

# Texas Water Development Board



# WATER Conditions

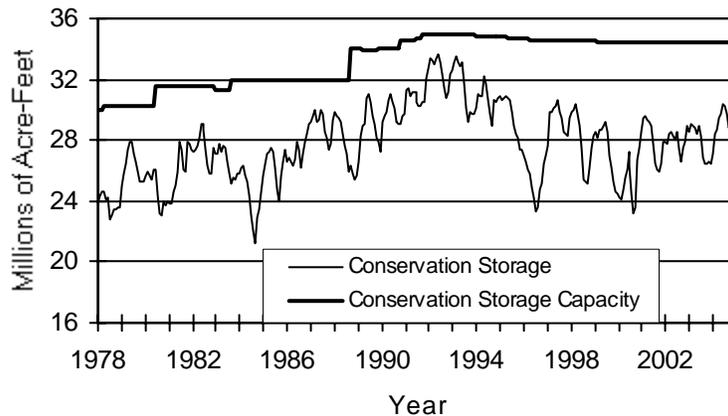
## RESERVOIR STORAGE

*November 2004*

Near the end of November, the 77 reservoirs monitored for this report held 31.47 million acre-feet in conservation storage, or **91.3** percent of the conservation storage capacity of the state's major reservoirs. Statewide total storage was at a record high for the month of November. Storage increased during the month by 2.22 million acre-feet (6% of conservation storage capacity). Compared to the previous year, storage was greater, up 4.93 million acre-feet (14%).

Storage was at capacity (100%) in South Central Region, near capacity in the East and Upper Coast (98%) Regions, as well as North Central (96%) Region, while the High Plains (30%) Region remained lower than one-third. Storage was at 100% in 36 reservoirs, and Texas share of the Amistad continued to remain above its capacity, to reach 131%. Compared to this time last year, all regions had increases in storage with the greatest increase in Edwards Plateau Region (+32%), except Upper Coast had a decrease in storage (-1%).

### 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.

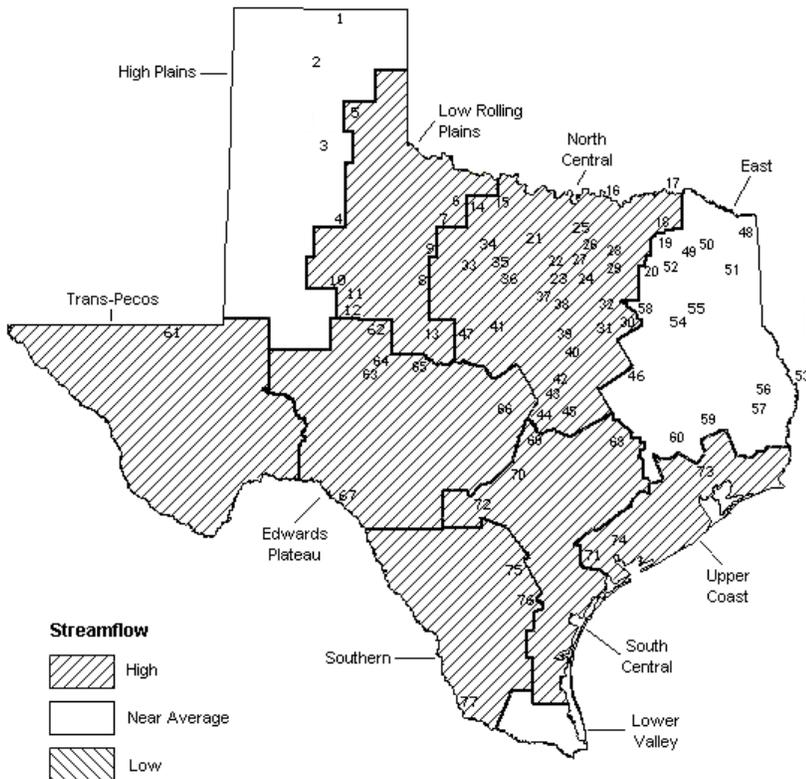
# STREAMFLOW

Of 29 reporting index stations in November, computed 30-day mean flows are very high (0% - 5% exceedance) at 12 stations, high (5% - 30% exceedance) at 12 stations, and near normal (30% - 70% exceedance) at 5 stations. In comparison to October, flows have increased at 25 index stations and decreased at 4 stations.

On a regional basis, flows in November have been very high in Upper Coast, Edwards Plateau, North Central, and South Central Region, high in Trans-Pecos, Low Rolling Plains, and Southern Regions, and near normal everywhere else.

