acre-feet less than a month ago and 1.15 million acre-feet more than storage at this time last year.

Sixty-five (65) reservoirs held 100% of conservation storage capacity, primarily in the North Central (40) and East (13) regions. Only one (1) reservoir remained below 10% full: Palo Duro (3%).

Total combined storage was at or above normal (storage \geq 70%) in the East (100%), North Central (100%), South Central (100%), Upper Coast (99%), Trans-Pecos (86%), and Low Rolling Plains (80%) regions. The region with the lowest percentage of storage was the High Plains (24%) region. Overall, storage increased in one but declined in eight regions over the past month.

Elephant Butte reservoir held 300,678 acre-feet or 15% of storage capacity. This is 7,759 acre-feet less than a month ago.

Storage is based on end of the month data in 114 major reservoirs that represent 96% of the total conservation storage capacity of 188 major water supply reservoirs in Texas. 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	Conservation Storage Capacity		Conservation Storage end of June 2016		Change since end of May 2016		Change since end of June 2015	
	(acre-feet)		(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)**	(%)
HIGH PLAINS								
Palo Duro Reservoir	61,066		1,783	3	-237	-0	555	1
Meredith, Lake (Texas)	500,000		131,948	26	-1,172	-0	67,466	13
Meredith, Lake (Texas & Oklahoma)	779,556		131,948	17	-1,172	-0	67,466	9
MacKenzie Reservoir	46,450		7,230	16	-74	-0	-3	-0
White River Lake	29,880		9,157	31	-555	-2	-1,385	-5
TOTAL	637,396		150,118	24	-2,038	-0	66,633	10
LOW ROLLING PLAINS								
Greenbelt Lake	59,968		15,580	26	-208	-0	2,178	4
N. Fork Buffalo Crk Reservoir	15,400		12,526	81	-350	-2	30	0
Kemp, Lake	245,307		245,307	100	0	0	45,430	19
Millers Creek Reservoir	26,768		26,570	99	-198	-1	-198	-1
Alan Henry Reservoir	94,808		90,227	95	365	0	-4,581	-5
Stamford, Lake	51,570		51,366	100	-204	-0	3,954	8
J B Thomas, Lake	199,931		134,748	67	-2,555	-1	-17,284	-9
Fort Phantom Hill, Lake	70,030		70,030	100	0	0	39,386	56
Sweetwater, Lake	12,267		2,887	24	298	2	1,193	10
Colorado City, Lake	30,758		8,115	26	-6	-0	470	2
Champion Creek Reservoir	41,580		11,090	27	834	2	8,214	20
Abilene, Lake	7,900		7,893	100	-7	-0	7,627	97
Coleman, Lake	38,075		37,913	100	-162	-0	15,038	39
Hords Creek Lake	8,443		8,061	95	813	10	4,528	54
TOTAL	902,805		722,313	80	-1,380	-0	105,985	12
NORTH CENTRAL								
Nocona, Lake (Farmers Crk)	21,444		21,444	100	0	0	0	0
Hubert H Moss Lake	24,058		23,713	99	-345	-1	-312	-1
Texoma, Lake (Texas)	1,258,113		1,258,113	100	0	0	0	0
Texoma, Lake (Texas & Oklahoma)	2,525,281		1,258,113	50	0	0	0	0
*Pat Mayse Lake	113,683		113,683	100	0	0	no data	
Kickapoo, Lake	86,345		86,345	100	0	0	0	0
Arrowhead, Lake	230,359		224,313	97	-6,046	-3	-6,046	-3
Bonham, Lake	11,027		10,620	96	-407	-4	-396	-4
Crook, Lake	9,195		8,903	97	-292	-3	-230	-3
Amon G Carter, Lake	19,266		19,266	100	0	0	0	0
Ray Roberts, Lake	788,167		788,167	100	0	0	0	0
Jim Chapman Lake (Cooper)	260,332		259,264	100	-1,068	-0	-1,068	-0
Graham, Lake	45,288		44,820	99	-468	-1	-468	-1
*Lost Creek Reservoir	11,950		11,950	100	0	0	0	0
Bridgeport, Lake	366,236		366,236	100	0	0	0	0
Lewisville Lake	563,228		563,228	100	0	0	0	0
Lavon Lake	406,388		406,388	100	0	0	0	0
Hubbard Creek Reservoir	318,067		310,435	98	-4,239	-1	213,532	67
Possum Kingdom Lake	523,873		523,873	100	489	0	0	0
*Mineral Wells, Lake	6,760		6,760	100	0	0	0	0
Weatherford, Lake	17,812		17,498	98	-314	-2	-293	-2
Eagle Mountain Lake	179,880		179,880	100	0	0	0	0
Worth, Lake	33,495		33,119	99	-376	-1	-376	-1
Grapevine Lake	164,703		164,703	100	0	0	0	0
Ray Hubbard, Lake	452,040		452,040	100	0	0	0	0
New Terrell City Lake	8,583		8,583	100	0	0	0	0
Palo Pinto, Lake	26,766		26,766	100	0	0	152	1
Benbrook Lake	85,648		85,648	100	0	0	0	0
Arlington, Lake	40,188		37,937	94	-2,251	-6	-1,714	-4

