# **Texas Water Development Board**





# **RESERVOIR STORAGE** *August 2009*

Storage in the state's major reservoirs continues to decrease. Near the end of August, the 109 reservoirs monitored for this report held 23.84 million acre-feet\* in conservation storage, or 76 percent of the conservation storage capacity of the state's major water supply reservoirs. This is just over 1 million acre-feet less than last month.

Storage was at 100% in seven reservoirs, with five of these reservoirs being in the East Region. On the other hand, six lakes were at or below 10% full: O C Fisher Lake was still effectively empty, Palo Duro Reservoir (1%) was nearly empty, E.V. Spence Reservoir and Lake J. B. Thomas were both at 6%, Lake Meredith stayed 8% full, and Lake Electra has dropped to 9% full.

Only the East Region(91%) has storage at or above 90% of capacity; the High Plains (8%) and Trans-Pecos regions (22%) remained very low. Storage decreased in all regions over the month. Since last year, storage increased slightly in the East and Trans-Pecos regions, and decreased everywhere else.

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



Figures are based on end of the month data at 109 major reservoirs that represent 95 percent of the total conservation storage capacity of the 175 major water supply reservoirs in Texas. By definition, a major reservoir has a conservation storage capacity of 5,000 acre-feet or greater.

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#### CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

# **STREAMFLOW**

Of 28 reporting index stations in August, computed 30-day mean flows were high (5% - 30%) at 2 stations, low (70% - 95%) at 14 stations, very low (>95%) at 4 stations, and near normal (30% - 70%) at the remaining 8 stations. Compared to July, flows have increased at 9 index stations and decreased at 16 stations.

On a regional basis, flows in August were low in all regions except the High Plains, Trans-Pecos, and East Texas regions, where the flows were normal. Streamflow in the Lower Valley Region is not monitored.

# **AUGUST STREAMFLOW CONDITIONS**

Reservoirs Shown on Map

Lake Granbury

Pat Cleburne, Lake

Waxahacie, Lake

55. Bardwell Lake

52

53

54.



56. Proctor Lake Whitney Lake 57. Aquilla Lake 58. 59 Navarro Mills Lake 60. Halbert, Lake **Richland-Chambers Reservoir** 61. 62. Lake Brownwood 63. Waco Lake 64 Limestone Lake 65. Belton Lake Stillhouse Hollow Lake 66. 67. Georgetown, Lake 68. Granger Lake 69 Tawakoni Lake 70. Wright Patman Lake Sulphur Springs, Lake 71. 72. Cypress Springs, Lake 73. Bob Sandlin, Lake 74. Fork Reservoir, Lake 75. O' the Pines, Lake 76. Cedar Creek Reservoir Trinity 77. Athens, Lake 78. Palestine, Lake Tyler, Lake 70 80. Murvaul, Lake Jacksonville, Lake 81. 82 Nacogdoches, Lake 83. Houston County Lake Sam Rayburn Reservoir 84. 85. Toledo Bend Reservoir 86. Livingston, Lake 87. B. A. Steinhagen Lake 88. Conroe, Lake Red Bluff Reservoir 89. 90 Oak Creek Reservoir 91. E. V. Spence Reservoir O. C. Fisher Lake 92. 93. O. H. Ivie Reservoir Twin Buttes Reservoir 95. Vrady Creek Reservoir 96. Buchanan, Lake 97. Lyndon B Johnson, Lake 98 Amistad Reservoir Intl 99. Travis, Lake 100. Austin, Lake 101. Somerville Lake Canyon Lake 102. 103 Medina Lake 104. Coleto Creek Reservoir 105. Lake Houston 106. Texana, Lake Choke Canyon Reservoir 107. 108. Lake Corpus Christi 109. Falcon Reservoir, Intl.

