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WATER BULLETIN NUMBER 13

Flow of the Rio Grande and Tributary Contributions

From San Marcial, New Mexico
to the Gulf of Mexico

1943

WITH MAXIMUMS, MINIMUMS AND NORMALS

MONTHLY DISCHARGES FROM EARLIEST FEASIBLE DATES
From San Marcial to Lower Presidio

STORAGE CAPACITIES AND WATER IN STORAGE

SOURCES OF RIVER FLOW

DIVERSIONS

SILT, CHEMICAL AND SANITARY ASPECTS OF WATER QUALITY

RAINFALL AND EVAPORATION

DRAINAGE BASIN AND IRRIGATED AREAS

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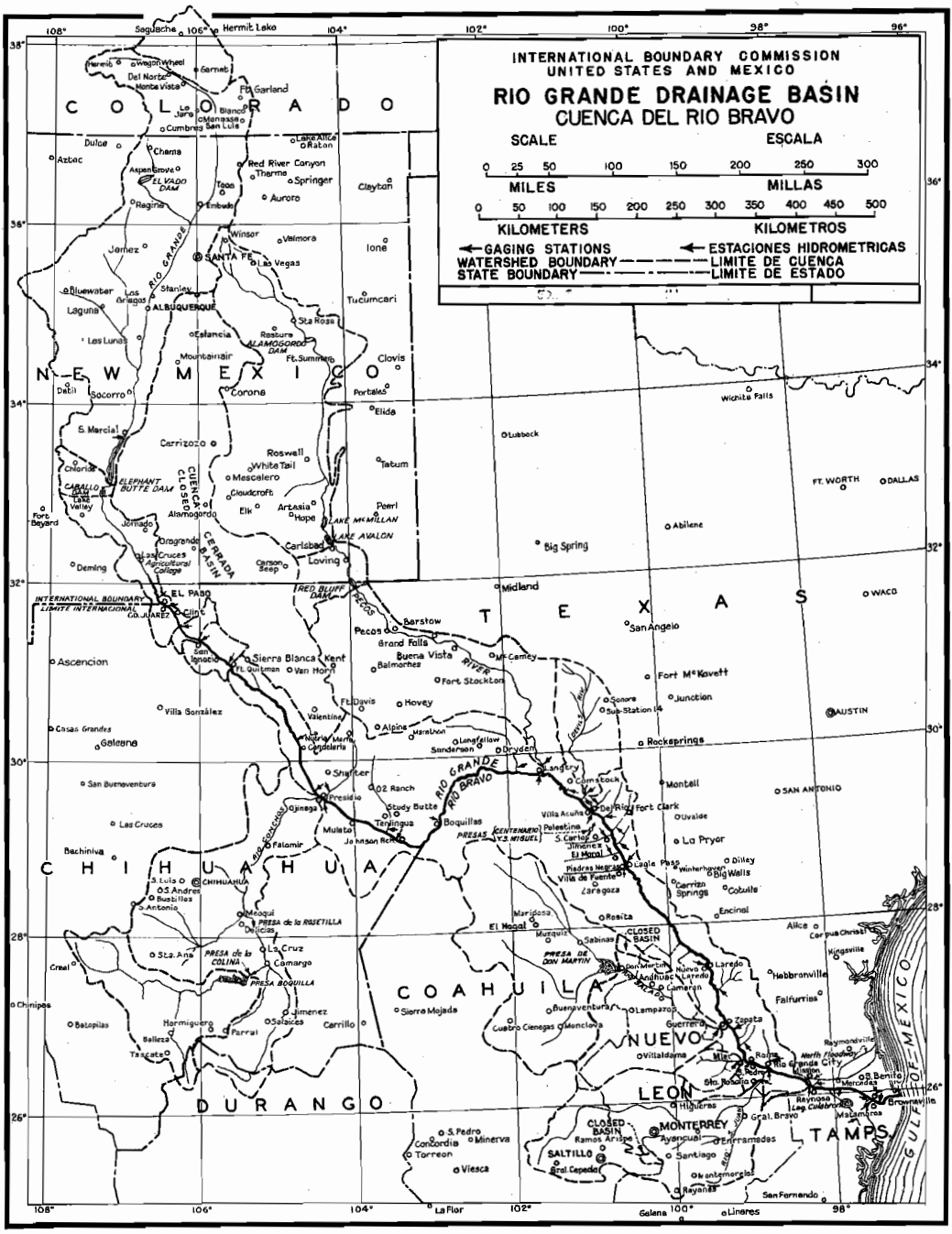


RIO GRANDE DRAINAGE BASIN

CUENCA DEL RIO BRAVO

FOREWORD

This compilation of stream discharges and related data is the thirteenth unified publication relative to the cooperative determination of the flow of the international portion of the Rio Grande. The first such publication was Water Bulletin No. 1, covering the year 1931. These data are published jointly by the United States and Mexican Sections of the International Boundary Commission and represent the results of stream flow measurements and related data from the Rio Grande and important tributaries near their confluence, from San Marcial, New Mexico, which is at the head of Elephant Butte reservoir,to the Gulf of Mexico, for the year 1943 as well as adjustments to and authentications of hydrographic records.

International stream gaging was begun in 1889, with the operation of the station at El Paso, Texas. A number of stations on the Lower Rio Grande and tributaries below El Paso were established in 1900 and operated until 1914. From 1914 to 1923, all such work was suspended except for a few months in 1919 and 1920. In 1923 the work was resumed and carried on independently by the two countries until 1931, when the present cooperative work began.

The duties and functions of the United States Section of the International Water Commission were transferred to the United States Section of the International Boundary Commission by Act of June 30, 1932. On January 1, 1932, the Mexican Section of the International Boundary Commission similarly took over the duties of the Mexican Section of the International Water Commission. On January 1, 1935, an International Water Commissioner for Mexico was again appointed, and though separated, the two Commissions functioned as one. In January 1941 the two Mexican Commissions were again combined into one.

This cooperative arrangement for obtaining hydrologic data is the result of the concurrence and agreement by both sections of the International Commission that a coordinated result should be insured and that an accurate and complete hydrographic record of international flow is necessary.

Of stream gaging stations on the Rio Grande, those at Juarez, Eagle Pass, Laredo, Roma, Buenos Aires, and Matamoros were operated in 1943 by the Mexican Section of the Commission, the others by the United States Section. Each section operated the gaging stations on tributaries entering the Rio Grande from its own country, or on floodways or diversions within its borders.

Of the 335,500 square miles of total area within the outer rim of the Rio Grande Basin, about 48.8% yield no run-off to the Rio Grande leaving 171,759 square miles of productive watershed. Approximately 2,870,000 acre feet per year is the average virgin yield of the upper 61,600 square miles of watershed above Fort Quitman and Girvin (on the Pecos) where 1,140,000 acres are irrigated and 3,600,000 acre feet of reservoir capacity regulates the flow. Approximately 3,630,000 acre feet per year is the average virgin yield of the upper 58,300 square miles of the Rio Conchos, Rio Salado, and Rio San Juan where 434,600 acres are irrigated and 4,110,000 acre feet of reservoir capacity regulates the flow. About 2,562,000 acre feet per year is the average virgin yield of the remaining lower 51,900 square miles of watershed in both countries where 788,000 acres are irrigated and only 290,000 acre feet of reservoir capacity regulates the flow. From the Rio Grande 3,750,000 acre feet per year,average, escapes to the Gulf of Mexico.

As a wartime conservation measure the size of this Water Bulletin is reduced, data are compressed on the pages and the index to all Water Bulletins is omitted. For finding all of the data for a particular stream measuring station or a particular subject, etc.; please refer to the index to all Water Bulletins, pages 106-111 in Water Bulletin No.10.

A factual picture of the Rio Grande along the international boundary, the various important aspects of the quantity and quality of its water, and the uses thereof,is more easily gained from the mass of essential detailed data in the Water Bulletins if the reader will look to the generalizations of the data which appear at the lower side and right-hand side of the tabulations, and also to the maps and graphs.

ACKNOWLEDGMENTS

Some of the data published herein relative to drainage basin and irrigated areas, chemical and bacteriological analyses, stored water, evaporation and rainfall have been furnished by the following agencies within the two countries: United States Department of Agriculture, United States Bureau of Reclamation, United States Army, U. S. Soil Conservation Service, Rio Grande Compact Commission, Texas Agricultural and Mechanical College,Texas State Board of Health, El Paso City-County Health Unit, El Paso Department of Water and Sewage, Cameron County Health Unit, Federal Board of Public Improvements of Nuevo Laredo, Tamaulipas, National Irrigation Commission of Mexico, Cia. Agricola y de Fuerza Electrica del Rio Conchos, S. A., Mexican Department of Agriculture and Development, National Bank of Agricultural Credit of Mexico, Meteorological Service of Mexico, and private individuals and corporations. Specific acknowledgment is made where the data appear.

FOREWORD

General Hydrologic Conditions for 1943

Along and Adjacent to The International Portion of the Rio Grande

During 1943 the evaporation and temperature were, in general, above normal and precipitation was, in general, below normal on both sides of the Rio Grande Basin. The inland or up-river areas were relatively warmer and drier than the areas near the Gulf of Mexico. On the United States side of the Lower Rio Grande Valley, the 1943 average rainfall was 21.98 inches, or 92% of the 1871-1943 normal. Such a rainfall occurs with an average frequency of once in 2.5 years. On the Devils River watershed, the 1943 average rainfall was 16.86 inches or 77% of the 1871-1943 normal. Such a rainfall occurs here with an average frequency of once in 4.5 years. On the Rio Grande watershed between Fort Quitman and Presidio, the 1943 average rainfall was 12.31 inches or 94% of the 1871-1943 normal. Such a rainfall occurs here with an average frequency of once in 2.2 years. On the Rio Grande watershed between El Paso and Fort Quitman, the 1943 average rainfall was 7.86 inches or 73% of the 1871-1943 normal. Such a rainfall occurs with an average frequency of once in 4.8 years.

As a whole, the monthly average amount of water in storage on the United States side and on the Mexican side of the Rio Grande basin was a little above normal. Some of the reservoirs on both sides were below normal.

The yearly flow of the Rio Grande was very much below normal at all points below Upper Presidio gaging station and at San Marcial. Due to releases from storage, the flow at El Paso was a little above normal, and at Fort Quitman and Upper Presidio it was only slightly below normal. At Matamoros and Lower Brownsville the annual flow was the lowest ever recorded, being 44.6% of normal at Matamoros.

San Felipe Creek near Del Rio, Texas, and Las Vacas Creek near Villa Acuña, Coah., flowed a little more than normal. But, with these exceptions, all United States and Mexican measured tributaries below Fort Quitman flowed less than normal. The United States measured tributaries flowed 64% of normal. The flow of the Mexican tributary, Rio San Juan, became largely controlled following the closing of the newly-constructed Azúcar Reservoir on March 10, 1943. Excluding the Rio San Juan, the remaining Mexican measured tributaries flowed 57% of their normal. The lowest annual flow of record occurred at Terlingua Creek, Goodenough Spring, and Rio Escondido.

No flood peaks of note occurred during 1943.

The water consumed per acre of land in irrigation in the Lower Rio Grande Valley was a little below normal while it was above normal in the up-river or inland portion of the basin, thus reflecting, in the two regions, the abnormal and subnormal conditions of evaporation, temperature, and rainfall.

Municipal diversions from the Rio Grande were considerably above normal.

The 1943 sanitary sampling and assaying of Rio Grande water extended from Elephant Butte Reservoir to Lower Brownsville. An analysis of the several years of data heretofore collected at El Paso station and near Laredo showed the average monthly density of coliform organisms to correlate quite well with surface washings of the watershed as indicated by rainfall or stream rises.

Also, along two stretches of the river the chloride content of the water was shown to be above the 250 parts per million concentration recommended as a limit for municipal use. These stretches of river were from below El Paso to Presidio, and from the Pecos River confluence to the Gulf. In this latter stretch the high chloride concentration was shown to coincide with abnormally high salt concentration in the Pecos River, which in turn was found to coincide with high stages of water storage in the Red Bluff Reservoir on the Pecos.

The annual tonnage of salts or total dissolved solids, carried by the Rio Grande at the various gaging stations and the tributary contributions were considerably below the 1935-43 normal. The total tonnage of salts leaving the El Paso-Juarez Valley at Fort Quitman gaging station was, as usual, less than that entering the Valley at the El Paso station. In 1943, for the third year in succession, the contribution to the Rio Grande of salts by the Pecos River was very much above normal. In fact, the average concentration in 1943 was 5.48 tons of total dissolved solids per acre-foot of water, the second greatest of record. A fuller understanding of this menacing development may be gained from page 70 of Water Bulletin No. 12.

At San Marcial, New Mexico, 3,300 acre-feet of suspended silt passed down the Rio Grande; this was 31% of normal. At Eagle Pass 3,900 acre-feet of suspended silt passed the station; this was 39% of normal. At Roma 47% of normal silt or 6,100 acre-feet passed the station. The silt entering the Rio Grande from the Rio Alamo was about 225 acre-feet or 46% of normal.

RIO GRANDE AT SAN MARCIAL STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and winch located at railroad bridge about one mile below San Marcial, New Mexico, and 177.1 miles above the American Dam at El Paso, Texas. The recorder is on the upstream end of the first bridge pier from the south abutment of the bridge and the zero of its gage is 4,455.38 feet, United States Coast and Geodetic Survey sea level datum. On February 17, 1943, while the deck of the railroad bridge was being raised about 12 feet, the recorder was moved to the downstream side of the Val Verde highway bridge 1.8 miles upstream from the railroad bridge. Elevation of zero of the gage at the highway bridge was not determined. The recorder was returned to the original location on the railroad bridge on June 25, 1943.

RECORDS: Based upon 125 meter measurements by wading and from cable about 1,000 feet above railroad bridge. Computations by shifting channel methods. 1943 records good. Records available: January 1895 to December 1943. Monthly records 1895-1943 will be found elsewhere in this bulletin.

REMARKS: For gage history 1895 to 1938 see Water Bulletins Nos. 4, 7, and 8. El Vado and smaller reservoirs and many irrigation diversions and drainage returns above this station in Colorado and New Mexico, modify the river flow.

COMPARATIVE FLOWS FROM RECORDS: Momentary Peak: Max. October 11, 1904, 50,000 sec. ft. with water surface level of 4,459.5 feet on U.S.C.& G.S. datum about .25 mile above the present station gage. This is the greatest flood peak flow in, at least, the past 115 years, or since 1828. Min. sometimes dry. See Water Bulletin No. 6, page 79, for large peak flows since 1828 and their average frequency.

Average Daily:	Max.	Oct. 11, 1904,	33,000 sec. ft.;	Min. sometimes dry.	
Average Monthly:	Max.	May 1941,	16,159 sec. ft.;	Min. sometimes dry.	
Average Yearly:	Max.	1941,	3,911 sec. ft.;	Min. 1902,	277 sec. ft.
Average of Two Successive Years:	Max.	1941-1942,	3,300 sec. ft.;	Min. 1899-1900,	487 sec. ft.
Average of Three Successive Years:	Max.	1905-1907,	2,830 sec. ft.;	Min. 1900-1902,	609 sec. ft.
Average of Four Successive Years:	Max.	1905-1908,	2,390 sec. ft.;	Min. 1899-1902,	539 sec. ft.
Average of Five Successive Years:	Max.	1905-1909,	2,260 sec. ft.;	Min. 1898-1902,	697 sec. ft.
Average of Ten Successive Years:	Max.	1903-1912,	1,980 sec. ft.;	Min. 1931-1940,	1,140 sec. ft.

Average of Forty-nine Years: 1,560 sec. ft.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	973	935	612	124	1,240	220	2,680	27.0	752	201	242	680
2	879	836	658	134	1,200	192	1,920	31.3	669	305	263	608
3	890	826	764	102	1,140	269	1,460	36.0	528	390	308	530
4	838	872	820	122	1,380	184	1,050	35.7	341	379	379	450
5	874	863	816	197	1,080	199	731	16.8	284	306	331	482
6	845	914	819	192	1,050	231	590	58.8	211	294	279	461
7	922	939	841	550	1,200	247	374	492	147	352	268	514
8	965	843	804	509	1,450	273	296	734	117	298	289	639
9	933	543	742	828	1,360	540	310	509	98.2	264	330	730
10	912	572	680	964	1,870	367	302	444	203	271	347	956
11	869	660	672	1,160	2,900	363	258	733	205	319	375	928
12	836	834	619	1,060	2,060	441	221	346	182	300	290	895
13	817	849	576	1,340	1,270	425	224	158	182	336	238	844
14	801	778	532	1,290	1,140	256	193	108	219	352	210	803
15	786	718	629	1,060	913	232	285	120	254	303	198	699
16	761	661	746	776	709	211	240	127	201	238	166	632
17	698	*678	816	677	624	291	148	141	155	234	172	656
18	712	736	1,040	633	438	144	150	162	184	200	240	716
19	462	725	867	744	364	101	173	366	282	172	253	700
20	* 502	712	722	968	209	142	174	1,650	273	167	202	667
21	" 936	761	651	799	386	144	453	1,330	255	255	235	652
22	"1,110	817	628	577	553	82.9	1,260	618	329	234	233	659
23	"1,020	870	587	492	440	59.0	1,310	417	279	223	287	688
24	" 913	859	566	591	490	206	931	315	240	265	327	713
25	799	892	441	780	303	* 93.2	806	384	209	305	363	798
26	793	835	236	1,170	320	" 54.0	570	671	226	303	470	858
27	860	842	189	1,890	387	* 43.5	303	313	262	271	476	935
28	999	701	164	1,400	261	41.0	246	520	335	312	566	954
29	968		141	1,500	247	756	228	1,460	317	247	706	882
30	951		135	1,410	214	3,830	122	756	276	260	697	778
31	969		129		178		55.8	1,490		231		815
Sum	26,593	22,071	18,642	24,039	27,376	10,637.6	18,063.8	14,569.6	8,215.2	8,587	9,740	22,322

Month	1943 Extreme Gage Feet High	1943 Extreme Gage Feet Low	1943 Extreme Second Feet High Day	1943 Extreme Second Feet High	1943 Extreme Second Feet Low Day	1943 Extreme Second Feet Low	1943 Average Second Feet	1943 Total Acre Feet	Period 1924-1943 Acre Feet Normal	Period 1924-1943 Acre Feet Maximum	Period 1924-1943 Acre Feet Minimum
Jan.	9.04	7.53	28	1,200	19	246	858	52,700	44,562	72,600	17,400
Feb.	9.00	8.55	6	1,110	10	483	788	43,800	48,096	77,100	29,600
Mar.	ϕ 3.91	ϕ 2.43	18	1,330	31	116	601	37,000	60,816	119,000	23,400
Apr.	ϕ 4.38	ϕ 2.26	27	2,400	4	75.7	801	47,700	135,266	432,000	16,850
May	ϕ 4.75	ϕ 2.71	11	3,430	30	173	883	54,300	286,692	994,000	4,450
June	11.30	ϕ 2.13	30	4,500	23	19.3	355	21,100	163,198	609,000	228
July	11.12	7.32	1	3,840	31	27.5	583	35,800	59,285	246,000	0
Aug.	10.84	6.83	20	3,410	6	0	470	28,900	48,270	275,000	1,620
Sept.	9.94	7.19	1	911	10	72.3	274	16,300	56,696	308,000	2,920
Oct.	9.10	8.26	13	402	20	87.9	277	17,000	42,226	221,000	0
Nov.	9.90	8.34	29	752	17	107	325	19,300	34,948	171,000	2,550
Dec.	10.41	9.12	28	1,040	7	376	720	44,300	44,194	95,300	15,100
Yearly	11.30	ϕ 2.13		4,500		0	578	418,200	1,024,249	2,832,100	244,489

* Partly Estimated " Estimated ϕ Gage heights at Val Verde Highway Bridge

RIO GRANDE AT BELOW ELEPHANT BUTTE DAM STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car with winch. Prior to January 17, 1939 the recorder was located at the south side of the pool immediately below the dam. The cable was 1 mile below the recorder. Zero of this gage was elevation 4,255.10 feet on United States Coast and Geodetic Survey sea level datum. On January 17, 1939, a temporary water-stage recorder was established 1900 feet below the dam with zero of the gage at elevation 4,242.24. On March 29; 1939, the zero of this gage was changed to elevation 4,240.94 on the above-mentioned sea level datum. On April 25, 1942, the water-stage recorder was moved to a point 100 feet above the cable. Zero of this gage is 4,242.09 feet on the above-mentioned sea level datum. Elephant Butte Dam is 135.1 river miles above the American Dam at El Paso.

RECORDS: Based upon 53 meter measurements during the year and a stable rating curve. Records available 1915 to 1943. 1943 records excellent. Records furnished by the El Paso Office of the United States Bureau of Reclamation. Monthly records 1915-1943 will be found elsewhere in this bulletin.

REMARKS: The station described here is operated by the Reclamation Bureau. It has been the official station since 1931. Prior to 1931 it was located at other points in the immediate vicinity. See United States Geological Survey Water Supply Papers. The river flow at this station is completely modified by irrigation diversions, drainage returns and reservoirs. Elephant Butte Dam is 42.0 river miles downstream from the San Marcial gaging station at the upper end of Elephant Butte Reservoir. Beginning December 1940 hydro-electric power generation facilities for 27,000 K.V.A. began operating here.

COMPARATIVE FLOWS FROM RECORDS: Average Daily: Max., May 22, 1942, 8,200 sec. ft.; Min., varies according to power generation.

Average Monthly:	Max.	May 1942,	7,590 sec. ft.;	Min.	Jan. 1930,	3.0 sec. ft.
Average Yearly:	Max.	1942,	2,510 sec. ft.;	Min.	1935,	881 sec. ft.
Average of Two Successive Years:	Max.	1941-1942,	1,930 sec. ft.;	Min.	1918-1919,	946 sec. ft.
Average of Three Successive Years:	Max.	1941-1943,	1,660 sec. ft.;	Min.	1935-1937,	985 sec. ft.
Average of Four Successive Years:	Max.	1939-1942,	1,490 sec. ft.;	Min.	1934-1937,	1,020 sec. ft.
Average of Five Successive Years:	Max.	1938-1942,	1,430 sec. ft.;	Min.	1933-1937,	1,040 sec. ft.
Average of Ten Successive Years:	Max.	1916-1925,	1,270 sec. ft.;	Min.	1928-1937,	1,060 sec. ft.

Average of Twenty-nine Years: 1915-1943, 1,220 sec. ft.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,010	1,260	1,040	1,060	1,140	1,230	1,070	1,130	1,260	1,180	1,010	1,150
2	1,020	1,270	1,040	1,040	959	1,140	1,130	1,200	1,200	1,130	1,030	1,180
3	958	1,170	958	1,040	1,100	1,170	1,180	1,270	1,240	998	1,070	1,090
4	1,020	1,200	1,020	1,012	1,120	1,120	1,090	1,300	1,230	1,080	1,030	1,150
5	990	1,070	965	1,060	1,140	1,160	1,130	1,350	1,100	1,160	1,020	1,040
6	1,050	918	966	1,170	1,140	934	1,200	1,310	1,180	1,200	1,100	1,050
7	1,300	835	903	1,160	1,160	1,090	1,240	1,280	1,220	1,180	942	1,130
8	1,480	887	995	1,170	1,150	1,130	1,340	1,120	1,250	1,190	1,090	1,160
9	983	911	1,020	1,150	1,030	1,140	1,280	1,210	1,250	1,190	1,120	1,130
10	931	893	1,040	1,190	1,120	1,130	1,280	1,220	1,240	1,150	1,140	1,150
11	939	891	1,020	1,050	1,180	1,100	1,170	1,200	1,230	1,150	1,160	1,160
12	990	896	1,010	1,170	1,180	1,100	1,170	1,210	1,110	1,220	1,140	1,120
13	1,010	977	1,040	1,240	1,120	939	1,250	1,220	1,160	1,300	1,140	1,050
14	990	922	898	1,180	1,210	1,040	1,260	1,190	1,170	1,290	984	1,130
15	1,030	1,010	980	1,210	1,130	1,110	1,170	1,140	1,210	1,250	1,130	1,160
16	1,000	1,000	998	1,200	1,020	1,120	1,240	1,130	1,220	1,190	1,160	1,130
17	953	980	991	1,150	1,120	1,110	1,300	1,190	1,230	985	1,180	1,150
18	968	1,010	1,050	1,050	1,130	1,070	1,160	1,200	1,190	1,130	1,300	1,160
19	987	1,020	1,060	1,140	1,120	1,040	1,150	1,220	1,130	1,220	1,300	1,120
20	965	1,020	1,080	1,200	1,080	891	1,210	1,250	1,120	1,220	1,190	1,120
21	921	1,020	984	1,160	1,090	989	1,160	1,220	1,180	1,170	1,080	1,170
22	947	1,030	1,080	1,130	1,090	1,110	1,160	1,110	1,210	1,210	1,180	1,250
23	934	1,070	1,150	1,110	978	1,110	1,160	1,160	1,170	1,210	1,200	1,250
24	842	1,070	1,150	1,090	1,030	1,120	1,170	1,190	1,160	1,150	1,160	1,220
25	922	1,070	1,130	979	1,130	1,110	1,040	1,260	1,130	1,210	1,140	949
26	1,050	1,070	1,150	1,060	1,100	1,100	1,190	1,290	914	1,140	1,170	933
27	1,040	1,070	1,180	1,060	1,150	957	1,150	1,270	1,160	1,190	1,160	1,130
28	1,050	987	1,090	1,060	1,120	1,020	1,300	1,300	1,130	1,140	953	1,420
29	1,050		1,060	1,070	1,100	1,090	1,290	1,170	1,170	1,130	1,120	1,500
30	1,040		1,100	1,090	989	1,110	1,330	1,190	1,240	1,110	1,090	1,250
31	958		1,060		1,050		1,280	1,140		939		1,130
Sum	31,328	28,527	32,208	33,451	34,176	32,480	37,250	37,640	35,404	36,020	33,489	35,732

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet ⊕ High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.			8	1,480	24	842	1,010	62,100	14,163	86,500	184
Feb.			2	1,270	7	835	1,020	56,600	31,139	76,300	969
Mar.			27	1,180	14	898	1,040	63,900	60,246	88,700	1,520
Apr.			13	1,240	25	979	1,120	66,400	111,545	162,000	57,200
May			14	1,210	2	959	1,100	67,800	119,990	467,000	67,800
June			1	1,230	20	891	1,080	64,400	128,620	363,000	64,400
July			8	1,340	25	1,040	1,200	73,900	126,295	211,000	73,900
Aug.			5	1,350	22	1,110	1,210	74,700	118,540	162,000	74,700
Sept.			1	1,260	26	914	1,180	70,200	72,675	129,000	25,000
Oct.			13	1,300	31	939	1,160	71,400	25,791	72,100	506
Nov.			18	1,300	7	942	1,120	66,400	25,264	158,000	884
Dec.			29	1,500	26	933	1,150	70,900	23,386	87,300	916
Yearly				1,500		835	1,120	808,700	857,654	1,818,800	637,544

⊕ Mean Daily.

RIO GRANDE AT BELOW CABALLO DAM STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and winch located .80 river mile below Caballo Dam and 106.8 river miles above American Dam at El Paso. Elevation of zero of the gage was 4,147.90±.2 feet from February 26 to October 7, 1938 when it was changed to 4,146.90±.2 feet. On October 13, 1938 it was again changed to 4,145.90±.2 feet. All elevations are on United States Coast and Geodetic Survey sea level datum.

RECORDS: Based upon 125 meter measurements during the year. Records available: February 26, 1938 to December 31, 1943: 1943 records excellent. Records furnished by the El Paso Office of the United States Bureau of Reclamation. Monthly records 1938-1943 will be found elsewhere in this bulletin.

REMARKS: This gaging station was installed by the Bureau of Reclamation on the Rio Grande on February 26, 1938 to measure the flow from the Caballo reservoir. The river flow here is completely modified by reservoirs and irrigation diversions and drainage returns above this station. This station is about 1.5 miles upstream from Percha Dam (a low diversion dam) at which point records have been kept in past years. Small accretions to the river take place between this station and Percha Dam. 1,522 acre feet of water, not accounted for in the tables below, were diverted in 1943 from Caballo reservoir into a small irrigation canal (Bonito Lateral) just below the dam.

EXTREME FLOWS: The greatest mean daily flow to pass Caballo Dam (since storage began February 8, 1938) occurred May 20, 1942 when the discharge was 7,650 second feet. The minimum discharge since records began occurred on December 12, 1940 and subsequent days when the mean daily flow was 1.3 second feet.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	293	113	967	2,530	2,140	2,150	1,360	2,690	2,020	371	29.1	5.1
2	49.2	114	967	2,520	2,290	1,950	1,280	2,700	1,880	737	28.8	4.2
3	48.0	113	1,030	2,710	2,290	1,880	1,660	2,700	1,800	718	28.8	4.2
4	43.2	112	1,060	2,680	2,290	1,870	1,780	2,690	1,760	560	28.8	4.2
5	47.9	270	1,040	2,590	2,080	1,950	1,780	2,730	1,740	480	28.8	3.9
6	53.7	701	989	2,710	1,330	2,000	1,680	2,920	1,710	360	28.8	3.9
7	58.4	651	961	2,710	1,110	1,990	1,650	2,810	1,710	122	28.8	3.9
8	59.5	665	965	2,670	2,000	2,020	1,620	2,730	1,660	125	18.2	4.2
9	59.4	483	982	2,580	2,300	2,130	1,800	2,710	1,470	126	3.5	4.5
10	55.7	133	1,030	2,430	2,300	2,160	2,200	2,610	1,470	127	2.5	3.2
11	55.6	96.4	1,070	2,430	2,290	2,140	2,250	2,560	1,580	93.3	2.5	3.6
12	65.0	89.2	1,070	2,340	2,210	2,250	2,240	2,500	1,590	9.7	2.5	3.9
13	67.3	231	1,210	2,260	1,970	2,250	2,280	2,460	1,560	3.3	2.5	3.9
14	67.2	836	1,360	2,200	1,970	2,230	2,610	2,650	1,570	3.3	2.5	3.9
15	70.7	836	1,380	2,210	1,970	2,230	2,430	2,620	1,470	280	524	3.9
16	73.0	834	1,400	2,250	1,960	2,200	2,330	2,570	1,380	999	1,090	3.9
17	74.0	828	1,510	2,340	1,940	2,030	2,180	2,510	1,360	999	1,070	4.5
18	71.5	830	1,610	2,400	1,930	2,030	2,150	2,470	1,320	930	1,010	4.8
19	69.2	824	1,680	2,400	2,010	2,200	2,110	2,390	1,320	721	868	5.1
20	73.2	817	1,880	2,340	2,150	2,250	2,020	2,340	1,320	574	591	5.1
21	73.4	816	1,870	2,210	2,050	2,250	1,930	2,380	1,270	478	187	5.4
22	73.4	785	1,880	2,030	1,960	2,240	1,930	2,530	1,040	267	157	5.1
23	76.7	780	1,920	1,990	1,960	2,290	1,930	2,420	517	114	157	3.9
24	76.7	785	1,960	1,990	1,960	2,400	2,080	2,290	138	113	138	331
25	77.9	790	2,030	1,980	1,960	2,730	2,180	2,280	110	113	12.2	620
26	90.8	838	2,130	2,000	1,900	2,820	2,170	2,170	109	76.1	5.4	589
27	93.8	923	2,310	2,120	1,870	2,670	2,150	2,130	105	28.4	5.1	446
28	95.4	959	2,320	2,170	1,860	2,650	2,140	2,180	137	27.8	5.1	408
29	107		2,320	2,080	2,030	2,460	2,160	2,230	188	29.1	5.1	280
30	112		2,470	2,070	2,090	1,800	2,450	2,240	200	28.4	5.1	148
31	113		2,580		2,090		2,640	2,170		29.1		9.9
Sum	2,444.8	16,252.6	47,951	69,940	62,260	66,220	63,170	77,380	35,504	9,642.5	6,066.1	2,930.2

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1938-1943 Acre Feet Average	Maximum	Minimum
Jan.			1	293	4	43.2	78.9	4,850	2,200	4,850	97
Feb.			28	959	12	89.2	580	32,200	26,443	64,300	7,260
Mar.			31	2,580	7	961	1,550	95,100	77,867	95,100	49,300
Apr.			‡ 3	2,710	25	1,980	2,330	138,700	133,017	212,000	106,000
May			‡ 9	2,300	7	1,110	2,010	123,500	156,333	412,000	91,500
June			26	2,820	30	1,800	2,210	131,300	159,767	354,000	114,300
July			31	2,640	2	1,280	2,040	125,300	142,400	234,000	109,000
Aug.			6	2,920	27	2,130	2,500	153,500	134,300	179,000	110,000
Sept.			1	2,020	27	105	1,180	70,400	83,867	181,000	43,800
Oct.			‡16	999	‡13	3.3	311	19,100	17,828	35,400	2,840
Nov.			16	1,090	‡10	2.5	202	12,000	9,610	14,400	3,400
Dec.			25	620	10	3.2	94.5	5,810	8,412	16,000	83.3
Yearly				2,920		2.5	1,260	911,760	952,044	1,795,620	703,547

● Mean Daily. ‡ And other days.

RIO GRANDE AT EL PASO STATION

DESCRIPTION: Staff gage and cable with sit-down cable car and winch located in the pass opposite Courchesne quarry, 4 miles northwest of El Paso, Texas, and 5 miles northwest of Cd. Juarez, Chihuahua, and .9 river mile above the American Dam. Zero of gage is 3,720.51 feet above U.S.C.& G.S. mean sea level datum. Also water-stage recorder 1 mile further upstream with zero of its gage 3,722.30 feet on the same datum. This latter gage has been the official gage since August 3, 1938. For items of gage history see previous Water Bulletins.

RECORDS: The daily discharges for the period June 30 - July 5, 1943, were based upon 3 meter measurements, made during that period. All other discharges in 1943 were computed by taking the sum of the flows in the American Canal and the flows at the Below American Dam Station. 1943 record good. Records available 1889-1943. Monthly records 1889-1943 will be found elsewhere in this bulletin.

REMARKS: Reservoirs on the Rio Grande and its tributaries, also many irrigation diversions and drainage returns, completely modify the river flow at this station.

COMPARATIVE FLOWS FROM RECORDS: Momentary Peak: Max., June 12, 1905, 24,000 sec. ft. with 6.0 feet stage (lower gage). This is the greatest peak flow in the past 115 years or since 1828, or possibly longer. Min., sometimes dry. See Water Bulletin No. 6, page 79, for all large peak flows since 1828 and their average frequency. Since Elephant Butte Dam was closed in 1915, the largest peak flow to pass this station was 13,500 sec. ft. on September 3, 1925. See Water Bulletin No. 10, page 77, for peak flood flows 1916-1937.

Average Daily:	Max. June 12, 1905,	23,680 sec. ft.;	Min. sometimes dry.		
Average Monthly:	Max. June 1905,	14,300 sec. ft.;	Min. sometimes dry.		
Average Yearly:	Max. 1905,	2,780 sec. ft.;	Min. 1902,	70.1	sec. ft.
Average of Two Successive Years:	Max. 1905-1906,	2,160 sec. ft.;	Min. 1899-1900,	168	sec. ft.
Average of Three Successive Years:	Max. 1905-1907,	2,280 sec. ft.;	Min. 1900-1902,	269	sec. ft.
Average of Four Successive Years:	Max. 1904-1907,	1,880 sec. ft.;	Min. 1899-1902,	227	sec. ft.
Average of Five Successive Years:	Max. 1903-1907,	1,790 sec. ft.;	Min. 1898-1902,	367 ϕ	sec. ft.
Average of Ten Successive Years:	Max. 1903-1912,	1,560 sec. ft.;	Min. 1893-1902,	650 ϕ	sec. ft.

Average of Fifty-five Years: 1,000 sec. ft.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	253	234	735	1,470	1,260	1,470	2,220	1,200	1,330	547	318	326
2	252	238	706	1,280	1,370	1,320	2,130	1,470	1,340	529	301	303
3	251	238	705	1,220	1,460	1,260	1,560	1,470	1,280	511	311	285
4	380	248	695	1,270	1,460	1,210	1,440	1,410	1,220	495	302	277
5	328	256	672	1,530	1,460	1,180	1,780	1,320	1,250	548	290	276
6	283	242	701	1,360	1,440	1,260	1,490	1,290	1,240	579	298	272
7	272	244	780	1,330	1,490	1,370	1,260	1,310	1,130	563	288	276
8	282	250	759	1,460	1,370	1,230	1,160	1,510	1,070	539	287	269
9	237	410	748	1,360	874	1,170	992	1,530	1,020	499	281	274
10	255	386	699	1,320	1,300	1,190	949	1,500	1,020	441	282	262
11	233	383	664	1,490	1,530	1,290	1,010	1,450	992	447	287	261
12	239	322	635	1,390	1,400	1,330	1,390	1,380	961	457	294	251
13	240	257	688	1,310	1,370	1,360	1,180	1,300	1,020	393	289	251
14	244	224	720	1,200	1,350	1,520	1,120	1,290	1,110	413	294	241
15	240	218	982	1,120	1,220	1,300	1,250	1,290	1,060	378	295	239
16	229	227	839	1,070	1,340	1,280	1,650	1,440	1,060	354	288	239
17	226	545	787	1,120	1,360	1,280	1,590	1,390	1,110	332	282	237
18	236	481	811	1,260	1,200	1,300	1,580	1,380	978	306	295	235
19	224	440	783	1,510	1,110	1,240	1,680	1,370	991	409	429	234
20	224	464	766	1,400	1,130	1,190	1,510	1,370	1,100	444	504	232
21	232	530	848	1,490	1,220	1,240	1,480	1,320	975	478	570	231
22	236	580	1,150	1,460	1,500	1,250	1,380	1,340	909	471	621	232
23	234	539	915	1,320	1,580	1,210	1,280	1,430	1,040	460	530	229
24	239	589	916	1,260	1,550	1,170	1,290	1,580	1,400	497	415	235
25	230	595	946	1,280	1,340	1,150	1,340	1,580	1,430	470	369	235
26	221	602	856	1,380	1,260	1,200	1,350	1,360	1,080	396	399	235
27	221	599	950	1,210	1,220	1,590	1,430	1,310	855	356	442	244
28	216	674	1,120	1,200	1,190	1,890	1,350	1,260	747	355	428	385
29	220		1,410	1,190	1,230	1,770	1,180	1,310	672	357	391	424
30	224		1,180	1,350	1,410	3,190	1,100	1,310	615	333	351	404
31	230		1,230		1,620		1,050	1,340		320		408
Sum	7,631	11,015	26,396	39,610	41,614	41,410	43,171	42,810	32,005	13,677	10,731	8,502

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	4.40	3.67	4	422	17	220	246	15,100	11,230	17,500	8,210
Feb.	4.75	3.70	28	699	15	212	393	21,800	21,174	52,000	7,230
Mar.	5.90	4.57	29	1,470	12	613	851	52,400	40,464	62,500	18,400
Apr.	6.35	5.34	1	1,840	16	1,009	1,320	78,600	67,400	139,000	44,900
May	6.15	4.92	31	1,710	9	779	1,340	82,500	81,768	357,000	47,600
June	7.17	5.58	30	4,020	25	1,110	1,380	82,100	82,087	304,000	56,200
July	6.42	5.21	2	2,800	9	881	1,390	85,600	86,520	198,000	68,900
Aug.	6.45	5.38	25	1,780	1	1,060	1,380	84,900	89,376	158,000	61,000
Sept.	5.94	4.36	24	1,500	30	793	1,070	63,500	68,510	171,000	41,700
Oct.	4.51	3.78	6	1,170	18	662	441	27,100	27,402	57,900	17,800
Nov.	4.64	3.57	22	1,300	18	658	358	21,300	18,274	29,500	11,400
Dec.	4.20	3.55	29	441	23	221	274	16,900	17,014	27,700	9,590
Yearly	7.17	3.55		4,020		212	873	631,800	611,219	1,559,200	453,900

ϕ This figure was erroneous in Water Bulletins 5 to 11.

RIO GRANDE BELOW AMERICAN DAM STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights located 3,200 feet below the American Dam and 1.5 miles above the International Dam, near the El Paso Smelting Works, west of El Paso, Texas. The zero of the gage is 3,712.30 feet, U.S.C. & G.S. sea level datum. The American Dam is 1,241.4 river miles above the Gulf of Mexico.

RECORDS: Based upon 41 meter measurements at normal and low stages during the year. Computations by shifting channel methods. 1943 records good. Records available: June 1, 1938 to December 31, 1943. Monthly records 1938-1943 will be found elsewhere in this bulletin.

REMARKS: The operation of this station began June 2, 1938, when the American Dam first began operating. At this dam part of the flow passing the El Paso gaging station (see preceding page) was diverted into the American Canal (see records of "Diversions from the Rio Grande" elsewhere herein) and the remainder, including excess flood flows, passed this gaging station. Reservoirs, diversions and drainage returns in the United States above this point completely modify the river flow.

EXTREME FLOWS: The largest peak flow to pass this station since 1828, or possibly before, was 24,000 second feet on June 12, 1905. Since Elephant Butte Reservoir was closed in January 1915, the largest peak flow was 13,550 second feet on September 3, 1925. See Water Bulletins Nos. 6 and 10, for the average frequency of all floods since 1828. Minimum, sometimes dry.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	" 2.0	233	52.9	146	211	191	ó 1,140	166	162	44.0	" 5.0	" 3.0
2	" 2.0	238	36.9	145	236	175	ó 1,150	169	164	" 6.0	" 5.0	" 3.0
3	" 2.0	238	36.3	134	226	172	ó 587	174	162	" 5.0	" 4.0	" 3.0
4	" 2.0	248	32.9	136	216	176	ó 481	172	139	" 4.0	" 4.0	" 3.0
5	" 2.0	201	26.0	146	224	180	ó 795	173	134	" 3.0	" 4.0	" 3.0
6	* 146	9.6	25.7	132	221	178	ó 360	174	145	" 3.0	" 4.0	" 3.0
7	271	10.0	30.7	129	221	183	178	168	146	" 3.0	" 4.0	" 3.0
8	281	9.5	29.4	129	219	179	169	166	158	" 3.0	" 4.0	" 3.0
9	170	8.4	28.4	123	222	174	160	166	158	" 3.0	" 4.0	" 3.0
10	* 9.7	6.7	31.1	126	213	172	160	166	170	" 4.0	" 4.0	" 3.0
11	* 8.8	6.8	32.1	153	219	170	169	167	170	" 3.0	" 4.0	" 3.0
12	7.3	6.2	31.7	129	209	168	184	168	160	" 3.0	" 4.0	" 3.0
13	* 7.6	6.1	34.2	129	218	166	184	167	165	* 162	" 4.0	" 3.0
14	* 7.6	4.5	32.5	128	208	167	173	168	172	70.0	" 4.0	" 3.0
15	* 7.6	4.1	41.4	130	214	170	174	166	172	64.0	" 4.0	" 3.0
16	76.4	3.2	35.8	132	222	174	359	168	188	59.0	" 4.0	" 3.0
17	226	4.8	33.1	127	225	178	456	160	187	55.0	" 4.0	" 3.0
18	236	4.0	34.3	129	221	176	402	165	171	50.0	" 4.0	" 3.0
19	223	3.5	40.8	138	221	176	531	161	171	26.4	" 4.0	" 10.0
20	223	3.7	42.3	130	217	173	186	161	176	" 6.0	" 4.0	" 9.0
21	232	3.6	45.5	131	224	175	159	162	165	" 6.0	" 3.0	" 3.0
22	236	3.9	48.7	125	236	170	148	165	148	" 6.0	" 3.0	" 3.0
23	234	3.7	42.6	123	230	176	146	167	164	" 5.0	" 3.0	" 3.0
24	* 95.0	3.9	40.5	123	219	184	150	161	175	" 5.0	" 3.0	" 3.0
25	* 10.0	3.8	31.1	125	216	196	159	174	186	" 5.0	" 3.0	" 3.0
26	7.9	3.5	30.5	126	210	210	176	155	153	" 5.0	" 3.0	" 3.0
27	* 7.6	3.0	31.2	113	213	262	167	152	153	" 5.0	" 3.0	" 3.0
28	135	37.0	33.2	105	210	543	169	160	128	" 5.0	" 3.0	" 3.0
29	220		41.9	112	219	750	162	166	106	" 5.0	" 3.0	" 3.0
30	224		47.5	118	219	2,150	163	170	98.0	" 5.0	" 10.0	" 3.0
31	229		48.9		230		165	172		" 5.0		" 3.0
Sum	3,541.5	1,311.5	1,130.1	3,872	6,809	8,314	9,762	5,149	4,739.0	" 633.4	" 119.0	" 106.0

Month	1943 Extreme Gage Feet High	1943 Extreme Gage Feet Low	1943 Extreme Second Feet High Day	1943 Extreme Second Feet High	1943 Extreme Second Feet Low Day	1943 Extreme Second Feet Low	1943 Average Second Feet	1943 Total Acre Feet	Period 1938-1943 ⊕ Acre Feet Average	Period 1938-1943 ⊕ Acre Feet Maximum	Period 1938-1943 ⊕ Acre Feet Minimum
Jan.	5.38	3.80	23	405	‡ 1	2.0	114	7,020	8,554	10,600	6,480
Feb.	5.15	3.79	4	258	27	* 3.0	46.8	2,600	8,634	32,800	1,900
Mar.	4.77	4.20	29	132	‡ 5	22.0	36.5	2,240	5,906	17,500	2,020
Apr.	5.13	4.42	19	255	1	54.1	129	7,680	21,436	74,500	6,360
May	5.41	5.02	1	264	8	200	220	13,500	70,460	300,000	12,500
June	7.93	5.01	30	3,250	10	161	277	16,500	54,528	250,000	9,770
July	6.97	5.05	2	1,950	23	137	315	19,400	38,533	155,000	11,900
Aug.	5.60	5.19	25	211	27	152	166	10,200	29,153	114,000	6,040
Sept.	5.45	5.20	25	216	30	90.0	158	9,410	33,290	124,000	3,530
Oct.	6.00	4.33	13	520	‡29	" 5.0	" 20.4	" 1,260	6,026	19,000	197
Nov.	4.82	4.25	30	" 10.0	‡21	" 3.0	" 4.0	" 236	4,158	8,700	153
Dec.	4.89		20	42.0	‡ 1	" 3.0	" 3.4	" 210	2,918	7,760	120
Yearly	7.93			3,250		2.0	125	90,256	283,596	1,093,553	90,256

* Partly estimated. " Estimated. ó Deduced. ‡ And other days.

⊕ The average, maximum and minimum discharges for January through May are for the period 1939-1943.

OUTFALLS FROM DEEP WELLS

Near El Paso, Texas, and Cd. Juarez, Chihuahua.

Between the Below American Dam Station and the Cd. Juarez Station several outfall ditches or pipe lines discharge water into the Rio Grande, the source of which is from deep wells in the vicinity of El Paso and Cd. Juarez. During 1943 such outfalls contributed a total of 11,061 acre feet of water to the Rio Grande flow, which is equivalent to an average steady flow of 15.3 second feet during the year. Of this total flow 15.0 second feet, or 10,844 acre feet, came from the United States side, while 0.3 second feet, or 217 acre feet, came from the Mexican side. On the remainder of this page will be found details concerning these outfalls.

El Paso Electric Company, Santa Fe Street Plant, Cooling Water Waste

This outfall enters the river 3.3 miles below the American Dam. From the company's pumping records it is calculated that 738 acre feet flowed into the river in 1943. This corresponds to an average flow of 1.0 second foot.

Cd. Juarez Sewage Outfall

This outfall enters the river 4.7 miles below the American Dam. From several inspections this outfall is estimated at 217 acre feet for 1943, which corresponds to an average flow of 0.3 second foot.

Peyton Packing Company Waste

This outfall enters the river 5.7 miles below the American Dam. From several inspections an average flow of 0.5 second foot, or 362 acre feet is estimated to have entered the river from this source.

El Paso Sewage Outfall

This outfall enters the river 6.6 miles downstream from the American Dam. Prior to 1942 the flow of sewage was usually measured by Venturi meter at the treatment plant which began operating in 1936. During most of 1942 and through September 16, 1943, (when the new sewage plant began operation) the sewage plant was not operating pending enlargement. The Department of Water and Sewage of the City of El Paso estimated the outfall to have been as shown below for January through September, 1943. October, November and December flows were measured by a Parshall meter.

1943						
Month	From Deep Wells		From Rio Grande		Total Acre Feet	Period 1936-1943
	Mean Second Feet	Acre Feet	Mean Second Feet	Acre Feet		Average Acre Feet
Jan.	10.9	" 669			669	580
Feb.	11.0	" 611			611	567
Mar.	11.8	" 727			727	591
Apr.	12.4	" 737			737	631
May	13.3	" 816			816	657
June	14.7	" 875			875	688
July	16.1	" 988			988	721
Aug.	15.9	" 979			979	687
Sept.	15.2	" 902			902	646
Oct.	13.3	816			816	645
Nov.	12.2	727	# 1.7	102	829	625
Dec.	10.6	649	2.4	146	795	628
Annual	13.1	*9,496	0.3	248	9,744	7,666

" Estimated. * Partly Estimated.
River Water Treatment Plant began operation November 7, 1943.

RIO GRANDE AT JUAREZ STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights located 2.5 miles downstream from El Paso, Texas, and Cd. Juarez, Chihuahua. This station is on the rectified channel of the Rio Grande, 7.0 river miles below the American Dam at El Paso, Texas, and 4.9 river miles below the International Dam. On January 1, 1943, the zero of this gage was lowered 3.28 feet. The zero of the present gage is 3,683.98 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 186 meter measurements during the year, 158 by the Mexican and 28 by the United States Section. Computations by shifting channel methods. 1943 records good. Records available: April 1, 1938 to December 31, 1943. Monthly records 1938-1943 will be found elsewhere in this bulletin.

REMARKS: Reservoirs, irrigation diversions and drainage returns above this station modify the river flow. The bottom of the river has degraded about 8.2 feet at this station from April 1938 to December 1943.

EXTREME FLOWS: The greatest flow since April 1, 1938, occurred May 18, 1942 with a gage height of 11.15 feet and a flow of 6,600 second feet. The lowest flow since April 1, 1938 occurred February 25, 1940, with a gage height of 6.76 feet and a flow of 16.2 second feet. On November 22, 1942, there was a flow of 38.8 second feet with a gage height of 2.66 feet. These gage heights refer to the present gage.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	252	245	554	1,116	727	918	1,300	795	826	245	261	98.9
2	259	226	413	869	787	777	1,603	961	876	253	235	90.1
3	267	218	410	791	876	731	904	911	819	242	255	106
4	367	256	434	752	922	706	780	908	777	212	250	226
5	341	264	427	1,077	915	664	946	802	798	255	236	232
6	297	131	466	971	893	724	1,003	749	777	298	235	238
7	279	93.2	526	876	915	809	791	798	650	283	234	256
8	292	111	491	1,031	812	742	696	1,040	586	249	234	253
9	248	195	501	915	410	675	692	1,040	576	217	132	253
10	160	169	438	830	710	657	692	985	565	163	50.1	253
11	89.3	152	396	1,098	989	717	501	932	501	291	48.0	233
12	78.0	98.2	378	968	876	763	968	812	544	441	45.2	213
13	76.6	51.9	434	865	805	911	742	812	498	403	47.0	203
14	73.5	49.8	484	805	802	989	614	996	576	399	41.3	195
15	70.3	44.1	678	735	681	823	812	1,010	526	381	44.8	117
16	155	63.2	572	639	745	777	1,049	943	473	367	40.2	39.6
17	236	262	498	685	791	777	738	890	569	343	35.7	37.1
18	260	232	505	788	703	731	823	879	410	330	38.5	28.3
19	252	194	491	1,120	554	703	1,077	851	399	313	144	28.3
20	219	216	491	975	576	657	982	816	544	192	220	37.4
21	232	251	512	1,116	639	689	978	819	466	185	268	26.8
22	260	310	837	1,098	858	735	929	876	434	186	317	27.2
23	257	237	629	901	957	699	851	897	519	175	261	29.3
24	190	297	579	795	961	650	833	1,090	915	214	182	31.8
25	162	311	618	756	809	618	968	1,090	1,090	186	143	27.2
26	181	321	565	908	706	830	848	890	685	123	161	26.1
27	200	413	618	717	671	1,162	946	826	473	71.3	224	31.8
28	227	590	805	713	639	1,476	897	823	438	67.5	190	156
29	232		1,162	685	657	1,324	727	943	299	221	189	177
30	232		844	844	876	2,084	643	855	273	277	131	158
31	244		915		985		622	777		302		160
Sum	6,688.7	6,001.4	17,671	26,439	24,247	25,518	26,955	27,816	17,882	7,884.8	4,892.8	3,988.9

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1938-1943 Acre Feet Average	Maximum	Minimum
Jan.	3.94	2.99	9	367	16	60.7	216	13,270	⊕ 11,656	⊕ 13,270	⊕ 9,440
Feb.	4.43	2.99	28	699	16	48.7	214	11,900	⊕ 42,308	⊕ 42,690	⊕ 4,730
Mar.	5.09	3.81	28	1,570	12	344	570	35,050	⊕ 27,716	⊕ 45,790	⊕ 14,140
Apr.	5.25	4.00	1	2,020	16	579	881	52,440	50,615	111,500	30,900
May	5.09	3.44	30	1,430	9	341	782	48,090	80,923	325,100	23,400
June	7.38	3.81	30	3,850	29	664	851	50,610	79,275	272,400	32,140
July	5.71	3.61	2	2,280	17	413	870	53,470	65,895	162,500	42,400
Aug.	5.35	3.97	29	1,500	31	611	897	55,170	60,625	127,300	38,700
Sept.	5.58	2.82	25	1,700	30	225	596	35,470	54,723	143,800	22,300
Oct.	3.77	2.17	15	509	28	57.2	254	15,640	20,372	45,390	11,600
Nov.	3.51	1.94	22	367	18	25.1	163	9,700	11,058	13,350	8,640
Dec.	3.12	1.80	9	283	25	17.3	129	7,910	10,985	17,510	7,510
Yearly	7.38	1.80		3,850		17.3	537	388,720	489,151	1,315,890	269,460

⊕ Period 1939-1943.

RIO GRANDE AT ISLAND STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights, located near Clint, Texas, and San Augustin, Chihuahua. This station is on the rectified channel of the Rio Grande 27.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 3,608.99 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 78 meter measurements during the year. 53 by the United States and 25 by the Mexican Section. Computations by shifting channel methods. 1943 records good. Records available: August 17, 1938 to December 31, 1943. Monthly records 1938-1943 will be found elsewhere in this bulletin.

REMARKS: Reservoirs, diversions and drainage returns above this station completely modify the river flow.

EXTREME FLOWS: The greatest flow since August 17, 1938, occurred May 19, 1942, with a gage height of 16.06 feet and a flow of 6,490 second feet. The lowest flow is sometimes zero.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	272	221	243	177	123	290	1,380	32.1	60.7	227	" 32.7	31.1
2	263	222	409	44.6	77.0	101	1,540	71.9	79.7	276	" 32.7	28.8
3	247	220	410	28.0	225	95.9	806	100	120	262	" 28.8	14.8
4	268	222	399	43.4	223	53.9	530	82.1	69.1	189	" 24.8	" 16.0
5	274	232	278	139	209	36.6	559	56.0	239	113	" 20.8	" 17.6
6	275	190	218	133	234	91.0	610	40.1	141	209	15.1	" 19.2
7	258	95.3	260	46.6	271	137	459	29.6	" 75.0	224	13.4	" 20.8
8	250	85.5	240	93.1	412	67.6	429	73.2	40.2	176	14.7	" 22.5
9	242	127	225	56.7	298	44.3	266	206	34.4	132	14.5	" 28.0
10	223	168	147	49.0	157	57.1	196	212	33.0	121	15.1	" 35.0
11	183	175	88.0	369	300	62.6	142	198	28.7	101	13.8	" 22.5
12	90.9	166	68.6	246	233	144	220	79.3	28.3	166	13.5	" 21.7
13	79.2	116	130	65.9	202	251	165	32.2	51.9	121	11.1	" 21.0
14	79.0	78.1	299	61.0	169	311	51.9	27.5	29.9	58.5	10.3	" 20.2
15	78.9	71.4	191	28.0	133	196	64.3	86.3	48.8	52.4	10.1	" 19.5
16	103	59.5	189	30.4	158	154	198	85.2	28.2	47.3	10.3	" 18.7
17	188	106	61.4	48.9	194	117	434	101	35.0	43.2	11.0	" 14.0
18	184	271	43.8	70.6	81.6	94.2	353	50.3	68.0	44.0	15.5	9.6
19	196	191	58.9	246	31.4	132	425	43.1	66.3	49.6	22.9	11.4
20	197	181	47.4	218	20.1	236	432	37.1	92.3	91.3	27.1	13.3
21	195	226	53.1	223	20.5	123	450	53.2	106	47.5	53.6	16.0
22	202	286	156	315	178	57.7	353	54.6	69.1	* 22.0	86.8	18.2
23	206	286	117	232	349	36.4	284	* 98.9	173	" 15.6	136	18.2
24	196	278	56.3	194	406	52.2	170	" 62.4	617	" 15.6	111	18.1
25	146	252	89.6	494	172	38.1	329	* 177	1,160	" 15.6	70.0	17.7
26	141	131	37.1	306	48.8	40.2	169	108	890	" 15.6	30.8	17.6
27	153	90.5	31.0	107	12.4	164	138	61.1	277	* 39.1	45.7	18.0
28	189	120	52.5	40.8	22.1	698	146	41.6	163	* 38.1	60.0	17.5
29	200		280	11.6	25.0	468	8.0	61.0	283	* 57.0	67.1	43.8
30	209		193	179	341	1,850	0	96.2	268	86.9	52.3	21.4
31	215		116		358		14.5	59.8		" 33.4		20.8
Sum	6,003	4,867.3	5,187.7	4,296.6	5,683.9	6,199.8	11,321.7	2,516.8	5,375.6	3,089.7	1,071.5	633.0

Month	1943 Extreme Gage Feet High	1943 Extreme Gage Feet Low	1943 Extreme Second Feet High Day	1943 Extreme Second Feet High	1943 Extreme Second Feet Low Day	1943 Extreme Second Feet Low	1943 Average Second Feet	1943 Total Acre Feet	Period 1938-1943 ⊕ Acre Feet Average	Period 1938-1943 ⊕ Acre Feet Maximum	Period 1938-1943 ⊕ Acre Feet Minimum
Jan.	10.10	8.86	4	427	15	73.7	194	11,900	9,780	11,900	7,900
Feb.	10.05	8.60	24	421	16	51.2	174	9,650	11,582	37,000	2,930
Mar.	10.58	8.54	15	1,520	27	29.7	167	10,300	7,366	21,000	876
Apr.	10.82	8.90	11	2,090	29	0	143	8,520	17,568	70,500	1,190
May	10.92	9.33	8	2,020	27	0	183	11,300	64,196	299,800	1,050
June	12.34	9.69	30	3,140	6	29.0	207	12,300	53,546	241,000	1,310
July	11.98	9.08	1	2,480	30	0	365	22,500	31,786	118,500	4,840
Aug.	10.50	9.15	11	358	14	26.4	81.2	4,990	29,318	* 99,400	4,990
Sept.	11.17	9.20	25	1,630	1	24.5	179	10,700	33,577	119,200	1,760
Oct.	10.33		2	280	23	" 15.6	99.7	6,130	11,015	42,800	1,620
Nov.	10.16	9.32	23	153	15	9.5	35.7	2,130	2,075	5,840	11.5
Dec.	10.60		29	398	18	9.6	20.4	1,260	4,652	12,900	1,050
Yearly	12.34			3,140		0	154	111,680	276,461	1,079,340	43,965.5

" Estimated * Partly Estimated

⊕ The average, maximum and minimum discharges for January through August are for the period 1939-1943.

RIO GRANDE AT COUNTY LINE STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights located 0.8 mile downstream from the El Paso-Hudspeth county line. This gaging station is on the rectified channel of the Rio Grande, 47.3 river miles below the American Dam at El Paso, Texas. The zero of the gage is 3,547.59 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 78 meter measurements during the year. 53 by the United States and 25 by the Mexican Section. Computations by shifting channel methods. 1943 records good. Records available: January 1, 1938 to December 31, 1943. Monthly records 1938-1943 will be found elsewhere in this bulletin.

REMARKS: Reservoirs, diversions and drainage returns above this station completely modify the river flow.

EXTREME FLOWS: The greatest flow since January 1, 1938, occurred May 19, 1942, with a gage height of 8.66 feet and a flow of 6,340 second feet. The lowest flow since January 1, 1938, occurred March 5, 1939 with a gage height of 2.23 feet and a flow of 44.3 second feet.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	324	269	444	400	417	340	1,830	239	268	465	417	360
2	304	298	513	327	391	335	1,800	262	251	479	353	359
3	254	323	487	311	478	269	1,120	275	333	504	251	352
4	284	337	481	273	473	244	1,000	255	409	419	191	289
5	367	351	424	359	393	240	810	232	425	346	169	213
6	365	348	432	522	377	288	1,330	218	519	362	141	184
7	359	291	487	343	328	391	905	205	256	340	159	268
8	367	248	449	293	534	299	637	213	267	320	208	273
9	344	248	427	376	359	246	514	342	227	290	188	295
10	346	397	399	312	230	233	331	390	184	278	183	300
11	316	377	298	457	323	239	300	432	203	241	171	306
12	309	358	238	432	438	304	340	316	219	336	150	311
13	343	326	178	282	389	585	476	264	230	358	148	299
14	316	279	327	326	343	444	290	217	205	291	139	272
15	307	272	249	266	324	532	270	269	223	295	138	287
16	301	229	368	236	360	319	309	341	250	272	153	270
17	350	187	288	256	423	268	749	292	312	251	186	255
18	304	346	276	265	340	238	455	274	222	287	240	258
19	293	336	275	603	245	244	597	249	241	291	215	260
20	303	331	258	538	209	319	618	242	232	299	289	232
21	288	355	298	374	203	413	637	255	256	319	489	198
22	272	359	385	519	214	234	543	283	282	317	531	202
23	275	389	360	469	433	224	434	363	349	253	601	254
24	278	369	295	528	604	224	355	274	* 806	349	602	255
25	249	391	288	741	365	215	460	363	*1,380	459	509	287
26	312	400	258	422	292	220	562	434	1,240	370	364	228
27	319	428	207	330	205	279	291	305	700	326	401	243
28	282	421	270	373	228	654	342	229	518	259	501	271
29	243		402	367	233	713	306	289	600	248	485	308
30	202		396	332	382	1,710	255	439	522	470	458	409
31	227		323		475		239	296		494		381
Sum	9,403	9,263	10,780	11,632	11,008	11,263	19,105	9,057	12,129	10,588	9,030	8,679

Month	1943 Extreme Gage Feet High	1943 Extreme Gage Feet Low	1943 Extreme Second Feet High Day	1943 Extreme Second Feet High	1943 Extreme Second Feet Low Day	1943 Extreme Second Feet Low	1943 Average Second Feet	1943 Total Acre Feet	Period 1938-1943 Acre Feet Average	Period 1938-1943 Acre Feet Maximum	Period 1938-1943 Acre Feet Minimum
Jan.	3.71	2.97	4	458	30	153	303	18,700	16,017	20,000	11,300
Feb.	3.67	2.79	24	604	17	156	331	18,400	18,155	47,900	7,360
Mar.	3.82	2.89	1	752	13	158	348	21,400	16,597	38,900	6,370
Apr.	4.75	3.00	25	1,680	30	253	388	23,100	26,373	84,200	7,870
May	4.72	2.70	8	1,230	21	154	355	21,800	62,623	303,000	6,980
June	5.66	2.86	30	2,780	25	202	375	22,300	55,070	239,000	6,870
July	5.51	2.93	1	2,610	27	187	616	37,900	45,017	140,000	11,400
Aug.	3.86	2.86	23	619	7	193	292	18,000	39,683	123,000	15,500
Sept.	4.50	2.81	6	1,680	10	174	404	24,100	48,048	140,000	8,290
Oct.	3.65	2.96	30	652	11	216	342	21,000	25,633	61,400	11,200
Nov.	3.71	2.67	21	705	15	136	301	17,900	15,038	20,400	8,230
Dec.	3.48	2.94	4	364	21	148	280	17,200	17,212	29,700	8,770
Yearly	5.66	2.67		2,780		136	362	261,800	385,466	1,247,500	129,680

* Partly estimated.

RIO GRANDE AT FORT QUITMAN STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights located on the rectified Rio Grande channel 1.5 miles below Old Fort Quitman, and 81.1 river miles below the American Dam at El Paso. The zero of the new gage is 3,450.57 feet, U.S.C.& G.S. datum. See Water Bulletin No. 7 for a gage history of this station.

RECORDS: Based upon 78 meter measurements during the year, 53 by the United States and 25 by the Mexican Section. Computations by shifting channel methods. 1943 records good. Records available: January 1923 to December 1943. Careful estimates covering all months in the period 1889-1923, are shown in Water Bulletin No. 12. Monthly records 1889-1943 will be found elsewhere in this bulletin.

REMARKS: Reservoirs, diversions and drainage returns above this station, completely modify the river flow.

COMPARATIVE FLOWS FROM RECORDS #: Momentary Peak: Max., about June 20, 1905, 17,000 sec. ft. This is the greatest flow in the last 115 years. See pages 71 and 72 of Water Bulletin No. 8 for the magnitude and average frequency of floods in the period 1828 to 1938. Min., frequently dry prior to January 1915.**

Average Daily: Max. June 20, 1905, 17,000 sec. ft. ⊕; Min., frequently dry prior to January 1915.

Average Monthly:	Max. May 1942,	5,030 sec. ft.;	Min. Frequently dry.	
Average Yearly:	Max. 1905,	2,140 sec. ft.;	Min. 1902,	42.4 sec. ft.
Average of Two Successive Years:	Max. 1905-1906,	1,650 sec. ft.;	Min. 1899-1900,	83.3 sec. ft.
Average of Three Successive Years:	Max. 1905-1907,	1,800 sec. ft.;	Min. 1900-1902,	131 sec. ft.
Average of Four Successive Years:	Max. 1904-1907,	1,460 sec. ft.;	Min. 1899-1902,	111 sec. ft.
Average of Five Successive Years:	Max. 1903-1907,	1,350 sec. ft.;	Min. 1898-1902,	211 sec. ft.
Average of Ten Successive Years:	Max. 1903-1912,	1,150 sec. ft.;	Min. 1931-1940,	244 sec. ft.

Average of Fifty-five Years: 1889-1943, 585 sec. ft.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	422	293	418	137	171	388	2,250	70.4	158	622	350	412
2	431	253	632	196	203	355	1,580	69.8	149	545	345	340
3	402	276	535	131	247	346	1,410	73.8	141	671	312	292
4	420	247	508	162	261	237	1,170	75.6	230	561	296	227
5	463	253	546	157	295	186	934	41.5	389	417	270	222
6	443	268	449	242	267	178	937	30.1	566	464	244	243
7	431	226	478	271	269	301	1,080	26.0	243	467	226	270
8	401	177	586	133	265	346	832	25.8	181	477	270	306
9	421	188	460	* 123	702	217	596	33.5	164	433	239	286
10	401	293	484	170	241	208	425	67.8	144	447	230	294
11	317	372	340	211	252	279	382	127	131	389	224	291
12	309	342	280	550	312	284	352	174	152	345	174	263
13	372	" 326	273	234	370	565	372	56.3	195	429	165	271
14	401	" 309	375	179	275	885	249	32.4	201	388	158	232
15	362	" 293	351	146	236	454	156	50.5	166	356	150	220
16	362	" 276	450	80.0	239	405	107	59.1	177	391	139	213
17	260	" 260	348	52.7	355	384	351	119	307	349	168	214
18	247	247	267	125	290	307	501	64.3	323	355	229	231
19	293	382	181	244	214	201	468	33.4	292	367	273	227
20	362	276	164	304	85.7	299	439	38.4	306	364	297	221
21	326	334	173	295	80.6	443	412	44.1	247	343	325	201
22	309	334	270	281	131	308	425	93.8	273	341	372	208
23	253	421	267	243	271	159	325	323	323	320	442	209
24	260	309	231	303	518	83.2	284	134	702	358	454	207
25	220	372	155	814	360	94.0	358	68.4	1,179	350	393	205
26	247	317	127	707	294	84.2	645	172	1,274	319	339	189
27	285	392	85.1	343	239	119	271	190	1,055	317	353	193
28	260	511	55.7	264	209	278	278	96.8	700	307	422	191
29	326		138	245	322	589	245	79.1	760	297	431	206
30	293		276	167	349	1,160	173	137	667	297	435	276
31	247		219		750		94.3	264		409		305
Sum	10,546	8,547	10,121.8	7,509.7	9,073.3	10,142.4	18,101.3	2,870.9	11,795	12,495	8,725	7,665

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	2.85	1.87	13	1,150	18	87.5	340	20,900	12,842	20,900	5,370
Feb.	2.87	1.82	11	1,190	7	71.4	305	17,000	14,366	50,100	3,510
Mar.	2.91	1.52	2	816	28	39.6	326	20,100	12,607	38,900	1,090
Apr.	3.75	1.67	25	1,700	17	28.9	250	14,900	15,991	77,000	1,200
May	3.65	1.65	9	1,180	21	61.0	293	18,000	30,669	309,000	880
June	4.75	1.49	30	2,110	26	64.3	338	20,100	27,886	240,000	3,630
July	5.60	1.41	1	2,840	16	65.1	584	35,900	26,876	140,000	4,300
Aug.	2.78	1.30	23	526	20	17.7	92.6	5,690	33,863	* 127,000	4,430
Sept.	4.40	1.86	26	1,550	11	99.0	393	23,400	38,614	147,000	6,980
Oct.	2.92	2.05	1	677	30	217	403	24,800	24,780	66,500	4,520
Nov.	2.84	2.03	23	535	16	128	291	17,300	15,991	24,500	4,990
Dec.	2.97	2.10	31	472	22	145	247	15,200	16,596	31,000	5,640
Yearly	5.60	1.30		2,840		17.7	322	233,290	271,081	1,270,400	102,420

* Partly estimated. # Including estimated records. ** Elephant Butte Reservoir closed January 1915.
⊕ Estimated from peak flow at El Paso and Upper Presidio. " Estimated.

RIO GRANDE AT UPPER PRESIDIO STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights located 7.8 river miles above the confluence of the Rio Conchos and about 10 miles northwest of the towns of Presidio, Texas, and Ojinaga, Chihuahua, and 285.7 river miles below the American Dam at El Paso, Texas. Zero of gage is 2,579.82 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based on 51 meter measurements during the year. Computations by shifting channel methods. 1943 records good. Records available: April 1900 to March 1914; September 1919 to March 1920; January 1927 to December 1943. The records formerly published for the period, August 1923 to December 1926, were found to be erroneous. Careful estimates covering all the months when dependable measured records were not available in the period 1889-1926, are shown in Water Bulletin No. 12. Monthly records 1889-1943 will be found elsewhere in this bulletin.

REMARKS: Reservoirs in the United States, as well as many irrigation diversions and drainage returns in the United States and Mexico, completely modify the river flow.

COMPARATIVE FLOWS FROM RECORDS: Momentary Peak: Max. ⊕: June 12, 1912, 15,200 sec. ft. From local testimony of flood heights, this is the greatest flow in the past 52 years or longer. Min., sometimes dry. See pages 71 and 72 of Water Bulletin No. 8 for the magnitude and average frequency of floods during the previous periods of record. On May 26, 1942, a gage height of 10.57 feet was reached with a flow of 5,160 sec. ft. The level of this river surface was the highest reached during the years 1923-1943, inclusive. According to local testimony, this is the highest level reached in the past 52 years or longer. The datum of the gage in 1912 is unknown.

Average Daily ⊕:	Max. June 12, 1912,	15,200 sec. ft.;	Min. sometimes dry.		
Average Monthly ϕ:	Max. June 1912,	10,150 sec. ft.;	Min. sometimes dry.		
Average Yearly ϕ:	Max. 1907,	1,970 sec. ft.;	Min. 1934,	75.0 sec. ft.	
Average of Two Successive Years ϕ:	Max. 1906-1907,	1,560 sec. ft.;	Min. 1899-1900,	125 sec. ft.	
Average of Three Successive Years ϕ:	Max. 1905-1907,	1,690 sec. ft.;	Min. 1900-1902,	152 sec. ft.	
Average of Four Successive Years ϕ:	Max. 1905-1908,	1,380 sec. ft.;	Min. 1899-1902,	144 sec. ft.	
Average of Five Successive Years ϕ:	Max. 1905-1909,	1,240 sec. ft.;	Min. 1933-1937,	188 sec. ft.	
Average of Ten Successive Years ϕ:	Max. 1905-1914,	1,080 sec. ft.;	Min. 1931-1940,	213 sec. ft.	
Average of Fifty-five Years ϕ: 561 sec. ft.					

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	450	349	377	156	221	192	871	197	13.5	727	255	403
2	441	352	380	151	181	192	1,500	170	14.4	672	239	410
3	431	344	438	179	172	344	1,600	142	16.8	592	284	406
4	427	338	432	165	141	272	1,350	103	17.1	548	307	405
5	417	344	517	‡ 146	129	242	1,520	80.3	15.6	532	288	375
6	405	343	498	‡ 144	134	251	*1,050	65.5	15.1	* 692	266	361
7	397	332	502	* 134	142	214	* 877	50.3	14.1	‡ 555	252	339
8	474	329	534	117	153	184	873	67.8	14.6	‡ 479	243	345
9	484	334	485	115	157	180	922	55.0	15.2	* 424	235	313
10	458	316	493	113	158	193	819	44.1	41.5	417	232	411
11	452	293	562	113	154	221	668	35.0	44.9	426	232	757
12	439	301	506	116	313	197	* 580	29.6	35.7	402	243	392
13	430	312	499	106	254	182	‡ 553	28.0	25.3	409	243	345
14	409	367	446	99.2	183	177	‡ 530	27.9	22.2	407	245	332
15	381	388	401	150	153	542	* 486	25.7	18.6	372	238	319
16	371	384	361	199	167	1,140	665	24.4	15.8	400	224	308
17	381	369	308	155	173	682	660	28.0	13.3	391	210	289
18	392	336	403	131	157	414	486	34.8	11.6	361	202	275
19	378	308	380	112	149	361	620	26.1	15.2	341	200	277
20	372	290	363	108	151	309	586	23.1	19.7	338	198	272
21	369	285	* 283	104	196	288	* 608	17.1	19.5	334	198	269
22	352	383	‡ 254	104	389	444	‡ 453	14.6	38.0	309	218	273
23	354	369	‡ 223	110	614	239	* 360	13.8	87.2	280	232	271
24	377	361	210	157	270	‡ 210	356	13.9	776	265	245	326
25	375	379	241	160	212	* 723	345	14.0	668	279	297	286
26	365	390	238	171	169	* 244	483	12.6	421	294	392	278
27	360	384	248	184	202	211	299	11.7	687	307	446	273
28	354	377	216	299	332	235	255	11.8	1,050 *	324	432	271
29	327		210	435	284	209	376	12.6	1,220 *	299	387	266
30	319		192	316	231	191	279	13.4	887	277	359	266
31	338		174		205		227	12.2		268		260
Sum	12,279	9,657	11,374	4,749.2	6,546	9,483	21,257	1,405.3	6,253.9	12,721	8,042	10,373

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	1.34	.63	8	503	30	315	396	24,400	12,012	24,400	644
Feb.	1.03	.45	22	417	21	278	345	19,200	12,472	40,800	1,420
Mar.	1.58	- .04	11	582	31	162	367	22,600	10,638	39,100	285
Apr.	1.15	- .43	29	457	14	92.3	158	9,420	9,168	41,600	0
May	3.45	- .25	23	1,180	5	123	211	13,000	23,569	240,000	0
June	4.35	- .04	16	1,520	9	178	316	18,800	22,318	216,000	830
July	5.57	.27	2	1,960	31	225	686	42,200	27,827	156,000	13.3
Aug.	.26	- 1.11	1	222	31	10.8	45.3	2,790	38,105	133,000	2,170
Sept.	4.80	- 1.12	24	1,690	10	14.9	208	12,400	41,970	* 151,000	3,140
Oct.	3.60	.44	6	1,200	31	264	410	25,200	32,992	105,000	0
Nov.	1.16	.07	26	453	20	191	268	16,000	16,166	34,500	0
Dec.	3.34	.34	11	1,120	31	256	335	20,600	15,281	30,900	374
Yearly	5.57	- 1.12		1,960		10.8	313	226,610	262,518	1,176,700	54,315

‡ Estimated. * Partly estimated. ⊕ Since daily records began in 1900. ϕ Beginning with 1889.

RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

DESCRIPTION: The Rio Conchos enters the Rio Grande 3.7 miles above the international highway bridge between Presidio, Texas, and Ojinaga, Chihuahua, 2.0 miles above the Lower Presidio gaging station on the Rio Grande, 7.8 miles below the Upper Presidio gaging station on the Rio Grande, and 293.5 river miles below the American Dam at El Paso, Texas.

RECORDS: Based on discharge records of the Rio Grande at Upper Presidio and Lower Presidio stations and estimated irrigation diversions and arroyo inflow between these two stations. 1943 records good. Records available: May 1900 through 1913, and May 1932 through 1943. The records for the past years, 1924 through April 1932, published in Water Bulletin No. 7, and the records published in Water Bulletin No. 6 for the years 1924 through 1926, have been found to be in error. Careful estimates covering all the months when dependable measured records were not available in the period 1896-1926 are shown in Water Bulletin No. 12. Monthly records 1896-1943 will be found elsewhere in this bulletin.

REMARKS: The Boquilla storage reservoir, as well as diversions for irrigation in the Rio Conchos basin, greatly modify the river flow. The Colina reservoir with 21,900 acre feet capacity and a maximum surface area of 1,160 acres, located about 10.5 miles downstream from Boquilla Dam, and the Rosetilla reservoir, located about 52.7 miles farther downstream, with a capacity of 15,400 acre feet and a maximum surface area of 840 acres, are used for power development only. The daily river flow may be modified by these reservoirs but, except for evaporation, the monthly flow is not. Power generation facilities #: Boquilla 14,647 K.W., Colina, 3,620 K.W., Rosetilla, 5,150 K.W.

COMPARATIVE FLOWS FROM RECORDS: Momentary Peak: Max., September 11, 1904, 162,000 sec. ft. This is the largest flow from the Rio Conchos for the past 115 years or longer. See pages 71 and 72 of Water Bulletin No. 8 for the magnitude and average frequency of floods from the Rio Conchos since 1828. Min., May 14, 1904, 3.0 sec. ft. The second lowest recorded flow was 19.0 sec. ft. which occurred on August 18, 1937.

