Texas Water Development Board

WATER Conditions

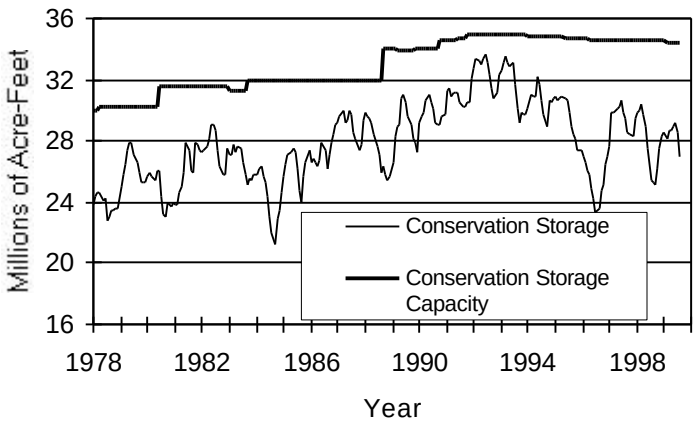
RESERVOIR STORAGE

August 1999

Near the end of August, the 77 reservoirs monitored for this report held 27,031,621 acre-feet in conservation storage. This is 78 percent of the conservation storage capacity of the State's major reservoirs. Compared to the end of July, storage decreased 1,522,583 acre-feet (-4.4% of conservation storage capacity). Compared to this month last year, storage increased 1,836,724 acre-feet (+5.3%).

Of the monitored reservoirs, 7 held 100 percent or more of conservation storage near the end of August. Compared to the end of July, conservation storage decreased in all regions of the state as follows: High Plains (-0.1%), Low Rolling Plains (-6%), North Central (-4%), East (-6%), Trans Pecos (-2%), Edwards Plateau (-2%), South Central (-2%), Upper Coast (-8%), and Southern (-3%) regions. Compared to the end of August 1998, conservation storage increased in all regions except the Upper Coast, with the greatest increases occurring in the High Plains (+17%) and East (+12%) regions.

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.

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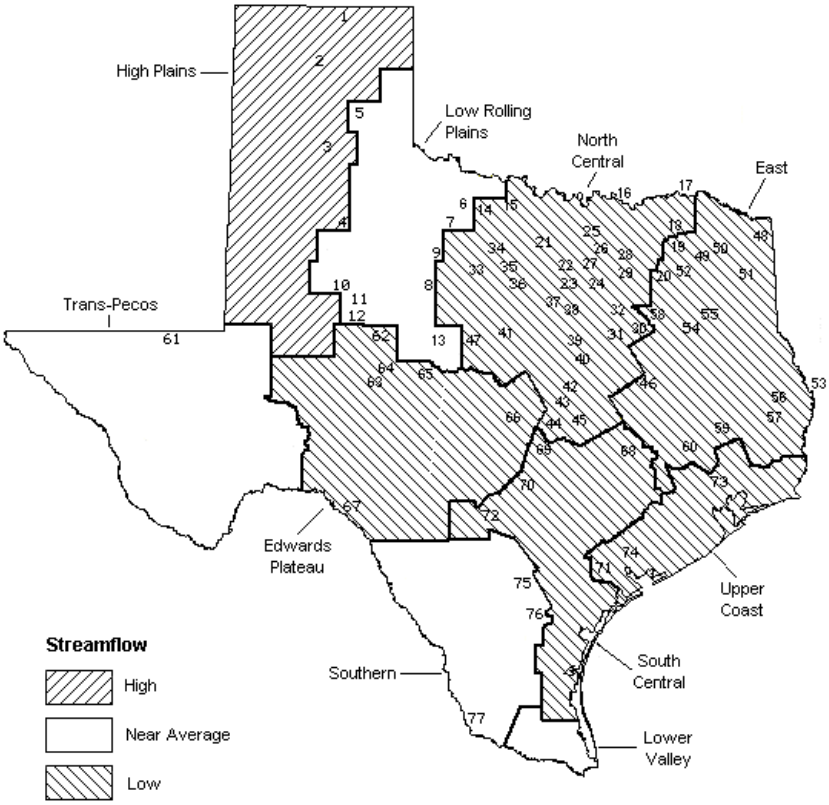
STREAMFLOW

Of 23 reporting index stations in August, computed 30-day mean flows were very high (0% - 5% exceedance probability) at 1 station, high (5% - 30% exceedance) at 2 stations, near normal (30% - 70% exceedance) at 8 stations, and low (70% - 95% exceedance) at 12 stations. In comparison to August, flows increased at 4 index stations and decreased at 19 stations.

Flows generally decreased in comparison to July at index stations in all regions of the state except for the Trans-Pecos region, where the single index the region showed increasing flows. Thirty-day mean flows were above normal in the High Plains, near normal in the Low Rolling Plains and Trans Pecos regions, and low in all other regions. The passage of Hurricane Bret through south Texas in late August had a minimal impact on 30-day mean flows in August due to the late occurrence of the hurricane. Relatively high flows at index stations in the Southern region through next month could, however, show an impact on average flows in September.

