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WATER BULLETIN NUMBER 28

Flow of the Rio Grande and Related Data

From Elephant Butte Dam, New Mexico to the Gulf of Mexico

1958

STORAGE IN MAJOR RESERVOIRS
SOURCES OF RIVER FLOW
DIVERSIONS
SUSPENDED SILT
CHEMICAL ANALYSES
SANITARY ASPECTS OF WATER QUALITY
METEOROLOGIC DATA
DRAINAGE BASIN AND IRRIGATED AREAS

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FOREWORD

This bulletin presents the twenty-eighth compilation of the stream discharges and related data concerning the international portion of the Rio Grande, prepared jointly by the United States and Mexican Sections of the International Boundary and Water Commission. The stream flow data and kindred subjects pertain to the Rio Grande and its important tributaries near their confluence with the main stream, from Elephant Butte, New Mexico to the Gulf of Mexico. The first publication in the series was Water Bulletin No. 1 for the year 1931. The present volume contains the information for the year 1958.

International stream gaging on the Rio Grande was initiated in 1889, when the station at El Paso, Texas was established. Several stations on the Rio Grande and its tributaries downstream from El Paso were established in 1900 and operated until 1914. Between 1914 and 1923, except for a few months in 1919 and 1920, all stream-gaging work on the international reach of the river was suspended. In 1923, the work was resumed and carried on independently by the two countries until 1931, when the present joint program of stream measurements was adopted.

During 1958, the United States Section of the Commission operated the stream-gaging stations on the Rio Grande at El Paso, American Dam, Island, County Line, Fort Quitman, Upper Presidio, Lower Presidio, Johnson Ranch, Langtry, Below Diablo Dam Site, San Antonio Crossing, Fort Ringgold, San Benito, and Lower Brownsville. The Mexican Section operated the stream-gaging stations on the main stream at Below Maverick Dam, Eagle Pass, Laredo, Below Anzaldúas Dam, and Progreso. Computation of flow below Falcón Dam was made jointly by the United States and Mexican Sections. Each Section operated the gaging stations on tributary streams, floodways, and diversions within its own country.

The total drainage area within the outer rim of the Rio Grande Basin is 335,500 square miles. However, nearly half of this area yields no runoff to the river, the estimated productive area of the watershed being 182,215 square miles. Reservoirs in the basin have a total storage capacity of approximately 8,700,000 acre-feet, in addition to the International Falcón Reservoir, which has a conservation capacity of 2,400,000 acre-feet. A present rounded total of 1,838,000 acres is irrigated below Elephant Butte Dam on the Rio Grande and below Girvin on the Pecos River. The residual flow from the Rio Grande that escaped to the Gulf of Mexico prior to construction of Falcón Dam averaged 2,600,000 acre-feet per year for the period 1934-1952. For the period 1953-1958, the residual flow has averaged 438,000 acre-feet per year.

Acknowledgments

Other agencies which have contributed to some part of the data published herein include: The Agricultural Research Service, the Soil Conservation Service of the U. S. Department of Agriculture; the Bureau of Reclamation and the Geological Survey of the U. S. Department of the Interior; the Weather Bureau of the U. S. Department of Commerce; the Texas Board of Health; the Colorado State Engineer; the New Mexico State Engineer; the Red Bluff Water Power Control District; the Willacy County Water Control and Improvement District No. 1; the El Paso Department of Water and Sewerage; the Laredo City Water Department; the Special Water Master of the 93rd District Court of Texas; the Ministry of Hydraulic Resources of Mexico; the Meteorological Service of Mexico; Northern Electric Power Company of Mexico, S. A.; the Federal Board of Public Improvement Works of Nuevo Laredo, Tamaulipas and the Water and Drainage Board of Matamoros, Tamaulipas.

Additional contributions have been made by individuals and corporations and specific notation is made for such, as well as for those of the above-named agencies, where the data appear. The courtesy and cooperation of those who made these contributions are acknowledged with our appreciation.

Units of Measure

Data collected by the Mexican Section are initially computed in metric units but are reported in this Bulletin in English units. The monthly volumes of stream-flow in cubic meters reported by the Mexican Section are converted to acre-feet by multiplying thousands of cubic meters by 0.81071 and rounding the result.

GENERAL HYDROLOGIC CONDITIONS FOR 1958

During the year 1958, temperatures were 98% of normal on the watershed of the Rio Grande below El Paso, Texas. Evaporation averaged 84% of normal. Precipitation averaged 129% of normal from El Paso to Diablo Dam Site, 162% of normal from Diablo Dam Site to Falcón Dam, 186% from Falcón Dam to Rio Grande City, and 156% of normal in the Lower Rio Grande Valley on the United States side.

The yearly volume of flow of the Rio Grande was below normal from El Paso, Texas to Upper Presidio, ranging from 80% of normal at El Paso Station to 16% of normal at County Line Station. From Presidio, Texas to Falcón Dam, the volume of flow was above normal, ranging from 172% of normal at Lower Presidio Station to 153% of normal at Laredo Station. Total releases at Falcón Dam in 1958, including flood discharges were 198% of the average for the six years of operations.

The total annual flow of all measured tributaries below Fort Quitman was 209% of normal. The total flow of these tributaries in the United States was 1,203,400 acre-feet or 122% of normal. For Mexico, the measured tributary flow, excluding Río Alamo and Río San Juan, was 4,115,600 acre-feet, or 274% of normal. The yearly flow of the Río Salado was the highest of record.

Return flow to the Rio Grande at Maverick Power Plant near Eagle Pass was 660,700 acre-feet or 125% of the 10-year average. The return flow of 413,900 acre-feet at Poniente Drain consisted largely of Rio Grande water by-passed to facilitate construction of Anzalduas Dam.

Above Falcón Dam a flood noteworthy for its duration and volume of flow occurred in September and October 1958. Comprised largely of flows from Río Conchos, Río Salado, and from other tributaries below Del Rio, the flood discharged more than 3,500,000 acre-feet into Falcón Reservoir during the two month period alone. Below Falcón Dam, flood releases combined with downstream tributary inflow principally from Río San Juan, to give a flood peak at Fort Ringgold gaging station of 104,000 second-feet on October 17, the highest recorded during 1958, and the highest flow at this station since 1948. For additional information regarding this flood see "Flood of 1958" on page 54 of this bulletin.

For all reservoirs in the Rio Grande basin having capacity greater than 15,000 acre-feet, excepting Bluewater Reservoir and Falcón International Reservoir, the average amount of water in storage in 1958 was 3,917,700 acre-feet or 108% of the normal 3,634,500 acre-feet. In the United States, stored water in such reservoirs averaged 110% of normal while in Mexico the average was 107% of normal. There was an increase in storage of 1,146,800 acre-feet in International Falcón Reservoir. Storage varied from a low of 1,700,500 acre-feet on June 18 to a high of 3,490,600 acre-feet on October 19, and averaged 2,231,400 acre-feet during the year or 212% of a synthetic 17-year normal.

Diversions from the Rio Grande in the United States were, on the average, 103% of normal. Diversions into the American Canal were 97% of normal; into Maverick Canal 109% of normal; and in the United States below Fort Ringgold equal to normal. In Mexico, diversions average 111% of normal. Diversions into the Acequia Madre were 122% of normal while diversions through the Anzalduas Canal for irrigation in Mexico were 110% of the seven-year average.

In 1958, the total reported irrigated acreage from the Rio Grande and its tributaries below El Paso, Texas showed a decrease of 16% from the previous year. Overall, there was an increase of 1% in the United States and a decrease of 28% in Mexico. On the United States side, there was an increase of 4% above Falcón Dam and practically no change from Falcón Dam to the Gulf. On the Mexican side, there was an 11% decrease above Falcón Dam and a 37% decrease below.

The 1958 investigation of the quality of Rio Grande water extended from El Paso to Lower Brownsville. The annual tonnage of salts carried by the river above Falcón Dam was 105% of the 1935-1958 normal. The volume of suspended silt transported by the Rio Grande in 1958 was 252% of the normal for sampling stations above Falcón Dam.

RIO GRANDE BELOW ELEPHANT BUTTE DAM, NEW MEXICO

DESCRIPTION: Water-stage recorder, 3,800 feet below Elephant Butte Dam, and cable with sit-down cable car and winch, 100 feet below the recorder. Elephant Butte Dam is 135.1 river miles above the American Dam at El Paso, Texas. The zero of the gage is 4,242.09 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 44 current meter measurements during the year and a continuous record of gage heights. Records, marked "Subject to Revision", were furnished by the United States Geological Survey. Records available: January 1915 through December 1958.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Beginning December 1940, hydroelectric power generation facilities for 27,000 kva were placed in operation at Elephant Butte Dam.

EXTREME FLOWS FROM RECORDS:

Average Flow in Second-Feet

Daily:	Max.	8,220	May 22, 1942	Min.	0	Occasionally
Monthly:	Max.	7,600	May 1942	Min.	2.7	Sept. 1954
Yearly:	Max.	2,510	1942	Min.	293	1955

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	11.0	1,250	1,950	1,920	1,420	1,930	1,790	2,210	569	537	512	606
2	11.0	772	1,930	1,920	1,420	1,900	1,820	2,200	573	547	512	580
3	11.0	1,240	1,940	1,920	1,420	1,900	1,810	2,200	1,160	544	526	565
4	10.0	1,250	1,950	1,900	1,420	1,860	1,830	2,200	1,120	533	526	555
5	8.8	1,250	1,960	1,890	1,360	1,860	1,860	2,200	1,130	519	537	558
6	8.8	1,260	1,950	1,900	1,390	1,880	1,820	2,210	1,090	498	551	569
7	9.4	1,250	1,930	1,930	1,390	1,890	1,810	2,220	1,090	522	537	565
8	9.4	1,250	1,940	1,900	1,420	1,890	1,830	2,220	1,090	526	540	562
9	9.4	772	1,940	1,890	1,430	1,910	1,830	2,220	1,070	533	547	680
10	634	1,230	1,940	1,880	1,420	1,920	1,830	2,240	530	522	533	670
11	1,040	1,240	1,950	1,900	1,430	1,920	1,820	2,260	544	522	540	630
12	40.0	1,230	1,960	1,890	1,420	1,920	1,820	2,260	544	551	540	590
13	987	1,230	1,940	1,880	1,420	1,900	1,810	2,270	550	372	547	588
14	1,060	1,230	1,950	1,900	1,320	1,890	1,820	2,270	562	519	544	565
15	1,100	1,240	1,940	1,910	1,240	1,900	1,830	2,270	562	374	547	588
16	1,070	785	1,920	1,920	1,240	1,890	1,840	1,390	562	318	547	606
17	1,120	1,240	1,920	1,900	1,240	1,890	1,860	1,300	562	508	569	644
18	1,270	1,240	1,920	1,900	1,240	1,880	1,870	1,200	560	508	375	591
19	744	1,240	1,910	1,900	1,250	1,890	1,890	1,320	565	519	544	584
20	1,250	1,220	1,910	1,900	1,240	1,910	1,880	1,330	573	322	555	602
21	1,290	1,230	1,910	1,900	1,250	1,900	1,900	1,330	573	522	565	565
22	1,290	1,250	1,910	1,900	1,240	1,910	1,940	1,330	555	565	562	599
23	1,280	777	1,900	1,260	1,250	1,650	1,930	1,290	519	573	558	602
24	1,230	1,240	1,900	1,240	1,260	2,050	1,920	1,310	516	537	584	584
25	1,040	1,450	1,900	1,220	1,240	1,920	1,900	1,320	512	562	644	565
26	564	1,860	1,910	1,230	1,260	1,950	1,910	1,310	508	555	636	562
27	1,060	1,970	1,900	1,240	1,260	1,950	1,900	1,280	512	555	636	650
28	1,040	1,970	1,920	1,240	1,280	1,930	1,600	1,280	516	565	648	580
29	1,050		1,930	1,240	1,270	1,950	1,910	1,290	516	544	664	646
30	536		1,910	1,240	1,260	1,940	1,900	1,310	522	403	640	573
31	939		1,920		1,260		1,940	1,300		533		569
Sum	21,722.8	35,166	59,760	51,760	40,960	57,080	57,420	54,340	20,255	15,708	16,766	18,393

Current Year 1958 — **Period** 1924-1958

Month	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			†21	1,290	† 5	8.8	701	43,100	25,214	86,500	184
Feb.			†27	1,970	2	772	1,260	69,800	36,506	83,600	188
Mar.			† 5	1,960	†23	1,900	1,930	119,000	62,281	119,000	1,520
Apr.			7	1,930	25	1,220	1,730	103,000	91,131	162,000	24,000
May			† 9	1,430	†15	1,240	1,320	81,200	91,700	467,000	512
June			24	2,050	23	1,650	1,900	113,000	105,306	363,000	34,900
July			†22	1,940	28	1,600	1,850	114,000	105,286	211,000	42,200
Aug.			†13	2,270	18	1,200	1,750	108,000	95,804	161,000	9,530
Sept.			3	1,160	26	508	675	40,200	56,985	129,000	163
Oct.			23	573	20	322	507	31,200	24,666	72,100	241
Nov.			29	664	18	375	559	33,300	23,720	158,000	196
Dec.			9	680	4	555	593	36,500	23,790	87,300	179
Yearly				2,270		8.8	1,230	892,300	742,389	1,818,800	212,333

† And other days Ø Mean daily

RIO GRANDE BELOW CABALLO DAM, NEW MEXICO

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights, located .8 river mile below Caballo Dam, and 106.8 river miles above the American Dam at El Paso, Texas. The zero of the gage is 4,140.90 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 122 meter measurements during the year and a continuous record of gage heights. Records were furnished by the El Paso office of the United States Bureau of Reclamation. Records available: January 1938 through December 1958.

REMARKS: Reservoirs, diversions and drainage returns modify the river flow at this station. In addition to the outflow from Caballo Dam listed below, 920 acre-feet of water were diverted in 1958 into Bonita Lateral, a small irrigation canal just below Caballo Dam. Prior to 1938, discharge records were kept at Percha Dam, a low diversion dam about 1.5 miles downstream from this station. Small accretions to the river take place between this station and Percha Dam.

EXTREME FLOWS FROM RECORDS:

		Average Flow in Second-Feet			
Daily:	Max. 7,650	May 20, 1942	Min. .1		Oct. 31-Nov. 14, 1954; Nov. 7-Dec. 31, 1955.
Monthly:	Max. 6,710	May 1942	Min. .1		Nov. & Dec. 1955
Yearly:	Max. 2,480	1942	Min. 303		1955

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.6	.8	891	2,170	1,620	1,950	2,160	1,730	1,760	7.8	1.6	2.8
2	.6	.8	1,490	2,140	1,280	1,960	2,080	1,730	2,000	5.8	1.7	2.8
3	.6	.8	1,500	1,980	1,170	1,970	2,140	1,730	2,330	4.5	1.9	2.8
4	.6	.8	1,510	1,980	1,200	1,980	2,320	1,610	2,360	3.5	2.0	2.9
5	.6	.8	1,630	1,970	1,220	2,100	2,710	1,610	2,370	3.1	2.1	2.9
6	.6	.8	738	1,890	1,220	2,190	2,660	1,960	2,380	2.7	2.1	2.9
7	.6	.8	731	1,870	1,370	2,200	2,610	2,160	2,310	2.3	2.1	3.0
8	.6	.9	1,230	1,790	1,440	2,240	2,580	2,330	2,160	1.9	2.1	3.0
9	.6	1.0	1,230	1,570	1,480	2,200	2,490	2,760	1,890	2.0	2.2	3.0
10	.6	1.0	1,240	1,500	1,600	2,100	2,580	2,770	1,570	2.1	2.2	3.0
11	.6	1.1	1,120	1,500	1,640	2,120	2,740	2,760	571	2.0	2.2	2.9
12	.6	1.1	178	1,460	1,650	2,200	3,020	2,740	212	1.9	2.3	2.9
13	.6	1.0	187	1,410	1,560	2,120	2,990	2,520	* 76.0	1.8	2.3	2.9
14	.6	1.0	1,010	1,280	1,490	2,040	2,930	2,620	* 21.0	1.7	2.3	3.0
15	.6	1.0	1,500	1,210	1,500	2,220	2,800	2,750	241	1.6	2.4	3.0
16	.6	1.0	1,510	1,200	1,490	2,210	2,660	2,740	544	1.5	2.4	3.0
17	.6	1.1	1,530	1,300	1,450	2,150	2,680	2,460	621	1.3	2.4	3.0
18	.6	1.1	1,720	1,260	1,460	2,150	2,750	2,400	868	1.2	2.5	3.0
19	.6	1.2	2,170	1,110	1,460	2,150	2,770	2,320	1,110	1.1	2.5	3.0
20	.6	1.3	2,370	1,010	1,480	2,280	2,600	2,120	1,150	1.0	2.5	3.0
21	.6	1.4	2,330	876	1,480	2,410	2,500	2,120	884	1.0	2.5	3.0
22	.6	1.4	2,410	837	1,500	2,460	2,480	1,070	588	1.0	2.6	3.0
23	.6	1.3	2,440	1,060	1,480	2,280	2,390	1,200	394	1.0	2.6	3.0
24	.6	1.3	2,180	1,260	1,550	2,190	2,330	1,350	212	1.0	2.6	3.0
25	.7	1.3	1,760	1,270	1,650	2,140	2,430	1,020	* 86.0	1.0	2.6	3.0
26	.7	1.3	1,870	1,370	1,640	2,090	2,580	1,040	14.0	1.0	2.6	3.0
27	.7	1.2	2,000	1,430	1,680	2,160	2,540	1,080	8.8	1.1	2.6	3.0
28	.8	1.2	2,020	1,430	1,790	2,180	2,380	1,100	7.0	1.2	2.6	3.0
29	.8		2,050	1,600	1,820	2,250	1,940	1,210	6.1	1.3	2.6	3.1
30	.8		2,060	1,690	1,830	2,240	1,710	1,470	8.3	1.4	2.7	3.1
31	.8		2,100		1,910		1,770	1,640		1.5		3.1
Sum	19.7	29.8	48,705	44,423	47,110	64,930	77,320	60,120	28,752.2	63.3	69.8	92.1

Month	Extreme Gage Feet (Current Year 1958)		Ø Extreme Second-Feet (Current Year 1958)				Average Second-Feet	Total Acre-Feet	Acre-Feet (Period 1938-1958)		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.			†28	.8	† 1	.6	.6	39.1	772	4,850	19.2
Feb.			†21	1.4	† 1	.8	1.1	59.1	11,771	64,300	13.0
Mar.			23	2,440	12	178	1,570	96,600	72,295	120,000	24,900
Apr.			1	2,170	22	837	1,480	88,100	98,143	212,000	29,300
May			31	1,910	3	1,170	1,520	93,400	89,164	412,000	75.2
June			22	2,460	1	1,950	2,160	129,000	112,195	354,000	37,000
July			12	3,020	30	1,710	2,490	153,000	118,086	234,000	28,200
Aug.			10	2,770	25	1,020	1,940	119,000	114,471	179,000	20,500
Sept.			6	2,380	29	6.1	958	57,000	57,544	181,000	7,730
Oct.			1	7.8	†20	1.0	2.0	126	7,910	35,400	15.5
Nov.			30	2.7	1	1.6	2.3	138	4,217	14,400	7.0
Dec.			†29	3.1	† 1	2.8	3.0	183	4,376	19,100	6.0
Yearly				3,020		.6	1,020	736,645.2	690,944	1,795,670	219,127

* Partly estimated † And other days Ø Mean daily

RIO GRANDE AT EL PASO, TEXAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights. The recorder is located 5 miles northwest of El Paso, Texas, 6 miles northwest of Juárez, Chihuahua, and 1.9 river miles above the American Dam. The cable and staff gage are located 1 mile downstream from the recorder in the pass opposite Courchesne Quarry. The zeros of the gages at the recorder and at the cable are 3,722.30 feet and 3,720.51 feet, respectively, above mean sea level, U. S. C. & G. S. datum.

RECORDS: Mean daily discharges in 1958 were computed by taking the sum of the flows in the American Canal and the flows at the river station below American Dam. Extreme discharges are those passing the El Paso station. Records available: 1889 through December 1958.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 24,000 second-feet on June 12, 1905, with a gage height of 6.0 feet at the lower gage. Min. occasionally no flow. Since Elephant Butte Dam was closed in 1915, the largest peak flow to pass this station was 13,500 second-feet on September 3, 1925.

Average Flow in Second-Feet

Daily:	Max. 23,680	June 12, 1905	Min. 0		Occasionally
Monthly:	Max. 14,300	June 1905	Min. 0		Occasionally
Yearly:	Max. 2,780	1905	Min. 70.1		1902

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.2	5.7	4.5	420	766	889	848	826	781	353	163	88.3
2	7.1	5.0	4.3	470	966	913	871	965	785	385	140	89.9
3	6.0	5.0	4.7	618	901	985	795	917	879	381	141	87.5
4	7.1	4.7	219	601	759	881	777	860	910	327	129	88.4
5	7.5	5.3	554	661	661	829	860	700	1,170	299	117	88.9
6	7.0	5.9	712	743	610	960	1,040	542	1,180	309	116	88.9
7	6.6	6.5	820	609	626	1,120	1,340	608	1,270	297	110	86.7
8	6.3	7.0	317	706	586	1,130	1,150	707	1,300	273	110	85.8
9	7.3	7.6	215	674	618	1,170	1,040	888	1,110	258	117	84.8
10	5.4	8.2	520	571	681	1,120	1,030	1,320	1,030	248	108	88.3
11	6.2	8.8	486	490	711	1,040	1,080	1,160	2,350	226	112	83.8
12	5.7	8.5	601	518	777	939	1,190	1,300	1,380	201	105	85.5
13	6.5	8.2	545	562	832	965	1,340	1,240	1,760	213	105	82.5
14	6.6	7.9	155	618	722	1,040	1,480	1,130	5,530	1,960	103	81.5
15	5.5	7.7	57.3	562	663	927	1,440	1,190	1,060	788	101	79.4
16	5.9	7.4	52.9	570	651	868	1,250	1,300	783	439	103	79.6
17	5.4	7.1	473	578	694	865	1,090	1,420	610	341	113	80.0
18	7.5	6.8	479	652	713	936	1,060	1,240	747	297	98.2	77.9
19	8.7	6.6	499	707	666	874	1,110	1,050	713	253	96.4	79.2
20	8.2	6.4	870	717	577	816	1,440	1,110	678	245	101	76.9
21	7.4	* 6.8	963	643	537	775	1,230	970	772	224	101	76.9
22	6.7	6.0	830	579	559	892	909	3,190	854	170	109	77.7
23	7.4	5.8	908	539	590	1,110	907	1,230	905	173	104	77.7
24	6.4	5.6	951	443	695	1,060	926	1,100	779	151	106	80.5
25	5.7	5.4	848	412	684	864	960	1,180	618	147	110	79.7
26	5.2	5.1	356	539	656	744	967	1,190	569	147	102	79.0
27	5.7	4.9	342	590	682	721	1,410	757	619	136	101	77.6
28	6.3	4.7	511	624	706	691	1,340	849	520	137	101	79.7
29	6.5		620	601	706	785	1,230	822	428	141	92.4	79.0
30	6.5		530	622	781	833	1,340	749	378	124	90.7	75.4
31	6.7		502		872		893	742		144		74.6
Sum	204.2	180.6	14,949.7	17,639	21,648	27,742	34,343	33,252	32,468	9,787	3,305.7	2,541.6

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1924-1958 Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			20	11.4	13	4.8	6.6	405	9,142	17,500	220
Feb.			11	Ø 8.8	† 4	Ø 4.7	6.4	358	14,871	52,200	136
Mar.	5.45		20	1,260	2	Ø 4.3	482	29,700	34,454	62,500	1,790
Apr.	5.64	3.73	6	*1,660	25	384	588	35,000	56,227	139,000	6,820
May	5.21	4.13	2	1,010	21	531	698	42,900	62,518	357,000	542
June	5.70	4.62	9	1,220	28	664	925	55,000	65,400	304,000	6,020
July	7.33	4.77	27	4,420	31	734	1,110	68,100	72,672	198,000	9,920
Aug.	8.10	4.58	22	6,300	6	511	1,070	66,000	74,843	158,000	4,870
Sept.	10.90		14	11,600	30	370	1,080	64,400	54,932	171,000	2,430
Oct.	7.42		14	3,990	30	115	316	19,400	21,631	57,900	151
Nov.			1	197	†29	88.3	110	6,560	13,963	29,500	229
Dec.			2	94.8	9	64.8	82.0	5,040	13,083	27,700	206
Yearly	10.90			11,600		Ø 4.3	543	392,863	493,736	1,559,200	57,481

* Partly estimated † And other days Ø Mean daily

RIO GRANDE BELOW AMERICAN DAM

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, west of El Paso, Texas. The American Dam is 1,248.2 river miles above the Gulf of Mexico. The zero of the gage is 3,712.30 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 58 meter measurements and frequent estimates by hydrographer at extreme low flows during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: June 1938 through December 1958.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The operation of the American Dam began June 2, 1938. At this dam, part of the flow passing the El Paso gaging station is diverted into the American Canal (see records of "Diversions from the Rio Grande") and the remainder, including excess flood flows, passes this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 11,300 second-feet on September 14, 1958 with a gage height of 14.50 feet. Min. no flow occurred on March 23, 1955 and for several days in 1956.

Average Flow in Second-Feet

Daily:	Max.	6,040	May 20, 1942	Min.	0	Several days 1956
Monthly:	Max.	4,880	May 1942	Min.	.2	Nov. 1958
Yearly:	Max.	1,510	1942	Min.	13.8	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.2	5.7	4.5	1.0	221	231	172	164	164	1.3	.4	.2
2	7.1	5.0	4.3	1.0	218	232	165	163	166	1.2	.3	.2
3	6.0	5.0	4.0	1.0	218	230	165	159	166	1.1	.3	.2
4	7.1	4.7	3.7	1.0	222	232	162	161	197	1.0	.3	1.1
5	7.5	5.3	3.5	.7	230	231	161	163	191	.9	.3	3.8
6	7.0	5.9	3.5	33.9	232	236	162	164	190	5.8	.3	3.8
7	6.6	6.5	3.9	3.2	234	228	248	158	189	8.0	.3	3.2
8	6.3	7.0	1.7	2.5	236	228	165	156	186	7.0	.3	3.0
9	7.3	7.6	1.4	2.5	231	230	167	154	181	7.8	.3	3.2
10	5.4	8.2	1.8	2.4	231	232	166	431	176	8.8	.3	3.2
11	6.2	8.8	3.0	2.5	230	235	168	166	1,340	5.5	.3	2.5
12	5.7	8.5	2.7	2.4	230	231	166	155	300	2.8	.3	1.2
13	6.5	8.2	2.4	.9	232	234	170	155	982	2.8	.3	1.2
14	6.6	7.9	1.9	.9	234	240	363	155	4,860	1,350	.2	1.0
15	5.5	7.7	1.6	.9	234	230	619	159	485	96.3	.2	1.0
16	5.9	7.4	1.3	.9	232	228	362	159	191	8.6	.2	1.9
17	5.4	7.1	1.4	.7	224	233	157	161	179	5.3	.2	.9
18	7.5	6.8	1.7	.9	221	232	150	158	176	3.4	.2	.9
19	8.7	6.6	1.8	214	226	227	144	166	184	2.8	.2	.8
20	8.2	6.4	2.6	218	222	226	317	162	185	2.5	.2	.7
21	7.4	* 6.8	3.3	227	222	224	279	156	186	2.3	.2	.7
22	6.7	6.0	2.8	218	223	223	154	2,200	173	1.8	.2	.7
23	7.4	5.8	2.7	220	214	223	152	291	162	1.6	.2	.7
24	6.4	5.6	3.5	225	194	222	154	143	160	1.2	.2	.7
25	5.7	5.4	2.9	221	196	228	160	155	168	.6	.2	.6
26	5.2	5.1	1.7	222	215	226	167	143	163	.6	.2	.6
27	5.7	4.9	1.6	220	239	224	436	148	187	.5	.2	.6
28	6.3	4.7	1.0	225	236	221	177	161	162	.4	.2	.6
29	6.5		1.1	220	232	220	156	157	4.2	.5	.2	.6
30	6.5		1.0	222	228	220	149	159	1.7	.4	.2	.6
31	6.7		1.0		230		154	156		.4		.5
Sum	204.2	180.6	75.3	2,711.3	6,987	6,857	6,487	7,338	12,054.9	1,533.2	7.4	40.9

Month	Current Year 1958 Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet High Day	High	Extreme Second-Feet Low Day	Low	Average Second-Feet	Total Acre-Feet	Period June 1938-1958 Acre-Feet Average	Maximum	Minimum
Jan.	4.67	4.49	20	11.4	13	4.8	6.6	405	6,324	12,000	220
Feb.			11	Ø 8.8	† 4	Ø 4.7	6.4	358	3,765	32,800	112
Mar.		4.70	1	Ø 4.5	28	.7	2.4	149	2,526	17,500	81.9
Apr.	6.38	4.42	6	483	†17	.5	90.4	5,380	9,839	74,500	2,230
May	5.99	5.75	4	271	24	192	225	13,900	24,429	300,000	25.2
June	6.20	5.84	9	304	23	211	229	13,600	21,145	250,000	35.5
July	9.50	5.37	27	2,770	31	133	209	12,900	17,927	155,000	967
Aug.	11.37	5.34	22	5,190	23	115	237	14,600	16,037	114,000	37.5
Sept.	14.50	4.46	14	11,300	30	1.3	402	23,900	15,406	124,000	198
Oct.	9.85	4.11	14	3,070	31	.3	49.5	3,040	2,994	19,000	18.0
Nov.	4.12	4.05	1	.4	†14	.2	.2	14.7	2,058	8,700	14.7
Dec.	4.48	4.02	16	4.9	† 1	.2	1.3	81.1	1,345	7,760	81.1
Yearly	14.50			11,300		.2	122	88,327.8	123,795	1,093,553	10,001.1

* Partly estimated † And other days Ø Mean daily

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 Agustín, 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, U. S. C. & G. S. datum.

RECORDS: Based on 55 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: August 17, 1938 through December 1958.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 7,050 second-feet on September 14, 1958 with a gage height of 15.80 feet. Min. frequently no flow.

Average Flow in Second-Feet

Daily:	Max. 6,140	May 19, 1942	Min. 0	Frequently
Monthly:	Max. 4,880	May 1942	Min. 0	Frequently
Yearly:	Max. 1,490	1942	Min. * .3	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	10.3	0	1.9	.4	.9	1.1	18.5	12.0	43.0	11.0	4.1
2	0	2.1	0	2.7	.4	.9	1.1	11.5	11.1	24.3	8.2	4.1
3	0	2.1	0	3.0	.4	.9	1.1	9.4	11.1	266	9.2	4.1
4	0	2.1	0	3.3	.4	.9	1.1	8.0	10.5	230	10.8	13.5
5	0	2.1	16.8	4.3	.4	.9	1.1	6.0	9.0	218	11.8	10.8
6	0	2.1	23.4	41.0	.4	.9	1.1	2.8	45.3	168	11.4	8.3
7	0	2.0	51.2	7.4	.4	.9	108	.3	28.0	230	11.8	9.2
8	8.8	2.0	28.7	5.0	.3	.8	8.2	1.5	322	212	11.4	8.3
9	11.4	2.0	7.9	3.0	.3	.8	2.2	1.5	191	134	11.4	10.9
10	12.8	1.9	5.0	2.0	.5	.8	1.3	38.2	20.5	88.7	10.7	13.0
11	13.5	1.9	3.6	2.1	.5	.8	1.1	196	1,720	18.5	10.7	12.7
12	13.1	1.8	20.6	1.8	.7	.8	1.1	7.0	1,340	13.8	11.4	13.9
13	9.4	1.8	46.6	1.9	.8	.8	1.1	5.0	741	13.8	7.9	12.9
14	13.1	1.7	4.4	1.6	.7	.8	196	4.4	4,340	968	8.0	13.1
15	13.2	1.6	2.2	1.1	.5	.7	109	4.2	952	972	8.0	12.1
16	13.2	1.6	2.2	1.3	.4	.7	87.8	4.2	203	417	8.0	15.0
17	15.1	1.5	2.2	.9	.9	.7	8.6	80.5	127	167	7.2	15.7
18	15.6	1.4	2.2	.9	.9	.7	5.9	163	65.9	207	7.2	15.6
19	21.3	1.3	2.2	.8	1.1	.8	6.6	14.8	40.3	174	7.2	17.4
20	21.3	1.3	1.9	.7	1.2	.8	228	8.0	37.6	114	10.7	17.9
21	17.6	9.8	33.6	.9	1.2	.9	286	30.6	33.7	80.0	11.4	19.1
22	17.6	1.3	1.7	.6	.9	.9	20.2	404	36.6	67.0	10.7	19.5
23	17.1	1.0	1.6	.8	1.0	1.0	11.9	1,180	288	29.3	10.7	22.0
24	16.1	0	1.5	.4	.9	1.0	9.8	467	277	24.1	7.9	46.2
25	16.4	0	30.3	.5	.7	1.1	8.5	870	90.2	18.9	8.0	57.6
26	16.2	0	2.6	.3	.6	1.1	7.5	483	159	15.1	6.2	56.3
27	15.1	0	1.9	.2	1.0	1.1	22.4	250	634	12.7	6.2	59.0
28	15.8	0	1.8	.3	.9	1.1	311	66.2	330	12.5	4.4	59.6
29	17.7		2.4	.4	1.2	1.1	154	29.0	231	27.8	4.1	56.3
30	17.1		2.2	.4	.9	1.1	197	19.0	101	72.9	4.4	60.9
31	16.2		2.0		.9		151	14.5		14.4		59.5
Sum	364.7	56.7	302.7	91.5	21.8	26.7	1,950.8	4,398.1	12,407.8	5,053.8	268.0	748.6

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period Sept. 1938-1958 Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	8.12		20	26.9	† 1	0	11.8	723	6,130	11,900	0
Feb.	8.35		21	37.6	† 24	0	2.0	112	4,674	37,000	0
Mar.	9.32		5	87.0	† 1	0	9.8	600	3,175	21,000	0
Apr.	9.78	7.83	6	110	27	.2	3.0	181	5,755	70,500	0
May	7.93	7.81	† 29	1.8	† 5	.2	.7	43.2	16,991	299,800	0
June	8.06	7.84	† 25	1.1	† 15	.7	.9	53.0	14,363	241,000	0
July	11.57	7.96	28	1,060	† 11	1.0	62.9	3,870	11,463	* 118,500	0
Aug.	13.07	8.24	23	2,270	7	.1	142	8,720	10,744	99,400	0
Sept.	15.80	8.62	14	7,050	7	5.0	414	24,600	13,169	* 119,200	0
Oct.	12.55	8.39	14	2,450	29	11.8	163	10,000	5,874	42,800	0
Nov.	8.43	8.30	20	13.5	† 28	4.1	8.9	532	1,305	7,270	0
Dec.	8.88	8.25	30	84.9	† 6	2.1	24.1	1,480	2,550	12,900	0
Yearly	15.80			7,050		0	70.3	50,914.2	96,193	1,079,340	238.1

Current Year 1958

* Partly estimated † And other days

RIO GRANDE AT COUNTY LINE STATION

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights, located .8 mile downstream from the El Paso-Hudspeth County line. This 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, U.S.C. & G.S. datum.

RECORDS: Based on 2 meter measurements, frequent inspections of the station during the year, and a continuous record of gage heights. Records available: January 1938 through December 1958.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 6,340 second-feet on May 19, 1942, with a gage height of 8.66 feet. Min. frequently no flow.

Average Flow in Second-Feet

Daily:	Max. 6,180	May 18, 1942	Min. 0	Frequently
Monthly:	Max. 4,920	May 1942	Min. 0	Frequently
Yearly:	Max. 1,720	1942	Min. 0	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	0	101	0	0
2	0	0	0	0	0	0	0	0	0	5.0	0	0
3	0	0	0	0	0	0	0	0	0	48.1	0	0
4	0	0	0	0	0	0	0	0	0	6.3	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	858	0	0	0
12	0	0	0	0	0	0	0	0	1,270	0	0	0
13	0	0	0	0	0	0	0	0	489	0	0	0
14	0	0	0	0	0	0	0	0	2,640	195	0	0
15	0	0	0	0	0	0	0	0	2,150	785	0	0
16	0	0	0	0	0	0	0	0	* 81.5	288	0	0
17	0	0	0	0	0	0	0	0	0	130	0	0
18	0	0	0	0	0	0	0	0	0	19.8	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	12.9	0	0	0	0	0
22	0	0	0	0	0	0	0	0	27.5	0	0	0
23	0	0	0	0	0	0	0	493	* 210	0	0	0
24	0	0	0	0	0	0	0	179	* 279	0	0	0
25	0	0	0	0	0	0	0	272	225	0	0	0
26	0	0	0	0	0	0	0	145	234	0	0	0
27	0	0	0	0	0	0	0	57.1	543	0	0	0
28	0	0	0	0	0	0	0	1.6	* 437	0	0	0
29	0		0	0	0	0	0	0	* 298	0	0	0
30	0		0	0	0	0	0	0	* 184	0	0	0
31	0		0		0		0	0		0		0
Sum	0	0	0	0	0	0	12.9	1,147.7	9,926	1,578.2	0	0

Current Year 1958 — **Period** 1938-1958

Month	Extreme Gage Feet		Extreme Second-Feet					Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low					Average	Maximum	Minimum
	High	Low	Day		Day							
Jan.				0		0		0	0	9,428	20,000	0
Feb.				0		0		0	0	8,143	47,900	0
Mar.				0		0		0	0	7,139	38,900	0
Apr.				0		0		0	0	10,801	84,200	0
May				0		0		0	0	20,820	303,000	0
June				0		0		0	0	18,392	239,000	0
July	3.49		21	84.8	† 1	0		.4	25.6	16,923	140,000	0
Aug.	5.65		23	930	† 1	0		37.0	2,280	16,237	123,000	0
Sept.	7.29		15	5,180	† 1	0		331	19,700	19,462	140,000	0
Oct.	4.48		15	1,450	† 5	0		50.9	3,130	12,431	61,400	0
Nov.				0		0		0	0	8,300	20,400	0
Dec.				0		0		0	0	9,142	29,700	0
Yearly	7.29			5,180		0		34.7	25,135.6	157,218	1,247,500	0

* Partly estimated † And other days

RIO GRANDE AT FORT QUITMAN, TEXAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car equipped for winch and heavy weights, located on the rectified channel of the Rio Grande, 1.5 miles below Old Fort Quitman and 81.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 3,450.57 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on frequent estimates during low flow, 22 meter measurements during the year, and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1889 through December 1958.

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

EXTREME FLOWS FROM RECORDS ‡ : Momentary: Max. 10,600 second-feet October 5, 1946, with a gage height of 10.00 feet. Min. frequently no flow.

Average Flow in Second-Feet ‡

Daily:	Max.	5,890	May 19, 1942	Min.	0	Frequently
Monthly:	Max.	5,030	May 1942	Min.	0	Several months 1952 & 1955 thru 1958
Yearly:	Max.	1,750	1942	Min.	6.7	1957

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	0	36.1	44.9	17.0
2	0	0	0	0	0	0	0	0	0	60.1	56.1	15.0
3	0	0	0	0	0	0	0	0	0	70.1	53.4	11.8
4	0	0	0	0	0	0	0	0	0	14.0	31.7	10.0
5	0	0	0	0	0	0	14.2	0	0	10.0	11.0	7.8
6	0	0	0	0	0	0	* 452	0	0	* 3.5	5.5	7.0
7	0	0	0	0	0	0	0	0	0	.7	8.5	5.4
8	0	0	0	0	0	0	0	0	.1	u .5	8.2	2.1
9	0	0	0	0	0	0	0	0	0	u .2	8.5	6.4
10	0	0	0	0	0	0	0	0	* 218	u .7	7.6	6.3
11	0	0	0	0	0	0	0	0	*1,580	u .7	3.5	* 6.3
12	0	0	0	0	0	0	0	0	* 680	u .7	32.2	* 6.3
13	0	0	0	0	0	0	0	0	* 625	u 437	20.0	* 6.3
14	0	0	0	0	92.3	0	0	0	* 568	1,000	18.5	* 6.3
15	0	0	0	0	562	0	2.2	0	1,370	1,160	19.0	6.3
16	0	0	0	.1	2.7	24.5	0	0	* 785	1,050	19.2	* 6.3
17	0	0	0	192	0	5.6	0	0	* 155	535	12.0	* 5.0
18	0	0	0	0	0	0	0	38.9	78.4	427	31.6	* 4.0
19	0	0	0	0	0	0	0	9.0	75.6	* 106	30.0	* 3.0
20	0	0	0	0	0	0	0	0	75.6	* 35.0	28.0	* 2.0
21	0	0	0	0	0	0	0	18.3	78.4	* 18.0	25.0	* 1.5
22	0	0	0	0	0	0	0	* .8	724	* 9.0	16.0	* 1.0
23	0	0	0	0	0	0	0	0	* 797	9.9	12.0	* 1.0
24	0	0	0	0	0	0	0	126	* 95.2	10.9	22.0	* 1.0
25	0	0	0	0	0	0	0	* 48.4	159	490	38.0	* 1.0
26	0	0	0	0	0	0	0	* 95.8	120	227	30.0	* 1.0
27	0	0	0	0	0	5.3	0	3.5	386	75.3	19.2	* 1.0
28	0	0	0	0	0	0	0	.8	668	50.1	12.2	* .9
29	0		0	0	0	0	0	0	297	41.0	8.0	* .9
30	0		0	0	0	0	0	0	178	56.3	18.2	* .9
31	0		0		0		0	u 2.0		45.6		* .8
Sum	0	0	0	192.1	657.0	35.4	* 468.4	343.5	9,713.3	5,980.4	650.0	*151.6

Current Year 1958									Period 1924-1958		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.				0		0	0	0	10,433	20,900	0
Feb.				0		0	0	0	10,342	50,100	0
Mar.				0		0	0	0	8,569	38,900	0
Apr.	5.74		17	970	† 1	0	6.4	381	10,656	* 77,000	0
May	9.82		15	3,720	† 1	0	21.2	1,300	19,379	309,000	0
June	5.06		16	279	† 1	0	1.2	70.2	17,591	240,000	0
July	8.49		6	2,220	† 1	0	15.1	929	18,409	140,000	235
Aug.	5.70		18	471	† 1	0	11.1	681	22,778	* 127,000	185
Sept.	10.55		11	4,750	† 1	0	324	19,300	25,998	147,000	0
Oct.	8.83		13	2,580	9	0	193	11,900	19,254	66,500	51.6
Nov.	5.50	4.70	12	404	29	6.8	21.7	1,290	12,128	24,500	0
Dec.	4.96		1	18.0	31	Ø* .8	* 4.9	* 301	12,526	31,000	0
Yearly	10.55			4,750		0	49.9	36,152.2	188,063	1,270,400	* 5,888.2

u Estimated * Partly estimated † And other days Ø Mean daily ‡ Period 1924-1958

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 Río Conchos, about 10 miles northwest of Presidio, Texas and Ojinaga, Chihuahua, and 285.7 river miles below the American Dam at El Paso, Texas. The zero of the gage is 2,576.66 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 42 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1889 through December 1958.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. During 1958, a small dirt and brush dam one-half mile downstream caused backwater frequently which affected the gage heights at the station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 14,000 second-feet on June 14, 1905. A gage height of 10.57 feet was recorded on May 26, 1942, with a flow of 6,160 second-feet. Min. frequently no flow.

Average Flow in Second-Feet ‡

Daily:	Max. 13,700	June 13 & 14, 1905	Min. 0		Frequently
Monthly:	Max. 10,150	June 1905	Min. 0		Frequently
Yearly:	Max. 1,970	1907	Min. 3.5		1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	.5	0	* 877	* 66.4	1.0
2	0	0	0	0	0	0	* .1	.6	0	* 809	* 37.4	1.0
3	0	0	0	0	0	0	* .2	52.6	0	* 758	* 28.1	1.0
4	0	0	0	0	0	0	0	168	0	* 547	* 23.6	1.0
5	0	0	0	0	0	0	0	22.2	0	* 178	* 14.4	.7
6	0	0	0	0	0	0	0	2.8	0	* 105	* 14.0	.8
7	0	0	0	0	0	0	0	2.4	0	* 71.4	* 14.4	.6
8	0	0	0	0	0	0	* 5.0	2.3	31.2	50.1	* 13.3	0
9	0	0	0	0	0	0	* 80.0	1.9	143	23.1	* 11.8	0
10	0	0	0	0	0	0	* 30.0	1.4	6.6	17.4	* 11.4	0
11	0	0	0	0	0	0	* 5.0	1.0	168	22.3	10.9	0
12	0	0	0	0	0	0	0	0	308	12.9	9.5	0
13	0	0	0	0	0	0	0	0	295	13.5	4.6	0
14	0	0	0	0	0	0	0	0	321	13.6	4.5	0
15	0	0	0	0	0	0	0	0	345	14.9	4.2	0
16	0	0	0	0	* .8	0	0	0	351	57.0	4.6	0
17	0	0	0	0	* 1.0	0	0	0	374	328	8.4	2.8
18	0	0	0	0	* .1	* .5	0	11.3	375	427	5.4	2.8
19	0	0	0	0	0	0	0	206	376	492	2.5	≈ .8
20	0	0	0	0	0	0	0	17.1	376	532	2.3	≈ .7
21	0	≈ .4	0	0	0	0	0	22.0	278	486	2.1	.6
22	0	89.2	0	0	0	* 35.0	0	43.7	179	138	2.0	.6
23	0	25.9	0	0	0	* 6.0	0	109	35.1	72.1	1.8	.6
24	0	1.6	0	0	0	* 10.0	0	268	8.6	49.6	1.6	.5
25	0	.2	0	0	0	* 2.0	0	249	102	279	1.5	.5
26	0	0	0	0	0	0	0	253	1,120	65.3	1.4	.5
27	0	0	0	0	0	0	0	118	1,280	32.7	1.4	.5
28	0	0	0	0	0	0	* .5	* 12.8	1,140	65.0	1.3	.4
29	0		0	0	0	0	* 1.0	* .7	1,050	257	1.2	.4
30	0		0	0	0	0	* 30.0	* .6	1,080	108	1.1	.3
31	0		0		0		* 2.5	* .2		84.9		.2
Sum	0	117.3	0	0	* 1.9	* 53.5	* 154.3	1,567.1	9,742.5	6,986.8	* 307.1	18.3

Current Year 1958									Period 1924-1958		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.				0		0	0	0	9,726	24,400	0
Feb.	8.27		22	238	† 1	0	4.2	233	9,013	40,800	0
Mar.				0		0	0	0	7,138	39,100	0
Apr.				0		0	0	0	5,878	41,600	0
May	4.80		16	9.6	† 1	0	* .1	* 3.8	14,108	240,000	0
June	7.60		22	184	† 1	0	* 1.8	* 106	13,896	216,000	0
July	7.60		10	115	† 1	0	* 5.0	* 306	19,200	158,000	* 13.1
Aug.	10.37		19	376	†12	0	50.6	3,110	25,045	133,000	29.4
Sept.	13.99		27	1,320	† 1	0	325	19,300	28,372	* 151,000	0
Oct.	13.32	5.45	1	954	15	12.7	225	13,900	24,443	105,000	0
Nov.	6.71		1	79.6	30	Ø 1.1	* 10.2	* 609	11,343	34,500	0
Dec.			†17	Ø 2.8	† 8	0	.6	36.3	11,003	30,900	0
Yearly	13.99			1,320		0	51.9	37,604.1	179,165	1,176,700	2,514.4

≈ Estimated * Partly estimated † And other days Ø Mean daily ‡ Period June 1900, March 1914, September 1919, March 1920, and 1924-1958.

RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

DESCRIPTION: Water-stage recorder and cable with stand-up cable car and winch, located 1.9 miles west of Ojinaga, Chihuahua, 3.7 miles west of Presidio, Texas, and 1.5 miles upstream from the confluence with the Rio Grande. The Río Conchos enters the Rio Grande 13.8 miles above the Lower Presidio gaging station on the Rio Grande and 293.5 river miles below the American Dam at El Paso, Texas. The zero of the gage, as corrected by recent check-levels, is 2,568.04 feet above mean sea level, U. S. C. & G. S. datum. The figure previously reported was in error. Records of stage and measured discharge at this station began April 4, 1954.

RECORDS: Based on 198 meter measurements during the year, 192 by the Mexican and 6 by the United States Section of this Commission, a continuous record of gage heights and a rating curve which, above 15,000 second-feet, was defined by related gage height and records of discharge at Lower Presidio Station. Computations by shifting channel methods. Records available: January 1896 through December 1958.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. La Boquilla Reservoir with 2,417,500 acre-feet capacity, La Colina Reservoir with 19,500 acre-feet capacity and La Rosetilla Reservoir with 15,400 acre-feet capacity are located 250, 242 and 186 river miles respectively above this station. Francisco I. Madero Reservoir, with capacity of 344,600 acre-feet, is located on the Río San Pedro, a tributary which enters the Río Conchos 174 river miles above this station. Power generation facilities: La Boquilla 14,647 kw., La Colina 3,620 kw., La Rosetilla 5,150 kw., Francisco I. Madero none.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 162,000 second-feet on September 11, 1904. Min. No flow several days in May, June and July 1953 and in July 1955.

Average Flow in Second-Feet ‡

Daily:	Max.	148,900	Sept. 11, 1904	Min.	0	Several days 1953 & 1955
Monthly:	Max.	24,540	Sept. 1904	Min.	4.7	Apr. 1955
Yearly:	Max.	3,710	1906	Min.	155	1953

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	252	259	247	119	2.8	516	3.5	242	143	* 45,910	4,060	1,200
2	253	261	250	78.8	2.8	452	3.2	230	133	* 47,320	3,570	1,160
3	243	254	251	60.4	3.9	470	2.8	122	107	* 45,560	3,170	890
4	258	254	231	65.0	3.2	326	3.2	39.9	80.9	* 38,140	2,580	791
5	317	251	219	79.8	3.2	218	2.8	17.7	66.0	* 31,430	2,780	897
6	357	246	212	70.6	3.2	198	2.8	12.7	55.8	* 29,280	2,550	901
7	326	246	212	57.6	2.8	166	4.9	9.9	81.9	* 29,060	2,210	872
8	357	243	216	44.8	2.8	183	3.9	9.2	179	* 25,390	2,130	830
9	306	238	229	21.5	2.8	137	2.5	10.2	1,780	* 24,160	2,110	848
10	299	237	204	17.7	2.1	115	2.1	113	840	* 17,130	2,120	812
11	293	234	182	13.4	2.5	74.5	2.5	101	3,570	12,080	1,890	791
12	290	230	178	9.2	2.1	54.0	2.1	13.4	11,970	8,650	1,680	830
13	281	235	158	7.4	1.1	44.8	2.1	44.1	*15,010	8,620	1,770	869
14	282	240	148	6.0	1.8	34.3	2.1	8.8	*21,650	9,320	1,560	858
15	282	228	122	7.4	2.5	24.0	2.1	53.3	10,420	9,360	1,500	791
16	283	228	118	6.7	2.5	17.3	2.1	47.0	3,990	7,520	1,530	950
17	283	235	121	6.0	2.5	37.4	1.4	15.2	4,630	5,720	1,460	791
18	283	234	112	5.7	54.4	87.2	1.4	172	4,060	5,440	1,420	766
19	281	234	90.1	5.3	173	45.1	2.1	147	2,550	8,860	1,180	791
20	301	235	95.7	5.7	127	26.5	44.5	144	3,220	11,480	1,280	791
21	278	247	93.9	4.9	100	16.2	23.3	357	4,200	8,550	1,320	901
22	275	403	83.7	3.9	123	410	3.2	2,020	4,590	6,750	1,270	862
23	278	480	67.5	3.9	95.7	129	2.1	295	6,850	5,610	1,080	770
24	281	519	80.9	4.2	99.9	24.4	1.8	509	*15,680	6,180	1,240	731
25	281	445	81.6	3.9	125	13.8	1.4	473	*20,800	5,930	1,050	893
26	281	360	73.5	3.5	168	10.9	1.1	323	*43,080	5,090	943	968
27	276	307	149	2.5	193	8.8	1.1	364	*37,790	9,360	1,090	1,090
28	273	290	135	3.2	163	8.5	80.9	819	*44,500	6,430	1,180	1,030
29	268		91.5	2.8	131	7.8	138	427	*40,610	5,010	1,240	1,050
30	263		87.2	2.1	124	6.4	360	277	*43,440	5,790	1,190	1,070
31	262		136		230		399	200		4,590		1,030
Sum	8,843	7,873	4,675.6	722.9	1,951.6	3,861.9	1,106	7,616.4	*346,076.6	*489,720	54,153	27,824

Month	Current Year 1958 Extreme Gage Feet High	Low	Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1924-1958 Acre-Feet Average	Maximum	Minimum
Jan.	5.12	4.40	5	501	3	234	285	17,540	49,648	147,000	11,500
Feb.	5.25	4.36	24	565	† 12	225	281	15,620	43,782	87,700	10,600
Mar.	4.59	3.74	2	272	26	56.5	151	9,270	38,492	80,800	5,410
Apr.	4.13	3.22	11	135	30	1.4	24.1	1,430	25,332	79,700	281
May	4.99	3.02	31	335	13	.4	63.0	3,870	31,186	148,000	319
June	6.07	3.12	22	999	30	4.2	129	7,660	36,589	91,900	760
July	5.54	2.79	30	682	26	.4	35.7	2,190	80,791	502,000	2,190
Aug.	11.94	3.02	22	5,790	15	5.7	246	15,100	111,581	601,000	7,660
Sept.	17.98	3.54	28	* 54,740	† 6	52.3	*11,540	* 686,400	230,195	1,173,000	6,770
Oct.	17.75	10.63	2	* 50,500	26	4,380	*15,800	* 971,300	161,714	* 971,300	5,890
Nov.	11.09	6.40	1	4,310	† 26	908	1,800	107,400	55,046	110,000	9,510
Dec.	7.28	6.23	1	1,360	18	710	898	55,160	46,557	97,700	9,940
Yearly	17.98	2.79		* 54,740		.4	2,610	*1,892,940	910,913	2,431,850	111,885

* Partly estimated †And other days ‡ Period 1900-March 1914; September 1919-March 1920; and 1924-1958

ALAMITO CREEK NEAR PRESIDIO, TEXAS

DESCRIPTION: Water-stage recorder about 1,800 feet above the confluence with the Rio Grande. Measurements of high flows are made from the highway bridge, 200 feet downstream from the recorder. This creek enters the Rio Grande near the lower end of Presidio Valley, 9.7 river miles below the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua, and 306.9 river miles below the American Dam at El Paso, Texas. The zero of the gage is 2,541.61 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 76 meter measurements made during the year, of low and medium flows, a high flow rating curve determined by slope-area calculations, and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1932 through December 1958.

REMARKS: A small irrigation reservoir (San Esteban) 10.5 miles south of Marfa, Texas and irrigation diversions below the reservoir modify the flow of this spring-fed creek. On September 28, 1958 backwater from the Rio Grande reached a gage height of 9.57 feet at this station. This is the highest recorded gage height.

EXTREME FLOWS FROM RECORDS: Momentary: Max. *16,400 second-feet on September 24, 1955, with a gage height of 7.33 feet. Min. Ø.1 second-foot on July 25, 1954 and several days in August 1958.

Average Flow in Second-Feet

Daily:	Max.	3,290	Oct. 24, 1941	Min.	.1	July 25, 1953 & several days in August 1958
Monthly:	Max.	418	Sept. 1958	Min.	.6	Oct., Nov., & Dec. 1953
Yearly:	Max.	55.9	1941	Min.	ᵘ 4.3	1951

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.8	2.0	2.1	1.2	.7	.5	.3	.9	.4	* 2.5	* 5.5	1.5
2	1.8	1.9	2.0	1.2	.7	36.3	.3	.9	.4	* 2.5	* 4.1	1.5
3	1.8	1.9	2.0	1.2	.6	2.5	.3	.8	.4	* 2.5	2.0	1.4
4	1.8	1.9	1.9	1.1	.6	.4	.3	.7	.4	* 2.5	2.0	1.4
5	1.8	1.9	1.9	1.1	.5	.4	1.6	.7	.4	* 2.5	2.0	1.5
6	1.8	1.9	1.8	1.1	.5	.4	.5	.7	.4	* 2.4	1.9	1.6
7	1.8	1.9	1.8	1.1	.5	.4	.4	.7	.4	* 2.4	1.8	1.6
8	1.9	2.0	1.8	1.2	.5	.4	.4	.8	.7	2.4	1.8	1.7
9	2.1	2.0	1.7	1.2	.5	.4	.4	.8	49.5	2.4	1.7	1.6
10	2.2	2.0	1.7	1.2	.5	.4	.4	457	1,690	2.2	1.6	1.5
11	2.1	2.0	1.6	1.3	.5	.4	.4	318	988	2.1	1.6	1.4
12	1.9	2.0	1.6	1.4	.5	.5	.4	1.4	1,160	1.9	1.5	1.4
13	1.8	2.0	1.6	1.4	.5	.5	.4	324	342	1.8	1.5	1.4
14	1.8	1.9	1.5	1.4	.5	.5	.4	4.6	450	1.8	1.4	1.5
15	1.9	1.9	1.5	1.5	.5	.5	.4	.1	582	1.7	1.4	1.5
16	1.9	1.9	1.5	1.4	.5	99.0	.4	.1	747	1.6	1.3	1.5
17	1.9	1.9	1.4	1.3	.5	1,560	.4	.1	18.6	1.6	1.3	1.4
18	1.9	2.0	1.4	1.2	20.1	14.1	.3	.1	1.4	1.6	1.4	1.4
19	1.9	2.0	1.4	1.2	.6	.4	.3	10.8	1,360	1.5	1.4	1.4
20	1.9	2.0	1.4	1.1	.5	.4	.3	2.0	452	1.5	1.5	1.5
21	1.9	2.1	1.4	1.0	.5	.4	.3	.1	15.0	1.5	1.5	1.6
22	1.9	2.2	1.4	.9	.5	.4	.3	24.9	189	1.4	1.6	1.6
23	1.9	2.2	1.4	.9	.5	26.2	.3	59.8	* 444	1.4	1.6	1.6
24	1.9	2.2	1.4	.9	.5	.4	.3	109	* 250	42.8	1.6	1.6
25	1.8	2.3	1.4	.9	.5	.4	.3	1.9	* 647	1.8	1.6	1.6
26	1.8	2.3	1.4	.8	1.7	.5	.3	.4	* 2,590	.8	1.6	1.5
27	1.8	2.2	1.3	.8	.5	.5	.3	.4	440	.8	1.6	1.5
28	1.9	2.2	1.3	.8	21.9	.4	197	.5	* 85.0	623	1.6	1.5
29	1.9		1.3	.8	.5	.4	668	.5	* 40.0	* 27.0	1.6	1.5
30	2.0		1.3	.8	.5	.3	290	.6	* 10.0	* 16.0	1.5	1.6
31	2.0		1.2		.5		1.8	.6		* 8.0		1.7
Sum	58.6	56.7	48.4	33.4	58.4	1,748.3	1,167.5	1,323.9	*12,554	765.9	54.5	47.0

Month	Current Year 1958 Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet High Day	High	Extreme Second-Feet Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1932-1958 Acre-Feet Average	Maximum	Minimum
Jan.	4.02	3.97	10	Ø 2.2	† 1	Ø 1.8	1.9	116	167	* 273	46.4
Feb.	4.10	3.97	† 25	Ø 2.3	† 2	Ø 1.9	2.0	112	267	3,120	41.5
Mar.	4.01	3.99	1	Ø 2.1	31	Ø 1.2	1.6	96.0	* 170	270	46.4
Apr.	4.05	3.99	15	Ø 1.5	†26	Ø .8	1.1	66.2	* 275	* 1,070	57.9
May	4.54	3.96	18	120	† 5	Ø .5	1.9	116	1,054	8,520	88.3
June	6.72	3.57	17	10,500	30	Ø .3	58.3	3,470	* 1,821	* 6,360	50.8
July	5.67	3.42	28	2,650	† 1	Ø .3	37.7	2,320	* 3,099	* 18,500	46.8
Aug.	6.12	3.23	10	5,200	†14	Ø .1	42.7	2,630	* 2,930	* 16,330	73.0
Sept.		4.22	26	Øᵘ2,590	† 1	Ø .4	* 418	*24,900	* 3,873	24,900	128
Oct.	7.24		28	2,750	†25	Ø .8	24.7	1,520	1,979	19,200	36.9
Nov.			1	Ø* 5.5	†16	Ø 1.3	1.8	108	194	807	35.7
Dec.	5.24	5.23	† 8	Ø 1.7	† 3	Ø 1.4	1.5	93.2	179	408	39.3
Yearly						.1	49.1	35,547.4	* 16,008	40,444	* 3,109.2

ᵘ Estimated * Partly estimated † And other days Ø Mean daily

RIO GRANDE AT LOWER PRESIDIO STATION

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located about 10.1 river miles below the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua, .4 mile below the confluence of Alamito Creek with the Rio Grande, and 307.3 river miles below American Dam at El Paso, Texas. The zero of the gage is 2,527.99 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 110 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1955 through December 1958 at this location. Records, published under this same station name, are also available from January 1896 through June 13, 1932 for a station located about 12.1 miles (erroneously reported in Water Bulletin Number 1 as 7.5 miles) below the confluence of the Rfo Conchos and 1.3 miles above Alamito Creek; and from June 14, 1932 through December 31, 1954 for a station about 2.0 miles below the Rfo Conchos confluence and 11.4 miles above the confluence of Alamito Creek.

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

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	262	259	243	123	1.8	413	1.5	196	157	52,200	4,430	1,270
2	259	257	233	76.6	1.1	446	1.6	128	139	48,000	3,830	1,230
3	253	248	233	56.7	.8	431	.6	124	99.7	51,200	3,300	972
4	259	244	215	53.5	.8	370	.6	131	51.0	41,600	2,790	832
5	290	237	207	70.9	1.1	218	.6	120	32.4	34,600	2,820	867
6	419	234	211	71.4	.8	189	.5	13.7	25.9	27,200	2,640	858
7	315	233	209	64.1	.8	176	.5	3.9	32.4	29,500	2,220	861
8	394	231	202	43.2	.8	156	.5	1.3	121	25,900	2,080	842
9	330	230	232	28.7	.8	142	.4	.9	2,470	22,800	2,120	856
10	305	232	219	19.5	.9	92.6	.4	* 448	2,440	22,200	2,090	859
11	309	227	189	13.0	.9	55.4	.4	* 519	* 4,020	14,700	1,990	822
12	303	220	187	12.5	1.0	27.3	.4	* 6.4	* 8,540	12,900	1,640	816
13	293	216	169	12.2	1.0	17.3	.5	271	10,000	9,970	1,710	829
14	286	217	170	14.9	1.0	13.7	.5	11.0	10,800	11,000	1,580	822
15	280	207	153	11.5	1.0	14.6	.5	.9	*11,300	10,200	1,600	787
16	282	196	154	9.8	1.0	51.8	.5	.7	6,560	9,470	1,620	876
17	280	205	153	9.0	1.0	1,160	.5	.6	5,390	7,150	1,540	798
18	281	201	138	4.9	11.7	66.8	.5	10.9	5,060	6,300	1,520	707
19	278	200	106	3.2	69.9	33.4	.5	272	4,090	7,720	1,270	736
20	298	203	83.3	7.9	74.1	18.0	.5	148	3,800	10,800	1,340	710
21	290	234	73.7	9.2	53.5	5.4	.5	449	4,830	10,300	1,380	806
22	288	383	75.9	4.1	42.3	82.1	.4	2,360	* 4,910	7,600	1,340	797
23	286	489	77.3	1.7	58.2	358	.4	504	6,630	6,270	1,180	772
24	290	479	69.1	1.3	45.9	41.4	.3	804	8,440	6,060	1,250	714
25	288	465	74.5	1.1	50.5	6.5	.3	935	*12,800	6,330	1,110	744
26	286	358	77.9	1.0	118	1.9	.3	579	24,000	5,670	1,020	786
27	284	299	81.1	.9	164	1.1	.5	519	34,900	7,330	1,090	809
28	280	269	145	1.2	185	.8	110	849	42,200	8,190	1,180	824
29	272		106	1.6	142	.4	* 970	518	38,900	5,500	1,240	808
30	268		92.5	1.9	102	.2	* 606	267	40,700	* 5,980	1,200	831
31	266		109		144		657	194		* 5,040		815
Sum	9,074	7,473	4,688.3	730.5	1,277.7	4,589.7	2,357.7	10,385.3	293,438.4	529,680	56,120	26,056

Current Year 1958 — **Period 1955-1958**

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	4.78	4.34	6	492	4	242	293	18,000	18,300	22,900	14,900
Feb.	4.97	4.18	25	556	19	186	267	14,800	18,375	26,700	13,300
Mar.	4.40	3.35	1	257	24	49.8	151	9,300	11,028	14,200	7,710
Apr.	3.99	2.32	1	149	27	.9	24.4	1,450	3,232	8,100	309
May	4.48	2.31	31	306	† 8	.8	41.2	2,530	10,420	31,800	219
June	9.26	2.65	17	4,440	30	.2	153	9,100	* 11,142	* 23,000	2,600
July	6.02	3.25	29	1,350	†24	.3	76.1	4,680	* 26,800	* 79,900	4,680
Aug.	9.71	3.16	22	4,840	16	.6	335	20,600	* 65,975	* 163,000	20,600
Sept.	21.26	4.25	28	53,900	6	19.7	9,780	582,000	182,850	582,000	23,500
Oct.	20.37	8.90	1	54,300	27	4,530	17,100	1,051,000	324,325	1,051,000	24,000
Nov.	8.92	6.55	1	4,710	27	974	1,870	111,100	47,325	111,100	23,000
Dec.	6.88	6.21	1	1,450	25	691	841	51,700	29,400	51,700	21,600
Yearly	21.26	2.31		54,300		.2	2,590	1,876,260	749,172	1,876,260	205,790

* Partly estimated † And other days

TERLINGUA CREEK NEAR TERLINGUA, TEXAS

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, and cable with stand-up cable car equipped for winch and heavy weights located 2.7 miles above the confluence with the Rio Grande. This creek enters the Rio Grande at the lower end of Santa Helena Canyon, 371.6 river miles below the American Dam at El Paso, Texas. The zero of the gage is 2,200.64 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 70 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1932 through December 1958.

REMARKS: Irrigation diversions modify the flow of this spring-fed creek at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 34,900 second-feet on May 24, 1935, with a gage height of 17.59 feet on a gage .3 mile downstream. Min. no flow on September 29-30, 1937.

Average Flow in Second-Feet

Daily:	Max. 17,200	June 1, 1937	Min. ᵛ 0	Sept. 29-30, 1937
Monthly:	Max. 921	June 1937	Min. .8	Oct. 1934
Yearly:	Max. 146	1937	Min. 5.5	1943

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.4	2.0	1.7	1.1	1.0	* 1.3	.8	2.8	.4	171	29.0	1.5
2	1.5	2.0	1.7	1.1	1.0	4.1	148	1.0	.6	102	7.5	1.4
3	1.5	2.1	1.6	1.1	1.0	62.6	31.3	1.1	.7	98.0	4.2	1.4
4	1.5	2.1	1.6	1.1	1.0	15.0	6.9	1.0	.8	73.5	3.8	1.4
5	6.7	2.1	1.6	1.1	1.0	4.5	10.3	.9	.9	9.4	3.6	1.5
6	2.5	2.1	1.6	1.1	1.0	6.8	29.2	.9	.9	4.0	3.5	1.5
7	3.6	2.0	1.6	1.1	1.0	14.1	37.7	.9	3.4	1.9	3.4	1.5
8	1.7	2.0	1.6	1.1	1.0	1.4	36.1	1.0	144	2.2	3.2	1.6
9	1.5	2.0	1.6	1.1	1.0	116	6.0	1.0	18.9	2.2	3.0	1.6
10	1.5	1.9	1.6	1.1	1.1	46.4	2.3	18.3	70.0	2.1	2.9	1.6
11	1.6	1.9	1.6	1.0	1.1	12.6	5.2	370	1,030	2.1	2.8	1.6
12	1.6	1.9	1.6	1.0	1.1	2.5	2.6	142	151	2.1	2.6	1.6
13	1.6	1.9	1.6	1.0	1.1	1.7	1.4	603	51.0	2.0	2.5	1.6
14	1.7	1.9	1.7	1.0	1.1	1.7	176	118	442	2.0	2.4	1.6
15	1.7	1.9	1.7	1.0	1.1	5.4	1,170	34.7	479	2.0	2.4	1.6
16	1.8	1.9	1.7	1.0	441	1,240	63.1	13.1	1,430	1.9	2.3	1.6
17	1.8	1.9	1.7	1.0	893	121	3.8	6.1	89.8	1.8	2.2	1.6
18	1.7	1.9	1.6	.9	294	21.7	81.8	10.7	19.5	1.8	2.1	1.6
19	1.7	1.9	1.6	.9	117	10.2	45.3	10.2	21.2	1.8	2.1	1.6
20	1.6	2.7	1.5	.9	16.1	1.4	209	2.2	936	1.7	2.0	1.6
21	1.6	46.5	1.5	.9	37.9	1.2	130	2.0	168	1.6	2.0	1.6
22	7.2	32.6	1.4	.9	8.0	1.2	4.2	40.8	52.0	1.6	2.0	1.6
23	8.2	7.6	1.4	.9	5.0	184	1.0	204	618	1.9	2.0	1.6
24	2.5	6.6	1.3	.9	* 3.0	68.4	.7	137	230	1.9	1.9	1.6
25	1.9	2.9	1.3	1.0	* 1.7	11.6	.7	72.5	2,440	497	1.9	1.6
26	1.9	1.9	1.2	1.0	* 1.7	3.6	.7	16.8	6,290	96.0	1.8	1.6
27	1.9	1.8	1.2	1.0	* 1.4	2.4	448	8.3	5,100	776	1.8	1.5
28	1.9	1.8	1.2	1.0	* 1.3	3.7	5,870	3.4	871	3,660	1.7	1.5
29	1.9		1.2	1.0	* 1.3	4.7	426	1.8	405	1,150	1.6	1.5
30	1.9		1.2	1.0	* 1.3	1.3	108	.8	219	600	1.6	1.5
31	2.0		1.1		* 1.3		8.0	.4		475		1.5
Sum	73.1	141.8	46.5	30.3	1,840.6	1,972.5	9,064.1	1,826.7	21,283.1	7,746.5	105.8	48.1

Current Year 1958									Period 1932-1958		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	2.96	2.29	22	80.0	1	1.4	2.4	145	* 182	743	82.7
Feb.	3.61	2.32	21	265	† 27	1.8	5.1	281	* 300	4,400	73.4
Mar.	2.40	2.32	† 1	Ø 1.7	31	Ø 1.1	1.5	92.2	* 249	* 2,410	72.4
Apr.	2.42	2.34	† 1	Ø 1.1	† 18	Ø .9	1.0	60.1	* 1,192	15,500	55.1
May	7.62	2.34	16	6,080	† 1	1.0	59.4	3,650	* 4,397	* 26,000	117
June	10.21	2.00	16	18,500	20	1.0	65.8	3,910	* 6,277	54,800	59.5
July	9.21	2.16	28	16,000	25	.6	292	18,000	* 7,848	* 28,700	ᵛ 518
Aug.	5.66	2.02	13	2,720	21	.2	58.9	3,620	* 3,730	* 26,680	123
Sept.	10.15	2.18	25	21,400	4	.3	709	42,200	* 7,357	42,200	123
Oct.	8.30	2.72	28	11,700	† 21	Ø 1.6	250	15,400	* 2,731	15,400	50.8
Nov.			1	Ø 29.0	30	Ø 1.6	3.5	210	* 297	2,980	64.9
Dec.			† 8	Ø 1.6	† 2	Ø 1.4	1.6	95.4	* 323	3,080	90.0
Yearly	10.21			21,400		.2	121	87,663.7	* 34,883	105,807	3,958.0

ᵛ Estimated * Partly estimated † And other days Ø Mean daily

RIO GRANDE AT JOHNSON RANCH, TEXAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located about 2 miles above Johnson Ranch, 14 miles below Castolon, Brewster County, Texas and Santa Elena Ranch, Chihuahua, and 392.9 river miles below the American Dam at El Paso, Texas. The zero of the gage is 2,045.30 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 74 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: April 1936 through December 1958.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 61,900 second-feet on September 27, 1958 with a gage height of 24.70 feet. An estimated 97,000 second-feet flow with a stage of 24.6 occurred at this station site on October 3, 1932. Min. zero several days in 1953, 1955 and 1958.

