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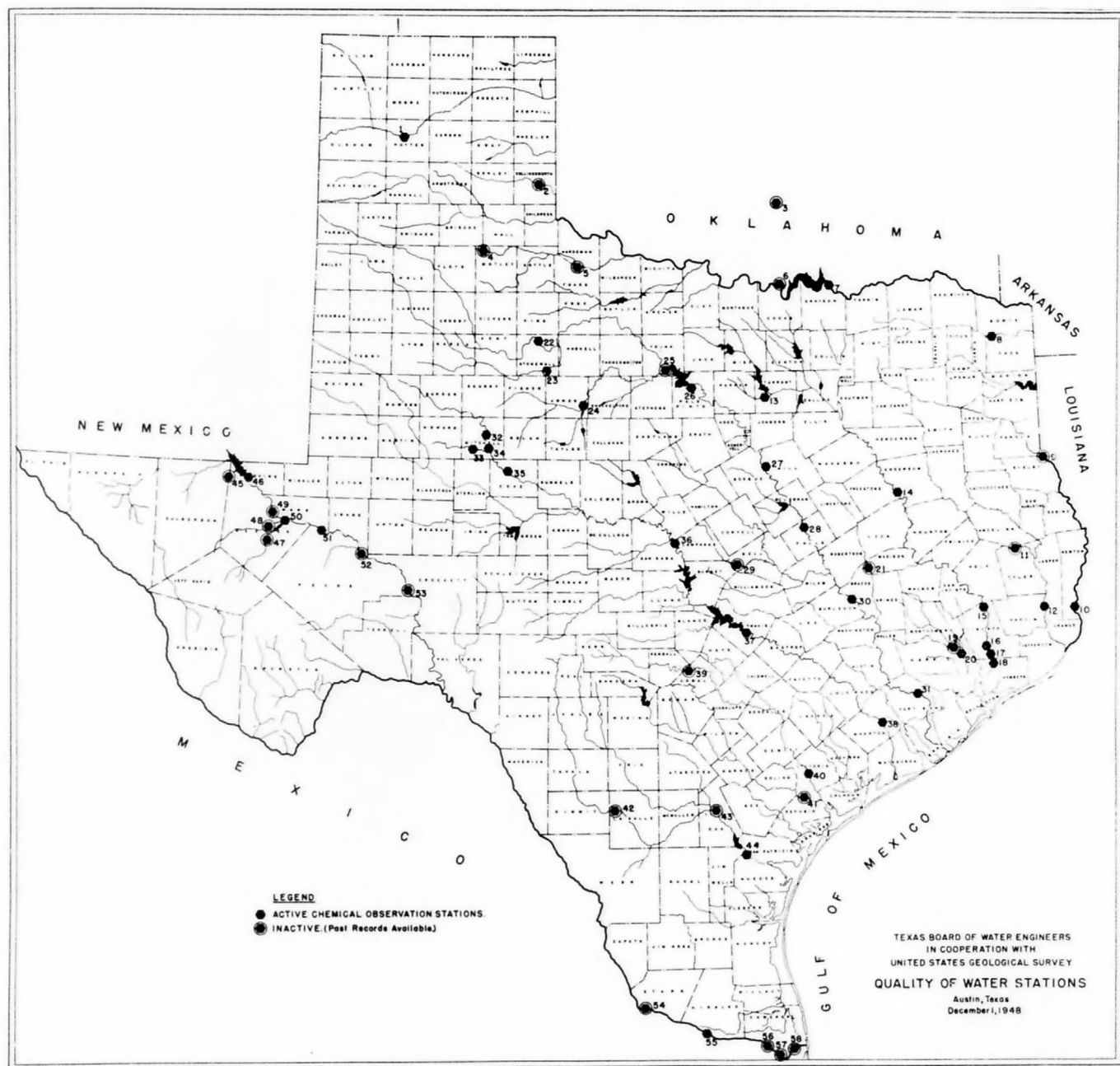
CHEMICAL COMPOSITION OF TEXAS SURFACE WATERS, 1948

B. Irelan, D. E. Weaver, and J. R. Avrett

Prepared in cooperation with the
United States Department of the Interior
Geological Survey
and others

June 1949

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This report includes the analyses made by the Geological Survey of samples collected from streams in Texas during the year ended Sept. 30, 1948. Quality of water records for previous years have been compiled in reports, "Chemical Composition of Texas Surface Waters, 1938-1945," by W. W. Hastings and J. H. Rowley; "Chemical Composition of Texas Surface Waters, 1946" by W. W. Hastings and B. Irelan; and "Chemical Composition of Texas Surface Waters, 1947" by B. Irelan and J. R. Avrett.

The analyses given herewith were made by the United States Geological Survey at Austin, Texas, in cooperation with the Texas Board of Water Engineers, Bureau of Reclamation, Corps of Engineers, Red Bluff Water Power Control District, Lower Colorado River Authority, Brazos River Conservation and Reclamation District, and other local groups.

The methods are those regularly in use and described in United States Water-Supply Paper 596-H, pages 236-261, 1928: "Notes on practical water analysis" by W. D. Collins, and American Public Health Association: "Standard methods for the examination of water and sewage, 9th ed." pages 1-112, 1946. On the basis of specific electrical conductance, daily samples of similar composition were mixed together for analysis. Effective Oct. 1, 1947, specific conductance is reported as "micromhos, $K \times 10^6$ at $25^\circ C$ ". In the past it was reported as $K \times 10^5$. At most stations three composites were made for each month as follows: samples for the first ten days, next ten days and the remainder of the month. For streams showing large changes in the quality of the water, composites were made more frequently, depending on the total salt content as indicated by measurement of the conductivity of the daily samples. For a few stations the compositing was done on a monthly basis.

The ions, calcium, magnesium, sodium and potassium, bicarbonate, sulfate, chloride, and nitrate, are reported in parts per million. Many of the analyses include silica determinations reported in parts per million as SiO_2 . Previously silica determinations were made only occasionally and were not reported. The mean discharge for the composite period is reported in second feet. The total and non-carbonate hardness are reported as calcium carbonate ($CaCO_3$). Weighted average analyses are given for certain stations where sampling was considered adequate. The weighted average analysis approximates the composition of the water that would be stored in a reservoir holding all of the flow for the entire year.

The location of active and inactive chemical observation stations on streams in Texas, as of Dec. 1, 1948, have been noted on the accompanying map. There were twenty-three daily observation stations maintained by the Geological Survey for the water year Oct. 1, 1947 to Sept. 30, 1948. Numerous spot analyses were run on rivers throughout the state during that period.

Acknowledgement is given to the following persons whose analyses of Texas surface waters have been used in compiling this report: Clara J. Carter, Jane K. Brassfield, Sam H. Hastings, Homer D. Smith, Lee J. Freeman, James R. Avrett, DeForrest E. Weaver. Calculations of weighted averages were made by DeForrest E. Weaver, James R. Avrett, and Marie H. McNiel.

CANADIAN RIVER NEAR AMARILLO, TEX., June 1948 to September 1948

Analyses of samples collected at Old Tascosa 20 miles west of gaging station at bridge on U. S. Highways 87 and 287, 2,000 feet downstream from Pitcher Creek, 2.0 miles downstream from Panhandle and Santa Fe Railway bridge and 19 miles north of Amarillo.

Date of collection	Specific conductance (micromhos at 25°C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids		Hardness as CaCO ₃		Per cent sodium carbonate
										Parts per million	Tons per acre foot	Total	Non-carbonate	
1948														
June 3-10	1,390	14	88	36	167	186	403	110	3.2	942	1.28	368	215	50
June 11-19	1,550	13	94	40	187	174	452	135	2.8	1,010	1.37	399	256	50
June 20-30	1,050	13	64	27	123	174	280	73	.8	697	.95	270	128	50
July 1-5, 9-11, 15-16, 19, 21, 23-29	1,470	15	80	33	159	167	336	135	2.8	855	1.16	335	198	51
July 8, 13-14, 20, 22	930	17	50	20	114	147	203	85	2.2	570	.78	207	86	54
July 6-7, 12, 17-18, 30	1,760	16	101	42	218	179	428	215	2.8	1,110	1.51	424	278	53
Aug. 1-2, 4, 13-20	1,530	19	80	35	193	174	354	178	1.2	985	1.34	343	200	55
Aug. 5-12	927	21	48	19	117	162	194	81	5.0	579	.79	198	65	56
Aug. 21-25	1,550	22	83	35	203	180	358	192	2.2	984	1.34	351	204	56
Sept. 17, 19-20	1,920	18	92	52	251	192	469	240	3.2	1,220	1.66	441	284	55
Sept. 21-30	1,900	15	90	49	251	190	465	235	1.2	1,200	1.63	426	270	56

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN ARKANSAS RIVER BASIN IN TEXAS

Date of collection	Specific conductance (Micromhos at 25° C)	Sulfate (SO ₄)	Chloride (Cl)
<u>Canadian River at bridge on Hwy. 87, near Amarillo, Texas</u>			
July 12, 1948	1,130	240	138
July 20	1,230	271	130
July 26	1,450	325	178
Aug. 3	801	147	70
Aug. 10	1,060	216	176
Aug. 18	868	161	84
Sept. 14	1,650	172	230
Sept. 21	709	147	44
Sept. 27	2,190	408	328

RED RIVER AT DENISON DAM, NEAR DENISON, TEXAS, October 1947 to September 1948

Analyses of samples collected immediately below dam on Red River, 1.7 miles upstream from Sand Creek and 5 miles north of Denison. Discharge records reported are for gaging station at old highway toll bridge 1.3 miles downstream from Sand Creek, 2 miles south of Colbert, Oklahoma. No appreciable inflow between dam and gaging station except during periods of heavy local rains.

Date of collection	Mean discharge (second feet)	Specific conductance (Micromhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium carbonate
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
Oct. 1-31	2,197	1,200	9.0	79	24	145	132	181	212	0.8	777	1.06	4,610	296	188	47
Nov. 1-30	1,341	1,230	--	80	22	138	134	163	220	1.8	764	1.04	2,770	290	180	51
Dec. 1-31	2,351	1,230	--	78	23	141	134	176	215	.5	762	1.04	4,840	289	179	52
Jan. 1-31	2,434	1,240	9.9	80	24	147	136	177	228	1.5	763	1.04	5,010	298	186	52
Feb. 1-29	2,604	1,290	9.8	82	24	149	136	175	235	1.8	765	1.04	5,380	303	192	52
Mar. 1-31	2,689	1,280	8.6	88	22	140	138	179	222	1.2	788	1.07	5,720	310	197	49
Apr. 1-30	3,466	1,270	6.6	89	24	137	142	177	225	.8	789	1.07	7,380	320	204	48
May 1-31	2,839	1,280	4.5	83	22	153	144	178	232	.8	754	1.03	5,780	298	180	53
June 1-30	5,995	1,330	6.0	86	22	160	148	178	245	.8	795	1.08	12,900	305	184	53
July 1-31	11,650	1,360	8.6	88	26	151	141	177	250	2.2	817	1.11	25,700	326	211	50
Aug. 1-31	2,549	1,360	9.4	84	23	158	143	172	242	3.2	820	1.12	5,640	304	187	51
Sept. 1-30	2,124	1,500	10	92	27	170	137	184	288	.8	905	1.23	5,190	340	228	52
Weighted average	3,528	1,310	--	85	24	150	140	175	239	1.5	797	1.08	7,590	310	196	51

SULPHUR RIVER NEAR DARDEN, TEXAS, October 1947 to September 1948

Analyses of composites of daily samples collected at gaging station at bridge on U.S. Highway 67, 0.6 mile upstream from St. Louis Southwestern Railway bridge and 1 mile southwest of Darden, Bowie County.

Date of collection	Mean discharge (Second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	Percent sodium
Oct. 1-2	30	1140	--	35	9.0	172	89	85	238	3.2	605	0.82	49.0	124	52	75
Oct. 3-10	13.1	2610	--	62	16	454	103	179	662	2.5	1430	1.94	50.6	220	136	82
Oct. 11-20	5.22	2570	--	65	15	441	114	177	640	2.5	1400	1.90	19.7	224	130	81
Oct. 21-31	6.35	2800	5	68	17	524	120	203	742	3.0	1630	2.22	27.9	240	141	80
Nov. 1-2, 5	205	2620	--	58	83	312	75	184	645	2.0	1320	1.80	731	486	424	58
Nov. 3-4, 6	312	672	--	34	7.2	75	88	61	100	0.8	322	0.44	271	114	42	59
Nov. 7-10	655	314	--	11	4.3	42	32	32	54	0.5	277	0.38	490	45	19	67
Nov. 11-15	426	762	--	41	11	91	34	74	169	1.0	438	0.60	504	148	120	57
Nov. 16-20	136	354	--	20	4.9	42	69	33	50	1.2	213	0.29	78.2	70	14	57
Nov. 21-30	2,753	248	--	17	4.5	22	56	24	26	2.2	178	0.24	1,320	61	15	44
Dec. 1-10	2,455	236	--	19	4.2	25	60	33	25	0.8	146	0.20	968	65	16	46
Dec. 11-15 (28-30)	5,502	252	--	24	3.9	23	73	33	22	1.0	151	0.21	2,240	76	16	40
Dec. 16-27	11,940	160	--	20	4.1	13	64	30	7.0	1.2	107	0.15	3,450	67	14	29
Jan. 1-10	9,621	183	7.6	25	2.6	8.0	80	15	6.0	1.2	132	0.18	3,430	73	8	19
Jan. 11-15	3,774	270	12	25	3.8	28	76	32	31	0.5	185	0.25	1,890	78	16	44
Jan. 16-20	882	519	10	27	6.2	68	71	53	91	0.2	314	0.43	748	93	35	62
Jan. 21-31	920	873	11	34	8.1	132	67	86	185	0.0	519	0.71	1,290	118	64	71
Jan. 22-30	916	473	10	23	6.6	62	59	57	79	0.2	296	0.40	732	85	36	61
Feb. 1-3	1,715	457	10	30	5.5	54	78	56	66	0.0	282	0.38	1,310	97	34	55
Feb. 2, 4-10	4,351	285	8.2	28	3.9	23	78	35	24	1.2	198	0.27	2,330	86	22	36
Feb. 11-20	8,055	230	7.4	29	2.4	16	90	25	11	2.5	157	0.21	3,410	82	8	30
Feb. 21-29	3,696	291	7.5	25	3.5	32	77	32	35	0.8	193	0.26	1,930	77	14	48
Mar. 1-10	10,880	238	8.4	32	3.1	9.9	96	21	8.0	2.8	165	0.22	4,850	92	14	19
Mar. 11-15	5,918	245	7.8	30	3.4	13	92	23	12	2.0	180	0.24	2,880	89	13	25
Mar. 16-20	1,020	383	8.6	32	5.1	37	89	43	43	3.8	240	0.33	661	101	28	44
Mar. 21-31	3,097	316	3.3	28	5.5	31	90	41	31	0.5	186	0.25	1,560	92	19	42

SULPHUR RIVER NEAR DARDEN, TEXAS, October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (Second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids Parts per million	Tons per acre foot	Tons per day	Hardness as CaCO ₃ Total	Non-carbonate	Percent sodium
Apr. 1-2, 17-18, 20	2,864	373	8.2	30	4.7	37	87	34	48	1.2	232	0.32	1,790	94	23	46
Apr. 3-7, 13-16	1,007	551	17	41	5.8	61	112	53	79	0.5	322	0.44	875	126	34	51
Apr. 8-12, 19	864	819	12	54	9.2	94	127	75	139	0.2	474	0.64	1,110	173	69	54
Apr. 25-30	434	565	9.0	47	6	63	115	66	81	2.2	355	0.48	416			49
Apr. 21-24	1,452	368	8.4	38	5.2	32	92	45	44	2.2	225	0.31	882	116	41	38
May 1-4	440	909	10	40	8.5	125	99	83	170	0.8	516	0.70	613	135	54	67
May 5-8	1,314	545	9.0	42	5.9	57	115	50	76	1.2	320	0.44	1,140	130	36	49
May 9-10, 15-19	18,880	233	7.4	30	2.6	17	90	16	20	4.0	170	0.23	8,670	86	12	30
May 11-14	13,580	111	5.8	13	5.3	10	52	18	10	1.2	126	0.17	4,620	54	12	29
May 20-31	8,212	252	10	29	3.3	16	91	17	18	3.8	168	0.23	3,720	86	11	29
June 1-11	9,232	397	12	33	5.1	39	102	33	48	2.8	243	0.33	6,060	103	20	45
June 12-16, 27-30	243	580	11	50	6.4	56	134	60	72	1.5	336	0.46	220	152	42	45
June 17-26	41.7	1150	11	51	11	163	137	80	232	3.5	636	0.86	71.6	172	60	67
July 1-10	230	551	9.8	46	4.9	56	123	55	68	2.2	321	0.44	200	135	34	47
July 11-12, 15-18	594	634	10	42	4.3	77	113	53	99	3.8	357	0.49	573	122	30	58
July 19-22	145	1900	8.4	56	10	315	119	134	445	1.8	1030	1.40	403	181	84	79
July 13-14, 23-31	79.7	1100	7.5	46	8.3	166	125	80	228	2.2	612	0.83	132	149	46	71
Aug. 1	152	5910	10	111	33	1150	76	477	1670	4.0	3490	4.75	1,430	412	350	86
Aug. 2, 7-10	126	1110	8.5	28	11	182	73	82	258	2.2	657	0.89	224	115	55	78
Aug. 3-6	220	738	6.4	28	6.0	112	82	61	146	0.8	442	0.60	263	94	28	72
Aug. 11-20	22.5	678	10	40	5.6	94	135	57	105	0.5	392	0.53	23.8	123	12	58
Aug. 21-31	7.56	780	14	48	7.5	102	157	65	124	1.2	444	0.60	9.1	151	22	59
Sept. 1-10	9.22	736	14	30	7.5	106	105	50	140	1.0	418	0.57	10.4	106	20	68
Sept. 11-14	7.85	742	13	26	7.6	112	101	50	144	0.5	422	0.57	8.94	96	13	72
Sept. 15-20	9.10	396	12	16	6.1	53	69	27	67	1.2	252	0.34	6.19	65	8	64
Sept. 21-26	6.22	365	11	20	4.7	49	92	22	54	1.5	242	0.33	4.1	69	0	61
Sept. 27-30	2.00	477	11	27	4.4	62	103	30	72	3.8	290	0.39	1.6	85	1	61
Weighted average	2,905	253	--	27	3.8	21	81	26	22	1.9	171	0.23	1,340	83	17	35

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN RED RIVER BASIN IN TEXAS

Date of collection on	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	TOTAL Hardness as CaCO ₃	Per cent sodium
<u>Elm Creek near Shamrock, Texas</u>												
Oct. 21, 1947	1,270	--	176	29	72	270	346	91	5.5	946	558	--
Dec. 1, 1947	1,270	--	132	23	84	166	324	92	5.3	833	424	30
<u>Deep Springs, Salt Lake, near Depot at Estelline, Texas</u>												
Sept. 23, 1948	65,900	15	1,500	311	17,000	133	4,250	26,500	--	49,640	5,020	88
<u>Baylor Creek at bridge on Hwy 287, near Childress, Texas</u>												
Mar. 1, 1948	562	11	96	12	6.7	11	230	8.0	3.2	430	289	5
<u>Buck Creek above bridge on U. S. Hwy. 62, 16 miles northeast of Childress, Texas</u>												
Oct. 21, 1947	3,710	--	574	147	206	105	1,870	320	0.8	3,170	2,040	--
<u>Buck Creek at bridge on U. S. Hwy. 83, near Childress, Texas</u>												
Sept. 23, 1948	3,660	22	606	134	258	126	2,100	240	1.5	3,420	2,060	21
<u>Prairie Dog Town Fork Red River at bridge on U.S. Hwy. 83, near Childress, Texas</u>												
Sept. 23, 1948	77,100	14	1,680	440	20,500	102	4,780	32,300	--	59,700	6,000	88
<u>Little Wichita River, Willie Morris Survey, Clay County, Texas</u>												
Sept. 10, 1948	5,200	8.6	212	73	802	98	619	1,310	0.0	3,070	829	68 $\frac{1}{4}$

SABINE RIVER NEAR RULIFF, TEXAS, October 1947 to September 1948

Analyses of samples collected at gaging station at bridge on State Highway 235, 2.4 miles N. of Ruliff, Newton County, and 4.5 miles down-stream from Cypress Creek.

