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WATER BULLETIN NUMBER 37

Flow of the Rio Grande and Related Data

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

1967

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

CONTENTS

Page

Foreword and Acknowledgments 4
General Hydrologic Conditions for 1967 5
Isohyetal Map for September 19-26, 1967 (Hurricane Beulah) 98
Isohyetal Map for Year 1967 153
Map - Rio Grande Drainage Basin - San Marcial to the Gulf of Mexico . . . . . Following Page 174

Quantity of Water

Stream-Flow Records
Rio Grande below Elephant Butte Dam 6
below Caballo Dam 7
at El Paso 8
Diversions from the Rio Grande - American Canal at El Paso 9
Rio Grande below American Dam at El Paso 10
Diversions from the Rio Grande - Acequia Madre at Juárez 11
Rio Grande - Island Station near Clint 12
- County Line Station near Acala 13
at Fort Quitman 14
above Río Conchos near Presidio 15
Tributary - Río Conchos near Ojinaga 16
Alamito Creek near Presidio 17
Rio Grande below Río Conchos near Presidio 18
Tributary - Terlingua Creek near Terlingua 19
Rio Grande at Johnson Ranch near Castolon 20
at Foster Ranch near Langtry 21
at Langtry 22
Tributary - Pecos River near Shumla 23
Pecos River near Langtry 24
Pecos River at Mouth near Comstock 25
Goodenough Spring near Comstock 26
Dolan Springs near Loma Alta 27
Devils River at Pafford Crossing near Comstock 28
Devils River at Mouth near Del Rio 29
Rio Grande below Amistad Dam near Del Rio 30
Tributary - Arroyo del Buey near Cd. Acuña 31
Ernestina and Maris Springs near Cd. Acuña 32
Eight Mile Creek near Del Rio 33
McKee Spring near Del Rio 34
Arroyo de la Treinta y Una near Cd. Acuña 38
Rosita Spring near Cd. Acuña 39
Cantu Spring on Ciénegas Creek near Del Rio 40
Briggs Farm Ditch near Del Rio 41
Ciénegas Creek near Del Rio 42
Arroyo Las Vacas at Cd. Acuña 43
Rio Grande near Del Rio 44
Tributary - San Felipe Springs at Del Rio 45
San Felipe Creek near Del Rio 46
Diversions from the Rio Grande - Maverick Canal at Mile 13 near Quemado 47
Tributary - Pinto Creek near Del Rio 48
Río San Diego at Jiménez 49
Rio Grande below Maverick Dam near Quemado 50
Tributary - Río San Rodrigo near Mouth at El Moral 51
Return Flow at Maverick Power Plant near Eagle Pass 52
Diversions from the Rio Grande - Maverick Canal Extension near Eagle Pass 53
Tributary - Return Flows - Maverick Dam to Eagle Pass 54
Rio Grande at Eagle Pass 55
Tributary - Río Escondido at Villa de Fuente 56
Return Flows - Eagle Pass to San Antonio Crossing 57
Rio Grande at San Antonio Crossing near El Indio 58
at Palafox near Laredo 59
at Laredo 60
Tributary - Río Salado at Las Tortillas 61
Rio Grande below Falcon Dam 62
Tributary - Río Alamo at Cd. Mier 63
Contributions from Río San Juan - Falcon Dam to Fort Ringgold 64
Inflows to and Spill Flows from Marte R. Gómez Reservoir near Camargo 65
Río San Juan at Camargo 66
Diversions from the Rio Grande - Falcon Dam to Fort Ringgold 67
Rio Grande at Fort Ringgold, Rio Grande City 68
Tributary - Contributions from Río San Juan - Fort Ringgold to Anzaldúas Dam 69
Diversions from the Rio Grande - Fort Ringgold to Anzaldúas Dam 70
Rio Grande above Mission Branch Inlet south of Abram 71
Diversions from the Rio Grande - Anzaldúas Canal near Reynosa 72
Rio Grande below Anzaldúas Dam 73
at Hidalgo 74
Floodways - United States and Mexico 75
Diversions from the Rio Grande - Anzaldúas Dam to Progreso 79
Rio Grande near Progreso 80
Diversions from the Rio Grande - Progreso to San Benito 81
Rio Grande near San Benito 82
Diversions from the Rio Grande - San Benito to Brownsville 83
Rio Grande at Railroad Bridge, Brownsville 84

CONTENTS

Page

Quantity of Water

Rio Grande near Brownsville 85
Diversions from the Rio Grande - Brownsville to the Gulf 86
U. S. Side below Falcon Dam 87
Tributary - Outfalls from Sewers 88
Diversions from the Rio Grande - Municipal and Industrial Water Uses - United States and Mexico 89
Stored Water in Large Reservoirs of the Rio Grande Basin - United States and Mexico 92
Floods of 1967 96
Rainfall on and Adjacent to the Rio Grande Watershed (Hurricane Beulah) 100
Sources of River Flow 105

Quality of Water

Suspended Silt in the Rio Grande and Tributaries 106
Chemical Analyses of Water Samples from the Rio Grande and Tributaries 110
Electrical Conductivity of Water Samples 115
Rio Grande Salt Burden 126
Sanitary Aspects of Water Quality 127

Climatological Data and Drainage Basin and Irrigated Areas

Rainfall on the Rio Grande Watershed - United States and Mexico 129
Average Rainfall on Subdivisions of the Rio Grande Watershed 152
Location of Rainfall Stations on the Rio Grande Watershed - United States and Mexico 155
Evaporation in the Rio Grande Basin - United States and Mexico 164
Temperature, Humidity, and Wind - United States and Mexico 167
Drainage Basin Area above Each Gaging Station and Corresponding Irrigated Areas 170

Supplementary Data–International Falcon Reservoir

Deduced Inflows 173

Corrections to Previous Water Bulletins

Corrections to Previous Water Bulletins 174

FOREWORD

This bulletin presents the thirty-seventh 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 1967.

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 1967, 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, Above Río Conchos, Below Río Conchos, Johnson Ranch, Foster Ranch, Langtry, Below Amistad Dam, Del Rio, San Antonio Crossing, Fort Ringgold, San Benito, and Brownsville. The Mexican Section operated the stream-gaging stations on the Rio Grande below Maverick Dam near Quemado, Eagle Pass, Palafox, Laredo, Below Anzaldúas Dam, and Progreso. The station at Falcon Dam was operated jointly by the two Sections. Each Section operated the gaging stations on tributary streams, floodway, 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 9,952,300 acre-feet, in addition to the International Falcon Reservoir, which has a conservation capacity of 2,400,000 acre-feet. In the Rio Grande Basin a rounded total of 2,249,000 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 Falcon Dam averaged 2,600,000 acre-feet per year for the period 1934-1952. For the period 1954-1967, the residual flow has averaged 529,200 acre-feet per year.

Acknowledgments

Other agencies which have contributed to some part of the data published herein include: The Agricultural Research Service and 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 Texas Water Development Board; the Sanchez Ditch and Reservoir Company; the Middle Rio Grande Conservancy District; the Red Bluff Water Power Control District; the New Mexico State Engineer Office; the Rio Grande Compact Commission; the Willacy County Water Control and Improvement District No. 1; the El Paso Department of Water and Sewerage; the Maverick County Water Control and Improvement District No. 1; the Del Rio City Water Department; the Eagle Pass City Water Department; the Laredo City Water Department; the Del Mar Conservation District; Central Power and Light Company; the Special Water Master of the 93rd District Court of Texas; the Ministry of Hydraulic Resources of Mexico; the Ministry of Agriculture and Livestock of Mexico; the Meteorological Service of Mexico; Meteorological Service of the State of Chihuahua, Mexico; Industrial Electric S. A. of Mexico; 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.

Period Averages

In Water Bulletins Nos. 1 through 29, normal or average discharge volumes shown for the various gaging stations were based on a period beginning in 1924, or thereafter when records became available.

Beginning with Water Bulletin No. 30, the periods have been revised to include only the years following completion of major projects below which the flow of the Rio Grande or a major tributary was modified, or later when records became available. The revised periods are based on the completion of Caballo Dam in 1938; the completion in 1947 of irrigation projects on the Río Conchos and its tributaries; and the construction of International Falcon Dam which was completed in 1953.

For purposes of comparison with the average flows in the Rio Grande below Caballo Dam, records of average discharge in the Rio Grande below Elephant Butte Dam have also been revised to include the same period.

The period of record used to determine the average diversions from the Rio Grande to the United States below Falcon Dam published herein was restricted to 1957, the first complete year of record after United States' waters in Falcon Reservoir were placed under the jurisdiction of the 93rd District Court of Texas.

Units of Measure

Records of stream flow collected by the Mexican Section are initially computed in metric units, but are reported in this bulletin in equivalent English units. Conversion of the mean daily discharges, the monthly average discharge and the monthly volumes from metric to English units is direct. For this reason the monthly average discharge in cubic feet per second and monthly volumes in acre-feet shown for gaging stations operated by the Mexican Section cannot necessarily be obtained in the usual manner from the total monthly flow in second-foot days.

GENERAL HYDROLOGIC CONDITIONS FOR 1967

Along and Adjacent to the International Portion of the Rio Grande

During the year 1967, temperatures were about normal on the watershed of the Rio Grande below El Paso, Texas. Evaporation averaged 96% of normal. Precipitation was 73% of normal from El Paso to Amistad Dam, 120% of normal from Amistad Dam to Falcon Dam, 209% of normal from Falcon Dam to Rio Grande City, and 159% of normal in the Lower Rio Grande Valley on the United States side.

The yearly volume of flow of the Rio Grande was much below normal from El Paso to above Río Conchos, near normal from below Río Conchos to Langtry, below normal from Amistad Dam to Laredo, and much above normal from Fort Ringgold to the Gulf of Mexico. Releases from Falcon Reservoir were below normal. In the reach between El Paso and the confluence of the Río Conchos with the Rio Grande the range was from 59% of normal at El Paso Station to 1% of normal at County Line Station; in the reach between the Río Conchos confluence with the Rio Grande and Langtry Station the flow averaged 96% of normal; and in the reach between Amistad Dam and Falcon Reservoir the flow averaged 74% of normal. Flows passing Rio Grande gaging stations below Falcon Dam were partly regulated by releases from Falcon Reservoir. Such releases in 1967 amounted to 2,060,760 acre-feet or 92% of the average for the fourteen years of operation, 1954 through 1967. The volume of flow into the Gulf of Mexico, including approximately 2,200,000 acre-feet of flood flows discharged through the United States and Mexican floodway systems, was approximately 4,062,000 acre-feet, or 447% of the average, including all flood flows, for this fourteen year period. This volume included 1,863,270 acre-feet discharged via the Rio Grande channel which was 352% of the average for this fourteen year period.

The total annual flow of all measured tributaries below Fort Quitman was 221% of normal. The total flow of these tributaries in the United States was 537,170 acre-feet or 57% of normal. For Mexico, the measured tributary flow excluding Río Alamo and Río San Juan was 1,366,450 acre-feet or 132% of normal. The flow of the Río Alamo and Río San Juan was 457% and 805% of their respective normals.

Return flow to the Rio Grande at Maverick Power Plant near Eagle Pass was 582,820 acre-feet or 100% of the nineteen year average. Return flow to the Rio Grande through various drains in the Maverick County Irrigation District excluding storm inflow amounted to 237,850 acre-feet, or 108% of the nine year average. There was no return flow through Poniente Drain in 1967.

During September 1967, the largest flood of record occurred on the Rio Grande from Rio Grande City to the Gulf of Mexico. The flood was the result of heavy and prolonged rains, particularly on the Río San Juan watershed, during the latter part of August and again in September when heavy rains accompanying Hurricane Beulah fell on the entire Rio Grande watershed from above Laredo to the Gulf of Mexico. For a detailed description of this flood see page 96 in this bulletin.

For all reservoirs in the Rio Grande basin having capacity greater than 15,000 acre-feet, excepting Falcon International Reservoir, the average amount of water in storage in 1967 was 3,705,600 acre-feet or 101% of the normal 3,671,700 acre-feet. In the United States, stored water in these reservoirs averaged 48% of normal while in Mexico the average was 128% of normal. In International Falcon Reservoir, there was a net increase in storage during the year of 388,200 acre-feet. The storage varied from a high of 2,971,200 acre-feet on December 15 to a low of 1,391,500 acre-feet on August 14 and averaged 2,224,500 acre-feet during the year or 127% of the average for the fourteen years of operation, 1954 through 1967.

Diversions from the Rio Grande in the United States were, on the average, 97% of normal. Diversions into the American Canal were 65% of normal; into Maverick Canal 107% of normal; and in the United States below Falcon Dam 97% of the average for the eleven years, 1957-1967. In Mexico, diversions averaged 109% of normal. Diversions into the Acequia Madre were 63% of normal while diversions through the Anzaldúas Canal for irrigation in Mexico were 111% of the fourteen year average.

In 1967, the total reported irrigated acreage from the Rio Grande and its tributaries below El Paso, Texas showed an increase of 23% from the previous year. On the United States side, there was an increase of 3% above and no appreciable change below Falcon Dam, for an inappreciable over-all average change. On the Mexican side, there were increases of 12% above and 84% below Falcon Dam for an over-all average increase of 48%.

The 1967 investigation of the quality of Rio Grande water extended from El Paso to Brownsville. The annual tonnage of salts carried by the river above Falcon Dam was 64% of the 1935-1967 normal. The volume of suspended silt transported by the Rio Grande in 1967 was 45% of average for sampling stations above Falcon Dam and 337% of average for sampling stations below Falcon Dam, ranging from 421% of average at Below Anzaldúas Dam Gaging Station to 33% of average at Johnson Ranch Gaging Station.

RIO GRANDE BELOW ELEPHANT BUTTE DAM, NEW MEXICO

DESCRIPTION: Cableway, bubbler gage, and water-stage recorders (graphic and digital) located on the left bank 100 feet upstream from the cableway at latitude 33°08'45", longitude 107°12'20", and river mile 1,383.2; 0.7 river mile downstream from Elephant Butte Dam, 1.5 river miles upstream from Cuchillo Negro River, and 135.1 river miles upstream from 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 25 discharge measurements during the year and a continuous record of gage heights. Records were furnished by the United States Geological Survey. Records available: 1915 through 1967.

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.	2.6	Nov. 1961 & Nov. 1964
Yearly:	Max.	2,510	1942	Min.	253	1964

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.5	848	1,550	1,010	559	503	511	1,280	1,430	10.0	17.0	15.0
2	6.2	848	1,570	990	563	509	509	1,270	1,430	9.8	17.0	15.0
3	6.0	856	⋔1,570	986	559	505	507	1,150	1,430	9.0	15.0	15.0
4	6.0	848	1,570	990	562	508	505	1,280	1,490	8.6	15.0	15.0
5	6.0	848	1,580	985	561	513	503	1,290	1,480	6.2	14.0	15.0
6	5.7	848	1,570	982	556	515	506	1,290	1,460	9.0	14.0	15.0
7	5.1	848	1,570	988	552	509	506	1,290	1,400	11.0	12.0	15.0
8	5.1	848	1,570	986	⋔556	512	504	1,290	872	11.0	9.2	15.0
9	5.1	848	1,570	990	⋔553	518	503	1,300	39.0	8.7	⋔9.3	15.0
10	5.1	848	1,570	⋔988	549	512	503	1,450	19.0	6.7	9.5	15.0
11	5.1	848	1,570	992	549	510	594	1,300	19.0	7.0	8.9	15.0
12	5.1	848	1,570	984	550	513	683	1,520	9.0	⋔7.0	8.5	15.0
13	⋔5.7	848	1,570	983	544	506	1,010	1,820	4.5	6.5	8.5	15.0
14	6.0	856	1,570	982	531	503	⋔1,010	1,430	⋔2.9	7.1	8.5	15.0
15	6.0	848	1,570	984	530	⋔500	1,020	1,400	3.0	6.9	9.0	15.0
16	6.0	848	1,580	989	519	498	1,020	1,430	2.8	7.0	10.0	15.0
17	6.0	840	1,580	995	⋔515	491	1,020	1,430	7.3	6.6	10.0	15.0
18	6.0	840	1,580	1,000	⋔507	482	1,020	1,220	1.7	5.9	11.0	15.0
19	6.0	848	1,580	1,010	515	566	1,020	1,410	1.4	15.0	12.0	15.0
20	5.5	856	1,580	1,020	1,090	530	1,020	1,420	1.1	13.0	12.0	15.0
21	5.5	848	1,580	1,020	1,240	512	1,020	1,420	1.8	8.9	13.0	15.0
22	5.5	848	1,570	1,020	509	510	1,030	1,420	2.8	8.5	13.0	15.0
23	6.0	848	1,570	1,020	514	510	1,020	1,410	3.0	8.5	14.0	15.0
24	7.1	919	1,590	523	513	507	1,020	1,420	4.3	1,230	14.0	15.0
25	⋔7.5	900	1,580	504	510	486	1,020	1,420	91.0	1,320	15.0	15.0
26	832	903	1,580	⋔530	508	430	1,030	1,430	101	25.0	15.0	15.0
27	864	⋔900	1,590	555	505	375	1,010	1,430	14.0	22.0	⋔100	15.0
28	864	903	⋔1,590	559	⋔428	⋔429	⋔1,030	1,430	⋔13.0	21.0	200	⋔15.0
29	872		1,590	731	468	510	1,020	⋔1,430	14.0	⋔19.0	1,500	15.0
30	872		1,580	808	470	510	1,020	1,430	10.0	18.0	400	15.0
31	848		1,570		500		1,080	1,430		17.0		15.0
Sum	5,297.8	24,037	48,830	27,104	17,585	14,982	25,774	42,940	11,357.6	2,869.9	2,514.4	465.0

Month	Current Year 1967: Extreme Gage Feet High	Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1938-1967: Acre-Feet Average	Maximum	Minimum
Jan.			†29	872	† 7	5.1	171	10,508	31,388	86,500	200
Feb.			24	919	†17	840	858	47,677	43,556	88,861	188
Mar.			†24	1,590	1	1,550	1,580	96,854	66,759	119,000	1,520
Apr.			†20	1,020	25	504	903	53,761	76,965	162,000	24,000
May			21	1,240	28	428	567	34,880	77,421	467,000	512
June			19	566	27	375	499	29,717	87,964	363,000	16,913
July			31	1,080	† 5	503	831	51,123	91,327	211,000	41,352
Aug.			13	1,820	3	1,150	1,390	85,171	76,734	134,000	9,530
Sept.			4	1,490	20	1.1	379	22,528	36,803	129,000	163
Oct.			25	1,320	18	5.9	92.6	5,692	22,535	72,100	166
Nov.			29	1,500	12	8.5	83.8	4,987	22,272	158,000	152
Dec.			† 1	15.0	† 1	15.0	15.0	922	23,160	87,300	179
Yearly				1,820		1.1	613	443,820	656,884	1,818,800	183,415

⋔ Discharge measurement made on this day Ø Mean daily † And other days

RIO GRANDE BELOW CABALLO DAM, NEW MEXICO

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank at latitude 32° 53' 05", longitude 107° 17' 30", and river mile 1,355.0; 0.8 river mile downstream from Caballo Dam, about 3 miles northeast of Arrey, New Mexico, 5 miles south of Caballo, New Mexico, and 106.8 river miles upstream from 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 52 discharge 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: 1938 through 1967.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. In addition to the outflow from Caballo Dam listed below, 918 acre-feet of water were diverted in 1967 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 the station and Percha Dam.

EXTREME FLOWS FROM RECORDS:

Average Flow in Second-Feet

Daily:	Max.	7,650	May 20, 1942	Min.	0.1	Oct. 31 - Nov. 14, 1954; Nov. 7 - Dec. 31, 1955.
Monthly:	Max.	6,710	May 1942	Min.	0.1	Nov. & Dec. 1955
Yearly:	Max.	2,480	1942	Min.	284	1964

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.2	1.3	1,020	1,090	753	642	1,220	1,210	1,910	1.2	1.1	1.2
2	1.2	1.3	1,050	⋔ 1,030	⋔ 771	615	1,080	⋔ 1,230	1,550	1.2	1.1	1.2
3	1.2	1.3	1,210	955	743	591	974	1,200	1,400	1.2	1.1	1.2
4	1.2	1.3	1,630	883	742	567	952	⋔ 1,080	⋔1,350	1.1	1.1	1.2
5	⋔ 1.2	1.3	2,080	846	745	507	983	1,030	1,060	1.1	1.1	1.2
6	1.2	1.3	⋔2,240	⋔ 801	731	489	⋔ 974	1,000	1,430	1.1	1.1	⋔ 1.2
7	1.3	1.3	2,290	769	743	509	991	1,050	1,410	1.1	⋔ 1.1	1.2
8	1.3	⋔ 1.3	2,190	764	736	514	1,010	⋔ 1,120	1,440	1.1	1.1	1.2
9	1.3	1.3	2,120	746	719	557	969	1,200	1,480	⋔ 1.1	1.1	1.2
10	⋔ 1.4	1.3	2,060	706	710	680	922	683	1,450	1.1	1.1	1.2
11	1.4	1.3	1,990	651	⋔ 708	⋔ 677	⋔ 958	800	1,400	1.1	1.2	1.2
12	1.4	1.2	2,010	602	717	684	1,010	690	1,660	1.1	1.2	1.2
13	1.4	1.2	2,010	⋔ 549	727	709	1,010	322	⋔1,980	1.2	⋔ 1.2	1.2
14	1.4	1.2	⋔2,220	506	736	753	997	620	1,890	1.2	1.2	1.2
15	1.4	1.2	⋔2,310	462	762	806	1,140	758	⋔1,340	1.2	1.2	1.2
16	1.4	⋔ 1.2	2,320	418	775	885	1,220	914	872	1.2	1.2	1.2
17	1.4	1.1	2,400	⋔ 386	⋔ 792	1,020	1,190	952	436	⋔ 1.2	1.2	1.2
18	⋔ 1.4	1.1	2,430	420	791	1,030	⋔ 1,300	⋔ 943	22.0	1.2	1.2	1.2
19	1.4	1.0	2,390	505	790	890	1,460	890	3.4	1.2	1.2	1.2
20	1.4	1.0	⋔2,210	539	789	471	⋔ 1,510	801	2.4	1.2	⋔ 1.2	1.2
21	1.4	⋔ .9	1,870	631	802	⋔ 831	1,480	844	2.0	1.3	1.2	1.2
22	1.4	.9	1,780	712	822	959	1,420	1,170	1.8	1.3	1.2	1.2
23	1.4	.9	1,770	688	833	⋔ 1,030	1,430	1,380	1.6	⋔ 1.3	1.2	1.2
24	1.4	.9	1,810	686	856	1,130	⋔ 1,330	1,460	1.2	1.3	1.2	1.2
25	⋔ 1.4	.9	1,840	729	885	1,190	⋔ 1,560	1,700	1.2	1.3	1.2	1.2
26	1.4	.9	1,840	⋔ 795	854	1,180	1,670	1,990	1.2	1.2	1.2	1.2
27	1.4	345	1,840	817	⋔ 770	1,300	1,600	1,770	1.2	1.2	⋔ 1.2	1.2
28	1.3	1,020 ⋔	1,630	788	779	⋔ 1,440	1,650	1,650	⋔ 1.2	1.2	1.2	1.2
29	1.3		1,400	746	699	1,430	1,820	⋔ 2,020	1.2	1.1	1.2	1.2
30	⋔ 1.3		1,360	746	697	1,290	1,720	⋔ 2,320	1.2	⋔ 1.1	1.2	1.2
31	1.3		⋔1,210		674		1,400	2,250		1.1		1.2
Sum	41.5	1,394.9	58,530	20,966	23,651	25,376	38,950	37,047	24,099.6	36.5	35.0	37.2

Month	Current Year 1967: Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1938-1967: Acre-Feet Average	Maximum	Minimum
Jan.			† 10	1.4	† 1	1.2	1.3	82.3	566	4,850	19.2
Feb.			28	1,020	†21	.9	49.8	2,767	8,358	64,300	13.0
Mar.			18	2,430	1	1,020	1,890	116,094	81,308	135,000	24,900
Apr.			1	1,090	17	386	699	41,586	85,804	212,000	25,470
May			25	885	31	674	763	46,912	78,036	412,000	75.2
June			28	1,440	20	471	846	50,333	107,169	354,000	36,268
July			29	1,820	10	922	1,260	77,257	114,810	234,000	28,200
Aug.			30	2,320	13	322	1,200	73,483	108,528	179,000	20,500
Sept.			13	1,980	†24	1.2	803	47,802	50,860	181,000	7,730
Oct.			†21	1.3	† 4	1.1	1.2	72.4	5,562	35,400	15.5
Nov.			†11	1.2	† 1	1.1	1.2	69.4	2,976	14,400	7.0
Dec.			† 1	1.2	† 1	1.2	1.2	73.8	3,085	19,100	6.0
Yearly				2,430		0.9	631	456,531.9	647,062	1,795,670	200,084.6

⋔ Discharge measurement made on this day Ø Mean daily † And other days

RIO GRANDE AT EL PASO, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located on the downstream side of the first pier from the left abutment of the Courchesne Bridge at latitude 31° 48' 10", longitude 106° 32' 25", and river mile 1,249.9; 5.6 river miles upstream from the Santa Fe Street-Juárez Avenue Bridge between El Paso, Texas and Cd. Juárez, Chihuahua and 1.7 miles upstream from the American Dam at El Paso, Texas. The zero of the gage is 3,722.30 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Mean daily discharges in 1967 were computed by adding the flows in the American Canal and the flows at the river station below the American Dam. Because the mean daily discharges are rounded, the monthly sum for this station may not equal the sum of the monthly sums of the other two stations. Extreme discharges are those passing the El Paso station, where measurements are made only during high flows. Records available: 1889 through 1967.

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. 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 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	65.5	57.1	32.6	467	343	418	726	987	875	151	44.1	41.5
2	66.1	57.4	74.3	506	393	423	582	825	915	149	42.4	41.4
3	62.2	54.4	429	473	431	371	649	560	899	151	38.6	43.5
4	61.9	49.8	436	522	418	354	542	502	732	120	40.0	44.4
5	65.5	46.8	644	528	369	378	474	580	737	108	40.1	45.7
6	65.2	48.7	1,380	533	358	310	356	682	883	104	40.2	43.3
7	61.9	47.3	1,310	430	383	284	375	685	617	94.4	39.0	45.9
8	53.5	48.9	1,180	434	377	260	382	515	568	94.6	40.4	45.0
9	54.1	47.3	1,120	414	409	243	385	612	600	93.4	41.9	48.6
10	71.2	47.3	919	416	406	208	375	1,240	516	91.3	42.0	45.3
11	65.6	42.6	989	464	375	207	385	524	529	97.0	43.5	41.1
12	68.0	38.7	874	441	335	229	370	750	563	86.3	43.6	43.8
13	71.3	38.7	862	416	302	353	423	618	583	81.4	42.5	42.9
14	72.9	42.6	979	420	342	306	343	500	576	78.7	40.7	46.2
15	64.8	42.7	789	428	360	299	392	503	602	78.1	40.7	53.8
16	65.7	41.5	833	435	371	284	389	344	569	70.4	40.6	53.8
17	64.9	42.9	797	418	402	287	362	330	507	71.1	42.6	57.4
18	63.2	41.6	747	380	401	303	508	412	328	70.0	42.0	50.7
19	60.7	40.4	875	364	386	439	513	471	342	72.2	43.1	46.9
20	59.8	39.2	933	384	360	1,870	411	425	264	73.1	43.0	46.2
21	55.9	38.0	909	370	384	481	430	433	220	73.3	42.4	45.0
22	54.2	38.0	648	308	405	394	528	465	168	73.5	45.1	44.4
23	54.8	38.0	576	324	433	295	542	360	154	72.3	46.1	41.6
24	53.9	38.0	531	420	455	402	583	315	134	72.5	43.0	41.6
25	53.9	38.0	581	456	425	403	673	409	188	55.6	40.4	43.3
26	53.2	36.7	574	415	442	518	613	472	172	53.5	43.3	45.1
27	53.2	36.6	676	392	433	541	522	626	163	49.0	46.0	45.7
28	52.4	31.1	701	418	415	568	638	789	157	48.1	45.2	44.6
29	53.9		712	408	434	612	635	789	143	48.8	44.6	45.2
30	53.8		609	393	438	714	817	697	148	43.8	44.3	45.8
31	55.5		513		420		1,040	791		42.8		46.4
Sum	1,878.7	1,210.3	23,232.9	12,777	12,205	12,754	15,963	18,211	13,852	2,568.2	1,271.4	1,416.1

Month	Current Year 1967: 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 1938-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	2.72	2.25	10	144	8	37.2	60.6	3,726	6,638	15,100	220
Feb.	2.40	2.25	2	60.6	28	28.5	43.2	2,401	8,282	52,200	136
Mar.	4.82	2.28	6	1,890	1	31.4	749	46,082	33,126	62,500	1,790
Apr.	4.12	3.52	6	566	22	290	426	25,343	44,914	139,000	6,820
May	4.02	3.54	24	479	13	280	394	24,209	48,716	357,000	522
June	6.57	3.24	20	5,160	10	195	425	25,298	55,872	304,000	6,020
July	5.22	3.51	31	1,170	16	290	515	31,663	61,105	198,000	9,652
Aug.	6.39	3.27	10	4,530	24	280	587	36,122	59,365	158,000	4,870
Sept.	5.23	2.95	6	1,110	24	128	462	27,475	42,145	171,000	2,430
Oct.	2.95	2.27	1	164	31	40.2	82.8	5,094	15,144	57,900	151
Nov.	2.31	2.24	22	46.9	30	37.4	42.4	2,522	9,021	21,300	229
Dec.	2.50	2.24	16	69.5	2	41.4	45.7	2,809	8,739	25,600	206
Yearly	6.57	2.24		5,160		28.5	321	232,744	393,067	1,559,200	57,481

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

DESCRIPTION: Concrete control consisting of two triangular-shaped wingwalls extending toward the center of the canal about one-fourth of the canal width and downstream at a 30° angle with the canal side walls, bubbler gage, water-stage recorders (graphic and digital), and binary decimal transmitter located on the right bank of the concrete-lined canal at El Paso, Texas, latitude 31° 46' 40", longitude 106° 31' 25", and about 2,400 feet downstream from the headgates of the American Dam which are located at river mile 1,248.2. The zero of the gage is 3,712.09 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 53 discharge measurements during the year, a stable rating curve at medium and high flows, and a continuous record of gage heights. Records available: June 2, 1938 through 1967.

REMARKS: This canal diverts water from the Rio Grande at the American Dam at El Paso, Texas, 2.1 river miles upstream from the International Dam at 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 downstream from the American Dam. The transmitter relays gage height data upon interrogation by telephone via commercial circuits.

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.	65.6	1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	65.0	0	26.2	276	191	414	565	796	732	151	43.7	⸸ 5.0
2	65.6	⸸ 0	68.7	314	⸸ 253	⸸ 421	485	660	765	149	42.0	5.0
3	⸸ 61.7	0	423	287	287	369	⸸ 525	388	745	⸸ 151	38.2	5.4
4	61.4	0	* 432	331	281	352	469	320	581	120	39.6	6.4
5	65.0	0	ᵘ 640	⸸ 340	237	344	463	397	⸸ 586	108	39.7	⸸ 4.4
6	64.7	0	* 967	340	224	⸸ 307	352	455	730	104	39.8	.2
7	61.4	0	⸸ 878	245	255	282	372	550	467	94.0	⸸ 38.6	1.0
8	53.0	0	758	248	250	258	380	⸸ 513	417	94.2	40.0	0
9	53.6	0	780	224	⸸ 281	241	384	610	453	93.0	41.5	0
10	⸸ 70.7	0	740	228	277	206	374	632	370	⸸ 90.9	41.6	0
11	65.1	0	821	⸸ 279	245	206	⸸ 384	438	452	96.6	43.1	16.9
12	67.5	0	707	253	206	228	369	530	⸸ 561	85.9	43.2	⸸ 32.0
13	70.8	0	699	241	172	⸸ 351	421	532	582	81.0	42.1	32.6
14	72.4	0	⸸ 811	242	214	304	342	499	575	78.3	⸸ 40.3	37.1
15	64.3	0	620	243	226	297	391	⸸ 502	601	77.7	40.3	37.0
16	65.2	⸸ 0	667	249	⸸ 238	282	388	343	568	70.0	40.2	47.0
17	⸸ 64.4	0	630	233	269	286	361	329	506	⸸ 70.7	42.2	51.8
18	62.7	0	576	⸸ 196	269	302	507	411	327	69.6	41.6	45.9
19	60.2	0	710	184	252	391	512	470	⸸ 342	71.8	42.7	⸸ 42.0
20	59.3	0	776	205	232	450	⸸ 410	424	263	72.7	42.6	42.0
21	55.4	0	⸸ 753	186	251	469	429	432	219	72.9	⸸ 42.0	41.4
22	53.7	0	490	122	⸸ 275	⸸ 393	526	⸸ 464	168	73.1	44.7	22.3
23	54.3	0	418	142	302	294	540	359	154	71.9	45.7	0
24	⸸ 53.4	0	371	235	326	401	556	314	134	⸸ 72.1	42.6	0
25	53.4	0	425	⸸ 275	299	401	550	408	185	55.2	40.0	0
26	52.7	0	422	230	320	500	513	471	⸸ 172	53.1	42.9	⸸ 0
27	52.7	⸸ 11.7	528	200	319	522	⸸ 510	625	162	48.6	45.6	0
28	51.9	⸸ 23.9	⸸ 552	235	303	⸸ 564	546	788	157	47.7	⸸ 44.8	0
29	53.4		559	226	⸸ 303	565	534	⸸ 788	143	48.4	44.2	0
30	18.6		461	212	303	572	576	696	148	43.4	23.4	0
31	0		358		306		⸸ 771	768		⸸ 42.4		0
Sum	1,773.5	35.6	18,066.9	7,221	8,166	10,972	14,505	15,912	12,265	2,558.2	1,238.9	475.4

Month	Current Year 1967: 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 1939-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	4.47		10	143	†30	0	57.2	3,518	1,279	8,110	0
Feb.	2.87		27	32.3	† 1	0	1.3	70.6	5,111	19,500	0
Mar.	9.15	2.74	7	1,070	† 1	25.0	583	35,836	29,818	50,100	1,700
Apr.	6.07	4.00	6	373	22	104	241	14,323	34,470	70,900	4,560
May	6.17	4.13	31	398	12	122	263	16,197	28,493	69,000	392
June	7.83	4.66	26	728	10	191	366	21,763	37,886	65,700	5,990
July	8.99	5.48	31	1,080	16	289	468	28,771	45,115	70,700	8,673
Aug.	9.72	4.00	12	1,280	10	129	513	31,561	44,709	74,600	4,840
Sept.	8.74	4.17	6	973	24	128	409	24,328	29,742	63,100	2,230
Oct.	4.44	3.16	1	164	31	39.8	82.5	5,074	12,559	39,000	0
Nov.	3.31	2.32	22	46.5	30	4.0	41.3	2,457	7,404	21,000	0
Dec.	3.46		16	62.7	† 5	0	15.3	943	7,370	25,500	0
Yearly	9.72			1,280		0	255	184,841.6	283,956	541,610	47,397.4

⸸ Discharge measurement made on this day * Partly estimated ᵘ Estimated
† And other days

RIO GRANDE BELOW AMERICAN DAM AT EL PASO, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the retaining wall of the Smelter Pump on the left bank of the river at latitude 31° 46' 35", longitude 106° 31' 20", and river mile 1,247.6; 1.5 river miles upstream from the International Dam, 3.3 river miles upstream from the Santa Fe Street-Juárez Avenue Bridge between El Paso, Texas, and Cd. Juárez, Chihuahua, and 0.6 river mile downstream from the American Dam. The zero of the gage is 3,712.30 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 77 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: June 1938 through 1967.

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 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 on March 23, 1955 and for several days in 1956, 1959, and 1964.

Average Flow in Second-Feet

Daily:	Max.	6,040	May 20, 1942	Min.	0	Several days 1956 & 1959
Monthly:	Max.	4,880	May 1942	Min.	0.2	Nov. 1958, Dec. 1959, & Nov. 1961
Yearly:	Max.	1,510	1942	Min.	13.8	1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.5	57.1	6.4	191	152	4.4	161	⇑191	⇑143	0.4	0.4	36.5
2	.5	57.4	5.6	192	⇑140	⇑1.9	97.0	165	⇑150	.4	.4	36.4
3	⇑.5	54.4	5.6	186	144	1.7	⇑124	⇑172	154	⇑.4	.4	38.1
4	.5	49.8	3.8	191	⇑137	1.6	72.6	182	⇑151	.4	.4	38.0
5	.5	46.8	3.8	⇑188	132	33.7	10.8	⇑183	151	.4	.4	⇑41.3
6	.5	48.7	⇑414	193	134	⇑2.5	3.6	227	153	.4	.4	43.1
7	.5	⇑47.3	435	⇑185	128	1.5	3.0	135	⇑150	.4	⇑.4	44.9
8	.5	48.9	426	186	127	1.6	1.8	⇑2.1	151	.4	.4	45.0
9	.5	47.3	⇑336	190	⇑128	1.9	1.5	1.7	⇑147	.4	.4	48.6
10	⇑.5	47.3	⇑179	188	129	1.7	1.3	610	146	⇑.4	.4	45.3
11	.5	42.6	⇑168	⇑185	⇑130	1.3	⇑1.3	85.8	⇑77.4	.4	.4	24.2
12	.5	38.7	167	188	129	1.0	.9	220	⇑1.6	.4	.4	⇑11.8
13	.5	38.7	163	175	130	⇑2.1	1.6	86.4	.8	.4	.4	10.3
14	.5	⇑42.6	⇑168	⇑178	128	2.5	.8	1.0	.7	.4	⇑.4	9.1
15	.5	42.7	169	185	134	1.9	.8	⇑.9	.8	.4	.4	16.8
16	.5	41.5	166	186	⇑133	1.9	.8	.8	.7	.4	.4	6.8
17	⇑.5	42.9	⇑167	185	133	1.1	.7	.7	.6	⇑.4	.4	5.6
18	.5	41.6	171	⇑184	132	1.4	⇑1.2	.9	.5	.4	.4	4.8
19	.5	40.4	165	180	⇑134	48.4	1.5	.8	⇑.5	.4	.4	⇑4.9
20	.5	39.2	157	179	128	1,422	1.4	.8	.5	.4	.4	4.2
21	.5	⇑38.0	⇑156	⇑184	133	11.6	1.2	.7	.5	.4	⇑.4	3.6
22	.5	38.0	158	186	130	⇑1.5	1.7	⇑.7	.5	.4	.4	22.1
23	.5	38.0	158	182	⇑131	1.1	1.7	.7	.5	.4	.4	41.6
24	⇑.5	38.0	⇑160	185	129	1.4	26.6	.8	.5	⇑.4	.4	41.6
25	.5	38.0	156	⇑181	⇑126	1.7	123	.8	2.8	.4	.4	43.3
26	.5	36.7	152	185	122	ᵘ18.0	100	.8	⇑.5	.4	.4	⇑45.1
27	.5	24.9	148	192	114	⇑*19.2	⇑12.2	.8	.5	.4	.4	45.7
28	.5	⇑7.2	⇑149	⇑183	112	3.5	91.9	1.2	.4	.4	⇑.4	44.6
29	.5		153	182	⇑131	46.6	101	⇑1.2	.4	.4	.4	45.2
30	35.2		148	181	135	⇑142	241	1.0	.5	.4	⇑20.9	45.8
31	⇑55.5		155		⇑114		265	22.7		⇑.4		46.4
Sum	105.2	1,174.7	5,169.2	5,556	4,039	1,782.7	1,452.9	2,298.3	1,587.2	12.4	32.5	940.7

Month	Current Year 1967: 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 1939-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	4.69	3.90	30	97.3	† 1	0.5	3.4	209	5,218	12,000	209
Feb.	4.47	3.97	2	60.6	28	6.8	42.0	2,330	2,868	32,800	31.3
Mar.	5.87	3.87	6	1,110	5	3.2	167	10,253	2,934	17,500	81.9
Apr.	5.09	4.90	12	201	30	156	185	11,020	9,712	74,500	2,230
May	5.03	4.15	3	201	31	8.7	130	8,011	19,444	300,000	25.2
June	8.56	3.42	20	4,570	12	.9	59.4	3,536	17,202	250,000	35.5
July	6.09	3.48	31	511	16	.6	46.9	2,882	15,389	155,000	967
Aug.	8.58	3.59	10	3,030	† 21	.6	74.1	4,559	14,316	114,000	37.5
Sept.	4.89	3.78	2	162	† 27	.4	52.9	3,148	11,772	124,000	53.8
Oct.			† 1	∅ .4	† 1	∅ .4	.4	24.6	2,166	19,000	18.0
Nov.	4.01	3.62	30	33.2	† 1	.4	1.1	64.5	1,351	8,700	11.9
Dec.	4.24	3.65	7	81.2	† 21	3.6	30.3	1,866	1,135	7,760	13.1
Yearly	8.58			4,570		0.4	66.2	47,903.1	103,507	1,093,553	10,001.1

⇑ Discharge measurement made on this day ᵘ Estimated * Partly estimated † And other days
∅ Mean daily

DIVERSIONS FROM THE RIO GRANDE
ACEQUIA MADRE AT JUAREZ, CHIHUAHUA

DESCRIPTION: Bridge for making discharge measurements, gravity well, and water-stage recorder located on the right bank of the canal at Juárez, Chihuahua, latitude 31° 45' 40", longitude 106° 30' 30", about 260 feet downstream from the canal intake at the International Dam at Juárez, Chihuahua, which is located at river mile 1,246.1 and 2.1 river miles downstream from the American Dam at El Paso, Texas.

RECORDS: Based on 80 discharge measurements during the year, 32 by the Mexican Section and 48 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1938 through 1967. 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 at El Paso, Texas." See page 10 in this Water Bulletin.

REMARKS: In 1967 all of the 29,829 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 during several months throughout the year.

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.	9.2	1964

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	⇑ 175	143	0	0	⇑ 160	⇑ 136	0	0	0
2	0	0	0	177	⇑ 134	0	0	⇑ 170	⇑ 137	0	0	0
3	0	0	0	⇑ 177	⇑ 128	0	0	⇑ 177	⇑ 147	0	0	0
4	0	0	0	180	⇑ 129	0	0	⇑ 183	⇑ 138	0	0	0
5	0	0	0	⇑ 179	124	0	0	183	⇑ 139	0	0	0
6	0	0	0	178	⇑ 122	0	0	133	⇑ 142	0	0	0
7	0	0	0	⇑ 179	121	0	0	0	⇑ 141	0	0	0
8	0	0	0	179	⇑ 125	0	0	0	⇑ 141	0	0	0
9	0	0	0	179	123	0	0	0	⇑ 141	0	0	0
10	0	0	⇑ 111	⇑ 179	⇑ 123	0	0	0	⇑ 141	0	0	0
11	0	0	⇑ 164	178	⇑ 124	0	0	0	⇑ 82.6	0	0	0
12	0	0	160	⇑ 179	⇑ 125	0	0	0	0	0	0	0
13	0	0	⇑ 162	179	125	0	0	0	0	0	0	0
14	0	0	163	⇑ 177	125	0	0	0	0	0	0	0
15	0	0	⇑ 154	177	⇑ 126	0	0	0	0	0	0	0
16	0	0	⇑ 149	178	125	0	0	0	0	0	0	0
17	0	0	⇑ 150	⇑ 176	⇑ 125	0	0	0	0	0	0	0
18	0	0	153	173	⇑ 126	0	0	0	0	0	0	0
19	0	0	152	⇑ 176	⇑ 128	0	0	0	0	0	0	0
20	0	0	⇑ 148	⇑ 179	128	0	0	0	0	0	0	0
21	0	0	149	⇑ 180	128	0	0	0	0	0	0	0
22	0	0	⇑ 150	⇑ 178	⇑ 128	0	0	0	0	0	0	0
23	0	0	⇑ 151	181	129	0	0	0	0	0	0	0
24	0	0	⇑ 144	⇑ 184	⇑ 130	0	0	0	0	0	0	0
25	0	0	144	183	⇑ 128	0	0	0	0	0	0	0
26	0	0	143	⇑ 179	⇑ 126	0	0	0	0	0	0	0
27	0	0	⇑ 142	⇑ 183	121	0	0	0	0	0	0	0
28	0	0	143	⇑ 183	118	0	0	0	0	0	0	0
29	0		⇑ 146	⇑ 179	⇑ 130	0	0	0	0	0	0	0
30	0		144	177	133	0	0	0	0	0	0	0
31	0		⇑ 146		⇑ 118		0	0		0		0
Sum	0	0	3,268	5,361	3,918	0	0	1,006	1,485.6	0	0	0

Month	Current Year 1967: Average Rainfall Inches ** 1938-1967	1967	Extreme Second-Feet: High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1938-1967: Acre-Feet Average	Maximum	Minimum
Jan.	0.39	0		0		0	0	0	0	0	0
Feb.	.31	T		0		0	0	0	0	0	0
Mar.	.28	.12	14	164	† 1	0	105	6,482	1,111	6,482	0
Apr.	.20	.08	24	∅ 184	1	165	179	10,634	6,959	12,383	2,020
May	.35	.24	1	170	31	0	126	7,772	9,675	17,380	0
June	.75	1.02		0		0	0	0	8,253	15,700	0
July	1.46	1.38		0		0	0	0	8,326	15,170	0
Aug.	1.30	1.02	4	185	† 7	0	32.5	1,994	8,084	12,620	0
Sept.	1.06	.55	3	164	† 12	0	49.4	2,947	5,007	12,380	0
Oct.	.75	.04		0		0	0	0	51.9	328	0
Nov.	.28	.24		0		0	0	0	0	0	0
Dec.	.47	.79		0		0	0	0	0	0	0
Yearly	7.60	5.48		185		0	41.3	29,829	47,466.9	83,930	6,653

⇑ Discharge measurement made on this day ** Average for valley floor from El Paso to Island Station
T Trace ∅ Mean daily † And other days

RIO GRANDE – ISLAND STATION NEAR CLINT, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank of the rectified channel of the Rio Grande at latitude 31° 32' 00", longitude 106° 14' 35", and river mile 1,221.1; 0.6 river mile downstream from the Riverside Canal Wasteway No. 2, about 4 miles south-southwest of Clint, Texas, and 27.1 river miles downstream from 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 54 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: August 17, 1938 through 1967.

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.	0.3	1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.4	⋔0.4	⋔ 0.3	0.9	0.4	⋔ 1.2	2.3	4.2	3.0	1.9	⋔ 1.7	3.9
2	1.4	.3	.3	.8	.4	.7	2.2	⋔ 2.4	4.0	1.5	2.0	3.8
3	1.4	.3	7.9	1.0	⋔ .4	1.9	2.5	1.6	2.4	1.5	1.7	3.9
4	⋔ 1.6	.3	2.9	⋔ 1.0	.5	1.2	2.2	1.4	2.7	⋔ 1.0	2.0	4.7
5	1.0	.4	1.0	1.0	.5	1.5	⋔ 2.6	1.3	4.5	.5	2.4	4.6
6	1.0	.3	118	.8	.5	1.2	2.2	5.9	⋔ 7.1	1.0	2.3	⋔ 4.0
7	1.0	.3	⋔ 84.5	1.2	.5	⋔ 1.1	17.6	2.2	57.6	1.0	2.2	3.5
8	1.0	⋔ .3	⋔ 30.0	1.7	.4	.5	1.6	1.2	6.9	1.0	⋔ 2.5	3.4
9	1.0	.3	3.7	1.4	.4	.4	1.5	⋔ 1.0	3.7	.9	2.8	3.0
10	1.0	.3	2.5	1.5	⋔ .4	.4	1.3	3.3	2.9	.9	3.1	2.4
11	⋔ 1.0	.2	2.2	1.9	.5	.4	1.2	⋔ 638	2.5	⋔ .8	2.9	2.1
12	1.0	.3	2.1	⋔ 2.0	.4	.4	⋔ 1.0	71.5	1.8	.8	2.8	1.7
13	1.0	.3	2.0	2.7	.4	.3	.9	323	⋔ 2.0	.8	2.6	⋔ 1.3
14	1.0	.3	1.9	1.7	.4	.3	.9	8.4	2.8	.8	2.5	1.4
15	.8	⋔ .3	⋔ 1.6	1.5	.4	.2	.9	5.0	2.8	.6	⋔ 2.1	1.8
16	.8	.3	1.5	.8	.4	.1	.8	⋔ 4.8	4.0	.4	2.4	3.6
17	.6	.3	2.3	.7	⋔ .4	0	.6	3.9	3.0	.5	2.4	4.2
18	⋔ .5	.3	2.9	.7	.5	0	.6	3.1	3.5	⋔ .5	2.5	3.4
19	.5	.3	2.5	⋔ 1.6	.5	.1	.6	2.9	3.0	.5	2.9	3.1
20	.5	.3	2.9	.9	.4	⋔ 608	.5	2.6	⋔ 2.8	.5	2.8	⋔ 3.2
21	.4	.3	3.0	.9	.5	95.9	.4	1.6	4.8	.5	2.9	3.1
22	.4	.3	⋔ 2.5	1.1	.4	5.5	.4	1.0	4.7	.5	⋔ 3.1	2.6
23	.4	⋔ .3	3.4	1.1	.5	3.4	.4	⋔ .2	4.6	.5	3.6	2.7
24	.4	.3	3.4	2.6	⋔ .5	2.8	.3	0	4.2	.4	3.9	2.7
25	⋔ .4	.3	.9	1.5	.5	2.8	.2	.2	4.7	⋔ .4	3.4	2.8
26	.4	.3	.3	⋔ 1.0	1.3	⋔ 2.8	⋔ .2	0	4.6	.6	3.4	2.8
27	.4	.2	.4	1.4	1.3	2.5	.2	.5	⋔ 3.2	.8	3.8	⋔ 2.7
28	.4	.2	.7	1.2	1.3	2.1	.2	1.5	3.2	1.3	3.7	2.8
29	.4		⋔ .3	.6	1.5	2.0	14.2	1.7	3.5	1.5	⋔ 3.8	2.9
30	.4		1.3	.9	1.6	⋔ 3.2	76.6	⋔ 1.5	2.0	1.5	3.5	3.0
31	.6		2.0		1.6		1.6	2.2		1.7		3.0
Sum	24.1	8.3	291.2	38.1	19.7	742.9	138.7	1,098.1	162.5	27.1	83.7	94.1

Month	Current Year 1967								Period 1939-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	7.72		1	3.3	†21	Ø 0.4	0.8	47.8	5,125	11,900	0
Feb.	7.55	7.41	1	.6	11	.1	.3	16.5	3,365	37,000	0
Mar.	9.86		6	481	† 1	Ø .3	9.4	578	2,459	21,000	0
Apr.	7.71	7.32	30	8.7	29	.4	1.3	75.6	4,075	70,500	0
May	7.75	7.30	4	11.3	1	.3	.6	39.1	11,776	299,800	0
June	11.82	7.23	20	1,720	†17	0	24.8	1,474	10,184	241,000	0
July	10.08	7.07	30	583	29	0	4.5	275	8,682	118,500	0
Aug.	12.30	7.17	11	1,550	†24	0	35.4	2,178	8,275	99,400	0
Sept.	9.22	7.23	7	270	12	.7	5.4	322	9,330	119,200	0
Oct.	7.37	7.05	†29	2.1	5	0	.9	53.8	4,374	42,800	0
Nov.	7.40	7.31	29	4.2	2	1.4	2.8	166	1,251	7,270	0
Dec.	7.47	7.18	17	6.6	15	1.1	3.0	187	2,269	12,900	0
Yearly	12.30	7.05		1,720		0	7.5	5,412.8	71,165	1,079,340	238.1

⋔ Discharge measurement made on this day † And other days Ø Mean daily

RIO GRANDE - COUNTY LINE STATION NEAR ACALA, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank of the rectified channel of the Rio Grande at latitude 31° 22' 50", longitude 105° 59' 10", and river mile 1,200.9; 0.8 river mile downstream from the El Paso-Hudspeth County Line, 5.5 miles northwest of Acala, Texas, about 8 miles southeast of Tornillo, Texas, and 47.3 river miles downstream from 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 54 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1938 through 1967.

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 & 1964

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.4	ñ 0	ñ 0	0	0	ñ 0	1.0	0	0	0	ñ 0	0
2	0	0	0	0	0	0	0	ñ 0	0	0	0	0
3	0	0	0	0	ñ 0	0	0	0	0	0	0	0
4	ñ 0	0	0	ñ 0	0	0	0	0	0	ñ 0	0	0
5	0	0	0	0	0	0	ñ 0	0	0	0	0	0
6	0	0	22.1	0	0	0	0	0	ñ 0	0	0	ñ 0
7	0	0	8.4	0	0	ñ 0	0	0	0	0	0	0
8	0	ñ 0	ñ 1.4	0	0	0	0	0	0	0	ñ 0	0
9	0	0	0	0	0	0	0	ñ 0	0	0	0	0
10	0	0	0	0	ñ 0	0	0	0	0	0	0	0
11	ñ 0	0	0	0	0	0	0	ñ 173	0	ñ 0	0	0
12	0	0	0	ñ 0	0	0	ñ 0	7.9	0	0	0	0
13	0	0	0	0	0	0	0	108	ñ 0	0	0	ñ 0
14	0	0	0	0	0	ñ 0	0	21.0	0	0	0	0
15	0	ñ 0	ñ 0	0	0	0	0	1.4	0	0	ñ 0	0
16	0	0	0	0	0	0	0	ñ 0	0	0	0	0
17	0	0	0	0	ñ 0	0	0	0	0	0	0	0
18	ñ 0	0	0	0	0	0	0	0	0	ñ 0	0	0
19	0	0	0	ñ 0	0	0	ñ 0	0	0	0	0	0
20	0	0	0	0	0	130	0	0	ñ 0	0	0	ñ 0
21	0	0	0	0	0	ñ 296	0	0	0	0	0	0
22	0	0	ñ 0	0	0	2.3	0	0	0	0	ñ 0	0
23	0	ñ 0	0	0	0	.8	0	ñ 0	0	0	0	0
24	0	0	0	0	ñ 0	0	0	0	0	0	0	0
25	ñ 0	0	0	0	0	0	0	0	0	ñ 0	0	0
26	0	0	0	ñ 0	0	ñ 0	ñ 0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	ñ 0	0	0	ñ 0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0		ñ 0	0	0	0	0	0	0	0	ñ 0	0
30	0		0	0	0	ñ 13.0	0	ñ 0	0	0	0	22.7
31	0		0		0		0	0		0		16.3
Sum	1.4	0	31.9	0	0	442.1	1.0	311.3	0	0	0	39.0

Month	Current Year 1967: 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 1938-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	1.95		1	2.4	† 2	0	0	2.8	6,825	20,000	0
Feb.				0		0	0	0	5,742	47,900	0
Mar.	3.05		6	216	† 1	0	1.0	63.3	5,011	38,900	0
Apr.				0		0	0	0	7,639	84,200	0
May				0		0	0	0	14,588	303,000	0
June	4.79		21	1,430	† 1	0	14.7	877	13,051	239,000	0
July	1.85		1	Ø 1.0	† 2	0	0	2.0	12,492	140,000	0
Aug.	4.40		11	573	† 1	0	10.0	617	11,811	123,000	0
Sept.				0		0	0	0	14,628	140,000	0
Oct.				0		0	0	0	9,257	61,400	0
Nov.				0		0	0	0	6,108	20,400	0
Dec.	2.45		30	51.9	† 1	0	1.3	77.4	6,784	29,700	0
Yearly	4.79			1,430		0	2.3	1,639.5	113,936	1,247,500	0

ñ Discharge measurement made on this day † And other days Ø Mean daily

RIO GRANDE AT FORT QUITMAN, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank of the rectified channel of the Rio Grande at latitude 31° 05' 05", longitude 105° 36' 25", and river mile 1,167.1; 1.5 river miles downstream from Old Fort Quitman, 10 miles northwest of Esperanza, Texas, 17.5 miles southeast of McNary, Texas, and 81.1 river miles downstream from 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 53 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 1967.

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

EXTREME FLOWS FROM RECORDS‡: Momentary: Max. 10,600 second-feet on 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 since 1951
Yearly:	Max.	1,750	1942	Min.	2.3	1965

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	⋔ 3.8	⋔ 3.6	0.5	0	⋔ 1.0	114	0	0.5	0.5	⋔ 0	0
2	0	3.2	3.8	.5	0	.7	77.9	⋔ 0	.5	.5	0	0
3	0	3.6	3.8	120	⋔ 0	.9	48.3	0	.5	.5	0	0
4	0	4.2	3.4	⋔ 57.6	0	1.6	18.3	70.7	.5	⋔ .5	0	0
5	0	3.7	3.4	2.0	0	1.1	⋔ 3.9	21.3	.5	.5	0	0
6	4.5	3.4	2.6	.8	0	.6	2.8	0	⋔ .5	.5	0	⋔ .5
7	2.6	6.5	2.6	.6	0	⋔ .1	1.4	0	.5	0	0	2.5
8	2.0	⋔ 4.1	⋔ 2.2	.5	0	0	12.5	0	.5	0	⋔ 0	2.3
9	0	3.9	2.0	.5	0	0	1.2	⋔ 0	0	0	0	1.2
10	0	3.6	1.5	.5	⋔ 0	0	0	0	0	0	0	1.3
11	0	3.0	1.0	.5	0	0	0	0	0	⋔ 0	0	1.3
12	0	2.4	.8	⋔ .5	0	0	⋔ 0	0	0	.3	0	1.1
13	0	2.5	.7	.2	0	0	0	0	⋔ 0	0	0	⋔ 0
14	0	2.5	.6	0	0	⋔ 0	0	0	0	.5	0	.7
15	0	⋔ 3.6	⋔ .5	0	0	0	0	78.8	0	.2	⋔ 0	3.2
16	.4	3.8	.5	0	0	0	0	⋔ 22.2	0	0	0	15.9
17	.6	3.7	.5	0	⋔ 0	0	0	24.3	0	0	0	11.0
18	⋔ .6	3.9	.5	0	0	0	0	3.0	0	⋔ 0	0	5.3
19	.6	3.8	1.0	⋔ 0	0	0	⋔ 0	.6	0	0	0	5.0
20	.6	3.8	.5	0	0	0	0	.6	⋔ 0	0	0	⋔ 4.8
21	2.9	3.4	0	0	0	⋔ .5	0	.6	0	0	0	3.6
22	4.4	3.3	⋔ 4.6	0	0	2.7	0	.6	0	0	⋔ 0	3.4
23	4.7	⋔ 2.9	1.6	0	0	0	0	⋔ .6	0	0	0	3.3
24	4.7	3.0	1.0	0	⋔ 0	0	0	.6	0	0	0	1.9
25	⋔ 4.7	3.1	.8	0	0	.4	0	.6	7.6	⋔ 0	0	1.6
26	4.6	3.6	.6	⋔ 0	0	⋔ 14.6	⋔ 0	.6	3.5	0	0	1.3
27	4.4	3.7	.5	0	0	1.0	0	.6	⋔ 17.1	0	0	⋔ 1.1
28	4.0	3.8	.5	0	0	.6	0	.6	1.0	0	.4	1.3
29	4.2		⋔ 1.4	0	0	21.7	0	.5	.5	0	⋔ 0	1.4
30	3.8		.8	0	0	⋔ 713	0	⋔ .5	.5	0	0	1.5
31	3.6		.5		1.1		0	.5		0		1.8
Sum	57.9	99.8	47.8	184.7	1.1	760.5	280.3	227.8	34.2	4.0	0.4	78.3

Month	Current Year 1967: 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 1938-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	4.22		6	6.6	† 1	0	1.9	115	7,041	20,900	0
Feb.	4.35	4.10	7	15.0	6	2.1	3.6	198	6,308	50,100	0
Mar.	4.87		22	90.4	† 21	0	1.5	94.8	4,898	38,900	0
Apr.	6.59		3	1,270	† 14	0	6.2	366	6,152	77,000	0
May	3.47		31	3.1	† 1	0	0	2.2	14,868	309,000	0
June	8.93		30	2,810	† 7	0	25.4	1,508	13,372	240,000	0
July	4.60		1	162	† 9	0	9.0	556	13,798	140,000	3.8
Aug.	6.03		15	953	† 1	0	7.3	452	13,024	127,000	16.7
Sept.	4.47		27	118	† 9	0	1.1	67.8	17,112	147,000	0
Oct.	3.70		† 1	Ø .5	† 7	0	.1	7.9	13,083	66,500	0
Nov.	3.89		28	7.2	† 1	0	0	.8	7,869	24,500	0
Dec.	4.00		16	28.7	† 1	0	2.5	155	8,014	31,000	0
Yearly	8.93			2,810		0	4.9	3,523.5	125,539	1,270,400	1,662.3

⋔ Discharge measurement made on this day ‡ Period 1924-1967 † And other days Ø Mean daily

RIO GRANDE ABOVE RIO CONCHOS NEAR PRESIDIO, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank at latitude 29° 37' 15", longitude 104° 28' 50", and river mile 962.5; 6.5 miles northwest of the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua, 7.8 river miles upstream from the Río Conchos, and 285.7 river miles downstream from 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 101 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1889 through 1967.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 14,000 second-feet on June 14, 1905. Highest flow recorded since 1924 was 5,160 second-feet, with a gage height of 10.57 feet, on May 26, 1942. 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.	1.3	1964

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.4	0	⋔ 0	0	⋔ 0	⋔ 0	7.7	⋔ 0.6	⋔ 0	17.7	⋔ 0	⋔ 0
2	.3	⋔ 0	0	0	0	0	3.2	.6	0	⋔ 25.6	0	0
3	⋔ .2	0	0	⋔ 0	0	0	⋔ 2.5	.5	0	16.7	⋔ 0	0
4	.2	0	0	0	⋔ 0	0	4.8	⋔ 6.3	0	7.4	0	0
5	.2	0	0	0	0	⋔ 0	21.0	12.4	⋔ 0	⋔ 2.8	0	⋔ 0
6	⋔ .2	⋔ 0	⋔ 0	⋔ 0	0	0	⋔ 21.1	10.0	0	1.5	⋔ 0	0
7	.2	0	0	0	0	0	32.6	⋔ 15.1	0	1.2	0	0
8	.2	0	0	0	⋔ 0	⋔ 0	9.0	35.1	⋔ 0	.5	0	0
9	⋔ .2	⋔ 0	⋔ 0	0	0	0	3.2	12.7	0	⋔ 0	0	0
10	.1	0	0	⋔ 0	0	0	⋔ .7	⋔ 7.9	0	0	0	0
11	0	0	0	0	⋔ 0	0	.4	7.3	⋔ 0	0	0	⋔ 0
12	⋔ 0	0	0	0	0	⋔ 0	.2	67.3	0	⋔ 0	0	0
13	0	⋔ 0	⋔ 0	⋔ 0	0	0	⋔ 0	126	.1	0	⋔ 0	0
14	0	0	0	0	0	0	.8	⋔ 47.4	⋔ .1	0	⋔ 0	⋔ 0
15	0	0	0	0	0	⋔ 0	2.2	46.4	.3	0	0	0
16	⋔ 0	⋔ 0	⋔ 0	0	0	0	2.2	36.4	0	⋔ 0	0	0
17	0	0	0	⋔ 0	0	0	1.2	⋔ 18.5	.6	0	0	0
18	0	0	0	0	⋔ 0	0	.9	15.1	123	0	0	⋔ 0
19	⋔ 0	0	0	⋔ 0	0	⋔ 0	.7	9.7	⋔ 194	⋔ 0	0	0
20	0	⋔ 0	⋔ 0	0	0	0	⋔ 8.4	6.4	180	0	0	0
21	0	0	0	0	0	0	11.3	⋔ 2.9	⋔ 63.9	0	0	⋔ 0
22	0	0	0	0	⋔ 0	⋔ 0	3.9	1.2	26.1	0	0	0
23	⋔ 0	⋔ 0	⋔ 0	0	0	0	1.3	.4	10.7	⋔ 0	0	0
24	0	0	0	⋔ 0	0	0	⋔ 2.8	⋔ 0	6.9	0	⋔ 0	0
25	0	0	0	0	⋔ 0	0	1.2	0	⋔ 4.8	0	0	0
26	⋔ 0	0	0	0	0	⋔ 66.1	.7	0	2.9	⋔ 0	0	⋔ 0
27	0	⋔ 0	⋔ 0	⋔ 0	0	106	.4	0	33.8	0	0	0
28	0	0	0	0	0	⋔ 7.8	⋔ .1	⋔ 0	87.6	0	⋔ 0	0
29	0		0	0	⋔ 0	1.3	4.4	0	⋔ 37.8	0	0	⋔ 0
30	⋔ .1		0	0	0	⋔ 7.4	14.9	0	18.0	⋔ 0	0	0
31	.1		⋔ 0		0		4.0	0		0		0
Sum	2.4	0	0	0	0	188.6	167.8	486.2	790.6	73.4	0	0

Month	Current Year 1967: 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 1938-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	7.80		1	0.6	†10	0	0.1	4.8	6,563	24,400	0
Feb.				0		0	0	0	5,536	40,800	0
Mar.				0		0	0	0	4,110	39,100	0
Apr.				0		0	0	0	3,060	41,600	0
May				0		0	0	0	10,875	240,000	0
June	10.12		27	197	† 1	0	6.3	374	11,427	216,000	0
July	8.93		7	41.7	13	0	5.4	333	14,749	156,000	0
Aug.	10.27		13	151	†23	0	15.7	964	14,076	133,000	0
Sept.	11.92		18	300	† 1	0	26.4	1,568	17,756	151,000	0
Oct.	8.78		2	26.2	† 8	0	2.4	146	15,256	105,000	0
Nov.				0		0	0	0	6,301	34,500	0
Dec.				0		0	0	0	6,630	30,900	0
Yearly	11.92			300		0	4.7	3,389.8	116,339	1,176,700	951.8

‡ Period June 1900-March 1914; September 1919-March 1920; and 1924-1967 † And other days
⋔ Discharge measurement made on this day

RIO CONCHOS NEAR OJINAGA, CHIHUAHUA

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the right bank at latitude 29° 34' 00", longitude 104° 27' 10", 1.5 river miles from the confluence with the Rio Grande, 1.9 miles west of Ojinaga, Chihuahua, and 3.7 miles west of Presidio, Texas. This stream enters the Rio Grande at river mile 954.7, 13.8 river miles upstream from the "Rio Grande below Río Conchos Gaging Station," and 293.5 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 2,568.04 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 141 discharge measurements during the year, 132 by the Mexican Section and 9 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 previously by related gage heights and records of discharge at the "Rio Grande below Río Conchos Gaging Station." Computations by shifting control methods. Records available: 1896 through 1967. Records of stage and measured discharge at this station began April 4, 1954. Prior to this date, flow records were determined from records of the Rio Grande at stations located upstream and downstream from the Río Conchos confluence.