Average Daily ⊖:	Max. Sep. 11,1904,	148,900	sec.ft.;	Min. May 14,1904,		5.0	sec.ft.
Average Monthly ⊖:	Max. Sep. 1904,	24,540	sec.ft.;	Min. May 1902,		11.0	sec.ft.
Average Yearly ϕ:	Max. 1914,	3,720	sec.ft.;	Min. 1922,		348	sec.ft.
Average of Two Successive Years ϕ:	Max. 1905-1906,	3,290	sec.ft.;	Min. 1921-1922,		647	sec.ft.
Average of Three Successive Years ϕ:	Max. 1904-1906,	3,210	sec.ft.;	Min. 1935-1937,		917	sec.ft.
Average of Four Successive Years ϕ:	Max. 1904-1907,	2,840	sec.ft.;	Min 1934-1937,		901	sec.ft.
Average of Five Successive Years ϕ:	Max. 1904-1908,	2,540	sec.ft.;	Min. 1933-1937,		1,090	sec.ft.
Average of Ten Successive Years ϕ:	Max. 1897-1906,	2,030	sec.ft.;	Min. 1928-1937,		1,250	sec.ft.

Average of Forty-eight Years ϕ: 1,730 sec. ft.

Month	1943								Period 1924-1943		
	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet		
				High		Low					
	High	Low	Day		Day				Normal	Maximum	Minimum
Jan.			27	1,520	2	649	1,020	62,700	62,815	147,000	20,300
Feb.			18	1,420	20	780	1,060	58,900	53,115	87,700	29,100
Mar.			11	1,600	31	642	1,050	64,600	47,575	80,800	20,900
Apr.			3	764	21	263	408	24,300	36,738	79,700	5,000
May			23	1,160	9	189	458	28,200	45,242	148,000	3,950
June			15	5,100	8	547	789	46,900	50,602	91,900	8,720
July			24	9,060	31	1,280	3,000	185,000	97,760	502,000	15,800
Aug.			1	1,290	28	143	439	27,000	153,775	601,000	11,300
Sept.			30	9,860	20	173	1,260	74,700	306,950	1,173,000	10,400
Oct.			1	9,590	31	810	2,260	139,000	185,610	798,000	34,600
Nov.			2	1,180	21	439	622	37,000	66,595	110,000	29,000
Dec.			8	2,790	7	398	884	54,300	59,885	97,700	23,800
Yearly				9,860		143	1,110	802,600	1,166,642	2,431,850	509,600

⊖ Beginning with 1900. ϕ Beginning with 1896. # Data from June 1934 issue of "Irrigación en Mexico".

DEVILS RIVER STATION NEAR DEL RIO, TEXAS

Corrections to Records 1925 and 1937

The discharges for May 28, 29, and 30, 1925, were found to be in error as published in Water Supply Paper 608. This error was due to lack of meter measurements at high stages on which to base a reliable rating curve. The figures shown below for these three days are based upon later reliable measurements at high stages.

The discharges for the dates in 1937 shown below and marked thus " are based upon estimated base flows which have only a small margin of error. It is now known that the discharges shown in Water Bulletin No. 7 for these dates were erroneous, the error being caused by faulty water stage records.

Day	1925	1937					1925	1937			
	May	March	April	May	June		May	March	April	May	June
1	341	367	" 312	" 350	510	19	335	" 368	323	" 328	" 331
2	341	371	" 307	" 348	386	20	335	" 364	366	" 328	332
3	341	392	" 303	" 347	350	21	335	" 360	367	" 328	310
4	341	392	" 299	" 345	359	22	330	" 355	354	" 328	338
5	335	401	" 294	" 344	394	23	341	" 351	300	" 328	346
6	335	407	277	" 342	394	24	347	" 347	361	" 328	342
7	330	406	286	" 341	340	25	353	" 342	" 359	" 328	345
8	335	409	301	" 339	458	26	347	" 338	" 358	" 328	331
9	341	388	303	" 337	1,100	27	378	" 333	" 356	" 328	333
10	347	386	321	" 336	703	28	* 2,810	" 329	" 355	" 328	322
11	353	378	331	" 334	504	29	*107,700	" 325	" 353	" 2,310	322
12	335	379	380	" 333	507	30	* 50,200	" 320	" 352	1,240	326
13	330	400	366	" 331	228	31	10,100	" 316		568	
14	324	" 390	387	" 330	355						
15	324	" 386	356	328	367	Totals	*179,953	*11,431	10,104	*13,467	11,922
16	324	" 381	352	" 328	329	Av. S.F.	5,800	369	337	434	397
17	330	" 377	354	" 328	" 330						
18	335	" 373	371	" 328	" 330	Acre Feet	356,900	22,700	20,000	26,700	23,600

" Estimated. * Partly estimated.

RIO GRANDE AT LOWER PRESIDIO STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights located about 1.70 miles above the international highway bridge between Presidio, Texas, and Ojinaga, Chihuahua, 2.0 miles below the confluence of the Rio Conchos with the Rio Grande, and 295.5 river miles below the American Dam at El Paso, Texas. Zero of gage is 2,556.42 feet, United States Coast and Geodetic Survey sea level datum.

RECORDS: Based on 50 meter measurements during the year. Computations by shifting channel methods. 1943 records good. Records available: May 1900 through March 1914; January 1924 through December 1943. The record published in Water Bulletin No.7, page 44, for the period January 1924 through April 1932 was found to be erroneous. Careful estimates covering all months when dependable measured records were not available in the period 1896-1926 are shown in Water Bulletin No. 12. Monthly records 1896-1943 will be found elsewhere in this bulletin.

REMARKS: Station moved to its present location on June 14, 1932. Previously it was located 11.1 miles farther downstream and .4 mile above the Alamito Creek confluence. See Water Bulletin No. 1 for description of the old station. Reservoirs in the United States, also Boquilla, Colina, and Rosetilla reservoirs on the Rio Conchos, as well as many irrigation diversions and drainage returns in the United States and Mexico, greatly modify the river flow.

COMPARATIVE FLOWS FROM RECORDS: Momentary Peak: September 11, 1904, 162,000 # second feet; Min. May 14, 1904, 3.0 second feet. See pages 71 and 72 of Water Bulletin No. 8 for the magnitude and average frequency of floods since 1828.

Average Daily @:	Max. Sep. 11, 1904,	149,200 sec. ft.;	Min. May 14, 1904,	5.0 sec. ft.
Average Monthly @:	Max. Sep. 1904,	24,870 sec. ft.;	Min. May 1902,	11.0 sec. ft.
Average Yearly @:	Max. 1906,	4,870 sec. ft.;	Min. 1922,	756 sec. ft.
Average of Two Successive Years ϕ:	Max. 1905-1906,	4,850 sec. ft.;	Min. 1939-1940,	982 sec. ft.
Average of Three Successive Years ϕ:	Max. 1905-1907,	4,460 sec. ft.;	Min. 1934-1936,	1,090 sec. ft.
Average of Four Successive Years ϕ:	Max. 1904-1907,	4,230 sec. ft.;	Min. 1934-1937,	1,070 sec. ft.
Average of Five Successive Years ϕ:	Max. 1904-1908,	3,740 sec. ft.;	Min. 1933-1937,	1,270 sec. ft.
Average of Ten Successive Years ϕ:	Max. 1905-1914,	3,100 sec. ft.;	Min. 1928-1937,	1,490 sec. ft.

Average of Forty-eight Years ϕ: 2,250 sec. ft.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,300	1,490	1,250	818	502	875	5,450	1,340	335	7,130	1,110	1,140
2	1,160	1,540	1,290	878	435	918	4,250	1,070	419	5,340	1,160	932
3	1,240	1,500	1,440	886	410	979	5,230	1,170	375	4,320	1,140	976
4	1,270	1,500	1,540	725	432	973	4,650	961	327	3,700	944	869
5	1,320	1,520	1,620	652	425	967	4,740	738	419	3,610	937	922
6	1,330	1,330	1,650	609	395	877	4,560	769	467	3,270	940	858
7	1,430	1,450	1,780	586	376	916	4,710	645	467	3,090	919	750
8	1,520	1,500	1,730	539	364	762	4,260	717	535	2,700	917	1,560
9	1,460	1,320	1,840	498	363	844	3,380	598	427	2,310	758	986
10	1,580	1,390	1,890	488	373	931	2,880	537	371	* 2,510	893	921
11	1,600	1,400	2,010	466	433	1,260	2,630	473	353	2,040	747	1,510
12	1,330	1,410	1,960	463	509	1,010	2,400	432	315	2,350	742	1,340
13	*1,370	1,260	1,870	441	512	847	2,190	382	275	2,300	681	1,230
14	‡1,280	1,320	1,660	427	485	873	2,030	329	253	3,310	668	1,190
15	‡1,190	1,400	1,560	441	597	1,940	1,980	291	241	3,410	1,000	1,530
16	*1,140	1,460	1,610	504	738	2,390	1,960	251	223	3,200	993	1,590
17	1,300	1,490	1,380	435	788	1,740	2,030	247	209	2,900	939	1,630
18	1,580	1,560	1,550	406	699	999	2,210	375	194	2,390	852	1,160
19	1,580	1,510	1,510	387	717	889	1,980	376	199	2,510	905	1,450
20	1,300	1,140	1,430	376	805	1,080	2,870	359	201	2,340	716	1,330
21	1,180	1,220	1,240	405	899	* 1,210	3,540	326	198	2,050	734	1,280
22	1,460	1,440	1,170	446	1,350	‡ 1,430	* 5,970	293	201	1,940	930	1,140
23	1,430	1,420	1,160	416	1,660	* 1,030	* 7,160	275	* 254	1,520	846	1,160
24	1,380	1,430	1,080	615	872	808	* 7,450	243	‡ 976	1,830	781	1,610
25	1,490	1,420	1,050	721	681	* 1,080	5,990	219	‡ 1,150	1,790	690	1,350
26	1,610	1,400	1,000	577	552	958	4,220	204	‡ 2,650	1,700	977	1,320
27	1,680	1,430	956	569	739	908	3,260	209	* 4,690	1,730	971	1,220
28	1,650	1,280	970	568	772	1,160	2,530	173	7,850	1,740	982	1,140
29	1,600		923	720	845	1,270	2,480	256	8,830	1,370	929	1,290
30	1,490		903	643	970	1,090	2,500	262	10,490	1,250	906	1,270
31	1,620		899		906		2,430	263		1,230		1,110
Sum	43,870	39,330	43,921	16,705	20,604	33,014	113,920	14,783	43,894	82,880	26,707	37,764

Month	1943 Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second Feet High Day	Extreme Second Feet High	Extreme Second Feet Low Day	Extreme Second Feet Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	3.19	2.46	27	1,880	2	1,090	1,420	87,000	74,820	164,000	30,400
Feb.	3.07	2.39	18	1,760	20	1,070	1,400	78,000	65,580	99,700	33,900
Mar.	3.40	2.12	11	2,170	31	812	1,420	87,100	58,180	89,400	21,200
Apr.	2.27	1.55	3	935	21	365	557	33,100	45,208	84,100	4,460
May	3.57	1.50	23	2,300	9	341	665	40,900	68,448	270,000	3,660
June	5.41	2.02	15	5,330	8	724	1,100	65,500	72,572	267,000	9,250
July	6.96	3.11	24	9,400	31	1,510	3,670	226,000	124,565	564,000	23,900
Aug.	3.11	1.56	1	1,520	28	161	477	29,300	191,345	675,000	29,300
Sept.	7.99	1.54	30	11,000	20	194	1,460	87,100	348,925	1,324,000	17,000
Oct.	7.45	2.97	1	10,300	31	1,080	2,670	164,000	218,635	864,000	41,000
Nov.	3.29	2.45	2	1,420	21	637	890	53,000	82,775	141,000	37,800
Dec.	4.05	2.58	8	3,120	7	732	1,220	74,900	75,155	116,000	31,400
Yearly	7.99	1.50		11,000		161	1,420	1,025,900	1,426,208	3,466,700	662,700

‡ Estimated. * Partly estimated. # Revised on account of better data after the 1938 flood.
@ Beginning with 1900. ϕ Beginning with 1896.

ALAMITO CREEK STATION NEAR PRESIDIO, TEXAS

DESCRIPTION: Water-stage recorder, about 1,800 feet above confluence with the Rio Grande, and six miles below Presidio, Texas, and Ojinaga, Chihuahua. This creek enters the Rio Grande .4 river mile below the lower end of the Presidio Valley and 306.9 river miles below the American Dam at El Paso, Texas. Zero of gage is 2,541.42 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon a rating curve, the high points of which are determined by slope-area calculations and the medium and low points of which are determined by meter measurements; also, upon numerous estimates by the hydrographer at low flow. Computations by shifting channel methods. 1943 records fair. Records available: January 1, 1932 to December 31, 1943.

REMARKS: The flow of this spring-fed creek is modified by a small irrigation reservoir (San Estaban) 10.5 miles south of Marfa and by irrigation diversions for about 805 acres of land below the reservoir. The low flow is steady, being from springs. The high flow is erratic, being from storms. The drainage area above this station is 1,504 square miles, all in the United States, 461 square miles of which are above San Estaban Dam and 1,043 square miles below it.

EXTREME FLOWS: The greatest recorded flow occurred July 20, 1937 with a gage height of 5.33 feet and a flow of 9,670 second feet. The lowest recorded flow was .87 second feet on several days in 1932. On June 28, 1941, a gage height of 6.68 feet was recorded with a flow of 9,550 second feet. On October 2, 1932, backwater from the Rio Grande caused a gage height of 8.33 feet. This is the highest recorded gage height.

CORRECTION: In Water Bulletin No.4 the August and the annual total ac. ft. for 1934 were slightly erroneous. They should be * 3,900 and * 6,397 ac. ft. respectively. For December 16, 17, 18, and 19, 1934 the daily discharges should be 3.0 sec. ft. In Water Bulletin No. 7 the January total and the annual total ac. ft. for 1937 were slightly erroneous. They should be 273 and * 16,576 ac. ft. respectively.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.5	3.5	3.5	3.4	3.0	4.0	25.5	4.0	3.0	4.0	3.0	3.5
2	4.5	3.5	3.5	3.0	3.0	4.0	19.5	3.5	3.0	4.0	3.0	3.5
3	4.5	3.5	3.5	3.0	3.0	4.0	3.0	3.5	7.5	4.0	3.0	3.5
4	4.5	3.5	3.5	3.0	3.0	4.0	92.1	3.5	14.3	4.0	3.0	3.5
5	4.5	3.5	3.5	3.0	3.0	5.8	3.5	3.5	7.0	4.0	3.0	3.5
6	4.5	3.5	3.5	3.0	3.0	391	3.5	3.5	6.5	4.0	3.0	3.5
7	4.0	3.5	3.5	3.0	3.0	4.0	3.5	3.5	3.5	3.5	3.0	3.5
8	3.5	3.5	3.5	3.0	3.0	5.1	3.5	3.5	3.5	3.5	3.0	3.5
9	3.5	3.5	3.5	3.0	3.0	4.5	3.5	3.5	3.5	3.5	3.0	3.5
10	3.5	3.5	3.5	3.0	3.0	4.0	3.5	3.5	3.5	3.5	3.0	3.5
11	3.5	3.5	3.5	3.0	3.0	4.0	3.5	3.5	3.5	3.5	3.0	3.5
12	3.5	3.5	3.5	3.0	3.0	4.0	3.5	3.5	3.5	3.5	3.0	3.5
13	3.5	3.5	3.5	3.0	3.0	4.0	3.5	3.5	3.5	3.5	3.0	3.5
14	3.5	3.5	3.5	3.0	3.0	27.7	3.5	3.5	3.5	3.5	3.0	3.5
15	3.5	3.5	3.5	3.0	3.0	5.0	53.4	3.5	3.5	3.5	3.5	3.5
16	3.5	3.5	3.5	3.0	3.0	59.6	221	3.5	3.5	3.5	3.5	3.5
17	3.5	3.5	3.5	3.0	3.0	8.0	3.5	3.5	3.5	3.5	3.5	3.5
18	3.5	3.5	3.5	3.0	3.0	4.0	6.2	3.5	3.5	3.0	3.5	3.5
19	3.5	3.5	3.5	3.0	3.0	4.0	186	3.5	3.5	3.0	3.5	3.5
20	3.5	3.5	3.5	3.0	28.1	5.0	6.0	3.5	3.5	3.0	3.5	3.5
21	3.5	3.5	3.5	3.0	76.2	3.0	6.0	3.5	3.5	3.0	3.5	3.5
22	3.5	3.5	3.5	3.0	93.5	3.0	3.0	3.5	3.5	3.0	3.5	3.5
23	3.5	3.5	3.5	3.0	4.0	3.0	3.0	3.5	3.5	3.0	3.5	3.5
24	3.5	3.5	3.5	3.0	4.0	3.0	3.0	3.5	4.0	3.0	3.5	3.5
25	3.5	3.5	3.5	3.0	4.0	3.0	3.0	3.5	19.5	3.0	3.5	3.5
26	3.5	3.5	3.5	3.0	4.0	3.0	3.0	6.0	10.5	3.0	3.5	3.5
27	3.5	3.5	3.5	3.0	4.0	3.0	3.0	3.0	5.0	3.0	3.5	3.5
28	3.5	3.5	3.5	3.0	485	4.0	3.0	3.0	4.0	3.0	3.5	3.5
29	3.5		3.5	3.0	275	3.0	3.0	3.0	4.0	3.0	3.5	3.5
30	3.5		3.5	3.0	4.0	3.0	12.0	3.0	6.0	3.0	3.5	3.5
31	3.5		3.5		4.0		7.0	3.0		3.0		3.5
Sum	115.0	98.0	108.5	90.4	1,042.8	586.7	700.2	109.0	153.8	104.5	98.0	108.5

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1932-1943 Acre Feet Normal	Maximum	Minimum
Jan.	3.55	‡ 3.52	8	4.6	14	3.2	3.7	228	203	273	123
Feb.	3.56	3.53	12	5.0	27	3.5	3.5	194	186	234	111
Mar.	3.58	3.52	24	6.2	12	3.2	3.5	215	200	270	123
Apr.	3.57	‡ 3.50	15	5.5	28	2.6	3.0	179	256	743	119
May	5.84	3.46	28	6,950	‡ 1	2.7	33.6	2,070	1,792	8,520	184
June	5.53		4	5,400	‡ 21	3.0	19.6	1,160	2,174	* 6,360	206
July	4.75	‡ 2.71	16	1,300	‡ 25	3.0	22.6	1,390	2,992	6,650	249
Aug.	3.02	2.66	26	12.0	1	3.0	3.5	216	4,136	16,330	216
Sept.	3.55	2.58	4	90.0	5	3.0	5.1	305	4,190	19,600	179
Oct.	" 2.80	" 2.75	1	" 5.0	‡18	3.0	3.4	207	2,733	19,200	157
Nov.	2.78	‡ 2.75	1	3.8	‡14	3.0	3.3	194	281	807	119
Dec.	2.78	‡ 2.73	4	5.0	‡13	3.5	3.5	215	236	408	117
Yearly	5.84			6,950		2.6	9.1	6,573	19,379	40,444	6,397

" Estimated. * Partly estimated. ‡ And other days.

TERLINGUA CREEK STATION NEAR TERLINGUA, TEXAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car located about 12 miles south of Terlingua, Texas, 2.4 miles above the confluence with the Rio Grande at the lower end of Santa Helena Canyon. This recorder was moved 310 feet downstream December 28, 1939. Zero of gage is 2,192.01 ±.5 feet above mean sea level, United States Geological Survey datum. This creek enters the Rio Grande 371.6 river miles below the American Dam at El Paso, Texas.

RECORDS: Based upon 1 meter measurement and numerous estimates by hydrographer at low flow, and the rating curve, the higher points of which were determined by slope-area calculations and the medium and low points of which were determined by meter measurements. Computations by shifting channel methods. 1943 records fair. Records available: January 1, 1932 to December 31, 1943.

REMARKS: The flow of this spring-fed creek is modified by irrigation diversions above the station. The low flow is steady, being from springs. The high flows are erratic, being from storms. On September 2, 1943, the "A" frame at this station on the east side of the creek was washed away. The cable anchorage in the rock hill and the gage well on the west side were undamaged.

EXTREME FLOWS: The greatest recorded flow was on May 24, 1935, when the extreme gage height was 17.59 feet, with a discharge of 34,900 second feet. The lowest flow recorded was on January 27 and February 3, 1935, and June 17, 1939, when the discharge was .20 of a second foot.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.5	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
2	2.4	1.5	1.5	1.5	1.5	1.0	1.0	2.0	165	2.0	2.5	" 2.5
3	2.3	1.5	1.5	1.5	1.5	1.0	1.0	2.0	291	2.0	2.5	" 2.5
4	2.2	1.5	1.5	1.5	1.5	1.0	1.0	2.0	105	2.0	2.5	" 2.5
5	2.1	1.5	1.5	1.5	1.5	1.0	1.0	2.0	3.0	2.0	2.5	" 2.5
6	2.0	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
7	2.0	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
8	1.9	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
9	1.8	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
10	1.7	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
11	1.6	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
12	1.5	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
13	1.5	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
14	1.5	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
15	1.5	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
16	1.5	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
17	1.5	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
18	1.5	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
19	1.5	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.5	" 2.5
20	1.5	1.5	1.5	1.5	13.6	1.0	138	2.0	2.0	2.0	2.5	" 2.5
21	1.5	1.5	1.5	1.5	162	1.0	425	2.0	2.0	2.0	2.5	" 2.5
22	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.0	2.5	" 2.5
23	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	3.0	2.0	2.5	" 2.5
24	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	4.0	2.0	2.5	" 2.5
25	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.0	2.5	" 2.5
26	1.5	1.5	1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.0	30.0	" 2.5
27	1.5	1.5	1.5	33.7	1.0	1.0	2.0	2.0	2.0	2.0	5.8	" 2.5
28	1.5	1.5	1.5	5.4	1.0	1.0	2.0	2.0	2.0	2.0	4.0	" 2.5
29	1.5		1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.0	2.5	" 2.5
30	1.5		1.5	1.5	1.0	1.0	2.0	2.0	2.0	2.0	2.5	" 2.5
31	1.5		1.5		1.0		2.0	2.0		2.0		" 2.5
Sum	52.5	42.0	46.5	81.1	214.1	30.0	602.0	62.0	619.0	62.0	107.3	" 77.5

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1932-1943 Acre Feet Normal	Maximum	Minimum
Jan.	.64	.58	1	2.5	‡12	1.5	1.7	104	188	743	82.7
Feb.	.62	.57	‡ 1	1.5	‡ 1	1.5	1.5	83.3	122	223	73.4
Mar.	.73	.57	‡ 1	1.5	‡ 1	1.5	1.5	92.2	176	489	72.4
Apr.	3.20	.67	27	580	‡ 1	1.5	2.7	161	1,561	15,500	55.1
May	5.00	.25	21	1,400	‡22	1.0	6.9	425	6,488	* 26,000	117
June	.26	.24	‡ 1	1.0	‡ 1	1.0	1.0	59.5	9,567	54,800	59.5
July	4.30		21	980	‡ 1	1.0	19.4	1,190	6,498	26,800	621
Aug.			‡ 1	2.0	‡ 1	2.0	2.0	123	4,811	* 26,680	123
Sept.	5.66	.30	3	1,900	‡ 1	2.0	20.6	1,230	8,274	24,600	223
Oct.			‡ 1	2.0	‡ 1	2.0	2.0	123	2,622	8,100	50.8
Nov.	2.05		26	30.0	‡ 1	2.5	3.6	213	478	" 2,980	64.9
Dec.			‡ 1	" 2.5	‡ 1	" 2.5	" 2.5	" 154	424	3,080	90.0
Yearly	5.66			1,900		1.0	5.5	3,958.0	41,209	105,807	3,958.0

" Estimated. * Partly estimated. ‡ And other days.

RIO GRANDE AT JOHNSON RANCH STATION

DESCRIPTION: Water-stage recorder and cable with stand-up cable car, with winch, located about 2 miles above Johnson Ranch, about 14 miles below Castolon, Brewster County, Texas and Santa Helena Ranch, Chihuahua, Mexico, and 392.9 river miles below the American Dam at El Paso, Texas. According to adjustment of 1943, zero of the gage is 2,045.30 feet above mean sea level, United States Geological Survey datum.

RECORDS: Based upon 13 meter measurements during the year. Computations by shifting channel methods. 1943 records fair. Records available: April 1936 to December 1943.

REMARKS: The river flow at this station is greatly modified by many irrigation diversions and drainage returns and by large reservoirs in the United States and Mexico.

EXTREME FLOWS: From high water marks it was determined that a stage of 24.6 feet was reached October 3, 1932; the estimated discharge for this stage was 97,000 second feet. The lowest flow to pass this station since records began was 23.1 second feet on June 6, 1938.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	* 1,360	" 1,460	1,270	" 762	577	1,080	1,350	2,540	298	8,460	" 1,360	917
2	* 1,250	" 1,520	1,270	* 706	519	913	4,900	" 1,530	738	6,320	" 1,250	988
3	* 1,320	* 1,420	1,170	717	448	891	4,910	* 1,240	725	5,000	" 1,290	987
4	* 1,290	1,440	1,270	750	392	884	5,410	" 1,130	1,680	4,070	" 1,280	925
5	* 1,310	1,390	* 1,390	723	361	1,160	5,290	* 1,240	641	3,520	" 1,060	933
6	* 1,340	1,390	* 1,480	634	377	978	4,540	" 1,040	704	3,400	" 989	890
7	* 1,360	1,360	* 1,550	590	386	1,810	4,780	" 706	482	3,090	" 989	880
8	* 1,360	1,310	* 1,590	560	371	1,000	4,490	" 742	506	2,910	939	798
9	* 1,380	1,420	* 1,700	539	344	1,060	3,580	" 671	516	2,520	974	1,050
10	* 1,440	1,280	* 1,660	498	320	1,000	3,050	" 663	575	2,300	879	1,180
11	* 1,440	1,250	* 1,770	455	320	970	2,660	" 582	502	2,400	829	965
12	1,550	1,290	* 1,840	442	314	1,060	2,430	" 516	480	2,000	836	1,370
13	1,390	1,290	* 1,890	434	353	1,100	2,260	" 459	479	2,140	749	1,300
14	* 1,360	1,290	* 1,800	428	472	" 957	2,060	" 388	473	2,150	725	1,310
15	* 1,320	1,210	* 1,620	534	514	" 892	2,360	* 335	472	2,580	709	1,090
16	* 1,400	1,300	* 1,520	873	435	1,490	2,650	288	428	2,980	778	1,360
17	* 1,290	1,240	* 1,480	416	516	3,410	3,220	319	381	2,790	960	1,480
18	* 1,240	1,390	* 1,520	438	653	2,190	2,180	262	377	2,710	1,010	1,530
19	* 1,270	1,340	* 1,340	404	637	1,230	4,240	270	377	" 2,470	848	1,350
20	* 1,530	1,460	* 1,450	378	581	933	3,110	274	381	" 2,540	899	1,250
21	* 1,590	1,220	* 1,410	362	1,120	1,270	3,480	316	381	" 2,300	823	1,390
22	* 1,520	1,180	* 1,340	346	5,330	1,390	4,170	312	385	" 2,080	690	1,230
23	* 1,310	1,180	* 1,200	346	1,670	1,270	5,570	303	385	" 1,980	790	1,280
24	* 1,400	" 1,270	1,120	382	1,750	1,140	6,240	278	389	" 1,620	887	1,090
25	* 1,400	" 1,290	1,570	376	1,060	899	6,760	274	1,990	" 1,850	781	1,360
26	* 1,340	* 1,310	" 1,120	515	785	853	5,280	262	3,820	" 1,800	711	1,430
27	* 1,400	1,310	" 1,050	617	651	1,110	4,010	278	2,340	" 1,730	828	1,220
28	* 1,590	1,350	" 985	630	587	887	3,060	248	4,940	" 1,730	1,130	1,290
29	* 1,620		" 929	485	1,330	1,120	2,590	235	7,350	" 1,780	962	1,140
30	* 1,620		" 874	478	2,600	1,380	2,200	229	8,490	" 1,590	927	1,100
31	* 1,590		" 812		987		2,440	236		" 1,340		1,240
Sum	* 43,580	37,160	* 42,990	15,818	26,760	36,327	115,270	18,166	41,685	86,150	27,882	36,323

Month	1943 Extreme Gage Feet High	1943 Extreme Gage Feet Low	1943 Extreme Second Feet High Day	1943 Extreme Second Feet High	1943 Extreme Second Feet Low Day	1943 Extreme Second Feet Low	1943 Average Second Feet	1943 Total Acre Feet	Period 1924-1943 Acre Feet ϕ Normal	Period 1924-1943 Acre Feet ⊕Maximum	Period 1924-1943 Acre Feet ⊕ Minimum
Jan.			29	* 1,620 #	18	* 1,240 #	* 1,410	* 86,400	73,632	86,400	35,900
Feb.	2.75	♀ 2.46	4	1,500	22	1,180	1,330	73,700	61,076	80,900	39,400
Mar.	3.54	2.05	25	2,340	31	782	1,390	* 85,300	56,008	85,300	31,100
Apr.	3.34	1.29	16	2,140	23	341	527	31,400	41,507	79,300	8,990
May	7.13	1.25	22	9,620	12	314	863	53,100	74,908	240,000	19,900
June	5.35	1.94	17	5,440	26	747	1,210	72,100	83,465	251,000	17,700
July	6.47	2.38	19	7,980	1	1,110	3,720	229,000	129,910	620,000	43,900
Aug.	4.47	.84	1	3,830	31	227	586	36,000	193,008	485,000	36,000
Sept.	7.08	.98	30	9,690	1	279	1,390	82,700	365,496	1,404,000	* 59,800
Oct.	7.00		1	9,480	31	" 1,340	2,780	171,000	227,336	929,000	* 75,600
Nov.	2.65	1.75	1	1,530	23	654	929	55,300	81,406	164,000	40,500
Dec.	2.85	1.88	9	1,680	9	742	1,170	72,000	72,308	110,000	29,600
Yearly	7.13			9,690		227	1,450	1,048,000	ϕ1,460,060	3,461,400ϕ	610,000ϕ

" Estimated. * Partly estimated. ♀ And other days. ϕ The monthly normals and the yearly normal, maximum and minimum from January 1924 to March 1936, included in above table were estimated from Boquillas and Lower Presidio. ⊕ The monthly maximums and minimums are for the period 1936 to 1943 only. # Mean daily.

RIO GRANDE AT LANGTRY STATION, TEXAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car and winch, located at Langtry, Texas, 79.5 miles above Villa Acuña, Coahuila, and 614.1 river miles below the American Dam at El Paso, Texas. Zero of gage is 1,091.69 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 24 meter measurements during the year. Computations by shifting channel methods. 1943 records good. Records available: May 1900 to October 1914; December 1919 to March 1920; and January 1924 to December 1943.

REMARKS: Large reservoirs and many irrigation diversions, and drainage returns in the United States and Mexico, greatly modify the river flow.

EXTREME FLOWS: The highest recorded gage height was on June 18, 1922, when the extreme gage height was 56.9 feet; the estimated discharge for this stage from extension of the rating curve was 204,000 second feet. The lowest flow ever recorded was in May 1904, with an extreme of 270 second feet. On pages 75 and 76 of Water Bulletin No. 9 will be found a record of flood occurrences since 1864 at this station.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,890	1,930	1,690	1,370	911	2,830	1,310	" 2,150	558	8,340	1,970	1,340
2	1,790	1,860	1,680	1,330	814	1,850	1,940	" 2,540	545	9,000	1,730	1,300
3	1,800	1,760	1,700	1,290	761	1,360	1,790	* 2,630	532	8,170	1,620	1,260
4	1,660	1,800	1,600	1,240	781	1,390	5,370	2,220	773	6,510	1,580	1,230
5	1,690	1,750	1,620	1,200	832	1,290	" 5,020	1,920	1,230	5,110	1,550	1,300
6	1,630	1,740	1,540	1,160	801	1,200	6,320	1,850	2,140	4,170	1,470	1,330
7	1,630	1,730	1,660	1,180	758	1,190	* 5,650	1,630	1,680	* 3,660	1,500	1,300
8	1,650	1,730	1,740	1,180	728	1,530	* 5,430	1,500	1,020	" 3,320	1,360	1,280
9	1,660	1,750	1,810	1,100	707	1,550	* 5,270	1,280	954	" 3,050	1,320	1,220
10	1,730	1,650	1,850	1,050	970	1,780	4,750	1,140	819	" 2,890	1,320	1,210
11	1,750	1,620	1,950	1,020	733	1,390	3,980	1,100	762	* 2,760	1,280	1,140
12	1,820	1,710	1,920	972	718	1,320	" 3,350	1,010	742	2,600	1,300	1,310
13	1,800	1,600	1,990	938	709	1,290	* 3,040	994	742	2,630	1,260	1,390
14	1,840	1,620	2,060	890	712	1,180	2,850	959	742	2,440	1,210	1,270
15	1,880	1,640	2,160	837	1,670	1,380	6,860	* 904	695	2,390	1,230	1,590
16	1,690	1,640	2,120	852	904	1,410	4,050	" 844	678	2,420	1,160	1,520
17	1,670	1,600	2,020	827	771	1,290	* 2,570	" 778	675	2,580	1,140	1,500
18	1,820	1,570	1,890	1,360	847	1,220	3,730	" 716	657	3,260	1,100	1,430
19	1,710	1,670	1,790	1,230	856	3,220	3,780	* 681	636	3,020	1,130	1,630
20	1,560	1,690	1,770	902	825	2,740	3,920	660	619	3,060	1,270	1,730
21	1,600	1,740	1,650	813	3,020	1,950	5,240	659	609	2,720	1,310	1,780
22	1,840	1,780	1,640	808	3,040	1,650	* 3,740	639	600	2,540	1,220	1,580
23	1,890	1,670	1,670	778	5,290	1,390	" 4,220	613	602	2,530	1,210	1,610
24	1,750	1,530	1,670	748	6,340	1,880	" 4,650	599	666	2,340	1,180	1,630
25	1,620	1,500	1,570	727	* 2,770	1,600	* 6,310	604	625	2,160	1,090	1,580
26	1,750	1,630	1,530	711	" 2,010	1,560	7,020	608	670	2,030	1,120	1,560
27	1,750	1,670	1,810	702	" 2,140	1,480	7,460	607	771	1,820	1,240	1,490
28	1,700	1,680	1,730	705	1,600	1,300	* 5,400	599	3,210	2,050	1,210	1,690
29	1,780		1,450	696	1,260	1,260	" 4,500	586	2,340	1,970	1,150	1,640
30	1,860		1,400	840	1,530	1,420	" 3,690	573	5,420	1,960	1,220	1,570
31	1,940		1,350		2,480		" 2,810	560		1,980		1,550
Sum	54,150	47,260	54,030	29,456	48,288	47,900	136,020	34,153	32,712	105,480	39,450	44,960

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	1.95	1.52	31	1,980	21	1,510	1,750	107,000	99,339	* 245,000	52,300
Feb.	1.94	1.47	1	1,970	25	1,490	1,690	93,700	84,053	* 117,000	48,900
Mar.	2.15	1.32	15	2,210	31	1,350	1,740	107,000	81,206	118,000	48,100
Apr.	1.72	.61	18	1,650	29	689	982	58,400	66,350	105,000	30,100
May	6.53	.58	23	9,880	9	682	1,560	95,800	113,338	271,000	32,300
June	3.19	1.13	19	3,640	29	1,180	1,600	95,000	112,654	299,000	37,310
July	7.50	1.23	15	11,800	1	1,300	4,360	270,000	166,502	719,000	56,100
Aug.	" 2.67	.45	3	2,820	31	560	1,100	67,700	233,430	* 730,000	67,700
Sept.	4.93	.41	30	7,110	3	532	1,090	64,900	418,318	1,410,000	35,700
Oct.	6.82	1.79	1	10,400	27	1,780	3,400	209,000	277,201	1,063,000	55,200
Nov.	2.00	1.06	1	2,030	26	1,060	1,320	78,200	109,434	* 211,000	56,600
Dec.	1.84	1.14	21	1,790	12	1,100	1,450	89,200	96,872	135,000	49,800
Yearly	7.50	.41		11,800		532	1,850	1,335,900	1,858,697	3,851,500	879,000

" Estimated. * Partly estimated.

PECOS RIVER STATION NEAR COMSTOCK, TEXAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and winch, located at the Pecos high bridge on the railroad 12 miles northwest of Comstock, Texas, 5.5 miles above the confluence with the Rio Grande. This river enters the Rio Grande 638.2 river miles below the American Dam at El Paso, Texas. Zero of the gage is 1,058.01 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 13 meter measurements during the year. Water-stage recorder installed May 11, 1942. Computations by shifting channel methods. 1943 records good. Records available: March 17, 1898 to December 3, 1898, and May 1900 to December 31, 1943.

REMARKS: The river flow is completely modified at this station by many irrigation diversions and drainage returns, and by the reservoirs of the Carlsbad irrigation project in New Mexico, and the Red Bluff reservoir in Texas. For dry weather losses and gains in the Pecos river channel from Sheffield to the Rio Grande, see page 47, Water Bulletin No. 11 and the last table on page 70, Water Bulletin No. 12.

EXTREME FLOWS: The greatest recorded flow was on September 1, 1932, when the extreme gage height was 38.25 feet and the extreme flow was 116,000 second feet. An extreme gage height of 35.75 feet was reported on April 6, 1900; discharge based upon 1935 rating curve was 107,000 second feet. The lowest flow ever recorded was on August 31, 1930, when the extreme gage height was -0.15 foot and the extreme flow was 97 second feet. On pages 75 and 76 of Water Bulletin No. 9 will be found a record of flood occurrences since 1899 at this station.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	806	690	370	335	288	381	239	237	* 204	288	262	287
2	806	684	369	332	280	372	298	234	* 233	271	265	284
3	805	684	365	333	277	339	298	232	* 272	270	284	280
4	799	660	355	330	277	334	271	230	* 253	273	274	280
5	804	637	363	331	277	389	260	224	* 309	282	270	387
6	834	620	364	332	284	330	255	227	* 237	282	263	333
7	852	593	356	348	288	370	255	224	236	279	248	345
8	852	576	357	424	296	309	248	224	242	272	245	337
9	851	565	367	336	320	290	244	224	221	268	248	333
10	844	542	381	332	632	278	240	224	212	266	248	337
11	843	521	378	332	349	271	240	220	208	269	248	306
12	849	501	379	332	297	267	246	224	204	274	248	310
13	849	485	375	328	278	271	239	220	203	275	250	306
14	842	479	372	316	274	292	239	217	205	276	* 250	302
15	811	469	377	308	829	300	2,340	220	201	272	* 250	291
16	762	459	369	324	350	280	341	217	206	266	* 250	284
17	792	444	357	320	329	269	264	217	228	263	* 250	284
18	816	439	354	308	317	265	248	217	213	267	* 250	280
19	815	438	350	301	317	261	242	* 217	212	271	* 250	280
20	796	432	339	297	329	250	244	* 214	204	268	* 260	284
21	748	423	348	292	406	250	252	* 214	200	266	* 263	287
22	725	413	372	296	1,170	257	254	* 214	196	262	* 263	291
23	718	407	355	304	443	267	255	* 217	195	259	* 263	294
24	717	406	365	296	452	256	253	* 214	248	257	* 263	302
25	709	391	366	284	429	252	251	* 208	243	257	* 263	310
26	700	382	367	284	443	255	252	* 201	278	258	* 263	287
27	699	377	404	296	457	255	250	* 198	316	258	* 263	318
28	692	371	365	288	439	251	251	* 201	315	266	* 270	306
29	692		349	284	411	243	249	* 204	298	263	* 280	294
30	692		338	288	417	239	240	* 204	298	260	* 287	298
31	697		339		381		238	* 201		257		298
Sum	24,217	14,088	11,265	9,511	12,336	8,643	9,996	6,739	7,090	8,315	* 7,791	9,415

Month	1943 Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second Feet High Day	Extreme Second Feet High	Extreme Second Feet Low Day	Extreme Second Feet Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	1.64	1.37	13	862	28	692	781	48,000	26,822	78,200	12,900
Feb.	1.39	.78	3	701	28	371	503	27,900	20,930	62,300	10,900
Mar.	.85	.64	27	422	30	333	363	22,300	19,496	40,700	11,100
Apr.	1.49	.50	8	769	‡25	284	317	18,900	18,020	42,400	9,520
May	3.27	.46	22	2,170	14	271	398	24,500	39,304	156,000	10,800
June	1.20	.38	4	607	30	236	288	17,100	40,377	197,000	13,300
July	9.10	.33	15	11,200	31	235	322	19,800	25,136	84,200	7,620
Aug.	.34	* .20	1	240	‡27	198	217	13,400	21,622	50,400	7,620
Sept.	1.06	.24	30	521	23	192	236	14,100	49,671	324,400	6,190
Oct.	.55	.41	1	292	31	254	268	16,500	58,288	486,000	9,520
Nov.			30	* 287 ⊕	8	245 ⊕	260	* 15,500	33,010	209,000	10,300
Dec.	.78	.44	5	413	19	276	304	18,700	26,677	91,800	12,200
Yearly	9.10	.20		11,200		192	355	256,700	379,353	1,330,900	176,780

‡ And other days. * Partly estimated. ⊕ Mean daily.

GOODENOUGH SPRING STATION NEAR COMSTOCK, TEXAS

DESCRIPTION: Water-stage recorder and light cable (winch operated, for carrying current meter and light weights only), located 4,000 feet above confluence with Rio Grande and 11.75 miles southwest of Comstock, Val Verde County, Texas. The stream from this spring enters the Rio Grande 664.9 river miles below the American Dam at El Paso. Zero of gage is 971.9 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 14 meter measurements during the year, 13 by the United States Section and 1 by the Mexican Section. Computations by shifting channel methods. 1943 records good. Records available: February 23, 1929 to December 1943. Annual discharges for the years 1924 to 1928, inclusive, were estimated as were the monthly discharges for January and February 1929. See page 52, Water Bulletin No. 6.

REMARKS: The flow of this spring channel is very uniform and is not modified by diversions or storage. When the Rio Grande reaches a flow of about 35,000 second feet near this station, then backwater from the Rio Grande reaches this gaging station.

EXTREME FLOWS: The highest recorded gage height was on September 18, 1941, when the extreme gage height was 4.57 feet, discharge 846 second feet. The lowest flow ever recorded was on February 26, 1943 when the extreme flow was 82.7 second feet with a gage height of 0.43 feet. Backwater from the Rio Grande reached a gage height of 13.86 on September 4, 1935, and 17.30 on September 1, 1932.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	108	102	88.4	103	100	151	124	124	118	118	111	106
2	108	103	86.5	101	102	149	123	124	117	118	114	106
3	108	103	86.7	97.5	102	146	123	124	118	118	117	105
4	106	103	90.5	95.1	104	146	124	123	118	119	117	105
5	105	103	92.2	94.2	103	147	124	122	118	119	117	105
6	106	101	90.2	99.6	103	148	124	122	120	119	117	106
7	106	102	91.2	104	104	142	123	122	120	119	115	106
8	106	103	92.1	112	103	139	124	122	120	119	113	106
9	105	103	93.8	123	104	137	125	121	121	119	113	106
10	106	101	95.5	121	104	136	124	121	120	118	111	106
11	106	101	96.5	120	103	135	124	121	120	118	109	105
12	106	102	97.4	118	102	133	124	121	120	118	109	105
13	106	101	95.2	117	102	131	124	120	120	118	109	105
14	108	102	95.9	115	101	129	123	120	119	117	109	104
15	108	102	97.4	112	101	128	123	120	120	116	108	103
16	108	98.7	95.9	112	100	127	124	120	119	116	107	103
17	107	97.4	95.9	109	99.2	127	124	120	119	116	107	103
18	107	95.6	96.6	107	101	126	124	119	120	116	107	103
19	103	93.3	95.2	106	103	126	124	119	120	117	107	103
20	105	92.1	94.4	105	104	126	124	119	120	115	108	103
21	107	89.8	93.7	104	106	125	124	119	121	115	108	103
22	107	88.5	95.2	103	119	125	126	118	121	115	108	103
23	106	86.7	96.6	102	143	125	126	118	120	115	108	103
24	107	83.7	110	101	156	124	126	118	120	114	107	103
25	105	83.2	104	100	163	124	126	117	120	114	107	102
26	104	83.4	98.8	101	164	124	126	117	119	114	107	103
27	105	85.1	96.8	101	164	125	126	117	119	114	107	102
28	105	88.2	98.5	102	163	124	127	118	119	114	107	101
29	104		103	102	161	124	126	118	120	112	106	101
30	104		106	102	157	124	125	118	119	112	106	101
31	103		106		152		125	118		112		101
Sum	3,285	2,697.7	2,976.1	3,189.4	3,693.2	3,973	3,859	3,720	3,585	3,604	3,296	3,217

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	ϕ Maximum	ϕ Minimum
Jan.	.64	.50	1	108	19	102	106	6,520	8,818	19,620	6,380
Feb.	.54	.43	2	105	26	82.7	96.3	5,350	7,838	17,030	5,350
Mar.	3.05	.38	24	358	2	86.5	96.0	5,900	8,286	17,770	5,900
Apr.	2.10	1.50	9	125	5	94.2	106	6,330	7,862	16,580	5,850
May	2.46	1.38	‡25	164	17	98.7	119	7,330	8,510	16,840	6,950
June	2.69	1.70	4	192	30	123	132	7,880	8,640	16,040	7,020
July	1.72	1.55	28	128	‡ 2	123	124	7,650	8,909	16,460	7,170
Aug.	1.57	1.31	1	125	31	117	120	7,380	8,682	15,840	6,890
Sept.	1.39	1.27	‡ 8	121	2	117	120	7,110	11,250	‖ 41,490	6,550
Oct.	1.40	1.26	9	120	31	111	116	7,150	10,018	* 25,870	6,840
Nov.	1.44	1.10	‡ 3	117	30	106	110	6,540	9,226	21,850	6,540
Dec.	1.12	‖ .88	1	107	28	‖ 101	104	6,380	9,061	20,470	6,380
Yearly	3.05	.38		358		82.7	113	81,520	107,100	192,840	81,520

‡ And other days. ‖ Estimated. * Partly Estimated.
ϕ Maximum and Minimum figures are for the period 1929 to 1943 only.

DEVILS RIVER STATION NEAR DEL RIO, TEXAS

DESCRIPTION: Water-stage recorder on main highway bridge, 12 miles northwest of Del Rio, Texas, and 4.5 miles above confluence with the Rio Grande. Devils River enters the Rio Grande 680.1 river miles below the American Dam at El Paso, Texas. High stage measurements from highway bridge, low stage measurements by wading. Zero of gage is 951.80 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based upon 12 meter measurements during the year. 1943 records good. Records available: May 1900 to March 1914 at a point .8 mile above Southern Pacific Railroad bridge; September 2, 1932, to December 31, 1943, at highway bridge 2 miles upstream from railroad bridge.

REMARKS: The monthly flow of this spring-fed river is not modified, but the daily flow is modified by 2 power dams, with a combined hydro-electric generating capacity of 3,100 K.V.A., the operation of which began in 1929. There are irrigation diversions for only 8 acres from this river.

EXTREME FLOWS: The highest recorded gage height was on September 1, 1932, when the extreme was 41.0 feet at the present station and the extreme flow was 597,000 second feet. (See Special Flood Report 1932 by United States Section of this Commission.) This corresponds to a flow of 143 second feet per square mile of watershed. Better topographic maps now available show the Devils river watershed above this gaging station to be 4,185 square miles instead of 4,060 square miles as previously reckoned. Zero flow sometimes occurs for a few hours at this station. When this happens, the gage height falls to .84 foot or below. On pages 75 and 76 of Water Bulletin No. 9 will be found a record of flood occurrences since 1832 at this station.

CORRECTIONS: On page 17, hereof, will be found corrections to daily flows in 1925 and 1937.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	329	385	371	366	290	512	296	304	306	371	300	295
2	372	414	400	345	289	421	438	334	268	392	294	300
3	450	504	334	327	291	424	373	337	427	359	290	307
4	359	483	351	304	290	* 422	364	331	493	341	297	295
5	365	406	394	331	269	" 506	366	306	414	308	305	352
6	420	397	398	323	290	" 429	358	309	303	312	307	340
7	473	394	373	393	314	" 436	343	292	328	316	303	341
8	347	369	340	1,170	316	" 443	350	333	316	311	293	312
9	401	386	353	532	335	" 451	353	338	325	297	285	307
10	363	415	370	305	647	" 458	348	310	312	307	289	333
11	441	340	375	" 307	" 544	" 465	1,110	317	298	312	289	324
12	375	349	380	" 308	" 440	472	589	297	315	309	343	325
13	413	356	360	" 310	337	402	505	322	311	309	297	330
14	396	370	354	" 312	303	466	351	303	317	305	297	322
15	404	374	365	" 314	299	398	372	316	309	230	296	303
16	347	383	355	" 316	341	441	364	320	320	355	303	284
17	429	355	347	" 317	358	402	366	288	343	512	303	304
18	174	375	344	319	363	406	363	291	320	275	300	330
19	375	380	337	324	346	418	359	302	318	282	272	299
20	327	386	336	303	338	364	356	304	333	285	272	268
21	434	391	336	298	1,060	430	363	310	347	285	278	298
22	350	370	342	302	2,170	398	343	306	342	288	290	321
23	403	362	354	305	2,040	412	373	302	333	293	292	321
24	350	372	382	305	1,480	411	312	289	335	288	294	317
25	442	373	441	302	852	385	347	286	326	285	278	284
26	370	366	361	278	597	384	235	304	383	287	294	305
27	382	372	346	308	548	386	497	301	329	297	329	300
28	386	352	351	276	567	386	377	295	328	291	325	295
29	382		362	285	490	384	341	310	327	317	331	275
30	424		316	297	773	376	331	303	326	297	296	285
31	405		318		541		324	311		297		284
Sum	11,888	10,779	11,146	10,482	18,118	12,688	12,167	9,571	10,052	9,713	8,942	9,556

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	1.62	.71	5	531	18	81.5	383	23,600	24,302	* 45,250	14,500
Feb.	1.86	1.11	3	854	8	196	385	21,400	21,685	* 36,880	13,300
Mar.	1.64	1.15	2	582	19	220	360	22,100	22,652	39,420	14,000
Apr.	3.07	.75	8	3,720	19	77.0	349	20,800	25,415	67,800	11,100
May	3.43	.83	22	4,960	6	102	584	35,900	47,647	356,900	10,500
June	" 2.30	.90	5	" 1,720	20	134	423	25,200	41,670	285,000	15,000
July	3.40	.75	11	4,820	1	96.0	392	24,100	47,030	377,000	19,600
Aug.	1.67	.87	1	576	5	82.4	309	19,000	25,937	* 51,000	15,500
Sept.	1.69	.93	26	590	2	95.5	335	19,900	95,271	895,990	13,900
Oct.	1.84	.75	1	782	16	51.0	313	19,300	50,248	349,000	18,600
Nov.	1.71	1.12	11	607	‡ 2	153	298	17,700	27,318	60,300	15,900
Dec.	1.73	1.20	4	631	30	179	308	19,000	25,264	49,520	15,900
Yearly	3.43	.71		4,960		51.0	370	268,000	454,439	1,284,080	237,400

‡ And other days. " Estimated. * Partly estimated.

ARROYO LAS VACAS NEAR VILLA ACUNA, COAHUILA

DESCRIPTION: Water-stage recorder and cable with sit-down cable car located 1.5 miles upstream from Villa Acuña, Coahuila, and 1.8 miles upstream from the confluence with the Rio Grande just above Del Rio-Villa Acuña international bridge. This confluence is 693.5 river miles below the American Dam at El Paso, Texas. Zero of the gage is 884.15 feet, U.S.C. & G.S. datum. Prior to September 7, 1939, a staff gage at the same location and on the same datum was used.

RECORDS: Based upon 71 meter measurements during the year, 68 by the Mexican and 3 by the United States Section. Computations by shifting channel methods. 1943 records good except November and December which are estimated because of flood injury to the gage well on November 2. Records available: Occasional estimates from June 1935 to March 20, 1938, after which the present record extends to December 31, 1943.

REMARKS: From January 1 to September 6, 1939, 3 gage readings a day during low flow, and hourly gage readings during flood flow were made on the staff gage at the station. A water stage recorder began operating September 7, 1939. The low flow of this stream is spring-fed. About 593 acres of land were irrigated from this stream above the gaging station in 1943.

EXTREME FLOWS: The highest recorded flow was on April 5, 1940, when a flow of 39,200* second feet was recorded with a gage height of 8.14 feet. The lowest flow was 0.7 second foot during several days in November 1938. The records of high flows prior to 1942 are doubtful because of the lack of meter measurements during flood flows. More definite figures will be published when better data are available.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.7	5.6	8.8	7.4	4.6	9.2	3.9	4.2	3.9	3.9	" 5.3	" 7.8
2	6.7	7.4	7.4	7.4	3.5	7.1	3.9	4.2	3.9	3.9	"720	" 8.8
3	7.1	7.8	6.0	7.4	3.2	7.1	3.9	4.2	3.9	3.9	" 3.2	" 10.2
4	7.4	6.7	6.0	7.4	3.5	8.8	3.9	4.2	3.9	3.9	" 3.2	" 19.8
5	8.8	9.5	6.0	4.9	3.5	18.4	4.2	4.2	3.2	3.8	" 3.2	" 9.9
6	9.2	9.5	5.7	5.3	3.2	9.2	4.2	4.2	3.2	3.9	" 3.5	" 10.6
7	7.8	8.8	5.7	24.7	2.5	6.0	3.5	4.2	3.9	3.9	" 4.2	" 11.3
8	8.1	7.1	5.3	604	3.5	5.3	3.5	4.2	3.9	3.9	" 3.5	" 11.3
9	8.5	6.7	5.3	33.9	12.0	6.4	3.5	4.2	3.9	3.9	" 3.5	" 10.2
10	8.1	6.0	5.3	15.5	3.5	6.0	3.5	4.2	3.9	3.8	" 3.5	" 8.8
11	7.8	5.6	5.3	10.6	3.9	5.6	3,397	4.2	3.9	3.9	" 3.2	" 9.2
12	7.8	5.3	4.6	8.8	3.9	5.6	23.0	4.2	3.2	3.9	" 3.5	" 9.9
13	7.4	5.6	4.6	9.2	3.9	5.6	4.9	4.2	3.2	3.9	" 4.2	" 9.9
14	7.1	6.0	4.6	9.2	3.9	5.6	4.9	3.2	3.2	3.9	" 3.9	" 10.6
15	6.7	6.4	5.0	7.4	3.9	5.3	4.9	3.2	3.2	3.8	" 3.9	" 11.3
16	6.7	6.4	6.4	7.8	3.9	4.6	4.9	3.2	3.9	3.9	" 3.9	" 8.8
17	6.3	6.7	6.7	4.9	3.9	4.9	4.9	3.2	7.4	3.9	" 4.2	" 9.2
18	7.1	6.7	7.1	4.9	3.9	4.9	4.9	3.2	4.2	3.9	" 3.9	" 9.9
19	6.0	5.6	6.7	5.3	3.9	4.6	4.9	3.2	4.2	3.9	" 3.9	" 9.2
20	6.0	6.4	6.7	5.3	3.2	4.2	4.9	3.2	4.2	3.8	" 3.9	" 8.5
21	6.3	6.0	6.4	5.3	463	3.9	4.9	3.2	4.2	3.2	" 3.5	" 8.1
22	6.4	8.1	6.4	5.3	1,400	4.9	4.9	3.2	4.2	3.2	" 3.5	" 8.1
23	6.4	7.8	6.0	5.6	52.6	5.6	4.9	3.2	4.2	3.2	" 3.5	" 7.4
24	6.4	7.8	135	5.6	19.4	6.0	4.9	3.9	4.2	3.2	" 3.5	" 8.1
25	7.8	8.5	12.0	5.6	12.4	6.4	4.9	3.9	4.2	3.2	" 3.5	" 7.4
26	9.2	9.2	8.1	6.0	12.7	5.3	4.9	3.9	4.2	3.2	" 3.5	" 6.7
27	9.5	9.2	7.8	4.9	12.0	4.6	4.6	3.9	4.2	3.9	" 13.8	" 6.7
28	7.8	8.8	7.4	5.6	10.9	3.9	3.9	3.9	4.2	3.9	" 4.6	" 7.1
29	8.1		7.4	5.3	8.5	3.9	4.6	3.9	4.2	3.9	" 5.3	" 7.1
30	6.0		7.4	4.9	89.3	3.9	4.9	3.9	3.9	3.9	" 6.4	" 7.4
31	6.4		7.4		11.3		4.9	3.9		3.8		" 7.4
Sum	227.6	201.2	330.5	845.4	2,173.4	182.8	3,549.5	117.8	119.9	116.2	"842.7	"286.7

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1938-1943 Acre Feet Average	Maximum	Minimum
Jan.	1.28	1.15	27	11.3	#	6.0	7.3	451	327	697	" 79.4
Feb.	1.25	1.18	#	9.5	12	5.3	7.2	399	304	550	" 113
Mar.	3.71	1.12	24	1,170	12	3.5	10.7	656	1,099	3,110	* 181
Apr.	8.56	.98	8	6,140	17	3.9	28.2	1,680	2,888	13,300	168
May	7.55	.95	22	5,720	20	3.2	70.1	4,310	1,123	4,310	156
June	1.38	.92	5	50.5	30	3.2	6.1	363	402	953	118
July	15.06	.92	11	18,750	#	3.2	114	7,040	2,815	7,900	460
Aug.	1.35	1.28	#	4.2	#	3.2	3.8	234	1,321	2,870	234
Sept.	1.61	1.28	17	12.4	#	3.2	4.0	238	1,658	6,850	119
Oct.	1.31	1.28	#	3.9	#	3.2	3.7	230	314	461	134
Nov.			2	" 720	#	" 3.2	" 28.1	" 1,670	* 552	" 1,670	106
Dec.			4	" 19.8	#	" 6.7	" 9.2	" 569	* 411	704	131
Yearly				18,750		3.2	24.4	17,840	13,214	22,423	7,396

Various days of the month. " Estimated. * Partly estimated.

RIO GRANDE AT DEL RIO STATION

DESCRIPTION: Water-stage recorder, located on the downstream side of a pier of the international highway bridge between Del Rio, Texas, and Villa Acuña, Coahuila, and 693.4 river miles below the American Dam at El Paso, Texas. Measurements from highway bridge. Zero of gage 863.80 feet above mean sea level, United States Coast and Geodetic Survey datum. Prior to February 20, 1942, the zero of this gage was one foot higher.

RECORDS: Based upon 17 meter measurements during the year, 14 by the United States Section and 3 by the Mexican Section. Computations by shifting channel methods. 1943 records fair. Records available: December 1923 to December 1943. Records are also available for station 11 miles upstream from May 1900 to April 1915; and for station 7.5 miles upstream at McKee's Switch from December 1919 to March 1920. Several small springs, but no important tributaries, enter the river between the various station sites.

REMARKS: The river flow is greatly modified at this station by many irrigation diversions and drainage returns and by large reservoirs in the United States and Mexico.

EXTREME FLOWS: The highest recorded gage height was on September 1, 1932, when the extreme gage height was 34.5 feet, discharge 605,000 second feet. This is the greatest rate of discharge ever recorded at any point on the Rio Grande. (See Special Flood Report 1932 by American Section of this Commission). The lowest flow ever recorded was in May 1940, when the extreme gage height was -.39 feet and the extreme flow 890 second feet. Numerous records of extreme flows may be found in previous Water Bulletins.

CORRECTION: Formerly published discharges for 1925 were found to be in error. The dates are May 28, 29, & 30; the corrected estimated discharges are 45,000, 142,000, and 96,000 sec. ft., respectively. The corrected total May discharge is 742,000 acre feet. The reason for the error is not known, but see page 17, hereof, for simultaneous errors for Devils River flow.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,680	3,220	2,670	2,290	1,650	3,780	2,430	3,740	1,430	7,270	2,830	2,110
2	3,560	3,240	2,720	2,290	1,720	3,960	2,300	3,520	1,430	9,290	3,410	2,230
3	3,570	3,220	2,640	2,210	1,630	3,040	2,860	3,610	1,520	9,490	2,550	2,200
4	3,400	3,230	2,670	2,140	1,560	2,600	2,930	3,650	1,620	7,780	2,440	2,160
5	3,320	3,120	2,620	2,110	1,530	3,530	5,850	2,970	1,740	6,510	2,430	2,260
6	3,410	3,040	2,650	2,060	1,580	2,930	5,790	2,720	2,080	5,470	2,370	2,290
7	3,400	3,020	2,530	2,020	1,570	2,630	6,440	2,680	2,860	4,900	2,290	2,270
8	3,280	2,990	2,620	6,180	1,560	2,580	5,770	2,510	2,440	4,520	2,270	2,230
9	3,360	2,970	2,690	2,480	1,540	2,790	5,320	2,420	1,930	4,410	2,170	2,210
10	3,320	2,990	2,800	2,130	2,040	2,730	5,700	2,210	1,820	4,150	2,140	2,210
11	3,410	2,800	2,830	2,040	2,020	2,750	11,200	2,080	1,710	3,990	2,130	2,160
12	3,360	2,750	2,930	1,970	1,540	2,500	5,380	2,050	1,620	3,720	2,110	2,080
13	3,430	2,830	2,860	1,930	1,460	2,320	4,760	1,950	1,600	3,500	2,140	2,210
14	3,360	2,740	2,870	1,850	1,410	2,360	4,180	1,890	1,590	3,530	2,130	2,300
15	3,400	2,750	2,970	1,760	1,400	2,160	5,770	1,860	1,620	3,210	2,080	2,160
16	3,300	2,730	3,000	1,780	2,560	2,370	8,430	1,770	1,610	3,160	2,100	2,400
17	3,190	2,720	2,930	1,800	1,730	2,370	4,770	1,710	1,620	3,480	2,040	2,410
18	3,040	2,670	2,880	1,750	1,540	2,270	3,900	1,620	1,580	3,610	2,010	2,370
19	3,160	2,620	2,750	2,130	1,550	2,430	5,220	1,600	1,530	3,930	1,940	2,290
20	3,080	2,700	2,640	2,100	1,580	3,970	4,560	1,560	1,510	3,820	1,970	2,440
21	3,020	2,730	2,640	1,810	3,210	3,570	5,400	1,520	1,480	3,740	2,100	2,550
22	2,960	2,730	2,540	1,710	10,800	2,960	5,920	1,520	1,470	3,440	2,160	2,600
23	3,180	2,730	2,560	1,710	6,530	2,740	4,290	1,490	1,480	3,330	2,070	2,440
24	3,180	2,650	2,850	1,690	8,820	2,520	5,250	1,450	1,500	3,320	2,050	2,470
25	3,120	2,510	2,810	1,640	6,160	2,840	5,640	1,430	1,610	3,160	2,040	2,440
26	2,910	2,480	2,540	1,590	3,950	2,640	7,100	1,450	1,590	3,000	1,970	2,410
27	3,030	2,590	2,480	1,600	3,540	2,610	7,570	1,460	1,630	2,880	2,070	2,380
28	3,020	2,640	2,710	1,590	3,500	2,540	7,120	1,450	1,980	2,760	2,210	2,300
29	3,010		2,610	1,580	3,000	2,360	5,430	1,450	3,780	2,910	2,140	2,490
30	3,120		2,320	1,560	3,490	2,290	4,820	1,440	3,480	2,850	2,070	2,430
31	3,170		2,260		3,060		4,110	1,430		2,830		2,380
Sum	100,750	79,410	83,590	61,500	89,230	83,140	166,210	64,210	54,860	133,960	66,430	71,880

1943									Period 1924-1943		
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet		
	High	Low	Day	High	Day	Low			Normal	Maximum	Minimum
Jan.	2.70	2.23	1	3,880	26	2,830	3,250	200,000	172,888	344,000	103,000
Feb.	2.58	1.93	3	3,440	26	2,380	2,840	158,000	146,774	229,970	96,200
Mar.	3.32	1.76	24	4,940	31	2,170	2,700	166,000	145,523	224,670	94,700
Apr.	7.85	1.28	8	18,600	30	1,480	2,050	122,000	132,982	200,000	83,300
May	8.06	1.22	22	19,500	9	1,340	2,880	177,000	224,952	* 742,000	68,200
June	2.85	1.53	2	4,430	30	2,140	2,770	165,000	224,402	704,000	107,000
July	10.00	1.51	11	28,900	2	2,130	5,360	330,000	260,770	*1,228,000	97,800
Aug.	2.68	.94	1	4,200	31	1,370	2,070	127,000	302,018	865,000	124,000
Sept.	2.69	.94	29	4,290	24	1,410	1,830	109,000	608,104	2,754,590	72,600
Oct.	5.15	1.80	2	10,400	28	2,680	4,320	266,000	425,798	1,634,000	110,000
Nov.	3.25	1.27	2	5,520	19	1,890	2,210	132,000	195,086	467,000	108,000
Dec.	1.84	1.36	30	2,750	1	2,010	2,320	143,000	174,307	295,180	102,000
Yearly	10.00	.94		28,900		1,340	2,890	2,095,000	3,013,604	6,041,720	1,639,000

* Partly estimated.

SAN FELIPE CREEK STATION NEAR DEL RIO, TEXAS

DESCRIPTION: Water-stage recorder at Silos farm road bridge 1.75 miles south of Del Rio, Texas, 2 miles above the confluence with the Rio Grande and 4 miles below the Del Rio gaging station on the Rio Grande. This stream enters the Rio Grande 695.2 river miles below the American Dam at El Paso, Texas. Low and medium flow measurements by wading or from bridge. High flows by slope-area measurements. Zero of gage is 875.05 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 14 meter measurements during the year, 12 by the United States and 2 by the Mexican Section. Computations by shifting channel methods. 1943 records good. Records available: September 1, 1931 to December 31, 1943.

REMARKS: The flow of this spring-fed creek was greatly modified in 1943 by municipal diversions at Del Rio of 1,902.1 acre feet and by irrigation diversions above this station.

EXTREME FLOWS: The highest recorded flow was on June 14, 1935, when a flow of 45,000 second feet was reached with a gage of 23.20 feet. With spring flow eliminated this storm flow corresponds to 726 second feet per square mile of watershed. The lowest flow was 2.2 second feet on December 19, 1934. Backwater from the Rio Grande reaches this station whenever the Rio Grande stage at Del Rio station gets above 14 feet or a flow of about 60,000 second feet.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	63.7	81.6	47.7	51.9	55.5	54.5	50.0	57.3	45.6	124	57.5	55.9
2	63.7	77.3	47.7	52.8	55.5	51.9	49.9	58.4	203	64.7	98.1	53.2
3	63.7	66.6	48.5	52.1	55.5	53.7	50.7	55.5	58.5	62.9	65.0	53.2
4	72.8	55.1	48.5	52.2	54.6	* 119	49.7	53.8	52.3	63.0	61.4	* 55.8
5	85.2	54.0	48.5	53.2	54.6	* 760	49.6	55.5	50.6	71.8	60.5	64.2
6	86.2	52.8	48.4	53.3	56.4	74.9	49.6	56.4	55.0	63.9	60.5	54.0
7	89.3	54.1	49.2	57.4	54.7	69.0	* 50.4	60.1	57.6	63.9	60.6	54.9
8	88.2	57.4	50.0	299	55.6	68.9	52.0	59.3	55.9	64.0	59.7	56.7
9	87.1	55.6	50.8	60.8	64.6	68.9	54.6	60.2	55.9	64.9	60.7	58.4
10	86.1	56.5	49.1	60.0	183	68.9	60.8	80.9	55.1	64.9	59.8	55.7
11	86.1	56.5	48.9	61.1	61.8	68.8	1,560	73.7	53.3	65.0	59.8	55.7
12	85.0	57.3	50.4	60.3	55.6	66.9	90.9	66.7	53.3	65.0	59.7	56.6
13	82.9	57.3	50.3	57.8	54.7	60.3	85.4	54.8	54.2	65.0	58.8	55.7
14	83.0	58.1	51.9	56.1	54.6	59.3	80.1	52.1	52.4	65.0	59.7	55.7
15	83.1	57.3	51.8	56.3	54.7	59.2	69.9	50.4	50.7	62.3	58.8	54.8
16	83.2	53.7	50.8	56.4	46.4	59.2	65.9	49.5	54.3	61.4	57.9	54.7
17	83.3	52.9	48.9	56.4	46.4	57.4	63.9	51.3	57.8	59.5	56.2	54.7
18	83.3	52.0	47.2	56.4	44.0	57.3	64.7	50.5	56.0	59.6	55.2	54.7
19	83.4	51.9	47.0	56.4	44.8	57.2	63.8	51.3	56.0	59.6	55.2	55.6
20	83.5	51.0	45.2	56.4	42.5	56.2	63.7	49.6	57.0	58.7	54.3	55.6
21	82.5	51.0	46.8	54.6	268	55.2	60.8	48.7	55.3	59.6	55.2	55.5
22	82.6	47.8	46.6	56.4	693	54.2	59.0	47.9	52.6	58.8	54.3	55.5
23	82.7	47.8	48.1	56.4	72.2	60.4	58.0	49.6	54.5	57.9	54.2	56.4
24	81.8	46.9	73.4	52.9	63.7	59.4	55.3	49.6	56.2	58.0	53.3	56.4
25	81.9	46.9	57.1	57.3	59.1	57.5	55.4	48.7	58.9	57.1	53.3	56.4
26	81.9	47.8	51.9	57.3	58.3	54.8	55.4	53.1	68.3	56.4	54.2	56.4
27	82.0	47.7	52.9	55.5	60.0	53.8	56.3	52.2	62.8	57.2	64.2	56.4
28	82.1	47.7	54.8	58.2	61.7	52.0	57.2	51.4	60.0	57.3	59.5	55.5
29	81.2		55.0	57.3	64.5	52.8	57.2	48.0	60.0	57.4	57.6	55.6
30	82.3		53.3	56.4	132	51.0	57.2	48.8	56.2	57.4	57.6	56.5
31	84.1		51.7		63.6		56.3	49.7		57.5		56.5
Sum	2,527.9	1,542.6	1,572.4	1,928.6	2,791.6	2,542.6	3,353.7	1,695.0	1,819.3	1,963.7	1,782.8	1,732.9

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	Extreme Second Feet High	Extreme Second Feet Low Day	Extreme Second Feet Low	Average Second Feet	Total Acre Feet	Period 1932-1943 ⊕ Acre Feet Normal	Maximum	Minimum
Jan.	1.40	1.10	7	91.4	3	61.8	81.5	5,010	4,199	7,070	934
Feb.	1.34	.93	1	85.8	21	45.3	55.1	3,060	2,763	5,490	487
Mar.	2.77	.94	24	282	20	44.4	50.7	3,120	2,688	4,190	1,300
Apr.	7.35	.97	8	3,000	30	49.6	64.3	3,830	2,914	* 6,120	566
May	8.42	.85	22	2,830	‡17	40.2	90.1	5,540	4,181	6,700	2,310
June	* 8.50	.93	5	* 2,890	28	44.5	* 84.8	* 5,040	7,028	* 47,900	1,440
July	*13.60	1.00	11	* 8,750	‡ 1	50.0	108	* 6,650	3,536	* 6,650	1,120
Aug.	1.36	.99	10	82.9	‡20	47.9	54.7	3,360	3,302	5,590	1,280
Sept.	5.90	.96	2	1,300	1	45.6	60.6	3,610	5,065	19,100	2,070
Oct.	4.62	1.01	1	780	26	51.1	63.3	3,890	3,792	6,320	1,710
Nov.	2.94	.99	2	332	22	50.0	59.4	3,540	3,228	5,560	526
Dec.	1.83	.96	4	141	2	47.4	55.9	3,440	3,312	5,820	496
Yearly	*13.60	.85		* 8,750		40.2	69.2	50,090	46,008	98,137	22,202

‡ And other days. * Partly estimated.

⊕ The average maximum and minimum discharges for September, October, November and December are for the period 1931 to 1943.

PINTO CREEK STATION NEAR DEL RIO, TEXAS

DESCRIPTION: Water-stage recorder, cable with sit-down cable car equipped for winch and heavy weights, and concrete control dam, 0.6 mile below Del Rio-Eagle Pass highway and 5.5 miles above confluence with the Rio Grande. This creek enters the Rio Grande 717.7 river miles below the American Dam at El Paso, Texas. Zero of gage is 854.61 feet above mean sea level, United States Coast and Geodetic Survey datum. Also a series of pipe gages (high stage indicating gages) 750 feet upstream from the gage well.

RECORDS: Based upon 15 meter measurements during the year and stable rating curve. 1943 records good. Records available: November 1928 to December 31, 1943.

REMARKS: The flow of this spring-fed creek is modified by small irrigation diversions above the gaging station.

EXTREME FLOWS: The greatest recorded flow was on August 31, 1932, when the extreme gage height was 21.08 feet and the extreme flow 54,650 second feet. This corresponds to a flood flow of 239 second feet per square mile of watershed. This spring-fed creek is often dry.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	5.1	2.0	2.2	‡ .5	3.5	0	0	966	240	2.2	2.3
2	0	5.0	2.0	2.2	‡ .5	2.7	0	0	83.8	84.9	8.0	2.3
3	0	4.8	2.0	2.2	‡ .3	2.4	0	0	36.7	34.3	2.4	2.3
4	0	2.8	1.7	1.6	‡ .2	35.6	0	0	5.3	11.1	2.3	2.3
5	0	2.6	1.7	1.3	‡ .1	172	0	0	2.5	6.5	2.3	2.8
6	0	2.5	2.0	1.2	0	36.7	0	0	2.1	3.0	2.4	2.6
7	0	2.4	2.1	1.1	0	8.5	0	0	1.9	2.5	2.2	2.4
8	0	2.2	1.8	964	0	2.9	0	0	1.8	2.4	2.1	2.4
9	0	2.4	1.5	112	0	2.6	0	0	6.2	2.3	2.1	2.4
10	0	2.4	1.8	49.3	39.3	2.4	0	0	2.1	2.2	2.1	2.4
11	0	2.5	1.8	6.3	19.1	2.3	0	0	1.4	2.2	2.1	2.4
12	0	2.3	2.1	5.8	2.5	2.2	0	0	1.2	2.2	2.1	2.3
13	1.2	2.5	2.1	5.6	1.6	2.1	0	0	1.0	2.2	2.1	2.2
14	1.7	2.5	1.9	5.1	1.2	2.1	0	0	.8	2.2	2.1	2.3
15	2.3	2.5	1.6	3.8	.8	2.1	0	0	.6	2.1	2.2	2.3
16	* 2.6	2.5	1.9	3.8	.5	2.1	0	0	10.9	2.1	7.3	2.4
17	* 2.6	2.6	1.9	5.8	0	2.1	0	0	13.5	2.1	2.3	2.4
18	* 2.6	2.6	1.6	3.8	0	2.0	0	0	2.1	2.2	2.2	2.4
19	* 2.6	2.6	1.8	3.3	0	2.0	0	0	1.7	2.2	2.1	2.4
20	* 2.6	2.6	1.8	1.6	0	2.0	0	0	2.0	2.2	2.1	2.4
21	* 2.8	2.6	1.5	1.6	66.4	1.9	0	0	2.1	2.2	2.1	2.4
22	3.0	2.6	1.5	1.3	1,210	* 4.9	0	0	2.1	2.2	2.1	2.4
23	3.3	2.7	1.4	1.0	61.4	2.2	0	0	2.0	2.2	2.1	2.5
24	3.6	2.4	2.0	1.0	25.1	1.8	0	0	2.0	2.2	2.1	2.6
25	3.7	2.4	7.2	.8	7.0	1.7	0	0	1.9	2.2	2.1	2.6
26	3.4	2.2	3.6	.8	5.6	1.6	0	0	2.4	2.2	2.1	2.6
27	3.5	2.2	2.4	.8	5.2	1.4	0	0	2.7	2.2	2.7	2.6
28	3.9	1.9	2.2	.8	4.6	1.2	0	0	2.1	2.2	2.9	2.5
29	4.1		2.2	.7	10.4	.9	0	0	1.9	2.2	2.4	2.5
30	4.3		2.2	.7	12.3	‡ .5	0	0	1.8	2.2	2.3	2.5
31	4.3		2.2		5.5		0	0		2.2		2.5
Sum	58.1	76.4	65.5	1,191.5	1,480.1	308.4	0	0	1,164.6	435.1	77.6	75.4

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1929-1943 Acre Feet Normal	Maximum	Minimum
Jan.	2.57		31	4.7	‡ 1	0	1.9	115	497	2,110	0
Feb.	2.59	2.42	1	5.1	28	1.9	2.7	152	436	1,860	8.3
Mar.	2.79	2.39	25	10.5	‡22	1.5	2.1	130	601	2,500	4.3
Apr.	7.95	2.33	8	2,640	30	.6	39.7	2,360	897	3,600	43.0
May	8.21	1.64	22	3,380	‡20	0	47.7	2,940	2,574	20,500	28.0
June	5.21	2.03	5	806	30	0	10.3	612	2,474	30,000	0
July			‡ 1	0	‡ 1	0	0	0	3,614	30,000	0
Aug.			‡ 1	0	‡ 1	0	0	0	3,592	48,700	0
Sept.	8.02	1.97	1	3,150	16	0	38.8	2,310	2,313	17,300	0
Oct.	6.44	2.44	1	1,600	1	1.8	14.0	863	969	4,000	0
Nov.	3.64	2.48	2	45.8	8	2.1	2.6	154	442	2,150	0
Dec.	2.59	2.50	5	2.9	13	2.2	2.4	150	538 ϕ	2,180 ϕ	0 ϕ
Yearly	8.21			3,380		0	13.5	9,786	18,947	#76,259.3	2,651.4 #

‡ And other days. * Partly estimated. ‡ Estimated. # Partly estimated for the period 1924-1943.
ϕ For the period 1928-1943

RIO SAN DIEGO STATION AT JIMENEZ, COAHUILA

DESCRIPTION: Water-stage recorder and cable with sit-down cable car. Masonry and concrete Cipoletti weir control for measuring discharges up to 700 second feet. The station is located 4.4 miles west of Jimenez, Coahuila, and five miles above the confluence with the Rio Grande. This stream enters the Rio Grande 722.4 river miles below the American Dam at El Paso, Texas. Zero of the gage is 828.90 feet U.S.C. & G.S. mean sea level datum.

RECORDS: Based upon the weir discharge table and the 1942 discharge curve. 1943 records good. Records available: 1924 to 1943. The records from 1922 to September 1932 are considered doubtful.

REMARKS: The weir control at this station was constructed in November 1932. From 1924 to 1932 there was a staff-gage at Paso del Salto, 3.1 miles upstream from the present station. The flow of this spring-fed stream is modified by two small storage reservoirs, San Miguel and Centenario on the Irrigation District of San Carlos, Coahuila, and by irrigation of Dolores Hacienda just above this station. One-fourth mile down stream from this gaging station, water was diverted for irrigating about 1,236 acres of land in the Jimenez Community.