Date of collection	Mean discharge (Second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	Percentage
Oct. 1, 7-10	1,104	647	—	13	5.4	106	44	16	164	0.8	364	0.50	1,090	54	2	81
Oct. 2-6	1,320	345	—	11	4.7	49	45	13	72	1.5	206	0.28	734	47	10	69
Oct. 11-20	720	349	—	8.9	4.1	55	41	10	81	0.8	213	0.29	414	39	5	75
Oct. 21-31	627	383	28	10	5.3	63	44	13	88	0.2	232	0.32	393	47	11	75
Nov. 1-10	1,192	304	—	9.6	3.1	45	31	9.6	69	1.2	189	0.26	608	37	11	72
Nov. 11-20	2,894	339	—	9.0	4.5	48	18	9.9	85	1.0	212	0.29	1,660	41	26	72
Nov. 21-30	5,007	399	—	10	4.9	58	18	15	100	1.0	260	0.35	3,510	45	30	74
Dec. 1, 3	3,850	442	—	13	5.9	57	42	17	90	1.2	280	0.38	2,910	57	22	68
Dec. 2, 4-10	6,322	198	—	6.2	2.8	26	14	12	42	0.8	158	0.21	2,700	27	16	68
Dec. 11-20	18,310	124	—	5.9	2.2	12	13	6.4	23	0.5	119	0.16	5,880	24	13	53
Dec. 21-31	12,640	174	—	7.0	4.0	19	20	16	30	0.8	124	0.17	4,230	34	18	55
Jan. 1-9	12,760	142	—	7.2	2.9	17	18	15	25	0.2	106	0.14	3,650	30	15	55
Jan. 10-20	15,170	174	—	8.8	3.2	21	23	17	31	0.2	122	0.17	5,000	35	16	56
Jan. 21-31	13,580	197	—	8.8	4.0	23	24	18	35	0.2	140	0.19	5,130	38	19	56
Feb. 1-10	16,450	195	—	7.0	3.6	24	12	23	36	0.2	128	0.17	5,690	32	22	62
Feb. 11-20	22,910	141	12	6.9	2.9	17	15	19	24	0.5	100	0.14	6,190	29	17	56
Feb. 21-29	27,200	130	11	5.0	2.8	16	12	20	20	0.2	102	0.14	7,490	24	14	59
Mar. 1-10	22,120	178	16	9.2	2.8	23	22	24	29	0.8	128	0.17	7,640	34	16	60
Mar. 11-20	17,030	174	12	7.0	3.4	21	16	22	28	0.8	125	0.17	5,750	31	18	59
Mar. 21-24, 26																
28-31	13,660	210	16	10	5.6	23	38	20	32	0.8	168	0.23	6,200	48	17	51
Mar. 25-27	13,450	90	14	4.8	2.1	13	20	12	13	0.8	108	0.15	3,920	21	4	57
Apr. 1-10	13,130	233	17	10	5.9	25	35	21	38	0.5	176	0.24	6,240	49	20	53
Apr. 16-18, 21-24	19,200	116	10	4.7	3.0	13	20	10	18	0.2	110	0.15	5,700	24	8	54
Apr. 11-15, 19-20																
25-30	10,530	240	16	9.6	4.7	30	33	19	43	0.0	170	0.23	4,830	43	16	60
May 1-10	5,012	276	17	10	4.4	38	39	20	52	0.0	176	0.24	2,380	43	11	66
May 11-20	5,713	277	16	10	4.6	35	31	18	54	0.8	172	0.23	2,650	44	18	64
May 21-31	10,680	160	10	6.2	4.6	16	26	12	25	1.2	145	0.20	4,180	34	13	51

SABINE RIVER NEAR RULIFF, TEXAS, October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (Second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent carbonate
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
June 1-10	12,660	186	14	10	5.0	19	46	13	25	0.8	143	0.19	4,890	46	8	48
June 11-20	4,987	258	19	11	4.4	37	50	14	50	0.8	166	0.23	2,240	46	5	64
June 21-30	1,796	317	22	14	5.6	40	64	17	53	0.8	191	0.26	926	58	6	60
July 1-10	1,490	360	26	15	4.8	48	64	13	68	0.0	210	0.29	845	57	5	65
July 11-20	1,595	365	21	14	4.6	53	64	12	74	0.0	211	0.29	909	54	1	68
July 21-31	1,303	455	24	16	5.5	65	62	12	100	0.0	260	0.35	915	63	12	69
Aug. 1, 11, 16-19, 21-23	696	529	27	15	6.6	74	59	12	116	0.8	280	0.38	526	64	16	71
Aug. 2-10	758	380	27	13	4.9	53	57	11	77	0.2	216	0.29	442	52	6	68
Aug. 12-15, 20	781	381	26	13	4.6	55	58	15	76	0.5	220	0.30	464	51	4	70
Aug. 24-31	579	336	25	12	4.5	48	60	10	65	0.8	195	0.27	305	48	0	68
Sept. 1-10	510	285	16	12	4.1	37	54	9.5	52	0.8	165	0.22	227	47	3	63
Sept. 11-20	696	324	17	11	3.8	44	41	9.1	67	1.8	183	0.25	344	43	9	69
Sept. 21-30	450	359	18	11	3.9	52	51	9.6	74	1.8	199	0.27	242	44	2	72
Weighted average	8,193	191	--	8.0	3.7	23	24	17	34	0.2	139	0.19	3,070	35	16	59

NECHES RIVER AT EVADALE, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station at bridge on U. S. Highway 59, 200 feet upstream from Gulf, Colorado and Santa Fe Railway bridge at Evadale, and 15 miles upstream from Village Creek.

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium carbonate
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
1947																
Oct. 1-10	600	260	--	9.8	4.4	40	54	11	51	1.2	178	0.24	288	43	0	67
Oct. 11-20	481	280	--	9.2	4.8	41	44	16	56	.8	188	.26	244	43	7	68
Oct. 21-31	471	326	--	9.2	6.6	44	37	18	69	.5	204	.28	259	50	20	66
Nov. 1-10	572	337	18	18	6.2	46	39	14	78	1.5	212	.29	327	70	38	59
Nov. 11-20	1,225	260	--	10	4.2	32	28	13	54	.8	189	.26	625	42	20	62
Nov. 21-30	2,764	192	--	9.2	3.2	17	16	9.0	36	1.0	155	.21	1,160	36	23	51
Dec. 1-10	3,372	185	--	8.9	3.0	15	18	7.8	31	.5	149	.20	1,360	35	20	48
Dec. 11-20	7,572	149	--	5.9	2.2	16	23	7.1	23	1.0	134	.18	2,740	24	5	66
Dec. 21-31	4,782	221	--	8.6	4.7	26	14	26	41	.2	145	.20	1,870	41	29	58
Jan. 1-10, 1948	4,308	233	--	9.3	4.4	32	18	28	47	.2	161	.22	1,870	41	27	63
Jan. 11-20	4,866	213	--	8.5	3.9	26	14	26	39	.2	158	.21	2,080	37	26	60
Jan. 21-31	5,285	213	--	9.1	4.0	27	15	28	40	.2	158	.21	2,250	39	27	60
Feb. 1-10	7,536	201	--	8.7	5.5	22	15	32	33	.2	142	.19	2,890	44	32	52
Feb. 11-13	11,390	181	13	9.2	3.9	21	16	28	30	.2	138	.19	4,240	39	26	54
Feb. 14-20	18,610	110	11	5.8	3.6	15	8.0	15	28	.2	115	.16	5,780	29	23	53
Feb. 21-29	21,530	124	11	4.9	4.4	12	5.0	21	21	.2	125	.17	7,270	30	26	46
Mar. 1-10	16,640	164	14	6.5	5.3	12	8.0	27	21	.0	146	.20	6,560	38	31	41
Mar. 11-20	11,460	191	16	8.0	3.8	21	13	30	28	.2	136	.18	4,210	36	25	56
Mar. 21-31	8,109	221	14	8.9	4.9	23	13	30	35	.8	152	.21	3,330	42	32	54
Apr. 1-10	7,473	219	12	9.1	4.7	23	17	28	34	.8	150	.20	3,030	42	28	54
Apr. 11-16	6,120	247	15	11	5.6	26	24	27	41	.8	168	.23	2,780	50	31	52
Apr. 17-20	14,200	121	11	6.1	2.6	12	16	16	16	.5	122	.17	4,680	26	13	51
Apr. 21-25	14,040	124	6.6	7.3	1.9	17	21	19	18	1.0	119	.16	4,510	26	9	59
Apr. 26-30	8,044	179	14	10	2.8	22	25	24	27	.8	139	.19	3,020	36	16	57
May 1-10	6,661	182	14	8.3	3.9	23	28	19	31	.8	123	.17	2,210	37	14	58
May 11-20	4,296	213	16	8.9	4.9	27	32	18	39	.5	140	.19	1,620	42	16	58
May 21-31	4,849	189	14	8.2	3.7	22	25	20	29	.5	144	.20	1,890	36	15	57

NECHES RIVER AT EVADALE, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
June 1-10	6,047	164	12	7.3	4.0	16	20	15	26	1.2	127	0.17	2,070	35	18	50
June 11-20	2,196	211	17	10	4.9	23	37	15	34	1.2	146	.20	866	45	15	52
June 21-30	960	266	24	11	4.5	36	53	15	46	.8	178	.24	461	46	2	63
July 1-10	806	266	25	11	5.6	33	54	13	45	.2	182	.25	396	50	6	58
July 11-20	1,068	249	22	10	6.1	29	50	13	41	.8	188	.26	542	50	9	56
July 21-31	731	260	23	10	4.4	39	49	18	42	.5	176	.24	347	43	3	56
Aug. 1-10	410	315	21	13	5.5	39	52	13	59	1.2	200	.27	221	55	12	61
Aug. 11-20	312	323	20	12	5.7	41	55	9.6	62	.8	197	.27	166	53	8	63
Aug. 21-31	274	291	22	12	5.1	38	66	10	48	1.8	173	.24	128	51	0	62
Sept. 1-10	276	265	21	11	4.5	36	66	9.3	43	.8	159	.22	118	46	0	63
Sept. 11-20	377	290	20	10	5.0	40	62	9.8	50	.8	170	.23	173	46	0	66
Sept. 21-30	283	298	18	10	5.8	42	65	13	51	1.8	176	.24	134	49	0	65
Weighted Average	4,802	179	—	7.8	4.1	20	17	22	30	0.5	140	0.19	1,820	36	22	55

TRINITY RIVER NEAR OAKWOOD, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station at bridge on U. S. Highways 79 and 84, 1½ miles upstream from International-Great Northern Railroad bridge and 6 miles northeast of Oakwood.

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	Percent sodium
Oct. 1-7	567	710	--	55	7.2	77	173	54	94	4.6	423	0.58	648	167	25	50
Oct. 8	509	1,180	--	64	13	155	176	62	240	5.2	669	.91	919	213	69	61
Oct. 10-16, 18	708	809	--	53	8.3	100	181	57	121	6.1	468	.64	895	166	18	57
Oct. 9, 17, 19, 20	773	1,160	--	60	10	160	180	72	216	13	671	.91	1,400	190	43	65
Oct. 28, 30-31	637	1,330	--	84	15	160	165	52	300	9.0	756	1.03	1,300	271	136	56
Oct. 21-27, 29	733	716	9.5	49	8.3	89	159	52	104	11	420	.57	831	156	26	54
Nov. 1, 3, 5-10	760	756	--	48	6.8	99	156	53	121	11	448	.61	919	148	20	59
Nov. 2, 4	1,085	1,540	--	60	11	246	183	66	352	18	882	1.20	2,580	194	44	73
Nov. 11-20	1,146	696	--	44	6.0	90	140	42	118	7.0	412	.56	1,270	134	20	59
Nov. 21-30	2,283	676	--	50	6.1	82	146	56	101	8.6	406	.55	2,500	150	30	54
Dec. 1-5, 8-10	2,626	751	--	54	5.5	90	161	63	108	5.2	432	.59	3,060	158	26	56
Dec. 6-7	1,800	1,750	--	66	7.4	285	159	59	435	11	984	1.34	4,780	195	64	76
Dec. 11-20	13,180	325	--	37	4.4	20	108	36	18	3.2	200	.27	7,120	110	22	28
Dec. 21-26	14,680	310	--	40	4.1	19	117	34	17	2.8	196	.27	7,770	117	21	26
Dec. 27-31	3,862	538	--	60	6.6	43	172	47	52	8.3	333	.45	3,470	176	36	35
Jan. 1-3	4,513	644	--	64	4.9	61	181	47	78	5.9	383	.52	4,670	180	31	43
Jan. 4-10	12,290	369	--	48	3.1	25	136	38	23	4.0	243	.33	8,060	133	21	29
Jan. 11-20	3,822	563	--	61	6.2	48	171	50	60	6.7	340	.46	3,510	178	38	37
Jan. 21-24	3,105	782	--	63	7.1	88	168	57	124	6.8	459	.62	3,850	186	48	51
Jan. 25-31	4,241	501	--	44	5.3	47	121	56	52	3.8	286	.39	3,270	132	32	44
Feb. 1-10	6,107	503	11	49	5.5	47	130	59	53	4.1	308	.42	5,080	145	38	41
Feb. 11-20	7,554	484	12	52	5.1	41	138	59	44	4.0	304	.41	6,200	151	38	37
Feb. 21-29	3,210	645	11	70	6.8	60	179	83	67	6.2	396	.54	3,430	203	56	39
Mar. 1-10	20,950	329	9.5	38	3.8	24	113	36	22	2.8	220	.30	12,400	110	18	32
Mar. 11-14, 17	24,380	368	14	49	2.5	31	145	50	19	1.8	239	.33	15,700	133	14	33
Mar. 15-16, 18-20	9,784	506	12	60	4.6	40	165	55	43	4.0	301	.41	7,950	169	33	34
Mar. 21-25	3,984	688	14	72	7.2	59	191	66	76	5.4	415	.56	4,460	209	52	38

TRINITY RIVER NEAR OAKWOOD, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre	Tons per day	Total	Non-carbonate	Percent sodium
Mar. 26-31	4,933	526	12	61	6.4	41	159	63	49	2.8	338	0.46	4,500	178	48	33
Apr. 1-10	1,800	722	13	70	7.4	68	138	75	81	7.7	428	.58	2,080	205	51	42
Apr. 11-15	2,888	775	10	61	5.6	86	156	59	118	6.4	446	.61	3,480	175	47	52
Apr. 16-20	4,066	537	12	51	4.8	51	133	59	60	4.6	319	.43	3,500	147	38	43
Apr. 21-30	1,556	742	12	63	7.5	80	173	77	94	10	442	.60	1,860	188	46	48
May 1-10	1,499	781	12	61	7.5	86	170	79	101	8.4	464	.63	1,880	183	44	51
May 11-12	5,625	471	11	36	4.1	56	116	23	76	2.8	268	.36	4,070	107	12	53
May 13-20	30,290	273	9.0	32	3.1	21	104	24	19	2.8	179	.24	14,600	93	7	34
May 21-25	14,050	370	13	47	3.3	23	132	37	23	1.8	225	.31	8,540	110	23	28
May 26-31	3,513	582	11	56	4.8	55	155	56	66	2.2	342	.47	3,240	160	32	43
June 1-10	2,370	608	13	55	5.5	61	166	47	74	4.0	360	.49	2,300	160	24	45
June 11-20	1,126	746	14	59	5.1	86	164	63	105	7.5	438	.60	1,330	168	34	53
June 21-30	1,004	936	15	61	6.6	118	175	68	150	13	538	.73	1,460	179	36	59
July 1-10	4,403	587	15	56	5.6	55	136	78	61	6.5	352	.48	4,180	163	52	43
July 11-19	2,410	583	14	56	5.8	55	138	71	66	5.7	348	.47	2,260	164	51	42
July 20-31	825	760	13	58	6.4	91	175	68	100	4.2	410	.60	980	171	28	49
Aug. 1-6, 9	923	738	12	50	5.8	92	151	60	109	11	432	.59	1,080	149	25	57
Aug. 7-8, 10	605	1,210	9.4	63	7.0	171	159	50	262	8.0	671	.91	1,100	186	56	67
Aug. 11-20	509	868	8.2	56	6.1	109	169	73	126	12	494	.67	679	165	26	59
Aug. 21-28	566	966	11	58	7.2	127	179	67	161	10	546	.74	834	174	28	61
Aug. 29-31	612	2,290	11	72	11	385	160	97	572	29	1,260	1.71	2,080	224	94	79
Sept. 1-10	666	941	14	52	8.0	123	164	69	151	13	530	.72	953	163	28	62
Sept. 11-20	539	867	12	53	8.2	108	162	65	133	15	488	.66	710	166	33	58
Sept. 21-30	466	867	8.4	50	8.0	115	162	68	138	12	483	.66	608	158	25	61
Weighted average	4,612	458	—	47	4.6	41	134	46	46	4.2	282	0.38	3,510	136	26	39

TRINITY RIVER AT ROMAYOR, TEX., October 1947 to September 1948

Analyses of samples collected at bridge of Gulf, Colorado and Santa Fe Railway, 1/4 mile west of Romayor and 2-1/2 miles downstream from Big Creek.

