

RESERVOIR STORAGE

December 2013

At the end of the month, total storage in 115 of the state's major water supply reservoirs was at 20.17 million acre-feet*, or 64% of their total conservation storage capacity. This is 425 thousand acre-feet more than a month ago but 150 thousand acre-feet less than the storage at this time last year.

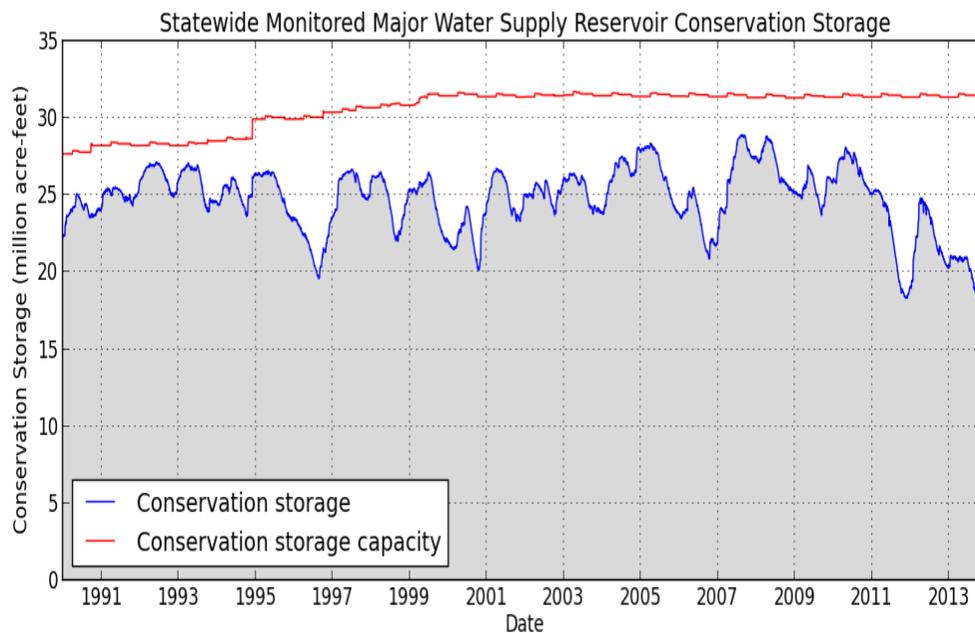
Eighteen reservoirs, most in North Central and East regions, held 100% of conservation storage capacity. Thirteen (13) reservoirs were at or below 10% full: Meredith, White River, Electra and Twin Buttes were effectively empty, North Fork Buffalo Creek and J. B. Thomas were at 1%, O. C. Fisher was at 2%, Palo Duro was at 3%, Medina and E.V. Spence were at 4%, Mackenzie was at 5%, Abilene was at 6%, and Champion Creek was at 7% full.

Total combined storage was greater than 70% in the Upper Coast (92%) and East (89%) regions. The regions with the lowest percentage storage were the High Plains (1%) and Low Rolling Plains regions (23%). Storage declined in 3 regions and increased in 5 regions over the past month.

Elephant Butte reservoir held 278,340 acre-feet, or 14% of storage capacity. This is 43,167 acre-feet more than a month ago.

* Only the Texas share of storage in border reservoirs is counted.

CONSERVATION STORAGE DATA FOR



Figures are based on the end of the month data at 115 major reservoirs that represent 96 percent of the total conservation storage capacity of the 188 major water supply reservoirs in Texas. Major reservoirs are

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	Conservation Storage Capacity (acre-feet)	Conservation Storage end of Dec		Change since end of Nov 2013		Change since end of Dec 2012		
		2013 (acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)	(%)	
HIGH PLAINS								
Palo Duro Reservoir	61,066	1,777	3	-1,212	-2	131	0	
Meredith, Lake (Texas)	500,000	0	0	0	0	0	0	
Meredith, Lake (Texas & Oklahoma)	779,556	0	0	0	0	0	0	
MacKenzie Reservoir	46,450	2,459	5	-35	-0	-588	-1	
White River Lake	29,880	0	0	0	0	-1,444	-5	
TOTAL	637,396	4,236	1	-1,247	-0	-1,901	-0	
LOW ROLLING PLAINS								
Greenbelt Lake	59,968	8,502	14	5	0	1,066	2	
*Electra, Lake	5626	No Data		No Data		0		
N. Fork Buffalo Crk Reservoir	15,400	100	1	-6	-0	-732	-5	
Kemp, Lake	245,307	60,038	24	125	0	-9,718	-4	
Millers Creek Reservoir	26,768	4,418	17	-113	-0	-2,804	-10	
Alan Henry Reservoir	94,808	62,313	66	-140	-0	-7,348	-8	
Stamford, Lake	51,570	8,339	16	-94	-0	-5,582	-11	
J B Thomas, Lake	199,931	2,778	1	47	0	1,590	1	
Fort Phantom Hill, Lake	70,030	31,522	45	-159	-0	-3,292	-5	
Sweetwater, Lake	12,267	2,571	21	-29	-0	-1,100	-9	
Colorado City, Lake	30,758	8,243	27	-32	-0	-2,815	-9	
Champion Creek Reservoir	41,580	3,089	7	-20	-0	-454	-1	
Abilene, Lake	7,900	475	6	-15	-0	-1,017	-13	
Coleman, Lake	38,075	15,543	41	-42	-0	-2,233	-6	
Hords Creek Lake	8,443	2,661	32	-3	-0	-262	-3	
TOTAL	902,805	210,592	23	-476	-0	-26,199	-3	
NORTH CENTRAL								
Nocona, Lake (Farmers Crk)	21,444	9,224	43	94	0	-1,479	-7	
Hubert H Moss Lake	24,058	20,918	87	919	4	-131	-1	
Texoma, Lake (Texas)	1,258,113	1,018,879	81	-22,681	-2	-60,555	-5	
Texoma, Lake (Texas & Oklahoma)	2,525,281	1,018,879	40	-22,681	-1	-60,555	-2	
*Pat Mayse Lake	113,683	90,573	80	4,607	4	-1,770	-2	
Kickapoo, Lake	85,825	27,406	32	-198	-0	-7,637	-9	
Arrowhead, Lake	235,997	65,461	28	-1,152	-0	-30,886	-13	
Bonham, Lake	11,027	9,363	85	805	7	1,883	17	
Crook, Lake	9,195	9,080	99	632	7	2,367	26	
Amon G Carter, Lake	19,266	9,528	49	83	0	-2,639	-14	
Ray Roberts, Lake	788,167	598,448	76	7,565	1	-82,093	-10	
Jim Chapman Lake (Cooper)	260,332	89,880	35	14,165	5	-59,186	-23	
Graham, Lake	45,288	23,994	53	-152	-0	-10,038	-22	
*Lost Creek Reservoir	11,950	8,662	72	-33	-0	-1,611	-13	
Bridgeport, Lake	366,236	165,395	45	308	0	-45,665	-12	
Lewisville Lake	563,228	387,313	69	25,079	4	-18,947	-3	
Lavon Lake	406,388	196,632	48	2,905	1	-40,717	-10	
Hubbard Creek Reservoir	326,559	79,652	24	-1,564	-0	-17,325	-5	
Possum Kingdom Lake	540,340	355,217	66	-1,178	-0	-39,007	-7	
*Mineral Wells, Lake	6,760	4,086	60	44	1	-949	-14	
Weatherford, Lake	17,812	10,243	58	-79	-0	-570	-3	
Eagle Mountain Lake	179,880	129,821	72	6,158	3	-1,342	-1	
Worth, Lake	33,495	24,810	74	398	1	822	2	
Grapevine Lake	164,703	111,246	68	4,638	3	-8,284	-5	
Ray Hubbard, Lake	452,040	323,641	72	7,540	2	-45,446	-10	
New Terrell City Lake	8,583	6,583	77	525	6	-208	-2	
Daniel, Lake	9,515	2,212	23	-19	-0	-664	-7	

