Texas Board of Water Engineers
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CHEMICAL COMPOSITION OF TEXAS SURFACE WATERS, 1952

Prepared in cooperation with the
United States Department of the Interior, Geological Survey
and others under the direction of
Burdge Irelan, District Chemist

February 1956

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During the period October 1, 1951, to September 30, 1952, samples were collected daily at 30 points on Texas streams and twice weekly at 7 sampling points in Trinity Bay near the mouth of the Trinity River. In addition to the chemical quality data published in this report, temperature data for 23 of the 30 sampling stations and sediment data for 2 of the sampling stations are available in the files of the U. S. Geological Survey, Austin, Texas. Records of chemical quality at 42 additional sampling points for varying length of time have been published in previous reports of this series. The location of the active and inactive stations are shown on the accompanying map, and the periods of operation of all the stations are shown on the bar graph.

Daily water samples were usually obtained at or near a Geological Survey gaging station. At several of the sampling stations samples were obtained at frequent intervals throughout the day when there was a rapid change in stage and concentration. Specific conductance was determined on all samples. Composite samples were usually made in 10-day periods using equal volumes of successive samples having similar conductances. At times, where samples obtained during one day showed a wide variation in specific conductance composites were made by subdividing the day into intervals of similar conductance.

Expression of Results

All data in the accompanying tables are reported in parts per million except mean discharge, tons per acre foot, tons per day, percent sodium, specific conductance, sodium-adsorption ratio, and pH. A part per million is a unit weight of a constituent in a million unit weights of water. Mean discharge is reported in cubic feet per second, which is the rate of discharge of a stream whose channel is one square foot in cross-sectional area and whose average velocity is one foot per second. The dissolved solids is reported in tons per day, tons per acre foot, and parts per million. Values reported for dissolved solids concentrations less than 1,000 parts per million are residue on evaporation and for concentrations more than 1,000 parts per million are sums of determined constituents unless noted otherwise. In obtaining the sum, the bicarbonate is calculated to carbonate by dividing by 2.03. For those analyses in which sodium and potassium are combined, the percent sodium was determined from the combined quantity of sodium and potassium in equivalents per million. For those analyses in which sodium is reported separately, the percent sodium represents the equivalent quantity of sodium only. Specific conductance, a measure of a water's ability to conduct an electric current, is reported in micromhos at 25° C. The values for pH are reported on a numerical scale. A water having a pH of 7.0 is considered to be neutral, less than 7.0 increasingly acidic, and greater than 7.0 increasingly alkaline. Sodium and potassium are reported as sodium unless listed separately in the tables. Hardness, due to calcium and magnesium, and noncarbonate hardness are reported as calcium carbonate ($CaCO_3$).

During the period October 1, 1951, to September 30, 1952, samples were collected daily at 30 points on Texas streams and twice weekly at 7 sampling points in Trinity Bay near the mouth of the Trinity River. In addition to the chemical quality data published in this report, temperature data for 23 of the 30 sampling stations and sediment data for 2 of the sampling stations are available in the files of the U. S. Geological Survey, Austin, Texas. Records of chemical quality at 42 additional sampling points for varying length of time have been published in previous reports of this series. The location of the active and inactive stations are shown on the accompanying map, and the periods of operation of all the stations are shown on the bar graph.

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Expression of Results

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The methods of analysis were the same as or modifications of those published in standard publications for water analysis. 1/

Weighted-average analyses are reported for those sampling stations for which discharge records are available. The weighted average of analyses represents the approximate composition of water that would be found in a reservoir containing all of the water passing a given station during the year after thorough mixing in the reservoir.

1/ Collins, W. D., Notes on practical water analysis: U. S. Geological Survey Water-Supply Paper 596-H, pp. 235-261, 1928; American Public Health Association, Standard methods for the examination of water and sewage, 9th ed., 1946; Scott, W. W., Standard methods of chemical analysis, Volume II, 2049-2055, 5th ed., 1939; Theroux, Eldridge, and Mallmann, Laboratory manual for chemical and bacteriological analyses of water and sewage, 3rd ed., 1943.

LOCATION OF QUALITY OF WATER SAMPLING STATIONS

Arkansas River Basin

1. Canadian River near Tascosa
2. Canadian River near Amarillo
3. Canadian River near Borger

Red River Basin

4. Prairie Dog Town Fork Red River near Brice
5. Mulberry Creek near Brice
6. Salt Fork Red River near Wellington
7. Elm Creek near Shamrock
8. Quitaque Creek near Quitaque
9. Pease River near Crowell
10. Red River near Gainesville
11. Red River at Denison Dam near Denison
12. Sulphur River near Darden

Sabine River Basin

13. Sabine River near Tatum
14. Sabine River at Logansport, La.
15. Sabine River near Ruliff
16. Cow Bayou near Mauriceville

Neches River Basin

17. Neches River near Rockland
18. Neches River at Evadale

Trinity River Basin

19. Clear Fork Trinity River at Fork Worth
20. Trinity River near Oakwood
21. Trinity River at Romayor
22. Trinity River near Moss Bluff
23. Old River near Cove
24. Trinity River at Anahuac
25. Trinity Bay near Anahuac

San Jacinto River Basin

26. San Jacinto River (West Fork) near Humble
27. San Jacinto River near Huffman

Brazos River Basin

28. Double Mountain Fork Brazos River near Rotan
29. Double Mountain Fork Brazos River near Aspermont
30. Salt Fork Brazos River near Peacock
31. Salt Fork Brazos River near Aspermont
32. Clear Fork Brazos River at Nugent
33. Paint Creek near Haskell
34. Clear Fork Brazos River at Fort Griffin
35. Brazos River near South Bend
36. Brazos River at Possum Kingdom Dam near Graford
37. Brazos River near Whitney
38. Leon River near Eastland
39. Lampasas River near Belton
40. Navasota River near Easterly
41. Brazos River at Richmond

LOCATION OF QUALITY OF WATER SAMPLING STATIONS--Continued

Colorado River Basin

42. Colorado River above Bull Creek near Knapp
43. Bull Creek near Ira
44. Bluff Creek near Ira
45. Colorado River at Colorado City
46. Morgan Creek near Colorado City
47. Colorado River at Robert Lee
48. Oak Creek near Blackwell
49. Colorado River near San Saba
50. Colorado River at Austin
51. Colorado River at Wharton

Guadalupe River Basin

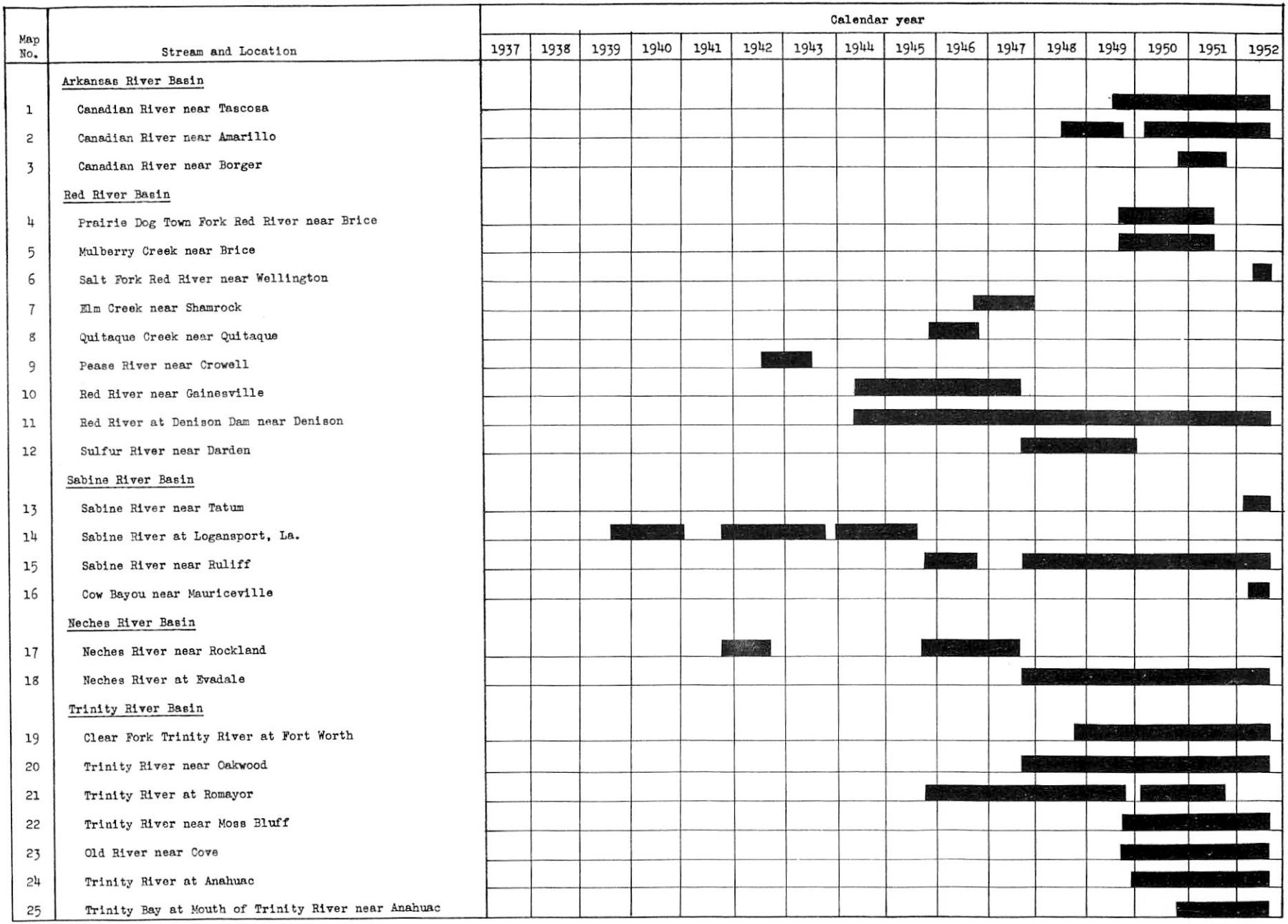
52. Guadalupe River near Spring Branch
53. Guadalupe River at Victoria
54. San Antonio River at Goliad

Nueces River Basin

55. Nueces River at Cotulla
56. Nueces River at Tilden
57. Nueces River near Three Rivers
58. Nueces River near Mathis

Rio Grande Basin

59. Salt (Screwbean) Draw near Orla
60. Pecos River near Orla
61. Pecos River at Pecos
62. Toyah Creek near Pecos
63. Salt Draw near Pecos
64. Toyah Creek below Toyah Lake near Pecos
65. Pecos River below Barstow
66. Pecos River below Grandfalls
67. Pecos River near Girvin
68. Pecos River near Sheffield
69. Rio Grande at Roma
70. Rio Grande at Mission Pumping Plant near Mission
71. Rio Grande near San Benito
72. Rio Grande at Los Fresnos Pumping Plant near Brownsville
73. Rio Grande near Brownsville



PERIODS OF OPERATION OF QUALITY OF WATER SAMPLING STATIONS IN TEXAS

Map No.	Stream and Location	Calendar year															
		1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952
	San Jacinto River Basin																
26	San Jacinto River (West Fork) near Humble																
27	San Jacinto River near Huffman																
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38	Leon River near Eastland																
39	Lampasas River near Belton																
40	Navasota River near Easterly																
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44	Bluff Creek near Ira																
45	Colorado River at Colorado City																
46	Morgan Creek near Colorado City																
47	Colorado River at Robert Lee																
48	Oak Creek near Blackwell																
49	Colorado River near San Saba																
50	Colorado River at Austin																
51	Colorado River at Wharton																

PERIODS OF OPERATION OF QUALITY OF WATER SAMPLING STATIONS IN TEXAS—Continued

Map No.	Stream and Location	Calendar year															
		1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952
	Guadalupe River Basin																
52	Guadalupe River near Spring Branch																
53	Guadalupe River at Victoria																
54	San Antonio River at Goliad																
	Nueces River Basin																
55	Nueces River at Cotulla																
56	Nueces River at Tilden																
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71	Rio Grande near San Benito																
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73	Rio Grande near Brownsville																

PERIODS OF OPERATION OF QUALITY OF WATER SAMPLING STATIONS IN TEXAS—Continued

ARKANSAS RIVER BASIN

CANADIAN RIVER NEAR TASCOSA, TEX.

LOCATION.--At Roy's Ranch near Tascosa, Oldham County, 20 miles upstream from gaging station near Amarillo, Potter County.
DRAINAGE AREA.--19,287 square miles, at gaging station.
RECORDS AVAILABLE.--Chemical analyses: June 1948 to September 1952.
Water temperatures: February 1949 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 2,060 ppm Mar. 18-19, 21-22, 26-27; minimum, 450 ppm July 16-21.
Hardness: Maximum, 514 ppm Mar. 18-19, 21-22, 26-27; minimum, 46 ppm Mar. 9-10.
Specific conductance: Maximum daily, 3,400 micromhos Mar. 18; minimum daily, 540 micromhos July 13.
EXTREMES, 1948-52.--Dissolved solids: Maximum, 2,060 ppm Mar. 18-19, 21-22, 26-27, 1952; minimum, 245 ppm Nov. 21-30, 1948.
Hardness: Maximum, 514 ppm Mar. 18-19, 21-22, 26-27, 1952; minimum, 46 ppm Mar. 9-10, 1952.
Specific conductance (1950-52): Maximum daily, 3,600 micromhos Mar. 2, 1951; minimum daily, 416 micromhos May 14, 1951.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations are sums of determined constituents unless otherwise noted. Records of discharge for gaging station near Amarillo for water year October 1951 to September 1952 given in Water-Supply Paper 1241. Mean discharge values reported are adjusted to reflect small discharge of sewage effluent entering Canadian River between sampling point and gaging station. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 17-21, 26-31, 1951	13.5	13		85	41	290		203	412	292	0.6	2.0		1,240	1.69	45	380	214	62	6.4	1,970	7.8
Nov. 1-10	57.3	11		76	38	251		209	384	225	.6	2.0		1,090	1.48	169	346	174	61	5.9	1,750	7.9
Nov. 11-30, Dec. 1-5	13.1	14		84	45	282		258	393	272	.6	2.0		1,220	1.66	43	394	183	61	6.1	1,950	8.1
Dec. 18, 19, 22-24, 26-31	4.5	20		56	32	177		317	193	136	.9	1.5		a777	1.06	9.4	271	11	59	4.7	1,280	8.2
Jan. 7-10, 1952	6.8	16		63	43	293		292	322	280	.6	.5		1,160	1.58	21	334	94	66	7.0	1,950	8.0
Jan. 11-20	6.1	18		68	45	305		268	315	332	.7	1.0		1,220	1.66	20	354	135	65	7.0	2,050	8.0
Jan. 22, 24, 27, 29-30	1.2	20		32	26	150		255	160	95	.7	2.2		611	.83	2.0	187	0	64	4.7	997	7.9
Feb. 12-13	1.5	14		27	17	147		331	133	33	.4	.0		534	.73	2.2	138	0	70	5.4	845	7.8
Feb. 17	2.0	16		40	29	149		270	164	106	.9	.2		638	.87	3.4	219	0	60	4.4	1,040	8.1
Feb. 27-29	2.0	13		26	17	148		318	139	36	.6	.2		a536	.73	2.9	135	0	70	5.5	863	8.2
Mar. 1-8	2.9	13		38	24	150		282	159	86	.6	1.0		611	.83	4.8	194	0	63	4.7	986	8.0
Mar. 9-10	6.0	14		10	5.2	148		244	87	52	.6	4.5		a456	.62	7.4	46	0	87	9.4	697	8.1
Mar. 11-14, 17	2.4	17		48	51	386		348	458	285	1.2	2.8		1,420	1.93	9.2	330	44	72	9.2	2,260	8.2
Mar. 15-16, 24-25	1.8	16		24	21	198		336	195	69	.5	.8		689	.94	3.3	146	0	75	7.1	1,110	8.2
Mar. 18-19, 21-22, 26-27	1.7	18		79	77	532		306	740	458	1.0	1.8		2,060	2.80	9.5	514	263	69	10	3,140	8.2
Apr. 2,5,6,10-13,15-17, May 4-7,15-23,27	2.9	19		56	40	348		246	391	318	.8	3.0		a1,290	1.75	10	304	102	71	8.7	2,140	8.0
Apr. 18-30, May 1-3, 9-14, June 1-8	86.7	17		34	19	201		158	207	179	.6	2.0		738	1.00	173	163	34	73	6.8	1,250	7.8
July 2,8-15,27-29,31	10.2	20		60	26	304		215	303	298	.9	4.7		1,120	1.52	31	256	80	72	8.3	1,850	8.1
July 16-21	980	20		23	9.3	125		177	105	76	.7	4.3		450	.61	1,190	96	0	74	5.5	766	8.1
July 22-26	361	19		38	15	189		190	165	165	.8	5.8		691	.94	674	156	1	72	6.6	1,190	8.2
Aug. 21-24	1,552	30		58	26	229		371	139	210	.7	3.8		878	1.19	3,680	252	0	66	6.3	1,540	7.3
Aug. 25-31	1,072	19		39	16	157		192	166	120	.8	3.2		615	.84	1,780	164	6	68	5.3	1,050	7.8
Sept. 8-14, 16, 18-25	5.0	18		77	43	326		214	399	342	.7	2.2		1,310	1.78	18	369	194	66	7.4	2,140	7.6
Sept. 26-30	4.0	16		88	43	340		207	431	365	.8	.8		1,390	1.89	15	396	227	65	7.4	2,230	8.0
Weighted average	82.1	21		45	20	178		232	169	152	0.9	2.9		705	0.96	156	194	4	67	5.5	1,210	--

a Residue on evaporation.

CANADIAN RIVER NEAR AMARILLO, TEX.

LOCATION.--At gaging station at bridge on U. S. Highways 87 and 287, 2,000 feet downstream from Pitcher Creek, 2.0 miles downstream from Panhandle & Santa Fe bridge, and 19 miles north of Amarillo, Potter County.
DRAINAGE AREA.--19,287 square miles.
RECORDS AVAILABLE.--Chemical analyses: July 1948 to October 1949, February 1950 to September 1952.
Water temperatures: August 1949 to September 1952.
Sediment records: August 1949 to September 1952. (Sediment records available from district office at Albuquerque, N. Mex.)
EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,950 ppm Jan. 5-8, 10; minimum, 285 ppm Sept. 3.
Hardness: Maximum, 752 ppm Jan. 5-8, 10; minimum, 188 ppm Sept. 3.
Specific conductance: Maximum daily, 3,590 micromhos June 5; minimum daily, 457 micromhos Sept. 3.
Water temperatures: Maximum observed, 93° F June 12, 14; minimum observed, freezing point on many days during winter months.
EXTREMES, 1949-52.--Dissolved solids (1950-52): Maximum, 1,950 ppm Jan. 5-8, 10, 1952; minimum, 285 ppm Sept. 3, 1952.
Hardness (1950-52): Maximum, 752 ppm Jan. 5-8, 10, 1952; minimum, 90 ppm Aug. 10-12, 1951.
Specific conductance (1950-52): Maximum daily, 3,630 micromhos Jan. 30, 1951; minimum daily, 457 micromhos Sept. 3, 1952.
Water temperatures: Maximum observed, 95° F June 29, 1951; minimum observed, freezing point on many days during winter months.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1241.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-15, 1951	8.6	68		70	42	141		352	135	116	4.0	64		a813	1.11	18.9	347	58	47	3.3	1,280	7.1
Oct. 16-26, 28-29	14.2	52		60	36	138		293	136	112	2.4	64		792	1.08	30.4	298	58	50	3.5	1,160	7.9
Oct. 27, 30-31	41.3	24		119	46	282		188	447	330	.8	15		1,360	1.85	152	486	332	56	5.5	2,130	8.0
Nov. 1-10	67.3	19		86	38	262		224	370	258	.8	8.2		1,150	1.56	209	370	187	61	5.9	1,870	7.8
Nov. 11-20	34.2	44		132	53	292		259	438	335	1.6	48		1,470	2.00	136	548	336	54	5.4	2,270	8.2
Nov. 21-30	16.6	55		147	55	285		260	424	378	2.0	25		1,500	2.04	67.2	593	380	51	5.1	2,400	8.2
Dec. 1-10	11.0	63		131	54	266		292	351	320	2.8	78		1,410	1.92	41.9	549	310	51	4.9	2,170	7.7
Dec. 11-20	9.8	65		138	56	270		280	372	338	2.4	79		1,460	1.99	38.6	575	346	51	4.9	2,260	7.5
Dec. 21-31	14.0	51		154	55	292		253	432	378	2.0	61		1,550	2.11	58.6	610	402	51	5.1	2,400	7.8
Jan. 1-4, 9, 1952	10.0	61		114	55	239		263	324	282	2.8	89		1,300	1.77	35.1	510	295	50	4.6	1,980	7.8
Jan. 5-8, 10	12.4	58		186	70	377		270	560	502	2.4	65		1,950	2.65	65.3	752	531	52	6.0	2,950	7.2
Jan. 11-20	16.1	58		114	52	264		287	326	308	4.0	67		1,330	1.81	57.8	498	264	54	5.1	2,100	7.0
Jan. 21-31	10.5	83		94	47	198		312	218	210	4.4	84		1,090	1.48	30.9	428	172	50	4.1	1,710	7.1
Feb. 1-17	9.6	70		102	48	214		324	228	235	4.4	89		1,150	1.56	29.8	452	186	51	4.4	1,830	6.9
Feb. 18-23	8.9	70		72	42	140		322	116	127	4.4	99		836	1.14	20.1	352	88	46	3.2	1,370	6.8
Feb. 24-29	10.7	70		98	49	247		423	219	228	4.4	94		1,220	1.66	35.2	446	100	55	5.1	1,860	7.1
Mar. 1-2, 4-8	12.7	69		86	46	230		433	181	192	4.4	95		1,120	1.52	38.4	404	48	55	5.0	1,680	7.2
Mar. 3, 9-10	15.3	61		161	60	309		246	488	392	2.0	65		1,660	2.26	68.6	648	446	51	5.3	2,630	8.1
Mar. 11-20	11.9	84		80	46	158		330	155	160	3.6	82		a931	1.27	29.9	388	118	47	3.5	1,420	7.5
Mar. 21-31	11.0	88		64	44	135		341	109	118	3.6	82		827	1.12	24.6	340	61	46	3.2	1,300	7.7
Apr. 1-10	10.4	80		67	44	133		374	113	109	4.4	59		818	1.11	23.0	348	42	45	3.1	1,260	7.4
Apr. 11-17, 19-22	68.0	53		59	31	162		292	163	142	2.0	16		791	1.08	145	274	35	56	4.3	1,310	7.1
Apr. 18, 23-30, May 1	104	34		104	44	361		243	446	388	1.2	15		1,510	2.05	424	440	242	64	7.5	2,450	7.5
May 2-10	37.5	54		84	40	216		309	242	212	2.4	41		1,040	1.41	105	374	121	56	4.8	1,680	7.3
May 11-20	49.6	48		76	38	219		277	254	216	2.0	24		1,010	1.37	1.35	346	118	58	5.1	1,640	7.6
May 21-31	10.2	78		69	43	146		359	126	126	4.0	67		853	1.16	23.5	349	55	48	3.4	1,330	7.3
June 1, 5-8	34.8	45		113	57	401		247	506	451	2.0	21		1,720	2.34	162	516	314	63	7.7	2,750	7.3
June 2-4, 9-10	71.9	45		56	30	200		254	219	166	2.0	28		891	1.21	173	263	55	62	5.3	1,410	7.8
June 11-20	8.22	91		57	43	135		338	119	102	3.6	72		a789	1.07	17.5	319	42	48	3.3	1,190	8.1
June 21-30	7.70	91		59	43	151		340	113	128	4.0	82		a838	1.14	17.4	324	46	50	3.6	1,300	8.1
July 1-10	13.8	63		54	34	169		351	159	128	2.8	.5		a783	1.06	29.2	274	0	57	4.4	1,310	7.5
July 11-20	520	56		52	31	183		187	196	193	2.8	22		922	1.25	1,290	257	104	61	5.0	1,490	7.5
July 21-31	253	48		53	29	172		247	180	153	2.4	14		a772	1.05	527	251	48	60	4.7	1,290	8.2
Aug. 1-10	202	38		49	25	139		203	162	132	2.0	1.0		a648	.88	353	226	59	57	4.0	1,150	7.1
Aug. 11-20	113	45		68	36	181		248	239	182	1.0	.5		a874	1.19	267	318	114	55	4.4	1,480	6.6
Aug. 21-27, 29-31	1,346	28		50	23	155		196	183	142	1.4	4.0		730	.99	2,650	220	59	61	4.6	1,150	6.4
Aug. 28	362	27		--	--	45		154	74	59	1.0	1.5		452	.61	442	192	66	34	1.4	677	7.9
Sept. 1-2, 4-10	156	39		86	36	193		282	258	196	2.0	.2		a949	1.29	400	362	132	54	4.5	1,580	7.5
Sept. 3	251	--		--	--	--		112	--	30	--	--		285	.39	193	188	96	--	--	457	7.6
Sept. 11-20	12.3	70		70	51	210		427	210	187	3.2	.0		1,010	1.37	33.5	384	34	54	4.7	1,650	7.1
Sept. 21-30	14.0	70		81	47	220		273	245	225	3.6	84		1,110	1.51	42.0	396	172	55	4.8	1,710	7.9
Weighted average	91.7	40		63	30	177		221	210	176	1.9	14		854	1.16	211	280	100	58	4.6	1,380	--

a Sum of determined constituents.

RED RIVER BASIN

SALT FORK RED RIVER NEAR WELLINGTON, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 83, 4 miles downstream from Fort Worth & Denver (Burlington) Railroad bridge, 4½ miles south of Lutie, and 6½ miles north of Wellington, Collingsworth County.
DRAINAGE AREA.--1,222 square miles, of which 209 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: June to September 1952.
Water temperatures: June to September 1952.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for period June to September 1952 given in Water-Supply Paper 1281.

Chemical analyses, in parts per million, November 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Nov. 18, 1951	a3.77	26		516	94	150		115	1,510	235	--	2.5		2,590	3.52	26.4	1,670	1,580	16	1.6	3,140	7.6
Jan. 21, 1952	a27.2	19		--	--	--		--	1,060	252	--	3.0		--	--	--	--	--	--	--	2,680	--
Mar. 18	a36.8	32		330	82	216		97	1,080	300	--	3.5		2,090	2.84	208	1,160	1,080	29	2.8	2,870	7.9
Apr. 17	a16.4	26		472	95	173		118	1,450	238	--	3.0		2,520	3.43	112	1,570	1,470	19	1.9	3,060	7.6
May 23	a5.70	--		--	--	--		58	--	180	--	--		--	--	--	1,590	--	--	--	2,930	7.5
June 8-20	1.54	41		510	91	138		81	1,580	162	0.6	6.9		2,570	3.50	10.7	1,650	1,580	15	1.5	2,980	7.6
June 21, 25-30	.96	36		498	88	145		83	1,540	170	.6	5.9		2,520	3.43	6.53	1,600	1,540	16	1.6	2,970	7.6
June 22-24	51.4	40		199	47	115		136	621	125	.6	4.8		1,220	1.66	169	690	578	27	1.9	1,710	7.9
July 1-10	1.55	36		516	87	138		74	1,580	165	.7	5.8		2,560	3.48	10.7	1,640	1,580	15	1.5	2,960	7.5
July 11-20	3.02	32		528	94	131		70	1,620	170	.7	4.4		2,610	3.55	21.3	1,700	1,650	14	1.4	2,990	7.6
July 21-31	1.34	34		536	88	130		78	1,610	168	.7	4.4		2,610	3.55	9.44	1,700	1,640	14	1.4	3,010	7.6
Aug. 1-10	.89	43		538	87	160		73	1,650	188	.7	5.2		2,710	3.69	6.51	1,700	1,640	17	1.7	3,280	8.0
Aug. 11-20	1.06	42		540	87	152		79	1,660	168	.7	4.2		2,690	3.66	7.70	1,700	1,640	16	1.6	3,160	8.0
Aug. 21-31	1.05	36		554	87	151		86	1,680	172	.7	4.0		2,730	3.71	7.74	1,740	1,670	16	1.6	3,220	8.0
Sept. 1-10	1.48	30		544	96	152		79	1,630	180	.7	3.8		2,740	3.73	10.9	1,750	1,690	16	1.6	3,290	8.1
Sept. 11-20	1.63	29		568	101	130		115	1,700	175	.8	3.0		2,760	3.75	12.1	1,830	1,740	13	1.3	3,270	7.8
Sept. 21-30	3.22	28		558	101	151		135	1,690	185	.8	3.0		2,780	3.78	24.2	1,810	1,700	15	1.5	3,240	7.8

a Instantaneous discharge (cfs).

RED RIVER AT DENISON DAM NEAR DENISON, TEX.

