

Texas Water Development Board



WATER Conditions

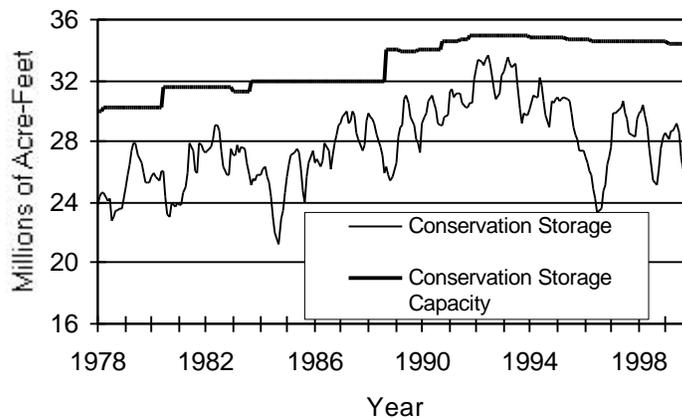
RESERVOIR STORAGE

November 1999

Near the end of November, the 77 reservoirs monitored for this report held 24.66 million acre-feet in conservation storage. This is 71.5 percent of the conservation storage capacity of the State's major reservoirs, the lowest percentage of total capacity for a November in 22 years of record, and the sixth-lowest for all months in the record. Compared to the end of October, storage decreased 0.63 million acre-feet (-1.8% of conservation storage capacity). Compared to this month last year, storage decreased 2.81 million acre-feet (-8.2%).

Of the monitored reservoirs, only 3 held 100 percent of conservation storage near the end of October. Storage during the month increased in only four reservoirs, and decreased in all regions by 1% to 4% except the Trans Pecos Region where it remained constant. Compared to the end of November 1998, conservation storage increased in the High Plains (+11%) and Trans-Pecos (+6%) regions, but decreased in the Upper Coast (-23%), South Central (-21%), and East (-10%) regions. Annual changes in other regions were less than 8%.

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS



Current data are based on elevation near end of month at 77 reservoirs that represent 98 percent of total conservation storage capacity in Texas reservoirs having a capacity of 5,000 acre-feet or more.