STREAMFLOW CONDITIONS FOR JUNE COMPARED WITH PAST RECORD



Reservoirs Shown on Map

1. Palo Duro Reservoir
2. Lake Meredith
3. MacKenzie Reservoir
4. White River Lake
5. Greenbelt Reservoir
6. Lake Kemp
7. Miller's Creek Reservoir
8. Fort Phantom Hill Reservoir
9. Lake Stamford
10. Lake J. B. Thomas
11. Lake Colorado City
12. Champion Creek Reservoir
13. Hords Creek Lake
14. Lake Kickapoo
15. Lake Arrowhead
16. Lake Texoma
17. Pat Junese Lake
18. Cooper Lake
19. Lake Sulphur Springs
20. Lake Tawakoni
21. Bridgeport Reservoir
22. Eagle Mountain Reservoir
23. Benbrook Lake
24. Joe Pool Lake
25. Ray Roberts Lake
26. Lewisville Lake
27. Grapevine Lake
28. Lavon Lake
29. Lake Ray Hubbard
30. Richland-Chambers Creek Lake
31. Navarro Mills Lake
32. Bardwell Lake
33. Hubbard Creek Reservoir
34. Lake Graham
35. Possum Kingdom Lake
36. Lake Palo Pinto
37. Lake Granbury
38. Lake Pat Cleburne
39. Whitney Lake
40. Waco Lake
41. Proctor Lake
42. Belton Lake
43. Stillhouse Hollow Lake
44. Lake Georgetown
45. Granger Lake
46. Lake Limestone
47. Lake Brownwood
48. Wright Patman Lake
49. Lake Cypress Springs
50. Lake Bob Sandlin
51. Lake O' the Pines
52. Lake Fork Reservoir
53. Toledo Bend Reservoir
54. Lake Palestine
55. Lake Tyler
56. Sam Rayburn Reservoir
57. B. A. Steinhagen Lake
58. Cedar Creek Reservoir
59. Lake Livingston
60. Lake Conroe
61. Red Bluff Reservoir
62. E. V. Spence Reservoir
63. Twin Buttes Reservoir
64. O. C. Fisher Lake
65. O. H. Ivie Reservoir
66. Lake Buchanan
67. Intl. Amistad Reservoir
68. Somerville Lake
69. Lake Travis
70. Canyon Lake
71. Coleto Creek Reservoir
72. Medina Lake
73. Lake Houston
74. Lake Texana
75. Choke Canyon Reservoir
76. Lake Corpus Christi
77. Intl. Falcon Reservoir

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage Late August 1999 (acre-feet)	(%)	Change since Late July 1999 (acre-feet)	(%)	Change since Late August 1998 (acre-feet)	(%)
HIGH PLAINS								
Palo Duro Reservoir	1	60,900	26,449	43	-2,897	-5	22,629	37
Lake Meredith (Texas)	2	500,000	423,900	85	13,200	3	73,295	15
Lake Meredith (Texas and Oklahoma)	(2)	779,560	423,900	54	13,200	2	73,295	9
MacKenzie Reservoir	3	46,250	10,380	22	-260	-1	3,010	7
**White River Lake	4	31,850	19,050	60	-10,440	-33	8,430	26
TOTAL		639,000	479,779	75	-397	0	107,364	17
LOW ROLLING PLAINS								
Greenbelt Reservoir	5	58,200	27,190	47	-1,080	-2	1,290	2
Lake Kemp	6	319,600	186,200	58	-33,600	-11	8,200	3
Miller's Creek Reservoir	7	27,890	13,230	47	-950	-3	-1,660	-6
Fort Phantom Hill Reservoir	8	70,030	23,270	33	-3,050	-4	-8,450	-12
Lake Stamford	9	52,700	8,700	17	-1,320	-3	-13,560	-26
Lake J. B. Thomas	10	202,300	36,240	18	-3,150	-2	27,620	14
Lake Colorado City	11	30,800	15,570	51	-420	-1	-730	-2
Champion Creek Reservoir	12	41,600	7,620	18	-1,670	-4	-5,880	-14
Hords Creek Lake	13	8,600	4,145	48	-262	-3	-1,765	-21
TOTAL		811,720	322,165	40	-45,502	-6	5,065	1
NORTH CENTRAL								
Lake Kickapoo	14	106,000	60,022	57	-3,688	-3	3,532	3
Lake Arrowhead	15	262,100	154,900	59	-12,000	-5	-61,000	-23
Lake Texoma	16	2,722,300	2,407,550	88	-206,336	-8	114,150	4
Pat Mayse Lake	17	124,500	108,977	88	-5,394	-4	-923	-1
Cooper Lake	18	273,000	232,789	85	-12,802	-5	-47,211	-17
Lake Sulphur Springs	19	17,710	15,275	86	-1,213	-7	85	0
Lake Tawakoni	20	936,200	869,600	93	-45,000	-5	119,500	13
Bridgeport Reservoir	21	374,830	281,200	75	-16,658	-4	-28,800	-8
Eagle Mountain Reservoir	22	178,380	141,395	79	-7,777	-4	-12,605	-7
Benbrook Lake	23	88,200	66,464	75	-12,313	-14	-7,236	-8
Joe Pool Lake	24	175,800	166,313	95	-6,439	-4	10,313	6
Ray Roberts Lake	25	798,760	674,845	84	-24,871	-3	-63,155	-8
Lewisville Lake	26	555,000	391,374	71	-47,853	-9	-96,626	-17
Grapevine Lake	27	187,700	147,371	79	-9,464	-5	-7,629	-4
Lavon Lake	28	443,800	352,970	80	-48,540	-11	35,970	8
Lake Ray Hubbard	29	413,420	413,420	100	0	0	7,420	2
Richland-Chambers Creek Lake	30	1,103,820	1,054,309	96	-44,068	-4	54,309	5
Navarro Mills Lake	31	55,810	47,454	85	-4,821	-9	3,354	6
Bardwell Lake	32	53,580	47,056	88	-3,658	-7	2,756	5
Hubbard Creek Reservoir	33	317,800	233,000	73	-5,300	-2	-45,000	-14
Lake Graham	34	45,000	45,000	100	0	0	9,990	22
Possum Kingdom Lake	35	551,820	471,200	85	92,739	17	59,200	11
Lake Palo Pinto	36	42,200	36,569	87	-3,626	-9	3,999	9
Lake Granbury	37	135,680	133,000	98	307	0	5,000	4
Lake Pat Cleburne	38	25,300	20,474	81	-2,073	-8	1,114	4
Whitney Lake	39	622,800	443,372	71	-27,742	-4	-34,628	-6
Waco Lake	40	144,500	134,904	93	-9,596	-7	17,904	12
Proctor Lake	41	55,590	28,849	52	-6,689	-12	-11,851	-21
Belton Lake	42	434,500	419,232	96	-15,268	-4	12,232	3
Stillhouse Hollow Lake	43	226,060	222,427	98	-3,633	-2	5,427	2
Lake Georgetown	44	37,010	34,949	94	-2,061	-6	5,249	14
Granger Lake	45	54,280	52,863	97	-1,417	-3	1,663	3
Lake Limestone	46	215,750	195,300	91	-13,700	-6	26,300	12
Lake Brownwood	47	143,400	99,170	69	-8,530	-6	-23,300	-16
TOTAL		11,922,600	10,203,593	86	-519,484	-4	59,503	0