Date of collection	Mean discharge (second-feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium carbonate
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
Oct. 1-10	1,178	653	—	50	6.2	78	156	49	97	4.7	404	0.55	1,220	150	22	53
Oct. 11-20	840	685	—	44	7.2	87	198	47	112	1.2	410	.56	930	140	18	58
Oct. 21-31	1,002	808	4.0	34	7.9	125	141	57	150	.2	468	.64	1,270	118	4	69
Nov. 1-4, 8-13	940	1,150	—	50	8.2	78	176	61	238	4.6	642	.87	1,630	158	14	71
Nov. 5-7, 14-20	1,551	849	—	43	7.6	121	185	43	145	.2	486	.66	2,040	138	0	65
Nov. 21-28	2,931	655	—	39	6.2	93	131	46	117	5.4	385	.52	3,050	123	16	62
Nov. 29-30,																
Dec. 1-4, 10	3,701	549	—	38	4.0	67	139	37	69	9.4	310	.42	3,100	112	0	57
Dec. 5-9	5,268	293	—	19	3.8	40	83	31	33	4.0	207	.28	2,940	63	0	58
Dec. 11-20	12,220	389	—	39	3.7	37	140	33	29	4.0	247	.34	8,150	113	0	42
Dec. 21-31	13,180	424	—	45	4.2	37	140	41	35	3.4	272	.37	9,680	130	15	38
Jan. 1-10	7,251	501	—	56	4.1	43	168	46	44	3.2	309	.42	6,050	157	19	37
Jan. 11-20	8,517	415	—	49	4.0	32	147	37	33	4.0	277	.38	6,370	139	18	34
Jan. 21-31	5,170	678	—	54	5.8	80	149	51	110	3.2	422	.57	5,890	159	37	52
Feb. 1-8	6,068	565	—	38	6.7	54	77	53	70	28	329	.45	5,390	122	59	49
Feb. 9-17	18,920	335	11	27	3.9	45	112	35	36	4.0	219	.30	11,200	83	0	54
Feb. 18-29	8,068	552	11	44	6.7	56	117	72	58	8.4	332	.45	7,230	138	42	47
Mar. 1-10	13,430	469	14	37	5.9	50	127	45	51	3.0	296	.40	10,700	117	12	48
Mar. 11-20	25,130	439	12	39	4.5	51	146	53	34	4.0	269	.37	17,300	116	0	49
Mar. 21-31	10,760	556	12	56	6.0	53	155	71	53	5.2	333	.45	9,670	164	38	41
Apr. 1-10	4,302	575	13	60	6.8	47	161	58	59	5.5	347	.47	4,030	178	46	37
Apr. 11-20	9,045	561	12	41	7.4	59	128	45	74	5.6	348	.47	8,500	133	28	49
Apr. 21-30	6,950	494	11	36	5.4	50	112	35	63	5.6	379	.52	7,110	112	20	49
May 1-4	3,845	512	12	37	6.4	48	120	31	65	.5	302	.41	3,140	119	20	47
May 5-13	3,140	895	13	54	7.6	117	142	57	172	3.2	510	.69	4,320	166	50	61
May 14-20	14,510	385	10	33	4.4	38	119	22	43	1.8	230	.31	9,010	100	3	45
May 21-31	23,820	374	12	41	3.2	29	123	34	29	1.8	228	.31	14,700	115	15	35

TRINITY RIVER AT ROMAYOR, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Sodium					Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Per cent car- bon- ate
			Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Potas- sium (Na+K)	Parts per mil- lion					Tons per Acre foot	Tons per day	Total	Non- car- bon- ate		
June 1-10	5,112	574	14	54	5.6	50	160	48	60	1.8	339	0.46	4,680	158	27	41	
June 11-20	1,908	665	12	54	6.6	69	164	48	88	3.8	370	.50	1,910	162	28	48	
June 21-30	1,013	705	12	55	6.2	80	169	64	92	3.0	410	.56	1,120	163	24	52	
July 1-10	3,747	711	13	55	6.2	79	164	55	99	5.2	414	.56	4,190	163	28	51	
July 11-20	3,687	634	14	58	6.4	63	180	54	73	3.0	370	.50	3,680	171	24	45	
July 21-31	1,137	669	14	49	7.0	72	135	61	93	5.0	387	.53	1,190	192	41	51	
Aug. 1-4, 17-20	825	775	16	44	5.5	103	152	50	123	6.7	449	.61	1,000	132	8	63	
Aug. 5-16	919	1,100	6.6	57	9.1	154	195	70	200	.2	619	.84	1,540	180	20	65	
Aug. 21-31	700	853	9.4	48	8.2	113	162	62	142	2.5	475	.65	898	154	20	62	
Sept. 1-10	789	965	5.1	48	6.2	134	163	48	175	7.3	544	.74	1,160	146	12	67	
Sept. 11-20	747	1,050	2.4	40	5.7	162	138	56	212	6.8	594	.81	1,200	124	10	74	
Sept. 21-30	639	1,010	4.7	43	6.1	151	140	65	195	5.6	576	.78	994	132	18	71	
Weighted average	6,167	493	--	42	5.0	51	136	45	55	4.4	303	0.41	5,050	126	14	46	

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN TRINITY RIVER BASIN IN TEXAS

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total hard- ness as CaCO ₃
Clear Fork Trinity River at Fort Worth, Texas											
Sept. 28-30, 1948	700	15	37	3.5	110	233	58	67	0.8	432	107
Trinity River at Devers pumping plant, near Moss Bluff, Texas, Station 4											
June 18-20	583	18	58	6.1	43	185	36	65	4.0	341	190
June 21-29	697	15	55	6.6	76	163	44	105	1.8	392	164
Aug. 21-31	790	11	46	7.3	104	154	52	135	1.2	439	145
Sept. 1-10	868	12	53	7.6	111	168	46	154	1.8	475	164
Sept. 11-20	927	9.5	50	8.2	126	161	56	170	2.8	515	158
Sept. 21, 24-25	1,230	7.0	48	6.1	192	145	56	270	4.2	681	145
Sept. 23	1,650	9.8	56	6.6	268	130	65	405	5.5	908	167
Sept. 26-30	959	7.0	40	5.6	144	140	49	191	1.8	554	123
Trinity River on Old River at Barber Hill pumping plant, near Cove, Texas, Station 3											
Oct. 1, 1947	1,920	--	--	--	--	--	--	--	--	--	--
Oct. 2	963	--	--	--	--	--	--	176	--	--	--
Oct. 3	1,870	--	--	--	--	--	--	--	--	--	--
Oct. 4	2,010	--	--	--	--	--	--	--	--	--	--
Oct. 5	2,480	--	--	--	--	--	--	710	--	--	--
Oct. 6	3,030	--	--	--	--	--	--	--	--	--	--
Oct. 7	3,770	--	--	--	--	--	--	--	--	--	--
Oct. 8	3,810	--	--	--	--	--	--	--	--	--	--
Oct. 9	4,160	--	--	--	--	--	--	1,240	--	--	--
Oct. 10	3,900	--	--	--	--	--	--	--	--	--	--
Oct. 11-20	3,790	--	103	68	600	150	183	1,080	5.5	2,100	536
June 1-10, 1948	385	18	39	4.4	34	123	32	38	2.2	237	115
June 11-20	487	17	47	5.3	46	152	39	52	1.2	294	139
June 21-23	671	17	48	6.8	78	150	52	99	.8	380	148
June 24-30	1,280	16	62	20	166	155	74	278	.5	739	236
June 21-28	559	23	57	5.9	48	162	46	61	6.5	337	167
July 23-31	1,150	17	58	17	133	136	81	215	6.1	648	214
Aug. 1-6	1,480	13	55	22	207	129	91	338	3.2	872	228
Aug. 7-10	2,630	10	70	43	401	133	137	688	1.8	1,420	352
Aug. 11-17, 19-20	2,500	35	74	45	356	147	130	628	3.2	1,340	370
Aug. 21, 24-26, 29, 31	3,440	9.2	79	64	504	149	166	892	2.2	1,790	460
Aug. 22, 23, 27-28, 30	4,190	9.8	91	68	667	150	203	1,150	1.2	2,260	506
Sept. 2-10	948	12	54	10	121	170	145	178	1.8	521	176
Sept. 11-15	940	12	52	8.5	126	157	63	172	1.8	530	165
Sept. 16-20	1,530	9.9	72	19	200	161	76	340	1.2	845	258
Sept. 21-30	1,150	11	55	11	164	163	58	243	2.0	648	182

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN TRINITY RIVER BASIN IN TEXAS
(Continued)

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total Hard- ness as CaCO ₃
Trinity River at Anahuac, Texas, Station 1											
June 1-10, 1948	652	19	40	9.1	77	134	34	112	1.8	372	138
June 11-21	627	17	43	8.1	70	144	34	98	1.8	359	141
June 22-30	807	20	50	11	96	162	43	141	1.2	458	170
July 21-26	720	21	40	8.7	89	121	51	125	1.5	414	136
Aug. 1	792	--	--	--	--	--	--	--	--	--	--
Aug. 2	702	--	--	--	--	--	--	105	--	--	--
Aug. 3	2,350	--	--	--	--	--	--	602	--	--	--
Aug. 4	813	--	--	--	--	--	--	128	--	--	--
Aug. 5	3,100	--	--	--	--	--	--	840	--	--	--
Aug. 6	851	--	--	--	--	--	--	144	--	--	--
Aug. 7	736	--	--	--	--	--	--	--	--	--	--
Aug. 8	960	--	--	--	--	--	--	--	--	--	--
Aug. 9	1,070	--	--	--	--	--	--	--	--	--	--
Aug. 14-15, 18-20	4,810	16	87	92	788	145	230	1,380	3.5	2,670	596
Aug. 21-23, 28, 30	5,490	12	92	105	900	161	260	1,570	1.5	3,020	661
Aug. 24-27, 29, 31	8,520	10	116	178	1,470	148	390	2,610	--	4,850	1,020
Sept. 1-3, 13-14	4,560	8.4	78	84	746	168	208	1,280	3.5	2,490	540
Sept. 4, 7, 11, 18	7,920	8.2	108	161	1,360	158	357	2,400	--	4,470	932
Sept. 5-6, 8-10, 12, 16	6,120	8.0	96	125	1,010	167	278	1,790	3.5	3,390	754
Sept. 17, 19-20	12,500	9.0	140	277	2,250	150	584	4,000	--	7,330	1,490
Sept. 21-22, 29	9,260	14	119	196	1,630	150	443	2,880	--	5,360	1,100
Sept. 23-24, 28, 30	7,220	13	103	148	1,230	152	333	2,180	--	4,080	866
Sept. 25-27	5,650	12	90	110	956	157	260	1,670	1.5	3,180	677

SAN JACINTO RIVER NEAR HUFFMAN, TEX., October 1947 to September 1948

Analyses of samples collected at the Sheldon Pumping Plant of the City of Houston, 5½ miles downstream from the Huffman gaging station at Beaumont, Sour Lake and Western Railway bridge, 3.4 miles southwest of Huffman.

Date of Collection	Specific conduct- ance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potas- sium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids		Hardness		Per cent non- car- bon- ate
										Parts per mil- lion	Tons per acre foot	Total as CaCO ₃	Non- car- bon- ate	
Oct. 1-2, 5, 1947	910	--	23	9.6	143	74	18	232	1.5	490	0.67	97	36	76
Oct. 3, 6-7, 10	2,920	--	38	52	483	80	105	838	2.5	1,560	2.12	309	244	77
Oct. 12	4,120	--	54	86	665	80	154	1,210	3.0	2,210	3.01	488	423	75
Oct. 11, 13-19	2,920	--	42	54	461	73	109	818	2.2	1,520	2.07	327	267	75
Oct. 20-24, 26-29, 31	943	14	32	15	136	73	25	232	1.8	536	.73	92	82	66
Nov. 1-6	925	--	36	9.8	128	75	17	232	2.2	503	.68	130	69	68
Nov. 7-10	669	--	20	4.1	105	63	9.1	167	.8	370	.50	69	18	77
Nov. 11-15, 17, 19-20	612	--	18	5.2	93	58	6.6	152	1.0	350	.48	68	20	75
Nov. 16, 18, 26	1,120	--	25	11	191	76	120	310	3.5	650	.88	108	45	79
Nov. 21, 23-24, 27-30	623	--	18	4.2	98	53	7.4	158	1.0	370	.50	62	19	77
Dec. 1-2, 8-10	499	--	18	3.8	73	46	7.2	122	1.8	301	.41	60	23	72
Dec. 3-7	317	--	13	3.1	46	38	6.4	75	1.8	223	.30	45	14	69
Dec. 11-12, 25-31	415	--	19	4.1	54	54	8.0	91	.5	257	.35	64	20	65
Dec. 13-24	418	--	13	3.5	34	43	7.3	55	.8	194	.26	47	12	61
Jan. 1, 3-10, 1948	412	--	20	3.7	65	64	6.9	104	.8	271	.37	65	13	69
Jan. 12-21	511	--	21	4.0	76	59	7.5	125	.8	313	.43	69	20	70
Jan. 22-30	388	--	15	3.5	57	55	9.1	86	.8	221	.30	52	7	71
Feb. 1-10	417	--	20	3.7	57	61	11	90	1.0	242	.33	65	15	66
Feb. 11-13, 15-20	268	12	18	3.3	31	47	12	53	1.0	204	.28	58	20	54
Feb. 21-29	293	12	17	3.0	35	48	9.3	58	.8	197	.27	55	15	58
Mar. 1-10	256	12	19	2.7	28	55	8.3	45	1.8	210	.29	58	13	51
Mar. 11-15, 18-19	326	16	22	2.3	46	67	26	58	1.0	202	.27	64	9	61
Mar. 20-23, 25-30	399	15	27	3.1	50	77	22	72	1.8	235	.32	80	17	58
Apr. 1-10	453	19	28	3.6	55	84	9.5	89	.5	266	.36	85	16	59
Apr. 12-18, 20	354	16	23	3.4	39	63	6.2	69	.8	223	.30	71	20	54
Apr. 21-22, 26	459	14	22	2.0	62	66	1.8	99	2.5	264	.36	63	9	68
Apr. 24-25, 27-30	238	9.9	16	2.8	30	63	4.1	42	1.2	167	.23	51	0	56

SAN JACINTO RIVER NEAR HUFFMAN, TEX., October 1947 to September 1948
(Continued)

Date of collection	Specific conduct- ance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potas- sium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	N ₁ - trate (NO ₃)mil- lion	Dissolved Solids Parts per million	Tons per acre foot	Hardness as CaCO ₃		
												Total	Non- car- bon- ate	Per cent so- dium
May 1-4	280	16	19	3.4	30	70	4.6	46	0.8	176	0.24	61	4	52
May 5-10	459	18	24	4.0	60	76	4.4	98	.8	270	.37	76	14	63
May 11-20	503	19	27	4.4	64	77	5.9	110	.8	282	.38	86	22	62
May 21-31	497	17	23	3.9	66	71	5.7	108	1.8	289	.39	73	15	66
June 1-3, 5-10	505	18	26	4.3	64	79	4.7	107	1.2	285	.39	83	18	63
June 11-19	511	18	27	4.1	68	91	5.4	106	2.2	318	.43	84	10	64
June 21-30	622	18	30	6.5	80	98	7.5	132	1.8	340	.46	102	21	63
July 1-4, 6-10	697	17	25	5.1	99	74	4.7	164	2.0	383	.52	84	23	72
July 11-19	566	17	22	5.0	78	71	4.9	128	1.8	308	.42	76	18	69

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN SAN JACINTO RIVER BASIN IN TEXAS

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total Hardness as CaCO ₃
San Jacinto River at Magnolia Gardens, near Crosby, Texas											
July 20, 22-23, 1948	2,140	12	40	35	328	80	68	580	3.2	1,110	244
July 21, 24-25	3,340	14	53	59	531	81	119	945	6.8	1,770	375
July 26-31	4,770	14	62	88	782	98	179	1,380	4.5	2,560	516
Aug. 1-10	6,590	17	78	139	1,110	113	265	1,990	.5	3,660	766
Aug. 12-14, 16-20	7,660	13	88	158	1,320	114	326	2,350	—	4,310	869
Aug. 21-31	8,600	10	102	179	1,490	112	360	2,670	—	4,870	990
Sept. 1-5, 9-10	10,300	9.4	96	218	1,820	114	441	3,220	—	5,860	1,140
Sept. 12, 20-21, 25	8,970	21	88	186	1,570	111	375	2,780	—	5,070	984
Sept. 15-18, 26-30	14,400	10	131	320	2,640	125	653	4,680	—	8,500	1,640

BRAZOS RIVER NEAR SOUTH BEND, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station at bridge on State Highway 67, 0.3 mile upstream from Wichita Falls and Southern Railroad bridge, 1.6 miles downstream from Clear Fork Brazos River, and 2.0 miles northeast of South Bend.

Date of collection	Specific conduct- ance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potas- sium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids		Hardness		
										Parts Per mil- lion	Tons per acre foot	as CaCO ₃ Total	Non- car- bonate	Per cent so- dium
Oct. 1-10, 1947	4,570	--	264	63	652	122	602	1,140	2.5	2,780	3.78	918	818	61
Oct. 11-14	4,200	--	232	59	560	84	440	1,070	2.5	2,400	3.26	822	752	60
Nov. 2-10	2,120	5.0	158	34	251	96	446	402	2.0	1,380	1.88	534	456	53
Nov. 11-20	3,800	--	233	44	523	117	602	835	.5	2,300	3.13	762	666	60
Nov. 21-23	1,810	--	117	21	236	102	275	370	.0	1,070	1.46	378	295	58
Nov. 24-30	4,270	--	169	31	702	98	399	1,120	.8	2,470	3.36	550	469	74
Dec. 1-5, 8-10	4,230	--	187	30	693	107	451	1,090	3.5	2,510	3.41	590	502	72
Dec. 6-7	2,250	--	108	20	328	115	255	498	3.5	1,270	1.73	352	258	67
Dec. 11-20	3,860	--	209	32	582	121	517	905	6.6	2,310	3.14	653	554	66
Dec. 21-31	6,270	--	292	56	1,050	160	765	1,640	2.0	3,880	5.28	959	828	70
Jan. 1, 7, 9-10, 1948	6,000	--	289	60	997	146	713	1,610	2.5	3,740	5.09	968	848	69
Jan. 2, 6	4,060	--	196	40	641	123	457	1,040	3.5	2,440	3.32	654	552	68
Jan. 3-5	2,280	--	111	23	346	107	221	570	2.8	1,330	1.81	372	284	67
Jan. 11-20	6,500	--	302	67	1,040	152	754	1,690	2.0	3,930	5.34	1,030	904	69
Jan. 21-23, 25-31	7,290	--	352	79	1,210	173	882	1,960	1.5	4,570	6.22	1,200	1,060	69
Feb. 1-10	7,430	--	348	80	1,240	169	889	2,000	2.5	4,640	6.31	1,200	1,060	69
Feb. 11-20	7,450	--	344	81	1,230	152	853	2,020	--	4,600	6.26	1,190	1,070	69
Feb. 21-26, 29	8,190	--	364	84	1,380	131	932	2,250	--	5,070	6.90	1,250	1,150	70
Feb. 27-28	2,980	--	130	29	426	104	156	795	2.0	1,590	2.16	444	358	68
Mar. 1-8	3,590	--	264	31	484	99	691	735	2.2	2,260	3.07	786	706	57

BRAZOS RIVER AT POSSUM KINGDOM DAM, NEAR GRAFORD, TEX., October 1947 to September 1948

Analyses of samples collected immediately below dam on Brazos River, 2.6 miles upstream from Loving Creek, and 11.3 miles southwest of Braford. Discharge records reported are for gaging station at bridge on Palo Pinto-Graford highway, 300 feet downstream from Dark Valley Creek and 6½ miles north of Palo Pinto. The gage is about 15 miles downstream from Possum Kingdom Dam. No appreciable inflow between dam and gaging station except during periods of heavy local rains.