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, upstream from 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 upstream from 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	April 1955
Yearly:	Max.	3,710	1906	Min.	155	1953

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	374	⋔ 646	431	269	⋔ 210	⋔ 456	⋔ 1,620	431	⋔ 1,980	1,280	727	⋔ 766
2	⋔ 413	544	⋔ 403	265	208	466	1,970	⋔ 2,160	1,920	⋔ 1,300	⋔ 643	727
3	420	456	371	⋔ 251	253	473	⋔ 1,690	1,110	2,270	1,590	777	918
4	505	388	351	226	⋔ 315	466	1,550	⋔ 869	⋔ 2,490	⋔ 1,430	780	⋔ 703
5	⋔ 410	360	374	250	285	582	⋔ 1,250	611	⋔ 2,610	1,580	770	678
6	388	⋔ 346	⋔ 434	⋔ 250	245	795	1,390	530	⋔ 3,230	⋔ 1,420	⋔ 886	597
7	639	336	392	227	252	⋔ 893	⋔ 1,120	⋔ 501	⋔ 3,780	989	1,140	⋔ 509
8	922	332	445	213	⋔ 277	692	1,220	537	⋔ 3,960	1,160	⋔ 791	540
9	⋔ 1,110	⋔ 364	⋔ 367	207	276	⋔ 1,010	1,020	554	⋔ 4,030	⋔ 1,180	784	477
10	1,100	378	343	⋔ 212	244	865	⋔ 932	⋔ 611	3,710	1,050	⋔ 844	470
11	⋔ 685	396	339	210	⋔ 251	681	802	477	⋔ 3,330	⋔ 840	901	⋔ 448
12	632	381	327	220	249	⋔ 597	⋔ 625	⋔ 1,920	3,030	833	848	⋔ 459
13	⋔ 512	⋔ 367	⋔ 311	⋔ 245	265	636	466	671	⋔ 2,530	⋔ 890	968	427
14	445	353	313	209	247	576	⋔ 396	⋔ 625	1,760	805	1,110	⋔ 420
15	410	⋔ 344	304	184	⋔ 211	⋔ 470	357	915	⋔ 1,210	1,040	⋔ 770	406
16	⋔ 388	⋔ 360	⋔ 292	190	213	424	413	⋔ 953	1,830	⋔ 830	727	410
17	378	337	265	⋔ 196	246	526	⋔ 431	618	1,150	833	⋔ 749	410
18	360	339	250	201	⋔ 285	1,590	466	⋔ 593	⋔ 2,660	⋔ 795	713	⋔ 403
19	⋔ 360	396	257	197	276	791	491	544	1,510	742	738	392
20	341	⋔ 399	250	⋔ 236	273	⋔ 1,270	⋔ 738	604	⋔ 2,620	⋔ 798	⋔ 798	374
21	338	491	⋔ 295	210	301	⋔ 1,610	809	692	2,330	823	763	⋔ 367
22	334	519	292	186	⋔ 331	586	⋔ 925	897	⋔ 2,380	869	⋔ 657	413
23	⋔ 329	⋔ 434	⋔ 1,200	177	353	⋔ 403	855	671	1,440	⋔ 749	⋔ 569	466
24	320	463	343	⋔ 185	487	396	⋔ 992	⋔ 491	869	840	604	519
25	320	448	337	197	⋔ 424	720	869	473	⋔ 869	⋔ 752	699	⋔ 473
26	⋔ 318	403	371	190	434	⋔ 6,390	⋔ 653	420	872	731	614	434
27	⋔ 314	⋔ 487	⋔ 309	⋔ 205	448	⋔ 2,440	⋔ 551	438	⋔ 3,570	⋔ 699	⋔ 551	424
28	303	434	431	195	441	1,910	⋔ 463	⋔ 420	⋔ 1,620	717	607	⋔ 420
29	303		399	177	⋔ 508	1,380	1,230	448	⋔ 1,490	699	⋔ 565	424
30	⋔ 611		⋔ 310	189	477	⋔ 1,470	512	466	1,530	⋔ 791	526	509
31	1,050		280		512		⋔ 491	⋔ 1,720		819		515
Sum	15,332	11,501	11,386	6,369	9,797	31,564	27,297	22,970	68,580	29,874	22,619	15,498

Month	Current Year 1967: 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 1948-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	8.14	5.97	9	1,240	†28	291	494	30,405	28,631	59,250	11,500
Feb.	7.15	6.04	1	830	18	318	410	22,813	28,862	72,270	10,600
Mar.	10.50	5.71	23	3,310	20	231	367	22,573	23,701	51,530	5,410
Apr.	5.87	5.54	1	283	15	173	212	12,635	9,768	22,650	281
May	6.43	5.61	30	618	† 1	194	316	19,436	14,111	31,600	319
June	15.52	5.74	26	8,830	24	344	1,050	62,585	27,190	64,219	760
July	10.14	5.77	29	3,530	15	335	879	54,145	53,097	201,000	2,190
Aug.	12.20	5.91	31	5,260	26	353	742	45,578	75,328	275,140	7,660
Sept.	15.45	7.51	27	7,980	27	516	2,280	135,993	123,461	686,400	12,400
Oct.	8.60	6.30	15	2,230	28	639	964	59,244	93,108	971,300	5,890
Nov.	7.38	6.07	7	1,360	30	477	752	44,857	35,230	107,400	9,510
Dec.	7.05	5.77	3	1,070	21	353	501	30,743	28,603	62,380	9,940
Yearly	15.52	5.54		8,830		173	749	541,007	541,090	1,892,940	111,885

‡ Period June 1900-March 1914; September 1914-March 1920; and 1924-1967

⋔ Discharge measurement made on this day

ALAMITO CREEK NEAR PRESIDIO, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located on the left bank 300 feet upstream from the highway bridge on Farm-to-Market Road 170 at latitude 29° 31' 15", longitude 104° 17' 40", about 2,000 feet from the confluence with the Rio Grande, and about 6 miles southeast of Presidio, Texas. This stream enters the Rio Grande near the lower end of the Presidio Valley at river mile 941.3, 9.7 river miles downstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua, and 306.9 river miles downstream from the American Dam at El Paso, Texas. Measurements of high flows are made from the highway bridge. The zero of the gage is 2,541.61 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 106 discharge measurements during the year at low and medium flows, a high flow rating curve determined by slope-area calculations, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1932 through 1967.

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. Backwater from the Rio Grande begins to affect the station record when the flow at the station on the Rio Grande below Río Conchos reaches about 35,000 second-feet.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 56,400 second-feet, determined by slope-area calculations, on September 2, 1962, with a gage height of 13.54 feet. Min. ø 0.1 second-foot on July 25, 1953 and several days in August 1958.

Average Flow in Second-Feet

Daily:	Max.	6,200	Sept. 2, 1962	Min.	0.1	July 25, 1953 & several days in August 1958
Monthly:	Max.	418	Sept. 1958	Min.	0.6	Oct., Nov., Dec., 1953
Yearly:	Max.	55.9	1941	Min.	4.3	1951

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.6	1.6	1.4	1.1	⸸ 1.1	⸸ 0.6	811	⸸ 0.9	⸸ 1.5	1.3	⸸ 1.4	⸸ 1.4
2	1.7	⸸ 1.6	⸸ 1.4	1.2	1.0	.6	25.0	.9	1.5	⸸ 1.4	1.4	1.4
3	⸸ 1.8	1.6	1.4	⸸ 1.2	.9	.6	⸸ 1.6	1.5	1.5	1.5	⸸ 1.4	1.5
4	1.6	1.6	1.4	1.2	⸸ .8	210	1.6	⸸ 99.3	1.5	1.5	1.4	1.6
5	1.5	1.5	1.4	1.2	.8	⸸ 232	1.6	62.7	⸸ 1.5	⸸ 1.6	1.5	⸸ 1.6
6	⸸ 1.3	⸸ 1.5	⸸ 1.4	⸸ 1.2	.8	⸸ 1.8	⸸ 1.6	5.9	1.6	1.6	⸸ 1.5	1.6
7	1.3	1.5	1.4	1.2	.8	49.1	1.4	⸸ 2.0	1.6	1.5	1.5	1.6
8	1.4	1.6	1.3	1.1	⸸ .8	⸸ 1.5	1.2	1.8	⸸ 1.7	1.4	1.5	1.6
9	⸸ 1.4	⸸ 1.6	⸸ 1.3	1.0	.8	1.4	.9	1.5	1.6	⸸ 1.4	⸸ 1.5	1.6
10	1.5	1.6	1.4	⸸ 1.0	.8	1.4	⸸ .7	⸸ 1.3	1.4	1.5	1.5	1.6
11	1.6	1.6	1.4	1.0	⸸ .8	1.3	.7	1.3	⸸ 1.3	1.5	1.5	⸸ 1.6
12	⸸ 1.7	1.6	1.5	1.0	.8	⸸ 1.2	.8	1.3	1.3	⸸ 1.6	1.6	1.6
13	1.7	⸸ 1.6	⸸ 1.6	⸸ 1.0	.8	1.1	⸸ .8	1.3	1.3	1.5	1.6	1.5
14	1.8	1.6	1.6	1.0	.8	1.0	.8	⸸ 1.3	⸸ 1.3	1.4	⸸ 1.6	⸸ 1.5
15	1.8	1.6	1.7	1.0	⸸ .8	⸸ .9	.7	1.3	5.8	1.2	1.4	1.5
16	⸸ 1.8	⸸ 1.6	⸸ 1.7	.9	.8	.9	.7	1.3	31.2	⸸ 1.1	1.2	1.6
17	1.8	1.6	1.7	⸸ .9	.7	1,250	.7	⸸ 1.3	1.8	1.3	⸸ 1.0	1.6
18	1.7	1.6	1.8	.9	⸸ .7	4.6	.6	1.3	⸸ 19.0	1.4	1.1	⸸ 1.6
19	⸸ 1.7	1.7	1.8	1.0	.7	⸸ 2.5	⸸ 39.6	1.3	1.0	⸸ 1.6	1.3	1.5
20	1.7	⸸ 1.7	⸸ 1.8	⸸ 1.0	.6	2.2	1,060	1.3	1.0	1.5	⸸ 1.4	1.4
21	1.7	1.7	82.3	1.0	.6	⸸ 2.0	99.6	⸸ 1.3	⸸ 1.0	1.4	1.4	⸸ 1.3
22	1.7	1.6	2.5	1.0	⸸ .6	⸸ 1.2	52.6	1.3	1.2	1.4	1.4	1.3
23	⸸ 1.7	⸸ 1.6	⸸ 1.8	.9	.6	1.2	54.8	1.3	1.4	⸸ 1.3	1.5	1.2
24	1.7	1.6	1.7	⸸ .9	.6	1.2	⸸ 4.8	⸸ 1.3	1.5	1.3	⸸ 1.5	1.2
25	1.7	1.8	1.6	.9	⸸ .6	1.2	3.7	1.2	⸸ 1.7	1.2	1.5	1.1
26	⸸ 1.7	1.4	1.5	1.0	.6	⸸ 3,990	2.7	1.2	1.6	⸸ 1.2	1.5	⸸ 1.1
27	1.7	⸸ 1.4	⸸ 1.4	⸸ 1.0	.6	191	⸸ 1.6	1.1	1.4	1.2	1.5	1.2
28	1.7	1.4	1.3	1.0	.6	⸸ 69.8	1.5	⸸ 1.0	1.3	1.2	⸸ 1.5	1.2
29	1.7		1.2	1.0	⸸ .6	233	1.3	1.1	⸸ 1.2	1.1	1.5	⸸ 1.3
30	⸸ 1.7		1.2	1.1	.6	⸸ 124	1.2	1.2	1.3	⸸ 1.1	1.4	1.4
31	1.7		⸸ 1.1		.6		1.0	1.4		1.2		1.5
Sum	51.1	44.4	128.0	30.9	22.7	6,379.3	2,176.8	204.2	94.0	42.4	43.0	44.7

Month	Current Year 1967: Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet High Day	Extreme Second-Feet High ø	Extreme Second-Feet Low Day	Extreme Second-Feet Low ø	Average Second-Feet	Total Acre-Feet	Period 1932-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.			† 3	ø 1.8	† 6	1.3	1.6	101	154	273	46.4
Feb.	6.55		25	5.8	† 26	1.4	1.6	88.1	223	3,120	41.5
Mar.	7.48		22	1,390	31	1.1	4.1	254	156	270	46.4
Apr.			† 2	ø 1.2	† 16	.9	1.0	61.3	224	1,070	57.9
May			1	ø 1.1	† 20	.6	.7	45.0	1,169	8,520	34.7
June	8.42		26	12,200	† 1	.6	213	12,653	2,183	12,653	50.8
July	8.52		20	12,800	18	.6	70.2	4,318	3,150	18,500	46.8
Aug.	6.28		4	551	† 1	.9	6.6	405	3,114	16,330	56.9
Sept.	6.10		18	319	† 19	1.0	3.1	186	3,813	24,900	128
Oct.			† 5	ø 1.6	† 16	1.1	1.4	84.1	1,614	19,200	36.9
Nov.			† 12	ø 1.6	17	1.0	1.4	85.3	170	807	35.7
Dec.			† 4	ø 1.6	† 25	1.1	1.4	88.7	160	408	39.3
Yearly	8.52			12,800		0.6	25.4	18,369.5	16,130	40,444	3,109.2

ø Mean daily ⸸ Discharge measurement made on this day † And other days

RIO GRANDE BELOW RIO CONCHOS NEAR PRESIDIO, TEXAS

DESCRIPTION: Cableway, bubbler gage, and water-stage recorders (graphic and digital) located on the right bank at latitude 29° 31' 05", longitude 104° 17' 40", and river mile 941.2; immediately downstream from Alamito Creek, 9.8 river miles downstream from the international highway bridge between Presidio, Texas and Ojinaga, Chihuahua, and 307.0 river miles downstream from the American Dam at El Paso, Texas. An auxiliary gage well and water-stage recorder, 0.3 river mile downstream from the bubbler gage, are used during periods of high flow and when flows from Alamito Creek affect the gage height record. The cableway is located 200 feet upstream from the auxiliary gage. The zero of the gage at both recorders is 2,527.99 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 125 discharge measurements during the year, 104 by the United States Section and 21 by the Mexican Section of this Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1955 through 1967 at this location. Period records shown in the summary below include monthly volumes for the period 1948 through 1954 at this location, which are based on discharge records at Alamito Creek Station and at a station on the Rio Grande 11.4 river miles upstream from the Alamito Creek confluence, and estimated irrigation diversions and arroyo inflow between the two river stations. Records are also available from 1896 through June 13, 1932 for a station located about 12.1 river miles downstream from the Río Conchos and 1.3 miles upstream from Alamito Creek; and from June 14, 1932 through 1954 for a station about 2.0 river miles downstream from the Río Conchos and 11.4 river miles upstream from Alamito Creek.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The main gage was moved to its present location on October 20, 1965.

EXTREME FLOWS FROM RECORDS‡: Momentary: Max. 54,300 second-feet on October 1, 1958 with a gage height of 20.37 feet. Min. 0.2 second-foot several days in July 1955, and on June 30, 1958.

Average Flow in Second-Feet ‡

Daily:	Max.	52,200	Oct. 1, 1958	Min.	0.2	Several days July 1955; June 30, 1958
Monthly:	Max.	17,100	Oct. 1958	Min.	3.6	May 1955
Yearly:	Max.	2,590	1958	Min.	283	1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	427	724	439	321	⇑ 212	⇑ 412	1,980	⇑ 461	2,110	1,270	⇑ 763	⇑ 724
2	441	⇑ 606	⇑ 415	292	212	375	2,290	2,260	⇑ 1,730	⇑ 1,210	679	736
3	⇑ 464	540	385	⇑ 270	213	446	⇑ 1,640	1,300	2,100	1,530	⇑ 724	870
4	532	456	364	243	⇑ 291	424	1,690	⇑ 1,320	2,370	1,320	787	739
5	485	406	374	227	283	⇑ 722	1,120	729	⇑ 2,520	⇑ 1,500	776	⇑ 668
6	⇑ 421	⇑ 389	⇑ 437	⇑ 251	276	651	⇑ 1,350	586	3,060	1,400	⇑ 853	636
7	599	370	402	234	249	1,110	1,030	⇑ 598	3,960	1,020	1,020	528
8	890	352	453	215	⇑ 280	⇑ 668	1,120	572	⇑ 4,030	1,140	833	568
9	⇑ 1,030	⇑ 375	⇑ 389	203	282	1,190	944	605	3,930	⇑ 1,220	⇑ 723	523
10	1,020	387	345	⇑ 206	240	1,040	⇑ 858	⇑ 610	3,650	1,080	783	491
11	781	401	329	194	⇑ 233	736	758	501	⇑ 3,280	896	837	⇑ 497
12	⇑ 645	401	319	172	250	⇑ 604	627	1,840	2,990	⇑ 755	801	492
13	562	⇑ 395	⇑ 301	⇑ 256	252	576	⇑ 478	890	2,610	850	880	472
14	503	388	295	228	250	575	434	⇑ 694	⇑ 1,820	791	⇑ 1,030	⇑ 467
15	464	350	302	193	⇑ 227	⇑ 451	409	⇑ 831	1,180	1,110	810	448
16	⇑ 448	⇑ 362	⇑ 318	178	196	400	434	1,010	1,550	⇑ 806	718	444
17	427	351	287	⇑ 186	205	1,030	441	⇑ 697	1,020	770	⇑ 741	440
18	408	354	260	189	⇑ 243	1,960	403	634	⇑ 3,300	766	759	⇑ 436
19	⇑ 408	412	258	179	270	⇑ 1,350	⇑ 494	620	1,780	⇑ 680	756	410
20	387	⇑ 446	⇑ 253	⇑ 226	254	1,200	1,540	615	2,590	730	⇑ 805	394
21	373	512	267	225	282	636	998	⇑ 730	⇑ 2,530	778	784	⇑ 370
22	371	558	507	184	⇑ 327	⇑ 552	956	813	2,470	818	730	385
23	⇑ 352	⇑ 503	⇑ 1,160	170	326	424	822	767	2,050	⇑ 805	621	434
24	347	494	458	⇑ 179	422	367	⇑ 936	⇑ 498	1,690	746	⇑ 583	494
25	349	507	377	204	⇑ 408	980	803	488	⇑ 1,630	750	692	487
26	⇑ 338	467	462	207	396	⇑ 7,380	685	418	1,740	⇑ 651	701	⇑ 451
27	342	⇑ 494	⇑ 366	⇑ 214	465	3,540	⇑ 557	469	3,710	683	577	423
28	335	464	404	239	454	⇑ 2,020	500	⇑ 441	1,960	626	⇑ 638	417
29	349		532	214	⇑ 526	1,400	1,160	436	⇑ 1,580	675	647	⇑ 419
30	⇑ 435		395	204	468	1,630	639	483	1,520	⇑ 677	567	493
31	994		⇑ 362		527		531	1,110		778		507
Sum	15,927	12,464	12,215	6,503	9,519	34,849	28,627	24,026	72,460	28,831	22,618	15,863

Month	Current Year 1967								Period **1948-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	9.94	9.03	9	1,140	23	329	514	31,591	31,823	66,200	11,700
Feb.	9.69	9.04	1	866	17	323	445	24,722	30,827	75,700	10,700
Mar.	10.78	8.77	23	2,570	21	239	394	24,228	24,176	52,600	4,690
Apr.	9.05	8.68	1	332	12	158	217	12,899	9,455	22,400	309
May	9.45	8.76	31	589	† 16	177	307	18,881	15,110	31,800	219
June	13.82	9.11	26	9,890	2	345	1,160	69,123	30,559	69,123	2,600
July	13.36	9.36	20	8,850	18	371	923	56,782	60,586	236,000	4,680
Aug.	11.93	9.57	31	5,060	27	394	775	47,656	80,297	230,284	11,900
Sept.	12.66	10.10	27	6,760	17	900	2,420	143,724	123,802	582,000	11,900
Oct.	10.62	9.83	3	1,740	28	597	930	57,186	102,882	1,051,000	6,090
Nov.	10.26	9.73	7	1,130	30	542	754	44,863	38,088	111,100	9,550
Dec.	10.17	9.53	3	994	21	364	512	31,464	31,397	70,700	9,980
Yearly	13.82	8.68		9,890		158	778	563,119	579,002	1,876,260	120,283

‡ Period 1955-1967 ⇑ Discharge measurement made on this day ** See explanation in RECORDS above

† And other days

TERLINGUA CREEK NEAR TERLINGUA, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank at latitude 29° 12' 00", longitude 103° 36' 15", 2.7 creek miles from the confluence with the Rio Grande, and about 8.5 miles south of Terlingua, Brewster County, Texas. This creek enters the Rio Grande at river mile 876.6, the lower end of Santa Helena Canyon, and 371.6 river miles downstream from 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 91 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1932 through 1967.

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 0.3 mile downstream. Min. no flow on September 29-30, 1937.

Average Flow in Second-Feet

Daily:	Max.	17,200	June 1, 1937	Min.	0	September 29-30, 1937
Monthly:	Max.	921	June 1937	Min.	0.8	October 1934
Yearly:	Max.	146	1937	Min.	5.5	1943

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.0	2.8	2.4	2.7	↑ 2.1	↑ 2.2	75.8	↑ 23.5	↑ 3.2	3.4	↑ 3.0	↑ 2.6
2	3.0	2.8	2.5	2.7	2.1	2.2	67.8	334	3.2	↑ 2.4	2.9	2.9
3	↑ 3.0	↑ 2.8	↑ 2.6	↑ 2.7	2.0	2.0	↑ 59.3	52.2	50.6	2.6	↑ 2.8	3.2
4	3.0	2.8	2.7	2.7	2.0	22.8	18.1	108	71.9	2.8	2.9	3.4
5	2.9	2.7	2.8	2.6	↑ 2.0	↑ 629	13.3	98.9	↑ 4.3	2.9	3.1	↑ 3.7
6	2.9	2.6	↑ 2.9	2.6	2.0	106	↑ 4.8	11.6	4.2	↑ 3.1	↑ 3.2	3.5
7	2.9	↑ 2.6	2.9	2.6	2.0	65.7	4.5	↑ 12.6	4.1	3.0	↑ 3.0	3.3
8	2.8	2.6	2.9	2.6	2.1	↑ 2.8	4.3	5.1	↑ 4.0	3.0	3.2	3.1
9	2.8	2.7	2.9	2.5	↑ 2.1	2.8	4.0	4.4	3.6	2.9	↑ 3.5	3.0
10	2.8	2.7	3.0	↑ 2.5	2.1	2.8	3.8	3.7	3.3	↑ 2.8	3.4	2.8
11	2.8	2.7	3.0	2.4	2.1	2.8	↑ 3.5	↑ 2.9	3.0	2.8	3.4	↑ 2.6
12	2.7	2.8	3.0	2.4	↑ 2.1	2.8	3.4	2.9	↑ 2.6	2.9	3.3	2.7
13	2.7	↑ 2.8	↑ 3.0	2.3	2.0	↑ 2.8	3.2	3.0	2.6	↑ 2.9	↑ 3.2	2.7
14	2.7	2.8	2.9	↑ 2.2	2.0	5.7	↑ 15.5	3.0	2.6	10.6	3.2	↑ 4.4
15	2.6	2.8	2.9	2.3	2.0	2.8	4.9	↑ 3.0	↑ 86.4	33.0	3.3	6.6
16	↑ 2.6	2.8	2.8	2.4	↑ 1.9	↑1,610	2.7	3.0	15.9	↑ 4.3	3.3	3.0
17	2.6	2.8	2.8	↑ 2.5	1.9	710	2.1	3.0	5.5	3.4	3.3	3.2
18	2.6	2.8	2.7	2.4	2.0	32.0	1.5	↑ 3.0	↑ 29.2	2.8	3.3	↑ 3.3
19	2.6	2.8	2.7	2.4	↑ 2.0	27.1	389	9.8	83.2	↑ 2.4	3.4	3.3
20	2.6	↑ 2.8	↑ 2.6	2.3	2.1	↑ 11.7	↑1,370	3.0	21.2	2.7	↑ 3.4	3.4
21	2.6	2.7	2.6	↑ 2.2	2.2	1.8	229	3.0	4.8	3.0	3.4	↑ 3.4
22	2.6	2.7	2.6	2.2	↑ 2.3	1.8	42.4	↑ 3.0	↑ 4.8	3.3	3.3	3.5
23	↑ 2.6	2.6	29.3	2.2	2.3	↑ 1.8	9.5	3.4	4.3	↑ 3.6	3.2	3.7
24	2.6	2.6	5.3	↑ 2.2	2.3	1.8	↑ 6.8	3.3	3.8	3.5	↑ 3.2	3.8
25	2.7	2.5	3.2	2.2	↑ 2.3	952	3.2	↑ 3.2	3.3	3.3	3.1	4.0
26	2.7	2.4	3.2	2.1	2.3	2,760	3.2	3.0	↑ 2.8	↑ 3.2	3.0	↑ 4.1
27	2.8	2.4	2.7	↑ 2.1	2.3	↑ 724	↑ 3.2	2.9	54.3	3.2	2.8	4.1
28	2.8	↑ 2.3	↑ 2.7	2.1	2.3	↑ 99.8	3.2	2.8	↑ 24.9	3.2	↑ 2.7	4.1
29	2.9		2.7	2.1	↑ 2.3	507	60.8	↑ 2.6	6.0	3.1	2.7	↑ 4.1
30	↑ 2.9		↑ 2.7	2.1	2.3	1,830	17.4	183	4.4	↑ 3.1	2.6	3.8
31	2.9		2.7		2.2		3.7	30.3		3.0		3.6
Sum	85.7	75.2	115.7	71.3	65.7	10,126.0	2,433.9	931.1	518.0	132.2	94.1	108.9

Month	Current Year 1967: 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 1932-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.			† 1	ø 3.0	†15	2.6	2.8	170	193	875	82.7
Feb.			† 1	ø 2.8	28	2.3	2.7	149	258	4,400	73.4
Mar.	3.66		23	191	1	2.4	3.7	229	235	2,410	72.4
Apr.			† 1	ø 2.7	†26	2.1	2.4	141	1,017	15,500	55.1
May			†22	ø 2.3	†16	1.9	2.1	130	4,017	26,000	81.3
June	10.66		16	21,500	†21	1.8	336	20,085	7,253	54,800	59.5
July	8.15		20	9,730	13	3.2	78.5	4,828	8,453	28,700	518
Aug.	4.52		30	1,210	29	2.6	30.0	1,847	5,244	33,617	123
Sept.	3.85		3	468	†12	2.6	17.3	1,027	6,869	42,200	123
Oct.	3.37		14	155	† 2	2.4	4.3	262	2,806	17,243	50.8
Nov.			9	ø 3.5	30	2.6	3.1	187	290	2,980	64.9
Dec.	2.55		14	10.0	† 1	2.6	3.5	216	295	3,080	90.0
Yearly	10.66			21,500		1.8	40.4	29,271	36,930	105,807	3,958

↑ *Discharge measurement made on this day* ø Mean daily † And other days

RIO GRANDE AT JOHNSON RANCH NEAR CASTOLON, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank at latitude 29° 02' 05", longitude 103° 23' 30", and river mile 855.3; two miles west-northwest of old Johnson Ranch headquarters, 5.5 river miles upstream from Smoky Creek, 13.0 river miles upstream from Chisos Crossing and the Chihuahua-Coahuila state line, 14.0 river miles downstream from Castolon, Brewster County, Texas and Santa Helena Ranch, Chihuahua, and 392.9 river miles downstream from 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 92 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: April 1936 through 1967.

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. A flow estimated at 97,000 second-feet with a stage of 24.6 feet occurred at this station site on October 3, 1932. Min. no flow several days in 1953, 1955, 1957, and 1958.

Average Flow in Second-Feet

Daily:	Max.	56,900	Sept. 10, 1942	Min.	0	Several days 1953, 1955, 1957 & 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 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	470	772	506	346	⋔ 186	⋔ 455	2,460	⋔ 546	⋔ 864	1,630	⋔ 752	⋔ 593
2	460	764	485	314	182	443	2,030	1,250	1,530	⋔ 1,380	789	607
3	⋔ 450	⋔ 624	⋔ 466	⋔ 291	183	381	⋔ 2,080	1,890	1,680	1,290	⋔ 673	728
4	479	580	437	279	190	405	1,520	1,410	2,050	1,550	663	776
5	499	523	414	254	⋔ 191	⋔ 1,210	1,490	1,340	⋔ 2,130	1,370	768	⋔ 810
6	519	471	⋔ 401	240	245	1,260	⋔ 1,150	840	2,280	⋔ 1,480	764	674
7	462	⋔ 453	427	231	250	772	1,300	⋔ 668	2,870	1,410	⋔ 796	658
8	462	426	439	247	250	⋔ 889	1,060	584	⋔ 3,330	1,020	967	564
9	717	404	405	226	⋔ 240	⋔ 737	1,100	547	3,470	1,050	⋔ 888	528
10	938	401	455	⋔ 205	256	806	976	566	3,370	⋔ 1,120	699	527
11	⋔ 982	406	401	193	253	848	⋔ 867	⋔ 591	3,120	1,030	747	⋔ 516
12	848	393	383	171	⋔ 237	713	769	506	⋔ 2,980	907	782	488
13	682	⋔ 418	⋔ 364	190	226	⋔ 608	663	1,180	2,670	⋔ 763	⋔ 832	472
14	643	425	348	⋔ 189	219	546	⋔ 557	940	2,310	807	836	⋔ 467
15	574	414	323	238	208	596	462	⋔ 674	⋔ 1,770	860	1,030	455
16	⋔ 530	411	304	240	⋔ 217	⋔ 577	384	663	1,260	⋔ 1,060	916	459
17	501	403	294	⋔ 219	215	3,780	366	896	1,510	813	708	458
18	479	410	287	199	199	1,270	406	⋔ 697	⋔ 1,240	761	726	⋔ 466
19	457	404	268	204	⋔ 209	1,440	568	572	3,350	⋔ 804	730	462
20	445	⋔ 420	⋔ 250	176	247	⋔ 993	⋔ 1,990	595	⋔ 1,790	727	⋔ 719	452
21	442	460	250	⋔ 154	265	1,070	2,040	522	2,490	718	763	⋔ 432
22	412	472	234	187	⋔ 258	651	1,220	⋔ 612	⋔ 2,300	771	792	405
23	⋔ 414	537	465	209	272	⋔ 551	1,120	666	2,280	⋔ 796	750	397
24	404	528	1,420	⋔ 192	277	505	⋔ 895	758	1,920	806	⋔ 643	438
25	389	473	650	186	⋔ 277	1,960	965	⋔ 522	1,680	651	604	493
26	385	491	431	158	361	4,320	826	461	⋔ 1,610	⋔ 737	654	⋔ 536
27	375	478	410	⋔ 168	364	⋔ 8,580	⋔ 751	424	4,240	626	738	501
28	371	⋔ 470	⋔ 424	183	403	2,830	605	⋔ 422	⋔ 3,970	650	⋔ 646	461
29	361		359	176	⋔ 400	3,060	568	433	2,700	614	628	⋔ 451
30	⋔ 365		481	203	423	9,980	884	700	1,750	⋔ 696	648	438
31	359		⋔ 427		446		787	657		643		451
Sum	15,874	13,431	13,208	6,468	8,149	52,236	32,859	23,132	70,514	29,540	22,651	16,163

Month	Current Year 1967 Extreme Gage Feet High	Low	Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1948-1967 Acre-Feet Average	Maximum	Minimum
Jan.	3.16	2.02	11	1,040	†29	353	512	31,486	31,704	65,200	11,300
Feb.	3.03	2.08	1	946	13	385	480	26,640	31,348	71,400	9,460
Mar.	4.00	1.71	24	1,820	23	220	426	26,198	24,844	52,300	4,440
Apr.	2.08	1.48	1	363	27	149	216	12,829	11,034	23,900	457
May	2.67	1.55	28	690	3	173	263	16,164	20,433	56,000	0
June	12.97	2.05	30	17,700	3	372	1,740	103,610	39,851	103,610	3,270
July	7.79	1.98	20	6,750	†16	358	1,060	65,176	72,199	300,000	5,930
Aug.	4.88	2.21	3	2,670	28	401	746	45,882	88,370	229,205	12,300
Sept.	8.25	2.40	27	7,260	1	506	2,350	139,865	136,050	611,394	9,350
Oct.	4.02	2.61	1	1,780	29	582	953	58,593	114,871	1,157,000	4,940
Nov.	3.34	2.57	15	1,150	25	586	755	44,928	39,412	132,000	8,600
Dec.	3.17	2.22	4	970	23	388	521	32,059	32,485	70,800	9,510
Yearly	12.97	1.48		17,700		149	833	603,430	642,601	2,059,290	120,747

⋔ Discharge measurement made on this day † And other days

RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TEXAS
(ABOVE MAIN STEM HEAD OF AMISTAD RESERVOIR)

DESCRIPTION: Cableway, bubbler gage, concrete control weir, and water-stage recorders (graphic and digital) located on the left bank at latitude 29° 46' 50", longitude 101° 45' 20", and river mile 651.0; 500 feet downstream from the Terrell-Val Verde County Line, 16.9 river miles upstream from Langtry, Texas, and 597.2 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 1,157.17 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 75 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods prior to completion of the weir and for high flows only, thereafter. After the weir was placed in operation, low and medium flow computations were based on a stable control weir rating curve defined by meter measurements. Records available: September 1961 through 1967.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. Construction of a concrete channel control weir at this site began on December 15, 1966, at which time the gage was temporarily relocated 1,500 feet downstream. The weir was finished and placed in operation on February 21, 1967, at which time the gage was relocated to the weir site and the zero of the gage was set 3.17 feet higher.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	766	600	649	583	⋔ 341	543	⋔ 8,570	773	686	2,320	874	826
2	745	⋔ 596	⋔ 672	604	333	⋔ 524	⋔ 6,710	1,040	968	1,970	914	815
3	⋔ 707	589	661	⋔ 634	326	634	⋔ 2,580	898	860	1,850	888	826
4	686	849	672	563	333	720	2,070	1,010	1,600	1,660	942	⋔ 794
5	674	870	661	524	349	⋔ 1,060	2,200	2,090	⋔ 2,150	1,540	955	847
6	⋔ 670	⋔ 823	⋔ 638	505	349	644	1,700	1,480	1,980	⋔ 1,620	⋔ 888	942
7	680	756	617	468	349	573	1,630	⋔ 1,680	2,170	2,690	901	1,010
8	691	725	586	458	⋔ 349	⋔ 1,570	1,300	1,160	2,300	1,700	968	996
9	⋔ 710	⋔ 695	⋔ 564	440	349	996	1,330	942	2,780	⋔ 1,640	968	901
10	702	668	564	⋔ 432	390	1,040	⋔ 1,290	798	3,130	1,400	1,010	874
11	711	647	606	603	406	973	1,190	⋔ 24,200	3,280	1,170	1,160	⋔ 804
12	⋔ 935	620	596	449	398	⋔ 834	1,170	2,080	3,240	1,240	1,050	783
13	1,060	⋔ 601	⋔ 617	415	381	930	1,480	860	3,020	1,250	⋔ 968	772
14	1,090	614	606	390	372	941	1,060	⋔ 834	5,200	1,160	982	740
15	963	644	575	372	⋔ 372	845	1,020	822	7,860	1,190	1,010	751
16	⋔ 879	⋔ 650	544	364	364	773	973	1,300	⋔ 3,750	3,880	1,010	740
17	844	661	⋔ 523	⋔ 364	349	951	⋔ 845	1,270	3,200	2,120	1,050	730
18	790	641	504	372	349	1,570	730	1,110	⋔ 1,960	1,400	1,140	⋔ 720
19	⋔ 736	628	504	381	356	⋔ 2,390	644	874	2,230	1,200	1,010	720
20	723	⋔ 608	⋔ 504	398	1,290	1,300	12,300	1,080	2,390	1,070	⋔ 942	720
21	710	595	485	390	424	1,280	⋔ 4,720	874	3,050	1,030	914	710
22	699	591	466	381	⋔ 364	1,190	3,640	784	2,110	1,030	901	700
23	⋔ 687	⋔ 583	466	372	364	1,160	2,290	784	2,620	⋔ 968	888	690
24	673	601	554	⋔ 356	372	1,030	⋔ 1,330	721	2,380	942	942	670
25	644	629	649	356	398	866	1,290	888	2,460	996	928	670
26	⋔ 630	672	973	349	398	⋔ 2,480	1,150	901	2,190	982	914	⋔ 650
27	607	⋔ 700	⋔ 1,160	349	415	2,160	962	888	2,020	968	⋔ 860	660
28	607	669	845	349	424	⋔ 7,680	1,010	⋔ 721	4,710	942	826	700
29	607		695	341	624	⋔ 5,590	941	664	5,200	996	847	730
30	⋔ 600		628	349	698	3,530	887	640	3,330	⋔ 901	874	720
31	604		638		534		⋔ 804	629		888		710
Sum	22,830	18,525	19,422	12,911	13,120	46,777	69,816	54,795	84,824	44,713	28,524	23,921

Month	Current Year 1967: 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. 1961-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	2.32	1.67	14	1,100	30	600	736	45,283	43,156	47,616	36,149
Feb.	2.15	1.18	4	965	21	299	662	36,744	36,921	49,064	30,032
Mar.	2.75	1.92	26	1,380	†22	456	627	38,524	35,993	42,893	29,975
Apr.	2.44	1.76	11	1,010	28	333	430	25,609	30,707	43,337	22,352
May	3.63	1.74	20	3,300	2	318	423	26,024	44,832	79,766	26,024
June	6.37	1.96	28	11,400	1	505	1,560	92,782	97,936	164,392	56,111
July	13.82	2.08	20	23,700	20	624	2,250	138,480	80,763	138,480	30,268
Aug.	24.55	2.11	11	64,900	†30	618	1,770	108,686	101,307	227,569	37,698
Sept.	10.35	2.15	15	17,200	1	664	2,830	168,248	212,605	634,303	77,100
Oct.	4.40	2.32	16	5,150	31	874	1,440	88,688	92,706	195,038	52,702
Nov.	2.55	2.27	11	1,200	28	815	951	56,577	49,529	57,591	41,903
Dec.	2.46	2.10	8	1,070	27	640	772	47,447	45,888	52,989	38,349
Yearly	24.55	1.18		64,900		299	1,210	873,092	872,343	1,520,593	710,413

⋔ Discharge measurement made on this day † And other days

RIO GRANDE AT LANGTRY, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the right bank at Langtry, Texas, latitude 29° 48' 00", longitude 101° 33' 30", and river mile 634.1; 24.1 river miles upstream from Pecos River, 66.6 river miles upstream from Amistad Dam, and 614.1 river miles downstream from American Dam at El Paso, Texas. The cableway is located 1,500 feet downstream from the gage well. The zero of the gage is 1,091.69 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 98 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: May 1900 through October 1914; December 1919 through March 1920; 1924 through 1967.

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 June 17, 1922 with a discharge of 204,000 second-feet, 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 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	836	649	742	634	♯ 399	607	7,820	871	743	2,400	979	909
2	826	♯ 633	♯ 738	624	400	♯ 602	♯ 8,260	1,110	903	2,230	♯1,030	897
3	♯ 802	634	729	♯ 716	402	639	3,220	♯ 1,080	981	♯ 2,070	981	922
4	768	808	753	644	♯ 426	751	2,730	1,010	1,350	1,830	1,030	♯ 917
5	755	991	751	589	437	♯ 1,170	2,550	2,330	♯ 2,400	1,680	1,050	885
6	♯ 755	♯ 937	♯ 729	♯ 576	438	793	♯ 2,140	1,710	1,930	1,730	♯ 967	969
7	759	862	693	551	433	649	2,000	♯ 1,880	2,170	2,850	956	♯ 986
8	755	819	650	540	♯ 434	1,530	1,670	1,380	♯ 2,380	1,860	1,040	1,040
9	♯ 785	♯ 784	♯ 627	520	432	♯ 1,170	1,560	1,100	3,040	♯ 1,840	♯1,060	977
10	762	755	624	♯ 509	446	1,140	♯ 1,510	♯ 956	3,480	1,610	1,090	962
11	751	733	666	625	473	1,150	1,320	21,700	♯ 3,570	1,380	1,220	♯ 924
12	♯ 897	699	658	541	♯ 465	♯ 1,010	1,310	5,480	3,550	♯ 1,410	1,190	886
13	1,130	♯ 677	♯ 673	♯ 476	451	959	♯ 1,420	1,090	3,380	1,410	♯1,090	870
14	1,200	686	673	456	455	1,030	1,670	♯ 952	♯ 3,750	1,350	1,090	♯ 826
15	1,090	700	642	443	458	♯ 926	1,080	939	8,870	1,400	1,100	838
16	♯ 969	♯ 729	617	446	450	827	1,100	1,360	4,070	♯ 3,930	1,120	812
17	937	722	♯ 605	♯ 450	443	982	♯ 942	♯ 1,160	3,860	2,600	♯1,110	800
18	876	708	598	448	♯ 446	1,190	830	1,560	♯ 2,180	1,550	1,230	♯ 790
19	♯ 838	700	589	450	451	2,700	940	991	2,280	♯ 1,400	1,170	790
20	803	♯ 686	♯ 582	♯ 472	1,250	♯ 1,440	10,800	1,160	2,160	1,230	♯1,080	791
21	788	675	568	462	627	1,340	6,520	♯ 1,060	♯ 3,220	1,160	1,060	♯ 784
22	766	684	554	446	♯ 479	1,380	3,730	943	2,040	1,160	1,030	774
23	♯ 745	♯ 667	♯ 546	431	451	1,210	2,600	988	2,520	♯ 1,110	999	758
24	740	687	587	♯ 422	445	1,180	♯ 1,810	♯ 866	2,340	1,090	♯1,000	740
25	723	702	664	424	455	966	1,540	918	2,300	1,110	1,050	730
26	♯ 713	750	908	420	♯ 449	♯ 2,250	1,430	1,020	2,130	♯ 1,120	1,060	♯ 714
27	689	791	♯1,320	♯ 416	457	2,150	♯ 1,220	993	1,770	1,110	♯1,030	755
28	679	♯ 765	946	411	478	6,020	1,230	♯ 852	4,180	1,020	947	♯ 817
29	661		745	405	558	♯ 6,570	1,140	771	5,470	1,070	930	862
30	♯ 664		♯ 654	410	808	4,450	1,070	747	3,470	♯ 965	♯ 945	842
31	653		670		597		♯ 935	♯ 730		972		816
Sum	25,115	20,633	21,501	14,957	15,393	48,781	78,097	59,707	86,487	49,647	31,634	26,383

Month	Current Year 1967								Period 1948-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	1.93	1.21	14	1,210	31	653	810	49,816	49,378	86,600	27,300
Feb.	1.72	1.09	5	1,030	21	581	737	40,926	47,529	95,300	25,000
Mar.	2.23	1.05	27	1,470	23	540	694	42,647	44,267	77,600	23,300
Apr.	1.64	.83	11	984	†29	405	499	29,667	39,583	112,000	16,700
May	3.31	.79	20	2,720	3	397	497	30,532	56,493	192,000	16,200
June	8.48	1.07	28	9,030	1	574	1,630	96,757	89,186	258,000	15,800
July	17.25	1.30	20	22,700	19	714	2,520	154,905	102,761	325,000	20,200
Aug.	29.55	1.51	11	56,400	31	723	1,930	118,429	114,576	248,000	31,100
Sept.	13.73	1.62	15	16,500	1	723	2,880	171,547	172,341	639,064	19,600
Oct.	5.70	1.72	16	5,550	30	941	1,600	98,475	156,306	1,335,000	23,200
Nov.	2.07	1.63	11	1,290	29	891	1,050	62,746	58,680	184,000	22,600
Dec.	1.93	1.38	8	1,100	26	714	851	52,331	50,490	93,100	24,800
Yearly	29.55	0.79		56,400		397	1,310	948,778	981,590	2,363,800	326,100

‡ Period 1931-1967 ♯ Discharge measurement made on this day † And other days

PECOS RIVER NEAR SHUMLA, TEXAS

DESCRIPTION: Light cableway for measuring from the bank, bubbler gage, and water-stage recorder located on the right bank about 450 feet downstream from the cableway at latitude 29° 49' 20", longitude 101° 24' 35", about 9 miles east of Langtry, Texas, 13.0 river miles upstream from the Pecos High Bridge, and 18.5 river miles from the confluence with the Rio Grande. This stream enters the Rio Grande at river mile 610.0, 24.1 river miles downstream from Langtry, Texas, and 638.2 river miles downstream from the American Dam at El Paso, Texas. Measurements made from the cable are limited to medium flows. The zero of the gage is 1,159.46 feet above mean sea level, U.S.C. &G.S. datum.

RECORDS: Based on 27 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: October 8, 1954 through June 1967. Records are also available for Pecos River near Comstock, 13.0 river miles downstream, from March 17 through December 3, 1898, May 1900 through October 7, 1954; for Pecos River at Mouth near Comstock, Texas from March 1961 through 1967; and for Pecos River near Langtry, Texas from July through December 1967.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The flood of June 1954, which had a discharge of 948,000 second-feet at the gaging station near the railroad bridge 13 miles downstream, reached an elevation of 1,281.2 feet above mean sea level at this station. The operation of this station was discontinued on June 30, 1967, at which time a new station equipped with control weir, located 3.5 river miles downstream, began operation (see next page).

EXTREME FLOWS FROM RECORDS: Momentary: Max. 51,800 second-feet on September 24, 1964 with a gage height of 25.78 feet. Min. 60.9 second-feet on August 31, 1962 with a gage height of 0.86 foot.

Average Flow in Second-Feet

Daily:	Max.	25,000	Sept. 24, 1964	Min.	62.3	September 1, 1962
Monthly:	Max.	2,990	Sept. 1964	Min.	82.0	August 1964
Yearly:	Max.	540	1957	Min.	148	1963

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	205	193	172	160	146	119						
2	201	190	171	162	⋔ 142	120						
3	⋔ 198	188	169	161	139	121						
4	200	189	170	⋔ 159	143	122						
5	201	191	168	156	147	132						
6	205	201	165	165	145	⋔ 140						
7	207	⋔ 201	⋔ 161	160	143	134						
8	207	198	161	158	141	130						
9	208	198	163	154	⋔ 141	124						
10	⋔ 212	194	167	160	136	121						
11	210	187	170	⋔ 167	137	118						
12	205	185	170	195	134	114						
13	203	183	168	188	131	⋔ 109						
14	202	⋔ 179	⋔ 172	172	127	107						
15	198	182	172	168	121	106						
16	197	182	164	162	⋔ 118	109						
17	⋔ 193	181	162	161	115	118						
18	195	181	158	⋔ 162	115	117						
19	196	188	160	556	117	114						
20	196	194	162	408	125	⋔ 111						
21	196	⋔ 187	⋔ 150	288	135	109						
22	198	186	188	232	127	106						
23	197	183	242	201	⋔ 120	103						
24	⋔ 199	180	209	184	125	101						
25	199	175	192	⋔ 177	124	100						
26	194	174	185	170	119	99.2						
27	188	179	179	159	117	⋔ 95.6						
28	190	⋔ 178	⋔ 174	156	117	94.1						
29	190		165	153	⋔ 117	94.1						
30	193		155	150	120	95.6						
31	⋔ 193		162		119							
Sum	6,176	5,227	5,326	5,804	4,003	3,383.6						

Month	Current Year 1967								Period 1955-June 1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	1.63	1.53	10	212	29	186	199	12,250	11,589	16,400	8,341
Feb.	1.64	1.49	6	205	26	172	187	10,368	10,278	14,600	7,202
Mar.	1.92	1.38	23	263	21	147	172	10,564	10,249	14,300	7,430
Apr.	3.02	1.34	19	712	30	146	193	11,512	14,680	39,900	7,718
May	1.37	1.19	5	149	17	114	129	7,940	26,335	173,000	5,346
June	1.33	1.10	6	143	†28	94.1	113	6,711	18,883	44,600	5,820
July									15,122	38,900	5,309
Aug.									12,257	26,500	5,043
Sept.									35,024	178,156	6,239
Oct.									27,044	101,000	5,607
Nov.									13,371	21,600	6,222
Dec.									11,862	16,300	7,418
Yearly									206,694	390,670	107,014

⋔ Discharge measurement made on this day † And other days

PECOS RIVER NEAR LANGTRY, TEXAS

DESCRIPTION: Cableway, concrete control weir, bubbler gage, and water-stage recorders (graphic and digital) located on the right bank at latitude 29° 48' 10", longitude 101° 26' 45", about 7.5 miles east of Langtry, Texas, 9.5 river miles upstream from the Pecos High Bridge, and 15.0 river miles from the confluence with the Rio Grande. This stream enters the Rio Grande at river mile 610.0, 24.1 river miles downstream from Langtry, Texas, and 638.2 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 1,133.08 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 27 discharge measurements during the year and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on stable control weir rating curves defined by meter measurements. Records available: July through December 1967. Records are also available for Pecos River near Comstock, 9.5 river miles downstream, from March 17 through December 3, 1898 and May 1900 through October 7, 1954; for Pecos River near Shumla, 3.5 river miles upstream, from October 8, 1954 through June 1967; and for Pecos River at Mouth near Comstock, from March 1961 through 1967.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The flood of June 1954, which had a discharge of 948,000 second-feet at the gaging station near the railroad bridge 9.5 river miles downstream, exceeded a gage height of 100 feet at this station. This station was placed in operation June 30, 1967.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1							101	⋔ 116	120	146	128	137
2							120	110	116	140	128	137
3							137	108	407	140	128	134
4							137	106	498	140	126	134
5							134	106	717	137	123	⋔ 131
6							120	96.4	⋔ 476	131	123	131
7							116	98.6	321	128	⋔ 123	134
8							110	96.4	238	126	126	128
9							110	96.4	201	128	131	134
10							110	96.4	179	⋔ 126	134	128
11							⋔ 110	⋔ 98.6	162	126	134	131
12							110	176	⋔ 149	123	131	⋔ 134
13							108	221	140	123	131	134
14							108	149	134	123	⋔ 128	134
15							106	⋔ 128	165	137	128	140
16							101	120	233	126	128	143
17							101	124	471	⋔ 118	126	146
18							⋔ 101	⋔ 858	209	118	126	146
19							101	395	⋔ 193	116	126	⋔ 143
20							591	182	242	113	128	143
21							653	162	176	113	⋔ 128	137
22							321	⋔ 152	176	113	128	134
23							221	373	212	113	128	134
24							176	146	190	⋔ 116	128	134
25							⋔ 158	134	176	116	131	131
26							149	128	182	116	131	⋔ 131
27							146	126	168	116	131	128
28							143	123	158	116	⋔ 134	128
29							137	⋔ 120	158	118	137	128
30							134	120	155	137	137	134
31							126	120		⋔ 128		134
Sum							5,096	5,185.8	7,122	3,867	3,869	4,175

Month	Current Year 1967								Period		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.											
Feb.											
Mar.											
Apr.											
May											
June											
July	4.22	1.68	20	2,160	† 19	98.6	164	10,108			
Aug.	3.19	1.66	18	1,380	8	94.2	167	10,286			
Sept.	3.35	1.75	3	1,510	† 2	116	237	14,126			
Oct.	1.89	1.74	29	155	† 19	113	125	7,670			
Nov.	1.83	1.78	† 29	137	† 5	123	129	7,674			
Dec.	1.87	1.79	18	149	27	126	135	8,281			
Yearly											

⋔ Discharge measurement made on this day † And other days

PECOS RIVER AT MOUTH NEAR COMSTOCK, TEXAS

DESCRIPTION: Cableway, bubbler gage, and water-stage recorder located on the left bank at latitude 29° 42' 20", longitude 101° 21' 35", 0.4 river mile downstream from Highway 90 bridge, 1.0 river mile from the confluence with the Rio Grande, and about 12 miles west of Comstock, Val Verde County, Texas. This stream enters the Rio Grande at river mile 610.0, 24.1 river miles downstream from Langtry, Texas, and 638.2 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 1,031.58 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 41 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Discharge for days which contain storm runoff and are affected by backwater from the Rio Grande are not computed. Records available: March 1961 through 1967. Records are also available for Pecos River near Comstock, 4.5 river miles upstream, from March 17 through December 3, 1898 and May 1900 through October 7, 1954; and for Pecos River near Shumla, 17.5 river miles upstream, from October 8, 1954 through June 1967; and for Pecos River near Langtry, 14.0 river miles upstream, from July through December 1967.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The rating curve for this station is affected by backwater from the Rio Grande when the stage at Langtry station exceeds about 2.5 feet. The flood of June 1954, which had a discharge of 948,000 second-feet at the gaging station near the railroad bridge 4.5 miles upstream, reached an elevation of 1,113.9 feet above mean sea level at this station.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	203	195	187	170	184	130	110	⋔ 116		155	136	141
2	202	196	179	169	⋔ 179	128	126	114		150	134	141
3	⋔ 197	195	176	170	171	125	138	112		149	138	139
4	197	195	174	⋔ 171	165	125	138	107		149	136	135
5	194	193	174	172	162	124	137	105		146	134	⋔ 135
6	192	196	182	173	160	⋔ 139	134	106		141	132	135
7	191	196	⋔ 181	172	159	141	120	105		144	⋔ 134	135
8	193	⋔ 200	183	168	152	138	117	⋔ 101		144	134	138
9	196	205	184	168	⋔ 146	133	117	93.8		143	133	136
10	⋔ 196	201	180	171	144	127	117	93.5		⋔ 137	136	138
11	196	199	178	⋔ 174	143	126	116	95.5		131	136	136
12	195	194	178	178	141	122	110	100		129	138	⋔ 135
13	193	191	179	207	138	⋔ 118	107	225		128	135	137
14	191	⋔ 190	⋔ 182	194	132	117	106	188		129	134	138
15	191	189	184	174	125	115	103	⋔ 152		146	⋔ 134	141
16	192	191	182	168	⋔ 119	118	102	140		137	135	141
17	⋔ 192	192	181	168	118	126	102	131		129	135	144
18	196	192	180	⋔ 167	115	125	⋔ 98.3	768		122	135	141
19	196	192	177	385	119	124	171	546		122	137	⋔ 141
20	198	194	174	518	127	123		206		121	139	141
21	197	⋔ 189	172	312	149	122	675	172		120	⋔ 140	139
22	197	188	⋔ 172	256	138	120	380	⋔ 169		120	140	138
23	197	186	246	228	⋔ 131	116	228	354		122	139	139
24	⋔ 199	186	240	210	129	112	183	202		⋔ 122	138	138
25	199	185	215	⋔ 202	136	112	166	140		121	138	138
26	199	185	198	195	132	110	153	132		122	135	⋔ 138
27	200	181	191	186	131	108	147	127		121	138	138
28	200	⋔ 183	⋔ 182	179	131	107	141	121		120	138	137
29	197		175	178	⋔ 133	106	134	⋔ 121		122	142	138
30	195		169	181	135	108	130	121		148	140	137
31	⋔ 193		166		134		120	120		⋔ 141		138
Sum	6,074	5,379	5,721	6,164	4,378	3,645		5,383.8		4,131	4,093	4,286

Month	Current Year 1967: 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. 1961-1967: Acre-Feet ** Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	2.25	2.20	1	204	14	189	196	12,048	10,833	12,675	9,320
Feb.	2.29	2.12	9	207	27	179	192	10,669	9,346	11,088	7,874
Mar.	2.48	1.92	23	264	30	166	185	11,348	9,610	11,419	8,152
Apr.	3.62	1.81	19	666	9	164	205	12,226	10,991		8,616
May	1.86	1.59	1	188	18	115	141	8,684	12,167		
June			7	Ø 141	29	Ø 106	122	7,230	7,316		7,230
July		1.42			19	95.5			7,626		
Aug.			18	1,370	10	Ø 93.5	151	10,679	7,469		5,792
Sept.											
Oct.		1.57	1	Ø 155	21	117	133	8,194	14,158		6,244
Nov.		1.68	29	Ø 142	6	132	136	8,118	11,694	16,080	6,857
Dec.	1.80	1.72	† 17	144	† 4	135	138	8,501	11,006	13,984	8,448
Yearly						Ø 93.5					

⋔ Discharge measurement made on this day # Some months missing
** See explanation in RECORDS above Ø Mean daily † And other days

GOODENOUGH SPRING NEAR COMSTOCK, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located on the left bank about 100 feet from the spring source at latitude 29° 32' 10", longitude 101° 15' 10", 0.8 mile from the confluence with the Rio Grande, and about 12 miles southwest of Comstock, Val Verde County, Texas. This stream enters the Rio Grande at river mile 583.3, 15.8 river miles upstream from Amistad Dam, and 664.9 river miles downstream from 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 48 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control 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: 1924 through 1967.