EXTREME FLOWS: The highest determined flow was on September 18, 1941, when a peak flow of about 75,220 second feet passed this station with a gage height of 20.96 feet on the present gage. According to local inhabitants the water level at the present gage reached the same height in 1905 as on September 18, 1941, but because of channel conditions it is thought that the maximum flow in 1905 was less than in 1941, even though the gage heights were the same. The river was dry on several occasions from April to June 1939.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	74.9	52.3	52.3	42.0	52.3	175	114	52.3	42.0	143	52.3	87.2
2	74.9	52.3	42.0	42.0	52.3	159	114	63.2	42.0	87.2	258	87.2
3	74.9	52.3	42.0	42.0	42.0	143	100	63.2	42.0	87.2	100	87.2
4	74.9	52.3	52.3	42.0	42.0	297	100	63.2	143	87.2	100	87.2
5	74.8	52.3	52.3	32.0	42.0	346	100	63.2	63.2	87.2	87.2	87.2
6	74.9	52.3	52.3	42.0	42.0	192	100	63.2	52.3	87.2	87.2	87.2
7	74.9	52.3	42.0	52.3	42.0	159	100	63.2	63.2	87.2	87.2	87.2
8	74.9	52.3	42.0	227	42.0	143	87.2	63.2	63.2	87.2	74.9	87.2
9	74.9	52.3	42.0	114	52.3	129	87.2	63.2	52.3	87.2	74.9	87.2
10	63.2	52.3	42.0	74.9	87.2	114	87.2	52.3	52.3	74.9	74.9	87.2
11	74.8	52.3	42.0	63.2	63.2	114	209	42.0	52.3	87.2	74.9	87.2
12	74.9	52.3	42.0	74.9	63.2	114	368	42.0	63.2	87.2	74.9	87.2
13	63.2	52.3	42.0	74.9	42.0	114	227	42.0	63.2	87.2	74.9	87.2
14	63.2	52.3	42.0	74.9	42.0	129	209	52.3	63.2	87.2	74.9	87.2
15	74.9	52.3	42.0	74.9	42.0	129	209	42.0	63.2	87.2	74.9	74.9
16	74.9	52.3	42.0	63.2	42.0	129	192	52.3	52.3	87.2	74.9	74.9
17	74.8	52.3	42.0	128	42.0	129	175	52.3	74.9	87.2	74.9	74.9
18	63.2	42.0	42.0	63.2	42.0	114	175	52.3	74.9	87.2	74.9	74.9
19	63.2	42.0	42.0	63.2	42.0	100	192	42.0	74.9	87.2	74.9	74.9
20	63.2	42.0	52.3	63.2	42.0	87.2	175	42.0	74.9	87.2	74.9	74.9
21	63.2	42.0	52.3	63.2	114	100	175	42.0	74.9	74.9	74.9	87.2
22	63.2	52.3	52.3	63.2	501	114	175	42.0	74.9	74.9	74.9	74.9
23	42.0	52.3	42.0	63.2	264	114	159	42.0	63.2	74.9	74.9	74.9
24	42.0	52.3	52.3	63.2	209	114	129	42.0	63.2	74.9	87.2	74.9
25	52.3	52.3	52.3	63.2	227	114	114	42.0	63.2	74.9	74.9	74.9
26	52.3	52.3	42.0	52.3	227	143	87.2	42.0	63.2	63.2	74.9	74.9
27	52.3	52.3	42.0	52.3	227	143	87.2	42.0	74.9	42.0	74.9	74.9
28	52.3	52.3	52.3	52.3	192	143	63.2	42.0	74.9	42.0	74.9	74.9
29	52.3		52.3	52.3	175	128	63.2	42.0	74.9	52.3	87.2	74.9
30	52.3		52.3	52.3	209	114	52.3	52.3	74.9	63.2	87.2	74.9
31	52.3		42.0		175		52.3	52.3		52.3		74.9
Sum	2,004.0	1,423.2	1,425.6	2,031.3	3,478.5	4,243.2	4,278.0	1,554.0	1,974.7	2,477.0	2,531.5	2,506.4

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1933-1943 Acre Feet Average	Maximum	Minimum
Jan.	2.92	2.82	#	74.9	#	42.0	64.6	3,970	8,561	36,430	2,910
Feb.	2.85	2.82	#	52.3	#	42.0	50.8	2,820	5,692	25,760	1,970
Mar.	2.89	2.82	24	63.2	#	42.0	46.0	2,830	5,265	21,500	2,140
Apr.	3.77	2.79	8	586	5	32.8	67.7	4,030	5,905	16,820	1,110
May	4.76	2.82	22	1,030	#	42.0	112	6,900	16,791	120,000	1,290
June	5.68	2.95	4	1,900	20	87.2	141	8,420	11,000	62,240	1,420
July	4.36	2.85	11	953	#	52.3	138	8,490	8,264	21,550	1,210
Aug.	2.89	2.82	#	63.2	#	42.0	50.1	3,080	7,473	19,950	2,030
Sept.	4.20	2.82	4	862	#	42.0	65.8	3,920	19,803	84,620	2,210
Oct.	3.61	2.82	1	459	#	42.0	79.9	4,910	⊕ 24,472	⊕ 146,640	⊕ 1,950
Nov.	4.04	2.85	2	773	1	52.3	84.4	5,020	⊕ 15,012	⊕ 68,290	⊕ 1,960
Dec.	2.95	2.92	#	87.2	#	74.9	80.9	4,970	⊕ 9,407	⊕ 45,160	⊕ 2,060
Yearly	5.68	2.79		1,900		32.8	82.0	59,360	137,635	381,720	27,460

Various days of the month. ⊕ Period 1932-1943.

RIO SAN RODRIGO STATION NEAR EL MORAL, COAHUILA

DESCRIPTION: Water-stage recorder and cable with sit-down cable car. Reinforced concrete control weir for measuring the flow up to 177 second feet. This station is located 10.6 miles west of the town of El Moral, Coahuila, 19.3 miles northwest from Piedras Negras and 11.2 miles above the confluence with the Rio Grande. Zero of the gage is 879.95 feet above sea level, U.S.C. & G.S. datum. This stream enters the Rio Grande 735.4 river miles below the American Dam at El Paso, Texas.

RECORDS: Based upon the 1942 rating table, the lower portion of which conforms to the weir table. The upper portion of the rating table is based upon meter measurements. 1943 records good. Records available: 1922 to 1943. The records from 1922 to September 1932 are considered doubtful.

REMARKS: From 1922 to 1932 there were made daily 3 staff-gage readings at this station, on the same gage used at this station prior to December 1938. This station was constructed in October 1932, at a point 1,640 feet upstream from Paso de las Mulas. In December 1938, the station was moved 3,300 feet downstream to the present site. The flow of this spring-fed river was modified by irrigation diversions above and below this station.

EXTREME FLOWS: The greatest recorded flow was on September 7, 1932, when the extreme gage height was 16.08 feet and the extreme flow 81,200 second feet. The river is sometimes dry.

CORRECTION: The elevation of the zero of the gage was reported erroneously in Water Bulletins Nos. 8, 9, 10 and 11. The correct elevation is shown above. For corrections to the daily discharge record for 1941 at this station see the following page.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	26.1	26.1	21.2	12.0	2.1	31.4	87.6	79.4	31.4	79.4	57.2	64.3
2	31.4	31.4	16.2	12.0	4.9	26.1	79.5	79.4	80.9	71.7	57.2	57.2
3	37.4	26.1	21.2	12.0	4.9	21.2	71.7	71.7	57.2	64.3	57.2	43.8
4	31.4	26.1	21.2	12.0	4.9	590	71.7	71.7	77.7	64.3	50.1	50.1
5	31.4	26.1	21.2	12.0	2.1	512	71.7	71.7	50.1	64.3	50.1	50.1
6	37.4	26.1	21.2	12.0	2.1	64.3	71.7	64.3	50.1	64.3	50.1	50.1
7	31.4	21.2	21.2	8.1	2.1	43.8	71.7	64.3	43.8	64.3	50.1	50.1
8	31.4	21.2	21.2	26.1	4.9	37.4	71.7	64.3	43.8	64.3	50.1	43.8
9	31.4	21.2	21.2	21.2	21.2	48.0	71.7	64.3	57.2	64.3	50.1	43.8
10	31.4	21.2	21.2	16.3	12.0	463	71.7	64.3	64.3	64.3	50.1	43.8
11	31.4	21.2	21.2	12.0	12.0	431	434	64.3	57.2	71.7	50.1	43.8
12	26.1	21.2	16.2	12.0	8.1	339	104	64.3	50.1	71.7	43.8	43.8
13	26.1	21.2	16.2	12.0	4.9	256	96.0	64.3	50.1	64.3	43.8	37.4
14	37.4	21.2	16.2	8.1	4.9	195	87.6	64.3	50.1	57.2	43.8	37.4
15	31.4	21.2	16.2	8.1	4.9	162	87.6	64.3	50.1	57.2	43.8	31.4
16	31.4	21.2	16.2	12.0	4.9	152	79.4	64.3	57.2	57.2	50.1	31.4
17	31.4	21.2	16.2	12.0	4.9	123	79.4	64.3	57.2	57.2	50.1	31.4
18	31.4	21.2	16.2	12.0	2.1	104	79.4	50.1	57.2	57.2	50.1	37.4
19	31.4	21.2	12.0	12.0	2.1	96.0	71.7	50.1	50.1	57.2	50.1	37.4
20	31.4	21.2	16.2	8.1	2.1	87.6	79.4	43.8	50.1	57.2	43.8	31.4
21	31.4	21.2	16.2	5.0	126	79.4	79.4	43.8	50.1	57.2	43.8	31.4
22	31.4	21.2	16.2	8.1	939	71.7	79.4	50.1	50.1	57.2	43.8	37.4
23	31.4	21.2	16.2	5.0	184	142	79.4	50.1	57.2	57.2	43.8	43.8
24	31.4	21.2	12.0	4.9	79.4	530	79.4	43.8	57.2	57.2	50.1	43.8
25	26.1	21.2	16.2	4.9	37.4	367	79.4	43.8	57.2	57.2	50.1	43.8
26	26.1	21.2	16.2	5.0	37.4	284	79.4	43.8	87.6	57.2	50.1	43.8
27	26.1	21.2	16.2	5.0	26.1	206	87.6	43.8	96.0	57.2	57.2	43.8
28	31.4	21.2	16.2	2.1	37.4	162	79.4	37.4	79.4	57.2	57.2	43.8
29	26.1		16.2	2.1	50.1	122	79.4	37.4	71.7	57.2	57.2	43.8
30	26.1		16.2	2.1	64.3	104	79.4	31.4	71.7	57.2	57.2	43.8
31	26.1		16.2		37.4		79.4	31.4		57.2		43.8
Sum	943.7	628.3	543.8	296.2	1,730.6	5,850.9	2,820.8	1,746.3	1,764.1	1,902.8	1,502.3	1,322.9

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1932-1943 Acre Feet Normal	Maximum	Minimum
Jan.	.33	.20	#	43.8	#	21.2	30.4	1,870	3,636	14,850	171
Feb.	.26	.16	#	31.4	#	16.2	22.4	1,250	2,612	11,580	555
Mar.	.20	.13	#	21.2	#	12.0	17.5	1,080	2,539	9,900	576
Apr.	.23	.03	#	26.1	#	2.1	9.9	588	2,139	6,870	382
May	4.00	0	22	2,280	1	0	55.8	3,430	5,857	42,330	58.0
June	6.20	.16	4	4,660	4	16.2	195	11,610	5,687	37,630	30.0
July	5.61	.46	11	3,960	#	71.7	91.0	5,600	4,022	12,170	0
Aug.	.49	.23	#	79.5	31	26.1	56.3	3,460	3,669	13,160	39.0
Sept.	1.25	.20	2	339	1	21.2	58.8	3,500	28,831	* 253,960	471
Oct.	.56	.36	1	96.1	6	50.1	61.4	3,770	10,931	81,360	815
Nov.	.43	.33	#	64.3	#	43.8	50.1	2,980	5,192	24,450	535
Dec.	.43	.23	1	64.3	#	26.1	42.7	2,620	4,254	19,060	131
Yearly	6.20	0		4,660		0	57.7	41,758	79,369	414,310	7,436

* Partly estimated. # Various days of the month.

RIO SAN RODRIGO STATION NEAR EL MORAL, COAHUILA

DESCRIPTION: See preceding page.

RECORDS: See preceding page.

REMARKS: See preceding page.

EXTREME FLOWS: See preceding page.

CORRECTION: The record of discharges for this station for the year 1941 as published in Water Bulletin No. 11 was erroneous due to errors caused by the automatic recording gage. The following record is correct.

Mean Daily Discharge in Second Feet 1941 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	31.4	43.8	31.4	26.1	43.8	26.1	123	87.6	71.7	352	132	122
2	31.4	43.8	26.1	21.2	43.8	26.1	96.1	79.5	71.7	325	132	122
3	31.4	43.8	26.1	21.2	43.8	26.1	79.5	79.5	71.7	325	132	132
4	31.4	43.8	26.1	21.2	37.4	31.4	71.7	79.5	71.7	311	132	132
5	31.4	43.8	26.1	21.2	31.4	31.4	71.7	79.5	71.7	284	123	122
6	31.4	37.4	26.1	21.2	26.1	31.4	64.3	79.5	71.7	256	132	123
7	31.4	37.4	21.2	21.2	26.1	26.1	64.3	79.5	71.7	242	132	123
8	31.4	37.4	26.1	21.2	26.1	26.1	57.2	79.5	64.3	218	132	123
9	31.4	37.4	21.2	21.2	26.1	26.1	57.2	79.5	108	195	132	123
10	31.4	37.4	21.2	21.2	26.1	26.1	50.1	79.5	113	184	132	123
11	31.4	31.4	21.2	21.2	26.1	31.4	64.3	79.5	96.1	173	132	123
12	31.4	31.4	21.2	21.2	21.2	31.4	64.3	79.5	142	173	132	123
13	31.4	31.4	21.2	16.2	21.2	31.4	64.3	79.5	105	162	132	113
14	31.4	31.4	21.2	16.2	21.2	37.4	296	79.5	96.1	162	132	113
15	31.4	31.4	21.2	16.2	21.2	37.4	113	79.5	87.6	152	132	113
16	31.4	31.4	21.2	16.2	21.2	37.4	96.1	79.5	96.1	152	132	113
17	31.4	31.4	110	16.2	21.2	37.4	96.1	79.5	248	152	132	113
18	31.4	31.4	71.7	16.2	21.2	37.4	87.6	79.5	3,210	142	132	113
19	31.4	31.4	50.1	12.0	21.2	37.4	87.6	71.7	5,650	142	132	113
20	26.1	37.4	43.8	12.0	26.1	37.4	87.6	64.3	3,341	142	132	113
21	26.1	37.4	43.8	12.0	64.3	37.4	87.6	64.3	2,189	142	132	113
22	26.1	37.4	43.8	12.0	105	43.8	87.6	64.3	1,593	142	132	105
23	26.1	37.4	37.4	12.0	64.3	50.1	79.5	57.2	1,190	142	132	105
24	26.1	37.4	37.4	12.0	50.1	64.3	79.5	57.2	876	142	132	96.1
25	31.4	37.4	37.4	16.2	50.1	64.3	79.5	57.2	735	142	132	96.1
26	31.4	37.4	37.4	21.2	43.8	50.1	79.5	57.2	600	142	132	96.1
27	218	31.4	37.4	31.4	37.4	50.1	79.5	64.3	530	142	132	105
28	57.2	31.4	37.4	31.4	31.4	218	79.5	96.1	463	142	132	105
29	43.8		31.4	123	31.4	206	79.5	96.1	417	142	132	105
30	43.8		26.1	71.7	26.1	162	87.6	87.6	381	142	132	105
31	43.8		26.1		26.1		87.6	87.6		142		105
Sum	1,013.2		723.4		1,579.0		2,364.2		5,806		3,531.3	
	1,196.5		1,050.0		1,082.5		2,698.9		22,833.1		3,951	

Month	1941 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1932-1941 Acre Feet Normal	Maximum	Minimum
Jan.	* .95	.23	27	* 230	#	26.1	38.6	* 2,370	3,710	14,850	171
Feb.	.33	.23	#	43.8	#	26.1	36.2	2,010	2,695	11,580	555
Mar.	1.05	.20	17	256	#	21.2	33.9	2,080	2,680	9,900	576
Apr.	1.31	.10	29	367	#	8.1	24.1	1,430	2,179	6,870	382
May	.79	.20	#	162	#	21.2	34.9	2,150	6,450	42,330	58.0
June	1.02	.23	28	242	#	26.1	52.6	3,130	5,583	37,630	30.0
July	3.02	.36	14	1,440	#	50.1	87.1	5,350	4,205	12,170	0
Aug.	.66	.39	28	123	#	57.2	76.3	4,690	3,973	13,160	39.0
Sept.	10.30	.43	18	10,770	#	64.3	761	45,290	33,699	* 253,960	471
Oct.	1.31	.69	1	367	#	132	187	11,520	12,199	81,360	815
Nov.	.72	.66	1	142	4	123	132	7,840	5,561	24,450	535
Dec.	.66	.56	#	123	23	96.1	114	7,000	4,563	19,060	131
Yearly	10.30	.10		10,770		8.1	131	94,860	87,497	414,310	7,436

* Partly estimated. # Various days.

RIO GRANDE AT EAGLE PASS STATION

DESCRIPTION: Water-stage recorder and cable with stand-up cable car and winch located .5 mile above the international highway bridge between Eagle Pass, Texas, and Piedras Negras, Coahuila, and 754.6 river miles below the American Dam at El Paso, Texas. Zero of the gage is 682.91 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based upon 136 meter measurements, 124 by the Mexican and 12 by the United States Section during the year. Computations by shifting channel methods. 1943 records good. Records available: May 1900 to April 1916; November 1923 to December 1943.

REMARKS: The river flow is greatly modified at this station by many irrigation diversions, drainage returns, and large reservoirs in the United States and Mexico. On April 10, 1939, the operation and maintenance of this station was turned over from the United States Section to the Mexican Section of the Commission.

EXTREME FLOWS: The greatest recorded flow was on September 2, 1932, when the extreme gage height was 49.00 feet, discharge 569,000 second feet. (See Special Flood Report 1932 by the United States Section of this Commission). The lowest flow ever recorded was on August 19, 1937 when the extreme gage height was 2.22 feet and the extreme flow 632 second feet. Numerous records of extremes may be found in previous Water Bulletins.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,480	3,160	2,520	2,090	1,380	3,640	2,230	3,990	1,860	8,190	2,810	2,160
2	3,390	3,200	2,520	2,080	1,490	4,170	2,310	3,570	3,140	9,180	8,790	2,150
3	3,300	3,310	2,460	2,060	1,590	3,990	2,170	3,390	2,380	8,580	5,230	2,250
4	3,400	3,280	2,400	1,950	1,480	3,080	2,670	3,740	2,150	7,880	2,810	2,200
5	3,250	3,140	2,450	1,890	1,330	10,730	3,530	3,450	1,740	6,430	2,480	2,300
6	3,250	3,070	2,400	1,840	1,330	4,560	5,510	2,970	1,680	5,690	2,380	2,360
7	3,380	2,950	2,300	1,870	1,410	3,520	6,140	2,690	2,110	5,120	2,230	2,450
8	3,440	2,940	2,310	9,110	1,450	3,020	5,930	2,520	2,400	5,050	2,290	2,440
9	3,310	2,860	2,510	3,640	1,460	2,730	5,260	2,310	2,030	4,800	2,370	2,370
10	3,310	2,830	2,660	2,510	1,830	2,910	5,160	2,230	1,540	4,590	2,290	2,390
11	3,370	2,800	2,650	2,240	2,080	3,160	7,950	2,140	1,490	4,340	2,180	2,300
12	3,430	2,660	2,710	2,070	2,030	3,170	13,770	1,930	1,460	4,030	2,100	2,120
13	3,280	2,680	2,770	2,060	1,660	2,820	5,120	1,830	1,500	3,670	2,060	2,040
14	3,320	2,720	2,710	1,890	1,470	2,650	4,480	1,700	1,510	3,440	2,050	2,230
15	3,170	2,700	2,760	1,780	1,470	2,600	4,030	1,710	1,510	3,410	2,090	2,270
16	3,250	2,730	2,810	1,720	1,380	2,490	8,720	1,720	1,750	2,960	2,450	2,120
17	3,150	2,710	2,810	1,820	2,640	2,670	6,040	1,620	1,750	3,190	2,170	2,320
18	3,050	2,700	2,800	1,710	1,830	2,570	4,200	1,530	1,610	3,290	1,980	2,320
19	2,950	2,630	2,760	1,650	1,540	2,480	3,850	1,480	1,570	3,880	1,890	2,320
20	3,140	2,650	2,610	1,980	1,560	2.710	3,850	1,430	1,480	3,990	1,820	2,210
21	2,980	2,620	2,440	1,960	2,210	3,710	4,030	1,340	1,430	3,920	1,810	2,420
22	3,110	2,760	2,470	1,730	17,760	3,510	5,510	1,340	1,360	3,600	2,090	2,500
23	3,080	2,740	2,350	1,550	9,360	2,990	5,230	1,330	1,370	3,330	2,120	2,570
24	3,220	2,720	2,390	1,590	7,310	2,850	4,480	1,290	1,400	3,370	2,000	2,490
25	3,180	2,650	2,910	1,540	8,720	2,780	5,160	1,290	1,380	3,280	2,000	2,550
26	3,000	2,460	2,510	1,580	5,540	3,000	5,790	1,300	1,810	3,050	1,950	2,440
27	2,830	2,380	2,260	1,520	4,170	2,750	6,430	1,300	1,730	2,970	2,010	2,440
28	2,990	2,430	2,270	1,450	3,920	2,680	7,840	1,300	1,620	2,720	2,170	2,330
29	2,980		2,530	1,470	3,920	2,490	6,820	1,260	2,330	2,640	2,230	2,280
30	2,980		2,360	1,410	3,740	2,300	5,440	1,270	3,400	2,820	2,190	2,500
31	3,100		2,140		3,920		4,730	1,270		2,770		2,440
Sum	99,070	78,480	78,550	63,760	102,980	98,730	164,380	62,240	54,490	136,180	75,040	72,280

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	3.81	3.28	1	3,600	27	2,780	3,200	196,500	189,346	365,000	104,400
Feb.	3.64	2.99	4	3,470	28	2,230	2,800	155,700	156,453	254,250	99,200
Mar.	3.71	2.79	25	3,440	31	2,000	2,530	155,800	153,774	247,440	95,900
Apr.	9.12	2.13	8	21,290	30	1,190	2,130	126,500	143,283	219,000	92,100
May	9.68	2.10	25	32,240	1	1,170	3,320	204,300	260,308	* 869,000	77,500
June	8.27	2.76	5	21,820	20	2,130	3,290	195,800	262,174	1,005,000	113,340
July		2.56	12	⊕ 13,770	3	1,910	5,300	326,000	278,444	* 1,255,000	* 125,000
Aug.	3.87	2.07	1	4,340	23	1,250	2,010	123,500	315,210	* 969,000	123,500
Sept.	4.40	2.07	2	5,760	22	1,240	1,820	108,100	642,218	2,857,410	80,900
Oct.	6.10	2.99	2	10,380	28	2,540	4,390	270,100	469,264	1,680,300	121,000
Nov.	7.51	2.49	2	17,340	20	1,610	2,500	148,800	223,477	512,800	109,000
Dec.	3.31	2.66	23	2,910	16	1,980	2,330	143,400	191,782	369,760	105,620
Yearly	9.68	2.07		32,240		1,170	2,980	2,154,500	3,285,733	6,668,460	1,798,000

⊕ Mean daily. * Partly estimated.

RIO ESCONDIDO STATION AT VILLA FUENTE, COAHUILA

DESCRIPTION: Water-stage recorder and cable with sit-down cable car, located 3.1 miles southwest of the City of Piedras Negras, Coahuila, on the outskirts of Villa de Fuente, 5 miles above the confluence with the Rio Grande and 5.6 miles below the confluence of the Rio San Antonio. This stream enters the Rio Grande 758.2 river miles below the American Dam at El Paso, Texas. Zero of gage is 717.78 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 29 meter measurements. Computations by shifting channel metnods. 1943 records good. Records available: 1922 to 1943.

REMARKS: This station was built in September 1932. From 1922 to 1932 there were made daily 3 staff-gage readings 2,300 feet downstream from the present station, but the results of these readings are doubtful. The elevation of the zero of this old gage was 0.79 foot above zero of the gage at the present station. The flow of this spring-fed stream is modified by irrigation diversions in the drainage basins of the San Antonio and the Escondido.

EXTREME FLOWS: The greatest recorded flow since January 1932 was May 14, 1935, when the extreme gage height was 17.06 feet and the extreme discharge was 17,700 second feet. The lowest recorded flow occurred November 4, 1934, when the extreme gage height was .75 foot and the extreme flow was .35 second foot.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	15.5	11.3	8.1	6.7	5.7	29.7	5.3	4.9	3.9	9.9	4.2	4.2
2	15.5	12.0	8.1	6.7	5.7	18.7	4.9	4.9	4.0	8.5	4.2	4.2
3	15.5	12.0	8.1	6.4	5.7	12.4	4.9	4.9	3.9	7.1	4.3	4.3
4	15.5	11.3	8.1	6.4	5.7	85.8	4.9	4.9	4.0	5.7	4.2	4.2
5	14.5	10.6	7.8	6.4	5.7	738	4.9	4.9	3.9	4.2	4.2	4.2
6	13.1	10.2	7.8	6.4	5.7	43.8	5.7	4.9	4.0	4.2	4.3	4.3
7	13.4	10.2	7.8	6.4	5.3	22.6	5.7	4.6	3.9	4.3	4.2	4.2
8	12.0	10.2	7.8	6.4	5.3	17.0	5.7	4.6	4.0	4.2	4.2	4.2
9	10.9	9.5	7.8	6.4	5.3	14.5	5.7	4.2	5.3	4.2	4.3	4.3
10	9.5	9.9	7.8	6.4	5.3	12.0	5.3	4.2	13.4	4.3	4.2	4.2
11	8.8	9.2	7.8	6.3	5.3	10.9	5.3	4.2	14.8	4.2	4.2	4.2
12	9.5	9.2	7.8	6.4	5.3	8.1	5.7	4.2	14.8	4.2	4.3	4.3
13	9.5	9.2	7.8	6.7	5.3	7.4	5.7	4.2	14.8	4.3	4.2	4.2
14	9.9	8.8	7.8	6.7	5.3	6.4	5.7	4.2	13.4	4.2	4.2	4.2
15	9.9	8.8	7.8	7.1	5.3	6.4	5.6	4.9	9.2	4.2	4.3	4.3
16	10.2	8.1	7.8	7.4	5.3	6.0	5.7	4.3	9.2	4.3	4.2	4.2
17	10.2	9.9	7.8	7.4	4.9	6.0	5.7	4.2	10.9	4.2	4.2	4.2
18	10.6	10.6	7.4	7.8	5.7	5.7	5.6	4.2	10.9	4.2	4.3	4.3
19	11.3	10.9	7.4	7.8	7.1	5.3	5.3	4.3	10.9	4.3	4.2	4.2
20	11.3	11.3	7.4	7.8	8.8	5.3	5.3	4.2	11.0	4.2	4.2	4.2
21	11.7	11.3	7.4	7.4	10.6	4.9	4.9	4.2	10.9	4.2	4.3	4.3
22	11.7	11.6	7.4	7.1	38.1	4.9	4.9	4.3	10.9	4.3	4.2	4.2
23	11.3	11.6	7.1	7.1	23.7	5.3	4.9	4.2	10.9	4.2	4.2	4.2
24	11.3	12.0	7.1	6.7	18.0	5.3	4.9	4.2	10.9	4.2	4.3	4.3
25	11.7	12.0	7.1	6.0	15.5	5.3	4.6	4.2	14.8	4.3	4.2	4.2
26	11.7	10.6	7.1	5.6	12.0	5.3	4.6	4.3	41.0	4.2	4.2	4.2
27	11.7	8.8	7.1	5.6	10.6	5.3	4.6	4.2	14.8	4.2	4.3	4.3
28	11.7	8.1	7.1	5.6	15.9	5.3	4.6	4.2	14.8	4.3	4.2	4.2
29	11.3		7.1	5.6	265	5.3	4.6	4.2	13.4	4.2	4.2	4.2
30	11.3		7.1	5.6	157	5.3	4.9	4.3	12.4	4.2	4.3	4.3
31	11.3		7.0		109		4.9	4.2		4.3		4.2
Sum	363.3	289.2	234.6	198.3	789.1	1,114.2	161.0	136.4	325.0	145.5	127.0	131.2

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1932-1943 Acre Feet Normal	Maximum	Minimum
Jan.	2.23	2.10	22	11.7	11	8.8	11.7	721	3,173	15,990	375
Feb.	2.26	2.07	17	11.7	28	8.1	10.3	574	1,838	9,990	179
Mar.	2.07	2.03	#	8.1	#	7.1	7.6	465	1,674	6,910	219
Apr.	2.07	2.03	19	7.8	#	5.7	6.6	393	1,968	5,360	393
May	6.00	2.00	29	1,100	16	4.9	25.5	1,570	4,448	23,840	494
June	7.87	2.03	5	1,940	#	4.9	37.1	2,210	3,901	19,730	618
July	2.03	2.00	#	5.7	#	4.6	5.2	319	2,284	9,290	271
Aug.	2.00	1.97	#	4.9	#	4.2	4.4	271	2,184	14,530	174
Sept.	2.95	1.97	26	201	#	3.9	10.8	645	2,950	14,340	186
Oct.	2.13	1.97	1	11.7	#	4.2	4.7	289	4,701	39,790	117
Nov.	1.97	1.97	#	4.2	#	4.2	4.2	252	3,010	25,590	101
Dec.	1.97	1.97	#	4.2	#	4.2	4.2	260	3,062	20,720	260
Yearly	7.87	1.97		1,940		3.9	11.0	7,969	35,193	126,090	7,969

Various days of the month.

RIO GRANDE AT LAREDO STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car. Until May 22, 1942 the water stage recorder was attached to the north abutment of railroad bridge over the Rio Grande between the cities of Laredo, Texas and Nuevo Laredo, Tamaulipas, 884.3 river miles below the American Dam at El Paso, Texas. On June 10, 1942 the water-stage recorder was installed on the downstream side of the first pier of the same bridge on the Mexican side. The elevation of the zero of the gage was not changed. Zero of the gage at the recorder is at elevation 351.50 feet. The cable is located 2 miles upstream from the railroad bridge. Zero of the gage at the cable is elevation 353.15 feet. All gage elevations are on U.S.C. & G.S. sea level datum.

RECORDS: Based upon 151 meter measurements, 149 by the Mexican and 2 by the United States Section. Computations by shifting channel methods. 1943 records good. Records available: May 1900 to March 1914 and from October 1922 to December 1943.

REMARKS: The river flow at this station is modified by many irrigation diversions, drainage returns, and large reservoirs in the United States and Mexico.

EXTREME FLOWS: The greatest recorded flow at this station was on September 3, 1932, when the peak gage reading was 52.20 feet, the flow being 402,000 second feet. On June 20, 1938, a minimum flow of 777 second feet was reached with a gage height of 4.04 feet. Numerous records of extreme flows may be found in previous Water Bulletins.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,920	2,430	2,600	2,620	1,540	4,590	2,610	4,590	1,260	3,020	2,910	2,400
2	3,990	2,560	2,490	2,490	1,470	3,710	2,390	4,060	1,530	9,080	2,800	2,330
3	4,060	2,520	2,730	2,390	1,460	3,920	2,370	3,850	2,670	9,750	6,990	2,440
4	3,960	2,640	2,670	2,360	1,500	4,060	2,400	3,470	4,660	9,500	6,850	2,280
5	3,740	2,770	2,730	2,260	1,680	25,990	2,430	3,400	2,430	8,970	3,600	2,310
6	3,810	3,080	2,730	2,150	1,590	20,090	2,780	3,670	2,200	7,200	2,930	2,340
7	3,670	3,230	2,670	2,100	1,730	8,480	4,870	3,140	1,890	6,360	2,740	2,390
8	3,670	3,450	2,670	2,140	1,520	4,590	5,720	2,800	1,940	5,650	2,630	2,520
9	3,710	3,380	2,600	7,200	1,580	3,430	6,110	2,630	2,490	5,190	2,410	2,540
10	3,600	3,400	2,600	5,760	1,550	3,130	5,610	2,500	2,770	4,840	2,450	2,500
11	3,570	3,180	2,670	3,420	1,550	3,030	6,640	2,420	2,540	4,770	2,400	2,460
12	3,480	3,120	2,790	2,670	1,840	3,050	8,760	2,320	2,090	4,380	2,280	2,410
13	3,710	3,120	2,840	2,330	2,150	3,430	15,190	2,240	1,850	4,130	2,290	2,370
14	3,670	2,960	2,890	2,190	2,080	3,210	6,390	2,070	1,710	3,960	2,300	2,320
15	3,710	3,040	2,950	2,050	1,690	2,810	4,910	2,010	1,670	3,810	2,250	2,280
16	3,740	3,000	2,990	2,020	1,490	2,790	4,240	1,900	1,680	3,640	2,220	2,360
17	3,780	3,040	2,960	1,960	1,460	2,890	7,030	1,780	2,340	3,480	2,270	2,390
18	3,710	2,970	2,920	1,900	1,450	3,000	6,710	1,730	2,080	3,180	2,530	2,390
19	3,570	2,910	2,960	2,000	2,560	2,840	4,870	1,700	1,830	3,530	2,270	2,590
20	3,340	2,950	2,860	1,890	2,090	2,560	3,710	1,710	1,740	3,670	2,100	2,650
21	3,320	2,900	2,690	1,830	1,850	2,360	4,910	1,530	1,650	4,200	2,100	2,630
22	3,530	2,930	2,530	2,140	1,660	3,070	4,310	1,490	1,560	3,990	2,000	2,600
23	3,430	3,050	2,380	2,180	14,370	3,670	4,940	1,370	1,590	3,990	2,000	2,730
24	3,340	3,160	2,410	1,850	9,610	3,360	5,510	1,250	1,560	3,710	2,260	2,740
25	3,400	3,010	2,550	1,640	7,730	2,910	4,240	1,290	1,490	3,460	2,250	2,840
26	3,460	2,940	2,630	1,630	9,290	2,910	4,870	1,260	1,500	3,510	2,080	2,750
27	3,370	2,960	3,150	1,610	6,220	2,830	5,690	1,210	1,520	3,410	2,070	2,850
28	2,850	2,870	2,830	1,640	4,520	2,980	6,820	1,210	2,390	3,080	2,070	2,680
29	2,420		2,680	1,600	4,590	2,760	7,380	1,210	1,970	2,830	2,070	2,650
30	2,500		2,590	1,550	5,970	2,810	6,530	1,270	1,780	2,720	2,170	2,600
31	2,460		2,800		6,500		5,260	1,300		2,810		2,680
Sum	108,490	83,570	84,740	71,570	106,290	141,260	166,200	68,380	60,380	145,820	80,290	78,020

Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet		
			High		Low						
	High	Low	Day		Day				Normal	Maximum	Minimum
Jan.	5.71	5.38	3	4,170	29	2,420	3,500	215,200	188,700	351,700	113,600
Feb.	5.58	5.12	8	3,530	28	2,800	2,980	165,800	154,930	237,400	99,400
Mar.	5.54	5.05	27	3,450	23	2,330	2,730	168,100	152,555	223,000	95,700
Apr.	8.66	4.46	9	14,130	30	1,550	2,390	142,000	151,445	401,000	95,600
May	10.66	4.36	23	22,140	3	1,370	3,430	210,800	295,755	906,200	112,700
June	14.76	5.02	5	50,500	22	2,280	4,710	280,200	306,135	1,390,200	89,200
July	10.47	4.82	13	25,180	3	2,250	5,360	329,700	295,030	1,250,200	128,800
Aug.	6.17	4.13	1	5,010	28	1,110	2,210	135,600	308,610	888,200	127,000
Sept.	6.50	4.20	4	5,860	1	1,260	2,010	119,800	680,785	3,116,700	87,300
Oct.	7.87	4.63	2	10,520	1	1,740	4,700	289,200	510,810	2,071,600	125,800
Nov.	8.10	4.72	3	11,090	23	1,940	2,680	159,300	230,015	570,800	122,100
Dec.	5.28	4.92	25	2,910	15	2,110	2,520	154,800	193,965	352,700	106,700
Yearly	14.76	4.13		50,500		1,110	3,270	2,370,500	3,468,735	7,310,300	1,862,800

RIO SALADO STATION AT CD. GUERRERO, TAMAULIPAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and two reinforced concrete Cipoletti weirs, with a combined capacity of 636 second feet. These weirs were constructed in December 1938. This station is located at the place called "El Cable" about 6.2 miles above the confluence of the Rio Salado with the Rio Grande and 2 miles southwest of Ciudad Guerrero, Tamaulipas. This stream enters the Rio Grande 946.1 river miles below the American Dam at El Paso, Texas. Zero of gage is 265.74 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 178 meter measurements during the year and the weir discharge records. Computations by shifting channel methods for flow greater than 636 second feet. 1943 records good. Records available: 1901 to 1912; 1923 to 1943.

REMARKS: This station was entirely rebuilt by the Mexican Section of this Commission in December 1932, and an automatic water-stage recorder was installed. Prior to 1932, 3 gage readings were made here daily. The flow of the Rio Salado was greatly modified by the Don Martin reservoir, which forms a part of the Irrigation System of the Rio Salado, and by irrigation diversions above this station.

EXTREME FLOWS: The greatest recorded flow at this station was on September 7, 1933, when an extreme gage height of 18.86 feet was reached with a corresponding discharge of 43,800 second feet. The stream is sometimes dry. Numerous extremes may be found in previous Water Bulletins.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	12.7	22.2	11.3	31.1	8.5	2,480	14.5	35.7	0	175	26.5	24.4
2	12.7	22.2	11.3	26.5	6.7	897	12.7	24.4	18.4	1,600	38.1	22.2
3	14.5	22.2	11.3	22.2	5.3	371	11.3	18.4	3,290	1,090	159	278
4	335	20.5	11.3	18.4	3.9	220	11.3	14.5	1,090	611	703	841
5	175	20.5	11.3	16.6	2.8	197	12.7	18.4	277	388	227	244
6	79.8	20.5	11.3	12.7	8.5	212	12.7	18.4	264	235	113	108
7	56.8	20.5	11.3	12.7	142	126	12.7	14.5	420	156	75.6	63.2
8	43.4	18.4	12.7	14.5	1,370	388	12.7	12.7	388	113	57.2	43.4
9	43.4	18.4	12.7	12.7	1,730	1,450	11.3	9.9	2,080	113	40.6	35.7
10	54.4	18.4	12.7	12.7	795	1,420	11.3	8.5	2,010	1,910	31.1	31.1
11	48.7	16.6	14.5	11.3	313	727	11.3	6.7	840	1,050	26.5	26.5
12	40.6	16.6	16.6	11.3	143	399	734	5.3	1,800	812	22.2	24.4
13	35.7	16.6	18.4	9.9	88.3	252	929	3.9	816	473	20.5	24.4
14	43.4	16.6	18.4	9.9	63.2	169	540	3.9	331	260	18.4	22.2
15	40.6	16.6	16.6	8.5	45.9	119	162	2.8	204	183	18.4	26.5
16	35.7	16.6	16.6	8.5	35.7	84.0	149	2.8	162	143	18.4	33.2
17	33.2	16.6	14.5	6.7	28.6	66.0	143	1.8	156	119	31.1	33.2
18	28.6	14.5	14.5	8.5	24.4	136	92.9	1.8	66.0	103	130	38.1
19	26.5	14.5	14.5	6.7	20.5	103	79.8	.7	48.7	88.3	325	33.2
20	22.2	14.5	14.5	8.5	16.6	60.0	57.2	.7	38.1	84.0	277	28.6
21	20.5	16.6	12.7	9.9	16.6	38.1	40.6	0	92.9	75.6	156	24.4
22	18.4	16.6	11.3	9.9	14.5	31.1	31.3	0	169	69.2	97.8	24.4
23	18.4	16.6	11.3	8.5	240	24.4	24.4	0	108	63.2	72.4	22.2
24	18.4	14.5	11.3	8.5	4,030	20.5	20.5	0	79.8	57.2	57.2	20.5
25	20.5	14.5	16.6	6.7	3,850	16.6	16.6	0	1,900	48.7	45.9	20.5
26	20.5	14.5	16.6	16.6	1,670	16.6	14.5	0	1,100	40.6	40.6	20.5
27	20.5	12.7	18.4	22.2	441	16.6	12.7	0	360	38.1	38.1	24.4
28	20.5	12.7	26.5	16.6	220	20.5	12.7	0	252	33.2	33.2	24.4
29	22.2		48.7	12.7	175	18.4	11.3	0	175	31.1	28.6	24.4
30	20.5		48.7	9.9	108	14.5	72.0	0	1,160	28.6	26.5	22.2
31	20.5		40.6		75.6		92.9	0		26.5		22.2
Sum	1,403.8	482.2	539.0	391.4	15,687.6	10,093.3	3,370.7	205.8	19,695.9	10,218.3	2,954.9	2,231.4

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	4.04	1.64	4	441	#	12.7	45.3	2,780	18,024	144,110	0
Feb.	1.80	1.64	#	22.2	#	12.7	17.2	956	12,588	98,520	0
Mar.	2.23	1.61	29	54.4	#	11.3	17.4	1,070	12,924	95,740	52.0
Apr.	2.00	1.51	1	35.7	#	6.7	13.0	776	12,918	54,500	56.4
May	8.43	1.38	24	5,190	6	1.8	506	31,100	45,409	* 253,000	5,110
June	7.19	1.67	1	3,570	#	14.5	336	20,000	40,819	192,000	1,620
July	6.92	1.61	13	3,080	#	11.3	109	6,690	21,674	100,000	228
Aug.	2.10	1.05	1	43.4	#	0	6.6	408	17,465	67,200	81.0
Sept.	8.99	1.02	9	6,070	1	0	657	39,100	96,336	600,000	3,310
Oct.	6.79	1.87	2	2,690	31	26.5	330	20,300	75,999	673,070	1,710
Nov.	5.38	1.71	4	1,180	15	16.6	98.5	5,860	27,352	248,590	246
Dec.	5.94	1.77	4	1,570	#	20.5	72.0	4,430	19,904	198,160	46.0
Yearly	8.99	1.02		6,070		0	184	133,470	401,412	1,350,260	101,770

* Partly estimated. # Various days of the month.

RIO GRANDE AT ZAPATA STATION

DESCRIPTION: Water-stage recorder and cable with stand-up cable car and winch, located about 3 miles below the town of Zapata, Texas, 7.5 miles northeast of Guerrero, Tamaulipas, 1.4 miles below the confluence of the Rio Salado with the Rio Grande, and 947.5 river miles below the American Dam at El Paso, Texas. Zero of the gage is at mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 62 meter measurements during the year, 51 by the United States and 11 by the Mexican Section. Computations by shifting channel methods. 1943 records good. Records available: January 1932 to December 31, 1943.

REMARKS: The river flow is greatly modified at this station by many irrigation diversions, drainage returns, and large reservoirs in the United States and Mexico.

EXTREME FLOWS: The greatest recorded flow was on September 4, 1932, when the extreme gage height was 262.07 feet and the extreme flow was 261,160 second feet. (See Special Flood Report 1932, by the United States Section of this Commission). The lowest flow recorded was on June 21, 1938, when the extreme gage height was 219.62 feet and the extreme flow 888 second feet.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,570	3,230	2,590	2,770	1,520	7,800	2,730	5,280	1,210	1,920	3,040	2,360
2	3,530	3,240	2,570	2,540	1,530	6,040	2,580	4,810	1,530	5,670	3,050	2,400
3	3,640	3,360	2,700	2,370	1,510	4,040	2,440	4,160	8,670	11,100	3,200	6,300
4	4,850	3,420	2,790	2,350	1,520	4,230	2,320	3,860	6,480	10,400	9,920	6,170
5	4,040	3,420	2,820	2,360	1,520	5,940	2,320	3,540	4,950	10,100	6,100	3,350
6	3,710	3,350	2,790	2,340	1,640	32,200	2,240	3,530	2,830	9,070	3,680	2,720
7	3,710	3,390	2,730	2,110	3,490	15,600	2,750	3,740	3,170	7,640	3,150	2,650
8	3,670	3,230	2,670	2,050	2,800	7,740	5,130	3,260	2,480	6,660	2,900	2,750
9	3,720	3,160	2,560	1,960	3,590	5,580	6,020	2,940	5,750	5,750	2,740	2,800
10	3,640	3,150	2,520	8,070	2,440	4,950	6,170	2,730	6,170	7,930	2,500	2,790
11	3,660	3,100	2,550	4,680	1,900	3,860	5,770	2,640	3,750	6,600	2,480	2,730
12	3,610	3,060	2,650	3,250	1,620	3,430	6,860	2,500	4,250	5,710	2,440	2,690
13	3,420	3,040	2,720	2,660	1,750	3,340	16,300	2,350	3,250	5,180	2,340	2,610
14	3,470	3,010	2,800	2,320	2,210	4,720	12,200	2,160	2,460	4,620	2,330	2,570
15	3,500	2,870	2,880	2,140	2,190	3,520	6,540	2,040	2,160	4,220	2,410	2,540
16	3,550	2,880	2,880	2,040	1,760	2,910	4,990	1,980	2,010	4,010	2,680	2,430
17	3,580	2,880	2,860	2,020	1,500	2,810	4,400	1,850	2,120	3,870	2,330	2,550
18	3,610	2,880	2,910	1,910	1,390	3,470	8,640	1,790	2,480	3,680	2,410	2,560
19	3,610	2,900	2,940	1,850	1,380	3,540	6,150	1,750	2,150	3,480	2,860	2,480
20	3,610	2,880	2,970	1,910	2,470	3,140	4,550	1,680	1,890	3,780	2,620	2,650
21	3,350	2,870	2,940	2,020	2,070	2,770	3,880	1,580	1,770	3,950	2,380	2,690
22	3,320	2,800	2,820	1,880	1,580	2,580	4,970	1,510	1,790	4,320	2,280	2,600
23	3,420	2,820	2,700	2,130	9,130	3,510	4,380	1,460	1,770	4,160	2,140	2,600
24	3,300	2,790	2,610	2,130	21,500	3,810	5,250	1,340	1,570	4,090	2,140	2,740
25	3,210	2,870	3,000	1,830	12,600	3,360	5,470	1,280	3,940	3,850	2,330	2,860
26	3,310	2,800	2,800	1,640	10,600	2,970	4,460	1,250	4,040	3,650	2,350	2,860
27	3,380	2,790	2,710	1,530	9,120	2,930	5,420	1,230	2,630	3,580	2,330	2,760
28	3,290	2,680	3,100	1,560	6,040	2,880	6,620	1,210	1,940	3,470	2,310	2,760
29	3,130		2,780	1,570	5,110	2,990	7,250	1,180	2,360	3,280	2,310	2,680
30	3,120		2,580	1,560	4,800	2,740	7,910	1,170	4,150	3,150	2,290	2,660
31	3,240		2,580		7,570		6,540	1,190		3,020		2,630
Sum	109,770	84,870	85,520	71,600	129,850	159,400	173,250	72,990	95,720	161,910	88,040	89,940

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1932-1943 Acre Feet Normal	Maximum	Minimum
Jan.	221.98	221.01	4	6,070	29	3,050	3,540	218,000	210,231	* 484,450	119,000
Feb.	221.15	220.81	4	3,420	28	2,580	3,030	168,000	171,015	* 361,350	111,000
Mar.	221.09	220.74	28	3,310	31	2,450	2,760	170,000	180,339	292,000	124,000
Apr.	223.40	220.26	10	11,700	30	1,540	2,390	142,000	155,098	226,000	110,000
May	225.93	220.13	24	24,400	19	1,380	4,190	258,000	333,829	682,000	134,000
June	228.64	220.72	6	36,400	22	2,540	5,310	316,000	375,788	1,517,000	115,000
July	225.14	220.52	13	19,700	6	2,160	5,590	344,000	381,058	1,238,000	132,000
Aug.	221.80	219.91	1	5,700	31	948	2,350	145,000	314,282	665,000	145,000
Sept.	223.76	219.93	9	13,400	1	877	3,190	189,000	934,014	2,985,330	172,000
Oct.	223.53	220.54	3	11,900	2	1,600	5,220	321,000	678,228	2,396,440	165,000
Nov.	223.98	220.55	4	14,600	24	2,100	2,930	175,000	271,962	748,020	133,000
Dec.	223.41	220.64	3	11,900	1	2,290	2,900	178,000	223,513	591,380	116,000
Yearly	228.64	219.91		36,400		877	3,620	2,624,000	4,229,357	8,038,070	2,231,000

* Partly estimated.

RIO ALAMO STATION AT CD. MIER, TAMAULIPAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and reinforced concrete weir for measurement of flows up to 177 second feet, located about 3.7 miles from the confluence of the Rio Alamo with the Rio Grande and .6 of a mile west of Ciudad Mier, Tamaulipas, Mexico, at a point called "Paso del Contaro". This stream enters the Rio Grande 984.6 river miles below the American Dam near El Paso, Texas. Zero of gage is 187.04 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based upon 10 meter measurments at high flows during the year and the wier discharge tables at low flows. High flow computations by shifting channel methods. 1943 records good. Records available: July 1, 1923 to December 1943.

REMARKS: This station was rebuilt in December 1932. In December 1933, the cable was moved 980 feet upstream. The zero of its staff-gage remained the same as before. The recorder and its gage were not moved. In September 1934, a channel with a small weir of 12 second feet capacity was constructed for measuring very low flows. In December 1938, a new weir of 177 second feet capacity was built to replace the former weir. The flow of this spring-fed stream is modified by small storage and irrigation diversions above this station.

EXTREME FLOWS: The greatest recorded flow occurred on September 7, 1933, with an extreme gage height of 26.9 feet and a corresponding flow of 76,600 second feet. The river is often dry. Numerous records of extreme flow may be found in previous Water Bulletins.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	21.5	33.9	10.6	18.7	2.5	10.6	0	0	0	438	6.0	13.1
2	18.7	31.4	10.6	15.9	2.5	6.0	0	0	178	399	6.0	13.1
3	18.7	27.9	8.1	13.1	2.5	4.2	0	0	2,460	94.3	6.0	278
4	2,476	31.4	10.6	13.1	2.5	2.5	0	0	830	47.3	6.0	208
5	802	31.4	10.6	15.9	2.5	40.6	0	0	109	31.4	8.1	37.1
6	148	27.9	8.1	15.9	2.5	445	0	0	37.1	24.7	10.6	21.5
7	178	27.9	8.1	15.9	1.1	80.5	0	0	18.7	18.7	10.6	15.9
8	94.3	24.7	10.6	13.1	1.1	40.6	0	0	1,700	15.9	10.6	15.9
9	84.8	27.9	8.1	10.6	1.1	18.7	0	0	579	33.5	10.6	15.9
10	67.1	27.9	8.1	8.1	0	8.1	300	0	1,150	3,430	10.6	15.9
11	47.3	24.7	8.1	6.0	0	18.7	61.8	0	1,400	544	10.6	15.9
12	43.8	24.7	8.1	6.0	0	10.6	671	0	459	94.3	13.1	15.9
13	43.8	21.5	8.1	4.2	0	21.5	3,360	0	126	47.3	13.1	15.9
14	43.8	24.7	8.1	4.2	0	15.9	388	0	59.0	33.9	13.1	15.9
15	43.8	24.7	8.1	4.2	0	40.6	104	0	153	27.9	15.9	15.9
16	40.6	24.7	8.1	4.2	0	13.1	54.7	0	378	21.5	18.7	27.9
17	37.1	18.7	8.1	4.2	0	6.0	31.4	0	67.1	18.7	27.9	21.5
18	43.8	15.9	8.1	4.2	0	27.9	15.9	0	63.2	18.7	18.7	24.7
19	43.8	18.7	8.1	4.2	0	21.5	10.6	0	27.9	15.9	15.9	21.5
20	40.6	15.9	6.0	4.2	0	8.1	6.0	0	21.5	15.9	13.1	21.5
21	37.1	15.9	6.0	4.2	0	4.2	4.2	0	15.9	13.1	13.1	21.5
22	40.6	13.1	8.1	4.2	0	4.2	4.2	0	13.1	13.1	10.6	21.5
23	40.6	13.1	6.0	4.2	0	4.2	2.5	0	10.6	13.1	10.6	21.5
24	40.6	10.6	6.0	6.0	8.1	4.2	2.5	0	10.6	10.6	10.6	21.5
25	40.6	10.6	752	4.2	4.2	2.5	2.5	0	153	10.6	10.6	21.5
26	37.1	10.6	99.6	4.2	2.5	1.1	1.1	0	438	8.1	18.7	21.5
27	33.9	10.6	31.4	4.2	2.4	1.1	0	0	374	8.1	37.1	21.5
28	40.6	10.6	21.5	4.2	58.6	1.1	0	0	178	8.1	21.5	21.5
29	37.1		18.7	4.2	946	0	0	0	120	8.1	18.7	21.5
30	37.1		18.7	4.2	116	0	0	0	1,02C	8.1	15.9	21.5
31	37.1		18.7		18.7		0	0		8.1		21.5
Sum	4,759.9	601.6	1,159.1	229.7	1,174.9	863.3	5,020.4	0	12,149.7	5,480.0	412.6	1,067.5

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High	Day	Low	Day	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	6.36	1.61	3,370	4	#	18.7	154	9,440	5,890	34,920	0
Feb.	1.80	1.51	37.1	1	#	10.6	21.5	1,190	3,999	25,550	67.2
Mar.	4.46	1.44	1,210	25	#	6.0	37.4	2,300	3,667	19,830	64.0
Apr.	1.61	1.38	18.7	1	30	2.5	7.7	456	6,731	26,710	86.0
May	5.02	.92	1,750	29	#	0	37.9	2,330	17,191	* 137,000	209
June	3.84	1.31	738	6	#	0	28.8	1,710	16,532	83,240	0
July	6.82	.95	4,100	12	#	0	162	9,960	9,914	37,590	255
Aug.	1.18	-.07	0	#	#	0	0	0	8,282	56,890	0
Sept.	8.14	-.07	6,140	30	#	0	405	24,100	28,338	190,520	* 135
Oct.	6.66	1.48	4,270	10	#	8.1	177	10,870	15,142	51,620	0
Nov.	2.03	1.44	63.2	27	#	6.0	13.8	818	4,374	21,940	0
Dec.	4.23	1.54	1,020	3	#	13.1	34.4	2,120	4,596	* 15,000	124
Yearly	8.14	-.07	6,140		0		90.2	65,294	124,656	316,793	11,908.7

Various days of the month. * Partly estimated.

RIO GRANDE AT ROMA STATION

DESCRIPTION: Water-stage recorder at international bridge between Roma, Texas, and San Pedro, Tamaulipas, and 992.0 river miles below the American Dam at El Paso, Texas and 15.4 river miles above the confluence of the Rio San Juan from Mexico. Zero of gage is 145.90 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based upon 170 meter measurements, 161 by the Mexican and 9 by the United States Section, during the year from bridge. Computations by shifting channel methods. 1943 records good. Records available: August 1900 to March 1914; November 1922 to December 1943.

REMARKS: The river flow is greatly modified at this station by many irrigation diversions, drainage returns, and large reservoirs in the United States and Mexico. This station was operated by the Mexican Section until March 1929 when operation and maintenance was begun by the United States Section. On August 1, 1939, the operation and maintenance of this station was turned over again to the Mexican Section of the Commission. Datum of present gage is 1.1 foot lower then that used prior to 1922. Backwater from the Rio San Juan sometimes reaches this station. See Water Bulletin No. 3, page 50.

EXTREME FLOWS: The greatest recorded flow was on September 5, 1932, when the extreme gage height was 35.4 feet and the extreme flow 203,000 second feet. (See Special Flood Report 1932 by United States Section of this Commission). The lowest flow ever recorded was on August 25, 1937, when the extreme flow was 914 second feet, at a stage of -.32 feet. Records of other extreme flows may be found in previous Water Bulletins.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,330	3,330	2,660	2,530	1,560	7,270	2,570	5,760	1,200	4,100	2,880	2,250
2	3,430	3,350	2,520	2,670	1,540	7,030	2,560	4,980	1,600	3,570	2,990	2,490
3	3,380	3,420	2,470	2,380	1,500	4,520	2,300	4,380	12,220	10,560	3,130	3,510
4	6,220	3,440	2,580	2,180	1,430	3,850	2,090	3,850	9,500	11,160	6,000	8,720
5	6,640	3,360	2,560	2,130	1,380	4,130	2,110	3,600	6,850	10,870	7,950	4,630
6	4,130	3,400	2,570	2,120	1,470	29,350	2,070	3,460	3,990	10,100	4,630	3,030
7	4,030	3,410	2,590	2,000	1,890	22,880	2,260	3,600	3,600	8,050	3,240	2,730
8	3,780	3,420	2,560	1,900	2,810	8,690	3,360	3,360	4,870	6,990	2,950	2,740
9	3,710	3,270	2,570	1,810	3,300	5,970	5,610	2,880	4,870	6,110	2,790	2,720
10	3,780	3,090	2,540	4,240	2,820	5,650	8,190	2,530	9,460	11,330	2,640	2,800
11	3,740	2,970	2,440	6,000	2,170	4,630	6,360	2,280	6,430	8,620	2,500	2,740
12	3,500	2,960	2,460	3,640	1,840	3,710	8,440	2,190	4,060	5,830	2,540	2,610
13	3,640	2,890	2,550	2,790	1,760	3,530	20,800	2,170	3,880	5,540	2,460	2,550
14	3,500	2,920	2,640	2,420	1,830	3,640	19,700	2,050	2,840	4,770	2,430	2,440
15	3,670	2,920	2,720	2,060	2,070	4,560	7,910	1,840	2,490	4,240	2,400	2,450
16	3,570	2,810	2,770	1,980	1,840	3,000	5,860	1,850	2,840	4,060	2,710	2,390
17	3,570	2,770	2,780	1,950	1,650	2,770	4,840	1,730	3,400	3,880	2,410	2,370
18	3,570	2,850	2,800	1,890	1,520	2,900	6,390	1,600	2,540	3,920	2,320	2,250
19	3,460	2,860	2,810	1,830	1,450	3,400	7,380	1,630	2,520	3,530	2,610	2,510
20	3,340	2,800	2,820	1,870	1,500	3,350	5,580	1,670	2,060	3,490	2,710	2,510
21	3,440	2,780	2,820	1,960	1,930	2,800	4,130	1,560	1,780	3,670	2,460	2,660
22	3,260	2,760	2,810	1,920	1,770	2,580	4,380	1,480	1,800	4,130	2,210	2,630
23	3,320	2,730	2,720	1,800	4,450	2,530	4,840	1,420	1,690	4,130	2,150	2,560
24	3,280	2,810	2,530	2,140	17,940	3,640	4,630	1,410	1,900	4,060	2,020	2,670
25	3,250	2,890	3,340	1,880	13,950	3,430	5,900	1,330	2,360	3,850	1,990	2,790
26	3,160	2,860	3,080	1,740	9,750	3,030	4,870	1,310	6,570	3,460	2,310	2,860
27	3,290	2,830	2,820	1,680	10,140	2,760	4,660	1,310	3,960	3,340	2,330	2,840
28	3,330	2,790	2,890	1,650	6,670	2,720	5,540	1,260	2,790	3,300	2,160	2,740
29	3,290		2,950	1,580	6,000	2,780	7,060	1,200	2,330	3,230	2,230	2,780
30	3,170		2,620	1,580	5,190	2,710	7,560	1,160	6,850	3,080	2,210	2,660
31	3,260		2,420		5,400		7,200	1,180		3,000		2,670
Sum	114,040	84,690	83,410	68,320	120,520	163,810	187,150	72,030	123,250	169,970	86,360	90,600

Month	1943 Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second Feet High Day	Extreme Second Feet High	Extreme Second Feet Low Day	Extreme Second Feet Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	4.00	1.25	5	8,790	30	3,170	3,680	226,200	221,934	467,400	119,500
Feb.	1.51	.92	5	3,360	28	2,710	3,020	168,000	180,926	349,000	108,400
Mar.	1.84	.72	25	3,810	31	2,380	2,690	165,400	183,824	325,500	99,000
Apr.	4.63	-.16	10	8,760	29	1,560	2,280	135,500	179,396	400,000	* 103,700
May	8.14	-.20	24	21,650	19	1,450	3,890	239,100	370,010	706,300	133,000
June	11.22	.89	6	40,600	23	2,420	5,460	324,900	398,617	1,586,000	92,600
July	9.22	.49	13	30,410	6	1,960	6,040	371,200	356,542	1,217,000	131,000
Aug.	3.22	-.39	1	6,500	30	1,150	2,320	142,900	324,570	742,800	142,900
Sept.	5.97	-.36	3	14,510	1	1,200	4,110	244,500	825,238	3,048,000	117,000
Oct.	5.87	.89	10	13,670	2	2,630	5,480	337,100	616,112	2,372,000	163,500
Nov.	5.02	.39	4	10,590	25	1,880	2,880	171,300	267,758	736,000	126,800
Dec.	4.76	.52	4	10,520	1	2,190	2,920	179,700	225,316	565,100	114,000
Yearly	11.22	-.39		40,600		1,150	3,740	2,705,800	4,150,243	8,098,000	2,227,000

* Partly estimated.

RIO SAN JUAN STATION AT SANTA ROSALIA, TAMAULIPAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car, located about 27.5 miles above the confluence with the Rio Grande and 15 miles southwest of Ciudad Camargo, Tamaulipas, at a settlement called Santa Rosalia, 3 miles west of Ochoa Railway Station. The new Azucar Dam is located 14.9 miles downstream from this station. This stream joins the Rio Grande 1,007.4 river miles below the American Dam at El Paso, Texas. Zero of gage is 205.15 feet, U.S.C. & G.S. sea level datum.

RECORDS: Based upon 136 meter measurements during the year, 110 by the Mexican and 26 by the United States Section. Computations by shifting channel methods. 1943 records good. Records available: May 1, 1900 to 1913; 1923 to 1943.

REMARKS: This station was established at La Quemada Ranch on May 1, 1900 and was moved 2.5 miles upstream to its present location on July 14, 1902. For detailed gage history see previous Water Bulletins. This station is within the basin of the Azucar Reservoir which is nearing completion. Because the diversion tunnel at Azucar Dam would discharge only about 7,000 second feet, a portion of the flow of the Rio San Juan was impounded in 1942. Particulars of this impoundment will be found in Water Bulletin No. 12. On March 10, 1943 the diversion tunnel was closed and the storage of water began. On August 31, 1943 use of this gaging station ceased because of backwater from the Azucar Reservoir. On this day the reservoir water level was 203.77 feet on Azucar Dam datum and 28,000 acre feet of water were in storage. Flow at this station is modified by small storages and diversions above this station.

EXTREME FLOWS: On August 30, 1909, there occurred a flood which reached a height of 49.21 feet, present scale, and a discharge of approximately 353,000 second feet. On August 30, 1938, the peak discharge was 233,000 second feet, with a gage height of 42.65 feet. The river is dry at times.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	414	414	155	107	109	202	48.4	15.5				
2	417	399	155	106	108	126	36.7	14.8				
3	523	399	156	699	95.7	111	29.3	19.1				
4	5,680	396	156	960	90.1	93.6	20.5	32.1				
5	4,130	364	156	657	84.0	80.9	15.9	31.8				
6	1,080	352	149	417	85.8	92.5	16.2	29.7				
7	692	332	141	338	87.6	335	15.5	31.1				
8	551	323	146	277	73.8	169	13.1	34.6				
9	572	312	144	239	67.1	198	10.2	28.6				
10	731	311	143	231	57.9	158	10.2	24.0				
11	777	294	145	232	49.8	152	9.2	14.5				
12	763	266	141	226	44.1	133	12.0	10.9				
13	724	260	145	214	41.3	116	1,630	9.2				
14	696	234	144	194	41.0	168	2,050	8.5				
15	667	230	137	197	39.2	244	904	7.8				
16	607	226	131	183	39.6	238	558	6.4				
17	604	222	126	161	39.9	156	340	0				
18	568	222	124	150	41.0	87.6	207	0				
19	540	221	121	145	42.0	91.1	133	0				
20	512	213	123	152	39.6	84.0	72.0	0				
21	484	204	119	152	37.4	77.0	41.0	0				
22	487	196	114	152	36.7	78.4	29.3	0				
23	519	198	108	151	33.5	84.4	26.1	0				
24	547	191	101	145	32.8	69.9	25.8	0				
25	508	191	112	138	41.3	64.6	24.4	0				
26	473	182	123	127	106	57.2	21.2	0				
27	456	173	170	106	121	69.6	18.7	0				
28	434	164	149	115	114	68.5	14.5	0				
29	424		140	116	516	65.7	14.1	0				
30	414		127	111	791	62.9	12.7	0				
31	417		108		396		14.1	0				
Sum	26,411	7,489	4,209	7,198	3,502.2	3,733.9	6,373.1	318.6				

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	15.03	3.41	4	10,350	#	413	852	52,390	36,469	93,500	7,580
Feb.	3.41	2.62	1	414	28	156	267	14,850	21,645	92,800	2,860
Mar.	2.76	2.36	27	177	24	101	136	8,350	16,865	56,600	1,810
Apr.	5.41	2.36	3	1,200	1	101	240	14,280	20,572	98,400	1,670
May	4.72	1.97	30	908	24	30.7	113	6,950	52,443	136,400	3,500
June	5.05	2.26	8	720	26	57.2	124	7,410	132,471	586,200	5,180
July	11.09	* 3.64	13	3,600	11	8.1	206	12,640	86,893	280,000	2,770
Aug.	7.51	6.27	8	34.6	#	0	10.3	632	⊕ 99,646	⊕ 802,200	632
Sept.									ϕ 245,291⊕	ϕ1,411,100	ϕ 22,790
Oct.									ϕ 155,757	ϕ 772,000	ϕ 18,970
Nov.									ϕ 55,596	ϕ 221,600	ϕ 12,930
Dec.									ϕ 44,148	ϕ 135,500	ϕ 11,990
Yearly									967,796	ϕ3,387,400	ϕ328,180

* Partly estimated. # Various days of the month. ϕ Period 1924-1942.
⊕ Includes water which by-passed to the west of the station.

RIO SAN JUAN BELOW AZUCAR DAM

DESCRIPTION: The Rio San Juan enters the Rio Grande 1,007.4 river miles below the American Dam at El Paso, Texas, and 12.4 miles below the Azucar Dam on the Rio San Juan.

RECORDS: Based upon data furnished by the National Irrigation Commission of Mexico showing in detail the portions of the total flows shown below which came from the various sources mentioned below.

REMARKS: Prior to March 10, 1943, the construction of Azucar Dam did not modify the flow into the Rio Grande of the Rio San Juan as recorded at Santa Rosalia Station, except from June 23 to 27, July 7 to 9, and October 7 and 8, 1942, when some water was temporarily impounded behind the dam. (See page 39 of Water Bulletin No. 12.) On March 10, 1943, the diversion tunnel through the dam was permanently closed, and the direct flow of Rio San Juan water into the Rio Grande stopped. On July 12, 1943, seepage through the embankment at the dam began to be noticeable and to be measured by weir. Leakage through stop logs in openings at the spillway began to be measured on September 1, 1943. These measurements were by current meter at a point 1,000 feet downstream. Zero of gage at this point is 7.64 feet U.S.C. & G.S. sea level datum. From July 13 to 24, October 7 to 30, and November 24 to December 8, water was spilled at the dam and was measured. All of these measured amounts flowed into the Rio Grande and are combined in the table below.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1					0	0	0	2.5	38.5	24.0	15.9	26.1
2					0	0	0	2.1	38.1	20.9	16.6	29.0
3					0	0	0	2.1	38.5	19.1	16.2	35.3
4					0	0	0	2.1	6.7	20.1	16.6	39.2
5					0	0	0	2.4	7.8	21.6	16.6	42.7
6					0	0	0	2.5	12.4	23.0	15.9	46.6
7					0	0	0	1.8	13.1	23.7	15.5	50.1
8					0	0	0	2.5	13.8	85.5	14.8	54.4
9					0	0	0	2.1	16.2	148	19.1	18.4
10					0	0	0	2.5	18.7	210	15.5	18.4
11				0	0	0	0	2.4	19.8	272	15.2	18.4
12				0	0	0	1.8	2.5	20.8	280	15.2	17.3
13				0	0	0	120	2.1	22.6	335	15.2	18.4
14				0	0	0	270	2.5	24.0	322	15.2	17.6
15				0	0	0	262	2.5	25.4	364	15.2	16.9
16				0	0	0	254	2.4	25.4	367	13.4	17.6
17				0	0	0	258	2.5	26.1	367	13.8	17.3
18				0	0	0	229	2.5	26.8	371	14.5	17.3
19				0	0	0	201	2.5	27.9	385	13.0	17.6
20				0	0	0	173	2.4	28.3	399	13.4	17.6
21				0	0	0	162	2.5	28.3	402	13.8	17.0
22				0	0	0	148	2.5	29.3	402	13.8	17.0
23				0	0	0	136	2.4	31.4	403	13.4	17.0
24				0	0	0	78.0	2.5	33.9	295	13.4	17.0
25				0	0	0	2.2	2.5	36.7	186	14.5	16.6
26				0	0	0	2.2	2.5	39.6	266	16.6	16.6
27				0	0	0	2.5	2.4	41.3	266	18.0	16.2
28				0	0	0	2.2	2.5	39.6	267	20.5	16.6
29				0	0	0	2.2	2.5	41.3	269	21.5	17.0
30				0	0	0	2.2	2.5	39.9	143	24.4	17.0
31					0		2.5	3.2		14.9		16.6
Sum							2,308.9	74.9	812.2	6,971.8	476.7	720.8

1943

Month	Extreme Gage (In Meters.) ⊕ High Day	High	Low Day	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet
Jan.										
Feb.										
Mar.	31	55.73	10	48.76						
Apr.	30	60.17	1	55.86		0		0	0	0
May	31	60.76	1	59.93		0		0	0	0
June	17 ‡	61.56	1	60.82		0		0	0	0
July	16	62.97	9 ‡	61.32	14	270	12	1.8	74.5	4,580
Aug.	6	62.49	30 ‡	62.11	31	3.2	7	1.8	2.4	149
Sept.	30	67.52	3	62.06	#	41.3	4	6.7	27.1	1,610
Oct.	23 ‡	68.93	1	67.57	#	402	31	14.9	225	13,800
Nov.	30	69.08	1	68.92	30	24.4	19	13.0	15.9	946
Dec.	31	69.47	1	69.09	8	54.4	27	16.2	23.3	1,430
Yearly						402		0		22,515

⊕ Azucar Reservoir gage heights. Add 2.33 meters to get elevations on U.S.C. & G.S. sea level datum.
‡ And other days. # And other days.

RIO GRANDE AT RIO GRANDE CITY STATION

DESCRIPTION: Water-stage recorder and cable with stand up cable car and winch, located about 4 miles by river below Rio Grande City, Texas, 3.7 miles northeast of Camargo, Tamaulipas, 7.9 miles below the confluence of the Rio San Juan with the Rio Grande and 1,015.3 river miles below the American Dam at El Paso, Texas. Zero of gage is at mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 120 meter measurements during the year, 104 by the United States and 16 by the Mexican Section. Computations by shifting channel methods. 1943 records good. Records available: January 1, 1932 to December 31, 1943.

REMARKS: When the water at this station rises above a gage height of about 149.20 feet, water overflows the left river bank beyond the station cable, but such water is measured. The river flow here is greatly modified by many irrigation diversions, drainage returns, and large reservoirs in the United States and Mexico. During this year the Rio San Juan flow into the Rio Grande was modified by storage of water in the new Azucar Reservoir. For further details of this see Rio San Juan Station record in this bulletin.

EXTREME FLOWS: The highest reported gage height was in 1909, when the extreme gage height was 159.2 feet, present gage datum, as reported by residents and confirmed by extreme gage height at Rio Grande City Weather Bureau gage and other points in the vicinity, as found in Joint Report of International Boundary Commission 1910-11. The lowest recorded flow was on May 9, 1940 when the extreme gage height was 124.10 feet and the extreme flow 946 second feet.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4,390	3,740	2,910	2,600	1,530	7,080	2,890	6,560	1,190	5,540	2,930	2,260
2	4,290	3,750	2,780	* 2,790	* 1,520	8,160	2,860	4,780	1,180	4,360	2,870	2,270
3	4,250	3,720	2,720	* 2,890	* 1,540	6,190	2,710	4,280	5,020	6,480	2,960	2,510
4	6,680	3,810	2,740	* 2,500	* 1,520	4,090	2,450	4,060	10,880	10,540	3,440	5,380
5	13,800	3,890	2,800	* 2,280	* 1,450	4,060	2,290	3,780	7,290	10,120	6,830	5,300
6	9,020	3,870	2,780	* 2,270	* 1,570	15,500	2,260	3,480	6,490	9,740	5,440	3,940
7	4,980	3,820	2,830	* 2,290	1,980	26,100	2,240	3,280	3,520	6,920	3,920	3,090
8	4,720	3,830	2,810	* 2,180	* 3,160	12,400	2,640	3,500	4,080	6,870	3,150	2,880
9	4,580	3,370	2,830	* 2,090	* 2,590	7,100	4,250	3,150	4,340	6,270	2,830	2,840
10	4,580	3,390	2,810	* 2,770	* 3,460	5,420	7,090	2,870	9,060	9,550	2,680	2,830
11	4,570	3,490	2,720	* 6,990	2,520	4,870	7,580	2,660	8,350	10,430	2,530	2,790
12	4,510	3,430	2,730	* 5,470	2,050	3,970	6,720	2,550	4,800	6,190	2,470	2,720
13	4,450	3,340	2,680	* 3,680	1,700	3,640	15,700	2,430	4,450	5,790	2,450	2,640
14	4,310	3,270	2,760	2,880	1,620	3,700	22,300	2,300	3,680	5,360	2,370	2,610
15	4,200	3,270	2,760	2,400	2,020	3,800	11,300	2,130	2,920	4,920	2,330	2,600
16	4,090	3,190	2,750	2,150	2,050	4,010	7,130	1,990	3,190	4,620	2,450	2,550
17	3,970	3,200	2,920	2,070	1,820	3,220	5,400	1,900	3,200	4,400	2,710	2,490
18	4,060	3,240	2,900	1,990	1,590	3,040	4,880	1,810	3,210	4,260	2,340	2,520
19	4,040	3,340	2,900	1,930	1,420	3,430	8,380	1,720	2,520	4,080	2,340	2,640
20	4,090	3,220	2,930	1,890	1,350	3,570	6,200	1,670	2,330	3,840	2,690	2,580
21	3,970	3,100	2,910	1,910	1,840	3,360	4,410	1,610	1,970	4,000	2,610	2,690
22	3,840	3,070	2,860	2,020	1,940	2,900	3,960	1,460	1,940	4,160	2,370	2,750
23	3,820	3,030	2,760	1,960	1,710	2,650	4,910	1,420	1,940	4,500	2,270	2,770
24	3,920	3,040	2,610	1,970	12,100	3,100	4,550	1,480	2,260	4,260	2,210	2,760
25	3,840	3,070	3,080	2,130	17,400	3,650	4,870	1,420	2,030	4,290	2,270	2,840
26	3,760	3,070	3,620	1,950	10,600	3,410	5,180	1,270	4,620	3,930	2,340	2,940
27	3,790	3,020	2,980	1,750	9,450	3,030	4,280	1,180	5,690	3,730	2,430	2,980
28	3,900	3,000	2,750	1,650	7,540	2,910	4,550	1,200	3,470	3,650	2,390	2,910
29	3,800		3,020	1,620	5,670	2,900	6,250	1,230	2,310	3,550	2,310	2,870
30	3,630		2,850	1,570	5,350	3,040	6,880	1,250	4,690	3,380	2,310	2,860
31	3,490		2,660		4,710		7,960	1,220		3,130		2,840
Sum	146,820	94,580	88,160	74,640	116,770	164,300	185,070	75,640	122,620	172,860	85,240	90,650

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	130.90	126.60	5	14,400	31	3,390	4,690	288,000	264,453	521,000	140,000
Feb.	126.94	126.07	5	3,890	28	2,940	3,380	188,000	208,100	* 368,690	125,000
Mar.	126.84	125.63	26	3,800	31	2,580	2,840	175,000	208,488	401,000	108,000
Apr.	128.71	124.52	11	7,550	30	1,550	2,490	148,000	202,386	395,000	118,000
May	132.87	124.28	24	21,000	21	1,330	3,770	232,000	432,304	833,000	153,000
June	135.53	125.90	7	29,800	23	2,570	5,480	326,000	531,840	1,737,000	94,300
July	133.83	125.52	14	23,900	7	2,210	5,970	367,000	452,024	1,240,000	152,000
Aug.	129.40	124.25	1	7,760	27	1,180	2,440	150,000	404,648	1,280,000	150,000
Sept.	130.50	124.25	4	12,010	1	1,190	4,090	243,000	1,050,414	3,723,800	147,000
Oct.	131.03	126.28	11	13,550	31	3,020	5,580	343,000	784,459	2,852,270	204,000
Nov.	129.38	125.28	5	7,250	25	2,140	2,840	169,000	326,526	829,260	156,000
Dec.	128.90	125.43	4	6,270	1	2,240	2,920	180,000	273,002	625,260	143,000
Yearly	135.53	124.25		29,800		1,180	3,880	2,809,000	5,138,644	9,554,530	2,643,000

* Partly estimated.

RIO GRANDE AT HIDALGO STATION

DESCRIPTION: Water-stage recorder on the downstream side of the United States end of the Hidalgo-Reynosa international bridge near Hidalgo, Texas, and Reynosa, Tamaulipas, 1,084.8 river miles below the American Dam at El Paso, Texas, and 156.6 river miles from the Gulf of Mexico. Zero of the gage is United States Coast and Geodetic Survey mean sea level datum. Meter measurements are from the bridge.

RECORDS: Discharges based upon 18 meter measurements during the year. Discharge computations by shifting channel methods. Discharge records available: July 1928 to December 1931; September and October 1932; peak flows in September 1933 and in 1934, also January to July, and September 1935; peak flows May and October, and full record July and September 1936; full record April 26 to December 31, 1938, and January to November 1939. Complete gage height record and discharges only during peaks in 1940, 1941, 1942 and 1943.

REMARKS: On July 28, 1941 the zero of the gage was changed to U.S.C. & G.S. mean sea level datum. At this time it was found that the elevation previously reported (79.28 feet) in these Water Bulletins as the elevation of the zero of the gage was in error, the correct figure being 79.03 feet. All previously reported gage heights should be corrected accordingly. All gage heights reported here for 1943 are on this new datum. Another gage (Weather Bureau) at this bridge has a zero elevation of 79.03 feet. When the river at this station reaches a stage of about 100.5 feet, or a flow of about 60,000 second feet water begins to flow into two floodway inlets on the United States side, viz: Hackney Lake Inlet about 4 miles upstream and Mission Inlet about 15 miles above this station, but the river may begin to overflow at Granjeno and Jardín de Flores at stages about 3.5 feet lower. The bottom of the river at this station is subject to considerable erosion during floods. See Water Bulletin No. 3, page 38.

EXTREME FLOWS: The highest recorded stage was in 1909 when 106.92 feet on the present gage was reached. In 1910, 103.85 was reached. These were before the present river bridge and highway embankments were constructed at this point. In 1932 the peak stage was 104.88 and the peak flow was 83,870 second feet. See previous Water Bulletins and Special Flood Report 1932 by the United States Section.