LOCATION.--Immediately below dam on Red River, 1.7 miles upstream from Sand Creek, 4 miles northwest of Denison, Grayson County, and 3 miles upstream from gaging station near Colbert, Bryan County, Okla.
DRAINAGE AREA.--39,719 square miles above dam, 39,777 square miles above gaging station, of which 6,697 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: May 1944 to September 1952.
Water temperatures: October 1945 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 894 ppm Aug. 1-31; minimum, 722 ppm Oct. 1-31.
Hardness: Maximum, 340 ppm Sept. 1-30; minimum, 264 ppm Oct. 1-31.
Specific conductance: Maximum daily, 1,540 micromhos July 14, 16-18; minimum daily, 1,150 micromhos Oct. 12, 15-18, 26, 29-31.
EXTREMES, 1944-52.--Dissolved solids: Maximum, 1,430 ppm Aug. 11-20, Sept. 1-10, 1944; minimum, 464 ppm Oct. 21-31, 1945.
Hardness: Maximum, 522 ppm Aug. 11-20, Sept. 1-10, 1944; minimum, 233 ppm Dec. 21-31, 1945, Jan. 11-20, 1946.
Specific conductance (1950-52): Maximum daily, 1,740 micromhos May 31, 1951; minimum daily, 1,150 micromhos Oct. 12, 15-18, 26, 29-31, 1951.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are residues on evaporation. Records of discharge for gaging station near Colbert, Okla., for water year October 1951 to September 1952 given in Water-Supply Paper 1241. No appreciable inflow between dam and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1951	1,841	11		68	23	144		135	160	212		2.0		722	0.98	3,590	264	154	54	3.9	1,180	7.8
Nov. 1-30	1,660	12		79	25	141		138	176	220		1.0		739	1.01	3,310	300	187	51	3.5	1,200	8.1
Dec. 1-31	1,815	13		80	25	141		138	167	228		1.8		750	1.02	3,680	302	190	50	3.6	1,230	8.1
Jan. 1-31, 1952	2,654	10		72	27	144		139	170	222		.5		751	1.02	5,380	290	176	52	3.7	1,240	8.0
Feb. 1-29	1,837	11		84	24	159		140	180	248		3.8		806	1.10	4,000	308	194	53	3.9	1,300	7.7
Mar. 1-31	1,895	8.0		86	25	157		140	184	248		4.5		834	1.13	4,270	318	203	52	3.8	1,340	7.8
Apr. 1-30	3,031	9.6		82	25	160		142	185	245		1.2		824	1.12	6,740	308	191	53	4.0	1,370	7.9
May 1-31	2,461	9.2		84	27	157		145	189	245		1.2		835	1.14	5,550	320	202	52	3.8	1,390	7.9
June 1-30	2,844	7.6		90	26	168		148	195	262		2.8		884	1.20	6,790	332	210	52	4.0	1,510	8.1
July 1-31	2,709	8.0		91	27	181		147	201	277		1.5		892	1.21	6,520	338	218	54	4.3	1,530	8.0
Aug. 1-31	3,140	8.2		89	27	183		145	200	285		2.0		894	1.22	7,580	333	214	54	4.3	1,530	7.9
Sept. 1-30	1,692	10		90	28	178		144	198	285		1.8		862	1.17	3,940	340	222	53	4.2	1,480	8.0
Weighted average	2,301	9.5		83	26	161		142	185	250		1.9		827	1.12	5,140	314	198	53	3.9	1,380	--

MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
NORTH GROESBECK CREEK 3 MILES SOUTHEAST OF NORTH GROESBECK																						
Jan. 22, 1952-------	4.14	20		--	--	--	--	1,830	530		0.0		--	--		--	--	--	--	4,410	--
SOUTH GROESBECK CREEK, 3 MILES NORTHEAST OF ACME																						
Jan. 22, 1952-------	4.00	17		612	102	179	203	1,690	290		1.8		2,990	4.07		1,950	1,780	17	1.8	3,560	7.9
GROESBECK CREEK NEAR QUANAH																						
Oct. 1, 1951--------	9.96	15		598	116	282	141	1,800	418		3.0		3,300	4.49		1,970	1,850	24	2.8	4,010	7.7
Nov. 18------------	9.92	15		600	118	264	148	1,760	425		5.0		3,260	4.43		1,980	1,860	22	2.6	3,980	7.6
Jan. 22, 1952-------	9.66	23		600	115	246	192	1,710	400		4.5		3,190	4.34		1,970	1,810	21	2.4	3,900	7.8
July 15------------	83.8	22		254	52	117	106	714	190		3.5		1,400	1.90		848	760	23	1.7	1,830	7.9
WANDERERS CREEK AT ODELL																						
Dec. 17, 1951-------	3.98	16		--	--	--	--	524	170		11		--	--		--	--	--	--	1,720	--
July 15, 1952-------	77.8	21		--	--	22	106	52	13		2.8		a205	.28		114	27	29	.9	329	7.9
SALT FORK OF RED RIVER NEAR CLARENDON																						
Apr. 22, 1952-------	19.2	39		40	17	41	153	76	38		1.5		a343	.47		170	44	34	1.4	526	8.2
LELIA LAKE CREEK NEAR HEDLEY																						
Oct. 4, 1951--------	5.22	41		78	28	58	161	223	48		6.3		561	.76		310	178	29	1.4	858	7.9
Jan. 22, 1952-------	7.17	31		--	--	--	--	205	54		6.9		--	--		--	--	--	--	942	--
Apr. 22------------	11.1	46		60	30	74	108	237	66		6.0		a599	.81		273	184	37	1.9	864	8.2
SALT FORK RED RIVER NEAR WELLINGTON																						
Oct. 1, 1951--------	3.61	30		550	93	126	101	1,640	168		4.0		2,660	3.62		1,750	1,670	14	1.3	3,030	7.6
NORTH FORK RED RIVER NEAR SHAMROCK																						
Nov. 18, 1951-------	.73	26		392	57	117	107	1,040	210		1.5		1,900	2.58		1,210	1,120	17	1.5	2,530	7.6
Jan. 21, 1952-------	18.5	21		--	--	--	--	428	308		1.5		--	--		--	--	--	--	1,970	--
SWEETWATER CREEK NEAR WHEELER																						
Nov. 18, 1951-------	7.77	30		40	15	51	230	38	30		1.0		318	.43		162	0	41	1.7	560	8.0
Jan. 21, 1952-------	10.7	35		--	--	--	--	20	18		.8		--	--		--	--	--	--	506	--
Apr. 17------------	16.9	40		30	14	41	206	22	21		1.0		a270	.37		132	0	40	1.6	426	8.2

a Residue on evaporation at 180° C.

MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER BASIN IN TEXAS--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
HACKBERRY CREEK NEAR WHEELER																						
Nov. 18, 1951	--	28	--	32	9.0	56		172	38	40	--	2.5		290	0.39		117	0	51	2.3	463	7.9
ROARING SPRINGS CREEK NEAR ROARING SPRINGS																						
May 16, 1952	1.80	68	--	--	--	83		138	78	97	--	23		a498	.68		170	57	51	2.8	749	8.1
NORTH FORK WICHITA RIVER 10 MILES SOUTHEAST OF PADUCAH																						
Nov. 28, 1951	4.45	22	--	540	134	879		138	1,590	1,440	--	13		4,690	6.38		1,900	1,790	50	8.8	6,790	7.6
Mar. 12, 1952	4.17	16	--	661	145	2,190		183	1,890	3,460	--	--		8,450	11.5		2,240	2,100	68	20	12,800	7.7
SALT CREEK 10 MILES SOUTHEAST OF PADUCAH																						
Mar. 12, 1952	2.22	7.0	--	1,290	312	11,500		85	3,550	18,200	--	--		35,000	47.6		4,500	4,430	85	75	47,000	7.8
NORTH FORK WICHITA RIVER 11 MILES SOUTHEAST OF PADUCAH																						
Mar. 12, 1952	5.89	11	--	871	209	5,320		138	2,490	8,440	--	--		17,400	23.7		3,030	2,920	79	42	25,900	7.7
COTTONWOOD CREEK 11 MILES SOUTHEAST OF PADUCAH																						
Mar. 12, 1952	--	15	--	722	144	558		196	1,820	1,100	--	1.0		4,460	6.07		2,390	2,230	34	5.0	6,060	7.6
NORTH FORK WICHITA RIVER 14 MILES SOUTHEAST OF PADUCAH																						
Nov. 28, 1951	13.9	18	--	767	180	4,060		156	2,230	6,410	--	--		13,700	18.6		2,650	2,530	77	34	20,500	7.7
Mar. 12, 1952	11.3	10	--	821	194	4,380		150	2,300	6,990	--	--		14,800	20.1		2,850	2,720	77	36	22,100	7.7
LAKE KEMP NEAR MABELLE																						
June 16, 1952	--	7.4	0.02	240	57	694		106	675	1,100	0.4	.0		2,830	3.85		834	746	64	10	4,650	7.4
SANTA ROSA LAKE NEAR VERNON																						
June 16, 1952	--	8.8	.14	35	13	27		176	34	14	.4	.0		a230	.31		141	0	30	1.0	393	7.9
WICHITA RIVER AT WICHITA FALLS																						
Oct. 12, 1951	b354	12	--	230	61	614		113	629	1,000	--	2.0		2,600	3.54		825	732	62	9.3	4,320	7.4
LAKE WICHITA AT WICHITA FALLS																						
Mar. 24, 1952	--	8.6	.03	120	36	304	0.8	104	239	552	.2	1.5	0.35	1,310	1.78		448	362	60	6.2	2,440	7.4

a Residue on evaporation at 180° C.
b Mean discharge.

MISCELLANEOUS ANALYSES OF STREAMS IN RED RIVER BASIN IN TEXAS--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
WICHITA RIVER 4 MILES WEST OF BYERS [c]																						
Dec. 12, 1951------	--	--	--	248	84	670		226	573	1,160	--	4.4	--	2,850	3.88		964	780	60	9.4	4,720	7.5
WICHITA FALLS PROJECT IRRIGATION CANAL 1½ MILES SOUTH OF IOWA PARK [c]																						
Dec. 13, 1951------	--	--	--	236	52	624		110	658	980	--	2.3	--	2,610	3.55		803	713	63	9.6	4,260	7.8
LAKE KICKAPOO NEAR ARCHER CITY																						
Feb. 20, 1952------	--	4.3	0.00	33	11	25	0.8	176	8.4	18	0.5	.5	0.07	a197	.27		128	0	30	1.0	335	7.9
RED RIVER NEAR GAINESVILLE																						
Mar. 18, 1952------	684	5.9	.01	143	43	384	4.8	146	326	650	.4	7.8	.18	1,640	2.23		534	414	61	7.2	2,860	7.4
LAKE TEXOMA AT PERRIN AIR FORCE BASE RECREATION AREA NEAR POTTSBORO																						
July 24, 1952------	--	6.1	.05	101	28	236		132	228	378	.3	1.8	--	1,040	1.41		367	259	58	5.4	1,830	7.6
GAGEBY CREEK 2 MILES NORTHWEST OF BRISCO																						
Dec. 17, 1951------	.18	22	--	--	--	--		--	12	14	--	.2	--	--	--		--	--	--	--	245	--
Mar. 18, 1952------	.17	--	--	--	--	--		--	15	15	--	--	--	--	--		--	--	--	--	291	--
LAKE RANDALL NEAR DENISON																						
Feb. 15, 1952------	--	3.5	.00	47	6.5	13	1.2	146	23	23	.3	.2	.10	a193	.26		144	24	16	.5	333	7.5
LAKE CROOK NEAR PARIS																						
Mar. 25, 1952------	--	9.6	.02	13	2.6	8.7	1.6	41	15	4.0	.3	1.0	.11	77	.10		43	10	29	.6	115	6.8
CANEY LAKE AT RED RIVER ARSENAL NEAR TEXARKANA																						
July 11, 1952------	--	7.4	.09	3.6	2.5	9.8		28	8.7	5.2	.2	.8	--	52	.07		19	0	52	1.0	70.0	7.2
CADDO LAKE NEAR KARNACK																						
Feb. 26, 1952------	--	15	.73	6.9	3.4	17	3.6	16	20	27	.3	.5	--	a127	.17		31	18	51	1.3	168	6.4
June 21----------	--	28	.20	6.2	3.9	22		23	19	27	.2	1.5	--	119	.16		32	13	60	1.7	172	7.1

a Residue on evaporation at 180° C.
c Chemical analysis made by Oklahoma City, Okla., Quality of Water Laboratory.

SABINE RIVER BASIN

SABINE RIVER NEAR TATUM, TEX.

LOCATION.--At gaging station at bridge on State Highway 43, 5 miles upstream from Potter Creek, 5.2 miles northeast of Tatum, Rusk County, 7 miles downstream from Cherokee Bayou, and at mile 339.
DRAINAGE AREA.--3,586 square miles.
RECORDS AVAILABLE.--Chemical analyses: February to September 1952.
Water temperatures: February to September 1952.
EXTREMES, 1952.--Dissolved solids: Maximum, 532 ppm July 14-17, 19, 21-26; minimum, 115 ppm May 1-6, 8, 27-29.
Hardness: Maximum, 92 ppm June 22-30; minimum, 39 ppm May 1-6, 8, 27-29.
Specific conductance: Maximum daily, 1,130 micromhos July 22; minimum daily, 144 micromhos May 5.
Water temperatures: Maximum observed, 90° F July 31.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are residues on evaporation. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, February to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Feb. 26-29, 1952-----	2,170	14		12	4.7	50		15	26	84		1.0		232	0.32	1,360	49	37	69	3.1	384	6.1
Mar. 1-4, 7-9, 17-18-	1,873	15		15	6.7	54		18	41	88		1.4		257	.35	1,300	65	50	64	2.9	422	7.0
Mar. 5-6, 10, 26-31--	1,611	15		18	7.6	69		17	48	114		1.2		312	.42	1,360	76	62	66	3.4	523	6.4
Mar. 11-16, 19-25----	2,304	14		13	6.2	45		17	38	72		1.3		223	.30	1,390	58	44	63	2.6	354	6.2
Apr. 1-11----------	1,065	18		16	6.8	64		20	42	104		1.3		279	.38	802	68	51	67	3.4	478	6.9
Apr. 12-20----------	5,097	9.4		8.9	4.4	29		14	24	46		1.8		140	.19	1,930	40	29	61	2.0	234	6.5
Apr. 21-30----------	6,057	11		9.9	3.6	25		24	22	35		1.6		123	.17	2,010	40	20	58	1.7	206	6.8
May 1-6, 8, 27-29----	9,575	12		9.6	3.6	21		30	18	27		2.4		115	.16	2,970	39	14	54	1.4	175	6.4
May 7, 9-13, 24-26, 30-31----------	5,784	15		15	5.5	39		39	24	61		2.4		191	.26	2,980	60	28	59	2.2	326	6.5
May 14-23----------	746	20		20	7.4	82		37	33	137		1.9		340	.46	685	80	50	69	4.0	591	6.7
June 1-11----------	6,710	15		12	3.8	21		38	18	27		2.9		125	.17	2,260	46	14	50	1.3	196	7.2
June 12-21----------	2,713	20		21	6.3	31		64	23	47		3.1		192	.26	1,410	78	26	46	1.5	316	7.6
June 22-30----------	242	20		25	7.1	68		67	28	109		2.5		313	.43	205	92	37	62	3.1	536	7.7
July 1-10----------	136	22		23	8.1	94		70	24	150		1.2		385	.52	141	91	34	69	4.3	675	6.8
July 11-13, 18, 20, 27-31----------	163	16		20	7.5	97		58	23	156		1.2		377	.51	166	81	34	72	4.7	673	6.8
July 14-17, 19, 21-26-	173	18		22	8.0	147		59	22	238		1.5		532	.72	248	88	40	78	6.8	942	6.7
Aug. 1-9----------	80.8	17		16	5.7	70		61	20	102		1.8		281	.38	61.3	63	13	71	3.8	494	7.3
Aug. 10-20----------	45.1	14		21	7.3	86		76	16	134		1.5		327	.44	39.8	82	20	69	4.1	610	7.5
Aug. 21-31----------	30.9	12		20	7.3	92		72	16	138		1.2		332	.45	27.7	80	21	70	4.3	624	7.5
Sept. 1-10----------	21.8	15		21	7.9	104		93	9.7	159		1.0		385	.52	22.7	85	9	73	4.9	691	7.7
Sept. 11-20----------	20.2	8.8		20	7.6	108		82	13	167		.8		393	.53	21.4	81	14	74	5.2	697	7.7
Sept. 21-30----------	22.2	16		22	8.1	122		99	8.4	187		.8		435	.59	26.1	88	8	75	5.6	775	7.6
Weighted average---	a2,134	14		13	4.8	34		31	24	51		2.1		169	0.23	974	52	27	59	2.0	277	--

a Mean discharge for water year October 1951 to September 1952 was 1,547 cfs. Runoff Feb. 26 - Sept. 30, 1952 was 82 percent of total for water year.

SABINE RIVER NEAR RULIFF, TEX.

LOCATION.--At gaging station at bridge on State Highway 235, 2.4 miles north of Ruliff, Newton County, 4.2 miles upstream from Kansas City-Southern Railway bridge, 4.5 miles downstream from Cypress Creek, and at mile 40.
DRAINAGE AREA.--9,440 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1946, October 1947 to September 1952.
Water temperatures: October 1947 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 258 ppm Nov. 1-15, 21-25; minimum, 59 ppm Apr. 22-30.
Hardness: Maximum, 49 ppm July 1-11, 13; minimum, 16 ppm Dec. 15-17, 19-31, Apr. 22-30.
Specific conductance: Maximum daily, 517 micromhos Nov. 14; minimum daily, 60.0 micromhos Apr. 25.
Water temperatures: Maximum observed, 90° F Aug. 7, 18.
EXTREMES, 1945-46, 1947-52.--Dissolved solids: Maximum, 411 ppm Dec. 26-27, 1948; minimum, 35 ppm June 5-11, 1950.
Hardness: Maximum, 64 ppm Aug. 1, 11, 16-19, 21-23, 1948; minimum, 13 ppm June 5-11, 1950.
Specific conductance (1950-52): Maximum daily, 663 micromhos June 22, 1951; minimum daily, 60.0 micromhos Apr. 25, 1952.
Water temperatures (1947-52): Maximum observed, 90° F on several days during summer months; minimum observed, 34° F Jan. 24, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-2,6-15,19,21,1951-	1,039	17		6.7	2.4	23		31	6.4	31		2.0		114	0.16	320	27	1	66	1.9	163	6.9
Oct. 3-5,16-18,20,22-31--	832	16		8.0	2.7	34		30	8.9	49		2.5		138	.19	310	31	6	70	2.7	238	6.8
Nov. 1-15, 21-25---------	980	16		12	4.4	75		43	15	114		.5		a258	.35	683	48	13	77	4.8	472	6.8
Nov. 16-20, 26-30--------	1,049	16		9.5	3.5	44		34	12	65		1.0		a168	.23	476	38	10	71	3.1	312	6.7
Dec. 1-10----------------	1,392	17		9.9	3.9	53		30	13	83		1.0		201	.27	755	41	16	74	3.6	355	7.4
Dec. 11-14, 18-----------	4,194	13		8.8	3.7	41		18	15	67		2.0		179	.24	2,030	37	22	71	3.0	289	6.9
Dec. 15-17, 19-31--------	3,811	9.4		--	--	20		12	11	26		1.0		100	.14	1,030	16	6	73	2.2	129	6.9
Jan. 1-10, 1952----------	3,134	15		6.3	3.5	29		15	18	43		1.5		132	.18	1,120	30	18	68	2.2	207	6.5
Jan. 11-20---------------	2,242	18		8.6	4.2	43		20	18	68		1.2		183	.25	1,110	39	22	70	3.0	310	6.6
Jan. 21-31---------------	2,771	19		9.7	4.5	50		19	20	80		2.0		201	.27	1,500	43	27	72	3.4	350	6.4
Feb. 1-3,6-8,15-16-------	14,130	16		7.8	4.2	45		16	22	69		1.5		179	.24	6,830	37	24	72	3.3	295	6.3
Feb. 4-5,13-14,17,19-20--	11,540	8.8		3.2	2.8	14		10	12	20		1.0		a67	.09	2,090	20	11	61	1.4	109	6.2
Feb. 9-12, 18, 21-29-----	12,650	12		6.4	3.4	23		12	19	34		1.0		109	.15	3,720	30	20	62	1.8	176	6.4
Mar. 1-10----------------	10,440	14		8.1	4.2	30		16	27	43		2.3		137	.19	3,860	37	24	64	2.1	228	6.7
Mar. 11-15, 26-31--------	8,505	14		8.8	4.2	28		18	26	41		1.4		144	.20	3,310	39	24	61	1.9	234	6.6
Mar. 16-25---------------	12,800	11		6.6	3.9	20		14	20	30		1.4		106	.14	3,660	32	21	57	1.5	172	6.4
Apr. 1-10----------------	6,024	16		9.6	4.7	29		21	25	44		2.6		149	.20	2,420	43	26	60	2.0	246	6.9
Apr. 11-21---------------	12,160	10		5.5	2.9	18		14	16	24		2.3		94	.13	3,090	26	14	60	1.6	139	6.4
Apr. 22-30---------------	34,780	6.4		3.1	1.9	10		10	11	12		1.8		59	.08	5,540	16	7	59	1.1	81.5	6.2
May 1-10-----------------	18,300	11		6.3	3.1	17		18	17	23		2.0		99	.13	4,890	28	14	57	1.4	151	6.3
May 11-19----------------	12,110	12		8.0	3.6	17		31	14	22		2.2		103	.14	3,370	35	9	52	1.4	160	6.8
May 20-31----------------	16,580	9.0		5.0	2.4	16		15	11	22		3.1		80	.11	3,580	22	10	61	1.5	128	6.4
June 1-22----------------	10,530	15		12	3.8	26		47	16	32		1.7		134	.18	3,810	46	7	55	1.6	220	7.4
June 23-30---------------	3,336	19		12	4.4	29		52	15	37		1.6		151	.21	1,360	48	5	57	1.9	243	7.4
July 1-11, 13------------	1,660	23		12	4.6	33		58	14	40		1.8		a157	.21	704	49	1	59	2.0	264	7.5
July 12,14,16,23-24, 26-27,30----------	3,320	20		7.3	3.2	26		38	12	30		1.5		a119	.16	1,070	31	0	64	2.0	187	7.4
July 15,17-22,25,28-29, 31----------	5,208	14		4.7	2.0	16		21	7.6	20		2.0		82	.11	1,150	20	3	64	1.6	119	7.0
Aug. 1-10----------------	1,840	20		8.2	3.3	24		38	8.7	31		3.0		a117	.16	481	34	3	60	1.7	197	7.1
Aug. 11-20---------------	1,126	20		9.1	3.9	32		48	8.3	42		1.0		144	.20	438	39	0	64	2.3	227	7.7
Aug. 21-31---------------	709	23		10	4.3	38		52	8.1	52		1.2		165	.22	316	43	0	66	2.6	268	7.7
Sept. 1-10---------------	529	24		9.7	3.6	34		49	6.6	47		.8		165	.22	236	39	0	66	2.4	260	7.6
Sept. 11-20--------------	470	24		8.9	3.5	35		46	6.3	48		2.0		162	.22	206	37	0	68	2.5	258	7.5
Sept. 21-30--------------	454	22		7.7	2.9	32		43	5.5	42		1.8		148	.20	181	31	0	69	2.5	227	7.3
Weighted average-------	6,415	12		6.9	3.2	23		21	16	32		1.8		112	0.15	1,940	30	13	62	1.8	178	--

a Sum of determined constituents.

COW BAYOU NEAR MAURICEVILLE, TEX.

LOCATION.--At bridge on State Highway 235, half a mile upstream from Kansas City Southern Railway bridge, and 3 miles southwest of Mauriceville, Orange County.
DRAINAGE AREA.--127 square miles.
RECORDS AVAILABLE.--Chemical analyses: March to September 1952.
Water temperatures: March to September 1952.
EXTREMES, 1952.--Dissolved solids: Maximum, 692 ppm Sept. 21-30; minimum, 23 ppm Apr. 23-30.
Hardness: Maximum, 172 ppm Sept. 11-20, 21-30; minimum, 10 ppm Apr. 23-30, July 21-31.
Specific conductance: Maximum daily, 1,210 micromhos Sept. 24, 27-28; minimum daily, 22.0 micromhos Apr. 24.
Water temperatures: Maximum observed, 93° F June 15, Aug. 13.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are residues on evaporation unless otherwise noted.
Records of discharge for period March to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, March to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Mar. 10-20, 1952	5.67	12		4.2	2.9	13		8	14	20		1.0		81	0.11	1.24	22	16	55	1.2	90.1	5.8
Mar. 21-31	3.63	11		3.6	2.6	15		9	11	22		2.0		76	.10	.74	20	12	62	1.4	99.4	6.0
Apr. 1-4, 10-11, 13-14	197	7.0		4.3	2.9	14		7	11	24		1.2		78	.11	41.5	23	17	56	1.2	106	5.8
Apr. 5-9	9.26	7.6		12	6.0	80		6	8.9	151		1.2		313	.43	7.83	55	50	76	4.7	538	5.5
Apr. 12, 15-22	220	6.6		3.2	2.5	8.0	--	8	12	10		1.0		a47	.06	27.9	18	12	49	.8	54.8	5.7
Apr. 23-30	1,541	3.5		1.8	1.3	3.6		7	5	4.2		1.0		a23	.03	95.7	10	4	44	.5	28.4	6.0
May 1-13	40.3	5.6		1.4	2.1	6.9	--	8	6.3	8.5		2.0		a37	.05	4.03	12	6	55	.9	51.2	6.6
May 14-18	2.84	11		5.0	3.6	29		16	10	46		2.8		121	.16	.93	27	14	70	2.4	192	7.0
May 19-31	254	6.2		1.9	1.6	5.0	--	7	5.8	6.0		1.5		39	.05	26.7	11	6	49	.6	41.3	6.1
June 1-8	19.9	9.4		2.1	1.7	8.6	--	7	5.4	13		2.2		61	.08	3.28	12	6	60	1.1	71.7	6.0
June 9-13	1.56	10		6.2	4.1	28		18	8.3	49		2.2		134	.18	.56	32	18	66	2.2	211	6.6
June 14-21	.44	23		19	11	86		56	21	150		1.5		344	.47	.41	92	46	67	3.9	638	7.2
June 22-30	.23	30		32	17	138		94	20	248		1.8		542	.74	.34	150	73	67	4.9	1,020	7.4
July 1-15	.21	32		36	19	161		107	22	288		2.5		617	.84	.35	168	80	68	5.4	1,130	7.6
July 16-20	405	6.4		2.5	2.1	12		8	6.9	18		1.0		a56	.08	61.2	15	8	63	1.3	77.6	6.3
July 21-31	72.5	9.8		1.8	1.3	6.8	--	9	6.2	9.0		1.0		51	.07	9.98	10	2	60	.9	55.7	6.3
Aug. 1-5	1.54	11		3.6	2.4	12		11	6.7	20		1.5		a62	.08	.26	19	10	58	1.2	108	6.8
Aug. 6-8	.17	15		9.4	6.9	35		29	7.4	68		1.8		a158	.21	.07	52	28	60	2.1	294	7.1
Aug. 9-14	.10	23		20	11	84		58	14	152		1.2		366	.50	.10	95	48	66	3.7	630	7.7
Aug. 15-20	b.03	31		28	16	125		84	18	226		1.2		512	.70	.04	136	67	67	4.6	913	7.9
Aug. 21-31	.10	29		31	18	141		96	21	255		1.0		586	.80	.16	154	75	67	5.0	1,030	7.3
Sept. 1-10	.1	28		35	20	160		109	21	288		.8		642	.87	.17	170	80	67	5.4	1,170	7.5
Sept. 11-20	b.05	28		36	20	166		110	22	298		.8		647	.88	.09	172	82	68	5.5	1,170	7.5
Sept. 21-30	b.01	27		36	20	173		109	23	308		.8		692	.94	.02	172	82	69	5.7	1,210	7.9
Weighted average	112	5.0		2.2	1.7	6.2		7	6.4	8.4		1.1		37	0.05	11.2	12	7	52	0.8	46.0	--

a Sum of determined constituents.
b Includes days of less than 0.05 second-foot flow.

MISCELLANEOUS ANALYSES OF STREAMS IN SABINE RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
GREENVILLE RESERVOIR NO. 2 NEAR GREENVILLE																						
Mar. 25, 1952----	--	2.4	0.01	38	6.5	21	0.8	142	32	13	0.3	0.0	0.16	205	0.28		122	5	27	0.8	347	7.9
CHEROKEE LAKE NEAR LONGVIEW																						
Feb. 27, 1952----	--	7.8	.70	3.5	2.3	8.7		14	13	7.8	.2	.5		a52	.07		18	7	51	.9	81	6.6
TENAHA CREEK NEAR SHELBYVILLE																						
June 12, 1952----	9.20	19	--	--	--	24		53	26	18	--	--		139	.19		44	1	54	1.6	198	7.9
PATROON BAYOU AT COUNTY ROAD BRIDGE 7 MILES NORTHEAST OF MILAM																						
June 12, 1952----	18.7	17	--	--	--	22		53	31	18	--	--		135	.18		54	11	47	1.3	217	7.0
PALO GAUCHO CREEK NEAR HEMPHILL																						
May 15, 1952-----	25.6	19	--	--	--	7.5		28	8.0	7.8	--	--		75	.10		26	3	38	.6	89.3	6.8
PALO GAUCHO CREEK 7 MILES EAST SOUTHEAST OF MILAM																						
May 16, 1952-----	39.9	18	--	--	--	10		31	11	8	--	--		79	.11		26	1	46	.9	91.0	7.0
HOUSEN BAYOU 9 MILES EAST OF YELLOWPINE																						
June 13, 1952----	7.87	29	--	--	--	19		36	22	17	--	--		135	.18		34	4	55	1.5	172	7.1
SANDY CREEK 9.5 MILES EAST OF YELLOWPINE																						
June 13, 1952----	24.7	23	--	--	--	7.7		16	6.2	7.2	--	--		64	.09		13	0	56	.9	60.0	6.6
MILL CREEK 12 MILES SOUTHEAST OF YELLOWPINE																						
June 13, 1952----	13.1	20	--	--	--	5.7		12	2.6	5.5	--	--		44	.06		8	0	60	.9	41.4	6.7
LITTLE COW CREEK AT BIRKEVILLE																						
Feb. 13, 1952----	--	12	--	--	--	--		9	--	9	--	.2		--	--		21	--	--	--	60	7.7

a Sum of determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN SABINE RIVER BASIN IN TEXAS--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
CANEY CREEK AT BON WIER																						
May 13, 1952------	19.5	16		--	--	6.0		21	1.6	7.2		--		53	0.07		16	0	45	0.7	62.1	6.5
DEMPSEY CREEK 5 MILES SOUTHWEST OF BON WIER																						
June 20, 1952-----	5.11	28		1.9	0.8	5.9	--	18	1	6.2	0.3	0.5		a54	.07		8	0	6	.9	51.9	6.5
BIG COW CREEK NEAR NEWTON																						
May 9, 1952-------	53.8	13		--	--	5.8		14	1.6	6.0		--		38	.05		9	0	58	.8	41.2	6.5
DONAHOE CREEK 9 MILES SOUTHWEST OF BON WIER																						
June 20, 1952-----	6.52	24		3.2	1.3	6.4	--	14	2	7.2		1.0		68	.09		13	2	51	.8	58.3	6.3
CYPRESS CREEK NEAR BUNA																						
June 4, 1952------	5.15	7.9		--	--	6.0		10	1.3	8.8		--		56	.08		9	0	59	.9	57.7	6.8

a Sum of determined constituents.