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	Conservation Storage Capacity (acre-feet)	Conservation Storage end of Dec		Change since end of Nov 2013		Change since end of Dec 2012		
		2013 (acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)	(%)	
(North Central Continue)								
Palo Pinto, Lake	26,827	8,276	31	-77	-0	-8,236	-31	
Benbrook Lake	85,648	75,643	88	8,509	10	18,709	22	
Arlington, Lake	40,188	29,524	73	-289	-1	3,860	10	
Joe Pool Lake	175,358	168,126	96	4,972	3	12,469	7	
*Cisco, Lake	25,895	14,782	57	-71	-0	4,884	19	
Leon, Lake	26,476	22,238	84	77	0	9,126	34	
Granbury, Lake	128,046	75,146	59	1,009	1	-14,435	-11	
Pat Cleburne, Lake	26,008	16,267	63	469	2	-2,347	-9	
Waxahachie, Lake	10,780	8,825	82	918	9	-932	-9	
Bardwell Lake	46,122	36,916	80	3,201	7	1,691	4	
Proctor Lake	55,457	27,146	49	146	0	-6,976	-13	
Whitney, Lake	553,344	349,081	63	6,758	1	-31,228	-6	
Aquilla Lake	44,460	34,405	77	3,012	7	3,182	7	
Navarro Mills Lake	49,827	49,827	100	0	0	12,726	26	
*Halbert, Lake	6,033	5,378	89	-105	-2	1,300	22	
Richland-Chambers Reservoir	1,087,839	796,588	73	19,369	2	-85,469	-8	
*Brownwood, Lake	128,839	74,281	58	-274	-0	2,670	2	
Waco, Lake	189,567	173,017	91	8,942	5	19,349	10	
Limestone, Lake	208,014	208,014	100	0	0	59,510	29	
Belton Lake	435,225	331,250	76	8,602	2	-26,495	-6	
Stillhouse Hollow Lake	227,771	170,757	75	-248	-0	-21,592	-9	
Georgetown, Lake	36,823	19,934	54	842	2	-1,582	-4	
Granger Lake	50,779	50,779	100	0	0	4,748	9	
Tawakoni, Lake	871,685	583,254	67	12,150	1	-124,181	-14	
Mountain Creek, Lake	22,850	22,850	100	0	0	250	1	
Squaw Creek, Lake	151,250	151,250	100	0	0	0	0	
TOTAL	10,670,995	7,281,821	68	127,321	1	-641,076	-6	
EAST								
Wright Patman Lake	122,593	122,593	100	0	0	0	0	
*Sulphur Springs, Lake	17,747	17,747	100	164	1	3,778	21	
Cypress Springs, Lake	66,756	66,433	100	5,380	8	5,287	8	
Bob Sandlin, Lake	190,822	153,698	81	14,511	8	9,654	5	
Caddo, Lake	29,898	29,898	100	0	0	9,965	33	
Martin, Lake	75,116	75,116	100	0	0	20,350	27	
Monticello, Lake	34,740	34,740	100	0	0	0	0	
Fork Reservoir, Lake	605,061	488,487	81	23,896	4	-4,898	-1	
O the Pines, Lake	241,363	241,363	100	30,637	13	68,152	28	
Cedar Creek Reservoir in Trinity	644,686	534,546	83	34,295	5	9,636	1	
Athens, Lake	29,435	28,102	95	2,044	7	4,431	15	
Palestine, Lake	373,199	373,199	100	0	0	38,567	10	
Tyler, Lake	73,161	66,825	91	7,199	10	14,593	20	
Murvault, Lake	38,285	38,285	100	0	0	1,296	3	
Jacksonville, Lake	25,670	25,670	100	0	0	1,650	6	
Nacogdoches, Lake	39,522	38,121	96	2,443	6	4,636	12	
Houston County Lake	17,113	17,113	100	232	1	0	0	
Sam Rayburn Reservoir	2,857,077	2,410,864	84	137,768	5	70,045	2	
Toledo Bend Reservoir (Texas)	2,245,752	1,956,859	87	5,917	0	65,607	3	
Toledo Bend Reservoir (TX & LA)	4,472,900	1,956,859	44	5,917	0	65,607	1	
*Livingston, Lake	1,785,348	1,785,348	100	0	0	45,184	3	
B A Steinhagen Lake	66,961	53,148	79	-3,285	-5	-3,464	-5	
Conroe, Lake	416,177	387,695	93	1,488	0	34,331	8	
TOTAL	9,996,482	8,945,850	89	262,689	3	398,800	4	