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	Conservation Storage Capacity (acre-feet)		Conservation Storage end of June 2016 (acre-feet) (%)		Change since end of May 2016 (acre-feet) (%)		Change since end of June 2015 (acre-feet)** (%)	
<i>(North Central continued)</i>								
Joe Pool Lake	175,358	175,358	100	0	0	0	0	
*Cisco, Lake	25,895	25,895	100	0	0	9,400	36	
Leon, Lake	27,762	27,291	98	-471	-2	845	3	
Granbury, Lake	125,756	125,756	100	6,225	5	228	0	
Pat Cleburne, Lake	26,008	26,008	100	0	0	0	0	
Waxahachie, Lake	10,780	10,780	100	0	0	0	0	
Bardwell Lake	46,122	46,122	100	0	0	0	0	
Proctor Lake	54,762	54,762	100	0	0	0	0	
Whitney, Lake	553,344	553,344	100	0	0	0	0	
Aquilla Lake	43,243	43,243	100	0	0	0	0	
Navarro Mills Lake	49,827	49,827	100	0	0	0	0	
*Halbert, Lake	6,033	5,318	88	-171	-3	-66	-1	
Richland-Chambers Reservoir	1,087,839	1,087,839	100	0	0	0	0	
*Brownwood, Lake	128,839	128,839	100	0	0	2,629	2	
Waco, Lake	189,418	189,418	100	0	0	0	0	
Limestone, Lake	203,780	203,160	100	-620	-0	-620	-0	
Belton Lake	435,225	435,225	100	0	0	0	0	
Stillhouse Hollow Lake	227,771	227,771	100	0	0	0	0	
Georgetown, Lake	36,823	36,823	100	0	0	0	0	
Granger Lake	51,822	51,822	100	0	0	0	0	
Tawakoni, Lake	871,685	871,685	100	0	0	0	0	
Mountain Creek, Lake	22,850	22,850	100	0	0	0	0	
Squaw Creek, Lake	151,250	151,250	100	0	0	0	0	
TOTAL	10,625,086	10,604,081	100	-10,354	-0	215,197	2	
EAST								
Wright Patman Lake	231,496	231,496	100	-78,886	-34	0	0	
*Sulphur Springs, Lake	17,747	17,747	100	1,897	11	0	0	
Cypress Springs, Lake	66,756	65,853	99	-903	-1	-903	-1	
Bob Sandlin, Lake	190,822	190,822	100	0	0	0	0	
Caddo, Lake	29,898	29,898	100	0	0	0	0	
Martin, Lake	75,726	74,297	98	-1,429	-2	-1,429	-2	
Monticello, Lake	34,740	34,192	98	-548	-2	-548	-2	
Fork Reservoir, Lake	605,061	596,893	99	-3,147	-1	-8,168	-1	
O the Pines, Lake	268,566	268,566	100	0	0	0	0	
Cedar Creek Reservoir in Trinity	644,686	641,743	100	-2,943	-0	-2,943	-0	
Athens, Lake	29,503	29,503	100	0	0	0	0	
Palestine, Lake	367,303	366,842	100	-461	-0	-461	-0	
Tyler, Lake	72,073	71,321	99	-752	-1	-752	-1	
Murvault, Lake	38,285	37,703	98	-582	-2	-582	-2	
Jacksonville, Lake	25,670	25,670	100	0	0	0	0	
Nacogdoches, Lake	39,522	38,206	97	-1,316	-3	-1,097	-3	
Houston County Lake	17,113	17,074	100	-39	-0	-39	-0	
Sam Rayburn Reservoir	2,857,077	2,857,077	100	0	0	0	0	
Toledo Bend Reservoir (Texas)	2,236,450	2,236,450	100	0	0	447	0	
Toledo Bend Reservoir (TX & LA)	4,472,900	2,236,450	50	0	0	447	0	
*Livingston, Lake	1,785,348	1,785,348	100	0	0	0	0	
B A Steinhagen Lake	66,961	64,657	97	7,144	11	9,920	15	
Conroe, Lake	410,988	408,115	99	-2,873	-1	-2,873	-1	
TOTAL	10,111,791	10,089,473	100	-84,838	-1	-9,428	-0	
TRANS-PECOS								
Red Bluff Reservoir	151,110	129,445	86	-4,633	-3	16,312	11	
TOTAL	151,110	129,445	86	-4,633	-3	16,312	11	

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS							
Name of Lake or Reservoir	Conservation Storage Capacity (acre-feet)	Conservation Storage end of June 2016 (acre-feet) (%)		Change since end of May 2016 (acre-feet) (%)		Change since end of June 2015 (acre-feet)** (%)	
EDWARDS PLATEAU							
Oak Creek Reservoir	39,210	19,539	50	1,147	3	8,899	23
E V Spence Reservoir	517,272	55,396	11	3,726	1	25,029	5
O C Fisher Lake	115,742	17,913	15	211	0	3,405	3
*O H Ivie Reservoir	554,340	133,793	24	47,532	9	52,410	9
Twin Buttes Reservoir	182,454	19,215	11	3,604	2	6,492	4
Nasworthy	9,615	8,669	90	584	6	163	2
Brady Creek Reservoir	28,808	15,568	54	2,209	8	7,230	25
Buchanan, Lake	816,904	815,602	100	4,118	1	373,288	46
Inks, Lake	13,962	12,967	93	-995	-7	-8	-0
Lyndon B Johnson, Lake	115,249	110,331	96	729	1	-795	-1
*Amistad Reservoir (Texas)	1,840,849	1,377,562	75	11,057	1	200,645	11
*Amistad Reservoir (TX & Mexico)	3,275,532	1,377,562	42	11,057	0	200,645	6
TOTAL	4,234,405	2,586,555	61	73,922	2	676,758	16
SOUTH CENTRAL							
Travis, Lake	1,113,348	1,113,348	100	0	0	175,196	16
*Austin, Lake	23,972	23,081	96	-201	-1	-498	-2
Somerville Lake	147,104	147,104	100	0	0	0	0
Canyon Lake	378,781	378,781	100	0	0	0	0
Medina Lake	254,823	254,823	100	0	0	70,168	28
*Coletto Creek Reservoir	31,040	31,040	100	0	0	0	0
TOTAL	1,949,068	1,948,177	100	-201	-0	244,866	13
UPPER COAST							
Houston, Lake	120,686	120,686	100	0	0	0	0
Texana, Lake	159,566	157,732	99	-1,834	-1	-1,374	-1
TOTAL	280,252	278,418	99	-1,834	-1	-1,374	-0
SOUTHERN							
Choke Canyon Reservoir	695,262	261,618	38	29,455	4	-19,707	-3
Corpus Christi, Lake	256,961	182,833	71	-5,658	-2	-74,128	-29
*Falcon Reservoir (Texas)	1,551,007	679,954	44	-24,913	-2	-75,322	-5
*Falcon Reservoir (TX & Mexico)	2,646,817	679,954	26	-24,913	-1	-75,322	-3
TOTAL	2,503,230	1,124,405	45	-1,116	-0	-169,157	-7
STATEWIDE TOTAL							
STATEWIDE TOTAL	31,395,143	27,632,985	88	-32,472	-0	1,145,792	4
Elephant Butte Reservoir	1,973,358	300,678	15	-7,759	-0	-43,393	-2