NECHES RIVER AT EVADALE, TEX.

LOCATION.--At gaging station on U. S. Highway 96, 200 feet upstream from Gulf, Colorado & Santa Fe Railway bridge at Evadale, Jasper County, 600 feet downstream from Mill Creek, 15 miles upstream from Village Creek, and at mile 55.
DRAINAGE AREA.--7,908 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1952.
Water temperatures: October 1947 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 180 ppm Dec. 1-10; minimum, 78 ppm Apr. 20-30.
Hardness: Maximum, 67 ppm July 1-10; minimum, 22 ppm Feb. 1-2, 4-8.
Specific conductance: Maximum daily, 342 micromhos Jan. 1; minimum daily, 75.9 micromhos Apr. 24-25.
Water temperatures: Maximum observed, 93° F July 27; minimum observed, 49° F Nov. 21.
EXTREMES, 1947-52.--Dissolved solids: Maximum, 218 ppm Dec. 11-20, 1948; minimum, 46 ppm June 4-18, 1950.
Hardness: Maximum, 70 ppm Nov. 1-10, 1947; minimum, 16 ppm Sept. 22-25, 27, 1950.
Specific conductance (1950-52): Maximum daily, 370 micromhos Aug. 29, 1951; minimum daily 53.7 micromhos Sept. 23, 1951.
Water temperatures: Maximum observed, 93° F July 27, 1952; minimum observed, 37° F Jan. 30-31, 1948, Jan. 31, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are residues on evaporation unless otherwise noted.
Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1951	900	17		12	5.5	20		46	13	30	0.3	1.0		141	0.19	343	53	15	45	1.2	208	7.3
Oct. 11-20	344	20		13	6.6	28		59	16	37	.3	1.5		173	.24	161	60	11	50	1.6	261	7.4
Oct. 21-31	352	20		11	3.9	36		52	16	43	.2	1.5		159	.22	151	44	1	64	2.4	255	7.7
Nov. 1-10	343	21		11	4.5	37		52	20	43	.2	2.0		166	.23	154	46	3	64	2.4	263	7.6
Nov. 11-20	375	21		12	4.8	40		46	18	55	.2	1.0		a175	.24	177	50	12	63	2.4	284	7.6
Nov. 21-30	343	22		11	3.7	40		49	20	48	.2	.5		172	.23	159	43	2	67	2.6	276	7.5
Dec. 1-10	692	20		11	3.8	42		47	22	51	.2	.5		180	.24	336	43	5	68	2.7	290	7.6
Dec. 11-20	1,997	17		8.3	3.4	34		28	20	44	.3	1.0		143	.19	771	35	12	68	2.6	233	7.2
Dec. 21-31	1,416	19		8.5	3.9	35		22	22	50	.2	1.2		155	.21	593	37	19	67	2.5	260	7.0
Jan. 1-10, 1952	1,909	18		8.5	4.0	35		19	24	51	.3	.5		156	.21	804	38	22	67	2.4	258	6.9
Jan. 11-20	1,339	19		8.4	3.8	27		21	22	38	.2	.5		139	.19	503	37	19	61	2.0	223	6.9
Jan. 21-31	1,713	19		8.7	4.3	33		14	24	51	.3	1.0		156	.21	722	39	28	65	2.2	266	7.1
Feb. 1-2, 4-8	7,737	10		4.2	2.7	15		13	17	18	--	.5		85	.12	1,780	22	11	60	1.4	112	6.4
Feb. 3, 9-20	4,413	16		8.8	4.4	30		18	27	43	.3	.5		148	.20	1,760	40	25	62	2.1	231	6.5
Feb. 21-29	5,710	17		8.5	4.5	30		18	30	41	.3	.8		148	.20	2,280	40	25	62	2.1	235	6.5
Mar. 1-10	7,253	16		8.1	4.2	26		17	32	32	.2	1.0		138	.19	2,700	37	24	60	1.8	197	6.6
Mar. 11-20	4,296	16		8.5	4.3	25		17	32	31	.2	1.2		138	.19	1,600	39	25	58	1.8	209	6.6
Mar. 21-31	9,233	14		7.8	3.6	22		17	29	27	.1	.8		120	.16	2,990	34	20	58	1.6	177	6.6
Apr. 1-10	5,810	15		10	4.8	25		22	32	33	.2	.8		138	.19	2,160	45	27	55	1.7	216	6.7
Apr. 11-19	9,267	14		8.5	4.3	22		23	26	28	.2	1.0		120	.16	3,000	39	20	56	1.6	185	6.8
Apr. 20-30	12,090	10		5.1	2.7	14		18	17	15	.1	1.2		78	.11	2,550	24	9	57	1.3	111	6.7
May 1-10	12,560	14		6.0	3.1	19		21	20	21	.0	2.0		96	.13	3,260	28	10	60	1.6	140	6.8
May 11-20	6,837	17		7.5	4.1	24		26	22	29	.1	1.0		a118	.16	2,180	36	14	59	1.7	184	6.9
May 21-31	14,620	13		5.8	3.2	13		20	17	14	.1	1.5		82	.11	3,240	28	11	50	1.1	110	6.4
June 1-10	9,856	15		5.5	2.9	15		24	16	14	.1	2.0		88	.12	2,340	26	6	56	1.3	124	7.1
June 11-20	2,896	18		8.4	4.2	24		30	21	29	.1	3.5		a123	.17	962	38	14	58	1.6	193	7.3
June 21-30	1,736	18		9.4	4.5	27		36	20	35	.1	1.0		a133	.18	623	42	12	58	1.8	220	7.3
July 1-10	1,502	21		18	5.4	24	--	44	21	42	.3	1.0		a155	.21	629	67	30	44	1.2	246	7.1
July 11-20	1,458	19		15	5.0	24	--	46	20	36	.3	.8		a143	.19	563	58	21	47	1.3	230	7.0
July 21-31	1,055	18		12	4.6	24	--	46	15	33	.3	1.0		a131	.18	373	49	12	51	1.4	220	7.1
Aug. 1-10	1,432	21		12	4.9	28		53	13	38	.1	1.5		159	.22	615	50	7	55	1.7	248	7.5
Aug. 11-20	1,168	22		12	4.9	31		56	12	41	.1	1.8		165	.22	520	50	4	57	2.0	256	7.5
Aug. 21-31	720	22		12	5.1	32		55	13	43	.1	2.2		165	.22	321	51	6	58	2.0	266	7.4
Sept. 1-10	574	25		12	5.2	34		62	11	42	.3	2.8		170	.23	263	51	1	59	2.1	274	7.4
Sept. 11-20	268	28		13	5.1	31		73	8.3	35	.2	1.8		167	.23	121	53	0	55	1.8	261	7.5
Sept. 21-30	216	26		13	4.5	34		73	7.5	38	.2	2.2		165	.22	96	51	0	59	2.1	262	7.5
Weighted average	3,718	15		7.6	3.7	22		23	22	27	0.1	1.3		115	0.16	1,150	34	15	59	1.7	174	--

a Sum of determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN NECHES RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
NECHES RIVER AT STATE HIGHWAY 31 NEAR CHANDLER																						
Feb. 27, 1952----		12		8.6	4.8	25		22	33	29		1.8		130	0.18		41	23	57	1.7	207	6.8
LAKE TYLER NEAR WHITEHOUSE																						
Feb. 27, 1952----		4.0	0.03	9.0	4.6	10		46	7.3	12	0.3	.5		92	.13		41	4	35	.7	138	6.8

CLEAR FORK TRINITY RIVER AT FORT WORTH, TEX.

LOCATION.--At Texas & Pacific water plant, one-eight of a mile downstream from gaging station which is at bridge on Vickery Boulevard at Fort Worth, Tarrant County, 100 feet upstream from East-West Expressway bridge, 310 feet downstream from Texas & Pacific Railway bridge, 3 miles upstream from mouth, and 5 miles downstream from Marys Creek.
DRAINAGE AREA.--526 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1948 to September 1952.
Water temperatures: October 1948 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 366 ppm Dec. 21-31; minimum, 191 ppm Aug. 11-20.
Hardness: Maximum, 218 ppm Jan. 21-31; minimum, 109 ppm Aug. 11-20.
Specific conductance: Maximum daily, 600 micromhos Dec. 13; minimum daily, 201 micromhos May 24.
Water temperatures: Maximum observed, 97° F Aug. 6; minimum observed, 41° F Dec. 22.
EXTREMES, 1948-52.--Dissolved solids: Maximum, 621 ppm Jan. 11-31, 1949; minimum, 124 ppm May 17, 1949.
Hardness: Maximum, 322 ppm Dec. 1-10, 1950; minimum, 68 ppm May 17, 1949.
Specific conductance (1950-52): Maximum daily, 842 micromhos Mar. 31, 1951; minimum daily, 201 micromhos May 24, 1952.
Water temperatures: Maximum observed, 97° F Aug. 6, 1952; minimum observed, freezing point on several days in January 1949.
REMARKS.--Records of specific conductance of daly samples available in district office at Austin, Tex. Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C) Parts per million	Dissolved solids (residue at 180° C) Tons per acre-foot	Dissolved solids (residue at 180° C) Tons per day	Hardness as $CaCO_3$ Calcium, magnesium	Hardness as $CaCO_3$ Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-10, 1951	a0	5.0		41	7.6	42		172	28	38	0.4	1.2		267	0.36	0.0	134	0	41	1.6	456	7.7
Oct. 11-20	a0	4.0		44	7.6	49		190	29	42	.4	1.0		287	.39	.0	141	0	43	1.8	494	7.8
Oct. 21-31	a0	5.8		46	7.4	49		193	28	44	.4	2.0		283	.38	.0	146	0	42	1.8	494	7.8
Nov. 1-10	a0	7.2		50	7.2	46		198	29	42	.4	2.5		287	.39	.0	154	0	39	1.6	492	7.8
Nov. 11-20	a.09	7.6		54	6.9	48		210	30	44	.4	2.0		302	.41	.07	163	0	39	1.6	524	8.0
Nov. 21-30	a.50	7.6		56	6.2	47		208	32	43	.4	1.5		297	.40	.40	165	0	38	1.6	526	7.6
Dec. 1-10	1.52	7.4		56	6.6	54		204	37	54	.4	.5		322	.44	1.32	166	0	41	1.8	556	7.3
Dec. 11-20	3.69	9.4		63	9.6	53	1 --	222	52	56	.3	.5		b352	.48	3.51	196	14	37	1.6	601	7.7
Dec. 21-31	4.25	13		67	8.2	54		232	53	50	.3	.5		366	.50	4.20	200	10	37	1.6	584	7.7
Jan. 1-10, 1952	3.44	9.2		70	9.3	42		239	45	42	.3	.2		354	.48	3.29	212	16	30	1.2	576	7.5
Jan. 11-20	4.95	9.5		71	9.4	37		240	45	36	.3	.5		341	.46	4.56	216	19	27	1.1	568	7.9
Jan. 21-31	9.79	12		71	9.8	33		243	43	32	—	.5		330	.45	8.72	218	18	25	1.0	534	8.0
Feb. 1-10	24.4	9.2		55	8.8	24		183	43	20	.3	1.2		258	.35	17.0	173	24	23	.8	424	7.7
Feb. 11-20	8.99	9.6		52	6.7	25		171	37	22	.4	1.0		245	.33	5.95	157	17	26	.9	404	7.7
Feb. 21-29	9.83	9.6		55	5.8	26		179	34	25	.3	.5		253	.34	6.71	161	14	26	.9	417	7.7
Mar. 1-10	9.99	9.6		59	8.2	30		198	37	30	.4	1.5		277	.38	7.47	181	19	26	1.0	465	7.7
Mar. 11-20	9.96	7.8		63	9.3	36		217	44	34	.4	.0		305	.41	8.20	195	17	29	1.1	515	7.6
Mar. 21-31	11.5	9.2		61	9.9	37		215	44	35	.3	1.0		310	.42	9.63	192	16	30	1.2	530	7.9
Apr. 1-10	10.2	7.6		58	9.9	40		207	44	39	.4	1.0		308	.42	8.48	185	16	32	1.3	532	7.8
Apr. 11-20	27.6	8.2		55	11	33		193	41	36	.3	2.0		311	.42	23.2	182	24	28	1.1	492	8.1
Apr. 21-30	166	10		43	6.9	11	1 --	133	24	13	.2	4.0		213	.29	95.5	136	27	15	.4	315	7.7
May 1-10	47.7	10		54	9.7	21		170	38	27	.2	2.5		277	.38	35.7	175	35	20	.7	432	7.9
May 11-20	189	10		50	6.7	35		166	44	30	.3	3.2		256	.35	131	152	16	33	1.2	437	7.7
May 21-31	149	15		50	4.0	20		159	29	14	.3	3.2		211	.29	84.9	141	11	23	.7	347	7.9
June 1-10	17.4	13		62	6.0	21		199	28	22	.3	1.8		260	.35	12.2	179	16	20	.7	438	8.1
June 11-20	4.80	15		50	7.5	21		171	29	20	.3	2.2		243	.33	3.15	156	16	23	.7	413	8.2
June 21-30	a.05	14		54	7.8	26		185	30	28	.3	1.8		253	.34	.03	168	16	25	.9	439	8.2
July 1-10	a.23	12		53	7.5	27		184	29	28	.3	1.8		249	.34	.15	163	12	27	.9	431	8.2
July 11-20	a.07	9.0		55	7.3	28		192	28	29	.3	1.2		252	.34	.05	167	10	27	1.0	450	8.2
July 21-31	a0	10		54	6.7	27		185	26	29	.4	1.8		262	.36	.0	162	11	27	.9	450	7.8
Aug. 1-10	a3.2	11		41	5.0	26		146	22	24	.4	2.2		205	.28	1.77	123	3	31	1.0	363	7.6
Aug. 11-20	a0	10		36	4.6	27		133	21	24	.4	1.2		191	.26	.0	109	0	35	1.1	346	7.5
Aug. 21-30	a0	10		36	4.8	29		137	21	26	.4	1.8		197	.27	.0	110	0	37	1.2	354	7.6
Sept. 1-10	a0	9.8		44	4.6	28		156	20	27	.4	2.8		234	.32	.0	129	1	32	1.1	375	7.4
Sept. 11-20	a0	12		44	4.3	29		156	20	27	.4	2.8		236	.32	.0	128	0	33	1.1	377	8.0
Sept. 21-30	a.69	11		48	4.6	28		170	20	26	.4	2.2		247	.34	.46	139	0	31	1.0	395	7.8
Weighted average	20.1	11		51	6.8	24		165	35	23	0.3	2.9		245	0.33	13.3	155	20	25	0.8	399	--

a Includes days of less than 0.05 second-foot flow.
b Sum of determined constituents.

TRINITY RIVER NEAR OAKWOOD, TEX.

LOCATION.--At gaging station at bridge on U. S. Highways 79 and 84, 1½ miles upstream from International-Great Northern Railroad bridge, 6 miles northeast of Oakwood, Leon County, and at mile 313.
DRAINAGE AREA.--12,912 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1952.
Water temperatures: October 1947 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,430 ppm Sept. 1-9; minimum, 234 ppm Apr. 22-30.
Hardness: Maximum, 244 ppm July 21-26, 28-29, 31; minimum, 124 ppm Mar. 1-4, 13-16.
Specific conductance: Maximum daily, 2,950 micromhos Dec. 1; minimum daily, 351 micromhos Apr. 29.
Water temperatures: Maximum observed, 90° F Aug. 14; minimum observed, freezing point, Dec. 15, 21-22.
EXTREMES, 1947-52.--Dissolved solids: Maximum, 1,430 ppm Sept. 1-9, 1952; minimum, 165 ppm Feb. 11-19, 1950.
Hardness: Maximum, 271 ppm Oct. 28, 30-31, 1947; minimum, 93 ppm May 13-20, 1948.
Specific conductance (1950-52): Maximum daily, 2,960 micromhos Sept. 8, 1951; minimum daily, 328 micromhos June 23, 1951.
Water temperatures: Maximum observed, 90° F Aug. 14, 1952; minimum observed, freezing point Feb. 5, 1949, Dec. 15, 21-22, 1951.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-10, 1951	329	14		58	8.2	185		148	108	230		26		712	0.97	632	178	56	69	6.0	1,230	7.7
Oct. 11-20	301	14		60	8.7	214		151	127	265		26		807	1.10	656	186	62	71	6.8	1,400	7.6
Oct. 21-31	340	14		60	9.2	235		137	130	295		42		891	1.21	818	188	75	73	7.4	1,470	7.5
Nov. 1-10	482	11		47	6.9	178		102	106	218		40		687	.93	894	146	62	73	6.5	1,140	7.3
Nov. 11-15	263	15		58	7.9	195	--	116	100	268		37		771	1.05	547	177	82	71	6.4	1,290	7.8
Nov. 16-20	240	14		56	10	324	--	128	108	475		34		1,080	1.47	700	180	76	80	10	1,930	7.5
Nov. 21-30	273	14		60	10	288	--	129	145	378		49		1,010	1.37	744	190	85	77	9.1	1,780	7.1
Dec. 1-10	350	19		62	14	410		99	153	578		60		1,340	1.82	1,270	212	131	81	12	2,370	7.8
Dec. 11-20	333	18		52	10	253		84	140	325		58		926	1.26	833	170	102	76	8.5	1,590	7.3
Dec. 21-31	307	17		57	12	311		109	138	415		62		1,070	1.46	887	192	102	78	9.7	1,860	7.8
Jan. 1-10, 1952	417	14		54	12	341		95	162	442		68		1,140	1.55	1,280	184	106	80	11	2,000	7.6
Jan. 11-20	342	15		46	8.4	227		84	117	305		28		849	1.15	784	150	80	77	8.1	1,430	7.4
Jan. 21-31	368	13		54	12	299		95	144	398		56		1,020	1.39	1,010	184	106	78	9.6	1,850	7.1
Feb. 1, 4-6, 8-10	511	15		58	9.5	269		130	135	338		55		965	1.31	1,330	184	77	76	8.7	1,680	7.0
Feb. 2-3, 7	629	16		62	14	436		122	149	610		55		1,400	1.90	2,380	212	112	82	13	2,530	7.3
Feb. 11-14	453	18		49	8.6	231		93	115	300		52		835	1.14	1,020	158	82	76	8.0	1,430	7.3
Feb. 15-16	1,040	14		62	12	434		145	142	585		68		1,390	1.89	3,900	204	85	82	13	2,410	7.5
Feb. 17-21	738	15		48	6.6	129		110	63	184		14		534	.73	1,060	147	57	66	4.6	936	7.5
Feb. 22-29	876	13		45	6.8	98		118	68	125		13		444	.60	1,050	140	44	60	3.7	752	7.5
Mar. 1-4, 13-16	1,513	13		39	6.4	77		95	59	100		13		378	.51	1,540	124	46	57	3.0	642	7.3
Mar. 5-12, 17-20	1,089	14		45	6.7	133		117	76	171		17		542	.74	1,590	140	44	68	4.9	939	7.2
Mar. 21-31	572	10		48	9.1	158		111	109	194		28		639	.87	987	158	66	69	5.5	1,100	7.2
Apr. 1-9	456	12		49	11	166		100	111	223		21		652	.89	803	168	86	68	5.5	1,160	8.1
Apr. 10-21	2,542	16		41	5.6	51		122	39	65		3.7		274	.37	1,880	125	25	47	2.0	489	8.0
Apr. 22-30	14,520	18		45	4.5	30		135	38	30		3.9		234	.32	9,170	131	20	33	1.1	391	8.1
May 1-4	16,710	20		47	4.5	27		136	39	28		3.3		257	.35	11,600	136	24	30	1.0	392	7.8
May 5-6, 26-31	13,020	16		52	4.8	73		150	45	95		3.5		396	.54	13,920	149	26	51	2.6	642	7.4
May 7-13	736	20		71	7.3	124		182	91	160		10		596	.81	1,180	207	58	57	3.8	994	7.5
May 14-25	4,204	15		44	3.7	58		133	38	70		3.9		314	.43	3,560	125	16	50	2.2	529	7.7
June 1-10	9,120	14		56	5.5	103		159	51	141		3.6		472	.64	11,620	162	32	58	3.6	823	8.1
June 11-20	963	12		55	6.9	134		165	62	180		4.4		550	.75	1,430	166	30	64	4.5	994	8.0
June 21-30	297	6.2		60	7.2	171		194	86	212		4.1		667	.91	535	179	20	68	5.6	1,180	8.2
July 1-5, 7-10, 27, 30	235	8.8		63	8.8	263		182	111	350		8.2		922	1.25	585	193	44	75	8.2	1,670	7.8
July 6, 11-20	291	11		77	11	420		192	156	575		23		1,370	1.86	1,080	237	80	79	12	2,500	7.8
July 21-26, 28-29, 31	290	14		80	11	422		190	161	580		25		1,390	1.89	1,090	244	89	79	12	2,520	7.8
Aug. 1-10	178	13		68	9.0	301		195	156	375		12		1,030	1.40	495	206	46	76	9.2	1,840	7.7
Aug. 11-20	182	20		70	9.6	348		178	172	435		40		1,180	1.60	580	214	68	78	10	2,090	7.6
Aug. 21-31	163	20		66	8.5	371		212	136	478		22		1,210	1.65	533	200	26	80	11	2,160	7.4
Sept. 1-9	181	28		71	10	454		255	117	612		13		1,430	1.94	699	218	9	82	13	2,640	8.2
Sept. 10-18	199	21		66	8.2	244		211	143	280		15		904	1.23	486	198	25	73	7.5	1,510	8.2
Sept. 19-30	200	24		66	11	428		188	226	510		39		1,400	1.90	756	210	56	82	13	2,440	7.5
Weighted average	1,663	16		50	5.6	93		140	57	119		9.1		434	0.59	1,949	148	34	58	3.3	738	--

TRINITY RIVER NEAR MOSS BLUFF, TEX.

LOCATION.--At Devers Pumping Plant Number One, one mile west of Moss Bluff, Liberty County.
RECORDS AVAILABLE.--Chemical analyses: Short periods during summers of 1946 to 1949, daily records October 1949 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 3,640 ppm Aug. 26-27; minimum, 198 ppm Feb. 4-6.
Hardness: Maximum, 782 ppm Aug. 26-27; minimum, 54 ppm Feb. 4-6.
Specific conductance: Maximum daily, 7,630 micromhos Aug. 27; minimum daily, 264 micromhos Feb. 6.
EXTREMES, 1949-52.--Dissolved solids: Maximum, 3,640 ppm Aug. 26-27, 1952; minimum, 110 ppm Oct. 4-10, 1949.
Hardness: Maximum, 782 ppm Aug. 26-27, 1952; minimum, 50 ppm Oct. 11-14, 26-27, 1949.
Specific conductance: Maximum daily, 7,630 micromhos Aug. 27, 1952; minimum daily, 127 micromhos Oct. 7, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-10, 1951		17		43	4.7	81		133	31	112		4.0		a358	0.49		127	18	58	3.1	643	7.4
Oct. 11-20		6.6		46	5.9	127		134	51	177		3.5		a483	.66		140	30	66	4.7	875	7.5
Oct. 21-31		5.6		43	10	142		124	58	208		3.0		555	.75		148	47	68	5.1	989	7.6
Nov. 1-10		6.6		51	9.6	151		140	72	214		4.0		611	.83		166	52	66	5.1	1,040	7.6
Nov. 11-14, 17-22		13		66	11	198		167	93	279		17		764	1.04		210	72	67	6.0	1,350	7.6
Nov. 15-16, 23-28		8.2		78	12	314		172	90	479		20		1,090	1.48		244	103	74	8.7	1,980	7.3
Dec. 1-10		12		48	8.1	141		124	57	207		8.3		549	.75		154	52	67	4.9	980	7.3
Dec. 11-20		15		50	9.6	162		119	71	238		12		623	.85		164	67	68	5.5	1,090	7.2
Dec. 21-31		18		56	8.0	187		126	78	272		15		724	.98		172	70	70	6.2	1,260	7.5
Jan. 1-10, 1952		14		56	8.1	193		129	90	270		17		744	1.01		173	68	71	6.4	1,300	7.4
Jan. 11-20		17		52	7.6	169		127	77	235		14		660	.90		160	56	70	5.8	1,150	7.5
Jan. 21-31		16		62	8.7	234		141	84	344		15		869	1.18		190	75	73	7.4	1,520	7.7
Feb. 1-3, 7-12		12		28	5.5	63		74	32	92		6.1		305	.41		92	32	60	2.8	506	7.0
Feb. 4-6		8.0		18	2.3	37		59	17	45		7.2		198	.27		54	6	60	2.2	292	6.9
Feb. 13-20		14		47	6.7	154		95	77	220		15		622	.85		145	67	70	5.6	1,050	7.2
Feb. 21, 27-29		17		50	7.9	234		89	64	365		14		867	1.18		158	84	76	8.1	1,470	7.5
Feb. 22-26		18		39	5.6	104		95	62	138		13		466	.63		120	42	65	4.1	758	7.6
Mar. 1, 10-13		15		49	9.7	241		88	59	385		12		840	1.14		162	90	76	8.2	1,510	7.4
Mar. 2-9		13		28	3.7	49	—	61	43	67		6.0		a240	.33		85	35	52	2.1	418	7.3
Mar. 14-20		14		36	5.1	71		103	37	98		5.8		346	.47		111	26	58	2.9	577	7.5
Mar. 21-31		16		42	6.0	61		105	51	84		7.0		342	.47		130	44	51	2.3	565	7.5
Apr. 1-6, 12-14		16		40	8.7	68		95	55	104		3.0		386	.52		136	58	52	2.5	625	7.7
Apr. 7-11, 15-20		10		23	5.1	30		63	31	41		3.0		201	.27		78	27	46	1.5	309	7.5
Apr. 21-30		10		27	4.2	28		83	26	34		3.0		200	.27		85	17	42	1.3	307	7.6
May 1-10, 27-31		18		39	3.5	26		123	27	27		1.5		216	.29		112	11	34	1.1	350	7.8
May 11-20		17		38	3.8	40		114	26	53		1.0		245	.33		110	17	44	1.6	420	7.8
May 21-26		17		38	4.0	56		106	37	75		1.5		291	.40		111	24	52	2.3	501	7.6
June 1-9		17		43	3.7	29		136	29	32		.2		228	.31		122	11	34	1.2	388	7.5
June 10-16		17		45	4.2	39		138	31	47		3.5		262	.36		130	16	40	1.5	445	7.7
June 17-30		18		56	5.0	64		170	40	83		2.5		366	.50		160	20	47	2.2	635	7.7
July 1-10		16		58	5.6	56	—	171	31	81		2.2		a334	.45		167	26	42	1.9	605	7.2
July 11-17, 20-23		10		29	4.1	49	—	87	21	72		.5		a229	.31		89	17	55	2.3	471	7.1
July 18-19, 24-31		19		55	6.1	79	—	160	35	118		1.5		a393	.53		163	32	51	2.7	709	8.2
Aug. 1-4, 9-12		21		64	7.2	119		188	46	173		3.2		544	.74		189	35	58	3.8	966	8.1
Aug. 5-8, 13-14, 19-22		18		68	11	174		174	67	270		1.5		718	.98		214	72	64	5.2	1,300	7.9
Aug. 15-18		15		74	19	261		136	100	435		1.8		997	1.36		262	151	68	7.0	1,860	7.7
Aug. 23-25, 28-31		16		86	38	444		200	121	740		2.8		1,550	2.11		370	206	72	10	2,810	7.5
Aug. 26-27		17		114	121	1,090		201	295	1,900		2.5		3,640	4.95		782	618	75	17	6,550	7.5
Sept. 1-7		20		76	24	314		214	93	495		1.5		1,130	1.54		288	112	70	8.0	2,090	8.2
Sept. 8-20		20		71	13	232		206	76	345		1.2		895	1.22		230	62	69	6.7	1,560	8.2
Sept. 21-30		18		70	12	270		206	80	395		1.0		994	1.35		224	55	72	7.8	1,720	8.1

a Sum of determined constituents.

OLD RIVER NEAR COVE, TEX.