## NOVEMBER STREAMFLOW CONDITIONS

### Reservoirs Shown on Map



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

## CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage Late Nov. 2004 (acre-feet)	(%)	Change since Late October 2004 (acre-feet)	(%)	Change since Late November 2003 (acre-feet)	(%)
<b>HIGH PLAINS</b>								
Palo Duro Reservoir	1	60,900	4,810	8	320	1	1,840	3
Lake Meredith (Texas)	2	500,000	164,000	33	8,010	2	22,120	4
Lake Meredith (Texas and Oklahoma)	(2)	779,560	164,000	21	8,010	1	22,120	3
MacKenzie Reservoir	3	46,250	10,060	22	1,220	3	4,050	9
White River Lake	4	31,850	9,900	31	2,910	9	4,230	13
<b>TOTAL</b>		<b>639,000</b>	<b>188,770</b>	<b>30</b>	<b>12,460</b>	<b>2</b>	<b>32,240</b>	<b>5</b>
<b>LOW ROLLING PLAINS</b>								
Greenbelt Reservoir	5	58,200	22,700	39	450	1	-1,020	-2
Lake Kemp	6	319,600	243,460	76	56,530	18	72,650	23
Miller's Creek Reservoir	7	27,890	21,530	77	7,110	25	9,290	33
Fort Phantom Hill Reservoir	8	70,030	68,840	98	22,390	32	37,740	54
Lake Stamford	9	52,700	36,640	70	7,290	14	3,850	7
Lake J. B. Thomas	10	202,300	62,360	31	32,840	16	40,610	20
Lake Colorado City	11	30,800	30,800	100	7,650	25	10,180	33
Champion Creek Reservoir	12	41,600	4,930	12	500	1	1,480	4
Hords Creek Lake	13	8,600	7,470	87	4,130	48	4,950	58
<b>TOTAL</b>		<b>811,720</b>	<b>498,730</b>	<b>61</b>	<b>138,890</b>	<b>17</b>	<b>179,730</b>	<b>22</b>
<b>NORTH CENTRAL</b>								
Lake Kickapoo	14	106,000	74,590	70	9,790	9	12,860	12
Lake Arrowhead	15	262,100	190,530	73	41,740	16	69,160	26
Lake Texoma	16	2,722,300	2,722,300	100	302,990	11	496,480	18
Pat Mayse Lake	17	124,500	116,590	94	7,270	6	11,590	9
Cooper Lake	18	273,000	202,340	74	42,600	16	-22,000	-8
Lake Sulphur Springs	19	17,710	17,710	100	2,010	11	2,010	11
Lake Tawakoni	20	936,200	894,400	96	49,500	5	106,800	11
Bridgeport Reservoir	21	374,830	345,000	92	23,900	6	109,700	29
Eagle Mountain Reservoir	22	178,380	173,400	97	11,500	6	35,800	20
Benbrook Lake	23	88,200	88,200	100	12,000	14	16,360	19
Joe Pool Lake	24	175,800	175,800	100	0	0	10	0
Ray Roberts Lake	25	798,760	798,760	100	5,070	1	68,400	9
Lewisville Lake	26	555,000	555,000	100	0	0	41,010	7
Grapevine Lake	27	187,700	187,700	100	7,380	4	31,140	17
Lavon Lake	28	443,800	433,480	98	41,880	9	97,440	22
Lake Ray Hubbard	29	413,420	405,500	98	33,000	8	58,700	14
Richland-Chambers Creek Lake	30	1,103,820	1,103,820	100	0	0	71,820	7
Navarro Mills Lake	31	55,810	55,810	100	0	0	6,310	11
Bardwell Lake	32	53,580	53,580	100	5,660	11	10,050	19
Hubbard Creek Reservoir	33	317,800	186,750	59	66,070	21	62,960	20
Lake Graham	34	45,000	39,730	88	9,960	22	17,000	38
Possum Kingdom Lake	35	551,820	541,900	98	900	0	114,300	21
Lake Palo Pinto	36	27,650	26,680	96	5,820	21	12,960	47
Lake Granbury	37	135,680	132,000	97	-900	-1	-700	-1
Lake Pat Cleburne	38	25,300	25,300	100	1,340	5	5,020	20
Whitney Lake	39	622,800	622,800	100	74,090	12	180,160	29
Waco Lake	40	144,500	144,500	100	0	0	0	0
Proctor Lake	41	55,590	55,590	100	450	1	6,140	11
Belton Lake	42	434,500	434,500	100	0	0	1,520	0
Stillhouse Hollow Lake	43	226,060	226,060	100	0	0	6,380	3
Lake Georgetown	44	37,010	37,010	100	5,510	15	13,570	37
Granger Lake	45	54,280	54,280	100	0	0	8,240	15
Lake Limestone	46	215,750	215,750	100	8,650	4	14,550	7
Lake Brownwood	47	143,400	137,340	96	5,840	4	8,240	6
<b>TOTAL</b>		<b>11,908,050</b>	<b>11,474,700</b>	<b>96</b>	<b>774,020</b>	<b>6</b>	<b>1,673,980</b>	<b>14</b>

## CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

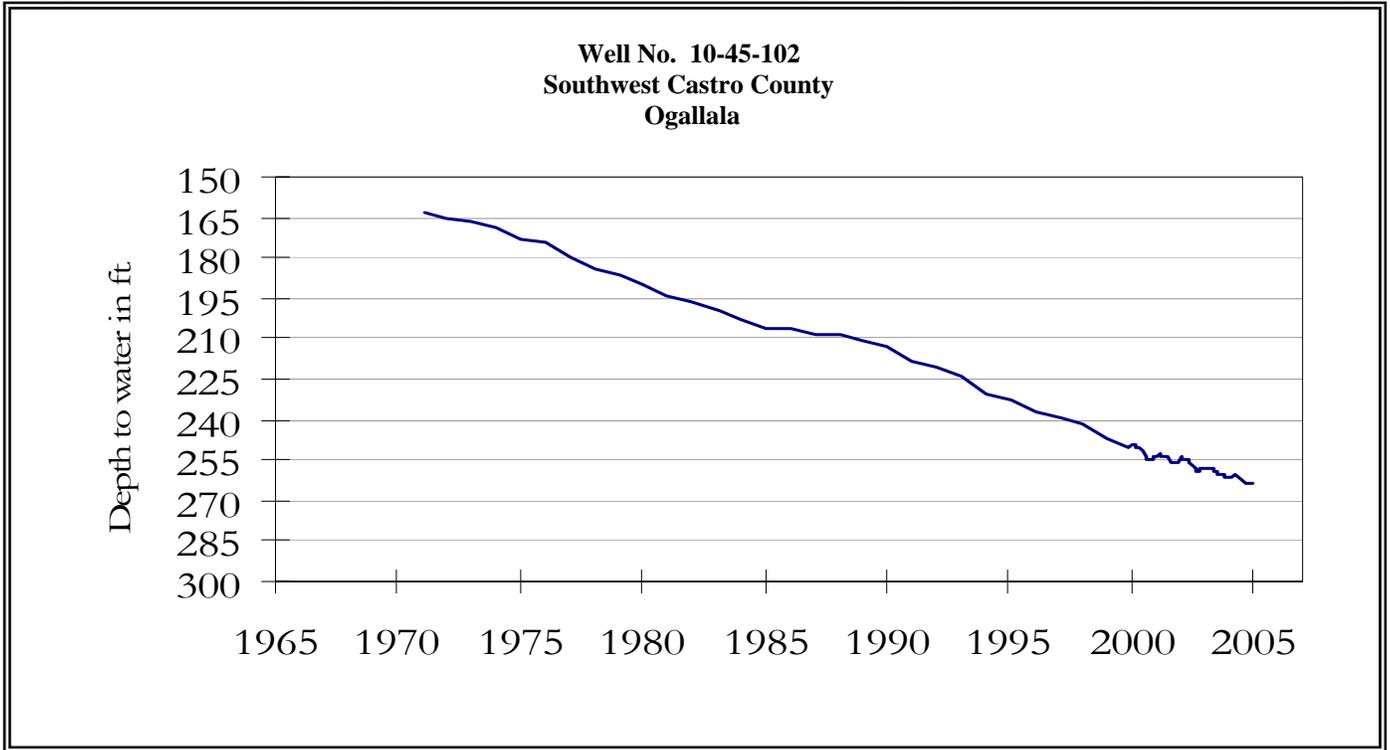
Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage Late Nov. 2004 (acre-feet) (%)	Change since Late October 2004 (acre-feet) (%)	Change since Late November 2003 (acre-feet) (%)
<b>EAST</b>					
Wright Patman Lake	48	142,700	142,700 100	0 0	0 0
Lake Cypress Springs	49	66,800	64,580 97	1,110 2	1,880 3
Lake Bob Sandlin	50	202,300	194,600 96	3,000 1	15,300 8
Lake O' the Pines	51	252,000	252,000 100	7,720 3	29,540 12
Lake Fork Reservoir	52	635,200	635,200 100	0 0	59,800 9
Toledo Bend Reservoir	53	4,472,900	4,229,000 95	347,000 8	563,000 13
Lake Palestine	54	411,300	408,790 99	13,810 3	38,480 9
Lake Tyler	55	73,700	73,700 100	0 0	5,920 8
Sam Rayburn Reservoir	56	2,876,300	2,876,300 100	368,440 13	528,660 18
B. A. Steinhagen Lake	57	94,200	94,200 100	6,050 6	9,680 10
Cedar Creek Reservoir	58	637,050	637,050 100	31,750 5	78,350 12
Lake Livingston	59	1,750,000	1,750,000 100	0 0	0 0
Lake Conroe	60	429,900	421,700 98	32,800 8	4,700 1
<b>TOTAL</b>		<b>12,044,350</b>	<b>11,779,820 98</b>	<b>811,680 7</b>	<b>1,335,310 11</b>
<b>TRANS-PECOS</b>					
Red Bluff Reservoir	61	307,000	115,340 38	25,470 8	60,200 20
<b>TOTAL</b>		<b>307,000</b>	<b>115,340 38</b>	<b>25,470 8</b>	<b>60,200 20</b>
<b>EDWARDS PLATEAU</b>					
E. V. Spence Reservoir	62	488,760	79,080 16	37,300 8	31,090 6
Twin Buttes Reservoir	63	177,800	22,540 13	17,480 10	18,120 10