Date of collection	Mean daily discharge (Second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent carbonate
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
Oct. 1-31	304	2,160	—	150	22	281	120	344	438	2.0	1,300	1.77	1,070	465	366	57
Nov. 1-30	213	2,260	6.0	152	28	316	114	405	450	1.5	1,420	1.93	817	494	401	57
Dec. 1-31	416	2,260	—	155	25	290	112	363	460	3.8	1,350	1.84	1,520	490	398	56
Jan. 1-31	435	2,300	—	158	24	306	113	356	492	1.2	1,390	1.89	1,630	493	400	57
Feb. 1-29	461	2,300	9.1	157	24	301	113	366	475	2.0	1,390	1.89	1,730	490	398	57
Mar. 1-31	322	2,430	9.9	164	25	320	119	375	510	1.2	1,460	1.99	1,270	512	415	58
Apr. 1-30	500	2,600	9.8	173	24	333	70	389	560	1.0	1,520	2.07	2,050	530	472	58
May 1-31	283	2,520	9.6	164	26	337	121	379	535	1.0	1,510	2.05	1,150	516	418	59
June 1-30	590	2,530	9.0	166	25	327	135	367	520	1.8	1,480	2.01	2,360	518	407	58
July 1-31	735	2,520	11	163	26	329	125	376	520	1.0	1,490	2.03	2,960	514	412	58
Aug. 1-31	926	2,550	12	166	28	342	131	379	538	.5	1,530	2.08	3,830	530	422	57
Sept. 1-30	453	2,570	12	165	32	321	123	387	522	1.8	1,500	2.04	1,830	544	442	56
Weighted average	470	2,450	—	162	26	321	118	374	510	1.5	1,460	1.99	1,850	512	415	58

BRAZOS RIVER NEAR WHITNEY, TEX., October 1947 to May 1948

Analyses of samples collected at gaging station at bridge on State Highway 22, 1.8 miles upstream from Towash Creek and 5 miles southwest of Whitney, Texas

Date of collection	Specific conduct- ance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potas- sium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids		Hardness		
										Parts per mil- lion	Tons per acre foot	as CaCO ₃ Total	Non- car- bonate	Per cent so- dium
Oct. 1-10, 1947	2,090	—	138	25	283	148	333	420	2.5	1,270	1.73	448	326	58
Oct. 11-20	2,110	—	137	25	275	104	340	428	1.5	1,260	1.71	445	360	57
Oct. 21-22, 25-27	2,020	—	130	22	252	113	304	392	.8	1,160	1.58	415	322	57
Oct. 23-24, 29-31	1,360	—	92	16	160	107	195	250	1.2	827	1.12	296	208	54
Nov. 1-10	983	—	69	14	110	119	134	163	1.2	598	.81	230	132	51
Nov. 11-20	1,400	6.0	112	16	185	152	262	238	1.0	898	1.22	361	221	52
Nov. 21-30	1,700	—	118	22	222	134	281	328	2.2	1,040	1.41	385	275	56
Dec. 1-7, 9	1,720	—	120	19	213	143	249	328	2.2	1,000	1.36	378	260	55
Dec. 8, 12-18	420	—	40	5.9	36	103	44	50	1.2	256	.35	124	40	38
Dec. 10-11, 19-20	793	—	62	10	83	104	102	131	1.2	483	.66	196	110	48
Dec. 21-31	931	—	76	12	103	140	118	159	1.8	558	.76	239	124	48
Jan. 1, 3, 6-10, 1948	1,050	—	84	13	47	138	143	72	2.2	646	.88	263	150	28
Jan. 2, 4-5	484	—	43	6.0	48	116	48	63	2.5	282	.38	132	37	44
Jan. 11-20	1,430	—	111	16	175	169	194	272	.5	915	1.24	343	204	53
Jan. 21-26, 28-31	2,020	11	135	24	254	153	283	402	1.2	1,190	1.62	436	310	56
Feb. 1-10	1,830	9.0	125	23	237	155	269	365	1.0	1,110	1.51	406	280	56
Feb. 11-20	1,910	8.2	132	24	245	146	287	385	.2	1,150	1.56	428	308	55
Feb. 21-25	1,690	11	114	22	201	109	252	325	2.8	982	1.34	375	286	54
Mar. 17-20	1,290	8.7	104	17	135	163	174	218	1.8	783	1.06	330	196	47
Mar. 21-31	1,390	6.8	108	19	148	160	189	242	.8	864	1.18	348	216	48
Apr. 1-10	1,830	5.5	119	21	234	154	255	355	.5	1,070	1.46	384	258	57
Apr. 11-20	2,210	8.2	137	24	290	123	319	452	1.2	1,290	1.75	440	340	59
Apr. 21-30	2,210	9.1	140	24	282	140	309	442	.8	1,280	1.74	448	334	58
May 1-10	2,400	9.0	152	24	312	130	341	492	.8	1,390	1.89	478	372	59
May 11, 17-18, 20	1,590	7.4	106	18	199	133	215	310	.8	979	1.33	338	230	56
May 12-16	532	7.2	46	6.6	51	109	54	75	1.2	316	.43	142	53	44

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BRAZOS RIVER AT RICHMOND, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station at bridge on U. S. Highway 90 in Richmond, about 1,500 feet downstream from bridge of Texas and New Orleans Railroad.

Date of collection	Mean discharge (second-feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	Percent sodium
Oct. 1-10	939	1,230	--	92	22	141	212	147	212	0.8	787	1.07	2,000	320	146	49
Oct. 11-20	865	1,360	--	96	24	150	226	162	220	.8	812	1.10	1,900	338	153	49
Oct. 21-31	1,015	1,360	--	94	25	152	226	162	222	.8	820	1.12	2,250	338	152	49
Nov. 1-10	1,184	1,430	--	99	29	172	227	184	255	3.2	898	1.22	2,870	366	180	51
Nov. 11-20	1,376	1,320	8.0	100	16	158	204	164	215	1.0	791	1.08	2,940	316	148	51
Nov. 21-26	2,538	400	--	37	7.1	38	130	31	45	1.2	245	.33	1,680	122	15	40
Nov. 27-30	1,358	685	--	64	13	65	220	60	78	1.0	418	.57	1,530	213	32	40
Dec. 1-10	2,417	808	--	69	13	86	222	80	104	1.2	492	.67	3,210	226	44	45
Dec. 11-20	5,349	633	--	56	9.0	63	140	71	89	1.5	394	.54	5,690	177	62	44
Dec. 21-31	2,745	581	--	54	10	53	157	54	75	1.8	356	.48	2,640	176	48	40
Jan. 1-10	1,846	907	--	80	13	90	217	82	131	1.2	546	.74	2,720	253	75	44
Jan. 11-20	1,925	829	--	69	12	86	183	80	124	1.2	498	.68	2,590	222	72	46
Jan. 21-31	2,077	817	--	73	12	80	201	78	113	1.2	500	.68	2,800	232	67	43
Feb. 1-10	2,445	971	--	79	13	108	177	105	161	4.0	647	.88	4,270	250	106	48
Feb. 11-13,																
19-20	5,652	803	--	65	11	88	146	95	127	1.5	497	.68	7,580	207	88	48
Feb. 14-18	5,204	508	--	47	7.1	52	125	52	72	1.5	336	.46	4,720	146	44	43
Feb. 21-29	5,666	910	--	58	9.5	122	128	81	184	.5	556	.76	8,510	184	78	59
Mar. 1-10	10,810	470	10	46	6.6	39	138	38	51	3.0	300	.41	8,760	142	29	37
Mar. 11-20	4,059	608	13	55	7.5	55	157	54	73	1.8	358	.49	3,920	168	40	42
Mar. 21-31	2,522	748	6.6	66	11	69	178	74	96	.5	430	.58	2,930	210	64	42
Apr. 1-10	1,753	962	12	82	16	91	215	101	133	.5	576	.78	2,730	270	94	42
Apr. 11-18	2,871	1,040	10	79	18	109	201	113	160	.2	657	.89	5,090	271	106	47
Apr. 19-24	4,492	505	13	46	5.8	47	128	46	261	2.8	320	.44	3,880	139	34	42
Apr. 25-30	2,665	709	12	55	8.5	73	130	70	107	.5	442	.60	3,180	172	66	48
May 1-10	2,414	681	13	58	8.2	67	150	74	86	1.8	414	.56	2,700	178	55	45
May 11-15	6,696	1,110	14	87	15	121	194	120	182	2.2	656	.89	11,900	278	120	49
May 16-20	8,828	471	14	52	6.5	35	159	45	38	2.2	279	.38	6,650	156	26	33
May 21-31	3,679	511	14	51	6.7	43	146	43	58	2.2	300	.41	2,980	155	35	38

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BRAZOS RIVER AT RICHMOND, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25 °C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	Percent sodium
June 1-10	4,399	592	13	56	7.4	54	152	57	72	2.2	349	0.47	4,150	170	46	41
June 11-20	966	711	15	69	12	59	210	58	82	1.2	402	.55	1,050	222	50	37
June 21-30	870	872	12	72	17	82	220	84	113	.8	502	.68	1,180	250	69	42
July 1-3	3,030	1,840	13	123	28	220	154	258	358	1.2	1,080	1.47	8,840	422	296	53
July 4-10	4,637	767	14	64	9.7	75	142	85	110	2.2	450	.61	5,630	200	83	45
July 11-20	3,799	498	13	49	7.3	41	134	48	56	2.2	292	.40	3,000	152	42	37
July 21-27	1,366	675	17	63	10	59	173	63	84	1.2	402	.55	1,480	198	56	39
July 28-31	1,022	945	13	82	16	85	192	98	139	.5	558	.76	1,540	270	113	41
Aug. 1-10	766	1,770	14	122	23	215	178	234	338	.8	1,030	1.40	2,130	399	253	54
Aug. 11-20	480	1,980	14	131	27	245	187	266	382	1.0	1,160	1.58	1,500	438	284	55
Aug. 21-31	469	1,770	14	118	26	216	203	226	332	1.0	1,030	1.40	1,300	402	235	54
Sept. 1-10	1,334	2,120	11	134	27	271	147	294	432	.2	1,240	1.69	4,470	446	325	57
Sept. 11-21	1,337	2,040	13	132	25	256	146	283	408	.8	1,190	1.62	4,300	432	313	56
Sept. 22-30	719	1,070	16	81	17	115	191	117	172	.8	635	.86	1,230	272	116	48
Weighted average	2,687	791	—	65	11	82	162	84	118	1.7	479	0.65	3,480	207	74	46

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN BRAZOS RIVER BASIN IN TEXAS

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total Hard- ness as CaCO ₃
<u>Salt Fork Brazos River near Aspermont, Texas</u>											
Sept. 30, 1948	63,400	7.5	1,750	420	10,800	126	4,110	17,800	--	34,900	6,090
<u>Clear Fork Brazos River at Nugent, Texas</u>											
Aug. 21-29, 1948	1,190	16	114	34	82	179	258	132	1.2	784	424
Aug. 30-31	430	18	39	8.0	38	98	69	42	2.2	272	130
Sept. 1-10	780	12	90	22	40	125	216	52	2.5	526	315
Sept. 11-21	987	15	94	31	67	175	202	108	2.5	649	362
Sept. 22-30	1,430	20	115	52	106	230	233	211	4.4	933	501
<u>Brazos River near Marlin, Texas</u>											
Oct. 23, 1947	2,010	--	134	24	268	119	323	412	1.8	1,220	433
Jan. 7, 1948	504	--	45	9.8	46	112	63	66	2.5	304	153
Feb. 6	1,770	--	126	21	220	164	259	335	3.8	1,050	401
Mar. 15	997	9.9	92	18	82	200	118	138	1.5	600	304
Apr. 14	776	9.5	68	12	73	148	90	113	3.0	492	219
May 18	487	10	52	6.8	40	128	55	57	1.8	342	158
June 23	2,500	10	153	28	308	114	318	525	1.2	1,400	497
July 27	2,560	10	158	27	331	110	374	528	2.2	1,480	506
Sept. 1	2,480	9.8	163	28	289	118	314	515	1.8	1,380	522
<u>Brazos River near Bryan, Texas</u>											
Oct. 22, 1947	1,790	--	122	25	223	168	270	335	1.5	1,060	408
Jan. 6, 1948	787	--	68	16	49	166	95	109	3.8	496	236
Feb. 5	1,560	--	116	22	188	194	220	282	3.2	988	380
Apr. 13	914	11	72	17	85	180	92	134	1.2	556	250
May 18	479	12	51	9.2	32	132	50	52	1.8	338	165
June 22	2,230	11	138	26	316	140	373	450	.8	1,380	452
July 28	2,130	17	140	25	269	152	307	420	1.2	1,250	452
Sept. 1	2,030	8.6	132	28	257	126	305	412	2.2	1,210	444

MORGAN CREEK NEAR COLORADO CITY, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station 227 feet downstream from U. S. Highway 80 bridge, about 1 mile upstream from Texas and Pacific Railway bridge, 5 miles west of Colorado City and 5½ miles downstream from Cherry Creek.

Date of collection	Mean discharge (Second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃			
											Parts per million	Tons per acre	Tons per day	Total	Non-carbonate	Percent	
Oct. 1-6	1	0.00	3,990	—	141	47	674	134	523	960	3.0	2,410	3.28	0.0	546	436	73
Oct. 7-8		1.60	1,000	—	42	11	141	86	179	139	5.0	559	.76	2.4	150	80	67
Oct. 9-24		.00	1,630	—	54	21	262	133	265	285	3.5	960	1.31	.0	209	112	72
Oct. 25	435		345	—	30	6.5	29	108	44	21	2.2	209	.28	245	102	13	39
Oct. 26-29	70.2		329	—	30	6.7	28	102	45	22	2.5	214	.29	41	102	19	37
Oct. 30-31	.65		478	—	34	9.2	53	105	70	55	1.8	297	.40	.5	123	37	48
Nov. 1-16	2	.01	607	19	35	11	72	110	87	68	3.2	352	.48	.0	132	42	53
Nov. 17-18		30.2	1,180	—	60	16	168	121	175	210	3.6	713	.97	58	216	116	63
Nov. 19-20		26.5	245	—	21	5.2	24	94	28	12	2.5	163	.22	12	74	0	41
Nov. 21-25		1.38	436	—	26	7.0	52	95	52	51	2.5	276	.38	1.0	94	16	54
Nov. 26-30		.24	638	—	38	9.7	79	106	85	92	2.8	380	.52	.2	135	48	56
Dec. 1-3	3	.47	707	—	39	9.6	98	114	95	111	2.0	416	.57	.5	137	44	61
Dec. 4-7	118		308	—	29	5.4	25	112	30	17	2.0	187	.25	60	95	3	36
Dec. 8-11		.65	552	—	34	8.0	71	108	78	72	1.0	322	.44	.6	118	30	57
Dec. 12-20		.13	890	—	50	12	120	125	127	142	1.0	536	.73	.2	174	72	60
Dec. 21-Jan. 28	4	.03	1,200	—	65	16	173	135	171	222	3.8	750	1.02	.1	228	118	62
Jan. 29-Feb. 25	28	.02	2,620	8.8	112	35	409	176	372	555	.0	1,580	2.15	.1	424	280	68
Feb. 26-29	6	205	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mar. 1-7	7	.33	1,140	9.3	60	5.5	173	106	169	200	2.8	685	.93	.6	172	85	69
Mar. 8-19		.07	2,070	10	90	27	299	129	280	418	.2	1,190	1.62	.2	336	230	66
Mar. 20-31	8	.02	3,210	9.0	116	45	518	179	445	700	5.5	1,930	2.62	.1	474	328	70
Apr. 1-10		.00	3,290	8.7	110	48	518	216	466	660	6.4	1,920	2.61	.0	472	295	70
Apr. 11-21		.00	4,400	3.4	186	61	684	186	709	930	.2	2,670	3.63	.0	715	562	68
Apr. 22		8.1	669	10	59	8.1	83	160	100	88	1.2	455	.62	10	180	50	50
Apr. 23-30	9	.01	4,280	7.0	157	51	678	103	572	990	.8	2,510	3.41	.1	602	517	71

See footnotes at end of table.

MORGAN CREEK NEAR COLORADO CITY, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium carbonate	
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate		
May 1-22		0.00	4,820	6.4	175	57	760	115	652	1,100	0.5	2,810	3.82	0.0	671	577	71
May 23, 29-31	10	6.78	1,190	11	57	14	170	111	172	210	4.8	699	.95	13	200	109	65
May 24, 25, 31	11	9.96	456	10	31	5.2	52	84	55	55	9.2	267	.36	7.2	99	30	53
May 25	12	7.50	8,100	13	265	101	1,410	136	1,170	2,000	—	5,030	6.84	102	1080	966	74
May 26-28	13	.07	2,000	8.0	74	24	308	90	293	405	3.5	1,160	1.58	.2	283	209	70
June 1-3		33.1	395	14	33	6.4	39	124	48	28	2.2	234	.32	21	109	7	44
June 4-10, 14-30																	
July 1-4	14	.08	548	12	34	9.4	61	115	86	52	3.8	328	.45	.1	124	34	52
June 11-13		1.57	1,160	12	56	16	162	133	189	178	3.2	694	.94	2.9	206	97	63
July 5, 6, 7-8	15	2,052	338	12	33	5.7	29	124	37	19	2.8	206	.28	1,140	106	4	37
July 6	16	6,043	100	4.0	14	.3	1.4	32	2	3	8.2	72	.10	1,170	36	10	8
July 9-10		11.8	892	17	54	14	105	122	129	130	2.2	516	.70	16	192	92	54
July 11-13		1.37	2,600	18	122	38	378	180	391	515	1.8	1,550	2.11	5.7	460	313	64
July 14-20		.34	5,120	21	196	76	851	172	810	1,180	4.5	3,220	4.38	3.0	802	660	70
July 21-22		3.00	4,360	19	178	63	708	185	665	990	2.2	2,720	3.70	22	703	552	69
July 23, 26, 30-31		8.12	743	15	42	9.4	91	112	91	109	2.2	426	.58	9.3	144	52	58
July 24-25, 27-29		18.5	483	17	32	6.4	59	118	52	57	3.5	287	.39	14	106	9	55
Aug. 1-2		96.5	365	18	33	5.6	34	140	34	20	2.2	223	.30	58	105	0	41
Aug. 3-5		.47	845	12	42	11	112	112	104	134	4.2	478	.65	.6	150	58	62
Aug. 6-9		.15	1,310	13	59	17	184	130	164	240	2.5	746	1.01	.3	217	110	65
Aug. 10-29		.00	2,150	16	92	27	317	169	298	408	6.4	1,250	1.70	.0	340	202	67
Aug. 30-31		18.0	453	13	32	5.9	50	120	52	40	4.0	272	.37	13	104	58	51
Sept. 1-21	17	.06	860	13	43	9.8	114	114	106	134	3.8	504	.69	.1	148	54	63
Sept. 22-27		17.8	514	14	31	7.9	62	116	60	59	4.2	305	.41	15	110	15	55
Sept. 28-30		.00	644	11	32	8.3	86	102	81	93	1.5	380	.52	.0	114	30	62
Weighted average		34.8	306	—	29	4.9	26	103	33	20	3.8	188	0.26	18	92	8	38

- 1 No flow Oct. 8
2 No flow Nov. 3-16
3 No flow Dec. 1-2
4 No flow Dec. 23-Jan. 1, 11-28
5 No flow Jan. 29-Feb. 2, 9-25
6 No samples collected, values estimated in computing weighted average

- 7 No flow Mar. 15-18
8 No flow Mar. 23-31
9 No flow Apr. 24-30
10 Includes 1/5 discharge May 31
11 Includes 23/25 discharge May 25 and 4/5 discharge May 31
12 Includes 2/25 discharge May 25

- 13 No flow May 28
14 No flow June 6-10, 16-20, 23-30, July 1-4
15 Includes 4/7 discharge July 6
16 Includes 3/7 discharge July 6
17 No flow Sept. 5-21.