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage Late August 1999 (acre-feet)	(%)	Change since Late July 1999 (acre-feet)	(%)	Change since Late August 1998 (acre-feet)	(%)
EAST								
Wright Patman Lake	48	142,700	142,700	100	0	0	0	0
Lake Cypress Springs	49	66,800	66,800	100	0	0	5,520	8
Lake Bob Sandlin	50	202,300	197,600	98	-126	0	20,170	10
Lake O' the Pines	51	252,000	252,000	100	0	0	34,000	13
Lake Fork Reservoir	52	635,200	626,300	99	-8,900	-1	16,300	3
Toledo Bend Reservoir	53	4,472,900	3,788,000	85	-379,000	-8	518,000	12
Lake Palestine	54	411,300	384,500	93	-20,800	-5	37,890	9
Lake Tyler	55	73,700	73,700	100	0	0	9,960	14
Sam Rayburn Reservoir	56	2,876,300	2,557,686	89	-251,455	-9	427,686	15
B. A. Steinhagen Lake	57	94,200	84,868	90	-636	-1	-3,132	-3
Cedar Creek Reservoir	58	637,050	637,050	100	0	0	100,050	16
Lake Livingston	59	1,750,000	1,680,000	96	-55,000	-3	210,000	12
Lake Conroe	60	429,900	397,700	93	-17,400	-4	9,700	2
TOTAL		12,044,350	10,888,904	90	-733,317	-6	1,386,144	12
TRANS-PECOS								
Red Bluff Reservoir	61	307,000	80,800	26	-7,330	-2	31,090	10
TOTAL		307,000	80,800	26	-7,330	-2	31,090	10
EDWARDS PLATEAU								
E. V. Spence Reservoir	62	484,800	69,970	14	-4,230	-1	-13,530	-3
Twin Buttes Reservoir	63	177,800	12,387	7	-4,255	-2	-8,313	-5
O.C. Fisher Lake	64	119,200	9,792	8	-774	-1	-5,308	-4
O. H. Ivie Reservoir	65	554,340	365,300	66	-17,800	-3	-96,700	-17
Lake Buchanan	66	896,980	744,093	83	-102,090	-11	-23,577	-3
* Amistad Reservoir (Texas)	67	1,771,030	1,056,000	60	43,000	2	260,950	15
* Amistad Reservoir (Texas and Mexico)	(67)	3,151,300	1,348,000	43	39,000	1	197,688	6
TOTAL		4,004,150	2,257,542	56	-86,149	-2	113,522	3
SOUTH CENTRAL								
Somerville Lake	68	155,060	149,539	96	-5,521	-4	20,539	13
Lake Travis	69	1,144,100	1,008,605	88	-9,447	-1	97,605	9
Canyon Lake	70	385,600	376,434	98	-9,166	-2	-2,566	-1
Coleto Creek Reservoir	71	35,060	27,960	80	-2,670	-8	-2,900	-8
Medina Lake	72	254,000	237,500	94	-12,500	-5	19,500	8
TOTAL		1,973,820	1,800,038	91	-39,304	-2	132,178	7
UPPER COAST								
Lake Houston	73	128,860	114,200	89	-8,900	-7	-5,800	-5
Lake Texana	74	157,900	144,600	92	-13,300	-8	-13,300	-8
TOTAL		286,760	258,800	90	-22,200	-8	-19,100	-7

.