Average Flow in Second-Feet

Daily:	Max. 56,900	Sept. 10, 1942	Min. 0	Several days 1953, 1955 & 1958	
Monthly:	Max. 23,600	Sept. 1942	Min. 0	May 1953	
Yearly:	Max. 4,780	1942	Min. 167	1953	

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	260	277	286	62.7	3.9	59.4	15.5	537	197	43,000	*5,030	1,340
2	256	272	264	61.6	4.4	42.1	26.6	205	156	49,700	*4,400	1,370
3	257	263	229	60.5	2.4	364	99.3	98.3	117	47,200	*4,160	1,350
4	248	265	227	67.0	.8	383	31.1	67.1	82.1	50,600	*3,750	1,170
5	250	259	226	56.5	.7	344	23.2	53.9	73.4	41,000	3,580	1,050
6	272	248	217	48.4	.4	287	397	47.3	46.8	33,900	3,370	1,030
7	328	241	197	44.5	.1	156	61.6	26.0	35.0	27,200	*2,950	1,080
8	353	239	196	43.7	0	112	20.0	14.8	27.7	29,200	2,520	1,050
9	321	241	187	49.3	0	132	23.3	12.9	850	26,100	*2,450	1,030
10	353	239	183	43.9	0	150	10.5	10.7	1,830	23,500	*2,480	1,030
11	319	224	206	38.4	0	118	* 5.1	425	3,760	22,500	2,430	1,030
12	307	223	184	33.2	0	61.3	ᵘ 3.5	765	6,510	15,600	2,240	990
13	308	221	168	27.4	0	44.3	ᵘ 2.0	883	7,030	12,900	1,870	995
14	300	216	161	24.2	0	30.4	* .5	549	8,300	10,800	1,970	1,010
15	285	210	151	22.9	0	14.9	850	217	10,400	11,000	*1,820	1,030
16	277	213	145	22.9	6.9	28.6	262	90.4	12,200	10,700	*1,820	990
17	285	199	138	20.4	1,090	1,610	39.3	51.2	7,150	9,300	*1,860	1,030
18	289	190	144	19.3	227	1,100	32.1	28.6	6,120	7,730	1,730	1,040
19	287	194	137	18.4	305	307	83.2	16.9	5,500	7,610	1,680	920
20	291	186	118	16.4	75.3	132	34.6	31.5	5,440	9,390	1,430	942
21	299	204	104	14.5	ᵘ 24.0	* 90.6	253	19.8	4,690	11,700	*1,240	904
22	320	245	89.3	9.9	ᵘ 40.0	72.4	* 34.2	75.0	5,030	* 9,290	*1,420	950
23	321	277	73.4	5.8	* 16.6	75.3	* 2.5	1,960	6,400	* 7,780	*1,560	989
24	295	418	63.1	3.3	* 13.7	156	* 1.4	615	6,670	* 6,630	*1,410	968
25	297	481	58.9	3.4	* 4.2	151	* 1.4	1,050	9,360	* 8,350	*1,420	908
26	305	509	58.4	2.8	ᵘ 1.6	376	ᵘ 1.2	864	18,600	* 7,390	1,240	869
27	312	406	54.0	1.8	.4	50.0	ᵘ 1.0	547	53,600	*10,600	1,110	971
28	304	337	48.1	2.3	0	ᵘ 19.7	4,770	457	40,500	*10,400	1,180	944
29	295		44.5	2.1	0	* 15.7	1,880	620	43,400	* 9,110	1,290	975
30	287		42.3	1.4	70.9	ᵘ 15.7	1,400	591	39,800	* 6,560	1,380	928
31	287		61.3		77.7		404	296		* 6,480		980
Sum	9,168	7,497	4,461.3	828.9	1,966.0	6,498.4	10,769.1	11,225.4	303,875.0	583,220	*66,790	31,863

Month	Current Year 1958 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 April 1936-1958 Acre-Feet Average	Maximum	Minimum
Jan.	1.60	1.23	7	394	5	229	296	18,200	47,868	86,400	11,300
Feb.	1.87	1.13	26	546	20	178	268	14,900	45,162	80,900	9,460
Mar.	1.44	.54	1	304	31	38.6	144	8,850	36,746	85,300	4,440
Apr.	.74	.10	4	77.7	†29	1.2	27.6	1,640	18,976	79,300	457
May	4.05		17	2,660	† 7	0	63.4	3,900	43,370	240,000	0
June	6.70	.34	17	7,560	30	11.2	217	12,900	54,573	251,000	3,270
July	8.95	.06	28	10,700	14	* .5	347	21,400	118,597	620,000	5,930
Aug.	4.27	.23	23	3,930	11	4.7	362	22,300	119,826	485,000	12,300
Sept.	24.70	.42	27	61,900	9	24.0	10,100	603,000	272,041	1,404,000	9,350
Oct.	22.93	* 7.50	4	52,500	31	*5,290	18,800	1,157,000	199,141	1,157,000	4,940
Nov.	* 7.60	3.61	1	* 5,430	28	1,070	*2,230	* 132,000	60,986	164,000	8,600
Dec.	4.08	3.20	2	1,470	26	843	1,030	63,200	49,987	110,000	9,510
Yearly	24.70			61,900		0	2,840	2,059,290	1,067,273	3,461,400	120,747

ᵘ Estimated * Partly estimated † And other days

RIO GRANDE AT LANGTRY, TEXAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located at Langtry, Texas, 24.1 river miles above the confluence of the Pecos River and 614.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 1,091.69 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 76 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: May 1900 to October 1914; December 1919 through March 1920; January 1924 through December 1958.

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

EXTREME FLOWS FROM RECORDS: The highest known gage height was 56.9 feet, which occurred about 3:00 P. M. on June 17, 1922. The discharge for this stage was 204,000 second-feet which was estimated by extension of the rating curve. The lowest recorded flow was 208 second-feet, which occurred July 12, 1953.

Average Flow in Second-Feet ‡

Daily:	Max.	70,930	Oct. 5, 1932	Min.	216	June 17 & 18, 1953
Monthly:	Max.	23,700	Sept. 1942	Min.	263	May 1953
Yearly:	Max.	5,320	1942	Min.	450	1953

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	584	532	682	324	276	276	384	u 1,910	651	43,500	7,710	1,600
2	564	532	682	324	281	269	320	u 1,080	749	41,800	7,110	1,660
3	553	532	630	319	282	265	291	u 712	688	43,000	6,100	1,720
4	559	537	596	314	275	371	278	u 633	556	49,700	5,330	1,690
5	566	542	568	301	270	387	271	* 591	507	50,000	4,680	1,720
6	567	536	545	307	276	324	275	486	484	52,800	4,030	1,650
7	561	530	524	306	267	516	1,130	402	507	43,100	3,690	1,470
8	562	529	496	303	262	623	590	354	8,560	33,400	3,740	1,390
9	562	522	486	308	258	504	371	327	6,860	30,600	3,480	1,400
10	574	521	475	309	257	467	382	315	2,100	29,400	3,100	1,370
11	625	518	466	306	247	407	385	311	1,050	26,200	2,960	1,350
12	628	520	463	297	237	364	329	332	2,110	25,200	2,980	1,340
13	619	518	460	292	278	359	297	306	4,240	17,500	2,940	1,320
14	623	513	452	287	297	372	276	514	6,010	14,200	2,900	1,300
15	602	510	454	286	591	352	261	1,240	8,180	11,300	2,540	1,250
16	587	512	467	288	857	344	250	1,220	14,800	11,300	2,460	1,270
17	584	507	458	286	518	330	250	822	12,500	11,200	2,350	1,280
18	581	506	462	289	396	755	266	646	12,700	10,900	2,250	1,290
19	571	505	443	303	1,300	941	633	941	6,560	8,980	2,220	1,270
20	586	504	429	273	1,600	909	676	481	8,310	7,660	2,150	1,320
21	589	504	431	269	752	836	611	577	6,370	7,760	2,090	1,300
22	586	509	422	265	533	643	503	433	* 5,860	10,300	1,950	1,210
23	612	513	423	258	517	1,230	438	452	* 5,170	11,900	1,840	1,220
24	627	512	415	255	434	944	448	434	4,980	9,320	1,920	1,200
25	623	507	402	255	383	765	438	1,250	6,350	8,170	1,890	1,240
26	612	508	390	256	634	457	433	1,320	6,490	6,970	1,790	1,290
27	596	526	381	257	362	366	415	859	16,100	9,240	1,650	1,260
28	574	643	364	258	314	411	389	983	23,000	10,400	1,720	1,200
29	552		360	263	305	368	355	997	37,400	14,000	1,550	1,190
30	543		346	267	288	440	2,610	789	48,900	13,600	1,480	1,230
31	527		324		280		2,820	684		9,450		1,200
Sum	18,099	14,648	14,496	8,625	13,827	15,595	17,375	22,401	258,742	672,850	92,600	42,200

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1924-1958 Acre-Feet		
			High		Low						
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	1.42	1.26	11	650	31	527	584	35,900	80,348	* 245,000	27,300
Feb.	1.49	1.18	28	662	†20	504	523	29,100	70,702	* 117,000	25,000
Mar.	1.54	.93	1	702	31	324	468	28,800	67,143	118,000	23,300
Apr.	.99	.84	† 1	328	†24	255	288	17,100	56,914	112,000	16,700
May	4.34	.80	19	3,760	12	237	446	27,400	89,510	271,000	16,200
June	2.71	.75	23	1,780	3	261	520	30,900	95,956	299,000	15,800
July	5.60	.68	30	5,620	18	246	560	34,500	140,618	719,000	20,200
Aug.	u 3.25	.79	1	u 2,540	14	294	723	44,400	175,800	* 730,000	31,100
Sept.	30.47	1.00	29	56,900	6	468	8,620	513,000	310,913	1,410,000	19,600
Oct.	28.85	* 6.27	6	54,100	26	6,630	21,700	1,335,000	247,235	1,335,000	23,200
Nov.	7.22	2.01	1	8,020	30	1,460	3,090	184,000	91,137	* 211,000	22,600
Dec.	2.28	1.62	3	1,770	†29	1,180	1,360	83,700	78,404	135,000	24,800
Yearly	30.47	.68		56,900		237	3,270	2,363,800	1,504,680	3,851,500	326,100

Current Year 1958

u Estimated * Partly estimated † And other days ‡ Period 1931-1958

PECOS RIVER NEAR SHUMLA, TEXAS

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, on top of rock ledge about 125 feet above river bed, and light cable (winch operated, for carrying current meter and light weights only), located 13.0 river miles upstream from the Pecos High Bridge and 18.5 river miles above the confluence with the Rio Grande. This confluence is 638.2 river miles below the American Dam at El Paso, Texas. On January 1, 1958 the zero of the gage was changed to 1,159.46 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 44 meter measurements made at low and medium stages during the year and a continuous record of gage heights. During the period February 10 through April 30, 1958, when access to this station was not feasible, records were computed at a temporary station at U.S. 90 Highway crossing 17.7 miles downstream. Computations by shifting channel methods. Records available: October 8, 1954, through December 1958 at this station. Records are also available for Pecos River near Comstock, 13.0 river miles downstream, from March 17 to December 3, 1898 and May 1900 through October 7, 1954.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The flood of June 1954 reached a gage height of 121.7 feet at this station, or an elevation of approximately 1,281.2 feet above mean sea level, and a discharge of 948,000 second-feet at the gaging station near the railroad bridge 13 miles downstream.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	192	* 227	213	196	166	197	170	151	156	1,180	340	267
2	190	* 224	212	195	170	189	165	150	152	1,050	334	260
3	189	* 221	210	193	182	189	161	150	148	806	323	254
4	214	* 218	210	191	164	187	156	146	146	677	322	255
5	259	* 218	209	187	151	185	156	151	146	611	312	252
6	243	* 214	208	183	145	184	159	150	148	559	303	251
7	234	212	209	181	136	181	1,890	147	162	530	299	248
8	220	210	* 205	179	135	177	553	144	5,860	525	293	247
9	217	211	* 203	178	138	175	320	144	2,470	555	290	246
10	208	213	* 199	178	137	175	260	147	653	549	288	246
11	209	212	195	176	138	172	228	149	471	661	279	245
12	209	214	195	173	137	167	214	148	423	530	279	243
13	206	214	196	174	3,990	166	207	149	355	506	280	244
14	209	214	200	176	6,470	169	201	158	568	447	281	242
15	212	212	203	177	1,120	170	196	173	4,530	602	284	242
16	208	212	203	177	653	229	193	252	773	612	279	243
17	208	212	203	177	514	233	191	199	528	575	276	241
18	205	212	210	179	441	214	188	182	445	517	270	248
19	202	214	231	191	425	191	181	178	441	479	268	247
20	226	215	222	182	393	196	186	168	420	444	262	245
21	216	220	220	178	365	189	199	172	387	423	263	238
22	209	231	221	176	461	753	193	198	15,600	406	263	231
23	246	239	226	174	337	233	184	210	1,050	385	263	230
24	268	240	223	173	284	708	177	211	665	375	260	233
25	248	236	223	169	259	294	172	191	568	362	260	230
26	234	232	219	169	246	234	168	175	514	357	256	228
27	230	221	218	170	231	221	164	169	500	352	260	224
28	219	216	215	170	222	196	163	162	524	362	260	222
29	211		214	169	216	179	165	159	482	367	263	218
30	211		210	169	204	177	160	157	549	370	261	222
31	208		201		198		153	160		358		215
Sum	6,760	6,134	6,526	5,360	18,828	6,930	7,873	5,200	39,834	16,532	8,471	7,457

Month	Current Year 1958 Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period Nov. 1954-1958 Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	2.16	1.93	24	271	2	184	218	13,400	11,772	13,400	8,890
Feb.	1.77	1.59	24	240	8	208	219	12,200	10,995	12,200	9,880
Mar.	1.77	1.49	19	235	†11	194	211	12,900	11,125	12,900	10,000
Apr.	1.50	1.09	1	197	†29	167	179	10,600	17,028	39,900	8,040
May	15.60	1.21	13	20,700	7	130	607	37,300	58,770	173,000	9,780
June	5.60	1.35	22	3,380	13	162	231	13,700	20,130	41,300	5,820
July	6.27	1.31	7	4,170	31	146	254	15,600	* 16,955	* 29,800	5,520
Aug.	1.86	1.27	16	300	†10	139	168	10,300	* 13,755	* 26,500	5,220
Sept.	21.90	1.27	22	38,400	† 4	144	1,330	79,000	32,728	79,000	6,410
Oct.	4.25	2.00	11	1,870	31	346	533	32,800	* 24,875	32,800	18,400
Nov.	2.01	1.73	1	344	26	253	282	16,800	14,380	21,600	9,100
Dec.	1.79	1.63	1	273	31	209	241	14,800	12,400	14,800	9,100
Yearly	21.90	1.09		38,400		130	372	269,400	244,913	390,670	114,790

* Partly estimated † And other days

GOODENOUGH SPRING NEAR COMSTOCK, TEXAS

DESCRIPTION: Water-stage recorder, located 4,000 feet above the confluence with the 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, Texas. The zero of the gage is 967.42 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 24 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. From June 23, 1946, when recorder installation became inoperable, to October 12, 1954, discharges were estimated between measurements. Prior to June 23, 1946, records were based on continuous records of gage heights. Records available: January 1924 through December 1958.

REMARKS: The flow of this spring is very uniform and not modified by diversions or storage. Backwater reaches the station when a discharge of approximately 35,000 second-feet occurs in the Rio Grande at the confluence. On September 28, 1958 backwater from the Rio Grande reached a gage height of 10.22 feet at this station. A maximum gage height of 43.35 feet was reached by backwater on June 28, 1954.

EXTREME FLOWS FROM RECORDS: Momentary: Max. estimated 1,200 second-feet on October 10, 1958 with a gage height of 6.85 feet. Min. 65.8 second-feet on February 27, 1957.

Average Flow in Second-Feet

Daily:	Max.	* 651	Oct. 10, 1958	Min.	66.8	March 1, 1957
Monthly:	Max.	* 421	Oct. 1932	Min.	* 69.4	Feb. 1957
Yearly:	Max.	266	1933	Min.	* 83.1	1952

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	87.9	82.2	81.3	77.9	* 76.2	91.2	107	94.2	98.4	* 412	275	228
2	88.3	82.5	80.9	77.6	* 75.8	91.7	104	93.7	96.9	* 401	274	228
3	88.2	82.3	80.6	78.2	* 75.4	92.6	100	93.7	95.0	* 392	274	227
4	88.2	82.9	80.3	78.8	* 75.4	91.2	98.8	93.2	93.6	* 397	269	226
5	87.7	83.1	80.8	78.3	* 75.4	89.3	97.1	93.2	93.2	* 378	269	224
6	87.7	82.7	80.6	78.6	75.4	87.7	108	92.6	93.2	* 390	265	221
7	87.3	82.2	81.1	78.8	76.4	87.4	238	92.6	96.5	* 378	265	222
8	87.6	82.5	81.0	80.2	76.9	86.1	233	92.1	* 164	* 374	261	222
9	87.7	83.1	81.1	80.0	* 76.7	85.6	206	91.6	* 356	* 367	258	220
10	87.5	83.8	81.6	79.9	* 76.8	84.3	180	91.1	375	* 651	254	221
11	87.9	83.7	81.8	80.2	* 77.0	83.6	152	91.1	336	561	252	222
12	87.6	83.3	82.4	80.7	* 77.1	82.6	138	91.1	305	489	251	223
13	86.6	83.8	82.9	81.8	* 77.3	81.8	127	90.6	298	396	249	219
14	86.3	84.5	83.5	81.2	* 77.5	81.2	119	93.4	301	320	249	218
15	85.6	83.7	83.3	81.5	* 77.6	80.7	116	99.5	* 449	325	247	218
16	85.8	84.4	83.0	81.7	* 77.8	80.2	113	103	576	327	247	222
17	85.5	84.6	82.8	81.7	* 79.0	80.9	111	105	546	325	246	222
18	85.8	84.5	82.5	82.1	* 79.2	88.3	109	106	477	322	242	222
19	86.3	* 84.6	81.9	82.1	* 96.0	115	106	108	458	316	242	222
20	86.0	* 84.2	81.7	82.5	* 95.3	109	104	109	511	310	241	220
21	85.5	* 83.9	82.1	82.5	94.4	98.3	102	108	463	302	239	221
22	85.8	* 90.2	82.2	82.5	94.1	96.9	100	107	* 419	295	237	223
23	85.9	* 83.6	81.1	82.5	93.6	97.1	99.0	107	394	291	235	223
24	86.5	* 82.9	80.5	82.9	92.7	145	98.4	106	369	287	233	225
25	87.1	* 82.6	79.9	82.9	92.1	152	98.0	104	351	284	234	226
26	86.2	* 82.3	79.6	82.9	91.2	126	97.5	103	333	281	232	226
27	86.3	* 81.9	79.7	83.2	90.4	118	97.0	102	* 377	278	232	226
28	85.5	* 81.6	79.7	83.2	89.2	115	96.1	102	* 471	274	229	225
29	84.6		79.8	85.8	88.6	107	95.6	101	* 457	278	227	226
30	84.5		79.1	76.6	89.7	106	95.6	100	* 423	276	227	228
31	83.1		78.6		90.5		95.1	99.0		275		230
Sum	2,682.5	2,337.6	2,517.4	2,428.8	2,580.7	2,931.7	3,741.2	3,063.7	* 9,875.8	* 10,952	7,455	6,926

Month	Current Year 1958 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 Mar. 1929-1958 Acre-Feet * Average	Maximum	Minimum
Jan.	1.04	.89	4	88.5	31	82.0	86.5	5,320	7,597	19,620	4,450
Feb.		.85	22	Ø* 90.2	1	81.4	83.5	4,640	6,768	17,030	3,860
Mar.	.91	.86	14	83.5	31	78.6	81.2	4,990	7,390	17,770	4,340
Apr.	.99	.86	29	85.8	30	76.6	81.0	4,820	7,229	16,580	4,820
May	1.69	.95	19	116	† 3	75.4	83.2	5,120	7,948	16,840	* 4,870
June	2.29	1.16	25	163	16	79.4	97.7	5,820	7,939	16,040	* 4,470
July	3.07	1.48	6	267	31	94.2	121	7,420	8,374	16,460	* 4,500
Aug.	1.72	1.41	20	110	†10	89.6	98.8	6,080	8,039	15,840	4,840
Sept.	5.81	1.52	14	916	6	91.7	*329	* 19,600	9,019	25,000	* 5,120
Oct.	6.85	2.75	10	* 1,200	†27	274	*353	* 21,700	9,316	* 25,870	4,820
Nov.	2.76	2.30	1	275	29	226	248	14,800	8,367	21,850	4,540
Dec.	2.30	2.05	31	230	†14	218	223	13,700	8,178	20,470	4,500
Yearly	6.85	.85		* 1,200		75.4	*157	*114,010	96,164	192,840	* 60,320

[u] Estimated * Partly estimated † And other days Ø Mean daily

UPPER DEVILS RIVER STATION

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, on rock ledge about 50 feet above river bed, located 26.4 river miles upstream from U. S. 90 Highway bridge and 30.9 river miles above the confluence with the Rio Grande. This confluence is 680.1 river miles below the American Dam at El Paso, Texas. The sea level elevation of the zero of the gage is undetermined.

RECORDS: Based on 6 meter measurements during the year by wading and a continuous record of gage heights. Computations by shifting channel methods. Records available: August 7, 1954 through January 31, 1958. For additional records, see "Devils River near Mouth," page 23 in this bulletin.

REMARKS: This station is located above slack water from the proposed Diablo Reservoir on the Rio Grande. The June 1954 flood reached a gage height of 35.9 feet at this station.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	* 252											
2	* 250											
3	* 246											
4	* 262											
5	* 272											
6	* 261											
7	* 258											
8	* 256											
9	* 256											
10	253											
11	248											
12	249											
13	249											
14	249											
15	247											
16	248											
17	245											
18	245											
19	248											
20	262											
21	254											
22	* 246											
23	* 261											
24	* 255											
25	* 252											
26	* 251											
27	* 247											
28	* 245											
29	* 244											
30	* 243											
31	* 242											
Sum	*7,796											

Month	Current Year 1958 — Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet High Day	High	Extreme Second-Feet Low Day	Low	Average Second-Feet	Total Acre-Feet	Period # Sept. 1954-Jan. 1958 — Acre-Feet * Average	Maximum	Minimum
Jan.			5	Ø 272	31	Ø 242	* 251	* 15,500	11,467	* 15,500	* 8,700
Feb.									6,100	8,130	3,040
Mar.									5,910	7,590	3,580
Apr.									9,940	* 18,100	* 5,440
May									6,120	* 8,030	4,210
June									23,757	ᵁ 62,300	3,940
July									13,227	ᵁ 19,100	3,280
Aug.									10,710	* 18,300	3,130
Sept.									34,895	ᵁ 105,000	3,180
Oct.									22,160	* 57,500	3,340
Nov.									10,975	* 18,700	3,210
Dec.									9,908	* 16,600	* 3,220
Yearly									165,169	* 210,260	* 55,340

ᵁ Estimated * Partly estimated Ø Mean daily # Some months missing

DEVILS RIVER NEAR MOUTH

DESCRIPTION: Water-stage recorder and rock and concrete low-flow station control, located 3.7 river miles downstream from U. S. 90 Highway bridge and .8 mile above the confluence with the Rio Grande. This confluence is 680.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 911.00 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 19 meter measurements by wading during the year, a continuous record of gage heights, and a stable rating curve for discharges up to 600 second-feet; above 600 second-feet and when affected by backwater from the Rio Grande, records are based on discharges at a station 3.7 miles upstream. Records available: August 1954 through December 1958. Records are also available from May 1900 to March 1914 for a point .9 mile upstream; from December 1923 to September 1, 1932 for a site 1.9 miles upstream; and from September 2, 1932 through August 31, 1957, for a station 3.7 miles upstream. A graph of Devils River flow from 1871 through 1939 may be found in Water Bulletin No. 9. For additional records see Upper Devils River on page 21 of this bulletin.

REMARKS: The monthly flow of this spring-fed stream is not modified, but the daily flow is modified by two power dams, with a combined hydroelectric generating capacity of 3,100 kva, the operation of which began in 1929. During the flood of June 1954, the peak flow of Devils River, affected by backwater from the Rio Grande, reached an elevation of 969.00 feet at the steam electric plant, located approximately 2,000 feet upstream from this station. On September 28, 1958, backwater from the Rio Grande reached a gage height of 11.86 feet at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. * 86,500 second-feet on September 24, 1955, with a gage height of 21.02 feet. Min. 51.9 second-feet on February 7, 1957, with a gage height of .70 foot. Extreme flow data for Devils River prior to 1954 may be found in previous water bulletins.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	483	457	668	517	471	416	* 615	508	512	* 865	803	666
2	508	445	646	491	493	407	* 610	504	526	* 859	773	667
3	512	441	620	505	473	410	* 599	499	523	* 853	767	668
4	561	449	615	488	480	441	* 594	495	541	* 846	761	663
5	631	467	605	515	448	390	* 588	491	519	* 821	750	664
6	589	458	574	494	469	395	* 604	486	537	* 761	738	660
7	512	445	574	504	464	412	* 694	486	550	* 715	738	655
8	502	436	589	503	456	392	* 626	469	546	* 670	733	651
9	502	355	564	498	429	404	* 604	469	* 555	* 637	727	668
10	506	458	579	484	466	376	* 588	456	834	3,820	721	664
11	496	467	559	500	442	413	* 578	422	659	2,280	715	643
12	504	445	579	486	445	410	* 573	471	643	* 1,084	710	655
13	498	436	574	493	986	395	* 567	478	621	* 929	704	678
14	497	467	521	500	584	397	558	484	611	* 884	704	635
15	488	444	481	482	492	418	553	505	* 775	* 878	698	642
16	488	438	494	494	* 545	2,080	553	507	* 1,270	* 871	698	659
17	487	449	554	512	491	20,000	548	519	* 1,060	865	698	665
18	486	460	539	515	567	24,400	544	516	871	834	659	666
19	469	460	574	507	532	2,580	544	531	761	815	659	667
20	500	370	526	497	479	1,320	544	532	1,210	809	670	674
21	490	518	526	495	494	945	544	528	1,150	815	676	658
22	480	741	510	436	463	851	544	525	13,870	815	676	659
23	553	2,680	528	492	462	1,000	544	526	3,890	821	676	666
24	538	2,840	520	459	457	965	544	540	1,120	821	676	672
25	577	1,190	530	458	449	776	548	532	917	803	676	662
26	482	898	515	462	422	706	473	533	840	803	682	669
27	527	750	502	461	502	654	517	539	* 910	785	654	670
28	509	689	523	457	459	643	495	535	* 865	821	687	665
29	479		487	477	449	626	517	536	* 865	904	643	677
30	470		500	469	445	610	548	537	* 871	846	659	695
31	483		495		420		513	529		797		658
Sum	15,807	19,153	17,071	14,651	15,234	64,232	17,471	15,688	39,422	*30,127	21,131	20,561

Current Year 1958									Period Aug. 1954-1958		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day	High	Day	Low					
Jan.	2.52	2.06	5	663	31	431	510	31,400	* 20,375	31,400	9,700
Feb.	4.90	1.75	24	3,460	9	310	684	38,000	20,138	38,000	8,950
Mar.	2.57	2.06	1	678	15	433	551	33,900	19,200	33,900	10,400
Apr.	2.36	1.48	17	572	22	235	488	29,100	* 21,700	* 30,000	12,600
May	5.00	1.44	13	3,500	26	216	491	30,200	* 101,750	¤ 347,000	11,500
June	19.10	1.27	17	82,000	8	181	2,140	127,000	56,575	127,000	10,100
July	2.82	1.72	7	740	30	250	564	34,700	25,552	34,700	9,710
Aug.	2.44	1.49	31	565	11	176	506	31,100	24,952	32,100	9,760
Sept.		2.20	22	31,100	3	463	1,310	78,200	* 52,830	* 118,000	9,650
Oct.			10	12,600	9	*Ø 637	* 972	* 59,800	* 40,760	73,400	* 13,600
Nov.	3.02	2.58	1	896	29	637	704	41,900	26,740	41,900	10,000
Dec.	2.73	2.28	29	750	8	506	663	40,800	25,616	40,800	9,980
Yearly	19.10	1.27		82,000		176	800	576,100	* 436,188	* 718,350	145,600

¤ Estimated * Partly estimated Ø Mean daily

RIO GRANDE BELOW DIABLO DAM SITE

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, and cable with stand-up cable car equipped for winch and heavy weights, located 10.5 river miles above the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, 2.9 river miles below the confluence of the Devils River, and 683.0 river miles below the American Dam at El Paso, Texas. The zero of the gage is 893.79 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 77 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: September 1, 1954 through December 31, 1958. Records are also available from May 1900 to April 1915 for a station 1.9 miles upstream; from December 1919 to March 1920 for a station 1.6 miles downstream near McKee's Switch; from December 1923 to July 2, 1941 for a station approximately 10.3 miles downstream and from July 2, 1941 through August 1954 for the station at the international highway bridge 10.5 miles downstream.

REMARKS: Reservoirs, diversions, and drainage and power plant returns modify the river flow at this station.

EXTREME FLOWS FROM RECORDS: The flood of June 1954 reached a peak gage height of 55.72 feet and a maximum discharge of 1,158,000 second-feet, determined by slope-area computation. This is the greatest rate of discharge recorded at any point on the Rio Grande and is equivalent to a discharge of 133 second-feet per square mile from the 8,718 square mile flood-producing storm area, which included the watersheds of the Pecos River below Sheffield, the Devils River, and the Rio Grande beginning above Osman Canyon near Langtry, except that in Mexico it included only 543 square miles of watershed.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,460	1,420	1,770	1,200	1,090	1,110	1,580	3,520	1,550	43,700	9,980	2,890
2	1,430	1,410	1,780	1,140	1,130	1,090	1,500	* 2,730	1,540	44,300	9,090	2,970
3	1,440	1,410	1,740	1,140	1,110	1,060	1,380	ᵘ 1,920	1,500	42,100	7,940	3,010
4	1,500	1,400	1,680	1,120	1,100	1,090	1,320	* 1,630	1,450	45,700	7,060	3,030
5	1,590	1,430	1,610	1,160	1,060	1,100	1,340	1,590	1,330	50,200	6,500	3,020
6	1,580	*1,380	1,530	1,090	1,030	1,210	1,490	1,500	1,350	51,600	6,010	3,020
7	1,480	*1,360	1,490	1,100	1,020	1,160	3,480	1,360	1,390	50,500	5,600	2,940
8	1,460	*1,320	1,480	1,110	1,040	1,230	3,770	1,280	3,160	39,500	5,130	2,830
9	1,430	*1,300	1,430	1,110	974	1,520	2,240	1,240	21,300	31,400	5,110	2,700
10	1,430	1,350	1,450	1,080	1,020	1,320	1,750	1,220	8,610	37,800	4,800	2,730
11	1,410	1,410	1,460	1,120	1,020	1,280	1,600	1,140	3,580	32,400	4,510	2,710
12	1,450	1,370	1,460	1,110	998	1,210	1,570	1,200	2,630	28,300	4,360	2,700
13	1,470	1,360	1,450	1,110	4,770	1,110	1,430	1,230	3,820	24,800	4,360	2,740
14	1,480	1,380	1,410	1,130	6,890	1,110	1,340	1,190	6,010	17,500	4,300	2,670
15	1,480	1,360	1,340	1,110	3,970	1,140	1,270	1,340	23,900	15,500	4,180	2,620
16	1,460	1,330	1,350	1,130	2,520	2,820	1,230	2,080	23,800	13,200	3,950	2,610
17	1,450	1,340	1,410	1,150	2,210	12,300	1,200	2,100	18,700	13,700	*3,870	2,630
18	1,450	1,350	1,390	1,140	1,940	29,500	1,180	1,760	14,700	12,900	3,800	2,650
19	1,430	1,330	1,370	1,110	1,710	5,660	1,190	1,630	13,600	12,000	3,760	2,630
20	1,500	1,240	1,330	1,150	2,350	3,610	1,490	1,850	12,200	10,300	3,720	2,580
21	1,480	1,380	1,310	1,090	2,930	2,850	1,570	1,400	11,600	9,340	3,700	2,620
22	1,470	1,600	1,280	1,050	1,920	2,610	1,510	1,480	25,600	10,600	3,630	2,570
23	1,560	4,180	1,300	1,110	1,660	3,330	1,480	1,360	19,700	13,300	3,520	2,500
24	1,600	4,620	1,310	1,080	1,560	4,290	1,370	1,390	8,720	13,000	3,450	2,520
25	1,640	2,790	1,340	1,090	1,560	3,010	1,390	1,390	8,250	10,900	3,450	2,520
26	1,570	2,070	1,320	1,070	1,500	2,430	1,160	2,090	9,060	9,640	3,420	2,530
27	1,600	1,820	1,250	1,070	1,600	1,940	1,230	2,100	14,900	10,100	3,280	2,580
28	1,560	1,740	1,270	1,060	1,400	1,750	1,150	1,680	48,100	10,500	3,180	2,560
29	1,480		1,220	1,100	* 1,190	1,690	1,170	1,750	25,000	15,800	3,130	2,510
30	1,450		1,220	1,110	1,180	1,590	1,100	1,780	45,700	15,100	2,970	2,570
31	1,430		1,230		1,140		2,990	1,640		14,100		2,530
Sum	46,220	47,450	43,980	33,340	56,592	97,120	49,470	51,570	382,750	749,780	141,760	83,690

Month	Current Year 1958 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 Sept. 1954-1958 Acre-Feet Average	Maximum	Minimum
Jan.	2.03	1.85	25	1,670	† 2	1,400	1,490	91,700	80,300	91,700	66,100
Feb.	4.08	1.67	24	6,050	20	1,180	1,690	94,100	79,350	94,100	71,000
Mar.	2.07	1.70	2	1,790	†27	1,180	1,420	87,200	72,950	87,200	66,800
Apr.	1.76	1.38	5	1,280	22	816	1,110	66,100	* 95,900	* 208,000	54,100
May	8.36	1.36	13	19,100	9	817	1,830	112,000	* 283,925	* 812,000	60,700
June	17.90	1.36	17	64,100	8	846	3,240	193,000	155,700	248,000	56,800
July	4.37	1.38	7	6,810	†30	832	1,600	98,100	107,025	183,000	46,000
Aug.	3.34	1.36	1	3,980	11	871	1,660	102,000	141,875	279,000	67,500
Sept.	18.10	1.66	28	73,900	† 5	1,250	12,800	759,000	* 300,580	759,000	71,900
Oct.	15.92	5.26	7	54,900	27	8,820	24,200	1,487,000	442,800	1,487,000	135,000
Nov.	6.23	3.02	1	11,100	30	2,920	4,730	281,000	130,820	281,000	68,200
Dec.	3.13	2.69	4	3,100	23	2,450	2,700	166,000	100,260	166,000	65,200
Yearly	18.10	1.36		73,900		816	4,890	3,537,200	*1,991,485	3,537,200	858,900

ᵘ Estimated * Partly estimated † And other days

ARROYO LAS VACAS NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Water-stage recorder and cable with sit-down cable car, and control wall with notch opening capacity of 777 second-feet, located 1.5 miles upstream from Cd. Acuña, Coahuila and 1.8 miles upstream from the confluence of Arroyo las Vacas with the Rio Grande. This confluence is just above the Del Rio-Cd. Acuña International Bridge, and 693.5 river miles below the American Dam at El Paso, Texas. The zero of the gage is 885.82 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 91 meter measurements during the year, a stable rating curve up to 777 second-feet, and a continuous record of gage heights. Computations by shifting channel methods for flows above notch capacity. Records available: Occasional estimates from June 1935 to March 19, 1938 and continuous records from March 20, 1938 through December 1958.

REMARKS: The low flow of this stream is from springs and is modified by irrigation diversions upstream. The reinforced concrete control wall, 52 feet downstream from the recorder, was built in January 1955 and the zero of the gage was changed to coincide with the notch elevation. On June 28, 1954 backwater from the Rio Grande reached an elevation of 902.49 feet at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 25,780 second-feet with a gage height of 16.14 feet on September 30, 1954. Min. no flow on several occasions September and December 1956, and January 1957.

Average Flow in Second-Feet ‡

Daily:	Max.	4,030	Apr. 28, 1957	Min.	0	Several days Dec. 1956 & Jan. 1957
Monthly:	Max.	279	Apr. 1957	Min.	.4	Several months 1952, 1953 & 1954
Yearly:	Max.	44.1	1954	Min.	2.8	1952

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.6	6.7	10.6	6.7	6.7	6.7	6.7	3.5	3.5	19.4	19.4	19.4
2	3.6	6.7	10.6	6.7	114	3.5	6.7	3.5	3.5	14.8	19.4	19.4
3	3.6	6.7	6.7	3.5	38.5	6.7	6.7	3.5	3.5	14.8	19.4	19.4
4	10.6	3.5	6.7	3.5	6.7	6.7	6.7	3.5	3.5	14.8	19.4	14.8
5	10.6	3.5	6.7	3.5	6.7	6.7	6.7	3.5	3.5	10.6	19.4	19.4
6	10.6	3.6	6.7	3.5	3.5	6.7	13.4	3.5	3.5	10.6	19.4	14.8
7	3.5	3.5	6.7	6.7	3.5	6.7	284	3.5	3.5	10.6	19.4	14.8
8	3.5	3.6	3.5	6.7	3.5	3.5	14.8	3.5	3.5	10.6	19.4	14.8
9	3.5	3.5	6.7	6.7	3.5	6.7	10.6	3.5	3.5	10.6	19.4	14.8
10	3.5	3.6	6.7	6.7	3.5	6.7	10.6	3.5	3.5	78.4	19.4	14.8
11	3.5	3.5	10.6	6.7	3.5	6.7	10.6	6.7	3.5	35.1	19.4	14.8
12	3.5	3.5	6.7	6.7	3.5	3.5	6.7	3.5	3.5	19.4	19.4	10.6
13	1.4	6.7	10.6	6.7	3,920	6.7	6.7	3.5	3.5	14.8	19.4	10.6
14	1.4	3.5	6.7	3.5	127	3.5	6.7	3.5	3.5	14.8	19.4	10.6
15	3.5	3.5	6.7	3.6	41.7	6.7	6.7	3.5	10.6	99.6	19.4	10.6
16	3.5	3.6	6.7	3.6	24.4	6.7	6.7	3.5	410	76.3	19.4	10.6
17	3.5	3.6	6.7	3.6	19.4	13.1	6.7	3.5	788	29.7	19.4	10.6
18	3.5	3.6	6.7	3.6	14.8	646	6.7	3.5	68.9	19.4	14.8	10.6
19	3.5	3.6	6.7	3.5	73.8	35.7	6.7	3.5	671	14.8	14.8	10.6
20	3.5	3.5	6.7	3.5	35.7	14.8	6.7	3.5	445	14.8	19.4	10.6
21	3.5	18.7	6.7	3.5	14.8	10.6	6.7	3.5	29.7	14.8	19.4	10.6
22	3.5	38.5	6.7	3.5	10.6	10.6	6.7	3.5	19.4	14.8	14.8	10.6
23	26.8	10.6	6.7	3.5	10.6	205	6.7	3.5	14.8	14.8	14.8	10.6
24	19.4	10.6	6.7	3.5	10.6	278	6.7	3.5	10.6	14.8	19.4	10.6
25	10.6	6.7	6.7	3.5	10.6	24.4	6.7	3.5	10.6	10.6	19.4	10.6
26	6.7	3.5	6.7	3.5	10.6	14.8	6.7	6.7	10.6	10.6	19.4	10.6
27	6.7	3.5	6.7	3.5	10.6	10.6	6.7	3.5	10.6	14.8	14.8	10.6
28	6.7	6.7	6.7	3.5	10.6	10.6	6.7	3.5	470	29.7	19.4	10.6
29	6.7		6.7	3.5	10.6	10.6	6.7	3.5	287	48.0	14.8	10.6
30	6.7		6.7	6.7	10.6	6.7	6.7	3.5	41.7	29.7	14.8	10.6
31	6.7		3.5		10.6		6.7	6.7		19.4		10.6
Sum	191.4	182.3	216.9	137.4	4,574.7	1,385.9	511.5	118.1	3,347.5	755.9	549.8	393.2

Month	Current Year 1958								Period 1938-1958		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	.69	.03	23	139	†13	1.4	6.2	380	337	910	31.5
Feb.	.62	.03	22	117	† 6	1.4	6.5	362	586	5,950	33.3
Mar.	.13	.07	† 1	10.6	† 3	3.5	7.0	430	736	2,600	59.3
Apr.	.10	.07	† 1	6.7	† 5	3.5	4.6	273	1,682	16.610	75.4
May	14.44	.07	13	22,180	† 6	3.5	148	9,080	1,835	9,080	90.0
June	3.44	.07	18	2,250	† 2	3.5	46.2	2,750	1,362	12,290	43.8
July	3.94	.07	7	2,840	31	3.5	16.5	1,010	1,243	8,230	26.8
Aug.	.20	.07	26	19.4	† 1	3.5	3.8	236	716	3,850	42.2
Sept.	5.18	.07	19	4,410	† 1	3.5	112	6,640	1,750	6,850	37.3
Oct.	1.15	.10	1	333	9	6.7	24.4	1,510	1,327	9,390	22.6
Nov.	.20	.13	† 1	19.4	17	10.6	18.3	1,090	349	1,670	21.0
Dec.	.20	.10	† 1	19.4	†30	6.7	12.7	780	296	780	22.0
Yearly	14.44	.03		22,180		1.4	33.9	24,541	12,219	31,995.7	2,066.7

Estimated † And other days ‡ Period 1938-1958

SAN FELIPE CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, and cable with stand-up cable car equipped for winch and heavy weights, at Silos Farm Road bridge 1.75 miles south of Del Rio, Texas and 2 miles above the confluence with the Rio Grande. This stream enters the Rio Grande 695.1 river miles below the American Dam at El Paso, Texas and 12.1 river miles below the gaging station on the Rio Grande below Diablo Dam site. The zero of the gage is 877.43 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 41 meter measurements during the year, and a continuous record of gage heights. Computations by shifting channel methods. Records available: September 1, 1931 through December 1958.

REMARKS: Municipal diversions at Del Rio and irrigation diversions greatly modify the flow of this spring-fed creek at this station. Backwater from the Rio Grande reaches this station when the Rio Grande near Del Rio reaches a stage of 15 feet, or a flow of about 60,000 second-feet. On June 28, 1954 combined creek flow and backwater from the Rio Grande reached a stage of 24.51, the highest of record, at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 45,000 second-feet on June 14, 1935, with a gage height of 23.20 feet. Min. .4 second-foot on July 20, 1953.

Average Flow in Second-Feet

Daily:	Max.	¤ 16,200	June 14, 1935	Min.	1.5	July 21, 1953
Monthly:	Max.	* 805	June 1935	Min.	4.6	July 1953
Yearly:	Max.	* 136	1935	Min.	25.1	1953

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	83.9	71.2	81.6	73.1	61.7	68.1	68.2	64.8	64.1	106	106	108
2	83.8	65.2	81.8	70.8	195	66.6	69.2	62.6	60.6	107	102	107
3	84.9	75.1	82.1	70.7	104	65.0	69.2	63.6	60.1	109	102	108
4	117	81.0	82.4	70.2	72.8	64.7	71.0	61.3	63.4	109	99.8	107
5	119	78.0	81.4	70.8	73.2	65.4	71.8	64.2	65.6	110	99.4	105
6	88.1	75.2	92.7	69.1	71.4	71.2	79.6	65.1	72.4	108	99.0	100
7	87.9	76.0	84.5	78.9	70.6	77.2	113	69.2	81.7	109	101	102
8	87.8	74.2	83.4	78.3	70.0	94.4	102	72.5	94.4	107	101	100
9	87.6	75.7	83.7	64.3	76.2	96.4	99.2	75.8	95.6	109	103	102
10	88.7	73.8	84.0	68.8	75.5	82.3	98.9	81.6	98.2	115	110	101
11	87.2	72.0	81.7	75.6	69.1	68.4	90.9	98.5	92.9	114	115	103
12	87.0	71.3	83.3	77.9	73.0	74.0	88.4	78.9	91.5	111	116	104
13	84.4	71.6	83.3	79.3	2,160	69.7	92.2	78.8	91.3	113	116	106
14	84.2	72.1	84.4	72.4	100	58.0	88.4	81.2	87.3	123	114	105
15	82.7	73.6	78.5	61.6	128	50.6	75.1	74.0	117	164	115	104
16	82.5	76.5	71.6	62.6	98.5	49.5	67.4	72.8	245	120	116	103
17	82.3	78.2	72.7	59.6	116	148	66.4	64.9	97.6	112	113	100
18	82.1	77.3	81.8	58.5	121	507	65.6	63.8	93.5	111	116	102
19	82.0	79.0	86.8	58.5	104	89.9	64.8	61.7	297	112	112	104
20	84.4	81.9	85.5	63.6	96.3	82.8	68.0	61.6	320	113	108	102
21	84.2	106	83.0	70.0	95.6	91.8	71.4	65.6	112	112	102	103
22	84.6	128	82.9	67.6	94.8	97.4	69.5	70.3	109	113	107	98.9
23	125	78.1	86.6	64.4	91.0	89.4	69.7	73.0	106	114	107	100
24	93.4	76.1	85.3	65.2	83.5	90.2	70.5	78.0	103	112	107	104
25	85.8	76.5	82.8	65.9	82.3	91.0	72.6	79.4	100	112	107	106
26	84.9	76.9	81.4	61.5	81.0	91.9	72.4	76.3	101	114	105	106
27	85.3	76.1	80.2	60.2	79.8	94.1	75.6	79.0	103	112	110	105
28	82.1	78.8	85.1	57.8	81.1	92.9	72.0	84.7	104	128	109	105
29	82.8		79.0	61.6	82.5	91.6	72.9	79.1	102	128	109	104
30	81.0		77.8	63.4	84.7	82.7	72.7	76.3	103	112	108	107
31	79.2		74.3		83.2		68.1	72.4		112		104
Sum	2,735.8	2,195.4	2,545.6	2,022.2	4,875.8	2,862.2	2,396.7	2,251.0	3,332.2	3,551	3,235.2	3,215.9

Month	Current Year 1958 Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet High Day	High	Extreme Second-Feet Low Day	Low	Average Second-Feet	Total Acre-Feet	Period Sept. 1931-1958 Acre-Feet Average	Maximum	Minimum
Jan.	2.31	1.47	4	200	28	72.4	88.3	5,430	3,705	7,070	934
Feb.	2.47	1.34	22	232	1	55.9	78.4	4,350	2,839	8,630	487
Mar.	2.15	1.37	6	174	18	67.3	82.1	5,050	2,508	5,030	* 689
Apr.	1.57	1.23	8	87.2	17	50.1	67.4	4,010	3,011	10,400	566
May	13.00	1.33	13	9,760	1	57.6	157	9,670	4,568	17,600	739
June	5.80	1.25	18	1,543	15	42.9	95.4	5,680	5,184	* 47,900	301
July	2.50	1.28	7	243	31	57.0	77.3	4,750	3,168	* 8,800	285
Aug.	2.37	1.25	11	214	20	51.8	72.6	4,460	2,872	6,060	350
Sept.	6.71	1.28	19	2,140	3	53.1	111	6,610	4,174	19,100	872
Oct.	2.44	1.69	15	227	4	100	115	7,040	4,067	8,470	1,000
Nov.	1.80	1.63	13	121	6	94.8	108	6,420	3,164	6,420	526
Dec.	1.77	1.60	4	112	23	93.1	104	6,380	3,173	6,380	496
Yearly	13.00	1.23		9,760		42.9	96.5	69,850	42,433	* 98,137	18,201

¤ Estimated * Partly estimated

RIO GRANDE BELOW MAVERICK DAM

DESCRIPTION: Water-stage recorder located 4.7 miles below the Maverick Irrigation District diversion dam, 30.0 miles above the Maverick Hydro Plant and 716.7 river miles below the American Dam at El Paso, Texas. The zero of the gage is at 804.79 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 75 meter measurements, by wading, during the year, 35 by the Mexican and 40 by the United States Section of this Commission. Computation by shifting channel methods. There are no facilities for measuring high flows at this station. Records available: January 1, 1956 through December 31, 1958.

REMARKS: This station was placed in operation on November 26, 1955. Irrigation diversions 5.9 miles upstream largely control the flow at this station.

EXTREME FLOWS FROM RECORDS: Maximum flow not recorded. Min. 2.8 second-feet several days in June, July and August 1956.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	378	378	614	291	84.8	114	448	1,920	427			1,830
2	378	335	586	291	209	103	487	1,650	360			1,830
3	360	335	586	270	537	103	431	989	410			1,880
4	431	335	516	291	148	103	347	622	396			1,930
5	600	360	484	270	114	103	295	427	328			1,880
6	537	360	590	198	84.8	170	270	427	247			1,880
7	470	335	622	187	84.8	159		328	279			1,880
8	413	314	424	187	84.8	114	1,820	247	345			1,740
9	395	275	367	187	84.8	257	1,430	154				1,660
10	395	256	341	166	84.8	284	795	114				1,610
11	396	360	341	137	84.8	204	572	170				1,610
12	396	314	341	120	93.6	182	509	103				1,570
13	431	295	341	120		148	448	103				1,570
14	413	295	318	137		114	378	125				1,530
15	413	295	249	120		114	347	125				1,480
16	413	256	230	120	1,760		247	512			2,990	1,480
17	396	256	318	120	1,760		207	848			2,890	1,480
18	396	275	341	137	1,250		154	770			2,780	1,480
19	396	275	396	137	879		138	558			2,660	1,480
20	378	275	424	137	1,020	2,280	226	537			2,540	1,480
21	413	335	367	147	1,840	1,550	466	491			2,540	1,480
22	396	558	367	120	1,250	1,220	466	328			2,420	1,480
23	448		367	111	756	1,440	509	328			2,360	1,390
24	579		396	102	569	2,550	364	262			2,260	1,390
25	512	1,660	424	94.3	501	1,920	364	295			2,260	1,390
26	491	908	396	87.2	403	1,250	270	470			2,210	1,360
27	431	667	367	87.2	420	918	154	961			2,160	1,440
28	470	579	341	87.2	480	696	226	720			2,070	1,440
29	413		367	87.2	271	572	138	558			2,020	1,360
30	396		318	87.2	193	551	138	696			1,930	1,320
31	378		318		148		682	600				1,360
Sum	13,312		12,457	4,633.3				16,438				48,690

Month	Current Year 1958						Period #1950-1958			
	Extreme Gage Feet		Extreme Second-Feet			Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low			Average	Maximum	Minimum
	High	Low	Day		Day					
Jan.	1.94	1.48	24	646	† 3	360	429	26,400	18,327	26,400	7,570
Feb.	4.17	1.21	24		21	204			24,820		
Mar.	2.89	1.35	6	1,440	15	210	402	24,700	16,423	24,700	11,420
Apr.	1.54	.92	2	341	† 27	84.8	154	9,190	5,835		
May		.92			† 1	84.8					
June	14.83	.98	18		† 2	103					
July	5.09	.98	7		31	103			18,980		
Aug.	3.67	.95	1	2,420	12	94.3	530	32,600	30,863	46,770	13,220
Sept.	15.03	1.18	29		6	188			31,710		
Oct.	14.86	5.64	7		27						
Nov.	6.76	2.99	1		30	1,880			32,215		
Dec.	3.02	2.53	4	1,930	31	1,290	1,570	96,660	46,193	96,660	9,910
Yearly											

† And other days # Some months missing

PINTO CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, on top of a ledge 45 feet above the creek bed, a solid rock and concrete station control, and a cable with stand-up cable car equipped for winch and heavy weights, located 1.6 miles above the confluence with the Rio Grande. This creek enters the Rio Grande 718.1 river miles below the American Dam at El Paso, Texas. The zero of the gage is 813.68 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 53 meter measurements during the year and a continuous record of gage heights. Records available: September 1955 through December 1958 at this station and November 22, 1928 through August 1955 at a site 3.9 miles upstream.

REMARKS: Small irrigation diversions modify the flow of this spring-fed creek at this station. When flow in the Rio Grande at the confluence of this creek exceeds about 80,000 second-feet, backwater may reach this station. Backwater from the Rio Grande flood of June 1954 reached a gage height of 28.8 feet, or an elevation of 842.50 at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 186,000 second-feet on June 24, 1948 with a gage height of 32.0 feet. Min. frequently no flow.

Average Flow in Second-Feet

Daily:	Max.	* 28,200	June 24, 1948	Min.	0	Frequently
Monthly:	Max.	* 953	June 1948	Min.	0	Frequently
Yearly:	Max.	105	1932	Min.	1.8	1945

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	13.3	14.2	18.1	18.1	17.5	16.8	42.4	25.4	21.5	36.1	43.4	39.1
2	13.1	14.2	17.8	18.6	173	15.8	41.3	25.1	21.2	36.1	42.4	39.1
3	12.9	14.2	17.8	19.2	165	15.5	41.3	25.1	21.2	34.6	41.3	39.1
4	19.6	14.2	17.2	19.5	30.8	15.0	40.2	25.1	21.2	35.1	40.2	38.0
5	56.5	14.4	17.8	18.1	22.4	14.6	39.1	24.8	21.2	36.1	40.2	39.1
6	43.6	14.8	134	17.2	20.3	14.4	39.1	23.9	22.7	36.6	41.3	39.1
7	25.2	14.4	216	17.5	19.2	14.0	228	23.6	26.3	36.6	40.2	40.2
8	18.6	14.2	45.9	17.5	18.6	13.3	54.3	23.9	36.2	36.6	40.2	40.2
9	16.8	14.2	26.3	18.1	18.3	13.1	43.4	23.9	29.1	36.6	40.2	40.2
10	16.5	14.4	23.6	17.5	18.6	12.9	39.1	22.7	26.0	36.6	40.2	40.2
11	16.0	14.8	22.4	17.5	18.1	12.7	37.0	41.6	24.5	36.6	40.2	40.2
12	15.5	17.2	22.1	17.5	17.2	11.7	37.0	33.7	26.7	36.6	40.2	41.3
13	15.0	15.8	21.8	18.1	1,970	11.3	36.6	27.5	26.0	36.1	39.1	41.3
14	15.0	15.0	21.8	18.6	288	11.3	35.6	26.3	25.7	36.6	39.1	41.3
15	14.8	14.4	21.8	18.6	77.6	11.3	34.2	25.4	25.7	43.4	38.0	41.3
16	14.8	14.2	21.5	18.3	50.6	128	32.8	24.8	126	48.9	38.0	41.3
17	14.8	14.0	21.8	18.3	47.1	4,640	32.4	24.5	55.9	40.2	40.2	40.2
18	14.6	13.7	23.0	20.3	40.4	5,840	32.1	24.2	32.4	39.1	40.2	40.2
19	14.4	13.7	23.9	17.8	38.9	814	31.3	23.3	38.2	37.5	39.1	40.2
20	15.2	14.0	22.7	17.5	27.0	155	31.3	20.9	399	36.6	39.1	40.2
21	15.0	17.4	21.2	16.8	25.1	97.9	30.9	20.6	112	36.6	39.1	40.2
22	14.8	128	20.3	16.8	23.6	80.4	30.5	21.8	65.5	36.6	38.0	40.2
23	25.5	74.0	20.0	16.5	22.7	70.4	30.5	22.1	68.7	36.6	39.1	40.2
24	33.0	30.4	19.7	16.0	21.8	65.5	30.5	22.4	46.7	36.6	39.1	40.2
25	20.6	23.3	20.9	15.2	21.2	59.6	29.4	22.4	39.1	36.6	39.1	40.2
26	17.8	20.9	20.9	15.2	20.9	52.9	28.5	21.8	37.5	36.6	38.0	40.2
27	16.0	18.1	20.9	16.0	20.9	50.2	27.2	21.5	37.0	38.0	37.5	40.2
28	15.5	17.5	20.9	16.8	20.0	48.9	26.9	20.9	36.1	47.8	37.5	40.2
29	14.8		20.9	17.2	19.2	46.7	26.9	20.3	35.6	56.9	37.5	40.2
30	14.8		20.0	17.8	17.8	44.5	26.6	20.3	35.6	52.9	38.0	40.2
31	14.8		19.2		17.2		26.3	20.3		46.7		39.1
Sum	588.8	619.6	982.2	528.1	3,309.0	12,397.7	1,262.7	750.1	1,540.5	1,214.5	1,185.7	1,242.9

Month	Current Year 1958 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 Dec. 1928-1958 Acre-Feet Average	Maximum	Minimum
Jan.	2.26	1.30	5	75.8	3	12.9	19.0	1,170	365	2,110	0
Feb.	3.02	1.34	22	358	†18	13.7	22.1	1,230	531	5,760	0
Mar.	4.61	1.49	6	1,380	4	17.2	31.7	1,950	470	2,500	0
Apr.	1.64	1.41	18	21.5	†25	15.2	17.6	1,050	1,489	27,100	0
May	9.52	1.48	13	14,100	†13	17.0	107	6,560	3,015	29,400	0
June	11.00	1.20	17	20,100	13	10.9	413	24,600	4,822	* 56,700	0
July	4.92	1.78	7	1,700	31	25.7	40.7	2,500	2,153	30,000	0
Aug.	2.36	1.55	11	72.0	21	18.9	24.2	1,490	1,983	48,700	0
Sept.	4.33	1.63	20	1,130	† 3	21.2	51.4	3,060	1,770	17,300	0
Oct.	2.26	2.03	†28	56.9	† 3	34.6	39.2	2,410	1,075	8,940	0
Nov.	2.16	2.08	1	44.5	†27	37.0	39.5	2,350	379	2,350	0
Dec.	2.14	2.10	16	42.4	† 3	38.0	40.1	2,470	445	2,470	0
Yearly	11.00	1.20		20,100		10.9	70.2	50,840	18,497	76,259.3	1,325.2

* Partly estimated † And other days

RIO SAN DIEGO AT JIMENEZ, COAHUILA

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and masonry and concrete Cipoletti weir control for measuring flows up to 706 second-feet, located 4.4 miles west of Jiménez, Coahuila, and 5.0 miles above the confluence with the Rio Grande. This stream enters the Rio Grande 723.0 river miles below the American Dam at El Paso, Texas. The zero of the gage is 831.52 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 16 meter measurements made during the year, the weir discharge table, and a continuous record of gage heights. Records available: 1922 through December 1958. The records from 1922 to September 1932 are considered doubtful.

REMARKS: Reservoirs above and irrigation diversions above and below this station modify the flow of this spring-fed stream. On December 24, 1955, the zero of the gage was raised 2.62 feet to make it coincide with the crest of the weir.

EXTREME FLOWS FROM RECORDS ‡ : Momentary: Max. about 75,200 second-feet on September 18, 1941, with a gage height of 20.96 feet. Min. no flow occurred on several occasions during April, May and June 1939; May and August 1952; and July and August 1953.

Average Flows in Second-Feet

Daily:	Max.	* 23,200	Sept. 18, 1941	Min.	0	Occasionally
Monthly:	Max.	2,380	Oct. 1932	Min.	8.0	July 1956
Yearly:	Max.	527	1935	Min.	24.0	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	32.8	52.3	52.3	42.0	42.0	52.3	63.2	24.0	24.0	1,550	1,140	904
2	32.8	63.2	52.3	42.0	103	52.3	52.3	24.0	16.2	1,290	1,140	883
3	32.8	52.3	63.2	42.0	245	52.3	52.3	32.8	16.2	1,170	1,140	883
4	32.8	52.3	63.2	42.0	114	42.0	42.0	32.8	16.2	1,140	1,170	862
5	52.3	52.3	63.2	32.8	87.2	32.8	42.0	32.8	16.2	1,120	1,170	837
6	52.3	42.0	229	32.8	63.2	32.8	42.0	32.8	24.0	1,090	1,170	816
7	63.2	52.3	209	42.0	63.2	32.8	685	24.0	24.0	1,090	1,140	816
8	63.2	52.3	87.2	42.0	63.2	32.8	74.9	24.0	32.8	1,060	1,140	791
9	63.2	52.3	74.9	42.0	52.3	32.8	52.3	24.0	42.0	1,060	1,120	770
10	63.2	52.3	63.2	52.3	52.3	24.0	52.3	24.0	413	1,140	1,120	770
11	63.2	52.3	63.2	42.0	52.3	16.2	42.0	42.0	388	1,120	1,120	770
12	63.2	63.2	63.2	32.8	52.3	24.0	42.0	32.8	533	1,090	1,120	745
13	52.3	63.2	52.3	24.0	3,880	24.0	42.0	32.8	533	1,060	1,090	724
14	52.3	63.2	52.3	24.0	1,080	24.0	42.0	32.8	509	1,060	1,090	724
15	52.3	63.2	52.3	24.0	325	24.0	42.0	32.8	558	1,230	1,090	724
16	63.2	52.3	52.3	24.0	175	24.0	32.8	24.0	770	1,230	1,060	770
17	63.2	63.2	52.3	24.0	129	111	42.0	24.0	1,060	1,260	1,060	770
18	63.2	63.2	52.3	42.0	114	1,480	42.0	24.0	1,920	1,290	1,060	770
19	63.2	63.2	42.0	42.0	100	175	42.0	24.0	1,230	1,200	1,060	745
20	63.2	63.2	52.3	42.0	87.2	100	42.0	24.0	1,360	1,170	1,060	745
21	63.2	63.2	52.3	42.0	87.2	87.2	32.8	24.0	1,120	1,170	1,060	724
22	52.3	74.9	42.0	24.0	87.2	87.2	42.0	24.0	978	1,170	1,060	667
23	52.3	74.9	42.0	24.0	74.9	52.3	42.0	24.0	950	1,200	1,030	639
24	63.2	63.2	42.0	24.0	74.9	25.4	42.0	24.0	950	1,170	1,030	639
25	63.2	63.2	42.0	32.8	74.9	175	42.0	24.0	929	1,120	1,010	639
26	63.2	52.3	42.0	32.8	74.9	114	32.8	32.8	904	1,120	1,010	639
27	52.3	42.0	42.0	32.8	74.9	100	24.0	24.0	883	1,170	978	639
28	52.3	52.3	42.0	32.8	63.2	87.2	32.8	24.0	10,420	1,170	978	611
29	52.3		42.0	42.0	63.2	87.2	32.8	24.0	3,880	1,200	950	611
30	52.3		42.0	42.0	52.3	74.9	32.8	24.0	2,070	1,170	929	611
31	52.3		42.0		42.0		32.8	24.0		1,140		611
Sum	1,706.8	1,619.8	1,964.3	1,061.9	7,649.8	3,279.5	1,957.9	841.2	32,569.6	36,220	32,295	22,849

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period Oct. 1932-1958 Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	.26	.16	† 6	63.2	† 1	32.8	55.1	3,390	6,375	36,430	1,860
Feb.	.33	.20	22	87.2	† 5	42.0	57.8	3,210	5,077	25,760	1,060
Mar.	1.90	.20	6	1,170	†17	42.0	63.4	3,900	4,909	27,040	1,340
Apr.	.23	.10	†10	52.3	22	16.2	35.4	2,110	6,395	40,270	1,110
May	7.68	.20	13	13,420	† 1	42.0	247	15,190	* 14,824	* 120,200	861
June	4.66	.10	18	5,230	†10	16.2	109	6,510	9,966	62,240	543
July	3.67	.13	7	3,530	†26	24.0	63.2	3,880	8,143	34,430	490
Aug.	.39	.13	11	114	† 1	24.0	27.1	1,670	6,978	32,180	738
Sept.	10.14	.10	28	23,550	† 1	16.2	1,090	64,570	15,165	* 84,620	1,230
Oct.	2.33	1.74	10	1,590	† 9	1,030	1,170	71,830	18,712	146,640	1,720
Nov.	1.90	1.61	† 4	1,170	30	929	1,080	64,060	12,250	68,290	803
Dec.	1.57	1.15	1	904	30	586	737	45,320	8,399	45,320	1,130
Yearly	10.14	.10		23,550		16.2	395	285,640	117,199	* 381,720	17,430

Current Year 1958

* Partly estimated † And other days ‡ Period 1932-1958

RIO SAN RODRIGO NEAR EL MORAL, COAHUILA

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and reinforced concrete control weir for measuring flows 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, Coahuila and 11.2 river miles above the confluence with the Rio Grande. The stream enters the Rio Grande 736.2 river miles below the American Dam at El Paso, Texas. The zero of the gage is 879.95 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 17 meter measurements during the year, the weir discharge table, and a continuous record of gage heights. Records available: 1922 through December 1958. The records from 1922 to 1931 are considered doubtful.

REMARKS: The flow of this spring-fed stream is modified by irrigation diversions above and below this station.

EXTREME FLOWS FROM RECORDS ‡ : Momentary: Max. * 81,200 second-feet on September 7, 1932, with a gage height of 16.08 feet on the original gage (See Water Bulletin No. 16). Min. frequently no flow, which occurs at a gage height of 0.0 feet.

Average Flow in Second-Feet

Daily:	Max.	* 27,900	Sept. 7, 1932	Min.	0	Frequently
Monthly:	Max.	4,270	Sept. 1932	Min.	0	Frequently
Yearly:	Max.	576	1932	Min.	3.2	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.1	4.9	12.0	8.1	2.1	0	12.0	0	0	3,920	1,760	381
2	8.1	4.9	12.0	4.9	2.1	0	12.0	0	0	2,720	1,600	367
3	8.2	8.1	12.0	5.0	2.1	0	12.0	0	0	2,100	1,420	353
4	8.1	8.2	8.1	4.9	4.9	0	12.0	0	0	1,620	1,250	353
5	16.2	8.1	8.1	2.1	4.9	0	8.1	0	0	1,330	1,110	341
6	21.2	8.2	8.1	2.1	2.1	0	8.1	0	0	1,110	1,010	341
7	21.2	8.2	12.0	2.1	2.1	0	8.1	0	31.4	936	946	328
8	16.2	8.1	16.3	4.9	2.1	0	8.1	0	142	865	876	328
9	12.0	8.1	16.3	2.1	0	0	8.1	0	7,100	795	812	328
10	12.0	8.1	12.0	2.1	0	0	4.9	0	5,160	759	777	328
11	12.0	8.1	12.0	2.1	0	0	4.9	81.2	4,480	1,010	745	328
12	12.0	8.1	12.0	2.1	0	0	4.9	4.9	2,680	1,110	727	328
13	8.1	8.1	12.0	4.9	0	0	4.9	2.1	1,730	1,190	692	328
14	8.2	12.0	12.0	2.1	4.9	0	4.9	2.1	1,390	1,190	675	314
15	8.1	12.0	12.0	2.2	4.9	0	4.9	2.1	2,830	1,220	643	314
16	8.1	12.0	12.0	2.2	8.1	0	4.9	0	5,120	1,780	611	314
17	8.1	12.0	12.0	2.2	12.0	6.4	4.9	0	5,470	3,920	579	302
18	12.0	12.0	8.1	2.2	8.1	431	2.1	0	6,000	3,570	547	314
19	12.0	12.0	8.1	2.1	8.1	37.4	0	0	4,410	2,860	533	302
20	8.1	12.0	8.1	2.1	4.9	21.2	0	0	3,140	2,300	516	302
21	8.2	16.2	8.1	2.1	4.9	16.2	0	0	2,490	1,910	487	302
22	8.1	16.3	8.1	2.1	4.9	12.0	0	0	2,080	1,530	473	302
23	8.1	21.2	8.1	2.1	4.9	12.0	0	0	1,730	1,310	441	302
24	12.0	21.2	8.1	2.1	2.1	90.4	0	0	1,500	1,110	427	302
25	12.0	12.0	8.1	2.1	0	50.1	0	0	1,220	989	413	302
26	8.1	12.0	8.1	2.1	0	31.4	0	0	1,040	961	399	302
27	8.1	8.1	4.9	2.1	0	26.1	0	0	1,410	911	381	290
28	4.9	8.1	8.1	2.1	0	21.2	0	0	20,760	890	381	290
29	5.0		8.1	2.1	0	16.2	0	0	11,940	1,110	399	277
30	5.0		4.9	2.1	0	12.0	0	0	6,110	1,530	381	277
31	4.9		5.0		0		0	0		1,800		265
Sum	312.4	298.3	304.8	83.5	90.2	783.6	129.8	92.4	99,963.4	50,356	22,011	9,805

Month	Current Year 1958 Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1932-1958 Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	.20	.07	† 5	21.2	†28	4.9	10.1	620	2,865	14,850	0
Feb.	.20	.07	†22	21.2	† 1	4.9	10.7	592	2,310	11,580	0
Mar.	.20	.07	9	21.2	†23	4.9	9.8	605	2,096	9,900	418
Apr.	.10	0	1	8.1	†21	0	2.8	166	2,922	21,160	104
May	.13	0	†16	12.0	† 9	0	2.9	180	5,816	42,330	0
June	3.31	0	18	1,590	† 1	0	26.1	1,550	5,433	41,660	0
July	.13	0	† 1	12.0	†18	0	4.2	259	3,220	12,170	0
Aug.	2.13	0	11	784	† 1	0	3.0	183	3,871	23,580	0
Sept.	14.99	0	28	29,660	† 1	0	3,330	198,300	* 23,616	* 253,960	0
Oct.	5.31	2.10	17	4,060	10	724	1,620	99,910	11,586	99,910	0
Nov.	3.48	1.38	1	1,820	†27	381	734	43,650	5,697	43,650	0
Dec.	1.38	1.08	1	381	31	265	316	19,460	4,072	19,460	0
Yearly	14.99	0		29,660		0	505	365,475	73,504	* 414,310	2,309

* Partly estimated † And other days ‡ Period 1932-1958

RETURN FLOW TO THE RIO GRANDE AT MAVERICK POWER PLANT NEAR EAGLE PASS, TEXAS

DESCRIPTION: A part of the water diverted from the river into the Maverick Canal is returned to the Rio Grande through the hydroelectric power plant near Eagle Pass, Texas, at a point about 32.2 canal miles below the point of diversion, and about 746.7 river miles below the American Dam at El Paso, Texas.

RECORDS: Based on records furnished by the Maverick County Water Control and Improvement District No. 1, showing hourly manometer readings of discharge, in cubic feet per second, through each turbine at the Central Power and Light Company hydroelectric power plant. The mean daily discharges computed from the manometer readings have been multiplied by a factor to make them agree with periodic current meter measurements of flow made under stable flow conditions by hydrographers of this Commission. Records available: January 1949 through December 1958.

REMARKS: This power plant began operating April 16, 1932, with hydroelectric power generating facilities for 12,000 kw. Because the September 1932 flood washed out the upper end of the Maverick Canal, this plant did not operate from September 2, 1932 until March 17, 1937. Since then, however, it has operated continuously except for 44 days in 1953 when shortage of water prevented operation, and from June 30 to July 20, during the flood of 1954, and while the canal was being repaired.

Average Flow in Second-Feet

Daily:	Max.	1,390	May 27, 1951	Min.	0	Frequently 1953 & 1954
Monthly:	Max.	1,160	June 1950	Min.	14.1	June 1953
Yearly:	Max.	1,020	1950	Min.	443	1953 & 1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	982	1,070	1,150	792	754	691	843	670	850	1,110	1,230	1,100
2	991	1,070	1,150	773	700	651	819	774	834	1,050	1,200	1,090
3	935	1,060	1,140	767	752	605	781	784	818	961	1,200	1,110
4	986	1,040	1,140	695	741	579	756	760	822	857	1,170	1,110
5	1,090	1,030	1,150	692	688	583	740	758	816	859	1,160	1,100
6	1,120	1,030	1,130	705	679	538	721	729	825	852	1,200	1,100
7	1,110	1,030	1,110	687	693	563	739	730	821	908	1,080	1,100
8	1,090	1,030	1,110	617	676	585	824	738	873	870	1,070	1,100
9	1,090	1,040	1,080	586	645	545	828	742	949	852	1,070	1,100
10	1,090	1,020	1,090	564	599	598	818	743	783	851	1,070	1,110
11	1,090	1,020	1,070	569	615	579	764	886	860	950	1,070	1,100
12	1,090	1,050	1,020	617	604	578	729	900	977	983	1,070	1,080
13	1,050	1,060	1,010	638	732	586	732	866	1,020	1,040	1,070	1,100
14	1,020	1,070	948	653	839	589	747	879	960	1,000	1,080	1,090
15	1,030	1,080	932	664	848	571	730	858	778	939	1,060	1,060
16	1,020	1,030	931	661	947	644	703	888	830	878	1,070	1,040
17	1,010	1,050	896	642	992	872	693	932	1,030	948	1,070	1,040
18	996	1,080	842	647	995	869	675	896	1,040	993	1,060	1,040
19	1,000	1,060	846	646	1,020	639	683	881	1,070	1,040	1,080	1,030
20	1,010	1,020	856	640	1,040	864	692	816	1,050	1,040	1,110	1,040
21	1,000	1,070	838	630	1,040	969	708	816	1,020	1,030	1,110	1,050
22	1,000	1,130	848	617	1,000	974	711	772	1,030	1,030	1,090	1,070
23	1,080	1,160	844	618	984	926	705	768	1,010	1,120	1,100	1,080
24	1,160	1,170	815	637	949	936	650	772	952	1,060	1,100	1,080
25	1,160	1,180	819	614	938	939	646	765	1,110	1,030	1,080	1,090
26	1,150	1,180	796	622	889	922	655	758	1,140	1,030	1,080	1,090
27	1,140	1,190	775	627	846	926	640	811	1,120	1,090	1,080	1,110
28	1,150	1,170	805	612	812	955	636	836	1,060	1,160	1,120	1,110
29	1,140		844	617	787	896	632	842	898	1,170	1,120	1,120
30	1,130		827	725	743	856	644	852	931	1,110	1,110	1,130
31	1,090		805		678		635	827		1,200		1,110
Sum	30,190		19,574		22,028		25,049			31,011		33,680
	33,000		29,617		25,225		22,279		28,277		33,180	

Month	Current Year 1958								Period 1949-1958		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			†24	1,160	3	935	1,060	65,500	49,140	65,500	34,400
Feb.			27	1,190	†10	1,020	1,080	59,900	42,780	59,900	24,900
Mar.			† 1	1,150	27	775	955	58,700	42,280	65,400	18,900
Apr.			1	792	10	564	652	38,800	34,328	58,600	6,080
May			†20	1,040	10	599	814	50,000	42,758	64,900	2,280
June			22	974	6	538	734	43,700	41,184	68,900	841
July			1	843	29	632	719	44,200	36,678	63,000	2,880
Aug.			17	932	1	670	808	49,700	45,130	68,900	22,600
Sept.			26	1,140	15	778	943	56,100	49,290	67,500	18,500
Oct.			31	1,200	10	851	1,000	61,500	49,370	69,000	23,000
Nov.			1	1,230	†15	1,060	1,110	65,800	47,080	65,800	27,300
Dec.			30	1,130	19	1,030	1,090	66,800	49,790	66,800	34,300
Yearly				1,230		538	913	660,700	529,808	740,000	320,701

† And other days

RIO GRANDE AT EAGLE PASS, TEXAS

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 756.4 river miles below the American Dam at El Paso, Texas. The zero of the gage is 682.91 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 219 meter measurements during the year, 196 by the Mexican and 23 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: May 1900 to March 1914; August 1914 to April 1916; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June 1922; September, November and December 1923; and January 1924 through December 1958.

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

EXTREME FLOWS FROM RECORDS: The greatest recorded flow was ** 964,100 second-feet, which occurred June 29, 1954, with a gage height of 53.51 feet. Well-authenticated information indicates the occurrence of a flood in June 1865 with an estimated discharge of 1,236,000 second-feet and a gage height of 56.00 feet on the present gage and also that these were the only floods since 1745 with flows greater than 825,000 second-feet. The lowest recorded flow was 24.4 second-feet, which occurred June 22, 1953 with a gage height of .07 foot.