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		(%)	(%)	(acre-feet)	(%)	(acre-feet)	(%)	
TRANS-PECOS								
Red Bluff Reservoir	151,110	65,725	43	18,096	12	41,358	27	
TOTAL	151,110	65,725	43	0	0	41,358	27	
EDWARDS PLATEAU								
Oak Creek Reservoir	39,210	8,292	21	-146	-0	-3,325	-8	
E V Spence Reservoir	517,272	20,250	4	-1,743	-0	-7,889	-2	
O C Fisher Lake	119,445	2,649	2	-889	-1	1,738	1	
*O H Ivie Reservoir	554,340	77,357	14	-1,988	-0	-49,056	-9	
Twin Buttes Reservoir	182,454	0	0	0	0	-6,658	0	
Brady Creek Reservoir	28,808	9,438	33	87	0	1,586	6	
Buchanan, Lake	860,607	322,350	37	8,308	1	-38,696	-4	
Inks, Lake	13,962	13,134	94	182	1	159	1	
Lyndon B Johnson, Lake	115,056	111,554	97	184	0	307	0	
*Amistad Reservoir (Texas)	1,840,849	903,666	49	8,530	0	38,488	2	
*Amistad Reservoir (TX & Mexico)	3,275,532	903,666	28	8,530	0	38,488	1	
TOTAL	4,272,003	1,468,690	34	12,525	0	16,169	0	
SOUTH CENTRAL								
Travis, Lake	1,113,348	405,362	36	10,289	1	-22,573	-2	
*Austin, Lake	23,972	22,849	95	-808	-3	261	1	
Somerville Lake	147,104	117,670	80	1,078	1	-3,269	-2	
Canyon Lake	378,781	319,717	84	-1,250	-0	9,814	3	
Medina Lake	254,823	9,413	4	-464	-0	-14,941	-6	
*Coleto Creek Reservoir	31,040	20,571	66	-402	-1	-1,982	-6	
TOTAL	1,949,068	895,582	46	8,443	0	-32,690	-2	
UPPER COAST								
Houston, Lake	128,054	128,054	100	0	0	6,444	5	
Texana, Lake	159,566	135,315	85	-7,332	-5	1,022	1	
TOTAL	287,620	263,369	92	-7,332	-3	7,466	3	
SOUTHERN								
Choke Canyon Reservoir	695,262	239,660	34	-3,742	-1	-89,257	-13	
Corpus Christi, Lake	256,961	236,395	92	-9,681	-4	196,518	76	
*Falcon Reservoir (Texas)	1,551,007	554,992	36	26,487	2	66,483	4	
*Falcon Reservoir (TX & Mexico)	2,646,817	554,992	21	26,487	1	66,483	3	
TOTAL	2,503,230	1,031,047	41	13,064	1	173,744	7	
STATE TOTAL	31,376,335	20,166,912	64	424,742	1	-150,188	-0	
* Conservation volume is used as conservation storage capacity because the dead storage is unknown.								
Elephant Butte Reservoir	1,973,358	278,340	14	43,167	2	118,088	6	

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.

DECEMBER RESERVOIR CONDITIONS

As of: 12/31/2013

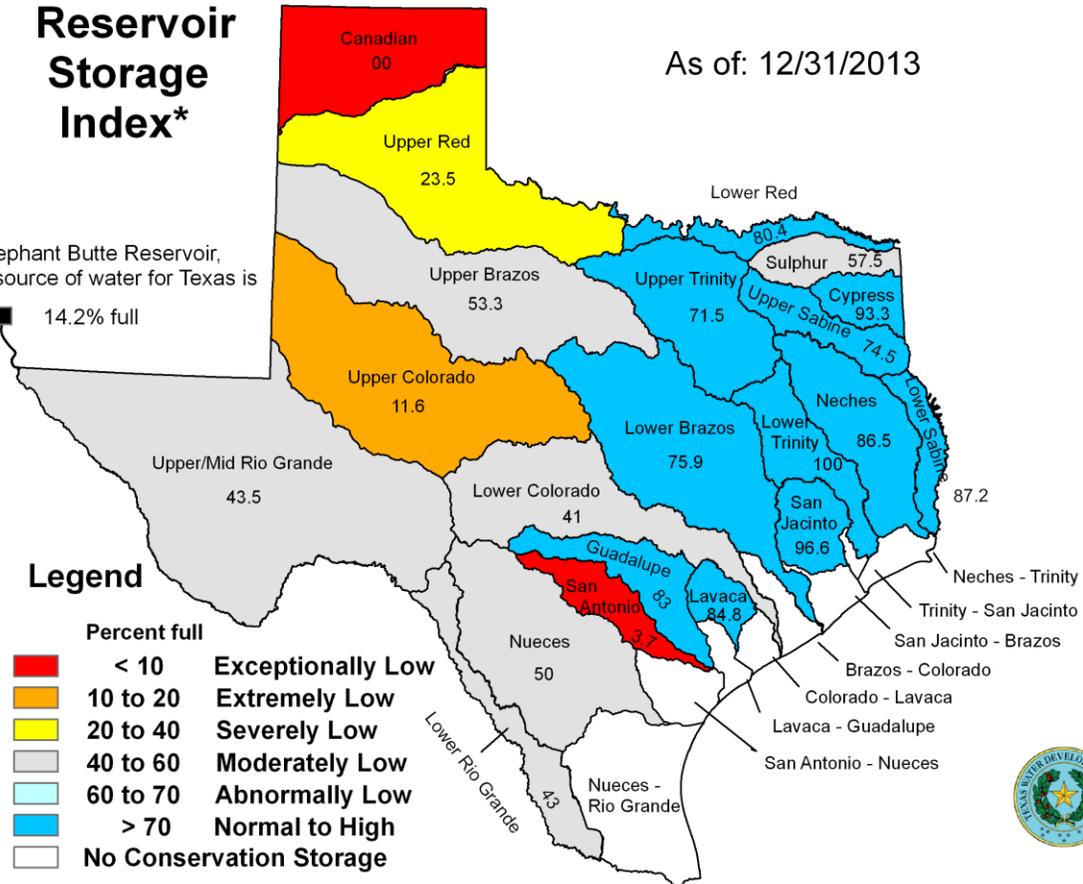
Reservoir Storage Index*

Elephant Butte Reservoir, a source of water for Texas is

■ 14.2% full

Legend

Percent full	Category
< 10	Exceptionally Low
10 to 20	Extremely Low
20 to 40	Severely Low
40 to 60	Moderately Low
60 to 70	Abnormally Low
> 70	Normal to High
No Conservation Storage	