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage Late August 1999 (acre-feet)	(%)	Change since Late July 1999 (acre-feet)	(%)	Change since Late August 1998 (acre-feet)	(%)
SOUTHERN								
Choke Canyon Reservoir	75	695,260	337,000	48	-8,000	-1	44,600	6
Lake Corpus Christi	76	241,240	179,000	74	2,100	1	56,860	24
* Falcon Reservoir (Texas)	77	1,555,120	224,000	14	-63,000	-4	-80,502	-5
* Falcon Reservoir (Texas and Mexico)	(77)	2,653,290	439,000	17	-71,000	-3	-66,916	-3
TOTAL		2,491,620	740,000	30	-68,900	-3	20,958	1
STATE TOTAL		34,481,020	27,031,621	78	-1,522,583	-4	1,836,724	5

NOTES:

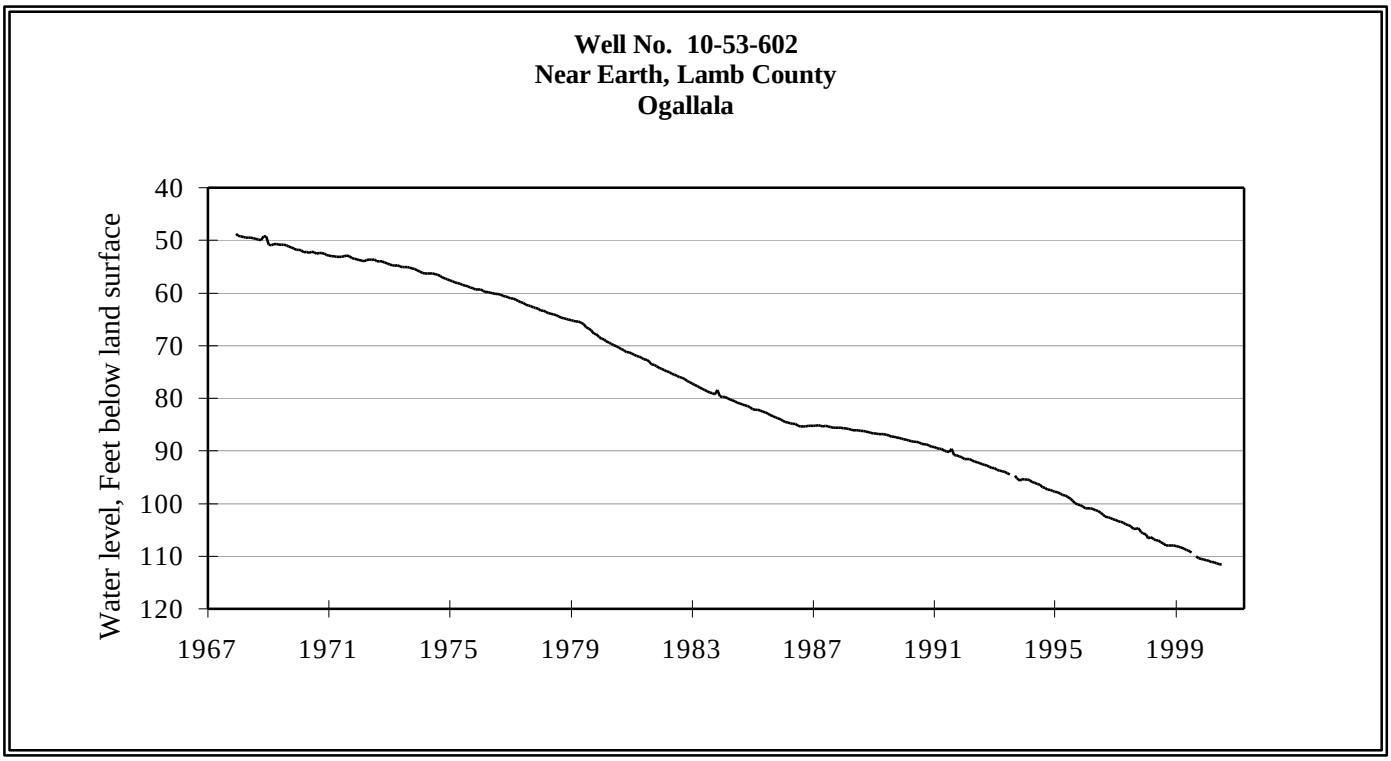
*** At the time of the writing of this report in late August 1999, the allocation of water between the United States and Mexico for Falcon and Amistad Reservoirs was not available. The last available allocation for these reservoirs, on August 18, was used here, and thus the passage of Hurricane Bret in late August 1999 is not reflected in Falcon Reservoir or Amistad Reservoir contents.**

**** The relatively large change in content this month for White River Lake is primarily due to the use of an updated elevation-volume table.**