Average Flow in Second-Feet ‡

Daily:	Max.	572,100	June 28, 1954	Min.	30.7	June 22, 1953
Monthly:	Max.	48,000	Sept. 1932	Min.	248	April 1953
Yearly:	Max.	9,180	1932	Min.	870	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,590	1,630	1,940	1,400	1,040	1,080	1,900	2,230	1,750	51,910	16,320	4,630
2	1,590	1,630	2,000	1,310	968	1,030	1,780	3,030	1,400	52,270	13,530	4,520
3	1,550	1,590	2,060	1,310	2,270	918	1,730	2,440	1,310	48,380	12,360	4,520
4	1,630	1,550	2,060	1,210	1,640	879	1,560	1,870	1,400	46,620	11,020	4,520
5	1,910	1,590	2,000	1,220	1,110	840	1,450	1,450	1,400	48,380	10,240	4,520
6	2,040	1,590	1,940	1,210	1,040	763	1,450	1,300	1,360	54,030	9,460	4,450
7	1,910	1,550	3,330	1,150	968	840	5,470	1,300	1,540	56,150	8,720	4,340
8	1,780	1,550	2,120	1,000	932	879	4,030	1,270	1,450	55,440	8,230	4,270
9	1,740	1,550	1,890	1,010	932	840	3,850	1,210	11,510	42,380	7,980	4,030
10	1,700	1,510	1,770	1,000	862	996	2,470	1,180	20,800	34,330	7,800	3,960
11	1,700	1,550	1,710	968	897	996	1,900	1,300	11,830	42,020	7,660	4,030
12	1,700	1,670	1,710	1,000	862	879	1,560	1,370	7,170	34,360	7,350	4,030
13	1,670	1,590	1,660	1,040	5,610	879	1,510	1,240	5,580	30,230	7,170	4,030
14	1,670	1,590	1,610	1,000	27,900	840	1,430	1,270	5,830	24,440	7,030	3,960
15	1,630	1,590	1,610	1,000	8,900	840	1,340	1,240	11,970	20,660	6,960	3,880
16	1,670	1,590	1,500	968	4,340	953	1,290	1,240	31,080	18,890	6,750	3,880
17	1,630	1,510	1,500	932	3,090	6,460	1,290	1,680	31,500	18,360	6,430	3,880
18	1,630	1,550	1,550	1,000	2,730	52,270	1,260	1,970	26,870	18,580	6,140	3,880
19	1,630	1,550	1,550	1,000	2,440	57,360	1,200	1,730	22,110	17,450	5,970	3,880
20	1,630	1,550	1,550	1,000	2,270	9,500	1,170	1,640	22,320	15,220	6,040	3,880
21	1,630	1,590	1,550	1,000	2,670	5,230	1,200	1,680	17,130	13,420	6,040	3,880
22	1,630	1,940	1,500	968	3,090	4,030	1,310	1,500	13,670	12,640	5,970	3,810
23	1,780	2,150	1,550	932	2,270	3,460	1,310	1,410	31,500	14,130	5,790	3,740
24	2,000	4,410	1,500	897	1,950	4,700	1,290	1,410	17,480	15,790	5,540	3,670
25	1,950	4,910	1,550	862	1,760	5,230	1,170	1,370	11,720	14,020	5,370	3,740
26	1,910	3,030	1,550	862	1,670	3,600	1,200	1,370	12,470	12,640	5,370	3,670
27	1,820	2,320	1,550	862	1,540	2,900	1,120	1,680	11,940	11,580	5,300	3,670
28	1,820	2,060	1,450	897	1,540	2,470	1,030	2,010	26,660	13,420	5,120	3,670
29	1,820		1,450	897	1,490	2,210	1,060	1,640	68,160	15,080	4,940	3,600
30	1,740		1,450	1,040	1,280	2,000	1,060	1,730	43,440	19,320	4,870	3,530
31	1,710		1,390		1,080		1,030	1,780		19,320		3,470
Sum	53,810	53,890	53,550	30,945	91,141	176,072	52,420	49,540	474,350	891,460	227,470	123,540

Month	Current Year 1958 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 1924-1958 Acre-Feet Average	Maximum	Minimum
Jan.	2.62	2.10	† 5	2,150	† 3	1,510	1,740	106,700	151,763	365,000	42,690
Feb.	4.40	2.03	25	6,070	†16	1,440	1,920	106,900	136,512	398,200	33,320
Mar.	3.67	2.07	7	4,310	31	1,350	1,730	106,200	127,192	247,440	26,970
Apr.	2.10	1.57	1	1,390	25	798	1,030	61,380	130,940	414,600	14,770
May	15.22	1.61	14	50,150	12	830	2,940	180,700	235,067	1,108,000	8,430
June	21.00	1.44	19	86,520	6	692	5,870	349,200	316,056	2,794,000	4,530
July	6.63	1.64	7	11,970	31	999	1,690	104,000	241,847	* 1,255,000	17,380
Aug.	3.15	1.64	† 1	3,210	1	1,090	1,600	98,310	246,140	* 947,000	35,730
Sept.	20.08	1.97	29	75,570	3	1,260	15,810	940,800	491,948	3,079,000	27,050
Oct.	17.49	6.56	8	57,560	27	11,300	28,760	1,768,000	406,169	1,768,000	31,560
Nov.	8.99	3.74	1	18,790	30	4,800	7,580	451,200	184,096	512,800	35,630
Dec.	3.71	3.15	1	4,700	31	3,420	3,990	245,100	155,436	369,760	41,000
Yearly	21.00	1.44		86,520		692	6,240	4,518,490	2,823,166	6,946,510	631,520

* Partly estimated † And other days ‡ Period 1924-1958 ** Determined by slope-area calculations.

RIO ESCONDIDO AT VILLA DE FUENTE, COAHUILA

DESCRIPTION: Water-stage recorder and reinforced concrete weir for measuring flows up to 45.9 second-feet located immediately below the highway bridge over Rio Escondido on the outskirts of Villa de Fuente, 3.1 miles southwest of Piedras Negras, Coahuila and 3.7 miles above the confluence with the Rio Grande. The cable and cable car are located 1.2 miles upstream at the previous station site. This stream enters the Rio Grande 760.0 river miles below the American Dam at El Paso, Texas. The zero of the gage is 708.78 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 49 meter measurements during the year, the weir discharge table and a continuous record of gage heights. Computations by shifting channel methods for flows greater than 45.9 second-feet. Records available: 1922 through December 1958. Records from 1922 to September 1932 are considered doubtful.

REMARKS: Diversions and drainage returns modify the flow of this spring-fed stream at this station. Backwater from the Rio Grande reached an elevation of 729.92 feet during the flood of June 1954.

EXTREME FLOWS FROM RECORDS ‡ : Momentary: Max. 24,000 second-feet on June 29, 1936 with a gage height of 19.13 feet. Min. frequently no flow.

Average Flow in Second-Feet

Daily:	Max.	7,700	May 27, 1957	Min.	0	Several days 1956, 1957 & 1958
Monthly:	Max.	647	Oct. 1932	Min.	0.6	Aug. & Sept. 1957
Yearly:	Max.	115	1958	Min.	2.4	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.7	1.4	2.8	1.4	1.4	1.4	2.8	.7	.7	526	583	333
2	.7	4.2	2.8	1.4	1.4	1.4	2.8	.7	1.4	357	569	321
3	1.4	6.0	1.4	1.4	1.4	.7	2.8	.7	0	264	554	310
4	1.5	6.0	2.8	1.4	.7	.7	2.8	.7	0	244	540	310
5	1.5	2.8	1.4	.7	.7	1.4	2.8	.7	0	227	526	310
6	1.4	2.8	1.5	.7	.7	.7	1.4	.7	0	219	516	298
7	1.4	1.4	1.5	.7	.7	0	1.4	.7	0	211	501	287
8	1.4	1.5	1.5	.7	.7	.7	1.4	.7	1,010	211	487	287
9	1.4	1.4	1.5	1.4	.7	1.4	1.4	.7	1,450	219	477	287
10	1.4	1.4	1.4	1.4	.7	4.2	1.4	.7	156	256	477	275
11	1.4	1.4	1.4	1.4	.7	4.2	1.4	84.4	40.3	252	463	264
12	1.4	4.2	1.4	1.4	1.4	2.8	1.4	52.3	36.0	236	463	264
13	1.4	2.8	1.4	1.4	148	2.8	1.4	4.2	19.1	252	452	252
14	1.4	1.4	1.4	1.4	6.0	2.8	1.4	.7	12.0	275	427	252
15	1.4	1.5	1.4	1.4	.7	2.8	1.4	1.4	7.8	344	417	244
16	1.4	1.5	1.4	1.4	9.2	2.8	1.4	1.4	2,050	367	403	244
17	1.4	1.4	1.4	1.4	7.8	2.8	1.4	.7	1,290	344	392	244
18	1.4	1.4	1.4	1.4	1.4	1,530	1.4	.7	512	344	367	236
19	1.4	1.4	1.4	2.8	1.4	186	1.4	.7	129	344	367	236
20	1.4	1.4	1.4	1.4	1.4	57.6	1.4	.7	334	344	367	227
21	2.8	1.4	1.4	1.5	1.4	33.5	1.4	.7	47.0	344	367	219
22	1.4	9.9	1.4	1.5	1.4	40.0	1.4	.7	27.5	344	367	219
23	16.6	4.2	1.4	1.5	1.4	36.7	1.4	.7	19.1	333	367	219
24	14.1	6.0	1.4	1.4	1.4	50.9	1.4	.7	16.6	321	367	211
25	12.0	4.2	1.4	1.4	1.4	43.4	1.4	.7	30.4	321	378	219
26	9.9	2.8	1.4	1.4	1.4	14.1	1.4	.7	40.3	333	367	219
27	7.8	1.4	1.4	1.4	1.4	6.0	1.4	.7	63.2	367	367	211
28	7.8	2.8	1.4	1.4	1.4	2.8	1.4	.7	149	427	357	211
29	7.8		1.4	1.4	1.4	2.8	.7	.7	298	554	344	203
30	2.8		.7	1.4	1.4	2.8	.7	.7	321	569	344	203
31	1.4		.7		1.4		.7	.7		593		203
Sum	111.2	80.0	46.6	40.9	202.5	2,040.2	48.3	161.9	8,060.4	10,342	12,973	7,818

Current Year 1958 — Period Oct. 1932-1958

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	.46	.03	23	27.5	† 1	.7	3.6	221	1,927	15,990	43.8
Feb.	.62	.03	22	43.4	14	.7	2.9	159	1,304	9,990	38.9
Mar.	.10	.03	† 1	2.8	†17	.7	1.5	92.4	1,143	6,910	92.4
Apr.	.10	.03	†17	2.8	† 5	.7	1.4	81.1	2,198	21,950	81.1
May	4.76	.03	13	1,910	† 4	.7	6.5	402	4,580	25,470	154
June	6.86	0	18	3,740	7	0	68.0	4,040	2,551	19,730	60.3
July	.10	.03	† 1	2.8	†28	.7	1.6	96.5	1,860	9,740	96.5
Aug.	1.84	.03	11	321	† 1	.7	5.2	322	2,046	20,830	34.9
Sept.	10.30	0	16	8,120	† 3	0	269	15,970	3,367	21,590	34.1
Oct.	3.51	1.48	1	1,080	† 6	211	334	20,530	3,503	39,790	43.8
Nov.	2.56	1.90	1	593	†29	344	432	25,730	2,676	25,730	43.8
Dec.	1.90	1.44	1	344	†28	203	252	15,520	2,337	20,720	67.3
Yearly	10.30	0		8,120		0	115	83,164	29,492	83,164	1,755.3

† And other days ‡ Period October 1932-1958

RIO GRANDE AT SAN ANTONIO CROSSING NEAR VILLA GUERRERO, COAHUILA

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, located on high ground about 1,000 feet from the river at San Antonio Crossing, .5 mile below Cuervo Creek, which marks the lower end of the Maverick Irrigation District, 35.5 river miles below Eagle Pass, Texas and Piedras Negras, Coahuila, 5 miles northeast of Villa Guerrero, Coahuila, and 792.4 river miles below the American Dam at El Paso, Texas. The zero of the gage is 581.61 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 18 meter measurements by wading during the year and a continuous record of gage heights. Computations for discharges up to 1,200 second-feet are based on a relatively stable rating curve defined by meter measurements. Computations for higher discharges are based on an extension of the curve. Records available: March, April, May, October, November, and December, 1952, with some days missing; January 1 through August 20, 1953; September 23, 1953 through June 14, 1954; and May 27, 1955 through December 1958, with some days missing.

REMARKS: The June 1954 flood reached an elevation of 624.31 feet at this station, with a discharge of 912,000 second-feet, determined by slope-area computations.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,520	1,570	1,810	1,430	1,280	1,260	1,820	1,310	1,860	39,700	16,200	5,030
2	1,520	1,550	1,780	1,400	1,280	1,260	1,730	3,060	1,680	46,900	12,800	4,910
3	1,530	1,550	1,840	1,380	1,540	1,170	1,690	2,940	1,540	46,200	11,800	4,940
4	1,630	1,570	1,830	1,290	2,310	1,090	1,620	2,240	1,530	46,100	11,000	4,970
5	1,930	1,550	1,800	1,270	1,520	1,010	1,500	1,760	1,610	46,800	10,200	4,940
6	2,260	1,550	1,780	1,290	1,290	950	1,470	1,550	1,540	54,500	9,570	4,850
7	2,000	1,530	2,230	1,250	1,190	894	2,470	1,480	1,860	55,700	9,000	4,790
8	1,840	1,530	2,470	1,110	1,120	967	5,750	1,470	1,760	58,400	8,590	4,700
9	1,720	1,500	1,800	1,030	1,060	997	3,630	1,380	5,230	44,600	8,110	4,500
10	1,670	1,520	1,670	1,080	1,070	940	2,940	1,420	21,580	* 33,300	8,060	4,410
11	1,660	1,480	1,600	1,100	1,060	1,160	2,150	1,950	13,080	* 41,900	7,810	4,330
12	1,640	1,560	1,550	1,080	1,080	1,070	1,780	1,820	8,170	* 35,300	7,480	4,270
13	1,640	1,640	1,510	1,140	1,200	992	1,680	1,550	6,090	* 31,400	7,240	4,300
14	1,610	1,570	1,480	1,180	27,800	992	1,660	1,410	5,720	* 26,900	7,120	4,270
15	1,600	1,560	1,440	1,100	8,810	1,010	1,550	1,410	7,730	* 22,600	7,010	4,190
16	1,600	1,560	1,450	1,100	5,590	1,170	1,480	1,380	27,100	* 21,500	6,810	4,110
17	1,610	1,480	1,430	1,050	3,500	2,990	1,400	1,500	32,200	* 20,600	6,550	4,060
18	1,630	1,500	1,400	1,050	2,980	32,900	1,350	2,110	28,200	* 19,300	6,370	4,030
19	1,610	1,520	1,510	1,100	2,640	68,000	1,300	2,110	22,500	16,800	6,150	4,060
20	1,610	1,520	1,510	1,130	2,230	* 12,600	1,320	1,800	23,300	15,000	6,050	4,090
21	1,610	1,520	1,550	1,150	2,300	5,590	1,290	1,640	19,300	13,100	5,980	4,060
22	1,610	1,770	1,550	1,160	3,050	4,150	1,400	1,800	14,900	12,200	5,910	3,980
23	1,810	2,130	1,720	1,120	2,540	3,450	1,540	1,510	21,800	13,100	5,770	3,980
24	2,200	3,440	1,600	1,060	2,050	3,570	1,460	1,550	21,800	15,300	5,670	3,880
25	2,060	4,500	1,560	1,040	1,860	5,140	1,400	1,500	10,200	14,000	5,510	3,900
26	1,880	3,360	1,570	1,020	1,760	3,860	1,320	1,450	9,680	12,200	5,440	3,900
27	1,850	2,360	1,540	1,060	1,640	2,920	1,370	1,480	10,100	11,200	5,410	3,850
28	1,730	1,990	1,520	1,090	1,580	2,460	1,260	2,070	17,000	12,200	5,310	3,880
29	1,740		1,480	1,100	1,610	2,190	1,160	2,010	54,500	13,800	5,150	3,850
30	1,670		1,520	1,140	1,480	1,900	1,210	1,760	45,500	19,200	5,060	3,770
31	1,640		1,460		1,340		1,180	1,890		17,900		3,750
Sum	53,630	51,880	50,960	34,500	91,760	168,652	54,880	54,310	439,060	*877,700	229,130	132,550

Month	Current Year 1958 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 #1952-1958 Acre-Feet Average	Maximum	Minimum
Jan.	2.44	1.91	6	2,350	† 1	1,500	1,730	106,000	73,006	106,000	53,730
Feb.	3.66	1.85	25	5,180	17	1,430	1,850	103,000	69,034	103,000	43,270
Mar.	3.13	1.90	7	3,750	18	1,390	1,640	101,000	63,500	101,000	38,100
Apr.	2.04	1.48	1	1,460	26	965	1,150	68,400	* 156,394	* 433,000	26,970
May	9.73	1.55	14	44,300	9	1,040	2,960	182,000	306,928	1,054,000	18,140
June	13.13	1.35	19	78,800	7	864	5,620	335,000	159,912	335,000	8,260
July	4.72	1.56	7	8,790	† 29	1,140	1,770	109,000	* 84,886	* 176,000	27,400
Aug.	2.92	1.56	† 2	3,280	1	1,130	1,750	108,000	83,633	108,000	44,200
Sept.	12.26	1.84	29	68,900	3	1,480	14,600	871,000	360,550	871,000	81,200
Oct.	11.37	4.95	8	59,600	† 27	10,900	*28,300	*1,741,000	* 478,244	* 1,741,000	71,220
Nov.	6.06	3.56	1	18,900	30	5,030	7,640	454,000	138,015	454,000	43,970
Dec.	3.60	3.08	1	5,150	31	3,700	4,280	263,000	103,813	263,000	53,190
Yearly	13.13	1.35		78,800		864	* 6,130	*4,441,400	*2,077,915	* 4,441,400	756,800

* Partly estimated † And other days # Some months missing

RIO GRANDE AT LAREDO, TEXAS

DESCRIPTION: Bubbler-type water stage recorder operated with bottled nitrogen gas, and cable with stand-up cable car located .9 mile downstream from the highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas, and 890.8 river miles below the American Dam at El Paso, Texas. The zero of the gage is 347.90 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 266 meter measurements during the year, 250 by the Mexican and 16 by the United States Section of this Commission and a continuous record of gage heights. Computations by shifting channel methods. Records available: May 1900 through December 1913; May, June and October 1914; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June, November and December 1922; and January 1923 through December 1958. Gage-height records are available for January, February and March 1914.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. This station was established in January, 1955 to replace the station 1.5 miles upstream which was destroyed by the June-July 1954 flood.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow was ** 716,900 second-feet, with a gage height of 61.35 feet, which occurred June 30, 1954. Much well-authenticated tradition establishes the occurrence of a greater flood in June 1865 with a gage height of 62.5 feet on the same gage and a discharge of approximately 950,000 second-feet and also that these were the only floods since 1745 with flows greater than 600,000 second-feet. The lowest recorded flow was zero which occurred various days in June and July, 1953 and on July 24, 1956.

Average Flow in Second-Feet ‡

Daily:	Max.	576,000	June 30, 1954	Min.	0	Several days June, July 1953
Monthly:	Max.	52,300	Sept. 1932	Min.	5.5	June 1953
Yearly:	Max.	9,670	1932	Min.	1,080	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,940	2,000	2,370	1,500	971	1,290	1,850	943	1,590	50,850	19,420	5,260
2	1,900	1,990	2,080	1,410	1,070	1,080	1,710	943	1,650	42,380	16,530	5,120
3	1,850	1,880	1,980	1,410	1,260	1,030	1,610	2,150	1,530	49,090	13,450	4,980
4	2,010	1,880	1,980	1,300	1,190	946	1,520	3,140	1,410	45,560	12,430	4,870
5	8,480	1,880	1,980	1,300	1,990	908	1,470	2,450	1,360	45,200	11,120	4,980
6	4,800	1,820	1,980	1,190	1,720	766	1,420	1,890	1,470	45,560	10,280	4,980
7	3,300	1,820	1,980	1,200	1,350	763	3,380	1,530	1,530	49,790	9,500	4,870
8	2,710	1,750	2,000	1,190	1,040	713	4,410	1,360	2,970	51,560	8,900	4,770
9	2,260	1,750	2,770	1,120	1,030	614	6,960	1,300	3,310	52,970	8,480	4,770
10	1,940	1,750	1,980	1,010	968	706	3,920	1,240	6,180	43,790	8,160	4,560
11	1,820	1,680	1,840	978	957	692	3,400	1,180	19,530	34,780	8,090	4,340
12	1,960	1,680	1,710	1,050	946	636	2,360	1,750	11,970	39,550	7,800	4,270
13	1,820	1,680	1,640	1,050	1,170	763	1,850	1,800	7,730	35,170	7,520	4,240
14	1,750	1,750	1,570	1,120	2,690	770	1,650	1,530	5,970	29,880	7,310	4,240
15	1,750	1,680	1,570	1,120	22,950	678	1,590	1,240	5,720	26,420	7,270	4,170
16	1,680	1,620	1,570	1,090	9,920	777	1,470	1,180	9,250	27,720	7,130	4,100
17	1,680	1,620	1,500	1,040	5,760	904	1,360	1,130	31,110	22,140	7,130	4,060
18	1,680	1,620	1,570	999	3,990	7,950	1,300	1,610	43,080	20,550	6,780	4,060
19	1,750	1,570	1,410	971	3,640	32,670	1,240	1,820	44,140	19,140	6,430	4,030
20	1,750	2,040	1,300	978	3,230	51,560	1,240	1,890	25,570	17,660	6,070	4,030
21	1,750	2,340	1,500	985	2,670	12,640	1,090	1,700	22,990	15,820	5,970	4,060
22	1,750	4,630	1,500	1,070	2,480	5,690	1,020	1,470	18,750	13,880	5,970	4,030
23	2,160	3,810	1,570	1,070	3,080	4,310	1,020	1,470	16,000	13,000	5,860	3,990
24	2,070	3,150	1,570	1,130	3,050	3,810	1,170	1,470	24,860	14,300	5,860	3,990
25	2,540	3,260	1,710	1,000	2,320	3,670	1,170	1,360	21,120	16,240	5,760	3,990
26	2,540	4,730	1,570	932	2,010	4,910	1,240	1,470	10,810	14,580	5,580	3,960
27	2,380	3,810	1,500	953	1,840	4,130	1,170	1,300	10,380	13,210	5,580	3,920
28	2,260	2,810	1,570	890	1,720	2,960	1,090	1,240	11,120	14,870	5,470	3,920
29	2,190		1,500	911	1,650	2,490	1,170	1,470	19,850	16,170	5,370	3,920
30	2,070		1,500	978	1,470	2,130	1,090	1,850	48,380	16,460	5,260	3,960
31	2,070		1,500		1,490		943	1,650		20,340		3,880
Sum	72,610	64,000	53,770	32,945	91,622	152,956	57,883	48,526	431,330	918,630	246,480	134,320

Month	Current Year 1958							Period 1924-1958		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day	High	Day	Low					
Jan.	6.53	1.08	5	11,300	†16	1,680	2,340	144,000	156,176	351,700	54,800
Feb.	3.97	1.12	22	6,140	†16	1,570	2,290	126,900	139,359	423,700	41,050
Mar.	2.20	.95	9	3,220	†19	1,300	1,730	106,700	128,978	223,400	30,960
Apr.	1.05	.59	1	1,570	28	851	1,100	65,350	140,476	464,000	28,300
May	13.75	.56	15	30,720	13	858	2,960	181,700	272,734	1,351,000	33,360
June	20.93	.23	20	57,560	9	512	5,100	303,400	322,142	1,994,000	337
July	5.38	.59	9	8,400	31	869	1,870	114,700	263,468	1,250,000	17,470
Aug.	3.35	.62	18	5,050	† 1	869	1,570	96,220	258,151	883,000	36,970
Sept.	20.73	.75	30	58,980	5	1,300	14,380	855,500	512,464	2,943,000	30,900
Oct.	20.93	7.05	1	59,680	28	12,750	29,630	1,822,000	438,903	1,951,000	31,910
Nov.	9.81	3.54	1	20,200	30	5,260	8,220	488,900	192,837	570,800	43,110
Dec.	3.54	2.89	1	5,260	31	3,810	4,330	266,400	162,027	352,700	52,230
Yearly	20.93	.23		59,680		512	6,310	4,571,770	2,987,715	7,017,110	786,640

† And other days ** Determined by slope-area calculations ‡ Period 1924-1958

RIO SALADO AT LAS TORTILLAS, TAMAULIPAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car, and control wall with notch opening of 2,500 second-feet capacity located 6.2 miles southeast of the town of Las Tortillas, Tamaulipas, 2 miles below the confluence of the Río Sabinas with the Río Salado and 24.8 miles above the confluence of the Río Salado with the Rio Grande. This confluence is 949.8 river miles below the American Dam at El Paso, Texas. The zero of the gage is 325.72 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 87 meter measurements during the year, a stable rating curve up to 2,500 second-feet and a continuous record of gage heights. Computations by shifting channel methods for flows greater than 2,500 second-feet. Records available: September 9, 1953 through December 1958. Records are also available for a station at Cd. Guerrero, 18.6 miles downstream, from 1900 through 1913 and 1923 through September 8, 1953.

REMARKS: Reservoirs and irrigation diversions modify the flow at this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 27,720 second-feet on October 16, 1958 with a gage height of 23.79. Min. frequently no flow. Extreme flow data for the Río Salado at Cd. Guerrero prior to 1954 may be found in previous bulletins.

Average Flow in Second-Feet ‡

Daily:	Max.	25,600	Oct. 18, 1958	Min.	0	Frequently
Monthly:	Max.	8,500	Oct. 1958	Min.	0	Frequently
Yearly:	Max.	2,020	1958	Min.	56.8	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	1.3	0	0	0	113	0	12.7	10,560	9,530	5,470
2	28.3	0	.7	0	0	0	77.0	0	6.4	7,910	9,390	2,030
3	55.1	0	0	0	0	0	36.4	0	6.4	6,500	10,140	2,300
4	57.9	0	0	0	0	0	16.6	0	3.2	3,740	10,280	3,990
5	470	0	0	0	0	0	3.9	0	3.2	2,240	7,880	4,310
6	1,160	0	0	0	0	0	2.5	0	424	1,710	6,990	4,310
7	554	0	0	0	0	0	1.4	0	8,260	1,340	7,380	3,310
8	251	0	0	0	0	0	1,410	0	3,230	1,230	7,130	1,310
9	123	0	0	0	0	0	2,990	0	5,900	1,120	6,670	3,370
10	62.2	0	0	0	0	0	2,650	0	8,050	1,090	7,450	4,100
11	31.4	0	0	0	0	0	1,170	0	3,530	2,610	6,990	3,990
12	484	0	0	0	0	0	441	0	600	4,060	4,980	1,840
13	144	0	0	0	20.5	0	205	0	348	6,430	1,980	1,150
14	42.4	0	0	0	277	0	113	0	254	9,080	2,190	3,140
15	16.6	0	0	0	3,640	0	69.6	0	191	10,950	3,920	3,920
16	6.4	0	0	0	1,240	3.2	42.4	0	1,190	22,280	4,380	3,310
17	2.5	0	0	0	625	12.7	21.5	0	4,310	25,040	5,260	1,090
18	1.4	0	0	0	971	79.5	12.7	0	9,990	25,600	5,260	1,800
19	1.4	0	0	0	1,100	171	12.7	0	21,150	22,640	5,160	3,670
20	.7	103	0	0	2,270	1,250	6.4	0	20,450	16,420	5,090	3,490
21	.7	48.4	0	0	1,230	338	6.4	0	15,680	12,570	5,050	1,120
22	.7	36.4	0	0	399	163	3.2	0	14,730	8,190	4,310	1,420
23	3.2	31.4	0	0	123	441	2.5	0	14,830	6,430	3,490	3,490
24	2.5	21.5	0	0	55.1	219	1.4	1.8	11,480	4,450	3,250	3,430
25	1.4	12.7	0	0	21.5	399	0	9.2	5,010	6,320	3,530	1,150
26	.7	9.2	0	0	12.7	113	0	261	2,450	7,660	3,670	1,060
27	0	3.9	0	0	6.4	1,010	0	123	2,710	4,450	3,990	3,140
28	0	2.4	0	0	3.2	2,250	0	205	5,510	6,110	4,380	3,850
29	0		0	0	.7	1,530	0	144	8,090	7,450	5,120	3,850
30	0		0	0	0	251	0	62.2	12,610	8,160	5,540	3,370
31	0		0		0		0	31.4		9,220		1,020
Sum	3,501.5	268.9	2.0	0	11,995.1	8,230.4	9,408.6	837.6	181,008.9	263,560	170,380	88,800

Month	Current Year 1958 Extreme Gage Feet High	Low	Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period Oct. 1953-1958 Acre-Feet Average	Maximum	Minimum
Jan.	2.53	0	6	1,490	† 1	0	113	6,950	1,392	6,950	0
Feb.	1.31	0	20	357	† 1	0	9.6	533	407	1,500	0
Mar.	.10	0	1	2.5	† 3	0	.1	4.0	219	1,090	0
Apr.	0	0	† 1	0	† 1	0	0	0	4,454	19,300	0
May	4.30	0	15	4,200	† 1	0	387	23,800	21,156	45,230	4,840
June	3.48	0	†27	2,890	† 1	0	274	16,300	8,468	18,890	0
July	3.81	0	† 8	3,390	†24	0	304	18,650	3,786	18,650	0
Aug.	1.94	0	26	833	† 1	0	27.0	1,660	6,676	31,700	0
Sept.	19.68	.10	19	22,600	† 5	2.5	6,030	359,000	111,748	359,000	2,860
Oct.	23.79	2.13	16	27,720	10	992	8,500	522,800	94,442	522,800	110
Nov.	9.71	2.72	4	10,800	14	1,670	5,680	338,000	57,423	338,000	0
Dec.	5.18	1.90	1	5,580	31	777	2,860	176,100	29,405	176,100	0
Yearly	23.79	0		27,720		0	2,020	1,463,797.0	339,576	1,463,797	41,238.2

† And other days ‡ Period September 1953-1958

RIO GRANDE BELOW FALCON DAM

DESCRIPTION: The discharges reported below represent water measured as it leaves Falcón Reservoir through the turbines, by-pass valves, spillway gates, and leakage. Falcón Dam, astride the Rio Grande, is located 84.5 river miles downstream from Laredo, Texas and Nuevo Laredo, Tamaulipas; 974.4 river miles below the American Dam at El Paso, Texas; and 273.8 river miles above the Gulf of Mexico. A water-stage recorder and a cable with stand-up cable car located 2.5 and 3.5 river miles downstream, respectively, are used to measure the flow of this station at those times when spillway gates are in operation.

RECORDS: Based on daily Simplex meter records of releases through the six turbines, of which three are in the United States Power Plant and three are in the Mexican Power Plant, established rating curves for the four hollow jet by-pass valves, estimates of gate leakage, a gage-height record at the Chapeño Station during spillway gate operation, and 51 current meter measurements during the year, 32 by the United States and 19 by the Mexican Section of the Commission. Records available: January 1, 1958 through December 31, 1958. Records are also available from December 17, 1952 through December 31, 1957 for a station at Chapeño, 2.5 miles downstream, where discharges included arroyo inflow below Falcón Dam, which inflow is eliminated from the records reported below.

REMARKS: Computation of flow was made jointly by the United States and Mexican Sections of the Commission.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 48,900 second-feet on November 9, 1958. Min. no flow occurs at times.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	932	743	40.0	936	7,740	5,240	2,920	1,480	2,370	25,000	35,700	515
2	760	751	40.0	1,100	8,260	5,240	2,290	1,900	2,310	26,100	35,700	9,930
3	787	741	40.0	1,070	8,800	5,490	1,800	2,170	2,120	27,200	35,600	6,730
4	661	717	40.0	1,000	2,260	6,190	1,460	2,220	3,500	26,800	35,500	9,340
5	413	716	40.0	1,450	10,500	6,600	1,360	1,910	774	26,900	37,200	9,340
6	407	721	40.0	2,260	8,210	7,370	1,160	1,720	1,340	26,100	44,400	9,370
7	836	765	40.0	2,510	8,070	8,360	1,280	1,400	929	23,400	44,800	9,370
8	844	827	59.0	2,510	7,300	8,720	868	1,270	1,160	22,700	47,000	9,850
9	847	768	81.0	2,820	7,310	8,560	771	1,970	688	22,500	47,800	11,500
10	842	25	81.0	2,780	6,800	7,700	395	2,510	775	23,200	26,400	11,600
11	853	25	116	3,970	8,090	6,940	82	2,690	767	25,900	14,300	11,600
12	835	25	89.0	4,420	7,890	7,480	387	3,040	766	25,900	14,300	11,600
13	844	25	95.0	3,970	7,640	9,100	393	2,700	738	26,500	11,000	11,600
14	792	25	91.0	5,870	34.0	10,400	390	2,030	385	29,100	8,700	11,600
15	773	124	97.0	5,960	34.0	6,650	620	1,190	798	31,900	8,700	11,600
16	764	400	152	5,430	34.0	13,300	705	1,480	436	37,100	8,660	10,900
17	767	403	166	4,940	34.0	11,700	725	1,980	534	42,300	8,630	8,770
18	732	214	410	4,760	34.0	9,490	913	2,480	869	44,400	10,500	8,790
19	733	109	423	4,250	34.0	9,380	1,020	2,310	1,070	44,700	13,600	8,760
20	761	25	406	5,640	526	9,000	1,300	2,010	805	44,500	12,100	8,730
21	748	25	813	5,640	881	7,570	1,200	1,760	311	44,100	10,200	8,720
22	760	25	815	5,320	1,560	5,920	1,130	2,210	705	43,100	10,000	8,720
23	732	25	1,280	3,650	2,400	4,350	1,220	3,480	710	38,700	10,200	8,740
24	743	25	1,430	3,890	2,940	5,990	1,180	4,640	744	34,900	8,710	8,740
25	753	25	965	4,050	3,680	5,970	1,440	2,760	3,450	34,400	6,010	3,910
26	724	25	711	3,830	3,670	5,230	1,840	754	8,280	34,400	5,980	716
27	761	25	526	4,410	3,490	3,910	2,580	803	11,600	34,800	5,980	726
28	736	25	493	4,650	3,010	918	2,410	907	20,100	34,900	5,980	698
29	695		293	5,010	2,810	1,350	2,000	2,300	24,800	34,800	4,670	710
30	710		605	5,960	3,270	1,430	2,070	3,270	24,800	35,000	350	702
31	709		927		3,920		2,170	3,470		35,700		706
Sum	23,254	8,349	11,404.0	114,056	131,231.0	205,548	40,079	66,814	118,634	1,007,000	568,670	234,583

Month	Current Year 1958								Period # Sept. 1953-1958		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			1	932	6	407	750	46,100	224,620	368,000	46,100
Feb.			8	827	† 10	25.0	298	16,600	190,040	349,000	16,600
Mar.			24	1,430	† 1	40.0	368	22,600	126,398	276,000	2,390
Apr.			†15	5,960	1	936	3,800	226,000	169,906	347,000	19,530
May			5	10,500	† 14	34.0	4,230	260,000	308,360	526,000	217,000
June			16	13,300	28	918	6,850	408,000	326,480	437,000	164,000
July			1	2,920	11	82.0	1,290	79,500	77,034	111,000	18,300
Aug.			24	4,640	26	754	2,160	133,000	141,360	206,000	25,900
Sept.			†29	24,800	21	311	3,950	235,000	123,450	235,000	15,300
Oct.			19	44,700	9	22,500	32,500	1,997,000	401,922	1,997,000	27,100
Nov.			9	47,800	30	350	19,000	1,128,000	247,252	1,128,000	30,100
Dec.			†10	11,600	1	515	7,570	465,000	190,917	465,000	65,500
Yearly				47,800		25.0	6,930	5,016,800	2,527,739	5,016,800	1,482,330

† And other days Ø Mean daily # Values prior to 1958 are Chapeño discharges less arroyo inflow

RIO ALAMO AT CD. MIER, TAMAULIPAS

DESCRIPTION: Water-stage recorder and cable with sit-down cable car and reinforced concrete weir for measuring flows up to 177 second-feet, located 3.1 miles above the confluence of the Río Alamo with the Rio Grande and .6 mile west of Cd. Mier, Tamaulipas, at a point called "El Paso del Cántaro." This stream enters the Rio Grande 986.8 river miles below the American Dam at El Paso, Texas. The zero of the gage is 188.35 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 48 meter measurements made at high flows during the year, the weir discharge table at low flows, and a continuous record of gage heights. High-flow computations by shifting channel methods. Records available: July 1; 1923 through December 1958.

REMARKS: Small reservoirs and irrigation diversions modify the flow of this spring-fed stream at this station. On June 11, 1952 the recorder was moved 515 feet downstream to a point 312 feet above the weir, and the zero of the gage changed to coincide with the weir crest elevation.

EXTREME FLOWS FROM RECORDS: Momentary: Max. * 144,800 second-feet on September 11, 1948, with a gage height of 33.56 feet. Periods of no flow have occurred at times during all years of record except 1934 and 1935.

Average Flow in Second-Feet ‡

Daily:	Max.	87,230	Sept. 11, 1948	Min.	0	Frequently
Monthly:	Max.	5,170	Sept. 1948	Min.	0	Frequently
Yearly:	Max.	536	1953	Min.	16.4	1929

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	12.0	0	1.1	0	0	0	113	0	3.2	2,060	675	213
2	42.0	0	1.0	0	0	0	28.3	0	2.5	2,770	607	208
3	12.4	0	1.0	0	50.9	0	10.6	0	1.8	1,610	487	208
4	710	0	.7	0	89.3	0	7.1	0	1.1	798	434	208
5	2,240	0	.3	0	101	0	4.2	0	.7	403	392	208
6	374	0	0	0	22.6	0	1.8	0	9.9	268	360	204
7	47.0	0	0	0	7.1	0	11.3	0	3,080	222	304	196
8	16.2	0	0	0	4.2	0	1,820	0	830	188	296	192
9	8.1	0	0	0	2.5	0	2,780	0	540	134	287	192
10	4.2	484	0	0	1.8	0	1,600	0	182	183	278	188
11	2.4	121	0	0	.7	0	459	0	607	3,600	269	181
12	1.4	63.6	0	0	0	0	94.6	0	269	4,910	265	178
13	.7	19.8	0	0	646	0	42.4	0	39.6	9,430	261	175
14	.7	4.2	0	0	3,570	0	18.0	53.0	19.4	7,490	257	168
15	.7	2.1	0	0	2,000	0	13.1	25.1	216	6,220	253	162
16	.4	1.4	0	0	216	0	8.1	2.5	152	14,270	249	160
17	0	1.1	0	0	86.9	310	6.0	.7	56.9	19,210	244	160
18	0	1.1	0	0	410	1,370	4.2	33.9	3,740	8,550	236	160
19	0	1.1	0	0	75.2	81.2	2.5	427	11,800	4,030	228	160
20	0	32.1	0	0	96.8	9.5	1.8	47.3	1,640	2,550	225	160
21	0	65.3	0	0	41.0	4.2	.4	12.4	477	1,780	225	154
22	0	31.4	0	0	10.9	788	0	4.2	1,010	1,230	225	145
23	0	12.0	0	0	4.9	2,670	0	1.8	2,590	1,000	225	139
24	0	7.1	0	0	2.8	230	0	1.1	558	865	221	126
25	0	4.9	0	0	1.1	100	0	819	234	742	216	112
26	0	3.2	0	0	.7	35.3	0	3,670	189	614	216	109
27	0	2.1	0	0	0	353	0	1,030	561	498	216	107
28	0	1.4	0	0	0	1,650	0	73.8	932	456	221	102
29	0		0	0	0	530	0	26.5	3,600	505	221	97.1
30	0		0	0	0	322	0	12.0	2,360	516	216	94.3
31	0		0		0		0	6.0		604		89.3
Sum	3,472.2	858.9	4.1	0	7,442.4	8,453.2	7,026.4	6,246.3	35,702.1	97,706	8,809	4,955.7

Current Year 1958									Period 1924-1958		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	4.52	0	5	2,830	† 16	0	112	6,890	3,800	34,920	0
Feb.	3.60	0	10	2,030	† 1	0	30.7	1,700	2,732	25,550	0
Mar.	.03	0	† 1	1.1	† 6	0	.1	8.1	2,780	19,830	0
Apr.	0	0	† 1	0	† 1	0	0	0	7,570	36,210	0
May	10.63	0	13	14,060	† 1	0	240	14,750	14,609	* 137,000	0
June	5.58	0	17	5,050	† 1	0	282	16,760	12,745	83,240	0
July	4.92	0	9	4,340	† 21	0	227	13,930	6,696	37,590	0
Aug.	6.33	0	26	6,570	† 1	0	201	12,390	18,854	205,700	0
Sept.	13.42	0	19	20,480	5	0	1,190	70,820	37,654	307,900	* 135
Oct.	14.17	.88	17	22,250	10	99.6	3,150	193,700	19,948	193,700	0
Nov.	2.23	1.44	1	682	† 24	216	294	17,470	3,793	21,940	0
Dec.	1.44	.79	1	216	31	84.8	160	9,830	3,340	15,000	0
Yearly	14.17	0		22,250		0	495	358,248.1	134,521	387,800	11,898.7

* Partly estimated † And other days ‡ Period 1924-1958

CONTRIBUTIONS FROM RIO SAN JUAN

DESCRIPTION: The discharges reported below comprise the total flow entering the Rio Grande through the Río San Juan Channel and the various drains serving the Río San Juan irrigation system between Roma and Anzalduas Dam site. The confluence of the Río San Juan and the Rio Grande is 1,010.4 river miles below the American Dam at El Paso, Texas, 3.9 river miles above Fort Ringgold gaging station, and 9.4 river miles below Marte Gómez Dam on the Río San Juan.

RECORDS: The portion of water reaching the Rio Grande above Fort Ringgold gaging station through the Río San Juan Channel was measured at a station consisting of water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located opposite Camargo, Tamaulipas, about 3.1 river miles above the confluence with the Rio Grande. The balance consisted of discharges through the Rancherías and Los Fresnos drains which were determined by prorating between weekly current meter measurements. The water reaching the Rio Grande below Fort Ringgold gaging station via Puertecitos, Los Indios, Huizache, and Morillo drains was determined by prorating between weekly current meter measurements. All storm water measured at the above mentioned drains was deducted and is not shown here. No water was released from Marte Gómez Reservoir for use in the United States during 1958. Records available: January 1953 through December 1958.

REMARKS: No water returned to the Rio Grande through Los Fresnos Drain during 1958. Mean daily discharges of the various other contributions are found in the following two pages including separate mean daily discharges of Morillo Drain for correlation with electrical conductivity and salt content determinations of water samples, taken at this station, which appear on page 83 of this bulletin.

Above Fort Ringgold Station

Month	Current Year 1958								Period 1953-1958		
	Extreme Gage Feet		Ø Extreme Second Feet				Average Second Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			5	738	31	5.4	40.7	2,500	949	2,500	* 182
Feb.			23	120	1	5.3	15.7	871	560	996	* 182
Mar.			1	9.4	26	5.8	7.5	464	572	1,040	182
Apr.			1	9.2	15	1.4	3.7	222	2,405	8,480	131
May			14	1,720	29	4.4	139	8,510	3,290	8,510	111
June			27	81.2	† 1	5.0	12.6	750	3,035	9,110	78.6
July			10	264	29	4.1	27.1	1,660	1,225	1,930	43.8
Aug			19	278	† 23	2.0	31.4	1,930	12,713	66,040	260
Sept.			30	1,640	6	10.6	239	14,220	54,430	294,800	1,070
Oct.			17	49,440	9	1,630	14,660	901,800	190,902	901,800	252
Nov.			1	8,580	11	1,490	3,870	230,400	45,360	230,400	405
Dec.			† 1	2,190	5	823	1,110	68,580	12,614	68,580	317
Yearly				49,440		1.4	1,700	1,231,907	328,055	1,231,907	18,151

Below Fort Ringgold Station

Month	Current Year 1958								Period 1953-1958		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.			11	25.8	1	18.3	22.3	1,370	1,584	2,650	661
Feb.			11	25.0	28	19.4	22.2	1,230	2,547	4,010	1,230
Mar.			18	19.2	26	14.5	17.0	1,050	1,858	2,370	1,050
Apr.			30	48.1	12	10.9	22.7	1,350	2,417	3,370	1,350
May			18	79.8	31	41.7	60.9	3,740	3,805	4,880	1,900
June			24	46.9	10	41.0	43.2	2,570	4,293	6,440	1,460
July			1	86.0	31	27.5	50.8	3,120	2,745	3,540	1,380
Aug			27	56.6	19	22.2	33.0	2,030	1,538	2,170	535
Sept.			1	37.3	17	24.1	27.4	1,630	1,623	2,350	1,110
Oct.			†13	34.5	† 1	33.5	34.2	2,100	1,573	2,140	1,160
Nov.			† 1	45.9	† 1	45.9	45.9	2,730	1,354	2,730	845
Dec.			2	55.2	†11	49.5	50.7	3,110	1,519	3,110	753
Yearly				86.0		10.9	36.0	26,030	26,856	32,153	20,051

* Partly estimated † And other days Ø Mean daily

CONTRIBUTIONS FROM RIO SAN JUAN – Above Fort Ringgold Station

Mean Daily Discharge in Second-Feet

RANCHERIAS DRAIN

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	.2	.4	.6	.4	2.4	2.2	10.3	1.3	.8	4.2	4.2	4.2
2	.2	.4	.6	.4	2.4	2.3	10.4	1.2	.8	4.2	4.2	4.2
3	.3	.4	.6	.5	2.4	2.3	10.5	1.1	.9	4.2	4.2	4.2
4	.3	.4	.6	.5	2.4	2.4	10.5	1.1	1.0	4.2	4.2	4.2
5	.3	.4	.6	.5	2.4	2.5	10.6	1.0	1.0	4.2	4.2	4.2
6	.4	.3	.5	.5	2.5	2.6	10.6	1.0	1.1	4.2	4.2	4.2
7	.4	.4	.5	.5	2.5	2.7	10.7	.9	1.4	4.2	4.2	4.2
8	.4	.4	.5	.5	2.5	2.8	10.8	.9	1.7	4.2	4.2	4.2
9	.4	.4	.5	.6	2.8	2.9	10.8	.8	1.9	4.2	4.2	4.2
10	.5	.4	.4	.6	3.1	3.0	10.9	.8	2.2	4.2	4.2	4.2
11	.4	.5	.4	.6	3.5	3.0	9.1	.7	2.5	4.2	4.2	4.5
12	.4	.5	.4	.6	3.8	3.1	7.3	.7	2.8	4.2	4.2	4.3
13	.4	.5	.4	.6	4.1	3.2	5.5	.7	3.1	4.2	4.2	4.1
14	.5	.6	.5	.5	4.4	3.3	3.6	.6	3.4	4.2	4.2	3.9
15	.5	.6	.5	.4	4.7	3.4	1.8	.6	3.7	4.2	4.2	3.7
16	.5	.6	.5	.4	5.0	3.5	1.8	.6	4.0	4.2	4.2	3.5
17	.5	.7	.5	.4	5.4	3.6	1.7	.6	4.2	4.2	4.2	3.3
18	.4	.7	.5	.4	5.7	3.7	1.6	.6	4.2	4.2	4.2	3.1
19	.4	.6	.5	.4	6.0	3.7	1.5	.6	4.2	4.2	4.2	2.9
20	.2	.6	.5	.4	6.3	3.8	1.5	.6	4.2	4.2	4.2	2.6
21	.2	.6	.5	.4	6.6	3.9	1.5	.6	4.2	4.2	4.2	2.6
22	.2	.6	.5	.4	6.0	4.8	1.5	.6	4.2	4.2	4.2	2.6
23	.2	.5	.5	.6	5.5	5.7	1.5	.6	4.2	4.2	4.2	2.6
24	.2	.6	.5	.8	4.9	6.6	1.5	.6	4.2	4.2	4.2	2.6
25	.3	.5	.5	1.1	4.3	7.5	1.5	.6	4.2	4.2	4.2	2.6
26	.3	.5	.5	1.3	3.7	8.3	1.5	.6	4.2	4.2	4.2	2.6
27	.3	.6	.5	1.6	3.1	9.2	1.6	.6	4.2	4.2	4.2	2.6
28	.4	.6	.5	1.8	2.5	10.1	1.6	.6	4.2	4.2	4.2	2.6
29	.4		.5	2.1	1.9	10.2	1.6	.7	4.2	4.2	4.2	2.6
30	.4		.5	2.3	2.0	10.2	1.5	.7	4.2	4.2	4.2	2.6
31	.5		.4		2.1		1.4	.7		4.2		2.7
Sum	11.0	14.3	15.5	22.1	116.9	136.5	158.2	23.3	91.1	130.2	126.0	106.6
Avg.	.4	.5	.5	.7	3.8	4.6	5.1	.8	3.0	4.2	4.2	3.4
Vol†	21.9	28.4	30.7	43.8	232	271	313	46.2	181	258	250	211

RIO SAN JUAN AT CAMARGO, TAMAULIPAS

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.7	4.9	8.8	8.8	3.9	2.8	10.6	6.4	16.2	1,710	8,580	2,190
2	5.7	5.3	8.1	7.8	3.9	2.8	10.6	7.8	14.8	1,770	8,260	2,190
3	5.7	5.3	7.8	7.1	3.5	2.8	10.6	7.4	13.8	1,830	7,880	2,190
4	98.2	5.3	7.1	6.0	3.5	2.8	10.6	7.1	12.4	1,820	7,770	1,610
5	738	5.6	7.1	4.9	3.2	2.8	10.6	6.4	10.9	1,800	7,630	819
6	94.6	5.6	7.0	3.9	3.2	2.8	10.6	6.0	9.5	1,790	7,200	826
7	51.9	5.6	7.0	3.2	2.8	2.8	66.4	5.7	21.9	1,730	6,390	823
8	41.0	5.6	7.0	2.1	2.8	2.8	10.6	4.9	33.5	1,670	6,140	833
9	29.7	5.6	7.1	1.8	2.8	3.2	95.3	4.6	17.7	1,630	5,760	872
10	18.7	7.8	7.1	1.7	2.8	3.2	253	4.6	13.1	1,640	5,190	897
11	7.8	13.1	7.1	1.8	2.8	2.8	47.0	4.6	12.4	1,810	1,490	890
12	20.8	9.2	7.1	1.4	2.8	2.5	10.9	4.6	12.4	5,400	1,890	397
13	10.6	7.1	7.4	1.4	2.8	2.5	10.9	4.6	12.0	15,190	2,120	989
14	9.2	7.1	7.4	1.0	1,720	2.1	10.9	4.6	11.7	29,910	2,270	1,020
15	7.8	7.1	7.4	1.0	710	1.8	10.9	4.6	11.3	42,380	2,210	1,020
16	6.4	7.1	7.4	1.1	313	1.8	10.6	4.6	14.1	48,380	2,210	1,020
17	6.7	7.1	7.4	1.4	208	1.4	9.9	4.6	52.3	49,440	2,230	964
18	6.7	7.1	7.4	1.4	897	2.5	9.2	48.7	185	48,730	2,250	1,030
19	7.1	7.1	7.1	1.4	143	3.5	8.8	277	809	40,260	2,480	1,070
20	7.4	7.1	7.1	1.8	77.0	4.2	8.1	53.3	220	27,760	2,770	1,070
21	7.4	7.1	6.7	1.7	10.9	5.3	7.4	36.0	131	19,740	2,610	953
22	7.8	107	6.4	1.8	9.9	5.3	7.1	18.7	325	16,560	2,550	833
23	7.4	120	6.0	2.1	8.8	5.3	6.4	1.4	51.9	14,410	2,470	830
24	7.1	12.4	5.7	2.5	7.8	5.3	5.6	1.4	28.6	12,570	2,460	876
25	6.7	11.7	5.7	2.8	6.7	5.3	4.9	230	192	11,120	2,270	1,020
26	6.4	10.9	5.3	3.2	5.6	5.3	4.2	73.1	228	10,060	2,190	1,050
27	6.0	10.2	6.0	3.2	4.6	72.0	3.9	30.7	424	9,220	2,190	1,050
28	6.0	9.5	6.4	3.5	3.5	62.5	3.2	26.8	1,120	8,690	2,190	1,090
29	5.6		7.1	3.9	2.5	10.6	2.5	23.0	1,430	8,370	2,190	1,140
30	5.3		7.8	4.2	2.5	10.6	3.9	19.1	1,640	8,370	2,190	1,180
31	4.9		8.5		2.5		5.3	17.7		8,760		1,230
Sum	1,250.3	424.5	218.5	89.9	4,174.1	241.4	680.5	950	7,074.5	454,520	116,030	34,472
Avg.	40.3	15.2	7.0	3.0	135	8.0	22.0	30.6	236	14,660	3,870	1,110
Vol†	2,480	842	433	178	8,280	479	1,350	1,880	14,040	901,500	230,100	68,360

† Volume in acre-feet

CONTRIBUTIONS FROM RIO SAN JUAN – Below Fort Ringgold Station

Mean Daily Discharge in Second-Feet

PUERTECITOS, HUIZACHE, AND MORILLO DRAINS

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	18.3	24.4	18.5	15.3	49.4	41.7	86.0	28.8	37.3	33.5	45.9	55.1
2	19.1	23.9	17.7	14.8	50.6	41.6	82.2	28.5	33.4	33.5	45.9	55.2
3	19.8	23.5	16.9	14.3	51.8	41.5	78.5	28.1	33.0	33.5	45.9	54.6
4	20.6	23.0	16.1	13.9	53.1	41.5	74.7	27.8	32.5	33.5	45.9	54.0
5	21.3	22.6	16.4	13.4	54.3	41.4	70.9	27.5	32.0	33.5	45.9	53.3
6	22.1	22.1	16.6	13.0	55.6	41.3	67.1	27.4	31.6	33.5	45.9	52.7
7	22.8	22.7	16.9	12.5	56.8	41.2	63.4	27.4	31.1	33.5	45.9	52.1
8	23.6	23.3	17.2	12.0	58.0	41.2	59.5	27.3	30.7	33.5	45.9	51.4
9	24.3	23.8	17.4	11.8	60.1	41.1	58.4	27.2	30.2	33.6	45.9	50.7
10	25.1	24.4	17.7	11.5	62.1	41.0	57.3	27.2	29.7	33.7	45.9	50.1
11	25.8	25.0	18.0	11.2	64.2	41.2	56.2	27.1	28.9	33.8	45.9	49.5
12	25.0	24.2	18.2	10.9	66.2	41.4	55.1	27.0	28.1	34.1	45.9	49.5
13	24.2	23.3	18.3	12.7	68.3	41.6	54.0	26.3	27.3	34.5	45.9	49.5
14	23.4	22.5	18.5	14.4	70.3	41.8	52.9	25.7	26.5	34.5	45.9	49.5
15	22.6	21.6	18.7	16.2	71.8	42.0	51.8	25.0	25.7	34.5	45.9	49.5
16	21.8	20.9	18.9	18.5	73.3	42.2	50.7	24.3	24.9	34.5	45.9	49.5
17	21.6	20.1	19.0	20.8	74.8	42.3	48.9	23.6	24.1	34.5	45.9	49.5
18	21.4	20.3	19.2	23.2	79.8	43.0	47.1	22.9	24.2	34.5	45.9	49.6
19	21.1	20.6	18.6	25.5	77.8	43.6	45.4	22.2	24.2	34.5	45.9	49.6
20	20.9	20.8	18.0	26.3	79.3	44.3	43.6	26.5	24.2	34.5	45.9	49.6
21	20.7	21.0	17.4	27.1	75.1	44.9	41.9	30.8	24.2	34.5	45.9	49.6
22	20.4	21.2	16.8	27.9	71.0	45.6	40.1	35.1	24.2	34.5	45.9	49.6
23	20.9	21.4	16.3	30.4	66.8	46.2	38.4	39.4	24.2	34.5	45.9	49.6
24	21.4	21.7	15.7	33.0	62.6	46.9	36.7	43.7	24.2	34.5	45.9	49.6
25	21.9	21.9	15.1	35.5	58.6	46.7	35.0	48.0	24.3	34.5	45.9	49.6
26	22.4	21.0	14.5	38.0	54.4	46.5	33.3	52.3	24.3	34.5	45.9	49.6
27	22.9	20.2	14.7	40.5	50.2	46.3	31.6	56.6	24.3	34.5	45.9	49.6
28	23.4	19.4	14.8	43.1	46.1	46.1	29.9	52.8	24.3	34.5	45.9	49.7
29	23.9		15.0	45.6	41.9	45.8	28.2	48.9	24.3	34.5	45.9	49.6
30	24.4		15.1	48.1	41.8	45.6	27.9	45.1	24.3	34.5	45.9	49.7
31	24.7		15.2		41.7		27.5	41.1		34.5		49.7
Sum	691.8	620.8	527.4	681.4	1,887.8	1,297.5	1,574.2	1,021.6	822.2	1,058.7	1,377.0	1,570.4
Avg.	22.3	22.2	17.0	22.7	60.9	43.2	50.8	33.0	27.4	34.2	45.9	50.7
Vol†	1,370	1,230	1,050	1,350	3,740	2,570	3,120	2,030	1,630	2,100	2,730	3,110

MORILLO DRAIN

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	14.7	18.5	13.6	10.2	35.5	29.3	69.9	21.3	29.1	ᵛ 23.0	ᵛ 31.8	ᵛ 38.2
2	15.3	18.0	13.0	9.8	36.7	29.3	66.7	21.1	25.1	ᵛ 23.0	ᵛ 31.8	38.2
3	15.8	17.5	12.3	9.5	37.9	29.3	63.6	20.9	24.4	ᵛ 23.0	ᵛ 31.8	38.0
4	16.4	17.0	11.6	9.1	39.1	29.3	60.4	20.8	23.7	ᵛ 23.0	ᵛ 31.8	37.8
5	16.9	16.5	11.8	8.8	40.3	29.3	57.2	20.6	23.0	ᵛ 23.0	ᵛ 31.8	37.6
6	17.5	15.9	12.1	8.4	41.5	29.3	54.0	20.6	22.4	ᵛ 23.0	ᵛ 31.8	37.3
7	18.0	16.7	12.3	8.1	42.7	29.3	50.9	20.7	21.7	ᵛ 23.0	ᵛ 31.8	37.1
8	18.6	17.4	12.5	7.7	43.9	29.3	47.7	20.7	21.0	ᵛ 23.0	ᵛ 31.8	36.9
9	19.1	18.2	12.7	7.6	45.1	29.3	46.7	20.8	20.3	ᵛ 23.0	ᵛ 31.8	36.7
10	19.7	18.9	13.0	7.5	46.3	29.3	45.8	20.8	19.6	ᵛ 23.0	ᵛ 31.8	36.4
11	20.2	19.6	13.2	7.3	47.5	29.3	44.8	20.8	19.0	ᵛ 23.0	ᵛ 31.8	36.2
12	19.6	18.8	13.2	7.2	48.7	29.3	43.8	20.9	18.3	ᵛ 23.0	ᵛ 31.8	36.0
13	19.0	18.0	13.2	9.0	49.9	29.3	42.9	20.3	17.6	ᵛ 23.0	ᵛ 31.8	35.7
14	18.4	17.2	13.3	10.8	51.1	29.3	41.9	19.8	17.0	ᵛ 23.0	ᵛ 31.8	35.5
15	17.8	16.4	13.3	12.5	52.3	29.3	41.0	19.3	16.2	ᵛ 23.0	ᵛ 31.8	35.3
16	17.2	15.6	13.3	14.3	53.5	29.3	40.0	18.7	15.6	ᵛ 23.0	ᵛ 31.8	35.0
17	16.9	14.8	13.3	16.1	54.7	29.3	38.7	18.2	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	34.8
18	16.5	15.0	13.3	17.9	55.9	29.3	37.3	17.7	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	34.6
19	16.2	15.2	13.1	19.7	57.1	29.3	36.0	17.1	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	34.4
20	15.9	15.4	12.9	20.0	58.3	29.3	34.6	21.2	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	34.1
21	15.5	15.6	12.7	20.2	55.1	29.3	33.3	25.2	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	33.9
22	15.1	15.8	12.5	20.5	51.8	29.3	32.0	29.2	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	33.7
23	15.6	15.9	12.3	22.2	48.6	29.3	30.5	33.3	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	33.4
24	16.0	16.1	12.0	23.9	45.4	29.3	29.1	37.4	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	33.2
25	16.4	16.3	11.8	25.6	42.2	29.3	27.7	41.4	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	33.0
26	16.8	15.6	11.6	27.4	39.0	29.3	26.2	45.4	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	32.8
27	17.3	15.0	11.4	29.1	35.8	29.3	24.8	49.5	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	32.5
28	17.7	14.3	11.2	30.8	32.6	29.3	23.3	45.4	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	32.3
29	18.2		10.9	32.6	29.3	29.3	21.9	41.4	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	32.1
30	18.6		10.7	34.3	29.3	29.3	21.7	37.3	ᵛ 14.9	ᵛ 23.0	ᵛ 31.8	31.9
31	19.0		10.4		29.3		21.5	33.2		ᵛ 23.0		31.6
Sum	535.9	465.2	384.5	488.1	1,376.4	879.0	1,255.9	821.0	* 542.6	ᵛ 713.0	ᵛ 954.0	1,086.2
Avg.	17.3	16.6	12.4	16.3	44.4	29.3	40.5	26.5	* 18.1	ᵛ 23.0	ᵛ 31.8	35.0
Vol†	1,060	923	763	968	2,730	1,750	2,490	1,630	*1,080	ᵛ1,410	ᵛ1,890	2,150

ᵛ Estimated * Partly estimated † Volume in acre-feet

RIO GRANDE AT FORT RINGGOLD, RIO GRANDE CITY, TEXAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights, located about 1 river mile below Rio Grande City, Texas, 3.9 river miles below the confluence of the Río San Juan with the Rio Grande, and 1,014.3 river miles below the American Dam at El Paso, Texas. The zero of the gage is 100.00 feet above mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 67 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1955 through December 1958. Records composed of the addition of discharges of the Rio Grande at Roma, Texas and the Río San Juan at Santa Rosalía, Tamaulipas, are available for May, June, and October 1914; September 1916; September and October 1917; October 1918; September and October 1919; August and September 1920; June 1922; September 1923; and January 1924 through December 1931. Records are also available for the station "Rio Grande near Rio Grande City" for 1932 through 1954.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Except for tributary inflows and intervening diversions below Falcón Dam, flow at this station is controlled largely by releases from Falcón Reservoir, 39.9 river miles upstream.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow was 198,800 second-feet, which occurred September 5, 1932, at an elevation of 157.4 feet at the station 3 miles downstream. Zero flow occurred several days in June and July 1953.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,300	720	70.4	1,010	6,690	4,220	2,070	2,190	3,080	26,800	46,000	2,630
2	1,000	749	58.4	1,050	7,690	5,450	3,030	1,570	2,370	27,900	45,800	6,110
3	890	753	67.4	1,190	8,500	4,770	2,460	1,920	2,320	29,000	45,400	8,550
4	1,030	743	58.4	1,200	7,440	6,030	2,040	2,080	2,340	28,500	45,200	9,690
5	5,180	745	51.7	1,130	5,410	6,150	1,650	2,130	3,250	27,900	44,900	10,500
6	2,900	746	54.0	1,570	9,800	6,580	1,480	1,940	997	27,600	46,300	10,500
7	1,160	727	60.7	2,210	7,260	7,750	1,360	1,750	2,500	26,200	48,600	10,500
8	968	728	60.7	2,500	7,500	8,210	1,600	1,470	4,340	24,500	49,000	10,500
9	992	801	70.4	2,480	7,210	8,210	4,520	1,340	2,160	23,400	48,600	11,800
10	963	1,570	79.4	2,730	7,020	7,850	4,000	2,070	1,350	23,400	46,100	12,700
11	933	1,270	60.7	2,910	7,350	7,100	1,810	2,380	1,050	27,400	28,900	12,800
12	999	328	79.4	3,680	7,760	7,180	747	2,680	1,440	33,300	20,300	12,800
13	936	167	101	3,820	7,800	7,540	460	2,950	1,010	43,200	18,100	12,800
14	948	125	109	4,380	17,400	9,000	488	2,660	809	54,400	14,000	12,800
15	908	101	101	5,470	8,440	10,100	516	2,280	535	71,400	12,600	12,700
16	852	94.5	94.5	5,840	3,790	7,780	668	1,300	1,630	93,100	12,400	12,600
17	868	140	94.5	4,800	694	12,700	829	1,570	1,010	101,000	12,300	10,800
18	854	398	121	4,740	1,610	13,300	820	1,910	2,400	101,000	12,300	9,900
19	835	329	209	4,650	811	9,490	949	3,120	9,820	91,200	14,500	9,900
20	850	245	395	4,710	322	8,970	1,080	2,740	6,710	79,700	16,300	9,900
21	857	193	409	5,120	384	8,520	1,280	2,070	1,980	70,200	13,600	9,890
22	839	387	739	5,190	939	7,430	1,290	1,800	1,550	63,400	12,900	9,810
23	851	326	869	4,810	1,500	7,590	1,220	2,250	2,900	57,400	12,600	9,780
24	833	147	1,330	3,570	2,320	5,880	1,250	3,810	2,430	53,900	12,500	9,780
25	830	105	1,490	3,710	3,270	6,250	1,250	4,970	1,320	50,700	9,450	9,240
26	826	91.5	1,160	3,670	3,590	5,760	1,450	5,180	6,010	48,600	8,750	2,960
27	849	76.4	853	3,600	3,600	5,360	1,890	3,300	8,770	47,100	8,290	2,030
28	859	65.2	650	4,280	3,500	5,560	2,380	1,190	15,800	46,300	8,380	1,990
29	771		618	4,180	3,100	2,360	2,350	962	21,400	45,900	7,750	1,930
30	693		446	4,870	2,930	2,590	2,070	2,230	25,200	45,800	5,310	2,190
31	743		564		3,590		2,110	3,400		45,900		1,940
Sum	35,317	12,870.6	11,124.6	105,070	159,220	215,680	51,117	73,212	138,481	1,536,100	727,130	272,020

Month	Current Year 1958 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 1955-1958 Acre-Feet Average	Maximum	Minimum
Jan.	31.96	26.52	5	6,320	30	388	1,140	70,100	229,275	349,000	70,100
Feb.	29.10	25.55	10	3,000	28	56.2	460	25,500	170,125	354,000	25,500
Mar.	28.28	25.46	25	2,170	6	45.0	359	22,100	89,875	166,000	14,400
Apr.	31.95	26.62	22	6,680	5	600	3,500	208,000	193,025	340,000	75,100
May	39.48	26.30	14	23,800	21	219	5,140	316,000	330,000	521,000	231,000
June	36.18	27.50	18	14,700	30	1,410	7,190	428,000	336,500	434,000	197,000
July	30.48	26.40	9	5,400	13	383	1,650	101,000	80,150	109,000	22,300
Aug.	30.89	26.65	26	6,240	29	554	2,360	145,000	139,500	198,000	25,000
Sept.	42.04	26.40	30	25,700	15	383	4,620	275,000	159,100	275,000	89,400
Oct.	57.40	41.60	17	104,000	10	22,800	49,600	3,047,000	839,875	3,047,000	30,000
Nov.	50.66	28.62	8	49,200	30	2,850	24,200	1,442,000	418,850	1,442,000	30,000
Dec.	34.98	27.67	† 13	12,900	30	1,650	8,770	540,000	258,750	540,000	134,000
Yearly	57.40	25.46		104,000		45.0	9,140	6,619,700	3,245,025	6,619,700	1,637,900

† And other days

RIO GRANDE ABOVE ANZALDUAS DAM

DESCRIPTION: Water-stage recorder in metal stilling well and shelter located approximately 200 feet upstream from the gates of Anzaldúas Dam near the upstream end of the headwall of the Anzaldúas Canal intake structure, and a staff gage graduated in metric units attached to the right bank abutment of the intake structure, 12.7 river miles above the international bridge between Hidalgo, Texas and Reynosa, Tamaulipas, 1,076.6 river miles below the American Dam at El Paso, Texas and 171.6 river miles upstream from the Gulf of Mexico. The zero of the gage is 88.84 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: The gage height record was obtained by the recording gage operated and maintained by the Mexican Section during the flood of 1958 and the gage heights were reduced to mean sea level elevation for this bulletin.

REMARKS: When the stage above Anzaldúas Dam reached an elevation of approximately 109.00 feet above mean sea level during the 1958 flood, water began to flow into the Mission Inlet of the United States Floodway System.

Mean Daily Elevations above Mean Sea Level – 1958

Oct. 1	106.23	Oct. 10	106.48	Oct. 19	113.06	Oct. 28	109.91	Nov. 6	109.51	Nov. 15	104.26
2	106.43	11	106.46	20	112.79	29	109.78	7	109.51	16	103.64
3	106.73	12	107.12	21	112.38	30	109.68	8	109.61	17	103.48
4	107.02	13	107.87	22	112.01	31	109.58	9	109.78	18	103.41
5	107.18	14	108.56	23	111.65	Nov. 1	109.55	10	109.84		
6	107.05	15	109.25	24	111.29	2	109.58	11	109.71		
7	107.09	16	109.84	25	110.86	3	109.61	12	108.83		
8	107.02	17	111.22	26	110.50	4	109.60	13	107.38		
9	107.05	18	112.68	27	110.20	5	109.55	14	105.74		

RIO GRANDE BELOW ANZALDUAS DAM

DESCRIPTION: Water-stage recorder and cable with stand-up cable car equipped for winch and heavy weights located .5 mile below Anzaldúas Dam, 12.2 river miles above the international highway bridge between Hidalgo, Texas and Reynosa, Tamaulipas, 1,077.1 river miles below the American Dam at El Paso, Texas, and 171.1 river miles from the Gulf of Mexico. An auxiliary recorder 575 feet upstream is used for extremely low flows. The zero of both gages is 82.61 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 115 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1, 1952 through December 31, 1958. After October 3, 1958, when the station was damaged by high water, the discharge records are based on: A) A continuous record of gage heights above Anzaldúas Dam, and B) A rating curve, for discharge over the crest of the temporary Anzaldúas Dam. This rating curve, which up to 18,000 second-feet is based on cable measurements at this station, was extended for higher flows on the basis of peak discharges in Hackney Branch and at Hidalgo, with proper allowance for flattening.

REMARKS: Flows at this station are largely regulated by Falcón International Storage Dam on the Rio Grande, and by Marte Gómez Reservoir on the Río San Juan in Mexico. There are many diversions in both countries above this station including the major single Mexican diversion to Anzaldúas Canal published elsewhere in this bulletin. Flood flows may be modified by operation of the international floodway system described on page 44 of this bulletin.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 63,920 second-feet on October 19, 1958 with a gage height of 28.87 feet. Min. periods of no flow have occurred on several occasions in 1953, 1954, 1956, and 1957.

Average Flow in Second-Feet

Daily:	Max.	63,570	Oct. 19, 1958	Min.	0	Occasionally
Monthly:	Max.	37,830	Oct. 1958	Min.	5.5	Mar. 1957
Yearly:	Max.	6,410	1958	Min.	158	1957

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	19.8	15.5	14.1	8.5	55.1	38.5	724	31.8	31.4	21,650	40,610	5,190
2	21.2	17.0	12.7	7.8	81.2	39.9	420	30.0	31.4	21,820	40,610	3,270
3	22.2	20.5	12.7	29.7	93.9	234	129	30.0	31.4	22,850	40,610	7,660
4	23.3	22.3	12.7	74.2	114	1,020	39.9	30.0	30.4	23,660	40,610	8,580
5	21.2	20.5	15.2	68.9	97.1	2,600	39.9	30.0	29.3	24,160	40,610	9,680
6	16.2	15.5	17.3	67.5	81.2	2,870	34.6	30.0	29.3	23,840	40,260	10,240
7	15.2	14.5	18.4	70.6	120	2,910	32.1	30.0	30.4	23,910	40,260	10,450
8	15.2	15.5	16.2	79.1	139	3,390	29.7	30.0	29.3	23,700	40,960	10,520
9	15.2	17.0	14.1	69.9	133	3,740	27.5	30.0	31.4	22,920	41,670	10,700
10	16.6	11.3	13.4	64.6	114	4,310	23.3	30.0	30.4	22,250	42,020	11,900
11	17.7	12.4	10.6	60.0	110	3,920	23.3	30.0	27.2	22,570	41,320	12,570
12	17.7	13.4	9.5	62.5	96.1	3,530	21.2	30.0	27.2	25,070	36,370	12,820
13	15.2	18.4	9.5	64.6	27.2	3,080	21.2	28.3	25.8	27,970	29,240	12,890
14	16.6	14.1	9.5	57.6	1,900	3,080	23.3	28.3	25.8	31,820	22,530	13,030
15	15.2	13.4	9.5	60.0	9,360	2,980	19.1	33.2	27.2	35,310	15,860	12,960
16	16.6	13.4	11.3	64.6	4,270	2,930	31.4	49.4	27.2	38,850	13,490	12,890
17	19.4	14.1	11.3	34.6	523	3,810	51.9	30.0	25.8	48,380	12,820	12,470
18	19.4	13.4	8.8	34.6	43.4	4,840	55.1	28.3	23.3	60,390	12,570	10,740
19	20.5	13.4	8.8	24.4	38.8	4,240	51.9	28.3	445	63,570	13,100	9,990
20	18.4	14.1	9.5	18.0	13.4	3,280	51.9	28.3	4,840	61,800	15,190	9,960
21	19.4	14.1	12.7	16.6	25.4	3,100	45.2	28.3	3,390	58,980	15,930	9,960
22	19.4	16.2	5.7	69.9	42.0	3,160	30.4	28.3	1,610	56,500	14,200	9,820
23	13.4	12.7	4.2	75.2	33.5	3,070	30.4	28.3	1,020	53,680	11,550	9,750
24	15.5	12.7	1.1	64.6	42.0	3,330	30.4	28.3	1,650	51,210	10,560	9,890
25	17.0	13.4	1.4	55.1	41.0	3,270	27.5	33.2	1,740	48,730	9,570	9,990
26	17.0	13.4	6.4	57.6	43.8	3,390	30.4	30.0	1,330	46,260	8,370	8,120
27	18.4	12.0	8.5	57.6	42.4	3,400	25.1	33.2	5,120	44,500	8,860	3,960
28	17.0	14.1	10.9	55.1	41.3	2,660	25.1	30.0	8,330	42,730	8,620	1,980
29	15.5		8.5	60.0	38.1	2,060	25.1	30.0	12,780	41,670	8,440	298
30	17.0		8.5	60.0	42.0	1,230	27.5	30.0	17,730	41,320	7,980	17.7
31	15.5		8.5		25.8		27.5	30.0		40,610		7.1
Sum	547.9	418.3	321.5	1,593.4	17,827.7	85,512.4	2,174.9	945.5	60,499.2	1,172,680	724,790	272,302.8

Month	Current Year 1958 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 1952-1958 Acre-Feet Average	Maximum	Minimum
Jan.	- .07	- .43	4	40.6	23	7.1	17.7	1,090	66,539	166,200	1,090
Feb.	- .23	- .59	4	22.2	10	3.5	14.9	830	49,477	114,100	830
Mar.	- .26	- .69	7	18.4	24	1.1	10.4	638	56,926	108,500	339
Apr.	.33	- .39	8	84.4	3	7.1	53.1	3,160	59,907	155,700	3,160
May	12.99	- .46	15	10,840	31	10.6	575	35,360	109,727	202,400	35,190
June	9.51	- .13	18	5,470	1	32.5	2,850	169,600	115,814	214,900	1,480
July	2.76	- .69	1	908	16	18.0	70.2	4,310	56,163	252,400	2,000
Aug.	- .62	- .72	16	49.4	†13	28.3	30.5	1,880	63,471	241,200	1,830
Sept.	21.78	- .82	30	20,410	18	23.3	2,020	120,000	103,103	468,500	3,920
Oct.	28.87	21.78	19	63,920	1	20,410	37,830	2,326,000	400,430	2,326,000	1,730
Nov.	26.25	11.06	10	42,020	30	7,350	24,160	1,438,000	235,547	1,438,000	1,430
Dec.	15.68	- .33	14	13,030	31	7.1	8,780	540,100	104,659	540,100	1,500
Yearly	28.87	- .82		63,920		1.1	6,410	4,640,968	1,421,763	4,640,968	114,749

† And other days

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY
On the United States Side

Part of the excess water from floods entering the Lower Rio Grande Valley is diverted from the river through the United States floodway system, with inlets located approximately 6 miles upstream (Mission Inlet) and 7 miles downstream (Hackney Lake Inlet) respectively from Anzaldúas Dam.