O.C. Fisher Lake	64	119,200	7,620 6	5,950 5	4,450 4
O. H. Ivie Reservoir	65	554,340	230,100 42	62,800 11	29,340 5
Lake Buchanan	66	896,980	896,980 100	28,630 3	61,290 7
Amistad Reservoir (Texas)	67	1,771,030	2,322,000 131	279,000 16	1,138,000 64
Amistad Reservoir (Texas and Mexico)	(67)	3,151,300	2,809,000 89	349,000 11	1,307,000 41
<b>TOTAL</b>		<b>4,008,110</b>	<b>3,558,320 89</b>	<b>431,160 11</b>	<b>1,282,290 32</b>
<b>SOUTH CENTRAL</b>					
Somerville Lake	68	155,060	155,060 100	0 0	1,350 1
Lake Travis	69	1,144,100	1,144,100 100	28,100 2	184,250 16
Canyon Lake	70	385,600	385,600 100	0 0	7,490 2
Coletto Creek Reservoir	71	35,060	32,040 91	1,800 5	300 1
Medina Lake	72	254,000	254,000 100	0 0	22,300 9
<b>TOTAL</b>		<b>1,973,820</b>	<b>1,970,800 100</b>	<b>29,900 2</b>	<b>215,690 11</b>
<b>UPPER COAST</b>					
Lake Houston	73	128,860	128,860 100	9,360 7	0 0
Lake Texana	74	157,900	152,830 97	-900 -1	-2,510 -2
<b>TOTAL</b>		<b>286,760</b>	<b>281,690 98</b>	<b>8,460 3</b>	<b>-2,510 -1</b>
<b>SOUTHERN</b>					
Choke Canyon Reservoir	75	695,260	694,000 100	4,000 1	8,000 1
Lake Corpus Christi	76	241,240	241,240 100	1,340 1	240 0
Falcon Reservoir (Texas)	77	1,555,120	668,000 43	-13,000 -1	147,000 9
Falcon Reservoir (Texas and Mexico)	(77)	2,653,290	1,765,000 67	14,000 1	628,000 24
<b>TOTAL</b>		<b>2,491,620</b>	<b>1,603,240 64</b>	<b>-7,660 0</b>	<b>155,240 6</b>
<b>STATE TOTAL</b>		<b>34,470,430</b>	<b>31,471,410 91</b>	<b>2,224,380 6</b>	<b>4,932,170 14</b>