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. A maximum gage height of 43.35 feet was reached by backwater on June 28, 1954.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 3,580 second-feet on September 23, 1964 with a gage height of 13.10 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 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	118	⋔ 111	⋔ 100	106	101	93.5	89.0	90.7	86.8	117	⋔ 126	120
2	118	109	101	104	100	94.0	88.9	⋔ 90.6	87.0	116	126	119
3	116	109	102	102	⋔ 102	99.9	89.9	89.8	93.0	116	124	118
4	⋔ 116	109	102	102	102	102	90.8	89.1	85.4	⋔ 114	126	118
5	117	110	104	⋔ 102	103	104	⋔ 90.8	88.3	83.7	116	125	118
6	118	107	102	102	108	107	93.1	88.4	83.9	117	124	⋔ 118
7	116	108	102	102	112	⋔ 109	94.3	88.6	83.1	117	125	120
8	115	⋔ 105	⋔ 102	102	113	108	95.6	88.8	82.3	116	126	123
9	114	107	102	101	112	107	95.8	⋔ 89.0	81.5	118	126	124
10	114	108	103	101	⋔ 113	106	96.1	88.4	80.7	117	126	125
11	⋔ 114	105	102	101	111	105	97.3	86.8	80.9	⋔ 119	126	127
12	115	104	103	⋔ 101	107	104	⋔ 98.6	94.1	81.0	119	127	130
13	116	104	103	99.1	105	103	99.3	96.6	80.2	118	128	⋔ 130
14	115	105	103	96.2	104	⋔ 103	96.9	99.0	78.5	118	128	129
15	113	⋔ 105	⋔ 101	96.2	101	103	96.5	99.4	79.7	129	⋔ 129	130
16	114	105	101	95.3	101	102	96.2	⋔ 95.8	77.9	149	129	130
17	113	104	102	93.3	⋔ 102	102	96.8	91.8	77.1	140	128	129
18	⋔ 112	103	102	98.9	103	100	99.4	90.8	81.3	⋔ 133	128	128
19	111	103	102	⋔ 113	104	99.7	⋔ 101	91.9	86.6	126	128	128
20	114	101	100	114	104	99.5	103	91.9	⋔ 88.8	124	128	⋔ 128
21	114	101	100	111	104	⋔ 100	99.6	91.0	90.9	123	128	128
22	113	101	⋔ 100	110	105	98.0	97.4	90.0	95.0	124	⋔ 129	127
23	113	⋔ 101	100	110	106	96.8	95.1	⋔ 89.1	99.1	124	128	126
24	113	99.5	114	110	⋔ 107	95.6	93.9	89.7	106	122	127	126
25	⋔ 114	98.5	126	109	105	93.6	93.7	89.3	116	⋔ 122	126	126
26	112	99.3	119	⋔ 107	103	92.4	⋔ 92.5	89.9	116	123	124	126
27	111	99.2	118	106	101	91.2	93.4	88.6	115	122	122	⋔ 126
28	111	98.2	116	107	100	⋔ 90.0	93.2	88.2	120	123	121	125
29	111		⋔ 116	106	98.0	89.1	92.1	88.8	123	125	⋔ 121	124
30	111		113	102	96.1	89.0	92.0	⋔ 89.4	122	125	120	122
31	111		110		⋔ 93.1		91.9	89.0		126		120
Sum	3,533	2,919.7	3,271	3,110.0	3,226.2	2,987.3	2,944.1	2,812.8	2,762.4	3,798	3,779	3,868

Month	Current Year 1967								Period 1930-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	1.63	1.47	† 2	119	27	110	114	7,008	7,772	19,620	4,450
Feb.	1.49	1.36	1	112	28	97.3	104	5,791	6,875	17,030	3,860
Mar.	1.63	1.32	25	128	23	98.4	106	6,488	7,437	17,770	4,340
Apr.	1.59	1.34	19	116	18	92.3	104	6,169	7,237	16,580	4,820
May	1.48	1.32	8	114	31	92.2	104	6,399	7,945	16,840	4,870
June	1.42	1.30	7	110	30	87.1	99.6	5,925	7,911	16,040	4,470
July	1.82	1.30	13	151	1	88.0	95.0	5,840	8,275	16,460	4,500
Aug.	1.49	1.31	14	101	2	84.7	90.7	5,579	7,973	15,840	4,840
Sept.	3.09	1.32	3	321	17	76.2	92.1	5,479	9,081	25,000	5,120
Oct.	2.81	1.82	29	250	† 4	114	123	7,533	9,534	25,870	4,820
Nov.	1.98	1.92	† 15	129	† 29	120	126	7,496	8,466	21,850	4,540
Dec.	1.94	1.79	16	132	† 3	118	125	7,672	8,206	20,470	4,500
Yearly	3.09	1.30		321		76.2	107	77,379	96,712	192,840	60,320

⋔ Discharge measurement made on this day † And other days

DOLAN SPRINGS NEAR LOMA ALTA, TEXAS

DESCRIPTION: Concrete wall with 90° V-notch weir of 14 second-foot capacity, bubbler gage, and water-stage recorder located on the left bank of Snake Creek near its mouth, latitude 29° 53' 40", longitude 100° 59' 00", and about 12 miles west of Loma Alta, Val Verde County, Texas. Snake Creek enters Dolan Creek from the left side, 0.9 creek mile from the confluence with Devils River. Dolan Creek enters Devils River from the left side, 16.8 river miles upstream from Pafford Crossing, and 42.3 river miles from the confluence with the Rio Grande. The elevation of the zero of the gage has not been determined.

RECORDS: Based on a continuous record of gage heights and the weir discharge table. Records available: 1966 through 1967.

REMARKS: The flow of these springs is very uniform during periods of dry weather and is not modified by diversions or storage. All storm flow passing this station is deducted and is not included in the tabulation below. This station was established for purposes of correlating the flow of these springs with precipitation data and the flow of other springs in the area.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	5.9	3.8	2.8	1.9	1.6	1.8	1.6	2.2	1.8	3.6	2.2	1.8
2	6.0	3.7	2.7	1.9	1.6	1.8	1.7	2.1	1.8	3.5	2.2	1.8
3	5.8	3.7	2.8	1.9	1.6	1.8	1.7	2.0	3.0	3.3	2.0	1.8
4	5.6	3.7	2.8	1.9	1.6	1.9	1.7	2.0	3.0	3.3	2.2	1.8
5	5.5	3.7	2.9	2.1	1.7	1.8	1.7	2.0	3.0	3.3	2.2	1.8
6	5.8	3.6	2.6	2.2	1.7	1.8	1.7	2.0	3.0	3.2	2.0	1.8
7	5.4	3.5	2.5	2.2	1.8	1.8	1.6	1.9	3.0	3.1	2.0	1.8
8	5.1	3.6	2.5	2.2	1.8	1.7	1.6	1.9	2.8	3.0	2.0	1.8
9	5.2	3.8	2.4	2.2	1.9	1.7	1.6	1.9	2.6	3.0	2.0	1.8
10	5.2	3.8	2.5	2.1	1.9	1.7	1.6	1.9	2.5	2.9	2.0	1.8
11	5.5	3.6	2.6	2.1	1.9	1.7	1.6	1.9	2.4	2.8	2.0	1.8
12	5.4	3.5	2.6	2.1	1.9	1.7	1.6	1.8	2.4	2.8	2.0	1.8
13	5.5	3.4	2.7	2.1	1.9	1.7	1.6	1.8	2.3	2.8	1.9	1.7
14	5.3	3.3	2.4	2.1	1.9	1.6	1.6	1.9	2.3	2.8	1.9	1.7
15	5.1	3.3	2.2	2.0	1.8	1.6	1.6	1.9	2.1	2.8	1.9	1.7
16	5.0	3.4	2.1	2.1	1.8	1.6	1.6	1.9	2.1	2.6	1.9	1.7
17	4.8	3.4	2.1	1.9	1.8	1.6	1.6	1.8	2.4	2.7	1.9	1.7
18	4.6	3.3	2.0	1.9	1.8	1.6	1.6	1.8	3.0	2.7	1.9	1.7
19	4.6	3.5	2.0	1.9	1.8	1.6	1.6	1.8	2.5	2.6	1.9	1.7
20	4.6	3.3	2.1	1.8	1.8	1.6	1.7	1.8	3.6	2.6	1.8	1.7
21	4.6	3.2	1.9	1.9	1.8	1.6	2.0	1.8	4.0	2.5	1.8	1.7
22	4.6	3.2	1.9	1.8	1.7	1.6	2.6	1.8	3.7	2.5	1.7	1.7
23	4.5	3.1	1.8	1.9	1.8	1.6	2.8	2.0	3.6	2.5	1.7	1.7
24	4.3	3.1	1.9	1.9	1.7	1.6	2.8	2.2	3.8	2.5	1.7	1.7
25	4.0	2.8	1.9	1.9	1.7	1.6	2.6	2.0	4.0	2.4	1.7	1.7
26	3.9	2.8	1.9	1.8	1.8	1.6	2.5	1.9	3.8	2.4	1.7	1.7
27	3.9	2.7	2.0	1.7	1.8	1.6	2.5	1.8	3.7	2.2	1.6	1.7
28	3.9	2.7	2.0	1.7	1.7	1.6	2.5	1.8	3.7	2.3	1.5	1.7
29	3.9		2.1	1.7	1.8	1.6	2.3	1.8	3.6	2.3	1.6	1.7
30	4.0		1.9	1.8	1.8	1.6	2.3	1.8	3.6	2.2	1.6	1.6
31	3.9		1.9		1.8		2.3	1.8		2.1		1.6
Sum	151.4	94.5	70.5	58.7	55.0	50.1	59.8	59.0	89.1	85.3	56.5	53.7

Month	Current Year 1967								Period 1966-1967		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.			2	6.0	† 26	3.9	4.9	300	232	300	163
Feb.			† 1	3.8	† 27	2.7	3.4	187	164	187	141
Mar.			5	2.9	23	1.8	2.3	140	146	151	140
Apr.			† 6	2.2	† 27	1.7	2.0	116	134	151	116
May			† 9	1.9	† 1	1.6	1.8	109	262	415	109
June			4	1.9	† 14	1.6	1.7	99.4	236	372	99.4
July			† 23	2.8	† 1	1.6	1.9	119	244	369	119
Aug.			† 1	2.2	† 12	1.8	1.9	117	236	354	117
Sept.			† 21	4.0	† 1	1.8	3.0	177	282	387	177
Oct.			1	3.6	31	2.1	2.8	169	304	439	169
Nov.			† 1	2.2	28	1.5	1.9	112	272	433	112
Dec.			† 1	1.8	† 30	1.6	1.7	107	257	407	107
Yearly				6.0		1.5	2.4	1,752.4	2,769	3,782	1,752.4

Ø Mean daily † And other days

DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TEXAS
(ABOVE HEAD OF DEVILS BRANCH, AMISTAD RESERVOIR)

DESCRIPTION: Concrete control wall with rectangular notch opening of 440 second-foot capacity, bubbler gage, water-stage recorders (graphic and digital), and binary decimal transmitter located on the left bank at latitude 29° 40' 35", longitude 101° 00' 00", about 11.5 miles east of Comstock, Val Verde County, Texas, and 25.5 river miles from the confluence with the Rio Grande. This stream enters the Rio Grande at river mile 568.1, 0.6 river mile upstream from Amistad Dam, and 680.1 river miles downstream from American Dam at El Paso, Texas. The zero of the gage is 1,131.88 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 23 discharge measurements by wading during the year, a stable rating curve, and a continuous record of gage heights. The rating curve for discharge above the capacity of the notch is estimated. Records available: 1960 through 1967. Records are also available from May 1900 through March 1914 for a station 23.8 river miles downstream; from December 1923 through September 1932 for a station 22.8 river miles downstream; from September 2, 1932 through August 1957 for a station 21.0 river miles downstream; from August 7, 1954 through January 1958 for a station 5.4 river miles upstream; and from August 1954 through 1967 for a station at the mouth 24.7 river miles downstream. A graph of Devils River flow from 1871 through 1939 may be found in Water Bulletin No. 9.

REMARKS: At this station the flow of this spring-fed stream is very uniform during periods of dry weather and is not modified by diversions or storage. The transmitter relays gage height data upon interrogation from the Amistad Dam hydrographic office of the United States Section of this Commission and is also programmed to relay similar data to this same office at predetermined time intervals. Transmission is via radio.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	160	145	129	106	91.2	88.4	77.6	83.0	91.2	152	119	110
2	160	145	126	106	⋔ 91.2	85.7	74.8	83.0	96.6	148	123	106
3	160	145	129	110	91.2	85.7	77.6	83.0	280	148	119	103
4	⋔ 160	145	126	⋔ 110	93.9	85.7	74.8	83.0	113	148	119	103
5	160	145	123	110	93.9	85.7	74.8	83.0	106	145	119	106
6	160	141	116	110	93.9	85.7	77.6	83.0	⋔ 103	145	119	106
7	156	137	119	106	93.9	83.0	77.6	83.0	106	141	119	106
8	156	137	119	103	93.9	83.0	74.8	⋔ 80.3	106	137	126	106
9	156	137	119	103	96.6	83.0	74.8	83.0	106	137	133	103
10	⋔ 156	137	119	103	93.9	83.0	74.8	83.0	106	133	126	103
11	156	133	123	103	93.9	83.0	⋔ 74.8	83.0	103	129	123	103
12	156	126	123	99.8	93.9	80.3	69.4	85.7	99.8	129	123	⋔103
13	156	126	123	99.8	88.4	⋔ 80.3	72.1	83.0	96.6	129	119	103
14	156	126	⋔ 123	96.6	85.7	80.3	72.1	80.3	96.6	129	⋔ 119	103
15	156	126	119	99.8	83.0	80.3	72.1	80.3	126	460	119	116
16	156	126	119	96.6	⋔ 80.3	80.3	72.1	80.3	137	164	119	113
17	156	126	119	96.6	80.3	77.6	72.1	77.6	335	⋔ 152	116	113
18	156	126	123	⋔ 103	80.3	77.6	72.1	185	272	145	116	110
19	156	126	126	99.8	83.0	77.6	72.1	190	⋔ 208	141	113	110
20	156	129	129	99.8	88.4	77.6	80.3	113	293	137	110	106
21	156	129	129	96.6	80.3	77.6	156	96.6	238	141	110	103
22	156	129	129	99.8	80.3	77.6	137	⋔ 91.2	204	137	110	99.8
23	156	129	129	96.6	80.3	77.6	110	101	190	137	110	99.8
24	156	129	133	96.6	80.3	74.8	99.8	235	190	133	106	99.8
25	156	129	123	96.6	80.3	74.8	⋔ 96.6	133	190	129	103	99.8
26	148	129	123	93.9	80.3	77.6	91.2	113	182	129	103	99.8
27	145	129	119	91.2	80.3	74.8	88.4	103	164	126	106	96.6
28	145	⋔ 129	⋔ 116	93.9	83.0	⋔ 74.8	88.4	99.8	160	123	113	96.6
29	145		110	93.9	⋔ 88.4	77.6	85.7	99.8	156	126	110	99.8
30	145		106	93.9	91.2	77.6	83.0	93.9	152	129	110	99.8
31	⋔ 145		106		88.4		83.0	91.2		⋔ 119		103
Sum	4,797	3,716	3,775	3,014.8	2,703.9	2,408.6	2,607.5	3,143.0	4,806.8	4,578	3,480	3,229.8

Month	Current Year 1967								Period 1960-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	1.48	1.44	† 1	160	† 26	145	155	9,515	11,796	16,072	9,313
Feb.	1.47	1.39	6	156	† 11	126	133	7,371	9,753	13,464	7,371
Mar.	1.42	1.31	24	137	29	99.8	122	7,488	9,278	13,700	5,995
Apr.	1.34	1.28	† 1	110	† 26	91.2	100	5,980	12,165	38,777	5,980
May	1.33	1.21	30	106	20	72.1	87.2	5,363	11,640	32,716	4,884
June	1.27	1.22	† 1	88.4	† 24	74.8	80.3	4,777	18,923	54,328	4,575
July	1.62	1.20	21	223	12	69.4	84.1	5,172	11,013	24,000	4,122
Aug.	1.94	1.23	24	371	17	77.6	101	6,234	10,751	17,400	3,955
Sept.	2.48	1.28	3	1,090	† 1	91.2	160	9,534	43,436	273,004	6,978
Oct.	2.68	1.37	15	1,540	† 29	119	148	9,080	15,281	31,772	7,153
Nov.	1.42	1.32	8	137	† 26	103	116	6,903	11,459	20,494	6,150
Dec.	1.37	1.28	† 14	119	27	91.2	104	6,406	10,624	18,056	6,176
Yearly	2.68	1.20		1,540		69.4	116	83,823	176,119	393,573	83,823

⋔ Discharge measurement made on this day † And other days

DEVILS RIVER AT MOUTH NEAR DEL RIO, TEXAS

DESCRIPTION: Rock and concrete control wall with a rectangular notch opening of about 600 second-foot capacity, gravity well, and water-stage recorder located on the right bank at latitude 29° 28' 15", longitude 101° 03' 25", 0.8 mile from the confluence with the Rio Grande, 3.7 river miles downstream from U. S. Highway 90 bridge, and about 12 miles northwest of Del Rio, Texas. This stream enters the Rio Grande at river mile 568.1, 0.6 river mile upstream from Amistad Dam, and 680.1 river miles downstream from 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 47 discharge measurements by wading during the year, a continuous record of gage heights, and a stable rating curve for discharges up to about 600 second-feet; above this discharge, 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 1967. For additional records see "Devils River at Pafford Crossing near Comstock, Texas" on preceding page.

REMARKS: The monthly flow of this spring-fed stream is not modified. Prior to December 20, 1965, the daily flow was modified by two power dams with a combined hydroelectric generating capacity of 3,100 kva, the operation of which began in 1929. These dams stopped operating December 20, 1965 incident to the construction of Amistad Dam. The rating curve for this station is affected by backwater from the Rio Grande when the stage at "Below Amistad Dam" station exceeds about 8 feet. The flood of June 1954, affected by backwater, reached an elevation of 969.00 feet at the steam electric plant approximately 2,000 feet upstream from this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 122,000 second-feet on September 21, 1964 with a gage height of 25.00 feet. Min. 51.9 second-feet on February 7, 1957 with a gage height of 0.70 foot. Extreme flow data for Devils River prior to 1955 may be found in previous water bulletins.

Average Flow in Second-Feet

Daily:	Max.	58,000	Sept. 21, 1964	Min.	82.6	Oct. 6, 1956
Monthly:	Max.	7,490	Sept. 1964	Min.	158	July 1956 & Jan. 1957
Yearly:	Max.	992	1957	Min.	201	1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	341	332	321	274	249	⋔ 236	205	213	232	327	⋔ 285	280
2	341	⋔ 324	⋔ 315	270	228	248	209	214	240	323	301	302
3	329	310	318	272	235	237	209	⋔ 215	6,960	323	307	246
4	327	329	325	274	⋔ 248	231	205	208	419	323	269	266
5	⋔ 340	334	319	268	246	226	200	205	330	320	288	275
6	341	366	323	⋔ 270	258	223	⋔ 198	204	292	313	294	⋔ 274
7	340	307	284	274	245	219	202	200	⋔ 270	317	304	276
8	328	328	303	268	248	221	200	200	274	294	⋔ 330	272
9	334	⋔ 327	⋔ 305	267	241	⋔ 217	198	⋔ 199	269	297	349	294
10	332	330	313	279	244	221	199	213	262	290	324	255
11	328	370	314	283	249	219	203	327	256	⋔ 290	316	248
12	⋔ 326	284	310	272	⋔ 248	220	204	222	246	290	308	256
13	331	323	306	267	239	219	⋔ 210	208	⋔ 239	289	301	⋔ 271
14	338	320	302	⋔ 262	257	220	208	210	239	288	296	262
15	340	327	300	261	209	221	200	211	8,590	796	⋔ 292	281
16	341	⋔ 330	⋔ 276	262	222	⋔ 220	198	⋔ 213	2,650	531	288	268
17	355	333	291	290	224	218	198	220	2,770	398	288	274
18	338	324	292	280	225	218	201	221	748	⋔ 370	302	271
19	351	336	298	258	⋔ 232	214	208	341	570	341	284	268
20	⋔ 363	351	298	⋔ 260	237	211	366	304	531	323	287	⋔ 268
21	360	⋔ 311	290	263	237	206	272	253	531	316	287	270
22	360	326	294	258	212	⋔ 204	319	236	459	309	⋔ 281	247
23	362	314	295	261	222	205	273	⋔ 237	423	306	283	246
24	366	317	⋔ 321	249	224	204	249	283	404	309	282	248
25	370	311	303	255	222	208	240	337	392	289	271	257
26	⋔ 373	324	302	392	⋔ 222	212	234	278	377	289	279	237
27	356	343	285	256	225	211	⋔ 235	249	373	289	294	267
28	351	315	285	⋔ 247	229	207	230	245	337	282	283	⋔ 220
29	347		281	253	236	209	228	242	393	302	⋔ 285	248
30	343		⋔ 275	252	237	⋔ 225	229	⋔ 238	345	436	281	257
31	339		277		246		218	243		295		264
Sum	10,691	9,146	9,321	8,097	7,296	6,550	6,948	7,389	30,421	10,465	8,839	8,168

Month	Current Year 1967: 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 1955-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	2.19	1.94	26	401	4	314	345	21,206	23,560	39,200	9,700
Feb.	2.35	1.57	11	469	12	225	327	18,141	20,853	38,000	8,950
Mar.	2.49	1.63	6	525	7	243	301	18,488	20,242	34,500	10,400
Apr.	3.00	1.63	26	732	13	237	270	16,060	23,553	60,872	12,600
May	2.01	1.44	14	343	† 15	185	235	14,472	49,114	347,000	11,500
June	1.74	1.53	30	263	23	198	218	12,992	44,989	127,000	10,100
July		1.47	20	Ø 366	1	188	224	13,781	23,780	48,100	9,710
Aug.	2.30	1.55	11	461	9	197	238	14,656	22,090	32,100	9,760
Sept.	11.44	1.62	3	35,200	2	228	1,010	60,340	69,010	445,849	9,650
Oct.	3.60	1.73	15	1,190	31	253	338	20,757	38,463	92,500	13,569
Nov.	2.25	1.57	3	445	3	209	295	17,532	25,049	41,900	10,100
Dec.	2.00	1.50	2	347	28	185	263	16,201	23,914	40,800	9,980
Yearly	11.44	1.44		35,200		185	338	244,626	384,617	718,350	145,600

⋔ Discharge measurement made on this day † And other days Ø Mean daily

RIO GRANDE BELOW AMISTAD DAM, NEAR DEL RIO, TEXAS

DESCRIPTION: Cableway, bubbler gage, and water-stage recorders (graphic and digital) located on the left bank at latitude 29° 25' 25", longitude 101° 02' 20", and river mile 565.2; 2.3 river miles downstream from Amistad Dam, 2.9 river miles downstream from Devils River, 10.5 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 683.0 river miles downstream from 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 85 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: September 1954 through 1967. Records from 1959 through 1962 were published under the title "Rio Grande below Amistad Dam Site" and prior to 1959 under the title "Rio Grande below Diablo Dam Site." Records are also available from May 1900 through April 1915 for a station 1.9 miles upstream; from December 1919 through March 1920 for a station 1.6 miles downstream near McKee's Switch; from December 1923 through July 2, 1941 for a station approximately 10.3 miles downstream; and from July 2, 1941 through August 1954, and October 1960 through 1967 for a station at the international highway bridge 10.5 miles downstream.

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

EXTREME FLOWS FROM RECORDS: Momentary: Max. 172,000 second-feet on September 24, 1964 with a gage height of 29.90 feet. Min. 550 second-feet on July 26, 1956 with a gage height of 1.25 feet. The flood of June 1954 reached a peak gage height of 55.72 feet and a maximum discharge of 1,158,000 second-feet at this station, determined by slope-area computations. 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.

Average Flow in Second-Feet

Daily:	Max.	107,000	Sept. 24, 1964	Min.	604	August 3, 1956
Monthly:	Max.	24,200	Oct. 1958	Min.	749	July 1956
Yearly:	Max.	4,890	1958	Min.	1,180	1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,630	1,460	1,500	1,390	⇑ 1,070	⇑ 1,220	4,490	1,520	⇑ 1,370	3,900	1,740	1,720
2	1,670	⇑1,420	⇑ 1,490	1,370	1,010	1,190	9,800	1,430	1,410	3,120	⇑1,730	1,690
3	⇑ 1,660	1,400	1,480	⇑ 1,350	1,020	1,200	5,720	1,610	6,190	2,840	1,800	1,610
4	1,620	1,400	1,460	1,410	⇑ 1,020	1,190	3,330	1,640	2,180	2,740	1,700	⇑1,640
5	1,570	1,590	1,460	1,340	1,060	1,300	⇑ 2,880	1,540	2,650	2,580	1,760	1,620
6	⇑ 1,560	⇑1,850	⇑ 1,410	⇑ 1,270	1,100	⇑ 1,690	2,860	2,540	3,520	2,420	⇑1,830	1,620
7	1,550	1,680	1,340	1,270	1,110	1,380	2,470	⇑ 2,140	3,110	2,660	1,810	⇑1,790
8	1,540	1,640	1,360	1,250	⇑ 1,130	⇑ 1,220	2,350	2,250	⇑ 3,110	3,260	1,820	1,800
9	⇑ 1,560	⇑1,560	⇑ 1,340	1,240	1,100	2,060	2,080	1,840	3,200	⇑ 2,520	1,870	1,800
10	1,590	1,530	1,350	⇑ 1,250	1,070	1,730	⇑ 2,020	1,620	3,770	2,480	1,860	1,680
11	1,580	1,520	1,360	1,240	⇑ 1,030	1,680	2,000	1,720	⇑ 4,160	2,310	1,860	1,660
12	⇑ 1,560	1,410	1,410	1,270	1,060	⇑ 1,680	1,880	18,300	4,110	⇑ 2,150	1,980	1,610
13	1,730	⇑1,420	⇑ 1,420	⇑ 1,260	1,070	1,500	1,930	3,900	4,000	2,160	⇑1,940	1,570
14	1,960	1,420	1,410	1,150	1,070	1,460	⇑ 2,280	2,030	⇑ 3,840	2,160	1,830	⇑1,530
15	2,010	1,420	1,410	1,140	⇑ 999	⇑ 1,550	2,020	1,730	9,730	3,460	1,820	1,530
16	⇑ 1,900	⇑1,450	⇑ 1,320	1,100	994	1,460	1,740	1,660	8,650	⇑ 2,500	⇑1,820	1,460
17	1,810	1,460	1,320	⇑ 1,130	988	1,370	⇑ 1,700	⇑ 2,070	7,870	4,790	1,820	1,600
18	1,730	1,460	1,320	1,140	⇑ 983	1,530	1,550	2,180	5,140	3,040	1,830	1,600
19	⇑ 1,710	1,450	1,320	1,100	972	⇑ 2,150	1,500	2,700	3,330	⇑ 2,360	1,910	1,580
20	1,660	⇑1,480	⇑ 1,320	⇑ 1,410	994	2,680	4,180	1,950	3,490	2,170	1,880	1,570
21	1,640	1,410	1,300	1,460	1,680	1,970	14,900	⇑ 1,800	3,830	2,010	1,790	⇑1,570
22	1,620	1,390	1,290	1,320	⇑ 1,280	⇑ 1,880	4,820	1,680	4,060	1,960	1,760	1,520
23	⇑ 1,600	1,380	⇑ 1,270	1,240	1,030	1,890	4,310	1,640	3,310	⇑ 1,970	1,760	1,500
24	1,590	⇑1,360	1,380	⇑ 1,180	992	1,740	3,040	⇑ 1,890	3,740	1,920	1,730	1,470
25	1,580	1,360	1,380	1,140	⇑ 959	1,680	2,310	1,680	3,470	1,870	1,720	1,460
26	⇑ 1,560	1,420	1,440	1,260	975	⇑ 1,500	2,120	1,630	3,440	⇑ 1,850	1,720	⇑1,430
27	1,480	⇑1,500	⇑ 1,660	⇑ 1,080	980	⇑ 2,800	2,000	1,690	3,160	1,840	1,720	1,430
28	1,490	1,520	2,040	1,050	974	2,710	1,820	⇑ 1,650	2,930	1,830	1,670	1,400
29	1,490		1,660	1,070	⇑ 1,010	⇑ 8,060	1,800	1,550	6,140	1,790	1,650	⇑1,470
30	⇑ 1,480		⇑ 1,440	1,090	1,050	⇑ 5,280	1,700	1,440	6,110	⇑ 2,140	⇑1,680	1,520
31	1,470		1,390		1,410		1,620	1,410		1,780		1,540
Sum	50,600	41,360	44,050	36,970	33,190	60,750	99,220	74,430	125,020	76,580	53,810	48,990

Month	Current Year 1967								Period 1955-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	2.25	1.83	15	2,040	† 27	1,470	1,630	100,365	102,185	146,000	66,100
Feb.	2.17	1.77	6	1,960	† 24	1,340	1,480	82,038	92,016	155,000	71,000
Mar.	2.35	1.69	27	2,150	23	1,260	1,420	87,373	88,113	140,000	66,800
Apr.	1.93	1.49	26	1,600	28	1,050	1,230	73,330	93,585	208,000	54,100
May	2.45	1.39	21	2,370	25	959	1,070	65,832	159,609	812,000	60,700
June	5.52	1.55	29	9,170	1	1,160	2,020	120,498	172,217	353,000	56,800
July			21	∅ 14,900	19	∅ 1,500	3,200	196,803	151,317	289,000	46,000
Aug.	10.80	1.74	12	24,400	31	1,380	2,400	147,632	163,302	290,000	67,500
Sept.	8.62	1.73	15	18,800	1	1,370	4,170	247,977	352,583	1,095,435	71,900
Oct.	4.05	2.02	17	5,510	31	1,760	2,470	151,896	295,704	1,487,000	104,808
Nov.	2.19	1.95	13	2,020	† 28	1,650	1,790	106,732	122,302	281,000	68,200
Dec.	2.10	1.37	8	1,910	16	926	1,580	97,172	107,987	166,000	65,200
Yearly	10.80	1.37		24,400		926	2,040	1,477,648	1,900,920	3,537,200	858,900

⇑ Discharge measurement made on this day ∅ Mean daily † And other days

ARROYO DEL BUEY NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 35.3 second-foot capacity, gravity well, and water-stage recorder located on the left bank at latitude 29° 24' 20", longitude 101° 02' 25", 0.2 creek mile from the confluence with the Rio Grande, and about 8.5 miles northwest of Cd. Acuña, Coahuila. This stream enters the Rio Grande from the Mexican side at river mile 564.0, 3.5 river miles downstream from Amistad Dam, 4.1 river miles downstream from Devils River, 9.3 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 684.2 river miles downstream from the American Dam at El Paso, Texas. The elevation of the zero of the gage has not been determined.

RECORDS: Based on a continuous record of gage heights and the weir discharge table. Records available: November 1961 through 1967.

REMARKS: The flow of this stream is not modified by diversions or storage. Flows exceeding the capacity of the weir were estimated and are included in the tabulation below. This station was established for investigational purposes in connection with Amistad Dam to determine what effect future storage in Amistad Reservoir will have on the flow of this stream. Backwater from the Rio Grande will affect the flow of this stream when the flow in the river is approximately 20,000 second-feet.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.2	0.2	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0.8	0.4	0.2
2	.2	.2	.4	.2	.2	.1	.1	.1	.4	.8	.4	.2
3	.2	.2	.4	.2	.2	.1	.1	.1	1.2	.7	.4	.2
4	.2	.2	.2	.2	.2	.1	.1	.1	.5	.6	.4	.4
5	.2	.2	.2	.2	.2	.1	.1	.1	.2	.6	.4	.4
6	.2	.2	.2	.2	.2	.1	.1	.1	.2	.6	.4	.4
7	.2	.2	.2	.2	.2	.1	.1	.1	.2	.5	.4	.4
8	.2	.2	.2	.2	.2	.1	.1	.1	.2	.5	.4	.4
9	.2	.2	.2	.2	.2	.1	.1	.1	.2	.5	.4	.4
10	.2	.2	.2	.2	.2	.1	.1	.1	.2	.5	.4	.4
11	.2	.2	.2	.2	.2	.1	.1	.2	.2	.4	.4	.4
12	.2	.2	.2	.2	.2	.1	.1	.1	.2	.4	.4	.4
13	.2	.2	.2	.2	.2	.1	.1	.1	.2	.4	.4	.4
14	.2	.2	.2	.2	.2	.1	.1	.1	.2	.4	.4	.4
15	.2	.2	.2	.2	.2	.1	.1	.1	u 41.7	.4	.2	.4
16	.2	.2	.2	.2	.2	.1	.1	.1	u 31.9	.4	.2	.4
17	.2	.2	.2	.2	.2	.1	.1	.1	2.9	.4	.2	.4
18	.2	.2	.2	.2	.2	.1	.1	.1	2.4	.4	.2	.4
19	.2	.2	.2	.2	.2	.1	.1	.1	2.2	.4	.2	.4
20	.2	.2	.2	.2	.2	.1	.1	.1	1.9	.4	.2	.2
21	.2	.4	.2	.2	.2	.1	.1	.1	1.6	.4	.2	.2
22	.2	.4	.2	.2	.2	.1	.1	.1	1.6	.4	.2	.2
23	.2	.4	.2	.2	.2	.1	.1	.1	1.6	.4	.2	.2
24	.2	.4	.2	.2	.2	.1	.1	.1	1.3	.4	.2	.2
25	.2	.4	.2	.2	.2	.1	.1	.1	1.3	.4	.2	.2
26	.2	.4	.2	.2	.2	.1	.1	.1	1.3	.4	.2	.2
27	.2	.4	.2	.2	.2	.1	.1	.1	1.1	.4	.2	.2
28	.2	.4	.2	.2	.2	.1	.1	.1	1.1	.4	.2	.2
29	.2		.2	.2	.2	.1	.1	.1	1.1	.4	.2	.2
30	.2		.2	.2	.2	.1	.1	.1	1.0	.4	.2	.2
31	.2		.2		.2		.1	.1		.4		.2
Sum	6.2	7.2	6.8	6.0	6.2	3.0	3.1	3.2	*100.2	14.5	8.8	9.4

Month	Current Year 1967								Period # Nov. 1961-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			** Average	Maximum	Minimum
Jan.	0.07	0.07	† 1	0.2	† 1	0.2	0.2	15.2	14.6	25.5	6.8
Feb.	.10	.07	† 21	.4	† 1	.2	.3	15.4	11.7	17.3	5.4
Mar.	.10	.07	† 1	.4	† 4	.2	.2	11.9	12.3	17.8	9.3
Apr.	.07	.07	† 1	.2	† 1	.2	.2	10.5	77.7		6.3
May	.07	.07	† 1	.2	31	.2	.2	10.9	68.0		10.9
June	.03	.03	† 1	.1	† 1	.1	.1	6.3	60.1		6.3
July	.03	.03	† 1	.1	† 1	.1	.1	6.5	17.4	31.4	6.5
Aug.	.16	.03	11	.8	† 1	.1	.1	6.7	12.2		6.7
Sept.	5.25	.03	15	u 200	1	.1	*3.4	*199	69.3		6.6
Oct.	.16	.10	† 1	.8	† 11	.4	.5	30.1	26.4		6.5
Nov.	.10	.07	† 1	.4	† 15	.2	.3	17.7	23.7	73.0	6.3
Dec.	.10	.07	† 4	.4	† 1	.2	.3	18.6	17.1	34.7	6.5
Yearly	5.25	0.03		u 200		0.1	*0.5	*348.8	410.5		216.8

u Estimated * Partly estimated # Some months missing ** See explanation in REMARKS above
† And other days

ERNESTINA AND MARIS SPRINGS NEAR CD. ACUNA, COAHUILA

In order to determine what effect storage in the projected Amistad Reservoir will have on the flow of various Mexican springs in the vicinity of Amistad Dam, gaging stations were established in November 1961 at Ernestina and Maris Springs. The stations and springs are described as follows:

ERNESTINA SPRING

DESCRIPTION: A 90° V-notch weir of 1.4 second-foot capacity and staff gage located at the spring on the right high bank of Arroyo del Buey about 100 feet from the right bank of the Rio Grande at latitude 29° 24' 20", longitude 101° 02' 15", and about 8.5 miles northwest of Cd. Acuña, Coahuila. This spring enters the Rio Grande at river mile 564.0, 9.3 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, 3.5 river miles downstream from Amistad Dam, 4.1 river miles downstream from Devils River, and 684.2 river miles downstream from the American Dam at El Paso, Texas. The elevation of the zero of the gage has not been determined.

RECORDS: Based on weekly staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. The flow of this spring is small and very uniform except during periods of very heavy rainfall at which time the capacity of the weir may be exceeded. The daily flow throughout the year ranged from 0.018 to 0.092 second-foot, or 8 to 41 gallons per minute, and the monthly average ranged from 0.018 to 0.042 second-foot, or 8 to 19 gallons per minute. The total volume for the year amounted to 21.1 acre-feet. Waters from this spring have a high sulphur content. Records available: November 7, 1961 through 1967.

MARIS SPRING

DESCRIPTION: Cipolletti weir of 11.1 second-foot capacity and staff gage located at the spring about 100 feet from the right bank of the Rio Grande at latitude 29° 24' 00", longitude 101° 01' 55", and about 8 miles northwest of Cd. Acuña, Coahuila. This spring enters the Rio Grande at river mile 563.5, 8.8 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, 4.0 river miles downstream from Amistad Dam, 4.6 river miles downstream from Devils River, and 684.7 river miles downstream from the American Dam at El Paso, Texas. The elevation of the zero of the gage has not been determined.

RECORDS: Based on weekly staff gage readings and the weir discharge table. Mean daily discharges, determined by prorating between readings, and annual and period summary are tabulated below. Flows exceeding the capacity of the weir are not included. Records available: November 14, 1961 through 1967.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	5.1	0.2	0.2
2	.1	.1	.1	.1	.1	.1	.1	.1	.4	3.9	.2	.2
3	.1	.1	.1	.1	.1	.1	.1	.1	.5	2.7	.2	.2
4	.1	.1	.1	.1	.1	.1	.1	.1	.7	1.5	.2	.2
5	.1	.1	.1	.1	.1	.1	.1	.1	.8	1.4	.2	.2
6	.1	.1	.1	.1	.1	.1	.1	.1	1.0	1.3	.2	.1
7	.1	.1	.1	.1	.1	.1	.1	.1	2.3	1.2	.2	.1
8	.1	.1	.1	.1	.1	.1	.1	.1	3.7	1.1	.2	.2
9	.1	.1	.1	.1	.1	.1	.1	.1	5.1	1.0	.2	.2
10	.1	.1	.1	.1	.1	.1	.1	.1	6.5	.9	.2	.2
11	.1	.1	.1	.1	.1	.1	.1	.1	7.9	.8	.2	.2
12	.1	.1	.1	.1	.1	.1	.1	.1	9.3	.7	.2	.2
13	.1	.1	.1	.1	.1	.1	.1	.1	10.7	.7	.2	.2
14	.1	.1	.1	.1	.1	.1	.1	.1	10.8	.7	.2	.2
15	.1	.1	.1	.1	.1	.1	.1	.1	10.9	.7	.2	.2
16	.1	.1	.1	.1	.1	.1	.1	.1	11.1	.7	.2	.2
17	.1	.1	.1	.1	.1	.1	.1	.1	11.2	.7	.2	.2
18	.1	.1	.1	.1	.1	.1	.1	.1	11.3	.6	.2	.2
19	.1	.1	.1	.1	.1	.1	.1	.1	11.4	.6	.2	.1
20	.1	.1	.1	.1	.1	.1	.1	.1	11.5	.5	.2	.1
21	.1	.1	.1	.1	.1	.1	.1	.1	11.3	.5	.1	.1
22	.1	.1	.1	.1	.1	.1	.1	.1	11.1	.4	.1	.1
23	.1	.1	.1	.1	.1	.1	.1	.1	10.8	.4	.1	.1
24	.1	.1	.1	.1	.1	.1	.1	.1	10.6	.3	.2	.1
25	.1	.1	.1	.1	.1	.1	.1	.1	10.3	.2	.2	.1
26	.1	.1	.1	.1	.1	.1	.1	.1	10.1	.2	.2	.1
27	.1	.1	.1	.1	.1	.1	.1	.1	9.8	.2	.2	.1
28	.1	.1	.1	.1	.1	.1	.1	.1	8.6	.2	.2	.1
29	.1		.1	.1	.1	.1	.1	.1	7.5	.2	.2	.1
30	.1		.1	.1	.1	.1	.1	.1	6.3	.2	.2	.1
31	.1		.1		.1		.1	.1		.2		.1
Sum	3.1	2.8	3.1	3.0	3.1	3.0	3.1	3.1	223.8	29.8	5.7	4.7

Month	Current Year 1967: Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period # Dec. 1961-1967: Acre-Feet ** Average	Maximum	Minimum
Jan.			† 1	0.1	† 1	0.1	0.1	8.7	18.6	65.3	4.4
Feb.			† 1	.1	† 1	.1	.1	7.9	11.8	33.6	4.1
Mar.			† 1	.1	† 1	.1	.1	8.7	11.5	22.4	4.9
Apr.			† 1	.1	† 1	.1	.1	8.4	19.7	36.5	4.2
May			† 1	.1	† 1	.1	.1	8.7	85.4		8.7
June			† 1	.1	† 1	.1	.1	6.0	31.8		6.0
July			† 1	.1	† 1	.1	.1	8.7	23.2	56.3	7.9
Aug.			† 1	.1	† 1	.1	.1	6.2	18.5	33.9	6.2
Sept.			20	11.5	1	.3	7.5	444	153		5.4
Oct.			1	5.1	† 25	.2	1.0	59.7	29.5		4.6
Nov.			† 1	.2	† 21	.1	.2	13.2	63.8	328	4.2
Dec.			† 1	.2	† 6	.1	.2	10.8	28.9	122	4.4
Yearly				11.5		0.1	0.8	591.0	495.7		146.2

Some months missing ** See explanation in Maris Spring RECORDS text above Ø Mean daily
† And other days

EIGHT MILE CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Concrete wall with 90° V-notch weir of 6.9 second-foot capacity, bubbler gage, and water-stage recorder located on the left bank at latitude 29° 24' 05", longitude 101° 00' 55", 0.8 creek mile from the confluence with the Rio Grande, and about 8 miles northwest of Del Rio, Texas. This stream enters the Rio Grande from the United States side at river mile 562.9, 4.6 river miles downstream from Amistad Dam, 5.2 river miles downstream from Devils River, 8.2 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 685.3 river miles downstream from the American Dam at El Paso, Texas. The elevation of the zero of the gage has not been determined.

RECORDS: Based on a continuous record of gage heights and the weir discharge table. Records available: March 1961 through 1967.

REMARKS: The source of flow of this stream is from surface runoff during rainy periods and the subsequent flow from underground seepage as a result of such rains. Flows of 0.05 second-foot or less are shown as zero in the discharge tabulations; however, the monthly volumes in the annual and period summary are based on the sum of mean daily discharges computed to the nearest hundredth of a second-foot when the mean daily flow is less than 0.1 second-foot. All storm water from surface runoff passing this station is deducted and is not included in the tabulation below. This station was established for investigational purposes in connection with Amistad Dam to determine what effect future storage in Amistad Reservoir will have on the flow of this stream.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	θ 0	θ 0	0	0	0	0	0	0	θ 0	θ 0	0
2	0	θ 0	θ 0	0	0	0	0	0	0	θ 0	θ 0	0
3	0	θ 0	θ 0	0	0	0	0	0	.4	θ 0	θ 0	0
4	0	θ 0	θ 0	0	0	0	0	0	.4	θ 0	θ 0	0
5	0	θ 0	θ 0	0	0	0	0	0	.2	θ 0	θ 0	0
6	0	θ 0	0	0	0	0	0	0	.1	θ 0	θ 0	0
7	0	θ 0	θ 0	0	0	0	0	0	θ 0	θ 0	θ 0	0
8	0	θ 0	θ 0	0	0	0	0	0	θ 0	θ 0	θ 0	0
9	0	θ 0	θ 0	0	0	0	0	0	θ 0	θ 0	θ 0	0
10	0	θ 0	θ 0	0	0	0	0	0	θ 0	θ 0	θ 0	0
11	0	θ 0	θ 0	0	0	0	0	0	θ 0	θ 0	θ 0	0
12	0	θ 0	θ 0	0	0	0	0	θ 0	θ 0	θ 0	θ 0	0
13	0	θ 0	θ 0	0	0	0	0	0	θ 0	θ 0	θ 0	0
14	θ 0	θ 0	θ 0	0	0	0	0	0	θ 0	θ 0	θ 0	0
15	θ 0	θ 0	θ 0	0	0	0	0	0	.3	.9	θ 0	0
16	θ 0	θ 0	0	0	0	0	0	0	.7	.1	θ 0	0
17	θ 0	θ 0	0	.1	0	0	0	0	.7	.1	θ 0	0
18	θ 0	θ 0	0	θ 0	0	0	0	0	.6	.1	θ 0	0
19	0	θ 0	0	θ 0	0	0	0	0	.3	θ 0	θ 0	0
20	0	θ 0	θ 0	0	0	0	0	0	.2	θ 0	θ 0	0
21	0	θ 0	θ 0	0	0	0	0	0	.2	θ 0	θ 0	0
22	0	θ 0	θ 0	0	0	0	0	0	.2	θ 0	θ 0	0
23	0	θ 0	θ 0	0	0	0	0	0	.1	θ 0	θ 0	0
24	0	θ 0	.1	0	0	0	0	0	.1	θ 0	θ 0	0
25	0	θ 0	θ 0	0	0	0	0	0	.1	θ 0	0	0
26	0	θ 0	θ 0	0	0	0	0	0	.1	θ 0	θ 0	0
27	0	θ 0	θ 0	0	0	0	0	0	θ 0	θ 0	θ 0	0
28	0	θ 0	θ 0	0	0	0	0	0	θ 0	θ 0	θ 0	0
29	0		θ 0	0	0	0	0	0	θ 0	.4	θ 0	0
30	θ 0		0	0	0	0	0	0	θ 0	.9	θ 0	0
31	θ 0		0		0		0	0		.1		0
Sum	0	0	0.1	0.1	0	0	0	0	4.7	2.6	0	0

Month	Current Year 1967: 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. 1961-1967: Acre-Feet ** Average	Maximum	Minimum
Jan.	0.13	0	†14	θ 0	† 1	0	0	0.1	1.0	4.4	0
Feb.	.16	.07	23	θ 0	† 6	0	θ 0	.6	.4	1.4	0
Mar.	.59	.05	24	.7	† 6	0	θ 0	.8	1.1	5.1	0
Apr.	.55	0	17	.6	† 1	0	0	.2	3.6		0
May				0		0	0	0	1.9		0
June				0		0	0	0	1.1		0
July				0		0	0	0	0		0
Aug.	2.03	0	12	θ 0	† 1	0	0	0	2.4		0
Sept.	3.47	0	†16	ø .7	† 1	0	.2	9.8	3.0		0
Oct.	1.38	.09	15	ø .9	† 1	θ 0	.1	5.9	2.6		0
Nov.	.23	.04	1	.1	25	0	θ 0	1.1	1.6	6.5	0
Dec.				0		0	0	0	1.8	11.3	0
Yearly	3.47	0		ø 0.9		0	θ 0	18.5	20.5		3.4

θ Flow ranged from 0.005 to 0.05 second-foot ** See explanation in REMARKS above
Some months missing † And other days ø Mean daily

MCKEE SPRING NEAR DEL RIO, TEXAS

DESCRIPTION: Spring located on the left flood plain of the Rio Grande at latitude 29° 23' 35", longitude 101° 01' 15", about 150 feet from the edge of the low flow channel, and about 8 miles northwest of Del Rio, Texas. Water from this spring enters the Rio Grande at river mile 562.7, 4.8 river miles downstream from Amistad Dam, 5.4 river miles downstream from Devils River, 8.0 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 685.5 river miles downstream from the American Dam at El Paso, Texas.

RECORDS: Based on 47 discharge measurements during the year made at approximately weekly intervals. Mean daily discharges determined by prorating between discharge measurements. Records available: November 1961 through 1967.

REMARKS: The flow of this spring is uniform during periods of dry weather and is not modified by diversions or storage. Flows of 0.05 second-foot or less are shown as zero in the discharge tabulations; however, the monthly volumes in the annual and period summary are based on the sum of mean daily discharges computed to the nearest hundredth of a second-foot when the mean daily flow is less than 0.1 second-foot. This station was established for investigational purposes in connection with Amistad Dam to determine what effect future storage in Amistad Reservoir will have on the flow of this spring. It is estimated that backwater from the Rio Grande will reach the emergence of the spring when the flow in the river is approximately 14,000 second-feet.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.5	⋔ 0.7	⋔ 0.7	0.8	0.5	⋔ 0.2	0.4	0.2	0.1	1.4	⋔ 0.5	0
2	.5	.7	.7	.7	.5	.2	.3	.1	.1	1.3	.4	0
3	.5	.7	.7	.7	⋔ .5	.2	.3	⋔ .1	.1	1.2	.4	0
4	.5	.7	.7	.7	.5	.2	.3	.1	.1	1.1	.3	0
5	⋔ .5	.7	.7	⋔ .7	.4	.2	.3	.1	.1	1.0	.3	0
6	.5	.7	.7	.7	.4	.2	⋔ .3	.1	.1	.9	.2	⋔ 0
7	.6	.7	.7	.6	.3	⋔ .2	.3	.1	.2	.7	.2	0
8	.6	⋔ .7	⋔ .7	.6	.3	.2	.3	.1	.3	.6	⋔ .1	0
9	.6	.7	.7	.6	.2	.2	.3	⋔ .1	.4	.5	.1	0
10	.7	.7	.7	.6	⋔ .2	.2	.3	.1	.5	.4	.1	0
11	⋔ .7	.7	.7	.5	.2	.3	.3	.1	.6	⋔ .3	.1	0
12	.7	.7	.6	⋔ .5	.2	.3	⋔ .3	.1	.7	.3	.1	0
13	.7	.7	.6	.5	.2	.3	.3	.1	⋔ .9	.3	.1	⋔ 0
14	.7	.7	.6	.5	.2	⋔ .3	.2	.1	1.1	.3	.1	0
15	.7	⋔ .7	⋔ .6	.5	.2	.3	.2	.1	1.4	.3	⋔ .1	0
16	.7	.7	.6	.6	.2	.3	.2	⋔ .1	1.6	.3	.1	0
17	.7	.7	.6	.6	⋔ .2	.3	.2	.1	1.9	.3	.1	0
18	⋔ .7	.7	.6	.6	.2	.3	.1	.1	2.1	⋔ .3	θ 0	0
19	.7	.7	.5	⋔ .6	.2	.3	⋔ .1	.1	2.4	.3	θ 0	0
20	.7	.6	.5	.6	.2	.3	.1	.1	⋔ 2.6	.3	θ 0	⋔ 0
21	.7	.6	.5	.5	.2	⋔ .3	.2	.1	2.5	.3	θ 0	0
22	.7	.6	⋔ .5	.5	.2	.3	.2	.1	2.4	.3	⋔ 0	0
23	.7	⋔ .6	.5	.5	.2	.3	.2	.1	2.3	.3	0	0
24	.7	.6	.6	.5	⋔ .2	.3	.2	.1	2.2	.3	0	0
25	⋔ .7	.6	.6	.4	.2	.4	.3	.1	2.1	⋔ .3	0	0
26	.7	.6	.7	⋔ .4	.2	.4	⋔ .3	.1	1.9	.3	0	0
27	.7	.7	.7	.4	.2	⋔ .4	.3	.1	1.8	.4	0	0
28	.7	.7	.8	.4	.2	.4	.2	.1	1.7	.4	0	⋔ 0
29	.7		⋔ .8	.4	.2	.4	.2	.1	1.6	.4	⋔ 0	0
30	.7		.8	.5	.2	.4	.2	.1	1.5	.4	0	0
31	.7		.8		.2		.2	.1		.5		0
Sum	20.2	18.9	20.2	16.7	8.0	8.6	7.6	3.2	37.3	16.0	3.3	0

Month	Current Year 1967: Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period Nov. 1961-1967: Acre-Feet Average	Maximum	Minimum
Jan.			†10	0.7	† 1	0.5	0.7	40.1	70.1	193	0
Feb.			† 1	.7	†20	.6	.7	37.5	62.3	167	0
Mar.			†28	.8	†19	.5	.7	40.1	72.3	205	0
Apr.			1	.8	†25	.4	.6	33.1	78.7	185	0
May			† 1	.5	† 9	.2	.3	15.9	118	423	.7
June			†25	.4	† 1	.2	.3	17.1	66.0	180	0
July			1	.4	†18	.1	.2	15.1	45.7	140	0
Aug.			1	.2	† 2	.1	.1	5.8	42.5	128	0
Sept.			20	2.6	† 1	.1	1.2	74.0	58.7	168	0
Oct.			1	1.4	†11	.3	.5	31.7	55.6	121	0
Nov.			1	.5	†22	0	.1	6.6	78.4	253	0
Dec.				0		0	0	0	67.5	234	0
Yearly				2.6		0	0.4	317.0	815.8	2,062	0.7

⋔ Discharge measurement made on this day Ø Mean daily † And other days
θ Flow ranged from 0.005 to 0.05 second-foot

MCKEE SPRING NEAR DEL RIO, TEXAS

Mean Daily Discharge in Second Feet

1966

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.5	1.6	1.8	1.5	3.5	2.6	2.4	1.5	3.1	1.3	0.4	0.6
2	1.4	⸸ 1.6	⸸ 1.8	1.5	3.1	⸸ 2.7	2.4	1.6	3.3	1.4	⸸ .4	.6
3	1.4	1.6	1.7	1.5	2.6	2.6	2.3	⸸ 1.6	3.5	1.5	.4	.6
4	1.4	1.7	1.7	1.5	2.2	2.6	2.3	1.6	3.7	1.6	.4	.6
5	⸸ 1.4	1.7	1.6	1.5	⸸ 1.8	2.6	2.3	1.6	3.8	⸸ 1.7	.4	.6
6	1.4	1.8	1.5	⸸ 1.5	1.9	2.5	2.2	1.6	4.0	1.7	.4	.6
7	1.4	1.8	1.4	1.5	2.0	2.4	⸸ 2.2	1.6	4.2	1.7	.4	⸸ .6
8	1.4	1.9	1.4	1.4	2.0	⸸ 2.4	2.2	1.6	⸸ 4.4	1.7	.4	.6
9	1.5	⸸ 1.9	⸸ 1.3	1.4	2.1	2.6	2.2	1.6	4.1	1.6	⸸ .4	.6
10	1.5	1.9	1.4	1.4	⸸ 2.2	2.7	2.2	⸸ 1.6	3.8	1.6	.4	.6
11	1.5	1.8	1.5	1.4	2.2	2.9	2.2	1.8	3.6	1.6	.4	.5
12	⸸ 1.5	1.8	1.6	1.3	2.2	3.0	2.2	1.9	3.3	⸸ 1.6	.4	.5
13	1.5	1.8	1.8	⸸ 1.3	2.2	3.2	⸸ 2.2	2.1	3.0	1.5	.4	.5
14	1.5	1.8	1.9	1.4	2.2	3.3	2.1	2.2	⸸ 2.7	1.4	.4	⸸ .5
15	1.5	1.7	2.0	1.4	2.3	⸸ 3.5	2.1	2.4	2.7	1.4	.4	.5
16	1.4	⸸ 1.7	⸸ 2.1	1.5	2.3	3.4	2.0	2.5	2.7	1.3	⸸ .4	.5
17	1.4	1.7	2.0	1.6	2.3	3.3	2.0	⸸ 2.7	2.7	1.2	.4	.5
18	1.4	1.8	2.0	1.7	⸸ 2.3	3.2	1.9	2.6	2.8	⸸ 1.1	.5	.5
19	⸸ 1.4	1.8	1.9	1.7	2.3	3.0	1.9	2.5	2.8	1.0	.5	.5
20	1.4	1.8	1.8	⸸ 1.8	2.3	2.9	⸸ 1.8	2.4	2.8	1.0	.5	.5
21	1.5	1.8	1.7	2.3	2.3	2.8	1.7	2.2	⸸ 2.8	1.0	.5	.5
22	1.5	1.8	1.7	2.8	2.2	⸸ 2.7	1.7	2.1	2.5	.9	.6	.5
23	1.6	1.9	⸸ 1.6	3.3	2.2	2.7	1.6	2.0	2.3	.8	⸸ .6	.5
24	1.6	⸸ 1.9	1.6	3.7	⸸ 2.2	2.6	1.6	⸸ 1.9	2.0	.8	.6	.5
25	1.7	1.9	1.6	4.2	2.3	2.6	1.5	2.0	1.8	.8	.6	.5
26	⸸ 1.7	1.9	1.6	4.7	2.3	2.6	1.5	2.2	1.5	⸸ .7	.6	.5
27	1.7	1.9	1.5	⸸ 5.2	2.4	2.6	⸸ 1.4	2.3	1.3	.7	.6	.5
28	1.7	1.8	1.5	4.8	2.4	2.5	1.4	2.5	⸸ 1.0	.6	.6	.5
29	1.7		1.5	4.4	2.5	⸸ 2.5	1.5	2.6	1.1	.6	.6	.5
30	1.6		⸸ 1.5	3.9	2.5	2.5	1.5	2.8	1.2	.5	⸸ .6	.5
31	1.6		1.5		2.6		1.5	⸸ 2.9		.5		.5
Sum	46.7	50.1	51.5	69.1	71.9	83.5	60.0	64.5	84.5	36.8	14.2	16.5
Avg.	1.5	1.8	1.7	2.3	2.3	2.8	1.9	2.1	2.8	1.2	0.5	0.5
A.F.	92.6	99.4	102	137	143	166	119	128	168	73.0	28.2	32.7

1965

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	4.0	2.9	3.3	2.8	4.6	3.1	2.9	1.9	⸸ 1.8	1.8	1.9	⸸ 1.9
2	3.9	2.9	3.4	2.8	4.6	3.2	2.8	1.9	1.8	1.7	1.8	1.9
3	3.7	2.9	3.5	2.8	4.7	3.2	2.7	1.8	1.9	1.7	⸸ 1.8	1.9
4	3.4	2.9	3.5	2.8	4.7	3.2	2.6	⸸ 1.8	1.9	1.7	1.8	1.9
5	3.2	2.9	⸸ 3.6	2.9	⸸ 4.7	3.3	2.6	1.8	1.9	1.6	1.9	1.9
6	⸸ 3.0	3.0	3.8	⸸ 2.9	4.9	3.4	2.5	1.9	1.9	1.6	1.9	1.9
7	3.0	3.0	3.9	2.9	5.0	3.4	2.4	1.9	2.0	⸸ 1.6	2.0	1.9
8	3.0	3.0	4.1	2.9	5.2	3.4	⸸ 2.3	1.9	⸸ 2.0	1.6	2.0	⸸ 1.9
9	3.0	⸸ 3.0	4.2	2.9	5.4	⸸ 3.5	2.3	1.9	2.0	1.6	2.1	1.8
10	3.0	3.0	⸸ 4.4	2.8	5.6	3.4	2.4	2.0	2.0	1.7	⸸ 2.1	1.8
11	3.1	3.0	4.2	2.8	5.7	3.3	2.4	⸸ 2.0	1.9	1.7	2.1	1.7
12	3.1	3.0	4.0	2.8	⸸ 5.9	3.2	2.4	2.0	1.9	1.8	2.0	1.7
13	3.1	3.0	3.8	2.8	7.8	3.0	2.5	2.1	1.9	⸸ 1.8	2.0	1.6
14	3.1	3.0	3.6	2.8	9.6	2.9	⸸ 2.5	2.1	1.8	1.9	1.9	1.6
15	⸸ 3.1	3.0	3.4	2.8	11.5	2.8	2.4	2.1	1.8	2.0	1.9	⸸ 1.5
16	3.2	3.0	⸸ 3.2	2.8	13.4	⸸ 2.7	2.4	2.1	⸸ 1.8	2.1	1.8	1.5
17	3.2	3.0	3.2	2.7	15.2	2.7	2.3	2.2	1.8	2.2	⸸ 1.8	1.5
18	3.3	3.0	3.1	2.7	17.1	2.7	2.2	⸸ 2.2	1.8	2.3	1.8	1.5
19	⸸ 3.4	3.0	3.1	2.7	⸸ 19.0	2.8	2.1	2.2	1.8	2.4	1.9	1.6
20	3.3	3.0	3.1	⸸ 2.7	13.2	2.8	2.1	2.1	1.8	⸸ 2.5	1.9	1.6
21	3.2	3.0	3.0	2.9	⸸ 7.5	2.8	⸸ 2.0	2.1	1.8	2.4	1.9	1.6
22	3.1	3.0	3.0	3.1	6.6	2.8	2.0	2.0	⸸ 1.8	2.4	1.9	⸸ 1.6
23	3.1	3.0	2.9	3.3	5.6	2.8	2.0	2.0	1.8	2.3	2.0	1.6
24	3.0	⸸ 3.0	⸸ 2.9	3.5	4.7	2.9	2.0	1.9	1.8	2.3	⸸ 2.0	1.6
25	2.9	3.1	2.9	3.6	3.7	2.9	2.0	⸸ 1.9	1.8	2.2	2.0	1.6
26	⸸ 2.8	3.1	2.8	3.8	⸸ 2.8	2.9	2.0	1.9	1.8	2.2	2.0	1.5
27	2.8	3.2	2.8	4.0	2.8	2.9	2.0	1.9	1.8	⸸ 2.1	2.0	1.5
28	2.8	3.3	2.8	4.2	2.9	3.0	⸸ 2.0	1.9	1.8	2.1	2.0	1.5
29	2.8		2.7	4.4	3.0	3.0	2.0	1.9	⸸ 1.8	2.0	1.9	⸸ 1.5
30	2.9		⸸ 2.7	⸸ 4.6	3.0	⸸ 3.0	1.9	1.8	1.8	2.0	1.9	1.5
31	2.9		2.7		3.0		1.9	1.8		1.9		1.5
Sum	97.4	84.2	103.6	93.5	213.4	91.0	70.6	61.0	55.5	61.2	58.0	51.6
Avg.	3.1	3.0	3.3	3.1	6.9	3.0	2.3	2.0	1.8	2.0	1.9	1.7
A.F.	193	167	205	185	423	180	140	121	110	121	115	102

⸸ Discharge measurement made on this day

MCKEE SPRING NEAR DEL RIO, TEXAS

Mean Daily Discharge in Second-Feet

1964

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	1.2	θ 0	0	0	0	4.6	⋔ 4.6
2	0	0	0	0	0	⋔ 1.3	θ 0	0	0	0	4.5	4.5
3	0	0	0	0	0	1.2	θ 0	0	0	0	4.3	4.4
4	0	0	0	0	0	1.0	θ 0	0	0	0	⋔ 4.1	4.3
5	0	0	0	0	0	.8	θ 0	0	0	0	4.1	4.2
6	0	0	0	0	0	.7	⋔ 0	0	0	0	4.1	4.1
7	0	0	0	0	0	.6	0	0	0	0	4.1	4.0
8	0	0	0	0	0	.4	0	0	0	0	4.1	3.9
9	0	0	0	0	0	.2	0	0	0	0	4.0	⋔ 3.8
10	0	0	0	0	0	⋔ .1	0	0	0	0	4.0	3.8
11	0	0	0	0	0	.2	0	0	0	0	4.0	3.7
12	0	0	0	0	0	.4	0	0	0	0	4.0	3.7
13	0	0	0	0	0	.5	0	0	0	0	⋔ 4.0	3.6
14	0	0	0	0	0	.6	⋔ 0	0	⋔ 0	0	4.0	3.6
15	0	0	0	0	0	.7	0	0	0	0	4.0	3.5
16	0	0	0	0	0	.9	0	0	0	0	4.0	⋔ 3.5
17	0	0	0	0	0	⋔ 1.0	0	0	0	0	4.1	3.5
18	0	0	0	0	.1	.9	0	⋔ 0	0	0	4.1	3.4
19	0	0	0	0	⋔ .2	.8	0	0	0	1.5	4.1	3.4
20	0	0	0	0	.2	.7	0	0	0	⋔ 3.8	⋔ 4.1	3.4
21	0	0	0	0	.2	.6	0	0	0	3.9	4.2	3.4
22	0	0	0	0	.2	.5	⋔ 0	0	0	4.0	4.4	3.3
23	0	0	0	0	.3	.4	0	0	0	4.2	4.5	⋔ 3.3
24	0	0	0	0	.4	.3	0	0	0	4.3	⋔ 4.6	3.4
25	0	0	0	0	.5	.2	0	0	0	4.4	4.6	3.6
26	0	0	0	0	.6	.1	0	0	0	4.5	4.6	3.7
27	0	0	0	0	.7	.1	0	0	0	4.6	4.6	3.8
28	0	0	0	0	.8	.1	⋔ 0	0	0	4.8	4.6	3.9
29	0	0	0	0	.9	.1	0	0	0	4.9	4.6	4.0
30	0		0	0	1.0	.1	0	0	0	⋔ 5.0	4.6	4.2
31	0		0		1.1		0	0		4.8		⋔ 4.3
Sum	0	0	0	0	7.2	16.7	0	0	0	54.7	127.6	117.8
Avg.	0	0	0	0	0.2	0.5	0	0	0	1.8	4.3	3.8
A.F.	0	0	0	0	14.3	32.9	0.3	0	0	108	253	234

1963

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0
22	0	0	0	0	⋔ .1	0	0	0	0	0	0	0
23	0	0	0	0	.1	0	0	0	0	0	0	0
24	0	0	0	0	.1	0	0	0	0	0	0	0
25	0	0	0	0	θ 0	0	0	0	0	0	0	0
26	0	0	0	0	θ 0	0	0	0	0	0	0	0
27	0	0	0	0	θ 0	0	0	0	0	0	0	0
28	0	0	0	0	⋔ 0	0	0	0	0	0	0	0
29	0		0	0	0	0	0	0	0	0	0	0
30	0		0	0	0	0	0	0	0	0	0	0
31	0		0		0		0	0		0		0
Sum	0	0	0	0	0.3	0	0	0	0	0	0	0
Avg.	0	0	0	0	θ 0	0	0	0	0	0	0	0
A.F.	0	0	0	0	0.7	0	0	0	0	0	0	0

⋔ Discharge measurement made on this day θ Flow ranged from 0.005 to 0.05 second-foot

MCKEE SPRING NEAR DEL RIO, TEXAS

Mean Daily Discharge in Second-Feet

1962

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.7	1.1	1.3	1.4	2.0	0	0	0	0	0	0	0
2	1.7	1.1	1.3	1.4	2.0	0	0	0	0	0	0	0
3	1.7	1.2	1.3	1.4	2.0	0	0	0	0	0	0	0
4	1.7	1.2	1.3	1.4	2.0	0	0	0	0	0	0	0
5	1.7	1.2	1.3	1.4	1.9	0	0	0	0	0	0	0
6	1.7	1.2	1.3	✝ 1.4	1.9	0	0	0	0	0	0	0
7	1.7	1.2	1.3	1.5	✝ 1.9	0	0	0	0	0	0	0
8	1.7	1.2	1.4	1.6	1.9	0	0	0	0	0	0	0
9	1.7	1.2	1.4	1.7	1.9	0	0	0	0	0	0	0
10	1.7	1.2	1.4	1.8	1.9	0	0	0	0	0	0	0
11	1.7	1.3	1.4	1.9	1.9	0	0	0	0	0	0	0
12	1.7	1.3	1.4	2.0	1.9	0	0	0	0	0	0	0
13	1.7	1.3	1.4	2.1	1.9	0	0	0	0	0	0	0
14	1.7	✝ 1.3	1.4	2.2	1.9	0	0	0	0	0	0	0
15	1.7	1.3	✝ 1.4	2.3	1.9	0	0	0	0	0	0	0
16	1.7	1.3	1.4	✝ 2.4	1.9	0	0	0	0	0	0	0
17	✝ 1.7	1.3	1.4	2.4	1.9	0	0	0	0	0	0	0
18	1.7	1.3	1.4	2.4	1.9	0	0	0	0	0	0	0
19	1.6	1.3	1.4	2.3	1.9	0	0	0	0	0	0	0
20	1.6	1.3	1.4	2.3	1.9	0	0	0	0	0	0	0
21	1.5	1.3	1.4	2.3	1.9	0	0	0	0	0	0	0
22	1.5	1.3	1.5	2.3	1.9	0	0	0	0	0	0	0
23	1.4	1.3	1.5	2.2	1.9	0	0	0	0	0	0	0
24	1.4	1.3	1.5	2.2	1.9	0	0	0	0	0	0	0
25	1.3	1.3	1.5	2.2	1.9	0	0	0	0	0	0	0
26	1.3	1.3	1.5	2.2	1.9	0	0	0	0	0	0	0
27	1.2	✝ 1.3	✝ 1.5	2.1	1.9	0	0	0	0	0	0	0
28	1.2	1.3	1.5	2.1	1.9	0	0	0	0	0	0	0
29	1.1		1.5	2.1	1.9	0	0	0	0	0	0	0
30	✝ 1.1		1.5	2.1	1.9	0	0	0	0	0	0	0
31	1.1		1.5		✝ 0		0	0		0		0
Sum	47.9	35.2	43.8	59.1	57.4	0	0	0	0	0	0	0
Avg.	1.5	1.3	1.4	2.0	1.9	0	0	0	0	0	0	0
A.F.	95.0	69.8	86.9	117	114	0	0	0	0	0	0	0

1961

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1											2.4	2.0
2											✝ 2.4	2.0
3											2.4	2.0
4											2.4	1.9
5											2.5	1.9
6											2.5	1.8
7											2.5	1.8
8											2.5	1.8
9											2.6	1.7
10											2.6	1.7
11											2.6	1.6
12											2.6	✝ 1.6
13											2.7	1.6
14											2.7	1.6
15											✝ 2.7	1.6
16											2.7	1.6
17											2.6	1.6
18											2.6	1.6
19											2.5	1.6
20											2.5	1.6
21											2.4	1.6
22											2.4	1.6
23											2.4	1.6
24											2.3	1.6
25											2.3	1.6
26											2.2	1.6
27											✝ 2.2	1.6
28											2.2	1.6
29											2.1	1.6
30											2.1	1.6
31												1.6
Sum											73.6	52.2
Avg.											2.5	1.7
A.F.											146	104

✝ *Discharge measurement made on this day*

ARROYO DE LA TREINTA Y UNA NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 35.3 second-foot capacity, gravity well, and water-stage recorder located on the left bank at latitude 29° 22' 40", longitude 101° 01' 10", 0.6 creek mile from the confluence with the Rio Grande, and about 6.5 miles northwest of Cd. Acuña, Coahuila. This stream enters the Rio Grande from the Mexican side at river mile 561.2, 6.3 river miles downstream from Amistad Dam, 6.5 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, 6.9 river miles downstream from Devils River, and 687.0 river miles downstream from the American Dam at El Paso, Texas. The elevation of the zero of the gage has not been determined.