Floodwater entering the system through the Mission Inlet is measured at the Mission Branch Station South of McAllen and floodwater entering through the Hackney Lake Inlet is measured at the Hackney Branch Station South of McAllen. ** These waters join at a point 5 miles northeast of Hidalgo and flow eastward in the Main Floodway for about 19 miles to a point 3 miles southwest of Mercedes, Texas. Here the floodway divides, one channel going northeastward through the Arroyo Colorado Floodway to the Gulf of Mexico, and the other going to the Gulf via the North Floodway, traveling first northward and then eastward to the Gulf. The Arroyo Colorado Floodway is measured at U. S. 83 Highway Bridge south of Harlingen, and the North Floodway flow is measured first at U. S. 83 Highway Bridge west of Mercedes and again at U. S. 77 Highway Bridge near Sebastian.

During the 1958 flood, when the river stage at Anzaldúas Dam reached an elevation of approximately 109 feet above mean sea level, diversion of river flow at Mission Inlet began. When the river stage reached approximately 100 feet above mean sea level at the Hidalgo-Reynosa bridge, Hackney Lake Inlet began to divert part of the river flow.

In 1958 a total of 1,341,000 acre-feet were diverted through this floodway system.

Mission Branch South of McAllen, Texas

RECORDS: Based on 12 current meter measurements and a continuous record of gage heights during the period.

Mean Daily Discharge in Second-Feet 1958 — Annual Summary

Oct. 15	0	Oct. 21	27,300	Oct. 27	9,700	Nov. 2	6,100	Nov. 8	5,900	Nov. 14	418
16	150	22	22,900	28	8,200	3	6,210	9	6,610	15	269
17	5,460	23	19,100	29	7,250	4	6,210	10	7,000	16	121
18	23,100	24	16,400	30	6,810	5	6,010	11	7,000	17	* 14.0
19	31,000	25	13,800	31	6,400	6	5,790	12	4,900	18	0
20	30,600	26	11,500	Nov. 1	6,100	7	5,530	13	1,590		

PERIOD	Maximum Gage Feet	DAY	Maximum Discharge Second-Feet	Average Second-Feet	Total Acre-Feet
October 15-31	100.46	19	32,000	14,100	475,000
November 1-18	94.52	† 10	7,060	4,210	150,000
YEARLY	100.46		32,000		625,000

Hackney Branch South of McAllen, Texas

RECORDS: Based on 12 current meter measurements and a continuous record of gage heights during the period.

Mean Daily Discharge in Second-Feet 1958 — Annual Summary

Oct. 14	0	Oct. 20	22,500	Oct. 26	14,200	Nov. 1	10,100	Nov. 7	9,890	Nov. 13	4,140
15	78.0	21	20,900	27	12,800	2	10,100	8	10,100	14	1,270
16	2,270	22	19,900	28	11,900	3	10,400	9	10,700	15	113
17	6,680	23	18,300	29	11,100	4	10,400	10	11,000	16 ᵘ	50.0
18	15,900	24	17,000	30	10,800	5	10,300	11	10,800	17 ᵘ	25.0
19	22,400	25	15,800	31	10,300	6	10,000	12	8,740	18	0

PERIOD	Maximum Gage Feet	DAY	Maximum Discharge Second-Feet	Average Second-Feet	Total Acre-Feet
October 14-31	102.78	19	22,600	12,900	462,000
November 1-18	99.43	10	11,100	7,120	254,000
YEARLY	102.78		22,600		716,000

ᵘ Estimated * Partly estimated † And other days ** These stations have been called "North Floodway South of McAllen" and "South Floodway South of McAllen", respectively, in previous Water Bulletins.

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY
On the United States Side

North Floodway at Mercedes, Texas

RECORDS: Based on 13 current meter measurements and a continuous record of gage heights during the period.

Mean Daily Discharge in Second-Feet 1958 — Annual Summary

Oct. 16	0	Oct. 22	30,100	Oct. 28	16,100	Nov. 3	11,900	Nov. 9	11,900	Nov. 15	1,890
17	1,420	23	27,800	29	14,500	4	12,200	10	12,800	16	954
18	14,300	24	24,600	30	13,400	5	12,100	11	13,300	17	350
19	35,100	25	22,600	31	12,800	6	11,700	12	12,800	18	150
20	36,700	26	20,300	Nov. 1	12,100	7	11,300	13	8,320	19	25.0
21	33,800	27	18,300	2	11,800	8	11,200	14	3,600	20 ᵘ	10.0
										21	0

PERIOD	Maximum Gage Feet	DAY	Maximum Discharge Second-Feet	Average Second-Feet	Total Acre-Feet
October 16-31	69.30	20	37,200	20,100	638,000
November 1-21	64.40	11	13,300	7,640	318,000
YEARLY	69.30		37,200		956,000

Arroyo Colorado at Harlingen, Texas

RECORDS: Based on 16 current meter measurements and a continuous record of gage heights during the period.

Mean Daily Discharge in Second-Feet 1958 — Annual Summary

Oct. 17	0	Oct. 25	8,810	Nov. 1	3,100	Nov. 8	2,880	Nov. 15	1,510	Nov. 22	35.0
18	381	26	6,910	2	3,050	9	2,810	16	996	23	18.0
19	3,650	27	5,310	3	3,010	10	3,060	17	552	24 ᵘ	10.0
20	17,400	28	4,420	4	3,230	11	3,300	18	390	25 ᵘ	10.0
21	19,400	29	3,720	5	3,200	12	3,450	19	235	26	0
22	17,100	30	3,320	6	3,100	13	3,090	20	97.0		
23	14,300	31	3,200	7	3,020	14	2,100	21	51.0		
24	11,300										

PERIOD	Maximum Gage Feet	DAY	Maximum Discharge Second-Feet	Average Second-Feet	Total Acre-Feet
October 17-31	33.68	21	19,700	7,950	236,000
November 1-26	16.42	12	3,490	1,780	91,800
YEARLY	33.68		19,700		327,800

North Floodway South of Sebastian, Texas

RECORDS: Based on 10 current meter measurements and a continuous record of gage heights during the period.

Mean Daily Discharge in Second-Feet 1958 — Annual Summary

Oct. 14 #	326	Oct. 22	33,300	Oct. 30	15,700	Nov. 7	13,100	Nov. 15	5,920	Nov. 23 ⊕	395
15 #	1,150	23	30,600	31	14,600	8	12,800	16	4,180	24 ⊕	365
16 #	1,520	24	27,500	Nov. 1	13,700	9	13,100	17 ⊕	1,990	25 ⊕	320
17 #	1,470	25	25,100	2	13,400	10	13,900	18 ⊕	975	26 ⊕	292
18 #	1,400	26	23,000	3	13,500	11	14,400	19 ⊕	680	27 ⊕	280
19	23,800	27	20,800	4	13,700	12	14,500	20 ⊕	585		
20	39,000	28	18,500	5	13,600	13	12,400	21 ⊕	510		
21	37,000	29	16,800	6	13,300	14	8,400	22 ⊕	440		

PERIOD	Maximum Gage Feet	DAY	Maximum Discharge Second-Feet	Average Second-Feet	Total Acre-Feet
October 14-31	45.07	20	39,300	18,400	658,000
November 1-27	41.82	†11	14,800	7,430	398,000
YEARLY	45.07		39,300		1,056,000

ᵘ Estimated ⊕ Partly flood flow bank return; largely local storm drainage. # Local storm flow † And other days

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY
On the Mexican Side

Part of the excess water from floods entering the Lower Rio Grande Valley is diverted from the river through the Mexican floodway system, with inlets 38 miles (Retamal Heading) and 107 miles (Floodway No. 3) respectively, below Anzalúdas Dam. During the 1958 flood, water also entered the system through a cut made in the river levee at the old Control No. 2 site and through five cuts made in the vicinity of the Progreso Gaging Station.

Retamal Heading is equipped with gates and may divert floodwater at any stage while Floodway No. 3 began diverting when the river was approximately 8 feet above normal stage.

In 1958 a total of 1,794,820 acre-feet were diverted through this floodway system.

Retamal Canal Near Rio Bravo, Tamaulipas

RECORDS: Based on 23 current meter measurements and a continuous record of gage heights during the period.

Mean Daily Discharge in Second-Feet 1958 — Annual Summary

Sept. 20	0	Oct. 7	6,140	Oct. 24	13,600	Nov. 10	16,530	Nov. 27	2,250	Dec. 14	3,400
21	106	8	6,250	25	14,340	11	16,530	28	2,210	15	3,430
22	178	9	6,460	26	13,670	12	16,560	29	2,090	16	3,420
23	105	10	6,500	27	13,170	13	15,640	30	2,040	17	3,400
24	102	11	6,320	28	13,170	14	13,950	Dec. 1	1,820	18	2,640
25	96.1	12	6,670	29	13,140	15	10,980	2	1,160	19	1,060
26	97.1	13	7,490	30	13,600	16	7,310	3	992	20	735
27	94.3	14	8,120	31	14,130	17	5,400	4	1,720	21	35.3
28	202	15	8,050	Nov. 1	15,220	18	4,520	5	1,940	22	35.3
29	1,070	16	8,370	2	15,220	19	4,170	6	2,210	23	35.3
30	1,420	17	8,830	3	15,540	20	4,520	7	2,450	24	35.3
Oct. 1	2,200	18	9,680	4	15,080	21	5,610	8	2,540	25	35.3
2	3,670	19	10,660	5	15,790	22	5,650	9	2,550	26	35.3
3	5,050	20	11,940	6	16,240	23	4,800	10	2,650	27	35.3
4	5,050	21	12,110	7	16,530	24	3,300	11	2,950	28	35.3
5	5,400	22	13,210	8	16,530	25	2,900	12	3,200	29	35.3
6	6,110	23	13,630	9	16,530	26	2,350	13	3,320	30	35.3
										31	35.3

PERIOD	Maximum Gage Feet	DAY	Maximum Discharge Second-Feet	Average Second-Feet	Total Acre-Feet
September 20-30	70.37	30	1,810	116	6,880
October 1-31	78.35	25	14,660	9,250	568,700
November 1-30	77.97	12	16,670	9,730	579,200
December 1-31	73.15	15	3,430	1,550	95,140
YEARLY	78.35		16,670		1,249,920

Levee Cuts In Vicinity of Progreso Station

RECORDS: Based on daily current meter measurements of flow by the Ministry of Hydraulic Resources.

Mean Daily Discharge in Second-Feet 1958 — Annual Summary

Oct. 5	883	Oct. 12	1,400	Oct. 19	1,720	Oct. 26	4,080	Nov. 2	3,190	Nov. 9	1,920
6	1,420	13	1,420	20	1,820	27	3,980	3	3,260	10	1,420
7	1,370	14	1,480	21	2,100	28	4,230	4	2,860	11	1,400
8	1,510	15	1,500	22	2,390	29	3,960	5	2,590	12	1,430
9	1,430	16	1,470	23	4,920	30	3,610	6	2,280	13	1,480
10	1,440	17	1,480	24	4,980	31	3,130	7	2,030	14	968
11	1,430	18	1,580	25	4,470	Nov. 1	2,850	8	2,020	15	586

PERIOD	Maximum Gage Feet	DAY	Maximum Discharge Second-Feet	Average Second-Feet	Total Acre-Feet
October 5-31		24	Ø 4,980	2,410	129,300
November 1-15		3	Ø 3,260	2,020	60,100
YEARLY			Ø 4,980		189,400

Ø Mean daily

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY
On the Mexican Side

Levee Cut at Control No. 2 Site

RECORDS: Based on daily current meter measurements of flow by the Ministry of Hydraulic Resources.

Mean Daily Discharge in Second Feet 1958 — Annual Summary

Oct. 14	600	Oct. 20	600	Oct. 26	706	Nov. 1	353	Nov. 7	530	Nov. 13	353
15	600	21	600	27	706	2	353	8	530	14	353
16	600	22	600	28	706	3	353	9	530	15	318
17	600	23	600	29	565	4	353	10	530	16	141
18	600	24	653	30	388	5	618	11	530		
19	600	25	706	31	353	6	530	12	441		

PERIOD	Maximum Gage Feet	DAY	Maximum Discharge Second-Feet	Average Second-Feet	Total Acre-Feet
October 14-31		† 25	Ø 706	599	21,400
November 1-16		5	Ø 618	426	13,500
YEARLY			Ø 706		34,900

Floodway Number 3 Above Matamoros, Tamaulipas

RECORDS: Based on daily current meter measurements of flow by the Ministry of Hydraulic Resources.

Mean Daily Discharge in Second Feet 1958 — Annual Summary

Oct. 9	1,760	Oct. 17	2,810	Oct. 25	4,200	Nov. 2	4,490	Nov. 10	4,480	Nov. 18	2,550
10	1,890	18	3,110	26	4,990	3	5,710	11	4,440	19	1,880
11	2,000	19	3,250	27	4,810	4	5,810	12	4,260	20	1,410
12	2,030	20	3,450	28	4,820	5	4,580	13	4,210	21	1,060
13	2,120	21	3,440	29	4,710	6	4,180	14	4,270	22	844
14	2,220	22	3,440	30	4,510	7	4,020	15	4,130	23	780
15	2,380	23	3,700	31	4,520	8	4,240	16	3,750	24	886
16	2,490	24	3,900	Nov. 1	4,510	9	4,440	17	3,200	25	950

PERIOD	Maximum Gage Feet	DAY	Maximum Discharge Second-Feet	Average Second-Feet	Total Acre-Feet
October 9-31		26	Ø 4,990	3,330	151,800
November 1-25		4	Ø 5,810	3,400	168,800
YEARLY			Ø 5,810		320,600

† And other days Ø Mean daily

RETURN FLOW TO THE RIO GRANDE AT PONIENTE DRAIN

West of Reynosa, Tamaulipas

DESCRIPTION: Water-stage recorder on downstream side of railroad bridge 650 feet below drain heading and cable with cable-car 300 feet farther downstream. This drain branches off the left side of the Anzaldúas Canal 5.16 miles below the canal intake and enters the Rio Grande 1,088.6 river miles below the American Dam at El Paso, Texas. The zero of the gage is 85.83 feet above mean sea level U. S. C. & G. S. datum.

RECORDS: Based on 66 meter measurements during the year, 64 by the Mexican and 2 by the United States Section of this Commission and a continuous record of gage heights. Computations by shifting channel methods. Records available: 1953 through 1958.

REMARKS: Flows passing this station represent that portion of water diverted through Anzaldúas Canal which is not used by Mexico. In 1958, this drain was largely used to by-pass Rio Grande water during the construction of Anzaldúas Dam.

EXTREME FLOW FROM RECORDS: Max. Ø 3,810 second-feet on January 18, 1954. Min. no flow the greater part of the time.

Average Flow in Second-Feet

Daily:	Max. 3,810	Jan. 18, 1954	Min. 0		Frequently
Monthly:	Max. 1,480	Apr. 1958	Min. 0		Frequently
Yearly:	Max. 737	1957	Min. 0		1955

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,580	47.3	91.5	604	1,500	2,080	9.5	1,530	2,300	127	0	0
2	1,240	35.7	133	615	1,490	2,270	9.5	1,660	2,000	0	0	0
3	165	38.8	105	706	1,540	2,300	579	1,370	1,650	0	0	0
4	172	21.2	57.6	791	1,770	2,190	1,330	1,290	1,180	0	0	0
5	622	38.5	0	932	1,880	249	1,140	1,380	1,320	0	0	0
6	1,050	72.0	33.5	883	2,040	9.5	886	1,380	1,920	0	0	0
7	989	308	59.0	939	1,960	9.5	614	1,320	480	0	0	0
8	316	473	53.0	1,430	1,610	9.5	441	1,210	399	0	0	0
9	131	607	22.2	1,830	1,430	9.5	579	1,050	533	0	0	0
10	0	696	21.5	1,920	1,500	9.5	710	1,090	463	0	0	0
11	0	1,080	78.0	2,000	1,730	9.5	537	1,380	509	0	0	0
12	0	682	50.1	2,270	1,660	9.5	327	1,600	512	0	0	0
13	0	311	123	1,970	1,720	9.5	282	1,900	512	0	0	0
14	0	151	113	1,920	1,920	9.5	310	1,700	505	0	0	0
15	62.2	196	147	2,000	403	9.5	396	1,490	448	0	0	0
16	108	196	125	2,200	7.1	9.5	445	1,500	385	0	0	0
17	122	177	140	1,900	316	9.5	537	1,290	251	0	0	0
18	109	102	56.9	1,590	788	9.5	664	982	322	0	0	0
19	83.7	310	117	1,670	196	9.5	773	1,340	385	0	0	0
20	41.0	360	150	1,690	171	9.5	802	1,990	19.1	0	0	0
21	0	163	968	1,450	271	9.5	660	1,640	13.4	0	0	0
22	0	160	830	1,400	388	9.5	823	1,170	5.7	0	0	0
23	80.2	194	512	1,600	420	9.5	872	939	5.7	0	0	0
24	103	98.5	622	1,690	611	9.5	823	1,290	5.7	0	0	0
25	103	80.9	473	1,530	1,120	9.5	862	1,590	5.7	0	0	0
26	63.2	115	494	1,270	1,700	9.5	1,090	2,240	5.7	0	0	0
27	40.3	78.0	643	1,250	2,250	9.5	1,290	1,590	5.7	0	0	0
28	157	74.9	299	1,450	2,190	9.5	1,350	1,080	172	0	0	1,020
29	145		396	1,530	1,940	9.5	1,590	284	667	0	0	2,740
30	12.4		316	1,440	1,900	9.5	1,640	219	211	0	0	2,940
31	25.4		643		1,790		1,440	1,360		0		2,750
Sum	7,520.4	6,866.8	7,872.3	44,470	40,211.1	9,326.5	23,811.0	41,854	17,190.7	127	0	9,450

Month	Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet High Day	High	Extreme Second-Feet Low Day	Low	Average Second-Feet	Total Acre-Feet	Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
	Current Year 1958								Period 1953-1958		
Jan.	5.18	1.18	1	2,020	†10	0	243	14,920	20,612	87,590	0
Feb.	4.33	1.25	11	1,580	4	0	245	13,620	5,442	19,030	0
Mar.	5.31	1.28	21	2,060	5	0	254	15,610	3,420	15,610	0
Apr.	6.27	.85	12	2,570	29	19.8	1,480	88,210	17,538	88,210	0
May	6.23	.89	27	2,550	†15	7.1	1,300	79,770	23,332	79,770	0
June	6.27	1.02	3	2,570	† 6	9.5	311	18,490	14,328	67,480	0
July	5.12	1.08	30	1,950	† 1	9.5	768	47,220	20,925	69,800	0
Aug.	6.27	.20	26	2,570	29	147	1,350	83,010	27,827	83,010	0
Sept.	6.00	1.12	1	2,420	†22	5.7	573	34,070	24,533	61,200	0
Oct.			1	127	† 2	0	4.1	253	20,077	70,960	0
Nov.			† 1	0	† 1	0	0	0	13,002	34,460	0
Dec.	6.63		30	3,120	† 1	0	305	18,730	25,893	71,280	0
Yearly				3,120		0	572	413,903	216,929	533,550	0

† And other days Ø Mean daily

RIO GRANDE AT HIDALGO, TEXAS

DESCRIPTION: Water-stage recorder on the downstream side of the international highway bridge between Hidalgo, Texas and Reynosa, Tamaulipas 1,089.3 river miles below the American Dam at El Paso, Texas and 158.9 miles above the Gulf of Mexico. The zero of the gage is at mean sea level U. S. C. & G. S. datum.

RECORDS: Based on 13 current meter measurements from the bridge and a continuous record of gage heights during the period shown below. Computations by shifting channel methods. Records available: July 1928 to December 1931; only peak flow records thereafter.

REMARKS: This station is operated during high flow only. When the river at this station reached a stage of about 100 feet above mean sea level during the 1958 flood, water began to flow into the Hackney Lake Inlet of the United States Floodway System.

EXTREME FLOWS FROM RECORDS: In September 1932 the maximum gage height was 104.88 feet, with a discharge of 83,870 second-feet.

Mean Daily Gage Height and Discharge - 1958 — Annual and Period Summary

	October		November	
Day	Gage Height Feet	Discharge Second-Feet	Gage Height Feet	Discharge Second-Feet
1	96.87	21,200	100.53	30,100
2	97.47	22,200	100.54	29,900
3	97.97	23,100	100.60	29,900
4	98.36	23,800	100.60	29,700
5	98.64	24,300	100.54	30,000
6	98.69	24,400	100.53	30,700
7	98.66	24,300	100.48	31,100
8	98.68	24,300	100.51	30,800
9	98.54	24,100	100.61	30,800
10	98.33	23,700	100.63	30,400
11	98.21	23,500	100.63	30,100
12	98.66	24,300	100.32	28,400
13	99.21	25;300	99.63	25,200
14	99.58	25,900	98.47	21,100
15	99.97	26,700	96.10	17,600
16	100.33	28,500		
17	100.77	31,100		
18	101.61	35,400		
19	101.98	36,800		
20	102.00	36,600		
21	101.87	35,500		
22	101.78	34,900		
23	101.64	34,000		
24	101.46	32,900		
25	101.32	32,000		
26	101.15	31,500		
27	100.97	31,000		
28	100.87	30,900		
29	100.74	30,600		
30	100.66	30,600		
31	100.58	30,600		
Sum		884,000		

	Current Year 1958								Period		
Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.											
Feb.											
Mar.											
Apr.											
May											
June											
July											
Aug.											
Sept.											
Oct.	102.02	95.80	19	37,100	1	19,600	28,500	1,753,000			
Nov.											
Dec.											
Yearly											

RIO GRANDE AT PROGRESO BRIDGE, TEXAS

DESCRIPTION: Water-stage recorder on the downstream side of the center pier of the bridge 2 miles south of Progreso, Texas, .8 mile below Progreso pumping plant, 1,124.4 river miles below American Dam at El Paso, Texas, and 123.8 river miles above the Gulf of Mexico. On October 4, 1956, when the low-flow channel shifted to the left bank, an auxiliary recorder was installed 300 feet above the bridge on the American bank to record such flows. The zero of the gage of both recorders is at 52.56 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 133 meter measurements during the year from the bridge, 108 by the Mexican and 25 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: December 1, 1952 through August 24, 1953; and December 1, 1953 through December 31, 1958.

REMARKS: Flows at this station are largely regulated by Falcón International Storage Dam on the Rio Grande, and by Marte Gómez Reservoir on the Río San Juan in Mexico. There are many diversions in both countries above this station including the major single Mexican diversion to Anzaldúas Canal published elsewhere in this bulletin. Flood flows may be modified by operation of the international floodway system described on page 44 of this bulletin.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 19,900 second-feet on October 22, 1958 with a gage height of 23.69 feet. Min. no flow several days in June, July and August, 1953.

Average Flow in Second-Feet

Daily:	Max.	19,740	Oct. 24, 1958	Min.	0	Frequently 1953
Monthly:	Max.	16,730	Oct. 1958	Min.	5.1	June 1953
Yearly:	Max.	3,840	1958	Min.	666	1957

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,170	49.4	63.9	438	1,030	1,440	1,250	872	1,030	12,500	16,810	6,040
2	1,390	52.3	84.8	438	1,070	1,640	727	1,010	1,670	14,090	16,740	4,410
3	950	53.0	127	388	1,110	1,520	459	1,110	1,420	14,230	16,630	3,470
4	293	53.7	152	494	1,350	1,590	826	1,050	1,050	14,730	16,600	5,830
5	337	49.1	130	657	1,680	1,910	1,260	936	830	15,150	16,600	6,780
6	650	44.8	88.6	816	1,470	1,700	1,020	872	1,280	15,220	16,460	7,490
7	1,010	42.0	51.6	759	1,580	1,800	802	855	1,540	15,290	16,280	8,090
8	964	40.3	66.4	650	1,650	2,000	473	738	657	15,330	16,240	8,260
9	427	268	80.9	1,020	1,490	2,300	385	614	410	15,330	16,240	8,090
10	281	516	71.7	1,340	1,330	2,600	537	569	463	15,080	16,600	8,330
11	141	657	40.3	1,550	1,380	3,050	713	791	396	14,830	16,670	9,040
12	94.3	897	41.0	1,690	1,470	2,960	537	844	473	15,150	16,630	9,500
13	83.7	752	101	2,020	1,190	2,590	318	1,060	378	15,610	16,070	9,780
14	73.1	381	51.2	1,860	1,340	2,290	280	1,250	491	16,000	14,870	9,890
15	62.9	280	94.6	1,480	4,060	2,500	181	1,050	512	16,170	13,170	9,920
16	60.0	127	126	1,430	6,220	2,610	195	915	470	16,390	11,270	9,960
17	130	227	128	1,630	3,500	2,420	244	1,040	424	16,740	9,960	9,890
18	157	196	103	1,370	1,160	2,980	290	932	307	17,130	9,320	9,430
19	158	125	108	1,180	664	3,920	385	561	151	18,290	9,010	9,250
20	130	226	64.3	1,320	236	3,740	466	872	484	18,960	9,110	9,080
21	113	353	99.9	1,430	96.4	2,840	526	1,290	2,990	19,390	9,890	9,710
22	74.5	266	643	950	127	2,690	392	992	2,910	19,710	10,030	9,990
23	54.4	127	784	908	193	2,800	424	689	1,740	19,630	9,610	9,820
24	50.8	174	445	1,070	191	2,470	410	664	1,080	19,740	8,400	9,780
25	47.3	160	424	1,140	460	2,420	378	999	1,440	19,490	7,800	10,030
26	100	85.5	346	946	999	2,410	459	1,200	1,470	19,350	7,100	10,100
27	114	85.1	107	929	1,430	2,550	682	1,620	1,360	18,750	6,710	8,400
28	80.2	74.9	406	1,100	1,780	3,030	897	1,200	3,470	18,190	6,710	5,440
29	68.2		187	1,060	1,560	2,670	819	713	6,640	17,690	6,530	3,670
30	132		367	1,010	1,290	1,970	975	275	9,530	17,340	6,500	3,160
31	93.9		264		1,280		953	102		17,000		3,020
Sum	9,490.3	6,362.1	5,847.2	33,073	44,386.4	73,410	18,263	27,685	47,066	518,500	370,560	245,650

Current Year 1958 — Period #Dec. 1952-1958

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	4.43	.26	2	1,530	25	39.6	306	18,820	69,047	129,500	17,340
Feb.	3.35	.13	12	1,010	8	31.8	227	12,620	42,070	83,210	12,620
Mar.	3.44	.03	22	1,050	27	14.1	189	11,600	42,847	77,520	4,990
Apr.	5.45	1.51	13	2,180	1	308	1,100	65,600	61,722	117,400	32,060
May	11.61	1.02	16	6,460	22	73.5	1,430	88,030	94,953	146,100	20,600
June	8.60	4.07	† 19	4,030	1	1,310	2,450	145,600	97,169	155,700	305
July	4.76	1.02	1	1,590	15	138	589	36,230	32,380	52,580	1,310
Aug.	4.82	.72	27	1,740	31	85.1	893	54,910	41,984	54,910	10,400
Sept.	18.70	.72	30	10,770	1	84.8	1,570	93,380	50,054	93,380	21,650
Oct.	23.69	18.70	22	19,900	1	10,770	16,730	1,028,000	232,602	1,028,000	14,030
Nov.	22.64	13.12	1	16,840	30	6,430	12,350	735,000	175,126	735,000	18,000
Dec.	17.62	6.82	26	10,240	31	2,870	7,920	487,200	104,363	487,200	7,370
Yearly	23.69	.03		19,900		14.1	3,840	2,776,990	1,044,317	2,776,990	482,410

† And other days # Some months missing

RIO GRANDE NEAR SAN BENITO, TEXAS

DESCRIPTION: Water-stage recorder located on the United States side 5.6 miles below San Benito pumping plant, 1,151.7 river miles below the American Dam at El Paso, Texas and 96.5 river miles above the Gulf of Mexico. A temporary water-stage recorder is operated during periods of low flow. The zero of the gage for both recorders is at mean sea level, U.S.C. & G.S. datum.

RECORDS: Based on 34 meter measurements during the year, by wading during low flow,and a continuous record of gage heights. Computations by shifting channel methods. Records available: November 26, 1952 through August 25, 1953, and December 1953 through December 1958.

REMARKS: Flows at this station are largely regulated by Falcón International Storage Dam on the Rio Grande, and by Marte Gómez Reservoir on the Río San Juan in Mexico. There are many diversions in both countries above this station including the major single Mexican diversion to Anzaldúas Canal published elsewhere in this bulletin. Flood flows may be modified by operation of the international floodway system described on page 44 of this bulletin.

EXTREME FLOWS FROM RECORDS: Momentary: Max. * 13,600 second-feet October 22-25, 1958 with a gage height of 60.07 feet. Min. no flow occurs frequently.

Average Flow in Second-Feet ‡

Daily:	Max.	* 13,600	October 22-25, 1958	Min.	0	Frequently
Monthly:	Max.	* 13,100	October 1958	Min.	39.5	Dec. 1956
Yearly:	Max.	* 2,930	1958	Min.	200	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	329	11.7	3.6	7.2	228	321	* 761	112	9.2	* 9,350	*13,200	* 6,760
2	412	6.4	4.0	5.8	284	466	358	126	286	* 10,900	*13,200	* 5,660
3	27.3	9.2	5.3	8.1	317	390	151	250	338	* 12,000	*13,200	* 4,200
4	9.3	6.0	13.1	6.7	430	409	118	134	314	* 12,700	*13,200	* 4,300
5	15.3	5.3	13.6	9.1	587	456	741	129	317	* 12,900	*13,100	* 5,680
6	6.7	4.8	30.6	7.6	449	419	794	129	596	* 13,000	*13,100	* 6,320
7	5.4	5.0	26.6	20.8	223	451	697	127	881	* 13,100	*13,100	* 7,250
8	21.5	4.7	18.8	143	367	374	444	129	702	* 13,100	*13,100	* 7,810
9	9.6	4.5	17.3	204	358	377	195	83.5	115	* 13,200	*13,000	* 7,900
10	5.1	5.3	20.7	254	321	401	248	15.1	67.7	* 13,200	*13,000	* 7,880
11	10.5	20.3	34.2	324	390	600	478	48.9	81.3	* 13,200	*13,000	* 8,090
12	37.4	129	23.6	248	414	648	531	39.2	63.5	* 13,200	*13,100	* 8,560
13	48.4	356	20.0	279	219	517	287	99.3	98.5	* 13,200	*13,000	* 9,110
14	39.0	193	18.6	470	334	396	108	197	203	* 13,300	*12,900	* 9,440
15	17.2	238	5.8	320	557	394	37.3	308	316	* 13,300	*12,600	* 9,600
16	7.5	238	3.6	336	2,690	623	16.2	141	328	* 13,300	*12,100	* 9,570
17	10.7	59.5	6.5	224	2,610	454	11.7	168	296	* 13,300	*11,400	* 9,690
18	10.7	68.5	24.6	286	1,360	495	10.2	348	363	* 13,400	*10,500	* 9,570
19	10.3	125	4.9	298	87.4	965	13.0	180	227	* 13,400	* 9,900	* 9,220
20	17.9	63.8	3.7	569	21.9	* 1,460	140	91.4	156	* 13,500	* 9,520	* 8,910
21	22.9	69.4	3.9	742	18.9	1,340	142	390	887	* 13,500	* 9,760	* 9,130
22	39.5	28.5	19.5	306	16.6	869	67.1	371	2,600	* 13,600	*10,100	* 9,490
23	51.9	10.1	817	62.0	15.8	934	13.9	228	2,600	* 13,600	*10,100	* 9,490
24	56.0	8.8	789	317	14.3	851	22.2	278	1,790	* 13,600	* 9,540	* 9,400
25	58.2	7.5	537	418	15.1	600	20.3	217	996	* 13,600	* 8,540	* 9,580
26	54.3	6.2	244	322	81.3	539	14.1	332	1,290	* 13,500	* 8,060	* 9,780
27	48.3	4.9	21.5	147	366	582	35.1	429	1,100	* 13,500	* 7,380	* 9,450
28	36.2	4.0	9.6	243	476	* 1,450	109	418	1,710	* 13,400	* 7,180	* 7,570
29	28.8		8.8	332	376	* 1,950	130	250	* 3,820	* 13,400	* 6,970	* 5,090
30	15.4		10.1	338	130	* 1,600	122	115	* 6,920	* 13,300	* 6,950	* 3,870
31	9.3		20.8		168		160	21.5		* 13,200		* 3,200
Sum	1,703.4		7,259.3		* 21,331		5,904.9		*404,750			*241,570
	1,471.6		2,780.3		13,925.3		6,975.1		*29,471.2		*333,800	

Month	Current Year 1958 Extreme Gage Feet High	Low	Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period # Dec. 1952-1958 Acre-Feet Average	Maximum	Minimum
Jan.	35.81	32.94	2	524	15	ᵘ 3.0	47.5	2,920	17,523	37,000	2,920
Feb.	34.97	33.33	13	407	9	3.9	60.8	3,380	11,675	21,500	3,380
Mar.	37.02	33.35	23	1,010	† 1	3.2	89.7	5,510	10,512	15,800	2,560
Apr.	37.24	33.40	21	830	2	5.3	242	14,400	* 22,133	ᵘ 45,400	11,500
May	44.48	33.50	16	3,010	† 24	14.3	449	27,600	* 30,178	* 57,100	7,770
June	41.40	34.45	29	* 1,190	1	206	* 711	* 42,300	30,192	62,100	53.8
July	38.50	33.48	1	1,150	26	8.9	225	13,800	11,402	21,700	34.9
Aug.	35.78	33.47	28	494	11	8.5	* 190	11,700	10,630	16,600	3,100
Sept.	53.05	33.47	30	* 8,000	1	9.0	* 982	* 58 500	* 20,226	* 58,500	7,710
Oct.	60.07	53.05	† 22	* 13,600	1	*8,000	*13,100	* 803,000	* 170,932	* 803,000	3,840
Nov.	59.69	51.47	3	* 13,300	30	*6,930	*11,100	* 662,000	* 138,528	* 662,000	5,640
Dec.	55.52	44.26	26	* 9,820	31	2,960	* 7,790	* 479,000	* 79,854	* 479,000	2,430
Yearly	60.07	32.94		* 13,600		ᵘ 3.0	* 2,930	*2,124,110	* 553,785	* 2,124,110	145,520

ᵘ Estimated * Partly estimated † And other days # Some months missing ‡ Period 1954-1958

RIO GRANDE AT MATAMOROS, TAMAULIPAS

DESCRIPTION: Staff gages on the downstream side of the international railroad bridge between Brownsville, Texas and Matamoros, Tamaulipas 1,191.9 river miles below the American Dam at El Paso, Texas and 56.3 river miles above the Gulf of Mexico. The zero of the gage is at 12.10 feet above mean sea level U. S. C. & G. S. datum.

RECORDS: Based on 39 meter measurements, 37 by the Mexican and 2 by the United States Section of the Commission, and frequent gage readings during the period. Computations by shifting channel methods. Records available: 1901 to 1913, 1923 to July 16, 1954 and September 30 to November 23, 1958.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow was 36,320 second-feet on June 22, 1903. The greatest flow since 1923 was 32,950 second-feet April 30, 1949 with a gage height of 24.89 on the present gage. The flood of September 1932 reached a stage of 23.62 with a discharge of 27,500 second-feet. Min. zero flow occurred frequently since 1951.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1										4,520	9,990	
2										6,670	9,960	
3										8,090	9,920	
4										8,790	9,890	
5										9,150	9,890	
6										9,390	9,890	
7										9,320	9,820	
8										9,110	9,780	
9										9,430	9,710	
10										9,610	9,710	
11										9,960	9,680	
12										10,060	9,680	
13										10,170	9,680	
14										10,030	9,640	
15										9,990	9,570	
16										10,060	9,360	
17										10,060	9,040	
18										10,100	8,510	
19										10,100	8,160	
20										10,100	8,090	
21										10,350	8,090	
22										10,350	8,090	
23										10,350	8,050	
24										10,280		
25										10,210		
26										10,170		
27										10,140		
28										10,350		
29										10,240		
30										10,170		
31										10,100		
Sum										297,420		

Month	Current Year 1958								Period		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.											
Feb.											
Mar.											
Apr.											
May											
June											
July											
Aug.											
Sept.											
Oct.	24.64	14.44	†21	10,350	1	3,300	9,590	589,900			
Nov.											
Dec.											
Yearly											

† And other days

RIO GRANDE AT LOWER BROWNSVILLE, TEXAS

DESCRIPTION: Bubbler-type water-stage recorder, operated with bottled nitrogen gas, and cable with stand-up cable car equipped for winch and heavy weights, located 1,000 feet below the El Jardin pumping plant, 6.8 river miles below Brownsville, Texas, and Matamoros, Tamaulipas, 48.8 river miles upstream from the Gulf of Mexico, and 1,199.4 river miles below the American Dam at El Paso, Texas. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 45 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: January 1934 through December 1958.

REMARKS: Flows at this station are largely regulated by Falcón International Storage Dam on the Rio Grande, and by Marte Gómez Reservoir on the Río San Juan in Mexico. There are many diversions in both countries above this station including the major single Mexican diversion to Anzaldúas Canal published elsewhere in this bulletin. Flood flows may be modified by operation of the international floodway system described on page 44 of this bulletin.

EXTREME FLOWS FROM RECORDS: The greatest recorded flow since January 1934 was 31,700 second-feet, which occurred October 8, 1945, with a gage height of 31.48 feet. Zero flow occurs frequently.

Average Flow in Second-Feet

Daily:	Max.	30,800	Sept. 14, 1942; Oct. 8, 1945	Min.	0	Frequently
Monthly:	Max.	* 23,200	Oct. 1941	Min.	0	June & July 1953
Yearly	Max.	9,010	1941	Min.	42.1	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	28.0	36.0	21.8	44.0	20.0	5.3	1,260	14.2	27.8	* 4,230	* 9,560	6,660
2	57.1	30.4	16.4	38.3	22.2	8.3	975	17.4	19.1	* 6,610	* 9,540	6,470
3	73.5	25.8	19.5	25.0	21.9	29.2	* 410	24.7	12.0	* 8,090	* 9,520	5,500
4	38.5	23.8	29.2	7.4	* 27.9	36.9	82.3	83.1	23.7	* 8,760	* 9,490	4,250
5	64.2	22.6	26.0	.4	* 47.4	22.4	28.6	87.6	30.7	* 8,940	* 9,460	4,230
6	50.0	17.9	23.5	0	140	12.7	* 192	36.4	69.9	* 9,170	* 9,480	5,080
7	58.0	6.1	23.6	0	123	11.9	* 525	22.4	298	* 9,180	* 9,480	5,880
8	37.4	4.8	26.9	u 1.0	35.3	9.4	588	36.0	571	* 9,120	* 9,490	6,850
9	22.9	4.3	33.5	0	17.4	12.7	445	33.6	706	* 9,290	* 9,490	7,480
10	18.3	5.2	28.4	0	27.3	4.7	* 272	32.1	463	* 9,390	* 9,500	7,720
11	17.4	5.9	13.8	.6	28.0	3.9	* 112	32.4	137	* 9,530	* 9,500	7,720
12	16.0	6.4	17.2	.2	25.7	10.2	245	17.2	62.0	* 9,700	* 9,510	7,930
13	10.8	31.8	28.9	9.6	24.2	46.7	432	8.9	50.1	* 9,690	* 9,520	8,410
14	8.6	83.7	35.6	24.3	21.3	47.9	* 343	5.0	57.3	* 9,650	9,530	8,930
15	11.6	157	35.7	10.4	24.2	13.2	178	5.5	49.5	* 9,650	9,520	9,260
16	29.7	95.0	32.2	14.7	84.0	2.8	94.8	8.4	167	* 9,690	9,460	9,460
17	35.2	157	30.6	3.3	802	3.2	50.4	15.4	318	* 9,680	9,300	9,600
18	31.5	127	26.2	2.2	1,620	18.3	22.0	13.7	300	* 9,690	9,020	9,700
19	24.7	61.2	18.0	.4	1,410	4.7	20.8	10.6	306	* 9,700	8,680	9,610
20	14.9	124	6.5	19.2	544	71.8	21.5	19.2	328	9,710	8,410	9,390
21	6.9	149	3.8	153	83.4	578	20.0	9.8	1,840	9,710	8,300	9,140
22	6.0	156	2.8	283	34.5	806	50.7	13.0	365	* 9,750	8,380	9,200
23	9.9	202	2.6	232	18.4	582	45.9	30.5	* 1,190	* 9,730	8,440	9,450
24	19.4	123	68.4	32.6	20.7	401	23.0	35.2	* 1,770	* 9,720	8,440	9,520
25	36.5	50.8	520	3.0	15.2	380	12.2	20.9	* 1,670	* 9,710	8,240	9,560
26	53.6	44.5	513	52.7	14.6	254	7.0	20.0	* 1,330	* 9,710	8,070	9,680
27	45.3	43.9	368	67.2	8.7	143	8.7	21.9	* 1,140	* 9,700	7,720	9,810
28	22.9	32.4	188	11.1	12.7	131	9.7	69.6	* 1,100	* 9,660	7,260	9,080
29	47.9		90.8	1.5	42.5	562	14.0	101	* 1,180	* 9,630	6,930	7,030
30	46.3		57.6	1.4	79.3	1,120	14.4	48.6	* 2,080	* 9,600	6,750	5,240
31	43.4		52.4		28.6		12.2	32.0		* 9,570		3,930
Sum	1,833.5		1,038.5		5,333.2		926.3			*285,960		241,770
	986.4		2,360.9		5,424.4		6,515.2			*17,661.1		*265,990

Current Year 1958 — **Period** 1934-1958

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	7.30	5.72	3	106	21	4.5	31.8	1,960	107,007	299,000	u 55.9
Feb.	8.74	5.60	23	266	9	3.2	65.5	3,640	79,733	237,000	137
Mar.	11.31	5.69	25	569	23	1.9	76.2	4,680	71,861	311,000	40.5
Apr.	9.62		23	323	† 6	0	34.6	2,060	67,861	* 372,000	221
May	17.40		18	1,720	27	0	175	10,800	181,185	717,000	53.6
June	15.57		30	1,290	1	0	178	10,600	220,213	* 1,161,000	0
July	15.60	5.77	1	1,300	26	5.9	210	12,900	195,151	759,000	0
Aug.	8.08	5.62	4	135	14	2.7	29.9	1,840	159,945	679,000	218
Sept.	21.10	5.86	30	2,970	3	10.8	* 589	* 35,000	378,582	1,337,000	950
Oct.	31.84	21.10	23	* 9,760	1	*2,970	*9,220	* 567,000	355,861	* 1,427,000	756
Nov.	31.23	26.34	1	* 9,580	30	6,750	*8,870	* 528,000	143,620	614,000	1,070
Dec.	29.47	20.88	27	9,830	31	3,510	7,800	480,000	114,087	480,000	337
Yearly	31.84			9,830		0	*2,290	*1,658,480	2,075,106	* 6,526,000	30,596

u Estimated * Partly estimated † And other days

FLOOD OF 1958

In early September 1958 widespread torrential rains, ranging up to a monthly total of 18.94 inches at Parral, Chihuahua, fell on the Río Conchos watershed. A large portion of the subsequent run-off was contained by Boquilla and Madero reservoirs which stored a total of 1,854,000 acre-feet before reaching spillway level but the residual flow was sufficient to cause a flood notable for its duration of flow and total volume. Though its peak flow was surpassed in magnitude by several previous Río Conchos floods, the peak level of the 1958 flood at the Lower Presidio station was the highest since 1917. The 1958 flood peak discharge at this station was 53,900 second-feet on September 28 with a gage height of 21.26 feet, about 1.2 feet higher than the gage height for the 1932 flood with peak discharge of 106,000 second-feet. At the Langtry station 307 miles downstream the 1958 flood peak was 56,900 second-feet with a gage height of 30.47 feet, or 1.2 feet higher than the gage height for the 1932 flood with peak discharge of 77,610 second-feet. These comparisons clearly demonstrate the significant reduction in flood carrying capacity of the river channel at these locations.

Additional inflow from the Devils River, Río San Diego, Río San Rodrigo and unmeasured tributaries below Langtry caused a peak flow of 75,570 second-feet at the Eagle Pass gaging station on September 29, this being the highest discharge recorded at any gaging station above Falcón Dam during the 1958 flood.

The sustained high flow in the Rio Grande for the last four months of 1958, totalling 3,432,800 acre-feet at Laredo, coupled with sustained record high flow from the Río Salado totalling 1,396,000 acre-feet for the same period, raised storage at Falcón International Reservoir from 1,792,500 acre-feet on September 4, 1958 to a record high of 3,490,600 acre-feet on October 19, 1958. Flood discharges at the dam began September 26, 1958, and continued to the end of the year. The total volume of flood spill during the period was 3,775,000 acre-feet; the maximum flood spill occurred on November 9, 1958 with a discharge of 48,900 second-feet, comprised of 39,600 second-feet spillway flow and 9,300 second-feet power plant discharge.

Below Falcón Dam, the Rio Grande discharge was augmented by a peak flow from the Río Alamo of 22,200 second-feet on October 17, 1958 and by flow from the Río San Juan. Extremely heavy intermittent rains occurred in the upper watershed of the Río San Juan where several stations reported an aggregate of over 51 inches for the two-month period of October-November. Marte Gómez Reservoir, located in the lower section of this river contained 386,700 acre-feet on September 7, 1958 and by October 11 was completely filled to its capacity of 1,019,100 acre-feet. Spills over the uncontrolled spillway began on October 11, 1958 and such spills, together with intervening storm flows, caused a peak flow in the Río San Juan at the Camargo gaging station of 49,800 second-feet on October 17, 1958. When these tributary floods discharged into an already swollen Rio Grande, the resulting peak flow was the maximum on the Rio Grande for 1958 and the highest discharge in the lower river since 1948. A discharge of 104,000 second-feet was recorded on October 17 at Fort Ringgold gaging station.

From the mouth of the Río San Juan to the Gulf of Mexico, extensive flooding occurred in those irrigated farms and villages adjacent to the river. A total of 53,500 acres of agricultural lands in the United States and 125,300 acres of ranching and agricultural lands in Mexico were reported inundated. In the United States below Anzaldúas Dam, damage from the river flow was confined within the river and interior floodway levees, while in Mexico, cuts made in the river levees to relieve pressure caused interior flooding at several places below Anzaldúas Dam. The river road (military highway) in the United States was overtopped in several places and in Mexico floodwaters cut off all highway communications with Matamoros during the height of the flood.

In the reach of river below Falcón Dam to the Gulf of Mexico the 1958 flood forcefully demonstrated the reduction in flood carrying capacity of the river, probably largely due to encroachment of vegetation in the channel and in portions of the river floodways during recent years when no flood flows have occurred. Water surface elevations in the river during the 1958 flood were higher than in 1950 for the same flows by amounts ranging from two to four feet in the reach from Rio Grande City to Hidalgo Bridge, to as much as nine feet at the Lower Brownsville gaging station. In terms of maximum discharges the 1958 flood was far less than the 1932 flood. In terms of maximum water surface elevations the 1958 flood was one foot higher at Lower Brownsville, 2.6 feet lower at Peñitas, and 3.0 feet lower at Rio Grande City, than the 1932 flood.

The United States and Mexican floodway systems received their greatest test since the 1932 flood. At the height of the flood, there was a peak flow of approximately 100,000 second-feet at the head of the floodway system. Diversions to the interior floodways of the United States and Mexico, and overflows through levee cuts along the Mexican bank left a residual flow of less than 11,000 second-feet flowing to the Gulf of Mexico through the Rio Grande channel. A total of 3,135,800 acre-feet were diverted through the floodway systems, 1,341,000 acre-feet through the United States and 1,794,000 acre-feet through the Mexican side.

OUTFALLS FROM WELLS AND SEWERS INTO THE RIO GRANDE

In Acre-Feet

EL PASO ELECTRIC COMPANY SANTA FE STREET PLANT COOLING WATER WASTE

This outfall enters the Rio Grande 3.3 miles below the American Dam. The 1958 record of outfall was obtained from records of water pumped from the company's wells and use of such water by the city of El Paso.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1958	0	0	0	0	0	0	9.6	0	0	0	0	0	9.6
* Average	38.2	36.1	50.7	34.9	63.7	66.4	60.6	46.1	32.1	34.3	25.8	29.5	518.4

EL PASO SEWAGE OUTFALL

This sewage outfall enters the Rio Grande 6.6 river miles below the American Dam. The 1958 record of outfall consists of flows measured by a Parshall meter and estimates by the Department of Water and Sewerage of the city of El Paso of amounts which by-passed the meter, minus estimated diversions between the Sewage Plant and the Rio Grande for irrigation use of 30 acres of land.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1958	1,286	1,165	1,336	1,266	1,455	1,543	1,570	1,554	1,505	1,442	1,327	1,320	16,769
Ø Average	845	790	855	826	895	950	1,016	1,002	957	965	896	887	10,884

EL PASO COUNTY WATER CONTROL AND IMPROVEMENT DISTRICT NO. 1 SEWAGE OUTFALLS

This water enters the Rio Grande through the sewer system of the El Paso County Water Control and Improvement District No. 1 between Ascarate and Ysleta, Texas, 9 and 15 miles, respectively, below the American Dam. The tabulation includes the outfalls from Disposal Plant No. 1 at Ascarate, Texas and Disposal Plant No. 2, a few miles downstream. Records were furnished by the El Paso County Water Control and Improvement District No. 1.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1958	195	146	173	164	204	195	202	221	228	208	193	203	2,332
# Average	90.9	81.5	81.3	80.0	82.2	81.8	88.1	96.1	96.2	94.6	94.8	93.6	1,061.1

LAREDO SEWAGE OUTFALL

This sewage outfall enters the Rio Grande 890.8 river miles below the American Dam at El Paso, Texas and immediately above the Laredo Gaging Station. The record is based on estimates by the Texas State Health Department.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1958	220	218	266	306	329	342	307	312	225	195	252	259	3,231
# Average	201	209	245	237	252	240	246	241	208	196	212	211	2,698

BROWNSVILLE SEWAGE OUTFALL

This sewage outfall enters the Rio Grande 3.4 river miles below the Gateway Bridge between Brownsville, Texas and Matamoros, Tamaulipas, 3.4 river miles above Lower Brownsville gaging station and 52.2 river miles above the Gulf of Mexico. Records which are furnished by the city of Brownsville, were not available for years prior to 1957.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1958	268	236	247	239	184	224	228	215	150	275	225	189	2,680
‡ Average	134	179	224	208	182	189	212	218	168	242	231	224	2,411

* Period 1940-1958, some years missing Ø Period 1936-1958 # Period 1950-1958 ‡ Period 1957-1958

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

In Thousands of Acre-Feet

Data are presented below for all storage reservoirs in the Rio Grande Basin in the United States and Mexico that exceed 15,000 acre-feet in capacity, except Bluewater Reservoir in the United States (capacity 43,500 acre-feet) for which records have not been available since 1950, and also for International Falcon Reservoir on the Rio Grande. The monthly figures represent the water in storage on the last day of each month, in thousands of acre-feet. The capacities indicated are at spillway level. Storage figures greater than the capacity indicate that the water surface was above spillway level. The capacity shown below for Caballo Reservoir was determined by the United States Bureau of Reclamation as a result of a silt survey completed in 1958.

The reservoirs and the sources of the data are: Rio Grande, Continental, Santa Maria, Terrace and Mountain Home from the State of Colorado, Division of Water Resources; Sanchez from the Sanchez Ditch and Reservoir Company; Costilla from the New Mexico Interstate Stream Commission; El Vado from the Middle Rio Grande Conservancy District; Elephant Butte, Caballo, Alamogordo, McMillan, and Avalon from the United States Bureau of Reclamation; Red Bluff from the Red Bluff Water Power Control District; Willacy from the Willacy County Water Control and Improvement District No. 1; Boquilla, Colina, and Rosetilla from the Northern Electric Power Company of Mexico, S.A.; Francisco I. Madero, Centenario and San Miguel, Venustiano Carranza, Marte Gómez, Culebrón, Villa Cárdenas, and Palito Blanco from the Ministry of Hydraulic Resources of Mexico; International Falcón Reservoir from International Boundary and Water Commission.

In the United States

Month	RIO GRANDE (Capacity 51.1)		CONTINENTAL (Capacity 26.7)		SANTA MARIA (Capacity 43.6)		TERRACE (Capacity 17.7)		MOUNTAIN HOME (Capacity 20.1)	
	1958	#Average 1927-1958	1958	#Average 1928-1958	1958	#Average 1928-1958	1958	#Average 1925-1958	1958	#Average 1924-1958
Jan.	40.8	13.6	11.0	5.2	14.5	7.4	1.7	2.4	8.7	4.0
Feb.	41.6	14.7	12.0	5.5	11.9	7.8	1.4	2.8	9.2	4.4
Mar.	41.9	16.0	12.0	5.8	14.9	8.9	1.7	3.2	9.5	4.8
Apr.	39.0	15.5	15.3	6.3	15.4	10.3	1.3	3.8	9.2	5.4
May	47.0	22.4	25.3	8.5	33.8	15.2	4.1	6.7	12.2	7.6
June	39.3	24.5	24.5	9.1	34.6	17.7	3.9	8.5	10.7	7.8
July	9.4	14.7	9.6	6.6	12.9	11.9	2.1	5.4	5.1	5.5
Aug.	0	6.7	.2	4.4	7.9	5.8	.9	2.8	3.0	3.5
Sept.	0	6.6	0	4.5	7.0	5.6	1.7	2.3	2.3	3.0
Oct.	0	7.6	0	4.2	6.8	5.7	1.4	2.4	2.1	3.0
Nov.	2.3	10.5	¤ .8	4.4	7.2	6.3	1.7	2.0	2.6	3.4
Dec.	3.8	12.0	¤ 1.2	4.9	7.4	6.8	2.0	2.3	2.9	3.7
Avg.	22.1	13.7	9.3	5.8	14.5	9.1	2.0	3.7	6.5	4.7
Max.	47.0	52.1	25.3	26.7	34.6	42.1	4.1	17.7	12.2	16.4
Min.	0	0	0	0	6.8	0	.9	0	2.1	0

Month	SANCHEZ (Capacity 103.2)		COSTILLA (Capacity 15.7)		EL VADO (Capacity 200.3)		ELEPHANT BUTTE (Capacity 2,206.8)		CABALLO (Capacity 344.0)	
	1958	#Average 1927-1958	1958	#Average 1922-1958	1958	Average 1935-1958	1958	Average 1915-1958	1958	#Average 1938-1958
Jan.	31.5	10.9	¤ 8.6	4.1	13.0	45.6	773.1	863.5	47.5	137.1
Feb.	31.5	11.1	¤ 9.0	4.5	23.9	41.2	753.3	865.4	104.2	154.9
Mar.	31.3	11.8	¤ 9.4	5.0	38.2	39.1	705.9	851.6	123.1	140.6
Apr.	32.5	13.5	10.2	6.2	81.6	87.3	776.3	853.3	135.4	118.3
May	48.3	18.8	9.7	8.5	192.2	146.0	1,097.9	976.3	118.5	109.3
June	46.3	18.4	8.7	7.9	170.6	131.3	1,209.3	1,024.4	100.6	90.0
July	33.4	13.2	5.1	5.1	158.3	104.8	1,093.3	970.4	60.9	66.0
Aug.	27.6	10.2	3.5	3.4	128.1	75.9	977.6	908.7	50.7	35.9
Sept.	25.8	10.3	¤ 3.4	2.8	112.1	60.1	951.2	872.7	48.9	29.0
Oct.	24.7	10.9	¤ 3.0	3.1	112.1	54.7	925.0	866.5	82.2	52.3
Nov.	25.5	10.9	¤ 2.9	3.4	42.1	46.4	954.3	869.1	113.0	77.2
Dec.	24.5	11.2	¤ 2.9	3.8	2.4	43.1	988.8	876.1	146.0	103.3
Avg.	31.8	12.6	6.4	4.8	89.6	73.0	933.8	899.8	94.2	92.8
Max.	48.3	62.4	10.2	15.1	192.2	203.5	Ø1,216.7	2,302.8	Ø 146.0	Ø 346.6
Min.	24.5	0	2.9	0	2.4	0	Ø 690.1	Ø 3.3	Ø 11.9	Ø 346.1

¤ Estimated # Some months missing Ø Daily extreme

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

In Thousands of Acre-Feet

In the United States

Month	ALAMOGORDO (Capacity 122.0)		McMILLAN and AVALON (Capacity 38.0)		RED BLUFF (Capacity 310.0)		WILLACY (Capacity 25.0)		TOTAL IN U.S. RESERVOIRS ** (Capacity 3,524.2)	
	1958	#Average 1937-1958	1958	#Average 1908-1958	1958	#Average 1936-1958	1958	#Average 1939-1958	1958	Estimated Average
Jan.	105.4	60.9	18.5	28.1	31.3	108.1	14.1	13.2	1,119.7	1,304.1
Feb.	108.4	64.9	17.9	28.4	34.0	110.2	14.1	12.4	1,172.4	1,327.1
Mar.	99.6	56.6	28.0	26.8	35.9	107.4	12.6	12.0	1,164.0	1,289.6
Apr.	122.5	47.5	27.1	18.4	27.1	89.4	14.6	11.3	1,307.5	1,286.5
May	123.7	56.6	41.9	21.7	50.9	97.4	16.5	12.3	1,822.0	1,507.3
June	121.4	49.6	39.2	20.5	47.3	102.2	17.2	12.8	1,873.6	1,524.7
July	120.3	51.3	28.6	18.2	39.0	88.1	16.2	12.6	1,594.2	1,373.8
Aug.	123.7	52.2	40.6	16.7	55.2	76.1	13.8	11.1	1,432.8	1,213.4
Sept.	122.8	50.4	44.1	18.9	72.3	78.7	17.6	13.5	1,409.2	1,158.4
Oct.	122.1	56.5	43.6	21.8	89.0	93.2	19.6	13.6	1,431.6	1,195.5
Nov.	122.5	56.3	42.6	23.3	99.0	97.4	17.3	13.6	1,432.8	1.224.2
Dec.	123.7	60.5	43.0	26.8	105.6	102.9	17.2	13.6	1,471.4	1,271.0
Avg.	118.0	55.3	34.6	22.5	57.2	95.9	15.9	12.7	1,435.9	1,306.3
Max.	123.7	156.3	44.1	85.5	105.6	327.5	19.6	22.0	1,873.6	
Min.	99.6	.4	17.9	0	27.1	10.0	12.6	0	1,119.7	

In Mexico

Month	BOQUILLA (Capacity 2,417.5)		LA COLINA (Capacity 19.5)		ROSETILLA (Capacity 15.4)		FRANCISCO I. MADERO (Capacity 344.6)		CENTENARIO and SAN MIGUEL (Capacity 19.9)	
	1958	#Average 1914-1958	1958	Average 1940-1958	1958	Average 1940-1958	1958	#Average 1948-1958	1958	Average 1934-1958
Jan.	535.2	1,354.4	17.1	17.9	10.9	13.3	79.4	165.0	11.3	11.9
Feb.	534.4	1,325.4	17.3	18.2	13.9	13.9	80.2	165.2	12.1	11.4
Mar.	524.6	1,277.9	18.6	17.8	7.8	13.2	73.5	161.3	12.2	8.4
Apr.	440.6	1,211.6	19.2	18.5	7.1	12.6	62.8	139.9	8.8	7.0
May	769.3	1,164.2	17.5	18.4	7.1	11.5	61.1	124.1	12.1	8.3
June	715.4	1,083.3	18.2	18.3	2.2	12.0	29.7	102.6	10.9	7.7
July	688.7	1,119.6	18.5	18.5	2.8	12.2	25.5	110.9	10.3	7.5
Aug.	844.8	1,278.3	18.3	18.1	11.7	12.6	63.0	127.0	9.8	8.0
Sept.	2,033.7	1,442.8	19.4	18.0	16.8	13.2	366.6	174.7	13.0	10.2
Oct.	2,539.7	1,450.9	19.2	18.1	15.2	13.1	344.5	182.2	16.2	12.2
Nov.	2,544.7	1,416.7	19.5	17.9	10.9	12.4	342.4	181.6	17.8	11.9
Dec.	2,120.8	1,390.5	19.4	17.7	13.7	13.4	341.6	180.8	18.5	11.7
Avg.	1,191.0	1,293.0	18.5	18.1	10.0	12.8	155.9	151.3	12.8	9.7
Max.	2,544.7	2,544.7	19.5	20.4	16.8	19.4	366.6	366.6	18.5	20.7
Min.	440.6	16.9	17.1	13.5	2.2	.4	25.5	1.4	8.8	0

Month	VENUSTIANO CARRANZA (Capacity 1,123.0)		MARTE R. GOMEZ (Capacity 1,019.1)		CULEBRON and VILLA CARDENAS (Capacity 90.0)		PALITO BLANCO (Capacity 124.0)		TOTAL IN MEXICAN RESERVOIRS (Capacity 5,173.0)	
	1958	Average 1930-1958	1958	#Average 1943-1958	1958	#Average 1939-1958	1958	Average 1942-1958	1958	Estimated Average
Jan.	60.1	330.4	459.7	494.8	51.2	40.7	86.5	41.7	1,311.4	2,470.1
Feb.	50.8	315.0	455.6	440.9	49.9	36.9	112.1	34.3	1,326.3	2,361.2
Mar.	48.2	296.3	446.7	396.6	42.6	31.7	103.2	35.7	1,277.4	2,238.9
Apr.	36.7	286.1	377.0	392.3	56.7	32.8	85.0	31.7	1,093.9	2,132.5
May	43.8	279.8	343.7	376.5	59.9	36.3	100.1	27.9	1,414.6	2,047.0
June	22.5	271.1	335.6	342.4	60.0	45.0	84.0	28.5	1,278.5	1,910.9
July	13.6	262.7	390.8	325.0	55.9	40.8	79.9	33.4	1,286.0	1,930.6
Aug.	13.1	265.8	403.7	410.6	34.9	41.0	67.1	32.7	1,466.4	2,194.1
Sept.	654.7	330.6	810.7	511.0	37.0	51.4	98.6	47.8	4,051.5	2,599.7
Oct.	1,103.7	363.4	1,015.8	564.0	82.5	58.3	96.2	58.2	5,233.0	2,720.4
Nov.	1,124.4	371.9	1,031.2	560.2	31.3	49.0	91.5	56.8	5,213.7	2,678.4
Dec.	1,129.1	372.4	1,037.7	560.0	53.5	53.5	94.0	54.3	4,828.3	2,654.3
Avg.	358.4	312.1	592.4	447.9	51.3	43.1	91.5	40.2	2,481.8	2,328.2
Max.	Ø1,133.9	1,163.4	Ø1,207.1	Ø1,207.1	82.5	116.8	112.1	140.1	5,233.0	
Min.	Ø 13.0	* 1.0	Ø 247.9	† 17.8	31.3	0	67.1	0	1,093.9	

Some months missing *Minimum since full reservoir in 1932. ** Excludes Bluewater Reservoir † Minimum since full reservoir in 1947. Ø Daily extreme

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

International Falcón Reservoir

Falcón Dam is the lowermost of the major international storage dams authorized for construction on the Rio Grande by the Water Treaty of 1944 between the United States and Mexico and was the first dam constructed. It is located 84.5 river miles downstream from Laredo, Texas and Nuevo Laredo, Tamaulipas, 974.4 river miles below the American Dam, and 273.8 river miles above the Gulf of Mexico.

Storage Capacities
(1954 SURVEY)

Elevation	Description	At Indicated Elevation		Between Indicated Elevations	
		Reservoir Capacity Acre-Feet	Reservoir Area Acres	Storage Volume Acre-Feet	Type of Storage
175.0	River Bed at Dam Axis	0	0	15,036	Silt and Dead
203.33	Lowest Outlet (Mexican Penstock)	15,036	1,363	2,425,492	Silt and Conservation
296.4	Top of Conservation Storage	2,440,528	78,451	908,759	Ordinary Flood
306.7	Top of Spillway Gates	3,349,287	98,805	801,684	Super Flood
314.2	Maximum Water Surface	4,150,971	115,581		

During the winter months, 400,000 acre-feet of the flood control capacity may be utilized for additional conservation storage.

Storage in Thousands of Acre-Feet at 24:00 Hours — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,766.1	1,933.0	2,050.1	2,102.7	1,904.4	1,965.8	1,863.1	1,873.6	1,801.4	2,813.9	3,217.8	2,974.3
2	1,767.3	1,934.3	2,050.1	2,103.4	1,889.9	1,957.1	1,859.2	1,871.0	1,797.0	2,854.9	3,199.5	2,968.0
3	1,768.0	1,934.3	2,055.6	2,103.4	1,880.8	1,945.7	1,856.6	1,868.3	1,795.1	2,907.9	3,181.4	2,968.0
4	1,806.5	1,936.3	2,059.1	2,102.7	1,882.7	1,934.3	1,855.3	1,867.0	1,792.5	2,949.0	3,157.6	2,965.2
5	1,850.2	1,939.0	2,061.9	2,102.0	1,867.0	1,922.3	1,854.7	1,866.4	1,793.2	2,984.2	3,126.5	2,966.1
6	1,866.4	1,941.6	2,065.4	2,099.8	1,850.2	1,906.4	1,853.4	1,865.7	1,793.8	3,019.8	3,077.0	2,965.2
7	1,873.6	1,941.6	2,067.5	2,093.5	1,833.4	1,888.6	1,855.3	1,864.4	1,821.2	3,071.4	3,027.1	2,960.7
8	1,877.5	1,942.3	2,071.0	2,092.1	1,822.5	1,870.3	1,871.6	1,861.2	1,835.3	3,125.6	2,975.2	2,952.6
9	1,879.4	1,943.0	2,074.5	2,087.8	1,811.0	1,852.8	1,893.9	1,857.9	1,852.1	3,182.4	2,914.1	2,949.0
10	1,882.1	1,947.7	2,081.5	2,080.8	1,796.3	1,837.9	1,909.0	1,854.7	1,876.2	3,243.8	2,899.0	2,941.8
11	1,884.7	1,948.3	2,085.0	2,074.5	1,782.4	1,823.8	1,917.0	1,849.9	1,912.4	3,271.9	2,898.1	2,925.7
12	1,893.9	1,949.0	2,089.2	2,066.8	1,767.3	1,808.4	1,921.0	1,845.6	1,939.6	3,311.9	2,894.5	2,914.0
13	1,895.9	1,950.4	2,087.1	2,060.5	1,809.7	1,791.9	1,921.0	1,842.4	1,955.1	3,346.3	2,888.3	2,904.3
14	1,897.2	1,955.7	2,087.1	2,050.1	1,867.7	1,774.9	1,919.6	1,841.1	1,965.8	3,373.1	2,894.5	2,894.5
15	1,899.1	1,957.1	2,087.1	2,039.7	1,922.3	1,758.6	1,921.0	1,841.1	1,976.6	3,405.9	2,897.2	2,883.0
16	1,900.5	1,958.4	2,090.7	2,029.3	1,954.4	1,733.1	1,923.0	1,839.2	1,990.2	3,449.1	2,900.8	2,875.1
17	1,903.8	1,961.8	2,094.2	2,017.6	1,969.2	1,710.9	1,923.0	1,837.2	2,053.5	3,474.4	2,915.0	2,869.8
18	1,905.1	1,963.8	2,096.3	2,014.1	1,983.4	1,700.5	1,921.6	1,836.6	2,147.6	3,486.6	2,912.3	2,863.7
19	1,905.7	1,966.5	2,095.6	2,004.6	1,995.0	1,723.2	1,919.0	1,836.0	2,273.6	3,486.6	2,902.5	2,861.9
20	1,909.0	1,973.3	2,094.9	1,997.7	2,002.5	1,806.5	1,916.3	1,835.3	2,370.6	3,472.4	2,899.9	2,860.1
21	1,909.0	1,982.7	2,096.3	1,986.8	2,006.6	1,848.9	1,911.7	1,833.4	2,446.8	3,451.1	2,899.0	2,853.1
22	1,909.7	1,995.0	2,097.0	1,974.6	2,008.7	1,854.7	1,911.0	1,829.5	2,506.2	3,416.9	2,898.1	2,847.0
23	1,919.0	2,007.3	2,097.7	1,970.6	2,008.7	1,854.0	1,908.4	1,825.0	2,562.6	3,382.0	2,897.2	2,846.1
24	1,913.0	2,015.5	2,099.1	1,967.2	2,007.3	1,848.2	1,906.4	1,821.2	2,621.4	3,351.3	2,898.1	2,846.1
25	1,921.0	2,025.8	2,099.1	1,959.1	2,004.6	1,844.3	1,904.4	1,818.0	2,677.8	3,325.6	2,906.1	2,847.9
26	1,923.0	2,030.0	2,098.4	1,951.7	1,999.8	1,843.1	1,899.1	1,817.4	2,687.0	3,304.1	2,915.9	2,855.8
27	1,926.3	2,037.6	2,097.7	1,944.3	1,995.0	1,851.5	1,895.9	1,816.7	2,690.4	3,296.2	2,921.2	2,868.1
28	1,929.6	2,042.4	2,099.8	1,935.6	1,990.9	1,857.3	1,891.2	1,816.1	2,682.8	3,274.8	2,926.6	2,880.4
29	1,929.6		2,102.7	1,930.3	1,986.1	1,863.8	1,888.0	1,813.5	2,678.7	3,258.3	2,934.6	2,907.9
30	1,930.3		2,102.7	1,919.6	1,981.4	1,864.4	1,884.7	1,809.1	2,736.7	3,238.0	2,956.2	2,916.8
31	1,931.6		2,102.7		1,973.3		1,878.8	1,804.6		3,227.4		2,912.3

Month	1958							Period 1953-1958		
	MOMENTARY MAXIMUM			MOMENTARY MINIMUM			Average Storage	Storage		
	Elevation	Storage	Day	Elevation	Storage	Day		Average	Maximum	Minimum
Jan.	289.38	1,931.6	31	286.81	1,765.5	1	1,886.3	1,092.2	2,216.4	2.3
Feb.	291.01	2,042.4	28	289.38	1,931.6	1	1,968.3	967.0	1,968.3	2.1
Mar.	291.87	2,102.7	†29	291.01	2,042.4	1	2,085.1	904.7	2,085.1	3.0
Apr.	291.88	2,103.4	† 2	289.20	1,919.6	30	2,028.8	833.7	2,028.8	2.6
May	290.55	2,010.7	23	286.50	1,746.1	13	1,921.1	892.6	1,921.1	2.8
June	290.00	1,973.3	1	285.76	1,700.5	18	1,841.4	905.6	1,938.0	.4
July	289.25	1,923.0	†16	288.19	1,853.4	6	1,895.3	1,143.1	2,157.3	1.0
Aug.	288.58	1,878.8	1	287.43	1,804.6	31	1,840.6	1,152.6	2,144.0	97.8
Sept.	300.03	2,736.7	30	287.24	1,792.5	4	2,167.8	1,406.1	2,263.2	256.2
Oct.	308.11	3,490.6	19	300.03	2,736.7	1	3,250.2	1,692.9	3,250.2	308.3
Nov.	305.45	3,227.4	1	301.78	2,888.3	13	2,964.4	1,689.2	2,964.4	390.9
Dec.	302.74	2,974.3	1	301.29	2,845.2	23	2,904.7	1,652.4	2,904.7	343.4
Yearly	308.11	3,490.6		285.76	1,700.5		2,231.4	1,196.3	2,231.4	328.5

† And other days

SOURCES OF RIVER FLOW

The graph and the column of figures on this page represent data on the annual yield of drainage areas tributary to various stream-gaging stations in the Rio Grande watershed. The graphic values are for the entire tributary area, while the column figures are reduced to the yield from one average square mile of the tributary area. There were no reservoirs of consequence on the area from 1900 to 1913; therefore, the figures in the first column correspond to those for that period in the graph. Because more than 10,000,000 acre-feet of reservoir capacity have been developed on the watershed since 1913, in which large volumes of unused runoff are stored in some years and released in later years as unused stream flow (thus reducing the unused stream flow in some years and adding thereto in others), it is significant to differentiate between the unused runoff and unused stream flow.