Mean Daily Gage Height in Feet —1943

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	84.24	83.77	82.68	82.52	80.86	85.36	81.80	86.49	79.10	‖ 85.00	83.21	82.30
2	84.37	83.81	82.39	82.39	81.04	86.22	81.79	85.90	79.00	* 85.80	82.82	82.19
3	84.46	83.81	82.63	82.55	80.26	86.72	81.98	85.04	79.06	84.91	82.55	82.30
4	84.32	83.78	82.75	82.86	79.85	86.13	82.47	84.36	83.13	86.56	82.63	82.66
5	86.11	83.89	82.26	82.26	79.59	85.00	81.93	83.80	86.79	87.82	83.71	85.47
6	87.86	83.93	82.16	81.85	79.48	84.86	81.45	83.43	85.63	87.70	85.78	85.49
7	86.18	84.06	82.68	81.72	80.23	91.33	81.04	83.23	84.53	87.42	85.84	84.40
8	85.34	83.98	82.27	81.63	80.37	90.80	80.89	83.50	83.54	86.72	84.39	83.58
9	85.06	83.75	82.05	81.55	81.76	* 87.33	81.10	83.22	83.71	86.34	83.32	83.03
10	84.84	83.57	82.03	81.58	82.02	‖ 85.82	82.86	82.69	84.78	86.21	82.78	82.93
11	84.87	83.41	82.06	81.89	82.20	‖ 85.31	85.56	82.31	86.79	87.96	82.56	82.93
12	84.90	83.26	81.98	* 84.34	82.15	‖ 85.24	85.59	81.96	86.40	87.24	82.39	82.90
13	84.85	83.39	81.98	‖ 84.41	81.46	‖ 84.54	86.41	81.70	85.12	86.02	82.28	82.84
14	84.79	83.60	82.46	* 83.45	80.73	* 83.84	89.93	81.71	84.49	85.79	82.58	82.73
15	84.74	83.19	82.06	82.64	80.35	83.63	89.39	82.02	83.90	85.49	82.22	82.70
16	84.67	82.93	81.92	81.99	81.23	83.98	86.42	81.34	83.19	85.26	82.50	82.75
17	84.61	82.81	81.99	81.69	81.18	83.93	85.22	80.71	82.96	84.95	82.68	82.70
18	84.57	82.74	82.08	81.95	80.61	83.30	85.03	80.80	83.20	84.70	82.88	82.52
19	84.51	82.78	82.09	81.27	80.04	82.94	84.94	80.72	83.51	84.53	82.69	82.51
20	84.49	82.94	82.30	80.79	79.70	83.52	85.99	80.58	82.74	84.19	82.42	82.70
21	84.50	83.37	82.71	80.85	79.52	83.51	85.54	80.60	82.17	84.01	82.64	82.52
22	84.41	82.94	82.44	81.76	79.85	83.21	84.67	81.16	81.72	84.05	82.65	82.54
23	84.09	82.73	82.19	81.99	81.39	82.63	84.00	80.62	81.49	84.13	82.42	82.74
24	84.20	82.44	82.03	82.01	80.98	82.14	84.29	82.17	* 81.59	84.57	82.34	82.86
25	84.22	82.31	82.39	81.95	87.91	82.17	84.66	79.95	* 82.18	84.57	82.35	82.86
26	84.13	82.33	82.79	82.03	88.50	82.97	84.52	79.86	82.42	84.24	82.31	82.93
27	84.07	82.72	83.28	81.91	87.13	83.64	84.64	79.74	‖ 84.12	83.92	82.32	83.01
28	84.07	83.10	83.18	81.17	87.03	82.73	84.20	79.70	‖ 85.31	83.69	82.47	83.05
29	84.15		82.80	81.10	86.47	82.07	84.20	80.73	‖ 84.57	83.57	82.46	82.96
30	83.97		82.71	81.00	86.01	81.80	84.88	79.67	‖ 83.73	83.51	82.36	82.85
31	84.05		82.68		85.72		85.84	79.22		83.62		82.96
Sum												

1943									Period 1924-1943		
Month	Extreme Gage Feet		Extreme Second Feet				Average Second Feet	Total Acre Feet	Acre Feet		
				High		Low					
	High	Low	Day		Day				Normal	Maximum	Minimum
Apr.		80.40			21	1,170					
May		79.40			6	2,470					
May		79.37			22	1,590					
May	89.45		25	15,500							
June	92.75		7	28,100							
July	90.95		14	21,800							
Sept.		78.80			2	1,300					
Yearly	92.75	78.80		28,100		1,170					

* Partly estimated. ‖ Estimated.

RIO GRANDE AT BUENOS AIRES STATION

DESCRIPTION: Water-stage recorder and cable with cable car, located about 22.4 miles below the Hidalgo-Reynosa international bridge and 1.9 miles above the Retamal Canal intake and 9.3 miles south of Donna, Texas, and 1,107.2 miles below the American Dam at El Paso, Texas. Zero of the gage is 0.85 feet above United States Coast and Geodetic mean sea level datum.

RECORDS: Discharges based upon 119 meter measurements, 118 by the Mexican and 1 by the United States Section during the year. Computations by shifting channel methods. 1943 records good. Records available: 1943.

REMARKS: This station was constructed by the National Irrigation Commission of Mexico in order to ascertain the discharge and water surface elevation of the Rio Grande at the Retamal Canal intake. From January to June 1942,3 gage height readings were made daily during low flow and more frequently during high flows. On June 26, 1942 a water-stage recorder was installed and meter measurements were begun. The river flow at this station is modified by many irrigation diversions, drainage returns and large reservoirs in the United States and Mexico.

EXTREME FLOWS: The greatest recorded flow at this station was on June 8, when the peak gage reading was 77.00 feet, the flow being 26,000 second feet. On September 3, 1943 a minimum flow of 136 second feet was reached with a gage height of 63.52 feet.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3,670	3,670	2,670	2,400	1,160	4,870	1,540	6,110	210	4,730	3,200	2,270
2	3,740	3,600	2,310	2,360	1,160	5,510	1,680	5,690	172	6,110	2,800	2,250
3	3,920	3,570	2,380	2,350	1,030	6,960	1,650	4,630	144	4,980	2,530	2,320
4	4,100	3,510	2,440	2,520	696	6,320	1,870	4,060	1,210	7,560	2,560	2,320
5	6,850	3,570	2,250	2,400	565	4,840	1,820	3,340	8,690	9,710	3,160	4,590
6	11,800	3,640	1,990	1,910	498	4,240	1,400	2,910	6,210	9,960	6,460	5,830
7	7,880	3,600	2,240	1,710	650	20,450	1,060	2,720	4,520	9,820	6,140	4,630
8	5,440	3,600	2,230	1,660	872	22,210	939	2,840	3,350	8,260	4,340	3,600
9	4,980	3,350	1,930	1,630	1,280	10,730	869	2,890	3,140	7,630	3,260	3,090
10	4,630	3,260	1,860	1,660	2,110	6,600	1,430	2,360	4,270	6,750	2,740	3,030
11	4,660	3,150	1,810	1,870	2,040	5,690	3,880	1,970	8,470	11,120	2,370	3,000
12	4,770	3,070	1,670	3,410	2,190	5,090	5,400	1,770	7,950	10,060	2,210	2,970
13	4,660	3,110	1,730	4,200	1,780	4,310	6,070	1,600	5,510	6,850	2,160	2,930
14	4,450	3,110	2,060	3,570	1,220	3,670	16,740	1,430	4,270	5,900	2,290	2,810
15	4,310	2,870	2,110	2,760	893	3,310	17,230	1,670	3,670	5,370	2,280	2,740
16	4,310	2,650	1,860	2,140	1,080	3,330	8,860	1,500	3,090	5,020	2,350	2,850
17	4,380	2,590	1,910	1,780	1,460	3,510	5,400	1,120	2,780	4,700	2,600	2,900
18	4,380	2,530	1,980	1,760	1,150	3,080	4,560	982	2,900	4,590	2,730	2,710
19	4,240	2,470	2,070	1,600	840	2,710	3,960	897	3,240	4,170	2,710	2,530
20	4,100	2,590	2,100	1,210	622	2,900	5,580	816	2,920	3,670	2,410	2,670
21	4,130	2,940	2,330	1,040	501	3,100	5,050	742	2,240	3,520	2,400	2,590
22	4,200	3,030	2,340	1,560	477	2,790	3,990	1,010	1,860	3,600	2,620	2,450
23	3,990	2,600	2,070	1,960	1,090	2,280	3,170	1,060	1,650	3,710	2,490	2,570
24	3,920	2,400	1,960	2,000	1,450	1,860	3,250	689	1,610	4,060	2,380	2,690
25	3,990	2,190	2,090	1,960	10,810	1,620	3,920	565	1,980	4,240	2,370	2,710
26	3,920	2,070	2,530	1,950	14,270	2,040	4,130	477	2,470	4,030	2,360	2,740
27	3,810	2,310	2,860	1,940	9,570	2,670	4,170	477	3,410	3,600	2,310	2,910
28	3,810	2,650	3,220	1,560	8,970	2,680	3,780	667	5,120	3,390	2,380	2,990
29	3,880		2,810	1,450	7,590	2,000	3,440	530	4,980	3,280	2,390	2,950
30	3,850		2,510	1,180	6,140	1,660	4,060	625	4,060	3,210	2,330	2,790
31	3,810		2,540		5,510		4,940	276		3,340		2,890
Sum	144,580	83,700	68,860	61,500	89,674	153,030	135,838	58,423	106,100	176,940	85,330	92,320

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	72.83	68.90	6	12,500	27	3,740	4,660	286,800			
Feb.	68.93	67.03	#	3,670	26	2,050	2,990	166,000			
Mar.	68.24	66.57	28	3,280	12	1,650	2,220	136,600			
Apr.	69.32	65.35	13	4,340	21	982	2,050	122,000			
May	73.82	64.01	26	17,410	22	456	2,890	177,900			
June	77.00	67.03	8	25,960	25	1,590	5,100	303,500			
July	75.43	65.91	15	19,740	9	840	4,380	269,400			
Aug.	71.29	63.78	1	6,500	31	234	1,880	115,900			
Sept.	71.85	63.52	5	9,610	3	136	3,540	210,400			
Oct.	73.03	68.50	11	13,000	30	3,170	5,710	351,000			
Nov.	71.13	67.36	6	7,700	13	2,050	2,840	169,300			
Dec.	70.64	67.36	5	6,320	2	2,220	2,980	183,100			
Yearly	77.00	63.52		25,960		136	3,440	2,491,900			

Various days of the month.

RIO GRANDE FLOODWAY DISCHARGES

IN THE LOWER RIO GRANDE VALLEY

On The United States Side — 1943

There are three floodways on the United States side of the Rio Grande delta which divert excess Rio Grande flood waters to the Gulf of Mexico. Such floodway discharges are measured at gaging stations known as North Floodway South of McAllen, South Floodway South of McAllen, and Rancho Viejo Floodway near Brownsville. The first two of these gaging stations are described in Water Bulletin No. 2, page 41. The third one is described in Water Bulletin No. 6, page 41. There was no flood flow through any of these floodways in 1943.

North Floodway Near Sebastian, Texas — 1943

The channel of the North Floodway in the vicinity of Sebastian, Texas, serves as a drainage channel as well as a floodway. During 1943 an average of two measurements per month was made of the flow at this point. From these measurements and rainfall records the following table of estimated drainage flow was prepared. The salt burden carried by this drainage flow will be found elsewhere in this bulletin under the heading, "Chemical Analyses of Water Samples".

Estimated Discharge

Mean Daily Second Feet—1943				Acre Feet			
					Period 1940-1943 #		
Month	Maximum	Minimum	Average	Total 1943	Maximum	Minimum	Average
January	70.0	39.6	48.7	2,990	7,450	1,400	3,947
February	60.2	40.9	44.3	2,460	6,010	1,610	3,360
March	118	64.4	81.5	5,010	5,380	1,880	4,090
April	98.4	27.1	43.2	2,570	5,900	2,210	3,560
May	370	25.0	67.5	4,150	24,200	2,890	10,413
June	220	16.7	40.1	2,380	9,090	2,380	6,213
July	41.0	12.8	17.2	1,060	7,170	1,060	3,903
August	40.0	8.0	9.8	605	1,900	605	1,318
September	150	8.0	42.1	2,500	4,740	1,520	2,920
October	68.0	16.1	30.3	1,870	2,450	136	1,696
November	114	16.1	25.3	1,510	2,420	861	1,545
December	78.0	24.2	29.8	1,830	4,480	1,830	2,708
Yearly	370	8.0	40.0	28,935	ϕ77,760	ϕ28,935	45,673

Record began October, 1940. ϕ Period 1941-1943

On The Mexican Side — 1943

There are several floodways on the Mexican side, but they carried no flood water in 1943.

RIO GRANDE AT MATAMOROS STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and winch. The water-stage recorder is attached to the central pier of the railroad bridge over the Rio Grande between Matamoros, Tamaulipas and Brownsville, Texas, about 57.6 miles upstream from the Gulf of Mexico, and 1,183.8 river miles below the American Dam at El Paso, Texas. The cable and car are located 0.3 mile upstream from the bridge. Zero of present gage is 15.26 feet above mean sea level, United States Coast and Geodetic Survey datum.

RECORDS: Based upon 144 meter measurements during the year. The river bottom shifts greatly at this station. Computations by shifting channel methods. 1943 records good. Records available: 1901 to 1913; 1923 to December 1943.

REMARKS: The river flow at this station is greatly modified by many irrigation diversions and by large reservoirs in the United States and Mexico. During floods only a portion of the river flow discharges past this station through the channel of the Rio Grande as part finds outlet to the Gulf of Mexico through flood channels in both countries, which divert from the Rio Grande within 117.4 miles above this station. In May 1924 a recorder was established .6 mile upstream from the bridge. In September 1925 the recorder was moved to its present location. On October 3, 1930 the zero of the gage was lowered 5 feet.

EXTREME FLOWS: The greatest flow recorded here was on June 22, 1903, when a mean daily flow of 36,200 second feet occurred with a gage height of 13.2 feet. The greatest flow since 1923 was on September 16, 1942 when 32,300 second feet passed this station with a gage height of 22.51 feet. The highest gage reading was on October 2, 1936, when a reading of 22.57 feet, present gage, was reached, with a discharge of 29,600 second feet. In 1930 the river at this station was dry for a few days in March and April. On June 17, 1938, the minimum flow was 9.5 second feet with a stage of 1.44 feet.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,340	2,860	1,230	1,490	427	4,870	830	3,090	19.8	3,350	2,390	1,750
2	2,320	2,890	1,165	1,510	314	4,870	547	4,020	26.5	3,120	2,060	1,620
3	2,630	2,780	978	1,470	302	4,840	381	3,850	20.5	4,100	1,700	1,720
4	3,030	2,470	996	1,600	289	5,400	533	3,240	26.5	4,240	1,520	1,630
5	3,080	2,210	1,350	1,810	260	5,650	826	2,750	78.4	4,170	1,600	1,730
6	4,520	2,310	1,270	1,700	170	5,040	802	2,290	3,570	5,900	1,890	2,910
7	6,960	2,630	1,030	1,290	87.9	5,650	664	1,920	3,880	6,530	3,220	3,880
8	6,000	2,660	1,070	943	65.0	17,020	420	1,600	2,750	6,360	4,100	3,600
9	4,910	2,520	968	784	57.2	13,000	208	1,790	2,440	5,930	3,530	3,160
10	4,480	2,380	862	795	47.0	7,800	184	1,540	2,570	5,580	2,670	2,800
11	4,310	2,060	703	908	229	5,330	180	968	3,050	5,510	1,880	2,500
12	4,170	1,780	657	953	406	4,310	809	752	5,050	7,800	1,440	2,520
13	4,200	1,650	685	1,030	388	4,100	2,650	561	5,720	7,450	1,260	2,570
14	4,130	1,780	759	1,970	357	4,060	4,380	378	4,480	5,930	1,230	2,270
15	4,060	2,120	989	2,330	117	3,280	12,150	364	3,570	5,010	1,520	2,090
16	3,780	1,870	978	1,830	76.3	2,750	11,440	590	3,340	4,410	1,610	2,120
17	3,780	1,440	710	1,150	58.6	2,410	6,110	466	3,140	4,200	1,910	2,010
18	3,710	1,370	614	848	63.9	2,220	4,060	338	2,690	3,960	1,960	2,060
19	3,640	1,390	646	1,020	213	2,100	3,100	272	2,550	3,290	2,120	2,140
20	3,520	1,380	678	886	170	2,020	2,840	173	2,540	2,820	2,280	2,080
21	3,500	1,650	915	611	60.4	2,090	3,470	149	2,340	2,730	2,140	1,900
22	3,670	1,950	1,010	512	43.8	2,100	3,570	140	1,780	2,790	2,060	1,980
23	3,420	1,590	809	547	36.0	2,200	2,950	146	1,550	2,780	1,960	1,860
24	3,200	1,260	766	879	28.6	1,910	2,250	101	1,590	2,900	1,920	1,680
25	2,890	989	833	943	21.2	1,450	2,080	191	1,550	3,180	1,740	2,150
26	2,550	791	1,110	925	7,663	1,140	2,530	71.0	1,790	3,110	1,620	2,330
27	2,520	735	1,420	851	10,770	1,150	2,520	32.8	2,180	2,700	1,640	2,310
28	2,800	911	1,570	795	6,000	1,590	2,330	23.3	2,450	2,450	1,840	2,210
29	2,930		1,820	710	6,070	1,720	2,440	19.1	3,440	2,210	1,980	2,310
30	2,880		1,590	484	5,760	1,230	2,370	19.1	3,850	2,070	1,770	2,360
31	2,880		1,470		5,020		2,360	18.7		2,280		2,280
Sum	112,810	52,426	31,651	33,574	45,570.9	123,300	81,984	31,864.0	74,031.7	128,860	60,560	70,530

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1924-1943 Acre Feet Normal	Maximum	Minimum
Jan.	10.73	5.05	7	7,200	2	2,230	3,640	223,800	227,707	490,800	92,240
Feb.	6.10	2.49	1	2,880	27	717	1,870	104,000	157,682	328,300	28,470
Mar.	4.23	2.10	29	1,880	18	600	1,020	62,780	127,270	240,800	27,860
Apr.	4.99	1.51	15	2,360	30	406	1,120	66,590	119,899	317,800	56,890
May	10.43	-.66	27	11,300	25	21.2	1,470	90,390	308,270	721,100	90,390
June	15.72	3.48	8	19,400	30	1,010	4,110	244,600	407,988	1,180,500	31,690
July	13.06	1.74	15	13,900	10	173	2,640	162,600	349,380	736,600	54,420
Aug.	7.38	0	2	4,170	31	18.7	1,030	63,200	304,350	833,700	63,200
Sept.	8.92	-.03	13	5,900	1	17.7	2,470	146,800	639,677	1,363,200	124,070
Oct.	11.45	4.69	12	8,190	30	2,030	4,160	255,600	596,705	1,408,500	124,280
Nov.	7.78	3.15	8	4,170	13	1,160	2,020	120,100	296,914	827,500	95,740
Dec.	7.32	3.64	7	4,030	2	1,580	2,280	139,900	229,352	594,200	69,710
Yearly	15.72	-.66		19,400		17.7	2,320	1,680,360	3,765,194	6,579,500	1,680,360

RIO GRANDE AT LOWER BROWNSVILLE STATION

DESCRIPTION: Water-stage recorder and cable with stand-up cable car and winch, located about 1,000 feet below the El Jardin pumping plant, about 6.6 river miles below Brownsville, Texas, and Matamoros, Tamaulipas, 50.4 miles upstream from the Gulf of Mexico, and 1,191.0 river miles below the American Dam at El Paso, Texas. Zero of gage is on United States Coast and Geodetic Survey mean sea level datum.

RECORDS: Based upon 56 current meter measurements, 55 by the United States and 1 by the Mexican Section made during the year. Computations by shifting channel methods. 1943 records good. Records available: January 1934 to December 1943.

REMARKS: The river flow at this station is greatly modified by many irrigation diversions, drainage returns, and large reservoirs in the United States and Mexico. During floods only a portion of the river flow discharges past this station through the channel of the Rio Grande as part finds outlet to the Gulf of Mexico through flood channels in both countries, which divert from the Rio Grande within 124.6 miles above this station.

EXTREME FLOWS: On September 14,1942, a peak discharge of 31,000 second feet was reached with a gage height of 33.24 feet. Additional data concerning peaks may be found in previous Water Bulletins. The river was dry at this station a few days in 1930, and March 25-28, 1935; June 16-19, 1938; several days in 1940; and several days in 1943.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,380	2,920	1,040	1,490	393	5,200	768	2,820	0	3,530	2,460	1,690
2	2,200	2,840	* 1,050	1,530	315	4,800	527	4,020	0	2,820	2,170	1,630
3	2,500	2,580	* 920	1,470	* 231	4,750	362	4,160	0	3,770	1,700	1,710
4	2,800	2,300	* 870	1,550	* 229	5,400	508	3,660	0	4,180	1,490	1,700
5	2,900	2,270	1,120	1,770	* 211	5,700	667	2,900	0	3,820	1,400	1,670
6	4,200	2,300	* 1,150	1,750	* 133	5,300	665	2,270	2,180	6,100	1,500	2,600
7	8,160	2,640	* 992	1,400	* 83.6	5,470	582	1,850	3,540	6,700	2,840	4,100
8	5,600	2,710	* 948	1,010	* 61.3	14,900	460	1,510	2,690	6,800	4,430	4,170
9	4,800	2,540	* 897	815	* 29.5	15,100	174	1,590	2,200	6,200	3,900	3,630
10	4,350	2,300	797	794	* 40.6	9,450	81.3	1,500	2,250	5,600	2,700	3,080
11	4,250	2,080	685	904	* 186	7,410	38.0	1,090	2,700	5,500	1,790	2,680
12	4,100	1,850	633	895	* 387	5,130	295	810	4,600	7,800	1,400	2,580
13	4,160	1,710	654	913	* 377	4,600	2,160	582	5,330	7,600	1,310	2,570
14	4,060	1,740	675	1,660	* 388	4,410	3,840	413	4,580	6,100	1,280	2,330
15	3,920	2,060	937	2,280	* 258	3,630	10,800	305	3,510	5,150	1,520	2,050
16	3,800	1,920	988	2,030	* 110	2,960	11,400	456	3,200	4,530	1,630	2,120
17	3,800	1,540	* 766	1,290	* 55.9	2,490	6,820	493	2,800	4,330	1,850	2,080
18	3,720	1,350	‡ 576	1,030	* 34.8	2,240	4,630	269	2,350	4,220	1,950	2,090
19	3,700	1,250	‡ 527	963	* 135	2,080	3,620	190	2,300	3,400	2,040	2,150
20	3,580	*1,240	‡ 577	826	* 122	1,890	2,860	121	2,230	3,130	2,270	2,080
21	3,500	*1,550	‡ 829	600	* 33.8	1,910	2,940	116	2,110	2,850	2,140	1,810
22	3,770	2,000	‡ 1,040	431	* 1.7	1,930	3,270	105	1,590	2,820	2,070	1,890
23	3,550	1,700	‡ 830	437	* 6.1	2,050	3,080	127	1,450	2,730	1,980	1,830
24	3,300	1,290	‡ 802	735	* 1.0	1,820	2,370	25.8	1,500	2,770	2,050	1,620
25	3,100	* 916	‡ 857	826	* 9.1	1,410	1,980	110	1,450	2,980	1,880	2,010
26	2,860	* 756	‡ 1,050	829	*2,860	1,080	2,340	46.5	1,650	3,180	1,670	2,340
27	2,880	* 690	* 1,340	746	8,850	1,019	2,470	0	2,000	2,810	1,640	2,360
28	2,900	* 781	1,490	685	6,800	1,270	2,310	0	2,200	2,540	1,800	2,210
29	2,860		1,790	650	6,900	1,590	2,330	0	3,200	2,330	1,940	2,240
30	2,850		1,630	493	6,500	1,190	2,220	0	3,970	2,100	1,780	2,290
31	2,940		1,480		5,900		2,210	0		2,280		2,220
Sum	113,490	51,823	29,940	32,802	41,642.4	122,870	78,777.3	31,539.3	67,580	130,670	60,580	71,530

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	Period 1934-1943 Acre Feet Normal	Maximum	Minimum
Jan.	22.07	16.12	7	8,570	2	2,140	3,660	225,000	202,920	299,000	88,200
Feb.	17.20	12.84	1	2,930	27	655	1,850	103,000	141,330	237,000	26,300
Mar.	14.97	‡12.42	29	1,850	19	513	966	59,400	121,070	199,000	29,700
Apr.	15.82	11.81	15	2,350	23	376	1,090	65,100	105,090	242,000	50,500
May	21.30		27	9,060	‡10	0	1,340	82,600	328,860	717,000	82,600
June	26.95	13.92	8	17,800	27	972	4,270	254,000	410,200	*1,161,000	32,000
July	24.32		16	13,000	12	0	2,540	156,000	374,790	759,000	65,900
Aug.	18.50	10.51	3	4,280	‡24	0	1,020	62,600	268,750	679,000	62,600
Sept.	20.04	11.75	13	5,460	‡ 1	0	2,250	134,000	622,400	1,337,000	134,000
Oct.	22.95	15.58	12	9,410	30	2,060	4,220	259,000	535,300	*1,427,000	200,000
Nov.	18.91	13.94	8	4,610	14	1,280	2,020	120,000	230,620	614,000	94,200
Dec.	18.34	14.40	7	4,360	2	1,570	2,310	142,000	187,860	341,000	64,800
Yearly	26.95			17,800		0	2,300	1,662,700	3,529,190	6,526,000	1,662,700

‡ Estimated. * Partly estimated. ‡ And other days.

MONTHLY AND ANNUAL DISCHARGES WITH NORMALS

From Earliest Feasible Dates

SAN MARCIAL TO LOWER PRESIDIO - IN ACRE FEET

For convenient reference there will be found below the accepted monthly and annual discharges at gaging stations along the Rio Grande from San Marcial, New Mexico, to Presidio, Texas, including the tributary flow of the Rio Conchos from Mexico and measured diversions. For certain pertinent stations these records include some estimates of flow. Explanations of these estimates will be found in Water Bulletin No. 12, especially, pages 45 to 51. For all but three of the stations, these records constitute a continuous monthly or annual record from the earliest date now feasible down to the present time. For the Tornillo Bridge and Fort Hancock stations, these records cover all of the period of operations at these stations, some of the records being from Water Supply Papers of the United States Geological Survey. Fort Hancock record was published in Water Supply Paper 358. The remainder of these records have all been previously published in Water Bulletins, but in a few instances the figures below have been corrected since the previous publication.

RIO GRANDE AT SAN MARCIAL STATION

Month	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904
Jan.	‡ 40,000	* 43,000	19,553	57,675	27,854	40,582	20,967	22,731	17,197	16,840
Feb.	54,700	39,114	24,325	59,425	24,603	35,099	25,468	17,435	21,927	18,902
Mar.	128,879	41,750	40,767	60,500	27,546	34,400	15,114	7,954	46,790	6,060
Apr.	279,014	180,000	209,000	271,458	54,089	5,450	23,683	40,106	100,007	0
May	222,892	124,143	755,196	165,832	35,048	123,590	256,126	26,787	318,367	0
June	233,375	9,759	363,000	126,268	952	159,888	96,178	6,407	660,476	0
July	149,476	28,653	65,977	167,062	28,407	139	59,286	0	77,841	10,532
Aug.	179,113	7,255	6,149	13,835	6,395	0	65,534	49,210	3,064	55,974
Sept.	‡ 40,000	7,735	114,188	3,689	2,916	56,112	37,607	13,349	1,438	44,727
Oct.	‡ 40,000	45,624	281,677	0	676	99	17,018	823	545	463,240
Nov.	‡ 40,000	12,444	175,715	10,175	9,521	2,440	20,053	4,641	5,534	51,769
Dec.	‡ 40,000	38,060	152,736	23,365	21,400	10,084	19,240	11,286	18,883	41,752
Total	1,447,449	577,537	2,208,283	959,284	239,407	467,883	656,274	200,729	1,272,069	709,796

Month	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914
Jan.	39,114	36,496	60,635	43,636	41,554	61,329	30,198	50,311	23,425	38,122
Feb.	63,868	39,689	67,696	47,970	34,334	42,019	35,663	44,430	38,102	40,086
Mar.	217,904	56,866	92,549	77,375	52,622	143,663	87,094	77,375	35,306	65,862
Apr.	279,392	163,140	222,863	123,927	104,340	189,917	92,450	117,798	99,114	115,720
May	962,221	500,707	368,965	165,263	336,238	308,628	303,888	501,779	129,293	266,562
June	714,268	345,064	524,192	90,516	289,983	63,094	269,554	502,096	95,058	212,225
July	35,782	118,314	328,740	48,952	48,080	1,061	392,390	113,772	6,863	159,850
Aug.	20,093	43,210	165,521	95,663	52,661	7,339	63,164	22,830	169	86,243
Sept.	5,276	25,527	160,899	9,709	179,048	2,995	39,164	7,646	4,860	33,085
Oct.	7,349	70,830	64,453	2,757	59,742	575	312,754	9,005	33,144	77,515
Nov.	42,397	77,752	56,489	29,931	39,580	8,915	116,469	27,580	35,167	43,206
Dec.	34,344	86,142	44,707	38,410	41,752	23,157	56,975	24,992	24,942	40,017
Total	2,422,008	1,563,737	2,157,709	774,109	1,279,934	852,692	1,799,763	1,499,614	525,443	1,178,493

Month	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
Jan.	33,243	47,800	45,600	28,000	34,400	51,300	45,000	58,500	40,900	56,000
Feb.	38,013	47,100	37,900	22,800	35,400	87,700	44,500	48,800	40,100	77,100
Mar.	53,163	164,000	38,800	45,600	75,600	84,200	81,800	56,900	52,000	76,900
Apr.	271,487	234,000	94,600	30,500	315,000	139,000	44,400	81,500	64,900	407,000
May	393,774	488,000	239,000	117,000	487,000	676,000	216,000	344,000	305,000	608,000
June	309,493	206,000	367,000	67,200	167,000	863,000	649,000	311,000	221,000	134,000
July	119,871	45,700	175,000	22,400	248,000	176,000	206,000	49,600	28,800	50,000
Aug.	46,175	97,800	6,050	1,670	81,800	38,900	158,000	0	78,400	7,222
Sept.	17,911	19,400	7,740	0	6,840	5,910	61,600	0	121,000	2,920
Oct.	13,000	162,000	972	11,000	33,300	14,700	25,900	0	99,600	0
Nov.	22,700	88,100	14,500	24,300	40,000	46,100	37,700	0	104,000	3,840
Dec.	35,400	48,900	28,400	40,700	55,100	39,900	55,200	12,700	68,200	15,100
Total	1,354,230	1,648,800	1,055,562	411,170	1,579,440	2,222,710	1,625,100	963,000	1,223,900	1,438,080

Month	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934
Jan.	17,400	45,200	38,700	49,600	26,500	44,800	39,200	43,710	45,140	48,900
Feb.	37,800	37,100	32,900	47,000	29,600	52,900	45,800	64,050	38,580	46,300
Mar.	41,400	59,000	35,400	49,700	43,000	65,200	49,600	# 99,450	47,460	26,700
Apr.	98,200	118,000	134,000	40,200	78,600	186,000	53,100	# 232,780	16,850	29,500
May	53,900	440,000	317,000	251,000	276,000	124,000	92,800	430,920	94,470	4,450
June	3,550	272,000	168,000	106,000	132,000	62,500	5,090	212,060	253,490	228
July	1,310	27,200	154,000	595	38,100	79,300	8,010	157,140	55,240	0
Aug.	21,300	1,620	65,800	9,320	275,000	53,100	6,940	60,700	37,880	31,700
Sept.	27,000	3,900	189,000	5,040	308,000	4,780	58,950	12,200	42,330	25,500
Oct.	32,000	3,160	105,000	0	123,000	4,320	55,600	16,770	15,900	861
Nov.	40,300	8,930	61,300	4,370	75,900	18,000	26,800	31,650	23,020	2,550
Dec.	44,600	31,400	47,900	27,800	58,400	36,100	47,900	37,270	46,200	27,800
Total	418,760	1,047,510	1,349,000	590,625	1,464,100	731,000	489,790	1,398,700	716,560	244,489

Month	1935	1936	1937	1938	1939	1940	1941	1942	1943	Normal
Jan.	44,900	53,700	35,900	41,300	51,100	36,500	47,500	72,600	52,700	40,966
Feb.	39,100	52,500	70,900	38,300	41,800	37,700	67,000	61,700	43,800	43,655
Mar.	23,400	66,700	113,000	38,200	119,000	38,900	91,700	94,600	37,000	64,995
Apr.	21,500	203,000	260,000	69,500	130,000	18,000	129,000	432,000	47,700	135,751
May	182,000	213,000	584,000	279,000	62,000	40,200	994,000	633,000	54,300	303,497
June	368,000	20,500	254,000	216,000	3,470	8,980	609,000	413,000	21,100	228,286
July	35,600	22,800	83,700	115,000	13,100	19,800	246,000	42,200	35,800	83,621
Aug.	108,000	39,400	23,300	19,400	26,400	38,600	76,800	34,200	28,900	49,343
Sept.	64,600	58,800	36,200	90,200	18,000	34,400	83,800	52,000	16,300	44,169
Oct.	37,200	42,500	42,000	52,200	18,500	22,700	221,000	34,800	17,000	54,955
Nov.	51,200	44,800	17,600	43,600	8,390	27,500	171,000	19,200	19,300	38,499
Dec.	53,600	48,700	37,200	55,500	33,100	45,600	95,300	50,100	44,300	42,053
Total	1,029,100	866,400	1,557,800	1,058,200	524,860	368,880	2,832,100	1,939,400	418,200	1,129,790

* Partly estimated. ‡ Estimated or Revised Record. For full explanation see Water Bulletin No. 12, pages 45-49.

A correction was made in Water Bulletin No. 6 to the March and April totals for 1932 at San Marcial. One change corrected an error in gage height on March 29, when the correct discharge was 1,820 sec. ft., making the correct March total flow 99,450 ac. ft. The other changes corrected errors in computation wherein the correct discharges for April 6 to 9 were 3,890, 4,020, 4,080, & 3,850 sec. ft., respectively, and the correct total for April was 232,780 ac. ft.

MONTHLY AND ANNUAL DISCHARGES WITH NORMALS

From Earliest Feasible Dates

SAN MARCIAL TO LOWER PRESIDIO - IN ACRE FEET

RIO GRANDE AT BELOW ELEPHANT BUTTE DAM STATION

Month	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
Jan.	" 25,000	1,600	95,300	492	922	12,800	2,890	15,300	11,900	984
Feb.	" 30,000	44,200	106,000	51,800	22,200	22,700	35,900	55,500	36,400	57,500
Mar.	* 28,000	69,600	109,000	75,900	53,700	64,100	87,000	75,700	54,000	65,100
Apr.	72,800	106,800	102,000	87,700	74,700	89,100	81,200	106,000	103,000	124,000
May	198,600	164,500	124,000	94,300	124,000	114,000	109,000	126,000	123,000	155,000
June	# 246,800	192,500	138,000	95,200	112,000	114,000	121,000	131,000	131,000	147,000
July	118,400	117,500	191,000	90,400	94,600	120,000	123,000	131,000	130,000	121,000
Aug.	114,100	82,700	114,000	77,500	91,200	112,000	125,000	130,000	105,000	161,000
Sept.	77,200	67,300	110,000	66,900	67,600	103,000	124,000	116,000	79,300	93,300
Oct.	21,200	37,700	110,000	34,100	11,300	54,500	82,900	59,300	45,000	34,700
Nov.	14,100	14,500	51,900	20,400	18,000	36,400	60,900	30,600	12,800	21,400
Dec.	23,500	127,900	52,800	922	3,770	36,600	26,800	35,800	12,700	22,300
Total	969,700	1,026,800	1,304,000	695,614	673,992	879,200	979,590	1,012,200	844,100	1,003,284

Month	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934
Jan.	4,620	1,800	5,710	11,000	8,830	184	389	301	903	1,490
Feb.	42,500	19,300	34,700	33,900	28,700	31,000	17,600	26,000	32,100	54,200
Mar.	88,700	61,300	62,500	71,400	64,000	72,800	73,000	64,100	71,900	71,400
Apr.	136,000	108,000	115,000	123,000	122,000	116,000	93,900	113,000	111,000	108,000
May	120,000	107,000	128,000	90,100	98,000	101,000	99,900	105,000	108,000	102,000
June	124,000	129,000	127,000	125,000	117,000	113,000	124,000	126,000	101,000	120,000
July	123,000	98,000	137,000	130,000	102,000	117,000	128,000	134,000	127,000	132,000
Aug.	96,100	118,000	121,000	119,000	78,800	125,000	103,000	132,000	133,000	134,000
Sept.	49,500	78,300	86,100	90,700	65,300	77,800	69,500	87,100	90,100	72,500
Oct.	10,300	13,300	33,100	26,800	6,820	17,500	19,900	12,900	17,800	506
Nov.	10,300	16,800	17,400	8,470	4,810	10,700	16,700	18,900	13,900	6,480
Dec.	11,500	10,800	13,200	6,380	5,820	10,100	4,800	12,500	20,300	1,490
Total	816,520	761,600	880,710	835,750	702,080	792,084	750,689	831,801	827,003	804,066

Month	1935	1936	1937	1938	1939	1940	1941	1942	1943	Normal
Jan.	404	760	729	638	40,100	1,020	54,800	86,500	62,100	15,499
Feb.	8,310	17,600	7,370	28,500	969	1,030	48,600	76,300	56,600	35,430
Mar.	43,200	58,200	49,300	81,900	1,520	23,000	51,500	66,200	63,900	62,825
Apr.	84,400	106,000	114,000	122,000	132,000	117,000	57,200	162,000	66,400	105,317
May	78,500	100,000	98,200	113,000	90,900	97,300	73,100	467,000	67,800	123,352
June	111,000	122,000	111,000	126,000	117,000	123,000	82,000	363,000	64,400	132,893
July	128,000	133,000	137,000	108,000	133,000	128,000	125,000	211,000	73,900	125,579
Aug.	117,000	130,000	142,000	134,000	129,000	114,000	99,200	110,000	74,700	114,562
Sept.	45,900	61,300	72,200	25,000	129,000	57,700	62,300	69,700	70,200	78,097
Oct.	9,210	6,390	2,310	33,900	50,200	4,690	72,000	72,100	71,400	33,511
Nov.	5,860	6,250	12,000	39,300	884	5,220	158,000	65,500	66,400	26,375
Dec.	5,760	4,550	11,900	68,700	916	29,000	87,300	69,500	70,900	27,190
Total	637,544	746,050	758,009	880,938	825,489	700,960	971,000	1,818,800	808,700	880,630

RIO GRANDE AT BELOW CABALLO DAM STATION

Month	1938	1939	1940	1941	1942	1943	Average
Jan.	3,080	204	146	97	4,820	4,850	2,200
Feb.	22,200	20,000	12,700	7,260	64,300	32,200	26,443
Mar.	73,800	76,000	84,300	49,300	88,700	95,100	77,867
Apr.	116,000	106,000	110,400	115,000	212,000	138,700	133,017
May	113,000	105,000	91,500	93,000	412,000	123,500	156,333
June	121,000	121,000	114,300	117,000	354,000	131,300	159,767
July	109,000	128,000	129,100	129,000	234,000	125,300	142,400
Aug.	131,000	118,000	114,300	110,000	179,000	153,500	134,300
Sept.	43,800	76,800	68,800	62,400	181,000	70,400	83,867
Oct.	26,100	19,300	2,840	4,230	35,400	19,100	17,828
Nov.	12,100	10,100	3,400	5,660	14,400	12,000	9,610
Dec.	9,320	8,660	83.3	10,600	16,000	5,810	8,412
Total	780,400	789,064	731,869.3	703,547	1,795,620	911,760	952,044

RIO GRANDE AT EL PASO STATION

Month	1889	1890	1891	1892	1893	1894 "	1895 "	1896 "	1897	1898
Jan.	" 15,160	12,100	27,700	20,000	7,680	8,800	21,000	6,500	18,800	30,500
Feb.	" 14,900	16,100	45,300	27,400	8,020	8,640	20,600	6,400	10,800	33,700
Mar.	" 28,800	26,100	115,000	46,200	2,150	16,700	39,500	12,300	4,410	20,000
Apr.	" 66,100	130,000	256,000	187,000	48,100	38,300	91,000	28,230	104,000	97,900
May	" 190,300	355,000	727,000	436,000	231,000	110,300	261,800	81,300	511,000	140,000
June	157,000	266,000	399,000	175,000	13,400	100,520	238,800	74,150	363,000	112,000
July	14,600	52,500	140,000	41,100	" 21,280	41,400	98,400	30,560	81,800	196,000
Aug.	0	45,100	40,700	800	" 7,640	14,900	35,300	11,000	8,120	31,200
Sept.	0	10,500	45,700	0	" 5,940	11,540	27,400	8,500	42,000	2,230
Oct.	0	4,000	91,500	0	" 13,420	26,100	62,000	19,230	108,000	160
Nov.	0	16,900	20,300	0	" 6,320	12,300	29,200	9,100	67,400	119
Dec.	4,370	32,900	21,200	0	" 5,400	10,500	25,000	7,730	41,800	5,720
Total	491,230	967,200	1,929,400	933,500	370,350	400,000	950,000	295,000	1,361,130	669,529

Month	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
Jan.	12,900	8,110	278	8,290	615	972	35,900	27,000	60,400	33,000
Feb.	11,300	5,680	4,500	5,770	1,290	387	43,300	31,700	46,600	31,200
Mar.	7,040	466	3,670	635	22,600	0	188,500	25,300	60,000	47,800
Apr.	8,810	300	0	7,900	49,500	0	198,000	88,000	176,000	80,100
May	10,300	44,800	158,000	526	204,000	0	546,000	349,000	269,000	117,000
June	0	93,100	77,000	307	587,000	0	851,000	271,000	443,000	40,200
July	19,600	70	12,600	20	158,000	0	58,800	96,600	337,000	16,300
Aug.	430	0	60,700	14,500	4,330	7,400	19,800	49,200	135,000	58,600
Sept.	0	16,500	21,000	9,310	1,030	11,000	3,320	2,820	167,000	14,300
Oct.	0	0	5,340	1,430	2,030	366,000	4,220	38,200	50,000	0
Nov.	0	0	12,800	298	298	48,400	25,500	59,300	54,900	5,080
Dec.	2,830	732	7,990	1,780	2,440	38,200	37,500	76,300	37,600	23,400
Total	73,210	169,758	363,878	50,766	1,033,133	472,359	2,011,840	1,114,420	1,836,500	466,980

* Partly estimated. " Estimated or Revised Record. For full explanation see Water Bulletin No. 12, pages 45-49.

\# In Water Bulletin No. 10 the daily flow for June 19, 1915 was erroneously shown as 4,300 s.f. It should have been 4,500 s.f. The monthly total above is correct as is that in W. B. 12.

MONTHLY AND ANNUAL DISCHARGES WITH NORMALS
From Earliest Feasible Dates
SAN MARCIAL TO LOWER PRESIDIO – IN ACRE FEET

RIO GRANDE AT EL PASO STATION

Month	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
Jan.	22,300	43,500	9,260	48,600	18,800	21,900	39,300	3,440	64,800	2,340
Feb.	17,200	20,900	11,900	32,300	35,000	23,200	32,000	16,300	63,700	32,000
Mar.	28,800	92,900	43,500	60,400	15,600	38,800	22,200	36,500	58,800	48,700
Apr.	61,500	117,000	31,900	96,000	50,700	73,000	37,800	53,800	54,200	48,600
May	270,000	274,000	248,000	382,000	88,600	259,000	143,000	93,800	73,300	46,600
June	234,000	33,100	229,000	514,000	43,100	228,000	184,000	112,000	76,200	28,600
July	24,800	69	435,000	126,000	5,680	147,000	76,700	53,700	141,000	28,300
Aug.	19,000	0	53,600	30,800	0	70,100	88,300	55,300	81,100	33,900
Sept.	118,000	129	11,600	20,300	0	8,210	59,900	25,900	78,300	19,500
Oct.	35,300	0	295,000	1,230	6,740	68,100	19,500	39,900	85,100	33,900
Nov.	20,600	0	119,000	18,400	17,100	51,000	1,930	595	43,800	20,300
Dec.	22,800	595	62,400	27,000	21,100	67,500	* 28,500	64,600	65,900	6,400
Total	874,300	582,193	1,550,160	1,357,030	302,420	1,055,810	733,130	555,835	888,200	349,140

Month	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Jan.	3,520	24,200	6,640	17,800	16,500	17,500	11,600	12,200	13,900	12,700
Feb.	17,100	13,100	24,800	47,900	33,700	48,500	29,200	15,400	24,600	26,600
Mar.	42,900	49,500	67,000	67,500	47,200	56,800	56,700	41,300	38,100	43,500
Apr.	56,400	50,400	53,900	85,500	72,200	91,000	75,100	65,400	59,000	80,100
May	90,200	72,500	76,600	74,900	87,300	122,000	73,200	69,400	71,700	68,600
June	71,100	82,600	93,600	79,000	90,300	98,200	68,400	75,200	73,800	72,900
July	67,200	84,100	105,000	83,200	90,900	111,000	79,800	88,900	86,800	86,300
Aug.	62,000	107,000	114,000	112,000	123,000	107,000	96,900	63,100	90,700	97,500
Sept.	50,900	74,800	116,000	82,300	60,400	77,400	87,400	65,000	80,600	67,300
Oct.	26,900	79,700	100,000	54,100	51,600	32,000	25,300	21,100	30,300	31,700
Nov.	16,500	28,200	69,200	36,700	23,300	21,100	15,300	21,000	29,500	22,300
Dec.	7,260	41,100	43,900	37,800	32,300	27,700	14,900	18,800	20,600	14,300
Total	511,980	707,200	870,640	778,700	728,700	810,200	633,800	556,800	619,600	623,800

Month	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Jan.	13,200	8,210	9,100	9,130	11,820	11,200	8,510	8,600	8,540	10,900
Feb.	18,000	16,300	13,900	16,880	24,870	33,100	8,800	10,700	10,200	16,800
Mar.	37,100	42,900	40,500	34,530	39,650	43,500	18,400	29,400	26,200	43,900
Apr.	62,500	62,500	56,800	57,240	66,470	56,700	44,900	50,800	60,400	66,300
May	70,700	58,800	53,700	62,460	63,490	60,700	47,600	62,500	69,500	71,100
June	56,200	67,800	63,100	73,630	79,110	62,000	56,700	62,800	73,300	78,500
July	83,000	82,400	76,440	78,460	82,600	73,800	69,900	76,500	76,300	78,000
Aug.	107,000	83,300	88,640	85,750	95,640	80,200	95,900	79,700	88,500	69,000
Sept.	51,500	51,900	52,480	67,440	66,680	48,000	65,800	50,500	68,200	61,000
Oct.	25,900	25,800	26,740	34,860	33,630	18,300	20,200	17,800	19,800	27,300
Nov.	14,300	16,700	22,250	24,370	20,460	11,400	11,500	12,500	17,100	16,600
Dec.	12,700	16,100	14,130	22,490	24,760	9,590	11,700	12,000	18,200	15,500
Total	552,100	532,710	517,780	567,240	609,180	508,490	459,910	473,800	536,240	554,900

Month	1939	1940	1941	1942	1943	Normal 1915 - 1943	Normal 1889 - 1943
Jan.	10,300	10,700	8,500	13,000	15,100	13,905	16,788
Feb.	15,700	12,700	7,230	52,200	21,800	24,348	22,185
Mar.	36,700	38,700	26,500	62,500	52,400	43,089	39,941
Apr.	56,000	57,800	61,400	139,000	78,600	64,166	71,748
May	59,600	52,200	58,600	357,000	82,500	82,536	157,409
June	64,100	68,300	61,600	304,000	82,100	84,798	145,488
July	73,500	68,900	74,200	198,000	85,600	84,845	83,921
Aug.	72,300	61,000	82,500	158,000	84,900	88,418	59,679
Sept.	61,200	41,700	71,600	171,000	63,500	66,834	45,391
Oct.	27,500	19,000	25,800	57,900	27,100	35,818	40,668
Nov.	18,200	11,900	16,700	21,000	21,300	20,897	21,824
Dec.	16,500	11,000	16,800	25,600	16,900	22,036	22,778
Total	511,600	453,900	511,430	1,559,200	631,800	632.690	727,820

DIVERSIONS FROM THE RIO GRANDE INTO THE AMERICAN CANAL

Month	1938	1939	1940	1941	1942	1943	Average
Jan.		61.5	61.5	122	6,540	8,110	2,979
Feb.		13,800	8,490	5,170	19,500	19,200	13,232
Mar.		34,600	33,000	24,450	45,000	50,100	37,430
Apr.		49,700	45,800	54,800	64,600	70,900	57,160
May		46,100	39,700	45,800	56,700	69,000	51,460
June	54,100	54,300	52,200	51,200	53,900	65,700	55,233
July	59,700	60,700	57,000	60,500	42,600	66,300	57,800
Aug.	61,000	58,900	55,000	59,000	44,000	74,600	58,750
Sept.	43,500	45,600	38,200	41,800	47,500	54,100	45,117
Oct.	26,400	27,300	13,100	16,800	39,000	25,900	24,750
Nov.	12,200	13,000	5,630	7,960	20,800	21,000	13,432
Dec.	13,600	8,730	8,440	11,800	25,500	16,700	14,128
Total	270,500	412,791.5	356,621.5	379,402	465,640	541,610	431,471

RIO GRANDE BELOW AMERICAN DAM

Month	1938	1939	1940	1941	1942	1943	Average
Jan.		10,300	10,600	8,370	6,480	7,020	8,554
Feb.		1,900	3,810	2,060	32,800	2,600	8,634
Mar.		2,060	5,710	2,020	17,500	2,240	5,906
Apr.		6,360	12,000	6,640	74,500	7,680	21,436
May		13,500	12,500	12,800	300,000	13,500	70,460
June	24,400	9,770	16,100	10,400	250,000	16,500	54,528
July	18,300	12,900	11,900	13,700	155,000	19,400	38,533
Aug.	7,980	13,300	6,040	23,400	114,000	10,200	29,153
Sept.	17,500	15,500	3,530	29,800	124,000	9,410	33,290
Oct.	901	197	5,810	8,990	19,000	1,260	6,026
Nov.	4,460	5,180	6,220	8,700	153	236	4,158
Dec.	1,910	7,760	2,520	4,990	120	210	2,918
Total	75,451	98,727	96,740	131,870	1,093,553	90,256	283,596

* Partly estimated.

MONTHLY AND ANNUAL DISCHARGES WITH NORMALS
From Earliest Feasible Dates
SAN MARCIAL TO LOWER PRESIDIO - IN ACRE FEET

DIVERSIONS FROM THE RIO GRANDE INTO THE ACEQUIA MADRE (MEXICAN CANAL)

Month	1938	1939	1940	1941	1942	1943	Average
Jan.	0	0	0	0	0	0	0
Feb.	0	0	0	0	0	0	0
Mar.	5,310	1,800	5,540	1,120	2,610	1,340	2,953
Apr.	8,720	6,040	11,720	6,440	9,580	6,570	8,178
May	17,380	12,990	12,200	11,200	16,110	13,300	13,863
June	12,130	9,760	11,960	10,200	15,700	10,050	11,633
July	7,910	10,010	8,480	10,360	15,170	11,560	10,582
Aug.	6,390	9,920	5,200	9,550	12,380	9,550	8,832
Sept.	2,240	9,710	3,140	6,450	12,380	8,860	7,130
Oct.	284	328	6	0	0	79	116
Nov.	0	0	0	0	0	0	0
Dec.	0	0	0	0	0	0	0
Total	60,364	60,558	58,246	55,320	83,930	61,309	63,287

RIO GRANDE AT JUAREZ STATION

Month	1938	1939	1940	1941	1942	1943	Average
Jan.		10,130	12,230	9,440	13,270	13,270	11,656
Feb.		8,130	9,090	4,730	42,690	11,900	15,308
Mar.		22,020	21,650	14,140	45,790	35,050	27,716
Apr.	33,420	35,060	30,940	40,350	111,500	52,440	50,615
May	28,010	29,330	23,380	31,650	325,100	48,090	80,923
June	44,280	36,140	40,070	32,140	272,400	50,610	79,275
July	49,350	42,390	42,730	44,900	162,500	53,470	65,895
Aug.	40,000	44,060	38,670	58,480	127,300	55,170	60,625
Sept.	42,470	35,330	22,280	48,970	143,800	35,470	54,723
Oct.	13,050	17,900	11,630	18,600	45,390	15,640	20,372
Nov.	12,140	13,170	9,360	13,350	8,640	9,700	11,058
Dec.	9,930	10,270	7,510	12,750	17,510	7,910	10,985
Total	272,650	303,930	269,540	329,500	1,315,890	388,720	489,151

RIO GRANDE AT ISLAND STATION

Month	1938	1939	1940	1941	1942	1943	Average
Jan.		8,800	8,900	7,900	11,400	11,900	9,780
Feb.		2,930	4,070	4,260	37,000	9,650	11,582
Mar.		876	954	3,700	21,000	10,300	7,366
Apr.		2,160	1,190	5,470	70,500	8,520	17,568
May		1,050	1,570	7,260	299,800	11,300	64,196
June		1,310	10,500	2,620	241,000	12,300	53,546
July		4,840	5,800	7,290	118,500	22,500	31,786
Aug.	ϕ 553	10,300	3,500	26,400	99,400	4,990	29,318
Sept.	29,400	12,000	1,760	28,400	119,200	10,700	33,577
Oct.	1,620	1,780	2,660	11,100	42,800	6,130	11,015
Nov.	2,220	296	11.5	1,950	5,840	2,130	2,075
Dec.	2,480	3,300	1,050	6,920	12,900	1,260	4,652
Total	35,720	49,642	43,965.5	113,270	1,079,340	111,680	276,461

RIO GRANDE AT TORNILLO BRIDGE STATION

Month	1924	1925	1926	1927	1928	1929	1930	1931
Jan.	11,700	11,800	11,800	12,900	8,240	8,150	8,640	8,300
Feb.	36,000	7,730	3,310	13,700	10,400	3,540	4,420	6,830
Mar.	31,600	7,370	8,710	13,900	8,120	4,670	9,160	8,920
Apr.	35,100	10,000	15,600	14,500	28,000	10,200	10,100	20,100
May	57,600	11,300	23,000	20,000	26,700	25,500	9,750	12,200
June	36,000	13,600	25,800	24,900	13,600	5,090	19,800	8,690
July	61,900	10,900	40,500	31,300	22,100	21,300	24,500	20,330
Aug.	39,200	54,500	9,980	51,900	59,200	59,600	27,500	40,840
Sept.	40,600	43,700	26,700	46,700	27,600	10,300	10,600	17,770
Oct.	14,700	13,600	17,700	12,200	13,900	12,700	10,300	10,350
Nov.	11,000	7,000	7,150	17,900	16,800	9,640	7,680	12,440
Dec.	18,800	6,330	11,600	16,100	10,700	7,350	11,100	9,460
Total	394,200	197,830	201,850	276,000	245,360	178,040	153,550	176,230

Month	1932	1933	1934	1935	1936	1937	Normal
Jan.	7,100	10,590	10,100	6,810	9,160	8,670	9,569
Feb.	10,470	12,250	20,400	2,060	5,670	4,750	10,109
Mar.	7,100	5,520	13,600	457	3,100	2,630	8,918
Apr.	6,960	15,520	3,470	640	2,100	3,740	12,374
May	12,530	11,800	6,060	609	4,980	13,500	16,824
June	14,490	31,010	2,570	1,520	5,200	14,000	15,448
July	17,640	24,490	9,180	1,620	8,820	7,150	21,552
Aug.	27,070	28,110	7,040	21,700	14,000	12,700	32,381
Sept.	23,300	22,640	8,040	44,100	26,200	24,400	26,618
Oct.	33,360	17,430	6,680	7,000	7,590	8,600	13,294
Nov.	12,950	9,250	3,150	5,200	5,660	8,250	9,576
Dec.	15,510	14,300	4,040	8,020	8,680	13,600	11,114
Total	188,480	202,910	94,330	99,736	101,160	121,990	187,977

RIO GRANDE AT COUNTY LINE STATION

Month	1938	1939	1940	1941	1942	1943	Average
Jan.	16,500	14,500	15,100	11,300	20,000	18,700	16,017
Feb.	17,200	9,270	8,800	7,360	47,900	18,400	18,155
Mar.	15,200	6,370	7,840	9,870	38,900	21,400	16,597
Apr.	15,800	9,570	7,870	17,700	84,200	23,100	26,373
May	13,900	7,460	6,980	22,600	303,000	21,800	62,623
June	27,500	6,870	17,000	17,750	239,000	22,300	55,070
July	42,400	11,400	14,100	24,300	140,000	37,900	45,017
Aug.	15,800	19,000	15,500	46,800	123,000	18,000	39,683
Sept.	46,600	23,900	8,290	45,400	140,000	24,100	48,048
Oct.	13,300	15,500	11,200	31,400	61,400	21,000	25,633
Nov.	12,800	13,500	8,230	17,400	20,400	17,900	15,038
Dec.	13,900	12,900	8,770	20,800	29,700	17,200	17,212
Total	250,900	150,240	129,680	272,680	1,247,500	261,800	385,466

ϕ August 17-31; Record began August 17, 1938 and not included in total or average.

MONTHLY AND ANNUAL DISCHARGES WITH NORMALS
From Earliest Feasible Dates
SAN MARCIAL TO LOWER PRESIDIO - IN ACRE FEET

RIO GRANDE NEAR FORT HANCOCK

Month	1900	1901	1902	1903	Average
Jan.		0	6,880	0	2,293
Feb.		0	3,150	0	1,050
Mar.		0	0	8,150	2,717
Apr.	0	0	0	25,960	6,490
May	18,050	107,100	0	134,100	64,812
June	57,350	60,400	0	324,800	110,638
July	0	4,130	1,590		1,907
Aug.	0	38,200	2,920		13,707
Sept.	3,870	14,300	7,240		8,470
Oct.	2,640	5,750	1,060		3,150
Nov.	0	12,480	0		4,160
Dec.	0	7,740	0		2,580
Total		250,100	22,840		221,974

RIO GRANDE AT FORT QUITMAN STATION

Month	" 1889	" 1890	" 1891	" 1892	" 1893	" 1894	" 1895	" 1896	" 1897	" 1898
Jan.	12,200	7,350	22,400	17,600	3,100	5,900	15,500	5,700	12,800	27,300
Feb.	8,200	7,350	20,900	19,000	3,400	4,500	14,100	2,650	5,400	24,600
Mar.	14,200	7,500	82,200	24,500	390	4,750	19,200	500	200	14,100
Apr.	41,200	88,500	162,000	124,000	7,880	13,000	68,000	5,000	73,100	72,900
May	92,500	285,000	420,000	318,000	170,000	51,000	238,000	30,000	260,000	120,000
June	88,000	212,000	335,000	125,000	2,500	45,000	161,000	33,000	359,000	359,000
July	3,000	26,000	70,000	4,750	2,580	8,500	45,000	12,200	49,000	113,000
Aug.	100	10,100	2,250	0	3,470	550	7,200	860	3,410	7,400
Sept.	1,080	7,000	0	0	1,740	880	11,500	1,750	28,000	260
Oct.	150	340	77,200	0	2,250	8,380	36,000	10,900	71,200	20
Nov.	150	6,200	9,900	0	1,600	3,800	23,000	2,200	24,800	50
Dec.	0	21,200	12,200	350	1,150	3,300	15,200	1,600	34,900	1,900
Total	260,780	678,540	1,214,050	633,200	200,060	149,560	653,700	106,360	921,810	440,530

Month	" 1899	" 1900	" 1901	" 1902	" 1903	" 1904	" 1905	" 1906	" 1907	" 1908
Jan.	8,450	5,100	221	5,760	200	1,580	28,200	21,400	59,800	31,600
Feb.	6,450	3,000	1,070	3,080	350	1,580	30,200	28,600	44,800	27,000
Mar.	3,750	0	874	780	8,260	1,730	181,000	19,200	40,800	31,600
Apr.	3,000	0	469	2,320	28,700	2,040	145,000	68,000	148,000	60,600
May	5,500	10,700	63,400	1,680	131,000	1,510	349,000	291,000	217,000	84,400
June	540	50,800	47,200	1,080	315,000	4,410	720,000	233,000	385,000	25,400
July	8,250	3,020	2,440	4,100	162,000	1,440	37,400	37,400	295,000	2,480
Aug.	570	886	27,000	2,700	1,280	2,080	2,540	11,900	69,300	15,400
Sept.	670	7,560	16,600	7,500	2,030	8,300	5,550	1,550	162,000	7,100
Oct.	70	1,230	2,060	733	420	233,000	1,640	11,400	29,400	34
Nov.	540	196	6,230	706	346	28,000	10,700	41,800	47,200	707
Dec.	350	15	4,120	250	810	26,200	39,000	66,800	34,600	7,740
Total	38,140	82,507	171,684	30,689	650,356	311,870	1,550,230	832,050	1,530,900	294,061

Month	" 1909	" 1910	" 1911	" 1912	" 1913	" 1914	" 1915	" 1916	" 1917	" 1918
Jan.	13,800	29,900	3,790	49,800	10,600	10,500	24,700	8,440	34,800	11,100
Feb.	9,700	14,300	4,120	28,100	26,700	8,050	22,000	9,770	36,200	18,100
Mar.	11,200	52,800	12,900	33,500	9,650	20,000	14,700	12,800	28,200	21,200
Apr.	27,600	89,600	4,900	90,000	16,600	47,800	13,800	20,900	19,700	15,500
May	193,000	256,000	173,000	247,000	55,200	197,000	55,200	30,500	23,600	18,100
June	171,000	5,640	186,000	476,000	18,700	185,000	71,200	44,400	24,000	7,720
July	11,000	0	349,000	78,000	1,170	98,000	50,300	13,400	93,900	4,050
Aug.	241	0	16,300	16,800	548	34,900	51,200	26,100	55,600	19,000
Sept.	105,000	2,840	3,580	21,400	607	1,140	46,300	15,300	52,700	4,750
Oct.	13,900	2,200	200,000	444	592	39,500	18,300	30,800	51,200	26,200
Nov.	6,710	1,500	74,300	6,550	3,550	38,400	1,910	3,740	33,600	24,900
Dec.	13,800	1,140	53,600	22,800	10,100	69,200	6,280	35,900	41,000	11,600
Total	576,951	455,920	1,081,490	1,070,394	154,017	749,490	375,890	251,850	494,500	182,220

Month	" 1919	" 1920	" 1921	" 1922	1923	1924	1925	1926	1927	1928
Jan.	9,680	12,000	9,410	14,300	14,700	19,200	13,800	13,900	13,500	12,500
Feb.	11,600	6,740	14,900	28,900	21,700	30,400	15,800	8,650	14,100	13,100
Mar.	20,300	13,600	27,100	28,000	22,400	28,500	18,300	11,300	7,720	7,440
Apr.	20,800	16,400	17,700	32,900	17,900	31,600	13,500	22,800	11,300	21,000
May	36,100	23,600	30,500	25,300	21,900	50,700	14,700	31,100	13,500	25,400
June	25,900	33,800	32,500	24,100	25,000	31,000	18,700	27,300	19,500	9,670
July	34,800	27,000	39,500	21,500	29,700	61,800	8,880	48,300	14,000	12,300
Aug.	26,500	47,000	64,000	49,100	59,400	29,200	58,100	19,700	45,300	66,400
Sept.	45,700	41,300	68,500	46,100	39,300	41,900	59,500	26,400	42,200	36,700
Oct.	13,600	51,400	67,400	35,500	38,100	17,600	20,800	30,000	21,200	24,000
Nov.	12,200	24,900	52,600	29,100	18,900	12,900	13,200	17,400	20,200	20,900
Dec.	5,120	22,900	28,000	22,600	23,400	19,000	12,600	19,400	18,400	14,400
Total	262,300	320,640	452,110	357,400	332,400	373,800	267,880	276,250	240,920	263,810

Month	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Jan.	10,600	11,500	9,410	8,130	12,810	12,500	5,370	11,400	9,850	14,600
Feb.	8,660	9,330	10,200	12,140	15,620	20,500	3,510	7,990	6,550	14,900
Mar.	9,220	10,800	10,100	11,560	12,200	16,600	1,090	5,750	4,290	17,500
Apr.	7,560	11,500	34,700	7,130	12,630	7,770	1,200	4,650	5,300	* 15,000
May	22,000	11,600	21,700	9,180	10,760	7,340	880	7,710	12,100	14,500
June	7,140	25,500	8,750	9,410	29,010	4,480	3,630	7,960	19,500	22,500
July	14,400	22,000	17,220	13,940	20,530	4,600	4,300	6,630	10,700	60,900
Aug.	62,100	25,500	36,600	24,910	19,090	4,430	24,300	11,000	12,300	8,540
Sept.	15,600	10,000	17,640	27,410	28,910	9,050	57,200	37,400	* 33,900	58,700
Oct.	24,400	22,900	14,300	45,720	21,950	4,520	20,700	20,200	* 25,500	15,200
Nov.	17,100	12,300	16,480	20,620	13,030	4,990	10,500	13,700	17,600	18,300
Dec.	13,000	15,100	14,550	20,970	17,250	5,640	12,700	15,200	20,700	15,600
Total	211,780	188,030	211,650	211,120	213,790	102,420	145,380	149,590	178,290	276,240

* Partly estimated. " Estimated or Revised Record. For full explanation see Water Bulletin No. 12, pages 45-49.

MONTHLY AND ANNUAL DISCHARGES WITH NORMALS
From Earliest Feasible Dates
SAN MARCIAL TO LOWER PRESIDIO - IN ACRE FEET

RIO GRANDE AT FORT QUITMAN STATION

Month	1939	1940	1941	1942	1943	Normal 1915 - 1943	Normal 1889 - 1943
Jan.	12,200	15,300	9,260	20,100	20,900	13,654	14,664
Feb.	11,800	10,600	6,380	50,100	17,000	15,767	14,626
Mar.	6,610	6,510	7,650	38,900	20,100	15,187	18,837
Apr.	6,670	3,210	10,400	77,000	14,900	17,083	34,284
May	7,910	5,600	19,700	309,000	18,000	30,275	93,434
June	5,080	13,600	34,900	240,000	20,100	29,184	92,557
July	8,210	10,900	22,000	140,000	35,900	29,368	41,353
Aug.	22,900	21,100	53,100	127,000	5,690	37,074	23,871
Sept.	21,800	6,980	70,600	147,000	23,400	39,043	27,961
Oct.	19,000	10,500	45,800	66,500	24,800	28,555	28,566
Nov.	14,900	10,100	24,500	23,800	17,300	17,989	15,651
Dec.	15,100	9,920	26,200	31,000	15,200	18,232	17,656
Total	152,180	124,320	330,490	1,270,400	233,290	291,411	423,460

RIO GRANDE AT La NUTRIA STATION

Month	1935	1936	1937	1938	1939	1940	1941	Average
Jan.	‡ 3,000	11,000	9,070	15,000	13,100	14,800	9,850	10,831
Feb.	‡ 2,500	7,810	6,380	14,400	9,690	10,800	7,540	8,446
Mar.	‡ 500	4,940	3,650	13,600	8,030	7,360	8,160	6,606
Apr.	‡ 0	3,080	3,460	13,000	4,570	1,500	10,900	5,216
May	‡ 0	4,670	10,900	10,500	6,890	7,060	* 21,100	8,731
June	‡ 5,290	5,510	13,900	14,000	7,360	10,600	* 37,900	13,509
July	2,780	6,260	6,730	57,900	7,210	6,330	* 34,200	17,344
Aug.	40,300	12,200	13,300	10,500	21,800	27,900	* 76,600	28,943
Sept.	62,700	55,500	35,300	71,800	15,200	13,100	105,600	51,314
Oct.	24,400	20,400	42,700	13,500	16,900	12,000	‡ 79,300	29,886
Nov.	11,100	12,400	15,400	12,700	13,800	10,300	27,700	14,771
Dec.	13,500	13,800	17,600	13,100	15,800	10,400	22,400	15,229
Total	166,070	157,570	178,390	260,000	140,350	132,150	441,250	210,826

RIO GRANDE AT UPPER PRESIDIO STATION

Month	‡ 1889	‡ 1890	‡ 1891	‡ 1892	‡ 1893	‡ 1894	‡ 1895	‡ 1896	‡ 1897	‡ 1898
Jan.	11,000	4,940	20,200	14,700	928	6,980	13,600	6,990	12,200	24,400
Feb.	6,610	4,480	17,300	15,500	1,660	3,340	12,300	2,690	4,000	20,400
Mar.	13,100	3,630	64,700	20,000	0	2,430	15,100	0	0	11,400
Apr.	38,600	66,600	127,000	95,700	2,320	7,460	55,400	473	53,600	56,400
May	72,800	223,000	340,000	251,000	146,000	41,900	203,000	22,100	206,000	95,300
June	75,600	189,000	289,000	114,000	12,600	36,700	145,000	28,900	304,000	60,800
July	20,400	58,100	80,600	24,200	29,700	12,700	86,600	43,400	103,000	110,000
Aug.	6,290	47,400	18,700	17,300	43,900	23,300	53,400	19,600	66,200	38,500
Sept.	15,300	23,400	4,980	1,270	22,000	13,800	29,400	18,600	52,800	13,600
Oct.	3,990	12,000	55,800	0	12,400	14,100	51,900	39,000	83,200	0
Nov.	681	6,870	9,500	0	2,680	3,420	24,200	4,020	26,400	0
Dec.	0	18,900	13,500	495	1,040	2,560	14,500	1,410	33,500	2,950
Total	258,371	658,320	1,041,280	554,165	275,228	168,690	704,400	187,183	944,900	433,750

Month	‡ 1899	1900	1901	1902	1903	1904	1905	1906	1907	1908
Jan.	6,180	‡ 3,870	0	4,740	0	0	23,600	22,800	51,300	30,500
Feb.	4,260	‡ 1,950	0	1,610	0	0	23,400	28,700	42,800	26,100
Mar.	1,060	‡ 711	0	0	3,040	0	136,000	21,800	36,000	29,900
Apr.	2,830	‡ 0	0	0	16,600	0	115,000	40,000	113,000	49,900
May	3,380	3,930	43,100	0	74,800	0	262,000	228,000	162,000	84,400
June	3,420	46,800	41,600	159	103,000	11,800	604,000	231,000	320,000	33,200
July	37,500	9,830	8,450	34,900	167,000	100	143,000	72,500	272,000	11,500
Aug.	16,800	2,500	28,400	6,290	16,100	40	32,200	61,100	104,000	41,500
Sept.	10,000	12,100	26,900	12,200	4,720	17,400	22,800	12,500	173,000	25,400
Oct.	1,750	11,100	11,400	198	317	209,000	4,630	15,500	60,600	0
Nov.	1,470	0	9,320	1,680	0	51,800	9,510	40,800	57,800	0
Dec.	216	0	4,980	496	0	29,000	36,600	62,600	35,100	2,560
Total	88,866	92,791	174,150	62,273	385,577	319,140	1,412,740	837,300	1,427,600	334,960

Month	1909	1910	1911	1912	1913	1914	‡ 1915	‡ 1916	‡ 1917	‡ 1918
Jan.	8,250	18,700	0	51,300	7,930	5,440	27,400	6,280	29,100	10,200
Feb.	5,250	12,400	982	26,700	19,800	2,140	20,600	7,010	30,200	14,500
Mar.	4,340	33,800	1,330	24,700	11,300	12,000	18,000	9,120	22,200	16,900
Apr.	11,000	67,100	1,550	68,300	6,810	‡ 38,300	12,200	14,400	12,200	8,700
May	147,000	223,000	139,000	159,000	48,500	‡ 160,000	48,700	23,200	17,400	14,100
June	153,000	21,900	157,000	427,000	24,300	‡ 195,000	57,900	34,800	16,200	7,350
July	49,500	2,340	292,000	121,000	5,540	‡ 137,000	58,400	10,000	64,800	12,500
Aug.	4,360	0	89,200	61,000	883	‡ 82,600	62,200	40,200	77,700	40,300
Sept.	81,800	248	9,040	43,300	5,770	‡ 22,600	61,700	16,700	59,900	6,400
Oct.	14,000	0	138,000	8,380	1,530	‡ 56,000	25,000	32,200	45,200	23,800
Nov.	6,660	0	81,800	3,850	535	‡ 38,300	1,980	3,470	29,100	25,200
Dec.	10,000	0	52,600	23,400	8,150	‡ 64,700	5,160	30,800	34,700	11,300
Total	495,160	379,488	962,502	1,017,930	141,048	814,080	399,240	228,180	438,700	191,250

Month	1919	1920	‡ 1921	‡ 1922	‡ 1923	‡ 1924	‡ 1925	‡ 1926	1927	1928
Jan.	‡ 8,440	7,440	6,620	10,700	10,700	17,100	10,700	12,500	10,500	11,600
Feb.	‡ 9,500	1,780	12,000	23,500	19,100	27,000	12,300	7,400	10,100	12,000
Mar.	‡ 19,300	5,290	21,100	21,700	19,600	24,200	12,900	11,700	6,120	5,270
Apr.	‡ 16,000	‡ 11,000	10,500	26,700	10,400	23,600	6,640	18,400	4,930	13,200
May	‡ 31,900	‡ 18,500	23,700	21,000	13,400	40,400	14,400	29,300	6,400	26,500
June	‡ 27,100	‡ 37,600	34,700	19,700	19,600	19,300	14,400	23,200	11,700	3,240
July	‡ 46,200	‡ 25,500	50,100	22,400	28,500	73,900	18,800	66,400	3,230	2,640
Aug.	‡ 36,300	‡ 78,700	70,700	43,700	82,600	37,100	74,300	34,100	38,300	75,200
Sept.	** 66,100	‡ 45,000	65,500	37,600	44,400	42,400	62,400	40,600	45,400	29,800
Oct.	30,300	‡ 55,600	55,700	29,200	46,300	19,200	33,400	44,000	32,100	21,400
Nov.	10,700	‡ 23,400	46,200	25,300	18,400	11,600	13,300	17,600	26,800	25,900
Dec.	2,400	‡ 19,800	23,800	18,100	21,700	16,300	11,400	18,800	19,000	18,600
Total	304,240	329,610	420,620	299,600	334,700	352,100	284,940	324,000	214,580	245,350

‡ Estimated or Revised Record. For full explanation see Water Bulletin No. 12, pages 45-49. ** See footnote at bottom of page 54.

* Partly estimated.

MONTHLY AND ANNUAL DISCHARGES WITH NORMALS

From Earliest Feasible Dates

SAN MARCIAL TO LOWER PRESIDIO – IN ACRE FEET

RIO GRANDE AT UPPER PRESIDIO STATION

Month	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938
Jan.	10,480	12,190	10,090	8,860	14,300	11,700	644	9,690	8,330	13,100
Feb.	8,820	10,030	10,170	10,040	13,940	15,600	1,420	6,740	5,060	12,200
Mar.	8,660	6,690	7,740	10,160	11,890	14,500	285	4,560	1,830	9,990
Apr.	4,070	6,300	26,830	1,520	3,850	4,090	0	201	307	7,800
May	14,990	5,770	23,440	2,170	4,340	1,800	0	1,400	132	4,880
June	5,610	28,610	3,430	830	14,590	928	9,780	965	13,800	9,460
July	9,600	12,290	17,380	6,700	20,000	13	3,420	2,810	7,350	63,900
Aug.	62,580	41,340	31,450	42,260	11,810	2,170	13,600	12,000	9,800	10,900
Sept.	19,050	6,650	17,780	39,400	32,670	3,140	68,500	66,000	38,600	59,200
Oct.	39,460	43,900	14,900	61,480	22,870	0	22,800	25,200	36,400	12,000
Nov.	23,930	13,310	10,240	22,220	17,290	0	6,920	11,300	15,900	10,500
Dec.	13,170	13,620	10,280	21,330	14,790	374	9,130	12,900	15,400	9,840
Total	220,420	200,700	183,730	226,970	182,340	54,315	136,679	153,766	152,909	223,770

Month	1939	1940	1941	1942	1943	Normal 1915 - 1943	Normal 1889 - 1943
Jan.	11,500	12,400	8,350	21,800	24,400	12,314	12,866
Feb.	9,780	10,000	6,830	40,800	19,200	13,366	12,218
Mar.	6,350	4,070	4,150	39,100	22,600	12,620	14,769
Apr.	1,500	647	8,450	41,600	9,420	10,533	24,244
May	2,530	1,420	38,500	240,000	13,000	23,561	73,136
June	2,490	9,230	40,000	216,000	18,800	24,183	78,729
July	2,070	5,140	42,700	156,000	42,200	30,170	51,051
Aug.	27,700	31,900	69,800	133,000	2,790	44,638	39,565
Sept.	13,400	14,400	76,600	151,000	12,400	42,851	34,866
Oct.	12,600	8,730	105,000	79,200	25,200	34,591	32,872
Nov.	11,100	7,600	34,500	27,300	16,000	17,485	16,152
Dec.	12,500	7,600	28,900	30,900	20,600	16,323	16,230
Total	113,520	113,137	463,780	1,176,700	226,610	282,635	406,698

RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

Month	* 1896	* 1897	* 1898	* 1899	1900	1901	1902	1903	1904	1905
Jan.	48,300	86,800	44,900	27,000	* 27,700	11,100	11,200	22,000	11,000	44,600
Feb.	42,900	76,900	39,800	24,000	* 34,700	17,400	6,230	64,000	6,810	43,200
Mar.	33,800	60,600	31,400	18,900	* 22,300	12,200	3,610	27,100	4,670	44,000
Apr.	24,000	43,200	22,300	13,400	* 8,110	2,420	1,450	7,500	1,520	28,200
May	31,600	56,700	29,300	17,700	12,900	1,200	674	5,500	5,230	21,100
June	55,100	99,000	51,200	30,900	15,400	3,100	2,010	47,300	38,300	53,400
July	119,100	213,800	110,600	66,700	270,000	52,200	328,000	25,300	37,400	192,000
Aug.	231,200	415,000	214,800	129,500	378,000	80,900	344,000	95,200	56,400	407,000
Sept.	460,200	718,400	371,700	224,000	160,000	103,000	627,000	144,000	1,460,000	446,000
Oct.	167,800	301,200	155,900	93,900	94,200	63,100	79,300	119,000	399,000	285,000
Nov.	66,400	119,200	61,700	37,200	24,400	26,000	33,400	23,200	105,000	251,000
Dec.	58,600	105,200	54,400	32,800	14,600	13,500	29,800	15,500	98,000	261,000
Total	1,279,000	2,296,000	1,188,000	716,000	1,062,310	386,120	1,466,674	595,600	2,223,330	2,076,500

Month	1906	1907	1908	1909	1910	1911	1912	1913	1914	* 1915
Jan.	89,200	38,200	39,900	30,800	72,700	2,230	37,400	18,300	8,160	117,000
Feb.	187,000	22,000	23,100	25,800	34,200	9,620	27,600	68,100	7,120	76,300
Mar.	79,200	11,600	10,100	12,500	17,100	6,450	18,700	95,700	6,500	54,100
Apr.	24,700	3,200	1,300	10,000	18,300	10,600	5,100	10,900	* 4,050	4,050
May	13,100	10,100	4,000	20,100	1,100	53,100	8,100	13,000	* 117,000	80,700
June	23,400	24,400	7,300	28,400	46,500	220,000	6,400	37,000	* 444,000	85,000
July	557,000	63,500	73,200	311,000	129,000	230,000	14,600	26,000	* 426,000	61,700
Aug.	1,080,000	135,000	346,000	401,000	43,400	151,000	305,000	67,100	* 488,000	27,800
Sept.	433,000	353,000	388,000	366,000	125,000	250,000	594,000	143,000	* 532,000	218,000
Oct.	112,000	81,700	32,900	57,500	31,300	164,000	173,000	20,900	* 396,000	146,000
Nov.	46,100	257,000	24,800	27,200	14,800	106,000	42,000	4,040	* 153,000	67,800
Dec.	43,400	246,000	29,800	60,000	5,140	60,400	31,900	4,750	* 111,000	65,300
Total	2,688,100	1,245,700	980,400	1,350,300	538,540	1,263,400	1,263,800	508,790	2,692,830	1,003,750

Month	* 1916	* 1917	* 1918	* 1919	* 1920	* 1921	* 1922	* 1923	* 1924	* 1925
Jan.	4,050	22,000	4,050	83,300	45,700	38,900	15,900	33,400	147,000	56,700
Feb.	8,760	8,840	4,050	6,810	17,700	40,800	4,050	41,600	57,100	48,700
Mar.	4,050	4,050	4,050	4,050	4,050	43,800	4,050	31,400	42,500	56,100
Apr.	4,050	4,050	4,050	4,050	4,050	9,320	4,050	122,000	30,800	73,400
May	4,050	4,050	4,050	4,050	28,900	4,050	12,200	17,600	27,600	148,000
June	4,050	4,050	22,600	4,050	61,500	52,900	74,700	36,400	34,000	72,900
July	22,900	4,050	4,050	223,000	49,100	42,900	44,600	20,600	15,800	213,000
Aug.	105,000	18,400	264,000	759,000	936,000	4,050	18,000	114,000	11,300	601,000
Sept.	221,000	1,240,000	97,300	717,000	1,095,000	207,000	4,050	750,000	78,700	606,000
Oct.	107,000	206,000	122,000	284,000	82,000	210,000	24,100	156,000	106,000	279,000
Nov.	29,800	18,200	30,700	45,300	38,100	12,600	25,700	76,000	49,900	110,000
Dec.	8,510	4,050	33,400	23,400	13,100	18,500	20,300	91,900	46,100	90,200
Total	523,220	1,537,740	594,300	2,158,010	2,373,200	684,820	251,700	1,490,900	646,800	2,355,000

Month	* 1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
Jan.	96,500	87,500	89,300	85,300	66,100	20,300	50,900	50,700	64,500	44,600
Feb.	79,600	76,500	87,700	81,300	40,600	29,100	52,100	39,300	62,300	32,500
Mar.	68,200	80,000	74,700	80,800	24,300	46,500	44,700	43,700	59,200	20,900
Apr.	50,600	79,700	62,100	77,900	16,500	50,700	29,300	48,600	49,500	5,000
May	53,800	67,900	64,300	82,400	17,400	49,100	18,200	35,700	48,200	3,950
June	52,900	74,100	73,000	77,800	23,300	57,100	9,720	91,900	58,100	52,800
July	55,300	87,200	106,000	87,500	51,100	82,100	27,800	61,100	61,600	42,700
Aug.	276,000	107,000	177,000	106,000	155,000	86,800	128,000	85,200	43,500	60,400
Sept.	294,000	107,000	86,400	132,000	10,400	59,200	502,000	533,000	38,700	249,000
Oct.	216,000	86,900	95,500	88,000	47,200	66,000	798,000	200,000	41,000	116,000
Nov.	106,000	71,900	100,000	72,400	29,000	55,200	62,600	73,200	45,500	45,000
Dec.	93,200	88,000	97,700	67,700	28,700	59,600	50,900	69,400	44,100	26,600
Total	1,442,100	1,013,700	1,113,700	1,039,100	509,600	661,700	1,774,220	1,331,800	616,200	699,450

* Estimated or Revised Record. For full explanation see Water Bulletin No. 12, pages 45-49. ** U. S. G. S. Water Supply Paper 508 et. seq. show 18,080 sec. ft. at this station on Sept. 15 and 16, 1919. The original measurement notes in I.B.C. files show this was the flow at Lower instead of Upper Presidio on these days. From this and other records the following flows were estimated for Lower Presidio: Sept. 15 to 18 incl., 6,000, 6,000, 4,000 and 2,620 sec. ft. respectively.