LOCATION.--At Barber Hill Pumping Plant, 5 miles northwest of Cove, Chambers County.
RECORDS AVAILABLE.--Chemical analyses: Short periods during summers of 1946 to 1949, daily records October 1949 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 3,430 ppm Aug. 18-19, 22; minimum, 156 ppm Jan. 26-31, Apr. 21-30.
Hardness: Maximum, 701 ppm Aug. 18-19, 22; minimum, 57 ppm Jan. 26-31.
Specific conductance: Maximum daily, 7,710 micromhos Aug. 22; minimum daily, 224 micromhos Apr. 26, May 1.
EXTREMES, 1949-52.--Dissolved solids: Maximum, 3,430 ppm Aug. 18-19, 22, 1952; minimum, 156 ppm Jan. 26-31, Apr. 21-30, 1952.
Hardness: Maximum, 701 ppm Aug. 18-19, 22, 1952; minimum, 57 ppm Jan. 26-31, 1952.
Specific conductance: Maximum daily, 7,710 micromhos Aug. 22, 1952; minimum daily, 224 micromhos Apr. 26, May 1, 1952.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-10, 1951		17		58	14	184		137	57	303		2.0		767	1.04		202	90	66	5.6	1,270	7.7
Oct. 11-20		14		57	13	173		155	52	277		1.5		703	.96		196	68	66	5.4	1,200	7.6
Oct. 21-31		11		63	16	220		147	67	362		2.0		866	1.18		223	102	68	6.4	1,460	7.5
Nov. 1-10		15		61	15	171		166	53	278		2.0		699	.95		214	78	63	5.1	1,240	8.1
Nov. 11-20		15		61	14	169		175	52	268		2.0		678	.92		210	66	64	5.1	1,210	8.2
Nov. 21-30		15		62	14	168		183	51	265		1.5		683	.93		212	62	63	5.0	1,210	8.2
Dec. 1-6		15		64	14	163		174	54	262		2.8		678	.92		217	74	62	4.8	1,200	8.1
Dec. 7-10		17		36	6.4	53		75	51	82		1.8		304	.41		116	55	50	2.1	493	7.9
Dec. 11-20		19		45	8.1	73		100	60	112		1.8		380	.52		146	64	52	2.6	636	7.8
Dec. 21-31		19		48	8.5	74		109	60	116		1.2		396	.54		155	66	51	2.6	653	7.7
Jan. 1-10		22		51	9.0	76		121	58	120		1.0		397	.54		164	65	50	2.6	714	7.9
Jan. 11-25		18		53	9.5	90		132	60	139		1.0		456	.62		171	63	53	3.0	788	7.8
Jan. 26-31		13		16	4.2	27		48	24	36		2.2		156	.21		57	18	51	1.6	257	7.1
Feb. 1-10		13		18	3.9	31		56	25	39		2.0		163	.22		61	15	53	1.7	264	7.4
Feb. 11-20		13		32	5.5	41		95	30	58		1.8		232	.32		102	25	47	1.8	411	7.3
Feb. 21-29		15		42	6.8	66		116	32	104		1.8		339	.46		133	38	52	2.5	564	7.4
Mar. 1-10		14		44	8.5	64		130	35	99		1.2		374	.51		145	38	49	2.3	599	7.4
Mar. 11-20		14		43	6.7	69		122	38	102		1.8		379	.52		135	35	53	2.6	619	7.9
Mar. 21-31		14		46	9.0	72		131	38	114		1.8		404	.55		152	44	51	2.6	665	7.9
Apr. 1-10		7.1		43	9.2	90		120	43	140		1.2		432	.59		146	47	57	3.3	745	7.8
Apr. 11-12		12		--	--	106		116	54	142		5.1		410	.56		125	30	65	4.1	743	8.0
Apr. 14-20		20		20	3.6	34		56	28	43		4.6		a181	.25		65	19	54	1.9	301	7.5
Apr. 21-30		18		19	3.1	28		61	21	33		4.2		a156	.21		60	10	51	1.6	260	7.4
May 1-10		18		29	3.8	31		101	28	28		4.0		a192	.26		88	5	43	1.4	317	7.7
May 11-20		20		39	4.6	30		132	33	26		3.8		a221	.30		116	8	36	1.2	369	8.1
May 21-31		20		34	4.2	40		111	33	43		3.0		a232	.32		102	11	46	1.7	396	8.0
June 1-12		23		36	3.7	30		127	27	25		3.0		a210	.29		105	1	38	1.3	338	8.1
June 13-24		23		42	6.2	52	--	140	33	67		3.5		a296	.40		130	16	46	2.0	513	8.2
June 25-30		18		50	11	113		154	52	166		3.0		494	.67		170	44	59	3.8	886	8.2
July 1-4, 12-14, 19--		18		53	13	129	--	162	55	196		2.5		546	.74		186	53	60	4.1	997	8.2
July 5-11		14		64	30	310		154	98	515		3.5		1,110	1.51		283	157	70	8.0	2,060	7.9
July 16-18		14		30	7.9	79		102	43	105		3.0		a332	.45		108	24	61	3.3	577	7.9
July 21-31		17		44	7.2	93		b133	31	140		2.2		402	.55		140	38	59	3.4	735	8.4
Aug. 2-11, 23		17		74	21	287		136	102	478		3.2		1,050	1.43		271	160	70	7.6	1,950	8.2
Aug. 12-13, 20, 24-31		19		82	38	457		c192	133	750		.2		1,570	2.14		360	220	73	10	2,900	8.5
Aug. 14-17, 21		18		84	57	618		134	174	1,060		1.0		2,080	2.83		444	334	75	13	3,820	8.2
Aug. 18-19, 22		15		103	108	1,040		122	281	1,820		4.0		3,430	4.66		701	601	76	17	6,130	8.2
Sept. 1-10		18		86	41	476		d197	135	790		1.8		1,640	2.23		383	221	73	11	3,060	8.4
Sept. 11-20		18		82	38	473		e195	128	775		2.2		1,610	2.19		360	210	74	11	2,910	8.4

a Sum of determined constituents.
b Includes equivalent of 5 ppm of carbonate (CO_3).
c Includes equivalent of 10 ppm of carbonate (CO_3).
d Includes equivalent of 8 ppm of carbonate (CO_3).
e Includes equivalent of 6 ppm of carbonate (CO_3).

TRINITY RIVER AT ANAHUAC, TEX.

LOCATION.--At Lone Star Pumping Plant in Anahuac, Chambers County.
RECORDS AVAILABLE.--Chemical analyses: Short periods during the summers of 1946 to 1949, daily records December 1949 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 12,500 ppm Sept. 21-30; minimum, 226 ppm June 4-6, 8-12, 14.
Hardness: Maximum, 2,490 ppm Sept. 21-30; minimum, 84 ppm Apr. 19-22, 24-25, 28-30.
Specific conductance: Maximum daily, 22,000 micromhos Sept. 29-30; minimum daily, 330 micromhos June 4.
EXTREMES, 1949-51.--Dissolved solids: Maximum, 12,500 ppm Sept. 21-30, 1952; minimum, 184 ppm Mar. 1-10, 1950.
Hardness: Maximum, 2,490 ppm Sept. 21-30, 1952; minimum, 52 ppm Dec. 25-31, 1949.
Specific conductance: Maximum daily, 22,000 micromhos Sept. 29-30, 1952; minimum daily, 235 micromhos Dec. 27, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-2,6-9, 1951-----		17		34	9.1	98		101	25	159		2.5		408	0.55		122	40	63	3.8	726	7.7
Oct. 3,17,19-20, 22-23,25-26,30------		15		94	143	1,220		133	319	2,150		--		4,010	5.45		822	714	76	19	7,140	7.7
Oct. 4, 15-16, 31------		18		72	92	789		121	204	1,390		3.0		2,630	3.58		558	459	75	15	4,760	7.7
Oct. 5, 24, 27-29------		17		57	46	425		127	105	738		1.8		1,450	1.97		331	227	74	10	2,690	7.7
Oct. 10-14----------		19		45	25	242		122	60	410		1.5		916	1.25		216	116	71	7.2	1,610	7.7
Oct. 18, 21----------		18		144	293	2,340		132	610	4,190		--		7,660	10.4		1,560	1,460	76	26	13,200	7.9
Nov. 1-2, 7-9----------		12		53	26	277		134	77	460		2.2		a973	1.32		239	129	72	7.8	1,840	7.6
Nov. 3-6----------		10		98	155	1,300		122	345	2,310		--		4,280	5.82		882	782	76	19	7,570	7.6
Nov. 11-12, 16---------		11		59	35	340		140	84	585		3.0		1,190	1.62		291	176	72	8.7	2,180	8.0
Nov. 13-15, 19-20------		9.6		72	65	589		143	164	1,020		3.0		1,990	2.71		447	330	74	12	3,650	7.6
Nov. 17-18----------		18		54	22	204		149	46	352		1.5		811	1.10		225	103	66	5.9	1,410	8.1
Nov. 21-24----------		7.2		134	253	2,070		134	526	3,700		--		6,760	9.19		1,380	1,260	77	24	11,500	7.5
Nov. 25-30----------		13		81	91	765		148	202	1,350		3.0		2,580	3.51		576	454	74	14	4,730	7.5
Dec. 1-3----------		8.8		118	191	1,640		146	436	2,880		--		5,350	7.28		1,080	960	77	22	9,210	7.6
Dec. 4-8----------		10		78	58	564		158	162	960		10		1,920	2.61		433	304	74	12	3,510	7.6
Dec. 9-10----------		18		54	18	189		146	57	310		4.5		754	1.03		208	89	66	5.7	1,320	8.1
Dec. 11-15, 18-20------		12		50	17	185		132	60	300		4.5		726	.99		195	87	67	5.8	1,340	8.0
Dec. 16-17----------		12		175	427	3,570		119	875	6,340		--		11,500	15.6		2,190	2,100	78	33	18,600	8.0
Dec. 21-23, 27---------		12		46	15	156		134	39	258		1.2		630	.86		176	66	66	5.1	1,130	8.0
Dec. 24-26, 28---------		12		52	25	247		136	61	420		1.8		930	1.26		232	121	70	7.1	1,680	8.0
Dec. 29-31----------		12		62	59	536		130	137	930		1.5		1,800	2.45		397	290	75	12	3,240	8.0
Jan. 1,3-6,8-10, 1952--		12		44	14	139		124	38	232		1.0		580	.79		168	66	64	4.7	1,040	7.7
Jan. 2, 7----------		19		55	46	386		126	100	678		1.8		1,350	1.84		326	223	72	9.3	2,490	8.1
Jan. 11-12, 25---------		13		133	277	2,240		126	551	4,020		--		7,300	9.93		1,470	1,370	77	25	12,400	7.8
Jan. 18, 20-21---------		11		50	28	265		128	71	450		4.5		a942	1.28		240	135	71	7.4	1,760	8.0
Jan. 13-15,17,19,22----		12		58	46	428		129	114	735		4.0		1,460	1.99		334	228	74	10	2,690	7.5
Jan. 23,27,29-31-------		11		48	17	178		132	54	292		1.5		718	.98		190	82	67	5.6	1,220	7.4
Jan. 24, 26----------		13		97	168	1,350		129	337	2,420		--		4,450	6.05		933	828	76	19	7,960	7.9
Feb. 1-10----------		7.4		28	8.5	125	--	60	18	222		1.0		498	.68		105	56	72	5.3	864	7.1
Feb. 11-20----------		9.6		32	9.1	146		61	18	258		2.2		546	.74		118	68	73	5.8	988	7.2
Feb. 21, 23-29---------		11		30	8.5	138		68	19	236		1.5		514	.70		110	54	73	5.7	916	7.0
Mar. 1-10----------		12		32	8.5	128		74	32	210		3.0		503	.68		115	54	71	5.2	859	6.9
Mar. 11, 13-20---------		17		34	8.6	118		82	19	203		4.5		450	.61		120	54	68	4.7	846	7.1
Mar. 21-27, 29-31------		15		38	7.1	99		97	34	156		5.2		436	.59		124	44	63	3.9	752	7.4
Apr. 1-10----------		12		36	8.8	115		93	24	194		2.8		485	.66		126	50	67	4.5	851	7.2
Apr. 11-13,15-18,23----		13		32	7.1	109		82	22	181		2.2		460	.63		109	42	69	4.6	777	7.9
Apr. 19-22,24-25,28-30-		8.8		24	5.8	82		62	15	138		1.9		321	.44		84	33	68	3.9	565	7.6

a Sum of determined constituents.

TRINITY RIVER AT ANAHUAC, TEX.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
May 1-10, 1952		11		32	4.7	46		95	24	67		2.6		241	0.33		99	21	50	2.0	423	7.6
May 11-19		13		41	4.7	40		120	31	54		1.7		253	.34		122	23	42	1.6	431	7.6
May 21-31		19		26	6.2	62		86	17	96		2.2		291	.40		90	20	60	2.8	504	8.0
June 1-3,7-13,15-20		18		41	5.6	46		130	29	62		2.2		281	.38		125	19	45	1.8	479	8.0
June 4-6,8-12,14		19		38	4.0	30		124	28	30		3.2		226	.31		111	10	37	1.2	359	7.8
June 21-24, 29		21		54	8.8	97		153	50	143		2.2		466	.63		171	46	55	3.2	821	8.2
June 25-28, 30		17		59	21	208		153	76	340		2.2		857	1.17		234	108	66	5.9	1,510	8.1
July 1-2, 19-20		15		58	23	224		142	75	375		2.8		913	1.24		239	122	67	6.3	1,580	7.8
July 3-4, 7-12		13		75	63	603		134	172	1,040		2.5		2,030	2.76		446	336	75	12	3,770	7.7
July 5-6, 13-18		12		81	116	1,050		106	269	1,840		3.5		3,420	4.65		679	592	77	18	6,170	7.5
July 21-28		12		41	12	129		101	43	214		1.8		538	.73		152	69	65	4.5	964	7.8
July 29-30, Aug. 1		13		51	26	270		106	79	460		4.2		a955	1.30		234	147	71	7.7	1,800	7.8
July 31, Aug. 2-3,5,7		14		64	62	586		104	156	1,020		2.5		1,960	2.67		414	330	75	13	3,520	7.7
Aug. 4, 6, 8-10		12		94	150	1,330		95	337	2,350		--		4,320	5.88		852	774	77	20	7,750	7.1
Aug. 11-20		11		122	242	2,080		95	519	3,690		--		6,710	9.13		1,300	1,220	78	25	11,600	7.2
Aug. 21-31		13		138	289	2,420		98	615	4,310		--		7,830	10.6		1,530	1,450	77	27	13,400	7.8
Sept. 1-7		14		146	327	2,660		98	680	4,760		--		8,640	11.8		1,710	1,630	77	28	14,700	7.5
Sept. 8-20		12		200	442	3,580		106	909	6,430		--		11,600	15.8		2,320	2,230	77	32	19,300	7.5
Sept. 21-30		15		258	450	3,860		114	998	6,910		--		12,500	17.0		2,490	2,400	77	34	20,200	7.7

a Sum of determined constituents.

TRINITY BAY AT MOUTH OF TRINITY RIVER NEAR ANAHUAC, TEX.

LOCATION.--At seven sampling stations in Trinity Bay opposite mouth of Trinity River, near Anahuac, Chambers County. Station 1 - In upper reaches of New Navigation Channel at Fort Anahuac. Station 2 - In Anahuac Channel immediately below delta, about half a mile west of Station 1. Station 3 - In Anahuac Channel about 1½ miles southwest of Station 2. Station 4 - In Trinity Bay at mid-point between Station 3 and New Navigation Channel. Station 5 - In Trinity Bay at mid-point between Ash Point and south end of Anahuac Channel. Station 6 - In Anahuac Channel at south end. Station 7 - In Trinity Bay about 1½ miles west of Station 6.
RECORDS AVAILABLE.--Chemical analyses: Biweekly October 1950 to September 1952.
REMARKS.--Top and bottom samples collected at all points except Stations 4 and 5.

Specific conductance (micromhos at 25° C) and chloride in parts per million, water year October 1951 to September 1952

Station Number	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride
	Oct. 3, 1951		Oct. 16, 1951		Nov. 14, 1951		Dec. 12, 1951		Jan. 10, 1952	
1 Top	23,800	8,330	23,500	8,310	23,900	8,330	24,300	8,330	28,300	10,100
1 Bottom	23,800	8,330	23,500	8,330	23,900	8,330	24,300	8,430	28,300	10,200
2 Top	5,900	1,740	4,340	1,210	12,100	3,840	3,450	900	3,370	900
2 Bottom	18,900	6,410	5,190	1,500	19,800	6,680	17,300	5,770	15,700	5,180
3 Top	6,680	2,000	7,370	2,260	12,700	4,040	3,960	1,070	4,800	1,380
3 Bottom	19,800	6,780	24,200	8,580	17,400	5,770	18,400	6,370	7,800	2,400
4 Shallow	19,200	6,540	7,070	2,120	13,600	4,360	8,040	2,480	7,020	2,110
5 Shallow	18,300	6,260	7,070	2,150	13,000	4,160	7,960	2,480	7,110	2,110
6 Top	18,100	6,140	7,070	2,160	13,400	4,310	18,000	6,170	7,070	2,150
6 Bottom	21,900	7,660	21,200	7,420	19,800	6,660	27,300	9,980	29,100	10,500
7 Top	18,300	6,240	7,070	2,160	12,700	4,090	18,100	6,190	7,140	2,120
7 Bottom	18,700	6,440	22,300	8,040	23,300	8,040	27,100	9,750	9,630	3,020
	Oct. 5, 1951		Oct. 23, 1951		Nov. 22, 1951		Dec. 19, 1951		Jan. 16, 1952	
1 Top	23,800	8,330	23,900	8,330	24,800	8,680	23,000	8,210	28,600	10,300
1 Bottom	23,800	8,330	23,900	8,330	24,800	8,710	23,200	8,230	28,600	10,400
2 Top	11,300	3,570	4,350	1,190	8,260	2,500	4,080	1,150	9,190	2,800
2 Bottom	17,100	5,770	5,100	1,480	23,300	8,060	21,200	7,600	26,200	9,240
3 Top	14,700	4,860	7,470	2,270	11,800	3,720	4,140	1,170	--	--
3 Bottom	16,400	5,500	24,900	8,800	19,400	6,560	21,600	7,520	29,300	10,500
4 Shallow	20,600	7,100	7,110	2,100	16,100	5,280	7,860	2,420	29,100	10,400
5 Shallow	20,600	7,120	7,080	2,140	15,900	5,250	7,910	2,450	29,100	10,500
6 Top	20,600	7,120	7,150	2,160	15,900	5,250	7,800	2,420	29,100	10,400
6 Bottom	21,300	7,350	20,300	6,950	25,100	8,800	22,700	8,010	--	--
7 Top	19,900	6,850	7,220	2,150	16,100	5,330	7,860	2,420	29,100	10,400
7 Bottom	20,200	6,950	23,700	8,310	25,000	8,710	17,000	5,850	29,100	10,400
	Oct. 9, 1951		Oct. 30, 1951		Nov. 29, 1951		Dec. 27, 1951		Jan. 25, 1952	
1 Top	23,700	8,330	22,200	7,740	--	--	19,400	6,760	28,000	10,500
1 Bottom	23,800	8,330	22,800	7,910	26,600	9,530	23,900	8,610	28,000	10,500
2 Top	6,530	1,950	11,800	3,740	10,100	3,120	9,000	2,850	4,980	1,470
2 Bottom	6,580	1,960	11,800	3,770	20,300	6,980	19,300	6,760	--	--
3 Top	14,700	4,860	12,500	4,040	17,400	5,920	12,900	4,290	6,920	2,150
3 Bottom	16,200	5,400	17,200	5,750	24,100	8,610	21,700	7,770	7,050	2,180
4 Shallow	20,600	7,080	13,200	4,260	18,300	6,270	23,900	8,560	6,920	2,140
5 Shallow	20,600	7,080	13,400	4,390	18,200	6,290	23,900	8,580	6,960	2,140
6 Top	18,700	6,410	19,700	6,710	18,000	6,220	23,800	8,580	6,960	2,160
6 Bottom	21,100	7,350	20,900	7,200	23,300	8,380	26,100	9,440	7,000	2,160
7 Top	18,600	6,390	12,600	4,040	18,100	6,320	23,800	8,580	6,910	2,130
7 Bottom	19,600	6,830	23,900	8,460	23,000	8,310	27,100	9,980	6,910	2,130
	Oct. 12, 1951		Nov. 7, 1951		Dec. 5, 1951		Jan. 3, 1952		Feb. 5, 1952	
1 Top	23,700	8,310	23,900	8,310	25,600	9,240	--	--	14,400	4,910
1 Bottom	23,800	8,330	23,900	8,330	25,600	9,240	24,600	8,580	14,300	4,880
2 Top	4,120	1,130	12,100	3,840	3,450	960	3,150	810	495	112
2 Bottom	16,600	5,600	19,200	6,460	4,070	1,100	20,000	6,830	493	122
3 Top	7,180	2,170	12,000	3,790	8,250	2,580	4,270	1,180	515	120
3 Bottom	24,900	8,850	12,000	3,790	15,100	5,100	28,100	10,100	515	120
4 Shallow	7,250	2,180	13,200	4,240	18,300	6,340	4,350	1,200	572	130
5 Shallow	7,910	2,450	12,900	4,110	18,500	6,410	4,220	1,190	572	129
6 Top	7,550	2,350	13,000	4,160	8,650	2,720	4,220	1,190	572	130
6 Bottom	24,900	8,880	13,600	4,390	26,200	9,560	27,000	9,730	582	132
7 Top	7,470	2,270	12,600	4,060	8,690	2,720	4,310	1,200	572	130
7 Bottom	19,900	6,850	13,600	4,390	26,000	9,420	20,500	7,030	583	132

TRINITY BAY AT MOUTH OF TRINITY RIVER NEAR ANAHUAC, TEX.--Continued

Specific conductance (micromhos at 25° C) and chloride in parts per million, water year October 1951 to September 1952--Continued

Station Number	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride
	Feb. 12, 1952		Mar. 12, 1952		Apr. 9, 1952		Apr. 21, 1952		Apr. 30, 1952	
1 Top	19,200	6,540	15,100	4,960	11,000	3,490	10,200	3,200	6,500	1,960
1 Bottom	19,400	6,610	15,700	5,180	11,100	3,520	10,200	3,200	6,740	2,040
2 Top	502	113	555	88	782	143	394	61	353	35
2 Bottom	500	113	510	89	790	144	388	62	346	36
3 Top	523	121	497	86	806	149	1,170	288	351	37
3 Bottom	527	122	788	165	1,300	290	2,580	710	346	37
4 Shallow	583	131	697	143	812	152	1,100	265	351	36
5 Shallow	576	130	728	151	812	151	1,100	268	421	49
6 Top	573	128	722	142	833	156	1,170	285	348	36
6 Bottom	576	132	6,820	2,050	1,760	432	1,460	368	351	36
7 Top	575	130	745	142	798	150	1,130	275	346	37
7 Bottom	575	130	12,500	3,970	1,500	352	1,130	275	348	37
	Feb. 20, 1952		Mar. 19, 1952		Apr. 14, 1952		Apr. 23, 1952		May 3, 1952	
1 Top	14,400	4,710	13,200	4,260	11,000	3,470	10,000	3,170	4,590	1,320
1 Bottom	14,700	4,860	13,100	4,260	11,000	3,490	10,100	3,200	4,980	1,380
2 Top	644	146	794	150	467	87	643	119	348	37
2 Bottom	669	152	4,000	1,560	--	--	640	120	359	37
3 Top	1,000	252	8,590	2,660	387	62	654	126	369	41
3 Bottom	2,220	602	8,270	2,560	401	65	649	124	350	37
4 Shallow	1,780	470	6,790	2,040	--	--	5,600	1,670	434	50
5 Shallow	1,740	455	6,790	2,040	423	68	5,340	1,560	366	38
6 Top	1,570	410	6,820	2,050	421	69	5,420	1,610	351	37
6 Bottom	1,710	452	10,400	3,270	411	66	12,000	3,820	368	37
7 Top	1,490	385	6,840	2,060	484	84	5,450	1,600	362	36
7 Bottom	1,730	455	6,840	2,030	--	--	14,900	4,880	352	37
	Feb. 27, 1952		Mar. 26, 1952		Apr. 16, 1952		Apr. 26, 1952		May 5, 1952	
1 Top	14,300	4,660	13,100	4,260	11,000	3,470	6,400	1,930	4,550	1,300
1 Bottom	14,800	4,830	13,200	4,240	11,100	3,540	6,770	2,030	4,720	1,370
2 Top	1,300	292	715	148	435	71	643	126	332	22
2 Bottom	1,310	290	5,520	1,620	431	72	634	120	328	20
3 Top	1,260	282	1,670	420	423	69	634	125	326	20
3 Bottom	1,350	308	1,670	420	423	69	655	122	332	20
4 Shallow	7,130	2,160	6,770	2,020	424	69	5,610	1,650	370	24
5 Shallow	7,890	2,400	6,770	2,030	434	72	5,430	1,590	340	21
6 Top	7,190	2,170	6,770	2,020	423	68	5,360	1,570	334	20
6 Bottom	16,300	5,430	10,000	3,180	420	69	13,400	4,310	327	21
7 Top	7,860	2,420	6,680	2,050	420	70	5,490	1,610	333	20
7 Bottom	15,700	5,300	6,680	2,050	415	69	13,300	4,290	359	24
	Mar. 5, 1952		Apr. 2, 1952		Apr. 19, 1952		Apr. 28, 1952		May 7, 1952	
1 Top	15,200	4,960	12,700	4,140	10,700	3,340	6,390	1,910	3,130	870
1 Bottom	15,800	5,200	12,800	4,140	10,600	3,370	6,510	1,960	3,160	870
2 Top	941	174	682	111	434	70	241	28	344	20
2 Bottom	895	174	--	--	428	72	478	93	344	20
3 Top	888	187	1,590	378	421	69	245	28	342	20
3 Bottom	841	171	2,940	780	419	68	250	29	362	22
4 Shallow	811	166	1,680	405	423	69	246	28	413	35
5 Shallow	811	166	1,720	405	445	73	243	26	355	22
6 Top	794	163	1,720	410	438	73	273	34	346	20
6 Bottom	794	164	10,200	3,170	418	68	247	29	346	20
7 Top	817	168	1,720	412	440	75	259	29	339	19
7 Bottom	811	173	12,000	3,840	430	72	259	30	378	22

TRINITY BAY AT MOUTH OF TRINITY RIVER NEAR ANAHUAC, TEX.--Continued

Specific conductance (micromhos at 25° C) and chloride in parts per million, water year October 1951 to September 1952--Continued

Station Number	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride
	May 10, 1952		May 19, 1952		May 28, 1952		June 7, 1952		June 16, 1952	
1 Top	3,130	870	3,250	880	2,780	750	1,790	445	2,180	552
1 Bottom	3,130	870	3,200	850	2,830	760	1,790	445	2,180	550
2 Top	347	22	507	64	354	34	316	25	397	40
2 Bottom	341	21	505	62	374	41	351	27	400	40
3 Top	345	22	512	61	321	31	331	24	409	42
3 Bottom	378	27	593	72	324	32	342	32	406	42
4 Shallow	344	20	539	64	366	34	319	26	406	42
5 Shallow	341	21	606	83	332	33	319	24	396	40
6 Top	354	32	547	69	329	32	314	26	395	40
6 Bottom	346	20	541	65	329	32	324	26	398	42
7 Top	342	22	523	62	321	32	329	27	407	40
7 Bottom	340	20	540	62	435	59	322	25	407	41
	May 12, 1952		May 21, 1952		May 31, 1952		June 9, 1952		June 18, 1952	
1 Top	3,160	880	3,210	880	2,820	760	1,790	445	2,180	555
1 Bottom	3,160	870	3,210	870	2,850	770	1,790	445	2,180	552
2 Top	378	34	297	35	331	34	336	22	493	58
2 Bottom	378	34	358	53	329	22	334	24	489	58
3 Top	384	33	318	40	313	34	345	24	489	58
3 Bottom	429	46	329	42	334	44	361	24	491	59
4 Shallow	382	36	327	40	312	36	339	24	480	56
5 Shallow	374	33	316	38	303	32	328	24	482	56
6 Top	372	32	329	42	322	32	342	25	480	56
6 Bottom	373	34	317	38	349	40	340	25	482	56
7 Top	372	33	317	39	338	33	334	26	482	56
7 Bottom	383	34	336	43	373	44	352	28	483	57
	May 14, 1952		May 24, 1952		June 2, 1952		June 11, 1952		June 21, 1952	
1 Top	2,910	720	3,210	860	1,780	444	1,790	440	2,180	550
1 Bottom	2,960	730	3,200	880	1,780	445	1,790	445	2,180	548
2 Top	433	47	293	35	318	31	367	34	499	57
2 Bottom	436	49	291	35	358	34	368	34	495	57
3 Top	466	54	312	39	320	32	362	34	491	57
3 Bottom	462	54	319	40	325	35	362	34	491	57
4 Shallow	479	52	346	45	324	34	362	34	484	56
5 Shallow	481	60	316	39	323	34	362	34	493	59
6 Top	456	51	314	38	329	34	360	34	488	57
6 Bottom	461	53	338	46	326	32	366	34	488	60
7 Top	455	52	293	36	317	32	363	34	492	56
7 Bottom	464	54	296	36	334	33	366	34	487	56
	May 17, 1952		May 26, 1952		June 4, 1952		June 14, 1952		June 23, 1952	
1 Top	2,710	725	3,190	880	1,770	440	1,770	442	2,200	555
1 Bottom	2,710	725	3,200	870	2,130	538	1,770	442	2,200	550
2 Top	405	37	336	43	314	24	366	33	658	95
2 Bottom	404	41	336	43	352	29	366	34	655	98
3 Top	456	51	336	40	317	25	361	34	659	100
3 Bottom	456	51	338	42	323	26	364	34	699	108
4 Shallow	457	54	335	42	317	25	364	34	659	100
5 Shallow	471	56	335	42	316	25	420	48	655	100
6 Top	464	56	335	42	323	25	362	34	659	100
6 Bottom	464	54	338	42	316	25	371	35	676	106
7 Top	458	51	336	40	324	25	363	34	671	102
7 Bottom	502	60	336	44	324	25	366	34	692	108

TRINITY BAY AT MOUTH OF TRINITY RIVER NEAR ANAHUAC, TEX.--Continued

Specific conductance (micromhos at 25° C) and chloride in parts per million, water year October 1951 to September 1952--Continued