Average Annual Unused Water Acre-Feet per Square Mile			
RUNOFF		STREAM FLOW	
1900-1913	1924-1958	1924-1958	
29.7	16.6	16.9	EL PASO — 1956 — 1942
			Unmeasured
19.6	5.6	5.9	FORT QUITMAN — 1957 — 1942
			Unmeasured
16.4	4.9	5.1	UPPER PRESIDIO — 1956 — 1942
42.6	31.5	31.2	RIO CONCHOS
			Unmeasured
			LOWER PRESIDIO — 1953 — 1942
			ALAMITO CREEK
19.8	20.1	20.1	TERLINGUA CREEK
			Unmeasured
			JOHNSON RANCH — 1953 — 1942
			Unmeasured
26.4	17.8	17.7	LANGTRY — 1953 — 1942
12.4	10.3	10.1	PECOS RIVER
			GOODENOUGH SPRING
103.1	98.2	98.2	DEVILS RIVER
67.6	82.8	82.8	Unmeasured
26.9	20.5	20.4	DEL RIO — 1953 — 1932
			SAN FELIPE CREEK
			PINTO CREEK
110.8	64.3	64.2	RIO SAN DIEGO
			RIO SAN RODRIGO
			Unmeasured
29.2	21.7	21.6	EAGLE PASS — 1956 — 1932
32.4	30.5	30.5	RIO ESCONDIDO
			Unmeasured
29.3	22.0	22.0	LAREDO — 1956 — 1932
23.1	15.5	14.2	RIO SALADO
			FALCON RESERVOIR
			FALCON DAM ¤ — 1958
			RIO ALAMO
			Unmeasured
			ROMA — 1932
** 48.4	** 53.2	** 51.0	RIO SAN JUAN
			Unmeasured
			FORT RINGGOLD Ø — 1952 — 1932
			RIO SAN JUAN
			DIVERSIONS
			OVERFLOW & LOSS
			MATAMOROS — 1941
			DIVERSIONS
			OVERFLOW & LOSS
			LOWER BROWNSVILLE 1956 — 1941

ANNUAL UNUSED STREAM FLOW IN MILLIONS OF ACRE-FEET

0 1 2 3 4 5 6 7 8 9

SOURCES OF RIVER FLOW

For the 49 years of record 1900 to 1913 and 1924 to 1958

o Maximum Year Period 1924 to 1958

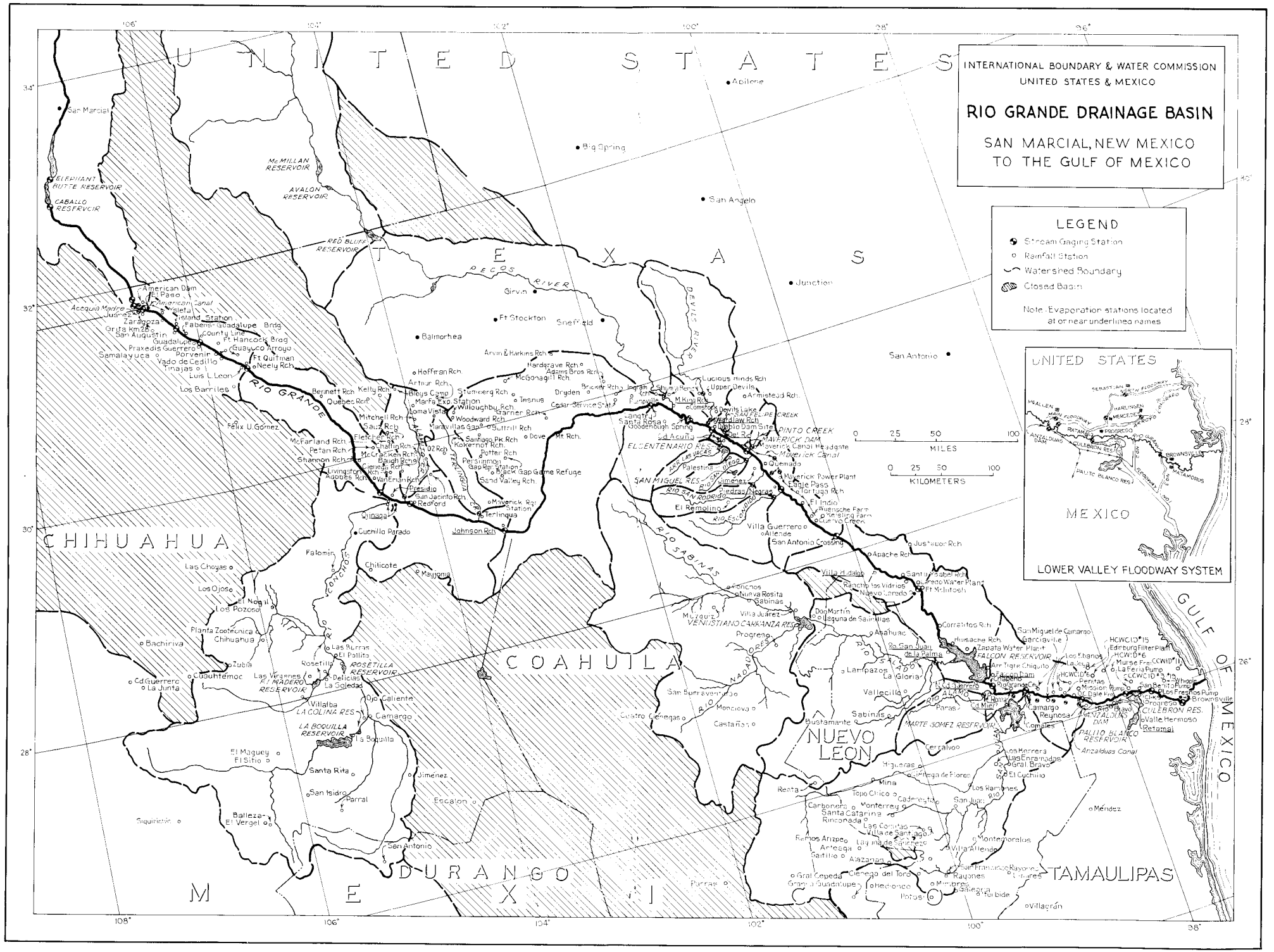
● Minimum Year

1924-1958 Average

1900-1913 Average

ANNUAL UNUSED STREAM FLOW IN MILLIONS OF ACRE-FEET

¤ Values prior to 1953 considered the same a for Zapata gaging station. Ø Values prior to 1955 considered the same as for Rio Grande City gaging station. ** Includes contributions of the Río San Juan entering the Rio Grande above and below Rio Grande City.


INTERNATIONAL BOUNDARY & WATER COMMISSION
UNITED STATES & MEXICO
RIO GRANDE DRAINAGE BASIN
SAN MARCIAL, NEW MEXICO
TO THE GULF OF MEXICO
LEGEND
Stream Gaging Station
Rainfall Station
Watershed Boundary
Closed Basin
Note: Evaporation stations located at or near underlined names
UNITED STATES
MEXICO
LOWER VALLEY FLOODWAY SYSTEM
0 25 50 100
MILES
0 25 50 100
KILOMETERS
UNITED STATES
MEXICO
TEXAS
CHIHUAHUA
COAHUILA
NUEVO LEON
TAMAULIPAS
DURANGO
GULF OF MEXICO
RIO GRANDE
PECOS RIVER
DEVILS RIVER
RIO CONCHOS
RIO SABINAS
RIO SAN RODRIGO
RIO ESCONDIDO
RIO SAN JUAN
RIO PANUCO
RIO ALAMO
RIO MADERO
ELEPHANT BUTTE RESERVOIR
CABALLO RESERVOIR
McMILLAN RESERVOIR
AVALON RESERVOIR
RED BLUFF RESERVOIR
ROSETILLA RESERVOIR
EL MADERO RESERVOIR
LA COLINA RES.
LA BOQUILLA RESERVOIR
SAN MIGUEL RES.
ELCENTENARIO RES.
LAS VACAS RES.
VENUSTIANO CARRANZA RES.
FALCON RESERVOIR
MARTE GOMEZ RESERVOIR
PALITO BLANCO RESERVOIR
CULEBRON RES.
ANZALDUAS DAM
MILLER DAM
AMISTAD RESERVOIR
AMERICAN DAM
El Paso
American Canal
Acequia Madre
Juarez
Zaragoza
Isleta
Tornillo Station
Fabens-Guadalupe Brdg
Grita Km 28
San Augustin
County Line
Ft. Hancock Brdg
Guadalupe
Guayuco Arroyo
Praxedis Guerrero
Samalayuca
Porvenir
Ft Quitman
Vado de Cedillo
Tinajas
Neely Rch
Luis L. Leon
Los Barriles
Bernett Rch
Kelly Rch
Quebec Rch
Felix U. Gomez
Mitchell Rch
Saus Rch
Fletcher Rch
Chaffin Rch
McFarland Rch
Petan Rch
McCracken Rch
Baugh Rch
Shannon Rch
Grenado Rch
Livingston Adobes Rch
Van Eman Rch
Presidio
San Jacinto Rch
Redford
Ojinaga
Cuchillo Parado
Falomir
Chilicote
Mayrome
Las Choyas
Los Ojos
El Nogal
Los Pozos
Planta Zootecnica Chihuahua
Bachiniva
Zubia
Cuauhtemoc
Cd. Guerrero
La Junta
Las Virgenes
Delicias
La Soledad
Rosetilla
Villalba
Ojo Caliente
Camargo
La Boquilla
El Maguey
El Sitio
Santa Rita
San Isidro
Parral
Jimenez
Escalon
Balleza
El Vergel
Siquirichic
San Antonio
Balmorhea
Ft Stockton
Sheffield
Girvin
Big Spring
Abilene
San Angelo
Junction
San Antonio
Hoffman Rch
Arthur Rch
Marfa Exp. Station
Loma Vistas
Woodward Rch
Maravillas Gap
Buttrill Rch
Santiago Pk Rch
Kokernot Rch
Potter Rch
Persimmon Gap Rgr. Station
Black Gap Game Refuge
Sand Valley Rch
Terlingua
Johnson Rch
Maverick Rgr Station
Arvin & Harkins Rchs
Hardgrave Rch
Adams Bros Rch
McGonagill Rch
Tesnus
Cedar Service Sta.
Dryden
Brooks Rch
Ingram Rch
Shumla Rch
Comstock
Devils Lake
Lucious Hinds Rch
Upper Devils
Armistead Rch
M. King Rch
Sanger
Santa Rosa
Goodenough Spring
Val Verde Creek
Val Verde Rch
Pinto Creek
Pinto Rch
Del Rio
Pumphouse Rch
Ed Acuna
Maverick Dam
Maverick Canal Headgate
Quemado
Palestina
Jimenez
Maverick Power Plant
Eagle Pass
Tortuga Rch
El Indio
Nuesche Farm
Kelsing Farm
Cuervo Creek
El Remolino
Villa Guerrero
Allende
San Antonio Crossing
Justeson Rch
Apache Rch
Las Conchas
Nueva Rosita
Sabinas
Villa Juarez
Mequiz
Laguna de Sain Vilas
Don Martin
Progreso
Villa Hidalgo
Ranchito los Vidrios
Nuevo Laredo
Santa Isabel Rch
Ft. McIntosh
Nuevo Laredo Water Plant
Anahuac
Corralitos Rch
Huisache Rch
Zapata Water Plant
Arr. Tigre Chiquito
Falcon Dam
Ed. Guerrero
Pilgrim Camp
Roma
El Mirador
Los Ebanos
Lavaca
HCWCID #15
Edinburg Filter Plant
HCWCID #6
Mission Fm.
La Feria Pump
CCWID #1
CCWID #6
Penitas
Mission Pump
Dr. Dale Fm.
San Benito Pump
Whipp
Los Fresnos Pump
Brownsville
Progreso
Valle Hermoso
Reynosa
Camargo
Comales
Rio Bravo
Retamal
Lampazos
La Gloria
Vallecillo
Paras
Sabinas
Bustamante
Castaños
Monclova
Cuatro Cienegas
San Buenaventura
Rio Madero
Cerralvo
Los Herrera
Las Enramadas
Gral. Bravo
El Cuchillo
Higueras
Villa de Arriega de Flores
Mina
Reata
Topo Chico
Cadereyta
Los Ramones
San Juan
Monterrey
Carbonera
Santa Catarina
Rinconada
Las Comitas
Villa de Santiago
Ramos Arizpe
Arteaga
Lampa de Sanchez
Patillo
Ajazanas
Montemorelos
Villa Allende
Gral Cepeda
Cienega del Toro
Gral Guadalupe
Chedionco
Mimbres
Saltillo
Torreon
Parras
Rayones
Tulbide
Villagran
Mendez
Matamoros
Progresso
Rio Grande
Arroyo Colorado
Brownsville Ship Channel
Laguna Madre
Gulf Intracoastal Waterway
Sebastian
North Floodway
Harlingen
Mercedes
Weslaco
Donna
Mcallen
Pharr
Anzalduas
Culebron Res.
Palito Blanco Res.
Retamal
Brownsville
Matamoros

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

DESCRIPTION: An open channel rating station in a concrete-lined canal with a water-stage recorder located 2,350 feet below the headgates at the American Dam near El Paso, Texas. Measurements are made at the downstream end of the first covered section of this Canal, 835 feet below the recorder. The zero of the gage is 3,712.09 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 12 meter measurements during the year, a stable rating curve at medium and high flows, and a continuous record of gage heights. After May 7, 1954 computations for flows below gage height 2.80 feet (discharge approximately 30 second-feet) are based on auxiliary recorder 400 feet below headgates. Records available: June 2, 1938 through December 1958.

REMARKS: This canal diverts water from the Rio Grande at the American Dam near El Paso, Texas, 2.1 river miles above the International Dam near Juárez, Chihuahua. Water from this canal discharges into the Franklin Canal from which water is frequently returned to the Rio Grande at spillways 2.2, 2.7, and 3.6 river miles below the American Dam.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,840 second-feet on March 27, 1944. Min. frequently no flow.

Average Flow in Second-Feet

Daily:	Max.	1,510	Aug. 13, 1945	Min.	0	Frequently
Monthly:	Max.	1,210	Aug. 1943	Min.	0	Frequently since 1952
Yearly:	Max.	748	1943	Min.	65.3	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	419	545	658	676	662	617	352	163	88.1
2	0	0	0	469	748	681	706	802	619	384	140	89.7
3	0	0	.7	617	683	755	630	758	713	380	141	87.3
4	0	0	215	600	537	649	615	699	713	326	129	87.3
5	0	0	551	660	431	598	699	537	* 982	298	117	85.1
6	0	0	708	709	378	724	881	378	988	303	116	85.1
7	0	0	816	606	392	895	1,090	450	1,080	289	110	83.5
8	0	0	315	704	350	905	983	551	1,110	266	110	82.8
9	0	0	214	672	387	938	874	734	927	250	117	81.6
10	0	0	518	569	450	892	863	885	850	239	108	85.1
11	0	0	483	488	481	804	913	990	1,010	220	112	81.3
12	0	0	598	516	547	708	1,020	1,150	1,080	198	105	84.3
13	0	0	543	561	600	731	1,170	1,090	778	210	105	81.3
14	0	0	153	617	488	804	1,120	974	667	614	103	80.5
15	0	0	55.7	561	429	697	819	1,030	576	692	101	78.4
16	0	0	51.6	569	419	640	* 889	1,140	592	430	103	77.7
17	0	0	472	577	470	632	* 935	1,260	431	336	113	79.1
18	0	0	477	651	492	704	908	1,080	571	294	98.0	77.0
19	0	0	497	493	440	647	968	887	529	250	96.2	78.4
20	0	0	867	499	355	590	1,120	946	493	243	101	76.2
21	0	0	960	416	315	551	947	814	586	222	101	76.2
22	0	0	827	361	336	669	755	990	681	168	109	77.0
23	0	0	905	319	376	887	755	939	743	171	104	77.0
24	0	0	947	218	501	843	772	959	619	150	106	79.8
25	0	0	845	191	488	636	800	1,020	450	146	110	79.1
26	0	0	354	317	441	518	800	1,050	406	146	102	78.4
27	0	0	340	370	443	497	978	609	432	136	101	77.0
28	0	0	510	399	470	470	1,160	688	358	137	101	79.1
29	0		619	381	474	565	1,070	665	424	141	92.2	78.4
30	0		529	400	553	613	1,190	590	376	124	90.5	74.8
31	0		501		642		739	586		144		74.1
Sum	0	0	14,872.0	14,929	14,661	20,901	27,845	25,913	20,401	8,259	3,304.9	2,500.7

Current Year 1958 — Period June 1938-1958

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.				0		0	0	0	1,329	8,110	0
Feb.				0		0	0	0	6,552	19,500	0
Mar.	9.68		20	1,260	† 1	0	480	29,500	28,145	50,100	1,700
Apr.	10.16	4.45	6	1,420	24	162	498	29,600	40,806	70,900	4,560
May	8.02	5.53	2	782	21	306	473	29,100	33,690	69,000	517
June	8.83	6.40	9	997	†27	443	697	41,500	41,031	65,700	5,990
July	11.01	7.07	27	1,740	31	569	898	55,200	48,312	70,700	8,950
Aug.	10.61	5.82	10	1,580	6	349	836	51,400	48,689	74,600	4,840
Sept.	10.71	5.45	11	1,620	14	296	680	40,500	33,296	63,100	2,230
Oct.	8.56	4.01	14	921	30	115	266	16,400	15,751	39,100	0
Nov.	4.72	3.70	1	197	†29	88.1	110	6,560	8,840	21,000	0
Dec.	3.78	3.22	2	94.6	16	55.8	80.7	4,960	9,127	25,500	0
Yearly	11.01			1,740		0	421	304,720	315,568	541,610	47,397.4

* Partly estimated † And other days

DIVERSIONS FROM THE RIO GRANDE
ACEQUIA MADRE NEAR JUAREZ, CHIHUAHUA

DESCRIPTION: Water-stage recorder and bridge for meter measurements located about 260 feet below the canal intake at the International Dam at Juárez, Chihuahua, which is 2.1 river miles below the American Dam at El Paso, Texas.

RECORDS: Based on 114 meter measurements during the year, 70 by the Mexican and 44 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: 1938 through December 1958. These records, showing the water actually diverted by Mexico, do not necessarily reflect the quantities of water made available to Mexico in the bed of the river by the United States under terms of the Convention of 1906. Such quantities of water are included in the record of "Rio Grande below American Dam," see page 8 in this Water Bulletin.

REMARKS: In 1958, all of the 60,050 acre-feet tabulated below were distributed to land irrigated in the first unit under the canal.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 480 second-feet on July 21, 1944 with a gage height of 6.00 feet. Min. no flow through the winter months.

Average Flow in Second-Feet

Daily:	Max.	339	May 10, 1942	Min.	0	Several months each year
Monthly:	Max.	283	May 1938	Min.	0	Several months each year
Yearly:	Max.	116	1942	Min.	10.8	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	215	220	179	161	160	0	0	0
2	0	0	0	0	215	227	162	163	157	0	0	0
3	0	0	0	0	214	219	160	162	161	0	0	0
4	0	0	0	0	212	218	156	164	182	0	0	0
5	0	0	0	0	213	212	155	163	186	0	0	0
6	0	0	0	0	217	219	155	167	185	0	0	0
7	0	0	0	0	222	215	158	159	189	0	0	0
8	0	0	0	0	217	214	155	157	186	0	0	0
9	0	0	0	0	209	215	156	155	180	0	0	0
10	0	0	0	0	209	221	157	156	177	0	0	0
11	0	0	0	0	212	215	162	150	177	0	0	0
12	0	0	0	0	216	215	160	153	177	0	0	0
13	0	0	0	0	210	221	164	155	177	0	0	0
14	0	0	0	0	214	231	163	152	177	0	0	0
15	0	0	0	0	216	227	153	157	177	0	0	0
16	0	0	0	0	216	222	156	154	183	0	0	0
17	0	0	0	0	241	224	151	155	184	0	0	0
18	0	0	0	0	223	224	155	153	177	0	0	0
19	0	0	0	155	212	221	150	160	180	0	0	0
20	0	0	0	210	215	220	150	157	180	0	0	0
21	0	0	0	209	221	218	142	154	182	0	0	0
22	0	0	0	214	226	219	164	171	158	0	0	0
23	0	0	0	211	222	216	157	166	158	0	0	0
24	0	0	0	206	189	218	152	164	158	0	0	0
25	0	0	0	205	191	220	155	140	158	0	0	0
26	0	0	0	210	206	217	165	141	158	0	0	0
27	0	0	0	207	230	221	173	143	158	0	0	0
28	0	0	0	210	224	218	165	152	158	0	0	0
29	0		0	212	218	219	149	149	0	0	0	0
30	0		0	211	219	219	141	153	0	0	0	0
31	0		0		222		149	153		0		0
Sum	0	0	0	2,460	6,686	6,585	4,869	4,839	4,840	0	0	0

Current Year 1958 — **Period 1938-1958**

Month	Average Rainfall Inches **		Extreme Second-Feet High		Extreme Second-Feet Low		Average Second-Feet	Total Acre-Feet	Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
	1938-1958	1958	Day		Day						
Jan.	.41	.64		0		0	0	0	0	0	0
Feb.	.31	.92		0		0	0	0	0	0	0
Mar.	.29	1.50		0		0	0	0	1,127	5,540	0
Apr.	.20	.24	19	260		0	82.0	4,890	6,017	11,700	2,020
May	.44	.65	17	357	24	179	216	13,260	10,337	17,400	0
June	.70	.88	†14	233	7	204	219	13,060	8,462	15,700	0
July	1.56	1.10	27	254	27	48.4	157	9,650	8,501	15,200	856
Aug.	1.42	1.20	22	237	23	75.9	156	9,600	8,395	12,400	0
Sept.	.99	3.23	11	220	†29	0	161	9,590	6,257	12,380	0
Oct.	.88	1.93		0		0	0	0	73.5	328	0
Nov.	.24	.28		0		0	0	0	0	0	0
Dec.	.43	T		0		0	0	0	0	0	0
Yearly	7.87	12.57		357		0	82.9	60,050	49,169.5	83,930	7,864

† And other days ** Average for valley floor from El Paso to Island Station.

DIVERSIONS FROM THE RIO GRANDE
MAVERICK CANAL AT MILE 13 NEAR QUEMADO, TEXAS

DESCRIPTION: For power generation and irrigation use, water is diverted into the main Maverick Canal from the Rio Grande at a point 17.3 river miles below the international bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 710.8 river miles below the American Dam at El Paso, Texas. At a point 31.8 canal miles below the headworks of this canal, a portion of the diverted water returns to the river through the Maverick Power Plant and the remainder enters the Maverick Canal extension. The discharges shown below are based on the continuous record of a bubbler-type water-stage recorder, operated with bottled nitrogen gas, and measurements of discharge at a point approximately 13 canal miles below the diversion point. Gage heights at this station are often affected by gate operation at Las Moras Siphon, 2.4 miles downstream.

RECORDS: Based on 76 meter measurements during the year and a continuous record of gage heights. Computations by shifting channel methods. Records available: June 21, 1949 through December 1958.

REMARKS: In 1958 a total of 30,904 acres of land was irrigated from this canal and its extension. Of this total, 148 acres were above this station, 8,414 acres were between this point and the canal extension, and 22,342 acres were irrigated from the Maverick Canal extension. A total of 660,700 acre-feet of water returned to the Rio Grande at the power plant and some returned through the irrigation system.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,650 second-feet on May 27, 1952. Min. no flow several days in June, July and November 1954.

Average Flow in Second-Feet

Daily.	Max.	1,620	July 13, 1952	Min.	0	June 28 thru July 11 and Nov. 2, 1954
Monthly:	Max.	* 1,530	July 1952	Min.	ᵛ 319	July 1954
Yearly:	Max.	1,390	1950	Min.	914	1956

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,250	1,280	1,280	1,080	1,140	1,210	1,290	1,330	1,280	1,250	1,260	1,380
2	1,240	1,270	1,300	1,080	1,120	1,170	1,270	1,380	1,260	1,180	1,260	1,380
3	1,230	1,260	1,300	1,080	1,210	1,160	1,250	1,350	1,280	1,180	1,250	1,390
4	1,250	1,260	1,300	1,080	1,140	1,140	1,240	1,350	1,280	1,160	1,240	1,390
5	1,280	1,260	1,300	1,050	1,110	1,150	1,230	1,330	1,260	1,180	1,260	1,380
6	1,270	1,270	1,300	1,060	1,120	1,170	1,220	1,320	1,240	1,200	1,330	1,380
7	1,260	1,260	1,290	1,060	1,090	1,210	1,280	1,290	1,240	1,190	1,310	1,370
8	1,250	1,260	1,280	1,060	1,060	1,200	1,280	1,260	1,270	1,160	1,290	1,360
9	1,240	1,250	1,270	1,060	1,040	1,230	1,290	1,240	1,220	1,170	1,280	1,350
10	1,250	1,240	1,260	1,040	1,040	1,310	1,280	1,230	1,070	1,190	1,260	1,350
11	1,250	1,250	1,250	1,070	1,060	1,270	1,280	1,240	1,240	1,180	1,260	1,340
12	1,250	1,250	1,240	1,070	1,030	1,270	1,290	1,210	1,320	1,190	1,290	1,340
13	1,280	1,250	1,220	1,070	1,090	1,240	1,290	1,210	1,350	1,210	1,290	1,350
14	1,270	1,260	1,200	1,070	1,040	1,200	1,270	1,220	1,250	1,150	1,300	1,360
15	1,270	1,250	1,200	1,070	1,020	1,180	1,260	1,200	* 1,060	1,100	1,290	1,350
16	1,270	1,240	1,200	1,060	1,190	1,220	1,250	1,240	1,100	1,040	1,310	1,350
17	1,270	1,240	1,190	1,090	1,230	* 1,300	1,260	1,300	1,230	1,060	1,330	1,350
18	1,260	1,250	1,180	1,120	1,230	* 838	1,260	1,310	1,230	1,180	1,330	1,360
19	1,260	1,250	1,180	1,130	1,250	* 826	1,260	1,300	1,260	1,200	1,330	1,360
20	1,260	1,250	1,170	1,130	1,270	* 1,200	1,260	1,300	1,200	1,200	1,360	1,370
21	1,270	1,250	1,160	1,140	1,290	* 1,290	1,300	1,290	1,230	1,180	1,360	1,360
22	1,270	1,300	1,140	1,140	1,270	ᵛ 1,280	1,300	1,250	1,230	1,210	1,360	1,360
23	1,290	1,320	1,130	1,110	1,280	* 1,230	1,300	1,270	1,220	1,250	1,370	1,360
24	1,310	1,330	1,120	1,130	1,270	1,270	1,290	1,250	1,220	1,220	1,360	1,360
25	1,290	1,320	1,120	1,110	1,280	1,290	1,290	1,260	1,360	1,240	1,360	1,350
26	1,290	1,320	1,110	1,090	1,240	1,290	1,280	1,280	1,340	1,230	1,370	1,340
27	1,270	1,310	1,120	1,100	1,250	1,300	1,230	1,320	1,320	1,230	1,350	1,340
28	1,290	1,290	1,120	1,120	1,270	1,280	1,250	1,310	1,240	1,250	1,350	1,340
29	1,280		1,100	1,120	1,240	1,280	1,220	1,300	1,160	1,240	1,390	1,330
30	1,280		1,090	1,160	1,220	1,300	1,230	1,300	1,220	1,200	1,380	1,320
31	1,270		1,080		1,220		1,240	1,300		1,280		1,320
Sum	39,270	35,540	37,200	32,750	36,310	36,304	39,240	39,740	37,180	36,900	39,480	42,040

Current Year 1958 — **Period July 1949-1958**

Month	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	4.52	4.12	24	1,320	† 2	1,230	1,270	77,900	71,867	89,500	61,900
Feb.	4.76	4.21	24	1,340	10	1,230	1,270	70,500	63,711	82,500	52,700
Mar.	4.64	3.49	6	1,330	30	1,050	1,200	73,800	67,600	90,700	52,000
Apr.	4.00	3.46	30	1,160	† 5	1,030	1,090	65,000	60,533	81,000	* 45,400
May	4.73	2.58	21	1,300	14	837	1,170	72,000	* 65,911	82,200	ᵛ 39,400
June	4.70	1.22	17	1,370	19	553	1,210	72,000	67,578	86,800	34,400
July	4.57	3.95	22	1,320	31	1,200	1,270	77,800	ᵛ 66,840	* 93,900	ᵛ 19,600
Aug.	4.65	3.92	2	1,390	12	1,180	1,280	78,800	ᵛ 72,250	88,500	53,000
Sept.	4.45	ᵛ 2.90	25	1,360	15	1,020	1,240	73,700	71,220	* 84,500	47,000
Oct.	4.28	2.79	31	1,290	16	975	1,190	73,200	ᵛ 72,580	87,500	* 54,300
Nov.	4.52	3.94	† 29	1,390	4	1,230	1,320	78,300	69,850	82,800	55,900
Dec.	4.51	4.26	† 3	1,400	†30	1,300	1,360	83,400	72,280	85,600	58,600
Yearly	4.76	1.22		1,400		553	1,240	896,400	* 822,220	1,004,200	* 663,500

ᵛ Estimated * Partly estimated † And other days

DIVERSIONS FROM THE RIO GRANDE
MAVERICK CANAL EXTENSION BELOW THE POWER PLANT
NEAR EAGLE PASS, TEXAS

DESCRIPTION: The main Maverick Canal divides into two branches at a point about 31.8 canal miles below the point at which water from the Rio Grande is diverted. One branch leads to the Maverick Power Plant and back to the Rio Grande. The other branch forms this Maverick Canal Extension, which is used to transmit irrigation water. The water-stage recorder is located at a wooden pile bridge about 1 mile below the heading of this canal extension. Meter measurements are made from the bridge.

RECORDS: Based on 57 meter measurements during the year, 44 by the United States and 13 by the Mexican Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: 1939 through December 1958.

REMARKS: Irrigation from this canal extension began in June 1938. In 1958, 22,342 acres of land north and south of Eagle Pass were irrigated. Some water from this canal extension returns to the river through the irrigation system which extends approximately 67 canal miles downstream.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 549 second-feet on June 28, 1956. Min. occasionally no flow.

Average Flow in Second-Feet

Daily:	Max.	522	June 28, 1956	Min.	0	Occasionally
Monthly:	Max.	448	July 1955	Min.	ᵘ 18.7	Mar. 1939
Yearly:	Max.	321	1952 & 1956	Min.	62.1	1939

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	140	144	94.7	157	252	320	261	334	273	89.9	* 45.1	* 184
2	142	140	92.5	179	285	322	258	352	274	87.1	* 45.6	177
3	187	136	93.0	196	285	323	258	360	278	93.7	45.6	184
4	161	137	91.5	208	282	322	252	362	273	202	45.2	181
5	84.3	142	88.6	207	284	324	261	355	272	208	44.8	184
6	63.9	140	84.7	205	282	344	270	354	268	241	63.8	180
7	60.8	138	84.3	211	282	364	319	344	266	212	159	180
8	61.4	136	83.3	269	279	360	285	327	257	170	157	182
9	61.4	141	84.2	294	281	366	260	323	* 179	199	158	184
10	60.0	140	84.0	295	282	370	255	326	202	198	159	182
11	59.2	140	79.5	292	282	380	282	229	187	139	155	185
12	57.2	122	87.4	279	286	399	328	192	176	96.5	160	178
13	109	110	91.6	277	226	387	326	225	177	94.6	155	176
14	143	108	140	278	122	359	330	195	175	92.8	157	181
15	147	105	144	279	114	362	328	198	169	88.9	156	175
16	146	126	145	284	116	327	336	202	ᵘ 132	84.3	157	175
17	147	141	165	301	* 107	217	331	223	ᵘ 74.9	91.2	155	177
18	148	101	193	312	* 100	138	337	257	ᵘ 74.3	90.1	ᵘ 155	175
19	145	111	196	314	* 100	120	337	260	75.5	90.4	ᵘ 156	175
20	142	150	199	318	* 96.6	123	338	286	75.5	89.9	ᵘ 155	174
21	145	114	198	301	101	121	342	299	76.1	89.5	ᵘ 156	167
22	147	82.6	182	296	126	121	340	290	76.8	90.4	ᵘ 161	155
23	99.5	84.2	164	296	134	119	352	292	77.4	86.9	ᵘ 162	139
24	49.5	87.3	161	301	171	118	396	281	81.5	107	ᵘ 167	138
25	44.7	90.4	159	294	172	124	402	280	88.8	143	ᵘ 169	143
26	45.6	92.4	154	301	185	159	399	277	92.2	140	ᵘ 170	140
27	44.8	97.6	159	303	226	162	395	278	91.6	88.8	ᵘ 172	144
28	44.0	93.5	158	308	254	161	395	275	89.8	46.5	ᵘ 173	141
29	42.8		161	310	280	195	376	276	162	46.5	ᵘ 175	143
30	43.1		159	276	283	256	362	250	170	47.0	ᵘ 179	142
31	75.1		158		326		349	269		47.0		156
Sum	3,350.0		8,141		7,763		10,060	8,771		3,591.0		5,197
	3,046.3		4,134.3		6,601.6				4,864.4		*4,168.1	

Current Year 1958 — Period 1939-1958

Month	Average Rainfall Inches **		Extreme Second-Feet High		Extreme Second-Feet Low		Average Second-Feet	Total Acre-Feet	Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
	1939-1958	1958	Day		Day						
Jan.	.99	3.20	4	224	31	40.8	98.3	6,040	11,547	19,800 ᵘ	2,140 ᵘ
Feb.	1.01	1.61	†16	205	22	78.9	120	6,640	10,502	18,200 ᵘ	2,120 ᵘ
Mar.	.77	.59	21	207	†12	73.3	133	8,200	12,401	22,500 ᵘ	1,150 ᵘ
Apr.	1.61	.43	20	325	1	156	271	16,100	12,636	22,200	3,430
May	3.17	2.81	31	364	20	96.6	213	13,100	10,964	21,800	2,840
June	1.88	5.18	11	413	†18	112	259	15,400	12,050	26,600	3,750
July	1.18	.96	24	431	11	239	325	20,000	13,838	27,100	4,510
Aug.	2.32	1.95	3	394	30	145	283	17,400	12,782	24,100	3,480
Sept.	2.89	9.59	8	285	†18	73.7	162	9,650	10,674	18,300	4,600
Oct.	1.77	5.87	† 6	241	31	45.5	116	7,120	11,992 *	21,800	5,130
Nov.	.65	.40	30	* 184	6	42.3	* 139	* 8,270	11,986 *	20,000	4,170
Dec.	.68	.63	11	195	21	124	168	10,300	12,592	20,200	4,280
Yearly	18.92	33.22		431		40.8	191	138,220	143,964 *	233,300	44,950

ᵘ Estimated * Partly estimated † And other days ** On United States side from Maverick Power Plant to Cuervo Creek

DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE BELOW FALCON DAM

The official records show that in 1958 there were in this area 771,046 irrigable acres, several towns, and many rural homes served Rio Grande water under the jurisdiction of the 93rd District Court of Texas through its Special Water Master. This jurisdiction began in June 1956.

The total diversion in 1958 was 857,500 acre-feet, most of which was made by pumping from the river. About 95% of the water diverted from the Rio Grande was determined by this Commission through continuous records of discharge at open channel rating stations and at deflection meter stations developed by this Commission. The records for the rest of the diversions were furnished by the Special Water Master. Drainage from more than 90% of this area does not return to the Rio Grande, but some of it is re-used in the area. More than one crop per year is often grown on parts of this land.

Monthly average, maximum, and minimum diversions from the Rio Grande on the United States side below Rio Grande City, for various periods beginning in 1922, will be found in previous issues of these bulletins. The area irrigated below Rio Grande City is about 98% of the total acreage irrigated on the United States side below Falcón Dam.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,030	106	144	714	2,430	1,670	2,390	1,910	1,540	454	342	818
2	1,840	50.0	31.0	889	2,340	3,110	1,760	1,700	2,560	325	210	904
3	2,150	217	68.0	792	1,970	3,300	1,540	1,490	2,380	500	410	966
4	708	168	169	575	1,600	3,360	819	2,220	2,060	532	208	973
5	343	183	163	878	2,770	3,660	1,270	2,120	1,320	358	264	1,170
6	789	182	158	972	3,010	3,330	998	2,140	880	669	497	735
7	953	265	102	1,550	2,760	3,400	1,310	2,080	835	692	473	210
8	1,320	249	37.0	1,340	2,380	3,310	1,290	1,890	734	656	336	652
9	740	228	56.0	1,710	2,200	4,100	906	1,700	702	658	212	1,190
10	387	517	96.0	1,960	1,990	4,270	610	1,040	702	1,030	558	1,230
11	33.0	666	217	2,270	1,730	4,440	569	2,040	516	729	475	1,250
12	46.0	625	91.0	2,300	3,020	4,440	499	2,100	737	421	615	1,020
13	114	570	144	2,080	2,750	4,350	395	2,130	366	289	503	830
14	122	201	78.0	2,870	2,150	3,590	845	2,230	294	240	865	468
15	145	195	111	2,870	3,630	3,010	791	2,180	493	367	668	969
16	112	168	64.0	2,730	4,170	3,670	839	1,840	438	326	301	830
17	159	288	202	2,700	3,760	4,040	847	1,500	418	350	742	944
18	212	241	220	2,380	2,610	3,770	854	2,030	536	336	678	1,300
19	34.0	162	229	1,660	2,100	3,780	750	2,030	425	333	958	1,520
20	143	268	206	1,330	1,060	3,770	672	1,930	220	331	895	1,180
21	163	665	113	2,410	566	3,310	1,270	2,110	209	390	820	491
22	33.0	561	114	2,650	542	2,880	1,460	2,110	589	616	913	933
23	119	209	119	2,340	581	3,700	1,400	1,480	465	384	554	1,020
24	72.0	189	396	2,240	483	3,920	1,400	1,140	642	396	1,080	532
25	114	331	466	2,300	496	3,850	1,300	1,950	767	382	946	209
26	143	281	1,070	2,130	1,190	3,920	1,080	2,030	911	432	939	220
27	290	77.0	1,020	1,470	1,820	3,180	1,160	2,310	648	589	383	341
28	234	155	1,050	2,420	2,520	2,300	1,860	2,160	363	372	796	140
29	325		240	2,580	2,960	2,020	2,070	1,760	897	317	575	712
30	242		401	2,580	2,580	2,420	2,110	1,170	1,360	239	140	754
31	174		411		2,070		2,120	698		284		595
Sum	13,289.0	8,017	7,986	57,690	66,238	103,870	37,184	57,218	25,007	13,997	17,356	25,106

Month	Average Rainfall Inches **		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period Acre-Feet		
			High		Low						
	1922-1958	1958	Day		Day				Average	Maximum	Minimum
Jan.	1.40	6.20	3	2,150	11	33.0	429	26,400			
Feb.	1.12	4.91	11	666	2	50.0	286	15,900			
Mar.	1.12	.72	26	1,070	2	31.0	258	15,800			
Apr.	1.37	.06	†14	2,870	4	575	1,920	114,000			
May	3.07	1.92	16	4,170	24	483	2,140	131,000			
June	2.61	2.04	†11	4,440	1	1,670	3,460	206,000			
July	1.74	2.16	1	2,390	13	395	1,200	73,800			
Aug.	2.11	.30	27	2,310	31	698	1,850	113,000			
Sept.	4.38	5.02	2	2,560	21	209	834	49,600			
Oct.	2.50	10.38	10	1,030	30	239	452	27,800			
Nov.	1.25	1.45	24	1,080	30	140	579	34,400			
Dec.	1.44	1.55	19	1,520	28	140	810	49,800			
Yearly	24.11	36.71		4,440		31.0	1,180	857,500			

Current Year 1958

† And other days Ø Mean daily ** United States side below Rio Grande City.

DIVERSIONS FROM THE RIO GRANDE
ANZALDUAS CANAL NEAR REYNOSA, TAMAULIPAS

DESCRIPTION: Water-stage recorder and cable with stand-up cable car, located .5 mile below the canal intake. The zero of the gage is 86.32 feet above mean sea level, U. S. C. & G. S. datum. This canal diverts water from the Rio Grande at a point 12.7 river miles above the international bridge between Hidalgo, Texas and Reynosa, Tamaulipas, 1,076.6 river miles below the American Dam at El Paso, Texas and 171.6 river miles upstream from the Gulf of Mexico.

RECORDS: Based on 217 meter measurements during the year, 211 by the Mexican and 6 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting channel methods. Records available: 1952 through December 1958.

REMARKS: Diversions by this canal are for irrigation and domestic use in Mexico and for conveying water for storage in Culebrón, Villa Cárdenas, and Palito Blanco reservoirs about 23 canal miles below this station. During 1958, because of timely rains, only 217,256 acres were irrigated with water delivered through this canal. Flow at this canal station is affected by backwater from the operation of canal gates 4.5 miles, 11.3 miles, and 22.5 miles below this station. During 1958, in order to facilitate construction of Anzaldúas Dam, major portions of the Rio Grande flow were temporarily diverted into this canal and returned to the river through Poniente Drain. (See page 48 in this water bulletin.)

EXTREME FLOWS FROM RECORDS: Momentary: Max. 10,950 second-feet on June 2, 1957, with a gage height of 16.01 feet. Zero flow occurs frequently.

Average Flow in Second-Feet

Daily:	Max. 9,350	May 29, 1957	Min. 0	Frequently	
Monthly:	Max. 4,260	Feb. 1956	Min. 0	Several months	
Yearly:	Max. 1,890	1957	Min. 150	1952	

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,750	728	171	653	3,620	3,020	1,050	1,590	2,790	1,220	17.7	7.1
2	2,000	724	133	643	4,860	3,390	1,480	1,710	2,280	1,880	17.7	7.1
3	1,030	660	105	733	5,850	3,120	2,360	1,420	1,850	2,100	17.7	7.1
4	1,020	685	76.3	818	6,850	2,620	2,040	1,340	1,720	2,360	17.7	7.1
5	2,140	762	41.0	958	6,860	1,810	1,740	1,430	2,320	2,400	17.7	7.1
6	4,620	761	144	907	5,540	2,370	1,330	1,430	2,690	2,390	17.7	3.5
7	3,250	746	128	964	7,260	2,800	1,140	1,360	1,240	2,450	17.7	3.5
8	1,440	704	137	1,460	6,980	3,460	971	1,250	2,540	2,280	17.7	3.5
9	894	732	53.6	1,860	6,770	3,400	2,070	1,090	3,710	2,300	17.7	3.5
10	953	696	45.5	1,950	6,660	3,040	3,790	1,130	2,540	2,300	17.7	3.5
11	953	1,320	111	2,030	6,530	3,010	3,760	1,420	1,470	2,310	17.7	3.5
12	961	1,490	50.8	2,400	6,530	2,670	2,090	1,640	1,050	2,340	17.7	3.5
13	936	689	124	3,400	6,770	3,190	939	1,990	1,300	2,310	17.7	3.5
14	975	361	115	3,250	7,990	3,860	469	2,050	1,020	2,530	17.7	3.5
15	892	280	154	3,780	5,980	5,310	396	1,850	759	2,210	17.7	3.5
16	839	196	152	4,170	5,550	4,850	445	1,890	689	1,760	14.1	3.5
17	772	177	163	5,010	3,710	5,310	537	1,340	1,320	1,560	14.1	3.5
18	741	102	61.5	4,520	968	6,190	664	982	1,040	1,170	10.6	3.5
19	794	310	129	4,310	1,400	6,750	773	1,340	2,410	1,000	10.6	3.5
20	772	447	175	4,310	1,050	5,410	802	2,310	2,940	848	7.1	3.5
21	759	305	1,020	4,040	691	5,200	660	2,060	1,800	685	7.1	3.5
22	819	379	861	4,060	675	4,670	823	1,590	708	413	7.1	3.5
23	850	343	532	4,250	901	3,580	872	1,540	465	98.5	1,430	3.5
24	767	352	642	3,990	1,600	3,180	823	2,120	357	70.6	2,300	3.5
25	806	287	500	3,080	2,630	2,030	862	3,210	401	70.6	2,470	3.5
26	759	219	521	3,130	3,150	1,780	1,090	4,240	17.7	53.0	996	3.5
27	647	186	666	3,180	3,260	1,960	1,290	4,130	17.7	53.0	7.1	3.5
28	754	125	307	3,070	3,230	2,730	1,350	3,090	172	53.0	7.1	1,020
29	664		413	3,180	2,680	2,000	1,590	1,220	667	35.3	7.1	2,740
30	658		334	3,360	2,460	1,150	1,680	689	211	35.3	7.1	2,940
31	735		676		2,470		1,520	2,180		17.7		2,750
Sum	36,950	14,766	8,741.7	83,466	131,475	103,860	41,406	56,631	42,494.4	41,303.0	7,560.6	9,562.5

Month	Average Rainfall Inches **		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period 1952-1958 Acre-Feet		
			High		Low						
	1952-1958	1958	Day		Day				Average	Maximum	Minimum
Jan.	.73	2.91	6	4,620	27	648	1,190	73,290	81,386	147,500	0
Feb.	1.61	5.20	12	1,490	18	102	528	29,290	85,444	245,000	0
Mar.	.64	.66	21	1,020	5	41.0	282	17,340	29,675	110,700	0
Apr.	1.65	.05	17	5,010	2	643	2,780	165,600	66,959	165,600	0
May	1.31	1.75	14	7,990	22	675	4,240	260,800	124,866	260,800	379
June	2.24	1.88	19	6,750	30	1,150	3,460	205,900	128,094	208,400	0
July	1.30	1.44	10	3,790	15	396	1,340	82,080	41,428	82,080	318
Aug.	1.62	.52	26	4,240	30	689	1,830	112,300	63,864	155,400	566
Sept.	3.56	6.89	9	3,710	†26	17.7	1,420	84,270	79,578	157,000	106
Oct.	3.27	9.37	14	2,530	31	17.7	1,330	81,950	56,424	162,400	0
Nov.	1.49	1.67	25	2,470	†20	7.1	252	15,000	28,060	83,690	0
Dec.	.62	1.39	30	2,940	† 6	3.5	308	18,980	64,141	166,700	0
Yearly	20.04	33.73		7,990		3.5	1,580	1,146,800	849,919	1,368,540	109,282

Current Year 1958 — Period 1952-1958

Ø Mean daily ** Average of several stations. † And other days

MUNICIPAL WATER USES

In Acre-Feet

Tabulated below are yearly and monthly amounts of water pumped from the Rio Grande, or tributaries, into the municipal distribution systems of several cities along the border. The basic data are furnished by the municipalities. During June to August 1958, the City of El Paso pumped water from wells near Canutillo, Texas into the Rio Grande about 17 miles upstream from the point of diversion at the water plant. This water amounted to 1,115 acre-feet and is included in the figures below. The Del Rio water came from San Felipe Springs. All other diversions are from the Rio Grande. Because of changing conditions, the period records are limited here to the past 10 years.

The population figures for Mexico are estimates furnished by the Mexican Section of the International Boundary and Water Commission. Population figures for United States cities are estimates made by the Chamber of Commerce in each city, except for Falcón Village, which was estimated by the International Boundary and Water Commission.

Records of Rio Grande water used by the city of Brownsville, as well as other municipalities in the Lower Rio Grande Valley on the United States side, are omitted because these amounts are included in the figures shown under "Diversions from the Rio Grande - United States Side Below Fort Ringgold, Rio Grande City, Texas" on page 60 herein. The municipal water supply of Reynosa, Tamaulipas, Mexico is from the Rio Grande and Rhode Canal of the Marte R. Gómez Reservoir. Only the amounts diverted from the Rio Grande are shown below. The municipal water supply of Matamoros, Tamaulipas, Mexico is from the Rio Grande and Soliseño Canal of Culebrón Reservoir. The Soliseño Canal water spills to the Rio Grande a short distance above the Matamoros water plant intake where it is diverted for municipal uses. The figures shown below do not include the water from Soliseño Canal.

In the United States

Month	EL PASO (Pop. 263,000)				DEL RIO (Pop. 24,000) Ø			
	1958	Period 1949-1958			1958	Period 1949-1958		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	0	330.8	963.2	0	185.3	192.0	237.8	127.3
Feb.	0	291.5	843.0	0	175.8	210.1	283.9	144.2
Mar.	74.6	279.1	1,016.2	0	219.0	277.1	467.4	185.2
Apr.	840	501.3	1,016.5	0	355.3	300.1	441.6	191.4
May	996	573.0	1,103.7	0	353.6	333.2	555.1	223.9
June	1,005	810.3	1,277.0	57.0	449.2	410.7	652.7	268.5
July	1,205	871.2	1,205.0	4.4	572.8	486.5	682.7	300.6
Aug.	1,383	953.2	1,383.0	0	643.0	488.5	691.7	271.9
Sept.	1,095	801.3	1,158.0	0	339.6	351.3	487.5	218.7
Oct.	931	604.9	983.0	0	241.5	257.6	387.5	170.0
Nov.	0	284.8	842.7	0	222.1	215.3	289.7	156.0
Dec.	0	291.3	952.8	0	228.3	207.2	266.1	146.7
Yearly	7,529.6	6,592.7	11,384.6	1,058.4	3,985.5	3,729.6	5,368.4	2,619.0

Month	EAGLE PASS (Pop. 11,500)				LAREDO (Pop. 67,000)			
	1958	Period 1949-1958			1958	Period 1949-1958		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	87.9	78.7	97.0	61.3	399.1	424.1	517.4	325.8
Feb.	79.9	75.9	90.8	52.1	383.4	421.0	523.0	301.2
Mar.	119.2	96.1	119.2	67.5	511.6	541.2	655.3	449.4
Apr.	115.4	97.9	117.8	64.5	605.1	583.8	734.0	386.0
May	119.2	108.8	148.4	70.2	715.3	638.3	725.6	514.7
June	137.1	126.2	173.4	86.8	855.7	689.5	865.4	541.9
July	193.8	150.4	217.4	103.7	876.7	798.2	1,098.1	591.7
Aug.	187.7	141.8	225.0	91.4	917.6	813.2	1,063.0	658.3
Sept.	119.2	113.8	146.3	74.9	576.4	621.6	790.7	533.1
Oct.	97.2	94.8	122.0	62.2	476.7	552.6	713.1	433.3
Nov.	93.8	80.0	97.4	63.5	467.5	458.6	578.8	398.1
Dec.	95.0	81.0	100.5	58.8	470.5	434.7	545.5	292.4
Yearly	1,445.4	1,245.4	1,467.8	899.0	7,315.6	6,976.8	8,340.5	5,620.6

Month	NEW ZAPATA (Pop. 4,000)				FALCON VILLAGE (Pop. 120)			
	1958	Period 1954-1958			1958	Period 1952-1958		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	17.7	12.0	17.7	5.0	2.1	4.1	7.2	2.1
Feb.	13.2	11.4	13.5	7.6	2.7	4.0	7.1	2.6
Mar.	19.5	16.1	21.4	10.2	6.2	6.1	10.4	3.5
Apr.	26.6	17.9	26.6	10.5	7.8	6.0	7.8	4.3
May	25.2	20.4	27.2	11.4	5.8	5.9	8.4	3.4
June	27.0	20.3	27.0	13.5	5.9	6.7	10.0	4.5
July	34.8	25.9	34.8	14.7	7.0	8.5	11.7	6.5
Aug.	37.9	25.9	37.9	15.8	7.8	8.3	9.9	6.5
Sept.	20.2	16.4	23.0	8.9	5.5	5.7	8.5	2.1
Oct.	19.8	16.8	19.8	13.0	3.2	5.3	7.7	3.1
Nov.	18.4	16.3	26.1	9.4	2.5	3.6	6.3	2.5
Dec.	18.8	15.5	23.0	9.1	4.1	3.7	5.8	2.6
Yearly	279.1	214.9	279.1	140.4	60.6	67.9	91.1	51.9

Ø Includes Laughlin Air Force Base

MUNICIPAL WATER USES

In Acre-Feet

In the United States

Month	ROMA (Pop. 8,000) *				RIO GRANDE CITY (Pop. 5,500)			
	1958	Period 1949-1958			1958	Period 1949-1958		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	20.7	14.4	20.7	6.8	36.0	41.9	54.2	30.2
Feb.	19.0	14.4	20.5	6.8	33.1	41.7	56.5	27.7
Mar.	23.8	17.8	23.8	9.4	39.8	47.0	63.3	33.0
Apr.	26.4	18.3	26.4	8.4	56.3	50.6	60.8	32.2
May	28.7	20.4	28.7	11.8	58.2	56.3	76.0	39.0
June	29.9	21.2	29.9	13.7	74.8	57.2	78.0	41.0
July	31.4	22.2	31.4	12.6	68.3	64.1	79.0	41.9
Aug.	33.1	22.1	33.1	13.8	79.5	64.6	79.5	42.1
Sept.	24.4	19.2	26.1	13.0	50.9	51.3	69.6	28.4
Oct.	23.9	18.1	24.6	11.3	35.8	48.0	62.1	30.3
Nov.	24.2	16.0	24.2	8.2	47.3	43.7	51.7	30.6
Dec.	24.1	16.0	24.1	7.8	42.0	44.2	67.9	34.0
Yearly	** 309.6	220.1	309.6	123.6	622.0	610.6	711.1	434.8

In Mexico

Month	NUEVO LAREDO (Pop. 87,000)				NUEVA CD. GUERRERO (Pop. 4,000)			
	1958	Period 1949-1958			1958	Period 1954-1958		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	537.1	395.6	570.2	215.5	29.8	28.4	32.8	20.2
Feb.	421.2	372.2	564.9	205.7	27.6	25.4	28.9	18.4
Mar.	572.7	461.8	665.6	276.5	32.2	29.5	32.9	21.2
Apr.	688.9	491.4	688.9	244.7	33.7	30.6	33.7	22.3
May	568.2	517.2	694.0	333.9	36.3	33.1	36.3	26.8
June	741.9	556.4	741.9	352.9	39.9	33.6	39.9	28.1
July	794.6	565.8	794.6	394.3	41.8	36.1	41.8	31.1
Aug.	783.1	580.9	783.1	359.4	39.2	35.8	39.2	31.5
Sept.	625.5	506.4	697.8	315.0	36.5	32.5	36.5	28.7
Oct.	592.5	499.2	639.9	306.1	31.6	32.5	34.9	29.3
Nov.	568.6	448.1	611.9	273.5	31.9	31.8	34.5	28.8
Dec.	540.9	413.2	540.9	227.1	32.3	31.5	32.3	28.9
Yearly	7,435.2	5,808.2	7,435.2	3,504.6	412.8	380.8	412.8	315.3

Month	REYNOSA (Pop. 68,500)				MATAMOROS (Pop. 85,000)			
	1958	Period 1954-1958			1958	Period 1949-1958		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	59.6	60.2	65.7	52.7	359.9	227.3	359.9	110.9
Feb.	60.8	62.1	68.1	54.3	289.7	210.4	329.2	102.2
Mar.	63.2	64.5	71.3	57.6	383.5	249.8	383.5	117.5
Apr.	65.3	65.5	73.0	58.4	280.1	235.2	361.1	114.9
May	67.3	67.9	76.2	61.6	436.7	249.5	436.7	123.6
June	68.1	68.3	76.2	61.6	445.5	255.7	445.5	117.6
July	68.9	68.9	76.2	61.6	369.4	257.9	458.1	108.6
Aug.	69.3	69.0	76.2	61.6	299.9	183.8	339.1	38.7
Sept.	66.5	65.9	74.6	58.4	430.6	239.4	430.6	105.8
Oct.	0	49.4	68.1	0	350.0	265.6	412.6	105.1
Nov.	0	48.4	67.3	0	368.3	251.2	368.3	86.0
Dec.	0	47.4	66.5	0	389.1	252.9	406.1	85.3
Yearly	589.0	737.5	859.4	589.0	4,402.7	2,878.7	4,402.7	1,306.0

* Includes Los Saenz and Escobares, Texas and Cd. Miguel Alemán, Tamaulipas. ** Includes 135.9 acre-feet supplied to Cd. Miguel Alemán, Tamaulipas.

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

The following tables are based on determinations of gravimetric percentages of dry silt in water samples taken at each station by one of the following three methods:

A. By lowering an open small-necked bottle in one or more verticals in the stream cross-section, being careful to approach but not strike bottom, thus securing an integrated sample throughout the depth. By taking from each sample an amount of water volumetrically proportional to the river flow represented by that sample, a composite, representative of the monthly river flow, is made and its gravimetric percentage of silt determined.

B. By sampling at the stream surface with a separate bottle at each of three points, spaced 1/6, 1/2 and 5/6 of the stream width. The gravimetric percentage in each sample is determined, a coefficient of 1.10 is applied to the average of the three, and the product applied to the volume of stream flow represented by that set of samples.

C. By sampling, at 8 hour intervals, the water pumped directly from the river to the Laredo, Texas Water Treatment Plant. From daily composites of these samples, a monthly composite, representative of the river flow, is made as stated in Method A and its gravimetric percentage of silt determined.

For ease of comparison, the assumption is made that one cubic foot of silt weighs 66.7 pounds, or one acre-foot of silt weighs 1,452 tons.

Month	1958							Period of Record		
	Tons		No. of Samples	Gravimetric Percentages			Acre-Feet at 1,452 Tons Per Acre Foot			
	Water	Silt		Average	Maximum Sample	Minimum Sample		Average	Maximum	Minimum

Rio Grande at El Paso, Texas

Period September 1947-1958

Jan.	550,000	54.3	31	.009881			.04	.25	1.4	0
Feb.	487,000	65.5	28	.01345			.05	.38	2.2	.01
Mar.	40,300,000	73,100	30	.1814			50.3	16.1	50.3	.89
Apr.	47,549,000	27,500	30	.05779			18.9	17.2	45.2	3.4
May	58,356,000	28,900	31	.04956			19.9	12.5	63.3	.08
June	74,784,000	35,100	30	.04698			24.2	28.9	152	3.7
July	92,578,000	38,900	31	.04202			26.8	42.0	124	1.1
Aug.	89,637,000	62,900	31	.07016			43.3	43.2	112	3.7
Sept.	87,523,000	179,000	30	.2048			123	30.7	123	1.7
Oct.	26,383,000	74,000	31	.2803			51.0	9.0	51.0	.01
Nov.	8,911,000	504	21	.00566			.35	.40	1.5	.01
Dec.	6,851,000	192	31	.002802			.13	.34	2.1	.01
Yearly	533,909,000	520,215.8	355	.09744			357.97	200.95	436.87	47.67

Samples and Analyses by U. S. Section, Method A

Rio Conchos near Ojinaga, Chihuahua

Period 1956-1958

Jan.	23,838,000	0	16	0	0	0	0	0	0	0
Feb.	21,223,000	0	14	0	0	0	0	1.5	4.5	0
Mar.	12,604,000	0	17	0	0	0	0	0	0	0
Apr.	1,949,000	0	16	0	0	0	0	0	0	0
May	5,261,000	0	17	0	0	0	0	48.3	145	0
June	10,410,000	0	16	0	0	0	0	46.7	140	0
July	2,981,000	10,700	15	0.3581	0.4770	0	7.4	33.7	93.7	0
Aug.	20,530,000	139,000	16	0.6791	1.9771	0	95.7	179	274	95.7
Sept.	932,912,000	13,552,000	27	1.4527	2.6812	0	9,330	3,147	9,330	14.4
Oct.	1,320,128,000	17,938,000	14	1.3588	1.5973	0.1262	12,400	4,481	12,400	22.0
Nov.	145,979,000	102,000	14	0.0696	0.2845	0	70.2	23.4	70.2	0
Dec.	75,005,000	0	15	0	0	0	0	0	0	0
Yearly	2,572,820,000	31,741,700	197	1.2337	2.6812	0	21,903.3	7,960.6	21,903.3	284.7

Samples and Analyses by Mexican Section, Method B

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

Rio Grande at Lower Presidio Station

Period 1955-1958

Month	1958 Tons Water	1958 Tons Silt	1958 No. of Samples	1958 Gravimetric Percentages Average	Maximum Sample	Minimum Sample	1958 Acre-Feet at 1,452 Tons Per Acre Foot	Period of Record Average	Maximum	Minimum
Jan.	24,461,000	9,530	9	.03897			6.6	3.7	6.6	2.1
Feb.	20,145,000	6,710	5	.03331			4.6	4.1	8.5	1.4
Mar.	12,638,000	1,820	4	.01442			1.3	1.6	2.8	1.0
Apr.	1,969,000	202	5	.01028			.14	24.0	95.7	.13
May	3,444,000	80,724	4	.02101			.50	40.6	161	.21
June	12,372,000	80,300	8	.6489			55.3	28.5	55.3	2.1
July	6,356,000	86,800	9	1.3654			59.8	395	1,420	2.0
Aug.	27,995,000	346,000	8	1.2358			238	499	1,360	66.8
Sept.	791,016,000	5,237,000	16	.6621			3,610	1,045	3,610	14.9
Oct.	1,427,848,000	6,919,000	21	.4846			4,770	1,392	4,770	28.3
Nov.	151,282,000	65,600	9	.04335			45.2	14.2	45.2	3.1
Dec.	70,239,000	2,970	9	.004234			2.0	2.1	2.6	1.4
Yearly	2,549,765,000	12,756,656	107	.5003			8,793.44	3,449.8	8,793.44	172.78

Samples and Analyses by U. S. Section, Method A

Rio Grande at Johnson Ranch, Texas

Period October 1951-1958

Jan.	24,714,000	4,900	9	.01984			3.4	1.8	3.4	.84
Feb.	20,210,000	4,590	5	.02270			3.2	37.3	253	.67
Mar.	12,026,000	2,680	4	.02225			1.8	2.5	9.2	.20
Apr.	2,234,000	9.1	5	.0004054			.01	130	692	.01
May	5,300,000	99,600	3	1.8800			68.6	134	304	0
June	17,518,000	205,000	8	1.1698			141	462	1,570	31.6
July	29,030,000	732,000	10	2.5230			504	1,084	4,030	93.0
Aug.	30,260,000	888,000	8	2.9341			612	1,035	3,840	2.8
Sept.	819,150,000	* 13,057,000	10	*1.594			8,990	1,567	8,990	98.5
Oct.	*1,572,174,000	* 19,652,000	0	*1.250			13,500	1,928	13,500	2.4
Nov.	180,044,000	65,700	4	.03651			45.2	7.9	45.2	.28
Dec.	85,892,000	591	5	.0006883			.41	7.6	48.3	.41
Yearly	2,798,552,000	* 34,712,070.1	71	*1.2404			23,869.62	6,397.1	23,869.62	803.27

Samples and Analyses by U. S. Section, Method A

Rio Grande at Langtry, Texas

Period April 1944-1958

Jan.	48,789,000	5,280	6	.01082			3.6	4.7	11.4	.94
Feb.	39,486,000	4,280	6	.01084			2.9	22.6	238	.31
Mar.	39,077,000	4,290	7	.01099			3.0	6.6	27.0	.29
Apr.	23,250,000	618	7	.002659			.43	69.3	614	.14
May	37,273,000	23,400	9	.06268			16.1	227	873	.95
June	42,039,000	71,900	6	.1710			49.5	480	2,450	.91
July	46,837,000	105,000	5	.2233			72.3	1,276	5,780	4.6
Aug.	60,386,000	550,000	4	.9110			379	1,050	3,900	4.7
Sept.	697,486,000	12,053,000	8	1.7280			8,300	1,656	8,300	1.0
Oct.	1,813,788,000	12,716,000	5	.7011			8,760	1,283	8,760	5.1
Nov.	249,620,000	397,000	4	.1589			273	41.2	273	1.3
Dec.	113,758,000	1,320	5	.001160			.91	7.3	46.8	.18
Yearly	3,211,789,000	25,932,088	72	.8074			17,860.74	6,123.7	17,860.74	645.10

Samples and Analyses by U. S. Section, Method A

Pecos River near Shumla, Texas

Period November 1954-1958

Jan.	18,223,000	607	3	.003333			.42	.37	.60	.20
Feb.	± 16,535,000	± 250	0	± .001509			.17	.22	.36	.11
Mar.	17,592,000	265	1	.001509			.18	.31	.38	.18
Apr.	14,449,000	1,870	1	.01295			1.3	42.1	167	.06
May	50,754,000	917	4	.001807			.63	102	407	.21
June	18,546,000	1,060	5	.005700			.73	.59	.85	.13
July	21,223,000	10,100	5	.04742			7.0	7.4	22.2	.08
Aug.	14,018,000	569	4	.004057			.39	6.2	23.8	.35
Sept.	107,380,000	87,000	5	.08103			59.9	15.9	59.9	.14
Oct.	44,565,000	1,970	3	.004419			1.4	12.8	48.4	.26
Nov.	22,835,000	1,600	5	.007028			1.1	.62	1.1	.03
Dec.	20,102,000	201	5	.001000			.14	.21	.27	.14
Yearly	366,222,000	106,409	41	.02906			73.36	188.72	577.44	52.24

Samples and Analyses by U. S. Section, Method A

± Estimated * Partly estimated

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

Month	1958						Period of Record		
	Tons		No. of Samples	Gravimetric Percentages			Acre-Feet at 1,452 Tons Per Acre Foot		
	Water	Silt		Average	Maximum Sample	Minimum Sample	Average	Maximum	Minimum

⊕ Rio Grande near Del Rio, Texas

Period August 1955-1958

Jan.	125, 110, 000	8,010	13	.006400			5.5	5.1	9,2	.61
Feb.	128, 401, 000	9,440	12	.007349			6.5	61.7	178	.50
Mar.	119, 141, 000	17,000	12	.01424			11.7	15.7	34.6	.73
Apr.	90, 244, 000	6,360	13	.007047			4.4	206	612	.83
May	164, 886, 000	137,000	14	.08289			94.4	566	1,600	2.6
June	265, 540, 000	422,000	13	.1588			291	375	785	48.9
July	134, 734, 000	92,400	12	.06860			63.6	41.8	63.6	8.7
Aug.	139, 335, 000	751,000	13	.5387			517	724	1,970	125
Sept.	1,040, 795, 000	6, 976, 000	12	.6703			4,800	1,884	4,800	154
Oct.	2, 023, 205, 000	13, 580, 000	14	.6712			9,350	2,897	9,350	581
Nov.	383, 622, 000	596,000	13	.1553			410	134	410	10.7
Dec.	226, 661, 000	13, 300	11	.005887			9.2	5.8	9.2	4.0
Yearly	4, 841, 674, 000	22, 608, 510	152	.4670			15,563.3	6, 916.1	15, 563.3	1, 008.37

Samples and Analyses by U. S. Section, Method A

Rio Grande at Laredo, Texas

Period 1953-1958

Jan.	195, 733, 000	40,700	15	.02080			28.0	10.7	28.0	4.5
Feb.	172, 524, 000	40,800	10	.02365			28.1	10.7	28.1	1.7
Mar.	144, 947, 000	22,800	12	.01571			15.7	12.3	26.8	.78
Apr.	88, 809, 000	16,300	10	.01841			11.2	383	1,920	.47
May	246, 984, 000	541,000	13	.2191			373	816	3,540	2.3
June	412, 320, 000	818,000	10	.1985			563	2,748	12,400	.62
July	156, 034, 000	107,000	14	.06875			73.7	1,014	3,440	5.0
Aug.	130, 811, 000	16,600	11	.01272			11.4	569	1,960	4.2
Sept.	1, 162, 728, 000	5, 323, 000	30	.4578			3,670	1,116	3,670	41.3
Oct.	2, 476, 333, 000	10, 921, 000	31	.4410			7,520	1,750	7,520	29.7
Nov.	664, 431, 000	1, 723, 000	30	.2593			1,190	219	1,190	6.1
Dec.	362, 084, 000	17,500	31	.004844			12.1	8.3	18.9	2.8
Yearly	6, 213, 738, 000	19, 587, 700	217	.3152			13,496.2	8, 657.0	19, 257.72	734.10

Samples by Mexican Section and Analyses by U. S. Section, Method A, Jan. -Aug.; Method C, Sept. -Dec.

∅ Rio Grande at Falcón Dam–U.S. Tailrace

Period July 1955-1958

Jan.	62, 685, 000	1,400	5	.002235			.96	2.7	4.2	.96
Feb.	22, 506, 000	415	2	.001842			.29	1.4	2.8	.29
Mar.	30, 742, 000	1,800	6	.005864			1.2	.8	1.2	.16
Apr.	307, 458, 000	17,700	12	.005743			12.2	4.9	12.2	.63
May	353, 757, 000	3,040	10	.0008607			2.1	3.7	5.2	2.1
June	554, 092, 000	16,000	13	.002880			11.0	11.4	18.7	4.6
July	108, 040, 000	2,600	7	.002410			1.8	1.0	1.8	.54
Aug.	180, 109, 000	3,310	7	.001840			2.3	1.5	2.6	.29
Sept.	319, 799, 000	3,820	5	.001193			2.6	1.6	2.6	.77
Oct.	2, 714, 550, 000	54,500	10	.002008			37.5	10.2	37.5	.24
Nov.	1, 532, 952, 000	7,970	12	.0005200			5.5	2.8	5.5	.82
Dec.	632, 361, 000	21,300	6	.003373			14.7	5.5	14.7	1.4
Yearly	6, 819, 051, 000	133, 855	95	.001963			92.15	47.5	92.15	23.69

Samples and Analyses by U. S. Section, Method A

Río Alamo at Cd. Mier, Tamaulipas

Period 1934-1958

Jan.	9, 360, 000	25,400	8	0.271	0.337	0	17.5	2.6	21.8	0
Feb.	2, 315, 000	26,700	5	1.154	1.819	0	18.4	3.0	48.6	0
Mar.	11, 100	0	2	0	0	0	0	8.8	91.6	0
Apr.	0	0	0	0	0	0	0	36.4	229	0
May	20, 062, 000	141,000	7	0.704	0.871	0	97.1	53.9	281	0
June	22, 787, 000	100,000	6	0.441	0.941	0	68.9	60.8	471	0
July	18, 941, 000	104,000	10	0.547	0.727	0	71.6	18.2	92.8	0
Aug.	16, 838, 000	46,300	12	0.275	0.449	0	31.9	168	1,610	0
Sept.	96, 241, 000	565,000	14	0.587	0.736	0	389	240	2,920	0
Oct.	263, 384, 000	1, 093, 000	7	0.415	0.600	0.005	753	101	753	0
Nov.	23, 746, 000	712	14	0.003	0.017	0	.49	2.5	40.7	0
Dec.	13, 359, 000	0	14	0	0	0	0	.91	16.1	0
Yearly	487, 044, 100	2, 102, 112	99	0.432	1.819	0	1, 447.89	696.11	3, 156.57	97.18

Samples and Analyses by Mexican Section, Method B

Some months missing ⊕ Discharge based on records of flow at gaging station "Below Diablo Dam Site" and "Arroyo las Vacas". ∅ Discharges based on record of total releases from Falcón Reservoir.

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

Month	1958						Period of Record		
	Tons		No. of Samples	Gravimetric Percentages			Acre-Feet at 1,452 Tons Per Acre Foot		
	Water	Silt		Average	Maximum Sample	Minimum Sample	Average	Maximum	Minimum
‡ Rio Grande near Los Ebanos, Texas							Period May 1956-1958		
Jan.	95,203,000	156,000	10	.1643	.5456		107	59.0	107	10.9
Feb.	34,695,000	18,100	8	.05205	.2120		12.5	13.2	14.0	12.5
Mar.	29,988,000	941	8	.003138	.0224		.65	10.0	19.4	.65
Apr.	283,235,000	36,100	9	.01273	.0369		24.9	330	635	24.9
May	429,206,000	359,000	12	.08372	.4924		247	252	289	220
June	581,404,000	247,000	11	.04253	.4087		170	107	170	27.2
July	137,790,000	116,000	10	.08392	.3362		79.9	28.4	79.9	.74
Aug.	197,410,000	60,300	11	.03056	.2105		41.5	27.8	41.5	2.0
Sept.	375,322,000	531,000	16	.1414	.9638		366	148	366	35.4
Oct.	4,145,956,000	456,000	9	.01099	.0194		314	116	314	16.0
Nov.	1,960,245,000	109,000	8	.005578	.0024		75.1	25.9	75.1	.72
Dec.	733,279,000	23,700	9	.003226	.0298		16.3	11.9	16.3	7.0
Yearly	9,003,733,000	2,113,141	121	.02347	.9638		1,454.85	1,129.2	1,454.85	1,198.1

Samples and Analyses by U. S. Section, Method A

ð Rio Grande at Hidalgo, Texas							Period May 1956-1958			
Jan.	21,750,000	71,200	5	.3273	.4270		49.0	25.2	49.0	1.5
Feb.	19,611,000	2,000	4	.01022			1.4	2.0	2.5	1.4
Mar.	21,942,000	683	4	.003111	.0241		.47	.36	.47	.25
Apr.	122,725,000	26,300	5	.2144	.0134		18.1	94.6	171	18.1
May	153,893,000	82,000	5	.05328	.1317		56.5	66.6	79.9	56.5
June	253,227,000	97,900	5	.03868	.1264		67.4	34.9	67.4	14.7
July	68,667,000	60,500	4	.08816	.2259		41.7	16.4	41.7	.92
Aug.	112,813,000	33,500	5	.02972	.1429		23.1	9.6	23.1	.73
Sept.	208,777,000	109,000	6	.05204	.1580		75.1	34.2	75.1	6.5
Oct.	2,383,008,000	982,000	7	.04120	.0676		676	230	676	1.5
Nov.	1,596,624,000	398,000	6	.02492	.0329		274	93.9	274	1.1
Dec.	759,481,000	196,000	5	.02578	.0654		135	46.3	135	.62
Yearly	5,722,518,000	2,059,083	61	.03598			1,417.77	654.06	1,417.77	309.65

Samples and Analyses by U. S. Section, Method A

Rio Grande near San Benito, Texas							Period April 1955-1958			
Jan.	3,967,000	437	4	.01101			.30	2.7	7.4	.30
Feb.	4,592,000	216	3	.004699			.15	1.1	2.9	.15
Mar.	7,495,000	3,610	5	.04817			2.5	1.2	2.5	.11
Apr.	19,569,000	11,200	4	.05729			7.7	5.7	8.3	.11
May	37,538,000	17,900	3	.04780			12.3	72.4	265	5.4
June	57,502,000	39,500	5	.06876			27.2	9.2	27.2	2.1
July	18,803,000	11,500	4	.06104			7.9	2.4	7.9	.11
Aug.	15,918,000	2,690	4	.01692			1.9	1.0	1.9	.07
Sept.	79,445,000	191,000	7	.24080			132	40.2	132	1.9
Oct.	1,091,076,000	363,000	4	.03324			250	63.2	250	.34
Nov.	899,818,000	359,000	2	.03992			247	62.1	247	.35
Dec.	651,195,000	236,000	5	.03629			163	41.8	163	.06
Yearly	2,886,918,000	1,236,053	50	.04282			851.95	303	851.95	23.27

Samples and Analyses by U. S. Section, Method A

Rio Grande at Lower Brownsville, Texas							Period April 1955-1958			
Jan.	2,659,000	199	4	.007480			.14	.15	.29	.02
Feb.	4,943,000	85,800	3	1.7367	.3056		59.1	19.8	59.1	.04
Mar.	6,364,000	1,140	5	.01795			.79	.35	.79	.08
Apr.	2,799,000	212	4	.007568			.15	.30	.80	.04
May	14,622,000	11,900	3	.08132	.0930		8.2	16.9	58.5	.38
June	14,377,000	26,800	5	.1864	.1909		18.5	6.1	18.5	.29
July	17,563,000	424,000	4	2.4132			292	73.3	292	.08
Aug.	2,497,000	113	4	.004538			.08	.76	2.9	.01
Sept.	47,609,000	67,300	6	.1414			46.3	12.2	46.3	0
Oct.	770,857,000	323,000	8	.04190	.1475		222	55.6	222	.03
Nov.	717,024,000	411,000	3	.05732	.1311		283	70.9	283	.12
Dec.	651,735,000	206,000	5	.03168	.0397		142	35.6	142	.02
Yearly	2,253,049,000	1,557,464	54	.06913			1,072.26	291.96	1,072.26	1.97

Samples and Analyses by U. S. Section, Method A

‡ Discharge based on record of flow at Fort Ringgold plus estimated storm runoff. ð Discharge based on record of flow at gage Below Anzaldúas Dam plus return flow at Poniente Drain minus McAllen Pump discharge.