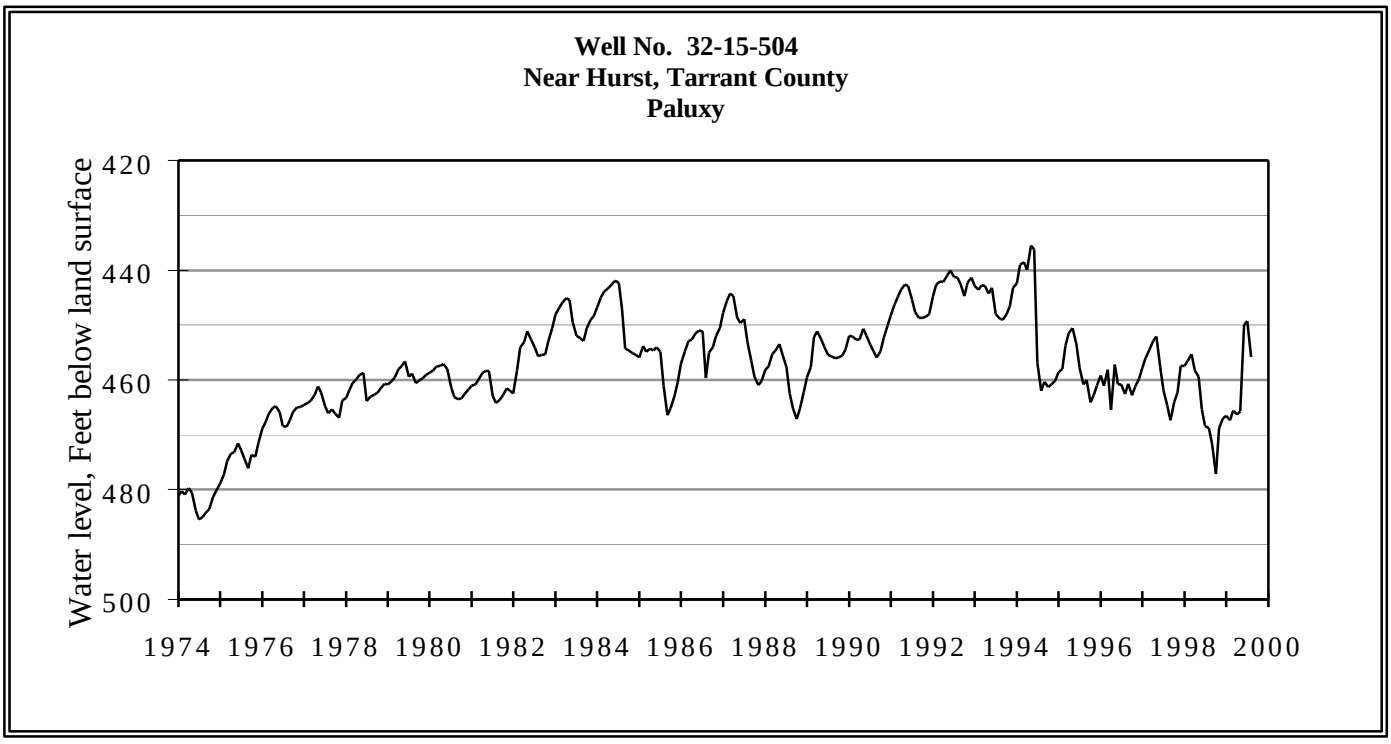
Conservation storage capacity is the space available to store water above the level of invert of lowest outlet works and below the level of top of conservation pool or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included 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.

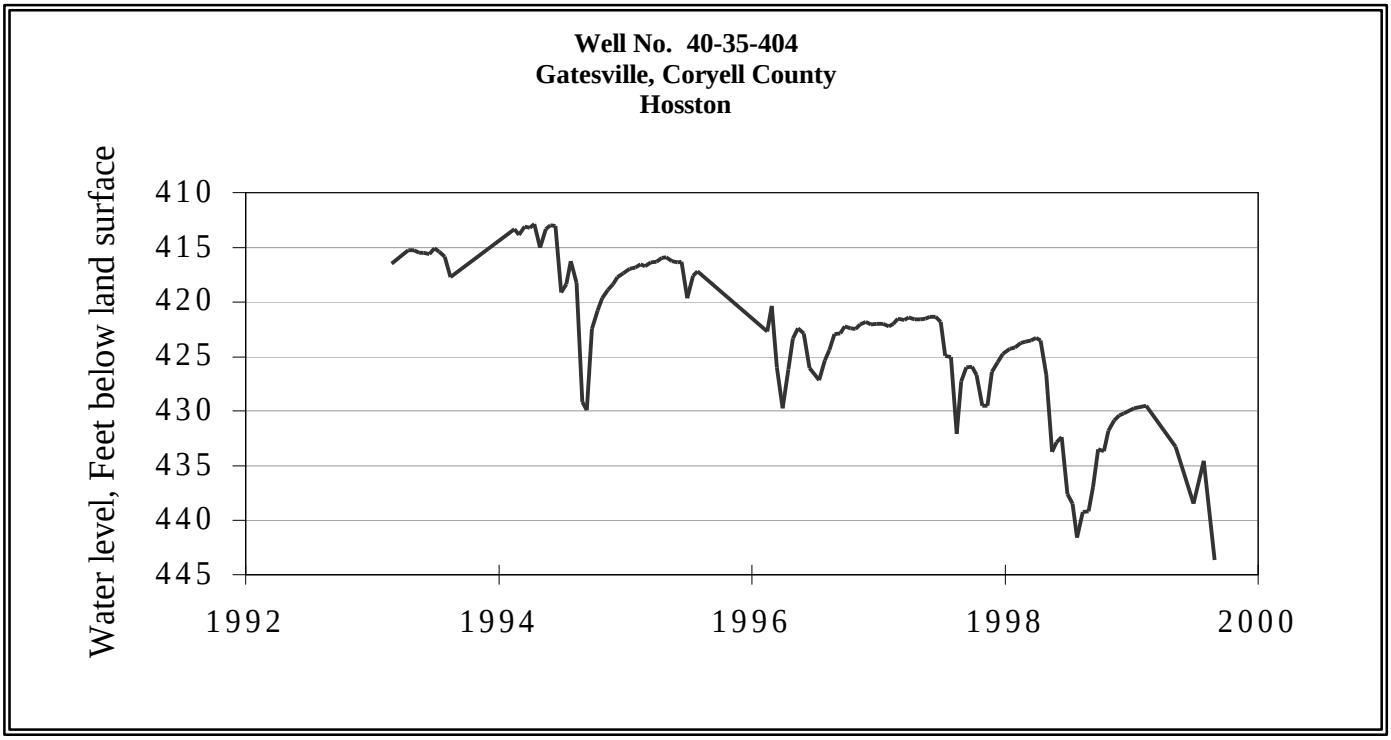
AUGUST GROUND WATER LEVELS IN OBSERVATION WELLS