Station Number	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride
	June 25, 1952		July 5, 1955		July 14, 1952		July 23, 1952		Aug. 4, 1952	
1 Top	3,800	1,060	2,220	565	6,370	1,880	6,450	1,940	9,380	2,950
1 Bottom	3,790	1,060	2,310	585	6,400	1,920	6,450	1,940	9,380	2,950
2 Top	--	--	3,090	840	6,560	1,970	906	198	4,970	1,450
2 Bottom	1,130	225	3,160	860	6,560	1,970	906	198	5,060	1,470
3 Top	1,450	325	2,900	760	6,780	2,040	890	193	6,800	2,040
3 Bottom	1,470	330	3,130	860	6,870	2,080	895	197	6,890	2,070
4 Shallow	1,440	325	3,450	940	7,090	2,140	915	202	6,420	1,920
5 Shallow	1,440	320	3,440	950	7,090	2,130	918	206	6,420	1,920
6 Top	1,440	320	3,520	970	--	--	973	217	6,420	1,920
6 Bottom	1,420	315	5,780	1,710	7,270	2,200	993	222	6,820	2,050
7 Top	1,440	320	3,620	1,000	7,090	2,160	915	203	6,430	1,930
7 Bottom	1,410	315	5,790	1,700	7,220	2,200	945	210	6,720	2,030
	June 28, 1952		July 7, 1952		July 16, 1952		July 28, 1952		Aug. 6, 1952	
1 Top	3,260	880	2,270	568	--	--	6,870	2,080	10,600	3,370
1 Bottom	3,350	910	2,340	580	6,440	1,940	6,870	2,060	10,700	3,340
2 Top	1,140	225	4,470	1,280	7,910	2,450	2,040	525	6,930	2,100
2 Bottom	1,130	228	4,490	1,260	7,910	2,425	2,040	528	7,090	2,150
3 Top	1,460	328	5,150	1,490	7,850	2,425	3,080	860	7,720	2,350
3 Bottom	1,470	330	5,190	1,510	8,500	2,650	3,900	1,100	7,750	2,380
4 Shallow	1,460	325	5,290	1,540	9,200	2,900	4,520	1,300	8,130	2,500
5 Shallow	1,440	325	5,290	1,540	9,140	2,850	4,520	1,300	8,130	2,450
6 Top	1,440	320	5,290	1,540	--	--	4,580	1,320	8,190	2,550
6 Bottom	1,420	315	--	--	12,600	4,140	4,760	1,370	8,290	2,550
7 Top	1,440	325	5,290	1,540	9,140	2,900	4,560	1,310	8,290	2,570
7 Bottom	1,410	312	5,390	1,570	12,600	4,090	4,760	1,370	8,360	2,600
	June 30, 1952		July 9, 1952		July 19, 1952		July 30, 1952		Aug. 9, 1952	
1 Top	2,380	612	4,080	1,150	--	--	6,860	2,090	10,700	3,340
1 Bottom	2,920	780	4,720	1,360	6,420	1,910	6,830	2,070	10,700	3,390
2 Top	1,930	475	2,840	750	7,930	2,450	4,510	1,310	6,960	2,100
2 Bottom	2,100	528	2,870	750	7,950	2,420	4,600	1,340	7,050	2,140
3 Top	2,730	728	3,250	880	--	--	6,560	1,970	7,700	2,350
3 Bottom	2,730	720	3,280	890	10,200	3,220	7,230	2,190	7,730	2,400
4 Shallow	3,310	900	3,600	1,010	9,240	2,900	6,190	1,840	8,170	2,500
5 Shallow	3,290	910	3,600	1,000	9,180	2,900	6,410	1,930	8,170	2,520
6 Top	3,290	890	3,610	1,000	9,330	2,950	6,230	1,860	8,210	2,520
6 Bottom	3,670	1,020	3,960	1,100	12,100	3,890	7,090	2,150	8,290	2,550
7 Top	3,290	900	3,640	1,010	9,210	2,820	6,110	1,820	8,290	2,570
7 Bottom	3,590	990	3,840	1,070	9,210	2,950	6,230	1,880	8,290	2,570
	July 2, 1952		July 12, 1952		July 21, 1952		Aug. 2, 1952		Aug. 11, 1955	
1 Top	2,470	630	4,030	1,140	6,450	1,930	9,420	2,920	11,100	3,520
1 Bottom	2,920	780	4,720	1,360	6,450	1,930	9,420	2,920	11,100	3,520
2 Top	3,060	830	2,820	740	983	218	4,570	1,320	13,800	4,490
2 Bottom	3,090	830	2,840	760	1,100	245	4,650	1,350	13,900	4,490
3 Top	2,860	770	3,260	880	1,180	270	6,610	1,960	13,900	4,460
3 Bottom	3,180	850	3,300	900	9,480	3,000	7,320	2,200	13,900	4,490
4 Shallow	3,540	980	3,610	1,000	11,400	3,620	6,280	1,860	12,400	3,940
5 Shallow	3,440	940	3,610	1,000	11,400	3,620	6,490	1,930	12,300	3,920
6 Top	3,520	960	3,660	1,010	11,400	3,620	6,310	1,860	12,300	3,920
6 Bottom	5,630	1,650	3,830	1,070	11,800	3,790	7,180	2,150	12,600	4,020
7 Top	3,630	990	3,650	1,000	11,500	3,670	6,200	1,830	12,300	3,920
7 Bottom	5,330	1,550	3,860	1,080	11,800	3,820	7,210	2,160	12,300	3,920

TRINITY BAY AT MOUTH OF TRINITY RIVER NEAR ANAHUAC, TEX.--Continued

Specific conductance (micromhos at 25° C) and chloride in parts per million, water year October 1951 to September 1952--Continued

Station Number	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride	Specific conductance	Chloride
	Aug. 13, 1952		Aug. 23, 1952		Sept. 1, 1952		Sept. 10, 1952		Sept. 20, 1952	
1 Top	11,200	3,540	21,000	7,130	27,210	9,730	26,700	9,600	27,800	9,950
1 Bottom	11,200	3,540	21,000	7,110	27,440	9,850	26,700	9,580	27,800	9,980
2 Top	11,800	3,790	12,400	3,940	14,070	4,660	21,800	7,620	19,600	6,810
2 Bottom	11,900	3,790	13,020	4,190	14,070	4,660	21,800	7,620	19,900	6,960
3 Top	11,700	3,740	13,120	4,240	14,370	4,790	24,100	8,580	20,300	7,080
3 Bottom	11,800	3,770	13,230	4,240	15,440	5,200	24,100	8,560	23,600	8,360
4 Shallow	10,900	3,440	13,120	4,210	15,730	5,300	24,200	8,610	21,300	7,450
5 Shallow	10,900	3,420	13,070	4,240	15,730	5,300	24,100	8,560	21,300	7,420
6 Top	11,600	3,670	13,070	4,210	15,730	5,250	24,100	8,580	21,300	7,450
6 Bottom	11,700	3,720	13,070	4,240	15,890	5,380	24,100	8,630	23,400	8,260
7 Top	11,600	3,690	13,070	4,190	15,660	5,280	24,100	8,560	21,300	7,420
7 Bottom	11,600	3,690	13,070	4,210	15,810	5,330	24,100	8,560	23,400	8,330
	Aug. 16, 1952		Aug. 25, 1952		Sept. 3, 1952		Sept. 13, 1952		Sept. 22, 1952	
1 Top	8,750	2,720	22,880	7,960	28,460	10,150	27,000	9,630	27,800	10,000
1 Bottom	11,000	3,470	23,190	8,060	28,460	10,200	27,000	9,600	27,800	10,000
2 Top	11,900	3,790	13,470	4,390	16,010	5,300	21,900	6,640	24,800	8,770
2 Bottom	12,000	3,790	13,470	4,440	16,010	5,350	21,800	8,610	24,800	8,890
3 Top	11,700	3,690	13,360	4,390	16,400	5,500	24,200	8,530	25,300	9,040
3 Bottom	11,900	3,740	13,360	4,390	16,400	5,500	24,200	8,580	25,900	9,240
4 Shallow	11,100	3,440	13,100	4,310	17,250	5,820	24,200	8,630	26,100	9,370
5 Shallow	11,100	3,470	13,100	4,310	17,250	5,820	25,200	8,580	26,100	9,370
6 Top	11,800	3,720	13,150	4,310	17,250	5,800	24,200	8,560	26,100	9,390
6 Bottom	11,800	3,690	13,250	4,360	17,250	5,800	24,200	8,580	26,900	9,700
7 Top	11,800	3,720	13,250	4,310	17,080	5,770	24,000	8,530	25,900	9,370
7 Bottom	11,800	3,690	13,250	4,340	17,250	5,820	24,000	8,580	26,300	9,700
	Aug. 18, 1952		Aug. 27, 1952		Sept. 6, 1952		Sept. 15, 1952		Sept. 24, 1952	
1 Top	9,240	2,900	23,030	7,960	27,070	9,600	26,800	9,650	27,700	10,000
1 Bottom	11,000	3,490	23,030	8,010	27,070	9,600	26,800	9,630	27,700	10,000
2 Top	12,400	3,990	15,110	4,960	15,930	5,300	21,500	7,520	23,500	8,380
2 Bottom	12,600	4,040	15,460	5,080	15,930	5,350	25,800	9,270	25,800	9,290
3 Top	12,000	3,820	14,710	4,810	16,320	5,530	25,800	9,350	25,300	9,090
3 Bottom	12,000	3,820	15,110	5,000	16,320	5,500	28,400	10,200	26,600	9,600
4 Shallow	12,300	3,970	15,390	5,080	17,160	5,820	26,200	9,370	27,500	10,000
5 Shallow	12,300	3,970	15,390	5,100	17,160	5,820	26,000	9,290	27,500	9,950
6 Top	12,300	3,920	15,390	5,100	17,160	5,820	26,000	9,290	27,500	9,950
6 Bottom	12,500	3,990	15,830	5,230	17,160	5,820	28,400	10,200	27,500	10,000
7 Top	12,300	3,940	15,390	5,080	16,900	5,750	26,200	9,320	27,500	10,000
7 Bottom	12,400	3,970	15,750	5,180	17,160	5,850	28,400	10,200	27,500	10,000
	Aug. 20, 1952		Aug. 30, 1952		Sept. 8, 1952		Sept. 17, 1952		Sept. 27, 1952	
1 Top	19,880	6,730	24,590	8,630	26,800	9,460	26,800	9,650	27,700	10,100
1 Bottom	20,120	6,810	24,780	8,680	26,800	9,460	27,500	9,850	27,700	10,100
2 Top	12,400	3,990	15,090	4,960	18,100	6,120	19,700	6,780	23,500	8,380
2 Bottom	12,870	4,160	15,090	4,980	19,100	6,460	23,700	8,410	25,600	9,290
3 Top	12,970	4,190	14,690	4,860	17,400	5,870	20,400	7,060	25,300	9,120
3 Bottom	13,070	4,290	15,370	5,100	21,200	7,350	24,200	8,530	26,400	9,600
4 Shallow	12,970	4,190	15,300	5,080	19,700	6,760	21,200	7,450	27,200	9,930
5 Shallow	12,970	4,210	15,300	5,050	19,700	6,760	21,200	7,450	27,200	9,980
6 Top	13,020	4,190	15,230	5,080	19,200	6,560	21,200	7,450	27,200	9,930
6 Bottom	13,070	4,210	15,510	5,150	23,700	8,330	23,200	8,260	27,200	10,000
7 Top	13,020	4,240	15,230	5,050	19,200	6,560	21,100	7,420	27,200	9,950
7 Bottom	13,070	4,240	15,730	5,250	23,700	8,430	23,100	8,280	27,000	10,000

TRINITY BAY AT MOUTH OF TRINITY RIVER NEAR ANAHUAC, TEX.--Continued

Specific conductance (micromhos at 25° C) and chloride in parts per million, water year October 1951 to September 1952--Continued

Station Number	Specific conductance	Chloride
	Sept. 29, 1952	
1 Top	27,700	10,000
1 Bottom	27,700	10,100
2 Top	17,800	8,970
2 Bottom	24,700	10,100
3 Top	19,300	6,730
3 Bottom	25,300	9,070
4 Shallow	26,000	9,490
5 Shallow	26,000	9,440
6 Top	26,000	9,460
6 Bottom	26,800	9,800
7 Top	26,000	9,460
7 Bottom	26,600	9,700

MISCELLANEOUS ANALYSES OF STREAMS IN TRINITY RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
EAGLE MOUNTAIN RESERVOIR ABOVE FORT WORTH																						
Apr. 2, 1952----	--	5.6	0.01	40	7.3	17	1.2	151	15	21	0.3	0.5	0.10	a182	0.32		130	6	22	0.6	335	7.7
LAKE WORTH NEAR FORT WORTH																						
Mar. 31, 1952---	--	5.6	.05	43	7.8	18	.8	161	17	23	.4	.2	.12	197	.27		139	7	22	.7	363	7.9
WEST FORK TRINITY RIVER AT FORT WORTH																						
Apr. 1, 1952----	45	5.4	.01	49	9.5	23	2.8	184	22	27	.4	1.5	.12	237	.32		161	10	23	.8	426	7.5
ELM FORK TRINITY RIVER NEAR CARROLLTON																						
Mar. 29, 1952---	22	6.0	.01	54	6.3	35	.4	169	35	43	.3	.8	.18	277	.38		161	22	32	1.2	481	7.9
TRINITY RIVER AT DALLAS																						
Apr. 1, 1952----	106	10	.35	63	8.7	165	38	291	207	119	1.2	7.7	.19	a763	1.04		193	0	60	5.2	1,310	7.5
CITY LAKE NEAR TERRELL																						
Mar. 24, 1952---	--	7.6	.03	19	5.2	13	.0	87	15	7.2	.4	.2	--	125	.17		69	0	29	.7	200	7.6
TRINITY RIVER NEAR ROSSER																						
Mar. 24, 1952---	195	13	--	59	11	175		153	202	116	--	89	--	740	1.01		192	66	66	5.5	1,230	6.6
CHAMBERS CREEK NEAR CORSICANA																						
Feb. 28, 1952---	--	15	.12	43	3.3	64	.4	133	88	41	.7	3.0	.32	358	.49		121	12	53	2.5	534	7.4
LAKE HALBERT NEAR CORSICANA																						
Feb. 28, 1952---	--	8.8	.01	60	13	46	.8	141	141	29	1.0	2.0	.11	387	.53		203	88	33	1.4	602	7.6

a Sum of determined constituents.

SAN JACINTO RIVER NEAR HUFFMAN, TEX.

LOCATION.--At Sheldon Pumping Plant of City of Houston, 5⅛ miles downstream from Huffman gaging station which is at Beaumont, Sour Lake & Western Railway bridge, 0.4 mile downstream from confluence of East and West Forks, and 3.4 miles southwest of Huffman, Harris County.
DRAINAGE AREA.--2,791 square miles at gaging station.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to July 1948, December 1948 to September 1952.
Water temperatures: January 1949 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 2,820 ppm Nov. 21-23, 28; minimum, 79 ppm Apr. 12-15, 24-28.
Hardness: Maximum, 566 ppm Nov. 21-23, 28; minimum, 36 ppm Apr. 12-15, 24-28.
Specific conductance: Maximum daily, 6,340 micromhos Nov. 23; minimum daily, 89.9 micromhos May 19.
Water temperatures: Maximum observed, 92° F July 3; minimum observed, 42° F Dec. 16.
EXTREMES, 1945-52.--Dissolved solids: Maximum, 2,820 ppm Nov. 21-23, 28, 1951; minimum, 44 ppm Oct. 4-10, 1949.
Hardness: Maximum, 566 ppm Nov. 21-23, 28, 1951; minimum, 16 ppm Oct. 4-10, 1949.
Specific conductance (1950-52): Maximum daily, 6,340 micromhos Nov. 23, 1951; minimum daily, 89.9 micromhos May 19, 1952.
Water temperatures (1949-52): Maximum observed, 92° F July 3, 1952; minimum observed, freezing point Feb. 2, 1951.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. During periods of extremely low flow and heavy pumping, salt-water intrusion from Galveston Bay occurs at this station. Some salt-water intrusion occurred during November 1951. Records of discharge for gaging station near Huffman for water year October 1951 to September 1952 given in Water-Supply Paper 1242. No appreciable inflow between gaging station and sampling point except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Non-carbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-10, 1951	134	19		17	5.2	92		63	5.7	145		1.0		336	0.46	122	64	12	76	5.0	577	7.7
Oct. 11-20	82.5	18		23	5.7	110		74	5.8	179		1.0		401	.55	89	81	20	75	5.3	704	7.7
Oct. 21-31	103	17		22	5.2	86		68	5.0	143		2.0		330	.45	92	76	21	71	4.2	593	7.6
Nov. 1-10	143	15		20	5.4	85		67	5.1	139		1.0		318	.43	123	72	17	72	4.4	585	7.6
Nov. 11-15	120	14		17	4.9	84		57	9.0	134		.5		292	.40	95	63	16	75	4.7	545	7.4
Nov. 16-18	87.7	14		20	12	136		60	30	223		2.0		486	.66	115	100	50	75	5.9	873	7.6
Nov. 19-20	915	14		50	87	726		72	161	1,300		2.5		2,380	3.24	588	482	424	77	14	4,520	7.5
Nov. 21-23, 28	105	17		59	102	865		81	200	1,540		2.0		2,820	3.84	799	566	500	77	16	5,240	7.5
Nov. 24-25, 29-30	118	18		36	43	414		71	83	725		1.5		1,360	1.85	433	267	209	77	11	2,550	7.4
Nov. 26-27	111	22		29	26	262		70	52	450		3.0		910	1.24	273	180	122	76	8.6	1,610	7.7
Dec. 1-2	126	26		36	45	437		72	90	760		2.5		1,430	1.94	486	275	216	78	11	2,640	7.7
Dec. 3, 9-10	239	17		21	4.6	86		60	10	140		.5		331	.45	214	72	22	72	4.4	575	7.5
Dec. 4-8	287	15		16	5.7	61		52	11	100		1.5		256	.35	198	63	21	68	3.3	415	7.4
Dec. 11-20	199	18		23	5.2	78		66	7.5	132		1.2		316	.43	170	79	25	68	3.8	528	7.4
Dec. 21-31	148	20		23	4.2	83		64	6.0	140		.5		a308	.42	123	75	22	71	4.2	561	7.4
Jan. 1-10, 1952	135	20		24	4.2	80		65	6.0	136		1.0		a303	.41	110	78	24	69	4.0	555	7.6
Jan. 11-20	126	18		24	4.2	82		69	5.0	137		.5		307	.42	104	78	21	70	4.1	566	7.5
Jan. 21-26	123	16		30	5.9	132		71	9.0	225		1.0		482	.66	160	100	42	74	5.7	859	7.3
Jan. 27-31	343	16		21	4.8	90		60	11	146		1.0		327	.44	303	72	23	73	4.6	599	7.1
Feb. 1-9	2,427	12		16	3.2	39		44	7.7	66		1.8		186	.25	1,220	53	17	62	2.3	309	6.9
Feb. 10-21	281	19		24	4.9	61		64	9.3	106		1.5		274	.37	208	80	28	62	2.9	465	7.1
Feb. 22-29	781	14		25	3.8	40		68	11	69		1.5		209	.28	441	78	22	53	2.0	363	7.2
Mar. 1-10	358	18		29	3.8	50		76	10	86		1.7		255	.35	246	88	26	55	2.4	433	7.6
Mar. 11-15	776	19		31	2.4	52		81	9.7	87		1.9		281	.38	589	87	21	56	2.5	445	7.2
Mar. 16-22	732	13		19	3.0	35		60	9.0	54		1.7		176	.24	348	60	11	56	1.9	298	7.3
Mar. 23-31	256	16		29	4.5	53		76	10	93		1.9		288	.39	199	91	29	56	2.4	458	6.9
Apr. 1-11	215	17		30	4.6	70		79	8.3	122		2.3		327	.44	190	94	29	62	3.2	555	7.8
Apr. 12-15, 24-28	11,330	6.4		9.5	3.1	12		29	9.6	18		2.4		79	.11	2,420	36	13	41	.9	123	7.3
Apr. 16-23, 29-30	2,598	12		16	2.5	26		48	7.5	40		2.4		146	.20	1,020	50	11	52	1.6	232	7.5
May 1-10	460	19		24	4.2	33		63	11	60		2.0		201	.27	250	77	26	48	1.6	329	7.1
May 11-17	239	22		29	4.4	50		82	9.7	87		.6		266	.36	172	90	23	55	2.3	445	6.6
May 18-31	4,196	7.8		11	3.4	12		32	5.6	24		2.4		101	.14	1,140	41	15	39	.8	146	6.9
June 1-11	848	23		24	5.2	24		68	8.4	49		.8		187	.25	428	81	26	39	1.2	304	7.7
June 12-20	302	24		29	4.4	46		84	7.7	79		1.9		260	.35	212	90	22	52	2.1	414	7.8
June 21-30	175	27		31	5.5	57		90	8.8	99		1.2		297	.40	140	100	26	55	2.5	490	7.9
July 1-10	177	22		25	4.4	54		76	6.3	90		1.8		260	.35	124	80	18	59	2.6	446	7.5
July 11-19, 31	171	20		25	4.3	60		82	8.3	95		1.8		259	.35	120	80	13	62	2.9	461	7.5
July 20-30	210	17		21	3.6	52		69	7.7	82		1.2		226	.31	128	67	11	63	2.8	401	7.4
Aug. 1-9	110	22		22	3.9	73		70	6.8	116		1.5		319	.43	95	71	14	69	3.8	528	7.2
Aug. 10-20	69.0	22		25	3.9	88		81	4.9	140		1.5		348	.47	65	78	12	71	4.3	623	7.4
Aug. 21-31	70.6	19		25	4.1	85		79	5.5	137		1.2		338	.46	64	80	15	70	4.1	607	7.3
Sept. 1-10	59.4	20		25	4.8	86		86	4.9	136		1.5		354	.48	57	82	12	69	4.1	608	7.8
Sept. 11-20	110	20		24	4.3	79		88	5.1	121		1.2		328	.45	97	78	6	69	3.9	554	7.7
Sept. 21-30	99.0	18		20	3.8	67		75	5.1	102		1.0		285	.39	76	66	4	69	3.6	475	7.6
Weighted average	777	11		15	3.8	30		43	8.8	50		2.1		155	0.21	325	53	18	55	1.8	254	--

a Sum of determined constituents.

BRAZOS RIVER BASIN

CLEAR FORK BRAZOS RIVER AT NUGENT, TEX.

LOCATION.--At gaging station at county road bridge in Nugent, Jones County, 4 miles upstream from Deadman Creek.
DRAINAGE AREA.--2,220 square miles.
RECORDS AVAILABLE.--Chemical analyses: August 1948 to September 1952.
Water temperatures: August 1948 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 3,590 ppm May 28-29; minimum, 201 ppm Sept. 22, 24-25.
Hardness: Maximum, 1,210 ppm May 28-29; minimum, 122 ppm Sept. 22, 24-25.
Specific conductance: Maximum daily, 6,260 micromhos May 29; minimum daily, 251 micromhos Sept. 22.
Water temperatures: Maximum observed, 95° F Aug. 16, 18; minimum observed, 41° F Dec. 15.
EXTREMES, 1948-52.--Dissolved solids: Maximum, 3,910 ppm Mar. 21-31, 1949; minimum, 158 ppm Sept. 15-16, 1949.
Hardness: Maximum, 1,520 ppm Feb. 11-19, 1951; minimum, 89 ppm Sept. 15-16, 1949.
Specific conductance (1950-52): Maximum daily, 6,260 micromhos May 29, 1952; minimum daily, 251 micromhos Sept. 22, 1952.
Water temperatures: Maximum observed, 95° F Aug. 16, 18, 1952; minimum observed, freezing point Jan. 29, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-9, 1951	a0.06	22		75	65	143	--	240	175	265		1.8		921	1.25	0.1	454	258	41	2.9	1,530	7.9
Oct. 10-20	b0	22		85	66	188		259	205	330		1.5		1,020	1.39	.0	484	272	46	3.7	1,770	7.9
Oct. 26-30	23.9	17		113	76	221		267	294	390		1.2		1,240	1.69	80	594	376	45	3.9	2,140	7.9
Oct. 31, Nov. 1-10	5.61	9.8		294	102	362		193	1,090	458		3.0		2,410	3.28	37	1,150	995	41	4.6	3,310	8.1
Nov. 11-20	1.01	12		230	91	325		213	841	428		2.0		2,030	2.76	5.5	948	774	43	4.6	2,910	8.1
Nov. 21-30	1.50	14		208	92	320		243	715	460		.8		1,930	2.62	7.8	898	698	44	4.6	2,880	8.1
Dec. 1-7	1.60	12		168	81	296		261	568	418		.5		1,670	2.27	7.2	752	538	46	4.7	2,530	8.0
Dec. 8-10	182	6.4		46	23	58		233	50	65		.5		366	.50	180	210	18	37	1.7	667	8.0
Dec. 11-20	15.8	6.4		44	25	72		229	68	78		1.2		418	.57	18	213	26	42	2.1	720	8.2
Dec. 21-25	.78	8.8		54	28	127		244	115	145		.5		606	.82	1.3	250	50	52	3.5	1,030	8.2
Dec. 26-31	.93	12		110	72	202		223	450	253		1.5		1,210	1.65	3.0	570	388	43	3.7	1,820	7.9
Jan. 1-10, 1952	2.39	9.6		122	81	217		206	567	248		1.8		1,350	1.84	8.7	638	468	43	3.7	2,020	7.9
Jan. 11-20	2.53	10		110	78	225		194	534	260		3.2		1,320	1.80	9.0	595	436	45	4.0	1,980	8.0
Jan. 21-31	1.85	9.2		170	101	312		196	650	482		2.0		1,820	2.48	9.1	840	679	45	4.6	2,820	7.9
Feb. 1-10	1.49	9.6		188	108	348		208	700	545		2.0		2,000	2.72	8.0	913	742	45	5.0	3,010	7.8
Feb. 11-20	1.85	10		198	114	351		221	762	530		4.1		2,080	2.83	10	962	782	44	4.9	3,070	7.6
Feb. 21-29	1.53	9.4		187	121	364		126	851	540		5.5		2,140	2.91	8.8	964	861	45	5.1	3,230	7.8
Mar. 1-10	1.73	9.0		206	125	377		152	953	518		2.0		2,260	3.07	11	1,030	904	44	5.1	3,260	8.0
Mar. 11-20	1.41	8.8		221	132	385		156	1,050	502		3.2		2,380	3.24	9.1	1,090	966	43	5.1	3,350	8.0
Mar. 21-31	.77	9.8		209	128	372		145	989	500		3.8		2,280	3.10	4.7	1,050	929	44	5.0	3,320	8.1
Apr. 1-10	.73	11		192	124	383		155	921	520		3.8		2,230	3.03	4.4	989	862	46	5.3	3,290	7.8
Apr. 11-20	.91	13		204	132	420		145	972	590		2.8		2,400	3.26	5.9	1,050	933	46	5.6	3,550	7.9
Apr. 21-25	56.8	14		89	31	165		126	305	201		4.4		915	1.24	140	350	246	51	3.8	1,420	8.0
Apr. 26-30	2.00	17		47	21	101		170	100	126		2.5		519	.71	2.8	204	64	52	3.1	858	8.1
May 1-3, 21-22, 24-26	125	15		44	13	34		121	81	36		2.8		294	.40	99	163	64	31	1.1	489	7.9
May 4-18	2.78	17		118	45	156		166	319	248		1.2		1,040	1.41	7.8	480	344	41	3.1	1,610	8.0
May 19-20, 23, 27, 30-31	51.5	13		76	23	78		128	215	87		2.8		575	.78	80	284	179	37	2.0	909	7.8
May 28-29	5.35	17		325	97	772		132	1,310	1,000		7.3		3,590	4.88	52	1,210	1,100	58	9.7	5,070	7.9
June 1-7	15.9	26		42	9.8	39		144	57	34		4.5		297	.40	13	145	27	37	1.4	470	8.1
June 8-20	all.8	17	0.01	94	20	32		114	218	44	0.4	4.5		534	.73	17	316	223	18	.8	784	7.8
June 21-24	a,b 0	18		86	31	66		111	239	101		2.8		656	.89	.0	342	251	29	1.6	994	7.8
July 1-14	b 0	19		88	46	127		131	278	202		3.5		855	1.16	.0	408	301	40	2.7	1,370	7.9
July 15-20	.18	22		94	59	180		163	289	305		3.8		1,030	1.40	.5	477	344	45	3.6	1,720	7.9
July 21-24	a,b 0	25		91	60	195		168	286	325		3.8		1,070	1.46	.0	474	336	47	3.9	1,780	8.0
Aug. 2-12	a,b .15	28		96	68	226		228	285	372		3.2		1,190	1.62	.5	519	332	49	4.3	1,990	8.0
Aug. 13-20	b 0	20		91	69	233		210	281	390		2.8		1,190	1.62	.0	510	338	50	4.5	2,050	7.9
Aug. 21-24	b 0	34		87	77	254		196	299	432		7.0		1,290	1.75	.0	534	373	51	4.8	2,200	8.2
Sept. 4-12, 23, 26	b57.3	10		37	24	78		c215	67	80		2.8		414	.56	64	191	14	47	2.5	725	8.4
Sept. 13-21, 27-30	a.10	11		54	25	92		188	121	110		3.0		525	.71	.1	238	84	46	2.6	883	8.2
Sept. 22, 24-25	102	8.8		37	7.3	14		104	44	12		5.2		201	.27	55	122	37	20	.5	318	7.7
Weighted average	10.8	12		65	28	81		165	165	106		2.8		558	0.76	16.3	277	142	39	2.1	895	--

a Includes days of less than 0.05 second-foot flow.
b No flow Oct. 10-25, June 25-30, July 1-14, 25-31, Aug. 1, 13-31, Sept. 1-3.
c Includes equivalent of 5 ppm of carbonate (CO_3).

BRAZOS RIVER AT POSSUM KINGDOM DAM NEAR GRAFORD, TEX.

LOCATION.--Immediately below dam on Brazos River, 2.6 miles upstream from Loving Creek, 11.3 miles southwest of Graford, Palo Pinto County and 20 miles upstream from gaging station near Palo Pinto.
DRAINAGE AREA.--22,550 square miles, approximately, of which 9,240 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: January 1942 to September 1952.
Water temperatures: October 1949 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,500 ppm Sept. 1-30; minimum, 1,310 ppm Feb. 1-29.
Hardness: Maximum, 490 ppm Sept. 1-30; minimum, 352 ppm Nov. 1-30.
Specific conductance: Maximum daily, 2,600 micromhos Aug. 26; minimum daily, 2,150 micromhos Nov. 30.
Water temperatures: Maximum observed, 73° F on several days during October, August and September.
EXTREMES, 1942-52.--Dissolved solids: Maximum, 2,130 ppm Feb. 2-9, 1942; minimum, 829 ppm Sept. 1-10, 1942.
Hardness: Maximum, 661 ppm Feb. 2-9, 1942; minimum, 318 ppm Dec. 21-31, 1942.
Specific conductance (1950-52): Maximum daily, 2,690 micromhos Sept. 17-18, 1950; minimum daily, 1,840 micromhos Jan. 6, 1951.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for gaging station near Palo Pinto for water year October 1951 to September 1952 given in Water-Supply Paper 1242. No appreciable inflow between dam and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1951	294	14		137	23	336		124	287	542		2.5		1,400	1.90	1,110	436	335	63	7.0	2,470	7.7
Nov. 1-30	202	12		105	22	355		119	300	505		2.0		1,360	1.85	742	352	255	69	8.2	2,250	7.6
Dec. 1-31	175	14		133	26	303		120	284	498		.8		1,320	1.80	624	439	340	60	6.3	2,270	8.0
Jan. 1-31, 1952	262	13		130	23	312		119	293	492		1.0		1,320	1.80	934	419	322	62	6.6	2,250	7.5
Feb. 1-29	84.9	11		130	24	308		119	288	492		1.8		1,310	1.78	300	423	326	61	6.6	2,240	7.6
Mar. 1-31	48.2	12		134	23	321		119	293	512		3.5		1,360	1.85	177	429	332	62	6.7	2,300	7.6
Apr. 1-30	121	13		133	23	318		121	297	502		1.0		1,350	1.84	441	426	328	62	6.8	2,290	7.4
May 1-31	70.9	15		136	24	313		126	291	505		.8		1,350	1.84	258	438	335	61	6.5	2,340	7.8
June 1-30	616	13		134	23	325		123	292	518		1.0		1,370	1.86	2,280	429	328	62	6.8	2,440	7.7
July 1-31	856	11		138	23	328		125	293	528		.5		1,380	1.88	3,190	439	336	62	6.7	2,410	7.7
Aug. 1-31	730	15		141	24	351		126	306	560		2.8		1,460	1.99	2,880	450	348	63	7.2	2,530	7.6
Sept. 1-30	48.5	12		152	27	352	--	136	307	578		1.5		1,500	2.04	196	490	378	61	6.9	2,510	7.5
Weighted average	294	13		135	23	331		124	295	527		1.5		1,390	1.89	1,100	432	330	63	6.6	2,410	--

BRAZOS RIVER NEAR WHITNEY, TEX.