CHEMICAL ANALYSIS OF WATER SAMPLES FROM THE RIO GRANDE AND TRIBUTARIES – 1958

The following tables are based on chemical analyses of composites representative of the river flow at Rio Grande and tributary stations. The monthly composites were made by the United States Section of this Commission by taking from each independent water sample an amount of water volumetrically proportional to the river flow represented by that sample. The chemical analyses were made by the U. S. Department of Agriculture, Agricultural Research Service, U. S. Salinity Laboratory, Riverside, California. All other data were computed by the United States Section of this Commission.

To convert milligram equivalents to parts per million by weight, multiply each ion by its appropriate conversion factor. These factors are: Ca, 20; Mg, 12.16; Na, 23; (CO_3 plus HCO_3) expressed as CO_3, 30; SO_4, 48; Cl, 35.5; NO_3, 62. To convert tons per acre-foot to parts per million, multiply tons per acre-foot by 735.5. Electrical conductivity, reported in the tables as $ECx10^6$ at 25°C, is a relative measure of the total salt concentration.

Rio Grande at El Paso, Texas

Sampling by U. S. Section

Month	No. of Samples	Dissolved Solids: Tons Per Acre Foot	Dissolved Solids: Total Tons	Mean $ECx10^6$ @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
Jan.	31	4.24	1,720	4,660	.77	8.3	78	48	7.08	3.42	38.06	5.45	19.99	23.42	T
Feb.	28	4.42	1,580	4,780	.81	8.2	77	49	7.69	3.84	38.58	5.50	20.42	24.60	T
Mar.	31	.91	27,000	996	.12	8.1	45	15	4.23	1.32	4.48	2.77	5.12	1.35	T
Apr.	30	.91	31,800	991	.17	8.0	46	21	4.21	1.34	4.71	2.90	5.32	2.20	T
May	31	.91	39,000	971	.20	7.8	43	20	4.22	1.31	4.20	2.81	5.21	1.95	T
June	30	.91	50,000	986	.11	7.8	44	19	4.22	1.36	4.38	3.05	5.23	1.95	T
July	31	.95	64,700	997	.15	8.0	45	21	4.20	1.37	4.47	3.00	5.12	2.10	.01
Aug.	31	.89	58,700	979	.13	8.0	45	21	4.17	1.30	4.42	3.05	4.94	2.15	.01
Sept.	30	.93	59,900	1,020	.22	7.7	46	24	4.25	1.25	4.73	3.00	4.80	2.45	.01
Oct.	31	1.41	27,400	1,580	.21	7.8	54	31	5.59	1.73	8.50	3.68	7.59	4.95	T
Nov.	21	1.99	13,100	2,160	.28	8.3	59	33	6.70	2.50	13.12	4.47	10.79	7.55	T
Dec.	31	2.20	11,100	2,390	.37	8.0	61	34	7.20	2.62	15.10	4.70	12.12	8.55	T
Mean ⊕	Ø356	.98	Ø 386,000	1,070	.17	7.9	47	22	4.37	1.38	5.03	3.05	5.42	2.44	T
Period Avg.		1.10	512,000	1,220			52	29	4.36	1.60	6.58	3.51	5.44	3.73	
Tons of Constituents, 1958									46,800	8,970	61,800	48,900	139,000	46,200	
Average Tons, Period 1930-1958									55,200	12,300	95,700	66,500	165,300	83,600	

Rio Grande at Fort Quitman, Texas

Sampling by U. S. Section

Month	No. of Samples	Dissolved Solids: Tons Per Acre Foot	Dissolved Solids: Total Tons	Mean $ECx10^6$ @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
Jan.	No Flow														
Feb.	No Flow														
Mar.	No Flow														
Apr. ᵘ		.62	236	700			47	27	2.90	.80	3.30	3.10	2.01	1.90	
May ᵘ		.49	637	550			46	16	2.50	.60	2.65	3.25	1.60	.90	
June ᵘ		.62	43.5	700			47	27	2.90	.80	3.30	3.10	2.01	1.90	
July ᵘ		.53	492	600			48	20	2.60	.65	3.00	3.25	1.75	1.25	
Aug.* †	2	.80	542	900			50	37	3.40	1.00	4.40	2.95	2.60	3.25	
Sept.	4	.67	12,900	720	.06	7.8	35	14	3.88	.80	2.52	2.15	4.05	1.00	.05
Oct.* †	5	1.66	19,800	1,870			59	56	5.40	2.00	10.60	3.00	4.90	10.10	
Nov.	4	2.76	3,560	3,070	.48	8.0	61	46	8.90	3.50	19.22	4.58	12.76	14.72	.03
Dec.	5	3.87	1,160	4,280	.50	7.8	61	55	12.28	5.06	27.10	4.80	15.48	24.80	.05
Mean ⊕	Ø20	1.09	Ø 39,370.5	1,210			51	40	4.53	1.32	6.04	2.63	4.54	4.74	
Period Avg.		2.35	401,000	2,670			61	55	7.53	3.07	16.57	3.58	8.65	15.04	
Tons of Constituents, 1958									4,460	789	6,830	3,880	10,720	8,260	
Average Tons, Period 1930-1958									35,100	8,680	88,600	25,000	96,600	124,000	

Rio Grande at Upper Presidio Station

Sampling by U. S. Section

Month	No. of Samples	Dissolved Solids: Tons Per Acre Foot	Dissolved Solids: Total Tons	Mean $ECx10^6$ @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
Jan.	No Flow														
Feb. ᵘ	0	.54	126	575			34		# 3.80		2.00	2.60		.45	
Mar.	No Flow														
Apr.	No Flow														
May	1	1.11	4.2	1,010			16		# 8.92		1.76	1.30		.50	
June	2	1.05	111	972			17		# 8.47		1.78	1.40		.40	
July	6	.58	177	605	.11	8.0	39	15	3.22	.51	2.37	2.60	2.59	.95	.06
Aug.	8	.54	1,680	601			36		# 3.83		2.18	2.80		.52	
Sept.	12	.58	11,200	635			37		# 3.91		2.34	2.03		.80	
Oct.	16	.78	10,800	918			46		# 4.80		4.12	2.35		2.70	
Nov.	9	2.85	1,740	3,200			55		# 14.68		18.03	3.52		17.70	
Dec.	4	8.83	321	8,680			52		# 46.49		49.94	3.80		59.55	
Mean ⊕	Ø58	.70	Ø 26,159.2	786			42		# 4.46		3.28	2.24		1.81	
Period Avg.		1.91	301,000	2,160			59		# 8.87		12.77	3.12		10.99	
Total of Constituents, 1958											3,860	3,440		3,280	
Average Tons, Period 1935-1958											63,100	20,100		83,700	

ᵘ Estimated T Trace Ø Total * Partly estimated ** Percent of total cations *** Percent of total anions # Sum of calcium and magnesium. ⊕ Weighted Mean † No analysis made

CHEMICAL ANALYSIS OF WATER SAMPLES FROM THE RIO GRANDE AND TRIBUTARIES - 1958

Month	No. of Samples	Dissolved Solids: Tons Per Acre Foot	Dissolved Solids: Total Tons	Mean ECx10⁶ @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

Sampling by Mexican Section

Río Conchos near Ojinaga, Chihuahua

Jan.	14	1.55	27,200	1,590	.41	7.8	57	22	5.38	1.70	9.24	2.27	10.49	3.70	.05
Feb.	11	1.57	24,500	1,600			54		# 7.59		9.08	2.50		3.50	
Mar.	14	1.62	15,000	1,680			54		# 7.91		9.38	3.00		3.85	
Apr.	13	1.68	2,400	1,740			53		# 8.30		9.23	2.05		4.30	
May	13	1.67	6,460	1,770			56		# 7.73		10.02	2.35		4.90	
June	13	1.38	10,600	1,400			47		# 7.62		6.63	2.57		2.50	
July	15	1.75	3,830	1,760	.22	8.1	43	22	8.63	1.94	7.90	2.70	11.87	4.20	.01
Aug.	16	1.04	15,700	1,050			35		# 7.04		3.81	2.37		1.46	
Sept.	14	.51	350,000	553			30		# 3.87		1.68	2.55		.45	
Oct.	24	.49	476,000	544			29		# 3.87		1.57	2.35		.46	
Nov.	11	1.10	118,000	1,180			41		# 7.14		4.93	3.21		2.10	
Dec.	14	1.42	78,300	1,440			46		# 8.13		6.91	2.97		2.72	
Mean Θ	Ø172	.60	Ø1,127,990	646			34		# 4.30		2.20	2.49		.72	
Period Avg.		.64	518,000	685			38		# 4.33		2.69	2.60		.98	
Tons of Constituents, 1958											130,000	192,000		65,700	
Average Tons, Period 1935-1958											67,800	85,700		38,000	

Sampling by U. S. Section

Rio Grande at Johnson Ranch, Texas

Jan.	9	1.62	29,500	1,670	.44	7.8	54	22	6.13	1.82	9.26	2.80	10.74	3.80	.04
Feb.	5	1.62	24,100	1,660			55		# 7.95		9.56	2.71		3.90	
Mar.	4	1.57	13,900	1,610			51		# 8.18		8.47	2.51		3.50	
Apr.	5	1.84	3,020	1,880			53		# 9.15		10.14	2.53		4.75	
May	3	.51	1,990	539			47		# 2.94		2.59	2.91		.35	
June	8	.98	12,600	1,040			48		# 5.45		4.96	3.00		1.80	
July	13	.61	13,100	648	.09	8.1	44	4	3.19	.48	2.89	2.90	3.31	.25	.03
Aug.	8	.86	19,200	892			38		# 5.63		3.49	3.01		.95	
Sept.	16	.53	320,000	574			35		# 3.83		2.06	2.85		.40	
Oct.	² † 2	.48	555,000	500			29		# 3.50		1.50	2.50		.35	
Nov.	5	1.21	160,000	1,270			42		# 7.68		5.53	3.27		2.45	
Dec.	5	1.57	99,200	1,590			45		# 9.22		7.58	3.23		3.45	
Mean Θ	Ø 83	.61	Ø1,251,610	638			35		# 4.17		2.33	2.69		.68	
Period Avg.		.83	531,000	882			42		# 5.22		3.82	2.70		1.56	
Tons of Constituents, 1958											150,000	226,000		67,500	
Average Tons, Period 1948-1958											76,200	70,400		48,100	

Sampling by U. S. Section

Rio Grande at Langtry, Texas

Jan.	6	1.06	38,100	1,130	.27	8.1	47	20	4.41	1.76	5.48	2.85	6.53	2.32	.04
Feb.	6	1.07	31,100	1,140	.24	8.0	47	20	4.37	1.86	5.56	2.91	6.51	2.42	.04
Mar.	7	1.04	30,000	1,110	.24	8.2	46	20	4.39	1.82	5.21	2.87	6.32	2.30	.03
Apr.	7	.75	12,800	833	.26	8.0	41	20	3.16	1.72	3.46	2.70	4.10	1.70	.02
May	9	.62	17,000	679	.18	8.0	32	16	3.31	1.35	2.18	2.75	3.08	1.09	.04
June	6	.75	23,200	811	.16	8.0	38	15	4.00	1.13	3.08	3.05	4.12	1.25	.04
July	5	.68	23,500	736	.16	7.9	34	13	3.79	1.15	2.59	3.31	3.22	1.02	.05
Aug.	4	.61	27,100	688	.11	8.1	34	12	3.84	.80	2.36	3.27	2.91	.88	.04
Sept.	8	.60	308,000	636	.14	7.8	30	10	3.88	.73	2.02	2.75	3.21	.65	.07
Oct.	5	.49	654,000	561	.11	7.8	29	9	3.39	.54	1.63	2.50	2.57	.48	.07
Nov.	4	.93	171,000	1,000	.16	8.1	38	17	5.26	1.10	3.86	3.00	5.62	1.72	.03
Dec.	5	1.28	107,000	1,320	.30	7.8	43	20	6.05	1.83	5.99	3.05	8.29	2.85	.07
Mean Θ	Ø 72	.61	Ø 1,442,800	672	.24	7.8	33	12	3.80	.76	2.26	2.67	3.36	.81	.06
Period Avg.		.74	745,000	773			41	20	3.78	1.06	3.30	2.68	3.79	1.57	
Tons of Constituents, 1958									245,000	29,700	167,000	258,000	519,000	92,300	
Average Tons, Period 1945-1958									104,000	17,660	104,000	110,000	249,000	76,400	

² Estimated T Trace Ø Total Θ Weighted mean ** Percent of total cations *** Percent of total anions # Sum of calcium and magnesium. † No analysis made

CHEMICAL ANALYSIS OF WATER SAMPLES FROM THE RIO GRANDE AND TRIBUTARIES – 1958

Month	No. of Samples	Dissolved Solids: Tons Per Acre Foot	Dissolved Solids: Total Tons	Mean EC x 10^6 @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

Sampling by U. S. Section

Pecos River near Shumla, Texas

Jan.	3	3.11	41,700	3,560	.22	8.0	59	64	8.22	6.41	21.30	2.66	10.29	23.10	.05
Feb. ᵘ	0	3.24	39,500	3,700	.26	8.0	60	65	8.30	6.70	22.06	2.62	10.56	24.10	.04
Mar.	1	3.53	45,500	4,030	.21	8.2	60	65	9.09	7.27	24.26	2.96	11.41	26.44	.04
Apr.	2	3.28	34,800	3,740	.34	7.9	60	65	8.01	6.86	22.11	2.40	10.54	24.44	.02
May ᵘ†	0	1.34	50,000	1,540			47	54	4.70	3.20	7.10	2.73	4.15	8.12	.04
June	5	2.25	30,800	2,650	.21	8.0	58	63	6.24	4.55	14.83	2.35	7.22	16.40	.03
July	5	1.50	23,400	1,760	.15	7.8	53	58	5.00	2.99	9.02	2.60	4.58	9.95	.05
Aug.	4	2.05	21,100	2,420	.24	7.8	57	62	5.80	4.29	13.17	2.40	6.45	14.75	.03
Sept.	5	.50	39,500	616	.05	7.8	36	39	2.91	.86	2.12	2.45	1.15	2.30	.04
Oct.	3	1.97	64,600	2,290	.15	7.9	54	56	6.68	3.93	12.28	2.77	7.38	13.05	.10
Nov.	5	2.34	39,300	2,790	.20	8.1	57	61	6.98	4.95	15.66	2.95	7.81	17.00	.09
Dec.	5	2.72	40,300	3,150	.25	7.9	58	62	7.79	5.55	18.08	3.08	8.85	19.62	.06
Mean ⊕	Ø 38	1.75	Ø 470,500	2,030			54	59	5.54	3.60	10.94	2.64	5.61	11.97	.05
Period Avg.		1.80	442,000	2,110			55	59	5.73	3.71	11.37	2.52	5.98	12.39	
Tons of Constituents, 1958									40,700	16,000	92,200	29,000	98,700	156,000	
Average Tons, Period 1955-1958									38,400	15,100	87,500	25,300	96,100	147,000	

Sampling by Mexican Section

Río San Diego at Jiménez, Coahuila

Jan.	4	.37	1,250	448	.09	8.1	15	15	3.02	.93	.71	2.70	1.21	.68	.03
Feb.	4	.40	1,280	464			14		# 4.15		.70	2.93		.60	
Mar.	4	.36	1,400	417			13		# 3.72		.58	2.63		.52	
Apr.	4	.41	865	453			15		# 3.84		.70	2.70		.68	
May	4	.43	6,530	470			13		# 4.24		.66	3.05		.60	
June	5	.39	2,540	451			13		# 3.99		.60	2.85		.55	
July	5	.33	1,280	373	.05	7.8	11	7	2.86	.50	.43	2.63	.85	.25	.01
Aug.	5	.44	735	510			15		# 4.40		.76	3.11		.62	
Sept.	4	.36	23,200	410			7		# 3.99		.28	3.21		.30	
Oct.	4	.33	23,700	425			9		# 3.85		.38	3.01		.42	
Nov.	5	.38	24,300	457			9		# 4.22		.40	3.40		.40	
Dec.	2	.32	14,500	384			9		# 3.65		.34	2.90		.36	
Mean ⊕	Ø 50	.36	Ø 101,580	426			9		# 3.96		.39	3.11		.40	
Period Avg.		.35	29,600	406			12		# 3.68		.50	2.85		.46	
Tons of Constituents, 1958											3,480	36,200		5,510	
Average Tons, Period 1950-1958											1,310	9,800		1,880	

Sampling by Mexican Section

Río San Rodrigo near El Moral, Coahuila

Jan.	4	.30	186	362	.05	8.0	10	11	2.83	.67	.40	2.75	.73	.42	.01
Feb.	3	.30	178	359			10		# 3.40		.38	2.71		.32	
Mar.	4	.30	182	356			10		# 3.40		.36	2.70		.32	
Apr.	4	.32	53.1	366			10		# 3.42		.36	2.77		.40	
May	3	.31	55.8	343			11		# 3.19		.40	2.55		.35	
June	2	.27	418	313			8		# 2.92		.25	2.50		.30	
July	3	.30	77.7	329	.06	8.0	10	7	2.48	.56	.34	2.60	.51	.25	.03
Aug.	1	.27	49.4	307			12		# 2.70		.36	2.35		.30	
Sept.	4	.36	71,400	395			4		# 3.87		.18	3.11		.25	
Oct.	3	.31	31,000	368			5		# 3.57		.20	2.95		.25	
Nov.	5	.30	13,100	359			5		# 3.51		.18	2.85		.25	
Dec.	1	.36	7,010	416			5		# 4.09		.24	3.50		.30	
Mean ⊕	Ø 37	.34	Ø 123,700	384			5		# 3.75		.19	3.05		.25	
Period Avg.		.33	22,000	376			7		# 3.59		.29	2.89		.30	
Tons of Constituents, 1958											2,170	45,500		4,410	
Average Tons, Period 1950-1958											591	7,760		960	

ᵘ Estimated T Trace Ø Total ⊕ Weighted Mean ** Percent of total cations *** Percent of total anions
Sum of calcium and magnesium. † Analysis did not represent the flow for month; estimates take high flow into consideration.

CHEMICAL ANALYSIS OF WATER SAMPLES FROM THE RIO GRANDE AND TRIBUTARIES - 1958

Month	No. of Samples	Dissolved Solids: Tons Per Acre Foot	Dissolved Solids: Total Tons	Mean EC x 10^6 @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
Sampling by Mexican Section † — Rio Grande at Laredo, Texas															
Jan.	15	.88	127,000	1,030	.15	7.9	46	38	3.64	1.78	4.69	2.47	3.81	3.90	.06
Feb.	10	.95	121,000	1,120			47		# 5.89		5.32	2.70		4.35	
Mar.	12	.90	96,000	1,060			47		# 5.50		4.96	2.51		4.20	
Apr.	10	1.05	68,600	1,220			49		# 6.23		5.87	2.55		5.42	
May	14	.58	105,000	666			37		# 4.00		2.39	2.35		2.25	
June	12	.41	124,000	487			29		# 3.37		1.40	2.53		1.25	
July	14	.67	76,800	762	.12	8.0	39	32	3.33	1.21	2.91	2.60	2.48	2.40	.06
Aug.	11	.67	64,500	777			41		# 4.58		3.13	2.55		2.32	
Sept.	30	.40	342,000	462			25		# 3.45		1.16	2.45		.70	
Oct.	31	.52	947,000	570			29		# 4.05		1.68	2.50		.75	
Nov.	30	.68	332,000	755			34		# 5.00		2.55	2.75		1.60	
Dec.	31	.81	216,000	908			38		# 5.65		3.53	2.95		2.45	
Mean ⊕	Ø220	.57	Ø2,619,900	647			34		# 4.27		2.19	2.55		1.44	
Period Avg.		.58	1,669,000	669			36		# 4.26		2.41	2.49		1.75	
Tons of Constituents, 1958											313,000	476,000		317,000	
Average Tons, Period 1956-1958											216,000	291,000		241,000	
Sampling by Mexican Section — Río Salado at Las Tortillas, Tamaulipas															
Jan. ᵘ	0	.43	2,990	495			31		# 3.40		1.50	2.50		.35	
Feb. ᵘ	0	.53	282	610			36		# 3.90		2.20	2.60		.50	
Mar. ᵘ	0	2.46	9.8	2,500			62		# 9.40		15.10	3.00		14.60	
Apr.	No Flow														
May	6	.56	13,300	641			32		# 4.30		2.02	2.55		1.45	
June	7	.40	6,520	461			26		# 3.49		1.25	2.47		.75	
July	3	.36	6,710	402	.10	8.0	20	12	2.80	.38	.78	2.31	1.23	.50	.01
Aug.	3	.52	863	592			32		# 3.97		1.90	2.47		1.20	
Sept.	12	.33	118,000	382			18		# 3.25		.69	2.30		.42	
Oct.	10	.35	183,000	426			17		# 3.51		.72	2.60		.58	
Nov.	6	.46	155,000	541			17		# 4.56		.91	2.85		.72	
Dec.	2	.75	132,000	832			24		# 6.54		2.09	3.25		1.58	
Mean ⊕	Ø 49	.42	Ø618,674.8	495			19		# 4.06		.95	2.66		.71	
Period Avg.		.44	193,000	509			20		# 4.09		1.05	2.64		.81	
Tons of Constituents, 1958											43,500	159,000		50,100	
Average Tons, Period 1955-1958											14,600	47,700		17,200	
Sampling by U. S. Section ‡ — Rio Grande at Falcón Dam–U.S. Tailrace															
Jan.	5	.58	26,700	689	.14	7.8	41	33	3.01	.99	2.73	2.35	2.28	2.25	T
Feb.	4	.58	9,630	682	.10	8.2	39	30	3.12	1.07	2.68	2.40	2.38	2.10	.01
Mar.	6	.60	13,600	699	.13	8.2	39	31	3.12	1.11	2.74	2.50	2.36	2.20	T
Apr.	12	.62	140,000	724	.16	7.8	40	31	3.06	1.21	2.82	2.47	2.46	2.25	.01
May	10	.64	166,000	740	.15	7.9	41	33	3.16	1.10	2.97	2.35	2.57	2.40	T
June	13	.64	261,000	756	.23	7.8	44	34	2.98	1.11	3.16	2.25	2.63	2.55	T
July	7	.63	50,100	737	.12	8.0	43	34	2.87	1.18	3.06	2.20	2.55	2.45	T
Aug.	7	.62	82,500	735	.13	8.0	44	35	2.85	1.15	3.10	2.18	2.53	2.50	.01
Sept.	5	.60	141,000	713	.08	7.8	43	34	2.73	1.13	2.94	2.11	2.42	2.35	T
Oct.	12	.50	999,000	591	.15	7.8	37	25	2.90	.77	2.14	2.23	2.14	1.46	.03
Nov.	12	.47	530,000	551	.10	8.0	32	20	2.98	.73	1.73	2.25	2.05	1.10	.04
Dec.	6	.49	228,000	561	.11	7.9	31	18	3.13	.79	1.74	2.44	2.19	1.02	.07
Mean ⊕	Ø 99	.53	Ø2,647,530	620	.14	7.9	37	26	2.96	.86	2.25	2.27	2.23	1.61	.03
Period Avg.		.58	1,616,000	677			38	28	3.11	1.00	2.57	2.32	2.49	1.91	
Tons of Constituents, 1958									405,000	71,400	353,000	465,000	731,000	390,000	
Average Tons, Period 1956-1958									237,000	46,500	225,000	265,000	455,000	258,000	

ᵘ Estimated T Trace Ø Total ⊕ Weighted Mean ** Percent of total cations *** Percent of total anions
Sum of calcium and magnesium † Sampling began at Laredo, Texas Water Treatment Plant as of Sept. 1, 1958.
‡ Tonnage figures based on total releases from Falcón Reservoir.

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1958

The following tables show electrical conductivity, expressed in mhos per centimeter cube x 10^6 at 25°C, of individual water samples taken at Rio Grande and tributary stations. The determinations were made by the United States Section of this Commission.

Electrical conductivity is a relative indication of the content of dissolved solids in the water samples. Though no exact relationship exists between conductivity and dissolved solids in natural waters, a study of recent data pertaining to stations on the Rio Grande at and below Laredo, Texas indicates that the relationship is expressed within 10% by the equation: Tons per acre-foot = .00089 x (EC x 10^6 at 25°C) where the conductivity (EC x 10^6 at 25°C) of such waters ranges between 400 and 4,500 micromhos.

Electrical conductivity and salt content for each sample collected in the Rio Grande above Morillo Drain, in Morillo Drain near Reynosa Vieja, Tamaulipas, and in the Rio Grande at Anzaldúas Dam are tabulated on page 85 in this bulletin.

Rio Grande at El Paso, Texas

Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C
January		February		April		May		July		August		September		November	
1	3,320	16	4,940	1	1,030	17	937	1	1,020	15	942	28	1,390	15	2,120
2	3,330	17	5,130	2	1,060	18	945	2	988	16	946	29	1,500	16	2,270
3	3,690	18	5,280	3	970	19	963	3	1,010	17	928	30	1,690	17	2,150
4	3,690	19	5,110	4	975	20	1,010	4	1,040	18	931	October		18	2,150
5	3,520	20	5,390	5	1,000	21	1,040	5	998	19	966	1	1,600	19	2,150
6	4,880	21	5,080	6	1,040	22	1,010	6	982	20	954	2	1,710	20	2,250
7	4,970	22	4,860	7	969	23	989	7A	976	21	993	3	1,160	21	2,200
8	5,460	23	3,980	8	953	24	956	7B	965	22A	955	4	1,570	22	2,200
9	5,600	24	4,100	9	963	25	949	8	971	22B	770	5	1,780	23	2,190
10	5,660	25	4,260	10	956	26	973	9	978	23	872	6	1,810	29	2,230
11	5,300	26	4,990	11	968	27	986	10	992	24	872	7	1,760	30	2,310
12	4,580	27	5,160	12	1,000	28	990	11	972	25	1,000	8	1,840	December	
13	4,240	28	5,360	13	1,020	29	969	12	971	26	921	9	1,890	1	2,310
14	5,320	March		14	971	30	965	13	950	27	1,020	10	1,920	2	2,250
15	5,120	1	4,710	15	987	31	954	14	970	28	1,080	11	1,980	3	2,310
16	5,300	2	5,330	16	990	June		15	967	29	1,100	12	1,200	4	2,310
17	5,300	3	5,710	17	968	1	942	16	997	30	1,110	13	1,860	5	2,250
18	4,880	4	5,940	18	957	2	966	17	985	31	1,110	14A	1,780	6	2,320
19	4,360	5	1,010	19	997	3	953	18	970	September		14B	716	7	2,250
20	3,880	6	954	20	942	4	961	19	978	1	1,080	15	791	8	2,220
21	4,470	7	907	21	941	5	1,010	20	952	2	1,110	16	935	9	2,220
22	4,390	8	1,010	22	968	6	964	21	1,360	3	1,020	17	1,240	10	2,370
23	5,040	9	1,030	23	994	7	928	22	1,040	4	1,050	18	1,390	11	2,380
24	5,020	10	967	24	1,060	8	958	23	1,000	5	989	19	1,640	12	2,390
25	4,810	11	1,030	25	1,100	9	936	24	1,030	6	965	20	1,720	13	2,400
26	4,950	12	979	26	1,030	10	953	25	974	7	964	21	1,830	14	2,400
27	4,950	13	936	27	979	11	953	26	1,020	8	944	22	1,990	15	2,470
28	4,860	14	1,210	28	983	12	962	27	1,010	9	965	23	1,980	16	2,460
29	5,270	15	1,510	29	990	13	981	28	966	10	962	24	2,060	17	2,460
30	4,240	16	2,290	30	980	14	961	29	955	11A	875	25	2,130	18	2,430
31	3,810	17	1,030	May		15	983	30	945	11B	554	26	2,090	19	2,460
February		18	1,030	1	982	16	1,010	31	997	12	880	27	2,120	20	2,430
1	4,880	19	969	2	896	17	1,040	August		13	1,010	28	2,130	21	2,430
2	3,800	20	937	3	892	18	972	1	1,180	14	847	29	2,090	22	2,420
3	3,760	21	925	4	913	19	960	2	1,010	15	843	30	2,150	23	2,430
4	3,810	22	966	5	966	20	994	3	996	16	1,080	31	2,140	24	2,450
5	5,420	23	934	6	985	21	1,060	4	1,020	17	1,270	November		25	2,340
6	5,280	24	922	7	992	22	1,000	5	1,040	18	1,320	1	2,010	26	2,340
7	5,360	25	893	8	1,000	23	982	6	1,160	19	1,290	2	2,050	27	2,430
8	4,350	26	995	9	1,020	24	973	7	1,160	20	1,280	6	2,210	28	2,440
9	5,130	27	1,180	10	964	25	1,000	8	1,090	21	1,210	8	2,240	29	2,440
10	5,080	28	1,020	11	963	26	1,040	9	1,010	22	1,100	9	2,160	30	2,430
11	5,130	29	950	12	927	27	1,060	10	999	23	1,030	10	2,210	31	2,370
12	5,040	30	962	13	919	28	1,060	11	982	24	1,110	11	2,210		
13	3,810	31	987	14	960	29	1,030	12	935	25	1,190	12	2,220		
14	3,840			15	981	30	1,010	13	940	26	1,280	13	2,240		
15	4,550			16	1,020			14	966	27	1,210	14	2,130		

Rio Grande at Fort Quitman, Texas

Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C	Date	ECx10^6 @25°C
August		September		September		October		October		November		December		December	
25	823	11	774	24	642	8	11,100	29	2,580	13	2,750	3	3,520	24	9,360
26	949	15	689	October		15	1,740	November		19	3,080	10	4,150	31	9,640
		17	806	1	1,490	22	1,800	5	3,160	26	3,250	17	4,430		

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1958

Rio Grande at Upper Presidio Station

Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C
May		July		August		September		September		October		October		November	
17	1,010	29	544	26	529	14	492	28	588	15	5,410	30	1,290	17	4,810
June		30	694	26	508	15	497	October		20	688	31	1,300	20	5,210
18	1,140	August		29	364	18	694	1	616	20	694	November		24	6,940
24	969	1	806	September		22	539	3	657	21	750	3	2,090	28	7,350
July		5	394	11	724	24	619	6	1,070	22	750	5	3,130	December	
3	885	20	676	11	722	25	546	7	1,900	24	875	7	3,160	1	7,380
10	577	22	609	12	471	26	734	9	3,400	27	1,360	10	3,230	4	7,890
10	571	22	611	13	491	27	616	13	4,360	29	1,390	14	5,030	22	9,170
29	522													29	8,930

Rio Conchos near Ojinaga, Chihuahua

January		February		April		June		July		September		October		November	
1	1,630	26	1,480	16	1,830	6	1,160	28	1,830	8	1,050	8	431	19	1,350
3	1,620	28	1,550	18	1,810	9	1,250	30	1,830	9	900	9	457	21	1,350
6	1,290	March		21	1,810	11	1,350	31	1,680	9	1,530	11	518	24	1,300
9	1,550	3	1,630	23	1,850	13	1,440	August		9	1,290	13	677	26	1,460
10	1,530	3	1,630	25	1,890	16	1,600	1	1,050	10	784	14	682	29	1,320
13	1,440	5	1,470	28	1,860	18	1,690	4	783	11	584	15	697	December	
15	1,560	7	1,790	30	1,840	20	1,800	6	1,050	11	755	16	586	1	1,280
17	1,670	10	1,740	May		23	1,190	8	1,320	11	1,200	17	723	3	1,340
20	1,800	12	1,730	2	1,820	25	1,600	11	749	12	775	18	759	5	1,400
22	1,700	14	1,740	5	1,890	27	1,720	13	967	12	1,040	21	532	8	1,480
24	1,690	17	1,740	7	1,870	30	1,380	15	1,010	13	656	22	591	10	1,420
27	1,680	19	1,760	9	1,850	July		18	1,700	21	641	23	642	12	1,470
29	1,650	21	1,750	12	1,850	2	1,810	20	1,380	22	643	24	663	15	1,430
31	1,680	24	1,840	14	1,840	4	1,830	21	1,300	23	484	25	643	17	1,380
February		26	1,810	16	1,840	7	1,820	22	916	23	471	28	673	19	1,490
2	1,380	28	1,790	19	2,450	9	1,850	24	1,080	24	481	29	739	22	1,390
3	1,650	31	1,790	21	2,000	11	1,840	25	954	October		31	769	24	1,460
5	1,630	April		23	1,540	14	1,960	27	816	1	683	November		26	1,490
7	1,650	2	1,690	26	1,550	16	1,900	28	1,360	2	453	3	929	29	1,430
10	1,670	4	1,690	28	1,510	18	1,990	29	915	3	488	5	1,070	31	1,440
12	1,640	7	1,750	30	1,560	20	1,860	September		4	429	5	1,090		
14	1,680	9	1,820	June		21	1,210	1	1,110	5	439	12	1,180		
17	1,670	11	1,810	2	1,530	23	1,180	3	1,190	6	464	14	1,180		
24	1,570	14	1,800	4	1,360	25	1,340	5	1,400	7	480	17	1,210		

Rio Grande at Lower Presidio Station

January		April		July		August		September		October		October		November	
2	1,690	1	1,920	1	756	26	880	18	576	1	683	24	680	24	1,550
7	1,360	7	1,940	3	556	26	839	18	587	2	453	27	783	28	1,570
10	1,610	15	2,390	7	616	29	1,130	22	639	3	488	27	763	December	
13	1,540	22	2,320	10	592	September		22	613	4	429	29	780	1	1,470
16	1,580	29	1,300	14	600	2	1,210	24	456	5	439	29	754	8	1,560
21	1,770	May		21	646	5	1,340	24	454	6	464	30	787	11	1,550
27	1,680	6	925	24	614	8	1,830	25	423	7	480	31	773	15	1,570
30	1,680	13	680	29	667	11	706	26	563	8	431	November		18	1,560
February		20	2,480	29	562	11	761	26	577	9	457	3	929	21	1,530
3	1,660	27	1,710	30	336	12	728	27	495	11	518	5	1,070	22	1,490
6	1,690	June		30	336	12	691	27	470	13	676	5	1,090	29	1,580
10	1,670	2	1,340	August		13	691	27	500	15	650	7	1,140	31	1,500
17	1,770	6	1,350	1	1,560	13	666	28	624	16	640	7	1,150		
25	1,370	10	1,410	5	696	13	628	28	592	17	821	10	1,220		
March		13	354	12	1,230	14	704	28	634	20	496	14	1,300		
4	1,680	17	352	15	578	14	612	28	643	20	529	14	1,280		
12	1,820	18	443	20	1,160	14	668	29	659	21	539	17	1,310		
18	1,820	24	1,630	22	1,100	15	640	29	655	22	585	17	1,390		
25	2,040	27	1,080	22	1,100	15	642	30	619	24	675	20	1,460		

Rio Grande at Johnson Ranch, Texas

January		February		April		June		July		August		September		November	
2	1,690	10	1,700	21	1,830	23	621	28	602	23	1,120	16	594	7	1,130
6	1,650	17	1,720	28	1,770	26	746	28	563	25	663	17	575	12	1,290
9	1,650	24	1,640	May		30	723	29	682	28	897	17	585	18	1,440
13	1,640	March		5	1,700	July		29	699	September		19	580	18	1,410
16	1,620	3	1,490	19	498	3	620	31	527	2	958	19	582	25	1,430
21	1,670	11	1,560	26	887	8	570	August		5	1,040	23	726	December	
24	1,770	17	1,740	June		11	699	4	434	8	1,010	23	669	2	1,480
27	1,720	24	1,770	3	2,000	14	739	11	1,140	11	815	25	555	10	1,561
30	1,700	April		9	1,570	17	576	14	447	11	767	25	514	16	1,610
February		1	1,820	12	1,260	21	691	18	555	12	631	October		21	1,610
3	1,660	8	1,960	16	1,580	21	1,310	21	830	12	673	2	472	31	1,550
6	1,700	14	1,910	19	555	25	711	23	1,210	16	561	21	408		

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1958

Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C

Rio Grande at Langtry, Texas

January		February		April		May		June		August		October		December	
2	1,120	24	1,110	4	906	12	705	26	797	15	768	6	521	1	1,300
10	1,120	27	1,120	7	866	16	781	30	620	26	610	12	495	12	1,310
17	1,210	March		11	837	19	786	July		September		16	642	17	1,350
24	1,120	3	1,250	14	825	21	474	3	594	2	852	20	686	23	1,340
27	1,110	7	1,210	18	815	23	686	9	718	12	619	27	689	30	1,350
31	1,110	10	1,100	21	797	28	677	14	516	15	795	November			
February		16	1,020	28	760	June		22	931	18	622	3	818		
7	1,160	24	1,000	May		5	647	30	690	24	591	7	911		
10	1,150	28	973	2	755	11	684	August		27	520	10	1,020		
13	1,130	31	973	6	699	15	1,160	5	646	28	453	24	1,290		
17	1,120			9	705	20	921	8	714	29	633				

Pecos River near Shumla, Texas

January		April		June		July		August		September		November		December	
7	3,330	28	3,740	2	2,990	14	2,140	19	2,580	30	1,630	5	2,770	11	3,100
14	3,670	28	3,740	9	2,930	19	2,340	26	2,310	October		7	2,760	18	3,200
21	3,700	May		16	2,560	24	2,390	September		7	2,090	14	2,730	24	3,260
March		5	3,440	25	2,310	29	2,440	2	2,470	22	2,610	21	2,830	31	3,370
17	4,030	12	3,420	30	2,650	August		9	546	29	2,730	28	2,920		
		19	2,230	July		5	2,430	15	512			December			
		26	3,630	7	1,170	12	2,400	22	348			5	2,990		

Upper Devils River

January		January		January		January		February		February		April		April	
3	410	9	402	15	413	22	371	6	364	11	412	25	392	25	387

Devils River near Mouth

January		February		April		May		June		July		August		October	
6	388	18	382	1	281	6	352	10	358	8	346	25	344	21	351
13	372	March		8	333	16	309	16	340	15	336	September			
27	378	3	294	16	351	28	318	19	251	August		4	330		
February		19	342	22	369	June		23	262	6	362	October			
3	343	25	371	29	372	2	365	July		11	343	8	341		
14	367							1	314	18	355	20	378		

Rio Grande near Del Rio, Texas

January		February		April		May		June		August		October		November	
3	1,100	19	1,160	4	1,170	14	438	27	658	13	704	1	575	17	978
6	1,040	21	1,230	7	1,200	15	764	30	768	15	675	3	656	19	980
8	1,200	24	704	9	1,180	16	676	July		18	758	6	538	21	973
10	1,060	26	922	11	1,230	19	770	2	741	20	759	8	507	24	1,060
13	1,130	28	1,080	14	1,070	21	809	7	596	22	653	10	523	25	373
15	1,140	March		16	1,080	23	672	9	1,230	25	733	13	504	26	1,120
17	1,150	3	1,110	18	1,080	26	970	11	558	27	755	15	542	28	1,090
20	1,210	5	1,110	21	1,050	28	1,030	14	579	29	657	17	698	December	
22	1,200	7	1,150	23	1,210	June		16	580	September		20	726	1	1,060
24	1,140	10	1,130	25	1,090	2	1,010	18	635	3	854	22	752	5	1,070
27	1,240	12	1,070	28	969	4	1,010	21	755	5	727	24	754	8	1,140
29	1,160	14	1,070	30	986	6	918	23	728	8	746	27	668	10	1,140
31	1,180	17	1,120	May		9	884	25	729	10	359	29	742	12	1,100
February		19	1,040	2	927	11	897	28	703	12	439	31	666	15	1,080
3	1,130	21	1,150	5	988	13	780	30	656	15	580	November		17	1,050
5	1,150	24	1,120	7	999	16	775	August		17	232	3	767	19	1,080
7	1,160	26	1,150	9	957	18	752	1	734	19	591	5	842	22	1,130
10	1,210	28	1,240	12	888	18	254	4	692	22	615	7	832	29	1,130
12	1,170	31	1,250	13	455	20	246	6	703	24	456	10	927	31	1,010
14	1,180	April		13	465	23	583	8	742	26	677	12	936		
17	1,170	2	1,280			25	823	11	693	29	375	14	991		

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

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Rio Grande at Maverick Canal Headgate

Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C
January		February		April		May		July		August		October		November	
1	1,070	16	1,120	2	1,160	18	753	2	760	17	868	1	608	16	1,040
2	1,070	17	1,140	3	1,190	19	704	3	764	18	776	2	541	17	1,020
3	1,120	18	1,120	4	1,210	20	728	4	678	19	815	3	668	18	1,050
4	1,080	19	1,120	5	1,190	21	1,050	5	666	20	768	4	733	19	1,060
5	1,020	20	1,100	6	1,200	22	740	6	700	21	781	5	728	20	1,080
6	1,050	21	1,150	7	1,260	23	638	7	614	22	603	6	589	21	1,080
7	1,010	22	1,100	8	1,190	24	743	8	609	23	657	7	564	22	1,070
8	1,100	23	1,040	9	1,210	25	912	9	1,450	24	652	8	504	23	1,090
9	1,100	24	625	10	1,150	26	959	10	766	25	713	9	513	24	1,070
10	1,100	25	649	11	1,160	27	983	11	647	26	761	10	531	25	1,060
11	1,080	26	777	12	1,190	28	912	12	586	27	907	11	495	26	1,090
12	1,100	27	976	13	1,160	29	1,090	13	600	28	636	12	501	27	1,080
13	1,130	28	1,040	14	1,150	30	906	14	586	29	558	13	505	28	1,070
14	1,080	March		15	1,090	31	1,080	15	601	30	672	14	528	29	1,080
15	1,100	1	1,060	16	1,120	June		16	582	31	752	15	539	30	1,090
16	1,130	2	1,080	17	1,110	1	1,090	17	620	September		16	604	December	
17	1,160	3	1,060	18	1,090	2	1,030	18	649	1	851	17	739	1	1,110
18	1,170	4	1,090	19	1,080	3	973	19	663	2	861	18	753	2	1,080
19	1,160	5	1,080	20	1,080	4	931	20	666	3	817	19	685	3	1,100
20	1,160	6	1,100	21	1,130	5	890	21	722	4	876	20	739	4	1,120
21	1,160	7	1,080	22	1,100	6	857	22	676	5	739	21	745	5	1,100
22	1,160	8	1,130	23	1,060	7	913	23	713	6	735	22	736	6	1,140
23	1,180	9	1,120	24	1,040	8	821	24	735	7	711	23	831	7	1,110
24	1,110	10	1,140	25	1,040	9	761	25	671	8	717	24	782	8	1,150
25	1,120	11	1,120	26	1,030	10	948	26	708	9	395	25	601	9	1,140
26	1,110	12	1,110	27	1,000	11	734	27	788	10	387	26	647	10	1,120
27	1,200	13	1,050	28	963	12	782	28	716	11	412	27	660	11	1,130
28	1,200	14	1,040	29	1,000	13	797	29	714	12	434	28	640	12	1,090
29	1,180	15	1,050	30	963	14	766	30	667	13	432	29	729	13	1,110
30	1,170	16	1,120	May		15	823	31	685	14	464	30	674	14	1,080
31	1,160	17	1,110	1	965	16	798	August		15	688	31	723	15	1,100
February		18	1,090	2	973	17	338	1	704	16	617	November		16	1,100
1	1,110	19	1,110	3	878	18	264	2	915	17	391	1	762	17	1,090
2	1,110	20	1,070	4	923	19	359	3	915	18	527	2	698	18	1,100
3	1,110	21	1,110	5	940	20	574	4	671	19	613	3	741	19	1,120
4	1,100	22	1,110	6	967	21	622	5	645	20	420	4	786	20	1,130
5	1,130	23	1,150	7	939	22	709	6	632	21	564	5	849	21	1,120
6	1,120	24	1,140	8	922	23	726	7	696	22	530	6	845	22	1,140
7	1,170	25	1,090	9	919	24	597	8	664	23	387	7	863	23	1,130
8	1,120	26	1,150	10	937	25	773	9	727	24	433	8	904	24	1,130
9	1,120	27	1,110	11	869	26	636	10	650	25	503	9	902	25	1,130
10	1,180	28	1,120	12	884	27	728	11	632	26	602	10	916	26	1,130
11	1,150	29	1,140	13	865	28	629	12	698	27	638	11	936	27	1,120
12	1,120	30	1,180	15	844	29	655	13	694	28	421	12	949	28	1,120
13	1,160	31	1,170	16	613	30	652	14	671	29	341	13	995	29	1,120
14	1,130	April		17	699	July		15	713	30	502	14	1,010	30	1,120
15	1,100	1	1,190			1	781	16	695			15	1,010	31	1,090

Río San Diego at Jiménez, Coahuila

January		February		April		June		July		August		October		November	
1	490	26	505	9	422	2	477	16	457	28	457	9	388	26	483
8	523	March		15	417	5	482	23	486	September		16	673	December	
15	466	2	419	23	517	12	440	29	479	1	491	22	514	2	421
22	523	7	344	May		18	413	August		9	500	November		9	354
February		13	451	1	529	24	505	2	487	17	384	1	422		
1	513	20	485	8	425	July		17	528	23	401	7	433		
11	518	April		21	491	2	378	13	490	October		14	448		
18	511	1	440	28	481	7	263	21	480	2	398	19	441		

Río San Rodrigo near El Moral, Coahuila

January		February		April		May		July		September		October		November	
6	347	25	352	2	350	9	336	3	321	10	391	17	417	21	379
13	356	March		10	366	22	322	10	330	12	393	23	402	28	389
20	363	3	356	16	372	June		18	335	19	402	November		December	
27	356	8	346	24	367	20	316	August		24	396	2	340	3	418
February		18	350	May		25	294	15	301	October		8	307		
3	356	25	350	2	396					1	406	12	394		
13	357														

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1958

Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C

Rio Grande at San Antonio Crossing near Villa Guerrero, Coahuila

January		February		April		June		July		August		September		November	
8	1,130	26	899	17	1,200	4	1,100	1	792	5	903	25	454	21	913
15	1,140	March		23	1,170	6	1,070	2	713	8	779	October		28	934
22	1,190	5	1,110	May		11	998	9	547	12	736	10	692	December	
29	1,190	12	1,160	2	1,050	13	939	15	724	20	768	18	803	5	942
February		26	1,200	7	879	19	381	22	710	28	772	23	686	21	959
5	1,230	April		14	512	24	756	23	723	September		31	939	29	942
14	1,260	2	1,180	21	823	30	814	29	750	4	785	November			
		9	1,290	28	849			31	805	19	628	7	779		

Rio Grande at Laredo, Texas

January		March		May		July		September		October		November		December	
7	655	11	1,150	17	359	21	728	12	380	10	502	7	733	5	897
9	1,120	13	1,030	19	1,050	23	709	13	363	11	506	8	752	6	845
11	1,170	17	1,150	21	806	25	697	14	392	12	508	9	759	7	901
13	1,050	19	1,170	24	741	28	729	15	419	13	508	10	754	8	897
15	1,140	22	1,120	26	833	30	750	16	426	14	513	11	796	9	906
16	1,130	24	1,150	30	801	August		17	457	15	496	12	780	10	922
18	1,160	26	1,140	June		4	818	18	417	16	484	13	793	11	913
21	1,140	29	1,140	2	877	6	723	19	371	17	525	14	772	12	932
23	1,200	31	1,170	4	957	9	750	20	448	18	558	15	825	13	940
24	1,140	April		9	1,050	11	887	21	505	19	614	16	796	14	931
25	1,140	2	1,180	18	385	12	698	22	438	20	656	17	840	15	930
27	1,170	7	1,190	19A	338	14	775	23	460	21	675	18	802	16	930
29	1,230	10	1,230	19B	632	19	736	24	484	22	679	19	875	17	921
31	1,130	14	1,280	20	289	22	737	25	400	23	670	20	883	18	923
February		16	1,290	21	340	25	763	26	416	24	682	21	870	19	914
3	1,170	18	1,290	23	526	27	827	27	461	25	718	22	792	20	920
6	1,160	21	1,280	24	628	29	839	28	493	26	749	23	860	21	900
8	1,150	23	1,240	25	699	September		29	579	27	660	24	886	22	901
10	1,210	25	1,200	30	765	1	764	30	343	28	599	25	887	23	914
14	1,190	28	1,190	July		2	786	October		29	626	26	882	24	912
21	1,050	May		2	758	3	814	1	364	30	664	27	854	25	902
22	982	2	1,160	4	846	4	804	2	510	31	688	28	878	26	920
24	906	6	1,080	7	771	5	725	3	550	November		29	873	27	917
26	1,290	8	1,050	8	816	6	690	4	566	1	651	30	875	28	920
27	1,100	12	761	9	679	7	712	5	634	2	646	December		29	918
March		14	691	10	721	8	761	6	685	3	674	1	894	30	927
3	762	15A	443	14	607	9	672	7	663	3	659	2	879	31	934
5	881	15B	349	16	921	10	573	8	558	5	652	3	877		
7	1,060	16	332	18	1,070	11	557	9	562	6	697	4	889		

Río Salado at Las Tortillas, Tamaulipas

May		June		July		August		September		October		October		November	
14	757	18	1,070	8	391	28	717	17	336	2	409	22	546	18	556
15	732	19	535	9	487	September		18	372	8	411	30	520	25	630
16	687	20	438	10	341	7	567	19	285	9	719	31	534	28	556
17	849	25	398	August		8	452	25	539	13	391	November		December	
19	465	26	376	26	520	9	449	28	366	14	364	3	472	9	1,100
20	478	28	510	27	593	10	641	29	358	17	292	10	523	16	602
		29	346	28	534	11	437	30	335	20	458	12	586		

Rio Grande at Falcón Dam–U.S. Tailrace

January		March		May		June		August		October		November		December	
2	649	31	695	5	732	17	754	6	732	6	702	10	537	10	554
6	648	April		7	735	19	755	11	731	7	688	12	534	15	556
10	648	1	695	9	741	20	756	13	740	8	662	14	543	17	558
15	664	8	699	12	735	23	758	19	729	8	654	17	569		
21	650	9	709	22	747	26	757	22	725	10	591	19	547		
February		11	708	23	742	27	761	25	728	17	633	21	550		
3	662	14	711	26	748	30	757	29	732	21	555	24	552		
5	669	16	712	28	751	July		September		23	559	26	552		
8	680	18	719	30	761	3	742	2	743	27	534	28	547		
17	682	21	720	June		7	737	8	731	29	548	December			
March		23	725	3	761	17	749	17	730	31	549	2	551		
12	685	25	722	4	756	21	740	25	693	November		4	555		
19	689	28	727	6	753	24	739	29	716	3	560	8	552		
21	683	30	729	9	747	28	735	October		5	542				
24	689	May		11	749	31	734	2	695	7	542				
27	696	1	727	13	749			4	695						

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1958

Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C	Date	ECx10⁶ @25°C

Rio Grande at Fort Ringgold, Rio Grande City, Texas

April		May		June		July		August		September		October		November	
2	890	6	762	5	765	10	543	13	790	16	862	21	564	26	602
4	896	9	770	8	774	13	707	15	810	18	642	24	530	29	694
6	763	12	758	11	765	14	769	18	768	21	506	27	527	December	
9	737	15	610	13	773	16	1,020	21	763	24	375	30	533	2	755
12	849	17	597	16	776	19	938	24	799	27	666	November		4	587
15	743	20	771	19	767	21	902	27	379	30	637	2	534	8	578
18	748	21	795	22	768	24	907	29	627	October		5	532	11	567
21	747	22	808	25	768	26	877	September		3	655	8	530	14	566
24	778	23	809	29	698	29	797	1	771	6	719	11	549	17	581
27	741	27	812	July		August		4	771	9	675	14	579	20	592
30	750	30	788	2	745	1	799	7	1,010	12	523	17	582	23	593
May		June		4	777	7	797	10	728	15	548	20	555	26	885
3	743	2	778	5	879	10	807	13	738	18	507	23	576	29	914

Rio Grande near Los Ebanos, Texas

January		February		April		June		July		September		October		November	
3	948	25	1,640	18	736	3	798	15	1,200	2	804	3	677	28	590
6	565	28	2,210	22	738	6	789	18	1,112	5	900	7	721	December	
7	573	March		25	749	10	773	22	932	8	634	10	647	2	842
10	854	4	2,870	29	751	13	772	25	919	9	462	14	561	5	608
14	925	7	3,260	May		15	779	29	811	10	694	17	522	9	600
17	931	11	3,540	2	746	17	778	August		12	773	21	514	12	585
21	963	14	3,540	6	774	18	770	1	820	16	1,080	24	523	16	587
24	958	18	2,910	9	744	20	777	5	815	19	475	28	533	19	617
28	993	21	1,880	13	765	21	775	8	864	20	360	31	543	23	622
31	980	25	776	14	667	24	547	12	790	22	532	November		26	680
February		28	919	15	585	27	781	15	796	23	743	4	538	30	1,030
4	984	April		16	572	July		19	820	26	748	7	540		
7	1,060	1	1,140	20	790	1	744	22	822	27	686	11	562		
11	691	4	842	23	947	4	842	25	751	28	724	14	528		
14	1,340	8	741	26	818	8	959	26	755	29	766	18	540		
18	2,400	11	775	27	816	10	461	28	557	30	670	21	590		
21	1,580	15	735	30	854	11	633	29	639			25	607		

Rio Grande above Morillo Drain

January		February		February									
11	788	6	1,110	17	993								

Morillo Drain near Reynosa Vieja, Tamaulipas

January		February		February		March		July		August			
11	15,510	6	18,600	17	19,630	4	19,270	1	15,100	5	22,000		

North Floodway near Sebastian, Texas

October		October		October		October		October		November			
8	993	19	555	20	579	23	564	28	580	10	606		
19	617	19	953	21	497	25	572	31	574				

Arroyo Colorado, South of Harlingen, Texas

October		October		October		October		October		November		November			
19	673	21	518	23	540	25	561	29	598	3	611	7	610		
20	562	22	531	24	544	27	624	31	583	5	615	10	600		

Rio Grande at Anzaldúas Dam

January		March		April		April		May		July		July		September	
11	1,070	11	4,860	1	1,390	29	929	27	1,040	1	1,300	25	1,770	20	645
February		14	3,770	4	1,750	May		30	1,110	4	1,410	28	1,290	20	576
17	1,120	18	3,980	8	1,110	2	861	June		8	1,700	August		20	543
28	2,350	25	1,850	11	913	6	934	3	1,040	11	833	1	1,220		
March		28	1,500	15	825	9	891	19	880	15	1,510	20	1,080		
4	3,080			18	815	20	1,100	20	925	19	2,980	27	949		
7	5,340			25	864	23	1,960	28	1,000	22	1,960				

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1958

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Rio Grande at Hidalgo, Texas

January		March		May		June		August		October		November		December	
7	775	4	2,790	6	1,010	30	1,080	26	1,280	7	740	10	562	4	900
8	780	11	3,900	13	875	July		28	885	11	699	14	638	11	724
14	1,190	18	4,700	15	872	11	970	September		14	500	21	637	19	724
21	1,200	25	2,040	20	1,050	15	1,520	2	970	19	516	28	770	22	1,090
28	1,580	April		28	1,040	27	2,200	9	1,130	21	514			29	1,120
February		1	1,330	June		29	1,330	16	1,330	25	581				
4	1,570	8	1,320	3	1,030	August		23	652	29	543				
12	1,260	15	868	10	904	5	1,270	29	706	November					
18	1,330	22	757	17	900	12	1,200	30	760	3	586				
25	2,560	29	920	26	827	19	1,410			7	567				

Rio Grande at Mercedes, Texas, Pumps

January		February		April		May		July		August		September		November	
1	919	16	1,450	3	1,370	19	709	1	1,050	16	1,010	30	667	15	614
2	856	17	1,450	4	1,520	20	756	2	1,090	17	1,030	October		16	646
3	959	18	1,340	5	1,840	21	859	3	1,020	18	1,060	1	698	17	711
4	705	19	1,260	6	1,800	22	894	4	1,260	19	1,090	2	709	18	720
5	688	20	1,280	7	1,720	23	940	5	1,250	20	1,210	3	684	19	732
6	698	21	1,290	8	1,540	24	920	6	1,350	21	1,350	4	704	20	713
7	971	22	1,170	9	1,300	25	1,310	7	1,340	22	1,071	5	686	21	685
8	1,110	23	1,270	10	1,130	26	1,960	8	1,470	23	1,120	6	690	22	641
9	732	24	1,300	11	927	27	1,440	9	1,450	24	1,060	7	708	23	654
10	911	25	1,360	12	918	28	1,150	10	1,590	25	1,000	8	710	24	703
11	798	26	2,110	13	893	29	1,070	11	1,640	26	1,100	9	714	25	701
12	798	27	2,420	14	874	30	1,080	12	1,680	27	960	10	720	26	699
13	845	28	2,370	15	872	31	1,080	13	1,080	28	860	11	708	27	685
14	926	March		16	848	June		14	934	29	870	12	660	28	738
15	942	1	2,350	17	848	1	1,110	15	961	30	870	13	651	29	791
16	1,010	2	2,180	18	817	2	1,140	16	1,020	30	830	14	649	30	786
17	1,050	3	2,260	19	823	3	1,160	17	1,180	31	935	15	588	December	
18	1,110	4	2,440	20	827	4	1,060	18	1,370	September		16	550	1	790
19	1,420	5	2,150	21	846	5	1,020	19	1,650	1	731	17	540	2	795
20	1,420	6	2,770	22	838	6	1,020	20	2,120	2	900	18	529	3	892
21	1,370	7	2,660	23	848	7	1,010	21	2,490	3	970	19	508	4	988
22	1,420	8	2,320	24	840	8A	966	22	2,990	4	960	20	506	5	912
23	1,360	9	2,420	25	848	8B	975	23	2,580	5	970	21	510	6	745
24	1,390	10	2,430	26	861	9	964	24	2,170	6	1,090	22	535	7	679
25	1,370	11	2,410	28	871	10	922	25	2,130	7	1,070	23	542	8	683
26	1,450	12	2,080	28	892	11	964	26	1,940	8	1,070	24	542	9	705
27	1,400	13	2,180	29	896	12	944	27	1,730	9	1,020	25	546	10	717
28	1,330	14	3,200	30	936	13	958	28	1,810	10	1,040	26	554	11	715
29	1,520	15	3,180	May		14	963	29	1,610	11	1,750	27	553	12	650
30	1,510	16	3,630	1	928	15	961	30	1,490	12	979	28	546	13	660
31	1,520	17	3,600	2	930	16	933	31	1,310	13	585	29	537	14	658
February		18	3,510	3	933	17	912	August		14	759	30	531	15	663
1	1,510	19	3,650	4	882	18	927	1	1,180	15	762	November		16	636
2	1,510	20	3,590	5	835	19	875	2	1,240	16	1,230	1	552	17	655
3	1,530	22	3,960	6	812	20	957	3	1,210	17	1,160	2	569	18	667
4	1,530	23	5,670	7	947	21	893	4	1,220	18	1,220	3	572	19	693
5	1,450	24	5,520	8	932	22	908	5	1,200	19	1,340	4	595	20	688
6	1,440	25	4,330	9	831	23	896	6	1,250	20	1,390	5	592	21	698
7	1,450	26	3,560	10	903	24	913	7	1,280	21	689	6	592	22	705
8	1,510	27	2,600	11	896	25	985	8	1,210	22	425	7	597	23	709
9	1,530	28	2,430	12	903	26	964	9	1,180	23	382	8	568	24	724
10	1,650	29	1,500	13	916	27	913	10	1,240	24	489	9	558	25	705
11	1,400	30	1,490	14	906	28	953	11	1,340	25	689	10	559	26	701
12	1,390	31	1,310	15	846	29	957	12	1,400	26	760	11	557	27	711
13	1,530	April		16	863	30	981	13	1,400	27	789	12	570	28	939
14	1,360	1	1,400	17	638			14	1,190	28	730	13	590	29	937
15	1,280	2	1,200	18	643			15	1,080	29	736	14	581	30	1,090
														31	1,190

Rio Grande near San Benito, Texas

January		March		April		June		July		September		October		December	
7	978	3	1,350	21	817	9	955	28	2,060	2	948	3	737	2	808
13	1,180	10	2,200	28	900	16	945	August		8	1,130	6	734	8	704
20	993	17	2,360	May		23	905	4	1,310	15	923	15	643	15	658
27	1,450	24	5,240	5	885	30	1,040	11	1,370	22	665	22	553	23	706
February		31	3,430	12	916	July		18	1,100	26	817	November		30	1,420
3	1,310	April		19	782	7	1,300	25	1,090	29	770	18	714		
10	1,600	7	3,030	June		14	1,300			30	734	24	689		
17	1,600	14	922	2	1,200	21	1,970								

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

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Rio Grande at Lower Brownsville, Texas

January		March		April		June		July		September		October		November	
7	875	3	2,160	21	1,020	2	1,840	21	2,060	2	1,440	3	758	12	561
13	1,680	10	2,290	28	978	9	1,200	28	1,650	8	1,300	5	744	19	708
20	1,380	17	1,970	May		16	1,140	August		15	1,310	7	644	25	676
27	1,640	24	2,450	5	1,070	23	994	4	1,610	22	843	14	739	December	
February		31	4,940	12	1,070	30	1,010	11	1,450	25	453	19	595	2	842
3	1,640	April		19	796	July		18	1,620	30	722	21	565	8	737
10	2,590	8	3,940			7	1,690	25	1,310	October		27	574	15	669
17	1,550	14	3,150			14	1,650			1	795			23	721
														30	1,340

ELECTRICAL CONDUCTIVITY AND SALT CONTENT

DATE OF SAMPLE	* RIO GRANDE ABOVE MORILLO DRAIN		Ø MORILLO DRAIN NEAR REYNOSA VIEJA, TAMPS.		# RIO GRANDE AT ANZALDUAS DAM SITE	
	Date ECx10⁶ @25°C	Dissolved Solids Tons Per Acre-Foot	Date ECx10⁶ @25°C	Dissolved Solids Tons Per Acre-Foot	Date ECx10⁶ @25°C	Dissolved Solids Tons Per Acre-Foot
Jan. 11	788	.663	15,510	16.4	1,070	.840
Feb. 6	1,110	.949	18,600	18.9		
Feb. 17	993	.832	19,630	20.1	1,120	.919
Mar. 4	2,870	2.55	19,270	20.1	3,080	2.91
July 1	744	.662	15,100	15.2	1,300	1.16
Aug. 5	815	.725	22,000	23.4		

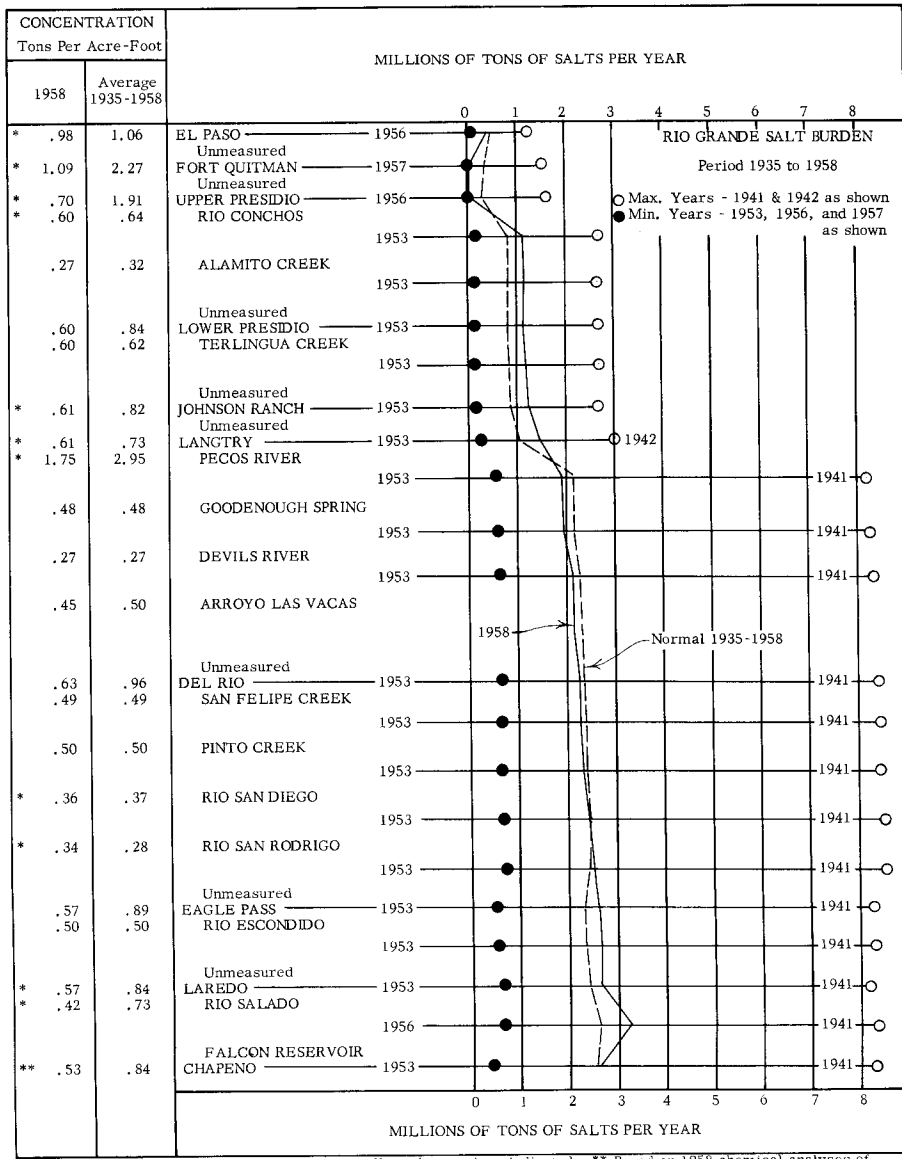
* Samples taken from Rio Grande at a point 200 feet upstream from Morillo Drain confluence except for last three samples which were taken 25 miles upstream and for which T. A. F. was determined by the equation shown in textual heading.

Ø Morillo Drain enters the Rio Grande 8.4 miles upstream from Anzaldúas Dam. Samples collected .25 mile upstream from its confluence. There was no storm run-off in Morillo Drain on dates samples were taken.

Samples taken at Anzaldúas Canal gaging station cableway .5 mile below the canal intake.

RIO GRANDE SALT BURDEN

The term "salt," as used herein, means total dissolved solids. The 1958 concentrations which are marked by an asterisk (*) are based on the chemical analyses shown on preceding pages of this bulletin. Those without asterisks are based on chemical analyses reported in previous water bulletins or have been developed by deduction. Average concentrations shown for the period 1935 to 1958 are the weighted means of the values determined for the 23-year period indicated.



* Based on 1958 chemical analyses of samples collected at stations indicated. ** Based on 1958 chemical analyses of samples collected at Falcón Dam-U. S. Tailrace.

SANITARY ASPECTS OF WATER QUALITY

The United States and Mexican Sections of this Commission and the Texas State Department of Health cooperate in the joint sanitary water-sampling program along the Rio Grande. All analyses below have been made under the "Rules of Laboratory Procedure," as approved by the participating agencies, and which conform with the procedures set out in the manual "Standard Methods for the Examination of Water and Sewage," Tenth Edition (1955), prepared by the American Public Health Association and the American Water Works Association. These analyses were made in the laboratories of the El Paso Water Plant, the Cameron County Health Unit, and the International Boundary and Water Commission. The percentages of dissolved oxygen (D. O.) shown below are the percent saturation at the elevation of the sampling station.

*Franklin Canal at El Paso, Texas, Water Plant

Date 1958	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1958	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)
Jan. 7	94.8	3.2	2,300	35,500	July 15	88.4	4.6	9,400	42,700
14	99.1	3.1	38,000	35,000	22	124	1.5	24,000	21,550
21	87.7	3.2	24,000	59,000	29	92.6	1.2	70,000	41,350
28	92.0	2.7	11,000	14,000	Aug. 5	94.6	2.2	6,200	26,750
Feb. 4	112	3.2	11,000	15,000	12	96.4	1.5	11,000	23,700
11	112	3.4	6,200	4,000	19	98.7	1.6	24,000	390,500
18	127	3.2	6,200	5,000	26	91.0	2.1	70,000	438,500
25	107	3.5	70,000	24,000	Sept. 2	99.4	1.7	38,000	272,500
Mar. 4	67.2		38,000	30,000	9	99.3	2.0	38,000	25,100
11	88.7	4.3	16,000	25,000	16	101	2.2	240,000	326,000
18	90.6	2.0	6,200	35,000	23	105	2.5	38,000	512,500
25	80.8	1.4	24,000	10,000	30	103	3.0	38,000	334,000
Apr. 1	92.9	1.3	3,600	30,000	Oct. 7	107	3.6	38,000	30,300
8	85.2	1.1	6,200	17,500	21	117	2.8	24,000	29,700
15	91.0	0.9	2,300	10,400	28	95.1	1.6	38,000	17,200
22	87.1	1.1	2,300	9,300	Nov. 4	102	1.7	70,000	20,500
29	97.7	1.4	3,600	10,350	12	114	1.1	11,000	234,000
May 6	94.1	1.1	3,600	11,800	18		1.0	11,000	32,000
13	94.5	1.2	38,000	20,350	25	125	2.3	11,000	21,000
20	94.1	0.9	11,000	15,000	Dec. 2	116	3.9	6,200	20,500
27	96.4	0.7	3,600	32,950	9	123	4.2	6,200	4,850
June 3	90.2	0.9	24,000	27,800	16		4.5	2,300	180
10	94.3	1.5	5,500	16,750	30	109	5.6	6,200	1,195
17	99.0	1.0	24,000	18,000					
24	89.1	0.5	13,000	6,850					
July 1	98.2	1.6	16,000	18,100	Total	4,764.0	108.6	1,278,100	3,422,925
8	99.8	1.8	38,000	19,700	Avg.	99.2	2.2	25,600	68,500

Rio Grande at Ysleta, Texas-Zaragoza, Chih. Bridge

Jan. 7	20.3	41.0	70,000,000	23,500,000	July 15	59.1	9.2	3,800,000	4,980,000
14	31.0	38.5	24,000,000	12,500,000	22	69.5	11.5	2,400,000	3,255,000
21	24.6	30.3	24,000,000	22,700,000	29	74.7	5.0	380,000	4,000,000
28		30.0	3,600,000	13,400,000	Aug. 5	52.8	15.1	2,400,000	1,505,000
Feb. 4	10.2	45.0	70,000,000	13,000,000	12	86.5	11.0	1,600,000	1,195,000
11	35.4	30.6	38,000,000	7,600,000	19	76.6	11.5	3,800,000	1,075,500
18	39.3	49.7	70,000,000	17,900,000	26	72.3	17.5	3,800,000	1,748,000
25		35.5	38,000,000	21,800,000	Sept. 2	66.6	9.8	2,400,000	1,820,500
Mar. 4	13.9	41.8	24,000,000	14,800,000	9	68.1	9.3	3,800,000	612,500
11	83.9	24.9	3,400,000	8,000,000	16	61.1	10.1	2,400,000	2,630,000
18	78.6	2.4	930,000	2,200,000	23	58.4	13.2	2,400,000	1,270,000
25	82.1	8.2	620,000	810,000	30	65.3	3.6	14,000,000	2,875,000
Apr. 1	72.1	2.7	7,000,000	3,000,000	Oct. 7	93.7	12.5	2,400,000	1,595,000
8	76.8	3.0	3,800,000	1,600,000	21	75.6	15.7	7,000,000	5,795,000
15	79.1	15.0	360,000	280,000	28	68.2	13.0	14,000,000	10,380,000
22	76.7	7.3	3,800,000	1,490,000	Nov. 4	72.2	10.9	7,000,000	9,200,000
29	63.4	4.3	3,800,000	1,605,000	12	34.8	8.2	24,000,000	10,850,000
May 6	56.5	10.6	3,800,000	6,015,000	18	23.2	23.6	24,000,000	1,385,000
13	63.4	7.6	1,600,000	3,910,000	25	124	23.1	240,000,000	5,200,000
20	57.7	8.7	3,800,000	6,285,000	Dec. 2	98.6	20.9	160,000,000	11,250,000
27	56.2	6.2	3,800,000	8,170,000	9	30.6	56.5	380,000,000	9,300,000
June 3	65.3	7.6	3,800,000	4,695,000	16	32.7	34.4	2,400,000,000	12,350,000
10	73.3	7.2	3,800,000	2,080,000	23	41.3	31.9	2,400,000,000	17,250,000
17	72.4	7.5	380,000	6,470,000	30	56.3	28.9	1,400,000,000	16,500,000
24	68.0	5.4	7,000,000	1,985,000					
July 1	58.3	7.2	7,000,000	4,015,000	Total	2,978.8	901.3	7,525,670,000	351,666,500
8	58.1	16.7	3,800,000	3,835,000	Avg.	60.8	17.7	147,600,000	6,895,000

* From January 7 through March 4, 1958, the sampling was from Rio Grande at Water Plant.