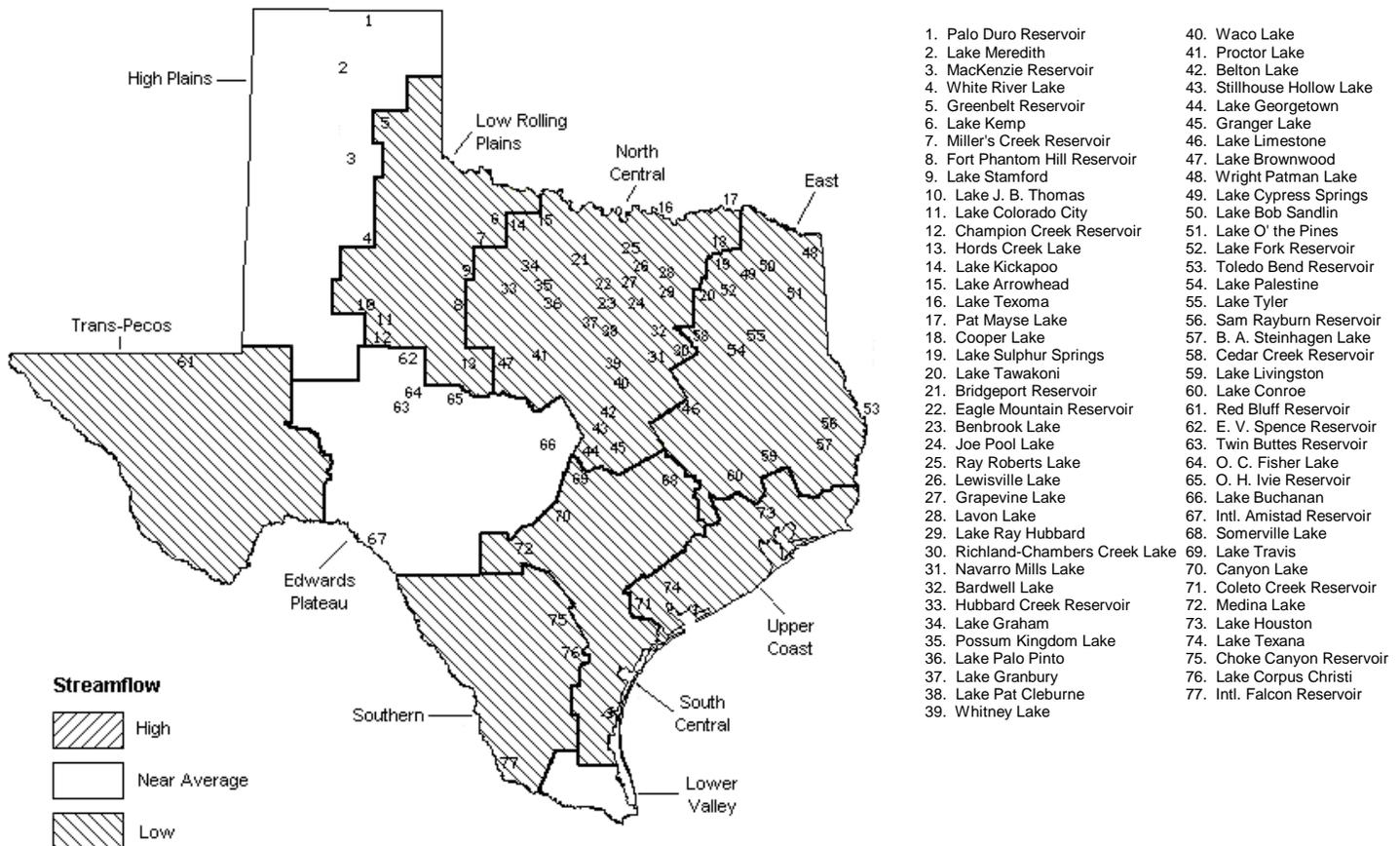
STREAMFLOW

Of 22 reporting index stations in November, computed 30-day mean flows were near normal (30% - 70% exceedance) at 6 stations, low (70% - 95% exceedance) at 14 stations, and very low (0% - 5% exceedance) at 2 stations. In comparison to October, flows decreased at 7 index stations, increased at 9 stations, and remained the same at 2 stations.

Flows in November were below normal in all regions of the state except for the High Plains and Edwards Plateau regions, where flows remained near normal. Flows generally increased in comparison to October at index stations in the East, South Central, and High Plains regions, and decreased or remained the same in the remaining regions. Four stations, in the Low Rolling Plains and North Central regions, recorded no (0) streamflow.

NOVEMBER STREAMFLOW CONDITIONS

Reservoirs Shown on Map



CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation		Change since		Change since		
			Storage Late November 1999 (acre-feet)	(%)	Late October 1999 (acre-feet)	(%)	Late November 1998 (acre-feet)	(%)	
HIGH PLAINS									
Palo Duro Reservoir	1	60,900	20,220	33	-1,731	-3	8,252	14	
Lake Meredith (Texas)	2	500,000	393,200	79	-11,831	-2	54,200	11	
Lake Meredith (Texas and Oklahoma)	(2)	779,560	393,200	50	-11,831	-2	54,200	7	
MacKenzie Reservoir	3	46,250	9,880	21	-180	0	2,592	6	
White River Lake	4	31,850	17,110	54	-530	-2	8,116	25	
TOTAL		639,000	440,410	69	-14,272	-2	73,160	11	
LOW ROLLING PLAINS									
Greenbelt Reservoir	5	58,200	25,450	44	-320	-1	210	0	
Lake Kemp	6	319,600	152,800	48	-200	0	5,200	2	
Miller's Creek Reservoir	7	27,890	11,470	41	-410	-1	-2,815	-10	
Fort Phantom Hill Reservoir	8	70,030	20,500	29	-320	0	-5,619	-8	
Lake Stamford	9	52,700	6,740	13	-360	-1	-12,596	-24	
Lake J. B. Thomas	10	202,300	30,900	15	-2,220	-1	24,115	12	
Lake Colorado City	11	30,800	14,960	49	-640	-2	-560	-2	
Champion Creek Reservoir	12	41,600	5,140	12	-150	0	-5,470	-13	
Hords Creek Lake	13	8,600	3,548	41	-251	-3	-1,746	-20	
TOTAL		811,720	271,508	33	-4,871	-1	719	0	
NORTH CENTRAL									
Lake Kickapoo	14	106,000	53,522	50	-1,472	-1	195	0	
Lake Arrowhead	15	262,100	136,400	52	-4,000	-2	-39,000	-15	
Lake Texoma	16	2,722,300	2,313,076	85	-40,327	-1	94,850	3	
Pat Mayse Lake	17	124,500	102,503	82	-719	-1	-2,046	-2	
Cooper Lake	18	273,000	218,105	80	-3,365	-1	-54,895	-20	
Lake Sulphur Springs	19	17,710	13,790	78	-357	-2	-1,128	-6	
Lake Tawakoni	20	936,200	771,000	82	-26,800	-3	-165,200	-18	
Bridgeport Reservoir	21	374,830	221,868	59	-10,580	-3	-62,404	-17	
Eagle Mountain Reservoir	22	178,380	138,018	77	-2,095	-1	-8,502	-5	
Benbrook Lake	23	88,200	60,073	68	2,889	3	-12,520	-14	
Joe Pool Lake	24	175,800	156,290	89	-2,453	-1	-7,645	-4	
Ray Roberts Lake	25	798,760	610,511	76	-21,390	-3	-102,306	-13	
Lewisville Lake	26	555,000	323,854	58	-13,672	-2	-112,423	-20	
Grapevine Lake	27	187,700	132,515	71	-4,175	-2	-17,059	-9	
Lavon Lake	28	443,800	285,347	64	-13,240	-3	-24,865	-6	
Lake Ray Hubbard	29	413,420	413,420	100	0	0	-33,231	-8	
Richland-Chambers Creek Lake	30	1,103,820	967,960	88	-24,014	-2	-135,860	-12	
Navarro Mills Lake	31	55,810	40,589	73	-1,679	-3	-15,221	-27	
Bardwell Lake	32	53,580	37,430	70	-1,132	-2	-16,150	-30	
Hubbard Creek Reservoir	33	317,800	209,400	66	-6,100	-2	-49,100	-15	
Lake Graham	34	45,000	41,300	92	-690	-2	1,660	4	
Possum Kingdom Lake	35	551,820	431,000	78	-6,000	-1	44,700	8	
Lake Palo Pinto	36	42,200	30,872	73	-1,147	-3	3,735	9	
Lake Granbury	37	135,680	125,600	93	-5,200	-4	-6,100	-4	
Lake Pat Cleburne	38	25,300	17,242	68	-816	-3	-5,621	-22	
Whitney Lake	39	622,800	426,900	69	-3,600	-1	-19,016	-3	
Waco Lake	40	144,500	110,685	77	-4,595	-3	-33,815	-23	
Proctor Lake	41	55,590	21,536	39	-1,083	-2	-12,753	-23	
Belton Lake	42	434,500	381,823	88	-7,878	-2	-52,677	-12	
Stillhouse Hollow Lake	43	226,060	212,913	94	-1,965	-1	-13,147	-6	
Lake Georgetown	44	37,010	27,533	74	-1,792	-5	-9,477	-26	
Granger Lake	45	54,280	49,007	90	-448	-1	-5,273	-10	
Lake Limestone	46	215,750	175,700	81	-6,900	-3	-40,050	-19	
Lake Brownwood	47	143,400	86,480	60	-2,570	-2	-27,523	-19	
TOTAL		11,922,600	9,344,262	78	-219,365	-2	-939,867	-8	