Note:

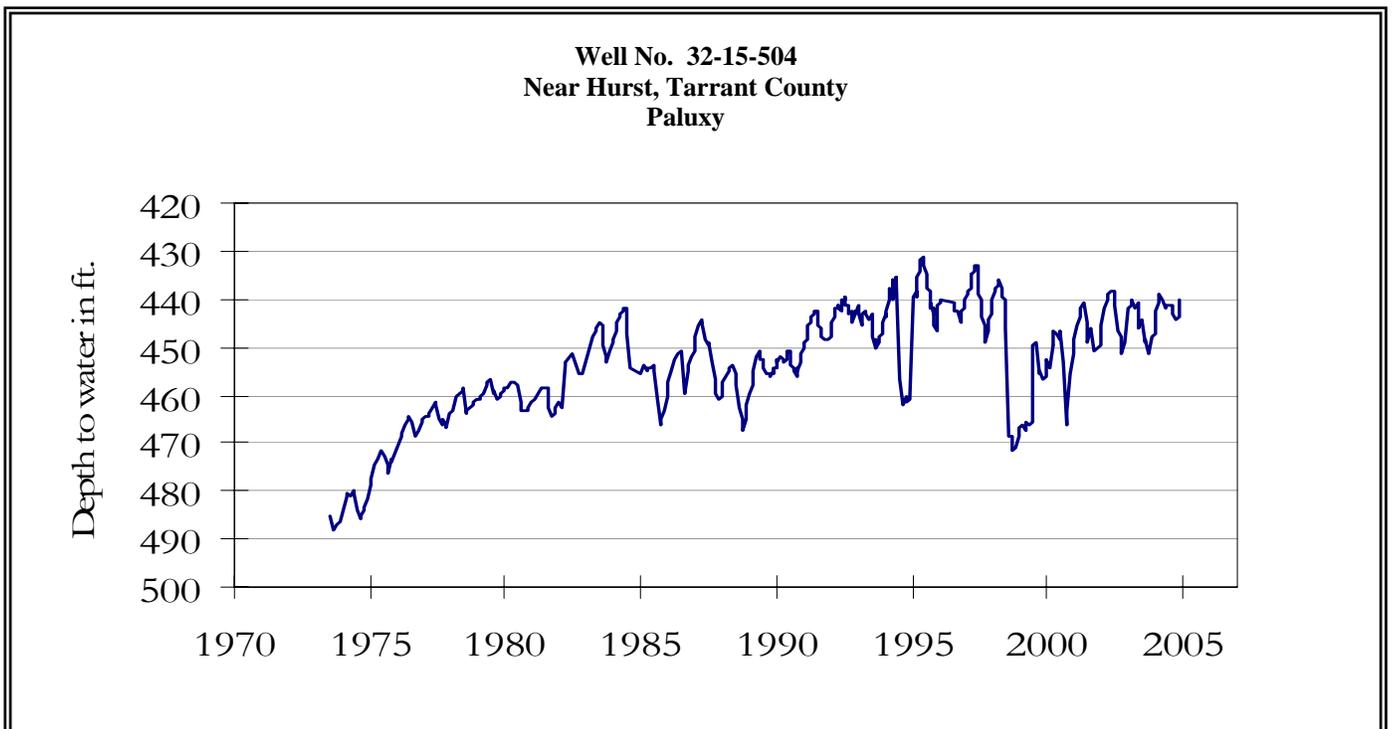
Conservation storage capacity is the space available to store water above the level of invert of lowest outlet works and below the level of top of conservation pool or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included 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  $\% \text{ Change} = 100 * (\text{current conservation storage} - \text{past conservation storage}) / \text{conservation storage capacity}$ .

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). Preliminary figures are shown for the Texas' share of conservation storage in all reservoirs.