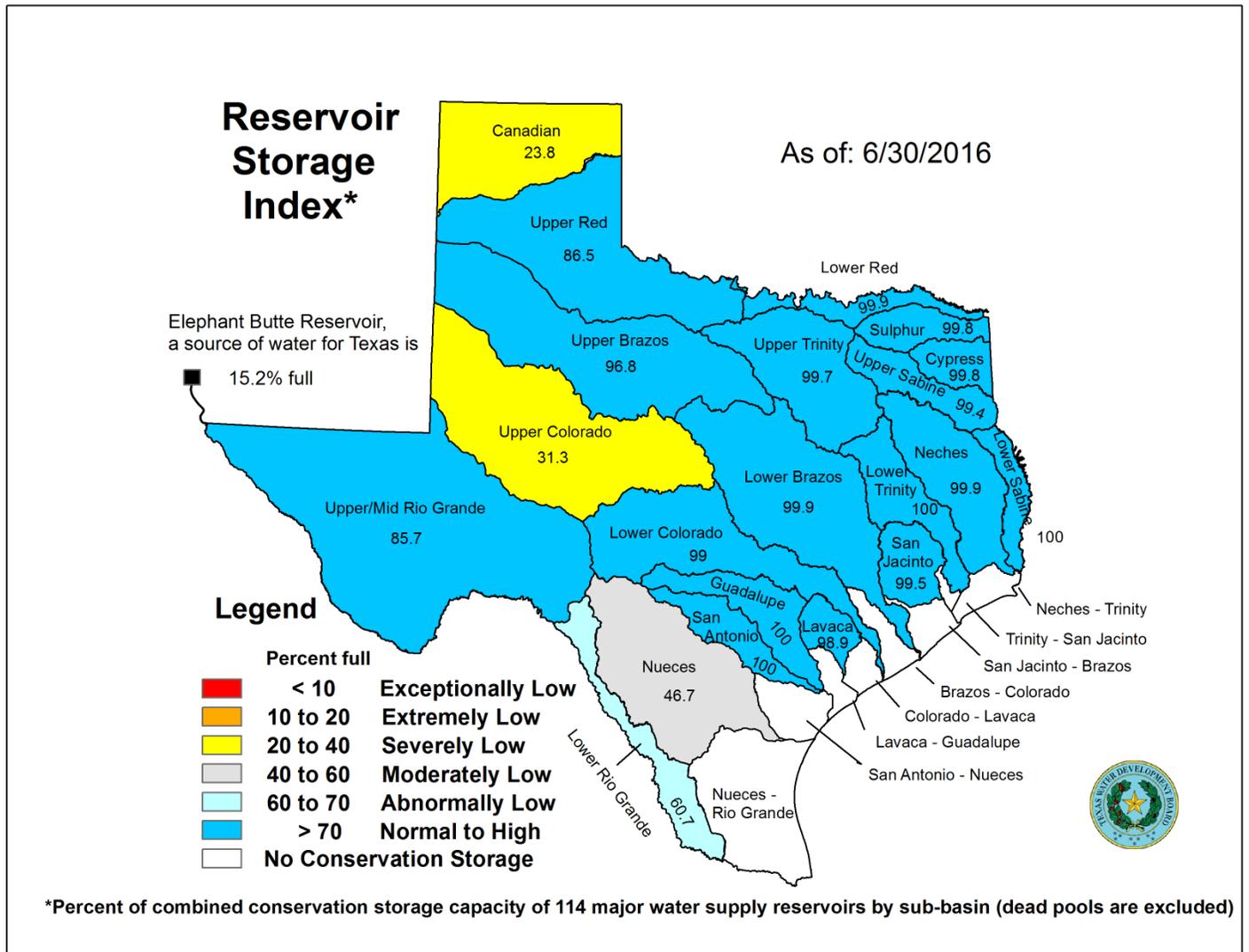
* Conservation volume is used as conservation storage capacity because the dead storage is unknown.

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

Note:

Conservation storage capacity is the space available to store water above the lowest outlet and below the top of conservation pool, or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included is any water in flood control storage (above the top of conservation pool or normal maximum operating level) or any water in the dead storage. Conservation storage percentage is based on the conservation storage capacity of the reservoir and the conservation storage in the reservoir on date shown. Percent change is given by 100*(current conservation storage - past conservation storage)/conservation storage capacity. Figures shown are for the Texas share of conservation storage in all reservoirs.

JUNE 2016 RESERVOIR CONDITIONS



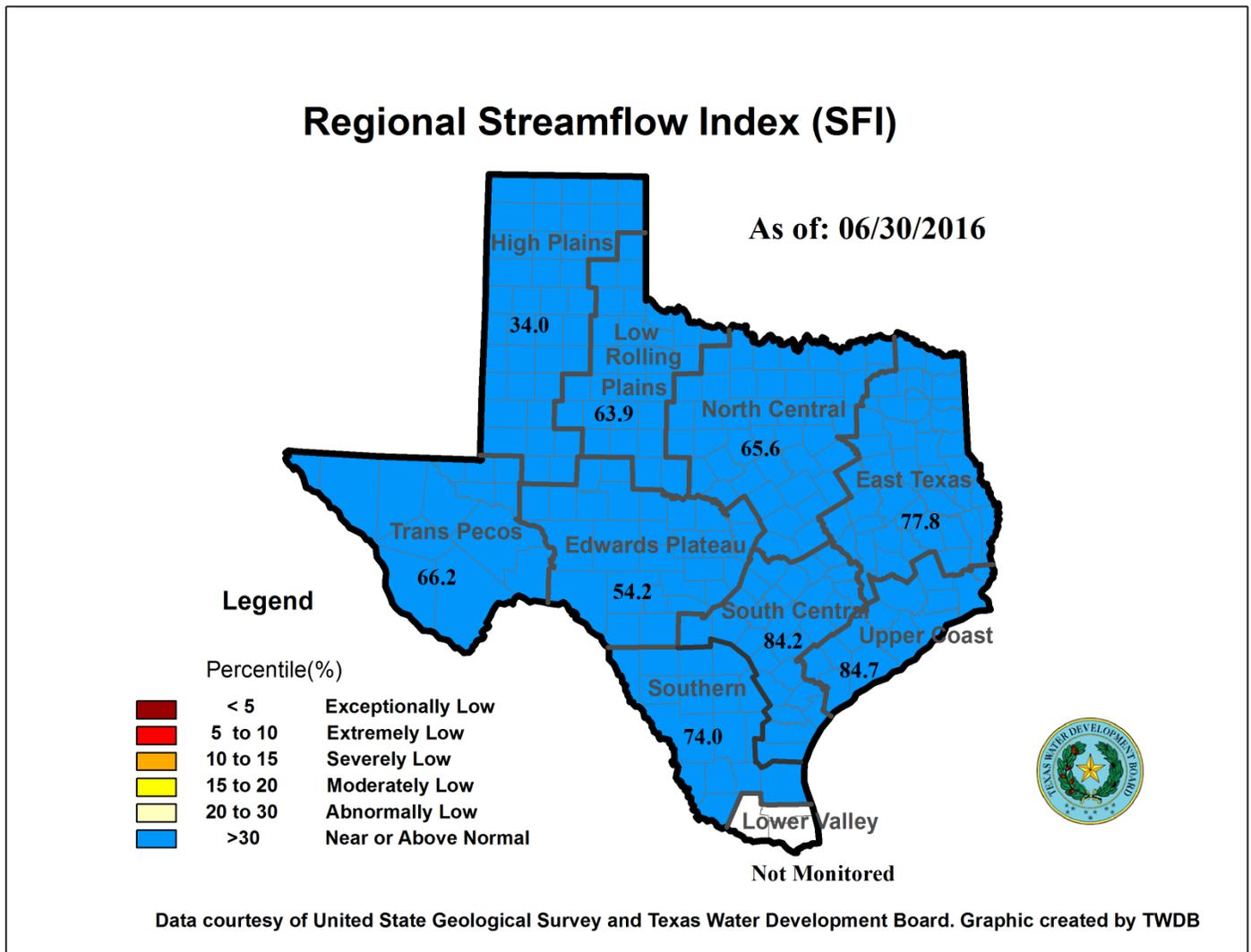
*Reservoir Storage Index is defined as the percent full of conservation storage capacity.