MONTHLY AND ANNUAL DISCHARGES WITH NORMALS
From Earliest Feasible Dates
SAN MARCIAL TO LOWER PRESIDIO – IN ACRE FEET

RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

Month	1936	1937	1938	1939	1940	1941	1942	1943	Normal 1915 - 1943	Normal 1896 - 1943
Jan.	24,100	48,200	61,300	57,700	49,900	31,500	61,500	62,700	55,888	47,752
Feb.	31,800	46,600	40,000	60,200	43,100	51,300	43,600	58,900	43,835	42,327
Mar.	24,200	35,400	27,600	48,600	27,600	34,000	47,900	64,600	38,107	33,782
Apr.	11,600	11,800	8,650	17,700	12,900	49,500	24,200	24,300	30,842	23,639
May	11,300	20,300	13,700	13,700	32,200	138,000	30,900	28,200	36,707	30,958
June	8,720	36,000	74,800	17,300	49,900	49,800	51,000	46,900	46,803	53,967
July	22,200	37,700	502,000	44,500	81,600	141,000	50,000	185,000	83,728	118,198
Aug.	39,600	29,000	246,000	185,000	92,300	234,000	385,000	27,000	183,495	222,705
Sept.	329,000	165,000	1,141,000	43,500	74,400	442,000	1,175,000	74,700	368,495	385,930
Oct.	99,800	70,600	170,000	58,600	34,600	759,000	241,000	139,000	174,114	164,104
Nov.	52,100	30,500	87,100	59,300	30,200	106,000	109,000	37,000	57,797	64,553
Dec.	60,100	48,600	59,700	43,200	23,800	67,400	78,400	54,300	50,902	57,332
Total	714,520	579,700	2,431,850	649,300	552,500	2,103,500	2,295,500	802,600	1,170,708	1,245,247

RIO GRANDE AT LOWER PRESIDIO STATION

Month	# 1896	# 1897	# 1898	# 1899	1900	1901	1902	1903	1904	1905
Jan.	53,900	119,300	59,700	29,600	# 31,600	11,100	15,900	22,000	11,000	68,200
Feb.	49,100	108,500	54,300	27,000	# 36,600	17,400	7,840	64,000	6,810	66,600
Mar.	43,200	95,600	47,800	23,800	# 23,000	12,200	3,610	30,100	4,670	180,000
Apr.	37,700	83,300	41,700	20,700	# 8,110	2,420	1,450	24,100	1,520	143,000
May	77,500	171,400	85,800	42,600	16,800	44,300	674	80,300	5,230	283,000
June	111,700	246,900	123,600	61,300	62,900	45,400	2,870	151,000	50,800	658,000
July	148,500	328,300	164,300	81,500	281,000	61,400	364,000	193,000	38,200	336,000
Aug.	239,700	529,900	265,200	131,600	381,000	110,000	351,000	112,000	57,100	440,000
Sept.	384,700	850,400	425,600	211,200	173,000	131,000	640,000	149,000	1,480,000	469,000
Oct.	178,100	393,700	197,000	97,800	106,000	75,200	80,200	120,000	609,000	290,000
Nov.	74,500	164,600	82,400	40,900	24,400	35,300	35,100	23,200	157,000	261,000
Dec.	67,400	149,100	74,600	37,000	14,600	18,500	30,300	15,500	127,000	298,000
Total	1,466,000	3,241,000	1,622,000	805,000	1,159,010	564,220	1,532,944	984,200	2,548,330	3,492,800

Month	1906	1907	1908	1909	1910	1911	1912	1913	1914	# 1915
Jan.	112,000	89,500	70,400	39,100	91,400	2,230	88,700	26,200	13,600	144,000
Feb.	216,000	64,800	49,200	31,000	46,600	10,600	54,300	87,900	9,260	96,900
Mar.	101,000	47,600	40,000	16,800	50,900	7,780	43,400	107,000	18,500	72,100
Apr.	64,600	116,000	51,000	20,800	85,200	12,000	73,200	17,500	# 42,000	15,800
May	241,000	172,000	88,300	167,000	224,000	193,000	167,000	61,400	# 277,000	129,000
June	255,000	345,000	41,100	182,000	69,000	378,000	434,000	61,900	# 639,000	143,000
July	630,000	336,000	85,200	361,000	132,000	522,000	136,000	31,900	# 562,000	119,000
Aug.	1,140,000	240,000	389,000	406,000	44,000	241,000	367,000	68,600	# 570,000	89,600
Sept.	446,000	527,000	414,000	449,000	126,000	260,000	638,000	149,000	# 555,000	280,000
Oct.	128,000	143,000	33,600	72,200	32,000	303,000	182,000	23,100	# 452,000	171,000
Nov.	86,900	315,000	24,800	33,900	14,800	188,000	45,900	4,570	# 191,000	69,800
Dec.	106,000	281,000	32,400	70,000	5,140	113,000	55,300	12,900	# 176,000	70,500
Total	3,526,500	2,676,900	1,319,000	1,848,800	921,040	2,230,610	2,284,800	651,970	3,505,360	1,400,700

Month	# 1916	# 1917	# 1918	# 1919	# 1920	# 1921	# 1922	# 1923	# 1924	# 1925
Jan.	10,300	51,100	14,200	91,700	53,100	45,500	26,600	44,100	164,000	67,400
Feb.	15,800	39,000	18,600	16,300	19,500	52,800	27,600	60,700	84,100	61,000
Mar.	13,200	26,200	21,000	23,400	9,340	64,900	25,800	51,000	66,700	69,000
Apr.	17,900	15,600	11,900	19,200	14,200	18,900	29,800	132,000	53,500	79,100
May	27,000	21,100	17,600	35,400	46,900	27,200	32,700	30,500	67,500	162,000
June	38,600	19,900	29,500	30,700	98,600	87,100	93,900	55,500	52,800	86,800
July	32,200	67,900	15,300	268,000	73,300	91,700	65,700	47,800	88,500	231,000
Aug.	145,000	95,500	303,000	795,000	1,014,000	74,000	60,900	196,000	47,600	675,000
Sept.	238,000	1,300,000	104,000	783,000	1,138,000	272,000	41,600	794,000	121,000	668,000
Oct.	139,000	251,000	146,000	314,000	138,000	266,000	53,300	202,000	125,000	312,000
Nov.	33,300	47,300	55,900	56,000	61,500	58,800	51,000	94,400	61,500	123,000
Dec.	39,300	38,800	44,700	25,800	32,900	42,300	38,400	114,000	62,400	102,000
Total	749,600	1,973,400	781,700	2,458,500	2,699,340	1,101,200	547,300	1,822,000	994,600	2,636,300

Month	# 1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
Jan.	109,000	98,000	101,000	95,800	78,300	30,400	59,800	65,000	76,200	45,200
Feb.	87,000	86,600	99,700	90,100	50,600	39,300	62,100	53,200	77,900	33,900
Mar.	79,900	86,100	79,900	89,400	30,900	54,200	54,900	55,400	73,600	21,200
Apr.	68,100	84,100	74,800	81,400	22,300	77,000	30,700	51,500	53,000	4,460
May	82,600	74,000	90,500	97,100	22,800	72,200	19,900	39,800	49,700	3,660
June	75,600	85,900	75,900	83,100	51,600	60,200	10,100	106,000	58,700	62,300
July	120,000	89,600	108,000	96,300	62,600	98,700	34,400	80,100	60,800	45,300
Aug.	309,000	145,000	252,000	168,000	196,000	118,000	170,000	96,400	45,200	73,500
Sept.	335,000	152,000	116,000	151,000	17,000	77,000	542,000	566,000	41,800	318,000
Oct.	260,000	119,000	117,000	128,000	91,200	80,900	859,000	223,000	41,000	139,000
Nov.	124,000	98,700	126,000	96,300	42,300	65,400	84,800	90,500	45,500	51,900
Dec.	112,000	107,000	116,000	80,900	42,300	69,900	72,200	84,200	44,500	35,900
Total	1,762,200	1,226,000	1,356,800	1,257,400	707,900	843,200	1,999,900	1,511,100	667,900	834,320

Month	1936	1937	1938	1939	1940	1941	1942	1943	Normal 1915 - 1943	Normal 1896 - 1943
Jan.	33,800	56,500	74,400	69,200	62,300	39,800	83,300	87,000	68,172	61,092
Feb.	38,500	51,700	52,200	70,000	53,100	58,200	84,400	78,000	57,200	55,554
Mar.	28,800	37,200	37,600	55,000	31,600	38,100	87,000	87,100	50,708	49,323
Apr.	11,000	11,200	15,600	18,400	12,700	57,200	65,000	33,100	40,671	42,203
May	12,300	19,900	18,100	15,800	33,200	177,000	270,000	40,900	59,874	86,139
June	9,250	49,300	83,800	19,400	58,700	89,500	267,000	65,500	70,629	124,328
July	23,900	43,800	564,000	45,600	85,700	183,000	204,000	226,000	112,834	168,010
Aug.	50,900	38,000	256,000	212,000	124,000	304,000	517,000	29,300	227,583	264,229
Sept.	395,000	204,000	1,200,000	56,800	88,800	518,000	1,324,000	87,100	411,348	425,146
Oct.	125,000	107,000	183,000	71,200	43,400	864,000	320,000	164,000	208,724	199,332
Nov.	63,400	46,400	97,600	70,400	37,800	141,000	136,000	53,000	75,293	83,058
Dec.	73,000	64,000	69,500	55,700	31,400	96,300	109,000	74,900	67,234	75,699
Total	864,850	729,000	2,651,800	759,500	662,700	2,566,100	3,466,700	1,025,900	1,450,270	1,634,133

Estimated or Revised Record. For full explanation see Water Bulletin No. 12, pages 45-49.

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

In Thousands of Acre Feet

The data below cover all reservoirs in the Rio Grande Basin having over 15,000 acre-foot capacity. The monthly figures represent the acre feet of water in storage on the last day of each month.

The names of the reservoirs and the sources of the data are: Rio Grande, Continental, Santa Maria, Terrace, Mountain Home, Sanchez, Costilla and El Vado data are from the Secretary of the Rio Grande Compact Commission. Bluewater data are from the Secretary of the Bluewater-Toltec Irrigation District. Elephant Butte, Caballo, Alamogordo, McMillan and Avalon data are from the United States Bureau of Reclamation. Red Bluff data are from the office of the Red Bluff Water Power Control District, Pecos, Texas. Willacy data are from the Willacy County Water Control and Improvement District No. 1.

The data for Boquilla Reservoir for 1943 is from the Compañia Agricola y de Fuerza Electrica del Rio Conchos, S. A. The data for Don Martin, Centenario and San Miguel are from the Banco Nacional de Credito Agricola, S. A. Data for Culebron, Villa Cardenas and Palito Blanco # 2 are from the National Irrigation Commission of Mexico. Regular water storage began in the new El Azucar Reservoir in March 1943. The data for storage in El Azucar are from the Lower San Juan Irrigation District of Tamaulipas, Mexico. For information on some temporary storage in El Azucar Reservoir in 1942 see Remarks under Rio San Juan Station at Santa Rosalia on page 39 of Water Bulletin No. 12.

On The United States Side

Month	Rio Grande (Capacity 51.1)		Continental (Capacity 26.7)		Santa Maria (Capacity 43.6)		Terrace (Capacity 17.7)		Mountain Home (Capacity 20.1)		Sanchez (Capacity 103.2)		Costilla (Capacity 15.7)		El Vado (Capacity 200.3)		Bluewater (Capacity 50.3)	
	Storage		Storage		Storage		Storage		Storage		Storage		Storage		Storage		Storage	
	1943	#Normal 1927-1943	1943	#Normal 1928-1943	1943	#Normal 1928-1943	1943	#Normal 1925-1943	1943	#Normal 1924-1943	1943	#Normal 1927-1943	1943	#Normal 1922-1943	1943	Average 1935-1943	1943	#Normal 1927-1943
Jan.	9.3	15.1	16.4	3.7	14.1	7.8	1.9	2.7	6.4	5.1	37.8	13.8	3.3	4.0	45.5	54.4	12.7	6.8
Feb.	10.6	16.4	16.4	3.7	14.7	8.5	2.5	3.1	6.9	5.5	37.4	13.8	3.7	4.4	49.8	54.7	21.1	8.2
Mar.	13.1	17.7	16.4	3.7	15.4	10.1	2.6	3.5	7.1	5.8	37.3	14.5	4.3	4.9	59.3	59.1	26.2	13.4
Apr.	8.8	17.2	16.2	3.9	15.4	12.0	1.3	4.1	7.3	6.4	35.2	16.4	5.0	6.2	125.0	123.5	29.0	17.6
May	3.4	25.4	15.0	5.8	15.3	16.8	.8	7.2	6.1	8.7	29.3	21.6	4.2	8.6	171.3	172.3	23.6	15.2
June	1.0	27.4	13.3	6.7	7.4	18.3	.7	9.1	2.0	8.6	21.6	20.3	2.2	7.6	142.7	160.1	17.5	12.0
July	.8	16.3	10.0	4.9	1.4	11.9	0	6.0	.1	6.3	14.1	14.3	1.8	4.4	102.6	124.9	13.8	10.2
Aug.	0	7.1	8.1	3.9	0	5.0	0	3.1	.1	4.0	10.8	12.0	2.0	2.9	67.8	85.8	10.0	8.8
Sept.	0	6.4	8.2	4.0	0	5.0	0	2.6	.3	3.7	11.7	13.4	1.2	2.5	37.6	62.5	8.6	8.5
Oct.	.1	7.9	7.8	3.5	.7	5.5	0	2.8	.5	3.8	12.6	14.2	1.4	2.8	26.1	54.8	7.2	7.9
Nov.	‡ 2.4	11.8	7.8	3.6	2.0	6.3	‡1.0	2.1	‡ .8	4.3	13.0	13.9	1.9	3.2	27.8	51.6	7.1	7.7
Dec.	4.7	13.2	7.8	4.2	3.0	6.9	1.9	2.5	‡1.2	4.6	13.6	13.6	2.2	3.6	30.8	54.7	7.0	7.4
Avg.	4.5	15.2	12.0	4.3	7.4	9.5	1.1	4.1	3.2	5.6	22.9	15.2	2.8	4.6	73.8	88.2	15.3	10.3
Max.	13.1	51.5	16.4	22.0	15.4	42.1	2.6	17.7	7.3	16.4	37.8	62.4	5.0	15.1	171.3	ϕ197.7	29.0	47.1
Min.	0	0	7.8	0	0	0	0	0	.1	0	10.8	1.6	1.2	‡ 0	26.1	2.3	7.0	0

Month	Elephant Butte (Capacity 2,219.0)		Caballo (Capacity 346.0)		Alamogordo (Capacity 157.0)		McMillan and Avalon (Capacity 44.8)		Red Bluff (Capacity 310.0)		Willacy (Capacity 25.0)		Total in United States Reservoirs (Capacity 3,630.5)	
	Storage		Storage		Storage		Storage		Storage		Storage		Storage	
	1943	Normal 1915-1943	1943	#Average 1938-1943	1943	#Average 1937-1943	1943	#Normal 1908-1943	1943	#Average 1936-1943	1943	#Average 1939-1943	1943	Estimated Normal
Jan.	1,759.1	1,046.9	314.2	187.6	98.2	85.2	44.0	34.2	300.0	164.5	17.2	16.8	2,672.1	1,648.6
Feb.	1,731.9	1,050.5	335.6	162.2	101.5	88.6	38.2	34.8	300.0	168.0	15.5	14.2	2,685.8	1,636.6
Mar.	1,693.5	1,041.2	304.8	131.9	94.4	75.4	27.8	32.3	295.2	167.1	18.2	16.7	2,615.6	1,597.3
Apr.	1,653.1	1,054.5	239.8	107.8	91.5	74.3	20.9	22.7	272.2	146.6	15.0	19.0	2,535.7	1,632.2
May	1,623.9	1,202.8	187.9	102.3	96.3	92.4	11.2	27.4	254.0	181.3	15.3	16.6	2,457.6	1,904.4
June	1,565.4	1,255.9	127.2	87.1	68.0	77.8	23.9	25.1	244.0	210.7	19.8	20.1	2,256.7	1,946.8
July	1,523.7	1,192.3	83.0	73.8	75.8	89.4	25.5	21.0	228.0	192.6	27.3	20.8	2,107.9	1,789.1
Aug.	1,454.4	1,113.3	15.6	54.6	38.3	84.0	13.7	19.2	183.0	173.8	13.8	16.6	1,817.6	1,594.1
Sept.	1,394.3	1,070.1	20.2	44.8	22.9	83.4	12.1	21.3	180.0	158.9	20.4	18.0	1,717.5	1,505.1
Oct.	1,329.3	1,065.6	70.4	74.6	24.0	87.0	7.6	24.3	185.0	159.7	17.1	19.5	1,689.8	1,533.9
Nov.	1,276.7	1,068.3	121.5	114.4	32.2	74.2	9.2	26.2	197.5	163.0	17.6	16.6	1,738.5	1,567.2
Dec.	1,250.6	1,072.0	180.4	154.0	37.8	76.4	12.6	30.8	210.0	167.6	17.6	18.9	1,781.2	1,630.4
Avg.	1,521.0	1,102.8	166.7	107.9	64.7	82.3	20.6	26.6	237.4	171.2	17.9	17.8	2,171.3	1,665.5
Max.	ϕ1,778.9	ϕ 2,302.8	ϕ335.6	ϕ 346.6	101.5	156.3	44.0	85.5	300.0	327.5	27.3	27.3	2,685.8	
Min.	ϕ1,250.6	3.3	ϕ 3.8	ϕ 1.9	22.9	14.2	7.6	0	180.0	11.0	13.8	8.8	1,689.8	

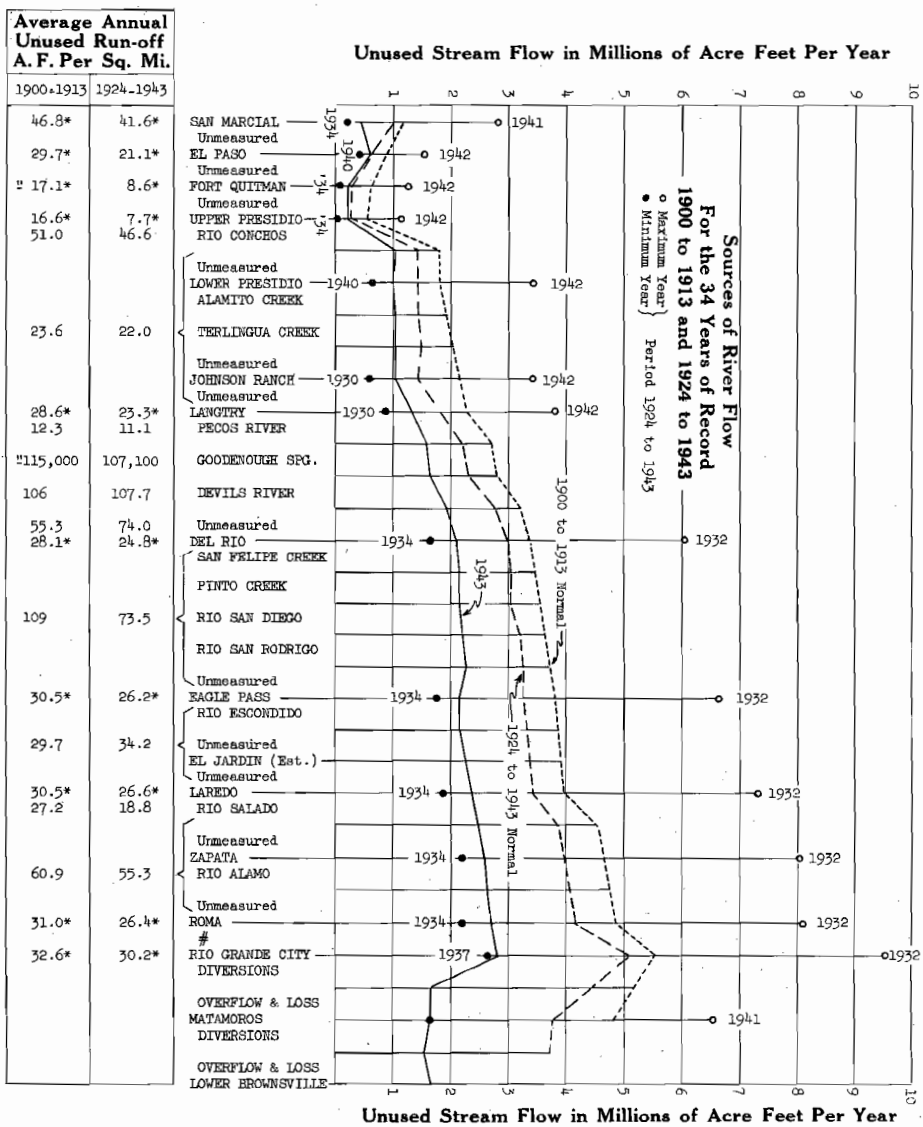
On The Mexican Side

Month	Boquilla (Capacity 2,116.0)		Centenario and San Miguel (Capacity 19.9)		Don Martin (Capacity 1,123.0)		El Azucar (Capacity 871.5)		* Culebron (Capacity 244.9)		Total in Mexican Reservoirs (Capacity 4,375.3)	
	Storage		Storage		Storage		Storage		Storage		Storage	
	1943	#Normal 1914-1943	1943	Normal 1934-1943	1943	Normal 1930-1943	1943	Estimated Normal	1943	#Average 1939-1943	1943	Estimated Normal
Jan.	1,967.3	1,529.6	13.0	11.4	184.0	396.8		400.0	84.6	66.7	2,248.9	2,404.5
Feb.	1,906.1	1,499.5	9.3	11.1	179.9	383.5		354.0	61.6	57.0	2,156.9	2,305.1
Mar.	1,808.0	1,453.4	3.9	8.6	169.1	363.6	6.7	309.0	30.4	44.4	2,018.1	2,179.0
Apr.	1,709.3	1,395.1	3.6	7.4	128.6	349.1	14.6	263.0	18.5	38.0	1,874.6	2,052.6
May	1,603.9	1,335.7	5.4	8.7	119.0	340.0	17.5	218.0	18.2	50.3	1,764.0	1,952.7
June	1,514.4	1,245.5	9.3	8.1	100.8	343.5	22.3	309.0	42.3	61.4	1,689.1	1,967.5
July	1,545.7	1,286.6	9.3	8.5	76.2	339.3	32.2	400.0	34.4	55.0	1,697.8	2,089.4
Aug.	1,578.0	1,471.6	9.7	9.2	65.0	327.9	28.0	490.0	19.3	49.6	1,700.0	2,348.3
Sept.	1,808.0	1,628.6	12.4	11.6	57.0	376.4	151.6	581.0	32.5	62.9	2,061.5	2,660.5
Oct.	1,907.4	1,619.7	13.4	11.9	69.8	389.2	214.3	536.0	49.4	69.8	2,254.3	2,626.6
Nov.	1,870.2	1,583.7	11.6	10.7	74.5	401.7	223.3	490.0	50.8	61.8	2,230.4	2,547.9
Dec.	1,869.8	1,570.2	13.9	10.9	71.9	403.9	248.6	445.0	60.4	63.4	2,264.6	2,495.4
Avg.	1,757.3	1,468.3	9.6	9.8	108.0	367.9	95.9	399.6	41.9	56.7	1,996.7	2,302.3
Max.	1,967.3	2,199.9	13.9	19.9	184.0	1,163.4	248.6		84.6	97.6	2,264.6	
Min.	1,514.4	54.0	3.6	.6	57.0	.7	6.7		18.2	18.2	1,689.1	

#Some months missing. ‡ Estimated by I.B.C. ϕ Daily Extreme. * Combined storage of Culebron, Villa Cardenas and Palito Blanco # 2.

SOURCES OF RIVER FLOW

A distinction must be made clear between the figures in the table at the lower or left side of this page showing average annual unused run-off, and the graphical part of the page, showing average annual unused stream flow. As an illustration of this distinction, consider these two different values at Lower Presidio. Both values are expressed as average annual amounts tributary to the station. The amount shown graphically above or to the right of the page is the water which actually flowed past this station. On the other hand, the amount shown by figures below, or to the left of the page, is the water which actually flowed past the station, and from which a certain amount of water is subtracted, and to which certain other amounts of water are added. In the case of Lower Presidio, these subtractive and additive amounts of water are (a) Subtractive - the water which ran off the watershed into Boquilla reservoir in years prior to 1924 and was drawn from the reservoir during the period 1924-1943. (b) Additive - the water impounded since 1924 and remaining in Caballo and Elephant Butte reservoirs at the close of 1943. (c) Additive - the water impounded since 1924 in El Vado and several small reservoirs on the upper Rio Grande in New Mexico and Colorado, and which remained therein at the end of 1943. This additive carry-over storage in El Vado and the small reservoirs on the Rio Grande above San Marcial averaged 3,200 acre feet per year. In Caballo and Elephant Butte reservoirs, the carry-over storage averaged 2,240 acre feet per year additive. The carry-over storage in Boquilla reservoir averaged 13,310 acre feet per year subtractive. Other carry-over storage figures are: Alamogordo, Avalon, McMillan, and Red Bluff on the Pecos River, 10,720 acre feet per year additive. Centenario and San Miguel on the Rio San Rodrigo, 695 acre feet per year additive. Don Martin on the Rio Salado, 3,595 acre feet per year additive. El Azucar on the Rio San Juan, 12,430 acre feet per year additive.



* Unused run-off at and above gaging station. " Estimated. # San Juan plus unmeasured. Prior to March 1943, the San Juan flowed into the Rio Grande and afterwards it was mostly retained in Azucar Reservoir.

DIVERSIONS FROM THE RIO GRANDE
INTO THE AMERICAN CANAL AT EL PASO, TEXAS

This concrete-lined canal diverts water from the Rio Grande at the American Dam near El Paso, Texas, 2.1 river miles above the International Dam near Ciudad Juarez, Chihuahua. The gaging station is an open channel rating station with water-stage recorder located 396 feet below the canal head-gates. The zero of the gage is 3,712.09 feet above U.S.C. & G.S. sea level datum. 1943 record good.

This canal was constructed by the United States Section in connection with the American Dam. Operation began June 2, 1938. Water from this canal discharges into the Franklin Canal from which some is frequently returned to the Rio Grande at spillways 2.2, 2.7 and 3.6 river miles below the American Dam. At times two small diversions are made from this canal. See the lower part of this page for details.

RECORDS: Based upon 43 current meter measurements during the year and a stable rating curve. Records available: June 2, 1938 (when the operation of this canal began) to December 31, 1943.

EXTREME FLOWS: The greatest mean daily flow in the canal occurred April 1, 1943, with a flow of 1,780 second feet. The lowest flow in the canal was .2 second foot on many occasions.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	251	" .5	682	1,320	1,050	1,280	1,080	1,030	1,170	503	313	323
2	250	" .5	669	1,140	1,130	1,150	981	1,300	1,180	523	296	300
3	249	" .5	669	1,090	1,230	1,090	973	1,300	1,120	506	307	282
4	378	" .5	662	1,130	1,240	1,030	959	1,240	1,080	491	298	274
5	326	55.3	646	1,380	1,240	1,000	985	1,150	1,120	545	286	273
6	137	232	675	1,230	1,220	1,080	1,130	1,120	1,090	576	294	269
7	" .5	234	749	1,200	1,270	1,190	1,080	1,140	984	560	284	273
8	" .5	241	730	1,330	1,150	1,050	992	1,340	914	536	283	266
9	67.3	402	719	1,240	652	1,000	832	1,360	867	496	277	271
10	245	379	668	1,190	1,090	1,020	789	1,330	851	437	278	259
11	224	376	632	1,340	1,310	1,120	844	1,280	822	444	283	258
12	232	316	603	1,260	1,190	1,160	1,210	1,210	801	454	290	248
13	232	251	654	1,180	1,150	1,190	* 999	1,130	855	231	285	248
14	236	220	688	1,070	1,140	1,350	950	1,120	940	343	290	238
15	232	214	941	995	1,010	1,130	1,080	1,120	891	314	291	236
16	153	224	803	938	1,120	1,110	1,290	1,270	868	295	284	236
17	" .5	540	754	994	1,140	1,100	1,130	1,230	925	277	278	234
18	" .5	477	777	1,130	982	1,120	1,180	1,210	807	256	291	232
19	" .5	436	742	1,370	891	1,060	1,150	1,210	820	383	425	224
20	" .5	460	724	1,270	917	1,020	1,320	1,210	925	438	500	223
21	" .5	526	803	1,360	1,000	1,070	1,320	1,160	810	472	567	228
22	" .5	576	1,100	1,330	1,260	1,080	1,230	1,170	761	465	618	229
23	" .5	535	872	1,200	1,350	1,030	1,130	1,260	880	455	527	226
24	144	585	876	1,140	1,330	986	1,140	1,420	1,230	492	412	232
25	220	591	915	1,150	1,120	952	1,180	1,410	1,240	465	366	232
26	213	599	826	1,250	1,050	993	1,170	1,200	924	391	396	232
27	213	596	919	1,100	1,010	1,330	1,260	1,160	702	351	439	241
28	80.6	637	1,090	1,090	977	1,350	1,180	1,100	619	350	425	382
29	" .5		1,370	1,080	1,010	1,020	1,020	1,140	566	352	388	421
30	" .5		1,130	1,230	1,190	1,040	932	1,140	517	328	341	401
31	" .5		1,180		1,390		887	1,170		315		405
Sum	4,088.9	9,704.3	25,268	35,727	34,809	33,101	33,403	37,630	27,279	13,044	10,612	8,396

Month	1943 Extreme Gage Feet High	Low	Extreme Second Feet High Day	High	Low Day	Low	Average Second Feet	Total Acre Feet	⊕ Period 1938-1943 Acre Feet Average	Maximum	Minimum
Jan.	7.75		9	616	‡ 7	" .5	132	8,110	2,979	8,110	61.5
Feb.	8.04		28	696	‡ 1	" .5	347	19,200	13,232	19,500	5,170
Mar.	10.41	7.45	29	1,470	12	578	815	50,100	37,430	50,100	24,450
Apr.	11.13	8.68	1	1,780	16	873	1,190	70,900	57,160	70,900	45,800
May	10.32	7.45	31	1,480	9	560	1,120	69,000	51,460	69,000	39,700
June	10.66	7.78	28	1,580	30	621	1,100	65,700	55,233	65,700	51,200
July	10.64	8.18	16	1,600	10	750	1,080	66,300	57,800	66,300	42,600
Aug.	10.60	8.68	25	1,570	1	906	1,210	74,600	58,750	74,600	44,000
Sept.	9.84	6.79	24	1,330	30	465	909	54,100	45,117	54,100	38,200
Oct.	7.50		5	599	13	" 3.0	421	25,900	24,750	39,000	13,100
Nov.	7.95	5.83	22	678	18	256	354	21,000	13,432	21,000	5,630
Dec.	6.97	4.80	28	442	20	122	271	16,700	14,128	25,500	8,440
Yearly	11.13			1,780		" .5	748	541,610	431,471	541,610	356,622

‡ And other days. * Partly estimated. " Estimated.

⊕ The average maximum and minimum discharges for January through May are for period 1939-1943.

DIVERSIONS FROM THE RIO GRANDE
BETWEEN AMERICAN DAM AND INTERNATIONAL DAM
Near El Paso, Texas.

Two small diversions on the American side and none on the Mexican side were made in this section in 1943, either directly from the Rio Grande, or from the American Canal. From information furnished by the American Smelting and Refining Company and the Globe Mills, Inc., and from frequent inspection, it is estimated that the Smelter diversion averaged 1 second foot and the Globe Mill averaged .5 second foot. Thus a total of 1,086 acre feet were diverted in 1943.

DIVERSIONS FROM THE RIO GRANDE
INTO THE ACEQUIA MADRE (MEXICAN CANAL)
Near Juárez, Chihuahua, Together With Corresponding
ACREAGE CULTIVATED, WATER DUTY AND RAINFALL

This canal diverts water from the Rio Grande at the International Dam at Juarez, Chihuahua, 2.1 river miles below the Américan Dam at El Paso, Texas. The gaging station is an open channel rating station with water-stage recorder located 1 mile below the head of the canal and a few hundred feet above the first spillway on the canal.

The record is based upon 120 current meter measurements at this station during the year, 95 by the Mexican Section and 25 by the United States Section of this Commission. Computations by shifting channel methods. 1943 records good. This record began with 1938, the year the American Dam began operating.

In 1943, 50,720 acre feet were distributed to 15,424 acres of land irrigated in the first unit under the canal where a diversion duty of 3.29 acre feet per acre was obtained. The remainder of the water from this canal was used, together with drainage water (which entered the canal at the lower end of the first unit) to irrigate lands farther down the canal.

The average annual evaporation from standard United States Weather Bureau pan in this region is approximately 95 inches per year. See evaporation records elsewhere in this Water Bulletin.

Mean Daily Discharge in Second Feet 1943 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	96.4	204	186	295	130	172	39.9	0	0
2	0	0	0	123	256	158	245	136	175	0	0	0
3	0	0	0	117	242	152	215	145	178	0	0	0
4	0	0	0	117	221	174	243	153	180	0	0	0
5	0	0	0	120	220	181	227	152	191	0	0	0
6	0	0	0	109	224	180	218	156	166	0	0	0
7	0	0	9.9	109	224	169	144	152	143	0	0	0
8	0	0	25.1	115	216	165	156	158	148	0	0	0
9	0	0	22.2	107	221	170	148	142	146	0	0	0
10	0	0	25.4	106	213	165	154	166	151	0	0	0
11	0	0	26.1	124	218	163	159	143	152	0	0	0
12	0	0	26.8	115	205	160	169	152	151	0	0	0
13	0	0	28.3	112	206	167	161	156	149	0	0	0
14	0	0	27.9	111	194	167	161	155	164	0	0	0
15	0	0	29.3	116	197	163	163	150	152	0	0	0
16	0	0	30.4	120	214	167	229	153	158	0	0	0
17	0	0	27.2	117	219	162	265	159	156	0	0	0
18	0	0	25.8	109	212	157	263	164	150	0	0	0
19	0	0	32.1	120	216	162	304	156	165	0	0	0
20	0	0	28.3	107	203	167	210	154	176	0	0	0
21	0	0	26.1	103	213	158	178	155	178	0	0	0
22	0	0	27.5	104	226	152	173	160	161	0	0	0
23	0	0	33.5	110	224	147	172	165	172	0	0	0
24	0	0	32.8	105	222	147	168	164	155	0	0	0
25	0	0	23.0	108	217	146	161	183	95.0	0	0	0
26	0	0	23.0	112	211	153	158	150	89.7	0	0	0
27	0	0	22.6	99.6	* 210	166	144	160	103	0	0	0
28	0	0	24.0	92.9	* 202	188	138	156	94.3	0	0	0
29	0		29.0	98.5	* 207	236	136	159	98.2	0	0	0
30	0		36.4	108	* 216	239	137	161	99.6	0	0	0
31	0		32.8		* 232		136	168		0		0
Sum	0	0	675.5	3,311.4	6,705	5,067	5,830	4,813	4,468.8	39.9	0	0

Month	Rainfall: Average 1943	Rainfall: Normal 1938 to 1943	Extreme Second Feet — 1943: High Day	High	Low Day	Low	Average Second Feet 1943	Acre Feet: Total 1943	Period 1938-1943: Average	Maximum	Minimum
Jan.	.23	.50					0	0	0	0	0
Feb.	0	.26					0	0	0	0	0
Mar.	.07	.34	30	43.8	#	0	21.8	1,340	2,953	5,540	1,120
Apr.	0	.25	11	147	1	24.0	110	6,570	8,178	11,720	6,040
May	.18	.37	1	357	1	96.4	216	13,300	13,863	17,380	11,200
June	1.34	1.00	29	420	24	137	169	10,050	11,633	15,700	9,760
July	1.20	1.27	3	403	55	91.5	188	11,560	10,582	15,170	7,910
Aug.	.48	1.53	25	277	2	118	155	9,550	8,832	12,380	5,200
Sept.	1.23	1.54	20	183	28	70.3	149	8,860	7,130	12,380	2,240
Oct.	.11	.79	1	81.9	#	0	1.3	79	116	328	0
Nov.	.63	.43					0	0	0	0	0
Dec.	.96	.62					0	0	0	0	0
Yearly	6.43	8.90		420		0		61,309	63,287	83,930	55,320
Acreage Irrigated on the First Unit only								15,424	ϕ 16,030	ϕ 17,090	ϕ13,967
Mean Acre Feet Per Acre on the First Unit only								3.29	ϕ 3.22	ϕ 3.90	ϕ 2.80
Average Rainfall in Inches (Entire Valley Floor above Island)								6.43	8.90	16.70	5.85

Various days of the month. * Partly estimated. ϕ Period 1939-1943.

DIVERSIONS FROM THE RIO GRANDE IN THE EL PASO VALLEY OF TEXAS

Together With Corresponding

ACREAGE CULTIVATED, WATER DUTY AND RAINFALL

The diversions of water listed below were made for use on lands in the El Paso Valley of Texas, lying between the American Dam and Fort Quitman gaging station.

The diversions were measured for 69,348 acres, or 98.8% of the total area. This area lies above the lower end of the Hudspeth County Conservation and Reclamation District Number One. These water measurement and acreage records were furnished by the El Paso office of United States Bureau of Reclamation. For 870 acres, (or 1.2% of the total area) lying below the Hudspeth District and above the Fort Quitman gaging station, the diversions were estimated.

From two diversions (the Franklin Canal below the Leon Street Wasteway and the Riverside Canal), there has been deducted the water spilled back to the river at 3 points, viz: 9.0, 19.0, and 26.1 river miles below the American Dam at El Paso. There is considerable re-use in this area of drainage and waste water from within the area. Final drainage water returns to the Rio Grande. This record began July 1, 1938.

The average annual evaporation from standard Weather Bureau pan in this region is approximately 95 inches per year. See evaporation records elsewhere in this Water Bulletin.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	417	1,312	1,110	1,135	921	1,085	1,201	211	274	288
2	0	0	320	1,192	1,080	1,207	732	1,336	1,247	236	267	295
3	0	0	429	1,238	1,112	1,177	786	1,136	1,143	225	260	308
4	0	0	407	1,133	1,107	1,206	832	1,085	1,101	276	276	237
5	0	0	643	1,288	1,134	1,174	820	1,234	813	238	260	229
6	0	108	543	1,252	1,190	899	785	1,173	1,005	214	242	207
7	0	161	615	1,306	1,152	1,207	751	1,157	1,134	255	251	264
8	0	152	649	1,417	1,153	1,051	866	1,212	956	290	255	224
9	0	186	692	1,313	708	1,132	901	1,270	1,169	284	308	174
10	0	187	639	1,218	1,035	1,060	894	1,189	935	305	288	254
11	0	187	743	1,025	1,219	1,180	914	1,258	785	243	298	205
12	0	187	573	1,212	1,177	1,117	999	1,306	782	220	299	214
13	0	169	339	1,271	1,099	949	1,138	1,210	770	356	292	236
14	0	150	412	1,317	1,241	1,112	1,092	1,148	836	265	287	225
15	0	150	647	1,114	1,165	1,159	1,074	1,048	834	337	314	232
16	0	156	834	1,011	1,127	1,254	935	1,308	812	312	292	233
17	0	204	845	1,049	1,202	1,303	1,139	1,311	874	265	261	188
18	0	239	866	1,119	1,109	1,223	1,245	1,249	806	251	269	161
19	0	249	756	1,249	978	1,146	1,215	1,296	750	282	328	160
20	0	307	830	1,130	1,033	1,012	1,118	1,316	837	405	413	156
21	0	261	766	1,286	955	1,233	1,194	1,276	806	422	397	164
22	0	267	942	1,155	1,071	1,218	1,211	1,041	811	471	367	160
23	0	266	929	1,128	1,100	1,176	1,122	1,218	754	443	333	174
24	0	330	1,034	681	1,085	1,109	1,089	1,338	577	493	382	182
25	0	369	1,002	684	1,112	1,120	954	1,464	422	495	260	156
26	0	546	941	1,265	1,242	1,137	1,126	1,313	92	518	324	146
27	0	462	1,030	995	1,143	1,020	1,335	1,315	577	483	361	171
28	0	725	996	1,153	1,114	1,274	1,215	1,216	509	474	288	216
29	0		1,152	1,113	965	1,603	1,040	1,107	432	259	235	315
30	0		1,097	1,188	721	982	1,057	1,275	319	379	295	341
31	0		1,276		1,192		1,046	1,243		296		360
Sum	0	6,018	23,364	34,814	33,831	34,575	31,546	38,133	24,089	10,203	8,976	6,875

Month	Average Rainfall 1943	Average Rainfall 1938 to 1943	Extreme Second Feet —1943 High Day	High	Low Day	Low	Average Second Feet 1943	Acre Feet Total 1943	Acre Feet ** Period 1938-1943 Average	Maximum	Minimum
Jan.	.25	.54		0		0	0	0	319	803	0
Feb.	0	.28	28	725	‡ 1	0	215	11,940	10,594	15,010	3,720
Mar.	.07	.37	31	1,276	2	320	754	46,340	34,664	46,340	21,600
Apr.	0	.27	8	1,417	24	681	1,160	69,050	55,386	69,050	49,400
May	.19	.40	26	1,242	9	708	1,091	67,100	49,774	67,100	41,700
June	1.44	1.08	17	1,303	6	899	1,152	68,580	55,346	68,580	49,100
July	1.30	1.37	27	1,335	2	732	1,018	62,570	56,787	62,570	44,200
Aug.	.52	1.65	25	1,464	22	1,041	1,230	75,640	56,710	75,640	48,020
Sept.	1.32	1.66	2	1,247	26	92	803	47,780	38,385	47,780	22,500
Oct.	.12	.85	26	518	1	211	329	20,240	20,050	25,700	13,900
Nov.	.68	.47	20	413	29	235	299	17,800	14,427	17,800	9,960
Dec.	1.03	.66	31	360	26	146	222	13,640	11,627	13,640	9,370
Yearly	6.92	9.60		1,464		0	692	500,680	404,069	500,690	355,883
Irrigated Acreage								70,218	67,950	70,218	61,751
Mean Acre Feet Per Acre								7.12	# 6.02	# 7.12	# 5.21
Average Rainfall in Inches								6.92	9.60	17.96	6.29

‡ And Other Days. ⊕ Mean Daily Extreme. # Period 1939-1943.

** January - June for the period 1939-1943; July - December for the period 1938-1943.

DIVERSIONS FROM THE RIO GRANDE
INTO THE MAVERICK CANAL EXTENSION BELOW THE POWER PLANT
Near Eagle Pass, Texas, Together With Corresponding
ACREAGE CULTIVATED AND RAINFALL

The Maverick Canal diverts water for power and irrigation from the Rio Grande into Texas at a point 17.4 river miles below the international bridge between Del Rio, Texas and Villa Acuña, Coahuila, and 711.0 river miles below the American Dam at El Paso,Texas. The tail water from the hydroelectric plant(cap.9,000 K.V.A.) returns to the river about 32.2 miles farther downstream.

The Maverick Canal Extension begins at the hydroelectric plant about 9 miles northward from Eagle Pass, Texas. The water-stage recorder is located on a wooden pile bridge about 1 mile below the headgate. Meter measurements are from bridge. Irrigation first began from this canal extension in June 1938. Records of canal discharge began April 1, 1939, and extend to December 31, 1943.

From this canal extension in 1943 there were 11,644 acres of land irrigated, northward and southward from Eagle Pass,as indicated in the table below. Under the Maverick Canal above the power plant the Maverick County Water Control and Improvement District reported that in 1943 the cultivated area was 3,073 acres, all of which were irrigated.

Some waste water from this canal extension reaches the river below the Eagle Pass gaging station.

The average annual evaporation from natural water surfaces in this region is approximately 65 inches per year. See Water Bulletin No. 5, page 58 and evaporation records elsewhere in this bulletin.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	175	162	154	170	147	149	117	138	136	136	166	148
2	169	163	159	174	163	150	119	138	124	129	157	167
3	173	163	153	174	165	134	118	131	129	157	124	178
4	168	162	146	180	160	151	137	129	154	159	125	172
5	165	161	153	175	149	78.4	134	125	157	150	122	211
6	167	163	148	177	161	119	128	120	154	147	120	173
7	163	174	169	175	161	133	130	127	155	146	153	179
8	163	162	144	174	162	129	128	132	159	144	128	172
9	164	157	149	180	176	136	136	130	149	153	141	167
10	167	158	156	180	174	134	145	123	145	139	139	164
11	164	160	157	181	174	131	153	118	150	139	142	150
12	165	151	159	176	169	112	132	116	168	135	144	212
13	164	158	160	174	159	117	140	125	148	139	147	168
14	164	171	166	174	161	115	138	135	147	131	190	175
15	166	159	162	172	162	121	141	139	145	138	139	166
16	162	150	159	171	174	120	143	128	147	159	148	154
17	172	147	159	171	170	121	142	122	146	155	138	168
18	168	152	157	183	161	121	149	125	144	161	156	175
19	163	146	155	171	160	122	147	124	141	153	140	164
20	161	157	145	179	158	130	143	120	143	152	162	158
21	166	171	155	176	164	125	140	132	137	156	214	166
22	165	160	151	172	163	123	141	107	137	165	153	177
23	167	153	137	170	167	120	137	131	133	141	163	170
24	173	160	141	168	156	121	144	125	127	146	156	164
25	163	154	152	179	143	121	146	120	136	145	152	167
26	163	152	158	166	148	123	124	140	133	148	147	175
27	160	146	155	159	147	129	124	153	131	145	137	167
28	164	170	176	160	148	119	136	146	131	155	149	154
29	163		169	158	147	116	130	148	145	166	168	155
30	164		171	156	98.4	114	135	140	148	174	168	166
31	174		170		140		130	135		163		165
Sum	5,145	4,442	4,845	5,175	4,887.4	3,734.4	4,207	4,022	4,299	4,626	4,488	5,247

Month	Rainfall		Extreme Second Feet — 1943				Average Second Feet 1943	Acre Feet			
	Average 1943	Normal 1924 to 1943	High		Low			Total 1943	Period 1939-1943		
			Day		Day				Average	Maximum	Minimum
Jan.	.60	.84	1	175	27	160	166	10,200	6,280	10,200	" 2,140
Feb.	.13	.72	7	174	‡19	146	159	8,810	5,040	8,810	" 2,120
Mar.	.22	.87	28	176	23	137	156	9,610	5,858	9,610	" 1,150
Apr.	.92	1.60	18	183	30	156	172	10,300	6,208	10,300	3,430
May	3.97	3.27	9	176	30	98.4	158	9,690	5,390	9,690	2,840
June	2.33	2.36	4	151	5	78.4	124	7,410	6,030	9,520	3,750
July	2.49	1.97	11	153	1	117	136	8,340	6,468	8,340	4,510
Aug.	.08	1.58	27	153	22	107	130	7,980	6,160	8,880	3,480
Sept.	4.48	2.98	12	168	2	124	143	8,530	6,040	8,530	4,600
Oct.	1.63	1.56	30	174	2	129	149	9,180	7,582	9,730	5,130
Nov.	1.83	.78	21	214	6	120	150	8,900	7,692	10,470	4,170
Dec.	1.63	1.24	12	212	1	148	169	10,400	8,322	10,400	4,280
Yearly	20.31	19.77		214		78.4	151	109,350	77,070	109,350	44,950
Irrigated Acreage								11,644	9,627	11,644	6,439
Mean Acre Feet Per Acre											
Average Rainfall in Inches								20.31	ϕ 19.77	ϕ 29.27	ϕ 11.80

ϕ Period 1924-1943. ‡ And Other Days. " Estimated.

DIVERSIONS FROM THE RIO GRANDE
ON THE UNITED STATES SIDE BELOW RIO GRANDE CITY STATION
Together With Corresponding
ACREAGE CULTIVATED, WATER DUTY AND RAINFALL

Diversions from the Rio Grande for irrigation are made here almost entirely by pumping. 90.6% of the water diverted was measured at the diversion point. The remainder was estimated. A very small part of the measurements were made by plant efficiency and power input; otherwise, measurements were by Venturi Meters, open channel rating stations, and Deflection Meters developed by this Commission. There is some re-use within the area, of drainage water from the area. Drainage water from this area does not return to the Rio Grande. During the year 86,806 acre feet of water were diverted and used on the new Willacy County Irrigation District, where 103,200 acres were cultivated, of which 45,000 acres were irrigated. The cultivated area and water diverted to Willacy County are all included in the tables below. During the year 3,010 acres were cultivated in Starr County below Rio Grande City gaging station, of which 1,600 acres were irrigated from the Rio Grande.

The cultivated areas shown here are all supplied with irrigation facilities. More than one crop per year is often grown on some of the land. The area actually irrigated this year was 84.5% of the cultivated area. The average annual evaporation from natural water surfaces in the vicinity is approximately 55 inches per year. See Water Bulletin No. 5, page 58.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,240	700	2,540	1,540	1,810	363	2,940	1,460	1,650	355	1,700	887
2	1,310	861	2,510	1,170	1,530	326	2,620	2,870	1,630	331	1,790	727
3	663	1,320	1,830	706	2,300	411	2,000	2,470	1,290	363	1,890	941
4	940	1,500	1,460	600	2,240	356	1,480	2,560	537	1,010	1,410	598
5	381	1,130	2,380	1,560	2,090	203	2,370	2,700	1,900	747	1,140	44
6	648	800	2,080	1,550	2,090	86	2,410	2,390	3,380	534	951	316
7	176	602	1,430	1,750	1,290	424	2,750	2,060	3,260	560	382	681
8	366	1,470	2,690	1,920	1,490	655	2,620	982	2,380	694	1,580	463
9	20	1,760	2,730	1,910	1,210	464	2,650	2,870	1,350	337	1,710	558
10	20	1,850	2,530	1,550	2,450	926	2,200	3,090	799	161	1,760	403
11	164	1,890	2,470	1,150	2,680	855	2,180	2,890	756	190	1,660	24
12	124	2,130	2,460	2,100	2,930	836	3,260	2,760	829	371	1,800	22
13	114	1,510	1,770	2,400	2,930	108	3,220	2,730	1,280	505	1,450	617
14	156	1,010	1,370	2,290	2,710	1,150	3,470	2,120	1,260	431	798	612
15	296	2,170	2,330	2,550	2,070	1,130	3,400	1,680	763	663	1,480	256
16	272	2,400	2,350	2,610	1,610	1,650	3,050	2,590	454	403	308	365
17	104	2,130	2,370	1,780	2,420	1,880	2,480	2,350	594	250	455	320
18	289	2,260	2,370	1,170	2,550	1,890	1,930	2,330	251	971	302	251
19	336	2,230	2,350	2,170	2,420	1,110	2,790	1,900	226	1,190	370	83
20	162	1,410	1,880	2,270	2,350	515	2,840	2,090	1,280	1,330	698	505
21	233	763	1,560	1,580	2,210	1,490	2,840	1,860	1,660	945	247	502
22	438	2,230	2,520	826	1,780	1,440	2,570	1,440	1,350	1,000	783	823
23	497	2,650	2,640	1,250	1,250	1,950	2,720	2,050	1,070	1,050	759	957
24	481	2,720	2,440	1,170	2,220	2,180	1,960	2,210	931	549	1,050	124
25	1,020	2,660	1,240	1,100	2,020	2,300	1,260	2,070	217	1,350	662	3
26	855	2,530	1,420	1,450	2,110	1,890	2,550	1,920	54	1,770	649	95
27	623	1,860	1,350	1,640	2,350	1,000	2,710	1,760	170	1,670	412	474
28	668	1,410	1,050	1,880	2,250	2,500	2,460	1,590	192	1,660	125	273
29	729		1,820	1,760	932	2,630	2,210	1,130	197	1,580	727	401
30	962		1,640	1,830	569	2,670	2,300	1,820	241	985	635	618
31	332		1,490		573		1,750	1,870		647		336
Sum	15,619	47,956	63,070	49,232	61,434	35,388	77,990	66,612	31,951	24,602	29,683	13,279

Month	Rainfall Average 1943	Rainfall Normal 1922 to 1943	⊕Extreme Second Feet —— 1943 High Day	High	Low Day	Low	Average Second Feet 1943	Acre Feet Total 1943	Period 1922-1943 Normal	Maximum	Minimum
Jan.	2.18	1.54	1	2,240	‡ 9	20	504	31,000	37,018	71,000	7,700
Feb.	.19	1.00	24	2,720	7	602	1,710	95,100	61,532	134,000	6,960
Mar.	.68	1.31	9	2,730	28	1,050	2,030	125,000	82,446	156,000	14,100
Apr.	.41	1.27	16	2,610	4	600	1,640	97,700	69,192	123,000	29,300
May	5.49	3.48	‡12	2,930	30	569	1,980	122,000	60,641	135,000	4,510
June	.39	2.95	30	2,670	6	86	1,180	70,200	57,660	129,000	1,500
July	.40	2.07	14	3,470	25	1,260	2,520	155,000	55,290	155,000	10,000
Aug.	.12	1.63	10	3,090	8	982	2,150	132,000	71,425	132,000	19,100
Sept.	6.02	4.91	6	3,380	26	54	1,070	63,400	49,481	110,000	8,020
Oct.	1.74	2.08	26	1,770	10	161	794	48,800	56,654	102,000	21,400
Nov.	2.37	1.38	3	1,890	28	125	989	58,900	50,201	99,300	11,500
Dec.	1.99	2.01	3	941	25	3	428	26,300	37,068	110,000	10,400
Yearly	21.98	25.63		3,470		3	1,420	1,025,400	688,608	1,051,000	472,500
Average Acreage cultivated below Rio Grande City								543,119	358,096	543,119	216,300
Mean Acre Feet per Acre								1.89	1.92	2.68	1.03
Average Rainfall in Inches								21.98	25.63	38.84	16.68

‡ And other days. ⊕ Mean daily.

DIVERSIONS FROM THE RIO GRANDE INTO THE RETAMAL CANAL

Near Rio Bravo, Tamaulipas

The Retamal Canal was constructed by the Flood Control Works Commission of the Lower Rio Grande Valley of Mexico. Its intake is 24.0 river miles below the Hidalgo-Reynosa bridge near Hidalgo, Texas and 1,108.8 river miles below the American Dam at El Paso, Texas. About 1,000 feet below its intake there is a canal control gate 1.2 miles below which are several gages installed September 1, 1939, where gage readings are taken as often as required by variation of flow. In July 1940 a water-stage recorder was installed at this point, and in June 1942 a cable was installed. Measurements are made by current meter during low flows and by floats during floods. The flow records for this canal began September 1, 1939. 1943 records good. 1943 records based upon 173 current meter measurements, 165 by the Mexican Section and 8 by the National Irrigation Commission. Retamal Canal has a capacity of 7,000 second feet. It empties into Culebron Lake which serves as a reservoir and which in turn discharges into Villa Cardenas reservoir or lake. During floods, flood water may escape from Villa Cardenas lake, via floodway No. 1, into the Gulf of Mexico. Also from Villa Cardenas lake a canal leads to Palito Blanco No. 2 reservoir. These lakes or reservoirs are also used for irrigation purposes.

In 1943 47,417 acres were cultivated under the Retamal Canal of which 38,857 acres were irrigated and 8,560 acres were dry farmed. On the irrigated area 4,309 acres were irrigated twice and the balance was irrigated only once. The average depth of each irrigation was .75 feet.

Mean Daily Discharge in Second Feet 1943 —— Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	280	241	141	95.7	0	519	27.2	547	0	276	123	125
2	343	228	89.4	92.9	0	597	24.3	540	0	463	84.1	136
3	344	225	78.8	101	0	731	29.3	392	0	360	59.7	147
4	345	222	86.2	126	0	717	41.7	276	63.9	657	59.3	179
5	625	226	82.3	132	0	551	52.6	209	812	1,056	81.2	406
6	1,296	235	59.3	66.0	0	388	0	166	547	1,081	371	533
7	848	260	77.7	39.2	0	1,925	0	141	364	1,035	459	336
8	509	299	88.6	35.6	0	2,140	0	147	212	745	269	216
9	459	249	58.6	33.5	0	1,162	0	148	166	667	127	163
10	449	231	45.9	40.6	0	675	15.9	98.9	293	671	78.0	132
11	445	205	44.9	50.9	0	448	243	63.2	752	1,056	53.3	138
12	441	201	39.6	218	0	427	427	39.6	731	1,059	34.6	143
13	427	186	42.4	364	0	357	632	20.8	413	724	31.4	149
14	406	211	55.1	270	0	243	1,635	14.5	267	537	35.3	141
15	403	196	63.9	124	0	177	1,741	21.5	219	456	39.2	130
16	392	142	49.8	66.7	0	188	706	20.8	148	388	43.4	141
17	378	121	49.8	57.2	0	229	424	7.8	111	334	60.0	161
18	378	99.3	51.6	47.7	0	160	364	0	122	302	74.5	164
19	340	78.4	56.5	36.7	2.1	110	309	0	156	259	79.8	162
20	320	89.0	56.9	23.7	2.1	121	445	0	129	214	61.8	192
21	344	126	75.2	0	1.7	159	442	0	87.7	197	54.4	202
22	351	145	84.1	32.1	1.8	139	364	0	44.6	192	68.2	189
23	319	89.7	60.4	53.7	1.8	95.4	206	0	20.1	196	61.8	156
24	296	69.2	48.4	57.2	2.5	46.7	204	0	14.9	242	46.3	225
25	318	63.9	57.9	51.9	890	26.9	290	0	32.6	258	45.9	339
26	295	62.9	91.5	43.4	1,444	38.5	307	0	78.1	236	45.6	286
27	265	78.4	123	0	1,031	97.1	316	0	141	201	41.3	242
28	262	118	168	0	883	111	268	0	367	162	47.7	254
29	267		143	0	830	57.9	224	0	341	138	55.8	250
30	251		93.6	0	664	36.4	273	0	240	132	49.4	240
31	249		84.0		604		417	0		136		261
Sum	12,645	4,697.8	2,347.4	2,259.7	6,358.0	12,672.9	10,428.0	2,853.1	6,872.9	14,430	2,741.0	6,538

Month	Rainfall **		Extreme Second Feet — 1943				Average Second Feet 1943	Acre Feet			
	Average 1943	Normal 1922 to 1943	High		Low			Total 1943	Period 1939-1943		
			Day		Day				Average	Maximum	Minimum
Jan.	2.18	1.54	6	1,340	30	233	408	25,080	11,432	25,080	2,090
Feb.	.19	1.00	8	313	26	60.7	168	9,320	4,511	9,320	85
Mar.	.68	1.31	28	179	12	37.1	75.7	4,660	7,575	20,100	0
Apr.	.41	1.27	13	388	#	0	75.3	4,480	5,058	10,300	1,410
May	5.49	3.48	26	1,640	#	0	205	12,610	18,325	25,600	12,610
June	.39	2.95	8	2,570	30	32.1	422	25,140	19,920	25,800	5,480
July	.40	2.07	14	2,160	#	0	336	20,680	10,345	20,680	360
Aug.	.12	1.63	2	611	#	0	92.0	5,660	12,734	29,740	138
Sept.	6.02	4.91	9	844	#	0	229	13,630	48,226	100,690	3,970
Oct.	1.74	2.08	11	1,210	30	129	465	28,620	49,924	93,990	28,620
Nov.	2.37	1.38	7	523	13	27.9	91.4	5,440	12,092	23,300	3,370
Dec.	1.99	2.01	6	569	24	109	211	12,970	11,504	20,000	3,070
Yearly	21.98	25.63		2,570		0	232	168,290	211,646	278,040	168,290
Acreage cultivated								47,417			
Mean Acre Feet per Acre								.68			
Average Rainfall in Inches **								21.98	ϕ 25.63	ϕ 38.84	ϕ 16.68

Various days of the month. ϕ Period 1922-1943. ** These are approximate rainfalls only.
Rainfall records are from the U. S. side of the Lower Rio Grande Valley.

MUNICIPAL WATER USES

Tabulated below are the yearly and monthly figures showing the amounts of water pumped into the municipal distribution systems of several towns along the Rio Grande on the United States and Mexican sides. The Del Rio water comes from San Felipe Springs, the Eagle Pass water comes from infiltration wells in or adjacent to the bed of the Rio Grande, the Cd. Guerrero water comes from the Rio Salado, the others from the Rio Grande. The municipal and industrial water supply for the El Paso area in Texas and Cd. Juarez in Chihuahua came from deep wells (See Outfalls from Deep Wells, page 11,hereof) prior to November 7, 1943, when the city of El Paso began diverting some water from the Rio Grande for municipal use as shown below.

On The United States Side—— In Acre Feet

Month	El Paso	Del Rio				Eagle Pass				Laredo			
	1943	1943	# Period 1931 - 1943			1943	Period 1932 - 1943			1943	Period 1931 - 1943		
			Average	Maximum	Minimum		Normal	Maximum	Minimum		Normal	Maximum	Minimum
Jan.		103.7	73.7	103.7	45.5	49.3	49.0	64.2	37.7	271.7	180.4	271.7	148.0
Feb.		121.6	69.2	121.6	46.0	46.5	50.5	64.3	40.2	297.2	191.0	297.2	159.0
Mar.		158.0	94.5	158.0	53.8	54.5	55.7	67.1	38.6	360.6	222.5	360.6	162.4
Apr.		175.0	112.0	175.0	79.8	72.8	69.5	83.9	60.3	422.1	267.0	422.1	145.5
May		170.4	123.0	170.4	81.4	77.5	65.9	77.5	55.4	510.4	269.0	510.4	194.6
June		179.4	143.5	190.1	92.5	63.7	77.9	108.0	49.4	505.6	304.0	505.6	182.0
July		220.8	157.2	220.8	101.1	113.3	87.8	113.3	61.2	544.4	310.1	544.4	209.1
Aug.		254.0	146.8	254.0	79.8	112.4	91.0	112.4	69.5	614.3	333.2	614.3	225.0
Sept.		165.0	117.0	165.0	65.1	80.2	77.3	98.6	49.6	389.1	274.8	389.1	212.0
Oct.		120.9	100.9	125.9	70.5	41.0	62.7	92.1	34.9	379.6	244.6	379.6	175.0
Nov.	176.8	125.9	79.8	125.9	59.3	50.7	57.6	99.9	39.9	377.8	237.0	377.8	174.0
Dec.	191.4	107.4	72.8	107.4	51.9	47.0	49.5	69.7	35.1	294.9	195.3	298.3	140.0
Yearly		1,902.1	1,290.4	1,902.1	1,006.0	808.9	794.4	914.0	673.0	4,967.7	3,028.9	4,967.7	2,448.0

Month	Roma				Rio Grande City				Brownsville, Texas			
	1943	Period 1931 - 1943			1943	Period 1931 - 1943			1943	Period 1932 - 1943		
		Normal	Maximum	Minimum		Normal	Maximum	Minimum		Normal	Maximum	Minimum
Jan.	2.4	8.8	14.3	2.4	36.7	19.5	36.7	13.2	141.5	81.6	141.5	58.7
Feb.	3.6	8.1	12.9	2.3	29.5	18.7	29.5	12.3	144.8	82.3	144.8	54.6
Mar.	4.7	7.6	9.5	2.0	35.3	24.0	35.4	18.6	168.8	99.7	168.8	66.2
Apr.	5.1	7.5	9.2	2.8	36.2	26.3	36.2	20.6	187.2	105.5	187.2	71.7
May	6.8	11.2	14.3	2.2	35.9	29.5	38.4	24.7	209.9	105.0	209.9	73.1
June	5.6	10.9	13.8	2.2	29.2	29.1	39.6	23.2	190.6	113.7	190.6	68.0
July	5.9	11.2	14.3	3.0	30.5	30.5	35.1	23.8	236.8	125.2	236.8	78.4
Aug.	5.2	11.2	14.3	3.5	32.9	31.2	47.7	21.2	247.6	133.9	247.6	80.0
Sept.	4.3	10.6	13.8	2.5	26.5	24.6	36.2	16.3	169.4	97.5	169.4	44.3
Oct.	3.4	7.6	9.5	2.9	20.3	23.2	35.8	14.4	159.0	100.4	159.0	66.3
Nov.	3.0	7.3	9.2	2.6	16.1	19.0	34.5	14.3	154.3	95.6	154.3	60.3
Dec.	2.6	7.4	9.5	2.3	15.7	18.5	36.0	12.8	146.4	87.7	158.1	54.9
Yearly	52.6	109.4	136.0	44.3	344.8	294.1	402.2	235.0	2,156.3	1,228.1	2,156.3	865.3

On The Mexican Side

Month	Nuevo Laredo, Tamps.				Cd. Guerrero	Matamoros			
	1943	Period 1928 - 1943			1943	1943	Period 1942 - 1943		
		Normal	Maximum	Minimum			Average	Maximum	Minimum
Jan.	101.9	89.1	117.9	46.8	5.0	72.0	70.2	72.0	" 68.4
Feb.	103.9	88.9	114.2	52.5	4.5	68.5	68.4	68.5	" 68.4
Mar.	134.4	113.3	140.0	72.7	6.3	76.0	72.2	76.0	" 68.5
Apr.	183.6	129.0	183.6	88.4	7.3	75.2	71.8	75.2	" 68.4
May	201.4	132.3	201.4	73.0	8.0	77.9	73.2	77.9	" 68.4
June	178.6	141.9	178.6	87.1	8.5	74.8	71.6	74.8	" 68.5
July	189.0	146.2	189.0	115.2	9.0	83.1	75.8	83.1	" 68.4
Aug.	202.0	154.1	202.0	106.6	10.1	104.8	86.6	104.8	" 68.4
Sept.	140.0	124.5	163.9	88.2	7.3	84.8	76.6	84.8	" 68.5
Oct.	139.6	119.7	161.2	63.1	6.5	85.1	76.8	85.1	" 68.4
Nov.	132.8	99.8	141.0	47.2	4.9	81.5	74.2	81.5	66.8
Dec.	120.7	92.8	127.8	58.1	5.0	77.2	73.6	77.2	70.0
Yearly	1,827.9	1,431.6	1,827.9	965.3	82.4	960.9	891.0	960.9	* 821.1

" Estimated. * Partly Estimated. # Some months missing.

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES — 1943

The gravimetric percentages of dried silt reported here were determined from numerous water samples taken in small necked bottles. Two methods of sampling were used.

A. By lowering one open bottle into the water at one or more verticals in the stream cross section, being careful to approach but not to strike bottom and thus to secure an integrated sample at all depths.

B. By sampling in three bottles each at the surface of the stream, one bottle at the mid-point and one bottle at each side, one-sixth of the width from the water's edge. Numerous experiments have shown that the mean of three samples so taken gives 0.908 of the mean suspended silt in the stream cross section within reasonable limits of accuracy. (See Tech. Bull. No. 382, 1933 U.S. Dept. Agr.)

The gravimetric percentages of dried silt were determined from the samples by two methods:

1. By determining the silt in a single monthly composite which was composed by using from each individual sample an amount proportional to the river flow represented by that sample. (One filtering, drying and weighing each month.)
2. By determining the silt in each sample bottle. (One filtering, drying and weighing for each bottle.)

For visualization and comparison the assumption is indulged here that 1,452 tons of silt would occupy one acre-foot in a reservoir bottom, which is equivalent to saying that one cubic foot of silt thus situated would weigh 66.7 pounds. See Water Bulletin No.7, page 63, for data as to the average density of Rio Grande silt in Elephant Butte reservoir.

SUSPENDED SILT IN THE RIO GRANDE AND SOME TRIBUTARIES AND DIVERSIONS — 1943

Month	SUSPENDED SILT									
	Tons		Number of Samples 1943	Gravimetric Percentages—1943			Acre Feet at 1,452 Tons Per Acre Foot			
								Period 1934 to 1943		
	Water 1943	Silt 1943		Maximum Sample	Minimum Sample	Average	1943	Average	Maximum	Minimum
Rio Grande at San Marcial Station ⊕ — Sampled by U.S. Section I.B.C., Method A. Analyzed by U.S. Section I.B.C., Method 1.										
January	71,720,000	115,469	31			.161	79.5	179.8	374.4	27.8
February	59,525,000	98,216	27			.165	67.6	268.4	1,027.0	23.3
March	50,277,000	82,454	31			.164	56.8	307.3	1,012.0	45.5
April	64,832,000	143,279	29			.221	98.7	792.7	3,780.0	18.6
May	73,832,000	206,730	27			.280	142.4	1,539.8	5,610.4	5.8
June	28,689,000	498,409	29			1.737	343.3	1,216.7	9,322.0	2.4
July	48,717,000	784,831	32			1.611	540.5	1,015.0	6,672.0	0
August	39,294,000	1,988,276	31			5.060	1,369.3	1,804.1	11,710.0	83.4
September	22,156,000	396,592	29			1.790	273.1	2,422.0	17,470.0	156.4
October	23,159,000	83,372	31			.360	57.4	806.2	6,520.0	0
November	26,268,000	76,440	29			.291	52.6	142.4	604.8	7.2
December	60,202,000	311,846	31			.518	214.8	161.6	346.4	30.3
Yearly	568,671,000	4,785,914	357			.842	3,296.0	10,656.0	41,317.6	2,459.7
Rio Grande at Eagle Pass Station — Sampled by Mex. Section I.B.C., Methods A & B ϕ. Analyzed by U.S. Dept. Agr., Method 2. ‡ Analyzed by U.S. Section I.B.C., Method 1. ‡										
January	267,188,000	51,837	18	.042	.006	.019	35.7	25.6	124.0	.1
February	211,697,000	31,303	24	.042	.003	.015	21.6	15.7	32.1	2.6
March	211,846,000	42,431	25	.048	.006	.020	29.2	33.6	187.9	4.7
April	171,958,000	69,580	25	.069	.008	.040	47.9	55.7	204.3	3.0
May	277,733,000	862,908	22	.814	.028	.311	594.3	828.9	4,217.8	31.2
June	266,271,000	298,224	25			.112	205.4	1,149.3	3,821.0	24.5
July	443,326,000	1,786,604	27			.403	1,230.4	1,424.6	7,835.8	95.2
August	167,859,000	241,717	24			.144	166.5	1,422.2	5,306.9	166.5
September	146,957,000	1,071,317	21			.729	737.8	3,671.0	10,802.8	60.7
October	367,272,000	1,076,107	19			.293	741.1	1,254.9	5,816.7	190.0
November	202,380,000	68,809	22			.034	47.4	121.7	305.5	14.3
December	194,936,000	54,582	16			.028	37.6	28.7	84.1	1.1
Yearly	2,929,383,000	5,655,419	268			.193	3,894.9	10,031.9	20,842.8	1,768.3
Rio Alamo Station — Sampled by Mex. Section I.B.C., Method B. Analyzed by Mex. Section I.B.C., Method 2.										
January	12,837,000	11,297	7	.204	0	.088	7.8	4.7	21.8	0
February	1,622,000	0	7	0	0	0	0	.1	.6	0
March	3,126,000	5,564	8	.257	0	.178	3.8	7.2	45.4	0
April	619,000	0	7	0	0	0	0	35.6	227.4	0
May	3,169,000	3,232	7	.119	0	.102	2.2	47.3	229.7	2.2
June	2,328,000	1,583	7	.116	0	.068	1.1	79.7	471.0	0
July	13,540,000	36,152	8	.341	0	.267	24.9	31.2	92.8	0
August	0	0	0	0	0	0	0	81.3	396.0	0
September	32,767,000	192,998	8	.833	0	.589	132.9	107.5	362.9	1.5
October	14,779,000	76,260	7	.644	0	.516	52.5	96.3	557.9	0
November	1,113,000	0	7	0	0	0	0	1.2	5.2	0
December	2,879,000	0	8	0	0	0	0	2.2	16.1	0
Yearly	88,779,000	327,086	81	.833	0	.368	225.2	494.3	1,198.6	154.5
Rio Grande at Roma Station # — Sampled by Mex. Section I.B.C., Methods A & B ϕ. Analyzed by U.S. Dept. Agr., Method 2. ‡ Analyzed by U.S. Section I.B.C., Method 1. ‡										
January	307,561,000	177,151	31	.505	.002	.058	122.0	49.4	168.7	.4
February	228,406,000	14,123	28	.012	.002	.006	9.4	29.0	121.0	.8
March	224,953,000	32,074	31	.106	.002	.014	22.1	157.0	1,825.3	1.3
April	184,256,000	75,478	30	.100	.006	.041	52.0	255.0	1,345.0	.7
May	325,038,000	1,123,537	30	.771	.010	.346	773.8	1,373.6	5,232.4	88.6
June	441,789,000	1,547,868	30			.350	1,066.0	1,378.6	7,216.0	52.7
July	504,736,000	2,039,133	26			.404	1,404.4	1,490.1	9,070.0	19.3
August	194,262,000	462,344	31			.238	318.4	1,360.8	3,251.2	113.2
September	332,400,000	917,424	29			.276	631.6	4,296.3	17,998.0	42.8
October	458,402,000	1,337,509	28			.296	934.9	2,259.7	9,241.0	133.0
November	232,909,000	947,940	27			.407	652.9	188.4	659.7	4.8
December	244,345,000	173,485	31			.071	119.5	68.5	319.0	1.0
Yearly	3,679,037,000	8,868,066	352			.241	6,107.5	12,906.4	30,839.0	2,314.0
Rio Grande at Buenos Aires Station — Sampled by Mex. Section I.B.C., Method B. Analyzed by Mex. Section I.B.C., Method 2.										
January	389,926,000	38,993	2	.011	.008	.010	26.9			
February	225,736,000	11,287	4	.006	.003	.005	7.8			
March	185,713,000	1,857	4	.002	.001	.001	1.3			
April	165,863,000	3,317	5	.002	.001	.002	2.3			
May	241,847,000	594,944	5	.359	.001	.246	409.7			
June	412,716,000	1,279,420	5	.568	.040	.310	881.1			
July	366,350,000	1,974,626	7	1.003	.011	.539	1,359.9			
August	157,564,000	304,099	4	.238	.003	.193	209.4			
September	286,147,000	718,229	4	.272	.001	.251	494.6			
October	477,200,000	1,202,544	6	.398	.110	.252	828.2			
November	230,132,000	188,708	4	.116	.022	.082	130.0			
December	248,983,000	164,329	4	.112	.005	.066	113.2			
Yearly	3,388,177,000	6,482,353	54	1.003	.001	.191	4,464.4			
Retemal Canal Station — Sampled by Mex. Section I.B.C., Method B. Analyzed by Mex. Section I.B.C., Method 2.										
January	34,103,000	5,027	1	0.015	0.015	0.015	3.5			
February	12,670,000	1,093	4	0.010	0.005	0.009	0.8			
March	6,331,000	204	4	0.006	0.001	0.003	0.1			
April	6,094,000	60	4	0.002	0.001	0.001	0.04			
May	17,147,000	66,102	2	0.470	0.350	0.386	45.5			
June	34,178,000	106,434	5	0.520	0.064	0.311	73.3			
July	28,124,000	150,311	6	0.763	0.022	0.534	103.5			
August	7,695,000	18,590	2	0.237	0.075	0.242	12.8			
September	18,336,000	33,800	3	0.275	0.008	0.182	23.3			
October	38,917,000	78,746	5	0.331	0.119	0.202	54.2			
November	7,392,000	5,169	4	0.102	0.028	0.070	3.6			
December	17,633,000	8,604	4	0.106	0.008	0.049	5.9			
Yearly	228,820,000	474,140	44	0.763	0.001	0.207	326.54			

ϕ Method A after June 1 and Method B prior thereto.
‡ " 1 " " " " 2 " "

⊕ Period 1925 - 1943
Period 1929 - 1943

CHEMICAL ANALYSES OF WATER SAMPLES FROM RIO GRANDE AND TRIBUTARIES—1943

The chemical analyses reported here were made by the United States Department of Agriculture at Riverside, California, from composite water samples made up periodically from independent water samples. This compositing and the determination of the specific electrical conductances of the independent water samples was done by the United States Section of the International Boundary Commission.