LOCATION.--At Whitney Dam, on State Highway 22, 3.4 miles upstream from gaging station which is 1.0 mile downstream from Coon Creek, 7.5 miles south of Whitney, Hill County, and at mile 439.
DRAINAGE AREA.--26,190 square miles, approximately, at gaging station, of which 9,240 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to May 1948, October 1948 to September 1952.
Water temperatures: October 1947 to May 1948, October 1948 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,350 ppm Oct. 1-10; minimum, 183 ppm June 11-20.
Hardness: Maximum, 442 ppm Oct. 1-10; minimum, 96 ppm June 11-20.
Specific conductance: Maximum daily, 2,560 micromhos Oct. 3, 4; minimum daily, 203 micromhos May 23.
Water temperatures: Maximum observed, 83° F on several days in August and September; minimum observed, 51° F on several days during December, January, and March.
EXTREMES, 1947-51.--Dissolved solids: Maximum, 1,560 ppm Oct. 1-10, 1948; minimum, 183 ppm June 11-20, 1952.
Hardness: Maximum, 542 ppm Oct. 1-10, 1948; minimum, 96 ppm June 11-20, 1952.
Specific conductance (1950-52): Maximum daily, 2,560 micromhos Oct. 3, 4, 1951; minimum daily, 203 micromhos May 23, 1952.
Water temperatures: Maximum observed, 87° F July 12, 1949; minimum observed, freezing point Jan. 28-29, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents unless otherwise noted. Records of discharge for gaging station near Whitney for water year October 1951 to September 1952 given in Water-Supply Paper 1242. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-10, 1951	514	9.0		131	28	317		144	278	512		2.0		1,350	1.84	1,870	442	324	61	6.6	2,350	7.7
Oct. 11-20	261	10		128	27	295		165	262	470		1.5		1,270	1.73	895	430	296	60	6.1	2,190	7.7
Oct. 21-31	254	9.0		124	25	303		138	259	488		1.5		1,280	1.74	878	412	300	62	6.5	2,260	7.7
Nov. 1-10	386	4.9		125	27	319	--	134	264	515		3.0		1,320	1.80	1,380	423	313	62	6.8	2,240	7.8
Nov. 11-20	214	4.3		126	25	314	--	132	270	508		2.2		1,310	1.78	757	418	310	62	6.7	2,230	7.7
Nov. 21-30	226	4.2		123	26	312	--	133	268	505		1.0		1,300	1.77	793	414	305	62	6.7	2,220	7.8
Dec. 1-10	202	2.0		126	28	301		144	270	485		.5		1,280	1.74	698	430	312	60	6.3	2,250	7.8
Dec. 11-20	202	2.1		124	28	299		148	265	480		.0		1,270	1.73	693	424	303	60	6.4	2,230	7.8
Dec. 21-31	230	5.6		94	21	279		210	225	370		.5		1,100	1.50	683	321	149	65	6.8	1,910	8.0
Jan. 1-10, 1952	176	2.8		123	28	312		137	282	492		.5		1,310	1.78	623	422	310	62	6.7	2,280	7.5
Jan. 11-20	208	2.6		121	28	311		135	276	492		1.0		1,300	1.77	730	417	306	62	6.6	2,250	7.8
Jan. 21-31	164	3.5		118	27	302		133	272	475		.5		1,260	1.71	558	406	296	62	6.6	2,220	7.6
Feb. 1-10	162	3.9		124	25	296		137	270	468		2.0		1,260	1.71	551	412	300	51	6.3	2,210	7.7
Feb. 11-20	157	2.9		120	24	284		141	254	450		1.0		1,200	1.63	509	398	282	61	6.2	2,120	7.5
Feb. 21-29	145	1.7		119	25	287		139	257	455		1.2		1,210	1.65	474	400	286	61	6.2	2,120	7.7
Mar. 1-10	127	2.5		120	24	290		141	263	452		1.8		1,220	1.66	418	398	282	61	6.3	2,140	7.6
Mar. 11-20	116	3.5		120	25	294		146	262	460		2.0		1,240	1.69	388	402	283	61	6.4	2,160	7.5
Mar. 21-31	100	3.0		118	24	300		143	265	462		1.0		1,240	1.69	335	393	276	62	6.5	2,160	7.6
Apr. 1-10	92.3	5.2		54	11	112		89	102	171		5.1		520	.71	130	180	106	58	3.7	914	7.7
Apr. 11-20	96.7	5.0		54	11	111		89	102	168		5.0		518	.70	135	180	106	57	3.6	905	7.6
Apr. 21-30	203	6.0		52	11	106		90	97	162		3.9		498	.68	273	174	101	57	3.5	870	7.7
May 1-16	49.9	9.0		53	8.6	101		98	90	150		2.2		479	.65	64.5	168	87	57	3.4	836	7.3
May 17-22, 28-31	54.1	9.2		49	7.2	75		106	66	112		2.2		387	.53	56.5	152	65	52	2.7	687	7.5
May 23-27	137	16		34	3.7	25		121	14	21		14		200	.27	74.0	100	9	35	1.1	317	7.5
June 1-10	44.5	10		32	5.4	43		99	28	58		4.0		a229	.31	27.5	102	21	48	1.8	389	7.9
June 11-20	94.1	9.0		30	5.2	27		100	22	35		2.2		183	.25	46.5	96	14	38	1.2	328	7.8
June 21-30	927	9.6		34	5.7	26		108	21	38		2.0		189	.26	473	108	20	35	1.1	342	7.9
July 1-9	1,214	13		41	7.0	75		158	50	78		2.2		a344	.47	1,130	132	2	55	2.8	611	8.1
July 10-13	268	11		68	14	132		132	111	205		2.2		628	.85	454	227	12	56	3.9	1,110	7.9
July 14-16, 24-31	875	10		90	18	196		134	170	310		.8		901	1.23	2,130	298	19	59	4.9	1,550	7.9
July 17-23	255	11		109	20	252		130	218	402		1.8		1,080	1.47	744	354	25	61	5.8	1,920	7.9
Aug. 1-10	1,160	8.8		99	18	214		142	176	345		1.2		948	1.29	2,970	321	204	59	5.2	1,660	8.1
Aug. 11-20	1,320	8.6		100	17	218		145	177	348		.8		964	1.31	3,440	320	200	60	5.3	1,670	8.1
Aug. 21-31	1,091	7.8		101	17	245		159	167	388		3.5		1,010	1.37	2,980	322	192	62	5.9	1,780	8.0
Sept. 1-10	1,077	11		92	16	224		206	91	365		5.5		934	1.27	2,720	296	126	62	5.6	1,670	7.8
Sept. 11-30	45.3	9.2		116	19	246		144	214	398		1.2		1,070	1.46	131	368	250	59	5.6	1,890	7.5
Weighted average	348	8.3		92	18	211		146	167	332		2.1		912	1.24	857	304	184	60	5.2	1,590	--

a Sum of determined constituents.

LEON RIVER NEAR EASTLAND, TEX.

LOCATION.--At bridge on county road, 4.2 miles upstream from mouth of Colony Creek, 6.2 miles downstream from Texas Electric Service Company dam forming Olden Lake, and 6.6 miles southeast of Eastland, Eastland County.
DRAINAGE AREA.--279 square miles.
RECORDS AVAILABLE.--Chemical analyses: September 1950 to September 1952.
Water temperatures: September 1950 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 291 ppm May 17-20; minimum, 119 ppm Sept. 18-19, 22-24.
Hardness: Maximum, 157 ppm May 17-20; minimum, 80 ppm Sept. 18-19, 22-24.
Specific conductance: Maximum daily, 512 micromhos May 31; minimum daily, 159 micromhos Sept. 23.
EXTREMES, 1950-52.--Dissolved solids: Maximum, 316 ppm Jan. 21-31, Feb. 1-10, 1951; minimum, 119 ppm Sept. 18-19, 22-24, 1952.
Hardness: Maximum, 200 ppm Feb. 1-10, 1951; minimum, 80 ppm Sept. 18-19, 22-24, 1952.
Specific conductance (1950-52): Maximum daily, 636 micromhos Mar. 24, 1951; minimum daily, 159 micromhos Sept. 23, 1952.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are residues on evaporation unless otherwise noted. No discharge records available for this station.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 29-31, 1951		8.8		33	4.5	15		103	21	18		3.5		a155	0.21		101	16	25	0.7	260	7.8
Nov. 1-12		8.2		28	4.1	11	--	92	12	16		3.0		a127	.17		87	11	22	.5	219	7.5
Nov. 24-30		7.6		39	5.0	12	--	130	13	16		1.0		a158	.21		118	11	18	.5	271	7.8
Dec. 1-10		13		37	6.1	15		137	13	16		1.8		a169	.23		117	5	22	.6	289	7.8
Dec. 17-20		14		40	6.6	14		145	16	16		.5		a178	.24		127	8	20	.5	299	7.7
Dec. 21-31		13		41	6.3	14		150	12	16		.5		a177	.24		128	5	19	.5	305	8.0
Jan. 1-10, 1952		12		45	6.0	14		159	14	16		.5		200	.27		137	7	18	.5	328	8.0
Jan. 11-20		11		47	5.8	15		161	16	18		.5		204	.28		141	9	19	.6	338	7.5
Jan. 21-31		9.0		47	5.9	17		162	16	20		.5		210	.29		142	9	21	.6	348	7.6
Feb. 1-10		7.8		45	6.1	17		157	16	21		.5		204	.28		137	9	22	.6	338	8.0
Feb. 11-20		8.4		46	6.1	17		157	17	22		.5		207	.28		140	11	21	.6	350	8.0
Feb. 21-29		5.9		43	5.8	16		148	16	20		1.0		193	.26		131	10	21	.6	331	7.9
Mar. 1-10		4.6		44	6.2	15		150	16	20		1.0		197	.27		135	12	20	.6	341	7.8
Apr. 12-17		4.4		40	7.3	22		146	17	27		1.7		195	.27		130	10	27	.8	349	8.2
Apr. 18-26		9.2		35	5.0	12		124	8.9	16		1.6		158	.21		108	6	20	.5	268	8.2
May 17-20		8.8		52	6.6	30		124	21	70		1.3		291	.40		157	55	30	1.1	466	7.4
May 21-31		17		44	5.7	26		116	16	54		2.2		251	.34		133	38	30	1.0	411	7.9
June 1-3, 16-18		14		46	6.7	25		140	12	48		1.2		240	.33		142	28	27	.9	407	8.2
Sept. 18-19, 22-24		9.0		26	3.6	11		81	8.6	18		3.0		a119	.16		80	13	23	.5	211	7.5

a Sum of determined constituents.

BRAZOS RIVER AT RICHMOND, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 59 in Richmond, Fort Bend County, 925 feet downstream from Texas & New Orleans Railroad bridge, and at mile 93.
DRAINAGE AREA.--44,050 square miles, approximately, of which 9,240 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1945 to September 1952.
Water temperatures: November 1950 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,040 ppm Oct. 21-31; minimum, 187 ppm June 1-10.
Hardness: Maximum, 372 ppm Nov. 21-30; minimum, 105 ppm Apr. 12-17, 23-25, 29-30.
Specific conductance: Maximum daily, 1,850 micromhos Sept. 14; minimum daily, 260 micromhos May 29.
Water temperatures: Maximum observed, 88° F July 4, 11, 14, Aug. 6-7; minimum observed, 49° F Dec. 16.
EXTREMES, 1945-52.--Dissolved solids: Maximum, 1,400 ppm Sept. 1-10, 1951; minimum, 133 ppm Aug. 27-31, 1947.
Hardness: Maximum, 446 ppm Sept. 1-10, 1948; minimum, 74 ppm Jan. 13-14, 18-20, 1950.
Specific conductance (1950-52): Maximum daily, 2,540 micromhos Sept. 4, 1951; minimum daily, 260 micromhos May 29, 1952.
Water temperatures (1950-52): Maximum observed, 91° F Aug. 5, 1951; minimum observed, 42° F Dec. 6, 1950.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations less than 1,000 ppm are residues on evaporation and for concentrations more than 1,000 ppm are sums of determined constituents. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids: Parts per million	Dissolved solids: Tons per acre-foot	Dissolved solids: Tons per day	Hardness as $CaCO_3$: Calcium, magnesium	Hardness as $CaCO_3$: Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-5, 14-20, 1951--	941	16	0.00	94	18	187	9.2	186	154	296	0.4	1.0	0.50	886	1.20	2,250	308	156	56	4.6	1,490	7.5
Oct. 6-13----------	818	16	.00	65	11	99	.8	168	85	140	.4	2.0	.29	514	.70	1,140	207	70	51	3.0	885	7.5
Oct. 21-31----------	606	15	.00	108	23	233	.8	196	191	369	.3	1.5	.39	1,040	1.41	1,700	364	204	58	5.3	1,790	7.5
Nov. 1-10----------	569	14	.04	97	25	196	2.4	214	155	306	.5	1.2	.25	940	1.28	1,440	345	170	55	4.6	1,540	7.7
Nov. 11-20----------	651	11	.03	95	25	199	4.8	204	154	309	.5	1.2	.25	935	1.27	1,640	340	173	56	4.6	1,540	7.8
Nov. 21-30----------	549	10	.04	106	26	207	4.0	222	168	327	.5	.8	.19	1,000	1.36	1,480	372	190	54	4.7	1,630	7.5
Dec. 1-10----------	715	14	.05	84	19	152	.8	211	119	220	.3	1.5	.30	748	1.02	1,440	288	114	53	3.9	1,250	7.9
Dec. 11-20----------	595	17	.05	86	18	139	.4	218	119	198	.3	1.5	.23	714	.97	1,150	288	110	51	3.5	1,190	8.1
Dec. 21-31----------	537	14	.05	89	20	161	1.2	227	133	228	.3	1.2	.19	789	1.07	1,140	304	118	53	4.1	1,320	7.9
Jan. 1-10, 1952--------	534	15	.01	78	20	173	1.6	185	147	253	.3	1.5	.29	785	1.07	1,130	276	125	57	4.5	1,360	8.0
Jan. 11-20----------	520	12	.01	92	21	174	4.8	227	150	250	.3	1.0	.35	818	1.11	1,150	316	130	54	4.3	1,410	8.0
Jan. 21-31----------	571	15	.01	87	19	164	.4	220	138	230	.3	1.5	.27	772	1.05	1,190	295	114	55	4.1	1,320	8.1
Feb. 1-5, 14-24--------	936	12	.00	79	18	133	2.8	199	116	192	.3	1.5	.31	703	.96	1,780	271	108	51	3.5	1,180	8.0
Feb. 6-13, 25-29-------	974	12	.03	53	9.7	72	3.6	148	60	106	.3	3.0	.20	415	.56	1,090	172	50	47	2.4	709	7.5
Mar. 1-10----------	1,365	13	.00	54	10	84	2.8	144	73	119	.3	3.0	.20	464	.63	1,710	176	58	50	2.7	766	7.6
Mar. 11-20----------	1,619	16	.05	49	9.8	72	2.0	137	63	101	.2	2.5	.14	415	.56	1,810	163	50	49	2.4	682	7.8
Mar. 21-31----------	916	17	.05	53	11	84	2.8	163	48	127	.3	1.8	.19	460	.63	1,140	177	44	50	2.7	764	7.5
Apr. 1-11----------	693	16	.01	70	14	120	4.8	216	66	171	.3	2.5	.21	595	.81	1,110	232	55	52	3.4	1,010	8.1
Apr. 12-17, 23-25, 29-30----------	8,085	14	.01	34	4.9	22	4.4	110	20	30	.3	3.0	.14	200	.27	4,370	105	15	30	.9	321	7.9
Apr. 18-22, 26-28------	9,006	14	.10	46	7.2	37	3.6	136	43	48	.3	4.5	.12	287	.39	6,980	144	33	35	1.3	468	7.8
May 1-10----------	2,621	15	.01	39	6.1	31	4.4	122	30	44	.3	3.2	.13	258	.35	1,830	122	22	35	1.3	406	7.8
May 11-20----------	837	23	.05	52	9.1	45	4.8	160	43	65	.3	2.8	.24	342	.47	773	167	36	36	1.5	551	7.9
May 21-26----------	5,105	25	.02	52	8.2	46	4.0	155	43	60	.3	4.0	.21	328	.45	4,520	163	36	37	1.6	525	8.2
May 27-31----------	22,820	24	.06	38	4.6	16		124	21	13	.4	6.5	--	188	.26	11,600	114	12	23	.7	286	8.0
June 1-10----------	7,734	21	.05	37	4.5	13	1.6	123	16	16	.2	4.0	.19	187	.25	3,900	111	10	20	.6	290	8.0
June 11-20----------	2,568	22	.03	43	5.8	26	2.8	136	29	33	.3	2.5	.20	254	.35	1,760	131	20	30	1.0	389	8.0
June 21-30----------	434	19	--	54	8.2	35	3.2	180	40	43	.3	2.0	.14	300	.41	352	168	20	31	1.2	501	8.2
July 1-10----------	697	17	--	56	10	49	2.4	192	48	62	.4	1.8	.21	346	.47	651	180	23	37	1.6	591	8.0
July 11-19----------	998	13	.00	45	7.3	39	1.6	150	33	51	.3	1.8	.10	274	.37	738	142	19	37	1.4	473	8.1
July 20-24, 30-31------	1,203	14	.00	51	8.5	51	1.6	160	42	71	.4	2.5	.10	334	.45	1,080	162	31	40	1.7	574	7.8
July 25-29----------	788	18	.06	35	6.1	32	6.0	123	28	40	.4	1.5	.15	243	.33	517	112	12	37	1.3	391	7.8
Aug. 1-5----------	414	21	.01	62	12	72	5.0	187	61	106	.4	2.0	.16	452	.61	505	204	51	43	2.2	759	7.3
Aug. 6-10----------	486	16	.01	70	18	132	5.5	153	123	201	.2	2.5	.16	655	.89	859	248	123	53	3.6	1,120	7.7
Aug. 11-20----------	607	14	.01	85	18	191	6.1	144	172	292	.3	1.0	.18	897	1.22	1,470	286	168	59	4.9	1,540	7.8
Aug. 21-31----------	731	17	.01	94	18	205	6.3	144	182	322	.3	1.5	.21	960	1.31	1,890	308	190	58	5.1	1,610	7.7
Sept. 1-10----------	687	15	.01	98	18	201	6.5	146	184	320	.2	1.5	.33	964	1.31	1,790	318	199	57	4.9	1,600	7.3
Sept. 11-20----------	809	14	.02	102	19	227	6.7	145	200	365	.2	1.5	.18	1,010	1.37	2,210	332	214	59	5.4	1,740	8.0
Sept. 21-30----------	332	14	.00	88	19	181	6.1	167	156	288	.3	2.0	.17	872	1.19	782	298	160	56	4.6	1,480	7.9
Weighted average-----	1,820	18	0.04	51	8.8	60	2.8	143	54	85	0.3	3.5	0.19	370	0.50	1,820	163	46	44	2.0	608	--

MISCELLANEOUS ANALYSES OF STREAMS IN BRAZOS RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)		Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
															Parts per million	Parts per acre-foot	Calcium, magnesium	Noncarbonate				
SODA LAKE NEAR EARTH																						
May 12, 1952----	--	6.2		234	3,020	5,960		663	0	14,500	7,310	8.8	—	8.4	31,400	42.7	13,000	12,500	50	--	33,100	7.9
BULL LAKE NEAR LITTLEFIELD																						
June 5, 1952----	--	6.4		711	815	5,030		74	0	3,860	8,500	2.0	--	3.3	19,000	25.8	5,120	5,060	68	--	26,400	8.2
DOUBLE MOUNTAIN FORK BRAZOS RIVER 4.3 MILES SOUTHEAST OF LUBBOCK																						
Mar. 4, 1952----	1.77	45		92	172	290		452	0	523	425	5.6	48	--	1,820	2.48	936	566	40	4.1	2,910	7.6
Apr. 3----------	1.85	52		90	173	301		479	0	549	422	--	38	--	1,860	2.53	936	544	41	4.3	2,860	8.1
Apr. 30---------	2.00	49		82	138	251		343	24	453	342	--	54	--	1,560	2.12	772	451	41	3.9	2,430	8.6
Aug. 5----------	1.68	58		63	168	305		334	22	542	422	--	52	--	1,800	2.45	848	538	44	4.5	3,100	8.5
DOUBLE MOUNTAIN FORK BRAZOS RIVER 7.8 MILES SOUTHEAST OF LUBBOCK																						
Mar. 4, 1952----	2.79	19		58	154	269		417	0	479	355	6.0	8.2	--	1,550	2.11	778	436	43	4.2	2,500	8.0
Apr. 3----------	2.84	21		42	159	278		343	23	506	362	--	8.7	--	1,570	2.14	759	440	44	4.4	2,540	8.6
Apr. 30---------	12.2	15		35	34	80		145	6	134	92	--	5.1	--	a505	.69	228	98	43	2.3	815	8.5
Aug. 5----------	1.57	14		52	118	227		301	20	389	298	--	3.8	--	1,270	1.73	614	334	45	4.0	2,110	8.5
Sept. 3---------	1.15	15		59	139	261		376	11	454	342	--	5.6	--	1,470	2.00	718	392	44	4.2	2,370	8.3
DOUBLE MOUNTAIN FORK BRAZOS RIVER 7.5 MILES NORTHWEST OF SLATON																						
Mar. 4, 1952----	2.35	2.6		63	132	250		390	0	421	335	5.0	2.0	--	1,400	1.90	700	380	44	4.1	2,320	8.2
Apr. 3----------	1.88	10		84	142	321		363	14	503	458	--	1.0	--	1,710	2.33	794	472	47	5.0	2,940	8.5
Apr. 30---------	22.5	7.4		40	131	248		307	17	430	318	--	2.0	--	1,340	1.82	638	358	46	4.3	2,230	8.6
Aug. 5----------	.18	43		40	124	247		324	17	371	328	--	4.8	--	1,330	1.81	610	316	47	4.3	2,220	8.5
Sept. 3---------	.29	38		42	123	245		367	13	352	320	--	5.8	--	1,320	1.80	611	289	47	4.3	2,170	8.4
DOUBLE MOUNTAIN FORK BRAZOS RIVER 5.5 MILES NORTH OF SLATON																						
Mar. 4, 1952----	1.04	9.6		64	116	225		504	0	316	260	6.0	.5	--	1,250	1.70	636	224	43	3.9	2,090	8.1
Apr. 30---------	39.2	11		42	129	254		322	25	420	315	--	1.5	--	1,360	1.85	636	330	46	4.4	2,250	8.7
Aug. 5----------	.10	26		28	125	259		353	27	358	310	--	2.2	--	1,310	1.78	584	250	49	4.6	2,180	8.5
DOUBLE MOUNTAIN FORK BRAZOS RIVER 4.2 MILES NORTHEAST OF SLATON																						
Mar. 4, 1952----	.64	12		68	138	345		599	0	488	335	6.0	.0	--	1,690	2.30	737	246	50	5.5	2,780	8.0
Apr. 30---------	57.1	17		44	123	260		314	24	422	315	--	1.0	--	1,360	1.85	616	318	48	4.4	2,250	8.7
DOUBLE MOUNTAIN FORK BRAZOS RIVER NEAR ASPERMONT																						
Oct. 9, 15, 28, 1951------	0	14		694	126	436		94	0	2,130	640	--	.2	--	4,090	5.56	2,250	2,170	30	4.0	4,980	7.5
Oct. 30---------	b1.6	12		202	18	12		53	0	504	24	--	3.5	--	a835	1.14	578	534	4	.2	1,030	7.6
Nov. 1----------	b.2	12		258	24	34		54	0	652	66	--	1.5	--	1,070	1.46	742	698	9	.5	1,370	7.6
Nov. 2-4--------	0	11		412	49	160		96	0	1,080	265	--	1.0	--	2,020	2.75	1,230	1,150	22	2.0	2,650	7.6
Nov. 8----------	0	16		576	76	342		138	0	1,580	520	--	2.0	--	3,180	4.32	1,750	1,640	30	3.6	3,750	7.9
Nov. 11-13------	0	16		636	90	390		166	0	1,750	600	--	.5	--	3,560	4.84	1,960	1,820	30	3.8	4,470	7.7
Nov. 26, 29-30--	0	5.0		702	101	443		121	0	1,990	680	--	2.0	--	3,980	5.41	2,170	2,070	31	4.1	4,930	7.5

a Residue on evaporation at 180° C.
b Mean discharge.

MISCELLANEOUS ANALYSES OF STREAMS IN BRAZOS RIVER BASIN IN TEXAS--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Instantaneous discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)		Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
															Parts per million	Parts per acre-foot	Calcium, magnesium	Noncarbonate				
WHITE RIVER 4.5 MILES EAST OF CROSBYTON																						
Nov. 21, 1951----	2.06	38	—	28	42	58		344	0	51	22	—	2.0	—	410	0.56	242	0	34	1.6	701	8.2
LAKE SWEETWATER NEAR SWEETWATER																						
Jan. 18, 1952----	--	3.0	0.05	59	13	13	3.6	197	0	41	20	0.0	.0	0.00	a270	.37	201	39	12	.4	453	7.7
FORT PHANTOM HILL RESERVOIR NEAR NUGENT																						
Jan. 18, 1952----	--	1.2	.05	40	23	57	8.0	236	0	40	65	.3	.2	.17	a362	.49	194	1	38	1.8	642	7.8
LAKE WACO NEAR WACO																						
Feb. 29, 1952----	--	6.2	.01	50	6.6	15	.0	164	0	30	14	.3	.5	.30	a225	.31	152	18	18	.5	367	7.6
LAMPASAS RIVER AT FORT HOOD NEAR BELTON																						
July 10, 1952----	--	11	.04	56	27	128		211	0	22	234	.3	2.5	—	a624	.85	250	78	53	3.5	1,160	7.9
BRAZOS RIVER NEAR BRYAN																						
Oct. 18, 1951----	414	9.0	--	123	25	322		146	0	245	520	--	1.5	—	1,320	1.80	410	290	63	6.9	2,270	8.0
Feb. 12, 1952----	224	9.0	--	98	26	230		205	0	201	335	--	1.2	—	1,000	1.36	352	184	59	5.3	1,730	8.2

a Residue on evaporation at 180° C.

COLORADO RIVER ABOVE BULL CREEK NEAR KNAPP, TEX.

LOCATION.--About 2½ miles above mouth of Bull Creek, 4½ miles south of Knapp, Scurry County, 6.7 miles west of Ira, and 14½ miles southwest of Snyder.
RECORDS AVAILABLE.--Chemical analyses: April 1950 to September 1952.
Water temperatures: April 1950 to September 1952.

Specific conductance (micromhos) at 25° C and chloride, in parts per million, water year October 1951 to September 1952

Date of collection	Specific Conductance	Chloride	Date of collection	Specific Conductance	Chloride	Date of collection	Specific Conductance	Chloride
Oct. 5, 1951	1,180	155	Feb. 2	35,200	13,100	June 5	1,720	370
Oct. 12	1,180	145	Feb. 13	13,100	4,020	June 12	2,440	545
Oct. 20	36,000	13,800	Feb. 21	11,800	3,320	June 16	3,070	730
Nov. 3	31,500	11,400	Feb. 28	14,400	4,500	June 23	3,410	1,270
Nov. 10	2,910	610	Mar. 4	16,100	5,200	July 2	14,200	4,300
Nov. 17	33,200	12,300	Mar. 12	21,500	7,450	July 7	39,700	15,700
Nov. 24	1,600	225	Mar. 19	5,220	1,310	July 15	7,910	2,350
			Mar. 26	5,730	1,630	July 24	40,300	15,400
Dec. 1	2,850	640				July 28	50,300	21,200
Dec. 5	1,740	295	Apr. 2	6,840	1,940			
Dec. 13	118,900	64,600	Apr. 9	8,860	2,700	Aug. 4	46,300	19,800
Dec. 17	3,230	590	Apr. 14	10,200	3,100	Aug. 8	5,630	1,560
Dec. 27	29,200	10,600	Apr. 21	10,500	3,250	Aug. 11	4,280	1,140
Jan. 3, 1952	3,760	918	May 1	6,020	1,660	Aug. 19	1,510	322
Jan. 9	2,690	568	May 6	7,930	2,380	Aug. 27	2,210	528
Jan. 16	3,330	655	May 15	9,810	2,980	Sept. 2	3,340	880
Jan. 23	7,430	2,100	May 19	5,020	1,400	Sept. 26	636	139
			May 29	1,340	270			

BULL CREEK NEAR IRA, TEX.