RECORDS: Based on a continuous record of gage heights and the weir discharge table. Records available: May 1961 through 1967.

REMARKS: The flow of this stream is very uniform during periods of dry weather and is not modified by diversions or storage. Flows exceeding the capacity of the weir were estimated and are included in the tabulation below. In 1967, the flow of this stream exceeded the capacity of the weir only during one day in August and parts of two days in September. This station was established for investigational purposes in connection with Amistad Dam to determine what effect future storage in Amistad Reservoir will have on the flow of this stream. It is estimated that backwater from the Rio Grande will affect the flow at this station only during times of extremely high floods.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.5	0.4	0.2
2	.2	.2	.2	.2	.1	.1	.1	.1	.1	.5	.4	.2
3	.2	.2	.2	.2	.1	.1	.1	.1	*14.3	.5	.4	.2
4	.2	.2	.2	.2	.1	.1	.1	.1	.4	.5	.4	.2
5	.2	.2	.2	.2	.1	.1	.1	.1	.4	.5	.4	.2
6	.2	.2	.2	.2	.1	.1	.1	.1	.4	.5	.4	.2
7	.2	.2	.2	.2	.1	.1	.1	.1	.4	.4	.4	.2
8	.2	.2	.2	.2	.1	.1	.1	.1	.4	.4	.4	.2
9	.2	.2	.2	.2	.1	.1	.1	.1	.4	.4	.4	.2
10	.2	.2	.2	.2	.1	.1	.1	.1	.4	.4	.4	.2
11	.2	.2	.2	.2	.1	.1	.1	*28.6	.4	.4	.4	.2
12	.2	.2	.2	.2	.1	.1	.1	.6	.4	.5	.4	.2
13	.2	.2	.2	.2	.1	.1	.1	.2	.4	.5	.4	.2
14	.2	.2	.2	.2	.1	.1	.1	.2	.4	.5	.2	.4
15	.2	.2	.2	.2	.1	.1	.1	.2	*69.2	2.8	.2	.4
16	.2	.2	.2	.2	.1	.1	.1	.2	6.7	.5	.2	.4
17	.2	.2	.2	.2	.1	.1	.1	.2	2.0	.5	.2	.4
18	.2	.2	.2	.2	.1	.1	.1	.2	.8	.4	.2	.4
19	.2	.2	.2	.2	.1	.1	.1	.2	.6	.4	.2	.4
20	.2	.2	.2	.2	.1	.1	.1	.2	.8	.4	.2	.4
21	.2	.2	.2	.2	.1	.1	.1	.2	.7	.4	.2	.4
22	.2	.2	.2	.2	.1	.1	.1	.2	.6	.4	.2	.4
23	.2	.2	.2	.2	.1	.1	.1	.2	.6	.4	.2	.4
24	.2	.2	.2	.2	.1	.1	.1	.2	.6	.4	.2	.2
25	.2	.2	.2	.2	.1	.1	.1	.2	.6	.4	.2	.2
26	.2	.4	.2	.2	.1	.1	.1	.2	.6	.4	.2	.2
27	.2	.4	.2	.2	.1	.1	.1	.2	.6	.4	.2	.2
28	.2	.4	.2	.2	.1	.1	.1	.2	.6	.5	.2	.2
29	.2		.2	.2	.1	.1	.1	.2	.6	.7	.2	.2
30	.2		.2	.2	.1	.1	.1	.1		.4		.2
31	.2		.2		.1		.1	.1				
Sum	6.2	6.2	6.2	6.0	3.2	3.0	3.1	*33.8	*105.1	16.3	8.6	8.2

Current Year 1967									Period # May 1961-1967		
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.	0.07	0.07	† 1	0.2	† 1	0.2	0.2	15.2	22.6	36.9	15.2
Feb.	.10	.07	† 26	.4	† 1	.2	.2	14.3	21.3	33.8	13.9
Mar.	.07	.07	† 1	.2	† 1	.2	.2	15.2	22.6	39.9	15.2
Apr.	.07	.03	† 1	.2	† 1	.2	.2	10.5	45.0		10.5
May	.07	.03	1	.2	† 2	.1	.1	5.9	33.5		5.9
June	.03	.03	† 1	.1	† 1	.1	.1	4.2	34.0		4.2
July	.03	.03	† 1	.1	† 1	.1	.1	4.4	16.1	27.8	4.4
Aug.	3.77	.03	11	u 124	† 1	.1	*1.1	* 66.3	33.6		8.2
Sept.	5.74	.03	15	u 225	† 1	.1	*3.5	*208	54.6		13.1
Oct.	1.08	.10	15	13.7	† 7	.4	.5	32.1	40.5		12.1
Nov.	.10	.07	† 1	.4	† 14	.2	.3	17.4	29.2	67.2	14.2
Dec.	.10	.07	† 16	.4	† 1	.2	.3	17.3	23.3	41.1	15.2
Yearly	5.74	0.03		u 225		0.4	*0.6	*410.8	376.3		250.4

u Estimated * Partly estimated # Some months missing † And other days
** See explanation in REMARKS above

ROSITA SPRING NEAR CD. ACUNA, COAHUILA

DESCRIPTION: Cipolletti weir of 3.5 second-foot capacity and staff gage located at the spring about 65 feet from the right bank of the Rio Grande at latitude 29° 21' 55", longitude 101° 00' 25", and about 5.5 miles northwest of Cd. Acuña, Coahuila. This spring, located in Mexico, enters the Rio Grande at river mile 560.4, 5.7 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, 7.1 river miles downstream from Amistad Dam, 7.7 river miles downstream from Devils River, and 687.8 river miles downstream from the American Dam at El Paso, Texas. The elevation of the zero of the gage has not been determined.

RECORDS: Based on weekly staff gage readings and the weir discharge table. Mean daily discharges determined by prorating between readings. Records available: November 17, 1961 through 1967.

REMARKS: The flow of this spring is very uniform during periods of dry weather and is not modified by diversions or storage. This station was established for investigational purposes in connection with Amistad Dam to determine what effect future storage in Amistad Reservoir will have on the flow of this spring.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.5	0.2	0.2
2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.5	.2	.2
3	.2	.2	.2	.2	.2	.2	.2	.1	.2	.5	.2	.1
4	.2	.2	.2	.2	.2	.2	.2	.1	.2	.4	.2	.1
5	.2	.2	.2	.2	.2	.2	.2	.1	.2	.4	.2	.1
6	.2	.2	.2	.2	.2	.2	.2	.1	.2	.4	.2	.1
7	.2	.2	.2	.2	.2	.2	.2	.1	.2	.3	.2	.1
8	.2	.2	.2	.2	.2	.2	.2	.1	.2	.3	.2	.1
9	.2	.2	.2	.2	.2	.2	.2	.1	.3	.2	.2	.1
10	.2	.2	.2	.2	.2	.2	.2	.1	.3	.2	.2	.1
11	.2	.2	.2	.2	.2	.2	.2	.1	.4	.2	.2	.1
12	.2	.2	.2	.2	.2	.2	.2	.1	.4	.2	.2	.1
13	.2	.2	.2	.2	.2	.2	.2	.1	.4	.2	.2	.1
14	.2	.2	.2	.2	.2	.2	.2	.1	.4	.2	.2	.1
15	.2	.2	.2	.2	.2	.2	.2	.1	.5	.2	.2	.1
16	.2	.2	.2	.2	.2	.2	.2	.1	.5	.2	.2	.1
17	.2	.2	.2	.2	.2	.2	.2	.1	.5	.2	.2	.2
18	.2	.2	.2	.2	.2	.2	.2	.1	.5	.2	.2	.2
19	.2	.2	.2	.2	.2	.2	.2	.1	.5	.2	.2	.2
20	.2	.2	.2	.2	.2	.2	.2	.1	.5	.2	.2	.2
21	.2	.2	.2	.2	.2	.2	.2	.1	.5	.2	.2	.2
22	.2	.2	.2	.2	.2	.2	.2	.1	.6	.2	.2	.2
23	.2	.2	.2	.2	.2	.2	.2	.1	.6	.2	.2	.2
24	.2	.2	.2	.2	.2	.2	.2	.1	.6	.2	.2	.2
25	.2	.2	.2	.2	.2	.2	.2	.1	.6	.2	.2	.2
26	.2	.2	.2	.2	.2	.2	.2	.2	.6	.2	.2	.2
27	.2	.2	.2	.2	.2	.2	.2	.2	.6	.2	.2	.2
28	.2	.2	.2	.2	.2	.2	.2	.2	.6	.2	.2	.2
29	.2		.2	.2	.2	.2	.2	.2	.6	.2	.2	.2
30	.2		.2	.2	.2	.2	.2	.2	.5	.2	.2	.2
31	.2		.2		.2		.2	.2		.2		.2
Sum	6.2	5.6	6.2	6.0	6.2	6.0	6.2	3.9	12.6	7.9	6.0	4.8

Month	Current Year 1967								Period # Dec. 1961-1967		
	Extreme Gage Feet		g Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				** Average	Maximum	Minimum
			Day		Day						
Jan.			† 1	0.2	† 1	0.2	0.2	10.9	12.1	15.2	10.9
Feb.			† 1	.2	† 1	.2	.2	9.8	10.4	13.7	8.1
Mar.			† 1	.2	† 1	.2	.2	10.9	11.4	15.2	7.8
Apr.			† 1	.2	† 1	.2	.2	10.5	11.4	14.7	10.1
May			† 1	.2	† 1	.2	.2	10.9	13.1		10.9
June			† 1	.2	† 1	.2	.2	10.5	12.5	17.3	10.5
July			† 1	.2	† 1	.2	.2	10.9	12.6	16.2	10.9
Aug.			† 1	.2	† 3	.1	.1	8.4	11.3	13.6	8.4
Sept.			† 22	.6	† 1	.2	.4	25.1	13.7		10.5
Oct.			† 1	.5	† 9	.2	.2	14.7	13.1	18.1	10.9
Nov.			† 1	.2	† 1	.2	.2	10.5	11.0	13.5	10.5
Dec.			† 1	.2	† 3	.1	.2	9.9	13.0	19.5	9.9
Yearly				0.6		0.1	0.2	143.0	145.6		124.3

Some months missing ** See explanation in REMARKS above † And other days g Mean daily

CANTU SPRING ON CIENEGAS CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located in a concrete enclosure in the channel of a small tributary to Cienegas Creek at latitude 29° 23' 15", longitude 100° 56' 00", about 2.5 miles northwest of Del Rio, Texas, and 3.5 creek miles from the confluence with the Rio Grande. The spring is isolated from surface runoff by the concrete enclosure and discharges through an opening near its top into the creek. Cienegas Creek enters the Rio Grande at river mile 556.6, 1.9 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 691.6 river miles downstream from the American Dam at El Paso, Texas. The elevation of the zero of the gage has not been determined.

RECORDS: Based on 45 discharge measurements during the year and a continuous record of gage heights. Records available: March 1961 through 1967.

REMARKS: The flow of this spring is very uniform and is not modified by diversions or storage. A weir was installed on May 24, 1961 and removed November 21, 1962. This station was established for investigational purposes in connection with Amistad Dam to determine what effect future storage in Amistad Reservoir will have on the flow of this spring.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.9	⋔ 2.7	⋔ 2.0	2.1	1.7	2.0	1.2	0.2	0	1.1	⋔ 0.2	0
2	2.9	2.7	2.0	2.0	1.7	2.0	1.1	⋔ .2	0	1.0	.2	0
3	3.0	2.6	2.0	2.0	⋔ 1.7	1.9	1.1	.2	1.0	.9	.2	0
4	3.0	2.6	2.0	2.0	1.6	1.8	1.0	.1	1.0	.9	.1	0
5	⋔ 3.0	2.5	2.1	⋔ 2.0	1.6	1.7	⋔ 1.0	.1	1.0	.8	.1	0
6	3.0	2.5	2.1	1.9	1.5	1.7	1.0	0	1.0	.7	.1	⋔ 0
7	3.0	2.4	2.1	1.9	1.4	⋔ 1.6	.9	0	⋔ 1.0	.7	.1	0
8	3.0	⋔ 2.4	⋔ 2.1	1.8	1.3	1.6	.9	0	1.1	.6	⋔ .1	0
9	2.9	2.4	2.1	1.8	1.3	1.5	.8	⋔ 0	1.1	.5	.1	0
10	2.9	2.3	2.1	1.7	⋔ 1.2	1.5	.8	0	1.2	.5	.1	0
11	⋔ 2.9	2.3	2.1	1.7	1.2	1.5	.7	0	1.2	⋔ .4	.1	0
12	2.9	2.3	2.0	⋔ 1.6	1.3	1.5	⋔ .7	0	1.3	.4	.1	0
13	3.0	2.3	2.0	1.6	1.3	1.4	.7	0	1.4	.4	.1	⋔ 0
14	3.0	2.2	2.0	1.7	1.3	⋔ 1.4	.6	0	1.4	.4	.1	0
15	3.0	⋔ 2.2	⋔ 2.0	1.7	1.3	1.4	.6	0	1.5	.4	⋔ 0	0
16	3.0	2.2	2.0	1.7	1.4	1.4	.5	0	1.6	.4	0	0
17	3.1	2.2	2.0	1.7	⋔ 1.4	1.4	.5	0	1.6	.4	0	0
18	⋔ 3.1	2.3	2.0	1.8	1.4	1.3	.4	0	1.7	⋔ .4	0	0
19	3.1	2.3	2.0	⋔ 1.8	1.4	1.3	⋔ .4	0	1.7	.4	0	0
20	3.0	2.3	2.0	1.8	1.4	1.3	.4	0	⋔ 1.8	.3	0	⋔ 0
21	3.0	2.4	2.0	1.7	1.3	⋔ 1.3	.4	0	1.7	.3	0	0
22	2.9	2.4	⋔ 2.0	1.7	1.3	1.3	.4	0	1.7	.3	⋔ 0	0
23	2.9	⋔ 2.4	2.0	1.7	1.3	1.3	.3	0	1.6	.3	0	0
24	2.8	2.3	2.0	1.7	⋔ 1.3	1.3	.3	0	1.5	.2	0	0
25	⋔ 2.8	2.3	2.0	1.6	1.4	1.3	.3	0	1.5	⋔ .2	0	0
26	2.8	2.2	2.1	⋔ 1.6	1.5	1.3	.3	0	1.4	.2	0	0
27	2.8	2.1	2.1	1.6	1.6	1.3	.3	0	1.3	.2	0	⋔ 0
28	2.8	2.1	2.1	1.6	1.8	⋔ 1.3	.3	0	1.3	.2	0	0
29	2.7		⋔ 2.1	1.6	1.9	1.3	.3	0	1.2	.2	⋔ 0	0
30	2.7		2.1	1.7	2.0	1.2	.2	0	1.1	.2	0	0
31	2.7		2.1		⋔ 2.1		.2	0		.2		0
Sum	90.6	65.9	63.3	52.8	45.9	44.1	18.6	0.8	37.9	14.1	1.7	0

Month	Current Year 1967: Extreme Gage Feet High	Extreme Gage Feet Low	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period Mar. 1961-1967: Acre-Feet Average	Maximum	Minimum
Jan.			† 17	3.1	† 29	2.7	2.9	180	112	201	0
Feb.			† 1	2.7	† 27	2.1	2.4	131	86.0	178	0
Mar.			† 21	2.1	† 30	2.0	2.0	126	88.6	184	0
Apr.			1	2.1	† 12	1.6	1.8	105	84.4	195	0
May			31	2.1	† 10	1.2	1.5	91.0	89.1	225	0
June			† 1	2.0	30	1.2	1.5	87.5	91.0	199	0
July			1	1.2	† 30	.2	.6	36.9	77.4	167	0
Aug.			1	.2	† 9	0	0	1.9	85.3	205	0
Sept.			20	1.8	† 1	0	1.3	75.2	92.4	193	0
Oct.			1	1.1	† 24	.2	.5	28.0	104	196	0
Nov.			1	.2	† 28	0	.1	3.8	96.5	186	0
Dec.				0		0	0	0	99.4	193	0
Yearly				3.1		0	1.2	866.3	1,106.1	2,194	0

⋔ Discharge measurement made on this day Ø Mean daily † And other days

BRIGGS FARM DITCH NEAR DEL RIO, TEXAS
(DIVERSIONS FROM CIENEGAS CREEK)

DESCRIPTION: Gravity well and water-stage recorder located on the right bank at latitude 29° 21' 40", longitude 100° 56' 30", 2,900 feet from the ditch intake which branches off the right bank of Cienegas Creek immediately upstream from a small diversion dam across the creek, and about 2.5 miles west of Del Rio, Texas. The point of diversion is 1.8 creek miles from the confluence with the Rio Grande. Cienegas Creek enters the Rio Grande at river mile 556.6, 1.9 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 691.6 river miles downstream from the American Dam at El Paso, Texas. The elevation of the zero of the gage has not been determined.

RECORDS: Based on 50 discharge measurements and a continuous record of gage heights. Computations by shifting control methods. Records available: March 1965 through 1967. Discharge measurement data available since November 1962.

REMARKS: Water from Cienegas Creek is diverted into this ditch for irrigation use. The source of this water is from springs. Storm flow entering the ditch is deducted and is not included in the tabulation below. Except at times when other small diversions from Cienegas Creek occur, the total yield of the springs may be determined by combining the flow shown in the tabulation below with that passing the Cienegas Creek Station shown on the following page. There were no other appreciable diversions from Cienegas Creek in 1967. This station was established for investigational purposes in connection with Amistad Dam to determine what effect future storage in Amistad Reservoir will have on the flow of these springs. The recorder was installed on March 1, 1965.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	3.9	⋔ 0.7	⋔ 4.2	2.6	2.6	2.4	2.0	0.5	0.5	0.3	0.4	0.1
2	4.0	1.0	3.7	3.6	2.1	2.7	1.1	⋔ .6	.5	.3	.4	.1
3	4.0	1.2	3.8	3.5	⋔ 1.8	2.5	2.2	.6	.6	.3	⋔ .4	.1
4	4.1	1.3	3.7	3.3	1.8	2.4	2.2	.7	.6	.3	.5	.1
5	⋔ 4.1	1.3	3.5	⋔ 3.2	2.3	2.4	⋔ 1.3	.6	.6	.3	.5	⋔ 0
6	3.5	1.5	3.2	3.4	1.9	2.4	1.4	.7	⋔ .6	.4	.6	0
7	1.7	1.4	3.3	3.3	1.8	⋔ 2.3	1.4	.7	.4	.4	.6	0
8	1.6	⋔ 1.5	⋔ 3.2	3.3	2.0	1.9	1.5	.8	.5	.2	⋔ .6	0
9	3.0	2.4	3.3	3.1	1.6	1.9	1.5	⋔ .8	.5	.2	.5	0
10	5.9	3.7	3.3	3.1	⋔ 1.7	2.1	1.3	.7	.8	.3	.4	0
11	⋔ 5.8	3.5	3.2	3.1	2.0	1.5	1.3	.9	.6	⋔ .3	.4	0
12	5.8	3.7	3.2	⋔ 3.1	1.9	1.3	⋔ 1.4	.7	.7	.3	.3	0
13	5.7	3.8	3.4	3.5	2.2	1.5	1.5	.6	⋔ .7	.3	.3	⋔ 0
14	5.6	3.6	4.0	3.2	1.8	⋔ 1.6	1.4	.6	.7	.3	.2	0
15	5.5	⋔ 3.7	⋔ 3.9	3.3	1.9	1.7	1.4	.7	.8	.3	⋔ 0	0
16	5.4	4.0	2.2	3.3	2.1	1.8	1.3	⋔ .7	.8	.2	0	0
17	5.2	4.1	2.2	3.5	⋔ 1.1	1.3	1.2	.7	.9	.2	.2	0
18	⋔ 5.1	3.9	2.2	3.4	1.1	.6	1.1	.8	.6	⋔ .1	.3	0
19	5.0	4.0	2.3	⋔ 3.9	1.2	.6	⋔ 1.2	.9	.3	.2	.3	.1
20	4.9	4.0	2.3	3.9	1.1	.8	1.5	.9	⋔ .3	.3	.4	⋔ .1
21	1.4	3.5	2.3	3.7	1.2	⋔ 1.0	1.2	.7	.3	.3	.4	0
22	1.2	2.9	⋔ 2.3	3.2	1.4	1.1	1.1	.7	.2	.2	⋔ .4	0
23	1.2	⋔ 2.7	3.1	3.0	1.3	1.7	1.0	⋔ .7	.4	.2	.4	0
24	⋔ 1.2	2.5	3.8	2.8	⋔ 1.2	2.3	.9	.7	.6	.2	.3	0
25	1.2	2.4	1.5	2.6	1.4	2.4	.9	.7	.6	⋔ .2	.3	0
26	1.1	2.5	1.3	⋔ 1.5	1.9	2.6	⋔ .7	.6	.6	.2	.3	0
27	1.0	2.4	1.2	1.3	1.9	2.0	.7	.5	.6	.3	.3	⋔ 0
28	1.0	3.1	1.0	1.3	2.2	⋔ 1.5	1.0	.5	.4	.3	.2	0
29	.9		⋔ 1.1	1.2	2.4	2.5	1.3	.6	.3	.3	⋔ .2	0
30	.9		1.3	2.0	2.4	.9	.6	⋔ .6	.3	.5	.2	0
31	.8		1.5		⋔ 2.3		.7	.6		.4		0
Sum	101.7	76.3	84.5	89.2	55.6	53.7	39.3	21.1	16.3	8.6	10.3	0.6

Month	Current Year 1967								Period Mar. 1965-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	1.58	0.71	† 9	5.9	31	0.8	3.3	202	135	202	68.8
Feb.		.62	17	ø 4.1	1	.6	2.7	151	118	151	85.7
Mar.	1.57	.84	1	4.5	29	.9	2.7	168	163	200	122
Apr.	1.45	.85	† 19	ø 3.9	1	.8	3.0	177	130	177	87.3
May	1.47	.95	16	3.4	17	1.0	1.8	110	98.5	158	27.6
June	1.53	.91	2	3.9	† 18	ø .6	1.8	107	46.2	107	7.1
July	1.41	.74	† 3	ø 2.2	30	ø .6	1.3	78.0	92.7	134	66.8
Aug.		.68	† 11	.9	† 1	.5	.7	41.9	41.8	74.2	9.5
Sept.		.54	17	ø .9	22	.2	.5	32.3	63.8	133	26.2
Oct.	.80	.35	29	.6	18	0	.3	17.1	78.4	200	17.1
Nov.	.71	.40	† 6	.6	† 15	0	.3	20.6	176	280	20.6
Dec.	.66	.37	† 1	.1	† 5	0	0	2.9	132	206	2.9
Yearly		0.35				0	1.5	1,107.8	1,275.4	1,372.7	1,107.8

⋔ Discharge measurement made on this day † And other days ø Mean daily

CIENEGAS CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located on the downstream side of the left abutment of the Cienegas Road bridge at latitude 29° 21' 35", longitude 100° 56' 20", 1.1 creek miles from the confluence with the Rio Grande, and about 2.5 miles west of Del Rio, Texas. This stream enters the Rio Grande at river mile 556.6, 1.9 river miles upstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 691.6 river miles downstream from the American Dam at El Paso, Texas. The elevation of the zero of the gage has not been determined.

RECORDS: Based on 50 discharge measurements and a continuous record of gage heights. Computations by shifting control methods. Records available: March 1965 through 1967. Discharge measurement data available since November 1962. Records are also available from September 1931 through June 1935 for a station 0.9 creek mile downstream.

REMARKS: Low flow of this stream is from springs, one of which is Cantu Spring whose discharge is shown on page . The flow of this stream is modified by irrigation diversions through the Briggs Farm ditch 0.8 creek mile upstream and, occasionally, by other smaller diversions upstream. During 1967 there were no appreciable diversions from the creek, other than through the Briggs Farm ditch (see preceding page). All storm flow passing this station is deducted and is not included in the tabulation below. The total yield of the springs may be determined by combining the flow passing this station with the diversions through the Briggs Farm ditch. This station was established for investigational purposes in connection with Amistad Dam to determine what effect future storage in Amistad Reservoir will have on the flow of these springs. The recorder was installed on March 9, 1965.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2.1	⋔ 5.4	⋔ 1.7	2.7	1.7	0.5	0.2	0.1	0.3	3.1	⋔ 2.2	2.1
2	1.9	4.4	1.3	1.3	1.5	.4	.2	⋔ .1	.3	3.1	2.2	2.1
3	1.9	3.6	1.0	1.4	⋔ 1.4	.4	.2	.1	3.1	3.3	2.2	2.0
4	2.0	3.7	1.3	1.3	1.7	.4	.2	.1	3.1	3.2	2.3	2.1
5	⋔ 1.8	4.1	1.5	⋔ 1.3	2.5	.4	⋔ .2	.1	3.1	3.2	2.4	2.4
6	2.2	4.6	1.6	1.3	2.1	.3	.2	.1	2.9	3.1	2.4	⋔ 2.4
7	4.1	4.4	2.0	1.2	1.7	⋔ .2	.2	.1	⋔ 1.8	2.9	2.7	2.2
8	4.8	⋔ 4.5	⋔ 2.4	1.2	1.6	.2	.2	.1	1.7	2.8	⋔ 3.2	1.9
9	3.5	4.1	2.6	1.2	1.5	.2	.1	⋔ .1	1.8	2.8	3.3	1.7
10	1.2	1.6	2.5	1.2	⋔ 1.3	.2	.1	.1	2.1	2.5	2.8	2.7
11	⋔ .9	1.4	2.5	1.3	1.2	.2	.1	.2	2.0	⋔ 2.2	2.6	1.8
12	.9	1.8	2.4	⋔ 1.4	1.2	.2	⋔ .1	.2	1.3	2.2	2.4	1.9
13	1.0	1.9	2.3	1.3	1.4	.2	.1	.1	⋔ 1.4	2.1	2.3	⋔ 2.1
14	1.1	2.3	1.6	1.2	1.5	⋔ .2	.1	.1	1.6	2.1	2.3	2.2
15	1.1	⋔ 2.8	⋔ 1.3	1.3	1.3	.2	.1	.1	2.1	3.2	⋔ 2.1	2.6
16	1.2	2.8	2.0	1.5	1.2	.2	.1	⋔ .1	3.6	2.7	2.1	2.6
17	1.3	2.6	2.7	1.7	⋔ 1.2	.2	.1	.1	6.2	2.6	1.9	2.6
18	⋔ 1.5	2.5	3.0	2.2	1.2	.2	.1	.1	7.1	⋔ 2.6	1.8	2.4
19	1.0	2.8	3.1	⋔ 2.7	1.3	.2	⋔ .1	.1	6.0	2.3	1.8	2.4
20	.8	2.9	3.1	2.4	1.4	.2	.1	.1	⋔ 5.1	1.4	1.8	⋔ 2.5
21	3.2	2.7	3.1	2.3	1.2	⋔ .2	.1	.1	5.0	1.9	1.8	1.9
22	5.5	2.6	⋔ 3.1	2.4	1.2	.3	.1	.1	4.9	2.0	⋔ 1.9	1.5
23	5.7	⋔ 2.8	3.0	2.3	1.2	.3	.1	⋔ .1	4.2	2.0	1.9	1.4
24	5.3	2.7	3.7	2.4	⋔ 1.2	.2	.1	.1	3.6	2.0	1.8	1.6
25	⋔ 4.8	2.3	4.7	2.6	1.1	.2	.1	.1	3.6	⋔ 1.9	1.8	1.7
26	4.4	2.8	4.7	⋔ 2.8	.9	.2	⋔ .1	.1	3.5	1.9	1.8	2.0
27	4.1	2.4	4.3	2.6	.8	.2	.1	.1	3.4	1.7	2.0	⋔ 1.9
28	4.4	2.0	4.2	3.1	.7	⋔ .2	.1	.1	3.1	1.6	2.1	2.1
29	4.7		⋔ 4.4	3.3	.6	.2	.1	.1	3.3	2.1	⋔ 2.2	2.2
30	4.7		4.0	2.2	.5	.2	.1	⋔ .1	3.1	3.1	2.1	2.3
31	4.7		4.2		⋔ .5		0	.1		2.3		2.3
Sum	87.8	84.5	85.3	57.1	39.8	7.4	3.8	3.3	94.3	75.9	66.2	65.6

Month	Current Year 1967: 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. 1965-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.		0.82	23	Ø 5.7	20	0.8	2.8	174	217	260	174
Feb.		.94	1	Ø 5.4	11	1.2	3.0	168	186	205	168
Mar.			†25	Ø 4.7	3	Ø 1.0	2.8	169	164	219	104
Apr.		.80	29	Ø 3.3	15	1.1	1.9	113	135	245	48.0
May		.66	5	Ø 2.5	31	.4	1.3	78.9	187	287	78.9
June	0.69	.54	1	.6	18	.2	.2	14.7	167	250	14.7
July	.62	.49	2	.3	31	0	.1	7.5	63.4	111	7.5
Aug.		.47	†11	Ø .2	† 1	0	.1	6.5	127	220	6.5
Sept.		.54	18	Ø 7.1	† 1	.3	3.1	187	163	200	102
Oct.	1.27	.73	29	4.6	20	1.3	2.4	151	168	262	89.3
Nov.	1.09	.90	8	3.5	26	1.6	2.2	131	109	131	92.2
Dec.	1.20	.92	10	3.2	23	1.2	2.1	130	143	155	130
Yearly				Ø 7.1		0	1.8	1,330.6	1,829.4		1,330.6

⋔ Discharge measurement made on this day Ø Mean daily † And other days

ARROYO LAS VACAS AT CD. ACUNA, COAHUILA

DESCRIPTION: Concrete wall with a 90° V-notch weir of 353 second-foot capacity, gravity well, and water-stage recorder located on the left bank at Cd. Acuña, Coahuila, latitude 29° 19' 45", longitude 100° 57' 20", and 1.8 creek miles from the confluence with the Rio Grande. This stream enters the Rio Grande at river mile 554.7, on the upstream side of the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, 12.8 river miles downstream from Amistad Dam, and 693.5 river miles downstream from 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 one discharge measurement during the year, a stable rating curve up to 353 second-feet, which is the capacity of the weir, and a continuous record of gage heights. Computations by shifting control methods for flows exceeding the capacity of the weir. The capacity of the weir was exceeded only for a few hours on May 4, August 11, and September 3, 1967. Records available: Occasional estimates from June 1935 to March 19, 1938 and a continuous record from March 20, 1938 through 1967.

REMARKS: Low flow of this stream is from springs and is modified by irrigation diversions upstream. On June 17, 1961, a flood destroyed the station leaving the control wall under several feet of silt. The station was reconstructed in September and a V-notch weir with a capacity of 353 second-feet, constructed at this station, started operating December 14, 1961. On June 28, 1954, backwater from the Rio Grande reached an elevation of 902.49 feet at this station. Records prior to 1965 were published under the title "Arroyo Las Vacas near Cd. Acuña, Coahuila."

EXTREME FLOWS FROM RECORDS: Momentary: Max. 63,570 second-feet with a gage height of 25.26 feet on June 17, 1961. Min. no flow several occasions in 1956, 1957, 1960, and 1961.

Average Flow in Second-Feet ‡

Daily:	Max.	23,940	June 17, 1961	Min.	0	Several days Dec. 1956 & Jan. 1957
Monthly:	Max.	1,050	June 1961	Min.	0.4	Several months 1952, 1953, & 1954
Yearly:	Max.	96.7	1961	Min.	2.8	1952

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1.4	1.4	2.1	1.8	1.4	1.4	0.4	0.4	0	2.1	2.8	2.8
2	1.4	1.4	2.5	1.4	1.4	1.4	3.5	.4	51.9	2.1	2.8	2.8
3	1.4	1.4	2.8	1.4	1.1	1.4	1.1	.4	1,340 ⸸	2.1	2.8	2.8
4	1.4	1.4	2.8	1.4	61.4	1.4	.7	.4	15.9	2.1	2.8	2.8
5	1.4	1.4	2.5	1.4	24.4	1.4	.4	.4	5.7	2.1	2.8	2.8
6	2.1	1.4	2.5	1.4	2.8	1.4	.4	.4	4.2	2.1	2.8	2.8
7	2.1	1.4	2.5	1.4	2.1	1.8	.4	.4	2.8	2.1	2.8	2.8
8	1.8	1.4	2.8	1.4	2.1	2.1	.4	.4	1.4	2.1	2.8	2.8
9	1.8	1.4	2.1	1.4	2.1	2.1	.4	.4	1.4	1.8	2.8	2.8
10	1.4	1.4	1.8	1.4	1.8	1.4	.4	.4	1.4	1.8	2.8	2.8
11	1.4	1.4	1.8	1.4	1.8	1.1	.4	47.3	1.1	1.8	2.8	2.8
12	1.8	1.4	1.8	1.4	1.8	1.1	.4	1.8	1.1	2.1	2.8	2.8
13	1.8	1.4	1.8	1.4	1.4	1.1	.4	.4	1.1	2.1	2.8	2.8
14	1.8	1.4	1.8	1.4	1.4	1.1	.4	.4	1.1	2.1	2.5	2.8
15	1.4	1.8	1.8	1.4	1.4	1.1	.4	.4	270	6.4	2.5	2.8
16	1.4	1.8	1.8	1.4	1.1	1.1	.4	.4	86.9	3.2	2.5	2.8
17	1.4	1.8	1.8	2.1	1.1	1.1	.4	.4	67.1	3.2	2.5	2.8
18	1.4	1.8	2.1	2.1	1.1	1.1	.4	.4	5.3	2.8	2.5	3.5
19	1.4	1.8	2.1	1.4	1.1	1.1	36.4	.4	3.5	2.5	2.5	3.1
20	1.4	1.8	2.1	1.4	1.1	1.1	.4	.4	3.5	2.5	2.5	2.8
21	1.4	1.8	2.1	1.4	1.1	1.1	.4	.4	3.5	2.5	2.5	2.8
22	1.4	1.8	2.1	1.4	1.1	.7	.4	.4	3.5	2.5	2.5	2.5
23	1.4	2.1	1.8	1.4	1.1	.7	.4	.4	2.8	2.1	2.5	2.5
24	1.4	2.1	2.8	1.4	1.1	.7	.4	.4	2.8	2.1	2.5	2.5
25	1.4	2.1	2.8	1.4	1.1	.7	.4	2.5	2.8	2.1	2.5	2.5
26	1.1	2.1	2.5	1.4	1.1	.4	.4	.7	2.8	2.5	2.5	2.5
27	1.1	2.1	2.1	1.4	1.4	.4	.4	.4	2.1	2.1	2.5	2.5
28	1.4	2.1	2.1	1.4	1.4	.4	.4	.4	2.1	2.1	2.5	2.8
29	1.4		1.8	1.4	1.4	.4	.4	.4	2.1	4.9	2.8	2.8
30	1.4		1.4	1.4	1.4	.7	.4	.4	2.1	6.0	2.8	2.8
31	1.4		2.1		1.4		.4	.4		3.9		2.8
Sum	46.2	46.6	66.9	43.8	127.5	33.0	52.5	63.1	1,892.0	81.9	79.5	86.0

Month	Current Year 1967: 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 1938-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	0.33	0.23	7	2.8	† 26	1.1	1.4	91.6	342	910	31.5
Feb.	.30	.26	† 23	2.1	† 1	1.4	1.8	92.4	518	5,950	33.3
Mar.	.52	.26	24	8.5	30	1.4	2.1	132	609	2,600	59.2
Apr.	.49	.23	17	7.1	† 5	1.1	1.4	87.6	1,411	16,610	75.4
May	2.89	.23	4	614	† 3	1.1	4.2	252	1,547	9,080	90.0
June	.30	.16	† 8	2.1	† 26	.4	1.1	64.0	3,222	62,520	43.8
July	2.13	.16	19	284	† 1	.4	1.8	101	1,017	8,230	26.8
Aug.	2.49	.10	11	427	† 30	0	2.1	122	648	3,850	42.2
Sept.	6.04	.10	3	5,510	1	0	63.2	3,757	3,066	49,566	37.3
Oct.	.92	.30	15	35.0	† 9	1.8	2.5	162	1,220	9,390	22.6
Nov.	.33	.33	† 1	2.8	† 14	2.5	2.8	157	331	1,670	21.0
Dec.	.36	.33	18	3.5	† 22	2.5	2.8	172	304	780	22.0
Yearly	6.04	0.10		5,510		0	7.1	5,190.6	14,235	70,026.3	2,066.7

‡ Period 1938-1967 ⸸ Discharge measurement made on this day † And other days

RIO GRANDE NEAR DEL RIO, TEXAS

DESCRIPTION: Gravity well, water-stage recorders (graphic and digital), and binary decimal transmitter located on the downstream side of the left pier of the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila at latitude 29° 19' 35", longitude 100° 55' 40", and river mile 554.7; 12.8 river miles downstream from Amistad Dam, 13.4 river miles downstream from Devils River, and 693.5 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 864.30 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 101 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: July 2, 1941 through 1954 and October 1960 through 1967. Records are also available from May 1900 through April 1915 for a station 12.4 miles upstream; from December 1919 through March 1920 for a station 8.9 miles upstream near McKee's Switch; from December 1923 through July 2, 1941 for a station 900 feet upstream from the international highway bridge; and from September 1954 through 1967 at a station, Rio Grande below Amistad Dam, 10.5 miles upstream.

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

EXTREME FLOWS FROM RECORDS: The greatest recorded flow of 1,140,000 second-feet occurred June 28, 1954, with a gage height of 38.25 feet. This peak flow was deduced by subtracting 18,000 second-feet from the peak discharge which occurred below Amistad Dam Site, 10.5 miles upstream. This subtraction was for estimated flattening of the flood wave in traveling between these points. The lowest recorded flow was 519 second-feet which occurred July 1, 1953, with a gage height of 0.28 foot. The transmitter, operated in cooperation with the United States Weather Bureau, relays gage height data upon interrogation by telephone via commercial circuits.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,630	1,480	1,540	1,410	♯1,100	♯1,250	4,210	1,520	1,400	4,040	1,770	1,770
2	1,650	1,460	♯1,520	1,380	1,040	1,200	9,470	1,430	1,420	3,200	♯1,780	1,730
3	♯1,620	♯1,400	1,520	♯1,330	1,040	1,180	♯6,380	♯1,610	9,550	2,910	1,810	1,610
4	1,590	1,380	1,490	1,400	♯1,130	1,180	3,280	1,640	2,190	2,780	1,670	♯1,650
5	1,570	1,540	1,490	1,380	1,110	♯1,290	2,830	1,540	♯2,610	2,640	1,740	1,630
6	♯1,580	1,800	♯1,480	♯1,340	1,090	1,620	♯2,770	2,540	3,500	♯2,490	♯1,760	1,620
7	1,570	♯1,660	1,370	1,340	1,070	1,420	2,460	♯2,140	3,030	2,580	1,770	♯1,750
8	1,540	1,660	1,370	1,290	♯1,060	♯1,260	2,390	2,250	♯3,060	3,510	1,760	1,780
9	♯1,540	♯1,610	♯1,330	1,280	1,080	1,920	2,120	1,840	3,150	♯2,570	♯1,900	1,840
10	1,590	1,550	1,350	♯1,290	1,080	1,780	♯2,000	1,620	3,660	2,530	1,870	1,720
11	1,570	1,540	1,350	1,260	♯1,090	1,680	1,960	♯1,720	♯3,920	2,350	1,840	♯1,680
12	♯1,550	1,400	1,360	1,260	1,100	♯1,680	1,780	♯18,300	4,060	♯2,160	1,940	1,630
13	1,690	♯1,410	♯1,380	♯1,340	1,080	1,520	♯1,780	3,940	4,020	2,200	♯1,880	1,590
14	1,950	1,370	1,370	1,210	1,050	1,420	2,100	♯2,030	♯3,920	2,180	1,780	♯1,580
15	2,010	1,390	1,380	1,160	♯979	♯1,520	1,960	1,760	8,920	3,290	1,800	1,560
16	♯1,910	♯1,400	1,300	1,130	990	1,450	1,570	1,670	9,260	♯2,560	♯1,820	1,450
17	1,810	1,430	♯1,300	♯1,140	1,000	1,380	♯1,600	♯2,000	7,050	4,610	1,850	1,510
18	1,740	1,440	1,290	1,170	♯1,010	1,500	1,440	2,020	♯5,270	3,080	1,860	♯1,500
19	♯1,720	1,470	1,310	1,120	1,010	♯1,910	1,360	2,810	3,400	♯2,240	1,960	1,510
20	1,670	♯1,540	♯1,340	♯1,400	1,020	2,820	3,280	2,090	3,530	2,090	1,930	1,510
21	1,650	1,430	1,280	1,540	1,610	1,990	♯14,800	♯1,930	♯3,720	1,940	1,850	♯1,540
22	1,620	1,440	1,290	1,360	♯1,270	♯1,840	5,540	1,790	4,140	1,880	1,780	1,500
23	♯1,600	1,430	1,270	1,250	1,080	1,880	4,440	1,660	3,250	♯1,910	1,810	1,480
24	1,590	♯1,410	1,400	♯1,160	1,040	1,700	♯3,120	♯1,910	3,690	1,860	♯1,780	1,460
25	1,560	1,380	1,380	1,150	♯1,010	1,690	2,380	1,720	3,460	1,820	1,790	1,440
26	♯1,540	1,430	1,460	1,260	1,020	♯1,490	2,120	1,610	3,440	♯1,840	1,820	♯1,420
27	1,470	♯1,480	♯1,610	♯1,120	997	♯2,640	♯1,980	1,710	3,200	1,850	♯1,810	1,400
28	1,500	1,540	2,080	1,090	965	2,620	1,800	♯1,640	2,960	1,850	1,730	1,390
29	1,480		1,760	1,090	♯968	♯7,390	1,780	1,540	5,890	1,820	1,700	♯1,430
30	♯1,480		♯1,530	1,090	1,030	5,360	1,700	1,450	6,110	♯2,150	♯1,720	1,500
31	1,490		1,420		1,400		♯1,620	♯1,420		1,820		1,520
Sum	50,480	41,470	44,320	37,740	33,519	59,580	98,020	74,850	126,780	76,750	54,280	48,700

Month	Current Year 1967: 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 Oct. 1960-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	2.57	2.17	15	2,060	27	1,400	1,630	100,127	103,497	141,000	85,191
Feb.	2.50	2.14	6	1,930	† 4	1,360	1,480	82,256	87,245	115,000	71,684
Mar.	2.63	2.07	28	2,190	23	1,250	1,430	87,909	86,636	106,000	71,743
Apr.	2.28	1.90	20	1,660	29	1,080	1,260	74,857	92,700	152,244	67,721
May	2.73	1.83	21	2,290	29	944	1,080	66,485	102,588	147,711	66,485
June	5.32	1.95	29	8,730	2	1,140	1,990	118,177	208,795	439,000	103,687
July	8.60	2.07	21	19,500	20	1,270	3,160	194,423	141,819	236,000	84,055
Aug.	10.52	2.08	12	26,000	31	1,400	2,410	148,465	154,736	275,191	80,379
Sept.	9.33	2.06	3	22,700	1	1,380	4,230	251,468	405,063	1,187,164	141,000
Oct.	4.08	2.33	17	5,540	31	1,770	2,480	152,234	177,035	266,860	103,023
Nov.	2.50	2.26	12	1,990	15	1,630	1,810	107,664	110,288	130,000	76,087
Dec.	2.39	1.87	9	1,880	16	1,100	1,570	96,596	106,901	149,000	83,347
Yearly	10.52	1.83		26,000		944	2,050	1,480,661	1,777,303	2,449,815	1,238,226

♯ Discharge measurement made on this day † And other days

SAN FELIPE SPRINGS AT DEL RIO, TEXAS

DESCRIPTION: Two large and at least two smaller springs rise near the northeast city limits of Del Rio, Texas in or near the channel of San Felipe Creek at latitude 29° 22' 20" and longitude 100° 53' 00". The total yield of these springs consists of waters measured in the Val Verde Canal at Del Rio, Texas and in San Felipe Creek at Moore Park, Del Rio, Texas, and diversions by the City of Del Rio. Diversions by the San Felipe Irrigation Company through the Val Verde Canal are measured at a gaging station consisting of a paved measuring section and gravity well and water-stage recorder located on the left side of the canal under the U. S. Highway 277 Bridge across San Felipe Creek at latitude 29° 21' 55" and longitude 100° 53' 10". The bridge is located about 0.6 creek mile downstream from the source of the springs and 2.9 creek miles from the confluence of the creek with the Rio Grande. The gaging station on San Felipe Creek at Moore Park consists of gravity well and water-stage recorder located on the left bank about 300 feet downstream from the U. S. Highway 277 Bridge at latitude 29° 21' 50" and longitude 100° 53' 10". This stream enters the Rio Grande at river mile 553.1, 1.6 river miles downstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 695.1 river miles downstream from the American Dam at El Paso, Texas. The zeros of the gages for the two stations are, respectively, 942.58 feet and 930.77 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Records for the Val Verde Canal and San Felipe Creek at Moore Park are based on 50 and 51 discharge measurements, respectively, by wading during the year, and continuous records of gage heights. Computations by shifting control methods. Records for the Del Rio Pumping Plant are furnished by the City of Del Rio Water Department. Records available: Total yield of the springs, February 1961 through 1967.

REMARKS: The flows tabulated below represent only the total yield of the springs. All storm runoff has been eliminated from the tabulations.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	96.5	94.1	90.7	88.5	91.9	79.1	72.8	68.2	71.0	73.5	66.5	70.0
2	95.3	95.3	91.6	89.0	92.6	77.9	71.5	67.5	65.9	75.7	66.4	68.5
3	96.6	95.0	92.4	89.0	93.7	77.8	74.3	69.0	75.7	75.5	65.5	70.1
4	95.5	94.7	93.2	89.6	93.8	79.0	73.6	67.2	71.9	72.4	68.3	69.3
5	94.7	96.1	90.6	91.2	79.2	79.9	74.1	67.1	69.4	71.9	68.3	69.6
6	96.2	94.1	96.6	91.4	78.1	79.4	73.8	66.6	67.8	70.7	67.6	69.7
7	94.8	95.1	93.5	91.0	78.9	81.3	73.6	67.4	66.6	66.8	67.4	69.4
8	95.2	94.6	91.9	92.6	82.1	80.2	70.9	67.7	65.2	68.5	67.3	69.4
9	96.2	96.3	93.2	93.4	83.1	80.3	71.9	67.3	63.9	69.5	67.3	69.8
10	96.4	95.8	92.2	92.2	82.9	79.7	72.1	65.2	62.2	68.9	66.9	69.7
11	97.2	97.1	92.0	93.1	83.5	82.2	73.2	65.5	66.5	68.9	68.1	69.7
12	97.5	97.3	89.1	91.2	83.9	81.2	71.1	65.5	68.0	69.6	67.5	68.2
13	98.3	96.0	91.1	93.8	81.6	81.0	69.3	66.1	66.7	68.2	69.1	67.1
14	97.1	95.2	91.6	94.2	83.0	80.0	70.9	67.7	64.4	68.0	69.7	65.9
15	97.9	94.2	88.5	93.6	85.8	79.6	72.3	66.7	64.1	68.5	69.7	67.1
16	98.6	94.8	87.8	93.4	84.8	80.0	72.0	65.8	111	68.9	69.7	67.4
17	97.8	93.8	85.9	92.7	81.6	79.9	72.0	64.0	97.6	69.6	70.1	68.2
18	99.7	94.7	87.5	92.9	81.9	79.4	72.1	65.0	81.9	69.5	70.8	67.1
19	99.1	94.1	88.6	90.5	83.0	81.0	70.6	65.4	77.4	68.8	68.8	68.2
20	98.1	96.4	91.9	91.5	81.5	79.0	69.9	66.3	76.4	67.7	70.2	68.3
21	99.1	94.7	88.6	93.3	80.6	80.4	69.4	66.7	75.7	66.8	70.8	68.0
22	98.6	95.1	93.7	91.7	83.0	78.2	69.2	71.4	74.8	66.5	71.7	67.6
23	99.2	94.9	92.0	91.8	80.0	78.6	70.1	69.2	77.6	70.3	69.9	67.4
24	99.7	93.1	92.3	91.0	80.9	78.0	71.6	69.2	77.8	70.0	70.3	66.8
25	97.9	93.4	92.6	92.3	81.2	78.9	68.7	67.9	77.5	69.0	71.8	66.1
26	98.1	93.6	90.3	90.8	80.4	78.5	67.9	68.8	77.4	67.8	71.4	65.7
27	95.9	92.8	90.5	89.2	81.6	79.5	70.9	70.2	72.9	67.8	70.2	65.1
28	97.0	92.1	90.6	87.6	83.1	78.1	67.9	70.5	73.7	68.2	70.7	65.9
29	96.1		90.1	90.6	83.0	78.0	68.7	70.2	73.2	68.6	71.3	65.8
30	94.7		90.7	94.2	83.0	73.8	70.2	70.0	73.6	65.0	70.4	66.4
31	95.7		88.0		84.0		70.4	69.8		66.8		66.1
Sum	3,010.7	2,654.4	2,819.3	2,747.3	2,587.7	2,379.9	2,207.0	2,095.1	2,207.8	2,147.9	2,073.7	2,103.6

Month	Current Year 1967: Extreme Gage Feet High	Low	Extreme Second-Feet High Day	Extreme Second-Feet High	Extreme Second-Feet Low Day	Extreme Second-Feet Low	Average Second-Feet	Total Acre-Feet	Period Feb. 1961-1967: Acre-Feet Average	Maximum	Minimum
Jan.			† 18	99.7	† 5	94.7	97.1	5,972	5,043	6,500	2,274
Feb.			12	97.3	28	92.1	94.8	5,265	4,590	5,909	2,119
Mar.			6	96.6	17	85.9	90.9	5,592	4,932	6,407	2,365
Apr.			† 14	94.2	28	87.6	91.6	5,449	4,654	6,239	2,291
May			4	93.8	6	78.1	83.5	5,133	4,963	6,379	2,842
June			11	82.2	30	73.8	79.3	4,721	4,772	6,073	2,481
July			3	74.3	† 26	67.9	71.2	4,378	4,771	6,292	2,214
Aug.			22	71.4	17	64.0	67.6	4,156	4,646	6,810	2,114
Sept.			16	111	10	62.2	73.6	4,379	4,610	6,400	2,555
Oct.			2	75.7	30	65.0	69.3	4,260	5,075	6,680	2,508
Nov.			25	71.8	3	65.5	69.1	4,113	4,852	6,052	2,384
Dec.			3	70.1	27	65.1	67.9	4,172	5,017	6,651	2,390
Yearly				111		62.2	79.5	57,590	57,925	74,062	36,580

g Mean daily † And other days

SAN FELIPE CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Cableway, bubbler gage, and water-stage recorders (graphic and digital) located on the left bank at latitude 29° 19' 55", longitude 100° 53' 20", immediately upstream from the Silos Farm road bridge, 1.1 creek miles from the confluence with the Rio Grande, and about 2 miles south-southeast of Del Rio, Texas. This stream enters the Rio Grande at river mile 553.1, 1.6 river miles downstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 695.1 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 877.43 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 52 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: September 1931 through 1967.