Water samples from the stations at Eagle Pass, Rio Salado, Roma, Rio San Juan, and Buenos Aires were gathered by the Mexican Section of the Commission, the others by the United States Section, except those for Caballo Dam and Leasburg Dam. In these cases the data were furnished by the El Paso, Texas office of the United States Bureau of Reclamation and the Riverside, California laboratory office of the Department of Agriculture. The composite samples were composed by taking from each sample an amount of water proportional to the acre footage of river flow represented by that sample.

To convert "Milligram Equivalents" to parts per million by weight, multiply each ion by its appropriate conversion factor. These factors are (HCO_3 + CO_3), 30.5; Cl, 35.5; SO_4, 48; Ca, 20; Mg, 12.16; Na, 23; NO_3, 62. To convert tons per acre foot to parts per million multiply tons per acre foot by 735.5.

Conductance, reported in the tables as (K x 10^5 at 25°C), is a relative measure of the total salt concentration in the water samples. (See Circular No. 232 U.S. Dept. Agr., July 1932.) It is a definite statement of an important physical property of the solution.

Descriptions of the sampling stations will be found in the forward part of this bulletin where the stream discharges are reported for these same stations.

Month	No. of Samples	Total Tons of: Per Acre Foot	Total Tons of: Dissolved Solids	Mean Kx10⁵ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter: Ca	Mg	Na	CO_3 + HCO_3	SO_4	Cl	NO_3
Water Samples from Rio Grande at San Marcial Station															
Jan.	31	0.70	36,900	76.6	0.14	8.2	42	18	3.34	1.12	3.27	3.34	3.16	1.45	.03
Feb.	27	0.66	28,900	73.7	0.15	8.2	43	19	3.16	1.05	3.15	3.14	3.00	1.41	.03
Mar.	29	0.72	26,600	79.0	0.17	8.3	47	20	3.10	1.06	3.64	2.99	3.40	1.57	.03
Apr.	30	0.71	33,900	76.9	0.15	8.1	44	17	3.19	1.10	3.31	2.99	3.49	1.36	.03
May	31	0.64	34,800	68.3	0.13	8.1	43	18	2.86	1.02	2.90	2.69	2.89	1.21	.03
June *	29	0.98	20,640	106	0.28	8.2	48	19	4.05	1.58	5.10	3.63	5.14	2.04	.01
July *	32	1.03	36,920	112	0.18	8.1	46	16	4.56	1.55	5.23	3.64	5.76	1.84	.04
Aug.	31	1.43	41,300	141	0.25	8.1	44	13	6.31	2.09	6.63	2.89	10.40	1.97	.03
Sept.	29	1.09	17,800	115	0.26	7.9	46	17	4.82	1.58	5.53	2.96	6.94	1.97	.03
Oct.	31	0.82	13,900	88.8	0.21	8.1	44	17	3.74	1.30	4.00	3.36	4.20	1.59	.01
Nov.	29	0.85	16,400	92.8	0.17	8.3	45	19	3.90	1.28	4.28	3.56	4.29	1.79	.01
Dec.	31	0.76	33,700	84.1	0.16	7.9	45	18	3.61	1.19	3.85	3.26	3.77	1.59	.01
Mean ⊕	360 ϕ	0.817	341,760 ϕ	88.0	0.173	8.13	44	17	3.69	1.26	3.96	3.16	4.30	1.57	.026
Period Average		0.679	713,000	75.0			43	17	3.20	1.10	3.18	2.58	3.61	1.26	
Tons of Constituents, 1943									42,100	8,710	51,800	54,800	117,000	31,700	
Average Tons Period 1933-1943									91,700	19,100	105,000	112,300	248,000	63,600	
Water Samples from Rio Grande at Caballo Dam															
Jan.	31	0.64	3,100	73.3	0.08	7.8	42	18	3.15	1.08	3.11	2.99	3.11	1.35	.01
Feb.	28	0.59	19,000	67.8	0.13	7.9	41	17	3.05	0.93	2.79	2.84	2.87	1.20	.01
Mar.	31	0.55	52,300	64.7	0.09	8.0	39	17	3.02	0.93	2.53	2.69	2.77	1.10	.01
Apr.	30	0.55	76,300	63.9	0.08	7.9	38	17	2.98	0.91	2.42	2.69	2.69	1.11	.01
May	31	0.55	67,900	63.7	0.13	8.1	39	17	2.95	0.91	2.46	2.69	2.63	1.06	.01
June	30	0.56	73,500	64.2	0.09	8.1	38	17	3.02	0.92	2.41	2.74	2.59	1.11	.01
July	31	0.56	70,200	64.4	0.12	8.1	39	18	2.95	0.91	2.50	2.79	2.56	1.16	.01
Aug.	32	0.58	89,000	66.2	0.12	7.9	40	18	2.99	0.98	2.66	2.74	2.59	1.16	.01
Sept.	30	0.59	41,500	67.2	0.09	8.0	40	20	3.05	0.97	2.64	2.79	2.62	1.36	.02
Oct.	31	0.60	11,500	65.8	0.12	8.0	40	20	3.07	0.95	2.67	2.72	2.70	1.33	.01
Nov.	30	0.58	6,960	64.5	0.14	8.0	39	18	3.08	0.96	2.60	2.82	2.72	1.21	.T
Dec.	31	0.60	3,490	68.1		8.0	40	18	3.12	1.02	2.79	2.87	2.85	1.24	T
Mean ⊕	365 ϕ	0.565	514,750 ϕ	65.0		8.01	39	18	3.00	0.934	2.53	2.74	2.65	1.15	.011
Period Average		0.727	619,000	79.3			44	18	3.41	1.19	3.58	2.74	4.04	1.44	
Tons of Constituents, 1943									74,500	14,100	72,100	104,000	158,000	50,600	
Average Tons Period 1931-1943									79,100	16,800	95,400	96,700	224,000	59,200	
Water Samples from Rio Grande at Leasburg Dam															
Jan.	21	1.01	7,090	110	0.13	7.8	42	22	4.96	1.55	4.80	3.74	5.16	2.50	.01
Feb.	28	0.68	18,100	77.8	0.13	7.9	41	19	3.53	1.08	3.18	2.99	3.41	1.50	.03
Mar.	31	0.62	54,000	70.0	0.07	7.9	39	18	3.27	1.01	2.76	2.84	3.05	1.30	.01
Apr.	30	0.62	77,600	70.2	0.14	7.9	40	18	3.21	0.98	2.79	2.79	2.95	1.26	.03
May	31	0.61	70,000	70.8	0.10	8.0	40	18	3.23	0.97	2.83	2.89	2.95	1.31	.01
June	30	0.61	75,700	70.1	0.10	8.0	40	18	3.21	0.96	2.75	2.84	2.92	1.31	.03
July	31	0.60	71,700	69.6	0.09	8.0	41	19	3.07	0.94	2.79	2.74	2.90	1.36	.03
Aug.	31	0.62	87,000	71.1	0.09	7.8	42	20	3.09	0.97	2.92	2.74	2.93	1.41	.03
Sept.	30	0.66	48,300	75.0	0.09	7.8	41	21	3.38	1.04	3.06	2.94	3.15	1.59	.03
Oct.	31	0.76	16,200	84.8	0.14	7.7	41	22	3.86	1.25	3.57	3.16	3.47	1.89	.01
Nov.	30	0.87	12,400	97.2	0.17	7.9	47	27	4.04	1.24	4.64	3.41	3.98	2.77	T
Dec.	31	0.85	6,630	95.0	0.21	7.9	42	21	4.23	1.34	4.10	3.36	4.38	2.09	T
Mean ⊕	355 ϕ	0.633	544,720 ϕ	72.3	0.103	7.91	41	19	3.26	0.999	2.92	2.85	3.04	1.41	.024
Period Average		0.784	644,700	84.9			44	20	3.68	1.27	3.93	2.88	4.26	1.78	
Tons of Constituents, 1943									76,500	14,200	78,600	102,000	171,000	58,500	
Average Tons Period 1931-1943									82,400	17,300	101,000	98,300	229,000	70,600	

* Composites for June 1-28, June 29-July 10, and July 11-31 were adjusted to calender months.

** Percent of Total Cations
*** Percent of Total Anions
⊕ Weighted Mean
ϕ Total

CHEMICAL ANALYSES OF WATER SAMPLES FROM RIO GRANDE AND TRIBUTARIES – 1943

Month	No. of Samples	Total Tons of: Per Acre Foot	Total Tons of: Dissolved Solids	Mean $K \times 10^5$ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter: Ca	Mg	Na	CO_3 + HCO_3	SO_4	Cl	NO_3
Water Samples from Rio Grande at El Paso Station															
Jan.	31	1.60	24,200	177	0.29	8.1	57	34	5.60	2.13	10.22	4.33	7.81	6.15	.01
Feb.	28	1.23	26,800	138	0.22	8.0	52	30	4.99	1.56	7.19	4.03	5.98	4.24	.01
Mar.	31	0.92	48,200	104	0.14	8.0	49	26	3.91	1.29	5.02	3.24	4.51	2.73	.01
Apr.	30	0.89	70,000	100	0.15	8.1	48	26	3.88	1.30	4.69	3.24	4.29	2.63	.03
May	31	0.92	75,900	103	0.16	8.1	48	26	4.09	1.37	4.94	3.44	4.18	2.73	.03
June	30	0.91	74,700	103	0.18	8.0	48	26	4.10	1.40	4.99	3.44	4.35	2.68	.01
July	31	0.92	78,800	104	0.14	8.1	49	27	4.04	1.34	5.07	3.39	4.35	2.80	.01
Aug.	31	0.93	79,000	105	0.14	8.0	49	27	4.06	1.38	5.13	3.44	4.42	2.84	T
Sept.	30	1.07	67,900	120	0.22	7.9	50	28	4.43	1.58	6.05	3.75	5.02	3.45	T
Oct.	31	1.45	39,300	160	0.31	8.0	55	32	5.41	1.92	9.00	4.20	6.94	5.32	.01
Nov.	22	1.56	33,200	173	0.33	8.1	56	33	5.85	2.09	9.94	4.60	7.36	5.97	T
Dec.	31	1.66	28,100	184	0.30	7.9	57	34	6.05	2.22	10.97	4.69	7.90	6.47	.01
Mean @	357 ϕ	1.02	646,100 ϕ	115	0.181	8.03	50	28	4.31	1.47	5.78	3.57	4.86	3.26	.012
Period Average		#1.11	# 666,000	122			52	30	4.49	1.63	6.68	3.50	5.48	3.85	
Tons of Constituents, 1943									74,200	15,400	114,000	93,600	201,000	99,300	
Average Tons Period 1930-1943									73,700	16,300	126,000	87,300	216,000	112,000	
Water Samples from Rio Grande at Fort Quitman Station															
Jan.	7	2.38	49,700	270	0.34	8.1	61	51	7.34	3.17	16.64	3.94	9.56	13.90	.07
Feb.	6	2.16	36,700	245	0.29	8.1	60	49	7.13	2.60	14.63	4.04	8.57	12.32	.04
Mar.	7	1.82	36,600	210	0.24	7.9	59	48	6.11	2.38	12.25	3.49	7.30	10.15	.05
Apr.	6	2.30	34,300	266	0.26	7.9	61	55	7.15	3.05	16.05	3.44	8.62	14.59	.01
May	6	2.31	41,600	261	0.27	8.1	62	55	7.03	3.07	16.16	3.19	8.60	14.54	.03
June	7	2.37	47,600	272	0.30	8.1	62	56	7.27	3.14	17.07	3.34	8.78	15.20	T
July	8	1.86	66,800	213	0.22	8.0	59	51	6.11	2.47	12.49	3.29	7.23	10.76	.02
Aug.	7	3.96	22,500	441	0.42	7.9	64	64	10.76	5.37	28.57	3.29	12.83	28.75	T
Sept.	7	2.35	55,000	269	0.30	8.0	60	54	7.63	3.19	16.29	3.90	8.69	14.55	T
Oct.	6	2.48	61,500	280	0.33	7.9	62	53	7.58	3.24	17.54	3.75	9.74	15.04	T
Nov.	6	2.62	45,300	294	0.36	8.1	61	52	8.41	3.38	18.46	4.30	10.06	15.72	.01
Dec.	7	2.65	40,300	298	0.36	8.0	60	51	8.95	3.41	18.72	4.84	10.24	15.67	.03
Mean @	80 ϕ	2.31	537,900ϕ	262	0.295	8.01	61	53	7.31	3.03	16.06	3.71	8.83	13.98	.022
Period Average		#2.18	# 581,000	243			61	54	7.08	2.64	14.98	3.45	9.96	13.47	
Tons of Constituents, 1943									46,500	11,700	117,000	35,900	135,000	157,000	
Average Tons Period 1930-1943									52,200	12,500	127,000	38,700	141,000	176,000	
Water Samples from Rio Grande at Upper Presidio Station															
Jan.	5	2.63	64,200	296	0.37	8.0	61	52	8.23	3.57	18.08	3.98	10.52	15.65	.01
Feb.	5	2.72	52,200	307	0.39	8.2	62	53	8.33	3.42	19.33	3.79	10.92	16.82	.01
Mar.	5	2.14	48,400	246	0.26	7.9	60	51	6.81	2.87	14.77	3.29	8.85	12.57	.01
Apr.	4	3.23	30,400	366	0.40	8.0	61	57	10.13	4.34	22.36	3.59	12.45	21.31	T
May	4	2.14	27,800	241	0.29	8.0	61	53	6.67	2.63	14.77	2.79	8.65	12.83	.03
June	5	2.04	38,400	233	0.28	8.2	62	54	6.36	2.43	14.28	2.64	8.00	12.42	.03
July	5	1.69	71,300	195	0.22	8.1	59	50	5.90	1.98	11.30	2.94	6.74	9.62	.03
Aug.	4	4.03	11,200	429	0.44	8.3	56	58	14.26	5.31	25.23	3.89	14.74	26.18	T
Sept.	5	1.69	21,000	194	0.21	7.7	60	49	5.68	2.03	11.55	2.42	7.30	9.36	.03
Oct.	5	2.25	56,700	257	0.31	7.9	62	53	6.82	2.96	15.93	3.06	9.18	13.60	.01
Nov.	4	2.84	45,400	320	0.41	7.9	63	55	8.32	3.72	20.77	3.51	11.29	17.86	.01
Dec.	3	2.35	48,400	267		8.0	61	51	7.50	3.05	16.79	3.76	9.52	13.78	.01
Mean @	54 ϕ	2.27	515,400 ϕ	258		8.01	61	52	7.22	2.91	15.83	3.26	9.14	13.67	.017
Period Average		1.82	558,000	206			58	50	6.30	2.31	12.04	3.09	7.30	10.30	
Tons of Constituents, 1943									44,600	10,900	112,000	30,600	135,000	149,000	
Average Tons Period 1935-1943									52,700	11,700	116,000	39,300	146,000	152,000	
Water Samples from Rio Conchos near Ojinaga, Chihuahua															
Jan.	5	0.77	48,300	81.7	0.18	8.1	39	13	4.02	1.08	3.20	3.29	4.04	1.10	.03
Feb.	4	0.69	40,600	75.0	0.10	8.0	38	14	3.78	0.88	2.88	2.99	3.63	1.06	.01
Mar.	4	0.64	41,300	69.4	0.13	7.7	37	14	3.53	0.91	2.59	2.84	3.18	0.96	.01
Apr.	5	0.82	19,900	89.3	0.16	7.9	42	19	4.10	1.07	3.76	2.99	4.34	1.77	.03
May	4	0.91	25,700	95.9	0.20	8.0	44	19	4.22	1.17	4.28	2.74	5.01	1.82	.01
June	4	0.76	35,600	80.0	0.18	8.0	41	15	3.79	1.01	3.37	2.79	4.10	1.21	.03
July	5	0.58	107,000	61.4	0.12	7.8	40	15	3.03	0.62	2.40	2.39	2.86	0.91	.03
Aug.	3	0.82	22,100	89.3	0.20	8.0	46	20	3.76	1.10	4.09	2.79	4.37	1.82	T
Sept.	5	0.67*	50,000	72.9			43	16	3.25 *	0.93 *	3.10 *	2.86 *	3.33 *	1.16 *	.01
Oct.	4	0.52	72,300	55.7	0.19	7.8	39	11	2.60	0.73	2.16	2.62	2.33	0.61	.01
Nov.	4	0.81	30,000	87.3	0.20	7.9	41	15	4.14	1.14	3.72	3.06	4.52	1.29	.01
Dec.	4	0.96	52,100	105	0.21	7.9	47	19	4.46	1.34	5.09	3.41	5.28	1.99	.01
Mean @	51 ϕ	0.679	544,900 ϕ	72.9			41	15	3.44	0.891	3.00	2.79	3.47	1.11	.018
Period Average		0.547	658,000	58.9			36	14	3.13	0.744	2.22	2.48	2.73	0.816	
Tons of Constituents, 1943									75,200	11,800	75,300	92,900	182,000	43,000	
Average Tons Period 1935-1943									103,000	14,800	83,700	124,000	215,000	47,400	

** Percent of Total Cations
*** Percent of Total Anions
@ Weighted Mean
ϕ Total
* Partly estimated
\# Period 1929-1943

CHEMICAL ANALYSES OF WATER SAMPLES FROM RIO GRANDE AND TRIBUTARIES – 1943

Month	No. of Samples	Total Tons of: Per Acre Foot	Total Tons of: Dissolved Solids	Mean K x10⁵ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter: Ca	Mg	Na	CO_3 + HCO_3	SO_4	Cl	NO_3
Water Samples from Pecos River Station															
Jan.	15	5.37	258,000	539	0.42	7.9	51	51	18.46	11.12	30.50	1.44	28.29	30.40	.03
Feb.	14	5.52	154,000	576	0.39	7.9	56	56	16.10	11.57	34.61	1.29	26.37	35.35	.04
Mar.	15	6.06	135,000	639	0.40	7.7	61	62	13.79	12.92	41.58	1.15	24.74	42.80	.04
Apr.	15	5.65	107,000	602	0.38	7.8	62	63	12.33	12.23	39.33	1.10	22.77	40.40	.03
May	15	4.72	116,000	515	0.30	8.0	61	62	11.16	10.08	33.11	1.44	19.15	33.63	.04
June	15	5.26	89,900	572	0.41	8.0	61	62	12.08	11.48	37.51	1.25	21.91	37.47	.03
July	17	4.29	84,900	473	0.33	7.8	61	62	10.24	9.06	30.00	1.89	16.91	30.53	.03
Aug.	15	5.51	73,800	599	0.41	7.8	61	62	13.19	11.75	39.07	2.03	22.26	39.62	.03
Sept.	15	5.15	72,600	571	0.37	7.9	60	61	12.70	11.39	36.48	2.03	21.38	37.20	.02
Oct.	15	6.20	102,000	655	0.44	8.0	60	61	15.52	13.04	42.93	2.03	25.80	43.28	T
Nov.	15	6.05	93,800	644	0.44	7.9	60	61	15.13	12.86	42.61	2.37	24.74	42.91	.01
Dec.	15	6.39	119,000	675	0.44	8.0	61	62	15.55	13.26	45.41	2.52	25.28	45.65	.01
Mean ⊖	181 ϕ	5.48	1,406,000ϕ	580	0.394	7.89	58	59	14.40	11.60	36.63	1.63	23.90	37.09	.028
Period Average		4.20	1,916,000	437			53	54	13.93	8.20	25.04	2.62	19.25	25.25	
Tons of Constituents, 1943									101,000	49,200	294,000	17,400	401,000	459,000	
Average Tons Period 1935-1943									173,000	61,800	357,000	49,600	573,000	555,000	
Water Samples from Rio Grande at Eagle Pass Station															
Jan.	7	1.80	354,000	199	0.25	8.0	51	45	6.27	3.57	10.13	1.84	9.16	9.05	.05
Feb.	7	1.67	260,000	188	0.25	7.9	53	47	5.60	3.20	9.76	1.99	7.98	8.74	.05
Mar.	7	1.54	240,000	178	0.19	7.7	53	46	5.33	2.98	9.28	2.94	6.59	8.23	.04
Apr.	9	1.30	164,000	153	0.18	7.9	55	50	3.87	2.74	8.02	1.74	5.64	7.37	.06
May	9	1.18	241,000	137	0.17	7.9	51	46	4.19	2.25	6.82	2.29	4.79	6.16	.13
June	25	1.02	200,000	119	0.16	7.8	54	46	3.34	1.88	6.13	1.64	4.53	5.23	.04
July	25	0.90	293,000	103	0.14	8.0	51	38	3.59	1.25	5.08	2.34	3.89	3.83	.06
Aug.	24	1.04	128,000	122	0.15	7.7	54	46	3.43	1.94	6.27	1.98	4.23	5.42	.09
Sept.	21	1.05	114,000	123	0.21	8.0	51	45	3.50	2.20	6.05	2.08	4.33	5.38	.06
Oct.	19	1.05	284,000	121	0.18	8.1	50	40	4.19	1.72	6.01	2.57	4.53	4.73	.04
Nov.	22	1.24	185,000	144	0.17	7.9	52	45	4.50	2.45	7.39	2.67	5.13	6.37	.04
Dec.	16	1.49	214,000	171		8.0	54	47	4.95	2.88	9.36	2.67	6.29	7.96	.04
Mean ⊖	191 ϕ	1.24	2,677,000 ϕ	143		7.93	52	45	4.37	2.30	7.29	2.22	5.47	6.27	.058
Period Average		1.19	4,088,000	133			46	40	5.08	2.08	6.21	2.49	5.47	5.28	
Tons of Constituents, 1943									257,000	82,000	491,000	198,000	770,000	651,000	
Average Tons Period 1938-1943									476,000	118,000	668,000	356,000	1,230,000	875,000	
Water Samples from Rio Salado Station															
Jan.	14	1.69	4,700	172	0.47	7.8	41	26	6.95	3.74	7.47	1.74	11.59	4.80	.01
Feb.	13	4.16	3,980	381	1.20	8.0	44	29	15.20	9.56	19.30	1.94	29.43	12.78	T
Mar.	13	5.59	5,980	496	1.71	7.8	45	30	19.69	13.36	26.90	1.79	40.54	17.88	.01
Apr.	13	6.33	4,910	555	2.09	7.8	46	31	21.63	14.96	31.28	1.64	45.61	20.91	T
May	14	1.62	50,400	164	0.55	8.0	43	28	6.50	3.28	7.46	1.84	10.57	4.85	.05
June	12	0.63	12,600	71.4	0.25	8.3	39	24	3.26	0.98	2.74	1.94	3.29	1.67	.06
July	16	1.42	9,500	146	0.44	8.0	42	25	6.01	2.72	6.34	1.79	9.67	3.83	.03
Aug.	9	0.89	363	96.3	0.36	7.9	40	24	4.33	1.61	3.89	1.93	5.46	2.35	.03
Sept.	19	1.00	39,100	107	0.38	7.8	39	24	4.64	1.84	4.22	1.63	6.52	2.58	.04
Oct.	13	0.66	13,400	74.6	0.25	7.9	39	25	3.30	1.07	2.76	1.53	3.84	1.84	.03
Nov.	13	1.22	7,150	130	0.37	7.7	41	26	5.32	2.58	5.59	1.63	8.27	3.43	.03
Dec.	15	1.38	6,100	144	0.49	7.8	44	28	5.73	2.78	6.59	1.43	9.28	4.08	.03
Mean ⊖	164 ϕ	1.19	158,183 ϕ	123	0.415	7.94	42	26	5.14	2.30	5.29	1.72	7.66	3.36	.041
Period Average		1.07	252,000	111			41	28	4.89	2.01	4.81	1.87	6.50	3.32	
Tons of Constituents, 1943									18,700	5,080	22,100	9,520	66,800	21,600	
Average Tons Period 1935-1943									31,200	7,790	35,200	18,200	99,400	37,500	
Water Samples from Rio Grande at Roma Station															
Jan.	0	‡1.81	‡ 410,000		Sampling for chemical constituents began here June 1,1943.										
Feb.	0	‡1.87	‡ 313,600												
Mar.	0	‡1.60	‡ 263,900												
Apr.	0	‡1.41	‡ 190,900												
May	0	‡1.27	‡ 303,400												
June	30	0.81	263,000	94.9	0.20	7.8	49	40	3.31	1.37	4.45	1.84	3.61	3.60	.03
July	29	0.88	327,000	101	0.06	8.1	51	37	3.47	1.31	5.04	2.19	3.94	3.71	.06
Aug.	31	0.92	131,000	105	0.17	7.9	51	40	3.52	1.48	5.23	2.12	3.86	4.02	.06
Sept.	29	0.80	196,000	93.7	0.19	7.9	48	39	3.22	1.39	4.32	1.98	3.53	3.48	.04
Oct.	29	0.91	307,000	105	0.15	8.1	49	38	3.72	1.47	5.03	2.37	3.98	3.88	.04
Nov.	27	1.09	187,000	128	0.21	7.7	51	43	4.08	2.18	6.48	2.37	4.73	5.32	.03
Dec.	31	1.33	239,000	156	0.22	8.0	53	46	4.67	2.60	8.30	2.52	5.67	7.11	.03
Mean ⊖ Period Average	206 ϕ	*1.16	*3,131,800ϕ												
Tons of Constituents, 1943															
Average Tons Period 1935-1943															

** Percent of Total Cations
*** Percent of Total Anions
⊖ Weighted Mean
ϕ Total
‡ Estimated
* Partly Estimated

CHEMICAL ANALYSES OF WATER SAMPLES FROM RIO GRANDE AND TRIBUTARIES – 1943

Month	No. of Samples	Total Tons of: Per Acre Foot	Total Tons of: Dissolved Solids	Mean $K \times 10^5$ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Mean Milligram Equivalents per Liter: Ca	Mg	Na	$CO_3 + HCO_3$	SO_4	Cl	NO_3
Water Samples from Rio San Juan Station															
Jan.	5	0.90	47,200	98.7	0.23	8.1	41	24	3.90	1.99	4.02	2.14	5.26	2.40	.13
Feb.	4	1.09	16,200	116	0.28	7.9	38	22	4.62	2.77	4.52	2.14	7.13	2.63	.12
Mar.	4	1.13	3,364	119	0.25	7.7	41	22	4.33	2.78	4.94	1.94	7.50	2.73	.06
Apr.															
May															
June															
July															
Aug.															
Sept.															
Oct.															
Nov.															
Dec.															
Mean ⊕															
Period Average															
Tons of Constituents, 1943															
Average Tons Period 1935-1943															

Sampling discontinued at the end of March. All March figures are for the entire month except those showing total tons of dissolved solids, and these figures are for only the first 10 days of of March. The Rio San Juan ceased to flow into the Rio Grande on March 10 as it was on that day that the Azucar Dam was closed.

Month	No. of Samples	Per Acre Foot	Dissolved Solids	Mean $K \times 10^5$ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Ca	Mg	Na	$CO_3 + HCO_3$	SO_4	Cl	NO_3
Water Samples from Rio Grande at Rio Grande City															
Jan.	12	1.58	455,000	177	0.23	8.0	49	43	5.83	3.13	8.68	2.04	8.00	7.65	.06
Feb.	12	1.73	325,000	194	0.25	7.9	51	45	6.04	3.45	10.02	2.14	8.60	8.84	.05
Mar.	9	1.51	264,000	174	0.25	7.9	56	49	4.48	3.01	9.49	1.79	6.92	8.28	.03
Apr.	13	1.30	192,000	152	0.19	8.1	54	48	4.03	2.62	7.88	1.89	5.74	7.07	.04
May	14	1.23	285,000	141	0.25	7.7	50	43	4.50	2.47	7.01	2.19	5.80	6.01	.04
June	15	0.76	248,000	88.2	0.12	8.0	47	38	3.30	1.24	3.97	2.14	3.11	3.22	.04
July	11	0.98	360,000	113	0.13	7.9	51	39	3.87	1.43	5.59	2.24	4.41	4.32	.04
Aug.	12	0.94	141,000	108	0.15	8.1	50	38	3.83	1.46	5.31	2.54	3.93	4.05	.04
Sept.	16	0.77	187,000	92.0	0.18	7.7	49	41	3.26	1.31	4.36	2.07	4.24	3.56	.04
Oct.	11	0.96	329,000	110	0.19	7.9	49	38	3.93	1.57	5.33	2.37	4.24	4.13	.01
Nov.	13	1.10	186,000	128	0.21	7.8	52	43	4.03	2.05	6.50	2.42	4.72	5.32	.03
Dec.	14	1.40	252,000	162	0.21	7.9	53	46	4.86	2.71	8.69	2.62	6.01	7.41	.03
Mean ⊕	152ϕ	1.15	3,224,000ϕ	132	0.190	7.9	51	43	4.28	2.09	6.60	2.20	5.21	5.52	.037
Period Average		0.903	4,544,000	103			44	36	4.03	1.63	4.51	2.30	4.12	3.67	
Tons of Constituents, 1943									328,000	97,100	580,000	256,000	956,000	748,000	
Average Tons Period 1935-1943									552,000	136,000	710,000	478,000	1,355,000	889,000	

Month	No. of Samples	Per Acre Foot	Dissolved Solids	Mean $K \times 10^5$ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Ca	Mg	Na	$CO_3 + HCO_3$	SO_4	Cl	NO_3
Water Samples from Rio Grande at Buenos Aires Station															
Jan.		‡1.55	‡ 445,000												
Feb.		‡1.64	‡ 272,000												
Mar.		‡1.42	‡ 195,000												
Apr.		‡1.27	‡ 155,000												
May	18	1.19	212,000	139	0.20	7.9	52	47	4.10	2.32	6.99	1.89	5.29	6.31	.04
June	16	0.75	230,000	87.9	0.12	8.1	47	38	3.25	1.23	3.97	2.04	3.18	3.22	.04
July	16	0.85	229,000	96.7	0.17	8.1	49	36	3.45	1.34	4.61	2.19	3.82	3.48	.06
Aug.	14	0.90	104,000	104	0.16	8.1	50	37	3.86	1.29	5.15	2.52	3.86	3.75	.07
Sept.	12	0.86	181,000	102	0.22	7.8	51	43	3.32	1.39	4.96	1.93	3.61	4.20	.03
Oct.	16	0.89	312,000	103	0.15	7.9	48	37	3.78	1.42	4.83	2.32	3.98	3.73	.04
Nov.	13	1.07	181,000	126	0.21	7.7	51	42	4.08	2.03	6.35	2.37	4.70	5.17	.03
Dec.	13	1.31	240,000	153	0.21	8.1	53	46	4.60	2.57	8.14	2.57	5.57	6.96	.03
Mean ⊕		*1.10	*2,756,000												
Period Average															
Tons of Constituents, 1942															
Average Tons Period 1935-1942															

Sampling for chemical constituents began here May 1,1943.

Month	No. of Samples	Per Acre Foot	Dissolved Solids	Mean $K \times 10^5$ @25°C	Boron p.p.m.	pH	% Na **	% Cl ***	Ca	Mg	Na	$CO_3 + HCO_3$	SO_4	Cl	NO_3
Water Samples from North Floodway Near Sebastian, Texas															
Jan. Feb. Mar. Apr. May June July	11	2.79	54,600	307	1.17	8.0	59	55	7.38	5.37	18.60	1.84	12.31	17.07	T
Aug. Sept. Oct. Nov. Dec.	11	2.24	21,000	250	0.96	8.0	58	52	6.57	4.19	14.86	2.67	9.55	13.18	T
Mean ⊕	22 ϕ	2.61	75,600 ϕ	289	1.10	8.0	59	54	7.12	4.99	17.39	2.11	11.42	15.81	T
Period Average		2.00	91,700	221			54	52	6.45	3.62	11.91	2.76	7.75	11.52	
Tons of Constituents, 1943									5,610	2,390	15,700	2,530	21,600	22,100	
Average Tons Period 1941-1943									8,060	2,740	17,100	5,240	23,200	25,500	

** Percent of Total Cations
*** Percent of Total Anions
⊕ Weighted Mean
ϕ Total
‡ Estimated
* Partly Estimated

ELECTRICAL CONDUCTANCE OF WATER SAMPLES

1943

San Marcial Station

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
January		February		March		April		May		June		July		August		September		November	
1	76.5	3	73.9	10	75.4	13	81.6	19	80.4	23	98.5	25	67.9	27	130	30	88.8	1	95.3
2	76.2	4	74.1	12	70.3	14	71.3	20	68.3	24	87.4	26	79.8	28	131	October		2	86.4
3	76.5	5	73.4	13	74.7	15	73.7	21	67.5	25	91.3	27	82.9	29	212	1	90.8	3	90.3
4	76.0	6	71.7	14	75.8	16	77.7	22	109	26	91.3	28	68.5	30	159	2	88.8	4	86.4
5	74.8	7	72.5	15	76.5	17	77.6	23	96.5	27	107	29	90.9	31	122	3	84.6	5	83.0
6	75.4	8	71.8	16	92.2	18	76.6	24	95.4	28	105	30	96.5	September		4	82.1	6	89.7
7	73.5	9	70.8	17	84.3	19	80.0	25	96.2	29	88.8	31	107	1	160	5	87.1	7	92.1
8	73.7	10	71.8	18	83.1	20	77.4	26	92.7	30	135	August		2	173	6	84.8	8	92.0
9	74.5	11	76.8	19	86.3	21	77.6	27	81.7	July		1	91.4	3	147	7	83.6	9	91.8
10	74.4	12	73.1	20	87.2	22	81.0	28	83.3	1	167	2	116	4	119	8	83.4	10	90.5
11	74.7	13	72.8	21	85.2	23	73.1	29	87.6	1	170	3	121	5	108	9	80.2	11	88.1
12	74.6	14	72.5	22	85.1	24	81.0	31	98.7	2	157	4	108	6	107	10	85.4	12	90.2
13	76.4	15	70.6	23	80.2	25	75.6	June		3	103	5	121	7	97.3	11	86.3	13	97.6
14	76.6	16	72.3	24	82.0	26	75.0	1	87.6	4	78.9	6	173	8	99.5	12	83.6	14	96.1
15	75.8	17	72.3	25	82.6	27	64.5	2	92.1	5	78.5	7	152	9	92.5	13	87.3	15	95.3
16	76.3	18	72.8	26	98.0	28	65.5	3	80.5	6	80.8	8	158	10	101	14	84.5	16	102
17	77.0	19	71.8	27	99.1	29	66.6	5	89.2	7	78.7	9	104	11	116	15	86.4	17	98.7
18	82.1	21	71.0	28	98.3	30	65.1	6	87.7	8	78.5	10	92.0	12	107	16	89.6	18	100
19	77.2	22	71.2	29	110	May		7	79.5	9	84.4	11	93.5	13	157	17	90.3	19	98.4
20	90.1	23	71.0	30	112	1	66.8	8	89.0	10	83.9	12	84.8	14	114	18	90.1	20	97.2
21	91.7	24	79.8	31	112	2	64.4	9	83.7	11	83.6	13	86.6	15	106	19	92.2	21	99.8
22	70.1	25	79.2	April		3	64.9	10	76.5	12	88.4	14	92.7	16	94.0	20	95.4	22	99.4
23	72.9	26	70.9	1	109	4	61.7	11	77.1	13	86.6	15	100	17	91.1	21	91.7	23	99.7
24	72.6	27	69.4	2	114	5	61.5	12	82.3	14	90.0	16	100	18	91.5	22	92.1	24	96.0
25	74.4	28	70.7	3	114	6	60.5	13	84.8	15	83.8	17	126	19	88.6	23	94.2	25	93.6
26	75.6	March		4	101	7	63.8	14	83.5	16	86.6	18	132	20	115	24	89.3	26	93.6
27	75.5	1	70.9	5	103	9	61.4	15	85.6	17	86.8	19	132	21	105	25	89.9	28	84.9
28	70.5	2	70.1	6	110	10	55.4	16	85.8	18	98.8	20	157	22	85.6	26	88.8	29	85.1
29	72.6	3	74.0	7	86.7	11	53.4	17	87.1	19	92.2	21	172	23	85.0	27	90.1	30	83.4
30	72.0	4	70.1	8	86.1	12	52.4	18	85.9	20	92.4	22	158	24	79.5	28	87.8	December	
31	71.9	5	69.2	9	85.5	13	63.3	19	93.3	21	92.3	23	108	25	91.1	29	90.1	1	84.4
February		6	68.3	10	77.8	14	70.5	20	93.6	22	80.5	24	97.5	26	94.1	30	90.3	2	82.5
1	75.4	7	68.6	11	81.5	16	68.1	21	96.7	23	79.8	25	87.5	28	87.5	31	95.6	3	85.4
2	73.6	9	70.4	12	75.4	17	70.4	22	97.7	24	95.7	26	135	29	88.5			4	86.9

El Paso Station

January		February		March		April		May		June		July		August		September		October		December	
1	169	3	184	8	108	10	103	13	100	15	104	18	99.1	20	107	22	121	25	156	4	188
2	181	4	180	9	107	11	100	14	101	16	101	19	100	21	110	23	126	26	157	5	189
3	181	5	181	10	111	12	101	15	103	17	101	20	101	22	110	24	109	27	167	6	191
4	162	6	172	11	111	13	101	16	103	18	99.4	21	99.6	23	107	25	108	28	174	7	187
5	150	7	175	12	108	14	103	17	104	19	102	22	103	24	101	26	115	29	170	8	189
6	163	8	174	13	113	15	101	18	102	20	107	23	102	25	93.7	27	133	30	176	9	190
7	169	9	152	14	109	16	105	19	107	21	105	24	105	26	105	28	145	31	182	10	188
8	173	10	132	15	107	17	106	20	107	22	104	25	102	27	104	29	152	November		11	190
9	163	11	132	16	103	18	104	21	107	23	102	26	105	28	110	30	154	1	184	12	193
10	178	12	139	17	104	19	101	22	101	24	107	27	98.6	29	110	October		2	187	13	195
11	179	13	154	18	105	20	95.1	23	103	25	108	28	102	30	107	1	162	3	189	14	194
12	177	14	169	19	108	21	97.5	24	101	26	110	29	108	31	104	2	152	4	189	15	196
13	182	15	179	20	109	22	99.0	25	101	27	103	30	115	September		3	159	5	192	16	194
14	183	16	184	21	106	23	103	26	103	28	95.1	31	122	1	106	4	165	6	195	17	197
15	181	17	151	22	97.7	24	101	27	101	29	96.8	August		2	106	5	156	7	193	18	195
16	183	18	120	23	101	25	99.1	28	105	30	92.3	1	114	3	111	6	144	8	194	19	197
17	186	19	129	24	106	26	99.0	29	104	July		2	103	4	115	7	144	9	194	20	192
18	188	20	123	25	99.4	27	102	30	102	1	94.3	3	99.9	5	115	8	145	16	194	21	199
19	186	21	114	26	104	28	99.6	31	100	2	90.1	4	99.3	6	111	9	149	17	195	22	197
20	172	22	119	27	101	29	102	June		3	91.5	5	102	7	118	10	159	18	197	23	199
21	188	23	118	28	102	30	102	1	95.4	4	107	6	104	8	116	11	161	19	174	24	196
22	184	24	112	29	95.7	May		2	99.5	5	107	7	105	9	121	12	167	20	137	25	200
23	185	25	114	30	98.3	1	101	3	104	6	104	8	99.4	10	128	13	168	22	124	26	200
24	175	26	112	31	97.7	2	102	4	104	7	106	9	99.4	11	121	14	170	23	136	27	197
25	182	27	115	April		3	99.0	5	106	8	104	10	102	12	125	15	175	24	155	28	181
26	184	28	110	1	93.0	4	98.5	6	103	9	113	11	102	13	124	16	176	26	172	29	145
27	185	March		2	95.7	5	97.8	7	102	10	119	12	103	14	113	17	182	27	158	30	145
28	185	1	110	3	95.5	6	99.8	8	107	11	111	13	108	15	116	18	184	28	164	31	147
29	185	2	106	4	91.7	7	98.9	9	102	12	94.4	14	104	16	118	19	184	29	165		
30	183	3	109	5	94.1	8	99.0	10	101	13	106	15	109	17	116	20	148	30	178		
31	183	4	103	6	102	9	118	11	106	14	104	16	107	18	121	21	146	December			
February		5	108	7	104	10	116	12	104	15	106	17	104	19	122	22	139	1	181		
1	182	6	106	8	98.9	11	100	13	104	16	96.4	18	106	20	117	23	147	2	184		
2	184	7	104	9	99.5	12	101	14	99.4	17	95.0	19	105	21	121	24	145	3	188		

Fort Quitman Station

January		February		March		April		May		June		July		August		September		October		December	
4	261	10	285	17	219	24	245	26	273	30	176	21	266	25	505	25	165	27	272	1	264
6	244	13	226	24	243	28	278	June		July		28	231	29	427	29	242	November		4	285
13	292	17	292	27	309	May		2	279	2	151	August		September		October		3	308	8	289
16	273	24	207	31	250	5	252	5	314	2	150	1	417	1	381	6	282	6	344	16	311
20	281	27	211	April		8	267	9	321	4	184	4	376	8	337	10	280	10	313	18	303
27	293	March		7	260	12	260	16	241	7	197	11	399	12	380	13	275	17	377	22	331
30	274	3	190	10	300	19	285	19	309	14	273	15	439	19	323	20	314	20	319	29	319
February		10	184	14	269	25	227	23	340	18	326	18	464	25	185	23	272	24	228		
3	271	13	223	21	254																

Upper Presidio Station

January		February		March		April		May		June		July		August		September		October		November	
6	292	3	320	3	238	7	410	12	301	12	297	17	196	21	462	25	187	23	296	27	306
7	294	10	305	10	214	14	401	19	309	19	258	24	274	28	522	29	149	30	285	December	
13	266	13	315	17	226	21	331	25	131	26	132	31	336	September		October		November		4	262
20	316	17	300	24	306	28	321	June		July		August		4	463	2	206	6	321	11	165
27	313	24	305	31	339	May		1	259	3	106	7	387	11	435	9	263	13	331	18	303
						5	294	5	341	9	224	14	483	18	448	16	282	20	338		

Rio Conchos near Ojinaga, Chihuahua

January		February		March		April		May		June		July		August		September		October		November	
2	79.4	2	72.1	8	66.8	9	84.4	13	102	6	83.1	10	61.5	16	94.5	27	88.2	25	66.5	20	89.7
11	82.2	11	76.5	16	62.0	15	91.4	20	87.6	13	73.9	17	65.5	23	93.4	30	55.1	November		27	92.7
16	78.9	18	75.0	28	70.6	22	99.1	26	87.0	20	70.5	24	35.0	September		October		4	78.6	December	
21	87.7	27	70.1	April		29	96.6	June		27	71.4	31	56.2	2	81.7	4	44.7	8	80.0	11	99.1
28	72.4	March		1	75.2	May		2	85.7	July		August		13	84.8	10	62.7	13	92.5	20	135
		1	72.5			6	100			1	91.6	7	78.1	20	103	15	47.2			27	84.7

Pecos River Station

January		February		March		April		May		June		July		August		October		November		December	
1	540	6	537	12	665	15	557	22	315	24	602	24	662	29	593	2	665	5	641	9	567
3	537	8	568	14	700	17	543	23	182	26	592	26	654	31	590	4	665	7	579	11	679
5	560	10	569	16	710	19	614	25	551	28	609	28	666	September		5	694	9	619	13	697
7	551	12	568	18	588	21	610	27	675	30	459	30	650	2	582	8	686	11	626	15	706
9	551	14	568	20	526	23	621	29	751	July		August		4	572	10	686	13	664	17	711
11	527	16	568	22	693	25	631	31	607	2	692	1	658	6	533	12	666	15	681	19	706
13	514	18	599	24	645	27	654	June		4	692	3	646	8	598	14	704	17	669	21	684
15	519	20	574	26	645	29	654	2	682	6	810	5	614	10	626	16	673	19	677	23	701
19	509	22	583	28	619	May		4	602	8	408	9	587	12	544	18	669	21	673	27	706
21	560	24	599	30	678	1	663	6	553	10	635	11	572	14	544	20	673	23	656	29	692
23	522	26	620	April		3	611	8	580	12	654	13	590	16	576	22	665	25	677	31	715
25	509	28	642	1	696	5	680	10	650	14	621	15	593	18	589	24	661	27	681		
27	562	March		3	587	7	675	12	480	15	158	17	607	20	592	26	631	29	669		
29	600	2	649	5	503	9	675	14	511	15	94.7	19	607	22	598	28	687	December			
31	600	4	649	7	584	10	693	16	542	16	109	21	610	24	589	30	642	1	659		
February		6	641	9	603	17	155	18	599	18	232	23	607	26	488	November		3	701		
2	590	8	653	11	631	19	477	20	559	20	563	25	617	28	561	1	645	5	675		
4	578	10	645	13	662	21	540	22	596	22	597	27	610	30	633	3	656	7	659		

ELECTRICAL CONDUCTANCE OF WATER SAMPLES

1943

Eagle Pass Station

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
January		March		May		June		July		August		August		September		October	
2	194	13	177	14	216	17	130	8	102	2	97.0	24	139	18	110	14	127
5	203	16	178	22	120	18	131	9	102	5	98.4	25	158	20	131	15	130
12	199	19	174	24	68.9	19	128	10	98.9	6	107	26	141	21	130	18	131
15	203	29	171	28	131	21	142	12	95.3	5	107	27	138	22	136	20	136
18	194	April		30	133	22	123	13	90.5	6	103	28	138	23	139	21	136
25	203	2	169	June		23	124	14	110	7	118	September		27	129	23	130
29	197	5	172	1	135	24	113	15	107	9	116	2	70.0	28	131	25	128
February		10	121	2	126	25	124	16	79.6	10	114	3	76.8	29	145	26	130
1	206	12	180	3	123	26	128	19	68.4	11	117	4	117	October		30	137
6	203	17	134	4	62.6	28	122	20	94.5	12	122	6	154	1	131	November	
8	195	19	178	5	69.1	29	114	21	98.1	13	119	7	157	2	130	1	137
12	190	24	176	7	121	30	124	23	110	14	125	8	113	4	92.9	2	71.6
15	186	26	162	8	108	July		24	99.5	15	126	9	121	5	92.0	3	71.0
19	174	30	174	9	109	1	136	26	109	16	125	10	102	6	98.1	4	140
22	178	May		10	142	2	153	27	87.8	18	130	11	102	8	97.0	5	142
March		4	174	11	110	3	146	28	89.9	19	131	13	125	9	96.5	6	152
1	181	7	185	12	116	5	158	29	91.6	20	142	14	125	11	117	8	149
5	181	10	192	15	123	6	135	30	90.4	21	139	15	134	12	118	9	144
8	178	12	161	16	115	7	130	31	93.3	23	138	17	113	13	125	10	147

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
November		December	
11	154	8	166
12	153	9	165
15	151	10	181
16	147	11	180
17	155	13	187
18	159	15	160
19	158	18	175
20	166	20	176
21	165	21	185
22	171	22	165
25	168	23	168
25	181		
29	180		
December			
1	163		
2	171		
3	165		
4	168		
6	167		

Rio Salado Station

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
January		February		March		April		May		June		July		September		September	
1	70.0	3	320	8	486	12	562	19	201	23	66.9	23	101	1	105	25	30.4
4	84.3	5	323	10	488	14	562	21	206	25	63.3	26	102	3	232	27	40.3
6	140	8	338	12	495	16	565	24	75.1	28	60.3	28	104	4	47.7	29	68.6
8	129	10	358	17	498	19	565	25	54.8	30	59.8	30	113	6	45.1	30	72.2
11	142	12	376	19	498	23	568	26	44.9	31	109	31	109	7	39.7	October	
13	176	15	397	22	500	26	581	28	30.8	July		August		8	87.3	1	63.0
15	251	17	406	24	500	28	594	31	40.5	1	61.1	1	118	9	113	2	71.7
18	297	19	414	26	500	30	605	June		2	61.5	2	107	9	112	4	54.8
20	291	22	426	29	503	May		1	65.2	5	62.4	7	63.0	10	208	8	52.9
22	280	24	442	31	516	1	608	7	33.9	11	63.3	7	87.9	12	61.8	10	70.9
25	274	26	448	April		3	615	9	46.1	12	92.5	8	80.8	13	41.7	13	67.1
27	278	28	458	1	521	5	626	10	138	13	261	13	84.2	15	45.3	15	89.1
29	284	March		2	527	8	442	11	89.7	14	124	14	86.8	16	87.1	17	34.9
31	301	1	464	5	549	12	147	14	71.0	16	88.4	16	87.1	18	87.8	18	72.8
February		3	470	7	555	14	174	18	70.0	19	138	18	87.8	20	28.6	22	157
1	309	5	479	9	558	17	193	21	65.7	21	106	20	90.4	22	32.1	25	163
														24	31.7	27	149

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
October		December	
29	148	1	173
31	157	3	132
November		4	114
1	162	5	173
3	173	8	142
5	84.3	10	132
8	139	13	133
12	157	15	148
15	148	17	186
17	138	20	250
19	146	22	243
22	144	24	217
24	149	27	166
26	148	29	142
29	166	31	127
30	171		

Roma Station

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
June		June		July		July		August		September		September		October		November	
1	98.6	20	118	8	119	29	99.9	16	108	3	90.4	23	128	12	80.8	1	128
2	71.8	21	117	9	128	30	105	17	114	4	128	24	126	13	85.7	2	129
3	84.1	22	117	10	136	31	102	18	121	5	78.6	25	115	14	91.6	3	130
4	107	25	119	11	130	August		19	124	6	103	26	66.5	16	98.8	5	136
5	117	24	129	12	128	1	95.5	20	110	7	130	27	65.1	17	108	6	129
6	116	25	123	13	66.2	2	99.1	21	125	8	81.1	28	68.6	18	109	8	59.6
7	41.4	26	140	14	95.4	3	95.6	22	123	9	101	29	81.7	19	114	9	54.2
8	67.0	27	128	15	76.5	4	94.6	23	128	10	46.5	30	84.0	20	119	10	66.2
9	45.8	28	128	16	45.3	5	83.2	24	131	11	85.3	October		21	124	11	80.3
10	46.2	29	145	17	75.7	6	92.9	25	131	13	89.5	1	89.5	22	124	12	109
11	51.5	30	132	18	93.1	7	91.4	26	130	14	92.6	2	68.5	23	132	13	132
12	79.6	July		19	88.9	8	89.1	27	131	15	103	3	121	24	131	14	143
13	95.5	1	131	20	104	9	92.0	28	134	16	88.8	4	113	25	131	15	142
14	107	2	117	21	105	10	82.4	29	136	17	130	5	68.5	26	131	16	148
15	109	3	117	22	114	11	100	30	136	18	103	6	117	27	131	17	146
16	118	4	121	23	114	12	102	31	135	19	94.4	8	101	28	133	18	146
17	115	5	123	25	84.0	13	112	September		20	111	9	101	29	137	19	140
18	124	6	124	26	84.0	14	97.3	1	138	21	103	10	66.9	30	134	21	147
19	131	7	134	27	87.1	15	99.5	2	138	22	108	11	70.5	31	126	22	147

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
November		December	
23	145	11	167
24	146	12	159
25	145	13	160
26	134	14	158
27	148	15	160
28	153	16	158
29	160	17	165
30	163	18	167
December		19	175
1	165	20	175
2	167	21	178
3	126	22	177
4	116	23	170
5	124	24	172
6	125	25	162
7	114	26	171
8	153	27	170
9	168	28	172
10	166	29	176
		30	166
		31	168

Rio San Juan Station

January		January		January		January		February		February		March		March		March	
4	66.3	5	59.9	13	82.2	20	144	27	137	3	121	17	116	3	119	10	120
										10	117	24	115				

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
March		March	
24	120	31	115

Rio Grande City Station

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
January		February		March		April		May		June		July		September		September	
2	174	6	203	15	174	21	110	24	114	21	121	26	74.0	1	139	30	85.1
4	171	8	203	17	179	26	164	26	65.1	24	119	30	102	3	143	October	
5	118	11	209	20	181	28	175	27	66.3	26	132	August		4	88.8	3	111
7	158	15	202	22	181	30	172	31	81.2	28	135	2	116	6	90.9	6	112
9	179	17	199	27	174	May		June		30	146	4	86.2	9	87.4	7	108
11	175	19	188	April		3	187	2	94.8	July		7	93.8	10	57.6	9	101
13	173	22	182	1	180	5	174	4	92.6	3	131	10	93.9	13	102	14	87.0
14	179	24	183	3	174	7	184	7	56.2	6	135	12	101	15	99.2	16	94.2
19	191	26	182	5	162	9	157	7	49.5	10	144	16	108	16	108	19	111
22	197	27	178	7	168	11	365	9	55.4	12	141	18	116	18	111	22	118
28	195	March		9	177	14	179	11	55.5	13	90.4	20	124	20	105	23	137
30	194	1	173	11	169	17	184	14	90.9	14	90.3	23	130	22	106	28	136
February		8	168	13	170	19	187	16	116	14	75.5	26	133	25	130	30	132
1	207	9	179	16	94.2	24	126	17	93.3	20	111	28	132	27	69.1	November	
4	185	12	176	19	70.5	24	113	19	139	23	165	30	138	29	72.1	1	132

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
November		December	
3	135	6	133
5	135	8	133
8	84.9	10	169
11	76.6	13	166
13	125	16	160
16	143	18	167
18	126	20	176
20	144	22	178
22	160	25	169
24	148	27	173
26	143	29	177
28	136	31	167
30	162		
December			
2	168		
4	148		

Buenos Aires Station

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
April		May		May		June		July		August		August		September		October	
19	103	13	156	31	80.7	16	83.5	12	130	1	102	27	127	27	149	9	116
21	80.1	14	344	June		18	107	13	133	2	108	30	132	28	113	11	98.3
23	73.3	17	191	2	84.3	21	99.1	14	145	4	103	September		29	87.7	18	92.9
26	143	19	176	4	93.5	23	134	15	97.9	6	98.7	1	133	October		20	101
28	144	21	186	7	113	29	119	15	87.4	9	89.2	3	135	1	67.0	22	108
30	166	24	199	7	120	28	114	15	89.8	11	92.1	5	126	2	79.8	25	118
May		25	188	8	63.6	July		16	91.4	13	91.3	6	88.2	3	75.3	27	127
3	173	25	178	8	54.8	1	142	17	88.0	16	105	8	84.7	4	90.2	29	125
5	174	26	146	9	51.2	2	132	19	75.1	18	112	10	105	5	108	November	
7	182	27	88.2	10	52.6	5	135	28	58.8	20	104	17	83.9	6	122	1	129
10	172	28	67.8	11	69.0	7	129	30	84.3	23	119	22	105	7	75.3	3	118
12	165	29	67.0	14	49.5	9	126			25	126	24	103	8	105	5	113

Date	Kx10⁵ @25°C	Date	Kx10⁵ @25°C
November		December	
7	128	3	158
8	135	6	140
10	122	7	118
12	60.1	12	85.7
15	81.4	13	166
17	127	15	164
19	139	17	157
22	132	20	158
26	147	22	164
29	143	24	171
27	167	27	167
29	164		

North Floodway Near Sebastian, Texas

January		February		March		April		May		June		August		September		October		November		December	
14	350	5	324	4	270	13	322	22	289	26	328	4	208	15	226	4	287	10	251	8	272
30	309	24	294	27	249	May		June		July		27	212	27	168	29	299	29	269	28	334
						7	306	10	390	19	199										

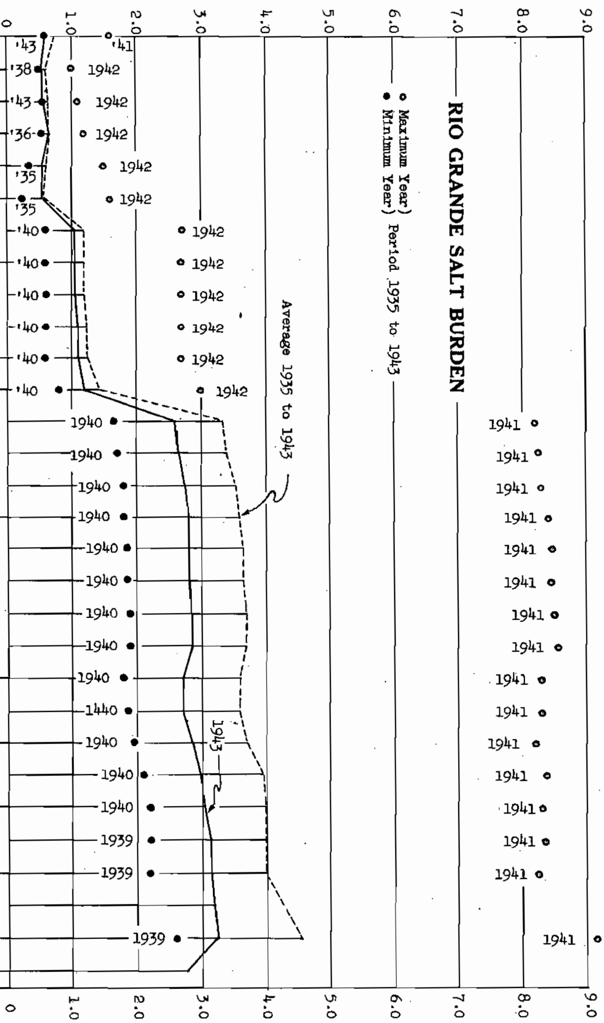
Lower Brownsville Station

March		April		May		May		May		May		May		May		July		August		August	
19	172	23	114	2	142	6	159	10	165	15	181	20	163	25	248	5	141	13	99.5	20	99.0
22	176	30	141	3	141	7	176	11	160	16	188	21	262	26	217	10	142	16	97.9	21	110
April		May		4	162	8	165	12	157	17	191	22	299	July		11	140	18	95.4	22	109
22	143	1	142	5	156	9	165	13	184	18	190	23	285	3	129	12	143	19	98.5	23	115
								14	170	19	181	24	265	8	150						

RIO GRANDE SALT BURDEN

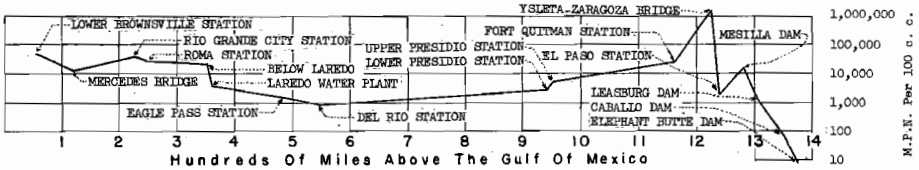
The graphical and tabular results below are based upon the chemical analyses shown on the preceding pages as well as upon similar data in previous Water Bulletins. For some tributaries the results are based upon curves showing the approximate relationship between salt concentration and amount of stream flow. For other stations and stream contributions the results are arrived at by secondary deductions.

Concentration Tons/Acre Foot 1943	Concentration Tons/Acre Foot Average 1935 to 1943	Station
.82	.65	SAN MARCIAL
		Unmeasured
.56	.70	CABALIO DAM
		Unmeasured
.63	.76	LEASBURG DAM
		Unmeasured
1.02	1.05	EL PASO
		Unmeasured
2.30	1.96	FORT QUITMAN
		Unmeasured
2.29	1.82	UPPER PRESIDIO
.68	.55	RIO CONCHOS
		Unmeasured
1.03	.80	LOWER PRESIDIO
.81	.34	ALAMITO CREEK
1.82	.55	TERLINGUA CREEK
		Unmeasured
1.02	.77	JOHNSON RANCH
		Unmeasured
.88	.71	LANGTRY
5.48	4.20	PECOS RIVER
.58	.61	GOODENOUGH SPG.
.34	.30	DEVILS RIVER
		Unmeasured
1.33	1.14	DEL RIO
.40	.56	SAN FELIPE CREEK
.60	.57	PINTO CREEK
.50	.37	RIO SAN DIEGO
.27	.25	RIO SAN RODRIGO
		Unmeasured
1.24	1.08	EAGLE PASS
.54	.56	RIO ESCONDIDO
		Unmeasured
1.19	1.01	LAREDO
1.19	1.07	RIO SALADO
		Unmeasured
1.17	.99	ZAPATA
.92	.48	RIO ALAMO
		Unmeasured
1.16	.97	ROMA
		RIO SAN JUAN
		Unmeasured
1.15	.90	RIO GRANDE CITY
		Unmeasured
1.10		BUENOS AIRES



SANITARY ASPECTS OF WATER QUALITY

The sanitary water sampling and assay program along the Rio Grande is a joint undertaking of the Texas State Health Department, the Federal Department of Public Health of Mexico, and the American and Mexican Sections of this Commission. Analyses of samples were made in the El Paso City-County Health Laboratory, the laboratory of the Central Power and Light Company water plant at Laredo, the Cameron County Health Unit Laboratory, and a mobile laboratory of the State. All analyses were made under the "Rules of Laboratory Procedure" set out on a later page herewith. The "Most Probable Numbers" (M.P.N.) of coliform organisms per 100 c.c. of sample water were obtained from the analyses by means of the M.P.N. table shown on a later page herewith. Some analyses were made for Biological Oxygen Demand (B.O.D.) and for Dissolved Oxygen (D.O.). The results of all of these analyses for 1943 are tabulated below for each of the sampling points.



The profile above shows the average 1943 M.P.N. values at sampling points along the Rio Grande except in the vicinity of Presidio, Del Rio, and Eagle Pass where the 1943 values were approximated from the sampling in 1942 and 1944 as no samples were taken at these points in 1943.

Analysis of the records published in these Water Bulletins since 1932 for Nuevo Laredo, since October, 1942 for Laredo, and since 1937 for El Paso show that the monthly average coliform density in Rio Grande water at these points correlates quite well with surface washings of the tributary watershed as indicated by rainfall or surface inflow to the river.

RIO GRANDE BELOW ELEPHANT BUTTE DAM

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Mar. 3			0
June 25			0
July 20			2.6
July 20			5.1
Aug. 3			6
3			25
Sept.27			9.3
Oct. 4			34
11			9.3
18			5.3
25			2.6
Nov. 1			16
8			2.6
Totals			119.8
Average			9.2

RIO GRANDE BELOW CABALLO DAM

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Mar. 11			0
June 25			16
July 20			2.6
Aug. 3			2.6
Sept.27			360
Oct. 4	80.4	2.8	110
11			62
18	82.6		62
25	80.8	1.9	62
Nov. 1			110
8			23
Totals	243.8	4.7	810.2
Average	81.3	2.4	73.7

RIO GRANDE AT LEASBURG DAM

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept.27			7,000
Oct. 4	90.6	4.8	2,400
11			620
18	85.6		940
25	86.4	2.1	1,100
Nov. 1			230
8			620
15			23
22			210
29			230
Dec. 6			62
13			93
Totals	260.6	6.9	13,528
Average	86.9	3.4	1,130

RIO GRANDE AT MESILLA DAM

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Oct. 18	88.0		3,600
25	86.0	1.8	1,100
Nov. 1			1,600
8			620
15			1,100
22			3,600
22			160
29			9,400
29			620
Dec. 6			140,000
6			28,000
13			9,300
13			11,000
Totals	174.0	1.8	210,100
Average	87.0	1.8	16,200

RIO GRANDE ABOVE MONTOYA DRAIN

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept. 4	98.5	5.8	620
11	97.0	5.0	620
18	85.8	1.3	1,100
25	75.5	0.9	6,200
Oct. 2	80.4	1.4	2,300
9	86.0	1.8	2,300
16	80.8	1.0	360
23	80.6	1.5	620
30			1,600
Nov. 6			1,100
13			26
20			93
27			1,100
Dec. 4			540
Totals	682.6	16.7	18,579
Average	85.3	2.1	1,330

MONTOYA DRAIN ELECTRIC PLANT EFFLUENT

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Oct. 9			16,000
16			3,600
23			3,600
30			3,600
Nov. 6			210
13			1,100
20			350
27			3,600
Dec. 4			2,300
Totals			34,360
Average			3,820

MONTOYA DRAIN OUTLET

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept. 4	88.8	1.7	2,300
11	80.3	2.5	6,200
18	60.5	1.4	930
25	68.5	1.0	3,600
Oct. 2	51.5	1.0	6,200
9	59.4	2.1	230
16	63.1	0.9	3,600
23	62.8	1.8	3,600
30	70.0	1.7	3,600
Nov. 6	54.4	1.0	3,600
13	77.8	1.9	3,600
20	69.0	2.2	1,100
27	67.9	2.1	2,300
Dec. 4	67.1	0.5	2,300
Totals	940.9	21.8	43,160
Average	67.2	1.6	3,080

RIO GRANDE AT EL PASO

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 5	69.6		160
12	59.5		620
19	70.7		360
26	71.0		620
Feb. 2	80.5		210
8	81.7		1,100
16	69.0		620
23	76.4		620
Mar. 2	76.0		1,100
9	74.9		360
16	77.6		200
23	71.1		11,000
30	70.0		1,100
Apr. 6	72.7		620
13	76.8		1,600
20	77.6		2,100
27	83.2		620
May 4	68.6		6,200
11	80.0		2,300
18	80.2		930
25	79.6		360
June 1	87.5		3,600
8	80.6		1,100
15	76.0		2,100
22	79.1		1,100
29	66.8		1,100
July 6	77.6		3,400
13	76.8		6,200
20	76.6		620
27	77.8		3,600
Aug. 3	77.9		5,500
10	80.0		1,600
17	75.4		6,200
24	75.0		620
31	74.2		3,600
Sept. 4	93.6	4.1	620
8	97.7	3.8	1,100
11	90.4	2.3	7,000
15	86.8	1.8	620
18	86.1	2.1	620
22	82.9	1.4	940
25	74.3	1.0	3,600
29	86.9	2.1	1,600
Oct. 2	72.2	1.0	1,100
6	90.4	2.3	1,600
9	82.7	1.2	930
16	79.8	0.6	1,100
20	92.1	2.6	2,300
23	79.9	1.3	2,300
27	95.0	1.1	1,100
30	81.7	0.9	5,500
Nov. 3	96.1	0.9	360

RIO GRANDE AT EL PASO

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Nov. 6	85.7	1.2	1,100
10	92.1	1.2	620
13	81.3	1.1	210
17	95.2	1.0	2,300
20	80.5	2.4	930
24	89.0	2.5	3,400
27	85.9	2.1	1,100
Dec. 1	87.3	1.1	1,100
4	82.2	1.2	930
8	86.2		1,100
16			160
22	93.6		620
29	87.9		1,100
Totals	5,153.7	44.3	120,200
Average	80.7	1.7	1,850

AMERICAN AND FRANKLIN CANAL JUNCTION

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Oct. 16			1,100
20			3,600
23			1,600
27			2,300
30			24,000
Nov. 3			620
6			1,600
10			1,100
13			70,000
17			3,400
20			1,100
24			6,200
27			2,100
Dec. 1			230
4			3,600
8			620
Totals			123,170
Average			7,700

FRANKLIN CANAL AT WATER PLANT

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept. 4	91.1	3.3	550
8	96.6	2.6	550
11	97.7	3.1	1,100
15		1.6	2,400
18	79.5	1.1	3,600
22	81.8	1.0	14,000
25	77.8	1.0	11,000
29	84.0	1.3	3,600
Oct. 2	78.0	1.8	3,600
6	88.1	2.5	2,300
9	84.8	1.9	3,600
16	85.9	1.2	3,600
20	91.1	2.7	2,300
23	85.7	1.7	1,100
27	89.4	1.1	1,100
30	85.7	1.2	3,600
Nov. 3	90.5	0.5	1,600
6	84.5	1.0	1,600
10	91.8	1.3	1,600
13	85.9	1.8	2,300
17	91.7	0.7	1,600
20	87.0	2.7	2,300
24	90.7	1.5	2,300
27	84.5	2.3	1,100
Dec. 1	86.2	1.3	620
4	86.8	1.6	2,300
8	85.3		2,300
Totals	2,262.1	44.1	77,620
Average	87.0	1.7	2,880

JUAREZ OUTFALL SEWER

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept.15	6.0	45.0	3,800,000
Nov. 11	0.0	260.0	670,000
Totals	6.0	305.0	4,470,000
Average	3.0	152.5	2,235,000

PEYTON PACKING PLANT OUTFALL

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept. 8	30.1	354	> 240,000
23	38.2	90.0	360,000
29	19.3	100	540,000
Oct. 6	20.9	115	23,000,000
20	0	360	28,000,000
27	0	712	1,100,000

PEYTON PACKING PLANT OUTFALL

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Nov. 3	0	653	11,000,000
10	23.7	220	6,200,000
17	0	174	21,000,000
Dec. 1	0	2,250	62,000,000
8	0		11,000,000
Totals	132.2	5,028.0	154,440,000
Average	12.0	502.8	14,950,000

EL PASO SEWAGE OUTFALL

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept. 5	0	254	> 240,000
11	0	138	55,000,000
18	0	114	36,000,000
25	0	125	55,000,000
Oct. 2	0	101	70,000,000
9	0	159	36,000,000
16	0	199.8	62,000,000
23	0	185	36,000,000
30	0	170	> 240,000
Nov. 6	0	118	62,000,000
13	0	104	6,200,000
20	0	258	62,000,000
27	0	159	23,000,000
Dec. 4	0	120	36,000,000
Totals	0	2,204.8	539,680,000
Average	0	157.5	38,550,000

ASCARATE WASTEWAY TO RIO GRANDE

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept. 4	88.0	1.7	1,100
11	80.7	3.1	2,300
18	77.3	1.0	2,300
25	79.8	1.0	11,000
Oct. 2	79.7	1.4	2,100
9	83.8	1.2	2,300
23	82.8	1.5	3,600
30			3,600
Nov. 6			3,600
13			1,100
20			2,300
27			3,600
Dec. 4			2,300
Totals	572.1	10.9	41,200
Average	81.7	1.6	3,170

RIO GRANDE AT YSLETA-ZARAGOZA BRIDGE

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 5	56.2		36,000
12	23.8		7,000,000
19	56.2		1,100,000
26	37.7		14,000,000
Feb. 2	49.0		24,000,000
8	20.4		2,400,000
16			14,000,000
23	49.9		2,400,000
Mar. 2	59.1		360,000
9	56.1		210,000
16	60.4		160,000
23	69.5		1,100,000
30	57.0		620,000
Apr. 6	71.3		110,000
13	67.0		230,000
20	70.2		360,000
27	74.4		230,000
May 4	67.5		1,100,000
11	70.6		130,000
18	65.2		620,000
25	68.4		360,000
June 1	76.1		620,000
8	64.5		940,000
15	63.4		230,000
22	66.9		940,000
29	66.8		62,000
July 6	70.4		550,000
13	60.2		340,000
20	69.4		620,000
27	78.1		360,000
Aug. 3	54.7		360,000
10	74.6		1,600,000
17	66.9		3,800,000
24	64.3		1,100,000
31	64.4		210,000
Sept. 4	93.4	7.7	3,800,000
8	98.2	9.7	1,100,000

> Greater than.

SANITARY ASPECTS OF WATER QUALITY

RIO GRANDE AT YSLETA-ZARAGOZA BRIDGE

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept. 11	69.1	7.2	360,000
15	66.9	6.6	1,100,000
18	60.8	2.4	230,000
22	60.0	6.0	2,400,000
25	66.3	5.1	620,000
Oct. 2	69.8	3.9	1,100,000
6	79.5	7.6	620,000
9	77.6	4.5	230,000
16	66.5	3.6	360,000
20	82.4	4.5	360,000
23	67.8	5.2	550,000
27	77.9	5.1	160,000
30	67.0	4.2	1,100,000
Nov. 3	75.2	4.3	34,000
6	57.9	4.6	540,000
10	69.0	7.0	62,000
13	26.5	16.8	7,000,000
17	70.2	10.6	620,000
20	58.8	9.2	230,000
24	80.7	6.6	62,000
30	56.4	9.0	3,800,000
Dec. 4	49.1	8.2	550,000
8	63.7		230,000
16	65.8		62,000
22	60.1		620,000
29	76.1		110,000
Totals	3,955.3	159.6	110,668,000
Average	63.5	6.6	1,760,000

FARENS WASTEWAY TO RIO GRANDE

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept. 8	91.9	5.7	> 240,000
15	85.9	2.3	23,000
25	72.7	2.5	> 240,000
Oct. 6	87.7	2.0	160,000
20	81.5	3.8	360,000
27	83.9	3.3	36,000
Nov. 3			0
Totals	503.9	19.6	1,059,000
Average	84.0	3.3	151,000

TORNILLO DRAIN

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Sept. 8	89.1	3.3	16,000
15	83.2	2.8	9,300
25	68.4	1.6	38,000
Oct. 6	81.8	0.5	6,200
20	76.0	2.3	9,300
27	73.9	3.9	11,000
Totals	472.4	14.4	89,800
Average	78.7	2.4	15,000

RIO GRANDE AT FORT QUITMAN

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 6	73.8		> 240,000
13	78.9		11,000
20	73.7		6,200
27	84.7		2,100
Feb. 3	87.1		2,700
10	83.4		3,600
17	92.6		2,600
24	92.5		23,000
Mar. 3	76.9		36,000
10	82.5		62,000
17	82.4		21,000
24	85.3		6,200
31			110,000
Apr. 7	101.2		11,000
14	101.2		11,000
21	88.3		11,000
28	101.4		9,300
May 5	103.4		11,000
12			23,000
19	102.6		1,100
26	106.6		1,600
June 2	104.3		3,600
9	106.8		1,600
16	102.2		2,100
23	95.5		3,600
30	73.0		> 240,000
July 7	81.3		36,000
14	114.2		3,600
21	106.2		6,200
28	106.0		3,600
Aug. 4	92.4		600
11	98.9		600
18	111.0		600
25	100.0		160
Sept. 1	88.9		1,100
8	104.8	5.4	1,600
15	101.0	4.5	6,200
25	72.3	4.6	140,000
29	79.7	4.3	160,000
Oct. 6	98.5	4.0	36,000
20	92.2	1.8	6,200
27	102.7	3.3	6,200
Nov. 3	93.0	3.9	2,300
10	87.4	4.2	2,300
17	95.5	2.1	0
24	98.4	3.6	16,000
Dec. 1	84.7	3.7	9,400
8	85.0		11,000
16	88.3		1,100
22	86.6		1,600
29	81.2		1,100
Totals	4,542.3	45.4	1,311,760
Average	92.7	3.8	25,700

LAREDO WATER PLANT

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 1			23
5			93
8			210
12			36
15			9.3
19			54
22			110
26			110
29			6
Feb. 2			62
5			36
9			15
12			23
16			62
19			62
23			54
26			36
Mar. 2			62

> Greater than.

LAREDO WATER PLANT

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Mar. 5			110
9			9.3
12			54
16			62
19			54
23			160
25			110
26			230
30			110
Apr. 2			110
6			110
9			3,600
13			1,100
16			230
20			360
23			130
27			62
30			36
May 4			54
7			230
11			160
14			620
18			160
21			91
25			3,600
28			1,600
June 1			3,600
4			6,200
8			9,400
11			210
15			550
18			360
22			1,100
25			360
29			160
July 2			620
6			620
9			1,100
13			38,000
16			3,600
20			2,300
23			3,600
27			2,300
30			1,100
Aug. 3			1,600
6			1,600
10			360
13			160
17			1,600
20			1,100
24			26
27			230
31			160
Sept. 3			> 240,000
7			2,300
10			910
14			1,100
17			3,800
21			360
24			93
28			1,100
Oct. 1			6,200
5			3,400
8			2,300
12			6,200
15			2,300
19			1,100
22			620
26			1,100
29			360
Nov. 2			1,100
5			6,200
9			3,600
12			160
16			36
19			160
23			16
26			54
30			21
Dec. 1			110
7			230
14			110
17			230
21			36
24			26
28			54
31			110
Totals			381,725.6
Average			3,640

BELOW LAREDO

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Mar. 25			2,300
May 4			70,000
11			2,300
18			11,000
25			340
June 2			6,200
8			6,200
15			6,200
22			11,000
29			3,600
July 6			3,600
20			23,000
27			1,600
Aug. 3			16,000
10			62,000
17			24,000
24			23,000
31			3,600
Sept. 7			16,000
14			5,500
21			3,600
29			16,000
Oct. 5			3,400
12			3,400
19			11,000
26			6,200
Nov. 9			110
16			> 240,000
23			16,000
30			7,000
Dec. 7			70,000
21			11,000
28			2,300
Total			687,450
Average			20,800

ZAPATA (INTERNATIONAL BRIDGE)

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 12	91.7	1.8	160
13	97.2	2.3	1,100
18	95.0	1.6	1,100
20	88.7	2.9	230
25	89.7		2,100
Totals	462.3	8.6	4,690
Average	92.5	2.2	938

RIO SALADO

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 18		1.8	230
20		2.9	230
25			360
Totals		4.7	820
Average		2.4	273

ZAPATA STATION

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 12		1.9	360
13		2.1	210
18		1.3	1,100
Totals		5.3	1,670
Average		1.8	557

RIO ALAMO

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 18		1.5	6,200
21		2.4	1,100
22		1.8	2,400
25			2,300
Totals		5.7	12,000
Average		1.9	3,000

ROMA (WATER PLANT)

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 12	96.4	2.2	110
13	96.4	2.1	280
18	101.7	1.4	54
19	98.2	2.0	130
20	91.5	2.0	540
20			230
21	98.4	2.2	1,600
22	95.3	1.9	620
23	95.9	2.0	1,300
24	96.4	1.0	620
25	95.0		620
Feb. 8			1,600
23			130
Mar. 2			110
9			360
17			70,000
24			160
Apr. 2			1,600
14			38,000
23			1,600
27			3,800
May 7			620
20			230
25			140,000
June 2			28,000
8			> 240,000
15			5,500
July 6			3,400
13			140,000
19			4,200
27			9,300
Aug. 3			9,300
11			94,000
17			2,100
24			1,600
31			420
Sept. 7			38,000
14			11,000
21			1,600
Oct. 6			9,300
12			36,000
19			36,000
26			6,200
Nov. 4			27,000
26			3,600
30			52
Dec. 7			22,000
16			3,600
Totals	965.2	16.8	1,006,486
Average	96.5	1.9	21,000

RIO SAN JUAN

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 18		1.7	210
21		2.2	160
22		1.7	60
25			2,300
Totals		5.6	2,730
Average		1.9	682

RIO GRANDE CITY

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 12		2.6	2,400
18	99.4	1.3	230
19	85.9	1.8	3,600
20	99.8	2.1	620
20			620
20			1,100
21	98.4	1.8	2,100
22	99.1	1.8	130
23	95.9	2.1	1,600
24	96.4	1.7	2,300
25	96.5	1.7	1,100
Feb. 8			360
23			620
Mar. 2			3,500
9			70,000
17			160
24			140,000
Apr. 2			92
14			70,000
23			110,000
27			140,000
May 20			160
25			4,800
June 2			6,700
8			> 240,000
15			28,000
22			140,000
July 6			3,500
13			16,000
19			9,400

RIO GRANDE CITY

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
July 27			4,200
Aug. 3			16,000
11			36,000
17			94,000
24			1,600
31			930
Sept. 7			9,400
14			36,000
21			6,200
Oct. 6			21,000
12			> 240,000
19			16,000
26			3,600
Nov. 4			34,000
26			1,300
30			60
Dec. 7			9,400
16			3,600
Totals	763.4	16.9	1,532,382
Average	95.4	1.9	31,900

MENCHIKES PUMP

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 20			620
27			16
Feb. 3			2,100
9			6,200
16			620
23			620
Mar. 4			6
9			1,600
17			93
22			36
Apr. 5			620
14			> 240,000
26			930
May 18			1,100
28			6,200
June 1			3,600
8			17,000
16			1,700
23			360
July 6			1,600
14			9,400
27			16,000
Aug. 4			5,400
11			3,500
17			2,100
24			9,300
31			360
Sept. 7			9,400
14			36,000
21			6,200
28			2,300
28			2,600
Oct. 5			16,000
12			16,000
19			4,200
26			21,000
Nov. 2			3,400
9			15,000
17			23,000
26			1,100
30			3,600
Dec. 7			38,000
17			6,200
Totals			533,381
Average			12,400

LOWER BROWNSVILLE

Date 1943	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.
Jan. 19			2,800
27			16
Feb. 2			11,000
9			3,600
16			70,000
23			340
Mar. 3			> 240,000
9			350
17			140,000
27			270
Apr. 5			70,000
13			140,000
May 3			6,200
12			3,600
19			140,000
27			3,400
June 9			24,000
17			840
25			28,000
29			11,000
July 6			9,400
14			9,400
27			36,000
Aug. 4			23,000
11			16,000
17			9,300
24			1,600
31			210
Sept. 8			2,100
14			16,000
21			160,000
Oct. 5			55,000
12			23,000
19			94,000
26			3,600
Nov. 2			36,000
9			240,000
17			600
26			160,000
30			3,600
Dec. 7			28,000
17			2,100
Totals			1,824,326
Average			43,400

SANITARY ASPECTS OF WATER QUALITY

Rules of Laboratory Procedure as Used on the Rio Grande Water Sampling Program

To estimate the approximate density of coliform organisms in the water of the Rio Grande and its tributaries the laboratory procedures to be followed are those indicated in the eighth edition of "Standard Methods" for the examination of water and sewage, published by the American Public Health Association and the American Water Works Association.