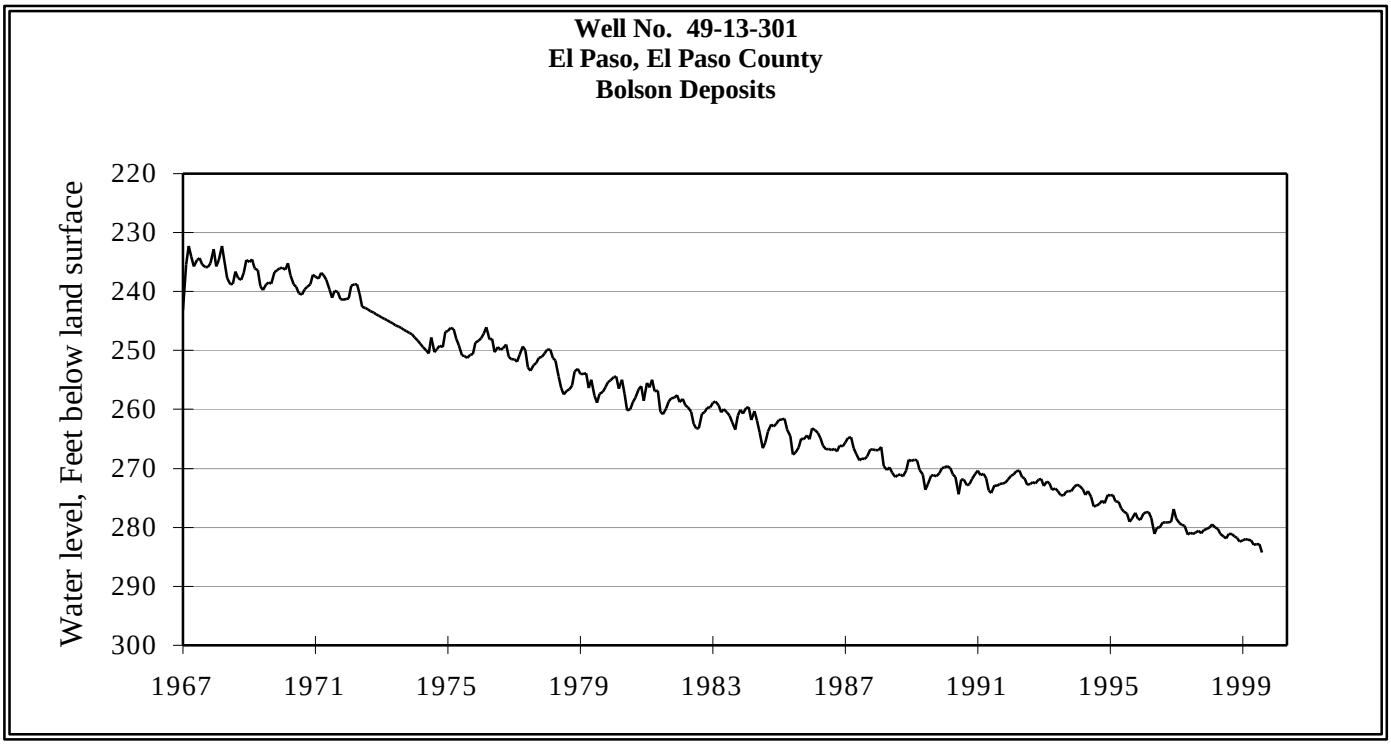
The August water-level measurement in this Ogallala aquifer well, elevation 3667 feet above sea level, was 111.54 feet below land surface. This was 0.12 of a foot below last month's measurement, 2.34 feet below last year's measurement, and 83.39 feet below the initial measurement recorded in 1950.