LOCATION.--At gaging station 267 feet upstream from highway crossing, 1.5 miles upstream from Colorado River, 5.5 miles upstream from Chimney Creek, 5.8 miles west of Ira, Scurry County, and 6.9 miles northwest of Cuthbert.
DRAINAGE AREA.--388 square miles, approximately (contributing area).
RECORDS AVAILABLE.--Chemical analyses: April 1950 to September 1952.
Water temperatures: April 1950 to September 1951.
EXTREMES, 1951-52.--Specific conductance: Maximum daily, 4,960 micromhos Aug 11; minimum daily, 235 micromhos Sept. 26.
EXTREMES, 1950-52.--Specific conductance: Maximum daily, 5,510 micromhos Aug. 18, 1950; minimum daily, 235 micromhos Sept. 6, 1950, Sept. 26, 1952.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1282.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1951	0	--		--	--	--		--	--	367		--		--	--	--	--	--	--	--	1,800	--
Nov. 1-30	0	--		--	--	--		--	--	525		--		--	--	--	--	--	--	--	2,360	--
Dec. 1-31	a.06	--		--	--	--		--	--	755		--		--	--	--	--	--	--	--	3,190	--
Jan. 1-31, 1952	.10	--		--	--	--		--	--	769		--		--	--	--	--	--	--	--	3,210	--
Feb. 1-29	a.07	--		--	--	--		--	--	809		--		--	--	--	--	--	--	--	3,410	--
Mar. 1-9	.10	10		85	57	559		108	482	760		0.8		2,010	2.73	0.54	446	358	73	12	3,420	7.8
Mar. 10-31	a.03	--		--	--	--		--	--	790		--		--	--	--	--	--	--	--	3,580	--
Apr. 1-30	a.08	7.0		98	67	598		122	593	780		3.2		2,210	3.01	.48	520	420	71	11	3,670	7.9
May 1-31	a.10	--		--	--	--		--	--	525		--		--	--	--	--	--	--	--	3,020	--
June 1-30	a.003	--		--	--	--		--	--	585		--		--	--	--	--	--	--	--	3,250	--
July 1-31	0	--		--	--	--		--	--	825		--		--	--	--	--	--	--	--	4,030	--
Aug. 1-31	a.01	--		--	--	--		--	--	980		--		--	--	--	--	--	--	--	4,450	--
Sept. 22-28	13.8	--		--	--	--		--	--	11		--		--	--	--	--	--	--	--	236	--

a Includes days of less than 0.05 second-foot flow.

COLORADO RIVER AT COLORADO CITY, TEX.

LOCATION.--At gaging station at Colorado City, Mitchell County, 3,517 feet upstream from bridge on U. S. Highway 80, 4,100 feet upstream from Texas & Pacific Railway bridge, 1.6 miles upstream from Lone Wolf Creek, and at mile 796.
DRAINAGE AREA.--4,082 square miles, of which 2,590 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: May 1946 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 32,800 ppm Apr. 1-10; minimum, 571 ppm July 16-17.
Hardness: Maximum, 4,190 ppm Apr. 1-10; minimum, 148 ppm July 16-17.
Specific conductance: Maximum daily, 45,800 micromhos Apr. 1-10; minimum daily, 1,030 micromhos July 17.
EXTREMES, 1946-52.--Dissolved solids: Maximum, 32,800 ppm Apr. 1-10, 1952; minimum, 176 ppm Oct. 26, 1947.
Hardness: Maximum, 4,500 ppm Aug. 9-12, 1946; minimum, 65 ppm Sept. 15-20, 1949.
Specific conductance (1950-52): Maximum daily, 45,800 micromhos Apr. 1-10, 1952; minimum daily, 472 micromhos Aug. 24, 1951.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952.

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1, 1951	a0	13		146	66	1,090	--	190	433	1,660		0.8		3,500	4.76	0.0	636	480	79	19	6,110	8.1
Oct. 3-8	a0	12		247	96	2,180		62	683	3,540		--		6,790	9.23	.0	1,010	960	82	29	11,500	7.2
Oct. 28-31, Nov. 1-4	1.18	8.4		414	140	3,670		100	1,200	5,850		--		11,300	15.4	36.0	1,610	1,530	83	40	17,700	7.3
Nov. 27-30, Dec. 1-5	.37	8.4		436	150	3,810		109	1,260	6,090		--		11,800	16.0	11.8	1,700	1,620	83	40	18,400	7.4
Dec. 14-18, 20-21	.20	5.4		590	218	5,810		105	1,850	9,210		--		17,700	24.1	9.6	2,370	2,280	84	53	27,100	6.8
Dec. 24, 26-31	.33	6.0		579	228	5,800		115	1,890	9,170		--		17,700	24.1	15.8	2,380	2,290	84	52	27,100	7.2
Jan. 1-31, 1952	1.09	4.6		570	225	5,810		137	1,890	9,150		--		17,700	24.1	52.1	2,350	2,230	84	53	26,900	7.5
Feb. 1-20	.72	4.2		655	268	7,070		98	2,000	11,300		--		21,300	29.0	41.4	2,740	2,660	85	58	34,500	7.2
Feb. 21-29	.91	5.4		688	292	7,580		87	2,030	12,200		--		22,800	31.0	56.0	2,920	2,850	85	61	33,900	7.2
Mar. 1-10	.53	8.8		749	322	8,320		124	2,320	13,300		--		25,100	34.1	35.9	3,190	3,090	85	65	36,200	7.0
Mar. 11	.10	8.0		907	379	9,930		96	2,800	15,900		--		30,000	40.8	8.1	3,820	3,740	85	70	42,500	6.6
Mar. 21-31	a0	9.6		938	391	10,400		95	2,910	16,600		--		31,300	42.6	.0	3,950	3,870	85	72	43,700	6.7
Apr. 1-10	a0	6.4		999	413	10,900		81	3,080	17,400		--		32,800	44.6	.0	4,190	4,120	85	73	45,800	6.7
Apr. 19-28	1.71	12		746	290	7,740		93	2,490	12,200		--		23,500	32.0	108	3,050	2,980	85	61	34,100	7.3
Apr. 29-30	6.75	13		482	162	4,480		56	1,330	7,220		--		13,700	18.6	250	1,870	1,820	84	45	21,700	--
May 1-2	182	15		95	21	408		152	196	622		7.0		1,440	1.96	708	324	199	73	9.8	2,640	7.8
May 3-6	6.20	7.8		241	75	1,910		58	614	3,100		--		5,980	8.13	100	910	862	82	27	10,000	7.2
May 7-8	.80	6.2		396	139	3,470		50	1,070	5,640		--		10,700	14.6	23.1	1,560	1,520	83	38	16,300	7.0
May 23-26	7.10	7.4		573	199	4,980		67	1,570	8,080		--		15,400	20.9	295	2,250	2,190	83	46	23,500	7.4
May 27-31	24.9	6.6		185	68	1,870		67	528	2,980		--		5,670	7.71	381	741	686	85	30	9,550	7.8
June 1-6	2.23	9.8		125	57	1,540		58	395	2,430		--		4,590	6.24	27.6	546	499	86	29	8,030	7.3
June 10-18	a0	15		149	70	1,990		45	481	3,150		--		5,880	8.00	.0	660	623	87	34	10,000	7.0
June 8-9, 19-22	1.55	18		165	49	1,540		46	414	2,480		--		4,690	6.38	19.6	613	576	85	27	8,330	6.9
July 16-17	210	16		50	5.7	152		125	62	217		6.9		571	.78	324	148	46	69	5.4	1,140	7.7
July 18	9.1	11		328	146	4,350		65	936	6,640		--		12,400	16.9	305	1,420	886	87	50	19,700	7.2
Aug. 13-17, 28-31	4.65	12		417	134	3,800		62	1,120	6,130		--		11,600	15.8	146	1,590	1,540	84	41	18,900	6.9
Sept. 1-10	a0	17		423	136	4,070		63	1,160	6,530		--		12,400	16.9	.0	1,610	1,560	85	44	19,900	7.0
Sept. 22-23	170	6.4		191	56	1,640		72	453	2,650		--		5,030	6.84	2,310	707	648	83	27	8,490	7.6
Sept. 24-30	22.0	6.8		240	83	2,420		69	669	3,870		--		7,320	9.96	435	940	884	85	34	12,100	7.4
Weighted average	4.47	11		177	56	1,500		104	456	2,390		--		4,640	6.31	56.0	672	587	83	25	7,620	--

a Includes days of less than 0.05 second-foot flow.

COLORADO RIVER NEAR SAN SABA, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 190, 5.2 miles downstream from San Saba River, 9.2 miles east of San Saba, San Saba County, and at mile 474.
DRAINAGE AREA.--30,600 square miles, approximately, of which 11,900 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1952.
Water temperatures: October 1947 to September 1952.
Sediment Records: December 1950 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 732 ppm June 3; minimum, 127 ppm Sept. 11-13.
Hardness: Maximum, 294 ppm Dec. 1-10; minimum, 83 ppm Sept. 11-13.
Specific conductance: Maximum daily, 1,220 micromhos June 3; minimum daily, 161 micromhos Sept. 11.
Water temperatures: Maximum observed, 92° F Aug. 9; minimum observed, 40° F Dec. 15.
Sediment concentrations: Maximum daily, 7,930 ppm June 3; minimum daily, 34 ppm for composite period Dec. 11-14, July 31, and composite period Aug. 1-4.
Sediment loads: Maximum daily, 394,000 tons Sept. 11; minimum daily, 0.1 ton for composite period Aug. 21-25.
EXTREMES, 1947-52.--Dissolved solids: Maximum, 1,530 ppm Oct. 15-19, 1947; minimum, 127 ppm Sept. 11-13, 1952.
Hardness: Maximum, 522 ppm Oct. 15-19, 1947; minimum, 71 ppm June 25-30, 1949.
Specific conductance (1950-52): Maximum daily, 2,280 micromhos Aug. 30, 1951; minimum daily, 161 micromhos Sept. 11, 1952.
Water temperatures: Maximum observed, 92° F on several days during summer months; minimum observed, freezing point Jan. 29, 1948, Jan. 30, 1951.
Sediment concentrations (1950-52): Maximum daily, 15,800 ppm Aug. 14, 1951; minimum daily, 24 ppm July 27, 1951.
Sediment loads (1950-52): Maximum daily, 394,000 tons Sept. 11, 1952; minimum daily, 0.1 ton for composite period Aug. 21-25, 1952.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are residues on evaporation unless otherwise noted.
Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-10, 1951	37.6	14		45	16	54		210	24	69	--	1.5		339	0.46	34.4	178	6	40	1.7	581	8.0
Oct. 11-20	19.0	14		46	23	43		235	16	66	--	1.0		335	.46	17.2	210	17	31	1.3	591	8.0
Oct. 21-31	31.5	12		47	28	46		261	13	74	--	.5		356	.48	30.3	232	18	30	1.3	642	8.0
Nov. 1-10	51.6	16		48	20	63		242	30	78	--	.8		395	.54	55.0	202	4	41	2.0	660	7.9
Nov. 11-20	27.1	16		57	26	55		286	24	77	--	.5		414	.56	30.3	249	14	32	1.5	702	7.9
Nov. 21-30	39.1	14		67	29	62		324	24	92	--	.0		478	.65	50.5	286	20	32	1.6	797	7.9
Dec. 1-10	36.8	13		70	29	85		316	23	139	--	.0		565	.77	56.1	294	34	39	2.1	932	7.9
Dec. 11-20	41.3	15		57	28	78		279	25	121	--	.5		a462	.63	51.5	257	28	40	2.1	847	8.0
Dec. 21-31	44.1	14		56	29	58		299	22	83	--	.8		a410	.56	48.8	258	14	33	1.6	743	7.8
Jan. 1-10, 1952	40.9	13		59	31	46		306	20	72	--	1.0		a392	.53	43.3	274	24	27	1.2	715	7.8
Jan. 11-20	51.2	11		60	31	46		305	21	74	--	.5		a394	.54	54.5	277	27	27	1.2	715	7.9
Jan. 21-31	48.4	13		61	32	37		315	17	62	--	.5		a378	.51	49.4	284	26	22	.9	685	7.9
Feb. 1-10	43.0	17		58	31	43		314	20	60	0.2	1.0		384	.52	44.6	272	14	25	1.1	670	8.1
Feb. 11-20	44.3	24		58	30	48		310	20	67	.3	1.0		a400	.54	47.8	268	14	28	1.3	690	7.9
Feb. 21-29	33.6	15		47	31	49		272	21	75	--	1.0		392	.53	35.6	245	22	30	1.3	683	7.9
Mar. 1-10	29.7	13		57	31	64		291	25	102	--	1.5		452	.61	36.2	270	31	34	1.7	794	7.9
Mar. 11-20	23.0	13		55	26	72		288	25	98	--	.5		436	.59	27.1	244	8	39	2.0	777	8.0
Mar. 21-31	20.7	10		55	30	76		282	27	118	--	.2		471	.64	26.3	260	30	39	2.0	838	8.1
Apr. 1-10	35.2	8.8		56	30	82		289	29	123	--	.8		478	.65	45.4	263	26	40	2.2	864	7.9
Apr. 11-20	132	9.6		54	30	69		285	27	104	--	.8		440	.60	157	258	24	37	1.9	799	7.9
Apr. 22-26	3,310	11		40	7.0	17		130	24	22	--	2.8		199	.27	1,780	129	22	22	.6	338	7.9
Apr. 21, 27-30, May 1	634	9.0		63	17	58		137	117	82	--	3.1		448	.61	767	227	114	36	1.7	728	7.7
May 2-3, 6-7	4,080	13		35	5.2	9.4		116	15	12	--	2.0		154	.21	1,700	109	14	16	.4	268	7.5
May 4-5, 8-10	456	13		41	7.7	17		137	22	24	--	3.5		203	.28	250	134	22	22	.7	351	7.7
May 11-19	2,186	20		46	10	25		168	21	35	--	1.8		247	.34	1,460	156	18	26	.9	455	8.0
May 20-31	2,942	18		37	5.2	7.6	--	132	8.6	9.5	--	3.2		161	.22	1,280	114	6	13	.3	273	8.0

a Sum of determined constituents.

COLORADO RIVER NEAR SAN SABA, TEX.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
June 1-2, 4-10	959	17	--	40	7.5	21		144	19	26	--	2.8	--	214	0.29	554	131	13	26	0.8	369	8.1
June 3	3,640	19	--	86	17	137		145	142	223	--	1.2	--	732	1.00	7,190	284	166	51	3.5	1,220	8.1
June 11-20	245	19	--	42	10	21		173	13	25	--	2.2	--	225	.31	149	146	42	24	.8	384	8.1
June 21-30	44.9	21	--	50	17	30		224	16	42	--	1.5	--	a288	.39	34.9	195	12	25	.9	505	7.7
July 1-10	18.3	22	--	46	23	41		236	15	63	--	1.5	--	a328	.45	16.2	210	16	30	1.2	602	8.0
July 11-20	11.5	21	--	45	26	47		241	15	76	--	1.5	--	a350	.48	10.9	220	22	32	1.3	647	8.0
July 21-31	8.88	18	--	43	29	59		248	14	97	--	1.2	--	a383	.52	9.2	226	23	36	1.7	722	8.1
Aug. 1-10	3.68	17	--	36	31	62		238	17	99	--	1.2	--	380	.52	3.8	218	22	38	1.8	717	8.1
Aug. 11-20	2.72	16	--	35	31	69		239	17	107	--	.8	--	396	.54	2.9	215	19	41	2.0	747	8.2
Aug. 21-31	1.75	15	--	34	32	69		238	17	109	--	1.2	--	398	.54	1.9	216	22	41	2.0	756	8.2
Sept. 1-10	49.9	15	--	34	32	72		240	17	112	--	1.0	--	402	.55	54.2	216	20	42	2.1	761	8.0
Sept. 11-13	35,970	13	0.14	28	3.1	4.6	4.2	102	7.4	3.2	0.2	3.5	0.03	127	.17	12,330	83	0	10	.2	205	7.5
Sept. 14-23	1,059	15	.05	41	7.3	12	4.3	146	15	18	.3	4.5	.05	197	.27	563	132	13	16	.5	332	8.1
Sept. 24-30	172	18	--	62	15	23		235	21	32	--	9.3	--	302	.41	140	216	24	19	6.8	522	7.8
Weighted average	65.1	15	--	36	6.4	16		129	16	19	--	3.0	--	184	0.25	323	116	11	23	0.7	311	--

a Sum of determined constituents.

COLORADO RIVER AT AUSTIN, TEX.

LOCATION.--At raw water intake of Austin City Water Plant, 4½ miles upstream from gaging station which is at Montopolis Bridge on U. S. Highway 183 at southeast edge of Austin, Travis County, 2.8 miles upstream from Walnut Creek, 3.8 miles downstream from Waller Creek, 5 miles downstream from Barton Creek, and at mile 290.
DRAINAGE AREA.--38,160 square miles, approximately, of which 11,900 square miles is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1952.
Water temperatures: October 1947 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 340 ppm Nov. 1-30; minimum, 262 ppm Sept. 1-30.
Hardness: Maximum, 182 ppm Feb. 1-29; minimum, 151 ppm Nov. 1-30.
Specific conductance: Maximum daily, 578 micromhos Mar. 10; minimum daily, 422 micromhos Sept. 23.
Water temperatures: Maximum observed, 87° F Aug. 7; minimum observed, 53° F Dec. 16, 18, Jan. 7, 11.
EXTREMES, 1947-52.--Dissolved solids: Maximum, 340 ppm Nov. 1-30, 1951; minimum, 251 ppm May 1-31, 1950.
Hardness: Maximum, 197 ppm Jan. 1-31, 1948; minimum, 151 ppm Nov. 1-30, 1951.
Specific conductance (1950-52): Maximum daily, 578 micromhos Mar. 10, 1952; minimum daily, 346 micromhos Dec. 7, 1950.
Water temperatures: Maximum observed, 87° F on several days during summer months; minimum observed, 43° F Jan. 28, 1948, Feb. 4, 1949.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations are residues on evaporation unless otherwise noted. Records of discharge for gaging station at Austin for water year October 1951 to September 1952 given in Water-Supply Paper 1242. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1951	394	11		43	16	43		166	34	67	0.3	1.5		310	0.42	330	174	38	35	1.4	544	8.1
Nov. 1-30	244	11		34	16	59		170	38	70	.2	1.5		340	.46	224	151	12	46	2.1	547	8.2
Dec. 1-31	198	9.8		45	16	47		174	39	68	.3	1.0		328	.45	175	178	36	36	1.5	565	7.7
Jan. 1-31, 1952	185	9.6		46	16	46		177	39	67	.3	1.2		328	.45	164	181	36	36	1.5	553	8.1
Feb. 1-29	202	8.4		45	17	48		177	42	68	.3	1.2		330	.45	180	182	38	36	1.6	569	7.7
Mar. 1-31	188	7.8		45	16	46		171	41	67	.3	1.0		322	.44	163	178	38	36	1.5	564	8.1
Apr. 1-30	448	7.8		42	15	48		159	41	67	.3	3.2		306	.42	370	166	36	39	1.6	553	7.9
May 1-31	1,023	9.8		42	14	46		158	38	64	.3	2.0		304	.41	840	162	33	38	1.6	541	7.9
June 1-30	1,733	12		39	14	47		154	37	64	.2	2.2		300	.41	1,400	155	29	40	1.6	531	8.0
July 1-31	1,801	11		40	14	42	—	156	36	62	.3	1.0		290	.39	1,410	157	30	37	1.4	521	7.9
Aug. 1-31	1,707	10		39	14	40		159	31	55	.3	.8		271	.37	1,250	155	25	36	1.4	494	8.0
Sept. 1-30	901	13		41	13	36		168	27	47	.3	1.8		a262	.36	637	156	18	33	1.3	470	8.0
Weighted average	754	11		40	14	44		160	35	61	0.3	1.5		293	0.40	596	158	26	38	1.5	522	--

a Sum of determined constituents.

COLORADO RIVER AT WHARTON, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 59, in Wharton, Wharton County, 1,000 feet downstream from Texas & New Orleans Railroad bridge, 12 miles upstream from Jones Creek, and at mile 67.
DRAINAGE AREA.--41,150 square miles, approximately, of which 11,900 is probably noncontributing.
RECORDS AVAILABLE.--Chemical analyses: April 1944 to September 1952.
Water temperatures: October 1945 to September 1948, March 1950 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 354 ppm Nov. 1-30; minimum, 154 ppm May 25-30.
Hardness: Maximum, 220 ppm Dec. 1-31; minimum, 93 ppm May 25-30.
Specific conductance: Maximum daily, 696 micromhos Jan. 8; minimum daily, 216 micromhos May 25.
Water temperatures: Maximum observed, 89° F Oct. 6, 10; minimum observed, 47° F Dec. 16.
EXTREMES, 1944-52.--Dissolved solids: Maximum, 386 ppm Apr. 1-10, 1948; minimum, 144 ppm Feb. 24-28, 1949.
Hardness: Maximum, 231 ppm Feb. 1-10, 1947; minimum, 87 ppm Feb. 24-28, 1949.
Specific conductance (1950-52): Maximum daily, 696 micromhos Jan. 8, 1952; minimum daily, 216 micromhos May 25, 1952.
Water temperatures (1945-48, 50-52): Maximum observed, 94° F July 31, 1948; minimum observed, 45° F Jan. 15-16, 1946, Dec. 12, 1947.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids concentrations are residues on evaporation unless otherwise noted. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1951	615	12		52	16	42		196	33	64	0.3	0.8		322	0.44	535	196	35	32	1.3	575	8.0
Nov. 1-30	423	11		42	17	60		216	36	64	.2	.2		354	.48	404	175	0	43	2.0	598	8.1
Dec. 1-31	352	11		60	17	44		232	35	62	.4	1.0		351	.48	334	220	30	31	1.3	609	8.1
Jan. 1-31, 1952	304	9.0		56	17	48		220	40	64	.3	.2		352	.48	289	210	29	33	1.4	616	7.7
Feb. 1-29	382	9.8		52	12	43		192	36	53	.3	1.5		307	.42	317	179	22	34	1.4	535	8.0
Mar. 1-26	338	7.8		55	16	40		206	36	57	.3	1.2		346	.47	316	203	34	30	1.2	580	8.0
Mar. 27-31	272	7.8		31	9.7	18		123	17	24	.4	3.0		186	.25	137	117	16	25	.7	309	7.5
Apr. 1-4, 12-18	1,716	14		32	5.0	20		110	13	26	.2	3.5		a168	.23	778	100	10	30	.9	297	7.5
Apr. 5-11, 19-30	544	13		42	10	34		142	37	45	.2	1.5		a253	.34	372	146	30	34	1.2	450	7.5
May 1-24, 31	921	8.8		45	13	44		166	39	59	.3	1.5		294	.40	731	166	30	37	1.5	533	7.4
May 25-30	7,153	11		29	5.0	13		104	15	14	--	2.0		154	.21	2,970	93	8	24	.6	250	7.5
June 1-30	956	14		41	11	44		149	36	57	.3	2.2		289	.39	746	148	25	39	1.6	502	8.1
July 1-31	1,049	9.2		42	15	42		167	34	60	.4	1.2		285	.39	807	166	30	35	1.4	530	7.9
Aug. 1-30	763	12		46	15	40		184	31	55	.3	.8		292	.40	602	176	26	33	1.3	538	7.8
Sept. 1-30	874	9.6		38	13	42		161	31	52	.4	.8		282	.38	665	148	16	38	1.5	479	7.6
Weighted average	764	11		42	12	37		162	30	49	0.3	1.5		270	0.37	557	154	22	34	1.3	474	--

a Sum of determined constituents.

MISCELLANEOUS ANALYSES OF STREAMS IN COLORADO RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
DEEP CREEK NEAR DUNN																						
May 7, 1952----	0	7.4		44	6.3	126		94	28	215		2.0		509	0.69		136	59	67	4.7	909	7.1
SULPHUR CREEK 1.2 MILES NORTHEAST OF DUNN																						
May 7, 1952----	.01	9.4		116	39	70		210	340	54		1.0		771	1.05		450	278	25	1.4	1,090	7.2
SOUTH CONCHO RIVER AT SAN ANGELO																						
Mar. 3, 1952---	--	13		68	25	63	--	260	57	94		1.2		481	.65		272	60	33	1.7	785	8.0
COLORADO RIVER AT LA GRANGE																						
June 11, 1952--	1,880	9.4	0.00	42	13	37	1.2	148	37	56	0.3	2.0	0.21	285	.39		158	37	33	1.3	493	7.6

GUADALUPE RIVER AT VICTORIA, TEX.

LOCATION.--At gaging station at bridge on U. S. Highway 59 in Victoria, Victoria County, 1,300 feet upstream from Texas & New Orleans Railroad bridge, 10 miles upstream from Coleto Creek, and at mile 51.
DRAINAGE AREA.--5,311 square miles.
RECORDS AVAILABLE.--Chemical analses: October 1945 to September 1946, October 1948 to September 1952.
Water temperatures: November 1950 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 830 ppm Apr. 25-26; minimum, 179 ppm July 23-31.
Hardness: Maximum, 331 ppm Apr. 25-26; minimum, 103 ppm July 23-31.
Specific conductance: Maximum daily, 1,560 micromhos Apr. 26; minimum daily, 217 micromhos Sept. 16.
Water temperatures: Maximum observed, 90° F Aug. 4, 27; minimum observed, 50° F Dec. 16.
EXTREMES, 1945-46, 1948-52.--Dissolved solids: Maximum, 1,040 ppm Jan. 11-17, 1946; minimum, 175 ppm June 4, 6, 15, 1951.
Hardness: Maximum, 428 ppm Jan. 11-17, 1946; minimum, 103 ppm July 23-31, 1952.
Specific conductance (1950-52): Maximum daily, 1,820 micromhos June 24, 1951; minimum daily, 217 micromhos Sept. 16, 1952.
Water temperatures (1950-52): Maximum observed, 90° F Aug. 4, 27, 1952; minimum observed, 40° F Feb. 1-2, 1951.
REMARKS.--Continuous records of specific conductance of daily samples for October 1945 to September 1952 available in district office at Austin, Tex. Some daily chloride determinations also available. Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of discharge for water year October 1950 to September 1951 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-2, 7-12, 16-20, 1951	227	17	0.02	52	18	60	2.8	195	34	99	0.3	1.5	0.24	386	0.52	237	204	44	39	1.8	677	8.0
Oct. 3-6, 13-15	252	16	.03	64	26	117	1.6	189	45	224	.3	.8	.75	619	.83	421	266	112	49	3.1	1,080	8.0
Oct. 21-31	243	17	.03	53	19	45	2.8	210	30	72	.4	1.8	.22	358	.49	235	210	38	31	1.4	611	8.2
Nov. 1-10	341	18	.04	58	21	52	2.8	229	33	83	.5	1.8	.26	407	.55	375	231	44	33	1.5	682	8.0
Nov. 11-20	278	18	.04	55	18	55	3.2	209	29	90	.4	1.8	.23	396	.54	297	211	40	36	1.7	675	8.2
Nov. 21-30	325	18	.03	57	23	76	3.6	210	33	135	.4	2.2	.28	495	.67	434	236	64	41	2.1	822	8.0
Dec. 1-10	336	16	.02	60	21	54	1.6	240	31	86	.4	2.5	.20	430	.58	390	236	40	33	1.6	697	8.1
Dec. 11-20	323	14	.02	68	24	68	2.0	254	35	117	.4	2.5	.20	468	.64	408	268	60	35	1.8	822	8.0
Dec. 21-31	321	16	.05	48	24	82	1.2	185	40	139	.3	2.2	.14	472	.64	409	218	67	45	2.4	820	8.0
Jan. 1-10, 1952	346	14	.05	56	20	55	.4	225	34	85	.3	2.2	.28	398	.54	372	222	37	35	1.6	694	8.0
Jan. 11-20	326	14	.05	57	21	59	.0	222	35	95	.3	2.5	.39	410	.56	361	228	46	36	1.7	712	8.0
Jan. 21-31	337	16	.01	42	19	58	..8	179	35	93	.3	2.0	.31	366	.50	333	183	36	41	1.9	638	8.0
Feb. 1-10	330	15	.01	47	19	56	2.4	197	35	88	.3	2.5	.19	374	.51	333	196	34	38	1.7	655	8.1
Feb. 11-20	309	16	.01	54	20	68	2.0	207	39	112	.3	2.0	.31	422	.57	352	216	47	40	2.0	763	8.1
Feb. 21-29	583	15	.01	56	17	52	.8	222	34	76	.4	2.5	.29	372	.51	586	210	28	35	1.6	655	8.2
Mar. 1-11	350	17	.02	54	16	54	3.6	190	34	91	.2	3.5	.21	396	.54	374	200	45	36	1.7	663	7.6
Mar. 12-18	333	20	.00	67	27	109	4.8	205	45	212	.2	1.5	.35	598	.81	538	278	110	45	2.8	1,110	7.9
Mar. 19-31	323	17	.00	55	20	54	2.0	218	35	90	.3	2.0	.22	404	.55	352	219	40	35	1.6	703	8.0
Apr. 1-10	388	18	.01	44	19	48	2.4	187	31	79	.2	1.8	.19	362	.49	379	188	35	35	1.5	608	8.2
Apr. 11-20	604	18	.00	46	19	48	1.6	190	31	81	.3	1.5	.28	368	.50	600	193	38	35	1.5	614	8.2
Apr. 21-24, 27-30	710	18	.06	50	15	44	4.0	192	28	68	.4	1.8	.13	348	.47	667	186	29	33	1.4	578	8.2
Apr. 25-26	1,054	18	--	85	29	170	--	191	50	351	.2	2.0	--	830	1.13	2,360	331	174	53	4.1	1,500	8.2
May 1-10	443	24	.01	29	18	48	3.6	138	34	74	.2	3.0	.14	303	.41	362	146	34	41	1.7	534	7.8
May 11-20	326	26	.02	29	20	38	1.2	158	32	52	.3	1.5	.68	291	.40	256	155	25	35	1.3	472	8.1
May 21-27	445	26	.02	36	19	42	2.4	178	29	59	.2	1.5	.05	309	.42	371	168	22	35	1.4	530	8.1
May 28-31	7,762	21	.06	33	6.0	21		119	13	27	.2	4.8	.12	195	.27	4,090	107	10	30	.9	306	7.8
June 1-5, 9-10	2,681	18	--	58	11	61	2.8	177	23	111	.2	3.8	.15	400	.54	2,900	190	44	41	1.9	686	7.7
June 6-8, 11-20	1,359	20	.05	47	9.3	29	2.4	156	23	48	.3	3.0	.17	272	.37	998	156	28	28	1.0	527	8.1
June 21-30	421	20	.06	50	15	35	4.0	185	26	58	.3	2.8	.22	311	.42	354	186	35	28	1.1	534	8.1
July 1-10	428	19	.01	48	16	42	2.8	185	28	68	.2	1.5	.05	329	.45	380	186	34	33	1.3	564	8.1
July 11-14, 18-22	655	15	.01	56	16	41	1.6	210	31	63	.3	1.8	.10	343	.47	607	206	34	30	1.3	594	8.0
July 15-17	262	14	.00	72	23	118	--	198	47	230	.4	2.5	.14	638	.87	451	274	112	48	3.1	1,130	7.9
July 23-31	407	13	.05	32	5.7	16	2.4	114	18	18	.4	2.8	.08	179	.24	197	103	10	25	.7	291	7.4
Aug. 1-9	242	21	.03	44	11	29	1.6	a164	21	40	.3	3.5	.17	266	.36	174	155	21	29	1.0	444	8.3
Aug. 10-20	178	20	.01	52	16	51	1.2	207	28	77	.3	1.8	.20	357	.49	172	196	26	36	1.6	622	8.2
Aug. 21-31	132	20	.01	52	16	50	1.6	b208	32	74	.4	1.5	.20	360	.49	128	196	25	35	1.6	621	8.3
Sept. 1-9	131	19	.01	50	17	50	..4	b210	28	72	.3	1.2	.22	352	.48	125	195	23	36	1.6	621	8.3
Sept. 10, 12, 15-19	11,690	15	.08	35	5.9	15	3.8	136	15	18	.3	2.5	.11	180	.24	5,680	112	0	22	.6	303	7.6
Sept. 11,13-14,20-23	3,867	17	.04	47	9.6	25	3.9	165	25	40	.3	3.0	.19	260	.35	2,710	157	22	25	.9	432	8.2
Sept. 24-30	1,389	18	.03	64	13	28	3.6	216	29	50	.3	4.0	.14	326	.44	1,220	213	36	22	.8	538	7.5
Weighted average	819	17	--	45	12	36	2.8	166	24	56	0.3	2.8	0.17	291	0.40	643	162	26	32	1.3	497	--

a Includes equivalent of 1 ppm of carbonate (CO_3).
b Includes equivalent of 3 ppm of carbonate (CO_3).