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation		Change since		Change since		
			Storage Late November 1999 (acre-feet)	(%)	Late October 1999 (acre-feet)	(%)	Late November 1998 (acre-feet)	(%)	
EAST									
Wright Patman Lake	48	142,700	142,700	100	0	0	0	0	
Lake Cypress Springs	49	66,800	66,720	100	60	0	-80	0	
Lake Bob Sandlin	50	202,300	171,702	85	-12,598	-6	-30,598	-15	
Lake O' the Pines	51	252,000	226,887	90	-3,888	-2	-25,113	-10	
Lake Fork Reservoir	52	635,200	590,600	93	-6,800	-1	-44,600	-7	
Toledo Bend Reservoir	53	4,472,900	3,506,000	78	-58,000	-1	-396,000	-9	
Lake Palestine	54	411,300	350,800	85	-6,700	-2	-60,500	-15	
Lake Tyler	55	73,700	72,106	98	-1,255	-2	-1,594	-2	
Sam Rayburn Reservoir	56	2,876,300	2,042,000	71	-172,000	-6	-430,134	-15	
B. A. Steinhagen Lake	57	94,200	81,993	87	-6,742	-7	-12,207	-13	
Cedar Creek Reservoir	58	637,050	575,233	90	-15,750	-2	-61,817	-10	
Lake Livingston	59	1,750,000	1,676,000	96	18,000	1	-60,000	-3	
Lake Conroe	60	429,900	377,600	88	-3,300	-1	-39,000	-9	
TOTAL		12,044,350	9,880,341	82	-268,973	-2	-1,161,643	-10	
TRANS-PECOS									
Red Bluff Reservoir	61	307,000	85,340	28	0	0	19,200	6	
TOTAL		307,000	85,340	28	0	0	19,200	6	
EDWARDS PLATEAU									
E. V. Spence Reservoir	62	484,800	61,850	13	-2,170	0	-14,330	-3	
Twin Buttes Reservoir	63	177,800	7,514	4	-827	0	-5,875	-3	
O.C. Fisher Lake	64	119,200	8,246	7	-350	0	-5,166	-4	
O. H. Ivie Reservoir	65	554,340	331,400	60	-8,900	-2	-103,500	-19	
Lake Buchanan	66	896,980	615,235	69	-3,940	0	-187,193	-21	
Amistad Reservoir (Texas)	67	1,771,030	1,043,000	59	-5,000	0	120,000	7	
Amistad Reservoir (Texas and Mexico)	(67)	3,151,300	1,380,000	44	4,000	0	63,000	2	
TOTAL		4,004,150	2,067,245	52	-21,187	-1	-196,064	-5	
SOUTH CENTRAL									
Somerville Lake	68	155,060	139,231	90	-1,473	-1	-15,829	-10	
Lake Travis	69	1,144,100	835,640	73	-16,192	-1	-308,460	-27	
Canyon Lake	70	385,600	360,181	93	-3,585	-1	-25,419	-7	
Coleto Creek Reservoir	71	35,060	24,230	69	-1,910	-5	-10,830	-31	
Medina Lake	72	254,000	208,300	82	-9,900	-4	-45,700	-18	
TOTAL		1,973,820	1,567,582	79	-33,060	-2	-406,238	-21	
UPPER COAST									
Lake Houston	73	128,860	100,900	78	-3,700	-3	-27,960	-22	
Lake Texana	74	157,900	120,100	76	-6,400	-4	-37,800	-24	
TOTAL		286,760	221,000	77	-10,100	-4	-65,760	-23	