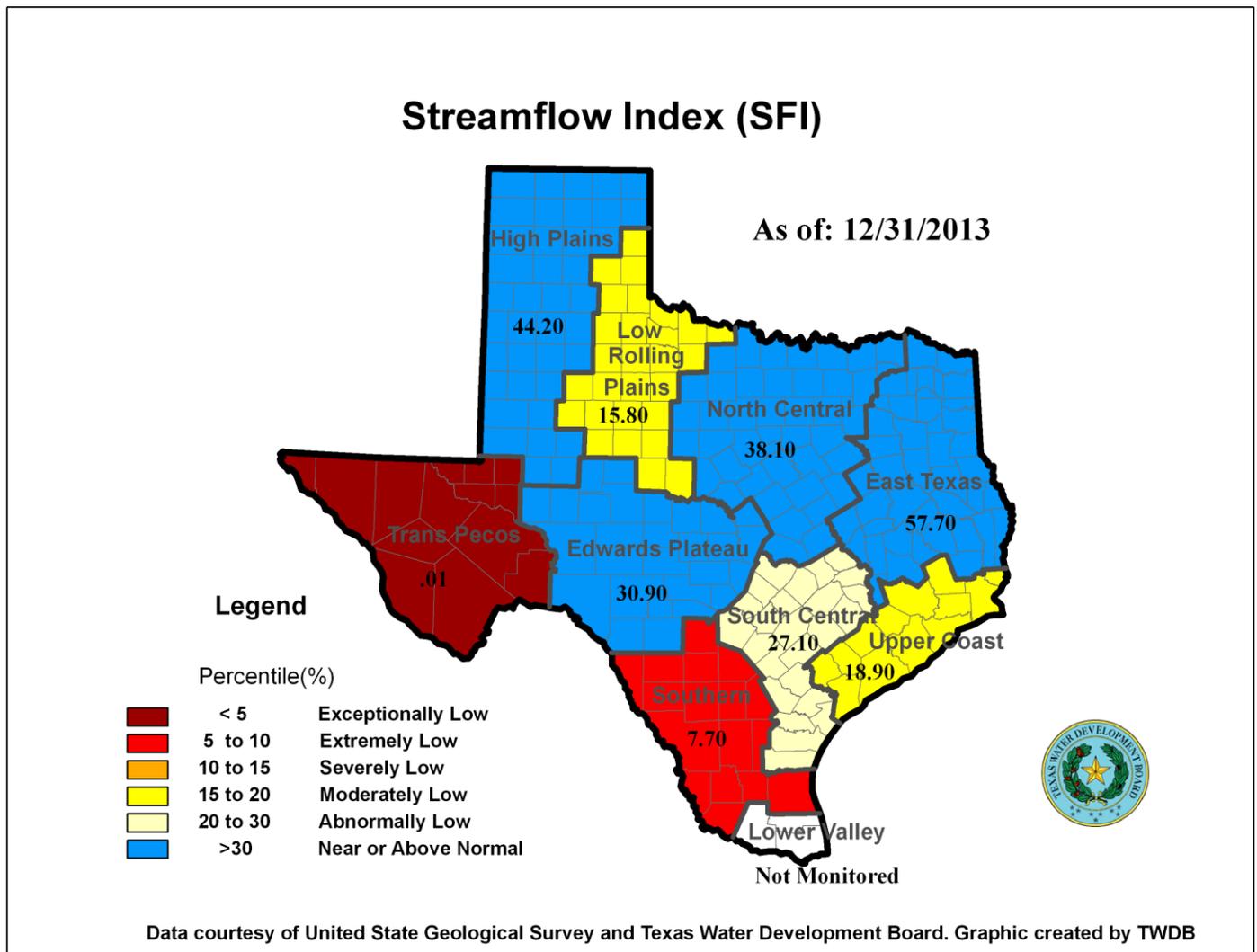


*Percent of combined conservation storage capacity of 115 major water supply reservoirs by sub-basin (dead pools are excluded)