SANITARY ASPECTS OF WATER QUALITY

Rio Grande at Laredo, Texas, Water Plant

Date 1958	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1958	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1958	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)
Jan. 6	24,000	16,400	May 12	360	1,250	Sept. 15	3,600	12,500
13	16,000	2,550	19	9,400	21,900	22	55,000	70,000
20	1,100	3,150	26	360	2,000	29	62,000	59,000
27	26	850	June 2	210	900	Oct. 6	23,000	66,000
Feb. 3	110	550	9	110	750	13	9,300	106,000
10	360	8,000	16	620	1,150	20	6,200	7,000
17	60	450	23	2,300	14,550	27	55,000	24,250
24	1,100	10,500	30	2,300	6,050	Nov. 3	23,000	177,000
Mar. 3	360	2,250	July 7	16,000	20,700	10	1,100	43,500
10	230	1,500	14	2,300	6,250	17	6,200	9,000
17	110	750	21	160	700	24	23,000	5,000
24	160	550	28	620	200	Dec. 1	3,600	7,500
31	230	800	Aug. 4	620	1,850	15	60	
Apr. 7	110	700	11	1,100	1,950	22	60	350
14	210	1,100	18	1,100	3,050	29	110	300
21	210	650	25	1,600	1,500			
28	230	900	Sept. 2	1,100	1,000	Total	361,696	749,350
May 5	2,300	2,150	8	3,300	22,400	Average	7,090	15,000

Rio Grande at 8.6 Miles Below Laredo, Texas, R. R. Bridge

Jan. 6	36,000	63,500	May 12	23,000	56,000	Sept. 15	36,000	4,500
13	16,000	48,000	19	110,000	1,690	22	36,000	6,000
20	36,000	5,750	26	110,000	76,500	29	230,000	5,500
27	23,000	59,000	June 2	36,000	87,000	Oct. 6	23,000	76,500
Feb. 3	160,000	14,500	9	23,000	142,000	13	6,000	6,000
10	110,000	18,500	16	110,000	370,000	20	11,000	3,500
17	62,000	29,500	23	23,000	79,500	27	36,000	35,250
24	16,000	33,000	30	94,000	180,000	Nov. 3	36,000	240,000
Mar. 3	36,000	20,000	July 7	240,000	95,000	10	110,000	7,500
10	62,000	48,500	14	160,000	91,000	17	36,000	72,500
17	62,000	41,500	21	62,000	245,000	24	21,000	19,000
24	81,000	89,000	28	23,000	23,500	Dec. 8	6,000	2,000
31	110,000	50,000	Aug. 4	62,000	35,000	15	52	4,500
Apr. 7	160,000	49,000	11	240,000	405,000	22	6,200	56,500
14	380,000	213,000	18	240,000	209,000	29	23,000	
21	380,000	103,000	25	62,000	6,500			
28	110,000	81,000	Sept. 2	62,000	10,000	Total	5,112,252	3,706,690
May 5	36,000	21,000	8	940,000	66,500	Average	100,000	74,100

Rio Grande at Falcón Dam–U.S. Tailrace

Jan. 6	93	450	June 9	0	1,900	Oct. 6	36	300
13	230	1,000	16	6	1,830	13	36	850
20	540	400	23	3	2,225	20	360	900
27	360	950	30	23	770	27	23	600
Feb. 3	60	400	July 7	3	200	Nov. 3	16	950
17	620	1,550	14	11	1,250	10	13	250
Mar. 17	36	7,750	21	6	350	17	36	400
24	60	1,000	28	36	550	24	21	10,200
31	8	160	Aug. 4	0	2,375	Dec. 1	11	550
Apr. 7	36	400	11	36	3,150	8	0	16,000
14	5	250	18	6	550	15	0	200
21	3	55	25	91	700	22	0	1,000
28	0	225	Sept. 2	110	650	29	0	150
May 5	23		8	36	450			
12	3	1,120	15	36	200	Total	3,201	66,665
26	3	665	22	3	400	Average	681	1,450
June 2	3	390	29	160	0			

Rio Grande at Mercedes, Texas, Pumps

Jan. 6	140,000		May 12	2,100		Sept. 8	3,600	
13	620		19	2,800		15	2,300	
27	24,000		26	1,100		22	3,600	
Feb. 2	60		June 2	2,300		29	9,400	
10	5,000		9	3,600		Oct. 6	4,200	
17	3,600		16	2,300		14	6,200	
25	620		23	3,400		27	24,000	
Mar. 3	1,100		30	2,300		Nov. 3	24,000	
10	620		July 7	2,300		25	620	
17	360		14	2,300		Dec. 1	930	
24	1,100		21	360		8	3,600	
31	3,600		28	2,300		16	1,600	
Apr. 7	620		Aug. 4	3,600				
14	5,500		11	3,600				
21	2,300		18	3,600		Total	349,810	
28	11,000		25	2,300		Average	7,600	
May 5	16,000		Sept. 2	9,400				

RAINFALL ON THE RIO GRANDE WATERSHED
IN INCHES
In the United States

Tabulated below, in downstream order, are monthly records of United States rainfall stations with averages for their periods of record. For location, elevation, period of record, type of gage in use, watershed subdivision in which the station is located, and the observer, see alphabetical listing of these stations shown on pages 105 and 106 of this bulletin. These rainfall records have not been published elsewhere. Records of daily rainfall amounts, where available, are on file in the office of the United States Section of this Commission. Daily records for years prior to 1953 may also be found in corresponding water bulletins.

Detailed listings of the months and years for which records are available through 1956 may be found under "Index to Precipitation Records" in Water Bulletins 10, 14, 22 and 26.

Month	American Dam		Island Station		Fabens-Guadalupe Bridge		County Line		Fort Hancock Bridge	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.62	.44	.94	.36	.81	.38	.63	.41	.66	.42
Feb.	1.27	.40	1.23	.31	* 1.14	.31	.64	.22	.49	.29
Mar.	1.94	.39	1.38	.29	1.47	.33	1.22	.32	1.01	.26
Apr.	.08	.25	.40	.22	.48	.31	.20	.29	.15	.36
May	.80	.30	.46	.41	.77	.44	.34	.45	.47	.61
June	.45	.68	1.62	.56	.37	.51	.40	.53	.76	.84
July	.74	1.52	1.00	1.01	.14	1.20	.56	1.03	1.22	1.21
Aug.	2.98	1.42	.74	1.21	.97	1.38	.71	1.38	1.61	1.61
Sept.	4.48	.98	2.41	.87	3.24	1.03	1.77	1.02	1.75	.96
Oct.	1.00	.71	2.49	.92	1.47	1.04	3.10	1.01	1.87	1.13
Nov.	.04	.18	.12	.21	.21	.20	.16	.20	.56	.20
Dec.	0	.38	0	.34	0	.38	0	.34	0	.41
Yearly	14.40	7.65	12.79	6.71	11.07	7.51	9.73	7.20	10.55	8.30

Month	Madden Arroyo		Guayuco Arroyo		Fort Quitman		Neely Ranch		Moody Bennett	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.39	.32	.48	.37	.59	.47	.32	.40	.62	.40
Feb.	.33	.19	.45	.20	.62	.26	.50	.18	1.05	1.04
Mar.	.75	.16	1.11	.19	.97	.25	.85	.20	.32	.18
Apr.	.82	.36	.60	.25	.55	.31	0	.13	.57	.28
May	1.17	.57	.88	.41	.25	.43	.58	.42	.13	.96
June	.27	.51	.62	.50	.74	.75	0	.59	.06	.03
July	1.58	1.22	.97	1.52	.69	1.49	1.22	1.54	1.62	1.14
Aug.	.38	1.65	1.21	1.60	1.28	1.48	.94	1.59	.59	1.00
Sept.	1.50	.93	2.52	1.21	2.97	1.00	3.22	1.41	2.68	1.17
Oct.	2.66	1.25	2.61	1.25	2.55	.91	1.90	1.14	1.41	1.20
Nov.	.01	.13	.04	.14	.90	.24	.12	.13	.26	.10
Dec.	0	.36	0	.36	0	.33	0	.35	0	.08
Yearly	9.86	7.65	11.49	8.00	12.11	7.92	9.65	8.08	9.31	7.58

Month	Bill Shannon		Petan Ranch		Adobes Ranch		Livingston Ranch		Presidio (IB&WC Gage)	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.55	1.02	1.80	.72	1.25	.39	3.10	.75	1.10	.30
Feb.	1.50	1.32	1.74	.38	1.32	.27	0	.44	1.20	.24
Mar.	.70	.35	1.15	.39	.47	.21	0	.09	.40	.19
Apr.	.20	.18	.20	.19	0	.18	0	.10	0	.18
May	.50	.72	2.00	1.13	.60	.36	0	.32	.15	.30
June	.32	.16	1.10	1.87	.54	1.02	1.25	1.10	.55	.79
July	1.75	1.02	3.55	3.21	1.04	2.01	0	1.09	.95	1.19
Aug.	.95	1.83	3.35	2.44	1.85	1.08	0	1.04	1.95	.78
Sept.	5.50	1.83	8.73	2.38	5.01	1.76	3.60	1.04	3.80	.91
Oct.	2.15	1.45	2.35	1.15	2.30	.77	2.20	1.28	1.65	.56
Nov.	0	0	0	.24	.21	.13	0	.18	.20	.12
Dec.	0	.10	0	.25	.12	.10	0	.14	.10	.14
Yearly	15.12	9.98	25.97	14.35	14.71	8.28	10.15	7.57	12.05	5.70

* Partly estimated

RAINFALL ON THE RIO GRANDE WATERSHED

IN INCHES

In the United States

Month	Quebec Ranch		Kelly Ranch		Bloys Camp		Marfa Experiment Station		Kerr Mitchell Ranch	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.20	.53		.52	.85	.65	1.43	.63	1.14	.62
Feb.	.75	.28		.21	.90	.65	.74	.45	.27	.38
Mar.	1.05	.31		.27	1.60	.49	.76	.33	1.05	.21
Apr.	.30	.40		.60	.50	.54	.13	.33	0	.56
May	1.60	1.16		1.18	.95	1.73	.64	.90	.58	1.12
June	2.05	1.58	1.55	1.72	.62	2.51	2.27	1.59	1.02	1.61
July	4.30	2.24	7.25	3.36	4.44	3.15	3.22	2.18	2.31	1.88
Aug.	.90	1.64	4.90	1.82	4.01	3.46	1.35	1.27	.76	1.79
Sept.	4.90	1.60	5.25	2.57	7.01	2.75	2.89	1.35	2.29	1.56
Oct.	.90	1.02	1.30	.86	2.29	1.62	1.42	.83	2.64	1.36
Nov.	1.20	.18	.30	.08	.65	.38	.12	.05	.10	.19
Dec.	0	.22	0	.24	T	.53	.03	.17	0	.38
Yearly	19.15	11.16		13.43	23.82	18.46	15.00	10.08	12.16	11.66

Month	Loma Vista Ranch		H. T. Fletcher Ranch		Sauz Ranch		McFarland Ranch-Shannon		McFarland Ranch Cement	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.05	.89	3.10	.97	3.10	.80	2.95	1.88	2.95	1.84
Feb.	.50	.45	2.00	.33	1.05	.31	1.30	1.85	1.30	1.95
Mar.	.85	.18	1.75	.35	1.80	.51	1.59	.40	1.52	.38
Apr.	0	.69	.50	.55	.35	.31	0	.08	0	.15
May	1.30	.97	1.25	1.24	.25	1.24	0	.75	0	.85
June	1.90	1.75	1.85	1.34	2.60	1.25	1.22	1.32	.46	1.19
July	3.40	2.26	3.45	2.77	5.75	2.83	2.60	3.46	3.00	3.14
Aug.	2.80	1.53	.70	2.76	1.10	2.21	3.67	3.08	4.44	3.18
Sept.	1.60	1.54	7.75	1.78	6.30	2.07	8.27	3.37	7.47	3.00
Oct.	1.35	1.24	3.45	1.54	3.45	1.57	3.70	3.18	3.55	3.01
Nov.	0	.30	.20	.28	.20	.28	0	.56	0	.58
Dec.	0	.46	.15	.34	.25	.44	0	.16	0	.15
Yearly	14.75	12.26	26.15	14.25	26.20	13.82	25.30	20.09	24.69	19.42

Month	McFarland Ranch-Headquarters		McFarland Ranch-Casa Colorada		McFarland Ranch-Deep Well		McFarland Ranch-Cane Pasture		McFarland Ranch-Punta el Agua	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	2.95	1.16	2.95	1.80	2.95	1.87	2.95	1.72	2.95	1.80
Feb.	1.35	.68	1.30	1.91	1.25	2.41	1.20	1.94	1.30	1.84
Mar.	1.66	.39	1.55	.39	1.59	.40	1.40	.35	1.35	.34
Apr.	0	.57	0	.21	0	.16	0	.19	0	.20
May	0	1.31	0	.88	0	.82	0	1.04	0	.84
June	1.67	1.12	1.85	1.01	1.40	1.54	2.40	1.16	1.95	.91
July	2.59	3.32	2.55	2.79	2.45	2.94	2.67	2.52	2.80	2.24
Aug.	3.01	2.58	5.82	3.52	2.12	3.42	3.85	2.66	2.60	2.76
Sept.	8.46	2.29	7.05	2.48	7.19	3.10	5.62	2.64	5.70	2.27
Oct.	4.09	1.80	2.97	2.79	3.53	4.18	4.15	2.82	4.64	2.67
Nov.	0	.43	0	.50	0	.59	0	.46	0	.45
Dec.	0	.51	0	.16	0	.14	0	.15	0	.15
Yearly	25.78	16.16	26.04	18.44	22.48	21.57	24.24	17.65	23.29	16.47

Month	McFarland Ranch-Cocameca		L. T. Van Eman Ranch		H. M. Greenwood (Cienega Ranch)		Redford		02 Ranch	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	2.95	2.06	2.40	.66	2.15	.66	1.30	.56	1.32	.58
Feb.	1.30	3.70	1.17	.19	.82	.23	1.00	.34	.51	.41
Mar.	1.52	.76	.60	.32	.56	.21	.50	.12	.52	.40
Apr.	0	.28	0	.42	.03	.62	0	.10	0	.38
May	0	1.44	2.08	.67	1.15	.79	0	.29	2.13	1.16
June	1.51	1.56	2.09	1.49	2.39	1.59	.80	.30	1.13	1.25
July	3.10	3.08	2.16	1.99	1.46	1.72	.75	.21	2.69	1.68
Aug.	2.53	3.59	4.67	2.10	.32	1.68	.40	.75	1.00	2.52
Sept.	10.14	5.07	6.28	1.91	7.40	2.35	5.60	1.72	2.87	1.73
Oct.	3.77	3.71	2.72	.95	3.08	1.34	1.60	.79	2.32	1.75
Nov.	0	.55	0	.23	.35	.26	.30	.15	0	.62
Dec.	0	.18	0	.39	.45	.51	.30	.06	.40	.36
Yearly	26.82	25.98	24.17	11.32	20.16	11.96	12.55	5.39	14.89	12.84

RAINFALL ON THE RIO GRANDE WATERSHED

IN INCHES

In the United States

Month	Terlingua Creek Station		Maverick Ranger Station		Johnson Ranch		Buttrill Ranch		Santiago Peak Ranch	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.70	.30	1.31	.76	.50	.44	2.10	.76	2.00	.82
Feb.	.30	.16	.83	.42	.45	.17	.21	.38	.60	.60
Mar.	.30	.18	.11	.08	.20	.18	.52	.15	.50	.09
Apr.	0	.54	0	.05	0	.53	.03	.64	3.00	1.04
May	0	.54	.20	.74	.40	.96	2.00	.99	2.00	.96
June	.50	.64	1.40	.75	.10	1.08	1.50	.83	2.90	1.88
July	.70	.64	1.62	1.46	.55	1.18	.30	1.02	5.20	1.50
Aug.	.30	.49	.29	.42	.30	.81	.86	.48	2.20	2.34
Sept.	1.15	.60	1.31	1.25	.80	1.22	4.70	.94	8.60	2.36
Oct.	1.80	.59	1.32	.99	1.50	.59	3.41	.89	3.10	1.21
Nov.	.10	.07	.08	.08	.10	.19	0	.27	0	.07
Dec.	.30	.18	.39	.12	.40	.30	.13	.02	0	T
Yearly	6.15	4.93	8.86	7.12	5.30	7.65	15.76	7.37	30.10	12.87

Month	Maravillas Gap Ranch		Ray Willoughby Ranch		J. F. Woodward Ranch		Kokernot Ranch - Headquarters		A. M. Potter Ranch	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	2.00	1.29	1.40	.60	1.33	.74	1.80	.55	1.50	.32
Feb.	.49	.89	.45	.59	.41	.67		.47	2.10	.52
Mar.	.36	.21	.82	.37	.80	.20		.12	.20	.03
Apr.	.18	.33	0	.45	0	.74		.46	0	.28
May	1.22	.95	1.00	1.06	.41	1.15		.53	.40	.65
June	2.09	1.03	1.65	1.61	2.00	1.57		.69	1.70	.81
July	.78	.77	1.05	2.66	1.84	1.36	2.70	1.20	1.30	1.20
Aug.	1.66	1.48	1.76	2.06	.33	2.15	.90	.90	4.90	1.02
Sept.	2.51	.85	9.82	2.55	4.55	1.93	2.30	.75	3.20	1.55
Oct.	2.45	1.83	1.70	.76	2.30	1.03		.66	.50	.21
Nov.	0	0	.10	.14	.04	.09		.30	2.10	.47
Dec.	.25	.10	0	.09	.09	.11		.10	.30	.10
Yearly	13.99	9.73	19.75	12.94	14.10	11.74		6.73	18.20	7.16

Month	Sand Valley Ranch		Persimmon Gap Ranger Station		Black Gap Game Refuge		Dove Mountain Ranch		Tesnus	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.65	.72	1.16	.47	1.43	.43	2.00	.96	1.05	.74
Feb.	.40	.34	.70	.39	.62	.52	.25	.16	.65	1.46
Mar.	0	.24	.21	.16	.66	.28	.65	.30	.54	.36
Apr.	.50	.24	T	.44	0	.39	0	.35	.12	.52
May	1.50	.98	.80	.73	1.23	.90	1.31	.92	.97	.90
June	1.00	1.13	1.45	1.13	1.18	.65	0	.96		
July	2.85	1.57	1.27	1.12	2.68	.99	1.98	.89		
Aug.	.40	.35	.44	.50	.69	.53	.37	.33		
Sept.	4.45	1.32	4.63	1.05	3.73	1.38	1.09	.94	Discontinued	
Oct.	1.30	.71	2.86	.80	3.91	.71	2.05	.55		
Nov.	0	.25	.10	.14	0	.19	0	.22		
Dec.	.30	.24	.26	.15	.39	.28	0	.25		
Yearly	14.35	8.09	13.88	7.08	16.52	7.25	9.70	6.83		

Month	Garner Ranch		Steve Stumberg Ranch		McGonagill Ranch Headquarters		McGonagill Ranch East Mill		Arvin and Harkins Header	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.09	.54	.50	.69	1.70	.51	1.60	.49	1.40	.57
Feb.	.60	.28	.75	.42	.62	1.20	.60	.14	.90	.58
Mar.	.40	.16	.88	.25	.60	.45	1.40	.61	1.00	.38
Apr.	0	.50	0	.72	0	.48	.60	.79	.30	1.43
May	.71	1.01	.80	1.59	.32	.77	.70	.62	.60	1.40
June	1.59	.95	1.80	1.12	1.64	1.62	2.10	1.35	1.80	1.36
July	.08	.72	0	1.64	.68	1.27	.20	.93	.20	.77
Aug.	0	.91	.40	1.20	1.33	1.21	2.25	.94	1.30	1.32
Sept.	4.30	1.11	6.92 *	2.10	6.17	1.50	9.01	2.03	9.90	2.05
Oct.	2.40	1.24	3.68 *	1.23	2.20	.64	2.80	.77	3.20	1.51
Nov.	0	.11	0	.39	0	.24	0	.27	.10	.27
Dec.	.16	.12	.10	.64	0	.14	0	.33	0	.24
Yearly	11.33	7.65	15.83	11.99	15.26	10.03	21.26	9.27	20.70	11.88

* Estimated

RAINFALL ON THE RIO GRANDE WATERSHED

IN INCHES

In the United States

Month	Arvin and Harkins Bean		Arvin and Harkins Camel		Arvin and Harkins Headquarters		Arvin and Harkins Monty Corder		E. W. Hardgrave Ranch	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.70	.60	1.60	.46	1.80	.61	2.30	.66	2.25	.76
Feb.	.60	.52	1.50	.52	1.60	.56	2.20	.60	1.24	.74
Mar.	1.10	.40	1.00	.41	.90	.36	.90	.42	1.16	.39
Apr.	.20	1.37	.10	1.34	.10	1.22	.30	1.33	.36	1.07
May	.70	1.21	1.40	1.16	.90	1.46	.30	1.14	1.93	1.70
June	1.80	1.32	2.50	1.16	2.60	1.16	2.00	1.43	1.18	1.20
July	1.00	.83	1.00	.68	.30	.73	.90	.73	0	.41
Aug.	2.80	1.56	1.30	.87	1.60	1.17	1.40	.75	2.60	.80
Sept.	5.70	1.56	4.50	1.36	3.60	1.23	4.70	1.42	4.12	1.52
Oct.	2.70	1.64	2.40	1.17	2.30	1.33	3.00	1.18	2.65	1.29
Nov.	.30	.23	.20	.19	.10	.19	.10	.24	.35	.37
Dec.	0	.27	0	.25	0	.24	0	.23	.07	.18
Yearly	18.60	11.51	17.50	9.57	15.80	10.26	18.10	10.13	17.91	10.43

Month	Adams Bros. Ranch		Bricker Ranch		Dryden		Cedar Service Station		Pumpville	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.90	.64	1.69	.52	1.66	.62	2.34	.87		.51
Feb.	1.10	.56	.89	.51	1.01	.46	1.28	.86		.42
Mar.	.78	.35	.75	.41	.70	.39	.91	.35	.28	.44
Apr.	.64	.83	.17	1.42	.58	.88	.02	.68	.32	1.22
May	1.37	1.39	.77	1.73	1.69	2.05	1.41	3.24	.30	1.94
June	.67	1.23	.87	1.41	.76	1.00	.91	1.59		1.58
July	.06	.35	.40	.22	0	.99	.04	.49		.32
Aug.	.91	.71	.73	.37	.26	1.21	.99	.90		.44
Sept.	9.17	2.72	4.11	1.70	7.14	1.79	4.51	1.98		1.76
Oct.	3.01	1.28	2.82	1.16	2.69	1.16	2.81	1.32		1.42
Nov.	.34	.30	.42	.26	.28	.36	.51	.60		.14
Dec.	0	.17	0	.17	0	.48	.30	.18		.48
Yearly	19.95	10.53	13.62	9.88	16.77	11.39	16.03	13.06		10.67

Month	C. L. Arthur Ranch		Hoffman Ranch		Ingram Ranch		Shumla Bend		Martin King Ranch	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.55	1.00	1.46	.92	2.40	1.04	1.76	.78	2.50	.86
Feb.	.70	.43	.84	1.12	.87	.74	.40	.69	.66	.64
Mar.	.70	.34	1.09	.36	1.14	.63	.11	.38	.30	.15
Apr.	0	.41	.57	.34	0	1.11	0	1.08	.12	.92
May	.30	1.35	0	.88	1.30	3.80	.52	3.65	2.49	2.84
June	1.83	1.57	2.38	1.17	5.62	1.87	2.17	.79	1.71	.74
July	3.42	2.54	2.34	1.92	0	.27	T	.08	.19	.14
Aug.	4.00	1.99	3.85	1.72	.73	.24	.38	1.86	.12	.60
Sept.	3.80	1.57	3.55	1.54	5.15	2.52	4.86	1.90	6.62	2.70
Oct.	2.30	1.00	1.66	1.24		2.02	2.60	1.66	3.84	1.92
Nov.	.13	.30	.28	.35	T	.42	.16	.46	.17	.51
Dec.	0	.19	0	.16	0	.22	.04	.16	.09	.19
Yearly	18.73	12.69	18.02	11.72		14.88	13.00	13.49	18.81	12.21

Month	Comstock		Goodenough		Upper Devils		Lucius Hinds Ranch		Devils Lake	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	2.68	.75		Record	2.03	.74	2.91	1.03	2.70	.76
Feb.	1.86	.82		began	2.49	1.04	2.78	1.20	3.24	.81
Mar.	.67	.72		August 1,	.78	.47	.79	.54	.86	.73
Apr.	.14	1.56		1958	0	1.39	0	1.33	.58	1.74
May	1.52	2.18			2.49	2.35	2.46	2.71	2.34	1.82
June	4.20	2.17			4.18	1.48	4.12	1.65	5.28	2.21
July	.84	.86			.40	.44	.39	.10	.73	.79
Aug.	.84	1.90	.33		.40	.72	.39	1.13	.23	1.26
Sept.	5.96	1.83	7.07		4.35	1.94	4.29	1.89	6.39	1.75
Oct.	3.07	1.44	5.40		2.92	2.10	2.88	1.84	5.35	1.59
Nov.	.33	.54	.11		0	.45	0	.59	.08	.62
Dec.	.08	.77	.10		.47	.35	.46	.46	.29	.70
Yearly	22.19	15.54			20.51	13.47	21.47	14.47	28.07	14.78

RAINFALL ON THE RIO GRANDE WATERSHED

IN INCHES

In the United States

Month	Wardlaw Ranch		Diablo Dam Site		Armistead Ranch		Maverick County Canal Headgate		Las Moras Creek	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	3.04	1.14	2.27	.70	4.31	.84	2.30	.54	2.44	Record
Feb.	2.17	1.06	1.71	.69	3.90	1.13	2.40	1.24	2.30	began
Mar.	.71	.45	.69	.45	1.15	1.08	1.30	.70	.85	January 1,
Apr.	.17	1.36	T	.95	.90	1.87	.69	1.63	.65	1958
May	5.33	3.08	5.24	2.26	4.94	2.47	4.95	2.46	3.52	
June	5.32	2.21	2.55	.89	15.37	3.99	2.90	1.64	12.32	
July	1.00	.33	.23	.28	2.20	.88	3.00	1.71	1.70	
Aug.	.29	1.52	.20	.80	1.60	1.89	1.10	1.52	.84	
Sept.	5.41	2.58	5.63	2.35	7.87	4.28	4.60	2.59	8.04	
Oct.	4.24	1.97	4.65	2.43	4.20	2.79	4.48	1.76	4.86	
Nov.	.08	.68	.20	.60	.44	.83	.25	.46	.45	
Dec.	.11	.27	.03	.16	.11	.37	.31	.50	.45	
Yearly	27.87	16.65	23.40	12.56	46.99	22.42	28.28	16.75	38.42	

Month	Maverick Power Plant		Tortuga Ranch		El Indio		Wuensche Farm		Keisling Farm	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	3.19	.81	2.61	.56	3.86	.89	3.37	.86		Record
Feb.	1.77	.72	1.26	.43	1.53	.83	1.66	1.17		began
Mar.	.92	1.16	.40	.46	.60	.59	.62	.66		December
Apr.	.30	1.68	.08	1.71	.60	1.33	.41	1.56		1958
May	3.38	2.70	2.42	3.52	1.95	3.47	3.65	2.69		
June	10.05	2.62	3.56	1.07	3.31	1.58	2.97	1.09		
July	.69	.91	0	.95	.69	.63	1.73	.80		
Aug.	1.25	1.72	1.10	2.51	2.31	2.17	2.85	1.47		
Sept.	9.39	2.98	10.35	3.38	8.10	3.15	9.28	3.40		
Oct.	7.07	2.06	7.10	1.55	5.87	1.41	4.55	1.69		
Nov.	.41	.67	.50	.39	.52	.54	.40	.64		
Dec.	.42	.46	.50	.38	.80	.70	.80	.48	.79	
Yearly	38.84	18.49	29.88	16.91	30.14	17.29	32.29	16.51		

Month	Cuervo Creek		Apache Ranch		Justapor Ranch		Santa Ysabel Farm		Laredo Water Plant	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	3.20	1.10	7.00	1.62	3.20	.73	4.69	1.02	3.87	.89
Feb.	1.50	.88	2.75	1.15	6.70	1.57		.49	3.05	.75
Mar.	.40	.22	.40	.08	.50	.22		.26	.14	.60
Apr.	.30	1.38	.50	1.31	.20	2.20		1.04	.04	1.06
May	1.70	2.20	4.40	2.89	4.50	2.53		2.26	2.58	2.58
June	4.40	1.61	2.80	.59	.24	.79	1.35	1.00	1.19	2.02
July	2.40	.93	3.40	1.93	T	.26		.15	4.08	1.28
Aug.	2.40	1.89	.90	2.50	1.25	1.05		3.35	3.28	1.52
Sept.	9.20	3.49	8.60	4.48	5.15	2.00		1.88	4.08	2.93
Oct.	3.65	1.93	7.80	3.31	4.10	2.05		1.59	8.78	1.70
Nov.	.22	.62	3.60	.95	2.55	1.19	1.21	1.25	.56	.80
Dec.	.60	.44	1.00	.80	.20	.90	.55	.59	.35	.95
Yearly	29.97	16.69	43.15	21.61	28.59	15.49		14.88	32.00	17.08

Month	Fort McIntosh		Corralitos Ranch		Huisache Ranch		Zapata Water Plant		Arroyo Tigre Chiquito	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	4.39	.75	5.10	.93	6.20	1.47	5.95	1.37	4.50	1.42
Feb.	3.11	.85	1.50	.49	1.40	.70	1.40	.59	1.70	.95
Mar.	.21	.74	.40	.23	.30	.51	.30	.56	.30	.30
Apr.	.24	1.31	0	.88	.10	.82	.10	1.06	.10	1.33
May	2.12	2.69	4.05	1.45	5.10	1.71	9.41	2.94	4.10	1.72
June	1.24	2.06	.70	1.11	1.50	1.48	.83	1.35	1.90	1.91
July	4.76	1.48	3.30	.91	1.90	.99	T	.56	1.80	.65
Aug.	4.79	1.74	.40	2.10	.70	1.48	.76	1.84	1.90	1.05
Sept.	3.95	2.77	3.85	1.98	3.86	2.40	4.48	2.91	4.89	2.82
Oct.	7.84	1.68	6.45	2.14	8.74	2.99	6.62	2.11	7.61	2.48
Nov.	.47	1.14	.20	.55	.30	.89	.40	.88	.45	1.06
Dec.	.45	.86	.10	.22	.30	.40	.38	.38	.50	.34
Yearly	33.57	18.07	26.05	12.99	30.40	15.84	30.63	16.55	29.75	16.03

RAINFALL ON THE RIO GRANDE WATERSHED

IN INCHES

In the United States

Month	Falcón Dam		Roma		Garciaville		Los Ebanos		La Joya	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	4.97	.83	4.91	.91	3.87		4.40		5.13	
Feb.	1.93	.61	3.10	.99	2.06		1.95		1.77	
Mar.	.24	1.01	.26	.95	.12		.30		.19	
Apr.	.14	1.19	.33	1.32	0	2.02	0	3.52	.11	2.14
May	7.03	2.39	5.42	1.89	3.11	2.08	1.80	1.12	1.55	1.56
June	8.29	2.28	2.42	2.16	.45	2.39	.90	2.52	1.10	1.82
July	1.83	.57	1.53	.93	1.92	.96	.80	.40	.60	.30
Aug.	3.13	2.35	2.50	2.09	.32	.17	2.10	1.10	2.70	1.35
Sept.	2.84	2.34	9.47	3.45	3.40	1.90	3.60	1.82	2.84	1.60
Oct.	9.97	2.42	10.15	2.67	9.51	4.81	6.40	4.25	7.30	4.18
Nov.	.33	.78	.82	.60	.61	1.22	1.85	1.64	.86	1.48
Dec.	.56	.35	.16	.36	.31	.33	.40	.20	.90	.45
Yearly	41.26	17.12	41.07	18.32	25.68		24.50		25.05	

Month	HCWCID #6		Peñitas		Mission Pump		O. C. Dale Farm		HCWCID #15	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	5.66	1.14	4.71		5.77	.94	9.14	1.64	9.38	1.50
Feb.	1.98	1.06	2.28		2.52	1.09	3.24	1.19	2.38	.98
Mar.	.52	.65	.67		.85	.81	.81	.65	.57	.89
Apr.	.03	1.29	0		0	1.29	.13	1.70	.08	1.28
May	2.54	1.71	1.28		1.57	1.37	.73	1.51	1.10	1.41
June	1.77	1.39	1.36		2.71	2.01	2.74	2.23	1.97	2.00
July	.72	.57	1.26	.63	.45	.96	.83	.92	.77	.86
Aug.	.25	1.62	1.26	.63	1.30	1.56	.04	1.24	0	1.16
Sept.	5.58	2.35	3.95	2.00	4.30	1.66	7.95	2.54	3.35	2.62
Oct.	8.44	3.59	8.66	5.22	9.66	3.65	6.85	3.36	9.34	2.68
Nov.	.72	1.00	.76	1.31	.99	1.07	.98	1.27	.81	.96
Dec.	.78	.51	.65	.86	.91	.80	.88	.76	1.01	.72
Yearly	28.99	16.88	26.84		31.03	17.21	34.32	19.01	30.76	17.06

Month	Edinburg Filtration Plant		HCWID #6		CCWCID #3 (Avg. of 6 gages)		La Feria Pumping Plant		CCWCID #19	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	9.90	1.62	6.05	1.05	4.88	.91	4.35	.80	3.94	.78
Feb.	2.21	1.00	2.83	1.16	5.19	1.41	4.70	1.35	3.85	1.17
Mar.	.73	.77	.58	.68	1.01	.83	.67	.76	.61	.60
Apr.	.20	1.92	T	1.92	0	2.15	0	1.68	0	1.50
May	1.38	1.43	1.16	1.37	1.35	1.68	1.75	1.92	1.06	1.53
June	1.45	1.90	1.92	2.08	4.15	2.89	3.05	2.36	2.83	2.55
July	1.51	.76	1.45	1.31	1.08	1.09	1.60	1.56	.87	.78
Aug.	.02	1.08	0	1.21	0	2.71	.20	1.84	0	2.07
Sept.	3.72	2.32	7.44	3.25	7.58	5.66	7.70	5.94	5.07	3.78
Oct.	8.12	2.92	10.44	3.04	11.64	3.73	9.80	4.50	8.70	2.75
Nov.	1.16	1.11	1.23	1.23	1.67	1.67	2.05	1.64	1.25	1.38
Dec.	1.37	.69	.98	.68	3.25	.89	2.70	.92	3.04	.90
Yearly	31.77	17.52	34.08	18.98	41.80	25.62	38.57	25.27	31.22	19.79

Month	San Benito Pump		Whipple Farm		CCWID #11 (Avg. of 18 gages)		Los Fresnos Pump			
	1958	Average	1958	Average	1958	Average	1958	Average		
Jan.	4.49	1.25	5.25	1.09	6.02	1.11	7.00	1.21		
Feb.	6.35	.92	8.80	2.07	7.28	1.93	8.00	2.20		
Mar.	.25	1.02	1.15	.84	.41	1.07	.30	.54		
Apr.	0	1.19	.10	1.71	0	1.46	0	1.62		
May	.93	2.36	1.55	2.46	2.82	1.33	1.40	1.48		
June	1.62	2.32	.40	2.30	0	1.50	2.40	3.96		
July	.93	1.56	1.21	2.32	1.51	1.45	2.20	2.02		
Aug.	0	2.02	0	1.64	2.16	2.42	1.00	1.81		
Sept.	3.63	3.78	5.70	4.78	4.91	4.21	4.30	5.26		
Oct.	7.72	2.35	13.60	3.81	1.38	2.08	16.65	5.56		
Nov.	1.90	.92	2.15	2.16	1.86	1.85	1.60	2.01		
Dec.	1.87	1.31	1.86	.78	3.26	.84	1.90	.70		
Yearly	29.69	21.00	41.77	25.96	31.61	21.25	46.75	28.37		

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Tabulated below, in downstream order, are monthly records of Mexican rainfall stations with averages for their periods of record. For location, elevation, period of record, type of gage in use, watershed subdivision in which the station is located, and the observer, see alphabetical listing of these stations shown on pages 107 through 109 of this bulletin. These rainfall records have not been published elsewhere. Records of daily rainfall for all stations operated by the Mexican Section of this Commission appear in their issue of Water Bulletin Number 28; for all other stations, the daily records are on file in the office of the Mexican Section.

Detailed listings of the months and years for which records are available through 1956 may be found under "Index to Precipitation Records" in Water Bulletins 10, 14, 22 and 26.

Month	Juárez, Chihuahua		"Garita" Km. 28, Chihuahua		Zaragoza, Chihuahua		San Agustín, Chihuahua		Guadalupe, Chihuahua	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.07	.38					1.04		.76	
Feb.	1.52	.45			1.28		1.10		1.00	
Mar.	3.24	.43			3.14		1.89		2.62	
Apr.	.12	.38			.18		.43		.36	
May	1.08	.44	.54		.96		.62		.19	
June	.68	.65	.62		.40		1.79		.35	
July	1.21	1.27	.06		.92		.67		.62	
Aug.	1.41	1.60	1.96		.19		.96		1.71	
Sept.	5.90	1.38	5.35		7.58		2.99		2.97	
Oct.	1.60	1.12	3.13		.50		2.43		2.33	
Nov.	.32	.54	.18		.18		.05		.05	
Dec.	0	.52	0		0		0		0	
Yearly	18.15	9.16					13.97		12.96	

Month	Samalayuca, Chihuahua		Tinajas, Chihuahua		San Antonio, Chihuahua		Los Barriles, Chihuahua		Praxedis G. Guerrero Chihuahua	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.73		.20						.71	
Feb.	1.34		1.06						.80	
Mar.	1.79		1.29						1.52	
Apr.	.49		.20						.26	
May	1.02		1.06						.48	
June	1.67		.54						.86	
July	1.08		.31		2.08		1.46		.70	
Aug.	1.61		2.11		1.99		2.06		.92	
Sept.	5.39		1.54		2.95		4.31		2.95	
Oct.	2.19		1.11		2.29		3.27		3.09	
Nov.	.35		.24		.64		.44		.35	
Dec.	0		0		0		0		0	
Yearly	17.66		9.66						12.64	

Month	Porvenir, Chihuahua		Vado de Cedillos, Chihuahua		Luis L. León, Chihuahua		Felix U. Gómez (Los Lamentos), Chihuahua		Bachiniva, Chihuahua	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.64						.39	.36	.30	.53
Feb.	.63						.79	.42	.22	.08
Mar.	1.37						1.30	.42	.93	.44
Apr.	.12		.33		.51			.17	.28	.17
May	.85		.76		.31			.05	0	.11
June	.31		.38		.88		1.56	.44	1.38	1.23
July	1.52		1.26		.68		1.85	2.45	5.41	6.05
Aug.	.75		.44		.57		1.36	2.66	3.37	4.36
Sept.	1.39		2.41		2.84		3.13	1.38	4.57	1.57
Oct.	1.90		1.87		2.92		2.44	1.56	3.15	1.33
Nov.	.45		.09		.76		.31	.30	.63	.25
Dec.	.05		0		0		0	.16	T	.12
Yearly	9.98							10.37	20.24	16.24

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Month	Cd. Guerrero, Chihuahua		La Junta, Chihuahua		Siquirichic, Chihuahua		Cuauhtémoc, Chihuahua		Balleza, Chihuahua	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.08	.61	1.84	1.11	T	T	.12	.28	.75	.30
Feb.	.59	.40	1.28	.53	1.04	.62	.20	.12	T	.34
Mar.	.93	.22	1.70	.35	.39	.57	.08	.11	T	.09
Apr.	.22	.17	.25	.19	.18	.09	.16	.20	T	.17
May	.08	.25	.03	.24	T	T	.22	.21	.19	.15
June	1.87	1.61	3.72	1.60	2.93	1.66	1.87	1.46	3.16	1.23
July	3.13	4.44	5.74	5.22	4.49	2.47	4.41	4.84	4.19	4.47
Aug.	5.41	5.03	6.00	4.93	3.41	5.82	2.20	3.93		4.51
Sept.	5.40	3.15	3.38	2.26	7.01	4.16	8.16	2.58	10.73	3.58
Oct.	2.41	1.25	1.47	1.29	2.52	1.64	2.32	1.19	3.89	.84
Nov.	.71	.50	1.43	.36	.89	.43	.63	.20	T	.51
Dec.	T	.67	T	.79	.61	.40	T	.40	.96	.45
Yearly	21.83	18.30	26.84	18.87	23.47	17.86	20.37	15.52		16.64

Month	El Vergel, Chihuahua		El Sitio, Chihuahua		El Maguey, Chihuahua		San Isidro, Chihuahua		Santa Rita, Chihuahua	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	2.74	1.86	1.02	.50	.43	.26	.79		1.18	.73
Feb.	.59	.45	.43	.19	.20	.10	.24		.08	.54
Mar.	1.61	1.77	.12	.09	.26	.17	.12		.10	.07
Apr.	.16	.32	.08	.04	.02	.03	T		0	0
May	1.83	1.06	.31	.78	.37	.43	.28		.55	.22
June	4.23	2.55	1.22	1.26	1.65	1.33	2.83		1.36	.58
July	6.44	5.60	2.09	3.20	2.99	4.54	5.49		1.65	1.65
Aug.	6.79	6.97	5.43	4.66	4.39	3.86	6.75	5.34	1.89	1.09
Sept.	11.79	6.78	9.37	4.31	9.98	4.45	14.69	7.54	6.43	2.42
Oct.	3.58	2.41	3.46	1.07	4.86	1.44	3.15	1.89	3.98	2.14
Nov.	.77	.40	.28	.07	.12	.15	.28	.20	.20	
Dec.	1.22	1.58	.39	.24	.04	.06	.31	.26	.91	
Yearly	41.75	31.75	24.20	16.41	25.31	16.82	34.93		18.33	

Month	La Boquilla, Chihuahua		Ojo Caliente, Chihuahua		San Antonio, Durango		Jiménez, Chihuahua		Escalón, Chihuahua	
	1958	Average	1958	Average	1958	Average	1958	Average		1957
Jan.	.80	.31	.94	.15	1.48	.38	.87	.22		.28
Feb.	.21	.14	.14	.11	.12	.08	.12	.03		.45
Mar.	.03	.17	.04	.18	T	.06	0	.10		0
Apr.	T	.17	T	.12	.04	.22	0	.11		0
May	.08	.58	.37	.46	.63	.51	.65	.57		1.75
June	.72	1.42	.87	1.55	3.39	1.81	.94	.34		0
July	2.31	2.93	1.77	3.27	1.57	3.91	2.65	2.66		1.16
Aug.	2.28	2.89	1.42	2.12	1.79	3.40	2.34	1.62		2.62
Sept.	8.53	2.98	8.58	2.63	16.38	4.15	10.93	2.42		.59
Oct.	3.04	.95	5.31	1.21	4.41	1.20	6.77	1.30		T
Nov.	.30	.37	.39	.11	.10	.22	.30	.15		.10
Dec.	.37	.39	.43	.21	.75	.29	.47	.24		T
Yearly	18.67	13.30	20.26	12.12	30.66	16.23	26.04	9.76		6.95

Month	Escalón, Chihuahua		Parral, Chihuahua		Camargo, Chihuahua		Rosetilla, Chihuahua		El Pollito, Chihuahua	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.91	.60	.39	.16	.94	.49	1.90	.53	1.26	.71
Feb.	.31	.38	.04	.18	.08	.16	.07	.07	.49	.34
Mar.	T	T	.04	.12	0	.02	T	.14	.04	.02
Apr.	T	T	T	.19	0	0	0	.17	T	.06
May	T	.88	.04	.37	.81	1.28	.45	.27	.47	.66
June	.14	.07	.20	1.49	.67	.49	T	1.08		.18
July	1.40	1.28	1.38	4.10	1.81	2.06	2.73	2.42		1.14
Aug.	1.56	2.09	2.78	3.94	1.35	1.32	1.72	2.38		2.42
Sept.	4.78	2.68	18.94	4.27	6.95	3.54	7.72	2.20		.41
Oct.	4.94	2.47	5.04	1.24	4.29	2.34	2.84	.86		.37
Nov.	.20	.15	.93	.55	2.17	.93	T	.21		.03
Dec.	.47	.24	.47	.44	1.38	.62	0	.28		.01
Yearly	14.71	10.84	30.25	17.05	20.45	13.25	17.43	10.61		6.35

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Month	Villalba, Chihuahua		Las Virgenes, Chihuahua		La Soledad, Chihuahua		Delicias, Chihuahua		Las Burras, Chihuahua	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.44	.42	1.64	.35	.94	.54	1.08	.40	1.43	.28
Feb.	.05	.08	.43	.06		.02	.28	.11	.59	.13
Mar.	.04	.04	.02	.04		.12	T	.11	.02	.13
Apr.	.10	.11	.01	.10	T	.16	T	.19	.03	.09
May	.20	.27	.47	.26	.67	.36	.35	.25	.05	.41
June	.12	.78	.83	.97	T	1.08	.47	1.12	.52	.90
July	2.58	3.59	1.89	2.24	1.63	1.55	2.42	2.45	2.00	2.60
Aug.	3.05	2.68	1.37	2.02	.91	2.15	1.95	2.58	1.81	2.20
Sept.	10.12	2.87	8.90	1.85	10.87	5.94	8.47	2.20	10.79	2.29
Oct.	2.89	1.17	3.89	.78	3.50	1.89	2.36	.89	1.76	.60
Nov.	.65	.24	.11	.13	0	T	.04	.24	.19	.11
Dec.	.47	.34	.39	.32	.39	.20	.41	.36	.81	.20
Yearly	21.71	12.59	19.95	9.12		14.01	17.83	10.90	20.00	9.94

Month	Zubia, Chihuahua		Planta Zootécnica, Chihuahua		Chihuahua, Chihuahua		Los Ojos, Chihuahua		Las Choyas, Chihuahua	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.		T	1.22		1.00	.30	.67	1.20	1.61	.71
Feb.		.06	.57		.48	.20	.65	.46	1.08	.63
Mar.		0	.04	.08	.04	.21	.12	.30	.20	.07
Apr.		.02	.23	.16	.08	.17	0	.32	0	.02
May		.57	.63	1.12	.18	.38	.12	1.70	.67	.35
June	.24	.60	1.04		.64	1.40	.21	.10	.16	.42
July	5.30	3.43	2.83		1.39	3.39	4.80	4.76	1.67	1.83
Aug.	4.78	4.14	2.20	3.42	1.58	3.33	2.87	2.06	1.67	2.83
Sept.	9.67	3.38	7.72	3.93	4.44	2.99	12.20	6.16	4.63	2.28
Oct.	1.56	1.34	2.64	1.93	1.07	.88	1.81	1.79	2.72	1.88
Nov.			.39	.26	.45	.45	.16	.14	.87	.34
Dec.	T	.12	0	T	T	.37	0	.10	0	.12
Yearly			19.51		11.35	14.07	23.61	19.09	15.28	11.48

Month	Los Pozos, Chihuahua		El Nogal, Chihuahua		Maclovio Herrera, Chihuahua		Mayjoma, Chihuahua		Chilicote, Chihuahua	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.81	.87	.63	.23	2.09	.41	1.61	.92	1.71	1.23
Feb.	.94	.45	.55	.18	.79	.16	.87	.67	1.18	.59
Mar.	.16	.13	.02	T	T	.21	.12	.04	.04	.02
Apr.	0	.01	T	.02	0	.22	0	.05	0	0
May	.43	1.07	.06	.13	T	.59	.45	.68	.28	.14
June	2.30	1.15	.24	.15	0	1.29	1.06	.55	.43	.14
July	2.58	2.03	2.72	2.08	.71	2.68	5.33	2.86	1.57	1.03
Aug.	3.09	2.72	2.60	2.59	0	2.62	2.54	2.45	.75	1.86
Sept.	6.12	3.06	7.52	1.59	6.46	3.35	13.41	4.23	7.99	3.04
Oct.	1.38		1.38	.63	2.17	.80	4.55	1.44	1.69	1.35
Nov.	.37		.39	.15	.61	.15	.33	.29	.59	.35
Dec.	.02	.01	0	.12	.18	.82	.43	.22	.04	.02
Yearly	19.20		16.11	7.87	13.01	13.30	30.70	14.40	16.27	9.77

Month	Ojinaga (IB&WC), Chihuahua		Ojinaga (M.S. of Mexico), Chihuahua		Santa Rosa, Coahuila		Cd. Acuña, Coahuila		Palestina, Coahuila	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.72	.67	2.05	.31	2.83		3.21	.68	3.25	1.12
Feb.	1.17	.47	1.14	.20	.50		2.19	.49	2.24	.99
Mar.	.17	.05	.16	.18	1.50		1.24	1.19	.57	.73
Apr.	T	.31	T	.25			.49	1.47	.63	1.56
May	.06	.31	.20	.52	1.00		7.85	2.78	2.07	2.88
June	.29	.43	.71	.76	1.60		4.53	1.78	4.94	2.02
July	1.20	.50	1.02	1.07	4.50		.49	.21	.35	1.81
Aug.	2.51	1.33	1.73	1.24			.53	1.15	.63	2.11
Sept.		.37	6.97	1.26	3.50		7.58	3.05	6.73	3.00
Oct.	1.78	1.02	2.80	.96	3.00		4.61	1.67	4.49	1.39
Nov.	.17	.18	.20	.34			.30	.51	.16	.72
Dec.	.12	.11	T	.38	.30		.22	.37	.33	.92
Yearly		5.75	16.98	7.47			33.24	15.35	26.39	19.25

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Month	Jiménez, Coahuila		El Remolino, Coahuila		Piedras Negras, Coahuila		Allende, Coahuila		Villa Guerrero, Coahuila	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	3.50	.84			3.47	.81	2.80	.68		
Feb.	2.31	.86			2.17	.76	1.36	1.32		
Mar.	1.00	.94			.62	.85	.18	.41		
Apr.	.73	1.56			.97	2.21	.12	1.23		
May	4.15	3.58			3.50	3.14	.93	2.44		
June	9.72	2.22	4.27		8.94	1.78	4.88	1.95	5.22	
July	1.27	.68	0		.23	1.42	.57	1.24	.89	
Aug.	.83	1.96	.30		1.83	2.33	.57	2.03	1.64	
Sept.	5.18	2.24	11.08		10.51	3.16	10.98	2.79	10.57	
Oct.	5.73	1.97	5.54		9.71	2.56	6.32	1.74	5.08	
Nov.	.35	.78	.39		.46	.71	.41	.44	0	
Dec.	.41	.48	.59		.57	.59	.94	.53	1.02	
Yearly	35.18	18.11			42.98	20.32	30.06	16.80		

Month	Villa Hidalgo, Coahuila		Rancho los Vidrios, Tamaulipas		Nuevo Laredo (M. S. of Mexico), Tamps.		Nuevo Laredo (IB&WC), Tamps.		Rancho San Juan de la Palma, Tamps.	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	4.61	.87	4.16	2.14	4.86	.82	4.01	.57	3.27	1.16
Feb.	3.09	.82	3.30	2.33	4.15	.82	3.24	.74	1.59	1.10
Mar.	.35	.57	.15	.14	.06	.71	.10	.36	.43	1.01
Apr.	1.06	1.48	.11	.84	.39	1.12	.30	.61	.12	.74
May	1.30	3.26	6.93	5.50	1.71	2.44	1.33	2.62	5.47	1.76
June	2.36	.79	.91	.84	1.67	1.83	1.24	1.45	1.14	1.19
July	2.80	.66	3.02	1.51	5.94	1.39	4.48	1.01	1.14	.62
Aug.	2.05	1.49	.17	.50	3.37	1.29	3.42	1.34	.25	1.48
Sept.	7.01	2.92	6.22	3.13	3.84	2.60	3.67	1.94	3.89	3.14
Oct.	10.35	2.51	9.72	4.37	7.21	1.44	7.78	1.45	8.23	2.22
Nov.	.75	.72	.22	1.20	.31	.88	.48	.78	.19	1.47
Dec.	.63	.59	.45	.50	.37	.94	.33	.30	.43	.46
Yearly	36.36	16.68	35.36	23.00	33.88	16.28	30.38	13.17	26.15	16.35

Month	Conchos, Coahuila		Muzquiz, Coahuila		Nueva Rosita, Coahuila		Sabinas, Coahuila		Villa Juárez, Coahuila	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.22	.38		.87	1.66	.72	1.52	.71	2.64	.65
Feb.	1.00	.50		.59	1.18	.52	.76	.88	.75	.44
Mar.	0	.33		.96	.15	.33	.08	.49	.18	.26
Apr.	0	1.08	.17	1.14	.09	1.17	.01	1.23	.04	1.01
May	3.88	2.75	3.22	3.69	3.01	2.89	3.53	2.92	3.66	2.15
June	1.22	.99	.63	2.90	1.43	1.81	2.35	2.02	1.06	1.03
July	0	1.82	3.21	1.92	.40	1.37	.12	1.14	3.78	.81
Aug.	.49	1.49	1.56	2.62	2.22	1.84	.07	2.34	.63	1.92
Sept.	14.96	2.88	20.73	5.21	13.13	2.55	10.67	3.58	12.24	3.28
Oct.	7.34	1.91	7.78	2.35	6.70	1.64	5.72	1.84	7.52	2.08
Nov.	.53	.68	.30	1.19	.87	.48	.61	.47	.61	.51
Dec.	.93	.34	.93	1.04	1.07	.68	1.30	.58	.77	.36
Yearly	31.57	15.15		24.48	31.91	16.00	26.74	18.20	33.88	14.50

Month	Cuatro Ciénegas, Coahuila		San Buenaventura, Coahuila		Castaños, Coahuila		Monclova, Coahuila		Progreso, Coahuila	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.98	.36	1.60	.65	1.59	.55	2.09	.48	1.83	.56
Feb.	.87	.36	.61	.48	.75	.45	.85	.48	.71	.41
Mar.	.30	.07	.24	.21	T	.29	.22	.28	.15	.22
Apr.	T	.27	.13	.53	.20	.61	.15	.54	T	1.29
May	1.34	.90	1.54	1.37	2.32	1.69	2.24	1.49	2.93	2.52
June	.14	.63	2.65	1.52	2.40	1.95	1.87	1.14	2.81	1.42
July	.06	.70	.28	1.47	1.77	1.36	.98	1.49	.24	.60
Aug.	1.42	.92	2.76	1.91	2.74	2.24	.97	1.60	.74	2.14
Sept.	7.09	1.43	6.51	2.20	8.09	2.98	9.33	2.98	11.94	3.02
Oct.	2.87	.84	3.87	1.35	2.38	1.69	3.81	1.24	8.24	2.08
Nov.	.39	.30	.69	.51	.35	.31	.51	.58	.63	.46
Dec.	.94	.44	.69	.64	.30	.31	.59	.55		.54
Yearly	16.40	7.22	21.57	12.84	22.89	14.43	23.61	12.85		15.26

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Month	Don Martín, Coahuila		Laguna de Salinillas, Nuevo León		Lampazos, Nuevo León		Anáhuac, Nuevo León		La Gloria, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	2.89	.82	3.17	.75	1.95		3.48	.80		
Feb.	1.18	.66	1.42	.70	1.08		1.34	.58		
Mar.	.18	.53	.55	.56	.33		.18	.60		
Apr.	.08	1.19	.22	.98	.12		.39	1.03		
May	5.33	2.36	3.50	2.46	2.81		5.10	2.74	3.50	
June	.87	1.64	1.85	1.29	3.88		2.03	1.40	2.78	
July	2.95	1.02	.61	.52	.77		3.05	1.27	3.79	
Aug.	1.12	1.95	2.40	2.97	1.67		.18	1.90	.61	
Sept.	11.40	3.06	13.54	3.07	12.83		9.90	2.88	10.57	
Oct.	9.00	1.76	12.66	1.96			9.41	1.60		
Nov.	.39	.58	.40	.48			.26	.53	0	
Dec.	.73	.71	.89	.54			.24	.77	0	
Yearly	36.12	16.28	41.21	16.28			35.56	16.10		

Month	Vallecillo, Nuevo León		Bustamante, Nuevo León		Sabinas Hidalgo, Nuevo León		Parás, Nuevo León		Nueva Cd. Guerrero, Tamaulipas	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.			.20				.16		5.14	1.68
Feb.			0						1.36	.80
Mar.			.04				.10		.24	.54
Apr.			0				0		.10	1.69
May			1.36		1.80		.39		4.72	1.63
June	4.45		3.39		7.57		2.47		2.99	1.94
July	1.61		0		5.83		0		1.65	.83
Aug.	0		1.22		1.96		.17		1.28	.86
Sept.	17.74		10.51		24.44		6.02		4.23	2.37
Oct.	9.76				11.35		18.11		8.56	2.45
Nov.	.18		0		.30		4.45		.65	.28
Dec.	.28		.79		.53		0		.28	.10
Yearly									31.20	15.17

Month	Cerralvo, Nuevo León		Cd. Mier, Tamaulipas		Laguna de Sánchez, Nuevo León		Villa Allende, Nuevo León		Rinconada, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	3.58	.74	5.04	1.72	.67	.43	.87	.86	.20	.18
Feb.	2.75	.62	2.72	1.64	.75	.47	1.63	1.04	.71	.38
Mar.	.29	.66	.24	1.75	.37	.52	.19	1.15	0	.20
Apr.	.24	2.02	.04	2.43	.49	1.16	.63	2.38	.71	.61
May	3.87	3.01	8.86	5.08	4.43	2.15	5.19	3.37	.04	.42
June	2.20	2.36	2.76	2.00	6.04	3.38	6.32	4.44	2.60	1.04
July	5.21	1.45	1.57	.63	2.07	2.68	10.02	3.12	T	.37
Aug.	5.21	3.32	1.50	2.26	4.65	4.62	4.29	4.90	1.65	1.35
Sept.	11.89	4.95	4.65	3.01	4.53	5.07	19.02	7.13	2.56	1.65
Oct.	11.49	2.83	9.45	2.92	15.45	3.58	19.98	6.38	2.80	.97
Nov.	.22	.69	.24	1.19	1.69	.48	3.19	1.31	.12	.22
Dec.	.05	.41	.65	.22	1.30	.53	1.41	1.08	.39	.31
Yearly	47.00	23.06	37.72	24.85	42.44	25.07	72.74	37.16	11.78	7.70

Month	Santa Catarina, Nuevo León		La Peña de San Cristobal, Nuevo León		A. Blanca Canoas, Nuevo León		Pajonál, Nuevo León		La Cruz, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.44	.83	.47		.57		.51		.67	
Feb.	.44	.40	1.02		.62		.24		.35	
Mar.	.04	.29	.39		.57		T		.31	
Apr.	.61	.65	0		.65		.24		.43	
May	.55	.67	1.50		1.59		1.83		2.56	
June	1.32	1.89	10.83		4.57		4.47		5.04	
July	1.97	1.26	3.15		1.97		1.95		2.09	
Aug.	4.13	2.94	3.74		3.60		4.37		7.76	
Sept.	10.13	3.32	5.31		6.72		6.75		6.30	
Oct.	8.57	2.00	14.33		6.74		7.54		7.70	
Nov.	1.02	.47	1.38		1.46		1.34		1.73	
Dec.	.47	.62	1.18		1.08		.55		0	
Yearly	29.69	15.34	43.30		30.14		29.79		34.94	

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Month	Rodeo, Nuevo León		Morteros, Nuevo León		Huasteca, Nuevo León		Jaguey, Nuevo León		Monterrey, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.63		.37		.39		.91		.56	.65
Feb.	.28		.22		.33		.53		.54	.63
Mar.	.12		.06		.16		.14		.14	.74
Apr.	.67		.49		.55		.47		.32	1.15
May	.94		.55		.41		.67		1.38	1.54
June	4.65		2.58		1.14		4.37		4.48	2.78
July	2.05		3.09		4.09		2.91		2.11	2.46
Aug.	2.48		2.28		3.07		1.79		2.91	3.10
Sept.	4.09		5.28		6.73		9.53		14.72	5.68
Oct.	5.75		6.54		8.62		14.15		15.14	3.34
Nov.	.91		.87		.91		1.02		.62	1.27
Dec.	.08		.47		.43		.39		.39	.78
Yearly	22.65		22.80		26.83		36.88		43.31	24.12

Month	Canadá, Nuevo León		San Nicolás, Nuevo León		Mirador, Nuevo León		Presa Estanzuela, Nuevo León		San Pablo, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.55		.67		0		0		1.65	
Feb.	.87		.77		0		.43		1.65	
Mar.	0		.12		.55		.98		.43	
Apr.	0		1.02		1.42		2.09		1.06	
May	9.65		1.06		2.36		9.65		2.56	
June	9.09		4.97		9.61		9.09		4.45	
July	1.65				7.28		7.87		8.27	
Aug.	.39				6.26		6.30		5.16	
Sept.	11.18		12.01		17.52		20.91		21.57	
Oct.	18.94		10.54		27.24		14.25		23.15	
Nov.	1.14		.72		2.01		2.32		.51	
Dec.	0		.14		1.73		0		1.61	
Yearly	53.46				75.98		73.89		72.07	

Month	Mederos, Nuevo León		Noria, Nuevo León		Puerto Gringo, Nuevo León		Túnel San Francisco, Nuevo León		Las Comitas, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.43		.59		0		.48		.49	.28
Feb.	.87		.85		0		.93		.22	.31
Mar.	.24		.49		0		.50		.18	.32
Apr.	.30		.31		0		.60		.55	.88
May	2.81		5.04		0		3.22		1.47	1.07
June	7.05		5.20		14.76		8.46		4.57	2.59
July	1.01		3.31		7.56		4.21		1.96	1.61
Aug.	5.12		3.82		6.77		6.85		3.38	3.57
Sept.	17.97		20.73		18.54		15.13		6.07	4.36
Oct.	18.62		15.64		24.41		21.34		5.99	2.26
Nov.	1.38		1.87		2.13		3.78		1.06	.46
Dec.	.61		.55		0		1.70		.39	.44
Yearly	56.41		58.40		74.17		67.20		26.33	18.15

Month	Villa de Santiago, Nuevo León		Cadereyta, Nuevo León		Cienega, Nuevo León		Manzano, Nuevo León		Puerto Mauricio Arriba, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.98	.83	.82	.78	.59		.51		0	
Feb.	.75	1.02	1.20	.94	.59		.85		1.26	
Mar.	.19	1.01	.13	1.22	.24		.43		.59	
Apr.	.28	1.66	.24	2.17	.31		.41		0	
May	2.44	2.74	.62	2.19	4.61		3.39		3.94	
June	11.43	4.98	2.40	3.31	11.54		12.87		3.70	
July	4.28	3.18	1.57	2.33	3.94		5.00		5.43	
Aug.	6.34	5.34	3.44	3.58	2.80		5.59		5.43	
Sept.	20.22	8.57	11.69	4.63	10.75		13.13		18.19	
Oct.	19.04	5.69	8.63	3.34	15.55		20.83		22.95	
Nov.	1.54	1.37	1.48	1.16	2.05		1.85		2.48	
Dec.	1.15	.99	.53	.73	3.15		1.59		.67	
Yearly	68.64	37.38	32.75	26.38	56.12		66.45		64.64	

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Month	Adjuntas, Nuevo León		Potrero Redondo, Nuevo León		Paraíso, Nuevo León		Las Peñas, Nuevo León		Raíces, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.59				.83		1.38		.98	
Feb.	.63		1.16		2.87		4.02		2.17	
Mar.	.16		.43		.91		1.22		1.18	
Apr.	.47		.81		.39		.71		.98	
May	4.57		3.25		7.56		7.87		5.91	
June	10.59		9.86		7.09		6.77		8.11	
July	3.98		5.85		7.64		8.31		9.25	
Aug.	5.16		4.82		2.87		5.71		4.72	
Sept.	14.49		5.54		19.80		23.15		21.69	
Oct.	11.14		18.35		31.54		30.71		21.97	
Nov.	1.65				3.74		4.13		4.72	
Dec.	1.65				1.18		1.81			
Yearly	55.08				86.42		95.79			

Month	Cerritos, Nuevo León		San Juan, Nuevo León		Arteaga, Coahuila		Cienega La Purisima, Coahuila		Potrero Abrego, Coahuila	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.53		10.28	1.25	.63		1.56		.98	
Feb.	.73		.91	.97	.59		1.71		.59	
Mar.	.24		1.61	1.05	.31		1.26		.51	
Apr.	.35		.08	2.35	.55		1.00		.75	
May	4.55		2.32	1.66	.51		1.57		2.66	
June	8.09		1.50	2.23	2.48		3.15		4.82	
July	5.79		3.23	1.20	1.89		3.46		2.48	
Aug.	8.23		1.54	3.99	1.73		2.17		2.20	
Sept.	31.08		10.22	4.72	7.32		15.28		5.35	
Oct.	16.81		10.02	3.38	3.98		9.15		7.91	
Nov.	1.71		1.04	.65	.83		2.38		2.05	
Dec.	.81		.64	.55	.39		1.22		1.81	
Yearly	78.92		43.39	24.00	21.21		43.91		32.11	

Month	Puerto de la Camotera Nuevo León		Casillas, Nuevo León		San Francisco Rayones, Nuevo León		Rayones, Nuevo León		Mimbres, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.31		.59		1.18		.36	.35	2.52	
Feb.	.57		.77		.79		.08	.37	1.77	
Mar.	.47		.37		0		0	.34	.87	
Apr.	.67		.47		0		T	.98	.47	
May	3.85		1.62		.91		.67	1.48	3.66	
June	7.66		4.93		4.69		2.06	2.10	1.85	
July	4.09		1.02		1.77		.59	.99	.94	
Aug.	5.31		2.53		2.36		2.87	3.10	9.09	
Sept.	4.55		2.89		5.20		3.90	2.82	9.06	
Oct.	21.34		9.24		8.94		7.24	1.84	7.20	
Nov.	1.85				2.32		2.01	.44	3.15	
Dec.	1.85				1.34		1.50	.29	3.03	
Yearly	52.52				29.50		21.28	15.10	43.61	

Month	Cienega del Toro, Nuevo León		Potosí, Nuevo León		Galeana, Nuevo León		Montemorelos, Nuevo León		El Cuchillo, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.20		1.48		.20		.81	.80	1.67	.75
Feb.	1.42		1.26		.91		1.91	.95	.36	.58
Mar.	.91		.69		0		.59	1.07	.31	.50
Apr.	.96		.35		1.02		1.06	2.28	.19	1.64
May	1.73		1.38		1.30		2.91	2.87	3.68	1.97
June	2.32		1.52				3.86	3.39	8.04	2.47
July	.55		.24		.63		.83	2.02	.77	1.42
Aug.	4.65		2.70		1.77		5.35	3.99	3.17	3.16
Sept.	8.00		1.46		2.56		12.58	5.34	5.28	3.63
Oct.	8.31		3.60				13.07	3.79	6.48	2.25
Nov.	2.81		3.13				1.56	1.60	1.16	.46
Dec.	2.83		3.46				.98	.94	.70	.40
Yearly	35.69		21.27				45.51	29.04	31.81	19.23

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Month	Los Ramones, Nuevo León		Los Herrera (La Tableta), Nuevo León		Las Enramadas, Nuevo León		Gral. Bravo, Nuevo León		Icamole, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	1.83	.62	1.52	.61	2.89	.97	2.37	.78	.23	
Feb.	1.18	.66	1.95	.70	1.36	.65	.19	.40	.02	
Mar.	.28	.68	.26	.71	.65	.69	.73	.60	.04	
Apr.	.20	1.82	.04	1.44	.71	1.71	T	1.58	.18	
May	2.36	2.04	1.00	2.82	1.36	2.71	1.77	2.58	.24	
June	3.90	3.02	4.74	2.72	4.43	3.51	3.76	2.54	2.05	
July	1.14	1.76	2.15	1.25	1.12	2.15	1.04	2.29	1.32	
Aug.	3.03	3.35	3.23	2.61	2.17	3.22	1.54	2.55	2.19	
Sept.	8.43	4.45	8.84	4.18	9.59	5.15	7.53	3.73	6.57	
Oct.	9.45	2.67	7.54	2.29	5.79	2.46	10.43	2.12	4.27	
Nov.	1.59	.51	1.02	.53	.93	.64	1.32	.88	.31	
Dec.	.47	.29	.24	.38	1.02	.69	.49	.73		
Yearly	33.86	21.87	32.53	20.24	32.02	24.55	31.17	20.78		

Month	Topo Chico, Nuevo León		Parras, Coahuila		Gral. Cepeda, Coahuila		Reata, Coahuila		Granja Guadalupe, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.43	.48	.42		.20	.45	0	.29	.61	
Feb.	0	.69	.42		.20	.40	0	.22	.15	
Mar.	.24	.61	1.25		0	.25	.08	.20	.14	
Apr.	.02	.99	.19		0	.33	0	.42	.22	
May	.06	.97	.80		.28	.80	0	.48	.96	
June	3.31	1.95	4.15		4.17	2.18	0	1.10	.81	
July	.33	1.34	4.04		.22	3.46	0	.65	1.36	
Aug.	0	2.92	1.18		2.31	2.86	5.12	2.49	1.02	
Sept.	7.70	4.28	3.20		3.19	2.80	1.69	1.25	2.11	
Oct.	14.69	2.84	4.78		4.72	1.33		.18	3.50	
Nov.	1.18	.77	1.01		1.18	.50	0	.38	.69	
Dec.	0	.54	.52		.65	.53	.98	.23	.18	
Yearly	27.96	18.38	21.96		17.12	15.89		7.89	11.75	

Month	Hedionda Grande, Coahuila		San Antonio de las Alazanas, Coahuila		Saltillo, Coahuila		Ramos Arizpe, Coahuila		La Popa, Nuevo León	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.98		3.19		.59	.57	1.60	.44	.69	
Feb.	.65		1.50		.56	.49	.61	.33	.35	
Mar.	.51		.79		.37	.37	.24	.31	.14	
Apr.	.33		.28		.71	.72	.13	.48	.26	
May	3.05		.91		.77	.99	1.54	.76	.16	
June	2.70		2.99		3.40	2.08	2.65	1.10	3.17	
July	1.12		2.36		1.71	2.64	.28	1.38	.20	
Aug.	4.92		3.03		1.85	2.33	2.76	1.36	.89	
Sept.	6.61		5.63		6.53	2.50	6.51	1.79	10.35	
Oct.	3.23		6.85		4.53	1.27	3.87	.74	3.96	
Nov.	3.15		3.35		1.12	.90	.69	.46	.63	
Dec.	1.24		2.68		.87	.63	.69	.53	.31	
Yearly	28.49		33.56		23.01	15.49	21.57	9.68	21.11	

Month	Mina, Nuevo León		Carbonera, Nuevo León		Ciénega de Flores, Nuevo León		Higueras, Nuevo León		Comales, Tamaulipas	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	.63		1.14		1.58	1.15	1.13	.74	3.56	.79
Feb.	.28		.94		1.98	.67	.98	.55	1.41	.65
Mar.	T		.67		.17	.74	.19	.54	.54	.69
Apr.	.12		T		.54	1.23	.18	1.16	.13	1.62
May	.04		.75		3.93	2.21	2.09	1.70	4.55	2.11
June	2.34		1.38		4.00	2.49	4.72	2.46	1.50	1.89
July	1.06		2.40		1.77	1.87	.94	2.06	1.10	.96
Aug.	2.09		1.69		3.32	4.11		2.96	3.30	2.52
Sept.	10.67		8.27		17.44	5.02	8.96	4.48	7.83	3.19
Oct.	6.50		2.91		8.86	2.39		1.67	8.28	2.26
Nov.	.37		3.03		1.85	.76		.77	.74	.53
Dec.	.31		1.54		.92	.74		.66	.39	.62
Yearly	24.41		24.72		46.36	23.38		19.75	33.33	17.83

RAINFALL ON THE RIO GRANDE WATERSHED

IN INCHES

In Mexico

Month	Camargo, Tamaulipas		San Miguel de Camargo, Tamaulipas		Reynosa, Tamaulipas		Río Bravo, Tamaulipas		Retamal, Tamaulipas	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	4.49	.96	0	.26	.91	.96	.94	.39	3.31	.71
Feb.	1.67	.81	.62	.84	1.64	.66	4.21	1.31	2.99	.96
Mar.	1.10	.70	0	.49	1.08	.74	.67	.76	.73	.82
Apr.	0	2.33	0	2.37	.04	1.17	.12	1.78	T	1.59
May	4.17	1.89	2.32	1.30	.55	2.29	2.24	1.47	2.13	1.79
June	1.22	1.96	.33	1.15	2.73	1.83	1.57	2.46	2.17	2.39
July	2.19	.74		.67	1.26	1.24	1.65	1.59	1.34	.93
Aug.	.71	1.34		1.55	.52	1.49	.79	2.14	.51	2.13
Sept.		2.15		.38	5.38	2.47	4.88	3.54	5.87	3.04
Oct.		2.56		3.98	9.04	2.63	9.06	2.28	5.39	2.46
Nov.		1.10		.89	1.22	.84	1.65	.98	1.46	.99
Dec.	.55	.30	0	.16	.96	.65	1.26	.53	1.14	.51
Yearly		16.84		14.04	25.33	16.97	29.04	19.23	27.04	18.32

Month	Control (C1-K-9), Tamaulipas		Iturbide, Nuevo León		Linares, Nuevo León		Valle Hermoso, Tamaulipas		Matamoros, Tamaulipas	
	1958	Average	1958	Average	1958	Average	1958	Average	1958	Average
Jan.	4.30	1.19	.89	.34	.55	.96	4.06	.76	3.81	
Feb.	5.43	1.06	1.13	.58	2.80	.91	6.67	1.68	9.11	
Mar.	.31	.75	.35	.49	.33	1.14	.35	.48	.30	
Apr.	.14	1.26	.74	1.11	1.10	2.45	T	1.27	0	
May	1.95	2.39	2.53	2.04	6.38	3.60	1.91	2.39	.78	
June	1.77	2.52	3.67	3.00	2.07	3.44	2.28	2.93	1.68	
July	.89	1.17	1.20	2.50	.98	2.77	1.79	1.42	2.20	
Aug.	.02	2.67	3.23	4.15	1.86	3.33	T	1.43		
Sept.	10.27	4.92	3.52	5.06	8.33	6.34	8.74	4.91		
Oct.	7.03	2.19	7.27	2.90	8.17	3.38	8.70	3.15	7.03	
Nov.	2.07	1.26	1.80	.49	1.32	1.23	1.99	1.30		
Dec.	1.10	.64	.99	.37	.37	.93	1.83	.47		
Yearly	35.28	22.02	27.32	23.03	34.26	30.48	38.32	22.19		

Month	Méndez, Tamaulipas									
	1958	Average								
Jan.	2.47	.90								
Feb.	1.85	.79								
Mar.	.83	1.03								
Apr.	.41	1.58								
May	3.03	2.75								
June	1.02	2.42								
July	2.24	1.10								
Aug.	T	3.36								
Sept.	4.87	3.98								
Oc..	6.15	2.17								
Nov.	1.88	.54								
Dec.	.79	.41								
Yearly	25.54	21.03								

AVERAGE RAINFALL ON SUBDIVISIONS OF THE RIO GRANDE WATERSHED IN INCHES

With Averages for the 88 Years 1871-1958, Inclusive

The precipitation records of all stations on or adjacent to the watershed subdivisions listed below have been used, with proper weighting for area, in calculating the average rainfalls shown here. The drainage area for each subdivision is shown in parentheses. The hundreds of individual records are delineated in the various "Indexes to Precipitation Records" shown in Water Bulletins Nos. 10, 14, 22, and 26.