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

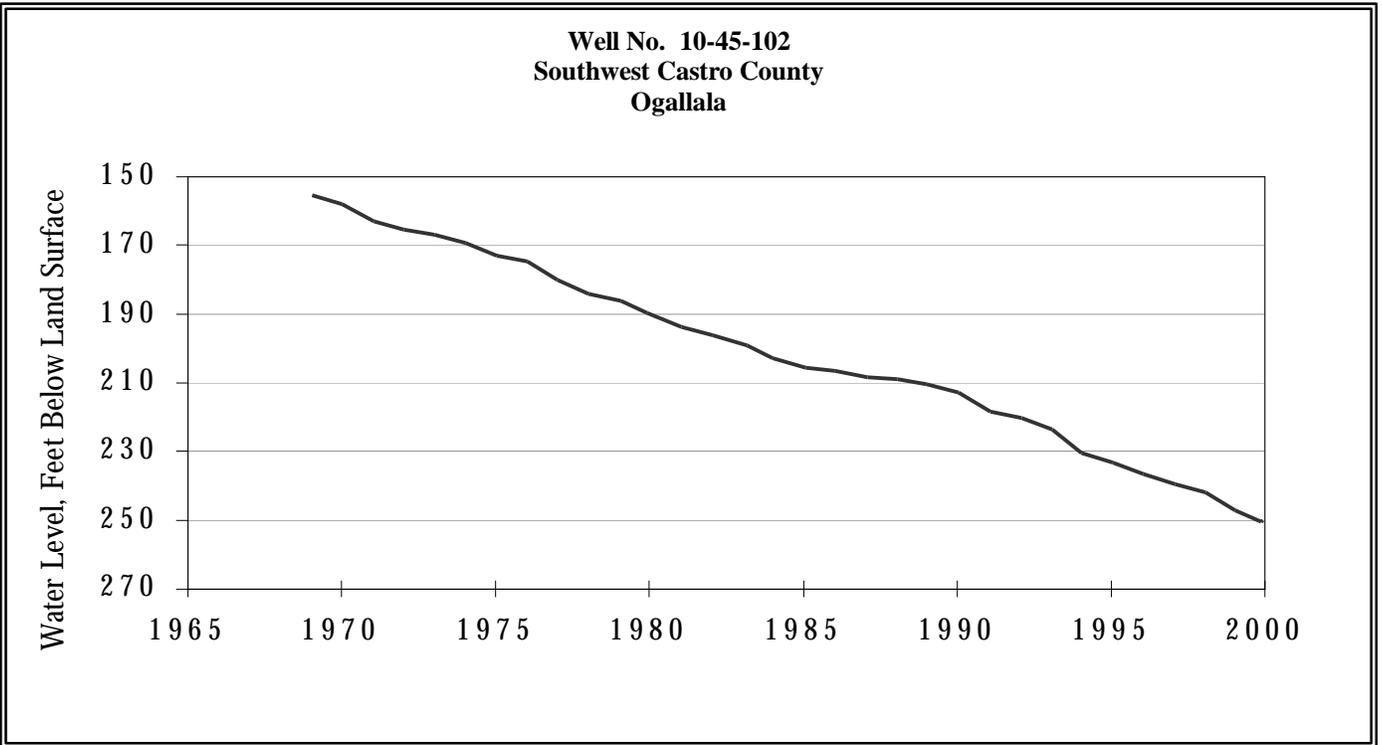
Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage Late November 1999 (acre-feet) (%)		Change since Late October 1999 (acre-feet) (%)		Change since Late November 1998 (acre-feet) (%)	
SOUTHERN								
Choke Canyon Reservoir	75	695,260	303,000	44	-8,000	-1	-61,344	-9
Lake Corpus Christi	76	241,240	163,500	68	-9,700	-4	-22,763	-9
Falcon Reservoir (Texas)	77	1,555,120	316,000	20	-40,000	-3	-51,000	-3
Falcon Reservoir (Texas and Mexico)	(77)	2,653,290	652,000	25	-27,000	-1	-4,000	0
TOTAL		2,491,620	782,500	31	-57,700	-2	-135,107	-5
STATE TOTAL		34,481,020	24,660,188	72	-629,528	-2	-2,811,600	-8

NOTES:

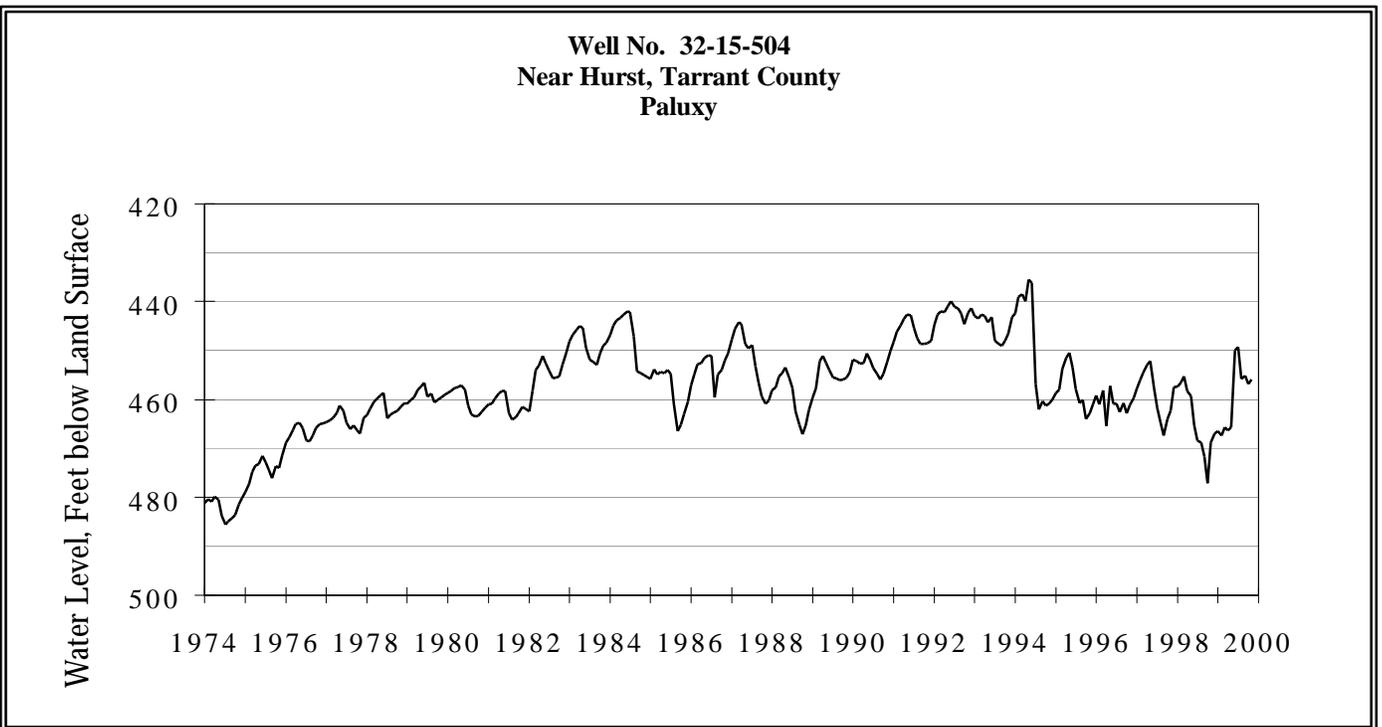
Conservation storage capacity is the space available to store water above the level of invert of lowest outlet works and below the level of top of conservation pool or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included is any water in flood control storage (above the top of conservation pool or normal maximum operating level), or any water in so called dead storage (in the bottom of the reservoir, below the invert of lowest outlet works and consequently not removable by gravity flow alone.) Percentage of conservation storage is based on the conservation storage capacity of the reservoir and the conservation storage in the reservoir for date shown. Percent change is given by % Change = 100 * (current conservation storage - past conservation storage)/conservation storage capacity.

Current data are based on elevations near end of month at 77 reservoirs that together represent 98 percent of the total conservation storage capacity of major Texas reservoirs (those with capacity of 5,000 acre-feet or more each). Figures in parentheses for Lake Meredith represent the total conservation storage excluding 58,014 acre-feet of dead storage and are not included in State total. Preliminary figures are shown for the United States' share of conservation storage in International Amistad and International Falcon Reservoirs; the estimates may be subject to revision on completion of international water accounting. Texas (United States' share) and Mexico and are not included in State total.