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 feet, 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. 0.4 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 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	83.6	90.1	60.6	70.7	50.6	32.7	38.2	⸸ 20.0	38.6	61.3	57.6	60.3
2	86.0	93.1	66.4	71.8	⸸ 48.3	39.7	32.1	18.6	381	60.5	55.7	60.3
3	85.4	84.0	72.7	68.9	48.5	39.9	36.5	22.5	887	60.9	52.7	61.5
4	⸸ 86.3	65.0	70.9	⸸ 66.0	146	40.1	31.4	20.9	75.8	60.2	51.9	60.4
5	82.7	72.7	69.3	65.7	112	37.5	⸸ 32.3	19.5	70.7	60.5	49.0	⸸ 61.6
6	89.6	80.8	71.7	65.3	75.0	⸸ 38.7	31.9	20.7	68.2	⸸ 58.7	50.3	61.4
7	94.1	⸸ 76.0	⸸ 72.7	66.3	72.4	41.5	28.9	25.0	65.8	62.5	⸸ 52.8	60.1
8	92.5	76.6	76.6	68.8	67.2	42.6	29.2	⸸ 24.1	65.8	65.2	59.7	61.0
9	91.9	78.4	77.8	67.1	⸸ 60.0	43.6	28.8	25.4	65.8	62.4	64.7	58.5
10	⸸ 92.3	81.9	78.9	68.1	61.1	43.6	28.4	28.1	54.4	⸸ 61.8	64.8	59.4
11	91.7	83.9	75.9	⸸ 74.7	57.4	42.6	⸸ 30.5	39.2	51.1	60.7	62.8	55.9
12	92.1	86.0	75.7	76.8	53.7	40.8	26.4	41.6	50.1	60.8	67.6	⸸ 55.7
13	93.5	79.3	75.5	73.0	54.6	⸸ 39.8	30.0	38.1	49.1	59.7	71.5	57.6
14	91.0	⸸ 81.2	⸸ 74.0	66.8	54.5	32.8	35.4	37.7	48.2	60.9	⸸ 67.0	61.6
15	93.4	71.6	65.3	63.5	44.5	27.6	34.8	33.1	132	69.7	61.6	64.6
16	90.8	59.0	61.1	66.8	⸸ 48.8	28.4	29.9	⸸ 26.6	535	58.8	60.5	65.4
17	⸸ 92.2	56.4	61.8	79.5	49.5	30.9	24.5	32.1	400	⸸ 54.4	61.7	66.2
18	90.2	57.6	67.8	⸸ 77.5	43.6	31.7	⸸ 25.5	33.9	89.5	54.7	62.9	65.8
19	89.1	62.4	70.0	74.1	35.5	29.1	25.7	41.1	⸸ 85.9	59.4	63.0	⸸ 65.3
20	90.1	68.5	66.8	76.2	39.0	⸸ 29.9	33.4	44.2	86.4	58.6	63.0	64.4
21	89.0	⸸ 69.8	⸸ 74.4	74.1	40.7	31.4	31.0	40.4	83.2	57.7	⸸ 65.3	65.5
22	90.0	76.8	88.0	80.8	38.4	31.2	31.2	⸸ 36.3	80.1	55.8	66.6	65.4
23	91.9	75.5	90.1	81.6	⸸ 41.0	32.7	30.5	34.3	74.6	53.9	63.5	66.5
24	⸸ 90.9	74.3	90.3	79.5	45.2	34.3	27.6	33.1	65.5	⸸ 56.4	63.7	67.6
25	91.5	81.2	84.0	⸸ 81.8	42.6	35.0	⸸ 24.9	35.4	⸸ 62.4	56.4	63.9	66.4
26	91.1	77.4	81.2	82.8	40.9	31.4	26.9	42.4	60.6	56.3	63.0	67.5
27	90.7	76.1	76.8	82.3	43.1	30.3	27.4	41.2	62.0	56.3	66.5	⸸ 65.3
28	90.4	⸸ 67.0	⸸ 75.6	78.8	44.3	⸸ 28.4	29.6	40.9	66.9	56.3	⸸ 70.0	65.5
29	89.0		75.4	67.2	49.1	31.1	28.6	⸸ 43.5	61.7	60.7	69.0	65.7
30	87.6		75.2	51.8	52.8	31.1	32.7	40.6	60.9	63.9	64.6	65.9
31	⸸ 88.2		77.9		⸸ 48.8		26.7	40.6		⸸ 61.7		66.0
Sum	2,788.8	2,102.6	2,300.4	2,168.3	1,709.1	1,050.4	930.9	1,021.1	3,978.3	1,847.1	1,856.9	1,954.3

Month	Current Year 1967: 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 1932-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	1.68	1.49	27	98.7	30	71.2	90.0	5,532	4,159	7,450	934
Feb.	1.66	1.23	3	97.0	16	48.8	75.1	4,171	3,276	8,630	487
Mar.	1.65	1.28	22	97.0	16	50.3	74.2	4,563	3,034	6,510	689
Apr.	2.34	1.24	17	198	30	45.2	72.3	4,301	3,469	10,400	566
May	6.50	1.01	4	1,820	22	29.7	55.1	3,390	4,642	17,600	739
June	1.48	.90	1	77.6	1	19.8	35.0	2,083	5,033	47,900	301
July	1.30	.86	1	58.0	31	18.3	30.0	1,846	3,318	8,800	285
Aug.	1.47	.79	11	79.8	2	13.6	32.9	2,025	3,105	7,150	350
Sept.	13.00	1.01	3	9,700	2	30.9	133	7,891	4,990	28,678	872
Oct.	1.85	1.14	15	137	26	48.2	59.6	3,664	4,306	8,470	1,000
Nov.	1.40	1.16	14	81.5	5	46.1	61.9	3,683	3,559	7,000	526
Dec.	1.33	1.18	18	69.4	11	50.5	63.0	3,876	3,599	7,020	496
Yearly	13.00	0.79		9,700		13.6	65.0	47,025	46,490	98,137	18,201

⸸ Discharge measurement made on this day

DIVERSIONS FROM THE RIO GRANDE

MAVERICK CANAL AT MILE 13 NEAR QUEMADO, TEXAS

DESCRIPTION: Light-weight cableway for making current meter measurements from the bank, bubbler gage, and water-stage recorder located on the left bank of a gunnite-lined section of the canal at latitude 29° 03' 00", longitude 100° 39' 40", 0.5 canal mile downstream from the Tequesquite Creek Siphon, 3.5 canal miles upstream from the Las Moras Creek Siphon, about 7.5 miles north-northwest of Quemado, Maverick County, Texas, and 12.8 canal miles from the canal intake. The canal intake is at river mile 537.4, 17.3 river miles downstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 710.8 river miles downstream from the American Dam at El Paso, Texas. The elevation of the zero of the gage has not been determined.

RECORDS: Based on 51 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Gage heights at this station are affected by gate operation at Las Moras Siphon. Records available: June 21, 1949 through 1967.

REMARKS: Water from the Rio Grande is diverted into the main canal by Maverick County Water Control and Improvement District No. 1 for power generation and irrigation use. At a point 31.8 canal miles downstream from 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. In 1967 a total of 34,874 acres of land were irrigated from this canal and its extension. Of this total 8,519 acres were between this point and the power plant and 26,355 acres were irrigated from the Maverick Canal Extension. A total of 820,670 acre-feet of water returned to the Rio Grande at the power plant and through the irrigation system (see pages 52, 54, and 57). On June 27, 1966, the zero of the gage was raised 0.70 foot.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 1,680 second-feet on September 15, 1967. Min. no flow several days in June, July, and November 1954.

Average Flow in Second-Feet

Daily:	Max.	1,620	July 13, 1952 & Sept. 13, 1963	Min.	0	June 28 through July 11 & Nov. 2, 1954
Monthly:	Max.	1,530	July 1952	Min.	319	July 1954
Yearly:	Max.	1,420	1961	Min.	914	1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,330	♠1,320	♠1,310	1,290	1,110	♠ 1,260	1,500	1,390	1,300	1,390	♠1,360	1,360
2	1,340	1,320	1,300	1,290	1,070	1,150	1,520	1,360	1,280	1,400	1,360	1,360
3	1,340	1,310	1,280	1,270	♠ 1,040	1,160	1,530	♠ 1,360	1,410	1,400	1,360	1,330
4	1,330	1,300	1,280	1,260	1,050	1,160	1,520	1,430	1,370	♠ 1,360	1,340	1,340
5	♠1,330	1,300	1,280	♠ 1,260	1,160	1,190	1,520	1,380	1,440	1,380	1,350	1,350
6	1,320	1,350	1,250	1,250	1,110	1,230	♠ 1,510	1,460	♠ 1,500	1,360	1,370	♠1,340
7	1,320	1,360	1,250	1,230	1,100	♠ 1,320	1,510	1,510	1,490	1,380	1,390	1,360
8	1,320	1,350	♠1,250	1,220	1,100	1,280	1,470	1,500	1,510	1,420	♠1,390	1,380
9	1,310	♠1,340	1,250	1,210	♠ 1,090	1,250	1,450	1,470	1,510	1,390	1,400	1,390
10	1,310	1,330	1,250	1,200	1,070	1,390	1,430	♠ 1,420	1,530	1,420	1,400	1,370
11	♠1,310	1,310	1,240	1,200	1,080	1,360	♠ 1,440	1,420	1,510	♠ 1,390	1,400	1,350
12	1,310	1,310	1,230	♠ 1,210	1,080	1,360	1,410	1,530	1,510	1,330	1,410	1,350
13	1,310	1,300	1,230	1,260	1,100	♠ 1,340	1,410	1,520	♠ 1,520	1,280	1,430	♠1,320
14	1,340	1,300	1,220	1,220	1,110	1,310	1,420	1,510	1,520	1,340	1,400	1,310
15	1,360	1,300	1,200	1,180	1,090	1,330	1,470	1,450	1,500	1,370	♠1,380	1,330
16	1,370	♠1,290	1,190	1,150	1,030	1,330	1,400	1,420	1,310	1,360	1,380	1,310
17	1,360	1,300	1,190	1,140	♠ 1,030	1,320	1,410	1,430	1,290	1,420	1,390	1,270
18	♠1,340	1,300	1,190	1,190	1,030	1,320	1,390	♠ 1,450	1,270	♠ 1,460	1,390	1,320
19	1,330	1,310	1,210	♠ 1,160	1,010	1,370	♠ 1,380	1,510	1,330	1,440	1,390	1,310
20	1,340	1,310	1,210	1,150	1,000	1,450	1,370	1,510	1,340	1,380	1,410	♠1,310
21	1,330	1,300	1,210	1,300	1,080	♠ 1,430	1,540	1,450	♠ 1,340	1,310	1,380	1,310
22	1,330	1,290	♠1,210	1,280	1,270	1,410	1,540	1,440	1,300	1,230	1,370	1,320
23	1,330	♠1,300	1,210	1,250	♠ 1,140	1,420	1,540	♠ 1,400	1,290	1,200	1,380	1,300
24	1,330	1,290	1,230	1,200	1,040	1,400	1,430	1,420	1,300	1,220	♠1,380	1,300
25	1,330	1,290	1,240	1,160	1,010	1,410	♠ 1,480	1,420	1,280	♠ 1,400	1,370	1,300
26	1,320	1,290	1,260	♠ 1,150	1,010	1,380	913	1,380	1,290	1,400	1,370	1,290
27	♠1,310	1,300	1,280	1,210	1,030	♠ 1,400	1,420	1,390	♠ 1,290	1,400	1,370	1,270
28	1,310	1,310	♠1,320	1,110	1,040	1,450	1,420	1,390	1,320	1,400	1,370	1,280
29	1,320		1,330	1,110	1,040	1,490	1,410	1,370	1,410	1,400	♠1,350	♠1,270
30	1,310		1,310	1,100	1,050	1,490	1,410	1,340	1,410	1,430	1,350	1,320
31	1,310		1,290		1,150		1,400	♠ 1,320		1,380		1,340
Sum	41,150	36,680	38,700	36,210	33,320	40,160	44,563	44,350	41,670	42,440	41,390	41,060

Month	Current Year 1967: 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 1950-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	3.88	3.51	16	1,380	†10	1,300	1,330	81,621	76,536	89,500	61,900
Feb.	3.74	3.47	7	1,370	25	1,280	1,310	72,755	69,050	82,500	52,700
Mar.	3.71	3.05	29	1,340	17	1,170	1,250	76,761	72,616	90,700	52,000
Apr.	3.64	2.72	21	1,320	†28	1,100	1,210	71,823	65,708	81,000	45,400
May	3.64	2.17	31	1,300	†25	992	1,070	66,090	70,985	84,973	39,400
June	4.23	2.79	30	1,520	2	1,130	1,340	79,657	74,456	88,900	34,400
July	4.35		†21	1,570	26	Ø 913	1,440	88,391	74,287	93,900	19,600
Aug.	4.12	3.38	13	1,600	31	1,320	1,430	87,968	78,115	91,459	53,000
Sept.	4.47	3.14	15	1,680	18	1,240	1,390	82,652	76,881	89,039	47,000
Oct.	4.00	2.88	18	1,510	24	1,160	1,370	84,180	78,957	91,578	54,300
Nov.	3.70	3.42	13	1,430	4	1,330	1,380	82,097	75,486	85,707	55,900
Dec.	3.60	3.02	9	1,400	17	1,210	1,320	81,443	77,212	88,504	58,600
Yearly	4.47			1,680		Ø 913	1,320	955,438	890,289	1,027,400	663,500

♠ Discharge measurement made on this day † And other days Ø Mean daily

PINTO CREEK NEAR DEL RIO, TEXAS

DESCRIPTION: Cableway, solid ledge rock and concrete control, bubbler gage, and digital water-stage recorder located on the right bank at latitude 29° 08' 45", longitude 100° 43' 05", 1.6 creek miles from the confluence with the Rio Grande, and about 19 miles southeast of Del Rio, Texas. This stream enters the Rio Grande at river mile 530.1, 6.1 river miles downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam, and 718.1 river miles downstream from 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 51 discharge measurements during the year and a continuous record of gage heights. Records available: September 1955 through 1967 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 the 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 feet above mean sea level, at this station. On June 29, 1966 the graphical water-stage recorder was replaced by a digital recorder.

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 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.5	⸸ 8.9	⸸ 8.9	0.9	1.2	⸸ 0.9	0.1	0.2	0.1	0.9	⸸ 4.8	3.7
2	6.3	7.2	8.6	.8	1.0	.9	.1	.1	.1	2.3	4.3	3.7
3	6.6	6.6	7.8	1.0	⸸ 1.1	.9	.1	⸸ .1	2.9	2.2	4.0	3.3
4	4.1	7.5	4.9	1.0	.9	.9	.1	.1	.2	⸸ 2.0	3.7	3.2
5	⸸ 6.8	8.6	4.9	⸸ 1.2	.9	.9	.1	.1	.2	2.5	4.1	4.1
6	6.4	9.4	4.2	1.2	.9	1.0	⸸ .2	0	⸸ .2	2.7	4.4	⸸ 4.2
7	7.4	7.3	4.2	1.0	.8	⸸ .9	.2	0	.2	2.9	4.9	4.1
8	7.0	9.6	⸸ 6.4	1.0	.8	.8	.2	0	.2	2.3	⸸ 7.6	4.0
9	6.9	⸸ 6.8	5.6	1.0	⸸ .6	.7	.1	0	.2	2.1	10.0	3.8
10	7.3	8.5	2.7	1.0	.7	.6	.1	⸸ 0	.3	1.9	6.8	2.9
11	⸸ 7.7	8.5	4.3	3.3	.8	.5	⸸ .1	.2	.3	⸸ 1.8	5.2	2.8
12	8.3	6.7	4.5	⸸ 3.7	.9	.4	.1	.4	.2	1.8	4.6	3.0
13	8.5	7.1	4.4	3.7	.8	⸸ .3	0	.3	⸸ .2	1.8	4.2	⸸ 3.1
14	9.3	6.9	4.8	3.0	.9	.3	0	.3	.2	1.8	3.9	3.2
15	9.4	6.9	4.9	2.8	1.0	.3	.1	.3	219	85.3	⸸ 3.7	4.1
16	8.6	⸸ 3.9	4.6	2.7	1.0	.3	.1	.3	41.9	34.9	3.7	4.0
17	9.6	1.2	4.6	2.8	⸸ 1.1	.4	0	.2	57.9	11.3	3.7	3.8
18	⸸ 9.4	1.0	5.1	3.5	1.0	.4	0	⸸ .2	15.3	⸸ 5.3	3.7	3.9
19	9.3	1.0	3.0	⸸ 4.0	.9	.4	⸸ .1	.2	5.9	4.0	3.7	3.7
20	9.2	.9	2.1	7.9	.9	.4	.2	.2	10.0	3.5	3.6	⸸ 4.0
21	9.2	.9	1.6	4.3	.9	⸸ .4	.1	.1	⸸ 7.0	3.7	3.6	4.0
22	10.2	.9	⸸ 1.6	4.0	.8	.3	.1	.1	4.5	3.5	3.6	3.5
23	10.5	⸸ .9	1.5	3.7	⸸ .7	.3	0	⸸ 0	3.6	2.6	3.4	2.9
24	10.4	.8	1.4	3.3	.7	.3	.1	.1	6.7	1.2	⸸ 3.6	2.4
25	10.2	3.8	1.2	3.4	.7	.2	⸸ .2	0	3.6	⸸ 1.1	3.3	1.8
26	9.6	8.8	1.0	⸸ 3.4	.7	.2	.2	.1	3.1	1.1	3.3	1.6
27	⸸ 7.5	9.7	.8	3.1	.7	⸸ .1	.1	.1	⸸ 6.5	1.9	3.4	1.4
28	8.3	9.6	⸸ .6	3.1	.7	.1	.1	.1	3.2	2.1	3.5	1.3
29	8.8		.7	3.0	.7	.1	.1	.1	1.2	2.3	⸸ 3.5	⸸ 1.1
30	8.8		.7	1.3	.8	.1	.2	.1	.9	34.8	3.6	1.3
31	8.9		.8		.8		.2	⸸ 0		10.5		1.3
Sum	257.0	159.9	112.4	80.1	26.4	14.3	3.4	4.0	395.8	238.1	129.4	95.2

Month	Current Year 1967: 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 1929-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	1.10	0.82	22	10.6	4	3.9	8.3	510	490	2,270	0
Feb.	1.10	.59	6	10.1	7	.2	5.7	317	581	5,760	0
Mar.	1.05	.65	1	9.3	†28	.6	3.6	223	513	2,500	0
Apr.	1.10	.65	20	11.3	† 1	.8	2.7	159	1,448	27,100	0
May	.69	.59	1	1.3	9	.5	.9	52.4	2,544	29,400	0
June		.50	6	ø 1.0	†27	.1	.5	28.4	4,530	56,700	0
July	.54	.44	† 6	.2	†13	0	.1	6.7	1,774	30,000	0
Aug.	.81	.35	11	3.1	† 5	0	.1	7.9	1,603	48,700	0
Sept.	4.44	.45	15	1,100	3	0	13.2	785	2,779	48,965	0
Oct.	2.95	.62	15	349	29	.8	7.7	472	957	8,940	0
Nov.	1.06	.66	9	11.0	26	.8	4.3	257	406	2,590	0
Dec.	.89	.62	†16	4.4	4	.9	3.1	189	498	2,470	0
Yearly	4.44	0.35		1,100		0	4.2	3,007.4	18,123	76,259.3	1,325.2

⸸ Discharge measurement made on this day † And other days ø Mean daily

RIO SAN DIEGO AT JIMENEZ, COAHUILA

DESCRIPTION: Cableway, masonry and concrete Cipolletti weir of 777 second-foot capacity, gravity well, and water-stage recorder located on the left bank on Río San Diego, and gravity well and water-stage recorder on Acequia de Dolores, an irrigation canal that runs along the left bank of the river under the cable, located at latitude 29° 04' 20", longitude 100° 43' 50", about 3.5 miles west of Jiménez, Coahuila, and 4.1 river miles from the confluence with the Rio Grande. Part of the canal flow measured here returns to the river downstream. This stream enters the Rio Grande at river mile 525.2, 6.3 river miles downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam, 29.4 river miles downstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 723.0 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 831.72 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: For the river, based on the weir discharge table and a continuous record of gage heights; and for the canal, on 29 discharge measurements during the year and a continuous record of gage heights. The flows tabulated below include the flow of the canal. Records published for this station prior to 1964 do not include the discharge of the canal. The capacity of the weir was exceeded only during a few hours on September 3, October 15, and 30, 1967. Records available: 1922 through 1967. The records from 1922 through September 1932 are considered doubtful.

REMARKS: Reservoirs and irrigation diversions upstream from these stations 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. In November 1961, the zero of the gage was raised an additional 0.20 foot and the capacity of the weir was increased from 706 to 777 second-feet at the time the weir, which was damaged by the June 17, 1961 flood, was repaired.

EXTREME FLOWS FROM RECORDS‡: Momentary: Max. 81,930 second-feet on June 17, 1961 with a gage height of 20.70 feet. Min. no flow occurred on several occasions during April, May, and June 1939, May and August 1952, and July and August 1953.

Average Flow in Second-Feet ‡

Daily:	Max.	33,730	June 17, 1961	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 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	44.8	44.8	36.7	44.1	46.3	35.3	32.5	17.7	35.0	226	245	121
2	44.8	44.8	36.4	44.1	42.7	52.6	32.8	18.4	35.0	207	238	121
3	44.8	50.5	36.4	54.4	42.7	49.1	33.2	18.4	3,640	207	207	121
4	50.5	50.5	36.4	54.7	43.4	47.3	32.8	22.2	410	214	207	114
5	50.5	55.8	36.0	54.7	44.1	37.4	32.1	23.0	154	245	207	107
6	44.8	55.8	36.0	54.7	44.8	36.4	31.8	22.6	106	226	207	107
7	44.8	53.0	35.3	55.4	38.5	36.4	31.1	22.6	88.6	226	207	114
8	44.8	54.0	35.3	55.8	35.0	35.7	31.1	22.2	74.2	226	206	107
9	44.8	54.0	36.4	55.8	39.9	35.7	31.1	22.2	67.8	226	206	107
10	44.8	49.1	36.4	55.8	39.9	35.0	27.5	22.2	55.8	226	188	106
11	44.8	49.1	36.0	67.5	43.4	35.0	25.8	83.3	55.8	236	187	106
12	44.8	48.7	35.7	56.5	39.2	34.6	26.9	45.2	55.8	236	187	106
13	44.8	48.7	35.3	56.5	36.4	34.6	28.6	29.3	40.3	226	170	106
14	44.8	48.7	35.0	56.5	36.0	35.0	29.7	29.0	35.0	226	170	106
15	44.8	48.7	35.0	55.4	36.0	33.9	29.3	28.3	646	544	170	107
16	44.8	48.7	35.0	55.4	36.0	32.5	28.3	27.2	182	258	170	107
17	44.8	48.7	34.6	55.8	35.0	32.1	27.5	27.2	420	245	170	107
18	44.8	48.7	34.6	55.4	34.3	32.8	27.2	27.2	456	226	161	107
19	44.8	48.4	34.6	55.4	32.8	32.8	27.2	27.2	192	226	153	93.2
20	44.8	48.4	35.0	55.4	32.8	31.1	26.5	27.2	124	226	153	93.2
21	44.8	48.4	34.6	55.4	32.8	30.7	26.1	27.2	97.1	226	153	93.6
22	44.8	48.4	34.6	55.8	32.5	30.7	26.1	26.8	125	226	153	93.6
23	44.8	48.4	35.0	55.8	31.4	30.7	26.8	35.0	199	216	152	93.2
24	44.8	48.4	45.2	55.8	27.5	30.7	26.5	41.0	171	216	137	93.9
25	44.8	47.0	45.9	56.5	27.5	31.1	25.8	44.8	216	216	137	93.6
26	44.8	47.0	45.9	56.5	27.5	31.1	25.8	37.1	258	216	137	93.6
27	44.8	47.0	44.5	56.5	27.5	31.4	24.7	35.3	280	207	130	93.6
28	44.8	37.1	35.0	56.9	31.8	31.4	24.7	35.0	243	207	129	93.6
29	44.8		35.3	56.9	32.5	31.4	24.4	35.3	226	269	129	93.6
30	44.8		36.4	56.9	32.8	31.4	24.4	35.3	226	526	121	93.6
31	44.8		45.9		32.5		24.0	35.3		268		93.6
Sum	1,400.2	1,370.8	1,150.4	1,662.3	1,115.5	1,045.9	872.3	950.7	8,914.4	7,671	5,187	3,192.9

Month	Current Year 1967: 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 1933-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	0.23	0.16	† 4	50.5	† 3	35.0	45.2	2,780	6,968	36,430	1,860
Feb.	.23	.16	† 5	55.8	28	37.1	49.1	2,719	5,586	25,760	1,060
Mar.	.23	.13	25	49.8	†17	27.9	37.1	2,281	4,940	27,040	1,340
Apr.	.26	.20	11	67.8	1	43.4	55.4	3,298	6,148	40,270	1,110
May	.23	.13	1	51.9	†24	27.5	36.0	2,213	12,174	120,200	861
June	.26	.16	2	70.3	†21	30.7	35.0	2,075	11,603	108,300	543
July	.16	.13	3	33.2	31	24.0	28.3	1,730	7,824	37,890	490
Aug.	.98	.10	11	491	1	17.7	30.7	1,886	6,513	32,180	738
Sept.	8.37	.16	3	10,200	† 1	33.2	297	17,675	15,734	94,667	1,183
Oct.	2.03	.56	15	1,420	† 2	207	247	15,208	14,376	71,830	1,698
Nov.	.62	.39	1	245	30	121	173	10,290	10,038	64,060	803
Dec.	.39	.33	† 1	121	†19	93.2	103	6,336	6,827	45,320	1,130
Yearly	8.37	0.10		10,200		17.7	94.6	68,491	108,731	381,720	17,430

‡ Period October 1932-1967 † And other days

RIO GRANDE BELOW MAVERICK DAM NEAR QUEMADO, TEXAS

DESCRIPTION: Cableway, bubbler gage, control weir of 1,270 second-foot capacity, gravity well, and water-stage recorder located on the right bank at latitude 29° 03' 00", longitude 100° 40' 00", and river mile 523.4; 1.5 miles south-southeast of Jiménez, Coahuila, 1.8 river miles downstream from Río San Diego, about 7.5 miles north-northwest of Quemado, Maverick County, Texas, 12.8 river miles downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam, 31.3 river miles downstream from the international highway bridge between Del Rio, Texas and Cd. Acuña, Coahuila, and 724.8 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 769.00 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 42 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods prior to completion of the weir and for flows exceeding the capacity of the weir thereafter. Computations for flows within the capacity of the weir were based on a stable control weir rating curve defined by meter measurements. Records available: 1965 through 1967. Records, excluding some high flow periods, are also available from 1956 through May 1965 for a station 8.1 river miles upstream.

REMARKS: This station was placed in operation January 1, 1965 and replaces the station "Rio Grande below Maverick Dam near Del Rio, Texas" which stopped operating June 1, 1965. Irrigation diversions 14.0 river miles upstream largely control the flow at this station. A bubbler gage replaced the gravity well on May 1, 1966. The weir was placed in operation June 1, 1967 at which time a bubbler gage and gravity well were installed and the zero of the gage was set 3.28 feet higher.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	452	335	388	186	148	92.9	2,730	⋔ 307	148	3,780	675	526
2	484	335	371	160	141	92.9	6,820	212	139	2,260	675	583
3	494	332	332	261	134	78.8	7,170	167	18,200	⋔ 1,890	675	494
4	⋔ 459	289	332	247	134	62.9	2,260	388	1,830	1,760	614	466
5	434	284	325	318	216	62.9	⋔ 1,760	265	⋔ 1,150	1,700	614	509
6	424	519	311	265	190	101	1,580	745	2,190	1,530	646	480
7	424	558	⋔ 283	219	148	341	1,580	1,020	1,850	1,510	⋔ 675	526
8	417	509	280	194	159	148	1,150	⋔ 788	1,700	2,580	675	583
9	417	466	286	194	177	124	1,070	738	1,760	1,700	720	646
10	⋔ 424	441	282	194	184	720	848	470	2,080	⋔ 1,550	738	646
11	445	406	290	212	184	367	⋔ 809	385	2,570	1,510	706	554
12	445	364	287	194	⋔ 184	367	646	⋔ 11,300	⋔ 2,710	1,240	773	⋔ 509
13	445	265	310	237	168	⋔ 307	614	9,430	2,650	1,180	848	466
14	576	287	⋔ 302	249	91.8	212	629	939	2,570	1,180	⋔ 738	466
15	653	300	311	194	77.7	212	1,020	⋔ 512	7,350	2,770	689	466
16	671	300	296	177	91.8	254	480	413	⋔ 12,200	2,080	675	466
17	660	300	253	177	91.8	203	427	438	6,570	⋔ 2,990	675	438
18	⋔ 593	300	242	216	⋔ 77.7	139	⋔ 265	646	5,790	2,610	706	413
19	547	300	238	218	70.6	254	237	1,300	2,810	1,440	720	⋔ 388
20	512	351	242	184	49.4	1,320	325	1,020	2,420	1,290	773	388
21	477	364	⋔ 222	374	49.4	⋔ 911	11,200	597	2,220	1,110	⋔ 706	378
22	473	304	201	357	350	579	⋔ 7,450	⋔ 540	3,420	1,050	689	367
23	473	304	195	242	133	579	3,360	367	2,500	1,020	646	342
24	⋔ 445	⋔ 300	231	186	77.7	452	2,390	466	2,420	⋔ 961	629	342
25	445	283	310	177	70.6	466	⋔ 1,530	452	2,570	706	614	353
26	434	290	310	177	49.4	342	1,710	297	⋔ 2,500	706	614	⋔ 342
27	403	318	339	199	49.4	⋔ 766	791	353	2,560	706	629	342
28	353	⋔ 378	632	173	49.4	1,190	614	342	1,960	720	⋔ 600	342
29	353		604	159	56.5	4,100	494	⋔ 307	3,740	745	540	342
30	353		352	142	56.5	5,510	480	222	5,370	1,580	509	353
31	335		235		56.5		413	167		883		353
Sum	14,520	9,782	9,592	6,482	3,716.2	20,354.4	62,852	35,593	107,947	48,737	20,186	13,869

Month	Current Year 1967								Period 1965-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.	3.58	3.08	16	671	31	325	470	28,803	33,289	57,984	13,081
Feb.	3.51	2.92	† 7	622	13	258	349	19,400	22,703	41,460	7,249
Mar.	3.71	2.79	28	812	23	184	309	19,022	20,055	36,094	5,047
Apr.	3.38	2.69	21	494	† 29	141	216	12,858	48,724	107,207	12,858
May	4.40	2.62	22	530	† 20	49.4	120	7,373	44,594	71,084	7,373
June	3.81	.20	30	7,350	† 4	62.9	678	40,377	140,986	291,508	40,377
July	7.09	.39	21	18,300	20	158	2,030	124,703	65,477	124,703	19,048
Aug.	9.19	.36	13	26,400	31	139	1,150	70,684	100,377	182,733	47,715
Sept.	11.32	.36	3	34,700	2	139	3,600	214,203	322,616	680,385	73,261
Oct.	3.05	1.05	1	5,010	† 25	660	1,570	96,641	103,588	169,643	44,478
Nov.	1.28	.89	13	883	30	494	675	40,038	36,607	45,872	23,911
Dec.	1.12	.66	9	706	23	330	448	27,512	26,646	30,175	22,249
Yearly	11.32	0.20		34,700		49.4	968	701,614	965,662	1,440,472	701,614

⋔ Discharge measurement made on this day † And other days

RIO SAN RODRIGO NEAR MOUTH AT EL MORAL, COAHUILA

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank at El Moral, Coahuila, latitude 28°53'45", longitude 100°38'05", 0.6 river mile from the confluence with the Rio Grande, and about 15.5 miles northwest of Piedras Negras, Coahuila. The stream enters the Rio Grande at river mile 512.0, 19.5 river miles downstream from the Maverick County Water Control and Improvement District No. 1 diversion dam, 20.7 river miles upstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila, and 736.2 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 746.82 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 38 discharge measurements made at low and medium flows during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1962 through 1967.

REMARKS: This station, located 10.6 river miles downstream from the permanent station which was in operation from 1922 through May 1966, was originally installed on a provisional basis; however, it became the permanent station on June 1, 1966 when the operation of the upstream station was discontinued. The rating curve for this station is affected by backwater from the Rio Grande when its flow is approximately 10,000 second-feet. The flow of this spring-fed stream is modified by diversions above this station. A pilot channel was constructed in October 1963.

EXTREME FLOWS FROM RECORDS‡: Momentary: Max. 72,000 second-feet on June 17, 1961 determined by slope-area computations. Min. frequently no flow.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.5	⋔ 6.4	⋔ 5.7	2.9	0.4	0	0	0	0	367	91.8	67.1
2	8.5	7.1	5.7	3.5	⋔ .4	0	0	0	0	291	88.3	65.3
3	7.4	7.1	5.7	3.5	.4	0	0	0	4,340	⋔ 241	84.8	63.6
4	7.4	7.1	5.7	2.9	.4	0	0	0	⋔ 280	219	84.8	63.6
5	⋔ 7.4	7.1	5.7	2.9	.4	0	0	0	20.5	251	84.8	⋔ 63.6
6	7.4	7.1	3.5	3.5	.4	0	0	0	2.8	191	84.8	63.6
7	7.4	6.4	⋔ 3.5	3.5	.4	0	0	0	0	197	93.2	63.6
8	7.4	⋔ 6.4	5.7	2.9	.4	0	0	0	0	221	104	63.6
9	7.4	6.4	5.7	2.9	.4	0	0	0	0	185	109	63.6
10	7.4	6.4	5.7	2.9	.4	0	0	0	0	⋔ 127	102	60.0
11	⋔ 7.4	6.4	5.7	2.9	.4	0	0	0	0	104	102	60.0
12	7.1	6.4	5.7	2.9	.4	0	0	0	0	87.6	98.9	⋔ 60.0
13	7.1	6.4	5.7	1.8	.4	0	0	0	0	76.3	98.9	60.0
14	7.1	6.4	⋔ 5.7	1.8	.4	0	0	0	0	71.0	⋔ 97.1	61.8
15	7.1	6.4	4.6	1.8	.4	0	0	0	6,180	780	97.1	65.3
16	7.1	⋔ 7.1	4.6	1.8	.4	0	0	0	427	214	95.3	65.3
17	⋔ 7.1	7.1	4.6	1.8	.4	0	0	0	⋔ 999	⋔ 118	93.6	65.3
18	7.1	6.4	4.6	1.8	⋔ .4	0	0	0	⋔ 629	92.9	93.6	63.6
19	7.1	7.1	4.6	1.8	.4	0	0	0	⋔ 71.3	88.3	90.1	⋔ 60.0
20	7.1	6.4	3.5	1.4	.4	0	0	0	⋔ 45.6	81.2	88.3	56.5
21	7.1	6.4	⋔ 3.5	1.4	.4	0	0	0	⋔ 21.9	77.7	86.5	53.0
22	7.4	6.4	3.5	1.4	.4	0	0	0	⋔ 241	77.7	86.5	49.4
23	7.4	6.4	3.5	1.1	.4	0	0	0	⋔ 296	81.2	86.5	49.4
24	7.4	⋔ 6.4	3.5	1.1	.4	0	0	0	685	⋔ 81.2	84.8	49.4
25	⋔ 7.1	6.4	3.5	1.1	0	0	0	0	⋔ 1,650	81.2	84.8	49.4
26	7.1	6.4	3.5	1.1	0	0	0	13.1	⋔ 1,380	84.8	81.2	⋔ 49.4
27	7.1	6.4	3.5	1.1	0	0	0	0	1,070	84.8	81.2	49.4
28	7.1	6.4	⋔ 3.5	1.1	0	0	0	0	⋔ 826	84.8	⋔ 77.7	49.4
29	7.1		3.5	1.1	0	0	0	0	643	84.8	81.2	49.4
30	7.1		2.8	.7	0	0	0	0	494	91.8	77.7	49.4
31	7.1		2.8		0		0	0		98.9		53.0
Sum	226.5	184.8	139.0	62.4	9.6	0	0	13.1	20,302.1	4,932.2	2,710.5	1,806.0

Month	Current Year 1967								Period #1962-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.	0.62	0.59	† 1	8.5	† 12	7.1	7.4	448	834	2,255	0
Feb.	.62	.59	† 2	7.1	† 1	6.4	6.7	364	495	1,183	0
Mar.	.59	.52	† 1	5.7	29	1.8	4.6	276	311		0
Apr.	.69	.46	2	10.9	† 29	.7	2.1	122	1,392	4,248	122
May	.43		† 1	.4	† 1	0	.4	17.0	1,680		17.0
June				0		0	0	0	764	1,722	0
July				0		0	0	0	213	593	0
Aug.	1.54		26	70.6	† 1	0	.4	25.9	408	2,115	0
Sept.	13.25		15	32,700	† 1	0	678	40,276	8,268		0
Oct.	3.84	1.18	15	1,770	14	71.0	159	9,784	3,874	11,438	0
Nov.	1.44	1.21	9	109	† 28	77.7	90.4	5,379	2,084	6,147	0
Dec.	1.21	1.12	1	67.1	† 22	45.9	58.3	3,583	1,424	4,269	0
Yearly	13.25			32,700		0	83.3	60,274.9	21,747		3,850.7

⋔ Discharge measurement made on this day ‡ Period 1961-1967 # Some months missing
† And other days

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 located on the left bank of the Rio Grande at latitude 28° 49' 50", longitude 100° 33' 10", about 9 miles north-northwest of Eagle Pass, Texas, and about 32.2 canal miles downstream from the point of diversion. The return enters the Rio Grande at river mile 501.5 and 746.7 river miles downstream from 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 discharge in cubic feet per second based on hourly manometer readings, 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 flows made under stable flow conditions by hydrographers of this Commission. There were 48 discharge measurements made during the year. Records available: 1949 through 1967.

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 it has operated continuously except for 44 days in 1953 when shortage of water prevented operation and from June 30 through July 19, during flood of 1954, and while the canal was being repaired.

Average Flow in Second-Feet

Daily:	Max.	1,400	Sept. 20 & 21, 1966	Min.	0	Frequently 1953 & 1954
Monthly:	Max.	1,270	Sept. 1966	Min.	14.1	June 1953
Yearly:	Max.	1,020	1950 & 1961	Min.	443	1953 & 1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	918	⋔ 835	⋔ 792	1,030	734	421	713	585	⋔ 960	1,130	⋔ 986	933
2	922	848	739	1,020	667	526	726	584	950	1,130	974	937
3	920	800	726	976	⋔ 573	462	746	⋔ 582	1,260	⋔ 1,120	962	923
4	910	812	712	835	556	487	758	631	1,150	1,100	957	904
5	⋔ 898	844	722	⋔ 754	602	471	⋔ 737	618	1,150	1,090	963	⋔ 943
6	869	898	683	731	617	490	708	666	1,280	1,060	947	954
7	873	867	672	711	590	⋔ 604	716	699	⋔ 1,290	1,060	⋔ 983	973
8	886	⋔ 853	⋔ 682	688	514	567	736	671	1,300	1,090	1,030	962
9	915	835	682	676	423	499	729	653	1,300	1,030	1,060	968
10	918	845	683	676	⋔ 333	617	687	619	1,330	⋔ 1,010	1,070	977
11	924	855	681	716	306	649	673	⋔ 598	1,130	1,080	1,080	977
12	⋔ 918	871	676	⋔ 721	268	627	⋔ 674	636	1,110	966	1,090	953
13	914	817	659	763	285	600	630	775	⋔ 1,140	883	1,100	⋔ 930
14	929	790	607	767	356	⋔ 537	663	714	1,130	893	1,090	921
15	943	⋔ 784	544	661	319	520	701	655	1,250	1,030	⋔ 1,090	948
16	919	795	559	636	257	483	680	636	840	1,080	1,080	958
17	878	774	559	598	⋔ 225	480	622	⋔ 631	891	1,180	1,090	922
18	⋔ 869	780	564	660	203	556	597	672	857	⋔ 1,180	1,090	915
19	867	806	604	860	169	549	⋔ 567	775	1,030	1,190	1,090	938
20	871	812	581	⋔ 914	216	587	622	822	⋔ 1,060	1,130	1,090	⋔ 948
21	879	778	547	992	306	⋔ 632	799	810	1,060	1,050	1,080	961
22	879	742	⋔ 543	867	472	588	896	⋔ 772	1,050	975	1,050	974
23	879	⋔ 787	643	845	396	610	868	726	1,060	840	1,020	981
24	877	793	893	823	⋔ 246	605	797	751	1,050	780	1,010	981
25	909	757	952	761	193	632	770	819	1,080	⋔ 889	1,000	968
26	911	804	982	⋔ 757	179	609	⋔ 491	878	⋔ 1,100	926	1,000	961
27	901	812	1,010	801	180	565	435	884	1,110	904	986	898
28	877	818	1,040	728	269	⋔ 637	665	920	1,100	918	949	⋔ 872
29	874		⋔ 1,040	696	245	677	613	1,030	1,170	936	⋔ 926	862
30	872		1,030	725	204	693	643	998	1,150	951	924	913
31	828		1,010		263		607	970		991		923
Sum	27,747	22,812	22,817	23,388	11,166	16,980	21,269	22,780	33,338	31,592	30,767	29,178

Month	Current Year 1967								Period 1949-1967		
	Extreme Gage Feet		Ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.			15	943	31	828	895	55,036	53,966	72,800	34,400
Feb.			6	898	22	742	815	45,248	47,933	68,500	24,900
Mar.			†28	1,040	22	543	736	45,258	44,878	65,400	18,900
Apr.			1	1,030	17	598	780	46,390	38,425	58,600	6,080
May			1	734	19	169	360	22,148	46,515	69,188	2,280
June			30	693	1	421	566	33,680	43,910	68,900	841
July			22	896	27	435	686	42,187	40,637	63,000	2,880
Aug.			29	1,030	3	582	735	45,184	48,502	69,000	22,600
Sept.			10	1,330	16	840	1,110	66,126	53,940	75,591	18,500
Oct.			19	1,190	24	780	1,020	62,663	55,433	70,870	23,000
Nov.			13	1,100	30	924	1,030	61,026	52,474	67,400	27,300
Dec.			†23	981	29	862	941	57,875	55,184	71,908	34,300
Yearly				1,330		169	805	582,821	581,797	740,000	320,701

⋔ Discharge measurement made on this day † And other days Ø Mean daily

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

DESCRIPTION: Gage well and water-stage recorder located on the downstream side of a wooden pile bridge at latitude 28° 49' 50", longitude 100° 32' 40", about 1 mile downstream from the heading of this canal extension, about 9 miles north-northwest of Eagle Pass, Texas, and about 32.8 canal miles downstream from the point of diversion from the Rio Grande, which is located at river mile 537.4. The elevation of the zero of the gage has not been determined.

RECORDS: Based on 50 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1939 through 1967.

REMARKS: The main Maverick Canal divides into two branches at a point about 9 miles north-northwest of Eagle Pass, Texas, and about 31.8 canal miles downstream from 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 while the other branch forms this Maverick Canal Extension, which is used to transmit irrigation water. Irrigation from this canal extension began in June 1938. In 1967, 26,355 acres of land north and south of Eagle Pass were irrigated. A total of 155,690 acre-feet of water from this canal extension returned to the river through the irrigation system which extends approximately 67 canal miles downstream.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 580 second-feet on July 25, 1964. Min. occasionally no flow.

Average Flow in Second-Feet

Daily:	Max.	559	July 14, 1964	Min.	0	Occasionally
Monthly:	Max.	525	July 1964	Min.	18.7	March 1939
Yearly:	Max.	345	1964	Min.	62.1	1939

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	263	⇑ 291	⇑ 353	153	233	525	543	509	⇑ 177	181	⇑ 257	246
2	258	285	354	153	249	456	549	511	177	183	286	244
3	260	286	352	178	⇑ 295	453	550	⇑ 513	178	⇑ 183	284	245
4	264	287	349	273	300	450	525	514	175	183	286	244
5	⇑ 256	288	369	⇑ 356	322	451	⇑ 528	514	168	184	287	⇑ 226
6	281	293	380	357	316	455	527	521	166	184	289	206
7	294	315	377	356	330	⇑ 450	526	530	⇑ 164	183	⇑ 274	206
8	298	⇑ 325	⇑ 375	354	353	433	508	529	166	183	218	224
9	279	326	375	354	396	432	494	534	165	231	192	231
10	263	315	377	349	⇑ 469	448	495	535	165	⇑ 219	192	231
11	266	297	379	261	482	474	491	⇑ 534	246	144	192	232
12	⇑ 265	299	378	⇑ 263	476	472	⇑ 492	537	234	242	193	231
13	265	321	378	264	474	470	488	525	⇑ 209	283	193	⇑ 231
14	266	330	380	263	482	⇑ 487	489	513	207	283	193	230
15	268	⇑ 329	411	290	474	508	491	511	206	222	⇑ 193	218
16	310	330	411	310	479	511	494	510	205	165	193	210
17	328	339	410	309	⇑ 516	532	495	⇑ 511	204	168	193	216
18	⇑ 307	345	412	317	506	525	493	513	203	⇑ 169	192	249
19	306	348	415	⇑ 175	⇑ 547	521	⇑ 510	489	206	170	192	⇑ 230
20	309	348	410	⇑ 97.0	534	533	507	450	⇑ 206	170	191	208
21	310	348	414	138	521	⇑ 544	492	418	206	170	190	205
22	311	350	⇑ 413	281	527	545	482	⇑ 397	207	169	193	194
23	308	⇑ 348	379	259	523	535	471	401	184	247	218	186
24	313	346	201	239	⇑ 516	527	467	403	205	⇑ 299	223	185
25	297	348	155	239	514	538	467	354	166	305	236	184
26	283	353	153	⇑ 237	509	538	⇑ 441	285	⇑ 146	305	238	184
27	282	354	154	238	520	535	453	281	143	303	246	208
28	282	355	155	234	524	⇑ 536	481	252	142	303	246	⇑ 231
29	286		⇑ 153	234	521	537	494	174	170	303	⇑ 245	232
30	288		152	233	519	541	512	176	184	300	244	232
31	283		150		520		510	177		223		233
Sum	8,849	9,099	10,124	7,764.0	13,947	14,962	15,465	13,621	5,580	6,857	6,769	6,832

Month	Current Year 1967: Average Rainfall Inches ** 1939-1967	1967	Extreme Second-Feet High: Day	High	Low: Day	Low	Average Second-Feet	Total Acre-Feet	Period 1939-1967 Acre-Feet: Average	Maximum	Minimum
Jan.	0.80	0.01	16	336	3	253	285	17,552	12,453	19,800	2,140
Feb.	.96	.32	13	423	3	273	325	18,048	11,729	18,200	2,120
Mar.	.73	2.83	16	425	31	147	327	20,081	14,803	23,310	1,150
Apr.	1.83	2.70	19	406	20	95.6	259	15,400	14,516	24,802	3,430
May	3.00	.40	19	555	1	228	450	27,664	12,738	27,664	2,840
June	1.69	1.16	†20	550	8	427	499	29,677	15,419	29,677	3,750
July	1.36	.79	3	560	27	404	499	30,675	17,485	32,276	4,510
Aug.	1.96	1.77	9	551	29	ø174	439	27,017	15,721	29,812	3,480
Sept.	2.97	4.62	11	287	23	93.4	186	11,068	12,471	22,640	4,600
Oct.	1.93	1.81	30	332	11	81.6	221	13,601	13,356	21,800	5,130
Nov.	.64	.86	† 6	292	22	186	226	13,426	13,065	20,117	4,170
Dec.	.70	.61	5	258	†22	182	220	13,551	13,130	20,200	4,280
Yearly	18.57	17.88		560		81.6	328	237,760	166,886	250,801	44,950

⇑ Discharge measurement made on this day † And other days ø Mean daily

** On United States side from Maverick Power Plant to Cuervo Creek

RETURN FLOW TO THE RIO GRANDE FROM MAVERICK CANAL
MAVERICK DAM TO EAGLE PASS, TEXAS

DESCRIPTION: Part of the water diverted from the Rio Grande into the Maverick Canal is returned to the river through various drains and spillways of the irrigation system located between Maverick Diversion Dam and Eagle Pass, Texas. These return flows are measured at gaging stations consisting of sharp-crested Cipolletti weirs or control structures equipped with continuous water-stage recorders located at Lateral 2 Spill, Cañon Grande, Quemado Creek, Lateral 15 Spill, Hardt Spill, Houchin Spill, Elm Creek, and Seco Creek; and a Parshall flume at the Lateral 2 Sand Trap Spill into Las Moras Creek immediately below the canal siphon.

RECORDS: Based on the weir discharge table and a continuous record of gage heights. All storm flow occurring at these stations is deducted from the records and is not shown below. Records available: April 1959 through 1967.

REMARKS: In addition to the flows listed below, water from the Maverick Canal is returned to the Rio Grande in this reach at the Maverick Power Plant (see page 52).

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	128	130	96.1	90.1	114	150	181	168	128	77.1	132	151
2	119	122	113	102	106	146	185	151	124	75.9	139	143
3	125	126	110	94.5	117	152	178	165	122	91.2	125	138
4	115	135	118	99.1	133	152	164	153	101	93.6	131	151
5	123	141	123	108	134	158	174	169	86.8	97.3	131	156
6	131	149	118	105	133	161	180	175	84.8	91.4	135	153
7	129	139	118	118	135	156	178	161	84.9	93.0	142	150
8	121	119	118	120	132	160	167	145	90.8	94.0	138	157
9	121	123	127	127	128	146	169	146	89.7	92.0	133	160
10	110	133	119	122	129	156	146	137	88.5	88.7	128	140
11	103	125	124	131	143	152	133	152	96.1	88.5	117	119
12	113	112	142	149	143	145	114	174	102	89.8	110	143
13	122	103	130	147	170	145	127	178	115	88.9	105	142
14	113	115	141	135	190	150	142	162	112	75.3	102	139
15	120	121	126	140	162	160	147	164	111	92.6	99.3	148
16	132	125	129	157	149	172	146	144	84.7	99.8	91.5	146
17	125	129	138	138	155	164	158	155	104	100	93.8	139
18	121	129	128	144	169	156	149	171	110	95.0	104	132
19	124	121	143	144	159	161	165	189	103	96.6	109	131
20	117	110	131	138	151	160	176	168	101	96.6	109	137
21	116	104	124	127	134	156	133	166	92.1	94.9	108	123
22	119	107	129	120	127	165	116	165	105	98.6	129	113
23	125	120	138	124	124	151	129	154	101	99.6	122	120
24	120	117	130	119	138	156	134	143	95.3	106	125	128
25	112	112	105	116	134	156	126	145	90.8	104	133	134
26	121	100	90.7	105	164	150	122	164	85.2	111	141	133
27	106	110	94.7	113	160	145	126	163	82.1	118	138	124
28	121	96.7	90.0	109	159	164	134	146	81.9	123	151	130
29	129		93.0	115	153	157	144	137	79.2	128	147	135
30	123		92.5	114	145	146	165	134	77.0	133	143	145
31	124		90.3		135		160	129		126		146
Sum	3,728	3,373.7	3,669.3	3,670.7	4,425	4,648	4,668	4,873	2,928.9	3,059.4	3,711.6	4,306

Current Year 1967									Period Apr. 1959-1967		
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.			16	132	11	103	120	7,394	7,882	13,430	5,860
Feb.			6	149	28	96.7	120	6,692	6,455	7,652	4,830
Mar.			19	143	28	90.0	118	7,278	7,432	8,952	6,680
Apr.			16	157	1	90.1	122	7,281	7,181	7,700	6,514
May			14	190	2	106	143	8,777	7,007	8,777	6,116
June			16	172	† 12	145	155	9,219	7,618	9,219	5,484
July			2	185	12	114	151	9,259	8,330	9,858	6,830
Aug.			19	189	31	129	157	9,666	8,087	9,666	6,262
Sept.			1	128	30	77.0	97.6	5,809	7,210	9,477	5,809
Oct.			30	133	14	75.3	98.7	6,068	7,128	8,583	4,144
Nov.			28	151	16	91.5	124	7,362	7,218	8,509	5,630
Dec.			9	160	22	113	139	8,541	7,515	8,821	6,699
Yearly				190		75.3	129	93,346	89,063	104,997	80,730

∅ Mean daily † And other days

RIO GRANDE AT EAGLE PASS, TEXAS

DESCRIPTION: Cableway, gravity well, water-stage recorder, and resistance-type transmitter located on the left bank at latitude 29° 42' 50", longitude 100° 30' 25", and river mile 491.8; 0.5 river mile upstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila, 73.4 river miles downstream from Amistad Dam, and 756.4 river miles downstream from 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 78 discharge measurements during the year, 45 by the Mexican Section and 33 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: May 1900 through March 1914; August 1914 through 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 1924 through 1967.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The transmitter is coupled, via leased telephone circuits, to a receiver located in the office of the Eagle Pass and Piedras Negras Bridge Company from where the Wheatstone bridge circuit can be balanced to indicate the existing gage height. This system is operated in cooperation with the United States Weather Bureau.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 964,000 second-feet, determined by slope-area calculations, on 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. Min. 24.4 second-feet on June 22, 1953 with a gage height of 0.07 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 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,540	1,320	1,200	1,310	904	593	3,230	1,060	1,310	5,790	1,980	1,640
2	♯1,560	♯1,290	1,140	1,280	♯855	1,040	5,330	♯957	1,270	♯4,200	1,860	1,710
3	1,580	1,260	1,120	1,260	759	689	8,830	893	16,600	3,520	1,800	1,590
4	1,550	1,240	1,130	♯1,090	766	689	♯4,700	929	8,510	3,130	1,800	♯1,530
5	1,530	1,250	1,150	996	788	667	2,800	1,120	3,030	3,340	1,730	1,540
6	♯1,500	♯1,370	1,130	1,010	872	♯696	2,380	1,010	3,080	2,930	♯1,780	♯1,580
7	1,500	1,620	♯1,120	968	830	868	2,340	1,890	♯3,600	2,790	1,880	1,590
8	1,510	♯1,510	1,040	915	749	1,010	1,980	1,590	3,100	3,330	♯1,980	1,710
9	♯1,500	1,450	1,060	883	657	798	1,860	1,650	3,080	♯3,350	1,990	1,730
10	1,520	1,420	1,060	883	♯590	1,040	♯1,600	♯1,360	3,220	2,790	2,050	1,800
11	♯1,510	1,420	1,060	♯950	576	1,340	1,450	1,200	♯3,780	♯2,800	2,010	♯1,690
12	1,520	1,350	1,070	957	558	♯1,130	♯1,430	3,850	♯4,060	2,460	1,980	♯1,620
13	1,520	1,270	♯1,070	989	526	1,090	1,270	16,800	4,060	2,230	♯2,120	1,550
14	1,590	1,210	♯1,070	1,030	607	♯936	1,300	♯2,600	4,030	2,220	2,110	1,500
15	1,850	1,220	982	939	♯597	858	1,560	1,640	15,400	4,380	1,970	1,540
16	♯1,880	1,230	996	879	♯533	876	1,430	1,310	17,700	♯4,410	1,920	1,550
17	1,770	1,210	964	848	477	869	♯1,040	1,180	9,040	♯3,230	1,940	1,480
18	1,680	1,210	953	♯985	512	855	♯1,050	1,420	♯9,150	4,700	1,980	♯1,460
19	1,590	1,410	982	1,840	452	826	975	1,750	4,840	3,210	♯1,980	♯1,490
20	1,560	1,250	982	1,170	480	♯1,240	1,140	2,270	3,850	2,630	2,050	1,510
21	1,530	1,250	♯932	1,180	519	2,020	6,360	1,720	♯3,670	2,440	2,020	1,500
22	1,510	1,200	901	1,210	660	1,380	12,700	1,570	4,590	2,300	1,910	1,480
23	♯1,500	1,200	1,140	1,180	893	1,240	4,450	♯1,440	4,380	♯2,140	1,800	1,480
24	1,490	1,180	1,500	1,090	♯565	1,300	♯4,030	1,280	3,960	♯2,070	1,800	1,480
25	1,480	1,150	1,350	♯1,010	463	1,130	2,720	1,570	5,330	1,960	1,770	1,480
26	1,480	1,150	1,350	982	424	1,160	♯2,160	1,510	5,190	1,900	1,770	1,480
27	1,470	♯1,200	1,360	985	434	935	1,750	1,400	♯5,260	1,890	♯1,770	♯1,410
28	1,420	♯1,210	♯1,420	982	501	♯1,840	1,500	1,500	4,590	1,910	1,770	♯1,360
29	1,420		♯1,850	922	509	2,590	1,320	1,570	4,480	1,940	1,720	1,360
30	♯1,400		1,560	925	♯445	♯7,130	1,300	1,480	6,780	2,390	1,660	1,400
31	1,360		1,400		473		♯1,210	♯1,380		♯2,510		1,450
Sum	47,820	36,050	36,042	31,648	18,974	38,835	87,195	62,899	170,940	90,890	56,900	47,690

Month	Current Year 1967: 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 1948-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	3.28	2.79	15	1,910	31	1,320	1,540	94,834	98,799	199,100	42,690
Feb.	3.12	2.49	7	1,660	13	971	1,290	71,531	102,765	398,200	33,320
Mar.	3.31	2.36	29	1,960	22	848	1,160	71,516	83,269	211,100	26,970
Apr.	4.10	2.33	19	3,440	17	777	1,060	62,802	105,145	414,600	14,770
May	2.69	1.54	23	1,110	26	385	611	37,636	168,527	1,108,000	8,430
June	6.00	1.61	30	8,120	1	410	1,300	77,064	352,990	2,794,000	4,530
July	9.09	2.36	22	17,600	19	795	2,810	172,914	180,741	629,800	17,380
Aug.	11.42	2.43	13	24,600	3	848	2,030	124,750	161,277	519,100	35,730
Sept.	13.52	2.76	15	34,100	2	1,240	5,690	339,166	342,175	1,736,025	27,050
Oct.	5.77	3.22	15	6,990	†27	1,870	2,930	180,297	267,013	1,768,000	31,560
Nov.	3.41	3.08	†13	2,150	30	1,530	1,900	112,857	122,313	451,200	35,630
Dec.	3.22	2.89	10	1,840	29	1,330	1,540	94,590	103,007	245,100	41,000
Yearly	13.52	1.54		34,100		385	1,990	1,439,957	2,088,021	4,518,490	631,520

‡ Period 1924-1967 ♯ Discharge measurement made on this day † And other days

RIO ESCONDIDO AT VILLA DE FUENTE, COAHUILA

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the downstream side of the left abutment of the highway bridge over Río Escondido on the outskirts of Villa de Fuente, Coahuila, 1.2 river miles downstream from the cableway, at latitude 28° 40' 10", longitude 100° 32' 50", about 3 miles southwest of Piedras Negras, Coahuila, 3.7 river miles from the confluence with the Rio Grande, and 6.8 river miles downstream from the confluence of Río San Antonio with Río Escondido. Río Escondido enters the Rio Grande at river mile 488.2, 3.1 river miles downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila, and 760.0 river miles downstream from 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 36 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: 1922 through 1967. Records from 1922 through 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. Prior to November 1954, the gage well was located at the present cableway site. The weir was destroyed by a flood on September 24, 1964.

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.	13,100	Sept. 24, 1964	Min.	0	Several days 1956, 1957 & 1958
Monthly:	Max.	827	Sept. 1964	Min.	0.6	August & September 1957
Yearly:	Max.	115	1958	Min.	2.4	1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	7.0	4.9	3.5	4.6	3.9	122	1.8	0.4	2.8	2.8	1.8	1.8
2	⋔ 11.7	4.9	3.5	4.6	3.5	89.7	1.8	.4	2.8	⋔ 2.8	1.8	1.8
3	11.7	4.9	3.5	4.6	3.5	5.3	1.8	.4	7.4	2.8	1.8	1.8
4	11.7	4.9	3.5	4.6	⋔ 3.5	3.1	⋔ 1.8	.4	8.1	4.2	1.8	⋔ 1.8
5	11.7	4.9	3.5	4.6	3.5	3.1	1.8	.4	4.2	3.2	1.8	1.8
6	11.7	⋔ 4.9	⋔ 3.5	4.6	3.5	3.1	1.8	.4	3.2	1.8	⋔ 1.8	1.4
7	11.7	4.9	3.5	3.5	3.5	3.1	1.8	⋔ .4	⋔ 7.1	1.8	1.8	1.4
8	11.7	4.9	3.5	3.5	3.5	3.1	1.8	.4	3.2	1.8	1.8	1.4
9	⋔ 11.7	4.9	3.5	3.5	3.5	3.1	1.8	.4	3.2	⋔ 1.8	1.8	1.8
10	11.7	4.9	3.5	3.5	3.5	3.1	⋔ 1.1	.4	2.8	1.8	1.8	1.8
11	11.7	4.9	3.5	4.9	3.5	⋔ 2.8	.7	.4	⋔ 2.8	1.8	1.8	1.8
12	11.7	4.9	3.5	7.1	3.5	⋔ 2.8	.7	.4	2.8	1.8	1.8	⋔ 1.8
13	11.7	4.9	⋔ 3.5	⋔ 7.1	3.5	2.8	.7	.4	4.2	1.8	⋔ 1.8	1.8
14	11.7	4.9	3.5	8.1	3.5	2.8	.7	.4	3.2	1.8	1.8	1.8
15	11.7	4.9	3.5	8.1	⋔ 3.2	2.8	.7	.4	3.9	32.1	1.8	1.8
16	⋔ 11.7	4.9	3.5	4.6	3.2	2.8	.7	.4	11.3	⋔ 4.9	1.1	2.1
17	11.7	4.9	3.5	4.6	3.2	2.8	⋔ .4	.4	6.4	4.9	1.1	2.1
18	11.7	4.9	3.5	4.6	3.2	2.8	.4	.4	3.5	3.5	1.1	⋔ 2.1
19	11.7	4.9	3.5	53.0	3.2	2.8	.4	.4	3.5	2.8	1.1	2.1
20	11.7	4.9	⋔ 3.5	8.8	3.2	2.1	1.8	.4	3.5	2.8	1.1	2.1
21	8.8	4.9	3.5	4.6	3.2	2.1	1.1	.4	3.5	2.8	1.1	2.1
22	3.5	4.9	3.5	4.6	3.2	2.1	.7	.4	8.5	2.8	1.1	2.8
23	⋔ 3.5	⋔ 4.9	4.6	3.5	3.2	2.1	.4	.4	10.6	⋔ 2.8	1.1	2.8
24	3.5	4.9	8.8	3.5	3.2	2.1	⋔ .4	1.8	13.4	1.8	1.1	2.8
25	3.5	4.9	7.1	3.5	3.2	2.1	.4	2.5	10.2	1.8	1.1	2.8
26	3.5	3.5	5.7	3.5	3.2	2.6	.4	2.5	5.3	1.8	1.1	2.8
27	3.5	⋔ 3.5	5.7	3.5	3.2	1.8	.4	2.1	4.2	1.8	⋔ 1.1	2.8
28	3.2	3.5	5.7	3.5	3.2	1.8	.4	1.8	5.3	1.8	1.1	⋔ 2.8
29	3.2		4.6	3.5	3.2	1.8	.4	2.5	4.6	1.8	1.8	2.8
30	⋔ 3.2		4.6	3.5	⋔ 3.2	1.8	.4	2.5	4.6	3.5	1.8	2.8
31	3.2		4.6		3.2		⋔ .4	⋔ 2.5		3.5		2.8
Sum	271.9	133.0	128.4	189.7	103.8	286.3	29.9	27.4	160.1	109.2	44.9	66.4

Month	Current Year 1967: Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1933-1967: Acre-Feet Average	Maximum	Minimum
Jan.	0	-0.30	2	17.7	†28	3.2	8.8	538	1,953	15,990	43.8
Feb.	- .30	- .33	† 1	4.9	†26	3.5	4.9	266	1,364	9,990	38.9
Mar.	.20	- .33	24	23.0	† 1	3.5	4.2	255	1,198	6,910	92.4
Apr.	1.15	- .36	19	135	11	2.5	6.4	377	1,946	21,950	81.1
May	- .33	- .39	1	3.9	†15	3.2	3.2	206	3,890	25,470	154
June	3.90	- .49	1	1,310	†27	1.8	9.5	568	2,394	19,730	60.3
July	- .36	-1.05	19	2.8	†23	.4	1.1	57.6	1,682	9,740	57.6
Aug.	- .39	-1.08	24	2.8	† 1	.4	.7	51.9	1,895	20,830	34.9
Sept.	.85	- .46	22	53.0	† 1	2.8	5.3	318	4,037	49,182	17.8
Oct.	1.71	- .43	15	244	† 6	1.8	3.5	216	2,435	20,530	43.8
Nov.	- .39	- .46	†29	2.8	†16	1.1	1.4	86.7	1,630	25,730	43.8
Dec.	- .36	- .46	†22	2.8	† 6	1.4	2.1	131	1,417	3,580	67.3
Yearly	3.90	-1.08		1,310		0.4	4.2	3,071.2	25,841	83,164	1,755.3

⋔ Discharge measurement made on this day ‡ Period 1932-1967 † And other days

RETURN FLOW TO THE RIO GRANDE FROM MAVERICK CANAL EAGLE PASS TO SAN ANTONIO CROSSING

DESCRIPTION: Part of the water diverted from the Rio Grande into the Maverick Canal is returned to the river through various drains and spillways of the irrigation system located between Eagle Pass, Texas and the San Antonio Crossing Gaging Station. These return flows are measured at gaging stations consisting of sharp-crested Cipolletti weirs or control structures equipped with continuous water-stage recorders located at Lateral 40 Spill, Lateral 40 D Spill, Caffon Diablo, Lateral 50 Lowline No. 1, Lateral 50 Spill, Lateral 50 Lowline No. 2, Rosita Creek, Lateral 60 K Spill, Sauz Creek, Lateral 70 Spill No. 1, Lateral 70 Spill No. 2, Indio Creek, Gravel Spill, Lateral 71 Spill, and Cuervo Creek.