COLORADO RIVER AT COLORADO CITY, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station 3,517 feet upstream from U. S. Highway 80 bridge, 4,100 feet upstream from Texas and Pacific Railway bridge, 1.6 miles upstream from Lone Wolf Creek.

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂) (Ca)	Calcium (Ca) (Mg)	Magnesium (Mg)	Sodium and Potassium (Na+K)		Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent carbonate
						Potassium	Sodium					Parts per million	Tons per acre	Tons per day	Total	Non-carbonate	
Oct. 1-7	1	2.19	6,200	—	128	48	1,100	80	347	1,760	3.5	3,430	4.66	20	517	452	82
Oct. 8-10		3.70	11,400	—	224	91	2,270	107	683	3,590	3.0	6,910	9.40	69	933	846	84
Oct. 11-24	2	.38	11,600	—	228	93	2,310	103	683	3,670	3.0	7,040	9.57	7.2	952	867	84
Oct. 25	3	348	4,770	6.0	103	38	868	110	326	1,310	3.5	2,710	3.69	2,550	413	350	81
Oct. 25	4	348	2,950	—	91	27	478	96	188	780	2.8	1,610	2.19	1,510	338	260	75
Oct. 25, 26	5	252	1,400	—	55	11	205	122	82	312	2.2	742	1.01	505	182	82	71
Oct. 26	6	156	274	—	26	5.9	23	113	30	10	2.0	176	.24	74	89	0	36
Oct. 27		44.0	1,840	—	58	14	308	97	130	465	2.5	1,030	1.40	122	202	122	77
Oct. 28-29		13.4	2,950	—	72	21	507	95	182	780	2.0	1,610	2.19	58	266	188	81
Oct. 30-31		5.10	4,950	—	113	36	896	105	305	1,400	1.5	2,800	3.81	39	430	344	82
Nov. 1-5		2.14	8,640	—	216	75	1,560	102	520	2,570	—	4,990	6.79	29	847	764	80
Nov. 6-10		1.06	12,300	—	269	102	2,340	104	696	3,840	—	7,300	9.93	21	1140	1060	82
Nov. 11-18		9.12	13,000	—	295	106	2,570	127	804	4,120	—	7,960	10.83	196	1170	1070	83
Nov. 19		62.0	7,300	—	186	59	1,340	123	459	2,160	—	4,260	5.79	713	706	606	81
Nov. 20-25		14.0	5,180	—	111	40	923	123	302	1,440	1.0	2,880	3.92	109	442	340	82
Nov. 26-30		3.26	7,980	—	160	59	1,510	131	441	2,380	.2	4,610	6.27	41	642	534	84
Dec. 1-4	7	34.6	9,800	—	168	68	1,890	135	528	2,940	—	5,660	7.70	529	699	588	85
Dec. 4-7	8	218	991	—	19	7.2	171	96	70	210	2.0	526	.72	310	77	0	83
Dec. 4, 8-10	9	130	3,050	—	63	18	541	120	167	803	2.5	1,650	2.24	579	231	132	84
Dec. 11-14		5.52	4,710	—	112	35	828	130	272	1,300	1.5	2,610	3.55	39	424	317	81
Dec. 15-20		3.23	7,450	—	170	59	1,390	148	418	2,220	—	4,330	5.89	38	667	546	82
Dec. 21-31		2.11	9,220	—	196	76	1,790	130	556	2,840	—	5,520	7.51	31	802	695	83
Jan. 1-10		2.03	11,200	5.4	236	99	2,180	139	691	3,470	—	6,750	9.18	37	996	882	83
Jan. 11-20		1.63	12,400	4.7	263	108	2,490	138	821	3,940	—	7,690	10.46	34	1100	988	83
Jan. 21-31		2.16	14,500	—	311	138	2,940	163	980	4,660	—	9,110	12.39	53	1340	1210	83
Feb. 1-10		2.93	14,000	—	313	130	2,730	165	899	4,390	—	8,540	11.61	68	1320	1180	82
Feb. 11-20		2.01	15,500	—	332	142	3,090	163	996	4,930	—	9,510	12.93	52	1410	1280	83
Feb. 21-26	10	12.4	16,500	3.4	342	144	3,350	127	1,110	5,300	—	10,300	14.01	345	1450	1340	83
Feb. 26-27	11	1,419	724	7.0	33	6.6	92	90	6.8	160	2.2	402	.55	1,540	110	36	65
Feb. 28		83.0	1,120	7.2	40	8.5	166	76	48	270	3.2	613	.83	137	135	72	73
Feb. 29		31.0	2,010	7.3	63	15	340	81	123	540	2.8	1,130	1.54	95	218	152	77

COLORADO RIVER AT COLORADO CITY, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	Percent sodium
Mar. 1-4	10.4	3,950	7.7	102	28	677	95	227	1,080	4.5	2,170	2.95	61	370	292	80
Mar. 5-10	4.02	6,760	3.7	164	55	1,210	121	412	1,940	1.5	3,850	5.24	42	636	536	81
Mar. 11-20	2.40	9,130	6.4	212	73	1,680	130	550	2,690	—	5,280	7.18	34	829	722	81
Mar. 21-31	.94	12,400	26	279	103	2,410	132	796	3,850	—	7,530	10.24	19	1120	1010	82
Apr. 1-21	.02	14,500	12	333	125	2,810	148	926	4,520	—	8,800	11.97	.5	1340	1220	82
Apr. 22	3.90	12,600	2.5	329	101	2,420	95	902	3,880	—	7,680	10.44	81	1240	1160	81
Apr. 23-30,																
May 1-15	.95	18,300	5.9	425	145	3,720	108	1,220	5,940	—	11,500	15.64	29	1660	1570	83
May 16-17	560	1,450	20	70	7.9	207	155	80	315	1.5	799	1.09	1,210	207	80	68
May 16, 20	348	3,550	11	110	26	586	161	195	935	1.2	1,940	2.64	1,820	382	250	77
May 18-19	40.0	2,410	10	74	15	389	117	135	605	1.8	1,290	1.75	139	246	150	77
May 21-25	125	5,740	9.0	136	41	1,010	107	325	1,610	.5	3,180	4.32	1,070	508	420	81
May 25-28	1,003	857	11	37	8.3	121	147	71	138	.8	467	.64	1,260	126	6	68
May 29-31	43.0	1,830	10	58	15	287	119	117	432	1.5	979	1.33	114	206	108	75
June 1	1,620	1,200	12	54	10	177	150	72	255	2.8	671	.91	2,930	176	53	69
June 2-4	1,561	454	13	31	5.4	57	143	31	51	2.8	262	.36	1,100	100	0	55
June 5-7	65.7	1,390	14	48	11	213	120	88	308	4.2	759	1.03	135	165	66	74
June 8-10	10.0	2,920	13	78	22	482	130	176	738	3.8	1,580	2.15	43	285	178	79
June 11-20	1.66	6,000	14	138	46	1,070	140	352	1,680	1.5	3,370	4.58	15	534	419	81
June 21-27	.00	7,490	13	170	52	1,380	122	463	2,170	—	4,310	5.86	.0	638	538	82
June 28	741	1,890	26	70	19	301	242	123	420	1.0	1,090	1.48	2,180	252	54	73
June 28	741	10,400	20	265	79	1,910	198	614	3,080	—	6,070	8.26	12,100	986	824	81
June 29-30	733	687	15	33	8.3	93	140	48	107	2.8	378	.51	748	116	2	63
July 1-5	293	1,340	14	50	15	190	136	84	282	3.2	721	.98	570	186	75	69
July 5-8	8,685	380	13	27	5.2	42	117	27	38	2.2	216	.29	5,070	89	0	50
July 9-10	232	718	11	36	7.4	99	126	55	122	4.0	400	.54	251	120	17	64
July 11-13	61.7	1,410	13	50	14	214	122	100	312	3.8	770	1.05	128	182	82	72
July 14-15	21.5	2,110	8.4	66	19	335	126	144	508	1.8	1,140	1.55	66	242	139	75
July 16-20	8.08	2,930	18	87	26	487	150	207	740	2.0	1,640	2.23	36	324	201	77
July 21-23	153	3,450	15	104	29	569	146	236	885	1.8	1,910	2.60	789	378	254	77
July 24-27	735	767	15	36	9.5	107	154	64	119	2.2	429	.58	851	129	3	64
July 28-31	29.5	1,970	16	53	18	320	124	142	462	3.2	1,080	1.47	86	206	105	77

COLORADO RIVER AT COLORADO CITY, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	Percent sodium
Aug. 1, 4-5	108	1,600	12	47	15	252	126	119	352	2.8	883	1.20	257	179	76	75
Aug. 2-3	252	697	13	32	7.2	97	117	59	114	3.2	390	.53	265	110	14	66
Aug. 6-7	13.5	1,970	13	54	15	327	119	129	475	5.7	1,080	1.47	39	196	99	78
Aug. 8-10	6.13	2,850	14	72	21	492	128	179	738	4.2	1,580	2.15	26	266	161	80
Aug. 11-17	1.83	4,590	16	109	38	800	149	281	1,240	4.5	2,560	3.48	13	428	306	80
Aug. 18-22, 31	14.0	5,340	16	128	44	942	154	333	1,470	2.5	3,010	4.09	114	500	374	80
Aug. 23-30 ²²	14.6	7,120	13	160	63	1,280	135	453	2,030	—	4,070	5.54	160	658	548	81
Sept. 1-3	15.7	3,030	14	92	26	524	129	196	825	1.8	1,740	2.37	74	336	230	77.4
Sept. 4-10	4.34	4,980	12	136	38	850	113	304	1,370	2.0	2,770	3.77	32	496	402	79.1
Sept. 11-20	2.84	6,770	11	154	55	1,220	118	395	1,950	3.5	3,850	5.24	30	610	514	81
Sept. 21-30	13.4	7,820	12	182	70	1,420	118	477	2,290	—	4,510	6.13	163	742	646	81
Weighted average 163		916	—	37	8.6	131	118	55	182	2.2	518	0.70	228	128	32	69

- ¹No flow Oct. 1-5
²No flow Oct. 18-24
³Includes 2/5 discharge Oct. 25
⁴Includes 7/20 discharge Oct. 25
⁵Includes 1/4 discharge Oct. 25 and 1/4 discharge Oct. 26
⁶Includes 3/4 discharge Oct. 26
⁷Includes 3/25 discharge Dec. 4
⁸Includes 4/25 discharge Dec. 4
⁹Includes 18/25 discharge Dec. 4
¹⁰Includes 2/5 discharge Feb. 26
¹¹Includes 3/5 discharge Feb. 26

- ¹²No flow Apr. 3-21
¹³No flow Apr. 30-May 15
¹⁴Includes 1/2 discharge May 16
¹⁵Includes 1/4 discharge May 25
¹⁶Includes 3/4 discharge May 25
¹⁷No flow June 18-20
¹⁸Includes 7/10 discharge June 28
¹⁹Includes 3/10 discharge June 28
²⁰Includes 1/7 discharge July 5
²¹Includes 6/7 discharge July 5
²²No flow Aug. 23-29.

COLORADO RIVER AT ROBERT LEE, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station at bridge on State Highway 208 in Robert Lee, half a mile upstream from Mountain Creek.

Date of collection	Mean discharge (second feet)	Specific conductance (Micromhos at 25°C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre	Tons per day	Total	Non-carbonate	Percent sodium
Oct. 1-10	5.92	2,390	—	121	30	342	135	317	515	2.0	1,390	1.89	22	426	315	64
Oct. 11-15	9.14	1,840	—	93	24	242	110	241	365	2.2	1,020	1.39	25	330	240	61
Oct. 16-24	.66	2,580	—	122	33	372	119	339	565	1.2	1,490	2.03	2.7	440	342	65
Oct. 25-31	1,126	787	—	46	8.6	100	112	77	137	2.8	454	.62	1,380	150	58	59
Nov. 1-10	21.9	1,200	16	70	15	167	123	151	225	1.8	711	.97	42	236	135	60
Nov. 11-22	35.2	1,790	—	92	19	209	133	151	350	4.0	957	1.30	91	308	198	60
Nov. 23-30																
Dec. 1-2	26.2	3,650	—	139	38	567	119	352	900	2.2	2,060	2.80	146	503	406	71
Dec. 3, 4, 6	316	1,860	—	62	15	292	111	145	430	3.5	1,000	1.36	853	216	125	29
Dec. 5, 7-10	285	974	—	40	9.0	140	119	81	182	3.8	514	.70	396	137	40	69
Dec. 11-20	24.8	1,400	—	58	14	206	129	153	272	1.0	805	1.09	54	202	96	22
Dec. 21-31	12.9	2,030	—	103	26	291	142	270	425	.2	1,190	1.62	41	364	248	63
Jan. 1-10	11.2	2,510	—	141	31	362	162	350	545	.2	1,510	2.05	46	480	346	62
Jan. 11-20	9.87	2,880	—	169	36	429	174	426	650	.8	1,800	2.45	48	570	428	62
Jan. 21-31	5.84	3,230	12	174	50	464	178	475	715	.2	1,980	2.69	31	640	494	61
Feb. 1-10	4.80	3,390	12	188	52	498	169	514	775	.2	2,120	2.88	27	683	544	61
Feb. 11-20	6.81	3,830	9.7	201	55	577	160	579	885	.2	2,390	3.25	44	728	596	63
Feb. 21-25	4.68	4,210	7.6	218	57	630	129	628	985	.2	2,590	3.52	33	778	673	64
Feb. 26-Mar. 10	480	1,250	8.4	59	14	172	100	131	255	.8	715	.97	927	204	122	65
Mar. 11-20	11.0	1,900	8.1	102	26	256	120	252	395	.0	1,100	1.50	33	362	263	61
Mar. 21-25	191	737	9.0	52	11	74	104	94	107	1.2	418	.57	216	175	90	48
Mar. 26-31	15.8	1,100	7.7	72	17	125	114	160	185	.8	656	.89	28	250	156	52
Apr. 1-10	3.53	1,640	5.9	100	25	198	131	251	292	1.2	938	1.28	8.9	352	245	55
Apr. 11-20	1.08	2,210	4.8	130	35	282	149	342	428	.8	1,300	1.77	3.8	468	346	57
Apr. 21-30	.77	2,330	7.4	136	36	302	132	370	462	.8	1,380	1.88	2.9	488	380	57
May 1-10	.03	3,140	9.2	161	46	448	128	467	690	.8	1,890	2.57	.2	591	486	62
May 11-17	.00	2,890	6.6	138	44	412	120	413	632	2.0	1,710	2.33	.0	526	427	63
May 18-20	284	4,010	18	116	33	681	145	277	1,060	3.5	2,260	3.07	1,730	425	306	78
May 21-27	779	2,760	11	88	25	451	140	202	690	5.5	1,540	2.09	3,240	323	208	75
May 28-31	688	935	18	42	9.2	139	180	77	152	4.2	530	.72	985	143	0	68

COLORADO RIVER AT ROBERT LEE, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25°C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
June 1-4-7	593	432	14	32	6.8	46	128	35	44	4.5	264	0.36	423	108	3	48
June 2-3, 8-10	1,124	657	17	42	8.1	79	134	61	95	3.5	380	.52	1,150	138	28	55
June 11-18	33.4	1,190	12	64	14	164	136	139	225	1.0	692	.94	62	217	106	62
June 19-25	43.5	1,840	12	90	21	262	139	233	372	.0	1,060	1.44	124	311	197	65
June 26-30	404	434	16	43	6.9	34	104	58	44	2.0	263	.36	287	136	50	35
July 1-5	229	791	19	37	9.0	110	135	68	131	2.2	450	.61	278	130	19	65
July 6-10	11,510	382	21	30	6.2	39	111	42	34	2.8	230	.31	7,150	100	9	46
July 11-14	308	757	16	51	11	86	133	98	104	2.8	444	.60	369	172	64	52
July 15-20	95.7	1,280	16	76	18	162	141	165	232	1.2	740	1.01	191	264	148	57
July 21-25	531	1,620	15	94	21	211	159	203	310	1.8	965	1.31	1,380	321	190	59
July 26-31	397	823	13	44	11	101	120	86	130	2.8	468	.64	502	155	56	59
Aug. 1-4	336	975	15	51	11	127	127	107	164	3.2	572	.78	519	172	68	62
Aug. 5-10	128	1,800	14	78	20	262	135	165	398	2.2	1,010	1.37	349	276	166	67
Aug. 11-20	30.8	1,820	16	94	24	246	149	230	350	4.2	1,040	1.41	86	333	211	60
Aug. 21-31	31.1	2,290	14	126	31	313	147	328	468	1.8	1,350	1.84	113	442	322	61
Sept. 1-3	50.7	3,320	16	174	41	490	166	514	705	2.8	2,020	2.75	277	602	466	64
Sept. 4-10	26.9	1,590	11	98	22	199	130	243	288	1.8	964	1.31	70	335	228	56
Sept. 11-22	36.0	1,820	11	112	26	228	147	273	338	2.2	1,060	1.44	103	386	266	56
Sept. 23-30	250	690	8.1	44	9.5	78	105	76	107	1.8	392	.53	265	149	63	53
Weighted average	304	796	—	44	9.8	104	119	80	138	2.8	461	0.63	378	150	53	60

COLORADO RIVER NEAR SAN SABA, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station at bridge on State Highway 190, 5.2 miles downstream from San Saba River and 9.2 miles east of San Saba.