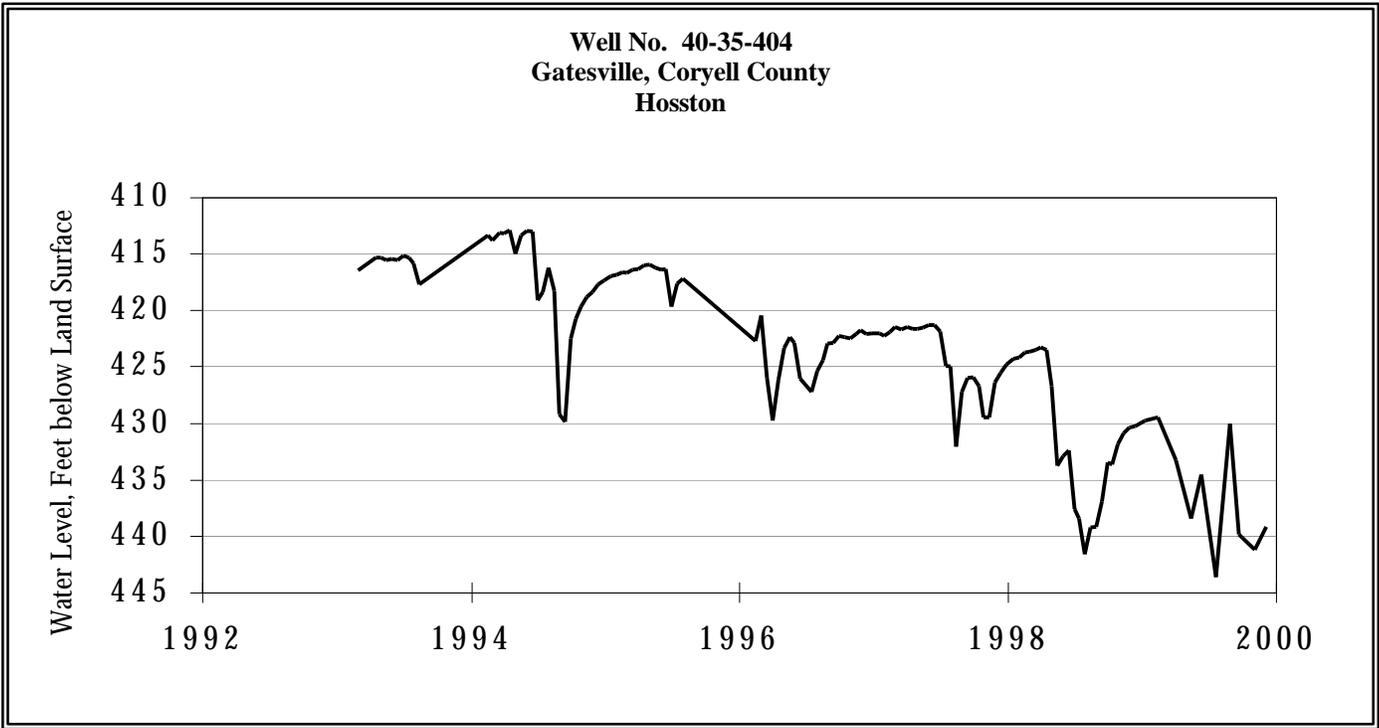
NOVEMBER GROUND WATER LEVELS IN OBSERVATION WELLS



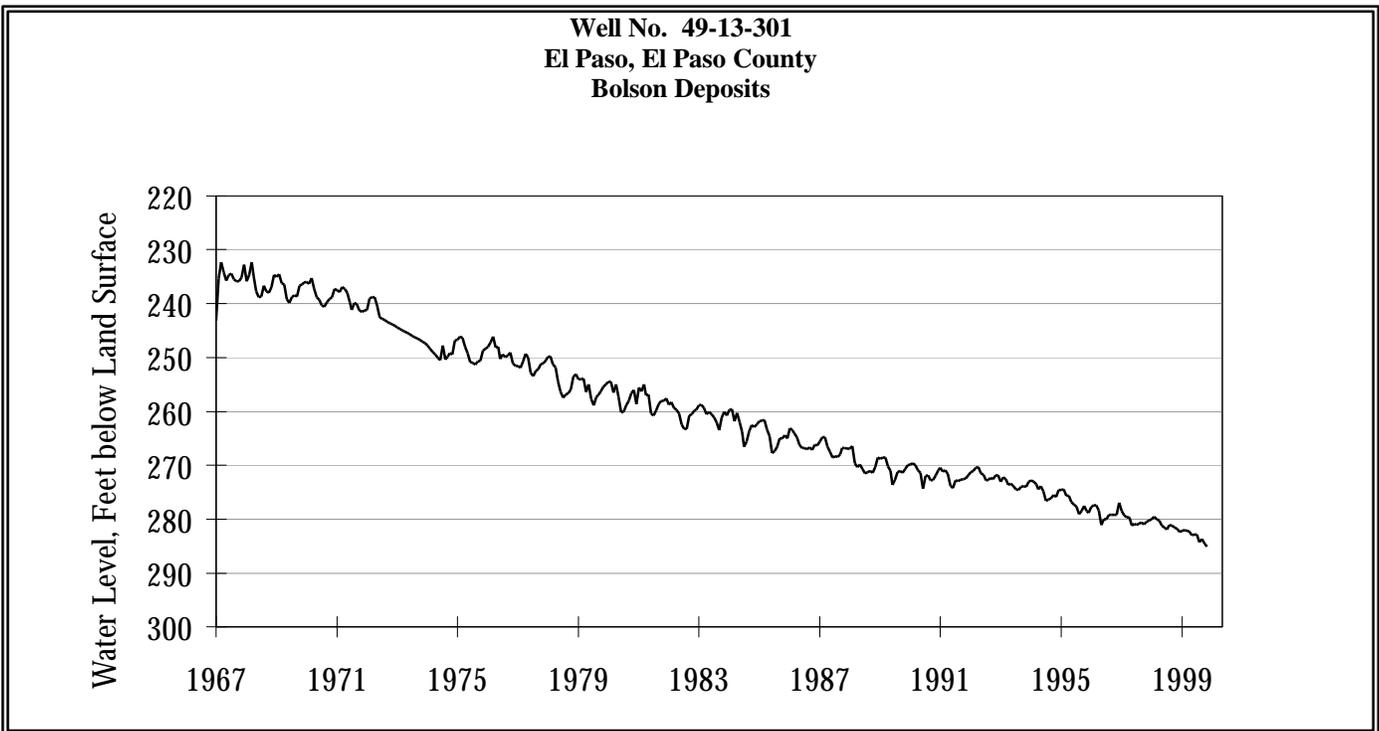
Water-level measurements in this Ogallala well, elevation 3816 feet above sea level, in the southwestern corner of Castro County, are now being reported in lieu of those in the Lamb County well. The November water-level measurement was 250.04 feet below land surface. This measurement was 3.04 feet below the January 1999 measurement of 247.00 feet below land surface and 94.04 feet below the initial measurement recorded in 1968.