# NOVEMBER GROUND WATER LEVELS IN OBSERVATION WELLS

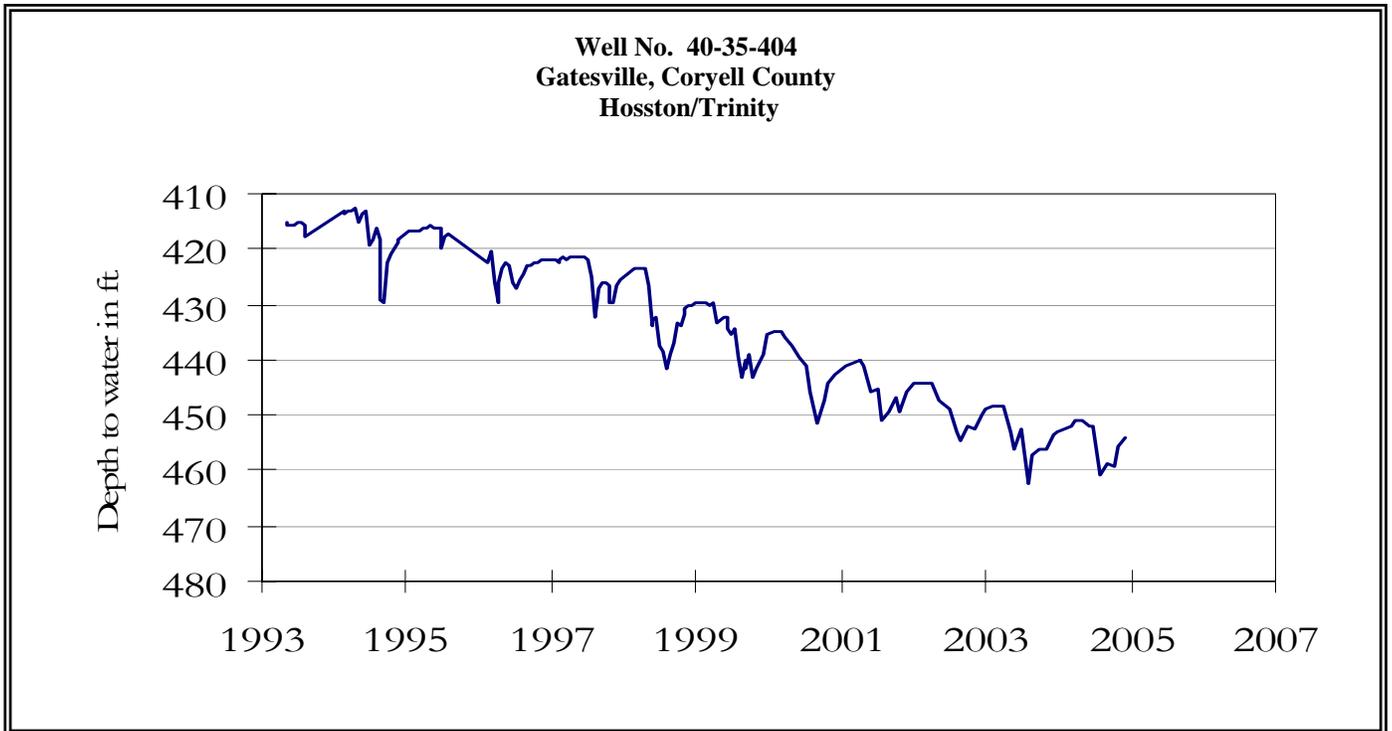


The late November water-level measurement in this Ogallala aquifer well, elevation 3,816 feet above sea level, was 263.82 feet below land surface. This measurement was 0.05 foot below last month's measurement, 2.62 feet below last year's measurement, and 107.82 feet below the initial measurement recorded in 1968.

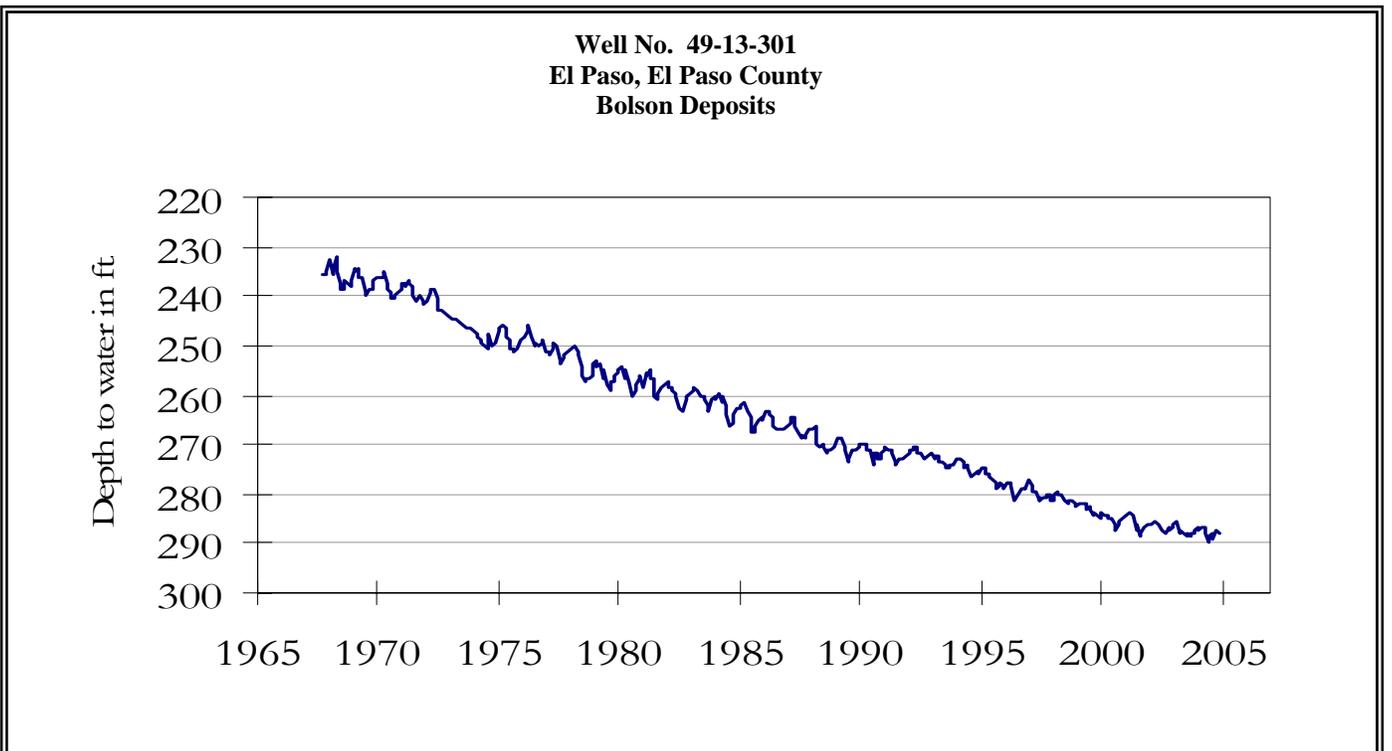


The late November water-level measurement in this Paluxy Formation Trinity aquifer well, elevation 535 feet above sea level, was 440.18 feet below land surface. This measurement was 3.76 foot above last

month's measurement, 7.02 feet above last year's measurement, and 46.79 feet below the initial measurement recorded in 1953.