CONSERVATION STORA	NSERVATION STORAGE DATA FOR SELECTED MAJO		IAJUI	K IEAAS KESEK VUIKS						
Name of Lake	No.	Conservation	Conservat:	ion	Change since		Change since			
or Reservoir	on	Storage	Storage	•	Late July		Late August			
	Map	Capacity	Late Aug.	2009	2009		2008			
		(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)	(%)		
		HIGH PL	AINS							
Palo Duro Reservoir	1	60,897	725	1	-83	0	-378	-1		
Meredith, Lake (Texas)	2	500,000	40,002	8	0	0	-12,558	-3		
Meredith, Lake (Texas & Oklahoma)	(2)	779,556	40,002	5	0	0	-12,558	-2		
MacKenzie Reservoir	,	46,429	6,202	13	-16	0	-107	0		
White River Lake	4	29,880	3,954	13	-603	-2	3.562	12		
TOTAL	-	637,206	50,883		-702	0	-9,481	-1		
101112		00,7200	50,005	U	,01	Ŭ	5,101	-		
IOW BOLLING DIAINS										
Greenbelt Lake	5	59 500	16 611	28	-644	-1	-2 708	-5		
*Electra Lake	5	5 626	518	20	-111	-2	-687	-12		
N Fork Buffalo Crk Peservoir	7	15 400	4 394	29	-518	_3	-435	-3		
Kemp Lake	, 8	245 308	149 866	61	-10 239	-4	-45 586	_19		
Millorg Crock Pogerucir	0	243,300	12 296	10	_000	-4	-5 211	-19		
Alan Hanny Deconvoir	10	27,000	13,200	10	- 303		-5,211	-19		
Chamford Lake	11	51,000	36 703	95 71	-1,200	-1	-4,557	-5		
La Remark Lake	11	51,570	30,793	/1	-1,077	-2	-2,006	-4		
J B Thomas, Lake	12	199,931	11,027	0 11	-1,240	-1	-4,087	-2		
Fort Phantom Hill, Lake	13	70,030	49,494	71	-2,873	-4	-1/,762	-25		
Sweetwater, Lake	14	10,006	6,14/	61 61	-349	-3	-2,312	-23		
Colorado City, Lake	15	31,793	18,644	59	-/44	-2	-4,469	-14		
Champion Creek Reservoir	16	41,618	8,130	20	-241	-1	-1,438	-3		
Abilene, Lake	17	6,099	2,183	36	-361	-6	-2,692	-44		
Coleman, Lake	18	38,076	23,143	61	-1,123	-3	-7,923	-21		
Hords Creek Lake	19	5,684	1,653	29	-258	-5	-1,857	-33		
TOTAL		903,337	431,622	48	-22,053	-2	-103,710	-11		
		NORTH CE	NTRAL							
Nocona, Lake (Farmers Crk)	20	21,445	19,232	90	-946	-4	165	1		
Hubert H Moss Lake	21	24,058	22,291	93	-625	-3	-292	-1		
Texoma, Lake (Texas)	22	1,248,903	1,230,852	99	-66,532	-5	-18,051	-1		
Texoma, Lake (Texas & Oklahoma)	(22)	2,497,806	2,461,704	99	-133,064	-5	-36,102	-1		
*Pat Mayse Lake	23	118,100	117,866	100	874	1	5,653	5		
Kickapoo, Lake	24	85,825	40,311	47	-2,771	- 3	-6,329	-7		
Arrowhead, Lake	25	235,997	155,823	66	-10,627	-5	-20,328	-9		
Bonham, Lake	26	11,026	9,240	84	-580	-5	-443	-4		
Crook, Lake	27	9,195	8,668	94	176	2	238	3		
Amon G Carter, Lake	28	19,903	16,043	81	-1,219	-6	-1,481	-7		
Ray Roberts, Lake	29	798 <b>,</b> 758	765,100	96	-20,260	-3	-16,244	-2		
Jim Chapman Lake (Cooper)	30	260,332	227,269	87	-13,694	-5	7,826	3		
Graham, Lake	31	45,260	34,798	77	-1,804	-4	-7,357	-16		
*Lost Creek Reservoir	32	11,950	9,366	78	-293	-2	-1,703	-14		
Bridgeport, Lake	33	366,236	242,774	66	-16,807	-5	-77,843	-21		
Lewisville Lake	34	543,988	477,588	88	-33,078	-6	3,359	1		
Lavon Lake	35	443,844	382,577	86	-25,825	-6	7,120	2		
Hubbard Creek Reservoir	36	318,067	219,460	69	-9,707	-3	-63,706	-20		
Possum Kingdom Lake	37	540,340	463,061	86	-12,100	-2	-24,754	-5		
*Mineral Wells, Lake	38	7,065	5,555	79	-288	-4	-235	-3		
Weatherford, Lake	39	18,645	13,642	73	-67	0	-1,213	-7		
Eagle Mountain Lake	40	182,500	144,019	79	-763	0	-17,418	-10		
Worth, Lake	41	24,500	16,705	68	-1,243	-5	-3,257	-13		
Grapevine Lake	42	164.702	144.207	88	-4.755	-3	1.754	1		
Ray Hubbard, Lake	43	452.040	426.552	94	-16.809	-4	-11-059	-2		
New Terrell City Lake	44	8.583	7-639	89	-384	-4	-224	- 3		
Daniel, Lake	45	9-435	4.587	49	-453	-5	-3-305	-35		
Palo Pinto, Lake	46	27.150	7.528	28	-852	-3	-12-407	-46		
Benbrook Lake	47	85 649	63 201	74	_7 194	-8	572	1		
Arlington, Lake	19 49	38 740	29 540	74	-3 440	_a	1 107	2		
	10	55,710	27,549	70	5,115	2	-,,	5		

## CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

## CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake	No.	Conservation	Conservation		Change since		Change since			
or Reservoir	on	Storage	Storage		Late July		Late August			
	Map	Capacity	Late Aug.	2009	2009		2008			
	-	(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)	(%)		
NORTH CENTRAL (Continue)										
Joe Pool Lake	49	142,861	135,554	95	-1,624	-1	2,881	2		
*Cisco, Lake	50	26,000	16,955	65	-669	-3	-4,075	-16		
Leon, Lake	51	26,421	17,821	67	-993	-4	-6,087	-23		
Granbury, Lake	52	128,046	101,991	80	-2,505	-2	-12,437	-10		
Pat Cleburne, Lake	53	25,730	19,409	75	-1,152	-4	-2,452	-10		
Waxahachie, Lake	54	10,779	8,299	77	-164	-2	-991	-9		
Bardwell Lake	55	46,122	38,376	83	-2,393	-5	-2,935	-6		
Proctor Lake	56	55,457	28,127	51	-2,791	-5	-13,702	-25		
Whitney, Lake	57	553,349	324,781	59	-10,305	-2	-94,775	-17		
Aquilla Lake	58	45,092	37,222	83	-2,552	-6	-784	-2		
Navarro Mills Lake	59	55,817	45,888	82	-3,727	-7	-2,997	-5		
*Halbert, Lake	60	6,033	2,731	45	-460	-8	-1,618	-27		
Richland-Chambers Reservoir	61	1,103,816	922,826	84	-33,059	-3	-97,174	-9		
*Brownwood, Lake	62	131,429	92,334	70	-1,123	-1	-15,085	-11		
Waco, Lake	62	198.943	178-680	90	-10.302	-5	-7,458	-4		
Limestone Lake	64	208 015	164 254	79	-17 261	-8	-36 320	-17		
Belton Lake	65	435 225	341 785	79	-30 528	-0	-93 440	- <u>1</u> ,		
Stillhouse Hollow Lake	65	207 771	204 023	90	-5 204	-3	-13 672	-21		
Correctorm Lake	67	22/,//1	12 740	30	-0,204	-5	-13,072	-14		
Georgecown, Lake	69	50,023	26 750	70	-2,370	-0	-9,311	-17		
	60 60	52,525	20,750	70	-2,007	-5	-0,94/	-1/		
	69	10 500,120	000,271	91	-22,430	- 3	-11,219	-1		
TOTAL		10,520,015	0,045,410	04	-407,308	-4	-000,44/	- /		
		EAS	C							
Wright Patman Lake	70	262,330	262,330	100	-15,156	-6	0	0		
*Sulphur Springs, Lake	71	17,838	17,838	100	0	0	1,003	6		
Cypress Springs, Lake	72	67,689	67,620	100	-69	0	-69	0		
Bob Sandlin, Lake	73	200,579	199.221	99	-1.358	-1	2,533	1		
Fork Reservoir, Lake	74	604.927	595,687	98	-9,240	-2	-4,488	-1		
O the Pines, Lake	75	267.672	267,090	100	-582	0	-582	0		
Cedar Creek Reservoir in Trinity	76	644,686	602,882	94	-11.262	-2	1.557	0		
Athens, Lake	77	29.435	27,910	95	-431	-1	<b>_</b> ,001 71	0		
Palestine, Lake	78	370,907	348-324	94	-7.369	-2	-22-583	-6		
Tyler, Lake	79	73,256	65-671	90	-2,533	- 3	-7.208	-10		
Murvaul. Lake	80	38,284	36,325	95	-1.037	- 3	-100			
Jacksonville Lake	81	30 300	28 652	95		-1	-311	-1		
Nacogdoches Lake	82	39 521	33 801	86	-1 416	_4	-3 091	-8		
Houston County Lake	83	17 113	14 923	87	-699	_4	-2 190	-13		
Sam Payburn Pegeruoir	84	2 857 077	2 435 787	85	-89 286	-3	43 243	2		
Tolodo Bond Bogorwoir (Towag)	95	2,037,077	1 925 274	97	-64 172	-3	22 156	1		
Tolodo Bond Bogorwoir (TV & LA)	(95)	4 472 900	2 970 5/9	07	-129 2/2	-3	52,130 64 313	1		
tivingston Lake	(05)	1 7/1 967	1 725 000	100	10 000	-5	-6 967	-		
B A Steinbagen Lake	00	1,741,807	1,733,000	100	1 008	- -	-0,007	16		
Corres Lake	07	416 199	201 202	90	-1,008	-2	7 150	20		
	00	0 003 VOE 470,100	0 120 002	01	_105 007	_ 0	-/,130	-2		
IOIAL		5,303,005	3,123,303	37	-193,997	-2	30,791	U		
TRANS-PECOS										
Red Bluff Reservoir	20	289 670	 65 000	22	-5 756	-2	2 240	1		
	09	205,070	65 000	22	-5,756	-2	2,239	- 1		
10140		209,070	05,000	44	-5,750	-2	4,449	-		

#### CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

	r								
Name of Lake	No.	Conservation	Conservation		Change since		Change since		
or Reservoir	on	Storage	Storage		Late July		Late August		
	Map	Capacity	Late Aug.	2009	2009		2008		
		(acre-feet)	(acre-feet)	(%)	(acre-feet)	(%)	(acre-feet)	(%)	
		EDWARDS P	LATEAU						
Oak Creek Reservoir	90	39,260	25,060	64	-1,296	- 3	-8,312	-21	
E V Spence Reservoir	91	517,272	32,388	6	-3,734	-1	-31,614	-6	
O C Fisher Lake	92	79,483	0	0	0	0	0	0	
*O H Ivie Reservoir	93	554,335	251,746	45	-11,429	-2	-83,826	-15	
Twin Buttes Reservoir	94	177,850	29,040	16	-3,806	-2	-22,857	-13	
Brady Creek Reservoir	95	29,110	13,599	47	-796	-3	-3,309	-11	
Buchanan, Lake	96	824,519	367,334	45	-76,002	-9	-338,066	-41	
Lyndon B Johnson, Lake	97	113,690	110,733	97	65	0	-1,221	-1	
*Amistad Reservoir (Texas)	98	1,840,849	1,780,000	97	-30,000	-2	-326,000	-18	
*Amistad Reservoir (TX & Mexico)	(98)	3,275,532	3,178,000	97	-64,000	-2	884,000	27	
TOTAL		4,176,368	2,609,900	62	-126,998	- 3	-815,205	-20	
		SOUTH CE	NTRAL						
Travis, Lake	99	1,113,902	435,971	39	-51,762	-5	-347,974	-31	
*Austin, Lake	100	21,804	20,730	95	-242	-1	-60	0	
Somerville Lake	101	147,104	108,282	74	-4,864	-3	-21,636	-15	
Canyon Lake	102	378,781	261,961	69	-8,422	-2	-64,200	-17	
Medina Lake	103	254,823	64,987	26	-13,236	-5	-114,438	-45	
*Coleto Creek Reservoir	104	31,040	22,660	73	-389	-1	-1,662	-5	
TOTAL		1,947,454	914,591	47	-78,915	-4	-549,970	-28	
		UPPER C	OAST						
Houston, Lake	105	128,863	128,863	100	0	0	0	0	
Texana, Lake	106	153,246	91,679	60	-1,396	-1	-24,334	-16	
TOTAL		282,109	220,542	78	-1,396	0	-24,334	-9	
		SOUTH	ERN						
Choke Canyon Reservoir	107	695,262	475,937	68	-18,826	- 3	-141,799	-20	
Corpus Christi, Lake	108	256,961	74,813	29	-16,945	-7	-133,236	-52	
*Falcon Reservoir (Texas)	109	1,551,034	1,021,000	66	-128,000	-8	240,000	15	
*Falcon Reservoir (TX & Mexico)	(109)	2,646,817	1,723,000	65	-143,000	-5	755 <b>,</b> 000	29	
TOTAL		2,503,257	1,571,750	63	-163,771	-7	-35,035	-1	
STATE TOTAL		31,249,101	23,839,681	76	-1,002,956	- 3	-2,187,142	-7	