JUNE 2016 STREAMFLOW CONDITIONS

The computed 30-day mean flow status for 29 reporting index stations monitored this month is presented below. Mean flow increased at 12 index stations, decreased at 15 stations, and remained unchanged at two (2) stations.

Streamflow Status	Number of Stations
Near or Above Normal (>30%)	25
Abnormally Low (20-30%)	1
Moderately Low (15-20%)	0
Severely Low (10-15%)	0
Extremely Low (5-10%)	2
Exceptionally Low (<5%)	1

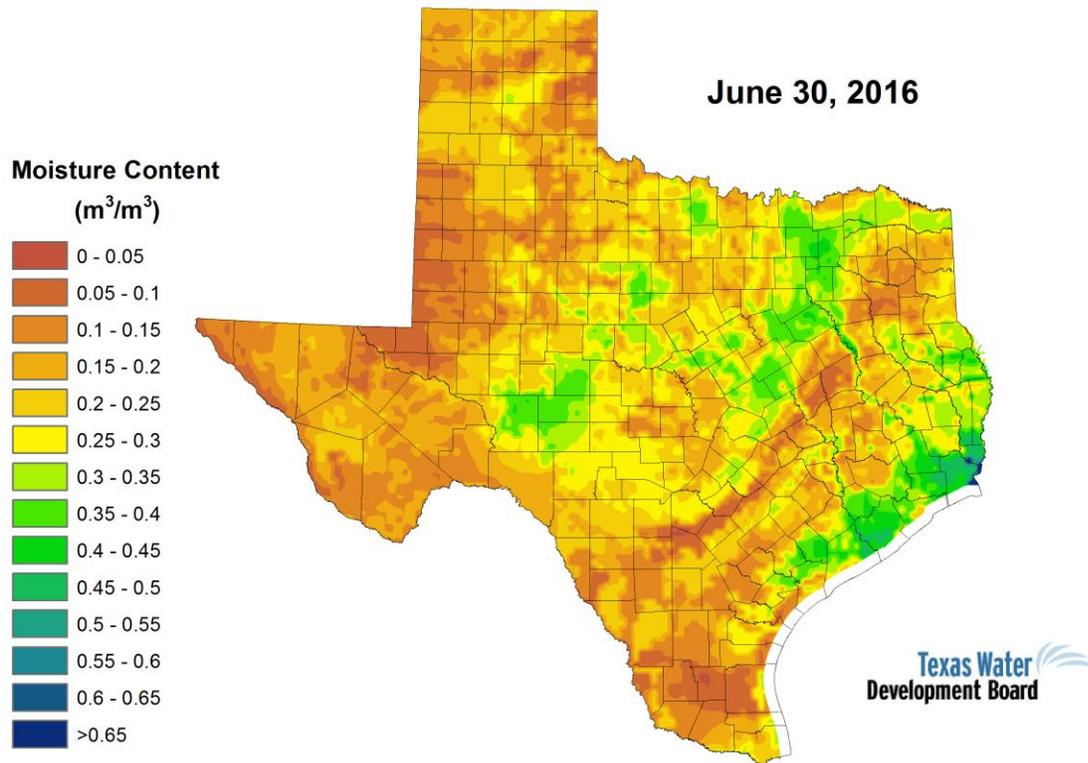
On a regional basis, as shown below, flows at index stations were near or above normal in all nine regions. Streamflow in the Lower Valley region is not monitored.