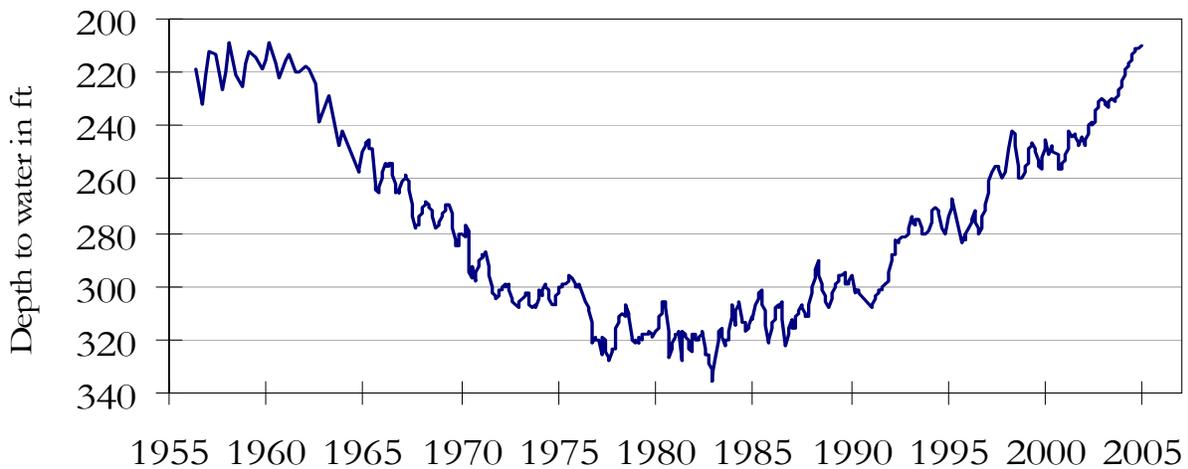


The late November water-level measurement in this Hosston Formation Trinity aquifer well, elevation 823 feet above sea level, was 454.07 feet below land surface. This water level was 1.5 feet above last month's measurement, 0.57 foot below last year's measurement, and 162.07 feet below the initial measurement recorded in 1955.



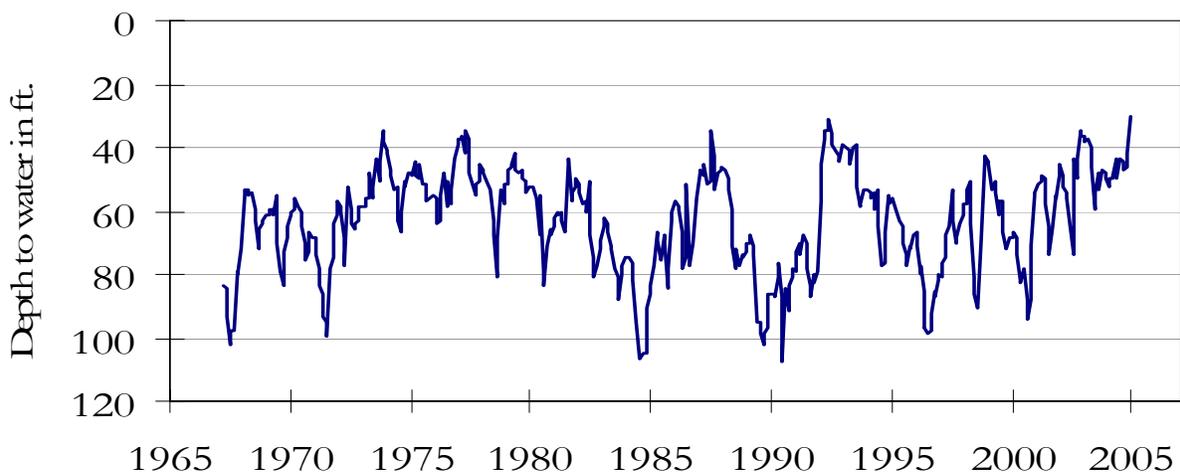
The late November water-level measurement in this Hueco Bolson aquifer well, elevation 3,882 feet above sea level, was 287.68 feet below land surface. This was 0.1 foot below last month's measurement, 0.08 foot below last year's measurement, and 55.78 feet below the initial measurement recorded in 1964.