RECORDS: Based on the weir discharge table, stable station control rating tables, and a continuous record of gage heights. All storm flow occurring at these stations is deducted from the records and is not shown below. Records available: April 1959 through 1967.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	200	218	230	126	178	218	254	220	136	144	180	169
2	198	181	232	113	146	268	285	208	144	161	144	152
3	197	188	202	123	142	269	312	180	170	172	166	154
4	180	187	205	128	174	278	280	190	170	167	178	179
5	174	220	231	132	192	285	280	190	165	178	194	182
6	182	223	218	185	206	274	279	250	162	171	185	164
7	162	198	190	241	220	265	277	241	139	172	168	140
8	196	194	190	213	214	249	264	206	135	166	184	144
9	231	201	200	222	193	239	304	201	142	157	196	134
10	203	205	206	226	186	241	269	202	145	140	172	138
11	182	201	219	218	217	255	261	212	137	181	172	138
12	182	198	241	228	232	266	243	216	153	174	161	137
13	183	201	225	192	226	241	214	249	176	152	158	142
14	194	200	203	171	226	230	201	282	143	193	166	145
15	186	203	192	171	218	210	197	222	147	218	169	154
16	186	202	173	184	210	212	225	222	151	196	160	164
17	187	184	199	203	213	214	231	241	171	181	160	190
18	197	176	219	224	216	228	210	268	178	154	147	174
19	198	217	246	206	224	242	211	305	164	144	148	172
20	207	237	273	154	250	222	216	303	191	140	145	169
21	225	212	245	99.0	307	223	229	292	187	131	142	154
22	226	206	252	97.5	305	202	282	253	189	130	135	128
23	243	173	266	166	258	198	306	244	200	132	126	133
24	235	199	314	225	260	210	278	240	193	130	115	142
25	225	218	267	228	270	254	236	242	175	163	144	142
26	220	269	179	209	268	258	230	242	177	202	165	138
27	207	250	162	198	248	256	184	240	155	216	170	129
28	204	237	144	202	236	267	156	221	156	226	179	124
29	213		98.2	207	282	250	217	217	138	222	187	117
30	224		140	197	269	251	271	177	139	195	171	150
31	222		134		235		271	155		200		182
Sum	5,798		5,488.5		7,275		7,131		5,308			4,680
	6,269		6,495.2		7,021		7,673		4,828		4,887	

Month	Current Year 1967								Period Apr. 1959-1967		
	Extreme Gage Feet		∅ Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.			23	243	7	162	202	12,435	10,360	12,435	7,079
Feb.			26	269	23	173	207	11,500	10,236	13,117	6,000
Mar.			24	314	29	98.2	210	12,883	11,897	13,498	9,300
Apr.			7	241	22	97.5	183	10,886	11,181	13,030	9,380
May			21	307	3	142	226	13,926	10,465	13,926	6,205
June			5	285	23	198	242	14,430	11,528	14,430	8,900
July			3	312	28	156	248	15,219	12,554	15,219	9,940
Aug.			19	305	31	155	230	14,144	12,026	14,299	8,390
Sept.			23	200	8	135	161	9,576	10,406	13,974	6,595
Oct.			28	226	† 22	130	171	10,528	10,509	12,248	8,460
Nov.			9	196	24	115	163	9,693	10,243	11,843	7,650
Dec.			17	190	29	117	151	9,283	10,208	12,157	6,464
Yearly				314		97.5	200	144,503	131,613	149,031	112,110

∅ Mean daily † And other days

RIO GRANDE AT SAN ANTONIO CROSSING NEAR EL INDIO, TEXAS

DESCRIPTION: Cableway, bubbler gage, concrete control weir, and water-stage recorders (graphic and digital) located on the left bank at latitude 28°20'40", longitude 100°18'35", and river mile 455.8; 0.5 river mile downstream from Cuervo Creek, which marks the lower end of the Maverick County Water Control and Improvement District No. 1, 1.9 river miles upstream from Tovar Creek, 5 miles northeast of Villa Guerrero, Coahuila, about 11.5 miles south of El Indio, Texas, 35.5 river miles downstream from the international highway bridge between Eagle Pass, Texas and Piedras Negras, Coahuila, and 792.4 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 580.00 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 57 discharge measurements during the year and a continuous record of gage heights. Computations for high flows by shifting control methods. Low and medium flow computations based on a stable control weir rating curve defined by meter measurements. Records available: March, April, May, October, November, and December 1952 with some days missing; January through August 20, 1953; September 23, 1953 through June 14, 1954; and May 27, 1955 through 1967 with some days missing prior to September 1955.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. 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. The lowest recorded flow was 54.4 second-feet on June 24, 1953 with an elevation of 581.96 feet at a station 1,700 feet upstream from the present site. On April 2, 1966, a concrete channel control weir was finished and placed in operation. Prior to this date, the gage was located 600 feet upstream from the present location with the zero of the gage 1.61 feet higher than the zero of the present gage. The cableway was installed in March 1967.

EXTREME FLOWS FROM RECORDS‡: Momentary: Max. 250,000 second-feet on September 25, 1964, determined by slope-area computations, with a gage height of 26.03 feet. Min. 262 second-feet on several days in August 1956 with a gage height of 0.38 foot.

Average Flow in Second-Feet ‡

Daily:	Max.	185,000	Sept. 25, 1964	Min.	299	July 20 & Aug. 2-4, 1956
Monthly:	Max.	31,700	Sept. 1964	Min.	445	July 1956
Yearly:	Max.	6,130	1958	Min.	1,040	1956

Mean Daily Discharge in Second Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,600	1,580	1,420	1,600	1,150	755	5,190	1,350	1,410	6,440	2,330	1,850
2	1,670	1,540	1,400	1,500	♯ 1,130	1,760	3,550	♯ 1,240	1,370	5,070	2,040	1,850
3	1,710	1,500	1,320	1,480	1,060	1,310	8,960	1,110	5,570	♯ 3,990	2,060	1,880
4	♯ 1,730	1,480	1,280	♯ 1,420	987	1,090	♯ 5,620	1,090	16,800	3,630	2,010	1,850
5	1,710	1,480	1,300	1,260	1,000	1,060	2,740	1,200	3,930	3,780	2,010	♯ 1,830
6	1,690	1,580	1,320	1,240	1,080	♯ 944	2,390	1,270	♯ 2,930	3,210	1,990	1,880
7	1,600	♯1,670	♯1,280	1,300	1,150	929	2,240	1,550	3,830	3,050	♯2,060	1,850
8	1,620	1,730	1,260	1,220	1,110	1,110	1,950	1,920	3,240	2,900	2,190	1,930
9	1,690	1,640	1,220	1,160	♯ 971	1,090	2,010	♯ 1,700	3,120	4,190	2,220	1,980
10	♯ 1,690	1,620	1,240	1,220	841	961	1,950	1,630	3,120	♯ 2,900	2,220	2,000
11	1,670	1,580	1,220	♯ 1,340	784	1,380	♯ 1,710	1,360	3,530	3,050	2,190	2,050
12	1,670	1,560	1,240	1,160	758	1,400	1,640	1,440	♯ 3,990	2,750	2,190	♯ 1,900
13	1,670	1,560	1,260	1,130	730	♯ 1,270	1,520	14,400	4,310	2,380	2,220	1,850
14	1,710	♯1,370	1,200	1,060	690	1,250	1,420	♯ 4,300	4,190	2,350	♯2,300	1,810
15	1,770	1,370	1,200	1,090	771	1,090	1,420	1,980	6,600	3,770	2,190	1,850
16	2,030	1,350	1,220	1,040	♯ 771	1,010	1,800	1,550	21,400	5,710	2,090	1,900
17	♯ 2,050	1,350	1,280	1,060	730	1,040	1,410	1,360	11,000	♯ 3,310	2,090	1,900
18	1,940	1,300	1,300	♯ 1,080	666	1,040	♯ 1,220	1,360	9,740	4,940	2,110	1,780
19	1,870	1,340	1,320	4,320	690	1,060	1,190	1,720	♯ 6,140	3,880	2,110	♯ 1,780
20	1,770	1,420	1,300	2,120	841	♯ 1,040	1,260	2,240	4,360	2,870	2,140	1,810
21	1,730	♯1,400	♯1,180	1,480	857	1,870	2,150	2,100	4,090	2,600	2,170	1,810
22	1,710	1,350	1,130	1,320	825	1,750	♯ 13,400	♯ 1,700	4,530	2,380	♯2,060	1,740
23	1,710	1,280	1,200	1,320	♯ 1,110	1,460	5,470	1,650	5,420	2,270	1,990	1,760
24	♯ 1,710	1,300	3,200	1,300	1,020	1,420	4,490	1,460	4,250	♯ 2,090	1,910	1,740
25	1,690	1,320	1,820	♯ 1,270	771	1,460	♯ 3,030	1,510	5,320	2,040	1,910	1,780
26	1,710	1,340	1,640	1,250	678	1,440	2,440	1,850	♯ 5,570	2,040	1,910	1,760
27	1,710	1,400	1,580	1,230	606	♯ 1,310	2,170	1,610	5,570	2,040	1,910	1,690
28	1,670	♯1,420	♯1,600	1,210	690	1,410	1,640	1,570	5,570	2,090	♯1,890	♯ 1,580
29	1,580		1,820	1,190	758	1,940	1,600	1,670	4,090	2,110	1,860	1,560
30	1,580		1,980	1,170	758	♯ 6,090	1,500	♯ 1,610	6,240	2,330	1,820	1,600
31	♯ 1,540		1,770		♯ 704		1,520	1,480		♯ 2,990		1,670
Sum	53,200	40,830	44,500	41,540	26,687	42,739	90,600	63,980	171,230	99,150	62,190	56,220

Month	Current Year 1967: 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 1956-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.			17	∅ 2,050	31	∅ 1,540	1,720	105,522	120,532	219,000	63,200
Feb.	6.50	6.24	† 7	1,770	23	1,240	1,460	80,986	107,092	174,000	72,600
Mar.	7.32	6.16	24	4,390	† 22	1,090	1,440	88,266	94,654	152,000	60,600
Apr.	7.74	6.12	19	7,170	† 16	1,020	1,380	82,395	124,654	433,000	42,600
May	6.30	5.81	23	1,350	27	582	861	52,934	205,737	1,054,000	50,500
June	7.93	5.91	30	7,630	1	666	1,420	84,773	225,880	737,000	35,300
July	8.40	6.25	22	17,500	20	1,150	2,920	179,705	146,013	312,000	27,400
Aug.	8.75	6.21	13	20,100	4	1,080	2,060	126,904	144,994	274,000	44,200
Sept.	9.80	6.38	4	32,000	† 2	1,370	5,710	339,635	440,997	1,888,661	81,200
Oct.	7.81	6.65	15	6,910	25	1,990	3,200	196,664	351,641	1,741,000	128,967
Nov.	6.86	6.58	1	2,550	† 29	1,820	2,070	123,354	152,264	454,000	59,000
Dec.	6.67	6.45	11	2,080	† 28	1,560	1,810	111,512	129,332	263,000	60,800
Yearly	9.80	5.81		32,000		582	2,170	1,572,650	2,243,790	4,441,400	756,800

‡ Period 1956-1967 ♯ Discharge measurement made on this day ∅ Mean daily † And other days

RIO GRANDE AT PALAFOX NEAR LAREDO, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the right bank on the outskirts of Palafox, Webb County, Texas and Villa Hidalgo, Coahuila at latitude 27° 47' 55", longitude 99° 52' 40", and river mile 403.0; 1.9 river miles downstream from Arroyo Agua Verde in Mexico, 13.1 river miles upstream from Santo Tomas Creek in United States, 44.7 river miles upstream from the international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas, and 845.2 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 436.02 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 46 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. High flows prior to early 1962 were computed from a rating curve developed after the cableway was installed. Records available: August 1959 through 1967.

REMARKS: Reservoirs, diversions, and drainage returns modify the river flow at this station. The recorder was installed on August 5, 1959 and the cableway in early 1962.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,700	1,540	1,480	1,700	1,090	660	4,700	⋔ 1,480	1,620	7,030	⋔ 2,740	1,810
2	1,710	1,520	1,480	1,540	1,060	1,820	3,360	1,330	1,480	6,000	2,260	1,800
3	1,780	1,450	1,470	1,450	989	2,790	5,080	1,240	1,650	4,380	2,070	1,780
4	⋔ 1,800	1,440	1,380	⋔ 1,470	⋔ 943	1,370	⋔ 8,670	1,100	15,700	3,810	2,050	1,800
5	1,750	1,410	1,360	1,320	908	1,030	3,950	1,070	10,100	3,640	2,050	⋔ 1,800
6	1,710	1,620	1,370	1,170	939	⋔ 1,010	2,880	1,220	3,210	3,570	2,030	1,790
7	1,700	1,520	1,340	1,200	996	953	2,490	1,250	⋔ 3,160	3,110	2,050	1,800
8	1,620	⋔ 1,770	⋔ 1,320	1,220	1,040	961	2,400	⋔ 1,790	3,510	2,940	2,170	1,780
9	1,680	1,750	1,280	1,150	⋔ 989	1,170	2,220	1,910	3,160	3,220	2,240	1,810
10	1,710	1,700	1,260	1,110	865	1,080	2,070	1,790	3,110	⋔ 3,530	2,260	1,810
11	1,700	1,660	1,290	2,280	777	953	⋔ 1,894	1,980	3,210	2,890	2,260	1,830
12	⋔ 1,680	1,580	1,260	⋔ 1,570	731	1,470	1,620	1,390	⋔ 3,570	2,990	2,250	⋔ 1,830
13	1,700	1,550	1,270	2,580	713	⋔ 1,380	1,600	4,590	3,810	2,670	2,220	1,800
14	1,700	⋔ 1,540	⋔ 1,290	1,590	692	1,260	1,500	12,500	3,960	2,460	2,260	1,780
15	1,710	1,360	1,240	1,280	653	1,220	1,360	⋔ 3,040	3,850	2,510	2,280	1,770
16	2,000	1,380	1,170	1,240	⋔ 724	1,040	1,360	2,050	17,200	5,090	2,210	1,770
17	⋔ 2,100	1,380	1,060	1,070	706	989	1,810	2,960	16,000	⋔ 4,590	2,150	1,800
18	2,010	1,380	1,120	⋔ 1,270	660	1,020	⋔ 1,310	5,160	8,970	3,600	2,160	1,780
19	1,940	1,330	1,100	3,780	643	1,010	1,150	1,780	8,400	4,800	2,150	⋔ 1,750
20	1,870	1,390	1,150	3,530	1,600	⋔ 1,030	1,100	2,120	5,010	3,390	2,150	1,750
21	1,800	⋔ 1,450	1,240	1,800	1,380	1,010	1,190	2,670	4,030	2,780	2,190	1,760
22	1,780	1,410	⋔ 1,170	1,400	943	2,140	6,360	2,180	13,300	2,600	⋔ 2,210	1,740
23	1,780	1,380	1,210	1,360	⋔ 749	1,620	10,200	3,460	9,960	2,460	2,120	1,720
24	1,770	1,310	3,470	1,410	968	1,380	4,170	2,220	6,290	2,330	2,020	1,730
25	⋔ 1,710	1,350	3,190	⋔ 1,400	918	1,340	⋔ 3,740	2,090	4,630	⋔ 2,220	2,010	1,720
26	1,700	1,380	1,850	1,350	724	1,360	2,810	1,840	5,580	2,220	2,010	1,730
27	1,660	1,410	1,670	1,450	657	⋔ 1,360	2,220	2,340	5,930	2,200	2,020	⋔ 1,710
28	1,660	⋔ 1,480	⋔ 1,620	1,200	636	1,240	2,010	3,050	6,850	2,190	2,000	1,680
29	1,610		1,620	1,230	636	1,600	1,540	3,290	⋔ 4,910	2,200	2,000	1,640
30	1,550		1,910	1,150	⋔ 689	2,490	1,450	2,320	4,870	2,200	1,940	1,650
31	⋔ 1,590		1,880		731		1,360	1,850		2,600		1,660
Sum	54,180	41,440	46,520	47,270	26,749	39,746	89,594	79,060	187,030	102,220	64,530	54,580

Month	Current Year 1967								Period #Aug. 1959-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.	2.59	2.03	17	2,140	30	1,530	1,750	107,464	118,757	167,000	74,038
Feb.	2.36	1.74	6	1,870	24	1,300	1,480	82,157	106,729	165,800	82,093
Mar.	4.36	1.25	†24	4,730	17	1,020	1,500	92,285	95,446	149,600	65,317
Apr.	5.68	1.28	19	7,420	17	1,030	1,580	93,714	105,296	167,429	85,742
May	3.61	.33	20	3,530	†28	636	862	53,059	137,131	270,690	53,059
June	4.43	.33	30	4,800	1	653	1,320	78,843	213,595	665,725	69,300
July	8.63	1.25	23	15,000	21	1,060	2,890	177,768	156,910	321,949	53,697
Aug.	10.04	1.12	14	19,200	5	1,060	2,550	156,873	166,370	262,677	79,011
Sept.	12.96	1.74	16	28,100	3	1,470	6,220	371,002	466,782	1,811,078	143,039
Oct.	5.51	2.53	1	7,170	†28	2,190	3,300	202,739	249,463	393,942	129,969
Nov.	3.25	2.33	1	3,110	30	1,940	2,150	127,973	134,901	178,200	79,586
Dec.	2.36	1.90	†11	1,840	29	1,630	1,760	108,290	123,796	175,100	91,717
Yearly	12.96	0.33		28,100		636	2,280	1,652,167	2,075,176	3,208,230	1,298,234

⋔ Discharge measurement made on this day † And other days
High flows prior to 1962 are based on a rating developed after this date

RIO GRANDE AT LAREDO, TEXAS

DESCRIPTION: Cableway, bubbler gage, and water-stage recorder located on the right bank at Laredo, Texas at latitude 27° 29' 50", longitude 99° 29' 40", and river mile 357.4; immediately downstream from the Laredo, Texas sewer plant, 0.9 river mile downstream from the international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas, and 890.8 river miles downstream from 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 85 discharge measurements during the year, 78 by the Mexican Section and 7 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: May 1900 through 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 1923 through 1967. 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: Momentary: Max. 716,900 second-feet on June 30, 1954, determined by slope-area calculations with a gage height of 61.35 feet. Much well-authenticated information establishes the occurrence of a greater flood in June 1865 with a gage height of 62.5 feet on the same gage and 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. Min. no flow several 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.	49,500	Sept. 1932	Min.	5.5	June 1953
Yearly:	Max.	9,670	1932	Min.	1,080	1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,730	1,450	1,620	1,820	1,130	636	⋔ 5,370	1,290	2,030	⋔ 6,890	2,810	2,050
2	⋔ 1,660	1,410	1,590	1,700	⋔ 1,090	2,210	5,120	1,290	1,890	7,100	2,540	1,980
3	1,750	1,480	1,550	⋔ 1,480	1,040	⋔ 2,620	⋔ 3,710	1,180	1,950	5,190	2,370	1,910
4	1,780	1,380	1,450	1,410	989	2,010	9,750	1,060	⋔ 7,130	⋔ 4,170	2,290	⋔ 1,840
5	1,770	1,380	1,410	1,410	918	⋔ 1,270	⋔ 6,220	1,010	⋔ 14,300	3,880	2,300	1,810
6	1,740	1,730	1,170	⋔ 1,270	⋔ 848	1,040	⋔ 3,280	989	⋔ 4,410	3,810	2,260	1,840
7	1,770	⋔ 1,700	⋔ 1,200	1,170	848	989	2,900	⋔ 1,110	2,970	3,670	2,220	1,840
8	1,770	1,800	1,130	1,240	⋔ 971	936	2,630	1,150	⋔ 3,440	3,390	2,260	1,840
9	1,680	2,120	1,170	1,240	971	918	2,400	1,670	3,200	⋔ 3,020	2,300	1,850
10	1,680	1,980	⋔ 989	⋔ 1,170	901	1,170	⋔ 2,210	1,500	2,990	3,740	⋔ 2,300	1,870
11	⋔ 1,620	1,890	1,090	1,380	795	1,060	2,080	1,500	⋔ 3,060	3,190	2,260	⋔ 1,850
12	1,550	1,820	1,130	⋔ 2,390	671	⋔ 989	1,950	1,530	3,260	3,120	2,210	1,900
13	1,480	⋔ 1,620	⋔ 1,170	1,740	636	1,410	1,730	1,310	3,570	3,040	⋔ 2,190	1,940
14	1,470	⋔ 1,550	1,130	2,190	636	1,330	1,730	⋔ 12,900	3,810	2,860	2,190	1,990
15	1,540	1,450	1,180	1,550	⋔ 583	1,250	1,590	4,800	3,810	2,610	2,220	2,030
16	⋔ 1,780	1,240	1,130	1,250	530	1,170	1,520	⋔ 2,360	9,320	⋔ 3,570	2,190	2,030
17	1,940	1,310	1,240	⋔ 1,130	565	1,020	⋔ 1,570	1,680	⋔ 21,200	5,370	2,150	2,030
18	2,010	1,340	1,130	1,090	554	989	1,700	⋔ 8,330	⋔ 13,900	3,640	2,140	⋔ 2,030
19	1,980	1,310	1,130	1,520	530	⋔ 1,020	1,430	2,080	10,900	4,480	2,120	1,880
20	1,910	⋔ 1,380	⋔ 1,130	⋔ 4,560	459	989	1,360	1,940	6,570	4,030	2,120	⋔ 1,730
21	1,850	1,450	1,090	2,100	1,510	989	⋔ 1,320	⋔ 2,550	5,010	3,180	⋔ 2,140	1,730
22	1,780	1,480	1,170	⋔ 1,550	⋔ 1,340	1,120	1,670	2,670	20,000	2,830	2,190	1,770
23	1,780	1,450	1,090	1,390	798	1,750	⋔ 12,600	2,950	⋔ 28,900	⋔ 2,400	2,190	1,750
24	⋔ 1,730	1,450	1,810	⋔ 1,310	671	1,480	⋔ 5,540	⋔ 3,990	18,000	2,220	2,150	1,730
25	1,660	1,380	⋔ 4,100	1,290	901	1,340	4,100	2,590	⋔ 8,020	2,190	2,130	1,730
26	1,620	1,410	2,470	1,270	777	⋔ 1,470	3,130	2,220	6,180	2,120	2,120	⋔ 1,730
27	⋔ 1,660	⋔ 1,520	⋔ 1,910	1,340	636	1,450	2,560	2,300	5,970	2,050	⋔ 2,120	1,730
28	1,620	1,550	1,700	⋔ 1,250	572	1,450	⋔ 2,200	⋔ 3,130	7,660	2,010	2,130	1,730
29	1,590		1,620	1,150	⋔ 530	1,340	1,710	5,790	6,250	1,980	2,140	1,720
30	⋔ 1,450		1,590	1,150	498	⋔ 1,720	1,500	3,070	4,630	⋔ 2,010	2,120	1,700
31	1,450		1,950		547		⋔ 1,410	2,400		2,010		1,700
Sum	52,800	43,030	45,239	46,510	24,445	39,135	97,990	84,339	234,330	105,770	66,870	57,260

Month	Current Year 1967								Period 1948-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High Day	High	Low Day	Low			Average	Maximum	Minimum
Jan.	1.77	1.51	18	2,030	† 14	1,340	1,700	104,697	111,677	219,200	54,800
Feb.	1.87	1.44	6	2,370	† 15	1,200	1,540	85,294	113,666	423,700	41,050
Mar.	3.41	1.38	25	5,050	23	918	1,460	89,742	93,540	223,400	30,960
Apr.	4.36	1.18	20	6,750	18	1,040	1,550	92,256	119,220	464,000	28,300
May	1.77	.52	21	2,050	21	431	788	48,499	213,512	1,351,000	33,360
June	2.49	.69	20	3,460	1	593	1,300	77,631	314,067	1,994,000	337
July	7.94	1.25	13	14,900	21	1,310	3,160	194,355	205,225	655,500	17,470
Aug.	9.28	1.12	14	18,100	6	989	2,720	167,352	178,034	534,400	36,970
Sept.	17.65	1.57	23	34,700	† 2	1,820	7,800	464,877	370,985	1,674,055	30,900
Oct.	4.72	1.77	† 1	7,700	31	1,910	3,410	209,821	296,139	1,822,000	31,910
Nov.	2.20	1.67	1	3,040	25	2,050	2,230	132,582	139,951	488,900	43,110
Dec.	1.67	1.54	1	2,050	30	1,700	1,850	113,600	117,610	266,400	52,230
Yearly	17.65	0.52		34,700		431	2,460	1,780,706	2,273,626	4,571,770	786,640

‡ Period 1924-1967 ⋔ Discharge measurement made on this day † And other days

RIO SALADO AT LAS TORTILLAS, TAMAULIPAS

DESCRIPTION: Cableway, control weir with notch opening of 2,500 second-foot capacity, gravity well, and water-stage recorder located on the right bank at latitude 26° 50' 10", longitude 99° 33' 50", 2.0 river miles downstream from the confluence of Río Sabinas with Río Salado, 6 miles southeast of the town of Las Tortillas, Tamaulipas, and 24.8 river miles from the confluence with the Rio Grande. This stream enters the Rio Grande at river mile 298.4, 24.6 river miles upstream from Falcon Dam, and 949.8 river miles downstream from 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 23 discharge measurements during the year, a stable rating curve up to 2,500 second-feet, and a continuous record of gage heights at the station site. From September 20 to October 3, 1967, records were based on gage height readings and 14 discharge measurements made at the highway bridge site, 13.0 river miles downstream from the station which was rendered inoperative by the flood of September 25, 1967. Computations by shifting control methods for flows greater than 2,500 second-feet. Records available: September 9, 1953 through 1967. Records are also available for a station at old 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. 49,400 second-feet on September 25, 1967 with a gage height of 32.94 feet. Min. frequently no flow. The maximum discharge was measured at the highway bridge 13.0 river miles downstream from the station. Extreme flow data for the Río Salado at Cd. Guerrero prior to September 8, 1953 may be found in previous bulletins.

Average Flow in Second-Feet ‡

Daily:	Max.	49,100	Sept. 25, 1967	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 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	0	0	0	14.1	88.3	0	0	0	1,150	6,000	636	353
2	0	0	0	10.6	70.6	410	0	0	572	3,880	600	353
3	0	0	0	8.8	56.5	1,600	0	0	406	⸸ 2,840	547	333
4	0	0	0	7.1	35.3	⸸ 1,380	0	0	335	2,540	⸸ 530	333
5	0	0	0	5.3	26.5	⸸ 283	0	0	494	2,230	530	333
6	0	0	0	3.5	21.2	⸸ 168	0	0	547	1,930	530	333
7	0	0	0	0	15.9	⸸ 88.2	0	0	494	1,620	530	333
8	0	0	0	0	12.4	44.1	0	0	353	1,480	547	333
9	0	0	0	0	8.8	30.0	0	0	307	1,270	547	313
10	0	0	0	0	7.1	21.2	0	0	283	1,170	547	313
11	0	0	0	0	5.3	17.7	0	0	283	1,060	547	313
12	.7	0	0	0	3.5	14.1	0	0	247	989	530	313
13	7.1	0	0	0	1.8	10.6	0	0	230	918	505	292
14	11.3	0	0	0	0	7.1	0	360	212	883	505	292
15	10.6	0	0	0	0	5.3	0	459	177	848	484	272
16	10.6	0	0	0	0	1.8	0	124	159	812	484	272
17	10.6	0	0	0	0	0	0	29.3	579	812	459	272
18	10.6	0	0	0	0	0	0	138	2,320	812	459	272
19	7.1	0	0	244	0	0	0	519	968	812	459	272
20	5.3	0	0	251	0	0	0	1,900	1,250	812	459	272
21	5.3	0	0	147	0	0	0	1,820	2,370	⸸ 883	459	272
22	5.3	0	0	212	0	0	0	2,210	⸸ 12,600	848	459	258
23	5.3	0	0	88.3	0	0	0	1,120	⸸ 23,400	837	441	258
24	5.3	0	0	44.1	0	0	0	1,480	⸸ 46,300	812	441	244
25	2.5	0	0	31.8	0	0	0	4,030	⸸ 49,100	812	413	231
26	1.1	0	0	24.7	0	0	0	3,000	⸸ 45,900	777	413	217
27	0	0	0	291	0	0	0	2,760	⸸ 29,500	742	396	231
28	0	0	0	780	0	0	0	922	⸸ 13,200	706	396	217
29	0		27.9	565	0	0	0	618	⸸ 7,200	696	396	217
30	0		14.1	194	0	0	0	2,120	6,850	671	396	189
31	0		12.4		0		0	2,670		653		203
Sum	98.7	0	54.4	2,922.3	353.2	4,081.1	0	26,279.3	247,786	42,155	14,645	8,709

Month	Current Year 1967: 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 1954-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	0.16	0	14	11.3	† 1	0	3.2	195	5,223	57,070	0
Feb.	0	0		0		0	0	0	5,266	66,880	0
Mar.	.52	0	29	49.4	† 1	0	1.8	108	2,327	29,690	0
Apr.	2.17	0	28	971	† 7	0	97.5	5,797	4,956	19,300	0
May	.82	0	1	106	† 14	0	11.3	700	23,542	100,919	302
June	3.35	0	3	2,680	† 1	0	136	8,101	11,790	27,410	0
July	0	0		0		0	0	0	3,810	18,650	0
Aug.	4.27	0	25	4,560	† 1	0	848	52,110	11,834	52,110	0
Sept.	32.94	.95	25	# 49,400	16	159	8,260	491,452	92,703	491,452	2,860
Oct.	6.07	1.80	1	# 6,920	31	636	1,360	83,627	52,795	522,800	110
Nov.	1.77	.79	1	706	30	378	487	29,048	28,281	338,000	0
Dec.	1.44	.95	1	353	30	127	281	17,278	14,675	176,100	0
Yearly	32.94	0		# 49,400		0	950	688,416	257,202	1,463,797	41,238.2

‡ Period September 1953-1967 ⸸ Discharge measurement made on this day † And other days
# Measured at highway bridge

RIO GRANDE BELOW FALCON DAM, TEXAS

DESCRIPTION: The discharges reported below represent water measured as it leaves Falcon Reservoir through turbine penstocks, bypass valves, spillway gates, and leakage. Falcon Dam, astride the Rio Grande, is located at latitude 26° 33' 25", longitude 99° 10' 05", and river mile 273.8; about 7 miles southwest of Falcon, Texas, 84.5 river miles downstream from the international highway bridge between Laredo, Texas and Nuevo Laredo, Tamaulipas, and 974.4 river miles downstream from the American Dam at El Paso, Texas. A gravity well and water-stage recorder located 2.5 river miles downstream and a cableway located one mile further downstream are used to measure the flow of this station at times when spillway gates are in operation.

RECORDS: Based on daily Simplex meter records of releases through the six turbines, established rating curves for the four hollow-jet bypass valves, estimates of gate leakage, measurements of flow at the cable during spillgate operations, and 6 discharge measurements during the year, 2 by the United States Section and 4 by the Mexican Section of this Commission. Records available: 1958 through 1967. Records are also available from December 17, 1952 through 1957 for a station at Chapeño, 2.5 miles downstream, where discharges included arroyo inflow below Falcon 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 this Commission from a consolidation of the basic data gathered by each Section incident to the international operation of Falcon Reservoir.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 48,900 second-feet on November 9, 1958. Min. 1.5 second-feet on March 24 and 25, 1957.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,730	4,200	2,160	1,420	8,520	3,190	2,910	3,610	18.0	18.0	1,770	18.0
2	2,380	3,760	2,130	1,520	5,670	2,520	2,690	4,380	18.0	18.0	2,020	18.0
3	2,280	3,140	2,130	2,160	7,270	1,810	3,310	4,520	18.0	18.0	18.0	18.0
4	2,710	2,940	1,780	2,300	8,430	1,050	3,510	5,230	18.0	18.0	18.0	18.0
5	3,130	3,390	1,790	2,020	8,760	1,420	3,130	6,320	18.0	18.0	18.0	18.0
6	3,620	2,820	1,770	2,270	7,780	3,060	2,840	6,650	18.0	18.0	18.0	18.0
7	3,620	2,340	2,120	2,030	6,920	3,360	2,730	7,000	18.0	18.0	18.0	18.0
8	3,120	1,460	2,130	3,080	7,140	2,750	3,240	7,120	198	18.0	18.0	18.0
9	1,880	922	2,150	2,330	8,940	2,260	3,380	7,660	18.0	4,520	18.0	18.0
10	876	965	1,960	2,930	10,900	1,520	3,120	5,620	18.0	4,550	451	18.0
11	866	1,460	1,960	5,310	11,200	1,500	2,420	2,280	18.0	5,120	18.0	18.0
12	1,860	2,180	1,970	6,960	10,300	2,610	1,000	2,090	18.0	6,260	18.0	18.0
13	1,120	2,340	1,960	8,090	9,540	3,260	1,020	3,220	18.0	6,780	18.0	18.0
14	367	2,740	1,960	8,600	9,500	3,750	4,020	3,290	18.0	7,520	18.0	18.0
15	1,370	3,600	3,800	10,100	3,450	3,530	3,000	3,120	18.0	8,040	18.0	2,600
16	1,860	3,170	4,140	11,200	1,660	3,010	1,680	2,530	18.0	8,000	18.0	2,600
17	1,860	2,800	3,640	♯ 11,200	1,020	3,010	1,040	1,260	18.0	8,680	18.0	2,600
18	1,870	2,480	3,630	♯ 10,900	3,290	3,520	1,050	182	18.0	9,320	18.0	2,610
19	1,620	2,120	4,140	♯ 11,700	2,990	4,530	1,080	18.0	18.0	9,540	18.0	2,600
20	1,660	2,650	4,290	13,000	1,750	4,540	1,090	18.0	18.0	9,490	18.0	2,580
21	1,390	2,440	4,100	♯ 14,200	1,210	3,610	1,080	18.0	18.0	9,530	18.0	2,250
22	2,550	2,550	3,770	11,600	1,790	3,200	1,090	18.0	18.0	9,500	18.0	2,020
23	3,140	2,580	3,910	11,100	1,780	3,030	1,010	18.0	18.0	9,160	18.0	1,780
24	3,120	2,870	2,410	♯ 11,400	1,790	3,410	1,020	18.0	18.0	8,510	18.0	754
25	3,090	2,690	818	12,400	1,790	3,040	2,080	18.0	18.0	8,520	18.0	18.0
26	2,700	2,410	1,520	12,300	2,130	3,000	2,560	18.0	18.0	7,540	18.0	18.0
27	2,690	2,210	1,780	9,930	2,120	3,760	1,940	18.0	18.0	5,800	18.0	689
28	3,180	2,200	1,420	♯ 10,700	2,280	4,270	1,390	18.0	18.0	2,010	18.0	1,680
29	3,580		1,430	10,300	2,270	4,250	2,620	18.0	18.0	1,690	18.0	2,030
30	3,690		1,420	9,640	2,330	3,370	3,900	18.0	18.0	1,530	18.0	2,040
31	4,490		1,410		2,180		3,840	18.0		1,520		2,030
Sum	74,419	71,427	75,598	232,690	156,700	91,140	70,790	76,316.0	720.0	153,274.0	4,727.0	31,151.0

Month	Current Year 1967: 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 # 1954-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.			31	4,490	14	367	2,400	147,610	203,773	412,727	46,100
Feb.			1	4,200	9	922	2,550	141,675	182,603	367,384	16,600
Mar.			20	4,290	25	818	2,440	149,949	143,891	347,000	2,390
Apr.			21	14,200	1	1,420	7,760	461,541	236,172	461,541	19,530
May			11	11,200	17	1,020	5,050	310,814	291,218	526,000	48,754
June			20	4,540	4	1,050	3,040	180,776	289,257	551,000	119,917
July			14	4,020	12	1,000	2,280	140,412	121,797	229,828	18,300
Aug.			9	7,660	† 19	18.0	2,460	151,373	128,984	206,000	25,900
Sept.			8	198	† 1	18.0	24.0	1,428	145,609	674,219	1,428
Oct.			19	9,540	† 1	18.0	4,940	304,019	238,872	1,997,000	27,100
Nov.			2	2,020	† 3	18.0	158	9,376	134,701	1,128,000	9,376
Dec.			18	2,610	† 1	18.0	1,000	61,788	128,443	465,000	37,100
Yearly				14,200		18.0	2,850	2,060,761	2,245,320	5,016,800	1,455,382

♯ Discharge measurement made on this day # Values prior to 1958 are Chapeño discharges less arroyo inflow
ø Mean daily † And other days

RIO ALAMO AT CD. MIER, TAMAULIPAS

DESCRIPTION: Cableway, reinforced concrete weir of 177 second-foot capacity, gravity well, and water-stage recorder located on the right bank at a point called "El Paso del Cántaro", latitude 26° 27' 10", longitude 99° 09' 20", about 0.5 mile north of Cd. Mier, Tamaulipas, and 5.0 river miles from the confluence with the Rio Grande. This stream enters the Rio Grande at river mile 261.4, 12.4 river miles downstream from Falcon Dam, and 986.8 river miles downstream from the American Dam at El Paso, Texas. The weir is located about 300 feet downstream from the recorder. The zero of the gage is 188.35 feet above mean sea level, U. S. C. & G. S. datum, which coincides with the weir crest elevation.

RECORDS: Based on 22 discharge 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 control methods. Records available: July 1923 through 1967.

REMARKS: Small reservoirs and irrigation diversions modify the flow of this spring-fed stream at this station. On June 11, 1952, the zero of the gage was raised 1.31 feet to make it 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. Min. 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.	7,310	Sept. 1967	Min.	0	Frequently
Yearly:	Max.	837	1967	Min.	16.4	1929

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	8.1	2.5	1.8	1.4	10.2	0	0	0	424	2,160	466	321
2	8.1	1.8	3.5	1.1	1,290 ⇑	243	0	0	367	⇑ 1,830	466	311
3	7.1	1.8	4.2	.7	325	24.0	0	0	291	1,750	434	297
4	4.2	1.8	2.5	.7	32.5	29.7	0	0	283	1,720	424	291
5	2.5	1.8	4.2	0	12.0	15.5	0	0	291	1,850	424	291
6	1.8	2.5	6.0	0	6.7	9.2	0	0	284	1,470	466	291
7	1.1	2.5	4.2	0	4.2	4.9	0	0	277	1,320	540	291
8	1.1	2.5	3.5	0	2.8	3.5	0	0	271	1,190	604	297
9	.7	2.5	2.5	0	1.8	1.8	0	0	277	1,100	569	304
10	.7	1.8	2.5	0	1.8	.7	0	0	214	1,010	516	297
11	.7	2.5	1.8	0	.7	0	0	0	168	911	505	284
12	.7	2.5	1.1	0	.7	0	0	0	142	862	473	277
13	4.2	1.8	1.1	0	.7	0	0	0	120	759	456	277
14	8.1	1.8	1.1	0	.7	0	0	0	104	699	456	⇑ 271
15	7.1	1.1	1.1	0	.7	0	487	0	89.7	671	434	250
16	6.0	1.1	.7	0	0	0	45.6	0	86.9	710	413	244
17	4.9	1.1	.7	0	0	0	10.9	331	262	710	413	250
18	6.0	1.1	.7	0	0	0	4.2	316	102	636	413	257
19	4.9	1.1	.7	0	0	0	1.8	⇑ 1,330	97.8	614	403	257
20	4.9	1.1	.7	8.8	0	0	1.1	523	285	600	392	257
21	4.2	1.1	.7	9.5	0	0	0	53.7	10,800	579	381	250
22	3.5	1.1	.7	5.3	0	0	0	⇑ 1,230	68,900	579	371	244
23	2.5	1.1	.7	3.5	0	0	0	⇑ 6,320	59,000	551	360	220
24	2.5	1.1	126	1.8	0	0	0	⇑ 7,420	39,600	551	352	214
25	2.5	1.1	59.3	1.1	0	0	0	⇑ 5,970	15,300	540	341	214
26	4.2	1.1	15.9	74.4	0	0	0	2,100	6,530	516	331	220
27	4.2	1.1	7.1	360	0	0	0	⇑ 1,270	⇑ 4,130	516	321	220
28	3.5	1.1	4.2	212	0	0	0	⇑ 2,910	⇑ 4,840	516	321	220
29	2.5		3.5	36.7	0	0	0	⇑ 2,230	⇑ 2,950	505	321	214
30	2.5		2.5	15.2	0	0	0	886	2,630	494	321	214
31	2.5		1.8		0		0	572		473		214
Sum	117.5	45.5	267.0	732.2	1,690.5	332.3	550.6	33,461.7	219,116.4	28,392	12,687	8,059

Month	Current Year 1967: 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 1924-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	0.16	0.03	† 1	8.1	† 9	0.7	3.9	233	3,120	34,920	0
Feb.	.07	.03	† 1	2.5	† 15	.7	1.4	88.4	2,379	25,550	0
Mar.	1.61	.03	24	297	† 16	.7	8.5	529	2,366	19,830	0
Apr.	2.17		26	671	† 5	0	24.4	1,460	6,511	36,210	0
May	4.30		2	3,530	† 15	0	54.4	3,351	13,685	137,000	0
June	2.76		2	1,230	† 1	0	10.9	659	11,799	83,240	0
July	3.08		15	1,660	† 1	0	17.7	1,093	5,876	37,590	0
Aug.	8.53		24	10,600	† 1	0	1,080	66,393	17,981	205,700	0
Sept.	26.90	.75	22	86,500	16	75.9	7,310	434,387	42,597	434,387	135
Oct.	3.61	1.90	1	2,400	31	473	915	56,338	19,143	193,700	0
Nov.	2.10	1.64	8	614	† 27	321	424	25,165	3,826	25,165	0
Dec.	1.64	1.38	1	321	† 24	214	260	15,982	3,201	15,982	0
Yearly	26.90			86,500		0	837	605,678.4	132,484	605,678.4	11,898.7

‡ Period 1924-1967 ⇑ Discharge measurement made on this day † And other days

CONTRIBUTIONS FROM RIO SAN JUAN
FALCON DAM TO FORT RINGGOLD

DESCRIPTION: The Lower Río San Juan Irrigation District in Mexico lies along the Rio Grande between Cd. Miguel Alemán and Río Bravo, Tamaulipas and is irrigated with water impounded by Marte R. Gómez Dam situated on the Río San Juan 12.4 river miles upstream from the confluence with the Rio Grande. The Río San Juan enters the Rio Grande at river mile 237.8 and 1,010.4 river miles downstream from the American Dam at El Paso, Texas. Drain water from this irrigation district enters the Rio Grande between Falcon Dam and the Fort Ringgold Gaging Station through the Río San Juan Channel, Rancherías Drain, and Los Fresnos Drain; and between this station and Anzaldúas Dam through Puertecitos, Los Indios, Huizache, and Morillo Drains. Only the portion of water reaching the Rio Grande via channels located upstream from the Fort Ringgold Gaging Station is shown below. The portion of drain water from this irrigation district reaching the Rio Grande via channels located downstream from the Fort Ringgold Gaging Station is shown on page 69 in this bulletin.

RECORDS: Water entering the Rio Grande through the Río San Juan Channel, included in the tabulation below and composed of spills and leakage from Marte R. Gómez Dam, and storm inflow and drainage below the dam, was measured at the Río San Juan Gaging Station at Camargo, Tamaulipas, 3.1 river miles upstream from the confluence with the Rio Grande. During the flood of September 1967, a large volume of water overflowed the right bank of the Río San Juan Channel above the gaging station and entered the Rio Grande Channel downstream from the Fort Ringgold Gaging Station (see next page for station description and separate tabulation of discharge for the Río San Juan station). The discharge through Rancherías Drain was determined by prorating between 42 current meter measurements made during the year. There was no drainage flow through Los Fresnos Drain in 1967. All storm water measured at these two drains was deducted and is not included in the tabulation below. Records available: 1953 through 1967.

REMARKS: In 1967, there were 168,201 irrigable acres in the Lower Río San Juan Irrigation District.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	31.4	19.2	10.3	7.6	27.4	18.8	10.7	5.2	16,500	32,600	1,260	2,160
2	27.4	20.7	10.6	8.5	543	938	10.3	5.3	12,200	24,400	1,600	2,160
3	23.9	23.0	10.2	9.5	190	40.1	10.3	5.4	9,470	19,100	1,710	2,150
4	20.0	25.0	9.9	10.5	22.1	17.7	9.9	5.0	8,300	16,300	1,790	1,990
5	20.0	27.0	9.9	11.5	21.1	17.2	9.5	4.9	7,840	16,200	2,020	1,940
6	20.1	29.0	9.6	12.4	21.1	16.7	9.0	4.9	7,640	14,800	2,290	1,940
7	20.1	31.0	9.2	13.4	20.8	16.3	9.5	4.4	7,990	13,100	2,550	1,880
8	20.1	33.3	9.3	15.1	20.8	15.8	9.9	4.4	7,210	12,000	2,770	1,760
9	20.5	35.3	8.9	16.6	20.5	15.5	10.3	4.3	6,290	11,500	2,920	1,760
10	20.6	33.4	9.0	18.2	20.5	15.2	10.8	4.2	5,660	10,800	2,940	1,710
11	20.6	31.1	8.7	19.7	20.5	14.6	11.2	4.6	5,090	9,930	2,980	1,680
12	19.2	29.1	8.7	21.2	20.2	14.3	11.7	4.6	4,740	9,050	2,990	1,630
13	17.3	27.2	8.4	22.7	20.2	13.6	12.1	4.9	4,280	8,340	2,940	1,600
14	15.9	24.9	8.5	21.4	20.2	13.3	175	5.2	3,400	7,780	2,940	1,560
15	14.4	22.9	8.2	20.2	19.9	13.1	214	5.6	3,680	7,110	2,870	1,530
16	13.0	21.2	8.3	18.9	20.0	12.9	46.9	5.9	3,400	6,720	2,800	1,490
17	11.5	19.4	8.3	17.6	19.6	13.0	34.3	6.3	3,260	6,540	2,690	1,450
18	10.0	17.7	8.1	16.3	19.6	13.1	25.6	62.4	3,150	5,940	2,590	1,410
19	9.9	16.0	7.9	15.0	20.2	13.2	16.8	1,510	4,740	4,240	2,590	1,370
20	9.8	14.6	8.1	13.8	20.3	13.4	8.1	1,460	7,600	2,790	2,590	1,380
21	10.1	12.9	7.8	18.4	20.9	13.6	7.6	1,110	28,000	1,130	2,570	1,380
22	10.0	11.1	7.6	22.6	21.4	13.3	7.5	795	99,200	431	2,590	1,380
23	9.9	9.4	7.6	27.3	21.5	13.2	7.0	961	106,000	360	2,610	1,390
24	9.8	9.4	7.6	31.5	22.1	13.0	6.5	1,970	109,000	360	2,570	1,390
25	10.0	9.7	7.9	36.2	22.6	12.5	6.4	4,060	115,000	290	2,410	1,390
26	9.9	9.6	7.8	40.4	22.1	12.4	5.9	8,860	108,000	290	2,310	1,400
27	11.4	10.0	7.8	45.0	21.5	11.9	5.4	18,200	90,100	290	2,270	1,400
28	12.9	10.0	7.7	39.7	21.0	11.7	5.5	24,300	67,800	360	2,160	1,410
29	14.7		7.7	34.5	20.4	11.5	5.3	27,700	51,600	720	2,160	1,410
30	16.2		7.7	29.2	19.9	11.1	5.4	25,300	40,300	1,050	2,160	1,410
31	14.5		7.6		19.4		5.5	21,800		1,190		1,400
Sum	495.1	583.1	264.9	634.9	1,340.8	1,370.0	723.9	138,173.5	947,440	245,711	73,640	49,910

Month	Current Year 1967								Period 1954-1967		
	Extreme Gage Feet		∅ Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.			1	31.4	† 20	9.8	16.1	988	4,370	51,360	126
Feb.			9	35.3	† 23	9.4	20.8	1,156	2,451	26,250	246
Mar.			2	10.6	† 22	7.6	8.5	525	2,006	20,360	250
Apr.			27	45.0	1	7.6	21.2	1,260	2,236	8,480	196
May			2	543	31	19.4	43.3	2,660	3,502	13,233	555
June			2	938	30	11.1	45.7	2,717	4,321	33,142	476
July			15	214	29	5.3	23.4	1,437	9,633	122,305	312
Aug.			29	27,700	10	4.2	4,450	274,079	21,716	274,079	202
Sept.			25	115,000	18	3,150	31,600	1,878,782	140,691	1,878,782	298
Oct.			1	32,600	† 25	290	7,910	487,270	100,801	901,800	229
Nov.			12	2,990	1	1,260	2,450	146,156	27,874	230,400	154
Dec.			† 1	2,160	19	1,370	1,610	98,974	12,535	98,974	200
Yearly				115,000		4.2	4,000	2,896,004	332,136	2,896,004	11,025

∅ Mean daily † And other days

INFLOWS TO AND SPILL FLOWS FROM MARTE R. GOMEZ RESERVOIR NEAR CAMARGO, TAMAULIPAS

DESCRIPTION: Marte R. Gómez Dam, on the Río San Juan near Camargo, Tamaulipas, is located at latitude 26° 13' 40", longitude 98° 55' 05", 12.4 river miles from the confluence with the Río Grande, and 9.3 river miles upstream from the Río San Juan gaging station at Camargo, Tamaulipas. This stream enters the Rio Grande at river mile 237.8, 3.9 river miles upstream from the Rio Grande gaging station at Fort Ringgold, and 1,010.4 river miles downstream from the American Dam at El Paso, Texas. Inflows into the reservoir are measured at El Cuchillo gaging station on the Río San Juan and at Los Herreras gaging station on the Río Pesquerías. The flow passing these two stations is also measured at Los Aldamas gaging station on the Río San Juan downstream from the confluence of the Río Pesquerías with the Río San Juan. However, the rating at this station is affected by backwater from the reservoir when the reservoir is full or nearly full. Outflows from the reservoir during flood periods consist mainly of flows over the spillway into the Río San Juan channel. The crest of the reinforced concrete spillway is set at gage height 250.46 feet, with a storage capacity of 759,100 acre-feet. An additional 150,000 acre-feet can be stored by placement of stop logs over the spillway to a gage height of approximately 253.90 feet. The zero of the gage is 7.25 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Inflow records for the Río San Juan at the Cuchillo and Aldamas gaging stations were based on rating curves defined by meter measurements and a continuous record of gage heights. Computations by shifting control methods. The daily discharge record for the Río Pesquerías, which enters the Río San Juan between the two gaging stations on this stream, was determined as the difference between daily discharges at the two stations on the Río San Juan; consequently, the record is approximate. The Río Pesquerías gaging station at Los Herreras was destroyed by the flood and the gage height record was lost. Spill flows were obtained from the spillway rating, modified, as required, by the placement of stop logs. All the records were furnished by the Ministry of Hydraulic Resources.

REMARKS: Marte R. Gómez Dam was originally designed as a multi-purpose dam; however, the spillway gates were deleted and the flood control capabilities of the dam are limited to normal flood peak abatement afforded by the reservoir and the manipulation of the stop logs. During the September flood, the maximum mean daily inflow was about 40% of the maximum mean daily spill flow. A large amount of storm runoff entered the Río San Juan between the dam and Camargo, Tamaulipas; and, during the height of the flood, a large volume of floodwater overflowed the right bank of the Río San Juan channel between these two points and did not pass the Camargo gaging station. The net amount of storm runoff and channel overflow is the difference between the discharge at these two points. The differences between the total inflow column and the sum of the discharge columns for the Río San Juan and Río Pesquerías in the tabulation below are equivalent discharges computed from daily precipitation falling on the reservoir area.

EXTREME FLOWS FROM RECORDS: The September 1967 flood was the greatest of record since 1909. The previous maximum mean daily spill was 44,000 second-feet on October 17, 1958.

Mean Daily Discharge in Second Feet 1967

Day	AUGUST				SEPTEMBER				OCTOBER			
	Inflows			Outflow	Inflows			Outflow	Inflows			Outflow
	Río San Juan	Río Pesquerías	Total	Spill	Río San Juan	Río Pesquerías	Total	Spill	Río San Juan	Río Pesquerías	Total	Spill
1	0	0	0	0	4,560	493	5,050	14,900	9,290	1,950	11,200	23,100
2	0	0	0	0	4,090	215	4,310	11,600	7,980	2,470	10,400	18,200
3	0	0	0	0	3,800	44.6	3,850	9,810	6,910	3,010	9,920	15,200
4	0	0	0	0	4,430	94.8	4,520	8,300	7,170	3,360	13,500	13,700
5	0	0	0	0	4,460	1,120	5,680	7,520	9,250	2,500	13,000	13,700
6	0	0	0	0	4,370	434	4,800	7,500	7,250	3,010	11,000	12,700
7	0	0	0	0	3,880	35.2	3,920	7,570	7,230	2,730	9,960	11,300
8	0	0	0	0	3,120	376	3,500	6,410	7,250	2,940	10,200	10,100
9	0	0	0	0	2,770	165	2,930	5,480	6,660	1,780	8,450	9,780
10	0	0	0	0	2,700	22.1	2,720	4,830	5,910	2,180	8,100	9,170
11	0	0	0	0	2,590	130	2,720	4,410	5,200	2,410	7,610	8,320
12	0	0	0	0	2,310	93.6	2,400	4,080	5,150	1,570	6,710	7,570
13	0	2,920	2,920	0	2,090	139	2,220	3,850	5,100	1,170	6,270	6,950
14	0	1,140	1,140	0	1,950	134	2,080	3,650	4,640	807	5,450	6,420
15	48.6	0	48.6	0	1,880	64.2	1,940	3,420	4,580	932	5,510	5,930
16	56.4	0	56.4	0	1,790	45.8	1,840	3,250	4,550	894	6,290	5,580
17	40.9	0	40.9	0	2,180	47.8	2,490	3,170	4,550	685	5,240	5,010
18	29.4	0	29.4	0	2,800	100	2,900	3,190	3,970	1,350	5,330	4,350
19	152	13,000	17,600	0	1,900	590	2,490	4,780	3,460	1,640	5,100	3,020
20	7,650	11,200	21,300	0	2,970	35.2	6,110	4,830	3,410	1,610	5,020	1,730
21	14,100	1,590	15,700	0	9,180	1,840	17,400	9,230	3,290	1,540	4,830	686
22	33,400	0	33,600	0	59,300	69,300	152,000	48,900	3,240	1,430	4,670	119
23	35,500	0	35,800	0	122,000	134,000	261,000	105,000	3,180	1,420	4,600	0
24	32,000	21,000	55,500	295	99,700	159,000	259,000	144,000	3,050	1,500	4,550	0
25	25,900	16,900	44,700	3,780	47,300	60,000	107,000	160,000	3,020	1,270	4,290	0
26	19,900	10,600	31,800	9,400	25,000	15,300	40,400	122,000	2,950	1,250	4,200	0
27	21,900	10,500	33,300	16,900	15,300	7,120	22,400	78,000	2,880	1,150	4,030	0
28	19,700	10,800	31,400	22,500	18,200	3,620	21,800	54,100	2,820	1,170	3,990	0
29	19,900	0	20,900	24,400	13,900	3,160	17,000	40,400	2,790	1,160	3,950	0
30	15,400	3,600	19,000	23,200	10,200	2,930	13,100	30,300	2,770	1,140	3,910	296
31	7,250	5.7	7,250	19,600					2,730	1,170	3,900	441
Sum		103,255.7		120,075		460,649.3		914,480		53,198		193,372
	252,927.3		372,085.3		480,720		979,570		152,230		211,180	

Month	Total Reservoir Inflows						Reservoir Spills					
	ø Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Extreme Second-Feet				Average Second-Feet	Total Acre-Feet
	Day	High	Day	Low			Day	High	Day	Low		
Aug.	24	55,500	† 1	0	12,000	737,589	29	ø 24,400	† 1	0	3,870	238,079
Sept.	24	259,000	16	1,840	32,700	1,944,204	25	166,000	17	ø3,170	30,500	1,814,788
Oct.	4	13,500	31	3,900	6,810	418,979	1	ø 23,100	†23	0	6,240	383,582
Total		259,000		0	17,000	3,100,772		166,000		0	13,400	2,436,449

ø Mean daily † And other days

RIO SAN JUAN AT CAMARGO, TAMAULIPAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank opposite Camargo, Tamaulipas at latitude 26° 18' 50", longitude 98° 50' 20", 3.1 river miles from the confluence with the Rio Grande, and 9.3 river miles downstream from Marte R. Gómez Dam. This stream enters the Rio Grande at river mile 237.8, 3.9 river miles upstream from the Rio Grande gaging station at Fort Ringgold, 36.0 river miles downstream from Falcon Dam, and 1,010.4 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 130.45 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 99 discharge measurements during the year, a continuous record of gage heights to September 22, and staff gage readings for November and December. From September 22 to November 1, the discharge record was computed using the spills from Marte R. Gómez Reservoir as a base. Computations by shifting control methods. Discharge prorated between measurements during times of extremely low flow. Records available: January 1954 through 1967.

REMARKS: Except for storm inflow, diversion, and drainage returns below Marte R. Gómez Dam, the flow at this station is controlled by spills from Marte R. Gómez Reservoir and leakage through the dam. Backwater from the Rio Grande frequently reaches this station. The gaging station was damaged by the flood of September 1967. During the height of the flood, a large volume of water overflowed the right bank of the channel between Marte R. Gómez Dam and Cd. Camargo, Tamaulipas and did not pass the gaging station. The discharge record from September 22 to November 1 was based on Marte R. Gómez Reservoir spills (see page 65) and estimates of storm inflow and channel overflow between the dam and the gaging station. Flow passing this station, combined with drain water entering the Rio Grande through Rancherías and Los Fresnos drains, is also published under heading "Contributions from Río San Juan - Falcon Dam to Fort Ringgold" (see previous page).

EXTREME FLOWS FROM RECORDS: Momentary: Max. 115,000 second-feet on September 25, 1967 with a gage height of 42.03 feet. Min. 0.7 second-foot several days in April 1960.