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

JUNE 2016 SOIL MOISTURE CONDITIONS

Soil Moisture Condition

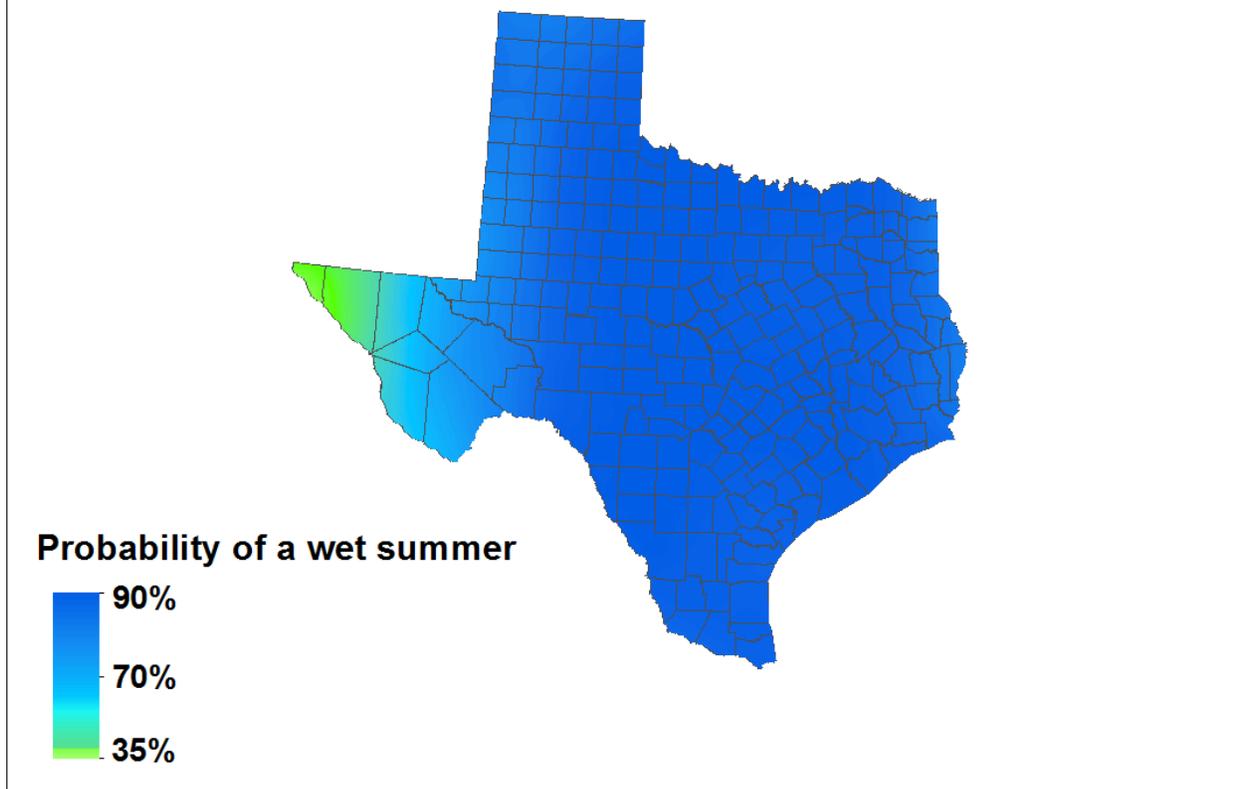


Data from NASA Soil Moisture Active Passive (SMAP) Level 4 - Model - Value Added Version 2
Soil moisture content is shown as volume of water per unit volume of bulk soil. Root zone: 0 to 1 meter depth.

Soil moisture has decreased across much of the central and eastern portion of the state in the past month. Soil moisture content in portions of central, north, and east Texas are in 0.3–0.4 range but elsewhere is less than 0.2.

2016 SUMMER RAINFALL PROBABILITY FORECAST

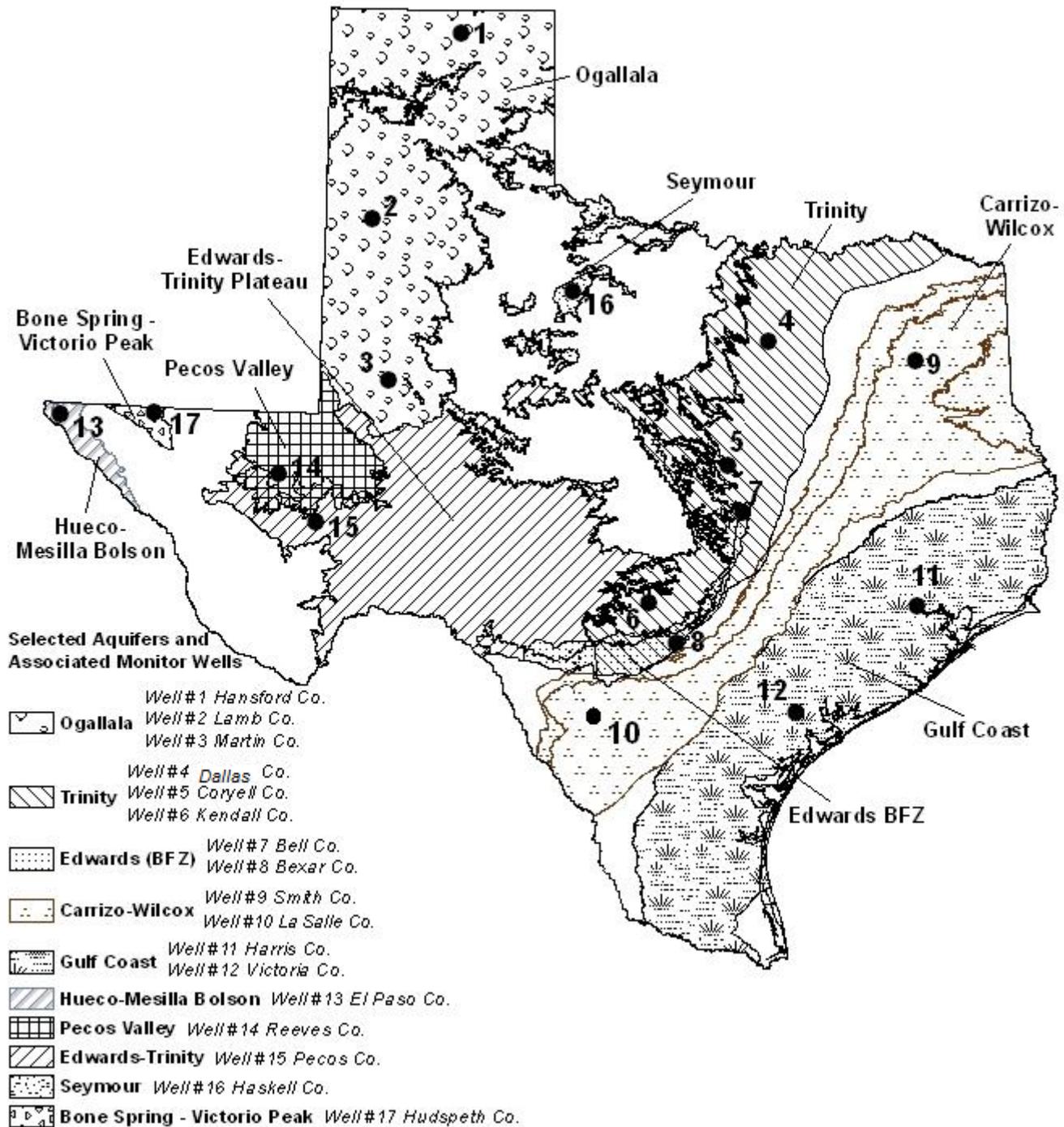
2016: May to July Rainfall Probability (Based on April Observations)



Note:

1. The forecast map (above) provides information on the likelihood that total rainfall from May–July (MJJ) 2016 will be greater than normal, where the term “normal” refers to the average 3-month rainfall observed for MJJ over the time period 1982–2015.
2. The forecast is based on April observations of select atmospheric circulation patterns and soil moisture over Texas known to be influential in driving MJJ rainfall. The forecast is generated using the methodology described in the TWDB Technical Note 15-02 on ['Early warning of summer drought over Texas and the south central United States: spring conditions as a harbinger of summer drought'](#). It is built on an understanding of the [spring drivers of intense summer drought over Texas](#).
3. A seasonal rainfall forecast typically provides information on the likelihood of above-, near-, or below-normal rainfall for a given season. The forecast is expressed as occurrence probabilities for each of three possible categories: below-normal, near-normal, or above-normal.
4. If there is no clear signal of whether the coming season is going to be wetter or dryer than normal, each category would have an equal likelihood of occurring. Each category would then be assigned a 33.3% probability of occurrence. If, however, there is a clear signal that the coming season is going to be wetter or dryer than normal, then either the wetter or the dryer category will have a greater probability of occurring. For example, if there is a clear signal that the coming MJJ season is going to be dryer than normal, the probabilities for each forecast category might be 55% for the below-normal category, 20% for the near-normal category, and 25% for the above-normal category.
5. For each county, only the highest probability value is shown in shading on the map. For MJJ 2016, all counties have probabilities for above-normal exceeding 35%. Therefore, only the above-normal category is depicted on the map (above).
6. The forecast does not provide information on how much wetter than normal each county is going to be in the MJJ season. The forecast only provides an estimate of what the chances are for each county to experience an MJJ season that will be wetter than the long-term average.
7. The rainfall forecasts provided are only for the MJJ season because the tool is specifically designed to incorporate physical mechanisms in the spring known to influence summer rainfall over Texas. Further research on drivers of rainfall in other seasons is needed before a tool to forecast rainfall in these seasons can be developed.
8. The MJJ rainfall probability forecasts by county are available at: <http://www.waterdatafortexas.org/drought/drought-forecast>

JUNE 2016 GROUNDWATER LEVELS IN OBSERVATION WELLS



June 2016

Water-level measurements were available for 16 of the 17 key monitoring wells in the state. Water levels rose in five monitoring wells since the beginning of June, ranging from an increase of 0.03 feet in the Haskell County Seymour Aquifer well to 4.63 feet in the LaSalle County Carrizo-Wilcox Aquifer well. Water levels declined in 11 monitoring wells, ranging from a decline of 0.02 feet in the Coryell County Hosston Formation-Trinity Aquifer well to 4.36 feet in the Pecos County Edwards-Trinity (Plateau) Aquifer well. The J-17 well in San Antonio recorded a water level of 55.01 feet below land surface or 675.99 feet above mean sea level. There are no restrictions currently in place for the San Antonio portion of the Edwards (Balcones Fault Zone), with water levels at 15.99 feet above Stage I critical management levels.

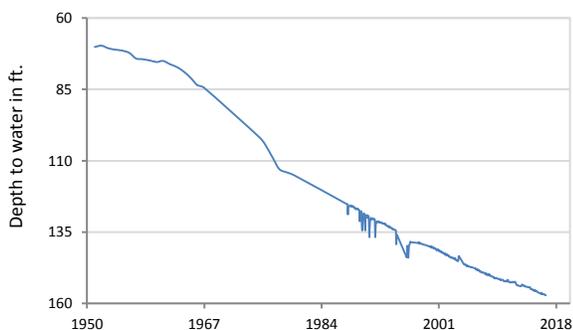
*IDs used in this publication on the aquifer map to indicate the monitoring well location (IDs 1 - 17) are different than the TWDB's six- or seven-digit state well identification number.

Monitoring Well	June	May	Month Change	Year Change	Historical Change	First Measured
(1) Hansford 0354301	157.18	157.02	-0.16	-0.93	-87.06	1951
(2) Lamb 1053602	146.66	146.54	-0.12	-1.05	-118.49	1951
(3) Martin 2739903	143.51	142.71	-0.80	-1.78	-38.62	1964
(4) Dallas 3319101	494.32	494.50	0.18	-3.82	-272.32	1954
(5) Coryell 4035404	505.46	505.44	-0.02	-4.61	-213.46	1955
(6) Kendall 6802609	108.53	108.10	-0.43	-0.25	-48.53	1975
(7) Bell 5804816	117.31	118.11	0.80	2.76	6.2	2008
(8) Bexar 6837203	55.01	51.41	-3.60	5.4	-8.37	1932
(9) Smith 3430907	433.37	432.42	-0.95	-0.45	-133.37	1987
(10) La Salle 7738103	448.82	453.45	4.63	34.0	-195.75	2003
(11) Harris 6514409	189.3	189.04	-0.26	-4.42	-53.80*	1947**
(12) Victoria 8017502	NA	33.43	NA	NA	NA	1958
(13) El Paso 4913301	295.67	294.99	-0.68	-0.23	-63.77	1964
(14) Reeves 4644501	164.67	167.19	2.52	-2.84	-72.58	1952
(15) Pecos 5216802	214.30	209.94	-4.36	-2.2	32.58	1976
(16) Haskell 2135748	46.39	46.42	0.03	1.98	-3.39	2002
(17) Hudspeth 4807516	149.35	147.15	-2.20	-1.53	-45.43	1966

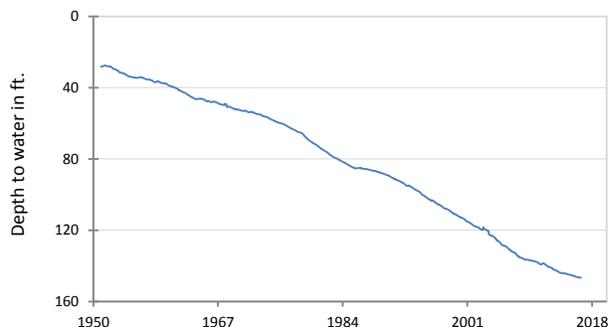
*Change since the original measurement of 135.5 feet below land surface in 1947 (**measurement not shown on the hydrograph)

JUNE 2016 GROUNDWATER LEVELS IN OBSERVATION WELLS

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



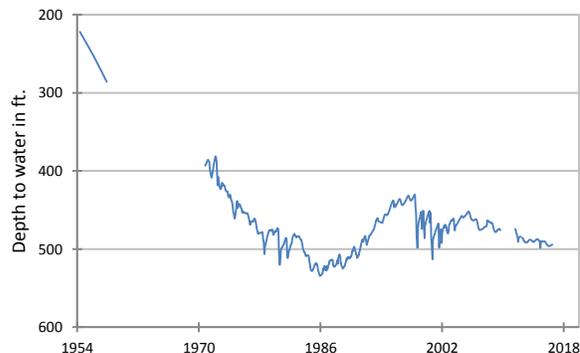
(2) State Well ID 10-53-602
Near Earth, Lamb County
Ogallala Aquifer