Experience for two years along the 1,400 mile Rio Grande from El Paso to Brownsville shows that strict uniformity of laboratory procedure is essential if the results obtained in the several cooperating laboratories are to be fully comparable with each other. To obtain this uniformity the following steps should be adhered to:

1. - Each water sample is first tested in sixteen Durham test tubes of nutrient lactose broth and all (but only) such test tubes as show positive results are subsequently to be tested by means of brilliant green bile broth.

2. - The sixteen Durham test tubes of lactose broth to be used for the first test should be prepared in accordance with "Standard Methods" for the presumptive test and then divided into four groups of four tubes per group.

3. - The same amount of sample water is to be added to each of the tubes of a group, but to each group there is to be added only one tenth as much sample water as to the preceding group. Thus it is seen that the amounts of sample water in the various groups will form a tenfold series of aliquots as shown in the first column of the following table.

4. - For purposes of record each aliquot group of tubes is to be designated by the amount of sample water contained in each tube of the group. (See the report form attached hereto.)

5. - The method of preparing sample water for inoculation into lactose broth tubes is shown in the following table:

Amount of sample water in each tube. Group designation	How to prepare the Inoculum	Amount of Inoculum to be added to each tube of a group
10 c.c.	Add directly from the sample water using a 10 c.c. pipette	10 c.c.
1 c.c.	Add directly from the sample water using a 1 c.c. pipette	1 c.c.
.1 c.c.	Add directly from the sample water using a .1 c.c. pipette	.1 c.c.
.01 c.c.	1 c.c. sample water plus 99 c.c. dilution water = 1/100 dilution Use	1 c.c.
.001 c.c.	1 c.c. sample water plus 99 c.c. dilution water = 1/100 dilution Use	.1 c.c.
.0001 c.c.	1 c.c. of 1/100 dilution plus 99 c.c. dilution water = 1/10,000 dilution Use	1 c.c.
.00001 c.c.	1 c.c. of 1/100 dilution plus 99 c.c. dilution water = 1/10,000 dilution Use	.1 c.c.

6. The amount of lactose broth in each tube is to be not less than twice as much as the inoculum to be added hereto.

7. To make the test in lactose broth proceed as follows: Shake the sample of water vigorously for 25 times. By means of sterile pipettes inoculate 4 groups of lactose broth tubes using the method described in paragraph 5 above and exercising all necessary precaution not to contaminate the pipettes, the sample, or the lactose broth tubes. In choosing the proper series of aliquot groups of lactose broth tubes, the technician can be guided only by past experience, but he should endeavor to choose such members of the series as will show fermentation in all 4 tubes of the group at one end of the series and no fermentation in all 4 tubes at the other end of the series.

8. After completing the inoculation of the 16 tubes they should be incubated at 37° C. for not more than 48 hours and then discarded.

9. Examine the tubes periodically and record (on the report form attached hereto) the number of tubes in each aliquot group which showed gas formation within the first 24 hours of incubation and also record the total number which showed gas within the entire 48 hour period of incubation.

10. All tubes which showed gas and were reported under paragraph 9 are to be tested for confirmatory results and the report of the confirmatory test is to be made under the same aliquot group designation as in paragraph 9.

11. After gently rotating (gently mixing) each tube which showed gas as reported in paragraph 9, transfer a loopful (5 m.m. loop) of the lactose broth therefrom to a Durham tube containing 10 c.c. of brilliant green bile 2%, being careful to flame the loop for each transfer. Incubate these bile tubes 24 hours at 37° C. Report the number of tubes in each aliquot group that show any gas.

12. During the incubation the lactose broth tubes should be inspected for gas formation during the morning working hours and during the afternoon working hours of each day and the transfers from the lactose broth tubes to the green bile tubes mentioned in the preceding paragraph should be made as soon as possible after gas formation is observed in the lactose broth.

13. The time of collecting the sample and the time of beginning the first test should be recorded on the report form and if the time interval between these two recorded times is to be more than six hours the sample should not be tested, but a note to this effect should be made on the report form.

14. At least twice each month the reports should be transmitted to the Office of the International Boundary Commission, 627 First National Bank Building, El Paso Texas, where the most probable number of coliform organisms per 100 c.c. of sample water will be calculated from tables prepared for this purpose in accordance with the Hoskins method.

REPORT FORM
RIO GRANDE SANITARY SURVEY WATER SAMPLE

Source: Rio Grande

Point of Collection:

When Collected

Date	Hour	Temperature Air	Temperature Water

Remarks and Signature of Collector:

Remarks from Laboratory and Signature:

Director:

COLIFORM ORGANISM TEST

Test began 194 , a.m. p.m.

Aliquot Group Designation	Lactose Broth 24 hrs.	Lactose Broth 48 hrs.	B.G. Bile 24 hours
10 c.c.			
1 c.c.			
.1 c.c.			
.01 c.c			
.001 c.c.			
.0001 c.c.			
.00001 c.c.			
M. P. N. per 100 c.c.			
"	D.O.		B.O.D.
¢ Satn.	p.p.m.		p.p.m.

TABLE OF MOST PROBABLE NUMBERS (M. P. N.)

The following table was computed by the Hoskins Method* and is intended to be correct to the closest second significant figure. It is for use with analyses using 4 tubes in each of 4 dilutions in geometric series, viz: 1 c.c., 0.1 c.c., 0.01 c.c. and 0.001 c.c. If the dilutions used in the analysis are 10 times as great as these or 100 times as great as these, then multiply the M.P.N. values in the table by 10 or 100, respectively. If the dilutions are one-tenth as great as these, then divide the values in the table by 10, etc., etc.

* See Public Health Reports - Revised 1940 - Reprint No. 1621.

SANITARY ASPECTS OF WATER QUALITY

TABLE OF MOST PROBABLE NUMBERS (M. P. N.)

1	.1	.01	.001	M.P.N.
4	4	4	4	> 240,000
4	4	4	3	140,000
4	4	4	2	70,000
4	4	4	1	38,000
4	4	4	0	24,000
4	4	3	4	36,000
4	4	3	3	28,000
4	4	3	2	22,000
4	4	3	1	16,000
4	4	3	0	11,000
4	4	2	4	21,000
4	4	2	3	17,000
4	4	2	2	13,000
4	4	2	1	9,400
4	4	2	0	6,200
4	4	1	4	14,000
4	4	1	3	11,000
4	4	1	2	8,100
4	4	1	1	5,500
4	4	1	0	3,600
4	4	0	4	9,500
4	4	0	3	7,100
4	4	0	2	5,000
4	4	0	1	3,400
4	4	0	0	2,300
4	3	4	4	6,700
4	3	4	3	5,900
4	3	4	2	5,000
4	3	4	1	4,200
4	3	4	0	3,500
4	3	3	4	5,600
4	3	3	3	4,800
4	3	3	2	4,100
4	3	3	1	3,400
4	3	3	0	2,800
4	3	2	4	4,700
4	3	2	3	4,000
4	3	2	2	3,300
4	3	2	1	2,700
4	3	2	0	2,100
4	3	1	4	3,800
4	3	1	3	3,200
4	3	1	2	2,600
4	3	1	1	2,100
4	3	1	0	1,600
4	3	0	4	3,100
4	3	0	3	2,600
4	3	0	2	2,000
4	3	0	1	1,600
4	3	0	0	1,100
4	2	4	4	3,700
4	2	4	3	3,300
4	2	4	2	2,900
4	2	4	1	2,500
4	2	4	0	2,100
4	2	3	4	3,200
4	2	3	3	2,700
4	2	3	2	2,400
4	2	3	1	2,000
4	2	3	0	1,700
4	2	2	4	2,800
4	2	2	3	2,400
4	2	2	2	2,000
4	2	2	1	1,600
4	2	2	0	1,300
4	2	1	4	2,300
4	2	1	3	2,000
4	2	1	2	1,600
4	2	1	1	1,200
4	2	1	0	950
4	2	0	4	1,900
4	2	0	3	1,600
4	2	0	2	1,200
4	2	0	1	910
4	2	0	0	620
4	1	4	4	2,600
4	1	4	3	2,300
4	1	4	2	2,000
4	1	4	1	1,700
4	1	4	0	1,400
4	1	3	4	2,200
4	1	3	3	1,900
4	1	3	2	1,600
4	1	3	1	1,400
4	1	3	0	1,100
4	1	2	4	1,900
4	1	2	3	1,600
4	1	2	2	1,300
4	1	2	1	1,100
4	1	2	0	800
4	1	1	4	1,600
4	1	1	3	1,300
4	1	1	2	1,100
4	1	1	1	790
4	1	1	0	540
4	1	0	4	1,300
4	1	0	3	1,000
4	1	0	2	780
4	1	0	1	540
4	1	0	0	360
4	0	4	4	1,900
4	0	4	3	1,700
4	0	4	2	1,400
4	0	4	1	1,200
4	0	4	0	940
4	0	3	4	1,600
4	0	3	3	1,400
4	0	3	2	1,200
4	0	3	1	950
4	0	3	0	710
4	0	2	4	1,400
4	0	2	3	1,200
4	0	2	2	920
4	0	2	1	700
4	0	2	0	490
4	0	1	4	1,100
4	0	1	3	910
4	0	1	2	690
4	0	1	1	490
4	0	1	0	340
4	0	0	4	910
4	0	0	3	680
4	0	0	2	490
4	0	0	1	330
4	0	0	0	230

1	.1	.01	.001	M.P.N.
3	4	4	4	1,000
3	4	4	3	920
3	4	4	2	840
3	4	4	1	750
3	4	4	0	670
3	4	3	4	980
3	4	3	3	890
3	4	3	2	750
3	4	3	1	670
3	4	3	0	580
3	4	2	4	890
3	4	2	3	750
3	4	2	2	670
3	4	2	1	580
3	4	2	0	500
3	4	1	4	740
3	4	1	3	660
3	4	1	2	580
3	4	1	1	500
3	4	1	0	420
3	4	0	4	670
3	4	0	3	580
3	4	0	2	500
3	4	0	1	420
3	4	0	0	350
3	3	4	4	880
3	3	4	3	800
3	3	4	2	720
3	3	4	1	670
3	3	4	0	560
3	3	3	4	800
3	3	3	3	720
3	3	3	2	650
3	3	3	1	560
3	3	3	0	480
3	3	2	4	710
3	3	2	3	640
3	3	2	2	560
3	3	2	1	480
3	3	2	0	410
3	3	1	4	630
3	3	1	3	550
3	3	1	2	480
3	3	1	1	380
3	3	1	0	340
3	3	0	4	550
3	3	0	3	480
3	3	0	2	410
3	3	0	1	340
3	3	0	0	280
3	2	4	4	760
3	2	4	3	690
3	2	4	2	610
3	2	4	1	540
3	2	4	0	470
3	2	3	4	680
3	2	3	3	610
3	2	3	2	540
3	2	3	1	460
3	2	3	0	400
3	2	2	4	610
3	2	2	3	530
3	2	2	2	460
3	2	2	1	400
3	2	2	0	330
3	2	1	4	530
3	2	1	3	460
3	2	1	2	390
3	2	1	1	330
3	2	1	0	270
3	2	0	4	460
3	2	0	3	390
3	2	0	2	330
3	2	0	1	270
3	2	0	0	210
3	1	4	4	660
3	1	4	3	590
3	1	4	2	520
3	1	4	1	450
3	1	4	0	380
3	1	3	4	590
3	1	3	3	520
3	1	3	2	450
3	1	3	1	380
3	1	3	0	320
3	1	2	4	510
3	1	2	3	450
3	1	2	2	380
3	1	2	1	320
3	1	2	0	260
3	1	1	4	450
3	1	1	3	370
3	1	1	2	320
3	1	1	1	260
3	1	1	0	210
3	1	0	4	380
3	1	0	3	320
3	1	0	2	260
3	1	0	1	210
3	1	0	0	160
3	0	4	4	370
3	0	4	3	300
3	0	4	2	430
3	0	4	1	370
3	0	4	0	310
3	0	3	4	300
3	0	3	3	430
3	0	3	2	370
3	0	3	1	310
3	0	3	0	260
3	0	2	4	430
3	0	2	3	370
3	0	2	2	310
3	0	2	1	250
3	0	2	0	200
3	0	1	4	370
3	0	1	3	310
3	0	1	2	250
3	0	1	1	200
3	0	1	0	160
3	0	0	4	310
3	0	0	3	250
3	0	0	2	200
3	0	0	1	160
3	0	0	0	110

1	.1	.01	.001	M.P.N.
2	4	4	4	550
2	4	4	3	500
2	4	4	2	460
2	4	4	1	410
2	4	4	0	370
2	4	3	4	500
2	4	3	3	460
2	4	3	2	410
2	4	3	1	370
2	4	3	0	330
2	4	2	4	450
2	4	2	3	410
2	4	2	2	370
2	4	2	1	330
2	4	2	0	290
2	4	1	4	410
2	4	1	3	370
2	4	1	2	330
2	4	1	1	290
2	4	1	0	250
2	4	0	4	370
2	4	0	3	330
2	4	0	2	280
2	4	0	1	240
2	4	0	0	210
2	3	4	4	490
2	3	4	3	450
2	3	4	2	400
2	3	4	1	360
2	3	4	0	320
2	3	3	4	450
2	3	3	3	400
2	3	3	2	360
2	3	3	1	320
2	3	3	0	280
2	3	2	4	400
2	3	2	3	360
2	3	2	2	320
2	3	2	1	280
2	3	2	0	240
2	3	1	4	360
2	3	1	3	320
2	3	1	2	280
2	3	1	1	240
2	3	1	0	200
2	3	0	4	320
2	3	0	3	280
2	3	0	2	240
2	3	0	1	200
2	3	0	0	170
2	2	4	4	440
2	2	4	3	400
2	2	4	2	350
2	2	4	1	310
2	2	4	0	280
2	2	3	4	390
2	2	3	3	350
2	2	3	2	310
2	2	3	1	270
2	2	3	0	240
2	2	2	4	350
2	2	2	3	310
2	2	2	2	270
2	2	2	1	240
2	2	2	0	200
2	2	1	4	310
2	2	1	3	270
2	2	1	2	240
2	2	1	1	210
2	2	1	0	160
2	2	0	4	270
2	2	0	3	240
2	2	0	2	200
2	2	0	1	160
2	2	0	0	130
2	1	4	4	390
2	1	4	3	350
2	1	4	2	310
2	1	4	1	270
2	1	4	0	230
2	1	3	4	350
2	1	3	3	310
2	1	3	2	270
2	1	3	1	230
2	1	3	0	200
2	1	2	4	310
2	1	2	3	270
2	1	2	2	230
2	1	2	1	200
2	1	2	0	160
2	1	1	4	270
2	1	1	3	230
2	1	1	2	200
2	1	1	1	160
2	1	1	0	130
2	1	0	4	230
2	1	0	3	190
2	1	0	2	160
2	1	0	1	130
2	1	0	0	93
2	0	4	4	340
2	0	4	3	300
2	0	4	2	260
2	0	4	1	230
2	0	4	0	190
2	0	3	4	300
2	0	3	3	260
2	0	3	2	230
2	0	3	1	190
2	0	3	0	160
2	0	2	4	260
2	0	2	3	230
2	0	2	2	190
2	0	2	1	160
2	0	2	0	120
2	0	1	4	230
2	0	1	3	190
2	0	1	2	160
2	0	1	1	120
2	0	1	0	91
2	0	0	4	190
2	0	0	3	160
2	0	0	2	120
2	0	0	1	91
2	0	0	0	60

1	.1	.01	.001	M.P.N.
1	4	4	4	380
1	4	4	3	350
1	4	4	2	320
1	4	4	1	290
1	4	4	0	260
1	4	3	4	350
1	4	3	3	320
1	4	3	2	290
1	4	3	1	260
1	4	3	0	230
1	4	2	4	310
1	4	2	3	280
1	4	2	2	260
1	4	2	1	230
1	4	2	0	200
1	4	1	4	280
1	4	1	3	250
1	4	1	2	220
1	4	1	1	200
1	4	1	0	170
1	4	0	4	250
1	4	0	3	220
1	4	0	2	200
1	4	0	1	170
1	4	0	0	140
1	3	4	4	340
1	3	4	3	310
1	3	4	2	280
1	3	4	1	250
1	3	4	0	220
1	3	3	4	310
1	3	3	3	280
1	3	3	2	250
1	3	3	1	220
1	3	3	0	190
1	3	2	4	280
1	3	2	3	250
1	3	2	2	220
1	3	2	1	190
1	3	2	0	160
1	3	1	4	250
1	3	1	3	220
1	3	1	2	190
1	3	1	1	160
1	3	1	0	140
1	3	0	4	220
1	3	0	3	190
1	3	0	2	160
1	3	0	1	140
1	3	0	0	110
1	2	4	4	310
1	2	4	3	280
1	2	4	2	250
1	2	4	1	220
1	2	4	0	190
1	2	3	4	280
1	2	3	3	250
1	2	3	2	220
1	2	3	1	190
1	2	3	0	160
1	2	2	4	250
1	2	2	3	220
1	2	2	2	190
1	2	2	1	160
1	2	2	0	130
1	2	1	4	220
1	2	1	3	190
1	2	1	2	160
1	2	1	1	130
1	2	1	0	110
1	2	0	4	190
1	2	0	3	160
1	2	0	2	130
1	2	0	1	100
1	2	0	0	80
1	1	4	4	270
1	1	4	3	240
1	1	4	2	220
1	1	4	1	190
1	1	4	0	160
1	1	3	4	240
1	1	3	3	220
1	1	3	2	190
1	1	3	1	160
1	1	3	0	130
1	1	2	4	210
1	1	2	3	190
1	1	2	2	160
1	1	2	1	130
1	1	2	0	110
1	1	1	4	190
1	1	1	3	160
1	1	1	2	130
1	1	1	1	110
1	1	1	0	79
1	1	0	4	160
1	1	0	3	130
1	1	0	2	100
1	1	0	1	79
1	1	0	0	52
1	0	4	4	240
1	0	4	3	210
1	0	4	2	190
1	0	4	1	160
1	0	4	0	130
1	0	3	4	210
1	0	3	3	190
1	0	3	2	160
1	0	3	1	130
1	0	3	0	100
1	0	2	4	190
1	0	2	3	160
1	0	2	2	130
1	0	2	1	100
1	0	2	0	78
1	0	1	4	160
1	0	1	3	130
1	0	1	2	100
1	0	1	1	78
1	0	1	0	51
1	0	0	4	130
1	0	0	3	100
1	0	0	2	77
1	0	0	1	51
1	0	0	0	26

1	.1	.01	.001	M.P.N.
0	4	4	4	290
0	4	4	3	260
0	4	4	2	240
0	4	4	1	210
0	4	4	0	190
0	4	3	4	260
0	4	3	3	240
0	4	3	2	210
0	4	3	1	190
0	4	3	0	170
0	4	2	4	240
0	4	2	3	210
0	4	2	2	190
0	4	2	1	170
0	4	2	0	140
0	4	1	4	210
0	4	1	3	190
0	4	1	2	170
0	4	1	1	140
0	4	1	0	120
0	4	0	4	190
0	4	0	3	170
0	4	0	2	140
0	4	0	1	120
0	4	0	0	94
0	3	4	4	260
0	3	4	3	230
0	3	4	2	210
0	3	4	1	190
0	3	4	0	160
0	3	3	4	230
0	3	3	3	210
0	3	3	2	190
0	3	3	1	160
0	3	3	0	140
0	3	2	4	210
0	3	2	3	190
0	3	2	2	160
0	3	2	1	140
0	3	2	0	120
0	3	1	4	190
0	3	1	3	160
0	3	1	2	140
0	3	1	1	120
0	3	1	0	93
0	3	0	4	160
0	3	0	3	140
0	3	0	2	120
0	3	0	1	93
0	3	0	0	70
0	2	4	4	230
0	2	4	3	210
0	2	4	2	180
0	2	4	1	160
0	2	4	0	140
0	2	3	4	210
0	2	3	3	190
0	2	3	2	160
0	2	3	1	140
0	2	3	0	120
0	2	2	4	180
0	2	2	3	160
0	2	2	2	140
0	2	2	1	120
0	2	2	0	92
0	2	1	4	160
0	2	1	3	140
0	2	1	2	120
0	2	1	1	92
0	2	1	0	69
0	2	0	4	140
0	2	0	3	120
0	2	0	2	92
0	2	0	1	69
0	2	0	0	46
0	1	4	4	210
0	1	4	3	180
0	1	4	2	160
0	1	4	1	140
0	1	4	0	110
0	1	3	4	180
0	1	3	3	160
0	1	3	2	140
0	1	3	1	110
0	1	3	0	91
0	1	2	4	160
0	1	2	3	140
0	1	2	2	110
0	1	2	1	91
0	1	2	0	68
0	1	1	4	140
0	1	1	3	110
0	1	1	2	91
0	1	1	1	68
0	1	1	0	46
0	1	0	4	110
0	1	0	3	91
0	1	0	2	68
0	1	0	1	46
0	1	0	0	23
0	0	1	4	180
0	0	4	3	160
0	0	4	2	140
0	0	4	1	110
0	0	4	0	90
0	0	3	4	160
0	0	3	3	140
0	0	3	2	110
0	0	3	1	90
0	0	3	0	68
0	0	2	4	140
0	0	2	3	110
0	0	2	2	90
0	0	2	1	68
0	0	2	0	45
0	0	1	4	110
0	0	1	3	90
0	0	1	2	67
0	0	1	1	45
0	0	1	0	23
0	0	0	4	90
0	0	0	3	68
0	0	0	2	45
0	0	0	1	23
0	0	0	0	0

> Greater than.

RAINFALL ON UNITED STATES SIDE OF RIO GRANDE WATERSHED

INCHES—1943

The rainfall records shown below have not been published elsewhere. The source of each record, and type of rain gage used, are shown below.

Latitude, longitude and elevation of each rainfall station will be found either in the index to rainfall stations in Water Bulletin No.10, or on page 71 of Water Bulletin No. 11, or with the station record in Water Bulletins published subsequent to No. 11.

American Dam Near El Paso

Recording Gage — Record by U. S. Section I. B. C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.12		.10																					.02				.24	.43
February																																0	.20
March			.04	.02																												.06	.44
April																																0	.38
May																																0	.80
June										.02								.16									.01	.27	.09	.37		.90	1.18
July									.01							.03			.10						.02							.16	1.21
August								.10		.04				.62	.08				.09	.02										.07		1.41	1.32
September		.15																				.01	.72	.39			.06					1.27	1.32
October	.01																							.53								.01	.53
November																									.03	.33	.08					.44	.35
December				.03	.08			.05	.36																	.13	.03					.67	.46
Total 1943																																5.18	
Period Average 1938-1943																																	6.02

Fort Bliss, Texas

Standard 8 inch Rain Gage — Record by U. S. Army

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.10	.01	T	.05																	T			T	T				.16	.38
February																																0	.36
March		T		.07	T	.01														.01				T								.09	.32
April																																0	.38
May																											T	.03	.02	T		.05	.54
June								.22			.03							T					T		.15	.01	T	.44	.49	.61		1.95	.59
July	.02	.04			.02	.02	.24		.21							.09		.02	.01	.16					.02	T						.85	1.30
August									T	.05				.27	T					T	T			T						T	T	.32	1.82
September		.04		T																		.05	1.15	.30	T	.11	T			T		1.65	1.40
October	T																		T										T			T	.82
November																									.11	.65	.15					.91	.48
December				.06	T			.66	.57				T													.04	.02					.77	.46
Total 1943																																6.75	
# Period Normal 1924-1943																																	8.85

Island Station

Recording Gage — Record by U. S. Section I.B.C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.06				.07		.01																		.02				.16	.37
February																																0	.25
March				.05																				.03								.08	.36
April																																0	.27
May																					.12						T	.03				.15	.43
June											.48											.03						.05	.14	1.04		1.74	.61
July	.06	.06			.27				.20	.06						.48		.01	.03						.06							1.25	.69
August										.04	.17											.03		.01								.25	1.20
September																						T	.16	.90	.38	T	T	.44				1.88	1.37
October	.01																															.01	.80
November																									.05	.09	.41					.51	.44
December				.04				.02	.54																	.04						.64	.56
Total 1943																																6.67	
Period Average 1939-1943																																	7.35

Fabens - Guadalupe Bridge, Texas

Standard 8 inch Rain Gage — Record by U.S. Section I. B. C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.04		.05	.05																								.14	.35
February																																0	.39
March																									.03							.03	.55
April																																0	.40
May																					.03							.04				.07	.64
June											.21																T		.13	.55		.89	.71
July		.21				.21			.09									.07		.21											T	.79	.42
August											.17				.07											.08				T		.32	2.08
September																						T	.11	.80	.43	T	.03	.69				2.06	2.12
October																																0	1.07
November																									T	.02	.34					.36	.37
December					.09				.07	.45																	.03					.84	.74
Total 1943																																5.30	
# Period Average 1940-1943																																	9.84

Fabens, Texas

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.13																			.03					.16	.39
February																																0	.36
March																								.10								.10	.69
April																																0	.51
May																																0	0
June											.21																T		.13	.55		.89	1.08
July																																53.18	2.18
August										.20				.01			.01													.02		.29	1.96
September		.01		.02																			1.14	.05	.02							1.17	2.38
October																																0	1.10
November																									.05	.05	.12					.22	.44
December				.10					.61																							.71	.64
Total 1943																																6.72	
# Period Average 1940-1943																																	11.64

County Line Station

Recording Gage — Record by U.S. Section I.B.C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January							.01	.08		.02		.01																.03				.15	.51
February																																0	.26
March				.02																				.04								.06	.47
April																																0	.48
May													T															.35				.35	.23
June											.12											.02						.01				.15	.56
July									.05									.06	.21		.33	.06			.14							.85	1.17
August										.05															.28							.34	1.96
September																						.04	.74	.55			.51					1.84	1.29
October												.10																				.10	.75
November																									.03	.08						.11	.46
December				.12				.01		.58																.08						.79	.54
Total 1943																																4.54	
Period Average 1938-1943																																	8.68

Some months missing. ‡ Estimated by I.B.C.

RAINFALL ON UNITED STATES SIDE OF RIO GRANDE WATERSHED

INCHES—1943

Fort Hancock Bridge, Texas

Standard 8 inch Rain Gage — Record by U.S. Section I. B. C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.30																								.30	.39
February																																0	.40
March																																0	.58
April																																0	.64
May																																0	.87
June										.05	.17									.01								.03	1.56	.04		1.86	1.92
July									.05							T	.02		.08	.10	.04				.56	.04						.89	1.04
August										.08							T				.60				.60							.85	1.76
September																					.02	.05	.86	.50			.25					1.68	1.48
October												.10																				.10	1.03
November																									.12	.40						.52	.38
December				.18				.03	.56																	.08	.03					.98	.41
																															Total 1943	7.08	
																															# Period Average 1940-1943		11.10

Madden Arroyo Highway (U. S. 80) Bridge, Texas

Recording Gage — Record by U.S. Section I. B. C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.02			.07	.27																				.05				.39	.20
February																																0	.06
March				.08																												.08	.04
April																																0	1.34
May																				.12	.05							.40	.05			.60	.38
June										.57	.04					.04						.05			.65					.25		1.60	.90
July									.28												.03				.06	.05						.44	.76
August	.10								.09																.02							.21	2.20
September	.02							.08														.06	.30	.50			.25					1.21	2.03
October												.28																				.28	1.25
November																									.17	.06	.17					.40	.30
December				.16					.58																	.04						.78	.91
																															Total 1943	5.99	
																															# Period Average 1941-1943		10.37

West Small, Texas

Standard 8 inch rain gage — Record by W. L. Newell

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January										.20																		.05				.15	.36
February																																0	.44
March				.11																												.11	.35
April																																0	1.07
May																												.12				.12	.50
June						.04																			.21	.20				.72		1.17	1.23
July																	.35		.26	.26												.87	1.89
August												.39		.60																		.99	2.34
September																							.19	.67			.08					.94	2.11
October												.31																				.31	1.27
November																										.25	.40					.65	.45
December				.22					.52																		.20					.94	.87
																															Total 1943	6.25	
																															# Period Average 1940-1943		12.88

Guayuco Arroyo Highway (U. S. 80) Bridge, Texas

Recording Gage — Record by U. S. Section I. B. C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January							.07	.31			.02																	.02				.42	.21
February																																0	.06
March				.07																												.07	.04
April																																0	.58
May																					.10							.56				.66	.44
June								.16													.02						.08		.05	.48		.73	.49
July	.85	.02				.09			.09								.05					.12		.09		.09						1.40	1.63
August	.02								.22					.15							.90				.25							.74	1.63
September	.14																					.01	.30	.50			.05					1.00	2.14
October												.38																				.38	1.20
November																									.11	.08	.38					.57	.27
December				.20					.61																	.06						.87	.82
																															Total 1943	6.84	
																															# Period Average 1940-1943		9.51

Fort Quitman Station

Recording Gage — Record by U. S. Section I. B. C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January						.05	.05	.12				.40																.01				.63	.62
February																																0	.48
March			.04																				.04									.08	.30
April																																0	.46
May																					.04							.48	.03			.55	.48
June						.24		.08		.28											.05					.06		.06		.40	1.13	.76
July			.03			.02			.06	.02			.01			.02		.03		.01	.04						.01					.25	1.40
August			.18				T				.10		.01	.05	T										.33							.67	1.62
September	.08																					.01	.30	.49			.23					1.11	1.47
October											.40																					.40	.73
November																									.03	.21	.34	.03				.61	.37
December				.14				.02	.63									.01								.04						.84	.51
																															Total 1943	6.27	
																															# Period Average 1937-1943		9.00

Neely Ranch, Texas

Standard 8 inch rain gage — Record by Mrs. Tom Neely

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				T	T	.02	.33				.02							T														.37	.18
February																																0	.09
March																							T	.02								.02	.01
April																																0	.15
May																												.60				.60	.32
June																					.06					.21				.97		1.24	1.08
July	.26					.30			.92							.02		.07		.27						.05						1.89	2.42
August	.05						.08				.01	.02														T				T		.16	2.55
September																								1.13			.68					1.81	2.43
October												.32																				.32	1.32
November																										.10						.10	.05
December										.17	.55																					.72	.76
																															Total 1943	7.23	
																															# Period Average 1941-1943		11.37

Ryan Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.12			.25									.03									T						.40	.23
February																																0	.04
March				.02		T																										.02	.03
April																	.03															.03	.37
May				.09										.07							.37							.06	.12			.71	1.56
June								.07		.40		.08		.69											.60		.25		.06			2.15	1.46
July		.11	.08		.50										.99	.30		.95	.23						.13				T			3.09	2.75
August													.27																			.27	2.87
September	.14	.14																			.06		1.72									2.06	2.95
October	.15																															.15	1.50
November			.31												T											.60	.45					1.36	.61
December			T	.30				.07	.72																	.15						1.24	.68
																															Total 1943	11.48	
																															# Period Average 1941-1943		25.05

Oscar Medley Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.28																								.28	.14
February																																0	0
March																																0	0
April																																0	0
May																					.46							.33				.79	1.50
June										1.79	1.86		.72						.52					1.36		.65			2.16	.36	9.42	4.94
July																																0	
August																																	
September																																0	1.42
October																																	
November																																	
December																																	
																																# Period Average 1941-1943	

Some months missing.

RAINFALL ON UNITED STATES SIDE OF RIO GRANDE WATERSHED

INCHES—1943

George Jones (Kelly Ranch)

Recording Gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.28																								.28	.14
February																																0	
March																																0	.15
April																																0	1.23
May																					.98							.12			.21	1.51	1.88
June								.12		.84	.06	.24		.80	.47	.24					.37		.06		1.32		.03	.05	.03	.45		4.98	2.98
July	.40	.10												.03	.08	.68			.38					.28								1.95	2.35
August																																0	2.47
September																																	
October																																0	1.58
November																																	
December																																	
																																# Period Average 1941-1943	

Lawhon, Woodward & Thompson

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.15																											.15	.08
February																																0	0
March																								.54								.54	.27
April																																0	.24
May										.10																		1.22	.18			1.50	1.10
June															2.25			.08		.07					.14			.46				3.02	1.51
July	.47	1.15	.08		.12									.50				.17														2.29	2.99
August																				.17	.07					.18						.42	3.73
September	1.16	.25																							2.44							3.85	2.46
October																																0	.99
November																											.35	.50				.85	.39
December				.50				.50	.26																							1.26	.93
																															Total 1943	13.88	
																															# Period Average 1941-1943		14.71

R. L. Stevenson Ranch

Recording Gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January							.34																									.34	.17
February																																0	.06
March																								.57	.04							.41	.17
April															.08																	.08	.74
May				.04												.08				.08	.27						.10		.28			.77	1.38
June					.37			.08		.71				.08	.61	.40							.07				.04	.35				2.71	2.43
July	.83	.32		.03	.12								.28	.50		.08				.31					.68							3.15	3.02
August				.17					.15							.30				.05					.25						.05	.97	2.39
September																						.45	1.55	.75	.20							2.95	3.36
October	.18																								.15							.28	2.11
November															.10										.15	.20						.45	.30
December																																	1.00
																															# Period Average 1941-1943		17.13

Watts Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.06			.50																								.56	.34
February																																0	.24
March																								.63								.63	.42
April																																0	.86
May				.05										.07						.23	.15							.50	.16			1.26	2.02
June															2.02	.76				.79					.10				.04			3.67	2.20
July	.93	.12												.10		.33			.42					.64						.25		2.79	3.17
August									.29	.08			.18	.06		.12	.03			.03												.79	3.99
September				.26	.12																				3.25							3.63	3.04
October				.03	.04																											.06	1.82
November																									.35	.65						1.00	.34
December								.28	.60														.85								.60	2.33	1.20
																															Total 1943	16.75	
																															# Period Average 1941-1943		19.50

Marfa, Texas

Standard 8 inch rain gage — Record by Army Air Forces

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.18	.13	.02		.25									.01								.28							.67	
February																	T															T	
March																								.07	T							.07	
April	.01														.03					T												.04	
May				.12										T					T	.04	1.12							.19	T			1.40	
June					T			.01			T		T	T	T	.34		.60	T	.46				.04			T	.11	.53			2.09	
July	T	.47	.11		.25				T	.03				2.65	.29	.14		.37		.06	T					.04				.17		4.58	
August				.21					T							.01		T						T	T	T					.04	.26	
September	.17	.89	.10	.06													.03				T	.04	.70	1.07	.09	.07	T	.16				2.80	
October	.08	T		.68						T	T																					.70	
November			.03												.09										.30	.47	.24					1.13	
December			T	.18	.20			.08	.05	T													T	.46			.21				T	1.08	.72
																															Total 1943	15.02	

Latitude 30° 16' ; Longitude 103° 52' ; Elevation 4,950 Feet.

W. M. Allison Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
July																																	
August																																	
September																										3.25						3.25	
October																																0	
November															.30												1.65					1.95	
December					1.40																		.86									2.26	

Lat 30° Long. 104° 18' Elevation

D. O. Atkinson Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
July			1.36												1.26	.67		.34													.14	3.77	
August																	.19			.09											.50	.78	
September																																0	
October																																0	
November														.33													.77						1.10	
December					.40			.37																								.77	

Lat. 29° 58' Long. 104° 18' Elevation 4,630 Feet

Bloys Camp

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January						.25																										.25	.12
February																																0	.15
March																																0	0
April																																0	.16
May				.12																	.06	.48						.23	.15			1.04	2.07
June						.15				.23	.30	.33	.17	1.58			.17								.61		.21	.11	1.14	.82		5.82	3.25
July	.35				.39											1.26		.60	.16													2.66	2.20
August																		.33		.75			.33	.23								1.64	3.09
September			.37															.56					1.12	1.12	.27							3.44	2.93
October																																0	1.65
November			.06																						.33	.05	.30					.74	.37
December				.45						.35																.33						1.13	.70
																															Total 1943	16.72	
																															# Period Average 1941-1943		18.67

Townsend Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.55																								.55	.68
February																																0	0
March																																0	.89
April																																0	1.68
May																					.31								.30			.61	1.76
June														.35							.12											.47	.94
July														1.60	.20			1.62	.32	.19						.17				.32		4.78	3.64
August											.14		.48																			.62	2.93
September					.18																		1.40	.80			.22					2.62	3.23
October																																0	1.27
November																										.50	.90					1.40	.57
December				.34				.34	.20														.96			.07					.83	2.74	1.23
																															Total 1943	13.79	
																															# Period Average 1941-1943		17.62

Some months missing.

RAINFALL ON UNITED STATES SIDE OF RIO GRANDE WATERSHED

INCHES—1943

H. B. Holmes

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																0	
February																																	
March																																0	1.26
April																																	1.89
May																																	1.72
June																																	
July			.24											.34		.19		3.32	.06	.12												4.27	3.78
August				.16				.06																							.18	.40	2.46
September	1.02			.11																				1.94	.09		.06					3.22	3.46
October																																0	1.88
November																											1.23					1.23	.41
December				.40				.26																								.66	.63

Period Average 1941-1943

Kerr Mitchell Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.16																												.16	.08
February																																0	0
March																																0	.23
April																																0	1.28
May				.20																	.25							.55				1.00	.81
June						.52												1.05	.52													2.09	1.25
July			.19		.68										.51			.50														1.88	2.19
August																																0	2.64
September				1.26																					1.82							3.08	2.54
October																																0	1.45
November																												.95				.95	.44
December				.40				.29	.20															.57								1.46	1.08

Total 1943 10.60

Period Average 1941-1943 13.95

Walker Place

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																0	
February																																0	0
March																																0	.10
April																																0	
May																				.20	.61											.81	
June																																	
July																																0	1.85
August																																0	1.80
September																									2.15					.10		2.25	.42
October																																0	.42
November																											.84					.84	.42
December				.59				.84																.45								1.88	.94

Period Average 1942-1943

Turney Fletcher Ranch

Recording gage. — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
July 1940																																	
Aug. "																																	
Sept. "																																0	
Oct. "									.05	.25	1.20	.15																				1.65	
Nov. "							.15	.40																								.55	
Dec. "																										.10						.10	
Jan. 1941	.40										.40	.20																			.30	1.30	
Feb. "																																	
Mar. "														.12								.15		.50								.77	
Apr. "																																	
May "		.40										.18			.10			.31				.92		.62	.49		.12					3.14	
June "		T				.10						.08			.12						.15						.11	.03	.42	.12		1.15	
July 1941	T						.03	.07	.40	.22			.15		1.02	.05						.21	.20	.17	.10		.05	.05			.04	2.76	
Aug. "			.42							.10			1.15	.20				.05	.80			.03		.87				.21			.10	3.93	
Sept. "	1.20		.10	.79				.05			1.02		.36								.30	1.12	.06							1.27		6.00	
Oct. "	.60								1.88	.14	.12	.36									.35	.30		1.34	.71					.22		5.40	
Nov. "														.08																		.08	
Dec. "							.20			.33	.63																					1.16	
Jan. 1942		.09																														.09	
Feb. "															.04												.04					.08	
Mar. "																																0	
Apr. "																.16																.16	
May "																						.12	.10								.09	.31	
June "			.05	.10				.50						.09								.11										.85	
July 1942							.09			.11			.04					.10			.68	.14										1.16	
Aug. "								.21					.16	.25		.50		.23	.35	.22	.10		.13	.11	.03				.48		.36	3.42	
Sept. "				.12			.05								.09			.12	.04			.12								.20		.74	
Oct. "											.29	.94						.18	.13													.84	
Nov. "			.32																													.32	
Dec. "						.18														.08	.40						.03					.69	
Total 1942																																8.66	
Jan. 1943				.09	.03			.17	.20																							.49	.63
Feb. "																																0	.04
Mar. "																								.09	.20							.29	.35
Apr. "																																0	.08
May "				.09																.10	.51						.11	.13	.17	.12		1.23	1.56
June "					.57			.39				.20		.58					.68							.30						2.72	1.57
July 1943																																2.52	2.15
Aug. "													.05					.05		.45					.24						.05	.84	2.73
Sept. "		T																			T	T		1.06	1.46	.22	.10	T				2.78	2.38
Oct. "	.17																															.17	2.02
Nov. "										.05				.05												.20	.30		.40			1.00	.49
Dec. "				.51				.20	.17	.05	T	T													.72			T				1.45	.85

Latitude 30° 10' ; Longitude 104° 12' ; Elevation 4,850 Feet.

Total 1943 13.49

Period Average 1940-1943 14.85

H. T. Fletcher Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.11				.93								.03															1.07	1.07
February																																0	.06
March																								.04	.25							.29	.31
April																																0	.96
May																					.40						.34	.07	.07	.17		1.05	1.14
June															..61				.08										.09	.59		1.17	1.37
July	.55	.95	.34											.08		.15														.31		2.38	2.81
August									T	T			.91			T						T				T	T					.91	3.87
September		.10																					.03	.60	1.65	.20	.15					2.75	2.33
October																																0	1.64
November																																0	.50
December																																0	.37
Total 1943																																9.62	

Period Average 1939-1943 16.43

McFarland Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																0	0
February																																0	.41
March																								.04	.23							.27	1.05
April																																0	.91
May																					.53											.53	1.84
June																																1.64	1.68
July			1.00												1.00	.37		.30														2.67	2.85
August																																0	3.98
September																									3.59							3.59	3.60
October																																0	1.84
November																												.77				.77	.38
December				.70																				.63							.50	1.83	1.64

Period Average 1941-1943

Some months missing.

RAINFALL ON UNITED STATES SIDE OF RIO GRANDE WATERSHED

INCHES—1943

O. M. Bunton Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.12			.55																	.03							.70	.33
February																																0	.06
March																								.25								.25	.36
April																																0	.89
May				.05																	.50							.23		.06		.84	1.16
June					.66	.13									.40	.15													.56			1.92	1.45
July	.88		.12							.09				.22		.47			.29													2.07	2.41
August				.05								.09	.09						.42												.34	.99	3.31
September		.31																							2.60							2.91	2.77
October		.08																														.08	1.47
November														.10											.25	.40	.22					.97	.44
December				.37						.44														.81								1.62	1.27
																															Total 1943	12.35	
																															# Period Average 1941-1943		15.85

F. C. Mellard Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																0	0
February																																0	0
March																																0	.84
April																																0	.55
May																				.80	.40							.50				1.10	
June																																	
July																																0	
August																																	
September																																	1.86
October																																0	1.82
November																																	
December																																	
																															# Period Average 1941-1943		

Rideout Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																0	0
February																																	
March																																0	.93
April																				.21	.65							.77	.06			1.49	1.63
May																																	2.74
June																																	
July	.40	1.25													.21	.31		1.25	.50													3.92	2.49
August																																0	1.46
September																																0	2.20
October																																0	2.53
November																																	
December																																	
																															# Period Average 1941-1943		

A. L. Baugh Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.25																								.25	
February																																0	
March																								.60								.60	
April																																0	
May																					.55											.55	
June					.75			.25							1.08												1.76		.40			4.24	
July		.10													.77			.80	.30	.10												2.07	2.40
August																																0	1.85
September																									3.25							3.25	2.25
October																																0	.28
November																											.85					.85	
December				.45																			.30				.10					.85	
																															Total 1943	12.66	
																															# Period Average 1942-1943		

Lat. 29° 51' Long. 104° 03' Elevation 3,820 Feet

Cartledge Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.30																								.30	
February																																0	
March																							.18	.61								.73	
April																																0	
May																				.30	.42							.41				1.13	
June					.60							.51															.54					1.65	
July	.23	.23						.48	.12				1.73	.06				.18												.31		3.34	
August																																0	
September																																	
October																																0	.03
November															.26												.38					.64	.46
December								.58																								.58	.71
																															# Period Average 1942-1943		

Latitude 29° 50' Longitude 104° 00' Elevation 3,740 Feet.

La Mota Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																0	
February																																0	
March																								.43								.43	
April																																0	
May										.75	.10																	T		.65		1.50	
June																																	
July																																0	
August																																	
September		.70																				.05	.01	.32	.33							1.43	
October																																0	
November																									.18	.18	.14					.50	
December																																0	

Latitude 29° 33'; Longitude 103° 59'; Elevation 3,750 Feet.

R. D. Harper Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.24																								.24	.12
February																																0	.05
March																								.45								.45	.26
April																																0	1.30
May															.80			.25	.55													.80	2.61
June																																.80	1.90
July																																	3.30
August																																0	3.75
September																									3.25							3.25	2.32
October																																0	1.84
November																											.75					.75	.98
December				.55																										1.40		1.95	1.11
																															# Period Average 1941-1943		18.93

S. S. (Ted) Harper Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																0	.06
February																								.45								.45	.18
March																																0	.93
April																				.77		.50					.18					1.45	2.78
May															.45	.40	.32												.40			1.57	2.82
June																																	
July	.42									.39				.46				.78	.19													2.24	2.90
August																																0	1.75
September				.74																					3.50							4.24	2.71
October																																0	1.88
November																																	
December				1.45																			.57	.15								2.17	1.46
																															# Period Average 1941-1943		

Some months missing.

RAINFALL ON UNITED STATES SIDE OF RIO GRANDE WATERSHED

INCHES—1943

McCracken Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.16			.22									.10															.48	.24
February																																0	.12
March																								.04	.23							.27	.14
April															.19																	.19	.76
May																				.27	.17							.54				.78	1.68
June					.27									.15	.70																	1.12	1.45
July	.95	.58							.38					.30	.86			.24														3.31	2.33
August			.28	.12																											.10	.50	2.05
September																								2.82	.26							3.08	2.58
October																																0	2.23
November															.14								.46	.25	.28							1.11	.50
December				.51				.35	.05															.43								1.34	.88
																															Total 1943	12.18	
																															# Period Average 1941-1943		14.96

H. M. Greenwood (Cienega Ranch)

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.40																								.40	.20
February																																0	.13
March																																0	.02
April																																0	1.16
May																				.20	.30							.60	.11			1.21	2.52
June					.19										.66													.41				1.26	2.22
July	1.27	.26								.32				.32	.42			.25		.50				.25	.07							3.46	2.58
August				.26																												.26	1.89
September				.16																				2.73	.42			.57				3.68	3.84
October																																0	1.98
November																										.56	.28					.84	.48
December				.55				.67	.10															.50								1.82	1.12
																															Total 1943	12.93	
																															# Period Average 1941-1943		18.14

Rawls Ranch

Recording Gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.18																								.18	.09
February																																0	0
March																																0	0
April																																0	.99
May																					1.18							.14				1.32	1.52
June																																	1.46
July																																	2.20
August																																0	.32
September																																	
October																																0	0
November																																	.15
December																																	.80
																															# Period Average 1941-1943		

Tom Rawls Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																0	
February																																0	
March																								.40								.40	
April																																0	
May																				1.20	.44							.20	.10			1.94	
June																				.13							.24			.12		.48	
July				.14					.50			.28				.11	1.75			1.16												3.94	
August																																0	
September		.15																						1.60	.60	.15			.67			3.17	
October																																0	
November																											.11			.42		.53	
December				.25	.14																		.15									.54	

Loma Vista

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January						.30																										.30	.15
February																																0	0
March																								.30								.30	.23
April																											.31					.31	1.19
May																				.20	.61											.81	1.19
June								.05			.16			.40	.10	.27														.10	.09	1.17	2.09
July					.17				.23					.41				.66		.15												1.62	1.63
August																										.23						.23	1.56
September																							.90	.50	1.00							2.40	3.21
October																																0	1.16
November																									.25	.28	.47					1.00	.33
December				.35			.34																				.17					.86	.34
																															Total 1943	9.02	
																															# Period Average 1941-1943		13.68

Crosson Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.77																								.77	.51
February																																0	.28
March																								.10								.10	.19
April	.69																															.69	.52
May																				.46	.39							.22				1.07	1.41
June								1.15			.20					1.18				.35								.42	1.00			4.30	2.26
July	.46	.52														.12		.30		.92												2.32	2.76
August					.05											.40			.07	.05												.57	2.39
September		2.18		.68																			1.80	1.32	1.33							7.51	2.77
October	.35				.40						.36																					1.11	.90
November														.51													1.56					2.07	.72
December			.84						.25															.54								1.63	.68
																															Total 1943	22.14	
																															Period Normal 1933-1943		15.59

C. F. Thomas Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.13			.22																								.35	
February																																0	
March																																0	
April																																0	
May																				.29	.60							.45	.11			1.45	
June					.22								.58																			.80	
July			.58							.28				1.42		.38		.23		.11										.59		3.59	
August																																0	
September		1.70							.44																1.9							4.04	
October																																0	.18
November																																	
December																																	
	Lat. 30° 01' Long. 103° 57' Elevation 4,640 Feet																														# Period Average 1942-1943		

Earnest Jones Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.12			.22																								.34	.17
February																																0	0
March																								.21								.21	.10
April													.09																			.09	1.05
May				.06																.35	.67								.25	.10		1.41	2.21
June													.20	.52	.53				.84	.15								.43				2.65	2.58
July	.07		.21												1.01			.32		.11										.41		2.13	4.49
August			.16													.34																.50	2.17
September	.50																						1.09	.97	.54							2.70	2.61
October																																0	1.62
November														.20											.35	.43	.28					1.26	.52
December				.40			.17			.14														.31								1.04	.86
																															Total 1943	12.33	
																															# Period Average 1941-1943		18.58

Some months missing.

RAINFALL ON UNITED STATES SIDE OF RIO GRANDE WATERSHED

INCHES—1943

Johnson Ranch, Texas

Standard 8 inch rain gage — Record by Elmo Johnson

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																	.50
February																																	.20
March																																	.17
April																																	.57
May																																	1.19
June																																	1.85
July																																	1.40
August																																0	.75
September		1.02																						.40	.48	.40	.04					2.34	1.37
October																																0	.57
November															.12										.56		.85					1.53	.40
December																																	.49
																																# Period Average 1933-1943	8.86

Steve Stumberg Ranch

Recording Gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.28																								.28	
February																																0	
March																		.33														.33	
April																																0	
May					.11									.13						.11	1.44								1.30	.10		3.19	
June										.10	.07								.60			.10						.20				1.07	
July																																0	
August																																0	
September		.56	1.57	.06		.57																	.30	.95	1.12	.38	.05					5.16	
October																																0	
November																								.35	.08		.42					.85	
December				.04		.20	.49			.07														.15								.95	

Lat. 30° 11' Long. 102° 53' Elevation 4,300 Feet

Sanderson, Texas

Standard 8 inch rain gage — Record by U.S. Weather Bureau

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.20			.37				.22																				.79	.49
February																																0	.60
March																								.08								.08	.21
April																									.47							.47	1.20
May														.20	.38				.07		.65	.85	.25				.10			1.40		3.90	3.54
June																																0	1.14
July	.50							.05							.50											.07						1.52	1.20
August																																0	1.57
September		.15	.32		.23																			.51	1.52	.76	.22					3.71	1.84
October																						.11										.11	1.43
November																										.90	.37					1.27	1.13
December				.43	.65					.22														.25			.03					1.58	.89
																																Total 1943	14.03
																																# Period Average 1939-1943	15.24

R. K. Merrill Ranch

Recording Gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.06	.17				.17	.10	.01																						.51	.49
February																																0	.48
March				.06	.04																		.08	.03								.21	.45
April															.02	.02	.04	.05														.13	1.10
May				.09				.02	.03				.02	.10	.02					.05	.07						.13	.80	.10			1.43	2.39
June					1.17				.10	.11	.31		.20			.55				.09			.75				.58		.50	.11		4.47	3.02
July									.30					.10	.05	.25		.20	.40	.93												2.03	2.77
August																																	4.38
September																																	3.42
October																																	3.55
November																																	.16
December																																	.54
																																# Period Average 1940-1943	22.75

J. O. Kingston Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																	
February																																	
March																																	
April																																	
May				.09				.02	.03				.02	.10	.02					.05	.07						.13	.80	.10			1.43	1.29
June																.15					.85		.45			.35			.20	1.20		5.20	2.53
July															.60	.50	.20	.90	.40	1.70												4.50	1.97
August																																0	1.40
September																								.11	.35	.30	.10			.55		1.41	3.13
October		.10																														.10	1.88
November																											.40					.40	.20
December											1.20													.20								1.40	.86
																																Total 1943	
																																# Period Average 1941-1943	

Latitude 30° 52' ; Longitude 103° 49' ; Elevation 3,700 Feet.

Balmorhea, Texas

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.12			.05																								.17	.63
February																																0	.52
March																																	.30
April																		.18														.18	.77
May																			T	.44	.78							.03				1.25	2.69
June							.03				.07																	.29		.24		.63	2.08
July	.10									.09					.04		.70	.26	.30	T	.16											1.65	.92
August																																	3.43
September																																	1.58
October																																	2.71
November																																	.72
December																																	.64
																																# Period Average 1939-1943	16.99

W. E. Moore Ranch, Texas

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
---	---	---	---	---	---	---	---	---	.08	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	.03	---	---	---	---	---	---	.11	.54
January																																0	.46
February																																	.68
March																																	.78
April																	.06															.06	2.29
May												.01							.04													.05	1.89
June																																	
July		.62							.08											.28												.98	.67
August																																	3.55
September																																	2.40
October																																	1.48
November																																	.63
December																																	.60
																																# Period Average 1939-1943	16.27

Reid Bros. Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.20					.12																								.32	.24
February																																0	.16
March																																	.68
April																																	2.01
May																																	3.12
June																1.00	.11	3.00	.50									.28		.20		5.09	2.46
July																																	1.81
August																																	5.64
September																																	3.32
October																																	2.35
November																																	0
December																																	1.89
																																# Period Average 1941-1943	23.08

Some months missing.

RAINFALL ON UNITED STATES SIDE OF RIO GRANDE WATERSHED

INCHES—1943

Stone Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.20			.05																								.25	.18
February																																0	.08
March																																	
April																																	
May																																	
June												.30		.40		.90														.25		1.85	1.48
July																																	
August																																	
September																																	
October																																	
November																																	
December																																	

Period Average 1941-1943

Pecos River Station

Standard 8 inch rain gage — Record by U. S. Section I. B. C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.17			.13				.08												.14								.52	.98
February		.01																														.01	.81
March		.02										T																				.16	.85
April						T	.86								.29				T													1.15	1.97
May						T			T									.02		.07	.60	1.00						.04	.83			2.56	2.20
June				1.60		T	T															.01										1.61	1.89
July								.11		.04				.04											.30							.49	1.54
August																																0	2.30
September	.30		T													.17						.02		.12	.31	.38				.95		2.25	1.62
October		.04		.08																												.12	1.05
November		.02													.01		T								.13		1.08			.03		1.47	.85
December				1.02	T	T	T	.08	.46				T										.23							.03		1.82	1.00

Total 1943 11.96

Period Average 1938-1943 17.06

Comstock, Texas

Standard 8 inch rain gage — Record by G. A. Humphreys

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.18																											.18	.47
February																																0	.51
March																							.11	.60								.71	.70
April							.08								.25																	.33	1.95
May																				1.90		.32						.43	1.48			4.13	2.83
June				.89																		.77										1.66	1.85
July																																0	.62
August																																0	3.54
September																.24							.16	.11	.13	.31				.15		1.10	1.47
October	.60	.09	.11							.04																						.84	2.68
November															.15										.11	.41	.60			.04		1.31	.87
December	.04			.98			.08	.14	.55														.32			.33					.60	3.04	1.33

Total 1943 13.30

Period Average 1939-1943 18.22

J. F. Runge Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
Jan. 1941																																	
Feb. "																																	
Mar. "																																	
Apr. "																																	
May "																																	
June "																																	
July "			.52						.19	.54																				1.10	.90	3.24	
Aug. "																						.50		.10	.90			.15				1.65	
Sept. "								1.00	1.30								1.10	.80						.60								4.80	
Oct. "					.50				.20						3.15														.35	.15		4.35	
Nov. "																																0	
Dec. "																																0	
Jan. 1942															.25																	.25	
Feb. "																																	
Mar. "					1.10	1.00	.35												.61	.20				.50		.25						4.01	
Apr. "																								.40								.40	
May "					.40	.55	T																									.95	
June "																																	
July "	.85		.10																													1.50	
Aug. "										.10	T		.20	2.10		T	.10					T	2.80	.35						.50	5.80	
Sept. "			1.20					3.80										.60														5.60	
Oct. "			.50									.20			.50		1.40	.15														2.75	
Nov. "																																	
Dec. "												1.30																				1.30	
Jan. 1943						.30																										.30	.22
Feb. "																																0	
Mar. "																								1.00								1.00	
Apr. "								.15			.35																					.50	2.26
May "						.80				.50					.30		T			1.30	1.00	.80										4.70	2.55
June "				.38																												.38	.66
July "																				.60	.20											.80	1.76
Aug. "			.30																													.30	2.38
Sept. "					.20																					2.80						3.00	4.47
Oct. "		.75	.40																													1.15	2.79
Nov. "																														.40		.40	.20
Dec. "					1.00					.39														.58			.25					2.22	1.17

Latitude 30° 56' ; Longitude 100° 34' ; Elevation 2,400 Feet.

Total 1943 14.75

Period Average 1941 - 1943 18.70

W. R. Bearce Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
Jan. 1939				1.85																												1.85	
Feb. "																																0	
Mar. "	.16																															.16	
Apr. "																.22											.36					.58	
May "	1.20	.05	.30	.42								.25				.87																2.59	
June "																						.16										.16	
July "										2.11	.95																	.10				3.14	
Aug. "								1.51								.22																1.73	
Sept. "																										2.80						2.80	
Oct. "										1.51														.12		.79	.05					2.27	
Nov. "										1.11							.28								.20			.32	.80			2.71	
Dec. "																						.59				.63						1.22	

Latitude 30° 52' ; Longitude 100° 44' ; Elevation 2,420 Feet.

Total 1939 19.61

H. K. Fawcett Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
Jan. 1941		.10																			.11										.47	.68	
Feb. "					.10			.34													.10											.44	
Mar. "					1.00												.87									.33						2.30	
Apr. "														.43												.42			.30			1.15	
May "		1.00		.57														.50						.10	.30							2.27	
June "			.50							.28					1.20																	1.98	
July 1941							.12				.40																					.52	
Aug. "					.70	.60																					.50					1.80	
Sept. "										1.50	.60					.79																2.89	
Oct. "					.85					1.43					1.70									.20							.30	4.48	
Nov. "																									.10							.10	
Dec. "																				.10												.10	

Total 1941 18.71

Some months missing.

RAINFALL ON UNITED STATES SIDE OF RIO GRANDE WATERSHED

INCHES—1943

H. K. Fawcett Ranch

Standard 8 inch rain gage — Record by Soil Conservation Service

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
Jan. 1942																																.20	
Feb. "												.15																				.15	
Mar. "																																0	
Apr. "								.79											.15	1.15												2.09	
May "																		.20														.20	
June "					.70																											.70	
July 1942			1.20	.10																												1.30	
Aug. "																	1.40				.33											2.33	
Sept. "									1.30																							4.40	
Oct. "			.94																.20											3.10		1.14	
Nov. "				.15		3.75																										3.90	
Dec. "																					.60											.60	
																															Total 1942	17.01	
Jan. 1943				.20		T												T									T					.20	.36
Feb. "							T																									T	.20
Mar. "																					T			.30								.30	.87
Apr. "								1.20			.10				.20															T		1.40	1.55
May "																					1.92	.50										2.42	1.63
June "																																	1.34
July 1943																																	.91
Aug. "																																	2.66
Sept. "																																	3.64
Oct. "																																	2.81
Nov. "																																	2.00
Dec. "				.73	.27	.80																										1.82	.84
																															Period Average 1941-1943		18.21

Latitude 30° 0' ; Longitude 100° 44' ; Elevation 2,000 Feet.

Devils Lake, Texas

Standard 8 inch rain gage — Record by U.S. Section I. B. C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																0	.25
February																																0	.50
March																								.74								.74	.51
April							.93																									.93	1.88
May								.20	.35												2.04	.95	.07						.03	.90		4.54	2.28
June				.35	.37																											.72	1.78
July											1.32																					1.32	.85
August																.76																0	2.11
September																									.05	.62	.03					1.46	1.27
October	.76																															.76	1.37
November	.52																										.76					1.28	.96
December				.50	.39				.45														.25								.15	1.74	1.08
																															Total 1943	13.49	
																															# Period Average 1939-1943		15.34

Quemado, Texas

Standard 8 inch rain gage — Record by Walter P. Cox

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.02		.03	.11																								.16	.18
February	.05	.06		.04																												.15	.42
March																									.02							.02	.04
April								.34								.06																.40	3.01
May																.20				.02	.81	1.22						.55	.34	.10		3.24	3.02
June				1.13	.02																.30											1.45	.92
July									.03		.57	.04														.05	.25					.94	.66
August																																0	1.80
September		2.64		1.53		.26										.40									.02	1.50						6.35	4.60
October				.29						.15	.02																					.46	.35
November		1.35													.89												.42					2.69	1.01
December			.15		.61			.12	.13	.10			.02										.12								.56	1.81	.84
																															Total 1943	17.60	
																															# Period Average 1941-1943		16.88

El Indio, Texas

Standard 8 inch rain gage — Record by J. H. Jones

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.44			.18																								.62	.81
February		.10																.12														.22	.77
March																																0	.22
April																																0	.19
May																						1.93						.08		1.18		3.19	3.70
June				3.35																												3.35	1.77
July												.80																				.80	1.30
August																																0	1.58
September		1.07						.27							.58	1.03										1.35	.49					5.07	4.29
October	.80				.22					.18																						1.20	.52
November		.94																								.55						1.49	.74
December		.20	.28	.25				.14															.17								.70	1.72	.95
																															Total 1943	17.46	
																															# Period Average 1941-1943		16.90

Roma, Texas

Standard 8 inch rain gage — Record by U.S. Section I. B. C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.52	.30	.28	.56	.12	.28	.13	.13	.17	.03																				2.38	1.94
February																		.60														.60	.73
March																								.90								.90	.89
April																					.80											.80	1.06
May																													.15	.40		.55	1.42
June												2.00						.18														2.18	4.70
July									.65	.30		1.71	.50													.07						3.23	1.99
August																														.08		.08	.59
September		.44					.10	.13	.60	.21					1.36	.11								.20	.16				2.00			5.31	4.71
October	.68								2.20	.16																						3.04	2.53
November			.11	.14											.17										.65	T	T					1.07	.44
December	.03			.40		.15	.05																.72								.46	1.81	.92
																															Total 1943	21.95	
																															# Period Average 1941-1943		21.63

Rio Grande City, Texas

Recording Gage — Record by U. S. Section, I. B. C.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.48	.14	.53	.09	.53	.11	.03	.18														.06							2.15	1.23
February																		.97														.97	.66
March																								.04	.52							.56	1.28
April																					.92											.92	1.16
May						.03				T																			.03			.14	1.02
June					.13											T									.27							.40	3.66
July								.19	.05		.19	.06														.04						.53	.66
August																														.01		.01	.89
September							.99	.52	.11	.10					1.51	.21							.50	.07	.59	.32				.08		4.80	3.29
October	.48								.89	1.28			.02																			2.67	1.85
November		.12	T	.25											.16											.55	.03	.02				1.11	.43
December			.01	.08		.07	.21							.14	.02									.23							.28	1.04	1.37
																															Total 1943	15.30	
																															# Period Average 1939-1943		17.50

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
A. L. Baugh Ranch													
1942							2.73	3.70	1.25	.55			
Cartledge Ranch													
1942										.06	.29	.84	

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
C. F. Thomas Ranch													
1942										.35		1.20	

Some months missing.

AVERAGE RAINFALL ON THE RIO GRANDE WATERSHED

IN INCHES

The records below show average monthly rainfalls on watershed or delta areas of the Rio Grande. The method of computing the records for the Devils River watershed were the same as used for the other watershed areas as outlined on page 84 of Water Bulletin No. 12.

Watershed El Paso to Fort Quitman

1871-1943

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1943	.28	0	.08	0	.28	1.64	1.47	.59	1.50	.14	.77	1.17	7.86
Total	33.34	27.76	25.77	28.59	22.48	178.42	60.15	148.65	108.24	65.71	55.51	46.69	781.59
Average	.46	.38	.35	.31	.39	.82	2.44	2.04	1.48	.90	.49	.54	10.70

Watershed Fort Quitman to Upper Presidio

1871-1943

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1943	.46	0	.10	.12	.58	1.97	2.51	.61	2.92	.32	1.02	1.70	12.31
Total	26.00	19.27	19.61	28.29	45.79	89.39	248.22	191.72	149.35	68.63	31.33	42.67	960.25
Average	.36	.26	.27	.39	.63	1.22	3.40	2.63	2.05	.94	.43	.58	13.16

Devils River Watershed

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
1871	.42	.14	1.68	.59	1.81	.32	.22	1.44	3.21	2.57	.92	.04	12.96
1872	.23	.32	.06	.63	1.18	3.65	3.66	1.06	.98	.72	2.96	2.69	18.16
1873	.16	.19	1.81	.18	4.77	5.91	1.53	2.12	2.35	.89	1.74	.35	21.40
1874	.60	.14	1.86	.49	2.47	3.34	1.48	.57	8.46	.88	5.27	4.79	30.45
1875	.04	.65	.32	.81	2.46	.68	2.54	2.15	1.22	0	2.39	2.83	16.09
1876	1.43	.81	1.02	.48	3.19	2.05	1.29	2.61	3.03	.63	.87	.40	17.81
1877	.14	1.49	.49	.76	2.03	3.21	1.08	1.02	3.97	1.25	1.82	3.06	20.32
1878	.07	.95	1.64	1.66	1.92	5.53	3.35	1.85	3.51	1.11	2.03	.30	23.80
1879	.60	.33	1.00	3.04	1.62	2.71	.02	5.11	.93	.51	.23	.37	16.47
1880	2.99	.60	1.36	1.56	4.71	2.27	6.52	5.94	6.29	1.68	2.48	.81	35.25
1881	.21	.24	.51	2.51	3.13	.35	1.03	.96	2.55	8.39	1.01	1.28	23.97
1882	1.13	1.66	.93	.31	2.85	2.63	3.24	8.27	4.34	1.69	4.14	.28	31.47
1883	.08	.66	4.73	.79	3.44	1.89	3.37	2.28	8.95	5.77	1.39	1.23	33.54
1884	.77	.58	.83	4.25	9.19	2.19	1.68	1.78	4.61	7.23	2.52	2.99	39.56
1885	.93	.56	7.77	3.18	3.09	5.21	1.43	1.45	1.75	.63	.09	.54	26.63
1886	.13	.56	1.02	.43	.55	2.39	.32	2.60	2.89	.99	.02	0	11.90
1887	0	.18	.14	1.10	2.32	2.14	1.20	2.05	3.62	1.48	2.61	1.58	18.38
1888	1.28	1.18	1.34	4.59	1.54	1.02	1.84	2.85	1.90	2.36	3.38	.68	23.96
1889	1.50	2.06	1.23	1.40	1.41	6.75	3.96	.84	4.88	.73	1.48	.13	28.37
1890	.18	.47	.08	2.88	1.69	2.87	1.16	3.39	4.97	1.78	1.94	1.86	22.38
1891	2.06	.29	.90	1.10	4.07	1.19	.19	1.91	2.87	.48	.67	2.65	18.38
1892	.29	.33	1.03	.67	1.90	1.07	.46	5.21	.89	5.01	1.29	1.53	19.68
1893	.08	.07	.50	.74	2.14	.78	.14	.74	.12	.15	.58	.94	6.98
1894	.61	.05	.51	2.56	3.60	.45	.42	6.70	5.01	.97	0	.18	21.04
1895	.58	1.34	.25	.76	5.79	2.33	2.17	2.59	3.33	1.41	2.86	.74	21.95
1896	1.62	.84	0	.86	.48	1.13	2.29	1.18	5.05	7.08	.87	1.26	22.66
1897	.78	.02	1.44	1.78	2.89	3.01	.60	5.07	.80	.63	.11	.42	19.77
1898	.16	.17	.74	1.33	.57	6.69	1.74	3.46	1.25	.88	.14	1.49	18.60
1899	0	0	0	3.68	.35	11.90	2.58	0	1.22	2.62	3.55	2.85	26.55
1900	1.55	.24	2.95	6.52	5.95	2.17	3.53	2.24	4.37	4.26	1.81	.30	35.99
1901	.37	.32	.08	1.00	2.64	1.32	2.35	1.45	2.84	1.59	1.62	0	14.36
1902	.50	.14	.38	1.85	5.32	.32	1.79	.25	2.67	.79	4.98	1.18	19.53
1903	2.28	1.70	.60	.52	4.06	6.39	1.79	.87	4.43	.86	0	.08	25.58
1904	.13	.48	.07	2.02	3.39	4.69	1.23	1.78	6.62	2.25	2.58	.30	25.54
1905	.06	.88	4.87	4.09	3.27	3.13	1.01	.71	2.23	1.77	3.21	1.60	26.83
1906	.18	.53	.53	2.60	2.84	9.48	4.57	6.85	4.86	.84	1.73	.84	32.30
1907	.14	.32	.68	.33	1.85	.76	3.55	.89	1.08	5.99	5.16	.09	20.27
1908	.15	.32	.75	4.30	2.69	1.60	3.60	5.13	1.56	1.01	.85	.07	22.01
1909	.02	.06	.70	1.32	.60	2.59	5.30	.89	1.31	.72	1.21	.95	15.59
1910	.26	0	.64	3.88	1.31	.80	.10	.41	2.47	1.42	.07	.58	11.74
1911	.12	2.57	3.59	3.87	.15	.02	.91	1.38	.81	.81	3.71	4.78	22.72
1912	0	.40	.72	.87	.16	4.63	.49	.69	3.16	1.60	4.38	2.57	19.53
1913	.42	.31	.33	.80	2.04	5.80	1.86	1.39	1.50	3.56	7.31	2.94	28.11
1914	.09	.45	.39	2.56	6.78	5.45	2.30	6.60	.70	4.55	3.61	1.00	34.48
1915	1.22	.70	1.06	4.48	1.54	1.78	2.76	3.28	4.76	.38	.10	.50	22.56
1916	.56	0	1.38	2.25	2.47	.58	1.91	2.52	2.08	1.41	.91	.04	16.09
1917	.21	.09	.52	1.59	2.56	1.03	.42	.84	2.17	.11	.11	.09	9.74
1918	.26	.24	.29	.86	3.79	2.32	.14	.40	1.36	3.65	3.49	2.03	18.78
1919	1.57	.41	2.11	1.67	3.46	4.73	2.67	3.00	7.90	3.02	3.48	.53	34.77
1920	1.90	.15	.26	.06	1.84	3.14	1.67	5.77	2.56	2.21	1.90	.05	21.81
1921	.29	1.07	2.53	1.05	1.38	4.15	.53	2.20	1.05	.45	.22	.07	14.99
1922	.29	.09	.76	7.87	2.41	4.16	1.66	.93	1.37	2.29	2.19	.03	24.03
1923	1.14	2.82	2.30	5.01	.42	1.22	1.51	1.75	3.55	5.00	4.81	1.68	29.19
1924	.24	1.31	1.25	1.25	2.68	.39	.42	1.21	2.88	.55	.01	.09	12.46
1925	.02	.04	.19	2.07	6.31	.78	1.64	3.41	3.52	2.45	1.02	.36	21.81
1926	1.40	.02	3.53	2.69	1.86	2.24	2.06	1.06	.78	3.36	2.22	2.05	23.27
1927	.31	1.63	1.98	1.70	.74	4.08	1.20	.45	2.63	3.85	.14	.92	19.65
1928	.34	.97	.48	.82	2.99	2.65	1.83	3.19	5.80	1.15	1.06	.72	22.00
1929	.32	.50	2.26	.75	3.94	1.73	1.65	.09	2.35	2.97	.45	2.03	19.02
1930	.18	.68	.67	1.89	1.55	3.45	.48	.84	.66	9.15	3.20	.80	22.98
1931	2.91	2.59	1.74	3.70	4.28	3.09	2.33	2.39	.60	1.06	2.43	1.97	28.02
1932	.78	1.47	.99	1.54	3.84	1.29	2.01	5.46	11.69	.35	.92	1.75	31.89
1933	.66	.53	.35	.75	2.32	.59	.89	1.46	.67	2.20	.65	.21	11.28
1934	1.18	.15	1.73	1.53	1.53	1.22	1.57	.94	1.45	.52	.68	.51	12.77
1935	.39	1.02	.58	1.39	5.57	7.57	2.84	.97	7.20	1.20	.52	1.65	31.20
1936	.25	.05	1.34	1.09	3.91	3.85	1.91	1.38	7.17	2.63	1.21	.44	25.23
1937	.35	.37	1.38	.63	1.41	1.82	.96	.52	1.88	1.97	1.43	3.66	16.76
1938	1.63	.58	.37	1.89	1.19	1.34	5.11	.75	.30	.17	.19	.65	13.58
1939	1.74	.07	.31	.73	2.09	.97	1.72	2.78	.87	2.56	3.59	1.28	18.64
1940	.40	1.28	.92	2.06	2.96	4.05	.23	3.29	.18	1.30	2.61	.82	20.20
1941	.95	1.09	2.88	5.20	2.27	2.42	2.84	2.14	4.33	4.99	.31	.58	27.80
1942	.20	.40	.15	2.35	1.49	.85	1.15	5.70	2.80	3.84	.50	1.01	20.52
1943	.31	.01	1.04	.80	3.97	1.73	1.01	.14	3.31	.91	1.67	1.96	16.86
Total	47.50	44.27	87.77	135.83	194.91	197.22	134.22	163.00	222.45	258.50	133.61	83.82	1,603.10
Average	.65	.61	1.20	1.86	2.67	2.70	1.84	2.23	3.05	2.17	1.83	1.15	21.96

United States Side Below Rio Grande City *

1871-1943

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1943	2.18	.19	.68	.41	5.49	.39	.40	.12	6.02	1.74	2.37	1.99	21.98
Total	90.85	74.21	86.97	95.08	211.63	183.18	158.21	136.87	322.09	175.85	107.07	101.94	1,741.93
Average	1.24	1.02	1.19	1.30	2.90	2.51	1.89	2.15	4.41	2.38	1.47	1.40	23.86

RAINFALL ON MEXICAN SIDE OF RIO GRANDE WATERSHED

INCHES —1943

The 1943 rainfall records shown hereunder have not been published elsewhere. The source of each record and the type of rain gage used are shown with each record. The latitude, longitude, and elevation of each station will be found in the index to rainfall stations in W. B. 10, or with station records in subsequent Water Bulletins.

Juárez, Chih.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.14		.12	.04																							.30		.33
February																														0		.37
March			.04	.06																										.10		.36
April																														0		.47
May																														0		.46
June																		.23											.30	.45		.98	.70
July	.11	.01			.04	.01		.32	.07							.05		.15	.04	.07	7				.03	.02						.92	1.16
August									T					.10						.10				.06								1.26	1.55
September		.51																				.33	.07	.33			.08					2.22	1.40
October	T																		T													T	.97
November																									.45	.95	.37					1.77	.61
December				.16				.12	.34																	.22	.08					.86	.50
Total 1943																																7.41	
# Period Normal 1903-1943																																	8.88

La Junta, Chih.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.22			.13	.42		T																						.77	.69
February																																0	.44
March																																0	.24
April																																0	.10
May																											.35					.35	.35
June							T	.09		.78				.12										.27	.51		.18		.07	.26		2.08	1.72
July		.39	.49	.96			T		.73	.08			.05	.05	T		.45	1.20	.51			.47			.29	.01					1.34	7.02	5.08
August	.33			.20		.12		.07	.29	.24	.49	.34	.12	.14	.13		.06		.33	.22	.65	T		.20	.16	.31		.06			.35	4.81	5.25
September	.25	.24	T																	.09	.04	.07	.59	.24	T	.98						2.50	2.29
October							.23			.30	.06																					.59	1.29
November																														.07		.07	.48
December				.35			.35	.71															.01			.27					.08	1.71	.80
Total 1943																																19.90	
# Period Normal 1925-1943																																	18.67

Some months missing.

* Within the outer limits of present irrigation districts or farmed areas.

RAINFALL ON MEXICAN SIDE OF RIO GRANDE WATERSHED

INCHES —1943

Guerrero, Chih.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				T				T	.19	T																						.19	.46
February																																0	.40
March																																0	.25
April																																0	.20
May																												.41	.02			.43	.28
June									T	.08	.92					.04	.12		.20	T						.35	.16	.08	T			1.95	1.61
July		.28	.77	1.40			.03					.59							.55	T	T					.37	T	T		T	.08	4.07	4.25
August	.37	T	T	.59		.18	1.10	.35		.32	.35	.16	T	.47		.08			T	.32	.08	T			.71	.26	.04	T		.39	.71	6.38	5.11
September	.59									.08	.32					.12			.24	.27	T	T	.59	.75	.55	.63						3.74	3.54
October						.04																										.44	1.13
November																									T	T			.02	.02		.04	.68
December			.04	.24			.35	.55															.02			T						1.20	.82
																															Total 1943	18.44	
																															# Period Normal 1903-1943		18.73

Parral, Chih.