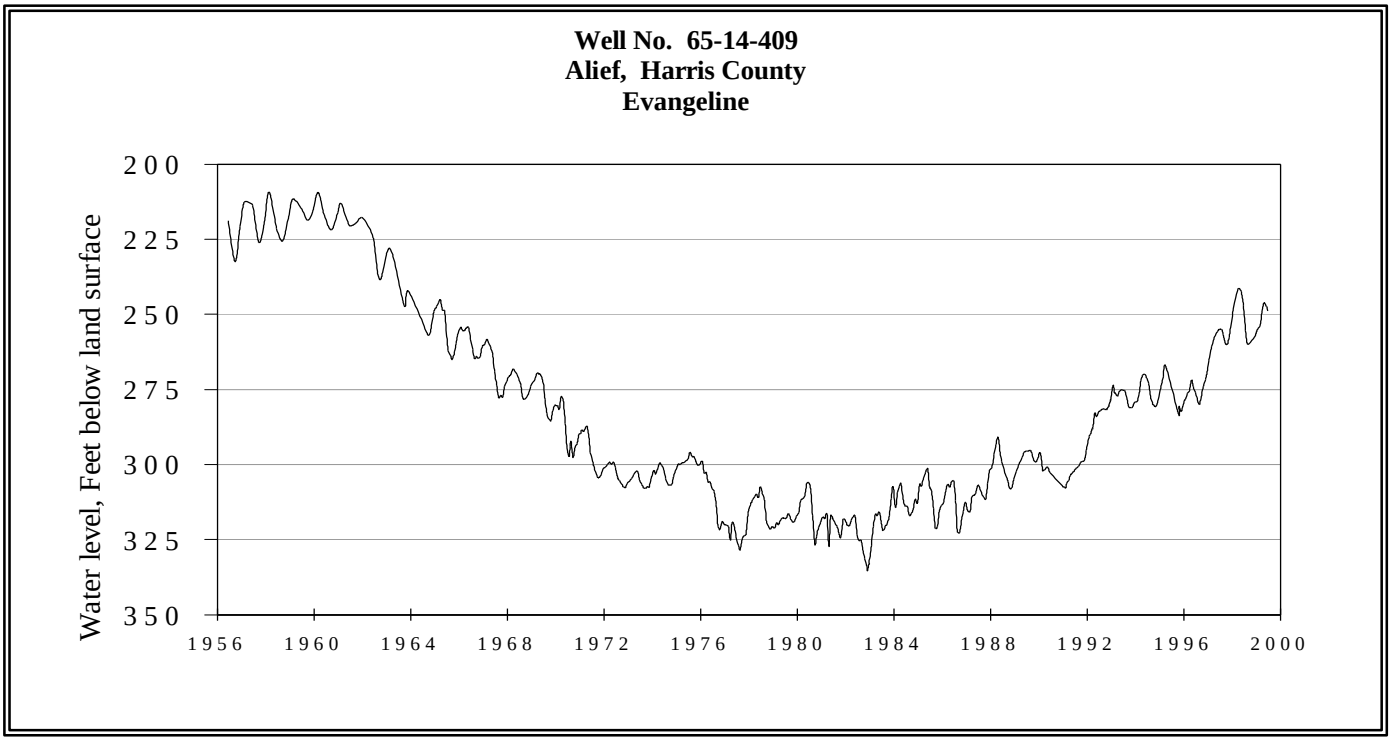
The August water-level measurement in this Paluxy aquifer well, elevation 535 feet above sea level, was 455.76 feet below land surface. This measurement was 6.46 feet below last month's measurement, 12.97 feet above last year's measurement, and 62.37 feet below the initial measurement recorded in 1953.



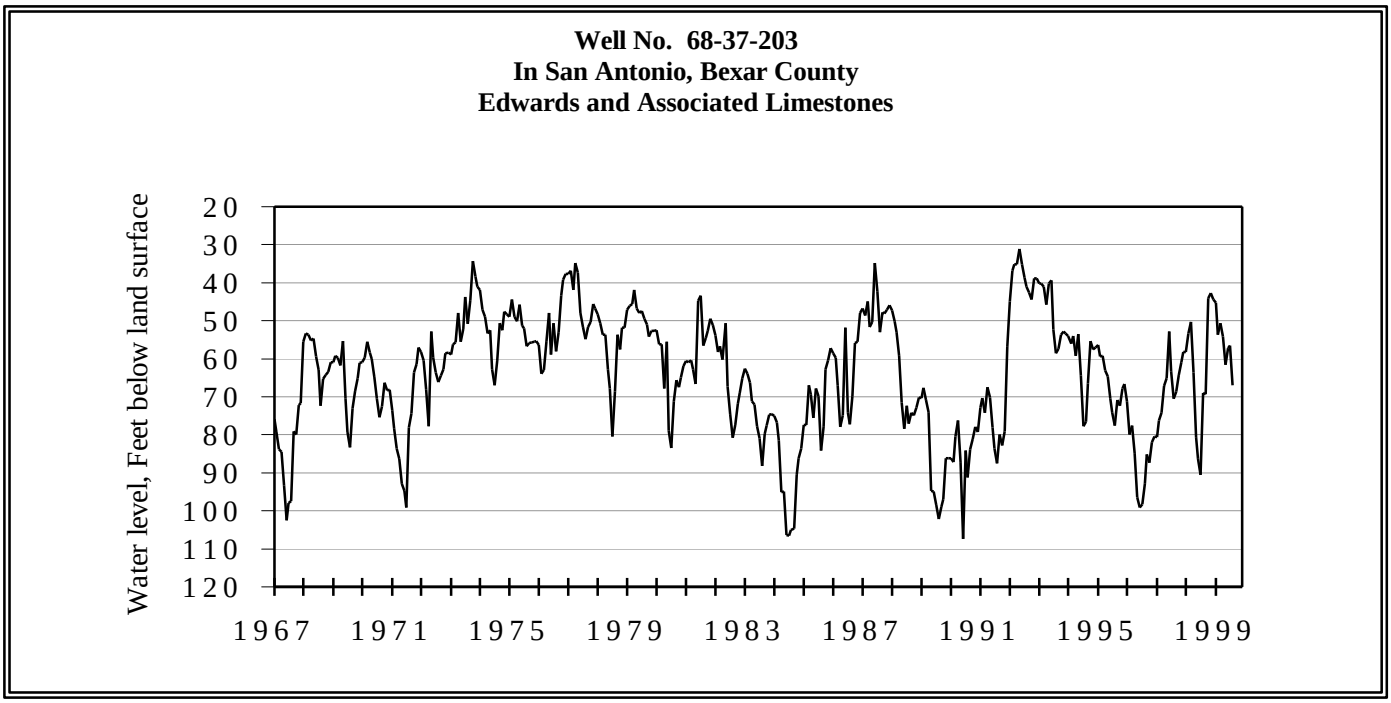
The August water-level measurement in this Hosston Formation aquifer well, elevation 823 feet above sea level, was 443.62 feet below land surface. This measurement was 9.05 feet below last month's measurement, 4.44 feet below last year's measurement, and 151.62 feet below the initial measurement recorded in 1955.