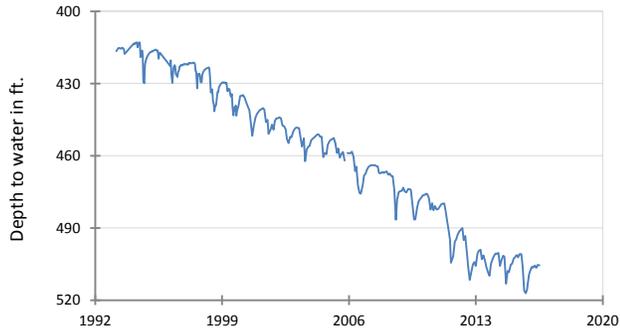
(3) State Well ID 27-39-903
Northwest Martin County
Ogallala Aquifer



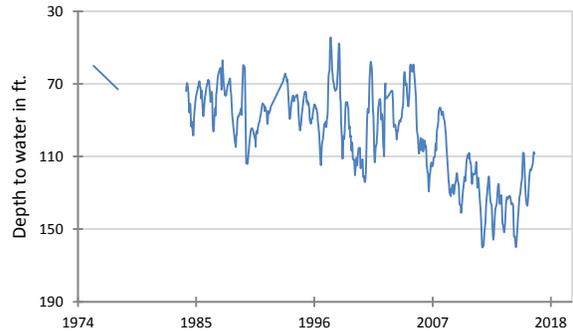
(4) State Well ID 33-19-101
Southeast Dallas, Dallas County
Twin Mountains Formation-Trinity Aquifer



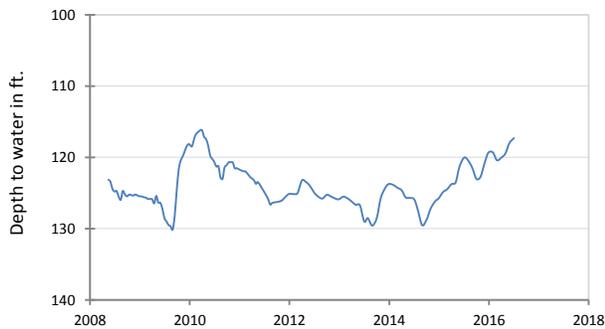
**(5) State Well ID 40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer**



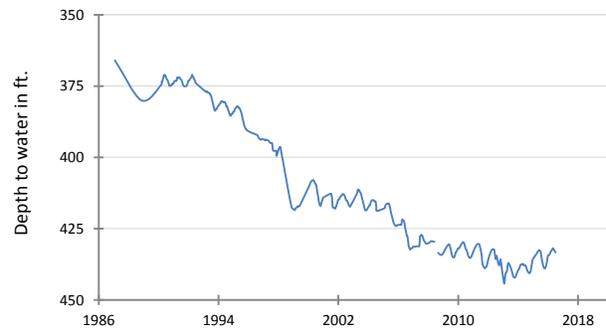
**(6) State Well ID 68-02-609
Waring, Kendall County
Cow Creek Formation-Trinity Aquifer**



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



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



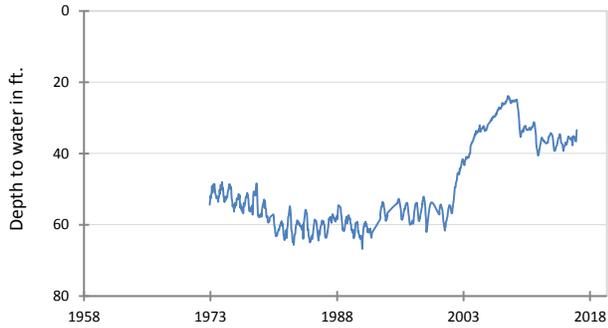
**(10) State Well ID 77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer**



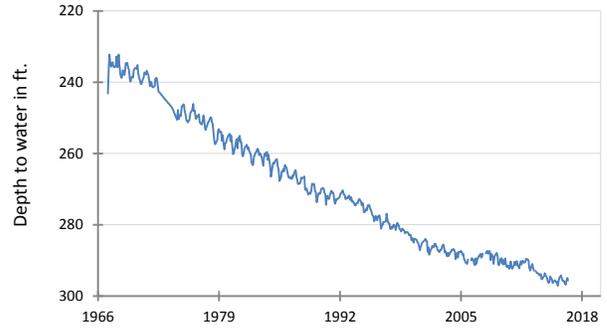
**(11) State Well ID 65-14-409
Alief, Harris County
Evangeline Formation-Gulf Coast Aquifer**



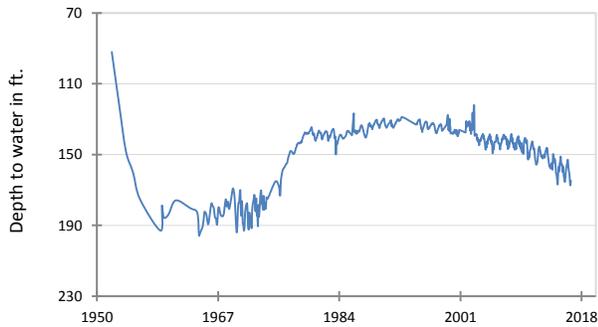
(12) State Well ID 80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



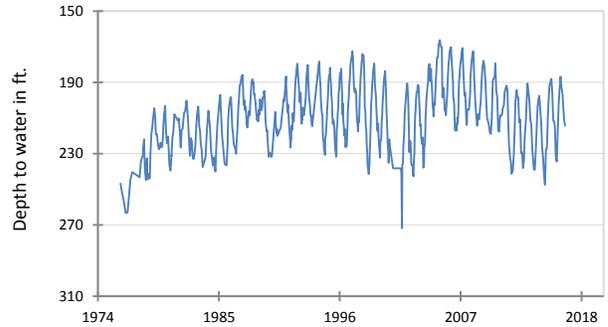
(13) State Well ID 49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolson Aquifer