Month	El Paso to Fort Quitman (2,768 Square Miles)		Fort Quitman to Upper Presidio (2,953 Square Miles)		* Upper Presidio to Johnson Ranch (3,886 Square Miles)		Johnson Ranch to Langtry (14,080 Square Miles)	
	1958	Period Average	1958	Period Average	1958	Period Average	1958	Period Average
Jan.	.78	.46	1.18	.40	1.45	.36	1.46	.51
Feb.	1.12	.38	1.29	.26	1.31	.29	.89	.35
Mar.	1.84	.35	.60	.26	.33	.19	.62	.44
Apr.	.29	.29	.30	.38	T	.41	.25	.80
May	.79	.42	.40	.60	.40	.77	1.05	1.51
June	1.08	.80	.65	1.19	.70	1.05	1.56	1.76
July	1.35	2.38	1.83	3.17	1.45	1.82	.97	1.90
Aug.	1.46	1.97	1.88	2.44	1.18	1.83	1.42	2.20
Sept.	3.95	1.39	4.11	1.93	4.78	1.44	5.41	2.21
Oct.	2.36	.94	2.89	1.04	2.29	.85	3.13	1.20
Nov.	.35	.44	.36	.39	.28	.34	.43	.60
Dec.	T	.61	.04	.55	.25	.42	.17	.56
Total	15.37	10.43	15.53	12.61	14.42	9.77	17.36	14.04

Month	Pecos River Below Sheffield (3,519 Square Miles)		# Langtry to Diablo Dam Site (2,014 Square Miles)		Devils River (4,305 Square Miles)		‡ Diablo Dam Site to Eagle Pass (1,695 Square Miles)	
	1958	Period Average	1958	Period Average	1958	Period Average	1958	Period Average
Jan.	2.56	.74	2.45	.54	2.29	.69	3.35	.78
Feb.	1.77	.90	1.63	.63	3.04	.67	2.97	.90
Mar.	.99	.81	.71	.84	1.39	1.15	1.08	1.08
Apr.	.71	1.98	.19	1.36	.59	1.80	.56	1.67
May	2.11	1.80	2.92	2.03	2.76	2.62	4.21	3.00
June	3.24	2.54	3.84	2.26	4.99	2.74	7.42	2.48
July	.74	1.86	.37	1.17	.60	1.74	.85	1.87
Aug.	1.59	2.03	.45	1.63	1.75	2.08	.95	1.91
Sept.	4.25	2.38	5.26	2.27	6.58	2.93	8.20	3.09
Oct.	3.61	1.82	4.03	1.36	3.53	2.15	6.16	1.94
Nov.	.39	.95	.12	.80	.69	1.64	.30	1.06
Dec.	.04	.78	.14	.66	.19	1.05	.36	.91
Total	22.00	18.59	22.11	15.55	28.40	21.26	36.41	20.69

Month	⊖ Eagle Pass to Laredo (4,117 Square Miles)		ŏ Laredo to Falcón Dam (3,394 Square Miles)		† Falcón Dam to Rio Grande City (1,166 Square Miles)		United States Side Below Rio Grande City (443 Square Miles)	
	1958	Period Average	1958	Period Average	1958	Period Average	1958	Period Average
Jan.	3.77	.77	4.76	.77	5.51	.91	6.20	1.24
Feb.	2.71	.81	2.07	.75	2.37	.79	4.91	1.07
Mar.	.43	1.00	.33	.86	.40	1.05	.72	1.13
Apr.	.39	1.59	.16	1.42	.12	1.19	.06	1.34
May	3.08	3.22	4.42	3.35	4.59	2.45	1.92	2.83
June	3.44	2.46	1.22	1.81	2.39	2.02	2.04	2.44
July	2.55	1.41	2.22	2.24	1.64	2.00	2.16	1.78
Aug.	2.07	2.34	1.29	1.80	1.74	2.09	.30	2.26
Sept.	6.92	2.98	4.39	2.85	5.90	3.19	5.02	4.27
Oct.	7.00	1.80	7.72	1.56	9.64	1.96	10.38	2.51
Nov.	.88	.98	.38	1.64	.53	.73	1.45	1.40
Dec.	.80	1.03	.32	.81	.53	.65	1.55	1.26
Total	34.04	20.40	29.28	19.86	35.36	19.03	36.71	23.53

* Excluding Río Conchos, Alamito and Terlingua Creeks. # Excluding Pecos and Devils Rivers. ‡ Excluding Arroyo las Vacas, San Felipe Creek, Pinto Creek, Río San Diego, and Río San Rodrigo. ⊖ Excluding Río Escondido. ŏ Excluding Río Salado above Old Cd. Guerrero. † Excluding Río Alamo and Río San Juan.

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

The precipitation records of stations listed below began on the date shown and extend through 1958. For detailed information regarding sources of date, specific periods of record, and other pertinent matters relative to these and additional rainfall stations on the Rio Grande watershed see "Index to Precipitation Records" in Water Bulletin Nos. 10, 14, 22 and 26.

In the United States

NAME OF STATION	TYPE GAGE	LATITUDE	LONGITUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Adams Bros. Ranch	S	30° 10'	101° 58'	2,150	Apr. 1952	Johnson Ranch - Langtry	George Adams
Adobes Ranch	S	29° 46'	104° 34'	2,550	1950	Fort Quitman - Upper Presidio	T. C. Davis
American Dam	S	31° 47'	106° 32'	3,730	1938	El Paso - Fort Quitman	I. B. & W. C.
Apache Ranch	C	27° 56'	99° 56'	500	# 1953	Eagle Pass - Laredo	L. Guardiola
Armistead Ranch	S	29° 35'	100° 39'	1,510	Dec. 1951	Diablo Dam Site - Eagle Pass	Floyd Hodges
Arroyo Tigre Chiquito	C	26° 41'	99° 07'	314	Apr. 1954	Laredo - Falcón Dam	I. B. & W. C.
Arthur, C. L. Ranch	S	30° 23'	103° 45'	4,900	# 1946	Pecos River above Sheffield	C. L. Arthur
Arvin & Harkins - Bean	V	30° 26'	102° 23'	3,100	Nov. 1948	Johnson Ranch - Langtry	Sid Harkins
Arvin & Harkins - Camel	V	30° 25'	102° 20'	2,890	Nov. 1948	Johnson Ranch - Langtry	Sid Harkins
Arvin & Harkins - Header	V	30° 27'	102° 26'	3,400	Nov. 1948	Johnson Ranch - Langtry	Sid Harkins
Arvin & Harkins - Hqtrs.	S	30° 27'	102° 19'	2,930	Nov. 1948	Johnson Ranch - Langtry	Sid Harkins
Arvin & Harkins - Monty Corder	V	30° 27'	102° 14'	2,850	Nov. 1948	Johnson Ranch - Langtry	Sid Harkins
Bennett, Moody Ranch	S	30° 37'	104° 52'	3,240	July 1956	Fort Quitman - Upper Presidio	Moody Bennett
Black Gap Game Refuge	S	29° 35'	103° 21'	2,250	1952	Johnson Ranch - Langtry	Tom Moore
Bloys Camp	V	30° 33'	104° 07'	5,650	# 1941	Alamito Creek	George Knight
Bricker Ranch	S	29° 59'	101° 52'	1,680	May 1952	Johnson Ranch - Langtry	Lena Mae Bricker
Buttrill Ranch	S	30° 00'	103° 16'	3,500	Mar.1952	Johnson Ranch - Langtry	Tom B. Leary
CCWCID #3 (La Feria Dist. Off.) Avg. 6 gages	S	26° 09'	97° 49'	50	1952	Lower Rio Grande Valley	CCWCID #3
CCWID #11 (Bayview Dist. Off.) Avg. 18 gages	S	26° 08'	97° 21'	25	1952	Lower Rio Grande Valley	CCWID #11
CCWCID #19 (Adams Gardens)	S	26° 10'	97° 47'	50	1952	Lower Rio Grande Valley	CCWCID #19
Cedar Service Station	S	29° 55'	101° 55'	1,860	1955	Johnson Ranch - Langtry	Harve Eastman
Comstock	S	29° 41'	101° 11'	1,530	May 1939	Langtry - below Diablo Dam Site	George Humphries
Corralitos Ranch	C	27° 07'	99° 27'	346	1953	Laredo - Falcón Dam	I. B. & W. C.
County Line	R	31° 23'	105° 59'	3,550	1938	El Paso - Fort Quitman	I. B. & W. C.
Cuervo Creek	C	28° 21'	100° 19'	620	Jan. 1954	Eagle Pass - Laredo	I. B. & W. C.
Dale, O. C. Farm	S	26° 15'	98° 16'	130	1952	Lower Rio Grande Valley	O. C. Dale
Devils Lake	S	29° 34'	100° 59'	1,080	May 1939	Devils River	C. P. & L. Co.
Diablo Dam Site	C	29° 25'	101° 02'	980	Oct. 1954	Diablo Dam Site - Eagle Pass	I. B. & W. C.
Dove Mountain Ranch	S	29° 49'	102° 53'	2,770	# 1952	Johnson Ranch - Langtry	Sam Cavness
Dryden	S	30° 03'	102° 07'	2,130	# 1931	Johnson Ranch - Langtry	Lewis Cash
Edinburg Filtration Plant	S	26° 18'	98° 10'	100	1952	Lower Rio Grande Valley	City of Edinburg
El Indio	S	28° 31'	100° 19'	725	# 1941	Eagle Pass - Laredo	Glen Stidham
Fabens-Guadalupe Bridge	S	31° 26'	106° 08'	3,610	Apr. 1940	El Paso - Fort Quitman	I. B. & W. C.
Falcón Dam	S	26° 34'	99° 08'	323	Apr. 1950	Laredo - Falcón Dam	I. B. & W. C.
Fletcher, H. T. Ranch	S	30° 12'	104° 16'	5,100	# 1939	Alamito Creek	Hayes Mitchell, Jr.
Fort Hancock Bridge	S	31° 16'	105° 51'	3,500	Apr. 1940	El Paso - Fort Quitman	I. B. & W. C.
Fort McIntosh (Laredo)	V	27° 30'	99° 31'	410	# 1810	Eagle Pass - Laredo	I. B. & W. C.
Fort Quitman	R	31° 06'	105° 36'	3,430	# 1937	El Paso - Fort Quitman	I. B. & W. C.
Garner Ranch	S	29° 56'	102° 39'	2,600	1949	Johnson Ranch - Langtry	J. Garner
Garciaville	R	26° 20'	98° 41'	200	Apr. 1957	Lower Rio Grande Valley	I. B. & W. C.
Goodenough Spring	C	29° 32'	101° 13'	1,018	Aug. 1958	Langtry - Diablo Dam Site	I. B. & W. C.
Greenwood, H. M. (Cienega Ranch)	S	29° 48'	104° 13'	4,000	Mar. 1941	Alamito Creek	H. M. Greenwood
Guayuco Arroyo	R	31° 10'	105° 40'	3,600	#May 1940	El Paso - Fort Quitman	I. B. & W. C.
Hardgrave, E. W. Ranch	S	30° 18'	102° 09'	2,650	Apr. 1952	Johnson Ranch - Langtry	Jack Hardgrave
HCWCID #6 (Goodwin Pump #4) Avg. 3 gages	S	26° 18'	98° 22'	185	1953	Lower Rio Grande Valley	HCWCID #6
HCWCID #15 (Edinburg Office)	S	26° 23'	98° 09'	85	1952	Lower Rio Grande Valley	HCWCID #15
HCWID #6 (Elsa Office)	S	26° 19'	98° 01'	70	1952	Lower Rio Grande Valley	HCWID #6
Hinds, Lucius Ranch	S	29° 46'	101° 03'	1,690	Sept. 1954	Devils River	Lucius Hinds
Hoffman Ranch	S	30° 38'	103° 51'	4,650	June 1955	Pecos River above Sheffield	Dr. A. J. Hoffman
Huisache Ranch	C	26° 57'	99° 21'	383	Aug. 1953	Laredo - Falcón Dam	I. B. & W. C.
Ingram Ranch	S	29° 52'	101° 29'	1,580	# Sept. 1954	Pecos River below Sheffield	Arnum Humphries

Some months or years missing C Cumulative R Recording S Standard V Visual

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

In the United States

NAME OF STATION	TYPE GAGE	LATITUDE	LONGITUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Island Station	R	31° 32'	106° 14'	3,630	1939	El Paso - Fort Quitman	I. B. & W. C.
Johnson Ranch	C	29° 01'	103° 23'	2,050	#July 1933	Johnson Ranch - Langtry	I. B. & W. C.
Justapor Ranch	C	27° 53'	99° 27'	720	# 1952	Adjacent to Eagle Pass - Laredo	Mrs. O. C. Ray
Keisling Farm	S	28° 23'	100° 17'	740	Dec.1958	Eagle Pass - Laredo	Robert Smith
Kelly Ranch	V	30° 32'	104° 16'	5, 320	# 1941	Adj. to Alamito Creek	George Jones
King, Martin Ranch	R	29° 44'	101° 23'	1, 460	Nov.1945	Langtry - Diablo Dam Site	I. B. & W. C.
Kokernot Ranch - Hqtrs.	S	29° 58'	103° 34'	4, 120	# 1952	Johnson Ranch - Langtry	David Kokernot
La Feria Pumping Plant	S	26° 03'	97° 50'	60	1952	Lower Rio Grande Valley	CCWCID #3
La Joya	R	26° 15'	98° 25'	150	Apr.1957	Lower Rio Grande Valley	I. B. & W. C.
Laredo Water Plant	S	27° 33'	99° 31'	410	# 1930	Eagle Pass - Laredo	Laredo Water Plant
Las Moras Creek	S	29° 00'	100° 38'	800	1958	Diablo Dam Site - Eagle Pass	Lou McGee
Livingston Ranch	S	29° 49'	104° 22'	4, 150	# 1951	Upper Presidio - Johnson Ranch	J. S. Livingston
Loma Vista Ranch	S	30° 13'	103° 47'	5, 450	# 1941	Alamito Creek	Hayes Mitchell
Los Ebanos	C	26° 16'	98° 33'	150	Apr.1957	Lower Rio Grande Valley	I. B. & W. C.
Los Fresnos Pumping Plt.	S	25° 57'	97° 34'	30	1952	Lower Rio Grande Valley	CCWCID #6
Madden Arroyo	R	31° 13'	105° 46'	3, 500	Sept.1941	El Paso - Fort Quitman	I. B. & W. C.
Maravillas Gap Ranch	S	30° 01'	103° 20'	3, 520	1956	Johnson Ranch - Langtry	Guy Combs, Jr.
Marfa Experiment Station	S	30° 20'	103° 59'	4, 800	1950	Alamito Creek	Dr. G. W. Dollahite
Maverick County Canal Headgate	S	29° 10'	100° 46'	870	Mar.1948	Diablo Dam Site - Eagle Pass	MCWCID #1
Maverick Power Plant	S	28° 50'	100° 33'	800	June 1952	Diablo Dam Site - Eagle Pass	C. P. & L. Co.
Maverick Ranger Station	S	29° 19'	103° 27'	2, 780	Feb.1955	Upper Presidio - Johnson Ranch	Park Ranger
McFarland Ranch - Cane Pasture	V	30° 03'	104° 15'	5, 370	1955	Alamito Creek	C. E. McFarland
McFarland Ranch - Casa Colorada	V	30° 06'	104° 17'	5, 330	1955	Alamito Creek	C. E. McFarland
McFarland Rch. -Cement	V	30° 05'	104° 19'	5, 470	1955	Alamito Creek	C. E. McFarland
McFarland Rch.-Cocameca	V	30° 08'	104° 16'	5, 300	# 1956	Alamito Creek	C. E. McFarland
McFarland Rch.-Deep Well	V	30° 07'	104° 17'	5, 470	1955	Alamito Creek	C. E. McFarland
McFarland Rch. -Hqtrs.	S	30° 06'	104° 16'	5, 310	# 1941	Alamito Creek	C. E. McFarland
McFarland Ranch - Punta el Agua	V	30° 02'	104° 13'	5, 210	1955	Alamito Creek	C. E. McFarland
McFarland Rch. -Shannon	V	30° 06'	104° 20'	5, 480	1955	Alamito Creek	C. E. McFarland
McGonagill Rch. -E. Mill	V	30° 20'	102° 55'	4, 050	May 1952	Johnson Ranch - Langtry	W. E. McGonagill
McGonagill Rch. -Hqtrs.	S	30° 20'	102° 58'	4, 150	Apr.1952	Johnson Ranch - Langtry	W. E. McGonagill
Mission Pump	S	26° 10'	98° 20'	100	1952	Lower Rio Grande Valley	HCWCID #14
Mitchell, Kerr Ranch	S	30° 13'	104° 00'	4, 450	# 1941	Alamito Creek	Mrs. Kerr Mitchell
Neely Ranch	S	30° 59'	105° 32'	3, 350	Aug.1941	Fort Quitman - Upper Presidio	Mrs. Tom Neely
02 Ranch	S	29° 51'	103° 45'	3, 780	# 1914	Terlingua Creek	Cavin Woodward
Peñitas(Edinburg Pump.Plt)	S	26° 14'	98° 27'	100	July 1957	Lower Rio Grande Valley	B. Leadbetter
Persimmon Gap Ranger Sta.	S	29° 40'	103° 10'	2, 900	# 1948	Johnson Ranch - Langtry	Park Ranger
Petan Ranch	S	30° 04'	104° 29'	5, 400	1950	Fort Quitman - Upper Presidio	Jim Harrington
Potter, A. M. Ranch	S	29° 46'	103° 25'	3, 440	# 1952	Johnson Ranch - Langtry	A. M. Potter
Presidio (I.B.& W.C.Gage)	C	29° 34'	104° 23'	2, 550	Oct. 1949	Upper Presidio - Johnson Ranch	I. B. & W. C.
Pumpville	S	29° 57'	101° 44'	1, 800	#Oct. 1946	Johnson Ranch - Langtry	Pellum Bradford
Quebec Ranch	V	30° 31'	104° 24'	4, 600	1949	Adjacent to Alamito Creek	George Jones
Redford	C	29° 29'	104° 13'	2, 500	July 1954	Upper Presidio - Johnson Ranch	I. B. & W. C.
Roma (Internat'l. Bridge)	S	26° 24'	99° 01'	230	1941	Falcon Dam - Rio Grande City	Starr Co. Bridge Co.
San Benito Pump	S	26° 03'	97° 45'	50	1933	Lower Rio Grande Valley	I. B. & W. C.
Sand Valley Ranch	S	29° 33'	103° 16'	3, 250	# 1952	Johnson Ranch - Langtry	Fred Gullihur
Santa Ysabel Farm	S	27° 39'	99° 37'	440	#Nov. 1952	Eagle Pass - Laredo	Virgil Roberts
Santiago Peak Ranch	S	29° 55'	103° 23'	3, 730	1953	Johnson Ranch - Langtry	Ellis Owens
Sauz Ranch	S	30° 10'	104° 12'	4, 880	# 1940	Alamito Creek	Hayes Mitchell, Jr.
Shannon Bill Ranch	C	29° 58'	104° 41'	2, 750	July 1956	Fort Quitman - Upper Presidio	Bill Shannon
Shumla Bend	C	29° 50'	101° 25'	1, 350	Nov.1954	Pecos River below Sheffield	I. B. & W. C.
Stumberg, Steve Ranch	C	30° 11'	102° 53'	4, 300	# 1943	Johnson Ranch - Langtry	I. B. & W. C.
Terlingua Creek Station	C	29° 12'	103° 36'	2, 260	Mar.1952	Terlingua Creek	I. B. & W. C.
Tesnus	S	30° 08'	102° 54'	3, 725	Jan. 1957	Johnson Ranch - Langtry	Mattie V. Chambers
Tortuga Ranch	C	28° 39'	100° 26'	780	# 1950	Eagle Pass - Laredo	W. H. Brown
Upper Devils	C	29° 45'	101° 01'	1, 260	Sept.1954	Devils River	I. B. & W. C.
Van Eman, L. T. Ranch	S	29° 52'	103° 59'	3, 890	# 1947	Alamito Creek	L. T. Van Eman
Wardlaw Ranch	R	29° 28'	100° 58'	1, 110	Aug.1955	Devils River	I. B. & W. C.
Whipple Farm	S	26° 04'	97° 29'	25	1952	Lower Rio Grande Valley	Harry Whipple
Willoughby, Ray Ranch	S	30° 12'	103° 33'	5, 050	1952	Johnson Ranch - Langtry	Cliff St. Clair
Woodward, J. F. Ranch	S	30° 08'	103° 36'	4, 750	1954	Johnson Ranch - Langtry	J. F. Woodward
Wuensche Farm	S	28° 24'	100° 19'	670	# 1952	Eagle Pass - Laredo	I. B. & W. C.
Zapata Water Plant	S	26° 54'	99° 16'	380	May 1953	Laredo - Falcon Dam	Zapata Water Plant

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LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED
In Mexico

NAME OF STATION	TYPE GAGE	LATITUDE	LONGITUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
A. Blanca Canoas, Nuevo León	†	25° 30'	100° 28'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Adjuntas, Nuevo León	†	25° 18'	100° 10'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Allende, Coahuila	S	28° 21'	100° 51'	1,170	# 1947	Río Salado	Hydr. Resources
Anahuac, Nuevo León	S	27° 15'	100° 07'	650	June 1933	Río Salado	Hydr. Resources
Arteaga, Coahuila	†	25° 27'	100° 50'	†	1958	Río San Juan	Meteor. Service of Mexico
Bachiniva, Chihuahua	†	28° 48'	107° 15'	6,250	1952	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Balleza, Chihuahua	S	26° 57'	106° 21'	5,870	# 1903	Río Conchos	Meteor. Service of Mexico
Bustamante, Nuevo León	†	26° 32'	100° 31'	†	1958	Río Salado	Hydr. Resources
Cadereyta, Nuevo León	S	25° 36'	99° 59'	1,180	#Sept. 1904	Río San Juan	Hydr. Resources
Camargo, Chihuahua	†	27° 42'	105° 10'	3,950	Oct. 1956	Río Conchos	Meteor. Service of Chihuahua
Camargo, Tamaulipas	S	26° 20'	98° 49'	175	# 1953	Río San Juan	Hydr. Resources
Canada, Nuevo León	†	25° 45'	100° 18'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Carbonera, Nuevo León	†	25° 49'	100° 47'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Casillas, Nuevo León	†	25° 11'	100° 12'	†	# 1958	Río San Juan	Hydr. Resources
Castaños, Coahuila	S	26° 47'	101° 27'	2,440	#Oct. 1932	Río Salado	Hydr. Resources
Cd. Acuña, Coahuila	S	29° 19'	100° 56'	919	1951	Diablo Dam - Eagle Pass	I. B. & W. C.
Cd. Guerrero, Chihuahua	S	28° 33'	107° 30'	6,560	#May 1903	Adjacent to Río Conchos	Meteor. Service of Mexico
Cd. Mier, Tamaulipas	S	26° 26'	99° 09'	260	Oct. 1955	Laredo - Falcón	I. B. & W. C.
Cerralvo, Nuevo León	R	26° 06'	99° 37'	1,120	#Nov. 1938	Río San Juan	Hydr. Resources
Cerritos, Nuevo León	†	25° 31'	100° 11'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Chihuahua, Chihuahua	S	28° 38'	106° 04'	4,690	# 1900	Río Conchos	Meteor. Service of Mexico
Chilicote, Chihuahua	†	28° 59'	104° 48'	†	# 1955	Río Conchos	Meteor. Service of Chihuahua
Ciénega del Toro, Nuevo León	†	25° 05'	100° 21'	†	1958	Adjacent to Río San Juan	Monterrey Wtr. Wks.
Ciénega, Nuevo León	†	25° 21'	100° 14'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Ciénega la Purisima, Coahuila	†	25° 20'	100° 29'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Ciénega de Flores, Nuevo Leon	R	25° 58'	100° 10'	1,760	Apr. 1938	Río San Juan	Hydr. Resources
Comales, Tamaulipas	R	26° 11'	98° 55'	270	#Mar. 1938	Río San Juan	Hydr. Resources
Conchos, Coahuila	†	28° 00'	101° 19'	†	#Oct. 1950	Río Salado	Hydr. Resources
Control (C1-K-9), Tamaulipas	S	25° 58'	97° 49'	59	#June 1942	Lower Rio Grande Valley	Hydr. Resources
Cuatro Ciénegas, Coahuila	S	27° 00'	102° 05'	2,430	#June 1923	Río Salado	Hydr. Resources
Cuauhtémoc, Chihuahua	S	28° 24'	106° 52'	7,250	#June 1923	Adjacent to Río Conchos	Hydr. Resources
Delicias, Chihuahua	S	28° 11'	105° 31'	3,710	#Aug. 1933	Río Conchos	Hydr. Resources
Don Martín, Coahuila	S	27° 33'	100° 37'	790	#June 1927	Río Salado	Hydr. Resources
El Cuchillo, Nuevo León	S	25° 43'	99° 16'	590	June 1938	Río San Juan	Hydr. Resources
El Maguey, Chihuahua	†	27° 35'	106° 07'	†	July 1955	Río Conchos	Meteor. Service of Chihuahua
El Nogal, Chihuahua	†	28° 52'	105° 51'	†	Sept. 1953	Río Conchos	Meteor. Service of Chihuahua
El Pollito, Chihuahua	†	28° 18'	105° 23'	3,820	# 1955	Río Conchos	Meteor. Service of Chihuahua
El Remolino, Coahuila	S	28° 45'	101° 05'	1,350	June 1958	Diablo Dam - Eagle Pass	I. B. & W. C.
El Sitio, Chihuahua	†	27° 31'	106° 14'	†	July 1955	Río Conchos	Meteor. Service of Chihuahua
El Vergel, Chihuahua	†	26° 59'	106° 23'	†	1957	Río Conchos	Meteor. Service of Chihuahua
Escalón, Chihuahua	†	26° 45'	104° 21'	†	1957	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Félix U. Gómez (Los Lamentos), Chihuahua	†	30° 35'	105° 50'	4,920	1955	Adjacent to Ft. Quitman to Upper Presidio	Meteor. Service of Chihuahua
Galeana, Nuevo León	†	24° 50'	100° 04'	†	# 1958	Adjacent to Río San Juan	Meteor. Service of Mexico
Garita Km. 28, Chihuahua	S	31° 34'	106° 28'	3,990	May 1958	El Paso - Ft. Quitman	I. B. & W. C.
Gral. Bravo, Nuevo León	S	25° 48'	99° 09'	394	#Sept. 1906	Río San Juan	Meteor. Service of Mexico
Gral. Cepeda, Coahuila	S	25° 24'	101° 29'	4,920	Aug. 1926	Río San Juan	Hydr. Resources
Granja Guadalupe, Coahuila	†	25° 03'	101° 01'	†	1958	Adjacent to Río San Juan	Hydr. Resources
Guadalupe, Chihuahua	S	31° 23'	106° 06'	3,580	1958	El Paso - Ft. Quitman	I. B. & W. C.
Hedionda Grande, Coahuila	†	25° 06'	100° 50'	†	1958	Adjacent to Río San Juan	Monterrey Wtr. Wks.
Higueras, Nuevo León	S	25° 59'	100° 01'	1,640	#Sept. 1906	Río San Juan	Meteor. Service of Mexico
Huasteca Parshall, Nuevo León	†	25° 40'	100° 26'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Icamole, Nuevo León	†	25° 44'	100° 46'	†	1958	Río San Juan	Hydr. Resources
Iturbide, Nuevo León	†	24° 44'	99° 53'	†	1941	Adjacent to Río San Juan	Hydr. Resources
Jaguey, Nuevo León	†	25° 39'	100° 22'	†	1958	Río San Juan	Private Gage
Jiménez, Chihuahua	†	27° 08'	104° 55'	4,490	# 1951	Río Conchos	Meteor. Service of Chihuahua
Jiménez, Coahuila	S	29° 04'	100° 40'	814	1951	Diablo Dam - Eagle Pass	I. B. & W. C.
Juárez, Chihuahua	S	31° 44'	106° 29'	3,740	‡ 1903	El Paso - Ft. Quitman	Hydr. Resources

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LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

In Mexico

NAME OF STATION	TYPE GAGE	LATITUDE	LONGITUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
La Boquilla, Chihuahua	S	27° 32'	105° 25'	4, 330	# 1910	Río Conchos	Río Conchos Hydro-electric Co.
La Cruz, Nuevo León	†	25° 29'	100° 21'	†	1958	Río San Juan	Hydr. Resources
La Gloria, Nuevo León	S	26° 54'	99° 48'	427	May 1958	Adjacent to Laredo to Falcón	I. B. & W. C.
La Junta, Chihuahua	S	28° 26'	107° 20'	6, 730	# 1925	Adjacent to Río Conchos	Hydr. Resources
La Peña de San Cristobal, Nuevo León	†	25° 24'	100° 19'	†	1958	Río San Juan	Monterrey Wtr. Wks.
La Popa, Nuevo León	†	26° 10'	100° 50'	†	1958	Río San Juan	Hydr. Resources
La Soledad, Chihuahua	†	28° 09'	105° 29'	†	# 1956	Río Conchos	Meteor. Service of Chihuahua
Laguna de Salinillas, Nuevo León	S	27° 32'	100° 34'	750	# 1940	Río Salado	Hydr. Resources
Laguna de Sánchez, Nuevo León	R	25° 21'	100° 16'	6, 500	Apr. 1941	Río San Juan	Hydr. Resources
Lampazos, Nuevo León	†	27° 00'	100° 30'	†	1958	Río Salado	Meteor. Service of Mexico
Las Burras, Chihuahua	†	28° 27'	105° 26'	3, 590	July 1949	Río Conchos	Hydr. Resources
Las Choyas, Chihuahua	†	29° 18'	106° 11'	†	# 1955	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Las Comitas, Nuevo León	S	25° 26'	99° 07'	1, 670	1940	Río San Juan	Hydr. Resources
Las Enramadas, Nuevo León	S	25° 48'	99° 16'	730	#Sept. 1926	Río San Juan	Hydr. Resources
Las Peñas, Nuevo León	†	25° 14'	100° 02'	†	1958	Río San Juan	Monterrey Wtr. Wrks.
Las Vírgenes, Chihuahua	S	28° 10'	105° 38'	4, 070	# 1943	Río Conchos	Hydr. Resources
Linares, Nuevo León	R	24° 52'	99° 34'	1, 180	# 1900	Adjacent to Río San Juan	Hydr. Resources
Los Barriles, Chihuahua	S	30° 55'	105° 45'	4, 860	July 1958	Adjacent to El Paso - Fort Quitman	I. B. & W. C.
Los Herrera (La Tableta), Nuevo León	R	25° 55'	99° 24'	820	Sept. 1939	Río San Juan	Hydr. Resources
Los Ojos, Chihuahua	†	29° 06'	106° 15'	†	1957	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Los Pozos, Chihuahua	†	28° 53'	106° 02'	†	# 1956	Río Conchos	Meteor. Service of Chihuahua
Los Ramones, Nuevo León	R	25° 42'	99° 38'	262	#Sept. 1939	Río San Juan	Hydr. Resources
Luis L. León, Chihuahua	S	31° 05'	105° 37'	3, 460	Apr. 1958	El Paso - Ft. Quitman	I. B. & W. C.
Maclovio Herrera (Falomir), Chihuahua	S	29° 03'	105° 08'	3, 380	# 1924	Río Conchos	Meteor. Service of Mexico
Manzano, Nuevo León	†	25° 21'	100° 12'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Matamoros, Tamaulipas	†	25° 52'	97° 30'	33	# 1958	Lower Río Grande Valley	Hydr. Resources
Mayjoma, Chihuahua	†	28° 54'	104° 20'	†	Aug. 1955	Río Conchos	Meteor. Service of Chihuahua
Mederos, Nuevo León	†	25° 35'	100° 17'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Méndez, Tamaulipas	S	25° 07'	98° 35'	420	#Sept. 1939	Adjacent to Lower Rio Grande Valley	Hydr. Resources
Mimbres, Nuevo León	†	24° 58'	100° 16'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Mina, Nuevo León	†	26° 00'	100° 31'	†	1958	Río San Juan	Hydr. Resources
Mirador, Nuevo León	†	25° 33'	100° 18'	†	1958	Río San Juan	Private Gage
Monclova, Coahuila	S	26° 54'	101° 25'	1, 940	# 1897	Río Salado	Meteor. Service of Mexico
Montemorelos, Nuevo León	S	25° 12'	99° 50'	1, 420	#Aug. 1904	Río San Juan	Hydr. Resources
Monterrey, Nuevo León	S	25° 40'	100° 18'	1, 740	# 1896	Río San Juan	Hydr. Resources
Morteros, Nuevo León	†	25° 38'	100° 27'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Múzquiz, Coahuila	S	27° 52'	101° 31'	1, 650	# 1923	Río Salado	Meteor. Service of Mexico
Noria, Nuevo León	†	25° 38'	100° 10'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Nueva Cd. Guerrero, Tamaulipas	S	26° 34'	99° 14'	348	#May 1954	Laredo - Falcón	I. B. & W. C.
Nuevo Laredo, Tamaulipas	S	27° 29'	99° 31'	420	1950	Laredo - Falcón	I. B. & W. C.
Nuevo Laredo, Tamaulipas	S	27° 29'	99° 31'	413	# 1909	Laredo - Falcón	Meteor. Service of Mexico
Nueva Rosita, Coahuila	S	27° 56'	101° 13'	1, 410	#Aug. 1925	Río Salado	Meteor. Service of Mexico
Ojinaga, Chihuahua	S	29° 33'	104° 28'	2, 580	#Apr. 1954	Río Conchos	I. B. & W. C.
Ojinaga, Chihuahua	S	29° 34'	104° 26'	2, 620	#Nov. 1906	Río Conchos	Meteor. Service of Mexico
Ojo Caliente, Chihuahua	S	27° 41'	105° 13'	4, 010	1942	Río Conchos	Hydr. Resources
Pajonál, Nuevo León	†	25° 29'	100° 25'	†	1958	Río San Juan	Hydr. Resources
Palestina, Coahuila	S	29° 08'	100° 57'	1, 080	‡ 1931	Diablo Dam - Eagle Pass	Hydr. Resources
Paraíso, Nuevo León	†	25° 14'	100° 04'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Parás, Nuevo León	†	26° 30'	99° 31'	†	# 1958	Adjacent to Laredo - Falcón	Hydr. Resources
Parral, Chihuahua	S	26° 56'	105° 39'	5, 740	# 1903	Río Conchos	Meteor. Service of Mexico
Parras, Coahuila	†	25° 27'	102° 10'	5, 510	1958	Adjacent to Río San Juan	Hydr. Resources
Piedras Negras, Coahuila	S	28° 42'	100° 31'	721	# 1951	Diablo Dam Site - Eagle Pass	I. B. & W. C.
Planta Zootécnica, Chihuahua	†	28° 41'	106° 04'	†	# 1957	Río Conchos	Meteor. Service of Chihuahua
Porvenir, Chihuahua	S	31° 14'	105° 52'	3, 530	1958	El Paso - Ft. Quitman	I. B. & W. C.
Potosí, Nuevo León	†	24° 51'	100° 19'	†	1958	Adjacent to Río San Juan	Monterrey Wtr. Wks.

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NAME OF STATION	TYPE GAGE	LATITUDE	LONGITUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Potrero Abrego, Coahuila	†	25° 17'	100° 18'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Potrero Redondo, Nuevo León	†	25° 16'	100° 08'	†	# 1958	Río San Juan	Hydr. Resources
Praxedis G. Guerrero, Chihuahua	S	31° 22'	106° 00'	3,560	1958	El Paso - Fort Quitman	I. B. & W. C.
Presa Estanzuela, Nuevo León	†	25° 33'	100° 17'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Progreso, Coahuila	S	27° 25'	101° 00'	1,210	Feb. 1943	Río Salado	Hydr. Resources
Puerto de la Camotera Nuevo León	†	25° 15'	100° 11'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Puerto Gringo, Nuevo León	†	25° 24'	100° 12'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Puerto Mauricio Arriba, Nuevo León	†	25° 20'	100° 10'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Rafces, Nuevo León	†	25° 15'	100° 01'	†	# 1958	Río San Juan	Monterrey Wtr. Wks.
Ramos Arizpe, Coahuila	S	25° 32'	100° 57'	4,590	#Apr. 1907	Río San Juan	Meteor. Service of Mexico
Rancho los Vidrios, Tamaulipas	S	27° 36'	99° 37'	446	Sept. 1956	Eagle Pass - Laredo	H. Vidrio
Rancho San Juan de la Palma, Tamaulipas	S	26° 53'	99° 22'	348	Apr. 1955	Laredo - Falcón	I. B. & W. C.
Rayones, Nuevo León	S	25° 01'	100° 05'	1,970	#Oct. 1926	Río San Juan	Hydr. Resources
Reata, Coahuila	S	26° 07'	101° 04'	3,070	#July 1944	Río San Juan	Hydr. Resources
Retamal, Tamaulipas	S	26° 02'	98° 02'	82	Oct. 1949	Lower Rio Grande Valley	I. B. & W. C.
Reynosa, Tamaulipas	R	26° 06'	98° 17'	130	# 1941	Lower Rio Grande Valley	Hydr. Resources
Rinconada, Nuevo León	S	25° 40'	100° 40'	4,790	Apr. 1944	Río San Juan	Hydr. Resources
Río Bravo, Tamaulipas	S	26° 00'	98° 06'	85	#Sept. 1950	Lower Rio Grande Valley	Hydr. Resources
Rodeo, Nuevo León	†	25° 35'	100° 27'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Rosetilla, Chihuahua	S	28° 14'	105° 19'	3,780	1940	Río Conchos	Río Conchos Hydro-electric Co.
Sabinas, Coahuila	S	27° 50'	101° 08'	1,440	#May 1922	Río Salado	Hydr. Resources
Sabinas Hidalgo, Nuevo León	S	26° 30'	100° 11'	1,030	May 1958	Río Salado	I. B. & W. C.
Saltillo, Coahuila	S	25° 26'	101° 00'	5,280	# 1886	Río San Juan	Hydr. Resources
Samalayuca, Chihuahua	†	31° 21'	106° 28'	4,180	1958	El Paso - Fort Quitman	Meteor. Service of Mexico
San Agustin, Chihuahua	S	31° 31'	106° 15'	3,650	1958	El Paso - Fort Quitman	I. B. & W. C.
San Antonio de las Alazanas, Coahuila	†	25° 15'	100° 36'	†	1958	Río San Juan	Hydr. Resources
San Antonio, Chihuahua	S	31° 01'	106° 00'	4,500	July 1958	El Paso - Fort Quitman	I. B. & W. C.
San Antonio, Durango	S	26° 25'	105° 21'	5,430	1943	Río Conchos	Hydr. Resources
San Buenaventura, Coahuila	S	27° 05'	101° 33'	2,300	#Dec. 1926	Río Salado	Meteor. Service of Mexico
San Francisco Rayones, Nuevo Leon	†	25° 03'	100° 07'	†	1958	Río San Juan	Monterrey Wtr. Wks.
San Isidro, Chihuahua	†	27° 09'	105° 56'	†	Aug. 1957	Río Conchos	Meteor. Service of Chihuahua
San Juan, Nuevo León	†	25° 33'	99° 50'	876	Nov. 1943	Río San Juan	Hydr. Resources
San Miguel de Camargo, Tamaulipas	S	26° 14'	98° 36'	130	# 1953	Lower Rio Grande Valley	Hydr. Resources
San Nicolás, Nuevo León	†	25° 44'	100° 17'	†	# 1958	Río San Juan	Private Gage
San Pablo, Nuevo León	†	25° 34'	100° 19'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Santa Catarina, Nuevo León	R	25° 41'	100° 26'	1,970	Oct. 1937	Río San Juan	Hydr. Resources
Santa Rita, Chihuahua	†	27° 15'	105° 28'	†	# 1956	Río Conchos	Meteor. Service of Chihuahua
Santa Rosa, Coahuila	†	29° 38'	101° 28'	†	# 1958	Langtry - Diablo Dam Site	Valeriano T. Diego
Siquirichic, Chihuahua	†	27° 09'	107° 12'	†	July 1956	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Tinajas, Chihuahua	S	31° 09'	106° 05'	4,210	1958	El Paso - Fort Quitman	I. B. & W. C.
Topo Chico, Nuevo León	R	25° 49'	100° 20'	1,640	#Aug. 1939	Río San Juan	Hydr. Resources
Túnel San Francisco, Nuevo León	†	25° 25'	100° 10'	†	1958	Río San Juan	Monterrey Wtr. Wks.
Vado de Cedillos, Chihuahua	S	31° 12'	105° 49'	3,500	Apr. 1958	El Paso - Fort Quitman	I. B. & W. C.
Vallecillo, Nuevo León	†	26° 40'	99° 58'	†	June 1958	Río Salado	Hydr. Resources
Valle Hermoso, Tamaulipas	S	25° 41'	97° 48'	56	#June 1949	Lower Rio Grande Valley	Hydr. Resources
Villa Allende, Nuevo León	S	25° 17'	100° 01'	2,210	#Nov. 1938	Río San Juan	Hydr. Resources
Villa de Santiago, Nuevo León	S	25° 25'	100° 07'	1,480	# 1923	Río San Juan	Hydr. Resources
Villa Guerrero, Coahuila	S	28° 20'	100° 24'	689	June 1958	Eagle Pass - Laredo	I. B. & W. C.
Villa Hidalgo, Coahuila	S	27° 47'	99° 52'	499	1951	Eagle Pass - Laredo	I. B. & W. C.
Villa Juárez, Coahuila	S	27° 37'	100° 44'	900	# 1943	Río Salado	Hydr. Resources
Villalba, Chihuahua	S	28° 01'	105° 46'	3,940	Oct. 1940	Río Conchos	Hydr. Resources
Zaragoza, Chihuahua	†	31° 40'	106° 20'	3,660	Feb. 1958	El Paso - Fort Quitman	Hydr. Resources
Zubia, Chihuahua	†	28° 27'	106° 28'	†	# 1955	Río Conchos	Meteor. Service of Chihuahua

Some months missing † Not available R Recording S Standard

EVAPORATION IN THE RIO GRANDE BASIN
IN INCHES
In the United States

Tabulated below are records of evaporation observed at six stations operated by the United States Section of this Commission from Presidio to Brownsville, Texas. At all stations, the exposure to wind was uniform and relatively unimpeded. The sites were kept cleared of all high brush and trees within 150 feet, and all brush, tall weeds and other obstructions within 100 feet of the fenced enclosures. Within the enclosures, all vegetation has been either eradicated or kept trimmed to within 3 inches of the ground surface. For specific location of these stations refer to data opposite same station name shown in "Location of Rainfall Stations on the Rio Grande Watershed", pages 105 and 106 in this bulletin.

Three types of pans were used at these stations:

1. U. S. Weather Bureau Standard Pan. A circular pan, 4 feet in diameter and 10 inches deep, made of 22-gage galvanized iron, is set on a wooden platform with the rim of the pan 16 inches above the ground. The water level is maintained between 2 and 3 inches below the rim of the pan. This type of pan was in operation at Falcón Dam, Texas.

2. A circular pan, 2 feet in diameter and 36 inches deep, made of 22-gage galvanized iron, is set in the ground with the rim of the pan 3 inches above the ground surface and the top covered with a circular screen of No. 4 (1/4" mesh) galvanized hardware cloth. The water level is maintained between 2.5 and 3.5 inches below the rim of the pan. This type of pan was in operation at Falcón Dam, Texas. This same type of pan, equipped with an automatic feed tank that maintains the water at a level 3 inches below the rim of the pan, was in operation at Martin King Ranch and Wardlaw Ranch.

3. A circular pan, 12 feet in diameter and 36 inches deep, made of 20-gage galvanized iron, is set in the ground with the rim of the pan 3 inches above the ground surface. The water level is maintained between 2.5 and 3.5 inches below the rim of the pan. This type of pan was in operation at Falcón Dam, Texas.

An evaporometer developed by the United States Section of this Commission and calibrated against a 2-foot pan, described above, was in operation at Presidio, Johnson Ranch, and Brownsville, 7 miles east.

Month	Presidio, Texas		Johnson Ranch, Texas		Martin King Ranch		Wardlaw Ranch	
	1958	Average 1950-1958	1958	Average 1950-1958	1958	Average March 1956-1958	1958	Average Sept. 1955-1958
Jan.	2.39	3.82	2.56	4.15	2.67	3.06	3.62	3.10
Feb.	4.57	5.18	4.46	5.66	3.26	3.37	2.48	3.51
Mar.	6.55	8.67	6.55	8.76	4.16	6.16	3.89	6.10
Apr.	10.12	10.75	9.94	10.99	7.46	7.79	5.84	6.97
May	11.48	13.08	11.67	13.19	9.20	9.33	8.25	8.26
June	12.77	14.15	11.41	14.15	9.91	12.02	7.00	9.85
July	12.37	13.42	12.83	14.78	10.30	13.29	11.02	13.83
Aug.	10.90	13.26	11.13	13.46	13.14	13.84	11.51	12.98
Sept.	7.35	11.33	6.93	11.03	5.25	8.11	5.57	7.70
Oct.	4.72	8.28	5.65	8.65	3.22	6.06	2.63	5.88
Nov.	3.43	5.29	2.91	5.42	2.68	3.79	2.33	4.31
Dec.	2.41	3.61	1.52	3.97	3.02	3.41	2.63	3.07
Total	89.06	110.84	87.56	114.21	74.27	90.23	66.77	85.56

Month	Falcón Dam, Texas						Brownsville, Texas	
	2-Foot Pan		4-Foot Pan		12-Foot Pan			
	1958	Average April 1950-1958	1958	Average April 1956-1958	1958	Average April 1956-1958	1958	Average
Jan.	2.92	4.04	3.72	4.39	2.76	3.26		Record began July, 1958
Feb.	3.13	5.15	4.13	5.42	3.01	3.96		
Mar.	4.48	7.39	6.19	8.80	4.68	6.20		
Apr.	7.09	8.43	9.72	10.37	6.93	6.67		
May	8.34	10.33	13.19	13.47	7.79	8.92		
June	8.18	11.78	12.30	13.69	7.83	9.70		
July	11.81	13.82	15.19	17.43	11.44	12.71	6.90	
Aug.	12.38	12.39	16.49	16.57	11.79	11.93	7.75	
Sept.	5.14	8.62	7.03	10.86	5.40	7.92	3.12	
Oct.	2.82	6.87	5.07	8.35	2.94	5.73	1.73	
Nov.	3.22	5.18	4.02	6.05	2.92	4.31	2.52	
Dec.	3.10	4.25	3.22	4.69	2.51	3.46	2.60	
Total	72.61	98.25	100.27	120.09	70.00	84.77		

EVAPORATION IN THE RIO GRANDE BASIN
IN INCHES
In Mexico

Tabulated below are records of evaporation observed at nine stations operated and maintained by the Mexican Section of this Commission. Eight stations are along the Rio Grande from Cd. Acuña, Coahuila to Retamal, Tamaulipas and one is located on the Río Conchos near Ojinaga, Chihuahua. At all stations, except Ojinaga, the sites were kept cleared of all high brush and trees within 150 feet, and of all brush and tall weeds within 100 feet of the fenced enclosures. There are several large trees at the Ojinaga station. The corrugated iron gage well, 42 inches in diameter, and one A-frame of the cableway of the Río Conchos stream gaging station are in the north end of the enclosure. Inside the enclosures, all vegetation either had been eradicated or was kept trimmed to within 3 inches of the ground surface. Except for a water barrel and a thermometer shelter in the northeast and northwest corners of the enclosures, the exposure to wind was uniform and relatively unimpeded. For specific location of these stations refer to data opposite same station name shown in "Location of Rainfall Stations on the Rio Grande Watershed", pages 107 through 109 in this bulletin.

The type of pan used at all these stations was a U. S. Weather Bureau Standard Pan, 4-feet in diameter and 10 inches deep, made of 22-gage galvanized iron, set on a wooden platform with the rim of the pan 16 inches above the ground. The water level was maintained between 2 and 3 inches below the rim of the pan and was measured with a micrometer gage.

Data for other evaporation stations in the Rio Grande Basin in Mexico, which were operated by various Mexican agencies, are available in Water Bulletin Number 28 published by the Mexican Section of this Commission.

Month	Ojinaga, Chih.		Cd. Acuña, Coah.		Jiménez, Coah.		Piedras Negras, Coah.		Hidalgo, Coah.	
	1958	#Average April 1954-1958	1958	Average 1951-1958	1958	#Average 1951-1958	1958	#Average 1951-1958	1958	Average 1951-1958
Jan.	2.41	2.98	2.73	3.74	2.94	3.31	3.11	3.32	3.48	4.65
Feb.	3.89	4.26	3.15	5.05	2.91	4.52	3.35	4.54	3.93	5.88
Mar.	5.57	6.76	5.29	8.10	4.87	7.02	5.27	7.29	5.80	8.92
Apr.	9.40	9.27	7.62	9.46	6.84	8.21	7.28	8.76	8.48	11.00
May	10.70	11.37	8.72	10.62	9.00	9.68	7.74	9.97	10.01	13.32
June	12.65	12.38	10.49	12.24	10.67	11.56	12.18	11.73	13.11	14.82
July	12.11	12.06	13.13	14.00	12.73	13.27	15.31	13.98	15.54	17.27
Aug.	9.91	9.79	12.56	12.89	11.60	11.88	16.01	13.13	14.78	16.06
Sept.		8.22	6.54	9.12	5.91	8.03	9.22	8.46	7.50	10.98
Oct.		5.82	2.98	6.19	2.74	5.61	8.16	6.39	3.73	7.96
Nov.	2.74	3.53	2.67	3.99	2.30	3.50	2.91	3.68	3.42	5.07
Dec.	2.03	2.77	2.54	3.50	2.58	3.11	2.14	3.14	2.66	4.43
Total		89.21	78.42	98.90	75.09	89.70	92.68	94.39	92.44	120.36

Month	Rancho San Juan de la Palma, Tamps.		Nueva Cd. Guerrero, Tamps.		Cd. Mier, Tamps.		Retamal, Tamps.	
	1958	Average April 1955-1958	1958	#Average June 1954-1958	1958	Average Oct. 1955-1958	1958	Average 1951-1958
Jan.	4.86	4.26	3.90	4.21	3.17	3.87	3.61	4.66
Feb.	3.98	5.25	3.74	4.40	4.00	5.23	3.78	5.09
Mar.	5.83	7.28	5.50	7.21	5.82	7.76	4.46	6.76
Apr.	9.02	9.66	8.42	9.31	9.36	9.22	7.30	8.42
May	9.52	11.48	9.98	11.96	11.00	11.39	8.17	9.29
June	13.24	13.28	11.40	11.86	12.32	13.04	8.47	9.55
July	17.28	15.92	13.48	14.49	15.23	16.37	9.77	10.02
Aug.	15.96	15.20	13.48	13.74	(No		11.08	10.13
Sept.	9.09	10.62	7.56	10.10	Record)		5.59	7.11
Oct.	4.93	7.88	3.38	7.46			3.10	5.96
Nov.	4.07	4.97	3.69	5.52			3.63	4.22
Dec.	3.10	4.16	2.76	4.08			2.58	3.97
Total	100.88	109.96	87.29	104.34			71.54	85.18

Some months missing.

TEMPERATURE, HUMIDITY, AND WIND

The mean monthly temperatures shown for the stations in Mexico are averages of daily maximum and minimum thermometer observations.

The mean monthly temperatures and relative humidities shown for stations in the United States were integrated from continuous records of hygrothermographs, housed in louvered shelters, with the sensing elements of the instruments 16 inches above the ground and 9 feet southwest of either a 2 or 4-foot diameter evaporation pan.

Monthly mean wind velocities are based on the total miles of wind movement indicated by a standard 3-cup anemometer installed and operated according to specifications for a Class A Weather Bureau evaporation station.

Mean Temperature – Degrees Fahrenheit
In the United States

Month	Tortuga Ranch, Texas		Falcón Dam, Texas	
	1958	Average June 1955-1958	1958	Average July 1950-1958
Jan.	49.1	51.5	52.2	59.8
Feb.	50.9	56.6	54.5	62.9
Mar.	57.7	62.0	60.3	68.9
Apr.	69.5	69.5	72.8	75.6
May	78.8	78.0	77.4	80.4
June	85.2	85.6	83.2	85.2
July	87.4	86.6	84.0	86.9
Aug.	89.3	87.2	86.2	87.1
Sept.	81.2	80.2	79.8	82.3
Oct.	70.7	70.7	67.1	74.5
Nov.	60.3	57.9	63.1	63.8
Dec.	50.8	52.4	53.0	58.9
Yearly	69.2	69.8	69.5	73.9

In Mexico

Month	Ojinaga, Chihuahua		Cd. Acuña, Coahuila		Jiménez, Coahuila		El Remolino, Coahuila	
	1958	#Avg. Apr. 1954-1958	1958	Avg. Apr. 1951-1958	1958	#Avg. Mar. 1954-1958	1958	Average
Jan.	45.7	48.6	49.3	52.9	50.0	54.4		Record began June 1958.
Feb.	53.6	54.3	51.6	57.8	52.0	58.9		
Mar.	57.2	59.1	57.2	64.1	56.7	64.1		
Apr.	67.5	68.0	70.5	72.6	68.7	71.6		
May	76.6	76.5	77.9	79.5	75.9	77.6		
June	86.9	84.1	85.3	86.2	83.1	84.5	83.1	
July	87.3	85.0	87.8	89.0	86.0	86.9	84.4	
Aug.	33.8	82.5	88.5	89.4	86.4	86.9	86.0	
Sept.		78.5	81.3	83.2	81.7	80.6	78.4	
Oct.	66.2	67.8	68.9	72.3	68.4	71.8	66.0	
Nov.	57.9	55.1	60.8	58.9	60.4	60.0	58.1	
Dec.	45.7	49.4	50.9	52.5	54.0	54.0	52.7	
Yearly		67.4	69.2	71.5	68.6	70.9		

Month	Piedras Negras, Coahuila		Villa Guerrero, Coahuila		Villa Hidalgo, Coahuila		Rancho los Vidrios, Tamaulipas	
	1958	#Avg. Apr. 1951-1958	1958	Average	1958	#Avg. Aug. 1951-1958	1958	Avg. Sept. 1956-1958
Jan.	48.9	52.1		Record began July 1958.	52.9	56.5	52.2	55.8
Feb.	50.4	56.1			54.0	59.5	54.3	61.6
Mar.	56.1	61.4			59.9	66.4	63.0	67.1
Apr.	66.7	69.5			73.2	74.8	74.5	75.0
May	74.5	76.3			78.8	79.9	84.7	83.0
June	84.6	83.9			86.0	86.4	87.4	87.0
July	86.4	86.3	83.3		87.4	87.5	84.2	86.0
Aug.	87.6	86.2	85.3		89.1	87.7	87.8	88.2
Sept.	82.4	78.8	79.2		83.1	82.4	83.5	83.1
Oct.	67.6	67.6	65.1		69.1	73.9	72.3	75.6
Nov.	57.0	55.9	58.8		54.5	60.8	67.8	63.6
Dec.	50.7	51.5	45.5		56.3	56.7	53.2	57.4
Yearly	67.7	68.8			70.3	72.7	72.1	73.6

Some months missing

TEMPERATURE, HUMIDITY, AND WIND

Mean Temperature – Degrees Fahrenheit

In Mexico

Month	Rancho San Juan de la Palma, Tamps.		Nueva Cd. Guerrero, Tamaulipas		Cd. Mier, Tamaulipas		Retamal, Tamaulipas	
	1958	Avg. Apr. 1955-1958	1958	Average	1958	#Avg. Oct. 1955-1958	1958	Average 1951-1958
Jan.	55.6	59.4	53.8	Record began	56.5	59.9	59.7	64.1
Feb.	57.0	63.5	56.3	January 1958	59.4	64.2	61.9	65.4
Mar.	62.2	63.9	60.8		65.1	68.5	65.5	71.4
Apr.	75.9	72.6	74.1		79.9	77.4	77.7	77.8
May	81.3	81.8	79.2		82.4	82.7	80.8	81.4
June	87.8	87.5	83.7		89.6	87.8	88.3	86.1
July	86.4	88.5	86.5		88.2	88.8	91.0	87.0
Aug.	91.0	89.8	88.2		90.0	89.5	93.7	88.5
Sept.	86.4	85.1	82.4			84.4	84.2	83.2
Oct.	72.0	75.6	69.1			77.1	74.5	76.5
Nov.	66.9	64.6	64.8			64.6	71.2	67.6
Dec.	55.9	59.4	53.6			62.2	58.3	62.8
Yearly	73.2	74.3	71.0			75.6	75.6	76.0

Mean Relative Humidity – Percent

In the United States

Month	Tortuga Ranch, Texas		Falcón Dam, Texas	
	1958	Average June 1955-1958	1958	Average July 1950-1958
Jan.	80.7	75.9	69.5	62.9
Feb.	80.9	72.7	76.8	61.5
Mar.	76.7	62.7	69.5	59.1
Apr.	67.8	65.5	61.6	59.4
May	65.8	68.4	66.8	62.7
June	68.7	64.1	68.2	63.1
July	62.5	61.3	65.0	58.4
Aug.	56.4	60.4	59.0	58.9
Sept.	82.4	70.8	78.6	64.7
Oct.	89.0	71.0	89.8	64.3
Nov.	80.2	73.4	76.9	63.8
Dec.	75.4	67.4	74.6	60.4
Yearly	73.9	67.8	71.4	61.6

Mean Wind Speed – Miles Per Hour

In the United States

Martin King Ranch		Tortuga Ranch, Texas		Falcón Dam, Texas	
1958	Average 1957-1958	1958	#Average June 1955-1958	1958	Average July 1950-1958
4.6	4.6	3.7	2.8	4.3	4.2
5.8	5.3	4.1	3.6	4.4	5.0
9.4	8.1	3.3	4.0	4.2	5.5
6.4	7.1	3.6	5.0	5.0	6.4
6.3	6.7	3.1	4.9	4.3	6.4
8.2	8.2	4.0	5.5	5.0	6.9
9.0	8.4		5.5	6.3	7.2
6.4	6.9	3.6	4.3	4.7	6.1
5.5	5.8		3.7	3.2	4.6
3.5	4.8		3.6	4.2	4.1
4.5	4.4	2.1	2.8	3.0	4.2
3.3	3.9	1.6	2.6	3.8	3.9
6.1	6.2		4.0	4.4	5.4

Some months missing

DRAINAGE BASIN AND IRRIGATED AREAS

Along the Rio Grande and Tributaries – 1958

The total area within the outer rim of the Rio Grande Basin is about 335,500 square miles; however, in many places, particularly along the southwestern boundary of the basin, large areas contribute no surface runoff to the Rio Grande. Such non-contributive areas constitute about 45.7% of the total area, leaving 182,215 square miles of productive watershed. Only the productive part of the watershed is included in the list below.

The irrigated areas shown below are from the most reliable sources available and are listed according to the downstream sequence of the points of diversion of their irrigation water and, consequently, they may or may not be wholly within the indicated main river or tributary reach. They are all within the Rio Grande Basin, except in the Lower Rio Grande Valley below the Rio Grande City gaging station, where water is diverted at numerous points to irrigate lands which are adjacent to but do not contribute surface runoff to the Rio Grande.

For both countries, only areas irrigated in 1958 are shown below except that, on the United States side below Falcón Dam, the figures shown represent acreages which were subject to irrigation in 1958 but for which data on the portion actually irrigated is not known.

DESIGNATIONS OF AREAS AND GAGING STATIONS	Drainage Basin Square Miles			Irrigated Areas—Acres		
	United States	Mexico	Total	United States	Mexico	Total
Above Elephant Butte Dam	25,923	0	25,923			
Elephant Butte Dam to Caballo Dam	1,295	0	1,295	0	0	0
Above Caballo Dam	27,218	0	27,218	0	0	0
Caballo Dam to El Paso Station	2,049	0	2,049	93,098	0	93,098
Above El Paso Gaging Station	29,267	0	29,267	93,098	0	93,098
El Paso Station to American Dam	4	0	4	14,126	0	14,126
Above American Dam	29,271	0	29,271	107,224	0	107,224
American Dam to Island Station	187	493	680	33,758	20,623	54,381
Above Island Gaging Station	29,458	493	29,951	140,982	20,623	161,605
Island Station to County Line Station	485	174	659	0	0	0
American Dam to County Line Station - Total	672	667	1,339	33,758	20,623	54,381
Above County Line Gaging Station	29,943	667	30,610	140,982	20,623	161,605
County Line Station to Fort Quitman Station	663	762	1,425	7,144	0	7,144
Above Fort Quitman Gaging Station	30,606	1,429	32,035	148,126	20,623	168,749
Fort Quitman to Upper Presidio Station	1,621	1,332	2,953	a 1,553	306	1,859
Above Upper Presidio Gaging Station	32,227	2,761	34,988	149,679	20,929	170,608
Río Conchos Above Boquilla Dam	0	8,202	8,202	0	4,942	4,942
Río Conchos Below Boquilla Dam	0	21,065	21,065	0	161,075	161,075
Río Conchos - Total	0	29,267	29,267	0	166,017	166,017
Alamito Creek above Gaging Station	1,504	0	1,504	b 488	0	488
Upper Presidio to Lower Presidio Gaging Station - excluding above tributaries	367	77	444	3,120	596	3,716
Upper Presidio to Lower Presidio - Total	1,871	29,344	31,215	3,608	166,613	170,221
Above Lower Presidio Gaging Station	34,098	32,105	66,203	153,287	187,542	340,829
Terlingua Creek above Gaging Station	1,070	0	1,070	c 2,430	0	2,430
Lower Presidio to Johnson Ranch Station - excluding Terlingua Creek	1,093	2,349	3,442	985	3,156	4,141
Lower Presidio to Johnson Ranch - Total	2,163	2,349	4,512	3,415	3,156	6,571
Above Johnson Ranch Gaging Station	36,261	34,454	70,715	156,702	190,698	347,400
Johnson Ranch Station to Langtry Station	6,594	7,486	14,080	d 6,643	0	6,643
Above Langtry Gaging Station	42,855	41,940	84,795	163,345	190,698	354,043
Pecos River above Girvin	29,562	0	29,562			
Pecos River, Girvin to Shumla Station	5,600	0	5,600	0	0	0
Pecos River - Total	35,308	0	35,308			
Goodenough Spring above Gaging Station	1	0	1	0	0	0
Devils River above Upper Devils Station	3,903	0	3,903	0	0	0
Devils River above Devils River Station	4,185	0	4,185	0	0	0
Devils River - Above Station near Mouth	4,305	0	4,305	0	0	0
Langtry Station to Below Diablo Dam Site Station - excluding above tributaries	221	1,793	2,014	0	0	0
Langtry Station to below Diablo Dam Site Station - Total	39,835	1,793	41,628	0	0	0
Above the Below Diablo Dam Site Gaging Station	82,690	43,733	126,423	163,345	190,698	354,043

a Includes 165 acres irrigated by spreader dams. b Includes 247 acres irrigated by spreader dams. c Includes 1,800 acres irrigated by spreader dams. d Includes 6,257 acres irrigated by spreader dams.

DRAINAGE BASIN AND IRRIGATED AREAS
Along the Rio Grande and Tributaries – 1958

DESIGNATIONS OF AREAS AND GAGING STATIONS	Drainage Basin Square Miles			Irrigated Areas—Acres		
	United States	Mexico	Total	United States	Mexico	Total
Arroyo las Vacas above Gaging Station	0	358	358	0	988	988
San Felipe Creek above Gaging Station	46	0	46	1,274	0	1,274
Below Diablo Dam Site Station to Below Maverick Dam Station - excluding above tributaries	627	210	837	31,157	625	31,782
Below Diablo Dam Site Station to Below Maverick Dam - Total	673	568	1,241	32,431	1,613	34,044
Above the Below Maverick Dam Gaging Station	83,363	44,301	127,664	195,776	192,311	388,087
Pinto Creek above Gaging Station	249	0	249	60	0	60
Río San Diego above Gaging Station	0	848	848	0	10,210	10,210
Río San Diego - Total	0	856	856	0	10,919	10,919
Río San Rodrigo above Gaging Station	0	669	669	0	5,313	5,313
Río San Rodrigo - Total	0	958	958	0	5,313	5,313
Maverick Dam Station to Maverick Power Plant - excluding above tributaries	389	181	570	75	0	75
Maverick Dam Station to Maverick Power Plant - Total	638	1,995	2,633	135	16,232	16,367
Above Maverick Power Plant	84,001	46,296	130,297	195,911	208,543	404,454
Maverick Power Plant to Eagle Pass Station	244	34	278	125	3,131	3,256
Above Eagle Pass Gaging Station	84,245	46,330	130,575	196,036	211,674	407,710
Río Escondido above Gaging Station	0	1,279	1,279	0	10,502	10,502
Río Escondido - Total	0	1,284	1,284	0	10,502	10,502
Eagle Pass Station to San Antonio Crossing Station - excluding Río Escondido	237	251	488	300	773	1,073
Eagle Pass to San Antonio Crossing Station - Total	237	1,535	1,772	300	11,275	11,575
Above San Antonio Crossing Gaging Station	84,482	47,865	132,347	196,336	222,949	419,285
San Antonio Crossing to Laredo Station	1,236	2,393	3,629	4,650	17,159	21,809
Above Laredo Gaging Station	85,718	50,258	135,976	200,986	240,108	441,094
Río Salado above Venustiano Carranza Dam	0	17,296	17,296	0	58,811	58,811
Río Salado above Las Tortillas Gaging Station	0	24,877	24,877	0	89,645	89,645
Río Salado above Cd. Guerrero Gaging Station	0	25,112	25,112	0	89,645	89,645
Laredo Station to Falcón Dam - excluding Río Salado	2,042	1,352	3,394	e 8,300	10,265	18,565
Laredo Station to Falcón Dam - Total	2,042	26,464	28,506	8,300	99,909	108,209
Above Falcón Dam Gaging Station	87,760	76,722	164,482	209,286	340,017	549,303
Río Alamo above Gaging Station	0	1,692	1,692	0	7,660	7,660
Río San Juan above Marte Gómez Dam	0	13,429	13,429	0	102,548	102,548
Río San Juan - Marte Gómez Dam to Camargo Gaging Station	0	172	172	0	169,825	169,825
Río San Juan - Total	0	13,601	13,601	0	272,373	272,373
Falcón Dam Station to Fort Ringgold Station - excluding above tributaries	222	399	621	9,408	1,389	10,797
Falcón Dam Station to Fort Ringgold - Total	222	15,692	15,914	9,408	281,422	290,830
Above Fort Ringgold Gaging Station	87,982	92,414	180,396	218,694	621,439	840,133
Fort Ringgold Station to Anzaldúas Dam Site	952	790	1,742	183,279	228,734	412,013
Above Anzaldúas Dam Site	88,934	93,204	182,138	401,973	850,173	1,252,146
Anzaldúas Dam Site to Progreso Station	13	22	35	141,993	3,321	145,314
Above Progreso Gaging Station	88,947	93,226	182,173	543,966	853,494	1,397,460
Progreso Station to San Benito Station	7	7	14	328,646	1,928	330,574
Above San Benito Gaging Station	88,954	93,233	182,187	872,612	855,422	1,728,034
San Benito Station to Lower Brownsville Station	14	14	28	100,958	1,063	102,021
Fort Ringgold Station to Lower Brownsville Station	986	833	1,819	754,876	235,046	989,922
Above Lower Brownsville Gaging Station	88,968	93,247	182,215	973,570	856,485	1,830,055
Lower Brownsville Station to Gulf of Mexico				6,762	684	7,446
Above Gulf of Mexico				980,332	857,169	1,837,501

e Excludes 45 acres irrigated from small reservoirs.

SUPPLEMENTARY DATA–INTERNATIONAL FALCON RESERVOIR

Deduced Inflows

Considering that a knowledge of the mean daily inflows reaching the International Falcón Reservoir would serve a useful purpose, such data have been deduced for 1958 showing the flows as close as they can be approximated. These data are based on the daily operation of the International Falcón Reservoir, taking into account: a) record of gage-heights at the dam; b) releases as measured at both hydroelectric plants and outlet works; c) elevation-area-capacity tables based on 1954 surveys; and d) rate of evaporation measured at the dam and at Nueva Cd. Guerrero applied to an area one foot higher than the average area of two consecutive days.

Flow contributions from different sources, irrigation diversions between Laredo and Falcón, river channel losses, reservoir evaporation, accuracy of gage-height records, displacement due to wind action on the reservoir, and seepage losses in the reservoir and through the dam, all tend to cause variations in the deduced determinations and the inflows shown below should not necessarily be in agreement with the combined flow of the Rio Grande at Laredo and the Río Salado at Las Tortillas.

In spite of the deficiencies above noted and others that may occur, it is estimated that the data shown below represent a reasonable approximation of the daily flows entering the International Falcón Reservoir. Storage and other data may be found on page 60 in this bulletin.

Mean Daily Discharge in Second-Feet 1958 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,500	1,960	4,560	1,310	523	2,670	3,400	466	1,960	63,920	31,220	9,890
2	1,610	1,880	593	1,740	1,530	2,030	1,520	1,740	925	46,970	26,730	7,060
3	1,180	1,290	3,040	2,010	4,700	922	1,560	2,330	2,210	54,380	26,660	7,170
4	20,310	2,170	1,880	1,540	3,850	1,570	2,110	3,010	3,390	47,670	23,940	8,550
5	22,640	2,740	1,740	2,180	3,640	1,440	2,440	2,790	1,440	44,850	22,040	10,380
6	8,620	2,650	2,160	2,660	936	330	1,560	2,630	2,000	44,850	20,130	9,460
7	4,910	1,300	1,570	597	780	636	3,110	2,180	15,040	49,790	20,160	7,350
8	3,140	1,340	2,460	2,790	3,010	727	9,610	1,060	8,900	50,850	21,440	6,110
9	1,960	1,320	2,900	1,060	2,000	1,030	12,430	1,580	9,780	51,910	17,480	9,890
10	2,360	2,590	3,990	396	554	1,540	8,690	2,300	13,630	54,740	19,280	8,120
11	2,370	586	2,080	1,430	2,040	1,100	5,050	1,530	19,460	40,960	14,340	3,810
12	5,830	547	1,600	890	953	1,030	3,600	2,260	15,400	46,260	12,890	6,500
13	2,440	968	675	1,620	29,490	1,430	1,800	2,340	9,390	43,790	8,480	6,710
14	2,040	3,310	625	1,450	29,730	1,710	1,430	2,190	6,890	42,730	12,220	6,990
15	2,200	1,330	667	1,710	28,220	257	2,610	2,260	7,030	49,090	10,350	6,320
16	1,690	1,160	2,370	833	16,770	1,290	2,830	1,740	7,770	59,330	11,050	7,240
17	2,540	2,190	2,530	60.7	8,580	968	2,020	2,260	33,050	55,440	16,670	6,460
18	1,670	1,300	1,880	2,810	7,730	5,230	1,540	3,310	48,730	51,210	9,960	5,860
19	1,240	1,530	685	1,420	6,780	21,900	1,370	2,860	64,980	45,560	9,430	8,300
20	3,050	3,520	742	2,340	5,260	52,270	1,290	2,870	50,500	38,140	11,410	8,400
21	1,130	4,940	2,200	1,160	3,670	30,370	162	2,040	39,550	33,970	10,210	5,230
22	1,200	6,780	1,910	459	3,600	9,290	2,120	1,700	31,640	26,310	10,060	5,650
23	4,310	6,780	2,540	3,220	3,480	5,230	1,230	2,600	30,370	21,650	10,240	8,400
24	1,400	4,410	2,220	3,390	3,380	4,240	1,400	3,780	31,610	19,920	9,640	8,900
25	3,600	5,540	1,230	463	3,520	5,580	1,680	1,710	32,980	22,040	10,420	4,840
26	2,210	3,030	1,130	833	2,510	5,860	876	1,250	13,910	24,190	11,230	4,800
27	2,780	4,770	611	1,180	2,350	8,930	2,460	1,560	14,200	31,040	8,970	7,060
28	3,140	3,150	1,930	925	2,180	4,730	1,460	1,850	16,950	24,230	8,930	7,380
29	1,130		2,520	3,370	1,760	5,190	1,590	1,980	23,270	26,590	9,080	14,550
30	1,580		1,440	897	2,260	2,780	1,860	2,220	55,090	25,040	11,580	5,400
31	2,330		1,910		1,070		696	2,460		31,080		144
Sum	118,110	75,081	58,388	46,743.7	186,856	182,280	85,504	66,856	612,045	1,268,500	446,240	222,924

Month	Current Year 1958 — Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Period — Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.			5	22,640	†21	1,130	3,810	234,200			
Feb.			†22	6,780	12	547	2,680	148,900			
Mar.			1	4,560	2	593	1,880	115,800			
Apr.			24	3,390	17	60.7	1,560	92,710			
May			14	29,730	1	523	6,030	370,600			
June			20	52,270	6	330	6,080	361,600			
July			9	12,430	21	162	2,760	169,600			
Aug.			24	3,780	1	460	2,160	132,600			
Sept.			19	64,980	2	925	20,400	1,214,000			
Oct.			1	63,920	24	19,920	40,920	2,516,000			
Nov.			1	31,220	13	8,180	14,870	885,100			
Dec.			29	14,550	31	144	7,190	442,200			
Yearly				64,980		60.7	9,230	6,683,310			

† And other days Ø Mean daily

CORRECTIONS TO PREVIOUS WATER BULLETINS

RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

The zero of this gage was shown by recent check-levels to be 2,568.04 feet above mean sea level, U. S. C. & G. S. datum, instead of 2,569.48 feet, as reported in previous bulletins.

RIO GRANDE AT LAREDO, TEXAS

In Water Bulletins Nos. 25, 26, and 27 under Average Flow in Second-Feet the Monthly Maximum should be 49,500 second-feet instead of 52,300 and the Yearly Maximum should be 9,670 second-feet instead of 10,100 as shown.

RIO GRANDE AT FORT RINGGOLD, RIO GRANDE CITY, TEXAS

In Water Bulletin No. 27, the Yearly Period Minimum Acre-Feet should be 1,637,900 instead of 1,634,900 as shown.

RIO GRANDE BELOW ANZALDUAS DAM

In Water Bulletin No. 27, the Yearly Period Minimum Acre-Feet should be 114,749 instead of 629,940 as shown.

INTERNATIONAL FALCON RESERVOIR

In Water Bulletins Nos. 23 through 27, the elevation of the lowest outlet (Mexican Penstock) was erroneously shown as 204.34. The correct elevation, 203.33, and the corresponding reservoir area and storage capacities are shown on page 60 of this bulletin.

TEMPERATURE, HUMIDITY AND WIND

In Water Bulletin No. 27, all yearly figures under the above heading are erroneous. To determine the correct mean yearly figures, divide the amounts shown by 12.