Average Flow in Second-Feet

Daily:	Max.	115,000	Sept. 15, 1967	Min.	0.7	April 23, 24 & 25, 1960
Monthly:	Max.	31,600	Sept. 1967	Min.	2.1	November 1964
Yearly:	Max.	3,990	1967	Min.	14.6	1963

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	29.7	15.2	6.0	⋔ 4.2	12.0	⋔ 6.0	6.0	2.1	⋔ 16,500	32,500	1,290	2,150
2	25.8	16.6	⋔ 6.4	4.2	530	925	5.7	2.1	⋔ 12,100	24,400	1,590	2,150
3	22.2	18.4	6.0	4.2	178	28.3	5.7	2.1	9,460	19,100	1,700	2,140
4	⋔ 18.4	20.0	5.7	4.2	⋔ 12.0	6.4	5.3	1.8	⋔ 8,300	16,300	1,780	1,980
5	18.4	21.2	5.7	4.2	10.6	6.4	4.9	1.8	⋔ 7,840	16,200	2,010	1,920
6	18.4	22.6	5.3	⋔ 4.2	10.2	6.4	⋔ 4.6	⋔ 1.8	⋔ 7,630	14,700	2,280	1,920
7	18.4	24.0	4.9	5.3	9.5	6.4	4.9	1.4	⋔ 7,980	13,100	2,540	1,870
8	18.4	25.8	4.9	6.7	9.2	⋔ 6.4	5.3	1.4	⋔ 7,200	12,000	2,750	1,750
9	18.7	⋔ 27.2	⋔ 4.6	8.1	8.5	6.4	5.7	1.4	⋔ 6,290	11,500	2,910	⋔ 1,740
10	18.7	25.4	4.6	9.5	8.1	6.4	6.0	1.4	5,650	10,800	2,930	1,700
11	⋔ 18.7	23.3	4.2	10.9	7.8	6.0	6.4	1.8	⋔ 5,090	9,920	⋔ 2,970	1,670
12	17.3	21.5	4.2	12.4	7.1	6.0	6.7	1.8	⋔ 4,730	9,040	2,980	1,630
13	15.5	19.8	3.9	⋔ 13.8	6.7	5.7	7.1	2.1	⋔ 4,270	8,330	2,930	1,590
14	14.1	17.7	3.9	12.4	6.4	5.7	⋔ 170	⋔ 2.5	⋔ 3,990	7,770	2,930	1,550
15	12.7	⋔ 15.9	3.5	10.9	5.7	⋔ 5.7	209	2.8	⋔ 3,670	7,100	2,860	1,520
16	11.3	14.5	3.5	9.5	5.3	5.7	43.4	3.2	3,390	6,710	2,790	1,480
17	9.9	13.1	⋔ 3.5	8.1	4.6	6.0	30.0	3.5	3,250	6,530	2,680	1,440
18	⋔ 8.5	11.7	3.5	6.7	⋔ 4.2	6.4	21.5	59.7	⋔ 3,140	5,930	2,580	1,410
19	8.1	10.2	3.5	5.3	4.9	6.7	13.1	1,510	⋔ 4,730	4,240	2,580	⋔ 1,370
20	7.8	9.2	3.9	⋔ 3.9	5.3	7.1	⋔ 4.6	1,460 ⋔	7,590	2,780	2,580	1,370
21	7.8	7.8	3.9	6.7	6.0	7.4	4.2	1,110	28,000	1,120	2,560	1,370
22	7.4	6.4	⋔ 3.9	9.2	6.7	⋔ 7.4	4.2	791	99,200	424	2,580	1,380
23	7.1	⋔ 4.9	3.9	12.0	7.1	7.4	3.9	957	106,000	353	2,600	1,380
24	6.7	4.9	3.9	14.5	7.8	7.4	3.5	1,970	109,000	353	2,560	1,380
25	6.7	5.3	4.2	17.3	⋔ 8.5	7.1	3.5	4,060	115,000	283	⋔ 2,400	1,390
26	⋔ 6.4	5.3	4.2	19.8	8.1	7.1	3.2	8,860	108,000	283	2,300	1,390
27	7.8	5.7	4.2	⋔ 22.6	7.8	6.7	⋔ 2.8	18,200 ⋔	90,000	283	2,260	1,400
28	9.2	5.7	4.2	19.1	7.4	6.7	2.8	24,300	67,800	353	2,150	1,400
29	10.9		4.2	15.5	7.1	⋔ 6.7	2.5	27,700	51,500	713	2,150	1,410
30	12.4		4.2	12.0	6.7	6.4	2.5	25,300	40,200	1,040	2,150	⋔ 1,410
31	13.8		4.2		6.4		2.5	21,800		1,180		1,390
Sum	427.2	419.3	136.7	297.4	925.7	1,135.4	601.5	138,112.7	947,500	245,335	73,370	49,650

Month	Current Year 1967: 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 1954-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.			1	29.7	26	6.4	13.8	847	4,284	51,270	88.4
Feb.			9	27.2	†23	4.9	14.8	831	2,348	26,170	203
Mar.			2	6.4	†15	3.5	4.6	272	1,904	20,270	212
Apr.			27	22.6	20	3.9	9.9	590	2,108	8,380	177
May	9.58		2	1,820	18	4.2	30.0	1,835	3,227	12,842	245
June	11.75		2	3,530	†13	5.7	37.8	2,251	4,071	32,689	274
July	8.07		14	562	†29	2.5	19.4	1,192	9,501	122,020	182
Aug.	24.11		29	28,400	† 7	1.4	4,450	273,904	21,631	273,904	161
Sept.	42.03	10.63	25	115,000	18	3,140	31,600	1,878,406	140,571	1,878,406	226
Oct.			1	36,000	†25	283	7,910	486,864	100,685	901,500	193
Nov.			12	2,980	1	1,290	2,450	145,554	27,756	230,100	126
Dec.			† 1	2,150	†19	1,370	1,600	98,547	12,436	98,547	163
Yearly	42.03			115,000		1.4	3,990	2,891,093	330,522	2,891,093	10,534

⋔ Discharge measurement made on this day † And other days

DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE - FALCON DAM TO FORT RINGGOLD

Since June 1956 the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam has been under the jurisdiction of the 93rd District Court of Texas, the disposition of such water being made through its Special Water Master.

During 1967, 9,155 irrigable acres and several towns and rural homes were served water diverted from the Rio Grande between Falcon Dam and the river gaging station at Fort Ringgold under the jurisdiction of this Court. The area irrigated from the Rio Grande in this river reach was 1.2% of the total irrigable acres below Falcon Dam.

The total diversion during 1967 in this river reach was 9,873 acre-feet, or 1.1% of the total water diverted from the Rio Grande below Falcon Dam. All the records of diversions in this river reach were furnished by the Special Water Master. About 43% of the water diverted was measured by means of flow meters and the rest was determined by periodic current meter measurements of pump discharges and recorded pump operating time. More than one crop per year is often grown on parts of this land.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	9.1	20.9	17.1	20.4	9.7	29.6	20.8	14.3	1.7	1.6	13.4	1.7
2	17.8	20.7	18.9	20.6	10.4	24.2	9.9	15.7	1.6	1.6	15.0	1.8
3	17.8	19.7	15.1	44.6	9.7	15.4	16.0	15.6	3.3	2.9	15.1	2.0
4	17.8	19.3	14.3	45.7	11.7	18.4	16.2	14.7	3.3	2.9	13.5	4.1
5	17.8	5.7	14.0	42.9	10.5	25.7	17.0	12.1	3.3	1.5	2.5	4.0
6	17.6	5.3	33.9	42.6	2.1	28.3	17.2	10.0	3.3	1.5	2.5	4.0
7	16.4	4.4	37.4	44.4	4.5	30.5	16.3	13.3	3.4	1.5	2.5	4.0
8	6.5	2.2	39.4	36.1	5.0	31.0	13.5	13.6	4.1	8.9	2.5	2.0
9	7.7	3.0	37.6	27.3	12.5	25.9	5.7	12.8	3.1	8.9	4.1	1.8
10	6.5	2.5	35.3	29.0	13.1	18.9	17.9	12.6	5.5	8.9	2.6	1.7
11	13.9	2.4	32.2	26.9	11.1	17.3	20.0	12.5	5.5	8.9	2.6	1.8
12	13.8	10.4	17.1	27.4	16.2	26.8	20.0	9.6	7.1	8.8	1.5	1.8
13	13.8	10.4	28.3	27.4	17.0	26.2	19.8	11.3	5.4	8.8	2.3	3.2
14	13.8	19.2	35.1	23.7	21.3	25.3	19.2	15.1	5.3	8.7	2.3	3.1
15	2.2	20.2	34.6	17.4	20.5	25.2	18.5	17.5	5.4	13.0	1.5	3.3
16	5.8	21.7	29.3	17.8	27.3	21.7	7.7	18.4	5.4	12.9	1.4	1.9
17	5.8	19.2	30.3	32.0	26.6	20.6	9.4	16.7	1.6	12.9	1.5	3.1
18	5.8	20.6	29.5	32.5	26.5	13.1	10.3	13.4	1.6	12.9	1.3	4.1
19	6.6	15.1	27.0	29.3	26.6	17.3	12.9	10.2	1.6	12.8	2.8	3.9
20	6.4	23.1	32.2	32.4	17.3	25.5	13.1	4.8	1.6	12.9	2.8	3.7
21	6.6	18.3	32.5	28.2	23.1	24.7	9.5	4.8	1.5	12.9	3.6	3.6
22	6.7	18.8	29.0	28.3	24.8	23.3	7.8	4.1	1.4	17.7	3.5	4.0
23	13.0	17.4	27.5	11.0	25.3	23.0	11.2	4.1	1.3	17.7	3.1	3.6
24	13.0	9.4	25.1	23.6	24.7	20.9	12.1	3.9	1.7	17.7	3.0	7.0
25	12.5	10.3	23.8	27.5	26.3	6.9	12.1	4.0	2.8	17.7	3.1	7.0
26	13.7	10.5	9.8	27.1	25.7	20.6	15.1	3.9	1.7	17.8	1.8	9.3
27	13.6	16.8	20.0	5.9	25.1	21.4	15.8	2.0	1.7	17.8	1.8	9.1
28	8.9	16.8	21.8	5.8	20.1	21.4	11.0	2.0	1.6	17.6	2.8	9.5
29	6.9		21.9	5.8	21.2	21.5	9.7	2.0	1.4	15.3	2.8	9.5
30	14.5		22.4	1.8	28.7	21.6	10.0	1.9	1.4	13.4	2.0	6.9
31	15.1		20.6		30.0		13.5	1.7		13.4		3.9
Sum	347.4	384.3	813.0	785.4	574.6	672.2	429.2	298.6	89.6	331.8	121.2	130.4

Month	Current Year 1967: Average Rainfall Inches ** 1957-1967	1967	Extreme Second-Feet ∅ High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1967: Acre-Feet Average	Maximum	Minimum
Jan.	1.20	1.19	† 2	17.8	15	2.2	11.2	689	637	1,291	159
Feb.	1.21	.42	20	23.1	8	2.2	13.7	762	681	1,480	223
Mar.	.70	.39	8	39.4	26	9.8	26.2	1,613	1,013	1,845	158
Apr.	1.60	2.36	4	45.7	30	1.8	26.2	1,558	1,067	1,890	369
May	2.72	.58	31	30.0	6	2.1	18.5	1,140	1,316	2,624	251
June	2.18	.90	8	31.0	25	6.9	22.4	1,333	1,377	2,610	449
July	.69	.76	† 11	20.0	9	5.7	13.8	851	874	1,620	466
Aug.	2.40	10.13	16	18.4	31	1.7	9.6	592	745	935	541
Sept.	5.01	21.42	12	7.1	23	1.3	3.0	178	627	1,230	178
Oct.	2.52	1.07	† 26	17.8	† 5	1.5	10.7	658	740	1,220	131
Nov.	1.43	3.32	3	15.1	18	1.3	4.0	240	556	1,170	216
Dec.	.93	.43	† 28	9.5	† 1	1.7	4.2	259	674	1,580	145
Yearly	22.59	42.97		45.7		1.3	13.6	9,873	10,307	14,754	6,859

** United States side - Average of several stations in the reach ∅ Mean daily † And other days

RIO GRANDE AT FORT RINGGOLD, RIO GRANDE CITY, TEXAS

DESCRIPTION: Cableway, gravity well, water-stage recorders (graphic and digital), and impulse-type transmitter located on the left bank at Fort Ringgold, latitude 26° 22' 05", longitude 98° 48' 20", and river mile 233.9; about 1 mile downstream from Rio Grande City, Texas, 3.9 river miles downstream from Río San Juan, and 1,014.3 river miles downstream from 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 50 discharge measurements during the year and a continuous record of gage heights. Computations by shifting control methods. Records available: January 1955 through 1967. 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 1924 through 1931. Records are also available for the station "Rio Grande near Rio Grande City," 3.0 miles downstream, 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 Falcon Dam, flow at this station is controlled largely by releases from Falcon Reservoir, 39.9 river miles upstream. The transmitter relays gage height data to the Anzalduas Dam office of the United States Section of this Commission and to the Anzalduas Dam control room via leased telephone circuits. The data is recorded automatically at both locations.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 220,000 second-feet on September 22 and 23, 1967 with a gage height of 61.40 feet. Min. no flow occurred several days in June and July 1953.

Average Flow in Second-Feet ‡

Daily:	Max.	207,000	September 23, 1967	Min.	14.6	April 13, 1957
Monthly:	Max.	49,600	October 1958	Min.	235	March 1957
Yearly:	Max.	9,140	1958	Min.	2,260	1957 & 1964

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	2,890	4,330	2,150	1,480	9,470	2,340	3,510	3,940	⋔ 18,800	33,200	3,220	2,420
2	2,600	4,080	2,110	1,490	8,920	5,080	2,980	3,850	⋔ 14,500	26,000	⋔ 3,390	2,430
3	2,360	3,570	⋔ 2,140	1,540	6,520	3,170	2,670	4,540	11,400	20,400	3,820	2,330
4	2,280	3,090	2,090	2,170	7,570	2,040	3,480	5,200	⋔ 9,540	⋔ 17,100	2,400	2,180
5	2,730	3,180	1,790	2,280	9,340	1,020	3,610	5,770	8,610	16,500	2,250	2,160
6	3,080	3,250	1,710	2,070	8,390	1,390	3,230	6,820	⋔ 8,280	15,100	2,650	⋔ 2,150
7	3,570	2,700	1,750	2,270	6,960	3,210	2,900	7,180	8,610	13,300	3,210	2,130
8	3,650	2,390	2,050	2,170	6,790	3,310	2,850	6,480	⋔ 7,790	12,200	3,410	⋔ 2,040
9	2,930	1,590	2,120	2,970	8,100	2,800	3,470	⋔ 7,710	6,910	13,100	⋔ 3,580	2,060
10	1,970	⋔ 947	2,090	2,390	9,510	2,320	3,370	7,680	5,890	⋔ 16,200	3,570	2,240
11	966	919	1,970	3,220	11,000	1,580	3,220	3,660	5,140	15,300	3,600	2,040
12	890	1,490	1,960	5,970	11,000	1,580	⋔ 2,500	2,280	⋔ 4,700	15,200	3,540	1,900
13	⋔ 1,890	2,080	1,910	7,720	10,000	2,720	1,090	2,360	4,390	⋔ 15,200	3,450	1,850
14	1,230	2,370	1,980	7,800	9,420	⋔ 3,500	1,440	3,030	4,110	15,100	⋔ 3,430	1,930
15	487	2,690	2,060	9,230	8,620	3,920	4,460	3,330	⋔ 3,830	15,400	3,390	1,950
16	1,320	3,550	3,950	9,900	1,390	3,490	3,700	3,180	3,620	15,400	⋔ 3,330	3,870
17	1,850	⋔ 3,090	3,900	10,800	1,530	3,200	1,690	2,630	3,590	⋔ 15,000	3,260	4,160
18	1,910	2,690	3,480	10,700	1,200	3,210	1,040	3,190	3,590	14,700	3,180	4,290
19	1,890	2,440	3,940	10,600	3,310	3,930	⋔ 1,030	6,220	4,570	14,200	3,130	⋔ 4,330
20	1,700	2,400	4,020	⋔ 11,500	3,100	4,550	1,050	7,580	7,490	⋔ 12,800	⋔ 3,090	4,340
21	1,730	2,270	⋔ 4,070	13,500	1,780	4,440	1,080	2,500	26,100	11,300	3,030	4,410
22	1,470	2,410	3,830	12,900	1,190	3,660	1,030	1,680	168,000	10,600	2,970	⋔ 4,140
23	2,670	2,500	3,870	11,300	1,760	3,180	1,100	7,460	207,000	10,500	2,930	3,790
24	3,200	2,520	3,940	11,000	1,770	3,300	985	⋔ 11,800	⋔ 195,000	9,830	2,860	3,540
25	3,120	2,880	2,350	11,400	1,780	⋔ 3,720	1,010	⋔ 12,100	176,000	⋔ 9,680	2,810	2,630
26	2,930	2,760	942	12,500	1,830	2,970	1,970	11,800	⋔ 159,000	9,330	2,710	1,860
27	2,700	2,310	1,550	12,300	2,140	3,250	⋔ 2,430	15,900	118,000	8,410	2,610	⋔ 1,680
28	2,750	2,190	1,840	⋔ 11,400	2,180	3,870	1,980	⋔ 23,000	⋔ 76,300	4,520	2,590	2,200
29	3,400		⋔ 1,510	10,900	2,350	4,470	1,410	⋔ 29,000	55,000	3,150	⋔ 2,470	⋔ 3,180
30	3,450		1,500	10,300	2,350	4,100	3,110	⋔ 27,700	⋔ 41,900	3,110	2,470	3,660
31	⋔ 3,850		1,480		2,380		3,530	⋔ 23,900		3,210		3,650
Sum	73,463	72,686	76,052	225,770	163,650	95,320	72,925	263,470	1,367,660	415,040	92,350	87,540

Month	Current Year 1967: 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 # 1954-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	30.33	26.11	7	5,590	15	353	2,380	145,714	203,913	397,255	55,635
Feb.	30.68	26.27	1	6,240	11	439	2,600	144,173	190,195	376,607	25,500
Mar.	30.36	26.44	21	5,650	26	545	2,450	150,849	146,821	378,000	14,400
Apr.	35.81	26.48	27	14,700	3	572	7,530	447,815	243,269	447,815	75,100
May	34.15	26.28	12	11,800	16	445	5,280	324,600	309,798	521,000	80,891
June	31.35	26.50	2	7,370	† 6	585	3,180	189,067	305,492	560,000	120,468
July	30.88	26.33	15	6,690	† 14	475	2,350	144,647	138,804	303,952	22,300
Aug.	42.62	26.73	29	29,600	† 13	761	8,500	522,593	162,813	522,593	25,000
Sept.	61.40	28.93	† 22	220,000	19	3,460	45,600	2,712,754	368,390	2,712,754	51,341
Oct.	47.98	28.14	1	37,400	30	1,960	13,400	823,232	362,709	3,047,000	30,000
Nov.	30.18	28.36	3	4,910	5	2,190	3,080	183,176	172,543	1,442,000	29,274
Dec.	30.53	27.83	19	5,870	27	1,650	2,820	173,636	141,060	540,000	36,100
Yearly	61.40	26.11		220,000		353	8,240	5,962,256	2,745,807	6,619,700	1,637,900

‡ Period 1955-1967 ⋔ Discharge measurement made on this day † And other days
# 1954 values are Rio Grande City Station less arroyo inflow

CONTRIBUTIONS FROM RIO SAN JUAN FORT RINGGOLD TO ANZALDUAS DAM

DESCRIPTION: The Lower Río San Juan Irrigation District in Mexico lies along the Rio Grande between Cd. Miguel Alemán and Río Bravo, Tamaulipas and is irrigated with water impounded by Marte R. Gómez Dam situated on the Río San Juan, 12.4 river miles upstream from the confluence with the Rio Grande. The Río San Juan enters the Rio Grande at river mile 237.8 and 1,010.4 river miles downstream from the American Dam at El Paso, Texas. Drain water from this irrigation district enters the Rio Grande between Falcon Dam and the Fort Ringgold Gaging Station through the Río San Juan Channel, Rancherías Drain, and Los Fresnos Drain; and between this station and Anzaldúas Dam through Puertecitos, Los Indios, Huizache, and Morillo Drains. Only the portion of drain water from this irrigation district reaching the Rio Grande via drains located downstream from the Fort Ringgold Gaging Station is shown below. The portion of water reaching the Rio Grande via channels located upstream from the Fort Ringgold Gaging Station is shown on page 64 in this bulletin.

RECORDS: Drain water reaching the Rio Grande through Puertecitos, Los Indios, Huizache, and Morillo Drains was determined by prorating between frequent current meter measurements. In 1967, 43, 43, 43, and 56 meter measurements were made at Puertecitos, Los Indios, Huizache, and Morillo Drains, respectively. All storm water measured at these drains was deducted and is not included in the tabulation below. In 1967, 68% of the drain water from this irrigation district reaching the Rio Grande between Fort Ringgold Gaging Station and Anzaldúas Dam was contributed by Morillo Drain. Records available: 1953 through 1967.

REMARKS: In 1967, there were 168,201 irrigable acres in the Lower Río San Juan Irrigation District.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	33.4	96.7	96.4	60.8	121	130	61.7	37.2	51.2	170	125	122
2	32.3	101	94.6	61.8	118	130	59.9	36.7	51.9	170	141	121
3	31.3	105	93.4	62.8	115	130	58.2	36.2	52.5	170	156	120
4	30.2	108	92.3	63.7	115	131	56.4	38.1	53.3	170	174	119
5	30.8	112	91.2	64.7	117	131	54.7	40.1	53.9	170	192	119
6	31.4	116	90.1	68.3	118	123	53.2	42.0	54.6	170	209	118
7	32.0	119	87.6	71.8	120	114	51.8	43.9	55.2	170	227	117
8	32.6	123	85.1	75.3	121	105	50.5	45.9	55.9	170	245	114
9	33.2	127	82.6	78.8	123	103	49.1	47.8	54.5	170	262	111
10	33.8	126	81.4	82.2	124	101	47.8	49.7	53.2	170	280	108
11	34.4	125	80.1	85.6	131	99.4	46.4	48.6	51.8	170	262	105
12	34.6	124	78.9	89.1	137	97.5	45.1	47.3	50.4	170	244	102
13	34.9	123	77.6	94.3	143	94.7	44.8	46.1	49.1	170	226	99.3
14	35.1	123	75.9	100	150	92.1	44.6	44.9	47.7	170	208	96.3
15	35.4	122	74.2	106	156	89.3	44.5	43.7	47.2	170	190	96.2
16	35.6	120	72.4	112	162	86.8	44.5	42.4	47.2	170	181	96.1
17	35.8	118	72.4	117	169	84.2	44.4	41.2	47.2	170	174	96.0
18	36.1	117	72.1	123	169	81.7	44.3	41.9	47.2	169	166	95.9
19	38.8	115	71.9	129	169	79.1	44.2	42.6	47.2	168	159	95.8
20	42.4	113	71.6	130	169	76.7	43.6	43.3	47.2	164	152	95.7
21	45.8	111	71.3	131	169	74.3	43.0	43.9	47.2	160	144	94.4
22	49.3	109	71.1	132	169	71.9	42.5	44.6	47.2	156	137	92.4
23	52.8	106	69.7	132	165	71.1	42.0	45.2	47.2	153	135	90.4
24	56.4	105	68.4	133	161	70.3	41.4	45.9	47.2	149	134	88.4
25	59.8	103	67.2	133	156	69.5	40.9	46.6	47.2	144	132	86.5
26	64.6	102	65.9	134	155	68.7	40.3	47.3	47.2	142	130	84.5
27	69.9	100	64.6	132	153	67.9	39.8	47.9	47.2	139	128	82.5
28	75.3	98.4	63.3	129	152	67.1	39.3	48.6	47.2	136	126	80.5
29	80.6		62.0	126	150	65.3	38.8	49.2	47.2	133	114	82.1
30	86.0		60.7	123	143	63.5	38.3	49.9	47.2	131	122	83.6
31	91.3		60.7		136		37.7	50.6		128		85.2
Sum	1,415.9	3,168.1	2,366.7	3,081.2	4,456	2,769.1	1,433.7	1,379.3	1,490.4	4,962	5,275	3,097.8

Month	Current Year 1967								Period 1954-1967		
	Extreme Gage Feet		∅ Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	High		Low				Average	Maximum	Minimum
			Day		Day						
Jan.			31	91.3	4	30.2	45.7	2,808	1,897	3,490	561
Feb.			9	127	1	96.7	113	6,286	3,253	6,540	1,230
Mar.			1	96.4	† 30	60.7	76.4	4,695	2,704	4,960	1,006
Apr.			26	134	1	60.8	103	6,111	3,033	6,111	899
May			† 17	169	† 3	115	144	8,843	5,406	8,843	1,557
June			† 4	131	30	63.5	92.3	5,493	5,394	8,210	2,422
July			1	61.7	31	37.7	46.3	2,844	3,307	4,760	1,638
Aug.			31	50.6	3	36.2	44.5	2,736	2,204	3,480	889
Sept.			8	55.9	† 15	47.2	49.7	2,956	2,076	4,150	665
Oct.			† 1	170	31	128	160	9,831	2,672	9,831	623
Nov.			10	280	29	114	176	10,461	2,297	10,461	562
Dec.			1	122	28	80.5	100	6,148	1,910	6,148	592
Yearly				280		30.2	95.6	69,212	36,153	69,212	13,462

∅ Mean daily † And other days

DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE - FORT RINGGOLD TO ANZALDUAS DAM

Since June 1956 the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam has been under the jurisdiction of the 93rd District Court of Texas, the disposition of such water being made through its Special Water Master.

During 1967, 185,989 irrigable acres and several towns and rural homes were served water diverted from the Rio Grande between the river gaging station at Fort Ringgold and Anzaldúas Dam under the jurisdiction of this Court. The area irrigated from the Rio Grande in this river reach was 23.9% of the total irrigable acres below Falcon Dam.

The total diversion during 1967 in this river reach was 174,386 acre-feet, or 18.9% of the total water diverted from the Rio Grande below Falcon Dam. About 90% of the water diverted in this river reach 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 these diversions were furnished by the Special Water Master and were either measured by flow meters or were determined from periodic current meter measurements of pump discharges and recorded pump operating time. More than one crop per year is often grown on parts of this land.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	81.4	244	274	277	201	434	463	464	11.2	0	167	28.0
2	102	191	326	213	226	201	313	470	10.0	0	128	32.6
3	360	235	312	463	324	52.9	623	512	8.3	0	135	8.0
4	366	160	253	523	335	93.2	580	407	8.3	0	93.3	105
5	384	80.2	161	557	286	190	615	243	31.0	0	48.2	87.9
6	397	46.6	393	575	262	154	622	147	103	0	65.7	49.2
7	274	49.3	424	519	181	270	606	489	88.2	0	42.9	70.3
8	181	88.3	406	426	426	245	418	499	84.4	0	9.7	2.3
9	149	59.2	428	305	499	319	222	502	48.1	6.8	9.7	2.3
10	18.5	66.2	427	641	519	228	589	560	72.1	8.1	20.0	8.7
11	108	68.8	298	676	572	131	578	418	224	25.2	37.1	12.1
12	261	71.7	219	682	526	289	638	220	267	40.9	.4	48.2
13	217	203	503	650	414	342	604	153	271	58.8	.4	117
14	139	239	548	595	349	384	426	452	361	27.8	1.0	37.0
15	6.9	243	563	496	206	409	268	478	275	11.1	25.9	71.8
16	51.3	200	563	374	189	386	183	510	79.5	83.1	.8	40.8
17	40.2	244	521	695	241	281	440	521	31.2	102	34.8	3.1
18	92.1	229	383	735	183	222	422	409	45.3	99.4	60.0	3.1
19	9.8	161	245	730	135	572	409	329	17.4	50.3	4.0	5.2
20	3.9	256	566	716	107	614	376	316	17.4	72.6	42.8	120
21	57.9	336	617	689	95.3	632	345	426	10.5	86.8	75.1	38.1
22	93.9	369	652	618	260	636	238	271	10.6	20.6	88.8	35.5
23	96.4	285	625	434	284	565	184	176	10.6	144	11.5	3.0
24	101	284	328	772	336	418	442	69.7	0	120	44.0	1.3
25	152	192	105	865	319	270	455	10.4	0	123	62.9	1.3
26	84.2	152	81.4	774	317	635	450	33.2	0	118	1.5	40.1
27	113	326	410	220	229	679	461	9.1	0	109	73.8	125
28	106	256	439	172	114	694	418	9.9	0	97.5	44.9	88.8
29	75.0		446	177	332	670	307	9.9	0	52.0	110	74.7
30	105		443	174	366	619	241	10.0	0	140	37.8	1.3
31	192		394		445		477	10.0		184		1.8
Sum	4,418.5	5,335.3	12,353.4	15,743	9,278.3	11,635.1	13,413	9,134.2	2,085.1	1,781.0	1,477.0	1,263.5

Month	Current Year 1967: Average Rainfall Inches ** 1957-1967	1967	Extreme Second-Feet ∅ High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1967 Acre-Feet Average	Maximum	Minimum
Jan.	1.27	1.58	6	397	20	3.9	143	8,764	10,592	28,747	2,197
Feb.	1.21	.55	22	369	6	46.6	191	10,583	10,544	38,599	1,640
Mar.	.67	.33	22	652	26	81.4	398	24,503	17,548	41,200	637
Apr.	1.44	1.40	25	865	28	172	525	31,226	24,334	36,074	5,760
May	2.19	.96	11	572	21	95.3	299	18,404	25,929	48,400	3,996
June	2.35	1.63	28	694	3	52.9	388	23,078	29,649	59,900	10,689
July	.56	.44	12	638	16	183	433	26,605	24,415	45,400	10,312
Aug.	1.55	5.72	10	560	27	9.1	295	18,118	21,146	30,000	15,747
Sept.	4.02	16.59	14	361	† 24	0	69.5	4,136	15,729	35,000	4,136
Oct.	2.70	2.59	31	184	† 1	0	57.5	3,533	15,364	30,400	2,830
Nov.	1.32	2.65	1	167	† 12	.4	49.2	2,930	10,945	20,807	2,930
Dec.	1.26	1.18	27	125	† 24	1.3	40.8	2,506	9,321	16,400	2,506
Yearly	20.54	35.62		865		0	241	174,386	215,516	302,180	136,460

** United States side - Average of several stations in the reach ∅ Mean daily † And other days

RIO GRANDE ABOVE MISSION BRANCH INLET SOUTH OF ABRAM, TEXAS

DESCRIPTION: Cableway, bubbler gage, water-stage recorder, and impulse-type transmitter, located on the left bank at latitude 26° 11' 00", longitude 98° 24' 30", and river mile 182.4; 1.5 miles southeast of Abram, Texas, about 6 miles southwest of Mission, Texas, 10.8 river miles upstream from Anzalduas Dam, and 1,065.8 river miles downstream from 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 8 discharge measurements during the flood period and a gage height record based on the recorder chart and/or frequent staff gage readings. Computations for the flood period by shifting control methods. Records available: June 1960 through 1967, complete gage height record and flood flows.

REMARKS: This station is operated as a flood stage recording and transmitting station only. It is located within the Anzalduas Dam backwater, therefore, discharges are computed only during extreme high floods when the station has an open-channel rating. The transmitter relays gage height data to the Anzalduas Dam office of the United States Section of this Commission via leased telephone circuits. The data is recorded automatically.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 216,000 second-feet on September 26, 1967 with a gage height of 124.70 feet.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1										55,500		
2										41,800		
3										31,500		
4										♠ 25,700		
5										20,800		
6										18,500		
7										17,200		
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21									♠ 10,700			
22									♠ 28,100			
23									♠ 83,900			
24									188,000			
25									210,000			
26									210,000			
27									174,000			
28									123,000			
29									92,200			
30									72,600			
31												
Sum												

Month	Current Year 1967								Period		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
	High	Low	Day	High	Day	Low			Average	Maximum	Minimum
Jan.											
Feb.											
Mar.											
Apr.											
May											
June											
July											
Aug.											
Sept.	124.70		26	216,000							
Oct.											
Nov.											
Dec.											
Yearly	124.70			216,000							

♠ Discharge measurement made on this day

DIVERSIONS FROM THE RIO GRANDE
ANZALDUAS CANAL NEAR REYNOSA, TAMAULIPAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the left bank at latitude 26° 08' 05", longitude 98° 20' 10", 0.5 canal mile from the canal intake, and about 5 miles northwest of Reynosa, Tamaulipas. The canal intake is immediately upstream from Anzalduas Dam at river mile 171.6, 102.2 river miles downstream from Falcon Dam, and 1,076.6 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 86.32 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 76 discharge measurements during the year, 65 by the Mexican Section and 11 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1952 through 1967.

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 downstream from this station. During 1967, 481,524 acres were irrigated with water delivered through this canal. More than one crop per year was grown on parts of this land. 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 1967, there was no water returned to the Rio Grande through Poniente Drain.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 10,950 second-feet on June 2, 1957 with a gage height of 16.01 feet. Min. no flow occurs frequently.

Average Flow in Second-Feet

Daily:	Max.	9,350	May 29, 1957	Min.	0	Frequently
Monthly:	Max.	4,550	June 1960	Min.	0	Several months
Yearly:	Max.	1,980	1959	Min.	150	1952

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	381	1,770	♯1,270	448	6,750	463	21.2	2,210	5,650 ♯	35.3	42.4	24.7
2	♯ 381	♯2,150	♯1,270	509	6,460 ♯	639	21.2	2,550	2,140	35.3	42.4	24.7
3	434	2,660	1,020	♯ 505	5,790	1,840 ♯	21.2	2,690	70.6	35.3	35.3	24.7
4	459	2,540	♯1,130	396	4,310 ♯	1,260	21.2	3,000	70.6	35.3	31.8	24.7
5	♯ 459	2,070	1,130	304	3,920	21.2	21.2	3,990	53.0	35.3	31.8	24.7
6	459	1,730	1,050	307	4,270	21.2	21.2	4,840	53.0	35.3	28.3	24.7
7	353	♯1,870	720	♯ 314	4,270	21.2	21.2	♯5,010	42.4	738	24.7	24.7
8	353	2,000	♯ 569	300	3,990 ♯	21.2	21.2	5,120	42.4	4,450 ♯	24.7	24.7
9	♯ 424	1,770	565	459	3,880	21.2	21.2	5,120	42.4	5,160	24.7	24.7
10	477	1,180	♯ 618	♯ 597	3,990	21.2	♯ 38.8	5,330	35.3	4,060	24.7	24.7
11	470	953	600	745	4,910	173	194	5,300	♯ 14.1	2,640	24.7	24.7
12	♯ 463	950	604	883	5,970 ♯	♯ 321	♯ 321	2,770	14.1	1,770	24.7	24.7
13	353	♯ 957	593	♯2,640	6,140 ♯	318	♯ 325	2,080	14.1	1,760	24.7	24.7
14	♯ 406	1,110	600	4,340	5,760	318	321	1,520	14.1	1,390	24.7	24.7
15	406	♯1,310	♯ 576	♯5,160	4,730	318	420	1,230	14.1	14.1	24.7	24.7
16	406	1,900	791	6,500	4,240	♯ 293	908	795	14.1	14.1	24.7	24.7
17	388	♯2,110	1,340	♯6,920	2,380	21.2	♯1,060	706	14.1	14.1	24.7	24.7
18	388	2,110	1,680	6,710	710	21.2	692	706	14.1	14.1	24.7	24.7
19	381	1,540	1,710	6,890	♯ 410	21.2	♯ 424	1,380	14.1	14.1	24.7	24.7
20	♯ 466	♯1,310	♯1,720	7,380	21.2	21.2	424	2,650	14.1	14.1	24.7	24.7
21	♯ 713	1,310	1,770	7,660	21.2	21.2	424	3,430	14.1	14.1	24.7	24.7
22	706	1,310	1,830	♯8,930	21.2	21.2	424	2,610	35.3	14.1	24.7	24.7
23	883	1,310	1,950	9,180	42.4	21.2	424	1,400	70.6	14.1	24.7	24.7
24	♯1,760	♯1,050	1,950	♯7,840	279	21.2	♯ 424	1,400	816	14.1	24.7	24.7
25	1,770	♯ 876	2,140	7,340	♯ 477	21.2	194	1,490	1,980	14.1	24.7	24.7
26	♯1,770	883	2,130	♯7,560	♯ 480	180	28.3	1,750	657	14.1	24.7	24.7
27	♯1,740	1,070	♯ 819	♯8,480	629	282	544	1,750	242	14.1	24.7	24.7
28	1,740	1,270	283	♯8,550	777	♯ 282	♯ 706	5,830	70.6	42.4	24.7	24.7
29	1,770		♯ 283	♯8,620	♯ 784	♯ 328	706	6,820	70.6	42.4	24.7	24.7
30	♯1,770		♯ 283	7,630	618	353	1,210	2,610	35.3	42.4	24.7	24.7
31	1,770		325		♯ 614		♯1,920	6,140		42.4		24.7
Sum	24,699	43,069	33,319	134,097	87,644.0	7,686.0	12,322.9	94,227	12,332.2	22,532.7	804.8	765.7

Month	Current Year 1967: Average Rainfall Inches ** 1954-1967	1967	Ø Extreme Second-Feet: High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1954-1967: Acre-Feet Average	Maximum	Minimum
Jan.	1.06	1.54	† 25	1,770	† 7	353	795	48,947	98,599	197,745	14,206
Feb.	1.42	.47	3	2,660	25	876	1,540	85,392	115,109	251,519	1,086
Mar.	.67	1.06	25	2,140	†28	283	1,070	66,109	46,935	147,900	1,128
Apr.	1.69	.20	23	9,180	8	300	4,480	265,969	129,819	265,969	23,381
May	2.28	1.61	1	6,750	†20	21.2	2,830	173,845	177,665	285,477	29,169
June	2.36	.91	3	1,840	† 5	21.2	256	15,256	133,000	270,700	15,256
July	1.02	2.13	31	1,920	† 1	21.2	399	24,446	48,408	162,400	6,384
Aug.	1.89	6.02	29	6,820	†17	706	3,040	186,909	77,695	186,909	6,709
Sept.	4.80	17.44	1	5,650	†11	14.1	410	24,470	74,255	165,800	9,860
Oct.	2.76	2.72	9	5,160	†15	14.1	727	44,675	41,944	162,400	0
Nov.	1.57	2.99	† 1	42.4	† 7	24.7	26.8	1,597	15,585	83,690	0
Dec.	1.26	1.18	† 1	24.7	† 1	24.7	24.7	1,520	41,089	166,700	1,520
Yearly	22.78	38.27		9,180		14.1	1,300	939,135	1,000,103	1,434,920	564,686

♯ Discharge measurement made on this day ** Average of several stations Ø Mean daily
† And other days

RIO GRANDE BELOW ANZALDUAS DAM, TEXAS

DESCRIPTION: Cableway, gravity well, and water-stage recorder located on the right bank at latitude 26° 08' 00", longitude 98° 20' 05", and river mile 171.1; 0.5 river mile downstream from Anzalduas Dam, about 4.5 miles northwest of Reynosa, Tamaulipas, 12.2 river miles upstream from the international highway bridge between Hidalgo, Texas and Reynosa, Tamaulipas, and 1,077.1 river miles downstream from the American Dam at El Paso, Texas. The zero of the gage is 82.61 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 111 discharge measurements during the year, 98 by the Mexican Section and 13 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1952 through 1967.

REMARKS: Except during local storms, flow at this station is controlled largely by releases from Falcon Reservoir and by diversions into Anzalduas Canal. Excessive upstream flood flows are partly diverted into the Mission Inlet of the United States floodway system before reaching this station. It was not possible to obtain meter measurements during the height of the flood of September 1967 as the station was inundated during that period. Discharges from September 23 to October 2 were computed from an extension of the rating curve.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 131,000 second-feet on September 24, 1967 with a gage height of 30.51 feet. Min. periods of no flow have occurred on several occasions in 1953, 1954, 1956, and 1957.

Average Flow in Second-Feet

Daily:	Max.	121,000	Sept. 25, 1967	Min.	0	Occasionally
Monthly:	Max.	37,830	Oct. 1958	Min.	5.5	March 1957
Yearly:	Max.	6,410	1958	Min.	158	1957

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,860	1,510	996	710	⋔3,340	2,500	2,480	932	⋔15,400	55,800	3,780	⋔2,910
2	1,790	1,290	⋔ 833	710	2,940	1,990	2,610	826	⋔15,600	⋔48,700	3,810	2,880
3	2,040	⋔1,110	717	⋔1,040	3,300	1,640	3,030	622	15,400	40,300	4,100	2,850
4	2,120	999	819	1,240	3,520	1,750	2,930	795	⋔14,800	⋔33,000	⋔4,700	⋔2,760
5	2,170	1,330	826	1,410	⋔3,380	⋔1,670	2,830	667	⋔12,500	26,300	3,810	2,630
6	⋔2,260	1,010	936	1,410	3,710	2,250	2,830	893	10,200	⋔22,100	⋔3,490	2,630
7	2,320	⋔1,010	1,020	⋔1,130	4,060	⋔2,310	⋔2,410	⋔1,160	⋔ 9,040	18,800	⋔3,600	2,630
8	2,120	833	⋔1,020	1,220	⋔3,080	2,450	2,410	1,210	8,580	11,700	4,100	⋔2,560
9	2,100	629	1,030	1,410	3,530	2,280	2,420	1,110	8,120	⋔ 9,110	⋔4,480	2,510
10	2,170	⋔ 572	823	⋔1,590	⋔3,990	2,040	⋔2,530	664	7,270	10,700	4,730	2,480
11	⋔1,550	466	826	1,740	4,030	2,020	2,220	⋔ 682	⋔ 6,110	13,900	4,730	⋔2,550
12	⋔1,140	406	1,040	⋔2,250	3,640	1,960	2,150	678	5,330	⋔15,100	4,870	2,400
13	⋔ 833	533	⋔1,080	2,130	4,060	2,330	⋔2,270	946	⋔ 4,870	14,900	⋔4,520	2,180
14	643	717	1,390	⋔2,250	4,170	⋔2,590	1,850	⋔1,330	4,450	14,900	4,410	2,190
15	784	1,030	⋔1,470	2,220	⋔4,730	2,840	⋔1,490	⋔1,370	4,170	16,200	4,200	⋔2,190
16	⋔ 660	1,070	1,380	2,420	3,810	2,610	1,480	1,330	4,060	⋔16,700	⋔4,170	2,460
17	1,250	⋔ 964	1,170	⋔2,690	1,080	2,730	1,570	⋔ 936	3,960	16,300	⋔4,030	3,960
18	1,780	847	1,590	3,060	1,360	3,390	1,110	1,060	⋔ 3,850	15,700	3,850	⋔4,310
19	1,300	653	1,400	⋔3,190	⋔1,520	⋔3,310	872	2,030	3,850	⋔15,300	3,850	4,450
20	⋔ 879	872	1,590	3,670	1,300	3,200	749	4,700	5,720	14,300	3,670	4,340
21	915	1,120	1,710	⋔3,780	2,380	3,300	⋔ 745	2,490	12,500	⋔13,000	⋔3,640	4,380
22	1,050	1,220	⋔1,740	3,250	⋔1,500	3,380	678	431	⋔20,400	12,000	3,570	⋔4,310
23	1,120	1,240	⋔1,740	2,740	1,410	⋔3,330	678	⋔1,580	⋔51,900	11,200	3,570	⋔3,990
24	1,170	⋔1,130	1,180	⋔3,250	1,340	2,690	678	7,980	117,000	⋔10,700	3,480	3,710
25	1,120	939	837	3,190	⋔1,240	2,580	678	⋔12,600	121,000	10,100	⋔3,430	3,480
26	⋔1,150	1,000	795	3,230	1,300	⋔2,830	⋔ 745	⋔11,800	117,000	9,850	3,410	2,760
27	1,310	1,300	⋔ 837	⋔3,410	1,510	3,030	675	11,600	104,000	⋔ 9,290	⋔3,180	⋔2,080
28	⋔1,150	1,310	1,010	3,320	1,510	3,220	⋔ 484	⋔11,800	89,700	⋔ 6,530	3,060	1,820
29	1,240		1,020	⋔2,820	⋔1,510	⋔3,090	473	⋔14,400	77,000	5,260	2,930	2,210
30	1,450		⋔ 971	3,020	1,580	⋔2,940	470	⋔14,800	65,300	4,270	2,900	3,160
31	1,510		749		1,740		⋔ 886	⋔16,400		⋔ 3,710		3,640
Sum	44,954	27,110	34,545	69,500	81,570	78,250	49,431	129,822	939,080	525,720	116,070	93,410

Month	Current Year 1967: 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 1954-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	3.25	-1.51	10	2,740	†14	484	1,450	89,196	82,073	166,200	1,090
Feb.	.92	-1.77	† 1	1,510	†13	396	968	53,802	68,475	241,900	830
Mar.	1.18	-1.18	†21	1,740	3	625	1,120	68,546	78,377	235,500	339
Apr.	7.64	- .95	†22	5,300	† 1	710	2,320	137,884	85,944	155,700	3,160
May	6.63	-2.82	15	5,400	17	70.6	2,630	161,812	113,280	202,400	35,360
June	3.77	- .36	22	3,450	13	353	2,610	155,206	151,180	217,800	7,850
July	3.15	-1.51	3	3,050	†28	470	1,600	98,050	74,764	253,970	2,000
Aug.	16.34	-3.15	31	17,100	†22	35.3	4,170	257,297	60,194	257,297	943
Sept.	30.51	4.23	24	131,000	19	3,740	31,300	1,862,856	223,157	1,862,856	3,920
Oct.	26.80	4.07	1	60,000	31	2,600	17,000	1,042,905	288,353	2,326,000	1,730
Nov.	7.45	4.53	12	5,120	†29	2,760	3,880	230,232	153,599	1,438,000	1,430
Dec.	7.12	2.95	19	4,700	28	1,610	3,010	185,277	90,830	540,100	1,500
Yearly	30.51	-3.15		131,000		35.3	6,000	4,343,063	1,470,226	4,640,968	114,749

⋔ Discharge measurement made on this day † And other days

RIO GRANDE AT HIDALGO, TEXAS

DESCRIPTION: Staff gage located on the downstream side of the left pier of the international highway bridge between Hidalgo, Texas and Reynosa, Tamaulipas at latitude 26° 09' 10", longitude 98° 27' 05", and river mile 158.9; 12.7 river miles downstream from Anzalduas Dam, and 1,089.3 river miles downstream from the American Dam at El Paso, Texas. Meter measurements are made from the bridge. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 11 discharge measurements, 2 by the United States Section and 9 by the Mexican Section of this Commission, and a record of gage heights based on frequent staff gage readings during the flood period. Computations by shifting control methods. Records available: July 1928 through 1931; January through July, and September 1935; April 26, 1938 through November 8, 1939; 1934, peak flows only; 1940 through July 16, 1948, complete gage height record and peak flows; and 1932 through 1967, flood flows.

REMARKS: This station is operated during flood periods only. When the river at this station reached a stage of about 100 feet above mean sea level during the 1967 flood, water began to flow into the Hackney Lake Inlet of the United States Floodway System.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 83,870 second-feet on October 2, 1932 with a gage height of 104.88 feet. On September 7, 1932, a peak reached this same elevation with a discharge of 83,830 second-feet.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1										✝43,700		
2										✝39,900		
3										✝35,200		
4										30,200		
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
23									24,400			
24									✝51,200			
25									✝74,300			
26									79,900			
27									✝73,300			
28									61,600			
29									✝51,600			
30									46,400			
31												
Sum												

Month	Current Year 1967								Period		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low						
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.											
Feb.											
Mar.											
Apr.											
May											
June											
July											
Aug.											
Sept.	104.80		26	80,200							
Oct.											
Nov.											
Dec.											
Yearly	104.80			80,200							

✝ Discharge measurement made on this day

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. Flood waters were diverted into this floodway system in 1967.

Floodwater entering the system through the Mission and Hackney Lake Inlets is measured at the Mission and Hackney Branch Stations on State Highway No. 336 bridges 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. A concrete and sheet pile structure at the point of division controlled the flow into the Arroyo Colorado Floodway until some time during September 24, 1967 when floodwaters in the overtaxed floodway system damaged the structure, resulting in largely uncontrolled flow into this floodway. The flow of the Arroyo Colorado Floodway is measured at El Fuste Siphon south of Mercedes and further downstream at the bridge on U. S. Highway No. 83 south of Harlingen. The North Floodway flow is measured at the bridge on old U. S. Highway No. 83 west of Mercedes and farther downstream at the bridge on U. S. Highway No. 77 near Sebastian.

In 1967, diversion of river flow at the Mission Inlet began when the river at Anzaldúas Dam reached a stage of approximately 110.5 feet above mean sea level, and into the Hackney Lake Inlet when the river reached a stage of approximately 100 feet above mean sea level at the Hidalgo-Reynosa Bridge gage.

A total of 1,210,141 acre-feet of flood flow was diverted through this floodway system in 1967.

MISSION BRANCH FLOODWAY SOUTH OF MCALLEN, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located in the pilot channel of the floodway on the downstream side of the State Highway No. 336 bridge at latitude 26° 10' 10", longitude 98° 14' 10", about 2 miles south of McAllen, Texas, and 8.5 channel miles from the point of diversion. The point of diversion is at river mile 177.8, 6.2 river miles above Anzaldúas Dam, and 1,070.4 river miles downstream from 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 11 discharge measurements and a continuous record of gage heights during the flood period. Computations by shifting control methods. Flood measurements are made from the highway bridge.

REMARKS: Besides floodwaters from the Rio Grande, the floodway carries local storm, drainage, and seepage flows. Prior to 1958, this station was named "North Floodway South of McAllen, Texas."

Mean Daily Discharge in Second-Feet 1967 - Period Summary

Aug. 31	♯ 63.4	Sept. 4	178	Sept. 22	♯θ 1,180	Sept. 26	80,800	Sept. 30	7,680	Oct. 4	490
Sept. 1	214	5	74.9	23	♯ 12,200	27	♯ 64,000	Oct. 1	3,660	5	292
2	♯ 303			24	♯ 77,500	28	37,500	2	1,540		
3	276	Total	1,109.3	25	81,000	29	♯ 15,800	3	663	Total	384,305

Period	Maximum Gage-Feet	Date	Maximum Second-Feet	Total Acre-Feet
Aug. 31 - Sept. 5	89.76	Sept. 3	329	2,200

Period	Maximum Gage-Feet	Date	Maximum Second-Feet	Total Acre-Feet
Sept. 22 - Oct. 5	104.96	Sept. 26	83,300	762,269

HACKNEY BRANCH FLOODWAY SOUTH OF MCALLEN, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located in the pilot channel of the floodway on the downstream side of the bridge on State Highway No. 336 at latitude 26° 08' 30", longitude 98° 14' 30", about 3.5 miles south of McAllen, Texas, and 4.5 channel miles from the point of diversion. The point of diversion is at river mile 164.7, 6.9 river miles downstream from Anzaldúas Dam, and 1,089.3 river miles downstream from 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 6 discharge measurements and a continuous record of gage heights during the flood period. Computations by shifting control methods. Flood measurements are made from the highway bridge.

REMARKS: Besides floodwaters from the Rio Grande, the floodway carries local storm, drainage, and seepage flows. Prior to 1958, this station was named "South Floodway South of McAllen, Texas."

Mean Daily Discharge in Second-Feet 1967 - Period Summary

Sept. 23	‡ 565	Sept. 27	36,400	Oct. 1	8,550	Oct. 5	284				
24	♯ 22,700	28	♯ 29,800	2	5,040	6	* 58.8				
25	♯ 39,000	29	23,100	3	2,310						
26	42,700	30	14,400	4	♯ 1,020	Total	225,927.8				

Maximum Gage-Feet	Date	Maximum Second-Feet	Total Acre-Feet
106.22	Sept. 26	43,300	448,128

θ Largely local storm flow ‡ Includes 35 percent local storm flow * Partly estimated
♯ Discharge measurement made on this day

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY

On the United States Side

NORTH FLOODWAY WEST OF MERCEDES, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located in the pilot channel of the floodway on the upstream side of the old U. S. Highway No. 83 bridge at latitude 26° 08' 30", longitude 97° 55' 50", on the west city limit of Mercedes, Texas, and about 2 channel miles from the point where the Main Floodway divides into the North Floodway and Arroyo Colorado. The zero of the gage is 0.16 foot above mean sea level, U. S. C. & G. S. datum (I.B.&W.C. Survey, 1967).

RECORDS: Based on 9 discharge measurements and a continuous record of gage heights during the flood period. Computations by shifting control methods. Flood measurements are made from the highway bridge.

REMARKS: Besides a portion of Rio Grande floodwaters from the Main Floodway, the North Floodway carries local storm, drainage, and seepage flows.

Mean Daily Discharge in Second-Feet 1967 - Period Summary

Sept. 23	6,840	Sept. 27	52,100	Oct. 1	14,700	Oct. 5	2,720	Maximum Gage-Feet	Date	Maximum Second-Feet	Total Acre-Feet
24	⸸ 34,900	28	⸸ 42,000	2	10,700	6	2,050				
25	⸸ 57,200	29	27,900	3	6,940	7	836				
26	⸸ 60,100	30	⸸ 19,600	4	4,470	Total	343,056	72.45	Sept. 26	61,200	680,452

NORTH FLOODWAY NEAR SEBASTIAN, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located in the pilot channel of the floodway on the downstream side of the U. S. Highway No. 77 bridge at latitude 26° 18' 50", longitude 97° 46' 35", about 2 miles south-southeast of Sebastian, Texas, and about 23 channel miles from the point where the Main Floodway divides into the North Floodway and Arroyo Colorado. The zero of the gage is 0.37 foot above mean sea level, U. S. C. & G. S. datum (I.B.&W.C. Survey, 1967).

RECORDS: Based on 7 discharge measurements and a continuous record of gage heights during the flood period. Computations by shifting control methods. Flood measurements are made from the highway bridge.

REMARKS: Besides a portion of Rio Grande floodwaters from the Main Floodway, the North Floodway carries local storm, drainage, and seepage flows.

Mean Daily Discharge in Second-Feet 1967 - Period Summary

Sept. 24	14,900	Sept. 29	31,800	Oct. 4	⸸ 8,700	Oct. 9	⊕ 2,090	Maximum Gage-Feet	Date	Maximum Second-Feet	Total Acre-Feet
25	⸸ 58,300	30	⸸ 23,100	5	6,680	10	⊕ 1,730				
26	⸸ 58,400	Oct. 1	18,200	6	⸸ 5,050	11	⊕ 1,490				
27	55,200	2	14,700	7	3,520			46.67	Sept. 26	59,200	721,875
28	⸸ 45,800	3	11,500	8	⊕ 2,780	Total	363,940				

ARROYO COLORADO SOUTH OF MERCEDES, TEXAS

DESCRIPTION: Cableway, bubbler gage, and water-stage recorder located on the left bank immediately upstream from the Hidalgo and Cameron Counties Water Control and Improvement District No. 9 El Fuste Siphon at latitude 26° 07' 45", longitude 97° 54' 45", near the south city limit of Mercedes, Texas, and about 2 channel miles from the point where the Main Floodway divides into the North Floodway and Arroyo Colorado. The zero of the gage is 51.97 feet above mean sea level, U. S. C. & G. S. datum (I.B.&W.C. Survey, 1967).

RECORDS: Based on 3 discharge measurements during the flood period, a low and medium flow rating curve defined by meter measurements, and a continuous record of gage heights. Computations by shifting control methods.

REMARKS: Besides a portion of Rio Grande floodwaters from the Main Floodway, the Arroyo Colorado carries local storm, drainage, and seepage flows.

Mean Daily Discharge in Second-Feet 1967 - Period Summary

Sept. 23	‡ 1,420	Sept. 27	⸸ 51,300	Oct. 1	6,590	Oct. 5	1,470	Maximum Gage-Feet	Date	Maximum Second-Feet	Total Acre-Feet
24	20,200	28	37,300	2	3,910	6	1,190				
25	⸸ 52,800	29	24,000	3	2,530	7	1,010				
26	58,200	30	⸸ 13,800	4	1,850	Total	277,570	15.94	Sept. 26	60,100	550,560

ARROYO COLORADO FLOODWAY SOUTH OF HARLINGEN, TEXAS

DESCRIPTION: Staff gages located on south service road bridge for U. S. Highway No. 83 and on the right bank downstream from the bridge at latitude 26° 10' 20", longitude 97° 41' 55", on the south city limit of Harlingen, Texas, and about 18 channel miles from the point where the Main Floodway divides into the North Floodway and Arroyo Colorado. The zero of the gages is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 6 discharge measurements during the flood period and a record of gage heights based on hourly, or more frequent, staff gage readings. Computations by shifting control methods. Flood measurements are made from the highway bridge.

REMARKS: Besides a portion of Rio Grande floodwaters from the Main Floodway, the Arroyo Colorado carries local storm, drainage, and seepage flows.

Mean Daily Discharge in Second-Feet 1967 - Period Summary

Sept. 24	5,860	Sept. 27	54,700	Sept. 30	17,600	Oct. 3	* 3,600	Maximum Gage-Feet	Date	Maximum Second-Feet	Total Acre-Feet
25	⸸ 45,000	28	⸸ 49,500	Oct. 1	9,460						
26	⸸ 54,500	29	31,700	2	5,560	Total	277,480	43.85	#	55,400	550,382

⊕ Partly flood flow; largely local storm drainage
‡ Local storm flow
* Partly estimated
# September 26 and 27
⸸ Discharge measurement made on this day

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 located approximately 38 miles (Retamal Heading), 51 miles (San Rafael), and 107 miles (Floodway No. 2), respectively, downstream from Anzaldúas Dam. Floodwaters were diverted into this floodway system in 1967.

Floodwater diverted through Retamal Heading flows through Retamal Canal into Culebrón and Villa Cárdenas Lakes; and floodwater diverted at San Rafael flows, via San Rafael Drain, into these same lakes from where it flows in a southeastwardly direction via Floodway No. 1 into the Gulf of Mexico. Floodwater entering Floodway No. 2 flows south and east into the Gulf of Mexico.

During the great flood of September 1967, the United States and Mexican floodway systems did not have sufficient combined capacity to divert from the Rio Grande and carry to the Gulf those floodwaters which exceeded the carrying capacity of the Rio Grande channel. Therefore, it was found necessary to breach the river levees on the Mexican side at several places in order to increase the diverting capacities of the floodway intakes. The Culebrón lateral which parallels the river and serves as a defense levee was topped and cut by the Rio Grande flood allowing water to flow freely into Culebrón Lake. Floodwater from the Rio Grande also cut the river levee at a point 11 miles upstream from the intake to Floodway No. 2. Floodwater discharging through this cut flooded the region before it found a way to the Gulf via drains and Floodway No. 2. Because the floodgates into Floodway No. 1 did not have sufficient capacity to pass to the Gulf the rate of floodwaters entering Culebrón and Villa Cárdenas Lakes through Retamal Canal, San Rafael Drain, and the various levee cuts and overflows, it was necessary to breach the Matamoros-Reynosa highway at Empalme to provide these lakes with additional exit capacity.

A total of 1,034,300 acre-feet of flood flow was diverted through this floodway system in 1967. In addition, 57,900 acre-feet of flood flow was diverted through Anzaldúas Canal during the August-September 1967 flood. There were no diversions for irrigation purposes through Retamal Canal in 1967.

RETAMAL CANAL AND CULEBRON LATERAL OVERFLOW NEAR RIO BRAVO, TAMAULIPAS

DESCRIPTION: Cableway located at latitude 26° 03' 15", longitude 90° 02' 00", 0.9 mile downstream from the canal headgate, and about 5 miles northwest of Río Bravo, Tamaulipas. The canal intake is at river mile 133.5, 25.4 river miles downstream from the international highway bridge between Hidalgo, Texas and Reynosa, Tamaulipas, and 1,114.7 river miles downstream from the American Dam at El Paso, Texas. The headgate is about 1,000 feet from the Rio Grande. The elevation of the gate sill is at 59.06 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Low flows based on 13 discharge measurements during the flood periods by the Ministry of Hydraulic Resources and high flows estimated, by the Mexican Section of this Commission by means of discharge hydrographs of the Rio Grande at the Hidalgo and Progreso gaging stations.

REMARKS: Retamal Canal, with a gate capacity of 7,000 second-feet, was originally constructed to transport water for irrigation purposes from the Rio Grande into Culebrón Lake. During the great flood of September 1967, the diverting capacity of this canal was increased to over 35,000 second-feet by breaching the river levee immediately downstream from the canal intake thus permitting additional floodwater to enter this channel bypassing the canal gate which was restricting the flow into the canal. Floodwaters from the Rio Grande cut Culebrón Lateral, which runs parallel to the Rio Grande, at a place about 6 miles west of here. Part of this floodwater discharged into Retamal Canal and was measured at this station; while the remainder, which entered directly into Culebrón Lake, was accounted for in the estimates of high flow made by the Mexican Section of this Commission and are included in the tabulation below.

Mean Daily Discharge in Second-Feet 1967 - Period Summary

Aug. 29	↑ 660	Sept. 5	↑ 1,280	Sept. 22	1,450	Sept. 29	34,100	Oct. 6	14,200	Oct. 13	↑ 1,940
30	1,870	6	219	23	↑ 4,590	30	27,100	7	11,500	14	↑ 1,090
31	↑ 2,240	7	0	24	↑ 7,630	Oct. 1	23,000	8	8,400	15	↑ 106
Sept. 1	2,340			25	9,250	2	20,200	9	4,770	16	0
2	2,550			26	9,960	3	17,900	10	↑ 1,100		
3	↑ 2,120			27	26,500	4	16,800	11	↑ 2,220		
4	2,000	Total	15,279	28	37,100	5	15,700	12	↑ 1,240	Total	297,846

Period	Date	ø Maximum Second-Feet	Total Acre-Feet	Period	Date	ø Maximum Second-Feet	Total Acre-Feet
Aug. 29 - Sept. 7	Sept. 2	2,550	30,795	Sept. 22 - Oct. 16	Sept. 28	37,100	590,777

↑ Discharge measurement made on this day ø Mean daily

RIO GRANDE FLOODWAY DISCHARGES
LOWER RIO GRANDE VALLEY

On the Mexican Side

SAN RAFAEL FLOODWAY AND RIVER LEVEE CUTS AT LA PALMITA AND LAS BAYITAS NEAR PROGRESO, TAMAULIPAS

DESCRIPTION: Flood flows into this floodway are measured a short distance from the intake which is located at latitude 26° 03' 20", longitude 97° 54' 55", and river mile 120.6, 3.2 river miles downstream from the Progreso International Bridge, 51.0 river miles downstream from Anzaldúas Dam, and 1,127.6 river miles downstream from the American Dam at El Paso, Texas. This floodway, constructed in 1957, consists of two parallel levees 0.6 of a mile apart and a pilot channel 330 feet wide of variable depth. The intake to the pilot channel is normally closed by an earth dike which is removed in times of floods as was done in 1967. The elevation of the intake is at 67.3 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Low flows based on 22 discharge measurements, 20 by the Ministry of Hydraulic Resources and 2 by the Mexican Section of this Commission. The two measurements made by the Mexican Section were made during the August-September flood. High flows were estimated by the Mexican Section of this Commission by means of discharge hydrographs for the Rio Grande at the Progreso and San Benito gaging stations.

REMARKS: This is the first year this floodway has been used to divert water from the Rio Grande. During the great flood of September 1967, this channel did not have sufficient capacity to divert the excess floodwaters from the Rio Grande. It was, therefore, necessary to breach the river levee on the Mexican side at two points in order to provide the floodwaters additional passageways into Culebrón Lake. These levee cuts were made at points known as La Palmita and Las Bayitas, 2.5 and 5.6 river miles, respectively, downstream from the San Rafael intake. Flood flows through these two cuts were taken into account in the estimates of high flows made by the Mexican Section of this Commission and are included in the tabulation below.

Mean Daily Discharge in Second-Feet 1967 - Period Summary

Aug. 28	236	Sept. 6	♠ 346	Sept. 22	♠ 547	Oct. 1	4,660	Oct. 10	1,170	Oct. 19	♠ 1,660
29	399	7	0	23	♠ 3,000	2	3,640	11	1,130	20	♠ 1,520
30	682			24	4,870	3	2,620	12	1,060	21	♠ 1,200
31	♠ 1,010			25	♠ 6,890	4	2,480	13	♠ 953	22	♠ 883
Sept. 1	1,070			26	16,200	5	2,480	14	♠ 1,310	23	♠ 318
2	♠ 943			27	19,700	6	2,150	15	♠ 1,550	24	35.3
3	♠ 1,230			28	11,000	7	1,840	16	1,770		
4	♠ 1,180			29	8,190	8	1,550	17	♠ 2,330		
5	♠ 911	Total	8,007	30	♠ 6,640	9	1,310	18	♠ 2,190	Total	118,846.3

Period	Date	ø Maximum Second-Feet	Total Acre-Feet
Aug. 28 - Sept. 7	Sept. 3	1,230	15,877

Period	Date	ø Maximum Second-Feet	Total Acre-Feet
Sept. 22 - Oct. 24	Sept. 27	19,700	235,737

FLOODWAY NO. 2 AND OVERFLOW AT TAHUACHAL NEAR MATAMOROS, TAMAULIPAS

DESCRIPTION: The intake to this floodway is located at latitude 25° 55' 30", longitude 97° 33' 50", and river mile 65.0; 9.4 river miles upstream from the international highway bridge (Gateway) between Brownsville, Texas and Matamoros, Tamaulipas, 106.6 river miles downstream from Anzaldúas Dam, and 1,183.2 river miles downstream from the American Dam at El Paso, Texas. The intake to this floodway is normally closed by the river levee which, during large floods, is breached as required to permit floodwater to enter the floodway as was done during the September - October 1967 flood.