MISCELLANEOUS ANALYSES OF STREAMS IN GUADALUPE RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
GUADALUPE RIVER NEAR HUNT																						
June 17, 1952		13		51	22	6.6		251	4.9	12	0.3	1.5		236	0.32		218	12	6	0.2	423	8.1
JOHNSON CREEK AT INGRAM																						
June 17, 1952		15		55	25	14		247	10	24	.3	1.8		a266	.36		240	38	11	.4	468	8.2
MEDINA LAKE NEAR SAN ANTONIO																						
Oct. 19, 1951		11	0.00	58	21	8.5	3.6	168	93	13	.1	2.2	0.61	350	.48		235	0	7	.2	484	8.1

a Sum of determined constituents.

NUECES RIVER NEAR THREE RIVERS, TEX.

LOCATION.--At bridge on U. S. Highway 281, 4,100 feet downstream from gaging station, which is 2 miles south of Three Rivers, Live Oak County.
DRAINAGE AREA.--15,600 square miles.
RECORDS AVAILABLE.--Chemical analyses: September 1945 to September 1946, October 1950 to September 1952.
Water temperatures: October 1950 to September 1952.
Sediment records: October 1950 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 1,610 ppm Apr. 10 (6 p.m.-12 p.m.); minimum, 168 ppm July 19-23.
Hardness: Maximum, 216 ppm Dec. 1-10; minimum, 60 ppm Sept. 1-10.
Specific conductance: Maximum daily, 2,830 micromhos Apr. 10; minimum daily, 194 micromhos July 20.
Water temperatures: Maximum observed, 90° F Aug. 6; minimum observed, 50° F Dec. 11-12, 16.
Sediment concentrations: Maximum daily, 4,040 ppm Apr. 23; minimum daily, no flow Aug. 12-16.
Sediment loads: Maximum daily, 36,200 tons May 28; minimum daily, 0 tons Aug. 12-16.
EXTREMES, 1945-46, 1950-52.--Dissolved solids: Maximum, 1,610 ppm Apr. 10 (6 p.m.-12 p.m.), 1952; minimum, 168 ppm July 19-23, 1952.
Hardness: Maximum, 283 ppm Dec. 21-31, 1945; minimum, 60 ppm Sept. 8-12, 13 (12 p.m.-12m.), 1951, Sept. 1-10, 1952.
Specific conductance (1950-52): Maximum daily, 2,830 micromhos Apr. 10, 1952; minimum daily, 194 micromhos July 20.
Water temperatures (1950-52): Maximum observed, 90° F Aug. 6, 1952.
Sediment concentrations (1950-52): Maximum daily, 10,300 ppm May 7, 1951; minimum daily, no flow on many days.
Sediment loads (1950-52): Maximum daily, 75,700 tons Sept. 14, 1951; minimum daily, 0 tons on many days.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. For the periods October 1941 to September 1945, October 1946 to September 1947, and July 1949 to September 1949 specific conductances, numerous spot chlorides, and a few partial analyses available in district office at Austin, Tex. Values reported for dissolved solids are residues on evaporation unless otherwise noted. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242. No appreciable inflow between sampling point and gaging station except during periods of local heavy rains.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium + Potassium (Na+K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Dissolved solids (residue at 180° C) Parts per million	Tons per acre-foot	Tons per day	Hardness as $CaCO_3$ Calcium, magnesium	Hardness as $CaCO_3$ Noncarbonate	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
Oct. 1-5, 1951	154	21	40	4.3	52	150	0	43	43	2.0	285	0.39	119	118	0	49	2.0	471	7.9
Oct. 6-10	36.0	26	58	6.2	88	222	0	68	77	.8	433	.59	42.1	170	0	53	2.9	735	8.0
Oct. 11-22	17.1	22	60	10	158	264	0	104	148	2.0	672	.91	31.0	190	0	64	5.0	1,060	8.2
Oct. 23-24, 28	845	22	44	4.0	75	138	0	67	76	1.5	363	.49	828	126	14	56	2.9	604	8.0
Oct. 25-27, 29-31	696	20	36	3.7	54	136	0	50	40	2.5	a273	.37	513	105	0	53	2.3	447	8.0
Nov. 1-10	97.9	20	40	4.7	83	170	0	50	76	2.5	366	.50	96.7	120	0	60	3.3	624	8.0
Nov. 11-20	15.0	23	42	5.9	89	206	0	50	72	1.5	395	.54	16.0	130	0	60	3.4	657	8.1
Nov. 21-30	16.1	25	58	8.6	147	306	0	82	116	.5	590	.80	25.6	180	0	64	4.8	983	8.2
Dec. 1-10	11.6	23	67	12	200	354	0	109	176	.5	826	1.12	25.9	216	0	67	5.9	1,270	8.2
Dec. 11-20	11.9	31	32	11	236	330	0	107	181	.8	792	1.08	25.4	125	0	80	9.1	1,290	8.2
Dec. 21-31	18.7	28	32	10	261	386	12	108	170	.5	843	1.15	42.6	121	0	82	10	1,360	8.4
Jan. 1-10, 1952	18.3	27	29	8.3	276	420	8	98	174	1.0	848	1.15	41.9	106	0	85	12	1,370	8.4
Jan. 11-20	17.9	24	30	8.0	277	426	12	99	168	.5	854	1.16	41.3	108	0	85	12	1,390	8.4
Jan. 21-31	14.5	22	38	9.7	287	432	12	107	194	.2	914	1.24	35.8	135	0	82	11	1,480	8.4
Feb. 1-10	13.7	24	23	10	301	387	13	122	202	2.5	902	1.23	33.4	98	0	87	13	1,520	8.5
Feb. 11-21	15.6	23	27	9.1	294	431	12	118	175	1.8	892	1.21	37.6	105	0	86	13	1,480	8.4
Feb. 22-29	636	16	36	2.5	49	117	0	56	34	4.5	274	.37	471	100	4	51	2.1	433	7.8
Mar. 1-10	41.9	18	46	5.6	145	193	0	74	153	3.0	566	.77	64.0	138	0	70	5.4	957	8.0
Mar. 11-20	12.6	19	59	11	183	312	0	120	148	1.5	712	.97	24.2	192	0	67	5.8	1,170	8.2
Mar. 21-31	20.9	16	59	14	225	367	0	143	173	.8	828	1.13	46.7	204	0	71	6.9	1,370	8.2
Apr. 1,7-9,17-22, 23 (12p.m.-12m.)	63.4	24	35	5.6	136	238	0	61	102	3.5	492	.67	84.2	110	0	73	5.6	837	8.2
Apr. 2 (12p.m.-12m.),3-6, 10 (12p.m.-6p.m.),15-16, 23 (6p.m.-12p.m.),24-30	228	19	30	3.8	53	125	0	45	37	3.9	257	.35	158	90	0	56	2.4	419	7.6
Apr. 2 (12m.-12p.m.),11-14, 23 (12m.-6p.m.)	457	22	36	4.3	72	137	0	61	59	5.5	331	.45	408	108	0	59	3.0	538	8.1
Apr. 10 (6p.m.-12p.m.)	1,096	30	70	8.3	537	226	8	196	685	8.8	1,610	2.19	4,760	208	24	85	16	2,830	8.5
May 1-10	11.5	23	45	7.3	114	217	0	90	83	1.8	484	.66	15.0	142	0	63	4.2	784	7.9
May 11-20	15.2	22	57	11	168	279	0	125	137	1.4	668	.91	27.4	187	0	66	5.3	1,110	7.9
May 21-25, 26 (12p.m.-12m.), 27,28 (12p.m.-12m.)	348	20	28	2.5	93	163	0	47	69	3.5	364	.50	342	80	0	72	4.5	582	8.0
May 26 (12m.-12p.m.)	146	33	60	4.8	269	154	5	22	420	4.4	962	1.31	379	169	34	78	9.0	1,650	8.4
May 28 (12m.-12p.m.), 29-31	3,790	18	31	2.3	38	116	0	37	23	3.7	218	.30	2,230	87	0	49	1.7	341	7.7

a Sum of determined constituents.

NUECES RIVER NEAR THREE RIVERS, TEX.--Continued

Chemical analyses, in parts per million, water year October 1951 to September 1952--Continued

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium + Potassium (Na+K)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
											Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
June 1-10	2,331	19	39	4.0	26	141	0	28	18	1.3	221	0.30	1,390	114	0	34	1.0	343	7.7
June 11-18	1,252	37	41	4.1	34	166	0	27	20	1.8	259	.35	876	119	0	38	1.4	388	8.1
June 19-30	16.2	42	49	5.6	64	214	0	36	51	.8	372	.51	16.3	146	0	49	2.3	578	8.2
July 1-14	37.6	38	49	5.5	78	199	0	59	63	1.2	398	.54	40.4	145	0	54	2.8	643	8.2
July 15-18	158	25	37	2.7	39	140	0	40	21	2.5	252	.34	108	103	0	45	1.7	387	7.9
July 19-23	584	21	22	2.2	23	96	0	17	10	4.8	168	.23	265	64	0	44	1.3	243	7.8
July 24-31	7.98	30	32	4.2	59	170	0	38	32	1.8	285	.39	6.14	97	0	57	2.6	462	8.1
Aug. 1-10	.96	40	44	5.7	85	232	0	52	51	1.8	432	.59	1.12	134	0	58	3.2	624	8.1
Aug. 11-19	b1.97	38	43	6.0	93	238	0	52	60	1.8	434	.59	2.31	132	0	61	3.5	663	8.0
Aug. 20-31	7.98	33	35	5.1	214	408	14	72	99	1.5	678	.92	14.6	108	0	81	8.9	1,100	8.4
Sept. 1-10	8.35	49	16	4.8	258	478	35	64	73	1.2	785	1.07	17.7	60	0	90	15	1,170	8.8
Sept. 11-16, 19-20	811	16	22	3.4	25	93	0	23	14	3.0	184	.25	403	69	0	44	1.3	260	8.0
Sept. 17-18, 21-30	39.8	22	41	7.5	66	177	0	60	48	1.8	348	.47	37.4	133	0	52	2.5	553	8.2
Weighted average	228	21	35	3.7	48	c143	—	38	35	2.6	270	0.37	166	102	0	50	2.1	425	--

b Includes days of less than 0.05 second-foot flow.
c Includes carbonate as bicarbonate.

NUECES RIVER NEAR MATHIS, TEX.

LOCATION.--At intake tower at Lake Corpus Christi Dam, 0.8 mile upstream from gaging station which is at bridge on U. S. Highway 59, 200 feet downstream from Texas & New Orleans Railroad bridge, and 4 miles southwest of Mathis, San Patricio County.
DRAINAGE AREA.--16,660 square miles.
RECORDS AVAILABLE.--Chemical analyses: October 1947 to September 1952.
Water temperatures: October 1947 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 478 ppm Apr. 1-30; minimum, 251 ppm Oct. 1-31.
Hardness: Maximum, 178 ppm Apr. 1-30; minimum, 115 ppm Oct. 1-31 and June 1-30.
Specific conductance: Maximum daily, 805 micromhos May 29; minimum daily, 371 micromhos June 13.
Water temperatures: Maximum observed, 90° F Sept. 17; minimum observed, 55° F Dec. 16-17.
EXTREMES, 1947-52.--Dissolved solids: Maximum, 548 ppm June 1-30, 1948; minimum, 175 ppm Apr. 27-30, 1949.
Hardness: Maximum, 201 ppm May 1-24, 1951; minimum, 85 ppm Apr. 27-30, 1949.
Specific conductance (1950-52): Maximum daily, 893 micromhos May 13, 16, 1951; minimum daily, 252 micromhos Sept. 16, 1951.
Water temperatures: Maximum observed, 94° F July 27, 1948; minimum observed, 38° F Jan. 31, 1948.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are residues on evaporation. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1951	313	22	0.00	40	3.6	35	7.6	142	34	30	0.3	3.0	0.11	251	0.34	212	115	0	38	1.4	383	7.6
Nov. 1-30	69.2	22		45	3.8	53		164	40	46	.3	1.0		314	.43	59	128	0	47	2.0	482	7.8
Dec. 1-31	40.5	22		49	5.2	51		174	42	47	.4	.8		307	.42	34	144	2	43	1.8	505	7.9
Jan. 1-31, 1952	44.3	22		52	4.9	49		182	41	44	.4	.5		307	.42	37	150	0	41	1.7	519	8.1
Feb. 1-29	59.3	24		55	5.1	58		198	44	53	.3	.2		358	.49	57	158	0	44	2.0	551	8.0
Mar. 1-31	75.3	22		55	5.9	91		218	53	88	.4	.5		442	.60	90	162	0	55	3.2	718	8.1
Apr. 1-30	157	18		57	8.9	93		224	57	97	.3	..5		478	.65	203	178	0	53	3.0	772	8.2
May 1-31	399	21		52	4.9	103		210	58	98	.3	1.2		454	.62	489	150	0	60	3.7	766	8.0
June 1-30	1,381	28		39	4.2	39		156	30	28	.3	.8		259	.35	966	115	0	43	1.6	399	7.9
July 1-31	155	24		42	4.0	41		176	28	26	.3	1.0		259	.35	108	121	0	43	1.6	427	8.0
Aug. 1-31	76.4	25		46	4.8	48		183	30	38	.4	4.2		290	.39	60	134	0	44	1.8	495	7.6
Sept. 1-30	175	26		43	4.3	49		180	29	36	.4	.8		279	.38	132	125	0	46	1.9	457	7.7
Weighted average	244	25		44	4.6	54		172	37	45	0.3	1.2		308	0.42	203	129	0	48	2.1	492	--

MISCELLANEOUS ANALYSES OF STREAMS IN NUECES RIVER BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
NUECES RIVER NEAR CAMP WOOD																						
June 17, 1952		13		43	16	7.1		a190	7.7	13	0.3	4.0		197	0.27		173	17	8	0.2	357	8.4
NUECES RIVER NEAR LAGUNA																						
June 16, 1952		13		53	15	6.3		215	9.5	13	.2	4.0		230	.31		194	18	7	.2	391	8.2
FRIO RIVER AT U. S. HIGHWAY 83 NEAR LEAKEY																						
June 17, 1952		11		58	18	5.7		246	.7	12	.2	6.1		240	.33		219	17	5	.2	423	8.2
FRIO RIVER AT CONCAN																						
June 16, 1952		13		47	16	6.6		200	12	14	.2	1.0		210	.29		183	19	7	.2	372	8.0
DRY FRIO RIVER NEAR CONCAN																						
June 16, 1952		10		58	15	7.1		219	16	16	.3	.8		240	.33		206	27	7	.2	407	8.1
CHACON LAKE 6 MILES NORTH OF DEVINE																						
Feb. 12, 1952		12	0.05	90	23	24	2.0	206	137	46	.3	.2	0.22	493	.67		319	150	14	.6	715	7.7

a Includes equivalent of 5 parts per million of carbonate (CO_3).

RIO GRANDE BASIN

PECOS RIVER NEAR ORLA, TEX.

LOCATION.--At gaging station 600 feet upstream from Pasotex pipeline crossing, 6 miles southeast of Orla, Reeves County, 11 miles downstream from Salt (Screwbean) Draw and 14 miles downstream from Red Bluff Dam.
DRAINAGE AREA.--21,300 square miles, approximately (contributing area).
RECORDS AVAILABLE.--Chemical analyses: July 1937 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 7,980 ppm June 1-30; minimum, 3,810 ppm Apr. 16-19.
Hardness: Maximum, 2,600 ppm June 1-30; minimum, 1,690 ppm Apr. 16-19.
Specific conductance: Maximum daily, 13,600 micromhos Sept. 26-27; minimum daily, 4,470 micromhos Apr. 19.
EXTREMES, 1937-52.--Dissolved solids: Maximum, 9,640 ppm Oct. 21-31, 1947; minimum, 1,090 ppm June 1-2, 1948.
Hardness: Maximum, 3,240 ppm Feb. 11, 13, 16-19, 1946; minimum, 602 ppm June 1-2, 1948.
Specific conductance (1950-52): Maximum daily, 13,600 micromhos Sept. 26-27, 1952; minimum daily, 2,500 micromhos Oct. 2, 1950.
REMARKS.--Records of specific conductance of daily samples from November 1941 to September 1952 available in district office at Austin, Tex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1951	6.63	22		614	231	1,470		102	2,200	2,350		—		6,940	9.44	124	2,480	2,400	56	13	10,000	7.4
Nov. 1-30	8.13	22		628	232	1,410		121	2,190	2,280		—		6,820	9.28	150	2,520	2,420	55	12	9,390	7.6
Dec. 1-31	28.1	26		624	232	1,450		120	2,170	2,350		—		6,910	9.40	524	2,510	2,410	56	13	9,790	7.7
Jan. 1-31, 1952	11.0	22		610	244	1,480		124	2,200	2,380		—		7,000	9.52	208	2,530	2,420	56	13	10,000	7.6
Feb. 1-29	10.5	16		584	232	1,550		119	2,190	2,420		—		7,050	9.59	200	2,410	2,310	58	14	10,000	7.4
Mar. 1-31	75.7	16		614	246	1,540		117	2,260	2,440		—		7,170	9.75	1,470	2,540	2,450	57	13	10,200	7.6
Apr. 1-15, 20-30	192	20		584	236	1,510		124	2,140	2,400		—		6,950	9.45	3,600	2,430	2,330	58	13	9,940	8.1
Apr. 16-19	386	16		510	101	637		122	1,430	1,050		5.5		3,810	5.18	3,970	1,690	1,590	45	6.6	5,440	7.8
May 1-31	43.5	36		612	242	1,670		89	2,290	2,620		—		7,510	10.2	882	2,520	2,450	59	15	10,700	7.6
June 1-30	71.5	28		629	251	1,820		106	2,360	2,840		—		7,980	10.9	1,540	2,600	2,510	60	16	11,300	7.0
July 1-31	127	21		618	226	1,610		100	2,240	2,520		—		7,280	9.90	2,500	2,470	2,390	59	14	10,500	7.3
Aug. 1-30	177	19		594	168	1,240		86	1,970	1,950		3.5		5,990	8.15	2,860	2,170	2,100	55	11	8,570	7.2
Sept. 1-30	37.6	17		665	212	1,840		102	2,190	2,960		—		7,930	10.8	805	2,530	2,450	61	16	11,500	7.4
Weighted average	68.0	21		601	212	1,460		106	2,120	2,310		—		6,780	9.22	1,240	2,370	2,280	57	13	9,690	--

PECOS RIVER BELOW GRANDFALLS, TEX.

LOCATION.--At gaging station at bridge on State Farm-to-Market Road 11 between Grandfalls and Imperial, 7.1 miles southeast of Grandfalls, Ward County, and 10 miles downstream from Chacatori Draw.
DRAINAGE AREA.--27,820 square miles, approximately (contributing area).
RECORDS AVAILABLE.-- Chemical analyses: April 1939 to June 1942, October 1946 to September 1952.
EXTREMES, 1951-52.--Dissolved solids: Maximum, 12,200 ppm Mar. 1-31; minimum, 984 ppm Apr. 2-4.
Hardness: Maximum, 3,710 ppm Mar. 1-31; minimum, 316 ppm Apr. 2-4.
Specific conductance: Maximum daily, 20,000 micromhos June 24, 27; minimum daily, 1,520 micromhos Apr. 2.
EXTREMES, 1939-42, 1946-52.--Dissolved solids: Maximum, 12,900 ppm May 1-5, 1951; minimum, 776 ppm June 5, 1947.
Hardness: Maximum, 2,780 ppm May 1-5, 1951; minimum, 316 ppm Apr. 2-4, 1952.
Specific conductance (1950-52): Maximum daily, 20,000 micromhos June 24, 27, 1952; minimum daily, 1,520 micromhos Apr. 2, 1952.
REMARKS.--Records of specific conductance of daily samples available in district office at Austin, Tex. Values reported for dissolved solids are sums of determined constituents. Records of discharge for water year October 1951 to September 1952 given in Water-Supply Paper 1242.

Chemical analyses, in parts per million, water year October 1951 to September 1952

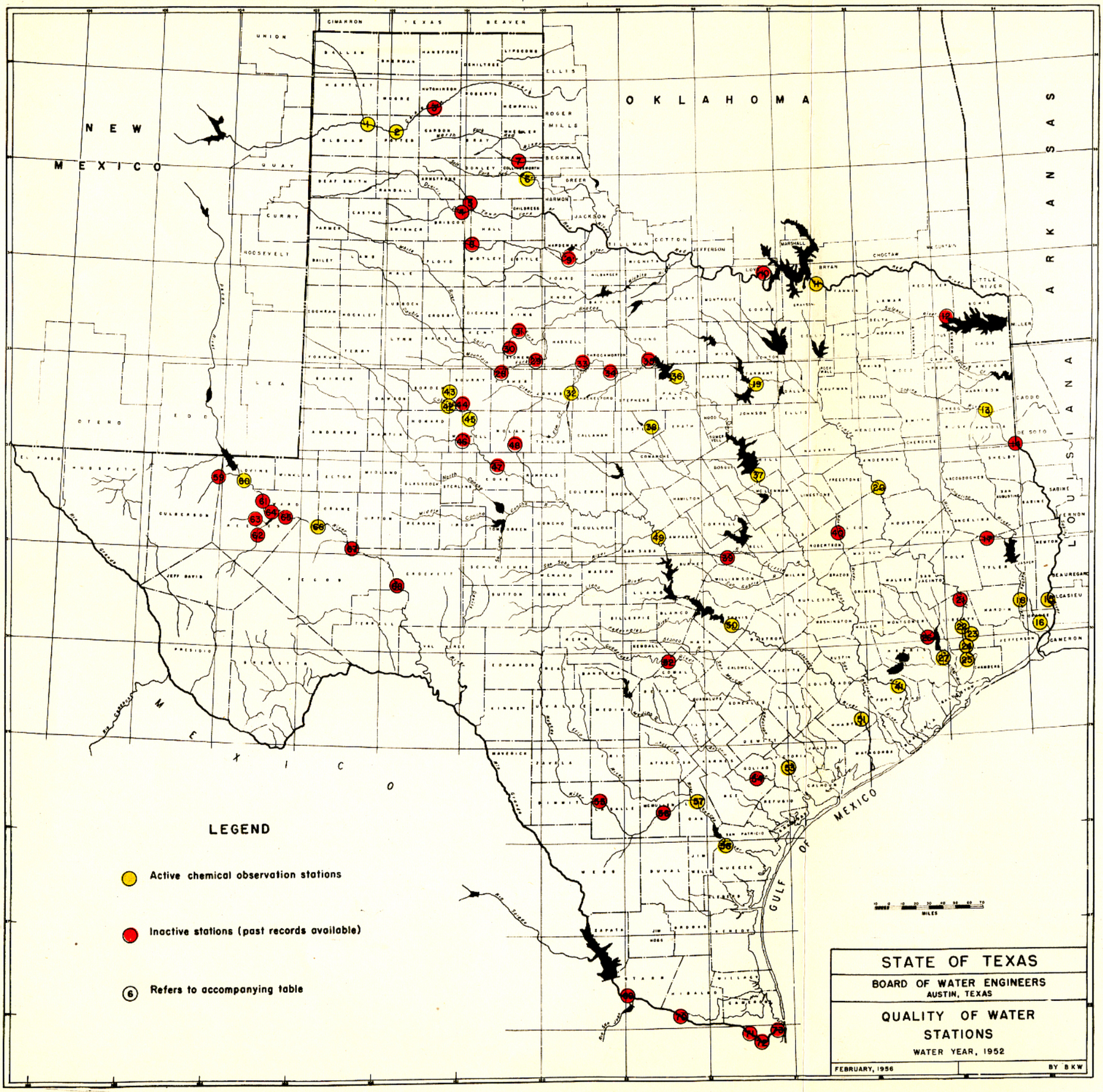
Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (sum)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
Oct. 1-31, 1951	17.3	22		710	357	2,270		161	2,810	3,630		--		9,880	13.4	461	3,240	3,110	60	17	14,000	7.4
Nov. 1-30	16.1	22		734	364	2,400		182	2,810	3,880		--		10,300	14.0	448	3,330	3,180	61	18	14,100	7.8
Dec. 1-31	18.0	22		742	371	2,430		196	2,840	3,930		--		10,400	14.1	505	3,380	3,220	61	18	14,600	7.9
Jan. 1-31, 1952	24.7	20		730	369	2,600		186	2,900	4,130		--		10,800	14.7	720	3,340	3,190	63	20	15,200	7.5
Feb. 1-29	21.3	21		728	373	2,530		170	2,910	4,030		--		10,700	14.6	615	3,350	3,210	62	19	15,100	7.8
Mar. 1-31	25.5	13		816	406	2,950		138	3,280	4,670		--		12,200	16.6	840	3,710	3,590	63	21	16,800	7.6
Apr. 1	16.0	--		264	138	968		122	1,170	1,420		12		4,030	5.48	174	1,230	1,130	63	12	6,210	8.1
Apr. 2-4	15.3	44		82	27	213		219	303	195		12		984	1.34	40.6	316	136	60	5.2	1,590	8.1
Apr. 5-30	19.8	16		741	387	2,700		152	3,070	4,250		--		11,200	15.2	599	3,440	3,320	63	20	15,700	7.2
May 1-29	28.0	20		732	382	2,660		100	3,060	4,200		--		11,100	15.1	839	3,400	3,320	63	20	15,600	7.7
May 30-31	72.5	12		185	78	570		92	661	890		7.3		2,450	3.33	480	782	706	61	8.9	3,980	7.9
June 1-4	24.5	19		398	177	1,220		100	1,540	1,900		5.0		5,310	7.22	351	1,720	1,640	61	13	7,970	7.8
June 5-30	17.4	16		797	387	2,710		101	3,250	4,250		--		11,500	15.6	540	3,580	3,500	62	20	16,000	7.6
July 1-31	16.0	18		817	393	2,650		146	3,180	4,250		--		11,400	15.5	492	3,650	3,530	61	19	16,000	7.4
Aug. 1-31	12.6	20		813	407	2,660		113	3,340	4,200		--		11,500	15.6	390	3,700	3,610	61	19	16,300	7.6
Sept. 1-30	12.4	18		799	381	2,550		109	3,180	4,050		--		11,000	15.0	368	3,560	3,470	61	19	15,500	7.3
Weighted Average	19.4	19		738	369	2,530		146	2,950	4,010		--		10,700	14.6	560	3,360	3,240	62	19	15,000	--

MISCELLANEOUS ANALYSES OF STREAMS IN RIO GRANDE BASIN IN TEXAS

Chemical analyses, in parts per million, water year October 1951 to September 1952

Date of collection	Mean discharge (cfs)	Silica (SiO_2)	Iron (Fe	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids (residue at 180° C)			Hardness as $CaCO_3$		Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos at 25° C)	pH
														Parts per million	Tons per acre-foot	Tons per day	Calcium, magnesium	Noncarbonate				
RIO GRANDE AT LANGTRY																						
June 17, 1952----	a1,180	20	0.01	168	24	108	2.4	188	537	19	0.7	2.5	0.25	1,010	1.37		518	364	31	2.1	1,280	7.3
PECOS RIVER NEAR COMSTOCK																						
June 17, 1952----	a114	9.0	.02	165	103	583	2.4	138	627	930	.9	1.0	.39	b2,490	3.39		835	722	60	8.8	4,110	7.6
LAKE WALK NEAR DEL RIO																						
June 17, 1952----	--	13	.04	46	10	6.0	.4	180	6.6	9.5	.3	5.0	.36	203	.28		156	8	8	.2	340	7.6
RIO GRANDE AT LAREDO																						
Apr. 21, 1952----	a554	13	.00	75	33	165	.4	141	248	215	.9	.8	.60	849	1.15		322	204	53	4.0	1,380	8.0
LAKE HARLINGEN NEAR HARLINGEN																						
Feb. 11, 1952----	--	11	.00	92	33	202	2.8	149	274	284	.8	.5	.57	1,000	1.36		365	243	54	4.6	1,640	8.0
Sept. 16----------	--	17	.03	130	37	304		154	386	430	.7	.2	--	b1,380	1.88		476	350	58	6.1	2,350	7.7

a Records furnished by International Boundary and Water Commission.
b Sum of determined constituents.


NEW MEXICO
OKLAHOMA
ARKANSAS
LOUISIANA
TEXAS
MEXICO
GULF OF MEXICO
LEGEND
Active chemical observation stations
Inactive stations (past records available)
(6) Refers to accompanying table
STATE OF TEXAS
BOARD OF WATER ENGINEERS
AUSTIN, TEXAS
QUALITY OF WATER STATIONS
WATER YEAR, 1952
FEBRUARY, 1956
BY BKW