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

#### 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 in all reservoirs.

# **GROUNDWATER LEVELS IN OBSERVATION WELLS**



#### August, 2009

Water level measurements were available for nine out of the ten key monitoring wells. Water levels rose in two of the ten monitoring wells since the beginning of August, increasing by from 0.30 feet in the Bexar County Edwards Balcones Fault Zone (BFZ) Aquifer well and by 0.52 feet in the El Paso County Hueco-Mesilla Bolson Aquifer well. Water levels declined in the remaining monitoring wells, ranging from 0.05 feet in the Hansford County Ogallala Aquifer well to 12.40 feet in the Frio County Carrizo-Wilcox Aquifer well. The J-17 well in San Antonio recorded a water level of 88.09 feet below land surface, 0.30 feet above last month's measurement. This water level is 2.91 feet above the Stage 3 critical management level. Stage 2 drought restrictions are currently in place.

## AUGUST GROUNDWATER LEVELS IN OBSERVATION WELLS



The late August water level measurement in this Ogallala Aquifer well, elevation 2,962 feet above sea level, was 151.50 feet below land surface. This measurement was 0.05 feet below last month's measurement, 1.04 feet below last year's measurement, and 81.38 feet below the initial measurement recorded in 1951.



The late August water level measurement in this Ogallala Aquifer well, elevation 3,816 feet above sea level, was 275.36 feet below land surface. This measurement was 0.34 feet below last month's measurement, 4.20 feet below last year's measurement, and 119.36 feet below the initial measurement recorded in 1968.



The late August water level measurement in this Paluxy Formation Trinity Aquifer well, elevation 535 feet above sea level, was 447.67 feet below land surface. This measurement was 1.66 feet below last month's measurement, 1.26 feet below last year's measurement, and 69.67 feet below the initial measurement recorded in 1955.



The late August water level measurement in this Carrizo-Wilcox Aquifer well, elevation 555 feet above sea level, was 435.07 feet below land surface. This water level was 0.91 feet below last month's measurement, 1.60 feet below last year's measurement, and 69.07 feet below the initial measurement recorded in 1987.



The late August water level measurement in this Hosston Formation Trinity Aquifer well, elevation 823 feet above sea level, was 486.47 feet below land surface. This water level was 0.04 feet below last month's measurement, 8.33 feet below last year's measurement, and 194.47 feet below the initial measurement recorded in 1955.





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The late August water level measurement in this Edwards-Trinity Plateau Aquifer well, elevation 3,199 feet above sea level, was 218.25 feet below land surface. This water level was 4.05 feet below last month's measurement, 7.55 feet below last year's measurement, and 28.63 feet above the initial measurement in 1976.



The late August water level measurement in this Evangeline Formation Gulf Coast Aquifer well, elevation 66 feet above sea level was not available. The last reading available, in March 2009, was 202.54 feet below land surface.



The late August water level measurement in this Carrizo-Wilcox Aquifer well, elevation 652 feet above sea level, was 487.66 feet below land surface. This was 12.40 feet below last month's 64.84 measurement, below feet last year's measurement, and 207.66 feet below the initial measurement recorded in 1963.



The late August water level measurement in this Edwards (BFZ) Aquifer well, elevation 731 feet above sea level, was 88.09 feet below land surface. This was 0.30 feet above last month's measurement, 32.78 feet below last year's measurement, and 41.45 feet below the initial measurement recorded in 1932. Stage 2 drought restrictions are still in place.

\*\*\* Water levels below the red line indicate Edwards Aquifer Authority Stage 1 drought restrictions. \*\*\*

## HYDROGRAPH OF THE MONTH



TEXAS WATER DEVELOPMENT BOARD 1700 N. CONGRESS AVE. P.O. BOX 13231 AUSTIN TX 78711-3231