The November water-level measurement in this Paluxy aquifer well, elevation 535 feet above sea level, was 455.97 feet below land surface. This measurement was 0.89 of feet above last month's measurement, 12.75 feet above last year's measurement, and 62.58 feet below the initial measurement recorded in 1953.

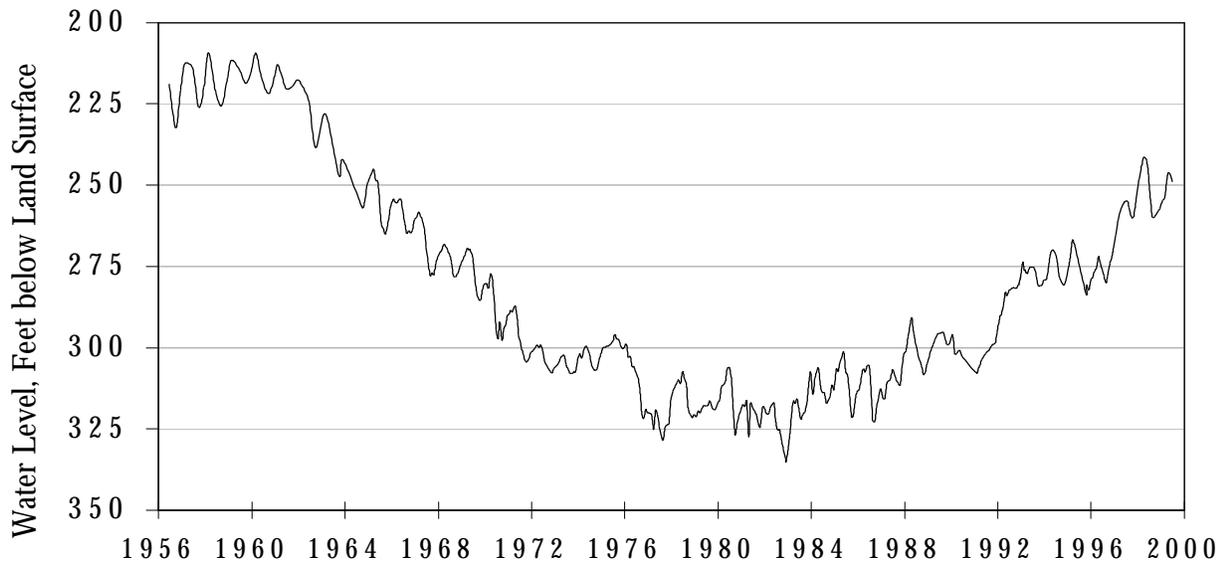


The November water-level measurement in this Hosston Formation aquifer well, elevation 823 feet above sea level, was 439.15 feet below land surface. This measurement was 2.03 feet above last month's measurement, 8.77 feet below last year's measurement, and 147.15 feet below the initial measurement recorded in 1955.



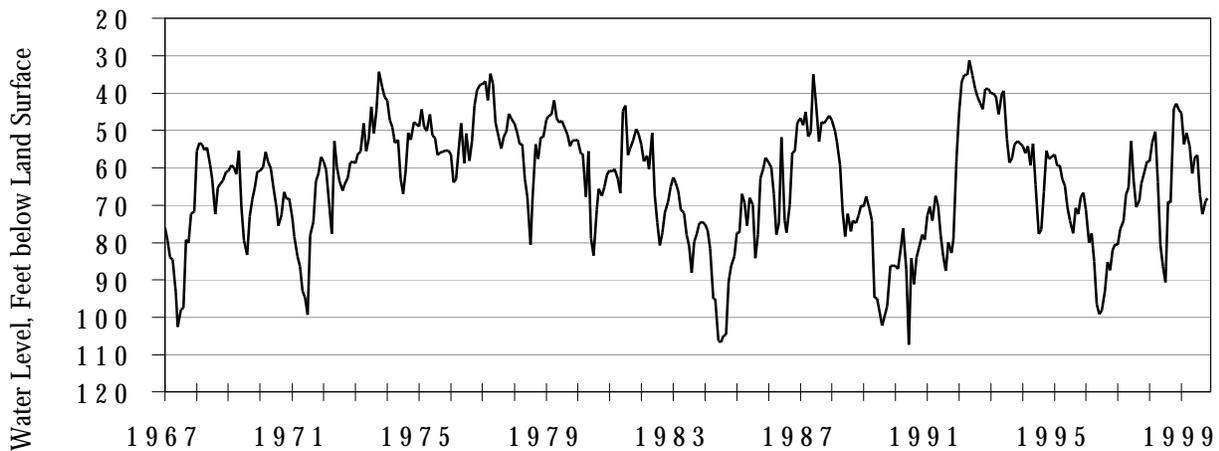
The November water-level measurement in this Bolson Deposits aquifer well, elevation 3882 feet above sea level, was 285.06 feet below land surface. This was 0.58 of a foot below last month's measurement, 3.30 feet below last year's measurement, and 53.16 feet below the initial measurement recorded in 1964.