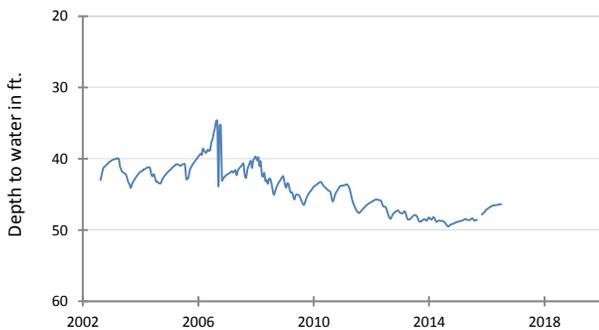
(14) State Well ID 46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



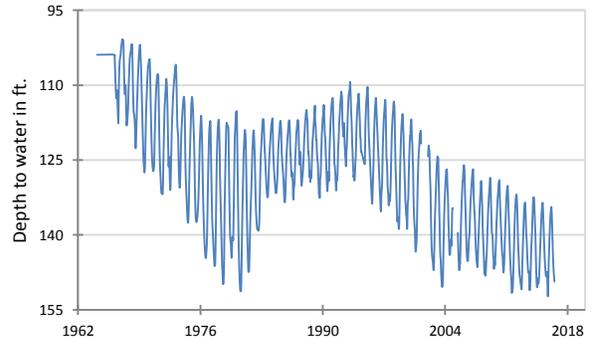
(15) State Well ID 52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



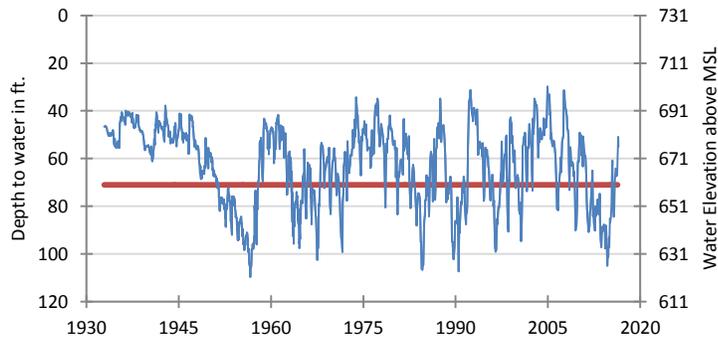
(16) State Well ID 21-35-748
Near O'Brien, Haskell County
Seymour Aquifer



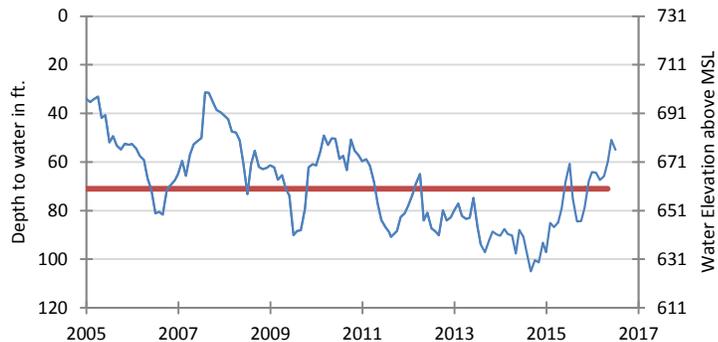
(17) State Well ID 48-07-516
Dell City, Hudspeth County
Bone Spring - Victorio Peak Aquifer



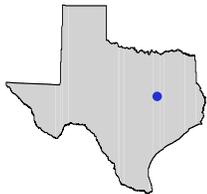
**(8) State Well ID 68-37-203 (J-17)
In San Antonio, Bexar County
Edwards (Balcones Fault Zone) Aquifer**



The late June water-level measurement in this Edwards (Balcones Fault Zone) Aquifer well, elevation 731 feet above mean sea level, was 55.01 feet below land surface, or 675.99 feet above mean sea level. This was 3.60 feet below last month's measurement, 5.4 feet above last year's measurement, and 8.37 feet below the initial measurement recorded in 1932.



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



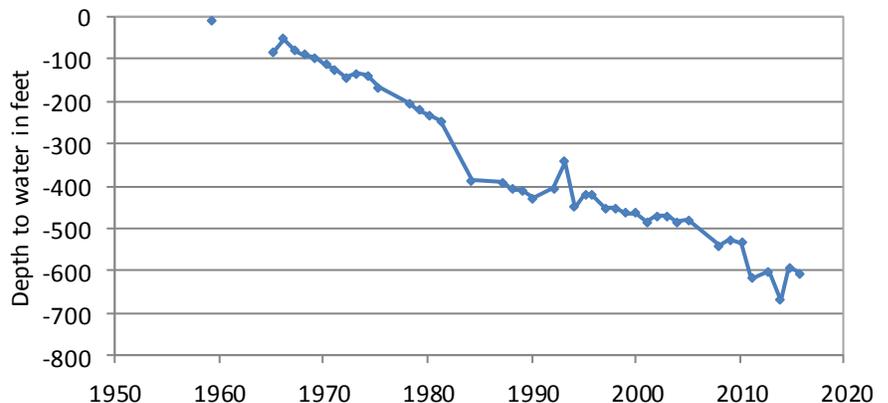
HYDROGRAPH OF THE MONTH

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

The Trinity Aquifer is a major aquifer that extends across much of the central and northeastern part of Texas. It is composed of several smaller aquifers contained within the Trinity Group, including; the Antlers, Glen Rose, Paluxy, Twin Mountains, Travis Peak, Hensell, and Hosston aquifers. These aquifers consist of limestone, sands, clays, gravels, and conglomerates. Their combined freshwater saturated thickness averages about 600 feet in North Texas and about 1,900 feet in Central Texas. The groundwater is fresh but very hard in the outcrop of the aquifer. Total dissolved solids increase from less than 1,000 milligrams per liter in the east and southeast to between 1,000 and 5,000 milligrams per liter, or slightly to moderately saline, as the depth to the aquifer increases. Sulfate and chloride concentrations also tend to increase with depth. The aquifer is one of the most extensive and highly used groundwater resources in Texas. The primary use is for municipalities, but it is also used for irrigation, livestock, and domestic purposes.

Trinity Aquifer

Well #3917701, 3,129 feet deep
public supply, east McLennan County



The first water level measurement of 9.67 feet below land surface was recorded in 1959 when the well was drilled. The TWDB has consistently measured the water level since 1965 when the water level was measured at 82 feet below land surface. There has been a steady decline in the water level since the first measurement due to increased public supply usage.