The August water-level measurement in this Bolson Deposits aquifer well, elevation 3882 feet above sea level, was 284.28 feet below land surface. This was 1.38 feet below last month's measurement, 3.20 feet below last year's measurement, and 52.38 feet below the initial measurement recorded in 1964.

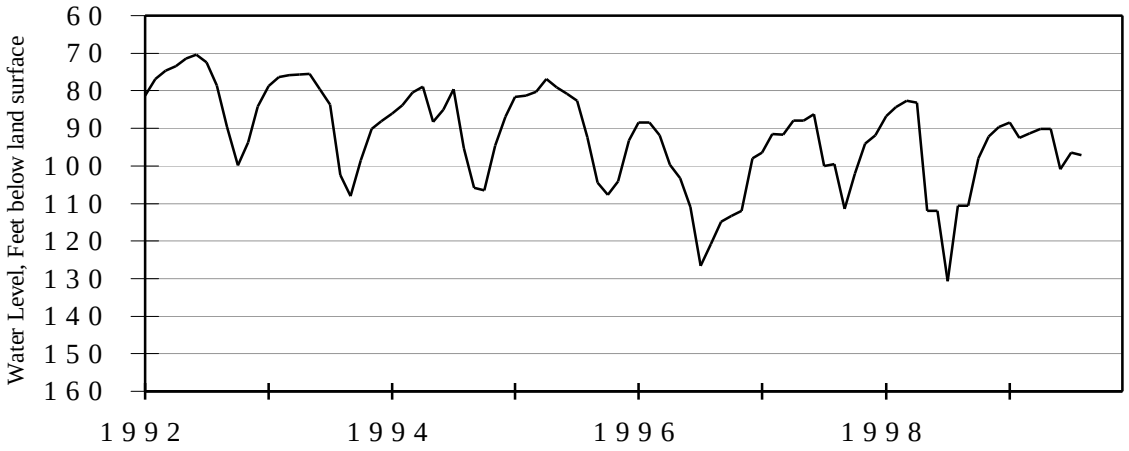


The August water-level measurement in this Evangeline aquifer well, elevation 66 feet above sea level, was 253.10 feet below land surface. This was 3.09 feet below last month's measurement, 6.76 feet above last year's measurement, and 149.87 feet below the initial measurement recorded in 1947.



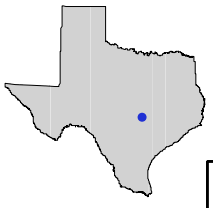
The August water-level measurement in this Edwards aquifer well, elevation 731 feet above sea level, was 67.00 feet below land surface. This was 10.40 feet below last month's measurement, 2.00 feet above last year's measurement, and 7.38 feet below the initial measurement recorded in 1962.

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



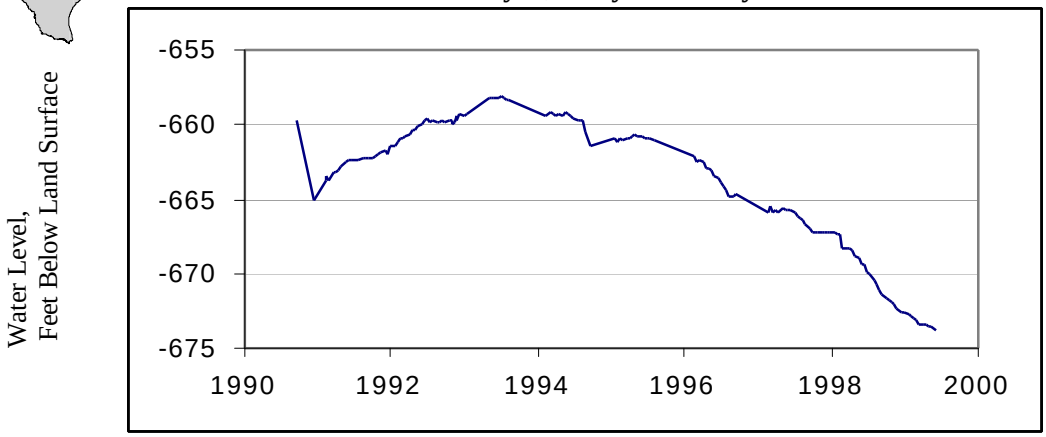
The August water-level measurement in this Carrizo aquifer well, elevation 446 feet above sea level, was 97.09 feet below land surface. This was 0.69 feet below last month's measurement, 13.47 feet above last year's measurement, and 15.84 feet below the initial measurement recorded in 1965.

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. 40-26-201
Coryell, Coryell County



This 908-foot deep abandoned public-supply observation well, elevation 1,152 feet above sea level, was completed in the Travis Peak Formation, or Trinity aquifer. The graph illustrates a steady water-level decline attributed to slow formation recharge and a constant increase of water demands in the local area.