Date of collection	Mean discharge (second-feet)	Specific conductance (Micromhos at 25°C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre-foot	Tons per day	Total	Non-carbonate	Percent sodium
Oct. 1-10	43.6	1,480	--	90	37	161	218	191	245	3.0	923	1.26	109	376	198	48
Oct. 11-14, 20	125	1,260	--	80	34	145	224	156	218	1.5	832	1.13	281	340	156	48
Oct. 15-19	302	2,570	--	138	43	356	169	354	558	1.5	1,530	2.08	1,250	522	383	60
Oct. 21-27	321	1,040	10	54	24	140	192	121	182	1.0	641	.87	556	234	76	55
Oct. 28	7,560	710	--	78	17	47	174	90	93	.8	476	.65	9,720	264	122	28
Oct. 29-31	2,053	384	--	41	7.6	28	124	35	38	3.6	248	.34	1,370	134	32	31
Nov. 1-10	292	422	--	37	11	34	140	31	43	3.5	264	.36	208	138	23	35
Nov. 11-20	106	629	--	51	20	53	221	40	71	2.2	375	.51	107	210	28	35
Nov. 21-30	131	709	--	72	16	73	222	88	91	3.0	498	.68	176	246	64	39
Dec. 1-8	1,198	833	--	56	19	88	207	58	127	1.5	498	.68	1,610	218	48	47
Dec. 9-19	693	593	--	49	13	51	149	48	80	1.8	347	.47	649	176	54	39
Dec. 20-31	171	1,140	--	72	22	127	218	86	197	1.0	660	.90	305	270	92	51
Jan. 1-10	153	863	--	62	23	81	237	50	126	1.2	487	.66	201	249	55	41
Jan. 11-20	112	932	--	67	26	91	259	45	150	1.5	560	.76	169	274	62	42
Jan. 21-31	109	978	--	66	27	101	270	45	160	1.2	558	.76	164	276	54	44
Feb. 1-10	116	848	--	60	28	77	273	36	120	1.2	480	.65	150	264	41	39
Feb. 11-20	114	758	--	53	25	69	256	34	98	2.2	430	.58	132	236	26	39
Feb. 21-29	615	647	--	51	20	55	223	28	82	2.0	376	.51	624	210	26	36
Mar. 1, 3-10	852	1,220	9.3	72	19	150	160	128	225	3.2	692	.94	1,590	258	126	56
Mar. 2	1,680	596	12	56	16	42	158	74	63	2.0	365	.50	1,660	206	76	31
Mar. 11-20	146	1,120	11	70	25	122	228	79	192	2.8	669	.91	264	278	90	49
Mar. 21, 23, 28-31	200	1,010	9.5	61	17	123	195	79	175	.8	594	.81	321	222	62	55
Mar. 22, 24-27	155	766	10	56	20	72	219	47	105	1.5	428	.58	179	222	42	41
Apr. 1-10	107	965	9.3	62	24	104	230	71	152	1.2	556	.76	161	253	64	47
Apr. 11-12, 18-23, 26, 29-30	277	952	8.7	64	21	94	215	71	142	1.2	539	.73	403	246	70	45
Apr. 13-17, 24-25, 27-28	396	590	8.5	48	14	49	173	37	72	1.2	334	.45	357	178	36	37

COLORADO RIVER NEAR SAN SABA, TEX., October 1947 to September 1948

(Continued)

Date of collection	Mean discharge (second-feet)	Specific conductance (Micromhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)		Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Per cent carbonate
						Parts per million	Tons per acre foot					Tons per day	Total	Non-carbonate			
May 1-6	348	1,260	7.9	82	26	133	190	153	202	1.2	771	1.05	724	312	156	48	
May 7-10	459	355	7.6	37	7.4	25	125	31	29	2.8	224	.30	278	123	20	31	
May 11-14	3,605	317	11	40	6.0	15	137	12	21	2.8	194	.26	1,890	124	12	21	
May 15-20	352	586	11	56	14	43	176	52	64	1.8	344	.47	327	198	54	32	
May 21-29	743	489	13	54	14	26	198	26	40	2.8	283	.38	568	192	30	22	
May 30-31	2,735	838	8.2	62	12	87	162	83	121	3.2	480	.65	3,540	204	71	48	
June 1-2, 4-5, 8-9	1,550	764	12	48	9.6	89	148	57	119	5.2	432	.59	1,810	160	38	55	
June 3, 6-7	1,797	382	14	41	7.0	26	135	26	33	5.2	236	.32	1,150	131	20	30	
June 10-20	266	586	13	40	10	66	166	39	74	3.2	332	.45	238	141	5	50	
June 21-25, 30	234	589	14	48	14	53	197	40	62	1.8	336	.46	212	178	16	39	
June 26-29	1,450	321	11	37	11	15	172	8.7	14	1.5	189	.26	745	138	0	20	
July 1-7	2,145	503	13	45	9.7	42	134	44	60	3.5	296	.40	1,710	152	42	37	
July 8-14	16,040	346	13	42	7.3	19	153	21	19	3.2	204	.28	8,830	135	9	24	
July 15-20	708	422	14	43	8.8	31	150	37	33	4.2	257	.35	491	144	21	32	
July 21-28	387	534	18	53	12	38	180	44	48	4.2	322	.44	336	182	34	31	
July 29-31	1,165	994	17	71	17	106	154	140	144	2.2	593	.81	1,870	247	121	48	
Aug. 1-2	3,104	1,030	13	70	16	111	151	110	171	3.2	602	.82	5,050	240	116	50	
Aug. 3-10	1,015	397	14	40	7.3	27	138	20	37	3.0	230	.31	630	130	17	31	
Aug. 11-20	159	662	19	52	11	75	180	54	86	2.5	389	.53	167	175	23	43	
Aug. 21-31	129	811	14	61	16	82	210	64	111	1.2	470	.64	164	218	46	45	
Sept. 1-9	165	886	13	55	21	92	227	33	144	.8	494	.67	220	224	38	47	
Sept. 10-15	1,474	281	11	35	5.9	13	126	11	15	4.5	176	.24	700	112	8	20	
Sept. 16-20	144	407	14	43	9.8	24	152	22	36	2.8	245	.33	95	148	23	26	
Sept. 21-26	441	496	15	49	14	33	187	29	46	2.8	295	.40	351	180	27	28	
Sept. 27-30	695	1,360	15	94	27	144	148	208	225	2.2	833	1.13	1,560	346	224	47	
Weighted average	832	547	--	49	11	47	161	43	64	2.9	324	0.44	728	168	36	37	

COLORADO RIVER AT AUSTIN, TEX., October 1947 to September 1948

Analyses of samples collected at raw water intake of Austin City Water Plant, 5 miles upstream from gaging station, at southeast edge of Austin, at Montopolis Bridge on U. S. Highway 290, 2.8 miles upstream from Walnut Creek, 3.8 miles downstream from Waller Creek, and 5 miles downstream from Barton Creek. No appreciable inflow between sampling point and gaging station except during periods of heavy local rains.

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
Oct. 1-31	1,136	493	8.0	35	21	40	186	33	50	0.8	322	0.44	988	174	22	32
Nov. 1-30	1,150	507	—	36	21	39	184	33	53	.8	297	.40	922	176	26	32
Dec. 1-31	947	533	—	44	20	37	191	36	55	1.0	311	.42	795	192	36	30
Jan. 1-31	917	537	—	46	20	36	188	36	60	.2	312	.42	772	197	43	29
Feb. 1-29	1,026	541	—	42	19	43	185	37	61	1.0	320	.44	886	183	32	34
Mar. 1-31	1,007	566	8.0	41	20	44	182	39	64	1.0	319	.43	867	185	35	34
Apr. 1-30	1,056	560	6.3	40	20	43	179	38	63	.5	316	.43	901	182	36	34
May 1-31	1,304	563	6.6	40	20	43	180	37	64	.2	303	.41	1,070	182	34	34
June 1-30	1,918	563	7.4	40	20	45	175	40	66	1.2	312	.42	1,620	182	38	35
July 1-31	2,125	537	7.5	42	18	30	150	37	59	.8	300	.41	1,720	179	56	27
Aug. 1-31	2,036	475	11	39	15	41	167	32	49	.8	266	.36	1,460	159	22	28
Sept. 1-30	1,193	450	10	39	14	27	149	27	45	1.2	254	.35	818	155	33	28
Weighted average	1,319	526	—	40	19	39	174	35	57	0.8	300	0.41	1,070	178	36	32

COLORADO RIVER AT WHARTON, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station at bridge on U. S. Highway 96 in Wharton, 1,000 feet downstream from Texas and New Orleans Railroad bridge and 12 miles upstream from Jones Creek.

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent Sodium carbonate
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
Oct. 1-10	1,024	538	—	53	22	30	218	36	50	1.8	341	0.46	943	223	44	23
Oct. 11-20	1,306	538	—	47	21	35	204	34	54	1.8	345	.47	1,220	204	37	27
Oct. 21-31	1,367	524	8.8	35	21	41	191	33	48	1.0	318	.43	1,170	174	18	32
Nov. 1-10	1,011	565	—	47	21	40	215	32	57	2.0	316	.43	863	204	28	30
Nov. 11-20	1,460	525	—	45	19	36	198	30	52	1.8	294	.40	1,160	190	28	29
Nov. 21-30	1,707	506	—	44	18	34	188	31	50	1.5	284	.39	1,310	184	30	29
Dec. 1-10	1,269	530	—	46	18	41	210	32	50	2.2	324	.44	1,110	189	17	32
Dec. 11-20	1,626	458	—	41	15	30	173	27	41	2.2	283	.38	1,240	164	22	29
Dec. 21-31	1,106	556	—	49	19	43	221	35	53	1.8	346	.47	1,030	200	20	32
Jan. 1-10	1,119	564	—	48	19	40	209	36	54	.2	318	.43	961	198	26	31
Jan. 11-31	1,408	551	—	50	20	38	207	36	58	2.0	324	.44	1,230	207	38	29
Feb. 1-10	1,555	541	—	48	18	40	196	40	56	.5	326	.44	1,370	194	34	31
Feb. 11-20	1,850	568	8.3	48	17	46	193	42	62	1.2	339	.46	1,690	190	32	34
Feb. 21-29	1,621	489	7.6	44	15	35	175	34	49	.8	300	.41	1,310	172	28	31
Mar. 1-10	1,600	535	10	46	16	41	192	33	54	1.8	304	.41	1,310	181	23	33
Mar. 11-20	1,243	600	9.3	49	19	45	206	38	63	.8	336	.46	1,130	200	32	33
Mar. 21-31	1,062	595	7.0	50	19	43	210	38	60	.8	334	.45	958	203	31	32
Apr. 1-10	976	602	9.4	48	19	48	208	40	64	.8	386	.52	1,020	198	28	35
Apr. 11-20	1,119	588	11	46	18	48	197	40	63	1.2	353	.48	1,070	189	28	35
Apr. 21-30	919	577	10	46	18	45	195	38	61	.8	350	.48	868	189	29	34
May 1-10	1,034	585	9.8	43	19	47	190	39	64	.8	320	.44	893	185	30	35
May 11-20	906	566	9.4	45	19	41	188	37	62	.0	308	.42	753	190	36	32
May 21-25	721	530	9.0	41	16	41	173	37	55	.5	290	.39	565	168	26	35
May 26-31	3,563	365	11	36	7.8	27	131	24	34	1.2	215	.29	2,070	122	15	33
June 1-10	661	531	12	44	16	40	176	37	57	1.2	302	.41	539	176	32	33
June 11-20	940	580	8.0	40	19	50	178	41	70	.8	324	.44	822	178	32	38
June 21-30	914	588	8.0	40	19	51	178	40	71	.8	330	.45	814	178	32	38

COLORADO RIVER AT WHARTON, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second feet)	Specific conductance (Micro-mhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)		Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium carbonate
						Potassium	Bicarbonate (HCO ₃)				Parts per million	Tons per acre	Tons per day	Total	Non-carbonate	
July 1-10	1,425	529	12	39	17	42	163	36	61	2.2	309	0.42	1,190	168	34	35
July 11-20	1,115	554	12	39	17	49	170	40	65	2.2	326	.44	981	168	28	39
July 21-31	1,019	541	11	38	18	43	166	38	62	.8	293	.40	806	169	33	36
Aug. 1-31	1,197	492	14	37	16	46	166	32	54	1.0	282	.38	911	158	22	37
Sept. 1-10	1,021	486	14	39	16	36	168	30	51	1.2	278	.38	766	163	25	33
Sept. 11-20	1,150	490	14	43	16	31	176	28	47	1.0	277	.38	860	173	29	28
Sept. 21-30	1,036	502	15	43	16	35	183	31	48	.8	291	.40	814	174	24	31
Weighted average	1,246	530	—	44	18	40	187	35	55	1.3	310	0.42	1,040	184	30	32 ¹ / ₂

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN THE COLORADO RIVER BASIN IN TEXAS

Date of collection	Specific conductance (Micromhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids	Total Hardness as CaCO ₃
<u>Colorado River 17 miles southeast of Gail, Texas</u>											
Aug. 25, 1948	400	9.5	20	4.5	64	155	59	12	1.5	246	68
<u>Bull Creek near Ira, Texas</u>											
Oct. 25, 1947	345	--	--	--	--	122	26	31	--	--	--
Oct. 28	339	--	--	--	--	94	23	38	--	--	--
Nov. 17	952	--	58	11	112	184	53	159	3.0	574	190
Nov. 18-21	316	--	29	4.6	28	97	23	30	8.7	181	91
Nov. 22, 24-25	420	--	31	6.0	47	111	31	56	1.5	236	102
Nov. 26, 28, 30	613	--	37	7.6	75	128	45	95	1.2	328	124
Apr. 5, 1948	3,220	11	118	68	458	209	537	595	.5	1,890	574
May 16-18, 25-26	344	44	33	5.0	31	133	26	20	5.8	232	103
June 1-4	286	44	29	4.5	25	130	18	10	6.0	201	91
Aug. 3, Sept. 28	322	21	24	4.3	46	129	33	23	5.8	223	78
<u>Bluff Creek near Ira, Texas</u>											
Oct. 25, 1947	1,770	--	135	39	168	179	168	382	3.8	984	498
Oct. 28	1,900	--	--	--	--	128	284	328	28	--	--
Nov. 13, 17	2,270	--	169	54	210	226	326	408	.0	1,280	644
Nov. 18-21	2,330	--	184	55	232	264	274	488	.0	1,360	685
Nov. 22, 24-26, 28, 30	2,450	--	198	61	243	296	351	472	.0	1,470	745
Apr. 5, 1948	3,130	11	183	76	322	148	346	700	.8	1,710	769
Apr. 22, 7:30 pm	2,500	--	--	--	--	178	--	560	--	--	--
Apr. 22, 9:30 pm	3,290	--	--	--	--	230	--	790	--	--	--
June 29, 2:15 pm	331	--	--	--	--	124	28	19	--	--	--
July 1, 2:45 pm	1,130	--	--	--	--	94	135	99	--	--	--
<u>Colorado River at Suspension Bridge, near Ira, Texas</u>											
Oct. 25, 1947	20,700	--	--	--	--	--	--	6,980	--	--	--
Oct. 28	6,970	--	--	--	--	--	--	2,070	--	--	--
Oct. 29	8,200	--	--	--	--	--	--	2,520	--	--	--
Oct. 30-31, Nov. 1, 4	12,000	--	210	85	2,400	88	643	3,790	--	7,170	874
Nov. 11, 13	20,000	--	340	129	4,080	117	928	6,500	--	12,000	1,380
Nov. 17	5,400	--	95	33	896	58	215	1,450	4.5	2,720	372
Nov. 30	14,600	--	--	--	--	154	664	4,730	--	--	--
Nov. 19-21	6,330	--	114	39	1,220	111	425	1,820	5.0	3,680	445
Nov. 22, 24-26, 28	10,500	--	186	67	2,110	131	540	3,300	1.0	6,270	740
Apr. 22, 1948	52,300	1.5	991	392	12,700	65	2,830	20,300	--	37,200	4,080
Apr. 5	40,600	32	762	309	9,480	119	2,170	15,200	--	28,000	3,170
Sept. 28	4,680	--	--	--	--	88	190	1,350	--	--	--

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN THE COLORADO RIVER BASIN IN TEXAS
(Continued)

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total Hard- ness as CaCO ₃
<u>Champlin Creek near Colorado City, Texas</u>											
Nov. 11, 17, 1947	1,310	--	116	48	97	210	323	135	0.0	876	487
Nov. 24	1,130	--	--	--	--	184	264	101	6.5	--	--
Feb. 27, 1948, 10:50am	257	--	--	--	--	124	--	8	--	--	--
Feb. 27, 4:38 pm	257	--	--	--	--	100	--	10	--	--	--
Feb. 28,	390	--	--	--	--	106	--	30	--	--	--
Mar. 1	711	--	--	--	--	162	--	60	--	--	--
<u>Mouth Champlin Creek near Colorado City, Texas</u>											
Oct. 7, 1947	1,710	--	112	73	137	127	466	205	0.2	1,060	580
Oct. 27	465	--	--	--	--	110	84	28	--	--	--
Oct. 31, Nov. 3-4, 6	960	--	98	33	68	183	235	94	1.8	674	380
<u>Colorado River near Ballinger, Texas</u>											
Apr. 28, 1948	530	8.0	42	12	46	124	64	59	5.6	302	154
July 27	406	9.9	38	7.1	45	129	34	57	1.0	278	124
Sept. 21	2,580	6.4	141	47	339	140	426	512	2.8	1,540	546
<u>Concho River near Paint Rock, Texas</u>											
Apr. 28, 1948	717	7.5	53	24	48	127	88	99	1.2	401	231
July 27	568	8.8	44	19	39	128	67	68	2.8	352	188
Sept. 21	868	20	58	29	71	144	110	132	.0	558	266
<u>Lake Brownwood at Brownwood, Texas</u>											
Jan. 15, 1948	381	11	42	8.0	24	134	19	40	.5	230	138
Sept. 21	358	7.0	38	7.0	31	132	17	37	.2	195	124
<u>Pecan Bayou near Brownwood, Texas</u>											
Apr. 28, 1948	431	6.2	46	8.9	25	152	22	41	.0	258	151
July 27	697	15	88	15	37	293	51	49	.8	415	281
Sept. 21	548	22	70	11	23	230	29	37	.2	312	220
<u>Brady Creek at Brady, Texas</u>											
July 27, 1948	429	19	55	14	14	237	9.1	13	3.5	251	194
Sept. 21	278	14	34	9.3	9.9	150	12	6	.8	158	123
<u>San Saba River near San Saba, Texas</u>											
Apr. 28, 1948	516	14	53	29	11	294	10	15	2.2	310	252
July 27	443	15	51	20	13	252	12	13	1.2	256	210
Sept. 21	552	19	61	24	17	256	21	38	2.2	318	250
<u>Llano River near Llano, Texas</u>											
Apr. 28, 1948	353	11	33	17	14	177	9.5	19	.8	214	152
July 27	355	14	40	16	9.3	182	11	16	3.5	215	166
Sept. 21	311	18	37	14	8.5	176	8.2	10	1.8	184	150

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN THE COLORADO RIVER BASIN IN TEXAS
(Continued)

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total hard- ness as CaCO ₃
<u>Pedernales River near Johnson City, Texas</u>											
Apr. 28, 1948	443	12	41	20	20	210	13	29	1.2	285	185
July 27	522	9.2	38	29	25	235	15	42	1.2	294	214
Sept. 21	764	11	38	42	53	246	30	106	.8	429	268

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN THE LAVACA RIVER BASIN IN TEXAS

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total Hard- ness as CaCO ₃
<u>Lavaca River near Edna, Texas</u>											
June 9, 1948	627	26	82	7.5	40	272	17	58	1.2	376	236
Aug. 1	671	27	81	8.2	47	272	17	69	.2	391	236
<u>Navidad River near Ganado, Texas</u>											
June 9, 1948	593	24	75	7.0	41	252	13	60	0.8	353	216
Aug. 1	889	29	80	15	80	266	29	132	.2	526	261

GUADALUPE RIVER AT VICTORIA, TEX., October 1947 to September 1948

Analyses of daily samples collected at bridge on U. S. Highway 96 in Victoria, Victoria County, 1,300 feet upstream from Texas and New Orleans (Galveston, Harrisburg and San Antonio) Railroad bridge and 10 miles upstream from Coleta Creek.