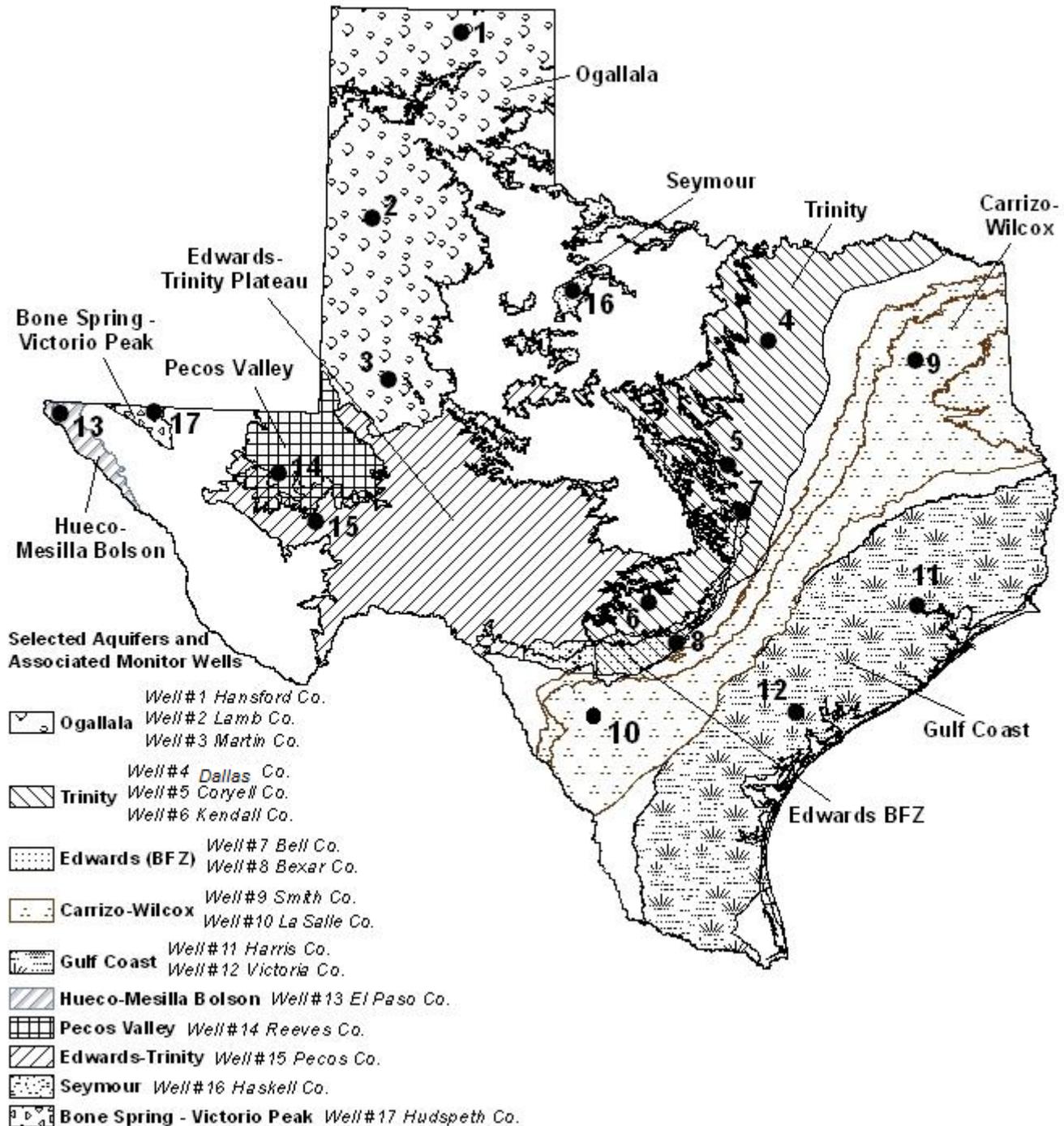
DECEMBER STREAMFLOW CONDITIONS

Of 29 reporting index stations monitored this month, computed 30-day mean flows were exceptionally low (<5%) at 10 stations, extremely low (5-10%) at 1 station, severely low (10-15%) at 2 stations, moderately low (15-20%) at 1 station, abnormally low (20-30%) at 3 stations, and near normal (30% - 70%) at the remaining 12 stations. Compared to last month, flows have increased at 13 index stations and decreased at 11 stations.

On a regional basis, flows in this month were exceptionally low in the Trans-Pecos region, extremely low in the Southern region, moderately low in the Low Rolling Plains and Upper Coast regions, abnormally low in the South Central region, and near or above normal in all other regions. Streamflow in the Lower Valley region is not monitored.



DECEMBER 2013 GROUNDWATER LEVELS IN OBSERVATION WELLS



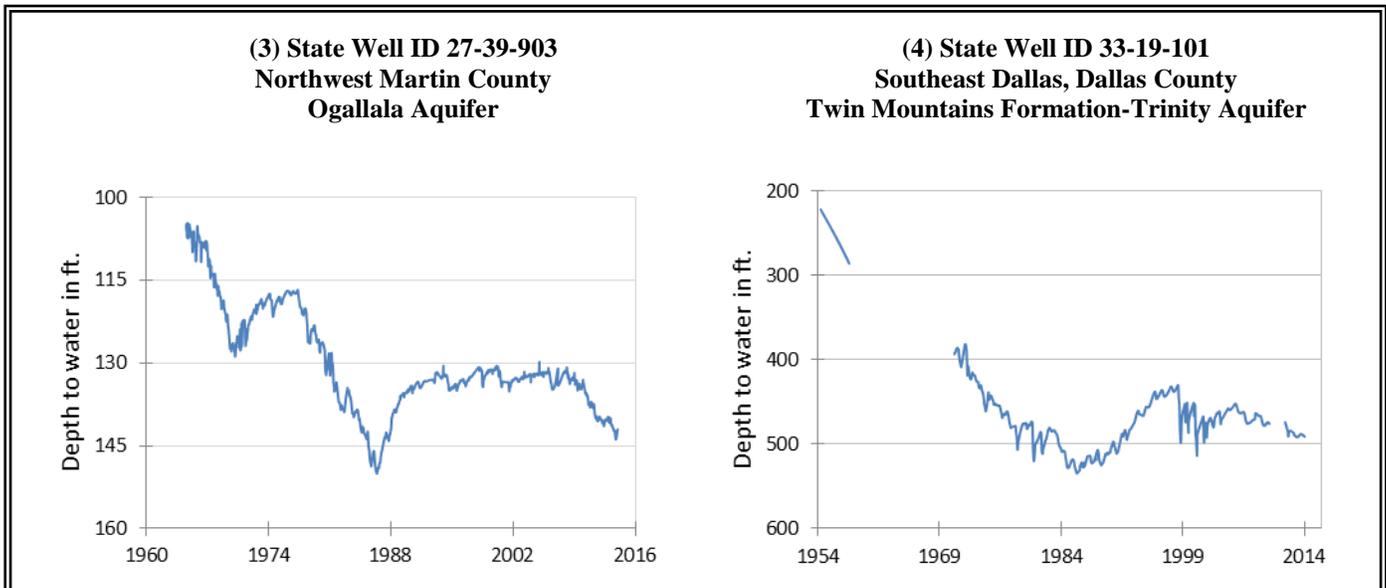
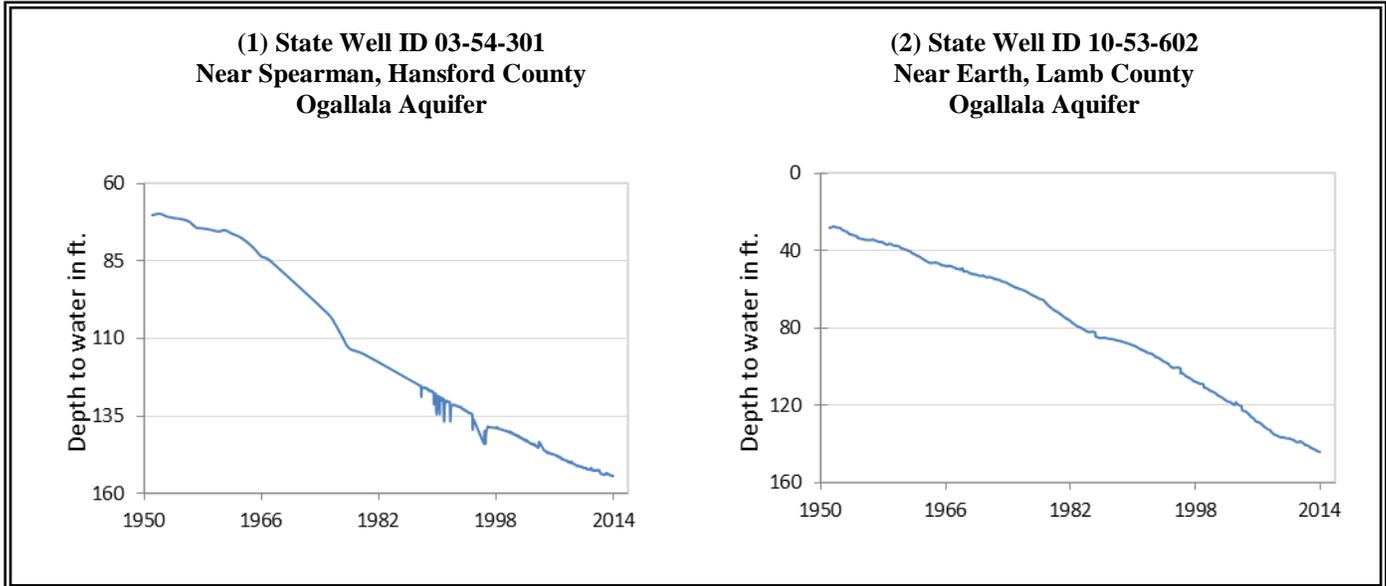
December, 2013