Standard 8 inch rain gage — Record by Meteorological Service of Mexico

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.26	.08																							.34	.18
February																																0	.25
March																																0	.16
April																																0	.07
May																											.04					.04	.37
June										.08				.74		.08	T		.12					.08					1.02			2.12	1.79
July																																	4.43
August							.12		.47							2.44				T	.16					.39					.16	3.74	4.36
September	T	1.06	.55	.87						.12											.16	.16	.86	1.89	.43	.20	.55					6.89	4.15
October									.39																							.39	1.39
November																																0	.77
December			.27				.20																								.04	.51	.55
																															Total 1943		
																															# Period Normal 1903-1943		18.45

La Boquilla, Chih.

Standard 8 inch rain gage — Record by Rio Conchos Hydro-Electric Company

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January								.25	.14																							.39	.32
February																																0	.17
March																																0	.21
April																																0	.18
May																												.14				.14	.72
June					.23		.41							.74		.68	.29										.05	.14	.34	.36		3.24	1.56
July	.36	.12	1.78								.58	.19				.05	.80		.44			.03		.03						.05		4.43	2.94
August			.02				.20				.04					.10								.09	.10	.38	.16					1.19	3.04
September		.35								.06									.03	.03	.25	.42	.90	.28	.36	.36						3.04	3.10
October										.55	.55																					1.08	1.04
November																									.06							.06	.45
December			.41		.06		.12	.02															.05								.06	.72	.42
																															Total 1943	14.29	
																															# Period Normal 1910-1943		14.15

Villalba, Chih.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.07		.04	.22	.06	.02																							.41	.37
February																T																T	.29
March																																0	.01
April																																0	.08
May																											T					T	.24
June										.20	.09				.66	.61											.16	.01	.48	.24		2.45	1.23
July	.02	1.57	1.59											.29	.20	.01	.25	.06	.33	.15	.07	T				.06	.01			T		4.14	3.74
August			.05			.02	.07	T	T	.11	.02	.02	.29	T	.03		.26	T		.04	.11			.03		.09	.01					.92	3.67
September	T	.09								.22									.02	.01	.22	.30	2.25	1.00	.59	.02						4.72	3.28
October					.02				.11	.75	.07																					.95	1.76
November										.10																.09	.01					.10	.38
December			.20	.13			.40	.18	T	T	T												.06	T							.14	1.11	.48
																															Total 1943	14.80	
																															# Period Average 1940-1943		15.47

Las Virgenes, Chih.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.05	.04	.18	.02	.01																								.30	
February																																T	
March																																0	
April																																0	
May				T																	.04					.12	.23		.06			.45	
June						.06									.30	.12						.07						.03	.27	2.17		3.02	
July		.13	.26	.61						.03				.03	.11		.02		1.52	.06	.02					.10						2.89	
August	T	T								.06	.02	.12		T		.14	.02			T				.02	.02	.03					.66	1.09	
September		.02								.13										.05	.12	.23	.15	1.02	.22	.12						2.06	
October										.74		.06																				.80	
November																										.29	.06					.35	
December			.22	.13			.49	.23	T	T													.10								.14	1.31	
																															Total 1943	12.27	

Latitude 28° 10' ; Longitude 105° 38' ; Elevation 4,068 Feet.

Hormiguero, Chih.

Standard 8 inch rain gage — Record by Meteorological Service of Mexico

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					T	T	T	.02	.20																							.22	.50
February																			T													T	.30
March																																0	.15
April																																0	.13
May					.02																											.02	.51
June								T	T	T		.08	T		.32		.22	.26				.18			1.37	.24				1.33	.12	4.12	2.13
July		.66	.10	.95							.26		.08	.04	T	.04	.86		1.37	.32	.12	T					.08	T				4.88	3.46
August			.35	.12	.04			.01	.04	.02	T	.02	T	T		.76				T	.04			.08	.24	.32	.43	T	.04		.12	2.65	4.16
September	.41	1.99	.59	.16	.09					.16	.12				T	.39		T	T	.10	.37	.26	2.48	1.58	.79	.20	.51					10.20	5.56
October						T			.24	1.09	.33																					1.66	1.82
November																									.04		T					.04	.65
December			.66	.08			.04	.08		.04	T			T																	.08	.98	.80
																															Total 1943	24.77	
																															# Period Normal 1923-1943		24.17

Delicias, Chih.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.06		.02	.08	.08	T																T							.24	.36
February																																0	.18
March																																T	.14
April																																0	.19
May				.04																T	.06						.04	.04	.04			.22	.31
June						T	.02			.04	.06				.32	.02		.14										T	.16	1.57		2.32	1.58
July	T	.32	.71	T						1.32				.08	.02	.02		.45	.79	.12	.30					T	.24			T		4.37	2.56
August				T			T	T		T	T	T			T	T										T	T					T	2.56
September	T									.19											.14	.37	1.60	1.34	.39	.10						4.13	2.44
October									T	.65	.12																					.75	.87
November																									.05	.20	.12					.37	.41
December			.23	.14		T	.63	.18	.02	T													.06	T							.14	1.40	.51
																															Total 1943	15.80	
																															# Period Normal 1933-1943		12.11

Chihuahua, Chih.

Standard 8 inch rain gage — Record by Meteorological Service of Mexico

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					T	.02	.02	.01	.47	.04																						.57	.27
February																																0	.25
March																T																T	.26
April																T																T	.19
May					T														.02			.07			.05	.24	.22	.25				.85	.40
June																																	1.56
July		.02	.16	.10	.83					T						.22	.11	.45	.63	.58	.94	.46	.06		.02	T	.26					4.84	3.62
August				.39		.58	.08	.05			.13	.13	.17	T	T	T	T				.07	.07		.34	.04							2.05	3.60
September	.02	.10																			.26	.12	.84	1.12	.45	.64	.17					3.72	3.36
October									.04	.61																						.65	.93
November										T													T		.25		.10					.35	.55
December			.04	.43			.04	.28	.04														.58	.54								1.75	.43
																															Total 1943		
																															# Period Normal 1900-1943		13.42

Some months missing.

RAINFALL ON MEXICAN SIDE OF RIO GRANDE WATERSHED

INCHES —1943

San Antonio, Durango

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.06	.12	.53	.04																								.75	
February																T																T	
March																																0	
April	T																															T	
May																										T		.08				.08	
June					.06	.35	.55	T	.24	.04		.09	.14		.73	1.07			T	1.29		.74	.05	.07				.09	T	.85		6.36	
July	.37	.23	.79						.17	.08	.09	.31					.07	1.22	.23	.01	.13		T	.14	T	T	.42		T			4.26	
August	.05		T			T			.38	.01	.04		.46	.02	.02		.08				T		.07	.09		.45	.06	T			.05	1.78	
September	.06	.49	.17	.76	.21				.05				T		T		T		.06	.07	.41	.30	.72	1.83	.80	T			.42			6.31	
October								.22	.66	.19																						1.07	
November	T												T		T											T			.10			.10	
December		T	.52	.09		T	T	T	T	T																					T	.61	
	Latitude 26° 25' Longitude 105° 21'																												Total 1943			21.32	

Palestina, Coah.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.78	.12	.08		.26																								1.14	1.08
February	.12																															.12	.76
March																														.24		.24	1.02
April							1.14																									1.14	1.30
May								.94	.12											1.18	1.06	.28	.08					.53	.24			4.43	3.00
June																																	2.22
July										5.74	.24																					5.98	2.44
August																																	2.18
September									.20										.79			.20	.59	.41				.41	.41			2.81	3.72
October	.41	.39															T															.80	.91
November	.86																															.86	.76
December				1.18	T	T	T	.08	T									.12				.24	.39	T								2.01	1.35
																																# Period Normal 1931-1943	20.74

Muzquiz, Chih.

Standard 8 inch rain gage — Record by Meteorological Service of Mexico

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January						.20	.16	.39	.19	T																						.94	.94
February		.16																														.16	.44
March																								T	1.18	T						1.18	1.18
April															T	T					T											T	1.06
May															T					.79	1.18	.39	.79	1.18				3.74		.87	T	8.94	3.71
June		T	.39	T															1.18	.40	T	.39	.99	.59								3.94	3.37
July				.79																												.79	2.16
August																T																T	2.57
September	.79	T					T	1.18	.20	T					.98	.39	T					.39	.59	.79	.39	.20	T	T	T	.16		6.06	5.38
October	.12	.20	.39	.51	.20	T												T														1.22	2.29
November	.20	.79	T																						T	.20	.31	.39	.12	.59		2.60	1.32
December	.20	.39	T	.12																	.31	.59									.20	1.81	1.28
																																Total 1943	27.64
																																# Period Normal 1923-1943	25.70

Presa Guadalupe, Coah.

Standard 8 inch rain gage — Record by National Irrigation Commission.

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
Sept. 1940 "		1.32				T	.09	.07									T				T											1.48	
Oct. "																																.24	
Nov. "			T		.09			.58			.02	.01	.21	T													1.21	.19		T		2.07	
Dec. "									T	.19									T	.10	T											.29	
Apr. 1941													T			T									.02	.02						.04	
May "	T											T				.58						T	.54	.66	.72							2.54	
June "												.26	T	T								.04	.02	.50					T	.53		1.35	
Jan. 1943					.01	.07	.35	.19		T																						.82	
Feb. "				T																												T	
Mar. "																																0	
Apr. "	.02																			T							T					.02	.03
May "					.01														T	T								T				.01	1.28
June "						.17	.51							.32				T	T	.04	.17					T	T		.03			1.24	1.30
July 1943		T														.16			.23							T						.39	
Aug. "														T																.02	.22	.24	
Sept. "		.08				.02																	.12	.64	.39	.49	.04					1.78	1.63
Oct. "	.12							.24	1.85	.06																						2.27	1.26
Nov. "																									.04				.57			.61	1.34
Dec. "				.19	.01	T																										.20	.24
																																Total 1943	7.58
																																# Period Average 1940-1943	

Nueva Rosita, Coah.

Standard 8 inch rain gage — Record by Meteorological Service of Mexico

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																	.24	.19	.12	T												.55	.90
February		T	.08															T	T													.08	.52
March																									.08							.08	.46
April															T																	T	1.24
May							.35		.16											.24	T	.12	.12	.47			T	T	.15			1.61	3.01
June					T	T	T	T											T				.47									.47	2.05
July										T	T	T	1.49																			1.42	1.84
August																											T					T	1.52
September	T	.47	.16			T	.26	.67	.87						.82	.28	T						.39	T	.71	.43				1.34		6.42	2.16
October	T	.20	T	T	T				.67	T	T	T					T															.87	1.36
November	T	T												T	.08									T	.24	T		T	T			.32	.69
December		.67	T	.47		.19	T	T					T	T									.08							.20		1.61	.95
																																Total 1943	13.43
																																#Period Normal 1925-1943	16.70

Sabinas, Coah.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.08	.26	.12	.35	.59	T		.08					T														T	T	1.88	1.13
February	.06	T	T															T														.06	1.66
March																																0	1.00
April																				.06												.06	1.41
May						.12			T							.24			.08	.04	1.53	.08	.02						.27		T	2.38	3.76
June				T		.12													.04			T	T									.16	2.13
July									.27			T	.16	T						.73	T											1.16	1.74
August																																0	1.31
September		.20						.29	1.65	.16					T	.12	.12						.12	T	.71	.47				.71		4.55	4.62
October			.04	T	.04			.92	.08	.04	.08	.08					T															1.28	.81
November																																	.66
December		.04	.04	.63	.02	.04	T	.02	.02					T								.02	.14								.19	1.16	.82
																																Total 1943	12.09
																																# Period Average 1922-1943	21.07

Sierra Mojada, Coah.

Standard 8 inch rain gage — Record by Meteorological Service of Mexico

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January						.23	.12	T		T																						.35	.52
February																																0	.32
March																									T							T	.34
April	T															T					T						T	T				T	.29
May							.01								T				.02	.01							T		.02	.01	T	.07	.96
June						T		.04		T	.12	.28	T			.24				.86	.28		.12						.04	.20		2.20	2.19
July			.24							T	.04	.20	.31	1.53	T	.24		.35			.67					.06		.24				3.30	2.97
August			.02						.05	T								T								T	.03				T	.08	2.88
September	.20	.20	.16	.23	2.17					.35												.04	1.65	.55	2.16	.04				T		7.95	2.95
October	.04			T	T	.12			1.38	.94	.63																					3.11	1.41
November														.13											.14		.09			.04		.40	.54
December			.07	.33		T	.21		T	T		T		T										T							.20	.81	.65
																																Total 1943	18.87
																																# Period Normal 1897-1943	16.02

Progreso, Coah.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																	
February	.02																															.02	
March																																0	
April																																0	
May						.06										.04			.16		.18								.50			.99	
June				.84																												.84	
July																																0	
August																																0	
September	.79					.37			3.02	.04					.06	.16	.33								.73	.26						5.76	
October	.39								.79	.04																						1.22	
November		.04												.04	.19														.04			.31	
December				.62									.06	.06									.14								.12	1.00	

Latitude 27° 28' ; Longitude 101° 03' ; Elevation

Some months missing.

RAINFALL ON MEXICAN SIDE OF RIO GRANDE WATERSHED

INCHES —1943

Villa Juárez, Coah.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.51	.10	.37	.38																								1.36	2.04
February	.06																															.06	.02
March																								.12								.12	.32
April						T													T													T	.79
May						.53															T								.49	.18		1.20	1.79
June				2.44																												2.44	1.09
July																									.07		.28					.35	1.48
August																																0	3.39
September		T				.49			.55	.59					T	.10									.71	.33				.77		3.34	2.39
October			.21						.69	.10	T																					1.00	3.58
November															T										T	T						T	.50
December				.61	T	T	.14	T															.18	T							.25	1.18	.67
																															Total 1943	11.25	
																															# Period Average 1930-1943		17.20

Latitude 27° 36' ; Longitude 100° 46' ; Elevation

Don Martin, Coah.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January																																	.93
February	.12	.01														T		T	T													.13	.59
March																								.11								.11	.68
April																				.01												.01	1.22
May						.88								.01						T		.08	T					.01	.67	.15		1.80	2.28
June				2.36	.11																											2.47	2.11
July	T										.01	.24														.38						.63	1.35
August																																0	1.54
September		.02				.36		.78	.53	.06	T					.19	.11	T						.01		1.13	.20			T	1.11	4.50	2.67
October				.37					.77	.20			T	T		.10																1.44	1.64
November																.48	.07	T	T	T						.08	.01			T		.64	.87
December			.01		.37	.02	.05		T				.13	.02									T	.17	T	T	T				.11	.86	1.01
																															# Period Normal 1927-1943		16.69

Monclova, Coah.

Standard 8 inch rain gage — Record by Meteorological Service of Mexico

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January						.20	.05	.44	.41	.12	T							T														1.22	.53
February					T																											T	.49
March																									.11							.11	.36
April																																	.60
May						.67			.15							.24			.99	.43	.28	T										2.76	1.57
June																																	1.89
July											T	.59																				.59	1.71
August																																0	1.54
September		.10	T	T	T		1.60			.30	.20						T	.94						.20	.14	.39	.10	T				3.87	3.16
October	T	T	T						1.03	T																						1.03	1.23
November	.12	.11	.04													.15							T		.03	.10	.12			.18		.85	.63
December			.15	.54			.05						.04	.12									.26								T	1.16	.65
																															# Period Normal 1897-1943		13.76

Anahuac, N. L.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.04	.25	.18	.28	.61	.53																								1.89	1.04
February	.05																							.03								.08	.45
March														.05									T	T	1.07							1.12	.85
April														T	T					.17												.17	1.15
May						1.00																	.98					.02	.01	.60		2.61	3.12
June				T	T	.02												T														.02	1.34
July										.02			T													.21						.23	1.09
August																																0	1.55
September		.62					T					.12	.08			.24	T						.02	.01	.18	1.67	.10	T			.01	3.05	3.89
October	.26								1.34	.20	T												T									1.80	1.18
November	.20														.20											.18		.12			.08	.78	.51
December		.12	.02	.06	T	.08	T	.04	.04		.08			.21									T	.10	T						.57	1.12	1.19
																															Total 1943	12.87	
																															# Period Normal 1933-1943		16.54

Rayones, N. L.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				T	T		.59	.67						T	T								T									1.26	.68
February																		T														T	.55
March																														T	T	T	.35
April								.16					T					T			.14											.30	.52
May					T									T					T	T	T	T	.07	T						.44		.51	1.44
June	.08			1.38							.08												T									1.54	2.72
July	1.17											.16	.47								T			T								1.80	1.27
August								.02									T															.02	2.67
September		.02				.16		.12	.03	.12	.15													.45	.01	.12	.04	T	T			1.22	2.82
October										.53																						.53	1.78
November													.16			T																.16	.50
December			.24																				.55									.79	.41
																															Total 1943	8.13	
																															# Period Normal 1926-1943		15.72

Guerrero, Tamps.

Standard 8 inch rain gage — Record by Meteorological Service of Mexico

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.87	.35	.43	.20	.12	.43		T	.04															T					2.44	1.66
February																																0	.34
March			T						T						T										.41							.41	.83
April			T																	T	.28											.28	.57
May							.79			T													.27						.08		T	1.14	2.34
June						.90	T										T	T								.12						1.02	1.53
July		T								.08		.83	.59	.23																	.24	1.97	1.92
August																																0	2.03
September		1.73				.95			1.22	T					T	.39							T	1.34	.59	.24			.43	T		6.89	3.16
October	.31	.16	T						2.05	.28																						2.80	1.64
November	T	.31	T	.17										.04	.05								T		.22	.10	.08					.97	.57
December		.08	.04	T		.12	.15						.08	.63									T								.54	1.94	1.72
																															Total 1943	19.86	
																															# Period Average 1936-1943		18.11

Allende, N. L.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.30	.13		.74	.72	T	T	T							.15														2.04	1.40
February				.32												T		.82							T		.21					1.35	1.09
March														.14																T		.14	1.76
April	.95														.69													T				1.84	2.54
May				T	T	T	T							T						.26		.83	T						.43			1.52	4.22
June			T	T	.35	.16											.24		.27			T		T	T							1.02	7.93
July	T								T	T		.78		.T												.12				.14		1.04	2.63
August																			T	T	T				.35		.49			T		.84	3.26
September			T	T		.46		1.15	1.50	.88					.84	T	.07				T		1.97	3.56	.14	.05	.85	T	T	1.50		12.39	7.20
October	2.37	T	.95	.68	1.04				.34	T	T			T																T		5.36	4.12
November	T	1.08												.25	T	.16	.58						.22	.57	.40	.21	.16					3.63	1.68
December				.77	.10		.17	.17			T			.24									.55	T							T	1.98	1.74
																															Total 1943	33.15	
																															# Period Average 1936-1943		39.59

Los Ramones, N. L.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.18	.34	.33	T	.29	.39	.04		.04																					1.61	1.28
February																									T							T	.52
March								T					.08											.94							T	1.02	.91
April	1.65	.59												T	.28	.04																2.56	2.82
May								T													T						1.77	T				1.77	1.95
June				.35	.66	.16											.28								T	.20						1.65	5.22
July									.04			.39	.56				.08										.28			.38	.10	1.83	2.58
August																																0	1.47
September	.23	.32				1.62			.26	.82				T	.04	T								.04	.12	.05	T	T	.08			3.58	4.32
October	.20			T	.08				.24																							.52	1.59
November			T										.08										.26			.47	.31	T				1.12	.54
December			.57	T	.02	T	T	T				T		.08										.43	T						.28	1.38	.66
																															Total 1943	17.04	
																															# Period Average 1939-1943		23.86

Some months missing.

RAINFALL ON MEXICAN SIDE OF RIO GRANDE WATERSHED

INCHES —1943

Montemorelos, N. L.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January	T			.48	.23	T	.49	.69	.06	T								.24														2.19	.96
February				T													.12	.55							T	.20						.87	.92
March												T																		T		T	1.24
April	1.18													T	.19						T	T										1.37	2.14
May					T																		.49	1.48								1.97	2.95
June												.41		.33			.20								.27	.24						1.45	4.26
July									.12	T		.78	.28				T									.08				.65		1.89	2.38
August						.28	.19																			.22	.41					1.10	3.53
September	.08	T				1.77		.10	2.64	.32				T	1.26	T	.47						2.22	3.80	.23	.08	.08	.09		.67	13.81	4.94
October	1.42		.65	.83	.06				.12	T	T		.23																	.10		5.41	2.79
November	T	1.30	T	T									.19		.35	.16	T						.39	.56	.35	.39	.22	T		T		3.91	2.00
December	.08	T	.57	.06	T	.08	.16	T	T	T	T		T	.24	.04	T	T.	T					.56	.12	T	T					T	1.91	1.26
																															Total 1943	33.88	
																															# Period Normal 1904-1943		29.31

Villa de Santiago, N. L.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January	T				.20	T	.57	.53			T							.30													T	1.60	1.10
February	T								T									.19							.08			.12				.39	1.08
March													.04																			.04	1.17
April	2.68													.35	.95													T				3.96	1.71
May				T			T	T											T	.51		.08		.12			.64	.82	.04			2.21	3.49
June				.45	.06	.15								.21		.87	.26			.55					.22	.24						2.81	5.93
July			T						.10			T					.16		T											T		.26	3.37
August	T						.05											T							.06		T			T		.13	4.83
September		.37	.08			.79		.79	1.93	.40	.04				.24		.47						2.20	2.91	.55	.08	.08			1.06		11.99	9.49
October	1.58			1.14	.46			T	.35	.04	T	T	.11																			3.68	4.56
November	.05	.37														1.08							.56	.37	.36	.08	T					2.87	1.73
December			1.18	.06		.20								T	.27							T	.12	.15							.04	2.00	1.30
																															Total 1943	31.94	
																															# Period Normal 1923-1943		39.78

Cadereyta, N. L.

Recording gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January		.01		.14	.20	T	.32	.48	.01		.01	.01						.08														1.26	.95
February	.02																								.08	.18						.28	1.03
March								.16					.32	.05										.01							T	.54	1.45
April	2.17													.02	.63															.01		2.83	2.08
May																						.02					.05	.06		T		.13	2.49
June				.02	.71						.02					.21	.06							.02		.10						1.14	4.35
July							2.01	1.01				.09														.14	T					3.25	2.88
August																																0	2.82
September		1.51				.40			.94	.20				.01	.06			T				.02	.38	.47	.23	T	.03	.11	.01			4.17	4.66
October			.02	.33	.05				.13	.01	.01											T		T								.55	2.60
November	.54	.12											.73	.02	.19	.58							.03	.39	.40	.22						3.52	1.68
December			.95	.04		.12	.19			.14		.06		.08	.10								.16	.15							.14	2.14	.98
																															Total 1943	19.51	
																															# Period Normal 1904-1943		28.17

Las Comitas, N. L.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.02		.31	.62	.03	.03	.03	.03																				1.07	.55
February				T																						T						T	.24
March													.02																			.02	.27
April	.76														.06															.09		.91	.76
May	.01								.02					.09								.32	T							.13		.56	.70
June			T	.29	T	.69						T					.06		T	.06							.52				1.62	4.91
July	.15										.03		.25			T	.12		T							.28	.60					1.43	1.69
August							.47		.04				T											T				.19			.13	.83	2.11
September	.16	.08				.72		.81	.80	.10				T	T	.04	.36						.53	1.89	.26		.21					5.96	5.18
October	.52		T	.18	T			T	.26																							.96	1.21
November	.45	.02											T		.03	.49									.21							1.20	.56
December			.81	T		T				T		.32		.43	T								.04	.22								1.82	1.26
																															Total 1943	16.38	
																															Period Average 1940-1943		19.42

Las Enramadas, N. L.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.16	.35	.14	T	.35	.49	.05		T																					1.54	.20
February																																0	.58
March										T			T											T								T	.87
April	.79	.18													.05																	2.02	1.24
May								.20												.10		.07					1.30					1.67	3.23
June				T	1.30	T										.06			.10					.39	T	.09	T					1.94	4.00
July												1.30	.27				.20		.20								.27				.13	2.57	3.05
August																																0	3.24
September	.06	.02				1.22		.05	.67	.55					.37	.10	.03							3.92	.03	.06	.08	.16				7.30	5.32
October	.32				.04				.10																				.02			.48	1.91
November			.01											.02	.04							.08		.06	.43	.10	.10	.01				.85	.79
December	.07		.49	T			.03					.06		.14										.03							.18	1.00	1.04
																															Total 1943	18.17	
																															# Period Normal 1926-1943		26.27

El Cuchillo, N. L.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			2.66	.15	.33	T	.22	.44	T	T	.09															T						3.89	1.66
February																										T						T	.37
March								T				T												.06								.06	.44
April	1.18	.13													T						T											1.31	1.13
May								T													T	T					T	.10				.10	1.94
June			T		.56	T						T					T															.56	2.96
July									.37		.14	T	.15													T	T					.66	1.39
August																											T					T	1.34
September						T		T	1.00	T					1.10	.05	.07						.04	2.95	.13	T	T	T		T	T	5.34	4.40
October	.15				T				.57	T																				T		.72	1.94
November		T	.08	T									T	T	.24	.35									.78	T	T					1.45	.40
December						T	T					T	T	.10									.51								.40	1.01	.94
																															Total 1943	15.10	
																															# Period Average 1938-1943		18.71

Santa Catarina, N. L.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.05	.15		.17		.24		.67						.06	.04	T												1.36	2.38
February				T																												T	.61
March													.04																			.04	.30
April														T	.04																	.04	.63
May							T	.03						.10						.02		.03		.15						.10		.33	.78
June			.07			.18						.24					.04			.05												.58	3.79
July											.09	.03	.89					.25								.08	.20					.94	2.37
August														.12																		.12	3.02
September		.14				1.70		.28	1.15	.10						.19	.22						.08	.99		.12				.04		5.01	3.69
October	.64			.21											.16																	1.01	1.18
November	.47	.07													T	.80							.02	T	.26	T	.03		T			1.65	.56
December				.71	T	.16	T			.05		.10		.63										.10								1.75	1.50
																															Total 1943	12.93	
																															# Period Normal 1938-1943		20.81

Saltillo, Coah.

Standard 8 inch gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.06	.10	.06	.40	.76	.08	.08	.04	.08							.02													1.68	.65
February																										.09						.09	.53
March																														.02		.02	.38
April	.23																				T							T	.07			.30	.74
May				.40										.27		.22			.64			.02	.07							T		1.64	1.03
June				.31	.15	.04		1.34	.04		.03	.10			T	.23	.08	.15		1.62	.08	.03			.28		.05			T		4.53	2.17
July										.20	.39	.17		.58				.17	.26	.10		.08	.52			.04	T			.06	.04	2.61	2.88
August				.51			.04			.02																						.57	2.52
September	.12	.04		.08	1.14					T							.15						.18	.04	.13	T	.42					2.24	2.60
October		.13						.07	.72																						.08	1.00	1.30
November	.33											.02				T									.26		T		T	.08		.69	1.04
December			.13		.04	.02				.12				.35	T								.09	.41								1.16	.70
																															Total 1943	16.53	
																															# Period Normal 1886 - 1943		16.54

Some months missing.

RAINFALL ON MEXICAN SIDE OF RIO GRANDE WATERSHED

INCHES —1943

Gral Cepeda, Coah.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.15	T	.35	.60	.11	T	.06	T																				1.25	.62
February																			T													T	.53
March																														T		T	.27
April	.25					T														T							.04	T	.57	.14		1.00	.27
May					.15								T	.25			T	T		T						T			T			.38	.86
June				T	T	1.16	T	T		T			.12	.45	.04	T			T	.12	.14	T			.15		.08					2.24	2.57
July		.16										.74		T			.32	.53	T		1.48		T			.61		.10				3.95	4.35
August				.48							T	.22	.13												T	T						.83	3.07
September	T	.59	.28		T	1.32	T	T										T						.77	.29	.13	T	.32					3.70	3.35
October	T			.29	T		.23	1.00	T																							1.48	1.42
November	.26	T											T												.14	T	.08		.05			.53	.58
December			T	.12	.05	T						T		.23	T									.26								.66	.77
Total 1943																																16.00	
∮ Period Normal 1926-1943																																	18.71

Ramos Arizpe, Coah.

Standard 8 inch rain gage — Record by Meteorological Service of Mexico

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					.02	.31	.12	.20	.55	.16	.19	.12	.08																			1.75	.58
February					T																											T	.36
March																									T							T	.53
April	.20															T																.20	.42
May						.04									.10		.04			.08			T									.26	.78
June					.14		.16		T			.12			T			.12			.12	.19										.85	1.23
July													1.16					T	.32											T	T	1.48	1.64
August						T	T						.24										T	T								.24	1.41
September	.16	.16				.47											.16							.47			.49					1.61	1.71
October								T	.24																							.24	.65
November	.78												T				.24								.26		.20					1.30	.51
December			T	T		T				.04	.24		.27										.16	.12								.83	.64
Total 1943																																8.96	
∮ Period Normal 1907-1943																																	10.26

Cuesta de los Fierros, N. L.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.05	T		.53	T	.14	.05																							.77	.47
February																										T						T	.35
March																																0	.20
April	.10					T								T	.01														.05			.14	.30
May								T									T		T					T								T	.48
June		.27																							.01	.06						.34	2.16
July											.08	T															.49					.57	.99
August																																0	1.21
September		T				.52				T						T		.52								.39	.02					1.45	2.35
October	.05	.10						T	.52																		T	T				.67	.92
November		.01	.04													.41																.46	.38
December			.16			T	.02		T	.04			.09		.48			T					.04	.20						T	1.03	.88
Total 1943																																5.43	
∮ Period Average 1935-1945																																	10.69

Monterrey, N. L.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.16	.15	.01	.46	.57	.02	.07	.03	.15						.03						.02	.02	.18						1.63	.73
February																		.04														.26	.63
March													.03																	T		.03	.79
April	1.79			T										.06	.45					T										.01		2.31	1.20
May					T				.04										1.24	2.36		.02					.49			T		4.15	1.71
June			T	.04	.78	.07								.07			T								.46	.06						1.48	2.93
July										T	.29	.07				.41		.80								.52					.03	1.92	2.58
August							T																			.12						.12	2.92
September		.39				.37		.55	.86	.35					.01		.35					.01	.75	1.58	.20	.06	.20	.03		.04		5.77	5.81
October	.51	.02		.27	.20			T	.16			.01																				1.17	3.68
November	.47	.15	.02										.20		.47	.09							.10	.08	.47	.16	.06	T	T	T		2.20	1.46
December			1.06	.10		.24	.06	T		.01		.08	.01	.52	.03								.11	.12							.09	2.43	.86
Total 1943																																23.47	
∮ Period Normal 1896-1943																																	24.64

Laguna de Sanchez

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.12				.47	.72	.10	T	T	.08														.06						1.55	.88
February																																0	.54
March																																0	.09
April	.16	T													.13															.53		.82	1.73
May					.09		T	T						.12	T		.12				.19	.59	T	T			.12	T	.20	T		1.43	1.68
June		.10	T	.63		.29	T					T				.09	.32	.10		.33					.24	.08	.16					2.34	5.36
July									T		.39	.79	.12				.14									3.86	.45			.16		5.71	4.57
August				.31			.62											T		T	T			.16			.12	.23		.12		1.58	1.61
September	.24	.10				.80		.61	.90	.30	T			.18	.63	T	.22					T	.76	.88	1.18		.85	T				7.05	5.78
October	.16								.63			T																				.79	1.16
November	.34	T											.18			T									.35							.87	.57
December			.76											.32									.25	.24								1.55	1.11
Total 1943																																23.69	
∮ Period Average 1941-1943																																	25.08

Topo Chico, N. L.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.12	.20	T	.25	.63	T	T	T	T																			T	1.50	.89
February																									T	T	.10					.10	.27
March													T											T								T	.77
April	T			T										.12	.61																	.73	.96
May																			.12	.99								.87				1.91	1.43
June							T									T									.27	.20						.47	4.29
July												T	T							.18												.18	1.42
August																										.26						.59	1.68
September	.18					.33	.33	1.56	1.31	1.12					T	T	.43					T	T	1.04	.22	T	.16	T	.85			7.00	4.93
October	.24						T		.15																							.42	1.04
November	.41	.31		T	T								.26		.59	.18							.08	.10	.61	.10	.04					2.68	1.34
December			.79	T	T	.43	.06						T	.71									.06	.09							.14	2.30	1.19
Total 1943																																17.88	
∮ Period Average 1939-1943																																	20.81

Campamento Comales, Tamps.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.21	.08	.21	.21	.24	.44	.02	.16	.15																					1.92	1.34
February																	.02	.06														.08	.37
March	T	T				T	T	T				T												.58								.58	1.10
April	T	.28													.06					.02	.41	T										.77	1.58
May						T			T														T					.08		.07		.15	2.24
June				T	.10			T			.06						T							T		T						.16	2.78
July		.08							.65		.09								.01							.05				.22		1.08	1.85
August																														.20		.20	2.35
September	.04					.06	.04	.69	.56	.02					.58	.13	.02						.12	.14	.17	.19			.63			3.39	3.14
October	.13								2.33	.12	.02	.02																				2.62	2.09
November			.13	.07										.03	1.30									.01	.52	.01						2.07	.55
December			.05			.10	.07			.07			.18	.22				.29													.41	1.39	1.51
Total 1943																																14.21	
∮ Period Average 1938-1943																																	20.30

Ciénegas de Flores, N. L.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.11	.34	.18	.28	.32	.14	.06	.06	.05					T															1.34	2.54
February	T																T	T								T						T	.35
March							T	.20	T				.22	.10								T	T	T						T	.21	.73	.78
April	.22	.29					T							.51														.14				1.16	1.28
May						T		T					T	.04							T	.08	.12	.33			.22	.18	.07			1.04	2.67
June	.07					.38										.18				.15												.78	3.14
July						.93						.07	.06				.68									.19	.48	.04				2.45	1.92
August							.27											T			T				.29	T		T	.11			.67	2.33
September						2.66		.21	1.51	.17				.07	.21	.14	.28	T		T	T	T	.40	.05	.11	.05	.13	.18	.07			6.24	4.92
October	.34		T	.11	.40			T	.56	T	.10	.09														.01						1.61	1.86
November	.18	.10										T	T	.13	T									.06	.11	.11	.06		T			.75	.61
December			.79	.11		.26	.12	.05					.04	.31	.14	.05	.04	.04	.04	.04	.04										.32	2.39	1.11
Total 1943																																19.36	
∮ Period Average 1938-1943																																	23.53

∮ Some months missing.

RAINFALL ON MEXICAN SIDE OF RIO GRANDE WATERSHED

INCHES —1943

Cerralvo, N. L.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.57	.36	.55	.12	.16	.36		.04	.04																					2.80	1.39
February	.06																T								.03	.02						.11	.40
March									.07														T	.48							T	.55	.69
April	.10													.04	.18																	.32	1.36
May						.36																.10			T							3.35	4.85
June				.06	.27	.69	.09					1.32	.10					.01						T	T		1.22	1.63		.04		2.54	6.46
July									.59			.15	.02				.76									T				.56	.08	2.15	2.19
August																																0	.82
September		1.43			1.13			1.95	1.91	1.28					.14	T	.08						.28	.19	.03							8.40	6.65
October	.67								1.91	.01			.05																			2.64	2.64
November	.30	.02	.09											.08	.10	.92		T						.18	.86	.01	.04					2.35	.74
December		.11	.07			.13			.07						.56								.21								.43	1.60	.77
																															Total 1943	26.21	
																															# Period Average 1938-1943		28.96

La Tableta, N. L.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			1.50	.30	.32	.02	.18	.57	.01		.11																					3.01	1.39
February																																0	.43
March													T											1.48								1.48	1.00
April	.13														T																	.13	.98
May																						.01					T	.61				.62	2.43
June					1.51	.24						.89						.07							1.09							3.20	5.69
July									.97			1.62	.21																	.29		3.09	1.82
August																														.13		.13	.98
September	.09	2.76				.02		.75	1.48	.61					1.41	.75	.01						.08	.16	.10		T					8.14	5.98
October	.22								1.95	T		T																		T	T	2.17	2.79
November	T	T	.13	.01				.08		.02						.45								.13	.80	.12	T	T				1.74	.65
December		T	.02	T		.03	.02			.02			.02		.30			T					.35	.01		T					.47	1.24	1.06
																															Total 1943	24.95	
																															# Period Average 1939 - 1943		24.80

Latitude 25° 55' ; Longitude 99° 24' ; Elevation

Mendez, Tamps.

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.73	.93	T	T	T	.22	T	.10	T	T																				1.98	2.47
February																		T						T	.14							.14	.67
March							T	T																								T	1.07
April		.46														T																.46	1.41
May																						T		1.21				.35				1.56	3.39
June			T		.09								.69																			.78	6.63
July												.35																				.35	1.18
August																																0	2.13
September							1.76	T	.60	.48	.31				1.03		T							1.32	1.35	.17			.30	T		7.32	4.44
October	T			.12																												.12	1.01
November		T	T									.14	T	T										T	T	.21	.15					.50	.43
December			.10				T							.29	T								.60								.46	1.35	.91
																															Total 1943	14.56	
																															# Period Average 1939-1943		25.74

Linares, N. L.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January			.65	.60	.04	.08	.41	.43	.04								.14															2.39	1.12
February																	.05								.20							.25	.87
March	.01							.02																.02								.05	1.08
April	.75	.17												.03	.16					T	.02							.22	T	.26		1.61	2.49
May					T	T		T												T		T	T		T		.07	.01		.12		.20	3.41
June		T	T		.08							.22	.01			.12	.11															.54	4.26
July									.01		T	.45					.26	.23				.06				.18		.01		T		1.20	3.50
August													.10							.29												.39	2.73
September		.33				1.12	.22	.35	1.94	.88				T	.12	.07	.10					.01	3.43	3.00	.08	.11	.24	.10		.10		10.20	6.43
October	.14	.03	.01	.69	.14				.05	.01			T																			1.07	2.80
November		1.04	.03										.03	.57	.13	.72							.02	.02	.11	.19	.12					2.97	1.49
December	.65		.33	.02		.07	.02	T		T				.18									.67	T							T	1.34	1.19
																															Total 1943	24.21	
																															# Period Normal 1900-1943		32.37

Villagrán, Tamps.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January					T	T								T	T																	T	.16
February									T		.39	T													T							.39	1.25
March																																0	.83
April	.34	.31												.08	.24																	.97	1.94
May														.01									2.37	1.98				.41	.17			4.94	7.56
June	.36					.25									.09	.34																1.04	6.21
July																																0	1.00
August												.34					.26															.60	5.27
September										.33	.38			.43					.24		.50	.33	.29		.39	.30	.16	.02			3.31	7.58
October	.29	.35	.08					.09							.08																	.89	2.84
November														4.77	.35																	5.12	1.59
December																																0	.18
																															Total 1943	17.26	
																															# Period Average 1939-1943		36.21

Reynosa, Tamps.

Recording Gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.09	.21		.19	.44	T	T	.22																				T	1.15	2.14
February																	T	.06														.06	.56
March	T												T				T						T		.24							.24	.96
April																					.94											.94	.31
May						.79		T																.67				.98	.65	1.54		4.61	4.43
June																																0	3.42
July																																	2.24
August																								T	T	.14						.14	.78
September							T	T	2.16	T				T	T								T	.75	1.06	1.30	T			T		5.27	3.02
October																																	2.39
November	T	T				T						T			.65	T		T	T	T		T		.45	.70	T	.13					1.93	.99
December	T	T	T	.15		.17	.11			.08	T	.07	.08	.09			.16	.31	.05						T				.29	T	T	1.56	1.16
																															# Period Average 1941-1943		22.40

Control (C 1-K-9), Tamps

Standard 8 inch rain gage — Record by National Irrigation Commission

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January	T	T	.31	.11	.04	.26	.14	.61	T	.04	.29	.11	.04	.04				T		T	T							T	T	T	T	1.99	
February	T					T	T	T	T			T		T					.10	T												.10	
March					.04											T	T	T						.53								.57	
April															.08																	.08	
May						.12		T	T	T		T														1.02	1.38		.39	.51		3.42	
June												.95	.43																			1.38	4.18
July																																0	1.02
August				T					T			1.26					1.54															2.80	2.40
September							1.61		2.64			.67				.71				.59			.79	1.18	T	.83	T	1.18	T			10.20	6.04
October																										T			T			T	1.98
November																																	
December																																	
																															# Period Average 1942-1943		

Matamoros, Tamps.

Standard 8 inch rain gage — Record by Meteorological Service of Mexico

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total	Normal or Average
January				.04	.31	.09	.44	.11	T	.24	.27	1.04	.04	.56				1.45		.03	T				1.48					1.48		7.38	1.61
February					T		T						T					T		T	.09				.09							.18	.97
March													T			T	T							.02	.28	.31						.61	1.17
April																		.02					.02	T					.02			1.54	1.94
May																						T		.04	T		.04					.12	3.00
June									T		T		T			T		T					T					T	T			T	3.84
July		T	T	.05			.02						.03					.03							.02					.03		.16	2.31
August				T																						.16	T			.52	T	.48	1.62
September		T	T				.11	.01	3.29	1.40	.10				.26	.08	.02						.08	.35	.80	.29	.80	T			T	7.47	5.19
October	.01	.07	T						T	1.30	.05																				T	1.43	2.95
November	.16	.07	.43				.01					T	.08	.06	.04									.58		.11	.07	.12				1.67	1.66
December		.01	2.47	.09		.02			.06	.89	.10		.04	.15	.24								.12	.87			T				T	5.06	2.13
																															Total 1943	24.62	
																															# Period Normal 1912-1943		27.99

Some months missing.

EVAPORATION IN THE RIO GRANDE BASIN

Three types of land pans are used for determining evaporation in the Rio Grande basin below San Marcial, New Mexico. The results reported below are inches evaporation from such pans.

1. Circular land pan 4 feet in diameter and 10 inches deep, made of 22 gage galvanized iron, set on wooden platform on top of ground. Water in pan kept at about 7 to 8 inches depth. Measurements by micrometer hook gage. This type of pan was used in Jornada, Elephant Butte, Caballo Dam, State College, Yeleta, Alamogordo Dam, Red Bluff Dam, Balmorhea (Weather Bureau), Grand Falls, Dilley, and all Mexican stations. This is the standard Weather Bureau pan. Prior to November 1938, a floating pan, described in previous bulletins, was used at Jornada.

2. Circular land pan 6 feet in diameter and 2 feet deep, made of 22 gage galvanized iron, set with top of pan 4 inches above ground. Water in pan kept at about 16 to 18 inches deep. Measurements by micrometer hook gage. This type of pan was used at Balmorhea (A. & M. College) and Weslaco.

3. Circular land pan 10 feet in diameter and 22 inches deep, set with the top edge of the pan about 1.5 inches above ground. Water in pan is kept about 17 inches deep. Measurements by micrometer hook gage. This type of pan is used at Winterhaven.

The United States Weather Bureau furnished the records for Elephant Butte, Caballo Dam, Jornada, New Mexico State College, Yeleta, Alamogordo Dam, Red Bluff Dam, Balmorhea, Grand Falls, and Fort Stockton. From Texas A. & M. College came records of Balmorhea, Winterhaven, and Weslaco. The Mexican records are from the Meteorological Service of Mexico and the National Irrigation Commission.

The latitude, longitude, and elevation of all stations is shown in Water Bulletin No. 12, page 94, except the following:
Yeleta, Texas (Weather Bureau) lat. 31° 42', long. 106° 19', elev. 3,650 feet.
San Buenaventura, Chih., lat. 29° 50', long. 107° 31', elev. 5,160 feet.
San Antonio, Durango, lat. 25° 53', long. 105° 59', elev. 7,550 feet.

In The United States

Month	Elephant Butte Dam N. M.		Caballo Dam, N. M.		Jornada, N. M.		State College, N. M.		Yeleta, Texas U. S. Weather Bureau					
	1943	#Normal 1933-1943	1943	#Average 1942-1943	1943	#Average 1938-1943	1943	Normal 1924-1943	1939	1940	1941	1942	1943	#Average 1939-1943
Jan.	3.84	3.34	3.58		2.95	2.65	3.13	2.99		2.65	2.74	3.45	3.00	2.96
Feb.	5.84	4.98	5.70			3.86	5.30	4.43	4.40	4.89	3.55	4.61	5.97	4.68
Mar.	8.73	8.64	8.44	9.00	7.63	7.04	7.92	7.54	8.18	8.67	6.82	8.21	8.82	8.14
Apr.	13.83	11.99	11.84	11.82	11.41	10.08	9.91	9.60	10.83	10.93	9.99	10.81	11.18	10.75
May	15.96	14.83	15.66	16.44	14.93	12.97	12.80	11.48	13.43	12.67	12.29	13.90	14.37	13.33
June	17.05	16.80	15.82	17.32	15.58	14.48	13.83	12.71	14.86	11.77	12.68	14.68	13.49	13.50
July	13.14	14.30	12.38	13.56	11.70	12.18	11.48	11.46	13.02	13.01	11.30	12.16	11.28	12.15
Aug.	13.96	12.66	13.98	11.98	12.40	10.75	11.84	10.05	10.87	10.59	8.97	9.39	12.30	10.42
Sept.	10.61	9.46	9.72	8.95	8.92	8.53	10.40	8.16	9.34	9.13	7.22	7.78		8.37
Oct.	8.54	7.77	7.71	6.92	6.89	6.04	6.87	6.05	6.19	6.03	5.43	5.72	6.72	6.02
Nov.	5.64	4.94	4.47	4.87	4.53	3.80	4.25	3.83	3.14	3.10	3.16	5.03	4.01	3.69
Dec.	2.74	3.21	2.22	2.60	1.57	2.45	2.14	2.64	2.87	2.80	2.89	2.83	2.07	2.69
Total	119.28	112.94	111.52			94.83	99.87	90.94		96.24	87.04	98.57		96.70

Month	Alamogordo Dam N. M.		Red Bluff Dam Texas		Balmorhea, Texas A. & M. College		Balmorhea, Texas Weather Bureau		Grand Falls, Texas		Winterhaven, Texas		Dilley, Texas		Weslaco, Texas	
	1943	#Average 1939-1943	1943	#Average 1939-1943	1943	Normal 1926-1943	1943	#Average 1940-1943	1943	#Average 1940-1943	1943	Normal 1931-1943	1943	#Normal 1928-1943	1943	Normal 1932-1943
Jan.	3.38	2.85	4.50	3.27	2.45	2.43	3.25	2.47	5.02	3.59	1.84	1.91	2.69	2.66	2.18	2.37
Feb.	5.38	4.28	6.22	5.38	3.54	3.34	4.80	3.89	7.40	5.18	2.89	2.62	4.78	3.47	3.24	2.92
Mar.	7.89	7.70	9.84	8.68	4.95	5.17	6.66	6.24	9.60	8.17	5.13	4.66	6.58	5.89	4.16	4.20
Apr.	10.66	10.00	10.62	10.64	6.96	6.36	9.17	8.01	12.69	11.77	6.66	5.51	7.67	7.05	5.44	5.24
May	13.27	11.96	14.60	12.52	7.27	7.33	9.57	8.64	15.39	12.29	7.88	6.30		7.85	6.00	5.86
June	13.41	13.05	15.44	13.43	7.37	7.86	9.17	8.76	14.40	12.97	6.15	7.52		9.25	6.72	6.49
July	12.19	12.74	12.08	13.47	7.38	7.62	8.80	9.16	14.24	13.32	7.36	8.17		10.23	8.00	6.84
Aug.	14.86	11.79	16.33	12.52	9.11	6.90	12.17	8.60	14.73	12.36	8.39	8.17		10.40	7.58	6.90
Sept.	9.89	9.30	10.09	9.95	5.50	5.37	7.04	6.54	8.38	8.72	4.40	5.92	6.04	7.36	4.27	4.69
Oct.	8.09	7.06	7.40	6.83	4.40	4.19	5.61	4.93	6.87	6.98	3.52	4.51	6.51	5.88	4.00	4.51
Nov.	4.36	4.30	4.70	4.33	2.70	2.87	3.52	2.90	4.31	4.50	2.67	2.94	3.75	3.54	2.45	3.27
Dec.		3.26	2.26	3.41	1.50	2.03	1.98	2.42	2.00	3.08	1.33	1.84	2.69	2.62	1.76	2.37
Total		98.29	114.08	104.43	63.13	61.47	81.74	72.56	115.03	102.93	58.22	60.07	76.20	76.20	55.80	55.62

In Mexico

Month	San Buenaventura, Chih.		San Antonio Durango		La Junta, Chih.		Villalba, Chih.		La Boquilla Dam, Chih.		Cd. Delicias, Chih.	
	1943	#Normal 1928-1943	1943		1943	#Average 1936-1943	1943	#Average 1940-1943	1943	Average 1938-1943	1943	#Average 1940-1943
Jan.	2.91	3.63	4.66		2.54	3.04		5.70	4.66	3.90	3.83	3.89
Feb.	4.84	4.68	6.21		4.57	3.88	8.10	7.24	5.77	5.51	5.41	5.08
Mar.	7.13	7.16	10.44		6.62	6.25	12.01	11.13	9.99	8.74	9.30	8.34
Apr.	9.18	9.07	11.74		9.73	9.08	13.87	13.93	11.66	10.66	9.38	10.11
May	11.35	10.67	12.42		11.08	10.72	16.44	15.82	14.27	13.20	11.70	12.01
June		11.01	8.48		9.47	10.19	13.01	14.10	14.87	12.61	12.23	11.90
July	7.65	8.83	6.79		7.20	7.20	10.19	10.70	13.79	10.50		10.36
Aug.	7.16	7.46	8.19		5.93	5.89	11.00	8.93	11.76	8.40	8.89	8.28
Sept.	6.92	6.77	4.90		5.25	5.05	8.30	7.09	9.93	7.05	7.28	7.10
Oct.	5.41	5.86	4.64		4.40	4.65	6.09	6.87	7.45	5.97	5.25	6.04
Nov.	3.26	3.94	3.84		2.81	3.22	4.47	5.18	4.78	4.24	4.19	4.27
Dec.	2.01	2.95	3.31		2.10	2.50	3.27	4.50	3.79	3.26	3.42	3.60
Total		82.03	85.62		71.70	71.68		111.19	112.72	94.04		94.04

Month	Palestina, Coah.		Presa De Guadalupe Coah.		Sabinas, Coah.		Don Martin, Coah.		Cd. Anahuac, N. L.		Montemorelos, N. L.	
	1943	#Normal 1931-1943	1943	#Average 1939-1943	1943	#Average 1941-1943	1943	#Normal 1927-1943	1943	#Normal 1933-1943	1943	#Normal 1941-1943
Jan.		5.38	3.26	3.92	3.27	2.06		3.52	3.43	2.63	2.62	2.39
Feb.		4.87	5.16	5.58	4.54	3.67	3.85	4.46	3.96	3.47		
Mar.	5.73	7.25	9.53	8.60	8.32	7.42	7.01	7.69	6.57	6.18	5.93	5.50
Apr.	6.46	8.41	11.31	11.03	11.62	9.96	8.91	9.44	8.24	7.82	6.53	5.31
May	7.56	9.63	12.96	12.60	12.09	10.21	11.16	10.78	10.40	8.91	7.68	6.35
June		11.06	10.64	11.28	13.28	11.26	11.78	12.44	11.50	10.45	7.71	6.54
July	9.09	11.50	10.11	10.98	13.78	12.50	12.23	12.86	11.43	10.96	10.30	8.65
Aug.	9.61	11.76	11.67	9.85	15.51	13.65	12.87	12.57	13.54	11.14	10.80	8.88
Sept.	7.95	9.22	6.81	7.68	6.14	7.32	6.50	8.77	6.50	7.36	5.74	5.63
Oct.	7.21	8.48	4.46	5.82	3.00	6.23	4.62	6.58	4.33	5.49	3.93	3.68
Nov.	5.00	6.86	2.17	3.67		3.64	2.91	4.23	3.01	3.44	2.47	2.66
Dec.	4.76	5.56	1.74	2.85	1.29	2.30	1.83	3.11	1.74	2.36	1.40	2.09
Total		99.98	89.82	93.86		90.22		96.45	84.69	80.21		

Month	El Cuchillo, N. L.		Cienaga De Flores, N. L.		La Tableta, N. L.		Santa Rosalia, Tamps.		Comales, Tamps.		Control (c 1-K-9)	
	1943	Average 1940-1943	1943	#Average 1941-1943	1943	#Average 1941-1943	1943	#Normal 1924-1943	1943	Average 1939-1943	1943	#Average 1942-1943
Jan.	4.38	3.89	4.47	4.10	3.61		4.05	3.48	4.03	4.19	3.36	
Feb.	5.87	4.99	5.43	4.99	5.40	4.23	4.09	4.57	6.49	5.46	4.59	
Mar.	9.17	7.76	7.44	7.83	7.74	7.32	6.90	7.50	8.68	7.96	5.64	
Apr.	11.01	9.90	9.18	8.14	9.81	8.19	8.71	8.68	10.32	9.95	5.89	
May	13.88	11.77	9.86	9.06	12.54	8.96	8.08	9.76	14.56	12.07	7.74	
June	14.75	11.46		9.16	12.17	8.55	11.13	11.41	14.70	12.17	6.85	
July	16.26	13.86		9.52	13.40	9.84	13.20	12.57	16.11	13.83	6.66	7.04
Aug.	17.25	14.47	11.74	10.89	14.32	11.07	14.31	12.51	16.11	13.66	8.43	8.12
Sept.	8.02	9.07	6.41	6.84	6.30	6.37		8.43	7.63	9.39		
Oct.	6.74	6.86	4.70	4.76	5.76	5.51		6.26	6.87	7.73	5.67	5.59
Nov.	4.01	4.86	3.39	3.93	3.97	3.96		[illegible]	4.14	5.66		
Dec.	2.90	4.04	2.87	3.34	2.51	3.64		3.48	2.79	4.41		
Total	114.24	102.93		82.56	97.53			94.07	112.43	106.48		

#Some months missing

DRAINAGE BASIN AND IRRIGATED AREAS

Along the Rio Grande and Tributaries—1943

The drainage basin areas tabulated below are taken from the best available sources, including topographic maps. The total area within the outer rim of the Rio Grande Basin is about 335,500 square miles. But, in many places, and particularly along the southwestern side of the basin, large areas yield no run-off to the Rio Grande. Such non-yielding areas constitute about 48.8% of the total area encompassed by the outer rim of the basin leaving 171,759 square miles of productive watershed. Only the productive watershed areas are listed below.

The irrigated areas listed hereunder include only areas below San Marcial gaging station on the Rio Grande and below Girvin gaging station on the Pecos River. These figures are from the most reliable sources and are the best figures available. On the United States side below Roma, the figures are for cultivated acreages, all of which have irrigation facilities, but a small part of which is farmed without irrigation in favorable seasons. (See page 65, hereof.)

For drainage basin and irrigated areas in previous years, see the heading of each gaging station in Water Bulletins Nos. 1 to 8, and see table in Water Bulletins No. 9, page 90, No. 10, page 102, No. 11, page 81, and No. 12, pages 96 to 98.

DESIGNATIONS OF AREAS AND GAGING STATIONS	Drainage Basin—Square Miles			Irrigated Areas—Acres			
	In		Total	In			Total
	United States	Mexico		United States	Mexico		
					Primary	Secondary	
Above San Marcial Station	24,717	0	24,717				
San Marcial to Elephant Butte Dam	1,747	0	1,747	0	0	0	0
Above Elephant Butte Dam	26,464	0	26,464	0	0	0	0
Elephant Butte Dam to Caballo Dam	1,290	0	1,290	82	0	0	82
Above Caballo Dam	27,754	0	27,754	82	0	0	82
Caballo Dam to El Paso Station	1,513	0	1,513	98,427	0	0	98,427
Above El Paso Station	29,267	0	29,267	98,509	0	0	98,509
El Paso Station to American Dam	4	0	4	0	0	0	0
Above American Dam	29,271	0	29,271	98,509	0	0	98,509
American Dam to Juarez	41	47	88				
Above Juarez Station	29,312	47	29,359				
Juarez to Island	145	472	618				
Above Island Station	29,458	519	29,977				
Island to County Line	485	186	671				
Above County Line Station	29,943	705	30,648				
Guayuco Arroyo, above U. S. 80 Highway Bridge	162	0	162				
County Line to Fort Quitman, excluding Guayuco Arroyo	501	679	1,180				
County Line to Ft. Quitman, including Guayuco Arroyo	663	679	1,342				
El Paso Station to Ft. Quitman Station - total	1,339	1,384	2,723	70,218	50,884	0	121,102
Above Ft. Quitman Station	30,606	1,384	31,990	168,727	50,884	0	219,611
Quitman Arroyo (I.B.C. name) above measuring point near its mouth	36	0	36				
Quitman Arroyo (I.B.C. name) above rocky canyon	18	0	18				
Red Light Arroyo (I.B.C. name) (Quitman Arroyo on U.S.G.S.Maps) above measuring point near its mouth	260	0	260				
Van Horn Creek, above measuring point near its mouth	117	0	117				
Ft. Quitman to La Nutria, excluding Quitman Arroyo, Red Light Arroyo, and Van Horn Creek	628	886	1,514				
Ft. Quitman to La Nutria - total	1,041	886	1,927	" 1,899	5,610	0	7,509
Above La Nutria Station	31,647	2,270	33,917	170,626	56,494	0	227,120
Capote Creek, above measuring point near its mouth	93	0	93				
La Nutria to Upper Presidio - total	580	503	1,083	880	9,390	0	10,270
Above Upper Presidio Station	32,227	2,773	35,000	171,506	65,884	0	237,390
Rio Conchos, above Boquilla Dam	0	7,322	7,322	0	2,970	0	2,970
Rio Conchos, below Boquilla Dam	0	17,419	17,419	0	175,900	12,100	188,000
Rio Conchos - total	0	24,741	24,741	0	178,870	12,100	190,970
Upper to Lower Presidio, excluding Rio Conchos	21	5	26	1,148	0	0	1,148
Upper Presidio to Lower Presidio - total	21	24,746	24,767	1,148	178,870	12,100	192,118
Above Lower Presidio Station	32,248	27,519	59,767	172,654	244,754	12,100	429,508
Alamito Creek, above gaging station	1,504	0	1,504	" 805	0	0	805
Terlingua Creek, above gaging station	1,070	0	1,070	" 288	0	0	288
Lower Presidio to Johnson Ranch, excluding Alamito and Terlingua	1,439	2,671	4,110	2,298	3,710	0	6,008
Lower Presidio to Johnson Ranch - total	4,013	2,671	6,684	3,391	3,710	0	7,101
Above Johnson Ranch Station	36,261	30,190	66,451	176,045	248,464	12,100	436,609
Johnson Ranch to Boquillas	471	3,735	4,206	" 184	0	0	184
Above Boquillas Station	36,732	33,925	70,657	176,229	248,464	12,100	436,793
Maravillas Creek, above proposed gaging station	2,192	0	2,192	0	0	0	0
Lozier Creek, above gaging station	1,728	0	1,728	0	0	0	0
Boquillas to Langtry, excluding Maravillas and Lozier	2,125	2,595	4,720	0	0	0	0
Boquillas to Langtry - total	6,045	2,595	8,640	0	0	0	0
Johnson Ranch to Langtry, excluding Maravillas and Lozier	2,596	6,330	8,926				
Johnson Ranch to Langtry - total	6,516	6,330	12,846	" 184	0	0	184
Above Langtry Station	42,777	36,520	79,297	176,229	248,464	12,100	436,793

" Estimated.

DRAINAGE BASIN AND IRRIGATED AREAS
Along the Rio Grande and Tributaries—1943

DESIGNATIONS OF AREAS AND GAGING STATIONS	Drainage Basin—Square Miles			Irrigated Areas—Acres			
	In		Total	In			Total
	United States	Mexico		United States	Mexico		
					Primary	Secondary	
Pecos River, above Girvin	29,562	0	29,562		0	0	
Pecos River, Girvin to I.B.C. gaging station	5,681	0	5,681	" 419	0	0	419
Pecos River, above I.B.C. gaging station	35,243	0	35,243	" 419	0	0	419
Goodenough Spring, above gaging station	1	0	1	0	0	0	0
Devils River, above Juno gaging station	2,947	0	2,947	0	0	0	0
Devils River, below gaging station near Juno to I.B.C. gaging station	1,238	0	1,238	0	0	0	0
Devils River, above I.B.C. gaging station	4,185	0	4,185	0	0	0	0
Langtry to Del Rio, excluding above tributaries	416	2,495	2,911	3	0	0	3
Langtry to Del Rio - total	39,845	2,495	42,340	422	0	0	422
Above Del Rio Station	82,622	39,015	121,637	176,651	248,464	12,100	437,215
Las Vacas Arroyo, above gaging station	0	146	146	0	741	494	1,235
San Felipe Creek, above gaging station	62	0	62	726	0	0	726
Sycamore Creek, above gaging station	515	0	515	42	0	0	42
Pinto Creek, above gaging station	229	0	229	" 100	0	0	100
Rio San Diego, above gaging station	0	931	931	0	21,000	0	21,000
Las Moras Creek, above gaging station	162	0	162	298	0	0	298
Rio San Rodrigo, above gaging station	0	586	586	0	3,210	3,210	6,420
Del Rio to Eagle Pass, excluding above tributaries	527	581	1,108	14,717	8,150	0	22,867
Del Rio to Eagle Pass - total	1,495	2,244	3,739	15,883	33,101	3,704	52,688
Above Eagle Pass Station	84,117	41,259	125,376	192,534	281,565	15,804	489,903
Rio Escondido, above gaging station	0	1,130	1,130	0	6,180	8,650	14,830
Arroyo Amole - total	0	482	482	0	0	0	0
Eagle Pass to El Jardin, excluding above tributaries	736	1,191	1,927	1,682	247	0	1,929
Eagle Pass to El Jardin - total	736	2,803	3,539	1,682	6,427	8,650	16,759
Above El Jardin Dam Site	84,853	44,062	128,915	194,216	287,992	24,454	506,662
Santa Isabella Arroyo, above river road	350	0	350	0	0	0	0
El Jardin to Laredo, excluding Santa Isabella	387	1,079	1,466	4,186	1,480	0	5,666
El Jardin to Laredo - total	737	1,079	1,816	4,186	1,480	0	5,666
Eagle Pass to Laredo, excluding above tributaries	1,123	2,270	3,393	5,868	1,727	0	7,595
Eagle Pass to Laredo - total	1,473	3,882	5,355	5,868	7,907	8,650	22,425
Above Laredo Station	85,590	45,141	130,731	198,402	289,472	24,454	512,328
Dolores Creek, above gaging station	606	0	606	0	0	0	0
Rio Salado, above Don Martin Dam	0	13,819	13,819	0	14,580	8,900	23,480
Rio Salado, below Don Martin Dam	0	7,709	7,709	0	89,450	10,130	99,580
Rio Salado, above gaging station	0	21,528	21,528	0	104,030	19,030	123,060
Laredo to Zapata, excluding above tributaries	491	942	1,433	" 6,008	1,240	0	7,248
Laredo to Zapata, including Dolores, and excluding Salado	1,097	942	2,039	" 6,008	1,240	0	7,248
Laredo to Zapata - total	1,097	22,470	23,567	" 6,008	105,270	19,030	130,308
Above Zapata Station	86,687	67,611	154,298	204,410	394,742	43,484	642,636
El Tigre Arroyo, above gaging station	261	0	261	0	0	0	0
Rio Alamo, above gaging station	0	1,675	1,675	0	4,940	5,440	10,380
Zapata to Roma, excluding above tributaries	771	315	1,086	" 1,102	0	0	1,102
Zapata to Roma, including El Tigre and excluding Alamo	1,032	315	1,347	" 1,102	0	0	1,102
Zapata to Roma - total	1,032	1,990	3,022	" 1,102	4,940	5,440	11,482
Above Roma Station	87,719	69,601	157,320	205,512	399,682	48,924	654,118
Rio San Juan, above gaging station at Santa Rosalia	0	12,013	12,013	0	102,550	67,210	169,760
Los Olmos Creek, above gaging station	535	0	535	0	0	0	0
Roma to Rio Grande City, excluding above tributaries	143	847	990	# 2,350	0	0	2,350
Roma to Rio Grande City, including Los Olmos and excluding San Juan	678	847	1,525	# 2,350	0	0	2,350
Roma to Rio Grande City - total	678	12,860	13,538	# 2,350	102,550	67,210	172,110
Above Rio Grande City Station	88,397	82,461	170,858	207,862	502,232	116,134	826,228
Rio Grande City to Hidalgo	415	430	845				
Above Hidalgo Station	88,812	82,891	171,703				
Hidalgo to Mercedes Bridge Station	15	15	30		38,860	ϕ 8,560	47,420
Above Mercedes Bridge Station	88,827	82,906	171,733				
Mercedes Bridge to Matamoros Station	11	11	22		0	ϕ174,980	174,980
Above Matamoros Station	88,838	82,917	171,755				
Matamoros to Lower Brownsville Station	2	2	4		0	0	
Rio Grande City to Lower Brownsville Station	443	458	901	*543,119	38,860	ϕ183,540	765,519
Above Lower Brownsville Station	88,840	82,919	171,759	750,981	541,092	299,674	1,591,747

" Estimated. # Includes 1,950 acres of dry farmed. ϕ Dry farmed. * Includes 83,925 acres of dry farmed.

AUTHENTICATED AND OTHER DISCHARGES

The tabulation below shows publications in which may be found the discharges at gaging stations on the Rio Grande and on tributaries and outfalls near their confluence with the Rio Grande as well as on floodways and diversions leading from the Rio Grande, from San Marcial, New Mexico, to the Gulf of Mexico. For stations from San Marcial to Lower Presidio, the table covers all measured discharges as well as carefully estimated discharges since the earliest feasible dates for times when flows were not measured. For Devils River the table covers all periods when flows were measured. For all other stations the table covers only the measured discharges within the two periods, 1900 to 1914 and 1924 to 1943.

All discharges authenticated by this Commission and not later revised are segregated from the others. Listed among the others are those in which revisions have been made, including all revisions of discharges published in Water Bulletins.

In the following table B means Water Bulletins, of various numbers, published by this Commission. P means Water Supply Papers of various numbers published by the United States Geological Survey. An exponent indicates the Water Bulletin number in which a revision has been made. * indicates daily and monthly discharges. # indicates monthly discharges. ## indicates period discharges. ϕ indicates annual discharges. ⊕ indicates daily gage heights.

Within The Period	Where Published
San Marcial	
AUTHENTICATED	
1895 - 1943	B. 13 #
1895 - 1896	B. 7 ##, 12 #
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
Seepage 1936-1937	B. 7 *
OTHER	
Feb.1895, Apr.1896	B. 12^{13}, P. 358 *
1897 - 1931	P.* 358, 388, 408, 438, 458, 478, 508, 528, 628, 668, 688, 703, 718, 733
Mar., Apr. 1932	B. $2^{6,13}$, P.* 733
1933 - 1943	P.* 748, 763, 788, 808, 828, 858, 878, 898, 928, 958
Seepage 1936-1937	P.# 828
Below Elephant Butte Dam	
AUTHENTICATED	
1915 - 1943	B. 12 #, 13 #
1915 - 1916	B. 10 *
1935 - 1943	B. 8 ± 13
OTHER	
June, 1915	B. 10^{13}
1916 - 1942	P.* 458, 478, 508, 528, 548, 568, 588, 608, 628, 648, 668, 688, 703, 733, 748, 763, 788, 808, 828, 858, 878, 898, 928, 958
Below Caballo Dam	
AUTHENTICATED	
1938 - 1943	B. 8 ± 13, 13 #
OTHER	
1938 - 1942	P.* 878, 898, 928, 958
El Paso	
AUTHENTICATED	
1889 - 1943	B. 13 #
1889, 1893 - 1896	B. 7 ϕ, 12 #
Jan. 1898	B. 12 *
April-July 1914	B. 7 *
Dec. 1915	B. 7 #, 12 #
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1889 - 1893	P.* 358
1897 - 1915	P.* 358, 388, 408, 568
Jan., Feb. 1893	B. 12^{13}
Jan., Aug. 1930	B. 6^{13}
1916 - 1931	P.* 568, 588, 608, 628, 648, 668, 688, 703, 718
American Canal	
AUTHENTICATED	
1938 - 1943	B. 8 ± 13, 13 #
Below American Dam	
AUTHENTICATED	
1938 - 1943	B. 8 ± 13, 13 #
Acequia Madre	
AUTHENTICATED	
1938 - 1943	B. 8 ± 13, 13 #
Diversions in the El Paso Valley	
AUTHENTICATED	
1938 - 1943	B. 8 ± 13
Outfalls Near El Paso	
AUTHENTICATED	
1936 - 1943	B. 8 ± 13

Within the Period	Where Published
Juarez	
AUTHENTICATED	
1938 - 1943	B. 8 ± 13, 13 #
Island	
AUTHENTICATED	
1938 - 1943	B. 8 ± 13, 13 #
Tornillo Bridge	
AUTHENTICATED	
1924 - 1927	B. 5 *
1924 - 1937	B. 13 #
1931 - 1937	B. 1 ± 7
OTHER	
1927 - 1931	P.* 668, 688, 703, 718
County Line	
AUTHENTICATED	
1938 - 1943	B. 8 ± 13, 13 #
Near Fort Hancock	
AUTHENTICATED	
1900 - 1903	B. 13 #
OTHER	
1900 - 1903	P. 358 *
Fort Quitman	
AUTHENTICATED	
1889 - 1943	B. 13 #
1889 - 1923	B. 12 #
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
Jul.1924, June 1928	B. 6^{13}
1923 - 1931	P.* 568, 588, 608, 628, 648, 668, 688, 703, 718
La Nutria	
AUTHENTICATED	
1935 - 1941	B. 5 ± 11, 6 #, 13 #
Upper Presidio	
AUTHENTICATED	
1889 - 1943	B. 13 #
1889 - 1900	B. 12 #
1900 - 1913	B. 7 #
1914 - 1926	B. 12 #
Sept.1919, Aug.1932	B. 8 *
June 1927, Jul.1932	B. 9 #
1927 - 1930	B. 3 *, 4 *
1928 - 1931	B. 6 #
1933 - 1935	B. 6 #
July 1937	B. 10 #
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1914	P.* 358, 388
1919 - 1920	P.* 508
1923 - 1926	P.* 568, 588, 608, 628
1926	B. 4^{12}
June 1927	B. 4^{9}
1924 - 1927, 1932	B. 6^{12}
July, Aug. 1932	B. 2^{8}, B. 2^{9}
June July 1933	B. 3^{4}
Annual 1931	B. 1^{6}
July 1937	B. 7^{10}
Rio Conchos at Ojinaga, Chih.	
AUTHENTICATED	
1896 - 1943	B. 13 #
1896 - 1900	B. 12 #
1900 - 1913	B. 7 #
1914 - 1926	B. 12 #
1927 - 1935	B. 5 #, 6 #
1933 - 1937	B. 7 #
1936 - 1943	B. 6 ± 13
OTHER	
1924 - 1926	B. 6^{13}
1924 - 1932	B. 7^{13}
1924 - 1935	B. 5^{13}

Within The Period	Where Published
Lower Presidio	
AUTHENTICATED	
1896 - 1943	B. 13 #
1896 - 1900	B. 12 #
1900 - 1913	B. 7 #
1914 - 1926	B. 12 #
1927 - 1935	B. 6 #
1933 - 1937	B. 7 #
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1915	P.* 358, 388, 408
1919 - 1920	P.* 508
1923 - 1926	P.* 568, 588, 608, 628
1924 - 1930	B. 3^{13}, 4^{13}
1924 - 1926	B. 6^{13}
1924 - 1932	B. 7^{13}
Alamito Creek	
AUTHENTICATED	
1932 - 1943	B. 2 ± 13, 6 #
OTHER	
Aug., Dec. 1934	B. 4^{13}
Jan. 1937	B. 7^{13}
Terlingua Creek	
AUTHENTICATED	
1932 - 1943	B. 2 ± 13, 6 #
OTHER	
June, Sept. 1937	B. 7^{8}
Johnson Ranch	
AUTHENTICATED	
1936 - 1943	B. 6 ± 13
Boquillas	
AUTHENTICATED	
1924 - 1935	B. 5 #, 6 #
1931 - 1936	B. 1 ± 6
OTHER	
1928 - 1931	P.* 668, 688, 703, 718
Lozier Creek	
AUTHENTICATED	
1932 - 1935	B. 2 ± 5, 6 #
Langtry	
AUTHENTICATED	
1900 - 1913	B. 7 #, 9 *
1924 - 1927	B. 4 *
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1914	P.* 358, 388, 408
1904, 1906	B. 7^{9}
1919, 1920	P.* 508
1924 - 1931	P.* 588, 608, 628, 648, 668, 688, 703, 718
Pecos River	
AUTHENTICATED	
1900 - 1913	B. 7 #
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1931	P.* 358, 388, 408, 438, 458, 478, 508, 528, 548, 568, 588, 608, 628, 648, 668, 688, 703, 718
Goodenough Spring	
AUTHENTICATED	
1924 - 1929	B. 5 ϕ
1924 - 1935	B. 6 # ϕ
1931 - 1943	B. 1 ± 13
OTHER	
1929 - 1931	P.* 688, 703, 718

AUTHENTICATED AND OTHER DISCHARGES

Within the Period	Where Published
Devils River	
AUTHENTICATED	
1900-- 1913	B. 7 #
Jan,Feb,Mar, 1914	P.* 388
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1871 - 1939	B. 9 (Graph)
1900 - 1913	P.* 358, 388
Nov. 1902	B. 7[11]
1923 - 1931	P.* 588, 608, 628, 648, 668, 688, 703, 718
June 1932	B. 2[6]
May 1925, Oct.1927	B. 6[13]
Feb. 1929	B. 6[13]
Jan. 1936	B. 6[10]
Cienegas Creek	
AUTHENTICATED	
1931 - 1935	B. 1 ± 5, 5 #
Del Rio	
AUTHENTICATED	
1900 - 1913	B. 7 #
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1915	P.* 358, 388, 408
1919 - 1920	P.* 508
1923 - 1931	P.* 588, 608, 628, 648, 668, 688, 703, 718
May 1925	B. 6[13]
Arroyo Las Vacas	
AUTHENTICATED	
1935 - 1943	B. 6 ± 13
San Felipe Creek	
AUTHENTICATED	
1931 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
June 1935	B. 5[10]
Sycamore Creek	
AUTHENTICATED	
1932 - 1935	B. 2 ± 5, 6 #
Maverick Canal	
AUTHENTICATED	
1939 - 1943	B. 9 ± 13
Pinto Creek	
AUTHENTICATED	
1928 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1928 - 1931	P.* 688, 703, 718
Rio San Diego	
AUTHENTICATED	
1932 - 1935	B. 6 #
1932 - 1943	B. 2 ± 13
Las Moras Creek	
AUTHENTICATED	
1932 - 1935	B. 2 ± 5, 6 #
OTHER	
Oct.-Dec. 1934	B. 4[9], 6[8]
Rio San Rodrigo	
AUTHENTICATED	
1932 - 1935	B. 6 #
1932 - 1943	B. 2 ± 13
OTHER	
1941	B. 11[13]

Within the Period	Where Published
Eagle Pass	
AUTHENTICATED	
1900 - 1913	B. 7 #
1924 - 1926	B. 4 *
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1916	P.* 358, 388, 408, 438
1923 - 1931	P.* 588, 608, 628, 648, 668, 688, 703, 718
Rio Escondido	
AUTHENTICATED	
1932 - 1935	B. 6 #
1932 - 1943	B. 2 ± 13
Laredo	
AUTHENTICATED	
1900 - 1913	B. 7 #
1924 - 1930	B. 3 *, 4 *
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1914	P.● 358, 388,
1922 - 1926	P.* 568, 588, 608, 628
Oct. 1926	B. 4[8]
Sept. 1934	B. 4[9]
Dolores Creek	
AUTHENTICATED	
1932 - 1936	B. 2 ± 6, 6 #
Rio Salado	
AUTHENTICATED	
1900 - 1913	B. 7 #
1924 - 1935	B. 5 #, 6 #
1926 - 1930	B. 3 *, 5 *
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1913	P.● 358
Zapata	
AUTHENTICATED	
1932 - 1935	B. 6 #
1932 - 1943	B. 2 ± 13
OTHER	
Sept. 1938	B. 8[10]
El Tigre Creek	
AUTHENTICATED	
1932 - 1936	B. 2 ± 6, 6 #
Rio Alamo	
AUTHENTICATED	
1924 - 1943	B. 1 ± 13, 6 #
Roma	
AUTHENTICATED	
1900 - 1913	B. 7 #
1924 - 1935	B. 5 #, 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1914	P.● 358, 388
1922 - 1931	P.* 568, 588, 608, 688, 703, 718
Sept., Oct. 1932	B. 2[3]
Rio San Juan at Santa Rosalia, Tamps.	
AUTHENTICATED	
1900 - 1913	B. 7 #
1924 - 1930	B. 3 *, 5 *
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1913	P.● 358
Sept. 1932	B. 2[8]

Within the Period	Where Published
Rio San Juan below Azucar Dam	
AUTHENTICATED	
1943	B. 13 *
Los Olmos Creek	
AUTHENTICATED	
1932 - 1936	B. 2 ± 6, 6 #
Rio Grande City	
AUTHENTICATED	
1924 - 1935	B. 5 #, 6 #
1932 - 1943	B. 2 ± 13
OTHER	
Aug. 1932	B. 2[10]
Sept. 1937	B. 7[11]
S. Diversions below Rio Grande City	
AUTHENTICATED	
1922 - 1937	B. 7 #
1938 - 1943	B. 8 ± 13
North Floodway South of McAllen	
AUTHENTICATED	
1926 - 1935	B. 2 ± 5
1938 - 1943	B. 8 ± 13
South Floodway South of McAllen	
AUTHENTICATED	
1926 - 1935	B. 2 ± 5
1938 - 1943	B. 8 ± 13
North Floodway South of Sebastion	
AUTHENTICATED	
1940 - 1943	B. 10 ± 13
Hidalgo	
AUTHENTICATED	
1928 - 1931	B. 6 #
1931 - 1936	B. 1 ± 6
1938 - 1939	B. 8 ± 9
1940 - 1943	B. 10 ± 13
OTHER	
1928 - 1931	P.* 668, 688, 703, 718
Buenos Aires	
AUTHENTICATED	
1943	B. 13 *
Retemal Canal	
AUTHENTICATED	
1939 - 1943	B. 9 ± 13
Mercedes Bridge	
AUTHENTICATED	
1932, 1935 - 1937	B. 2 *, 5 ± 7
1938 - 1941	B. 8 ± 11
Rancho Viejo Floodway	
AUTHENTICATED	
1935 - 1936	B. 5 *, 6 *
1938 - 1943	B. 8 ± 13
Matamoros	
AUTHENTICATED	
1900 - 1913	B. 7 #
1926 - 1930	B. 3 *, 5 *
1924 - 1935	B. 6 #
1931 - 1943	B. 1 ± 13
OTHER	
1900 - 1914	P.● 358, 388
1922 - 1926	P.* 568, 588, 608, 628
Lower Brownsville	
AUTHENTICATED	
1934 - 1935	B. 6 #
1934 - 1943	B. 4 - 13