Date of collection on	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total Hard- ness as CaCO ₃
Oct. 1	1,580	--	--	--	--	--	--	--	--	--	--
Oct. 3	1,340	--	--	--	--	--	--	278	--	--	--
Oct. 7	1,780	--	--	--	--	--	--	420	--	--	--
Oct. 8	1,620	--	--	--	--	--	--	--	--	--	--
Oct. 9	1,490	--	--	--	--	--	--	330	--	--	--
Oct. 10	1,410	--	--	--	--	--	--	--	--	--	--
Oct. 11	1,410	--	--	--	--	--	--	310	--	--	--
Oct. 12	1,620	--	--	--	--	--	--	--	--	--	--
Oct. 13	1,630	--	--	--	--	--	--	--	--	--	--
Oct. 14	1,630	--	--	--	--	--	--	--	--	--	--
Oct. 15	1,580	--	--	--	--	--	--	--	--	--	--
Oct. 16	1,510	--	--	--	--	--	--	345	--	--	--
Oct. 17	1,420	--	--	--	--	--	--	--	--	--	--
Oct. 18	1,700	--	--	--	--	--	--	--	--	--	--
Oct. 19	1,410	--	--	--	--	--	--	--	--	--	--
Oct. 20	1,700	--	--	--	--	--	--	405	--	--	--
Oct. 21-28, 30-31	1,680	--	90	33	215	128	75	402	4.0	926	360
Nov. 1	1,510	--	--	--	--	--	--	--	--	--	--
Nov. 2	1,720	--	--	--	--	--	--	420	--	--	--
Nov. 3	1,700	--	--	--	--	--	--	--	--	--	--
Nov. 4	1,360	--	--	--	--	--	--	292	--	--	--
Nov. 6	1,570	--	--	--	--	--	--	--	--	--	--
Nov. 7	1,650	--	--	--	--	--	--	--	--	--	--
Nov. 8	1,570	--	--	--	--	--	--	--	--	--	--
Nov. 9	1,800	--	--	--	--	--	--	--	--	--	--
Nov. 10	1,780	--	--	--	--	--	--	--	--	--	--
Nov. 11	1,670	--	--	--	--	--	--	385	--	--	--
Nov. 12	1,220	--	--	--	--	--	--	--	--	--	--
Nov. 13	1,660	--	--	--	--	--	--	--	--	--	--
Nov. 14	1,560	--	--	--	--	--	--	--	--	--	--
Nov. 15	1,410	--	--	--	--	--	--	--	--	--	--
Nov. 16	1,410	--	--	--	--	--	--	--	--	--	--
Nov. 17	1,600	--	--	--	--	--	--	--	--	--	--
Nov. 18	1,550	--	--	--	--	--	--	--	--	--	--

GUADALUPE RIVER AT VICTORIA, TEX., October 1947 to September 1948
(Continued)

Date of collection	Specific conductance (micromhos at 25° C)	Chloride (Cl)	Date of collection	Specific conductance (Micromhos at 25° C)	Chloride (Cl)	Date of collection	Specific conductance (Micromhos at 25° C)	Chloride (Cl)
Nov. 19	1,410	298	Dec. 30	1,290	—	Feb. 4	1,240	
Nov. 20	1,670	—	Dec. 31	1,400	302	Feb. 5	1,120	
Nov. 21	1,510	335	Jan. 1	1,590		Feb. 6	1,500	
Nov. 22	1,610		Jan. 2	1,440	310	Feb. 7	1,590	
Nov. 23	1,030		Jan. 3	1,670		Feb. 8	1,060	210
Nov. 24	1,180		Jan. 4	1,700		Feb. 9	1,060	
Nov. 25	1,160	228	Jan. 5	1,560		Feb. 10	1,240	258
Nov. 26	1,550		Jan. 6	1,670		Feb. 11	1,820	430
Nov. 27	1,550		Jan. 7	1,670		Feb. 12	1,680	
Nov. 28	1,830		Jan. 8	1,670		Feb. 13	1,540	
Nov. 30	1,860	240	Jan. 9	1,760	400	Feb. 14	1,120	
Dec. 1	2,400	610	Jan. 10	1,730		Feb. 15	1,110	224
Dec. 2	1,630		Jan. 11	1,730		Feb. 16	1,130	
Dec. 3	1,610		Jan. 12	1,700		Feb. 17	1,400	
Dec. 4	1,540	340	Jan. 13	1,640	285	Feb. 19	1,190	
Dec. 6	1,490		Jan. 14	1,640		Feb. 20	1,360	306
Dec. 7	1,680		Jan. 15	1,670		Feb. 21	1,610	390
Dec. 8	1,680		Jan. 16	1,670		Feb. 23	1,180	
Dec. 9	1,720	395	Jan. 17	1,440		Feb. 24	1,250	
Dec. 10	1,580		Jan. 18	1,590		Feb. 25	1,330	
Dec. 11	1,570		Jan. 19	1,590		Feb. 26	896	
Dec. 12	1,350		Jan. 20	1,400	300	Feb. 27	777	142
Dec. 13	1,570		Jan. 21	1,690		Feb. 28	1,050	
Dec. 14	1,170	224	Jan. 22	1,420	310	Feb. 29	1,070	214
Dec. 15	1,330		Jan. 23	1,670		Mar. 1	1,350	
Dec. 16	1,430		Jan. 24	1,640		Mar. 2	1,440	
Dec. 17	952	170	Jan. 25	1,550	355	Mar. 3	1,470	
Dec. 18	1,360		Jan. 26	1,670		Mar. 4	1,080	206
Dec. 19	1,240		Jan. 27	1,440		Mar. 6	1,540	294
Dec. 20	1,670	380	Jan. 28	1,440		Mar. 7	1,200	
Dec. 21	963	168	Jan. 29	1,640		Mar. 8	1,300	
Dec. 22	1,100		Jan. 30	1,640		Mar. 9	1,200	
Dec. 23	1,100		Jan. 31	1,730	405	Mar. 10	1,430	
Dec. 24	1,730		Feb. 1	1,440	312	Mar. 12	1,210	
Dec. 25	1,730		Feb. 2	1,110		Mar. 13	932	166
Dec. 26	1,730		Feb. 3	1,100		Mar. 15	991	
Dec. 27	2,440							
Dec. 28	2,090	515						

GUADALUPE RIVER AT VICTORIA, TEX., October 1947 to September 1948
(Continued)

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total Hard- ness as CaCO ₃
Mar. 16	838	--	--	--	--	--	--	160	--	--	--
Mar. 17	1,050	--	--	--	--	--	--	--	--	--	--
Mar. 18	1,110	--	--	--	--	--	--	--	--	--	--
Mar. 19	994	--	--	--	--	--	--	--	--	--	--
Mar. 20	1,500	--	--	--	--	--	--	332	--	--	--
Mar. 21	1,540	--	--	--	--	--	--	320	--	--	--
Mar. 22	1,530	--	--	--	--	--	--	--	--	--	--
Mar. 23	1,650	--	--	--	--	--	--	365	--	--	--
Mar. 24	1,570	--	--	--	--	--	--	--	--	--	--
Mar. 25	1,510	--	--	--	--	--	--	--	--	--	--
Mar. 26	1,570	--	--	--	--	--	--	--	--	--	--
Mar. 27	1,390	--	--	--	--	--	--	--	--	--	--
Mar. 28	1,480	--	--	--	--	--	--	--	--	--	--
Mar. 29	1,480	--	--	--	--	--	--	--	--	--	--
Mar. 31	1,370	--	--	--	--	--	--	272	--	--	--
Apr. 1-10	1,380	13	88	31	147	229	62	292	3.2	819	347
Apr. 11	1,330	--	--	--	--	--	--	--	--	--	--
Apr. 12	1,390	--	--	--	--	--	--	--	--	--	--
Apr. 13	1,230	--	--	--	--	--	--	248	--	--	--
Apr. 14	1,400	--	--	--	--	--	--	--	--	--	--
Apr. 15	1,450	--	--	--	--	--	--	318	--	--	--
Apr. 16	1,340	--	--	--	--	--	--	--	--	--	--
Apr. 17	1,280	--	--	--	--	--	--	--	--	--	--
Apr. 18	1,270	--	--	--	--	--	--	--	--	--	--
Apr. 19	1,260	--	--	--	--	--	--	--	--	--	--
Apr. 20	1,340	--	--	--	--	--	--	280	--	--	--
Apr. 21	1,140	--	--	--	--	--	--	220	--	--	--
Apr. 22	1,520	--	--	--	--	--	--	338	--	--	--
Apr. 23	1,270	--	--	--	--	--	--	--	--	--	--
Apr. 24	1,300	--	--	--	--	--	--	--	--	--	--
Apr. 25	1,310	--	--	--	--	--	--	--	--	--	--
Apr. 26	1,420	--	--	--	--	--	--	--	--	--	--
Apr. 27	1,340	--	--	--	--	--	--	--	--	--	--
Apr. 28	1,240	--	--	--	--	--	--	--	--	--	--
Apr. 29	1,340	--	--	--	--	--	--	280	--	--	--
May 2	2,070	--	--	--	--	--	--	530	--	--	--
May 3	1,410	--	--	--	--	--	--	300	--	--	--

GUADALUPE RIVER AT VICTORIA, TEX., October 1947 to September 1948
(Continued)

Date of collection	Specific Conductance (Micromhos at 25° C)	Chloride (Cl)	Date of collection	Specific conductance (Micromhos at 25° C)	Chloride (Cl)
May 4	1,520		June 13	579	
May 5	1,570		June 15	821	112
May 6	1,640		June 16	748	
May 7	1,790		June 17	1,010	
May 8	1,710	390	June 18	1,210	
May 9	1,960		June 19	1,260	
May 11	1,410		June 20	1,320	272
May 12	983		June 22	1,260	262
May 13	1,320	266	June 23	1,280	
May 14	935		June 24	1,450	
May 15	735	128	June 25	1,530	338
May 16	783		June 26	1,300	
May 17	776		June 27	1,330	
May 18	1,290		June 28	1,390	
May 19	2,590	695	June 29	1,410	
May 21	973	184	June 30	1,260	
May 22	733		July 1	1,070	
May 23	661		July 2	1,100	202
May 24	643		July 3	817	
May 25	673		July 4	655	
May 26	783		July 5	727	
May 27	1,200	238	July 6	1,410	
May 29	291	18	July 7	1,450	340
May 30	324		July 8	1,040	
May 31	926		July 9	593	
June 1	941		July 10	563	72
June 2	917		July 11	1,060	
June 3	1,210	272	July 12	968	
June 4	855		July 13	819	128
June 5	694		July 14	764	
June 6	694		July 15	874	
June 7	530		July 16	692	96
June 8	520	66	July 17	984	
June 9	543		July 18	813	
June 11	525	60	July 19	956	
June 12	629		July 20	1,130	220

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GUADALUPE RIVER AT VICTORIA, TEX., October 1947 to September 1948
(Continued)

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	1- Ca (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total hard- ness as CaCO ₃
July 21-27, 29	918	19	65	20	86	202	39	159	1.2	542	244
Aug. 1	955	--	--	--	--	--	--	--	--	--	--
Aug. 2	834	--	--	--	--	--	--	138	--	--	--
Aug. 4	940	--	--	--	--	--	--	--	--	--	--
Aug. 5	963	--	--	--	--	--	--	--	--	--	--
Aug. 6	903	--	--	--	--	--	--	--	--	--	--
Aug. 7	903	--	--	--	--	--	--	--	--	--	--
Aug. 8	969	--	--	--	--	--	--	--	--	--	--
Aug. 9	1,090	--	--	--	--	--	--	204	--	--	--
Aug. 10	946	--	--	--	--	--	--	--	--	--	--
Aug. 11-20	1,100	18	71	26	113	206	53	215	2.8	624	284
Aug. 21	1,120	--	--	--	--	--	--	--	--	--	--
Aug. 22	1,530	--	--	--	--	--	--	370	--	--	--
Aug. 23	1,480	--	--	--	--	--	--	330	--	--	--
Aug. 24	1,200	--	--	--	--	--	--	--	--	--	--
Aug. 25	966	--	--	--	--	--	--	175	--	--	--
Aug. 26	1,060	--	--	--	--	--	--	--	--	--	--
Aug. 27	1,050	--	--	--	--	--	--	--	--	--	--
Aug. 28	1,190	--	--	--	--	--	--	--	--	--	--
Aug. 29	440	--	--	--	--	--	--	50	--	--	--
Aug. 30	304	--	--	--	--	--	--	--	--	--	--
Aug. 31	266	--	--	--	--	--	--	19	--	--	--
Sept. 1	291	--	--	--	--	--	--	28	--	--	--
Sept. 2	348	--	--	--	--	--	--	--	--	--	--
Sept. 3	388	--	--	--	--	--	--	46	--	--	--
Sept. 4	782	--	--	--	--	--	--	120	--	--	--
Sept. 5	595	--	--	--	--	--	--	--	--	--	--
Sept. 8	722	--	--	--	--	--	--	--	--	--	--
Sept. 9	680	--	--	--	--	--	--	--	--	--	--
Sept. 10	669	--	--	--	--	--	--	--	--	--	--
Sept. 11	648	--	--	--	--	--	--	82	--	--	--
Sept. 12	657	--	--	--	--	--	--	--	--	--	--
Sept. 13	904	--	--	--	--	--	--	--	--	--	--
Sept. 14	888	--	--	--	--	--	--	158	--	--	--
Sept. 15	1,730	--	--	--	--	--	--	445	--	--	--
Sept. 16	1,500	--	--	--	--	--	--	355	--	--	--

GUADALUPE RIVER AT VICTORIA, TEX., October 1947 to September 1948
(Continued)

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total Hard- ness as CaCO ₃
Sept. 17	1,070	--	--	--	--	--	--	208	--	--	--
Sept. 18	774	--	--	--	--	--	--	118	--	--	--
Sept. 19	665	--	--	--	--	--	--	--	--	--	--
Sept. 20	649	--	--	--	--	--	--	76	--	--	--
Sept. 21-30	744	17	58	20	63	213	33	108	1.8	427	226

NUECES RIVER NEAR MATHIS, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station at bridge on U. S. Highway 59, 200 feet downstream from Texas and New Orleans Railroad bridge, 0.8 mile downstream from Lake Corpus Christi Dam and 4 miles southwest of Mathis.

Date of collection	Mean daily discharge (second (feet)	Specific conductance (Micro-mhos at 25°C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	Percent sodium
Oct. 1-31	83.0	510	17	40	6.7	66	168	41	56	0.8	322	0.44	72	128	0	52
Nov. 1-30	65.2	531	—	46	6.1	59	177	36	60	2.0	334	.45	59	140	0	48
Dec. 1-31	32.6	616	—	52	6.2	68	188	40	76	.5	378	.51	33	156	2	49
Jan. 1-31	39.7	663	—	50	6.9	80	193	42	90	.2	403	.55	43	154	0	53
Feb. 1-29	30.3	665	16	51	6.6	83	188	44	96	.2	412	.56	34	154	0	54
Mar. 1-31	31.0	686	20	53	6.4	80	192	44	92	.5	412	.56	34	159	1	52
Apr. 1-30	37.3	764	18	57	7.2	88	201	49	105	.5	438	.60	44	172	8	53
May 1-31	39.3	818	23	59	7.1	101	212	54	117	.5	484	.66	51	176	2	55
June 1-30	43.7	940	20	61	8.1	122	218	61	147	.8	548	.75	65	186	7	59
July 1-6	1,349	913	22	56	13	113	194	63	152	.8	526	.72	1,920	194	34	56
July 7-31	1,132	429	22	41	5.2	43	162	29	38	1.2	244	.33	746	174	41	43
Aug. 1-31	46.0	420	29	44	4.9	47	180	28	28	.8	272	.37	34	130	0	41
Sept. 1-30	135	435	24	44	6.2	39	174	30	32	.8	276	.38	101	135	0	38
Weighted average	148	554	—	46	6.8	62	174	38	66	1.0	325	0.44	130	143	0	49

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN THE NUECES RIVER BASIN IN TEXAS

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total Hard- ness as CaCO ₃
<u>Frio River at Calliham, Texas</u>											
July 1948	23,300	13	137	44	5,230	185	237	8,150	—	13,900	523
<u>Los Olmos Creek near Falfurrias, Texas</u>											
Feb. 1948	7,700	—	90	65	1,540	556	321	2,160	0.2	4,450	492

PECOS RIVER NEAR ORLA, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station 600 feet upstream from Pasotex pipe line crossing, 6 miles south-east of Orla, 16 miles downstream from Salt (Screwbean) Draw, and 19 miles downstream from Red Bluff Dam.