Water level measurements were available for all seventeen key monitoring wells in the state. Water levels rose in thirteen of the monitoring wells since the beginning of December, ranging from 0.01 feet in the Hansford County Ogallala Aquifer well to 12.19 feet in the Pecos County Edwards Trinity Aquifer well. Water levels declined in four monitoring wells, ranging from 0.06 feet in the Lamb County Ogallala Aquifer well to 1 foot in the Kendall County Trinity Aquifer well. The J-17 well in San Antonio recorded a water level of 90.34 feet below land surface or 640.66 feet above mean sea level. This water level is 0.66 feet above the Stage III critical management level in that segment of the Edwards Aquifer. Stage II restrictions were declared by the EAA when the ten-day average fell below the 650-foot elevation, or 81 feet below land surface.

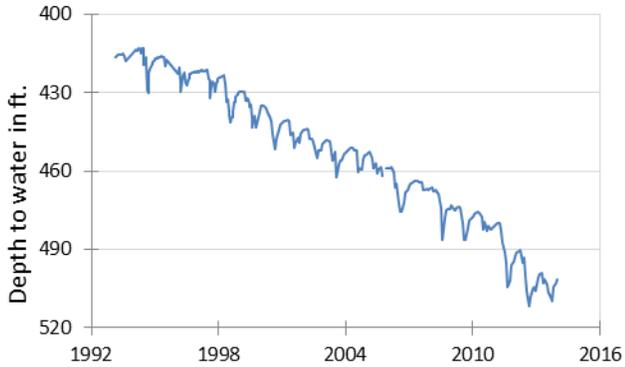
* ID is used in this publication to differentiate between the monitoring well number (1 - 17) as displayed on the aquifer map and the TWDB's six- or seven-digit state well "identification" number.

Monitoring Well	December	November	month change	year change	historical change	first measured
(1) Hansford 0354301	154.4	154.41	0.01	-0.73	-84.28	1951
(2) Lamb 1053602	144.11	144.05	-0.06	-1.62	-115.96	1951
(3) Martin 2739903	142.03	142.54	0.51	-1.28	-37.14	1964
(4) Dallas 3319101	491.13	490.15	-0.98	0.28	-269.13	1954
(5) Coryell 4035404	501.65	502.93	1.28	4.19	-209.65	1955
(6) Kendall 6802609	133.39	132.39	-1.00	1.34	-73.39	1975
(7) Bell 5804816	123.75	124.3	0.55	2.14	-0.62	2008
(8) Bexar 6837203	90.34	89.8	-0.54	-10.34	-43.7	1932
(9) Smith 3430907	439.72	440.65	0.93	2.03	-73.72	1987
(10) La Salle 7738103	487.49	499.34	11.85	-26.25	-243.42	2003
(11) Harris 6514409	196	197.43	1.43	4.69	-60.5	1956
(12) Victoria 8017502	37.94	38.92	0.98	-0.92	-3.94	1958
(13) El Paso 4913301	293.63	294.38	0.75	-0.7	-61.73	1967
(14) Reeves 4644501	149.73	158.60	8.87	-1.94	-57.64	1952
(15) Pecos 5216802	203.23	215.42	12.19	-0.97	43.65	1976
(16) Haskell 2135748	48.26	48.68	0.42	-0.69	-6.93	2002
(17) Hudspeth 4807516	136.5	139.05	3.35	0.41	-32.58	1964

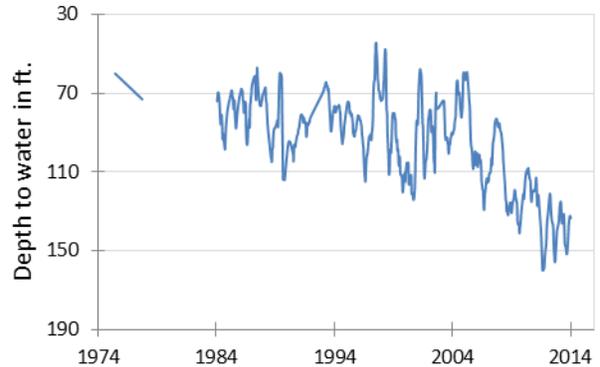
DECEMBER GROUNDWATER LEVELS IN OBSERVATION WELLS



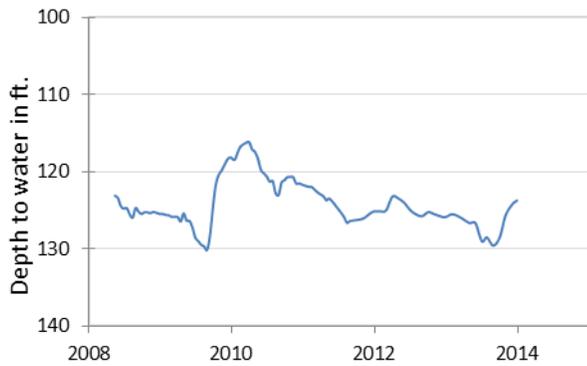
**(5) State Well ID 40-35-404
Gatesville, Coryell County
Hosston Formation-Trinity Aquifer**