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



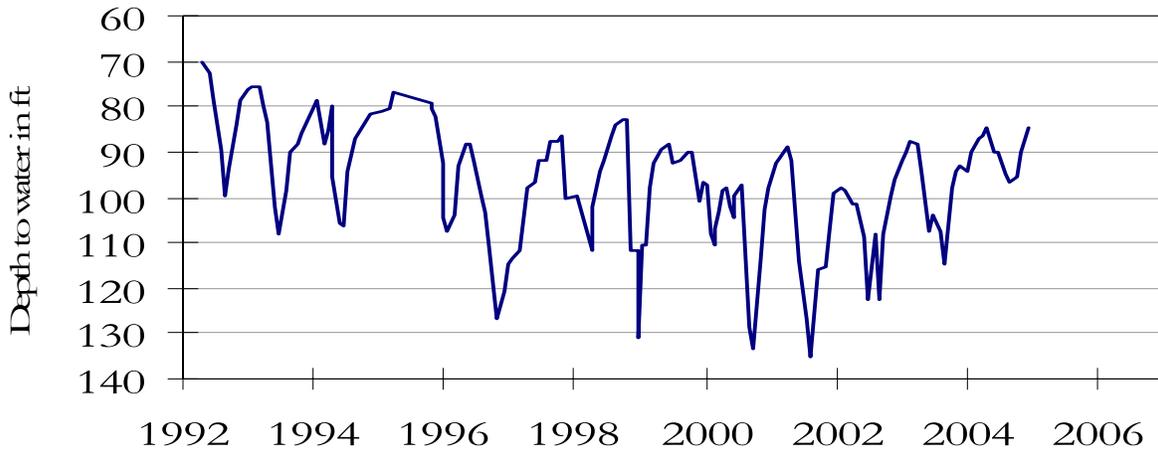
The late November water-level measurement in this Evangeline Formation Gulf Coast aquifer well, elevation 66 feet above sea level, was 209.65 feet below land surface. This was 1.01 foot above last month's measurement, 15.65 feet above last year's measurement, and 106.42 feet below the initial measurement recorded in 1947.

**Well No. 68-37-203 (J-17)  
In San Antonio, Bexar County  
Edwards and Associated Limestones**



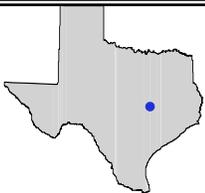
The late November water-level measurement in this Edwards (BFZ) aquifer well, elevation 731 feet above sea level, was 29.78 feet below land surface. This was 11.97 feet above last month's measurement, 19.62 feet above last year's measurement, and 29.84 feet above the initial measurement recorded in 1962.

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



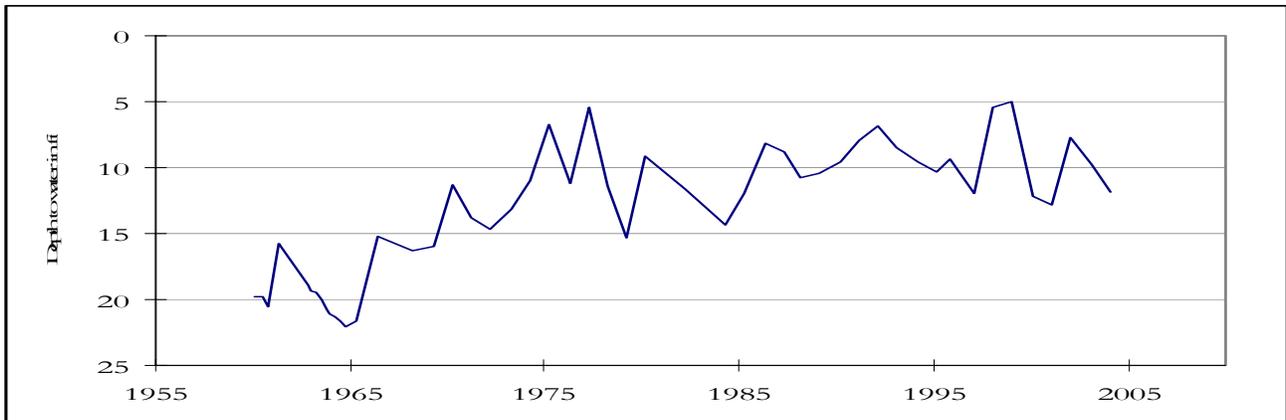
The late November water-level measurement in this Carrizo aquifer well, elevation 446 feet above sea level, was 84.63 feet below land surface. This measurement was 5.63 feet above last month's measurement, 8.41 feet above last year's measurement, and 3.38 feet below the initial measurement recorded in 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. 3949301**  
**Falls County**



This water level observation well, used for irrigation, located 5 miles south of Marlin at an elevation of 333 feet ASL, was completed in the Brazos River Alluvium Aquifer. Total pumpage from the aquifer is less than annual availability. Historical declines have occurred when pumpage has exceeded local recharge. However, this is offset by periods of normal or above normal rainfall.

**November 30, 2004**

Water levels increased in five key monitoring wells since the beginning of November, ranging from 1.01 feet in Well No. 65-14-409, Alief, Harris County (Evangeline) to 11.97 feet in Well No. 68-37-203 (J-17), San Antonio, Bexar County (Edwards and Associated Limestones), and decreased in two key monitoring wells, ranging from 0.05 feet in Well No. 10-45-102, Southwest Castro County (Ogallala aquifer) to 0.1 feet in Well No. 49-13-301, El Paso, El Paso County (Bolson Deposits).

*TEXAS WATER DEVELOPMENT BOARD*

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*AUSTIN TX 78711-3231*