Date of collection	Mean discharge (second-feet)	Specific conductance (Micromhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium carbonate etc
											Parts per million	Tons per acre	Tons per day	Total	Non-carbonate etc	
Oct. 1-10	4.16	12,500	--	726	260	1,980	96	2,500	3,200	--	8,710	11.85	98	2,880	2,800	60
Oct. 11-20	.64	13,200	--	744	275	2,060	86	2,560	3,350	--	9,030	12.28	16	2,990	2,920	60
Oct. 21-31	.65	13,500	14	688	315	2,284	78	2,800	3,530	--	9,640	13.11	17	3,010	2,950	62
Nov. 1-10	19.7	12,800	--	692	266	2,020	96	2,510	3,210	--	8,750	11.90	465	2,820	2,740	61
Nov. 11-20	2.76	12,300	--	650	260	2,030	95	2,460	3,160	--	8,610	11.71	64	2,690	2,610	62
Nov. 21-30	4.24	11,800	--	623	245	2,930	110	2,370	2,980	--	8,200	11.15	94	2,560	2,470	62
Dec. 1-10	3.06	11,800	--	680	270	1,860	130	2,350	3,040	--	8,260	11.23	68	2,800	2,700	59
Dec. 11-20	3.94	11,300	--	731	264	1,690	133	2,280	2,910	--	7,940	10.80	84	2,910	2,800	56
Dec. 21-31	8.26	11,100	--	624	254	1,700	140	2,170	2,790	--	7,610	10.35	170	2,600	2,490	59
Jan. 1-10	6.27	10,500	--	588	239	1,690	128	2,190	2,650	--	7,420	10.09	126	2,450	2,340	60
Jan. 11-20	6.72	10,600	--	596	240	1,690	127	2,140	2,700	--	7,430	10.10	135	2,470	2,370	60
Jan. 21-31	6.15	10,600	--	598	243	1,700	133	2,190	2,700	--	7,500	10.20	125	2,490	2,380	60
Feb. 1-10	3.60	10,700	30	584	245	1,640	117	2,120	2,650	--	7,330	9.97	71	2,460	2,370	59
Feb. 11-20	3.03	10,600	22	584	245	1,620	114	2,130	2,600	--	7,260	9.87	59	2,460	2,370	59
Feb. 21-29	3.71	11,000	18	610	254	1,680	106	2,230	2,700	--	7,540	10.25	76	2,570	2,480	59
Mar. 1-10	7.30	10,700	19	594	252	1,610	116	2,190	2,580	--	7,300	9.93	144	2,520	2,420	58
Mar. 11-20	6.25	10,400	18	574	241	1,570	120	2,090	2,520	--	7,070	9.62	119	2,420	2,320	58
Mar. 21-31	6.45	10,800	22	600	251	1,610	112	2,190	2,600	--	7,330	9.97	128	2,530	2,440	58
Apr. 1-10	37.8	10,900	12	626	245	1,670	97	2,270	2,670	--	7,540	10.25	770	2,570	2,490	59
Apr. 11-20	514	9,680	5.9	546	218	1,470	117	1,980	2,340	--	6,620	9.00	9,190	2,260	2,160	59
Apr. 21-30	407	9,910	5.7	558	222	1,490	120	2,000	2,390	--	6,720	9.14	7,380	2,310	2,210	58
May 1-10	195	11,500	8.0	583	241	1,890	135	2,140	2,990	--	7,920	10.77	4,170	2,450	2,340	63
May 11-20	61.7	11,200	7.0	612	245	1,760	127	2,140	2,860	--	7,690	10.46	1,280	2,540	2,430	60
May 21-22, 30-31	33.0	11,100	5.5	615	248	1,750	119	2,160	2,840	--	7,680	10.44	684	2,550	2,460	60
May 23-29	52.3	6,190	6.0	396	100	909	73	1,190	1,470	5.5	4,110	5.59	580	1,400	1,340	59

PEGOS RIVER NEAR ORLA, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second-feet)	Specific conductance (Micromhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium carbonate
											Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
June 1-2	187	1,640	19	215	16	108	56	547	155	2.8	1,090	1.48	550	602	556	28
June 3,5-8	344	2,810	17	219	38	328	78	591	522	1.2	1,750	2.38	1,630	702	638	50
June 4,9-20	602	5,020	17	317	103	659	112	1,030	1,050	2.5	3,230	4.39	5,260	1,210	1,120	54
June 21-July 15	432	3,690	17	219	69	487	112	695	760	2.2	2,300	3.13	2,680	830	738	56
July 16-Aug. 10	131	6,690	22	366	131	962	124	1,230	1,530	3.5	4,310	5.86	1,520	1,450	1,350	59
Aug. 11-14, 17-20	274	6,400	22	364	126	916	118	1,210	1,460	3.5	4,160	5.66	3,080	1,430	1,330	58
Aug. 15-16	283	3,710	19	224	67	475	47	697	780	3.2	2,290	3.11	1,750	834	796	55
Aug. 21-27	85.1	7,110	19	404	139	1040	114	1,330	1,670	3.5	4,660	6.34	1,070	1,580	1,490	59
Aug. 28-31	56.2	8,760	18	446	164	1360	125	1,520	2,170	--	5,740	7.81	871	1,790	1,680	62
Sept. 1-10	27.9	9,650	19	482	189	1530	112	1,690	2,450	--	6,420	8.73	484	1,980	1,890	63
Sept. 11-18	6.08	9,220	26	472	182	1450	104	1,630	2,340	--	6,150	8.36	101	1,930	1,840	62
Sept. 19-30	5.44	12,500	18	606	249	2050	98	2,180	3,290	--	8,440	11.48	124	2,540	2,460	64
Weighted average	114	6,520	--	376	135	946	113	1,280	1,510	--	4,310	5.86	1,330	1,490	1,400	58

PECOS RIVER BELOW GRANDFALLS, TEX., October 1947 to September 1948

Analyses of samples collected at gaging station at bridge on county road between Grandfalls and Imperial, 7.1 miles southeast of Grandfalls, Ward County and about 10 miles downstream from Chacatori Draw.

Date of collection	Mean discharge (second feet)	Specific conductance (Micromhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium carbonate
										Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
Oct. 1-10	14.7	14,800	--	750	379	2,410	122	3,090	3,800	10,500	14.28	417	3,430	3,330	60
Oct. 11-20	15.0	14,600	--	750	368	2,290	130	2,950	3,680	10,100	13.74	409	3,380	3,280	60
Oct. 21-31	14.5	14,300	--	742	361	2,330	135	2,990	3,680	10,200	13.87	399	3,340	3,230	60
Nov. 1-10	13.2	13,700	--	674	373	2,330	135	2,860	3,680	9,980	13.57	356	3,220	3,100	61
Nov. 11-20	12.0	14,500	--	704	374	2,360	146	2,920	3,730	10,200	13.87	330	3,300	3,180	61
Nov. 21-30	12.0	14,500	--	716	387	2,550	158	2,920	4,080	10,700	14.55	347	3,380	3,250	62
Dec. 1-10	30.8	15,300	--	698	369	2,640	151	2,880	4,170	10,800	14.69	898	3,260	3,140	64
Dec. 11-20	34.2	15,500	--	686	369	2,650	139	2,830	4,200	10,800	14.69	997	3,230	3,120	64
Dec. 21-31	34.9	15,300	--	662	375	2,620	153	2,790	4,150	10,700	14.55	1010	3,190	3,070	64
Jan. 1-10	34.7	15,500	--	692	363	2,680	173	2,790	4,250	10,900	14.82	1020	3,220	3,080	64
Jan. 11-20	22.7	14,800	--	658	354	2,540	175	2,750	3,980	10,400	14.14	637	3,100	2,950	64
Jan. 21-31	21.4	14,500	--	698	357	2,430	189	2,870	3,800	10,200	13.87	589	3,210	3,060	62
Feb. 1-10	21.0	15,000	6.2	727	371	2,440	100	2,990	3,860	10,400	14.14	590	3,340	3,260	61
Feb. 11-20	20.3	14,900	7.2	737	373	2,480	94	3,030	3,920	10,600	14.42	581	3,370	3,300	61
Feb. 21-29	20.4	14,900	6.0	737	372	2,480	96	3,050	3,910	10,600	14.42	584	3,370	3,290	62
Mar. 1-10	20.6	15,000	46	706	382	2,460	72	3,030	3,870	10,500	14.28	584	3,330	3,270	62
Mar. 11-20	20.4	15,000	43	723	386	2,470	88	3,050	3,910	10,600	14.42	584	3,390	3,320	61
Mar. 21-31	18.0	15,800	30	785	401	2,680	97	3,260	4,230	11,400	15.50	554	3,610	3,530	62
Apr. 1-10	17.4	15,500	41	752	398	2,590	77	3,170	4,100	11,100	15.10	521	3,510	3,450	62
Apr. 11-20	22.3	15,100	25	758	385	2,510	84	3,180	3,930	10,800	14.69	650	3,470	3,410	61
Apr. 21-30	21.1	14,900	44	727	375	2,410	72	3,030	3,820	10,400	14.14	592	3,360	3,300	61
May 1-10	17.1	15,200	40	758	381	2,530	93	3,120	4,000	10,900	14.82	503	3,460	3,380	61
May 11-20	14.9	15,200	31	768	378	2,620	100	3,180	4,100	11,100	15.10	447	3,470	3,390	62
May 21-31	15.5	15,600	30	778	385	2,530	84	3,240	3,960	11,000	14.96	460	3,520	3,460	61
June 1-10	16.0	15,300	39	788	377	2,530	104	3,210	3,960	11,000	14.96	475	3,520	3,430	61
June 11-20	16.1	14,700	31	768	360	2,420	107	3,130	3,760	10,500	14.28	456	3,400	3,310	61
June 21-30	20.1	14,400	24	767	358	2,350	125	3,100	3,660	10,300	14.01	559	3,390	3,280	60

PECOS RIVER BELOW GRANDFALLS, TEX., October 1947 to September 1948
(Continued)

Date of collection	Mean discharge (second-feet)	Specific conductance (Micromhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Dissolved Solids			Hardness as CaCO ₃		Percent sodium carbonate
										Parts per million	Tons per acre foot	Tons per day	Total	Non-carbonate	
July 1-10	21.7	14,300	32	733	348	2,390	90	3,020	3,710	10,300	14.01	603	3,260	3,190	61
July 11-20	24.8	14,200	35	737	350	2,340	104	3,020	3,650	10,200	13.87	683	3,280	3,190	61
July 21-31	19.5	14,600	34	761	364	2,410	102	3,100	3,780	10,500	14.28	553	3,400	3,310	61
Aug. 1-10	15.2	14,600	35	765	369	2,410	104	3,130	3,780	10,500	14.28	431	3,430	3,340	60
Aug. 11-31	15.0	14,500	26	765	363	2,380	131	3,100	3,710	10,400	14.14	421	3,400	3,290	60
Sept. 1-20	19.2	14,100	24	759	347	2,290	153	2,990	3,590	10,100	13.74	524	3,320	3,200	60
Sept. 21-30	15.3	13,600	37	733	341	2,200	143	2,900	3,460	9,740	13.25	402	3,230	3,110	60
Weighted average	19.6	14,900	—	730	369	2,470	122	3,000	3,900	10,500	14.28	555	3,340	3,240	62 $\frac{1}{2}$

RIO GRANDE AT MISSION PUMPING PLANT, NEAR MISSION, TEX., October 1947 to September 1948
Analyses of samples collected at Mission pumping plant, 3 miles south of Mission, Texas.

Date of collection	Specific conduct- ance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potas- sium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids		Hardness		Per cent
										Parts per mil- lion	Tons per acre foot	as CaCO ₃ Total	Non- car- bon- ate	
Oct. 1-10	696	--	64	12	64	159	119	64	3.2	462	0.63	209	78	40
Oct. 11-20	754	--	60	15	75	141	140	80	1.5	498	.68	211	96	44
Oct. 21-24	891	--	52	9.9	66	125	114	65	3.0	376	.51	171	68	46
Oct. 25-31	638	--	65	18	98	150	167	107	1.0	577	.78	236	113	47
Nov. 1-10	852	--	66	15	88	145	157	94	2.5	545	.74	226	107	46
Nov. 11-20	997	--	73	20	105	163	195	109	2.2	642	.87	264	130	46
Nov. 21-30	898	--	68	15	100	157	166	102	2.5	576	.78	231	102	48
Dec. 1-10	1,000	--	74	20	134	219	203	117	1.8	658	.89	266	87	52
Dec. 11-20	1,040	--	73	26	115	171	197	135	2.8	657	.89	289	149	46
Dec. 21-31	1,160	--	82	24	128	176	208	155	3.5	711	.97	303	159	48
Jan. 1-10	1,260	--	84	29	148	177	233	185	1.5	829	1.13	328	184	49
Jan. 11-20	1,250	--	82	28	148	168	239	180	2.0	830	1.13	320	182	50
Jan. 21-31	1,310	--	88	31	154	185	243	195	2.5	855	1.16	347	196	49
Feb. 1-10	1,370	27	78	27	172	152	246	210	2.5	858	1.17	306	181	55
Feb. 11-20	1,450	30	80	30	178	157	271	210	2.8	922	1.25	323	194	54
Feb. 21-29	1,440	26	84	28	175	168	242	222	3.8	901	1.23	324	187	54
Mar. 1-8, 10	1,420	25	92	30	161	157	286	195	4.0	923	1.26	353	224	50
Mar. 11-20	1,550	31	96	34	181	165	304	225	4.0	956	1.30	380	244	51
Mar. 21-31	1,300	25	81	29	147	160	252	175	1.5	829	1.13	321	190	50
Apr. 1-10	1,170	20	69	26	131	140	220	155	1.0	727	.99	279	164	50
Apr. 11-20	1,030	16	67	23	111	145	195	128	1.0	632	.86	262	142	48
Apr. 21-30	1,120	15	72	23	122	143	213	142	1.2	700	.95	274	157	49
May 1-10	1,580	19	84	38	193	133	322	240	2.2	964	1.31	366	256	53
May 11-20	1,120	17	70	27	119	127	206	160	1.2	691	.94	286	182	48
May 21-31	956	15	64	18	104	119	186	118	1.2	594	.81	234	136	49

RIO GRANDE AT MISSION PUMPING PLANT, NEAR MISSION, TEX., October 1947 to September 1948
(Continued)

Date of collection	Specific conduct- ance (Micro- mhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Mg)	Magn- esium (Mg)	Sodium and Potas- sium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids		Hardness		Per cent so- dium
										Parts per mil- lion	Tons per acre foot	as CaCO ₃ Total	Non- car- bon- ate	
June 1-10	1,060	16	66	22	120	131	176	158	2.8	640	0.87	255	148	51
June 11-20	1,060	18	67	24	117	141	194	142	1.8	658	.89	266	150	49
June 21-27	932	15	64	18	101	146	168	111	1.8	568	.77	234	114	48
June 28-30	319	20	33	3.1	35	134	29	19	4.2	209	.28	95	0	44
July 1-2, 8-14	388	20	43	6.7	24	124	44	20	4.2	248	.34	135	33	28
July 3-7, 15-22	673	19	65	11	57	140	112	68	4.5	427	.58	207	92	37
July 23-31	1,010	22	79	18	45	152	161	140	4.5	632	.86	271	146	45
Aug. 1-10	1,010	27	80	19	107	152	198	125	3.2	655	.89	278	153	46
Aug. 11-20	974	32	76	18	104	164	189	109	5.4	638	.87	264	129	46
Aug. 21-31	1,070	29	80	20	117	172	202	128	5.0	695	.95	282	140	47
Sept. 1-10	903	18	68	15	97	141	159	112	2.8	568	.77	231	116	48
Sept. 11-15, 19	380	10	38	5.6	31	110	56	24	2.8	242	.33	118	28	36
Sept. 16-18, 20	562	9.8	60	9.0	42	122	105	47	3.2	355	.48	186	86	33
Sept. 21-30	677	11	59	11	66	136	117	71	2.5	421	.57	192	80	43

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN THE RIO GRANDE BASIN IN TEXAS

Date of collection	Specific conductance (Micromhos at 25° C)	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Dissolved Solids	Total Hardness as CaCO ₃
<u>Pecos River near Ft. Sumner, New Mexico</u>											
Apr. 2, 1948	2,640	--	--	--	--	--	--	135	--	--	--
<u>Delaware River near Red Bluff, New Mexico</u>											
Oct. 15, 1947	3,440	669	86	--	131	77	1,960	145	0.8	3,030	2,020
<u>Pecos River at tailrace of Red Bluff Dam</u>											
Oct. 16, 1947	11,800	675	258	--	1,860	123	2,340	3,020	--	8,210	2,750
<u>Screwbean Draw near Pecos, Texas</u>											
Oct. 3, 1947	27,200	--	--	--	--	--	--	--	--	--	--
Oct. 8	26,900	--	--	--	--	--	--	--	--	--	--
Oct. 13	26,900	--	--	--	--	--	--	--	--	--	--
Oct. 18	26,100	--	--	--	--	--	--	--	--	--	--
Oct. 23	26,100	--	--	--	--	--	--	--	--	--	--
Oct. 28	25,500	--	--	--	--	--	--	--	--	--	--
Nov. 2	25,500	--	--	--	--	--	--	--	--	--	--
Nov. 10	25,300	--	--	--	--	--	--	8,000	--	--	--
Nov. 15	12,100	--	--	--	--	--	--	--	--	--	--
Nov. 20	11,800	--	--	--	--	--	--	--	--	--	--
Nov. 25	11,800	--	--	--	--	--	--	3,100	--	--	--
Dec. 20	24,100	--	--	--	--	--	--	7,400	--	--	--
Dec. 25	24,700	--	--	--	--	--	--	7,800	--	--	--
Dec. 30	11,000	--	--	--	--	--	--	2,650	--	--	--
Jan. 5, 1948	23,500	--	--	--	--	--	--	7,400	--	--	--
Jan. 10	10,700	--	--	--	--	--	--	2,600	--	--	--
Jan. 15	23,500	--	--	--	--	--	--	7,600	--	--	--
Jan. 20	23,900	--	--	--	--	--	--	7,500	--	--	--
Jan. 25	23,700	--	--	--	--	--	--	7,400	--	--	--
Jan. 30	23,200	--	--	--	--	--	--	7,400	--	--	--
Feb. 5	23,400	--	--	--	--	--	--	7,400	--	--	--
Feb. 10	23,400	--	--	--	--	--	--	7,400	--	--	--
Feb. 15	23,500	--	--	--	--	--	--	7,500	--	--	--
Feb. 20	23,500	--	--	--	--	--	--	7,400	--	--	--
Feb. 25	9,840	--	--	--	--	--	--	2,150	--	--	--
Mar. 1	23,400	--	--	--	--	--	--	7,400	--	--	--
Mar. 5	23,400	--	--	--	--	--	--	7,400	--	--	--
Mar. 10	23,400	--	--	--	--	--	--	7,300	--	--	--
Mar. 15	23,700	--	--	--	--	--	--	7,400	--	--	--
Mar. 20	23,700	--	--	--	--	--	--	7,400	--	--	--

ANALYSES OF SPOT SAMPLES COLLECTED AT VARIOUS POINTS IN THE RIO GRANDE BASIN IN TEXAS
(Continued)

Date of collection	Specific conductance (Micromhos at 25° C)	Sili- ca (SiO ₂)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Dissolved Solids	Total Hard- ness as CaCO ₃
Screwbean Draw near Pecos, Texas--Continued											
Mar. 25, 1948	23,900	--	--	--	--	--	--	7,500	--	--	--
Mar. 30	24,300	--	--	--	--	--	--	7,700	--	--	--
Apr. 5	24,700	--	--	--	--	--	--	7,700	--	--	--
Apr. 10	24,700	--	--	--	--	--	--	7,600	--	--	--
Apr. 15	25,300	--	--	--	--	--	--	8,100	--	--	--
Apr. 20	25,300	--	--	--	--	--	--	8,000	--	--	--
Apr. 25	25,300	--	--	--	--	--	--	8,000	--	--	--
May 1	11,500	--	--	--	--	--	--	2,850	--	--	--
May 6	24,700	--	--	--	--	--	--	7,700	--	--	--
May 11	24,700	--	--	--	--	--	--	7,900	--	--	--
May 16	24,700	--	--	--	--	--	--	7,800	--	--	--
Pecos River near Pecos, Texas											
Oct. 16, 1947	12,300	--	779	356	1,830	132	2,750	3,130	--	8,910	3,410
Barstow Drain No. 1, near Pecos, Texas											
Oct. 16, 1947	12,500	--	739	326	2,010	132	2,860	3,160	--	9,170	3,180
Barstow Drain No. 2, near Pecos, Texas											
Oct. 16, 1947	9,570	--	756	257	1,300	121	2,510	2,170	--	7,050	2,940
Barstow Drain No. 3, near Pecos, Texas											
Oct. 16, 1947 <u>a/</u>	10,500	--	774	305	1,490	150	2,730	2,450	--	7,820	3,190
Oct. 16, 1947 <u>b/</u>	10,600	--	742	294	1,550	144	2,740	2,450	--	7,850	3,060
Salt Draw near Pecos, Texas											
Oct. 16, 1947	9,100	--	366	251	1,460	190	1,820	2,170	--	6,160	1,950
Toyah Lake Outlet near Pecos, Texas											
July 24-27, 1948	6,900	9.2	628	86	1,000	43	2,370	1,130	2.0	5,250	1,920
July 28-30	9,320	8.0	754	116	1,520	51	3,050	1,740	1.5	7,210	2,360
July 31-Aug. 1	2,780	11	408	37	218	38	1,190	265	2.0	2,150	1,170
Aug. 2-4	6,020	8.1	632	80	808	38	2,160	980	2.0	4,690	1,910
Pecos River near Garvin, Texas											
Oct. 1-14, 1947	19,200	--	816	517	3,450	127	3,850	5,350	--	14,000	4,160

a/below pipe leaking into drain
b/above pipe leaking into drain.