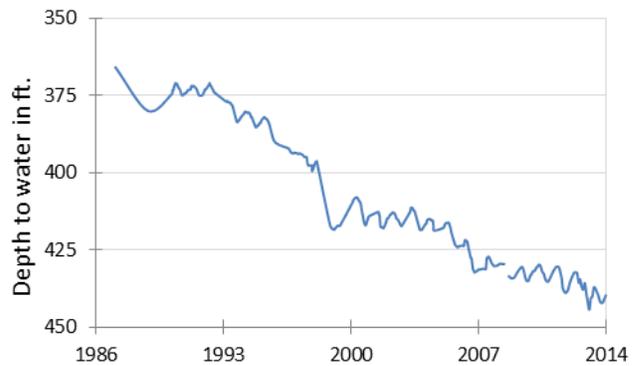
**(6) State Well ID 68-02-609
Waring, Kendall County
Cow Creek Formation-Trinity Aquifer**



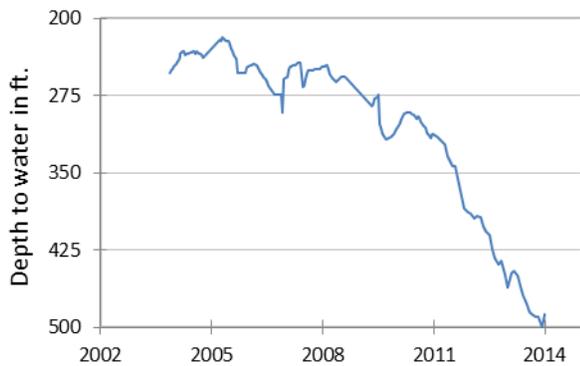
**(7) State Well ID 58-04-816
Near Salado, Bell County
Edwards (BFZ) Aquifer**



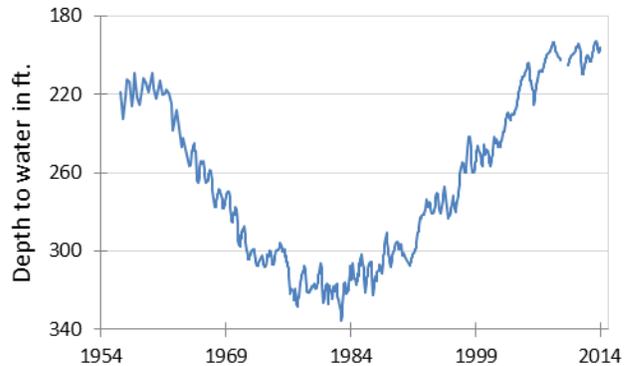
**(9) State Well ID 34-30-907
Red Springs, Smith County
Carrizo-Wilcox Aquifer**



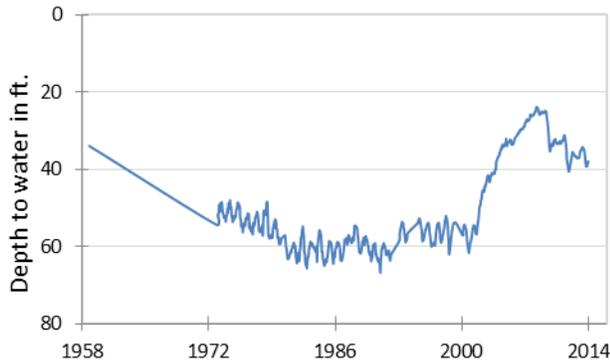
**(10) State Well ID 77-38-103
Near Cotulla, La Salle County
Carrizo-Wilcox Aquifer**



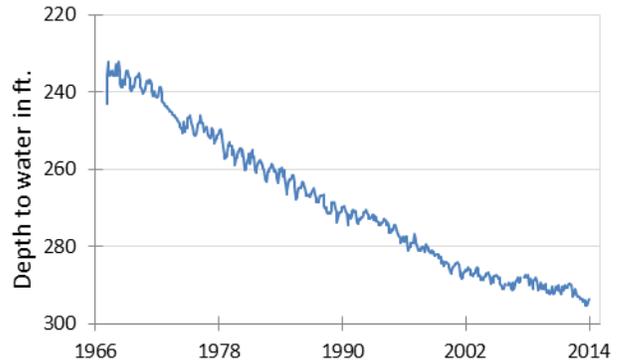
**(11) State Well ID 65-14-409
Alief, Harris County
Evangeline Formation-Gulf Coast Aquifer**



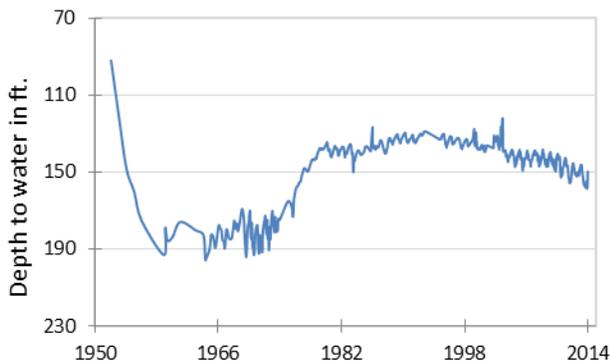
(12) State Well ID 80-17-502
Near Bloomington, Victoria County
Lissie Formation-Gulf Coast Aquifer



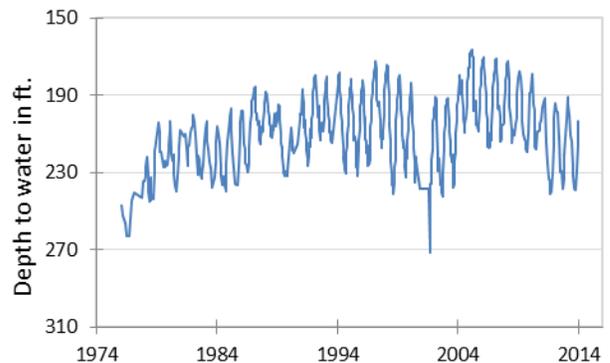
(13) State Well ID 49-13-301
El Paso, El Paso County
Hueco-Mesilla Bolson Aquifer