**Well No. 65-14-409
Alief, Harris County
Evangeline**



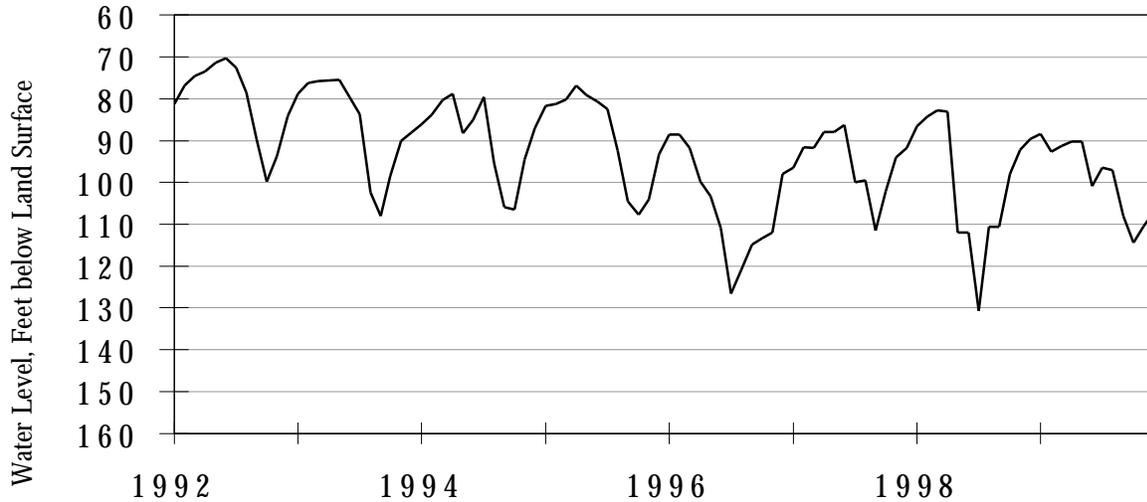
The November water-level measurement in this Evangeline aquifer well, elevation 66 feet above sea level, was 252.29 feet below land surface. This was 4.32 feet above last month's measurement, 5.50 feet above last year's measurement, and 149.06 feet below the initial measurement recorded in 1947.

**Well No. 68-37-203
In San Antonio, Bexar County
Edwards and Associated Limestones**



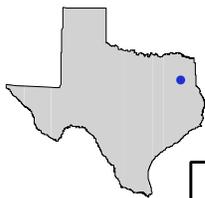
The November water-level measurement in this Edwards aquifer well, elevation 731 feet above sea level, was 68.20 feet below land surface. This was 0.59 feet above last month's measurement, 25.50 feet below last year's measurement, and 9.17 feet below the initial measurement recorded in 1962.

Well No. 68-60-912
Between Poteet and Pleasanton, Atascosa County
Carrizo



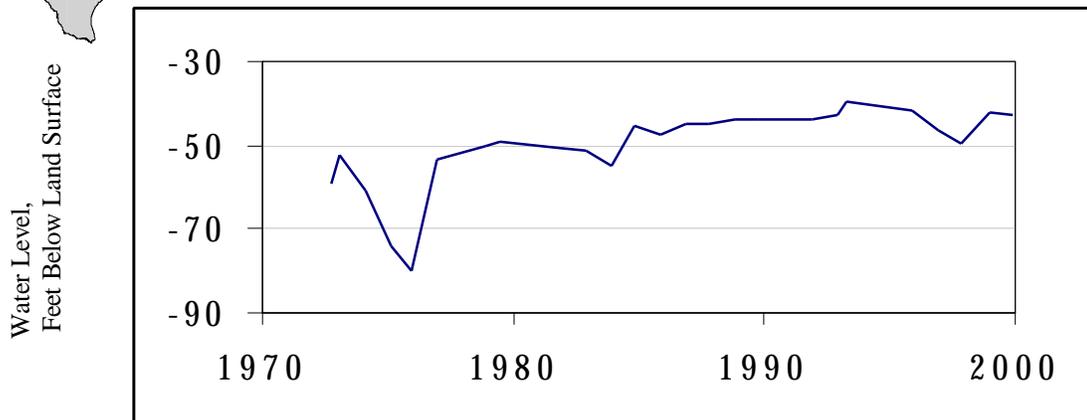
The November water-level measurement in this Carrizo aquifer well, elevation 446 feet above sea level, was 107.19 feet below land surface. This was 3.28 feet above last month's measurement, 15.00 feet below last year's measurement, and 29.22 feet below the initial measurement recorded in 1965.

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.

Well No. 35-49-801
Rusk County



This 275-foot-deep observation well, elevation 368 feet above sea level, is completed in the Carrizo Sand-Wilcox Group aquifer, located approximately 9 miles east of Henderson, Texas. The graph illustrates a steady aquifer recharge attributed to a decrease in ground-water usage as surface water demands have increased.