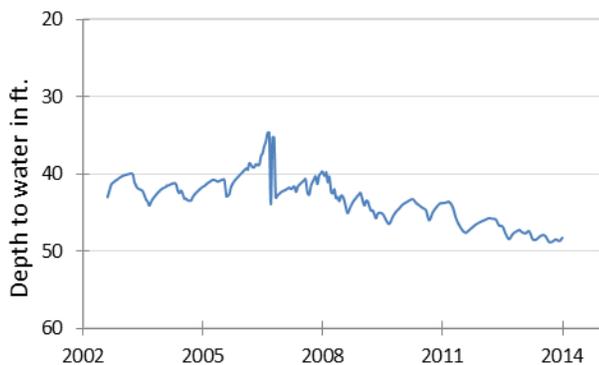
(14) State Well ID 46-44-501
Near Pecos, Reeves County
Pecos Valley Aquifer



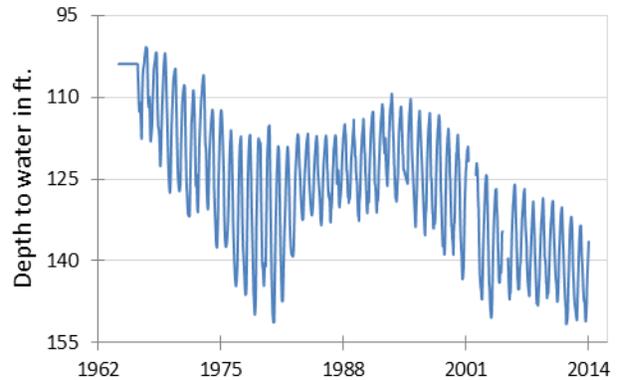
(15) State Well ID 52-16-802
Fort Stockton, Pecos County
Edwards-Trinity (Plateau) Aquifer



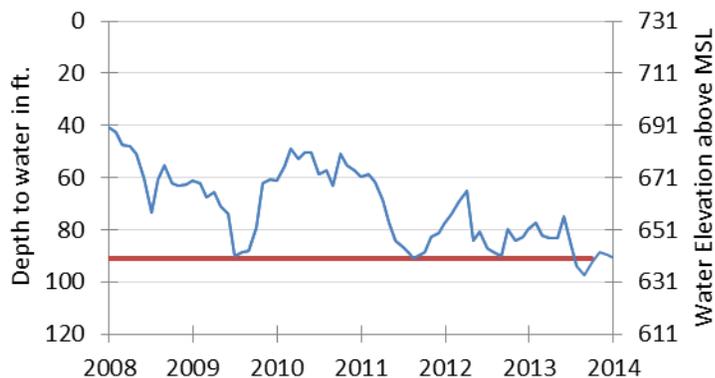
(16) State Well ID 21-35-748
Near O'Brien, Haskell County
Seymour Aquifer



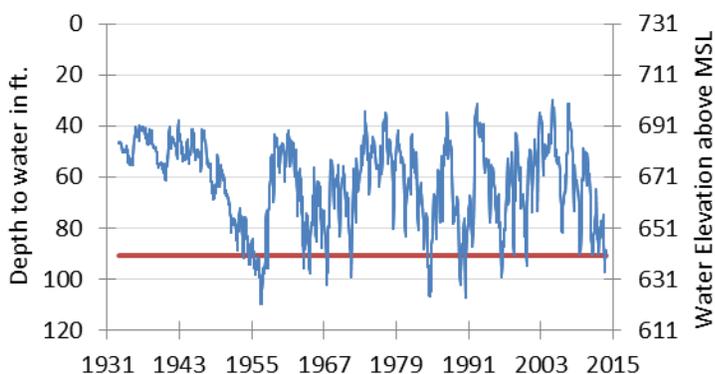
(17) State Well ID 48-07-516
Dell City, Hudspeth County
Bone Spring - Victorio Peak Aquifer



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

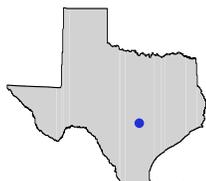


The late December water level measurement in this Edwards (BFZ) Aquifer well, elevation 731 feet above mean sea level, was 90.34 feet below land surface, or 640.66 feet above mean sea level. This was 0.54 feet below last month's measurement, 10.34 feet below last year's measurement, and 43.7 feet below the initial measurement recorded in 1932.



***** Water levels below the red line indicate Edwards Aquifer Authority Stage III drought restrictions. *****

HYDROGRAPH OF THE MONTH

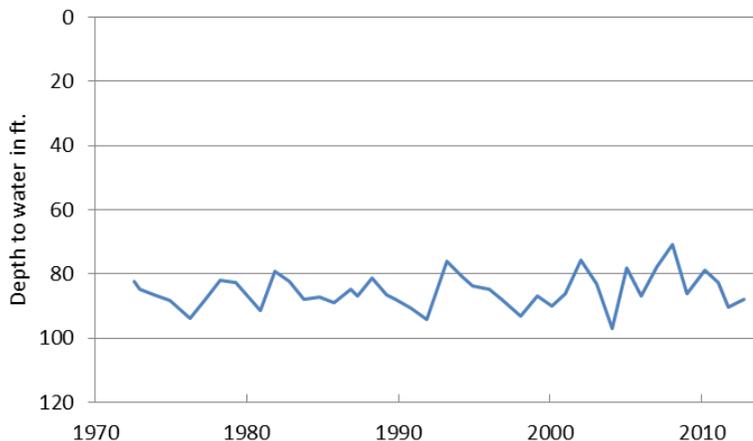


Each month this space features a new hydrograph (marked with the • symbol on the map) depicting different aquifers and different conditions in Texas.

The Hickory Aquifer, a minor aquifer found in the central part of the state, consists of the water-bearing parts of the Hickory Sandstone Member of the Riley Formation. The aquifer reaches a maximum thickness of 480 feet with freshwater saturated thickness averaging about 350 feet. Although the groundwater is generally fresh, with total dissolved solids concentrations of less than 1,000 milligrams per liter, the upper portion of the aquifer typically contains iron in excess of the state's secondary drinking water standards, but also naturally occurring radioactivity--gross alpha radiation, radium, and radon--commonly in excess of the state's primary drinking water standards.

Hickory Aquifer

**Well # 57-10-101
Llano County TD-'104**



Groundwater is used for irrigation throughout its extent and for municipal supply in the cities of Brady, Mason, and Fredericksburg. Slight water level fluctuations occur seasonally in irrigated areas. The hydrograph of this well, a windmill 106 feet deep in northwestern Llano County still used to water stock, also reveals this shallow's well response to drier periods over the last nearly 40 years.



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