RECORDS: Mean daily discharges were estimated by the Mexican Section of this Commission by means of discharge hydrographs for the Rio Grande at the San Benito and Brownsville gaging stations.

REMARKS: During the September - October 1967 flood, the river levee, which normally seals the floodway intake, was breached at six places to allow excess floodwaters to enter this floodway and discharge into the Gulf. Floodwaters from the Rio Grande, cut the defense levee at a place known as El Tahuachal, 6.2 river miles upstream from the intake. Flood flow through this cut was taken into account in the estimate of flow and is included in the tabulation below.

Mean Daily Discharge in Second-Feet 1967 - Period Summary

Sept. 24	147	Sept. 28	5,690	Oct. 2	6,320	Oct. 6	5,330	Oct. 10	2,080
25	1,500	29	7,420	3	5,970	7	4,800	11	313
26	3,140	30	7,770	4	5,900	8	4,410	12	0
27	4,770	Oct. 1	6,850	5	5,690	9	3,400	Total	81,500

Date	ø Maximum Second-Feet	Total Acre-Feet
Sept. 30	7,770	161,617

♠ Discharge measurement made on this day ø Mean daily

DIVERSIONS FROM THE RIO GRANDE

UNITED STATES SIDE - ANZALDUAS DAM TO PROGRESO

Since June 1956 the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam has been under the jurisdiction of the 93rd District Court of Texas, the disposition of such water being made through its Special Water Master.

During 1967, 145,711 irrigable acres and several towns and rural homes were served water diverted from the Rio Grande between Anzalduas Dam and the Progreso International Bridge under the jurisdiction of this Court. The area irrigated from the Rio Grande in this river reach was 18.7% of the total irrigable acres below Falcon Dam.

The total diversion during 1967 in this river reach was 168,283 acre-feet, or 18.3% of the total water diverted from the Rio Grande below Falcon Dam. About 95% of the water diverted in this river reach 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 these diversions were furnished by the Special Water Master and were either measured by flow meters or were determined from periodic current meter measurements of pump discharges and recorded pump operating time. More than one crop per year is often grown on parts of this land.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	147	283	122	137	647	657	658	308	3.6	0	35.1	0
2	324	307	326	9.5	695	398	349	294	11.7	0	62.4	9.9
3	342	298	286	229	643	3.8	768	292	3.6	0	133	0
4	318	198	228	287	661	35.8	629	310	18.6	0	91.5	192
5	335	93.6	81.8	326	712	204	671	227	13.0	0	30.6	212
6	356	204	345	276	553	95.2	598	60.6	19.3	0	29.7	212
7	290	109	341	288	259	63.1	600	286	24.2	0	10.2	177
8	111	131	336	292	586	155	478	348	17.6	0	0	75.7
9	275	117	330	47.5	658	119	235	346	10.8	0	0	12.8
10	78.3	57.5	352	330	687	73.7	717	339	3.6	0	0	1.4
11	38.6	160	276	398	666	12.1	718	364	46.9	0	0	2.4
12	139	30.8	105	448	673	406	721	242	276	0	0	14.7
13	166	176	333	495	674	504	687	62.7	356	2.9	4.5	15.1
14	105	311	419	506	305	564	572	307	381	4.0	4.0	0
15	39.0	349	430	410	405	679	373	393	199	0	5.8	0
16	71.0	309	452	201	274	662	191	279	106	0	11.7	0
17	206	316	455	536	9.6	576	499	288	88.3	5.5	9.1	0
18	209	268	418	632	0	363	440	320	34.1	14.6	3.2	12.8
19	182	59.5	110	608	113	779	451	430	7.2	6.1	0	26.6
20	99.5	375	400	706	0	774	478	728	0	9.6	0	1.0
21	71.5	428	497	709	0	794	428	572	0	0	0	118
22	6.8	418	485	603	64.1	834	177	345	0	4.1	17.6	161
23	121	431	455	376	56.4	789	82.5	102	0	228	0	13.1
24	101	416	247	732	128	562	227	34.2	0	330	7.7	4.4
25	106	319	130	611	164	273	230	12.7	0	171	7.0	2.9
26	101	124	104	673	110	667	326	8.6	0	18.6	0	25.6
27	160	358	169	651	105	641	298	3.6	0	68.9	7.5	124
28	87.6	314	203	532	57.2	734	262	3.6	0	27.9	20.9	165
29	39.8		238	597	362	770	145	3.6	0	9.3	10.4	50.1
30	218		222	327	440	802	60.6	11.2	0	19.6	10.0	2.8
31	290		196		537		252	3.6		118		0
Sum	5,134.1	6,960.4	9,091.8	12,973.0	11,244.3	13,989.7	13,321.1	7,324.4	1,620.5	1,038.1	511.9	1,632.3

Month	Current Year 1967: Average Rainfall Inches ** 1957-1967	1967	Ø Extreme Second-Feet: High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1967: Acre-Feet Average	Maximum	Minimum
Jan.	1.34	1.44	6	356	22	6.8	166	10,183	9,997	33,848	1,885
Feb.	1.32	.69	23	431	12	30.8	249	13,806	9,136	28,535	1,140
Mar.	.71	.77	21	497	5	81.8	293	18,034	14,469	36,100	1,050
Apr.	1.50	.33	24	732	2	9.5	432	25,732	18,277	25,732	3,630
May	2.61	1.82	5	712	† 18	0	363	22,303	20,868	35,500	3,091
June	2.41	1.64	22	834	3	3.8	466	27,749	28,848	42,000	14,658
July	.70	.33	3	768	23	60.6	430	26,422	25,018	41,100	13,105
Aug.	1.55	5.44	20	728	† 27	3.6	236	14,528	16,617	25,800	7,922
Sept.	3.94	14.25	14	381	20	0	54.0	3,214	13,515	28,000	3,214
Oct.	3.03	3.48	24	330	† 1	0	33.5	2,059	15,015	29,215	2,059
Nov.	1.64	3.06	3	133	† 8	0	17.1	1,015	9,337	22,818	1,015
Dec.	1.52	1.58	† 5	212	† 1	0	52.7	3,238	9,362	17,500	1,978
Yearly	22.27	34.83		834		0	232	168,283	190,459	241,270	147,810

** United States side - Average of several stations in the reach Ø Mean daily † And other days

RIO GRANDE NEAR PROGRESO, TEXAS

DESCRIPTION: Gravity well, water-stage recorder, and digital transmitter located on the downstream side of the center pier of the Progreso International Bridge at latitude 26° 03' 45", longitude 97° 57' 00", and river mile 123.8; 0.8 river mile downstream from the Progreso pumping plant, 2 miles south of Progreso, Texas, 47.3 river miles downstream from Anzaldúas Dam, and 1,124.4 river miles downstream from the American Dam at El Paso, Texas. Meter measurements are made from the bridge. An auxiliary gage well and water-stage recorder located about 300 feet upstream from the bridge are used when the low-flow channel shifts to the left bank. The zero of the gage at both recorders is 52.56 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 94 discharge measurements during the year, 74 by the Mexican Section and 20 by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: December 1952 through August 24, 1953; and December 1953 through 1967.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcon Dam, flow at this station after August 25, 1953 was controlled largely by releases from Falcon Reservoir, 150 miles upstream. Excessive upstream flood flows are partly diverted through the Mission and Hackney Lake Inlets of the United States floodway system and through Retamal Heading of the Mexican floodway system before reaching this station. The transmitter relays gage height data upon interrogation by telephone via commercial circuits.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 60,700 second-feet on September 26, 1967 with a gage height of 24.84 feet. Min. no flow several days in June, July, and August 1953.

Average Flow in Second-Feet

Daily:	Max.	48,400	Sept. 26, 1967	Min.	0	Frequently	1953
Monthly:	Max.	16,730	Oct. 1958	Min.	5.1	June	1953
Yearly:	Max.	3,960	1967	Min.	666		1957

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,460	1,200	950	622	2,550	1,280	2,010	♯ 480	♯ 12,600	♯ 23,600	3,530	2,990
2	1,610	1,130	862	562	♯ 2,430	1,970	1,920	590	♯ 12,400	22,700	3,400	2,980
3	♯ 1,440	999	579	692	2,190	1,880	2,070	551	♯ 12,700	♯ 21,700	3,520	2,950
4	1,640	890	530	♯ 738	♯ 2,450	1,840	♯ 2,200	374	♯ 12,600	20,300	3,710	2,930
5	1,770	901	554	819	2,580	1,700	2,160	399	♯ 12,300	♯ 17,900	4,100	♯ 2,760
6	1,830	1,160	710	♯ 996	2,510	♯ 1,610	♯ 2,100	509	♯ 11,300	15,500	3,570	2,660
7	1,890	♯ 890	♯ 607	1,000	3,160	2,090	2,040	706	♯ 10,100	♯ 13,700	♯ 3,370	♯ 2,660
8	2,030	858	562	840	3,400	2,160	1,840	♯ 791	9,110	11,400	3,570	2,690
9	2,000	848	622	932	♯ 2,460	2,160	1,990	833	♯ 8,550	♯ 9,180	3,920	2,690
10	♯ 1,980	604	♯ 625	1,190	2,630	2,010	2,030	♯ 763	7,950	8,160	4,240	2,700
11	2,020	576	523	♯ 1,170	3,050	1,900	♯ 1,780	498	6,960	10,100	4,450	2,680
12	1,510	417	544	1,270	3,110	1,820	1,540	357	5,760	♯ 13,700	4,560	♯ 2,710
13	1,080	385	826	1,630	2,860	♯ 1,620	1,470	473	4,660	13,500	♯ 4,560	2,710
14	848	♯ 392	♯ 660	1,520	3,290	1,830	1,630	752	4,130	14,100	4,310	2,610
15	593	321	837	1,610	3,740	1,920	♯ 1,410	♯ 893	3,740	15,000	4,200	2,590
16	724	♯ 540	932	1,800	3,390	1,980	1,300	968	3,740	♯ 15,900	4,030	2,610
17	♯ 675	777	862	2,060	3,220	1,890	1,260	964	3,640	16,000	3,950	2,940
18	915	629	745	♯ 2,050	1,580	2,220	♯ 1,150	724	3,530	♯ 15,700	3,810	3,810
19	1,510	622	1,060	2,290	1,510	2,670	886	660	3,600	15,400	3,710	♯ 4,310
20	♯ 1,230	597	1,180	♯ 2,380	♯ 1,530	♯ 2,420	569	1,510	3,920	14,800	3,670	4,520
21	858	♯ 417	♯ 1,090	2,820	1,660	2,330	378	♯ 2,920	6,570	14,000	♯ 3,570	4,480
22	826	579	1,110	2,850	2,230	♯ 2,380	434	1,720	12,300	13,000	3,500	4,310
23	999	717	♯ 1,180	2,610	♯ 1,600	2,430	569	544	18,000	♯ 12,000	3,440	4,240
24	♯ 1,020	♯ 720	1,230	2,320	1,510	2,450	625	1,700	22,500	11,200	3,410	4,100
25	1,010	650	1,020	♯ 2,420	♯ 1,280	2,300	♯ 473	6,920	27,100	10,700	3,360	3,850
26	♯ 961	703	777	2,390	1,180	2,290	445	♯ 9,820	48,400	♯ 10,300	3,300	♯ 3,520
27	939	773	727	2,280	1,320	♯ 2,170	410	10,700	47,700	10,000	3,270	3,080
28	1,080	♯ 812	♯ 657	2,730	1,540	2,310	357	♯ 11,200	33,000	8,650	♯ 3,170	2,530
29	1,070		735	2,520	1,430	2,400	295	♯ 11,600	27,700	6,430	3,120	2,360
30	1,130		745	2,200	♯ 1,240	2,230	266	♯ 12,200	25,600	4,700	3,050	2,720
31	♯ 1,200		742		1,160		385	♯ 12,500		♯ 3,920		3,300
Sum	39,848	20,107	24,783	51,311	69,790	62,260	37,992	95,619	422,160	413,240	111,370	97,990

Month	Current Year 1967: 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 1954-1967 Acre-Feet Average	Maximum	Minimum
Jan.	5.81	2.33	† 10	2,240	15	523	1,290	79,005	85,017	241,800	17,340
Feb.	3.90	1.48	1	1,220	15	275	717	39,876	71,072	371,900	12,620
Mar.	3.84	2.03	24	1,280	12	456	798	49,151	73,097	379,400	4,990
Apr.	6.92	2.20	† 21	3,050	2	523	1,710	101,755	80,348	144,000	32,060
May	8.20	3.38	17	3,880	31	1,040	2,250	138,507	102,240	146,100	33,164
June	6.43	3.38	19	2,730	1	1,040	2,080	123,511	125,667	176,300	63,350
July	5.77	1.57	† 4	2,270	30	211	1,230	75,382	72,026	235,822	16,970
Aug.	19.62	1.84	31	12,700	24	300	3,080	189,578	56,684	189,578	10,400
Sept.	24.84	7.94	26	60,700	18	3,530	14,100	837,532	144,013	837,532	21,650
Oct.	22.44	8.60	1	24,400	31	3,670	13,300	819,671	174,301	1,028,000	14,030
Nov.	10.10	7.41	11	4,630	30	3,020	3,710	220,881	98,796	735,000	18,000
Dec.	9.78	5.51	20	4,590	29	2,300	3,160	194,355	83,330	487,200	7,370
Yearly	24.84	1.48		60,700		211	3,960	2,869,204	1,166,591	2,869,204	482,410

♯ Discharge measurement made on this day † And other days

DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE - PROGRESO TO SAN BENITO

Since June 1956 the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam has been under the jurisdiction of the 93rd District Court of Texas, the disposition of such water being made through its Special Water Master.

During 1967, 313,989 irrigable acres and several towns and rural homes were served water diverted from the Rio Grande between the Progreso International Bridge and the gage near San Benito under the jurisdiction of this Court. The area irrigated from the Rio Grande in this river reach was 40.3% of the total irrigable acres below Falcon Dam.

The total diversion during 1967 in this river reach was 429,826 acre-feet or 46.7% of the total water diverted from the Rio Grande below Falcon Dam. About 99% of the water diverted in this river reach was determined by this Commission through continuous records of discharges at open channel rating stations and at deflection meter stations developed by this Commission. The records for the rest of these diversions were furnished by the Special Water Master and were either measured by flow meters or were determined from periodic current meter measurements of pump discharges and recorded pump operating time. More than one crop per year is often grown on parts of this land.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,030	933	299	400	1,580	675	1,450	344	228	129	191	87.5
2	1,350	972	239	290	1,780	787	1,070	351	140	111	174	30.7
3	1,260	948	303	342	1,760	434	1,450	350	129	128	224	47.2
4	1,310	750	260	603	1,830	466	1,570	362	74.0	96.0	166	167
5	1,270	302	132	662	1,880	988	1,650	218	118	189	29.1	119
6	1,330	421	120	674	1,830	1,050	1,660	106	30.0	67.0	151	106
7	1,320	540	340	720	1,830	1,200	1,650	453	69.7	58.0	119	49.9
8	1,020	494	326	557	2,060	1,500	1,300	478	55.0	43.0	22.2	37.9
9	837	431	292	582	2,120	1,570	991	457	144	30.0	39.6	48.6
10	375	362	294	987	2,100	1,400	1,150	392	38.0	83.2	124	33.5
11	654	245	203	999	2,260	1,090	1,120	185	171	21.0	38.8	67.8
12	925	168	144	876	2,470	1,010	1,140	163	69.8	38.0	0	92.1
13	650	232	552	1,090	2,290	924	1,080	47.0	146	90.9	47.7	114
14	376	405	675	1,140	2,090	1,070	1,050	602	130	112	99.7	108
15	263	433	613	1,080	1,320	1,410	932	688	295	25.0	22.8	53.4
16	509	295	663	1,040	1,170	1,540	576	605	237	26.0	159	46.8
17	576	366	637	1,350	855	1,540	765	586	67.4	24.0	16.5	47.1
18	597	133	438	1,530	844	1,430	511	373	29.8	111	97.8	89.5
19	597	9.2	634	1,810	665	1,690	221	584	0	23.0	63.8	17.0
20	787	344	701	1,740	575	1,870	404	620	0	112	91.5	0
21	754	498	830	1,770	300	1,830	315	871	0	23.0	111	203
22	672	477	874	1,810	181	1,920	133	1,170	0	22.0	21.7	418
23	541	530	881	1,770	398	1,840	51.6	1,100	0	177	0	301
24	566	626	770	1,750	168	1,650	328	626	0	134	152	114
25	744	609	656	1,800	422	1,400	325	1,030	0	134	21.7	0
26	874	370	499	1,890	423	1,710	190	1,100	0	114	4.0	264
27	932	615	450	1,870	269	1,710	361	623	0	140	128	190
28	1,010	492	390	1,800	47.2	1,780	377	212	0	65.3	21.5	244
29	676		491	1,720	339	1,720	220	198	0	18.0	31.8	269
30	760		444	1,400	318	1,660	140	247	0	187	77.3	82.9
31	689		513		387		153	170		62.8		0
Sum	25,254	13,000.2	14,663	36,052	36,561.2	40,864	24,333.6	15,311.0	2,171.7	2,594.2	2,446.5	3,448.9

Month	Current Year 1967: Average Rainfall Inches ** 1957-1967	1967	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1967 Acre-Feet Average	Maximum	Minimum
Jan.	1.36	1.49	2	1,350	15	263	815	50,091	34,838	81,383	9,940
Feb.	1.61	.85	2	972	19	9.2	464	25,786	20,122	45,337	5,166
Mar.	.78	1.29	23	881	6	120	473	29,084	24,008	54,200	3,280
Apr.	1.57	.03	26	1,890	2	290	1,200	71,509	44,207	74,653	12,900
May	3.09	2.25	12	2,470	28	47.2	1,180	72,519	52,031	74,629	10,366
June	2.69	1.42	22	1,920	3	434	1,360	81,054	78,845	123,000	46,957
July	1.09	.58	6	1,660	23	51.6	785	48,266	43,331	77,132	13,077
Aug.	2.01	4.47	22	1,170	13	47.0	494	30,369	28,223	45,900	13,538
Sept.	4.53	14.41	15	295	†19	0	72.4	4,308	26,878	59,400	4,308
Oct.	3.25	4.14	5	189	29	18.0	83.7	5,146	25,694	58,164	5,146
Nov.	2.00	4.06	3	224	†12	0	81.6	4,853	17,971	44,359	4,853
Dec.	1.69	2.00	22	418	†20	0	111	6,841	22,031	37,500	6,663
Yearly	25.67	36.99		2,470		0	594	429,826	418,179	525,771	299,374

** United States side - Average of several stations in the reach Ø Mean daily † And other days

RIO GRANDE NEAR SAN BENITO, TEXAS

DESCRIPTION: Cableway, concrete control weir, bubbler gage, water-stage recorders (graphic and digital), and impulse-type transmitter, located on the left bank at latitude 26° 02' 00", longitude 97° 43' 40", and river mile 96.5; 5.6 river miles downstream from San Benito pumping plant, about 9.5 miles southwest of San Benito, Texas, and 1,151.7 river miles downstream from the American Dam at El Paso, Texas. An auxiliary gage well is located 0.2 river mile upstream from the gage. The zero of the gage is at mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on the weir discharge table defined by meter measurements, 47 discharge measurements during the year, and a continuous record of gage heights. High flow computations by shifting control methods. Records available: November 26, 1952 through August 25, 1953, and December 1953 through 1967.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcon Dam, flow at this station after August 25, 1953 was controlled largely by releases from Falcon Reservoir, 177.3 river miles upstream. Excessive upstream flood flows are partly diverted through the United States and Mexican floodway systems before reaching this station. The transmitter relays gage height data via leased telephone circuits to the Anzalduas Dam office of the United States Section of this Commission and to the McAllen, Texas office of the Special Water Master, who, under the jurisdiction of the 93rd District Court of Texas, has control of the United States portion of water in Falcon Reservoir and in the Rio Grande below Falcon Dam. The data is recorded automatically at both locations. The concrete control weir was constructed in December 1965 and the gage was moved to its present location just above the weir on January 4, 1967.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 25,000 second-feet on September 29, 1967 with a gage height of 61.05 feet. Min. no flow occurs frequently.

Average Flow in Second-Feet ‡

Daily:	Max.	24,800	September 29, 1967	Min.	0	Frequently
Monthly:	Max.	13,400	October 1967	Min.	39.5	December 1956
Yearly:	Max.	2,970	1967	Min.	200	1956

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	221	416	400	217	758	451	512	197	⸸ 11,000	21,900	3,430	2,790
2	412	280	591	220	728	690	646	178	⸸ 10,800	21,100	3,040	2,680
3	232	200	433	265	516	1,550	⸸ 657	233	11,200	20,700	2,920	2,750
4	193	168	251	325	530	1,300	588	226	11,500	20,000	2,980	2,620
5	364	384	279	⸸ 171	613	972	618	148	⸸ 11,400	19,100	3,380	2,480
6	408	594	433	189	635	452	465	238	10,900	18,100	3,490	2,270
7	488	592	424	293	848	629	478	312	10,200	⸸ 17,000	2,960	2,250
8	718	327	226	258	⸸ 1,440	737	468	⸸ 273	⸸ 9,310	15,800	2,930	2,480
9	929	⸸ 444	196	258	715	628	631	316	8,530	⸸ 13,200	3,250	2,480
10	1,250	337	273	⸸ 264	462	635	⸸ 909	362	7,960	11,300	3,610	2,470
11	1,670	267	292	240	602	772	⸸ 700	367	7,170	10,700	3,920	2,390
12	974	313	301	216	635	650	482	294	⸸ 6,190	11,800	4,330	2,390
13	426	235	358	409	613	⸸ 625	391	307	5,140	⸸ 12,300	4,440	⸸ 2,320
14	588	165	200	386	758	695	⸸ 411	309	4,350	12,500	⸸ 4,360	2,190
15	506	104	⸸ 101	380	1,930	661	532	⸸ 183	3,770	12,800	4,170	2,120
16	⸸ 257	⸸ 24.1	173	503	2,540	505	518	250	3,420	13,300	4,050	2,140
17	128	180	208	589	⸸ 2,980	484	532	344	3,460	⸸ 14,200	3,860	2,310
18	116	383	225	469	1,550	598	459	408	3,470	14,300	3,760	3,040
19	420	519	267	438	486	887	539	279	3,620	14,500	3,590	3,510
20	562	384	332	431	638	753	386	310	3,970	⸸ 13,900	3,460	3,730
21	255	136	371	679	882	507	206	1,570	4,880	13,400	3,360	3,760
22	142	75.7	188	912	1,940	⸸ 466	162	⸸ 1,620	8,280	12,700	3,330	3,630
23	233	81.6	206	803	1,510	506	320	215	⸸ 11,600	12,000	3,370	3,500
24	384	118	236	666	1,040	613	364	34.6	⸸ 13,300	⸸ 11,100	3,300	3,580
25	363	122	371	⸸ 562	922	723	⸸ 242	3,070	15,000	10,800	3,310	3,570
26	191	143	361	595	592	610	203	6,880	⸸ 16,300	10,600	3,340	3,300
27	127	165	309	574	598	386	205	⸸ 8,650	⸸ 17,300	⸸ 10,400	3,290	2,890
28	99.9	269	257	587	1,130	427	174	⸸ 9,840	⸸ 19,600	9,660	⸸ 3,240	2,310
29	262		⸸ 266	884	1,100	558	102	10,300	24,800	7,770	3,130	1,800
30	310		208	762	735	595	110	10,500 ⸸	23,900	5,720	2,990	2,110
31	430		267		715		154	10,700 ⸸		⸸ 4,190		2,900
Sum	13,658.9	7,426.4	9,003	13,545	31,141	20,065	13,164	68,913.6	302,320	416,840	104,590	84,760

Month	Current Year 1967: 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 1954-1967: Acre-Feet Average	Acre-Feet Maximum	Acre-Feet Minimum
Jan.	39.49	34.38	11	1,840	28	96.8	441	27,092	37,943	227,000	2,920
Feb.	35.64	34.02	7	672	16	13.2	265	14,730	44,062	363,000	3,380
Mar.	35.51	34.40	2	617	15	96.0	290	17,857	42,007	360,000	2,560
Apr.	36.67	34.54	29	1,040	5	155	452	26,867	34,652	118,000	11,500
May	42.86	35.00	17	3,130	9	374	1,000	61,768	42,675	70,168	16,873
June	37.97	34.93	3	1,670	1	323	669	39,799	46,717	81,119	16,100
July	36.29	34.42	10	1,090	29	94.8	425	26,111	34,808	197,219	4,690
Aug.	55.77	34.00	31	10,800	24	13.0	2,220	136,690	28,075	136,690	3,100
Sept.	61.05	44.38	29	25,000	16	3,360	10,100	599,652	99,753	599,652	7,710
Oct.	60.59	45.52	1	23,000	31	3,890	13,400	826,802	137,507	826,802	3,840
Nov.	47.05	42.35	13	4,460	30	2,890	3,490	207,454	75,024	662,000	5,640
Dec.	45.91	38.40	21	3,830	29	1,720	2,730	168,121	61,008	479,000	2,430
Yearly	61.05	34.00		25,000		13.0	2,970	2,152,943	684,231	2,152,943	145,520

‡ Period 1954-1967 ⸸ Discharge measurement made on this day

DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE - SAN BENITO TO BROWNSVILLE

Since June 1956 the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam has been under the jurisdiction of the 93rd District Court of Texas, the disposition of such water being made through its Special Water Master.

During 1967, 117,453 irrigable acres and several towns and rural homes were served water diverted from the Rio Grande between the river gages near San Benito and near Brownsville under the jurisdiction of this Court. The area irrigated from the Rio Grande in this river reach was 15.1% of the total irrigable acres below Falcon Dam.

The total diversion during 1967 in this river reach was 134,233 acre-feet or 14.6% of the total water diverted from the Rio Grande below Falcon Dam. About 89% of the water diverted in this river reach 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 these diversions were furnished by the Special Water Master and were either measured by flow meters or were determined from periodic current meter measurements of pump discharges and recorded pump operating time. More than one crop per year is often grown on parts of this land.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	116	312	199	69.3	616	114	430	113	93.0	22.6	55.0	22.2
2	211	255	242	25.2	580	117	448	163	91.1	7.8	73.0	25.8
3	286	173	267	159	548	82.1	478	136	50.2	10.1	106	12.1
4	245	99.0	210	204	478	114	506	202	2.2	9.1	47.9	38.3
5	250	75.0	156	220	447	482	517	111	4.1	6.0	6.5	22.3
6	308	204	155	162	524	541	452	108	6.6	11.4	6.5	29.4
7	344	269	199	103	546	395	395	200	5.8	9.1	14.1	30.6
8	284	280	221	119	597	480	387	256	5.8	10.4	7.2	11.0
9	304	233	93.3	85.8	659	558	395	189	8.9	0	104	12.7
10	289	279	132	230	531	469	473	248	5.2	4.4	134	11.3
11	305	114	72.6	288	496	382	426	272	12.1	5.2	11.7	9.3
12	333	80.4	51.9	178	600	391	420	136	15.0	3.4	9.4	13.5
13	170	157	205	218	583	445	375	61.9	15.4	11.9	10.8	11.3
14	57.5	156	220	316	538	473	293	225	13.4	8.5	10.5	19.6
15	63.1	160	129	369	409	468	166	228	13.8	9.4	111	9.5
16	272	138	110	361	387	414	117	196	12.3	9.2	202	11.2
17	272	66.7	90.4	466	353	404	288	200	10.0	9.1	272	8.8
18	171	51.3	115	530	420	384	247	200	11.4	7.2	11.9	15.3
19	124	49.2	69.7	447	372	516	249	106	3.5	9.5	10.5	14.6
20	340	121	194	428	303	514	267	57.7	0	8.3	134	23.4
21	372	104	244	379	185	472	151	51.6	0	16.5	106	90.3
22	206	56.2	219	523	243	421	92.8	43.1	0	16.5	120	72.0
23	158	60.8	157	492	251	358	46.4	45.9	10.6	11.2	52.0	67.5
24	228	123	121	483	113	372	158	23.5	5.6	86.4	9.9	14.4
25	281	114	27.0	588	123	383	243	52.9	5.2	88.7	54.7	16.1
26	230	47.1	19.6	534	400	489	209	53.3	5.6	89.3	9.8	113
27	208	89.6	76.5	551	503	417	128	38.4	10.2	87.0	45.4	173
28	141	142	118	468	363	395	156	68.4	10.9	104	20.5	217
29	122		124	451	174	460	92.0	64.1	5.8	86.4	27.5	198
30	181		144	587	88.6	441	44.6	80.9	7.7	21.4	30.3	200
31	271		129		85.8		129	93.4		22.2		136
Sum	7,142.6	4,009.3	4,511.0	10,034.3	12,516.4	11,951.1	8,778.8	4,024.1	441.4	802.2	1,814.1	1,649.5

Month	Current Year 1967: Average Rainfall Inches ** 1957-1967	1967	Ø Extreme Second-Feet: High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1967 Acre-Feet: Average	Maximum	Minimum
Jan.	1.51	1.74	21	372	14	57.5	230	14,167	10,329	22,100	1,290
Feb.	1.98	.79	1	312	26	47.1	143	7,952	6,300	12,284	1,028
Mar.	.68	.91	3	267	26	19.6	146	8,948	6,347	15,200	705
Apr.	1.58	.01	25	588	2	25.2	334	19,903	11,620	21,828	2,180
May	2.61	1.60	9	659	31	85.8	404	24,826	15,495	27,670	2,561
June	2.79	.83	9	558	3	82.1	398	23,705	20,372	32,279	8,280
July	1.07	.72	5	517	30	44.6	283	17,413	11,613	23,145	3,687
Aug.	2.31	6.52	11	272	24	23.5	130	7,982	7,965	10,700	4,291
Sept.	5.64	19.23	1	93.0	†20	0	14.7	876	6,421	12,600	876
Oct.	3.21	4.43	28	104	9	0	25.9	1,591	6,382	11,300	1,591
Nov.	1.68	1.66	17	272	† 5	6.5	60.5	3,598	5,003	9,021	2,320
Dec.	1.94	1.94	28	217	17	8.8	53.2	3,272	6,516	11,200	2,163
Yearly	27.00	40.38		659		0	185	134,233	114,363	161,503	84,432

** United States side - Average of several stations in the reach Ø Mean daily † And other days

RIO GRANDE AT RAILROAD BRIDGE, BROWNSVILLE, TEXAS

DESCRIPTION: Gravity well and water-stage recorder located on the downstream side of the left pier of the railroad bridge between Brownsville, Texas and Matamoros, Tamaulipas at latitude 25° 53' 00", longitude 97° 30' 25", and river mile 56.3; 3.7 river miles downstream from the Brownsville pumping plant, 8.7 river miles downstream from the inlet to Floodway No. 2 in Mexico, and 1,191.9 river miles downstream from the American Dam at El Paso, Texas. Meter measurements are made from the bridge. The zero of the gage is 12.11 feet above mean sea level, U. S. C. & G. S. datum.

RECORDS: Based on 4 discharge measurements during the flood periods, 3 by the Mexican Section and one by the United States Section of this Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1901 through 1913; 1923 through July 16, 1954; and, for flood flows only, through 1967.

REMARKS: This station is operated during flood periods only.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 36,320 second-feet on June 22, 1903; and since 1923, 32,950 second-feet on April 30, 1949 with a gage height of 24.89 feet on the present gage.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1									11,000	15,900		
2									11,300	15,300		
3									11,400	15,000		
4									11,800	14,800		
5									11,800	14,400		
6									11,400	13,800		
7									10,800	13,200		
8									9,820	12,500		
9									8,900	11,500		
10									8,230	10,500		
11									7,770	9,710		
12									7,100	10,000		
13									6,220	11,300		
14									5,300	12,000		
15									4,520	12,400		
16									3,990	12,900		
17									3,710	13,200		
18									3,670	13,500		
19									3,740	13,600		
20									4,170	13,500		
21									4,520	13,300		
22									5,690	12,900		
23									8,860	12,300		
24									11,600			
25									12,000			
26									12,300			
27								6,110	12,300			
28								8,020	12,700			
29								9,290	13,500			
30								10,000	15,300			
31								10,600				
Sum									265,410			

Month	Current Year 1967								Period		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
				High		Low					
	High	Low	Day		Day				Average	Maximum	Minimum
Jan.											
Feb.											
Mar.											
Apr.											
May											
June											
July											
Aug.											
Sept.		10.43	30	ø 15,300	18	3,670	8,830	526,251			
Oct.	23.39		1	16,000							
Nov.											
Dec.											
Yearly											

ø Mean daily

RIO GRANDE NEAR BROWNSVILLE, TEXAS

DESCRIPTION: Cableway, bubbler gage, and water-stage recorder located on the left bank at latitude 25° 52' 35", longitude 97° 27' 15", and river mile 48.8; 1,000 feet downstream from El Jardín pumping plant, 6.8 river miles downstream from the international highway bridge (Gateway) between Brownsville, Texas and Matamoros, Tamaulipas, and 1,199.4 river miles downstream from 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 79 discharge measurements during the year, 50 by the United States Section and 29 by the Mexican Section of this Commission, and a continuous record of gage heights. Computations by shifting control methods. Records available: 1934 through 1967.

REMARKS: Except for diversions, tributary inflows, and drainage returns below Falcon Dam, flow at this station after August 25, 1953 was controlled largely by releases from Falcon Reservoir, 225 river miles upstream. Excessive upstream flood flows are partly diverted into the United States and Mexican floodway systems before reaching this station.

EXTREME FLOWS FROM RECORDS: Momentary: Max. 31,700 second-feet on October 8, 1945 with a gage height of 31.48 feet. Min. no 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 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	204	126	83.0	129	199	779	120	⋔ 43.0	⋔ 10,500	⋔ 15,500	⋔ 4,620	3,140
2	167	146	105	176	195	531	61.7	43.2	⋔ 10,800	⋔ 15,000	3,930	2,980
3	140	116	181	144	217	762	138	36.0	⋔ 10,900	14,800	3,650	2,940
4	83.4	88.5	156	97.5	91.0	1,230	188	37.0	⋔ 11,200	14,500	3,560	2,950
5	45.6	100	92.9	⋔ 96.5	47.5	979	77.7	37.1	⋔ 11,300	⋔ 13,900	3,720	2,900
6	⋔ 39.0	185	163	56.8	88.6	454	87.6	33.7	⋔ 11,100	⋔ 13,400	4,030	2,770
7	100	260	173	41.7	125	202	56.5	34.1	⋔ 10,500	⋔ 12,800	3,930	2,640
8	162	279	190	120	301	286	53.4	44.7	9,790	12,200	3,640	2,620
9	324	143	143	156	555	247	67.7	30.5	8,930	⋔ 11,400	3,620	2,610
10	550	134	79.2	150	169	203	⋔ 167	47.1	8,240	10,600	3,780	2,620
11	860	168	120	48.2	40.8	233	338	47.7	7,750	9,620	4,080	2,600
12	1,000	182	193	42.7	⋔ 55.1	422	293	87.5	⋔ 7,110	⋔ 10,200	4,460	⋔ 2,560
13	683	195	155	37.9	69.9	333	128	210	6,280	11,600	4,770	2,570
14	440	111	112	⋔ 44.6	56.9	200	⋔ 77.5	133	⋔ 5,340	12,500	⋔ 4,780	2,510
15	480	71.5	⋔ 97.0	45.2	206	195	231	⋔ 92.6	4,590	12,900	4,610	2,390
16	373	39.1	52.3	36.7	1,130	234	377	37.9	4,080	13,500	4,350	2,310
17	131	⋔ 25.5	41.6	54.3	1,830	115	364	33.1	3,810	⋔ 13,800	4,060	2,310
18	65.9	39.6	67.7	95.0	2,090 ⋔	113	305	86.9	3,730	13,900	4,040	2,520
19	47.0	198	96.3	46.0	1,120	154	270	210	3,760	13,700	4,020	3,150
20	92.7	330	143	36.5	411	⋔ 299	266	271	4,200	⋔ 13,400	3,850	3,700
21	174	290	100	46.2	580	254	200	302	4,420	13,400	3,740	3,980
22	130	150	120	155	916	104	185	1,350	5,230	13,100	3,620	4,000
23	87.0	84.8	67.3	283	1,290	117	158	⋔ 1,310	8,250	12,500	3,490	3,870
24	74.9	54.5	87.1	264	1,350	185	206	470	⋔ 11,200	⋔ 11,600	3,420	3,780
25	119	52.0	163	173	1,110	242	163	243	⋔ 11,800	10,900	3,480	3,830
26	134	62.5	245	58.2	807	⋔ 280	⋔ 92.5	2,600	⋔ 12,100	10,400	3,490	3,750
27	77.5	70.0	239	62.6	316	181	76.5	5,250	⋔ 12,200	⋔ 10,100	3,440	3,330
28	41.5	79.0	200	40.8	375	73.2	74.8	⋔ 7,480	⋔ 12,600	9,560	⋔ 3,370	2,750
29	38.8		154	62.6	912	⋔ 47.8	62.2	8,860	⋔ 13,400	8,810	3,320	2,200
30	⋔ 44.8		131	189	1,060	58.4	92.9	9,640	⋔ 15,200	7,200	3,250	1,920
31	75.8		95.5		902		37.9	10,200		⋔ 5,580		2,140
Sum	6,984.9	3,780.0	4,045.9	2,989.0	18,615.8	9,513.4	5,015.9	49,301.1	260,310	372,370	116,120	90,340

Month	Current Year 1967								Period 1954-1967		
	Extreme Gage Feet		Extreme Second-Feet				Average Second-Feet	Total Acre-Feet	Acre-Feet		
			High		Low				Average	Maximum	Minimum
	High	Low	Day		Day						
Jan.	10.60	4.00	12	1,050	† 5	28.0	225	13,854	24,973	224,000	283
Feb.	7.12		21	375	16	∅ 25.5	135	7,498	37,197	362,000	1,060
Mar.	6.40		† 26	262	17	∅ 41.6	131	8,025	34,997	361,000	2,050
Apr.	6.64		23	302	20	∅ 36.5	99.6	5,929	22,172	127,000	875
May	14.18	3.88	18	2,170	11	37.8	601	36,924	24,174	63,462	4,140
June	10.70	3.94	4	1,270	30	42.3	317	18,870	25,474	60,836	2,430
July	6.75	3.84	17	436	31	30.6	162	9,949	26,514	190,638	1,120
Aug.	28.18	3.65	31	10,300	17	18.7	1,590	97,786	18,722	97,786	218
Sept.	31.08	18.20	30	15,900	18	3,690	8,680	516,325	84,458	516,325	950
Oct.	31.07	20.98	1	15,800	31	5,020	12,000	738,596	110,345	738,596	756
Nov.	20.98	16.81	1	5,030	30	3,220	3,870	230,324	64,312	528,000	1,290
Dec.	18.93	13.16	22	4,040	31	1,870	2,910	179,189	55,834	480,000	524
Yearly	31.08			15,900			2,570	1,863,269	529,172	1,863,269	30,596

⋔ Discharge measurement made on this day ∅ Mean daily † And other days

DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE - BROWNSVILLE TO THE GULF

Since June 1956 the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam has been under the jurisdiction of the 93rd District Court of Texas, the disposition of such water being made through its Special Water Master.

During 1967, 6,230 acres, or 0.8% of the total irrigable acreage below Falcon Dam, were served by diversions between the gage near Brownsville and the mouth of the river under the jurisdiction of this Court.

The total diversion during 1967 in this river reach was 4,022 acre-feet, or 0.4% of the total water diverted from the Rio Grande below Falcon Dam. All the records of diversions in this river reach were furnished by the Special Water Master and were determined by periodic current meter measurements of pump discharges and recorded pump operating time. More than one crop per year is often grown on parts of this land.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	6.4	4.8	0	2.8	22.5	7.4	17.0	2.6	0	0	1.0	3.5
2	13.1	4.2	0	1.2	22.5	6.4	12.0	3.2	0	0	1.0	6.1
3	11.9	2.1	0	.6	20.8	5.6	15.8	.5	.7	0	1.0	12.9
4	15.9	2.1	0	.6	23.3	1.9	16.5	0	0	0	0	11.0
5	16.7	3.1	0	0	24.6	12.2	16.5	0	0	0	1.1	9.4
6	16.7	4.7	2.3	0	15.1	12.2	16.5	1.5	0	0	1.1	9.4
7	16.7	7.1	2.8	0	21.7	14.4	12.0	4.5	0	0	1.1	7.6
8	3.5	7.1	2.8	0	26.9	12.0	4.5	2.9	0	0	1.1	7.6
9	3.5	7.1	2.3	0	28.9	12.0	7.1	4.6	0	0	1.1	7.6
10	2.6	7.1	3.8	5.5	28.9	10.6	9.1	6.2	0	0	1.1	2.6
11	6.6	7.1	3.8	5.5	26.9	13.3	9.1	6.3	0	0	1.1	3.5
12	6.6	1.4	0	5.5	30.1	13.3	9.1	5.3	0	0	1.1	1.0
13	2.9	3.5	3.6	7.0	25.8	16.1	9.7	6.4	0	0	0	1.0
14	0	5.1	2.5	7.0	27.0	16.1	9.7	2.1	0	0	0	0
15	.9	5.1	2.5	7.0	28.4	18.2	4.0	2.1	0	0	0	0
16	2.1	6.4	2.5	7.8	27.1	12.7	4.6	2.6	0	0	0	0
17	3.5	5.0	4.3	11.6	27.1	12.6	8.6	4.4	0	0	0	0
18	2.1	3.6	4.3	11.6	25.0	6.7	8.6	3.9	0	0	0	0
19	2.1	3.2	1.8	9.5	22.2	5.9	2.2	3.1	0	0	0	0
20	2.1	4.7	3.8	11.0	13.8	5.9	3.2	.9	0	0	0	0
21	2.1	4.7	6.1	11.0	16.6	8.8	3.8	1.1	0	0	0	2.9
22	2.2	3.1	5.2	11.5	18.9	8.8	2.8	.9	0	0	0	2.9
23	4.1	3.1	4.9	12.7	21.5	5.9	0	.9	0	0	0	2.9
24	7.0	3.1	1.6	13.1	23.4	5.9	0	.9	0	0	0	0
25	7.0	2.5	1.6	14.7	24.9	5.7	0	.9	0	0	0	0
26	7.0	1.8	0	13.8	18.4	7.2	0	0	0	0	0	0
27	10.1	1.6	2.4	13.1	15.1	15.1	0	0	0	0	0	0
28	10.1	0	2.4	11.7	18.2	25.5	2.3	0	0	0	2.7	0
29	0		2.4	13.1	18.4	25.8	2.3	0	0	1.1	2.7	0
30	2.1		2.4	14.1	10.9	20.1	2.6	0	0	1.1	3.5	0
31	4.2		2.4		8.6		2.6	0		1.1		0
Sum	191.8	114.4	74.5	223.0	683.5	344.3	212.2	67.8	0.7	3.3	20.7	91.9

Month	Current Year 1967: Average Rainfall Inches ** 1957-1967	1967	Ø Extreme Second-Feet High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1967 Acre-Feet: Average	Maximum	Minimum
Jan.	1.75	2.12	† 5	16.7	† 14	0	6.2	380	495	1,275	0
Feb.	2.14	1.11	† 7	7.1	28	0	4.1	227	172	415	0
Mar.	.72	.53	21	6.1	† 1	0	2.4	148	139	305	0
Apr.	1.54	T	25	14.7	† 5	0	7.4	442	250	633	0
May	2.32	1.42	12	30.1	31	8.6	22.0	1,356	395	1,356	131
June	2.48	1.17	29	25.8	4	1.9	11.5	683	585	1,393	214
July	.92	.75	1	17.0	† 23	0	6.8	421	239	778	43.6
Aug.	2.14	6.98	13	6.4	† 4	0	2.2	134	149	317	63.5
Sept.	5.93	21.58	3	.7	† 1	0	0	1.4	77.6	190	0
Oct.	2.91	3.46	† 29	1.1	† 1	0	.1	6.5	76.3	218	0
Nov.	1.68	.58	30	3.5	† 4	0	.7	41.1	92.0	252	0
Dec.	2.07	1.47	3	12.9	† 14	0	3.0	182	125	335	0
Yearly	26.60	41.17		30.1		0	5.6	4,022.0	2,794.9	5,036.3	1,332.5

Ø Mean daily ** United States side - Average of several stations in the reach † And other days
T Trace

DIVERSIONS FROM THE RIO GRANDE
UNITED STATES SIDE BELOW FALCON DAM

Since June 1956 the United States portion of the water in Falcon Reservoir and in the Rio Grande below Falcon Dam has been under the jurisdiction of the 93rd District Court of Texas, the disposition of such water being made through its Special Water Master.

The official records for 1967 show that, in this area, 778,429 irrigable acres, several towns and many rural homes were served Rio Grande water under the jurisdiction of this Court.

The total diversion in 1967 was 920,721 acre-feet, most of which was made by pumping from the river. About 94% of the water diverted was determined by this Commission through continuous records of discharges 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 and were either measured by flow meters or were determined from periodic current meter measurements of pump discharges and recorded pump operating time. 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.

Diversion data pertaining to "Diversions from the Rio Grande - United States Side below Rio Grande City" for the period 1922 through 1957 may be found in previous issues of these Water Bulletins. The area irrigated below Rio Grande City is about 99% of the total acreage irrigated on the United States side below Falcon Dam.

A breakdown by river reaches of the total diversion below Falcon Dam shown in the tabulation below may be found in appropriate downstream order on preceding pages of this Water Bulletin. Because the mean daily discharges are rounded, the total acre-feet shown in the summary below may not equal the sum of the acre-feet of the individual reaches.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,390	1,800	911	906	3,080	1,920	3,040	1,250	338	153	462	143
2	2,020	1,750	1,150	559	3,310	1,530	2,200	1,300	254	120	453	107
3	2,280	1,680	1,180	1,240	3,310	594	3,350	1,310	195	141	614	82.2
4	2,270	1,230	965	1,660	3,339	729	3,320	1,300	106	108	412	517
5	2,270	560	545	1,810	3,360	1,900	3,490	811	169	196	118	455
6	2,430	886	1,050	1,730	3,190	1,880	3,370	433	162	79.9	256	410
7	2,260	979	1,340	1,670	2,840	1,970	3,280	1,450	191	68.6	190	339
8	1,610	1,000	1,330	1,430	3,700	2,420	2,600	1,600	167	62.3	42.7	136
9	1,580	850	1,180	1,050	3,980	2,600	1,860	1,510	215	45.7	158	85.8
10	770	774	1,240	2,220	3,880	2,200	2,960	1,560	124	105	282	59.2
11	1,130	597	886	2,390	4,030	1,650	2,870	1,260	460	60.3	91.3	96.9
12	1,680	363	537	2,220	4,310	2,140	2,950	776	635	91.1	12.4	171
13	1,220	782	1,620	2,490	4,000	2,260	2,780	342	794	173	65.7	262
14	691	1,140	1,900	2,590	3,330	2,530	2,370	1,600	891	161	118	168
15	375	1,210	1,770	2,380	2,390	3,010	1,760	1,810	788	58.5	167	138
16	911	970	1,820	2,000	2,070	3,040	1,080	1,610	440	131	375	101
17	1,100	1,020	1,740	3,090	1,510	2,830	2,010	1,620	198	154	334	62.1
18	1,080	706	1,390	3,470	1,500	2,420	1,640	1,320	122	245	174	125
19	925	297	1,090	3,630	1,330	3,580	1,350	1,460	29.7	102	81.1	67.3
20	1,240	1,120	1,900	3,630	1,020	3,800	1,540	1,730	19.0	215	271	148
21	1,260	1,390	2,230	3,590	620	3,760	1,250	1,930	12.0	139	296	456
22	988	1,340	2,260	3,590	792	3,840	651	1,830	12.0	80.9	252	693
23	934	1,330	2,150	3,100	1,040	3,580	376	1,430	22.5	578	66.6	391
24	1,020	1,460	1,490	3,770	793	3,030	1,170	758	7.3	688	217	141
25	1,300	1,250	943	3,910	1,080	2,340	1,270	1,110	8.0	534	149	27.3
26	1,310	705	714	3,910	1,290	3,530	1,190	1,200	7.3	358	17.1	452
27	1,440	1,410	1,130	3,310	1,150	3,480	1,260	676	11.9	423	256	621
28	1,360	1,220	1,170	2,990	620	3,650	1,230	296	12.5	312	113	724
29	920		1,320	2,960	1,250	3,670	776	278	7.2	182	185	601
30	1,280		1,280	2,500	1,250	3,560	499	351	9.1	382	161	294
31	1,460		1,260		1,490		1,030	279		402		142
Sum	42,504	29,819	41,491	75,795	70,854	79,443	60,522	36,190	6,407.5	6,549.3	6,389.9	8,215.8

Month	Current Year 1967: Average Rainfall Inches ** 1957-1967	1967	Ø Extreme Second-Feet: High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1967: Acre-Feet Average	Maximum	Minimum
Jan.	1.35	1.58	6	2,430	15	375	1,370	84,307	66,889	166,872	16,205
Feb.	1.47	.65	1	1,800	19	297	1,060	59,146	46,957	126,230	11,785
Mar.	.71	.66	22	2,260	12	537	1,340	82,297	63,549	149,000	6,280
Apr.	1.54	.86	†25	3,910	2	559	2,530	150,339	99,754	157,807	25,100
May	2.55	1.39	12	4,320	†21	620	2,290	140,559	116,086	171,000	20,436
June	2.51	1.41	22	3,840	3	594	2,650	157,575	159,770	259,000	86,810
July	.78	.53	5	3,490	23	376	1,950	120,045	105,516	178,000	41,158
Aug.	1.92	6.35	21	1,930	29	278	1,170	71,783	74,838	113,000	48,709
Sept.	4.63	17.12	14	891	29	7.2	214	12,709	63,205	136,000	12,709
Oct.	2.97	3.21	24	688	9	45.7	211	12,991	63,287	124,598	12,991
Nov.	1.59	2.88	3	614	12	12.4	213	12,674	43,894	97,969	12,674
Dec.	1.49	1.35	28	724	25	27.3	265	16,296	48,038	84,500	14,034
Yearly	23.51	37.99		4,320		7.2	1,270	920,721	951,783	1,153,049	678,925

** United States side - Average of several stations in the reach Ø Mean daily † And other days

OUTFALLS FROM SEWERS INTO THE RIO GRANDE

In Acre-Feet

EL PASO SEWAGE OUTFALL

This sewage enters the Rio Grande through the outfalls of the El Paso, Ascarate, and Ysleta Sewage Plants, located 6.6, 8.2, and 15 river miles, respectively, downstream from the American Dam. The outfall from the El Paso Plant consists of flows measured by a Parshall meter and estimates of amounts which bypass the meter. The Ascarate and Ysleta Plants are owned by the El Paso County Water Control and Improvement District No. 1, but all three plants are operated by the El Paso Water Utilities of the Public Service Board of the City of El Paso, Texas and all records are furnished by this agency.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1967	1,967	1,752	1,973	1,650	1,685	1,701	1,732	1,779	1,683	1,760	1,612	1,584	20,878
* Average	1,616	1,537	1,720	1,638	1,795	1,784	1,869	1,912	1,799	1,791	1,667	1,674	20,802

EAGLE PASS SEWAGE OUTFALL

This sewage outfall enters the Rio Grande 757.5 river miles downstream from the American Dam at El Paso, Texas and about 600 feet upstream from the Eagle Pass-Piedras Negras International Railroad Bridge. The records are based on weekly current meter measurements or gage height observations made by personnel of the International Boundary and Water Commission. There are no records available prior to 1962.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1967	59.7	61.1	58.5	54.1	35.5	30.5	27.8	51.0	68.6	66.4	62.1	64.5	639.8
# Average	53.2	52.7	47.4	43.7	42.7	39.7	34.8	42.4	49.4	51.5	53.5	57.0	568.0

LAREDO SEWAGE OUTFALL

This sewage outfall enters the Rio Grande 890.8 river miles downstream from the American Dam at El Paso, Texas and immediately upstream from 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
1967	425	417	515	483	666	572	596	424	289	334	409	386	5,516
* Average	320	332	403	399	450	429	424	387	346	329	360	332	4,511

BROWNSVILLE SEWAGE OUTFALL

This sewage outfall enters the Rio Grande 3.4 river miles downstream from the Gateway Bridge between Brownsville, Texas and Matamoros, Tamaulipas; 3.4 river miles upstream from the Brownsville Gaging Station; and 52.2 river miles from the Gulf of Mexico. Records are furnished by the City of Brownsville. No cooling water waste was returned to the Rio Grande by the City of Brownsville Water Plant.

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yearly
1967	299	220	268	248	301	373	371	367	366	467	282	297	3,859
* Average	276	256	305	266	279	312	308	300	295	312	284	269	3,462

* Period averages are for past 10 years # Period 1962-1967

MUNICIPAL AND INDUSTRIAL WATER USES

In Acre-Feet

Tabulated below are monthly and yearly amounts of water pumped directly from the Rio Grande into the municipal distribution systems of several cities along the border, except the City of El Paso which pumps its water from the Franklin Canal and the City of Del Rio which pumps its water from San Felipe Springs. The basic data for the cities are furnished by the municipalities. Central Power and Light Company furnishes the data for the Laredo Power Station. All diversions in the United States listed below are in the State of Texas, while those in Mexico are in the State of Tamaulipas, except for Piedras Negras which is in the State of Coahuila. Because of changing conditions, the period records are limited here to the past 10 years.

During March through October 1967, 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 11,384 acre-feet and is included in the figures below. All Rio Grande water used by United States municipalities below Falcon Dam is included in the figures shown under "Diversions from the Rio Grande - United States Side . . ." (by river reaches and total below Falcon Dam) on pages 67, 70, 79, 81, 83, 86, and 87 herein. The City of Reynosa, Tamaulipas, Mexico no longer pumps water from the Rio Grande. All its water supply is from the Rode Canal of the Marte R. Gómez Reservoir. Cd. Mier, Tamaulipas started diverting water from the Rio Grande for municipal use January 1953. There were no actual records kept of this diversion prior to May 1960. This diversion has been estimated to be 32.4 acre-feet per month during this period. The Del Mar Conservation District started diverting water from the Rio Grande in late December 1961, Piedras Negras in November 1964, and San Ygnacio in November 1965. The Laredo Power Station, Central Power and Light Company, started operations in April 1951. The Cd. Miguel Alemán, Tamaulipas water plant started operations in August 1967. Prior to this date, all water for municipal use was supplied by the Roma, Texas water plant. During August 1967, Cd. Miguel Alemán was supplied with 30.6 acre-feet of water by the Roma plant; and from September through December 1967, with 2.6 acre-feet.

Population data for all cities are estimates based on the 1960 official census, except Falcon Village where the population was estimated by the International Boundary and Water Commission, and Del Mar and San Ygnacio where the population was estimated from the number of meter connections.

In the United States

Month	EL PASO (Pop. 331,000)				DEL RIO Ø (Pop. 28,190)			
	1967	Period 1958-1967			1967	Period 1958-1967		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	0	0	0	0	398.7	286.0	407.0	185.3
Feb.	0	0	0	0	373.3	289.5	411.6	175.8
Mar.	831	323.8	831	37.9	589.3	436.6	599.2	219.0
Apr.	2,096	1,151.2	2,096	671.4	540.5	488.1	611.1	324.3
May	2,540	1,238.4	2,540	3.0	768.8	515.4	768.8	353.6
June	2,498	1,482.2	2,498	637.0	907.6	648.7	907.6	449.2
July	2,565	1,548.2	2,565	830.8	952.8	794.6	1,027.2	464.2
Aug.	1,978	1,555.8	1,978	881.5	837.5	764.8	1,147.4	532.5
Sept.	1,909	1,106.8	1,909	343.9	431.0	533.0	731.7	300.8
Oct.	1,010	337.7	1,016	0	404.6	378.4	521.1	241.5
Nov.	90	74.3	397	0	306.2	295.8	413.5	217.1
Dec.	0	67.7	677.1	0	301.6	271.9	372.0	220.1
Yearly	15,517	8,886.1	15,517	3,805.3	6,811.9	5,702.9	6,969.4	3,985.5

Month	EAGLE PASS (Pop. 16,500)				DEL MAR (Pop. 1,130)			
	1967	Period 1958-1967			1967	Period 1962-1967		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	161.3	121.6	161.3	87.9	22.6	6.7	22.6	0.3
Feb.	146.8	119.5	146.8	79.9	21.0	6.6	21.0	.6
Mar.	196.0	156.4	196.0	119.2	21.9	6.5	21.9	0
Apr.	187.0	154.7	187.0	114.3	35.3	10.4	35.3	0
May	254.9	172.0	254.9	119.2	31.9	9.6	31.9	0
June	258.6	209.4	258.6	137.1	32.9	11.0	32.9	0
July	291.0	233.9	293.1	173.1	37.3	13.3	37.3	0
Aug.	259.7	220.7	273.7	178.8	50.4	20.3	50.4	1.9
Sept.	164.8	177.6	229.9	119.2	21.2	13.6	22.8	1.7
Oct.	180.8	150.7	180.8	97.2	13.5	9.9	19.7	1.7
Nov.	161.9	129.8	187.1	93.8	27.9	14.0	32.1	1.5
Dec.	168.1	123.2	169.7	92.3	30.8	13.8	31.8	1.5
Yearly	2,425.9	1,969.5	2,425.9	1,445.4	346.7	135.7	346.7	15.0

Ø Includes Laughlin Air Force Base

MUNICIPAL AND INDUSTRIAL WATER USES
In Acre-Feet

In the United States

Month	LAREDO (Pop. 71,512)				LAREDO POWER STATION			
	1967	Period 1958-1967			1967	Period 1958-1967		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	773.4	581.7	773.4	399.1	36.7	29.6	40.2	15.4
Feb.	731.1	582.5	777.0	383.4	42.0	36.6	72.7	13.5
Mar.	990.6	774.8	990.6	511.6	48.7	39.6	79.3	10.7
Apr.	1,050.5	866.1	1,050.5	644.8	76.4	46.4	76.4	26.0
May	1,449.0	977.7	1,449.0	715.3	49.3	55.2	74.4	35.6
June	1,429.3	1,072.0	1,429.3	855.7	75.3	68.7	89.3	46.9
July	1,703.7	1,212.1	1,703.7	876.7	87.8	90.0	100.5	73.4
Aug.	1,248.4	1,139.5	1,324.0	917.6	75.6	97.1	126.5	77.0
Sept.	742.1	886.5	1,245.1	576.4	49.8	68.6	83.8	49.8
Oct.	815.5	802.4	994.7	476.7	46.4	40.8	62.3	11.6
Nov.	756.6	666.2	969.0	467.5	21.8	39.7	61.7	17.9
Dec.	702.8	603.2	823.5	470.5	40.3	37.3	59.2	20.7
Yearly	12,393.0	10,164.7	12,393.0	7,315.6	650.1	649.6	820.0	475.6

Month	SAN YGNACIO (Pop. 900)				NEW ZAPATA (Pop. 2,386)			
	1967	Period November 1965-1967			1967	Period 1958-1967		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	1.6	1.2	1.6	0.8	24.4	23.2	43.0	14.6
Feb.	2.5	1.8	2.5	1.1	26.7	23.9	40.2	13.2
Mar.	3.4	2.8	3.4	2.1	34.2	29.1	41.2	19.5
Apr.	4.0	3.2	4.0	2.4	36.0	34.3	46.0	26.6
May	2.4	2.0	2.4	1.5	36.6	33.1	46.4	18.3
June	1.4	1.6	1.9	1.4	40.7	37.2	49.2	27.0
July	.8	1.8	2.7	.8	46.8	43.5	57.6	34.1
Aug.	3.9	2.6	3.9	1.4	38.9	40.3	52.7	31.7
Sept.	1.9	1.7	1.9	1.5	23.8	31.8	50.4	20.2
Oct.	1.9	1.7	1.9	1.5	25.0	30.4	47.6	19.8
Nov.	1.4	1.8	2.5	1.4	21.1	24.5	44.3	17.4
Dec.	1.2	1.4	1.9	1.2	20.1	23.7	43.1	16.4
Yearly	26.4	23.6	26.4	21.3	374.3	375.0	483.8	279.1

Month	FALCON VILLAGE (Pop. 142)				ROMA * (Pop. 12,105)			
	1967	Period 1958-1967			** 1967	Period 1958-1967		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	6.8	5.1	6.8	2.1	38.6	29.4	38.6	20.7
Feb.	7.1	5.2	7.2	2.7	36.0	28.6	36.0	19.0
Mar.	9.8	7.4	9.8	5.3	45.3	35.4	45.3	23.8
Apr.	10.1	8.4	10.1	6.5	48.7	37.9	48.7	26.4
May	11.3	8.8	11.5	5.8	49.7	40.6	49.7	28.7
June	12.8	9.1	12.8	5.9	50.1	41.8	50.1	29.9
July	14.7	11.4	14.7	7.0	54.9	46.1	54.9	31.4
Aug.	10.6	10.5	13.2	7.8	44.4	43.4	51.8	33.1
Sept.	5.8	8.0	11.0	5.5	18.9	36.3	49.5	18.9
Oct.	6.4	7.3	8.9	3.2	29.2	35.3	44.5	23.9
Nov.	5.1	5.5	7.9	2.5	15.7	31.2	44.0	15.7
Dec.	5.4	5.6	7.8	3.8	15.4	29.7	43.2	15.4
Yearly	105.9	92.3	105.9	60.6	446.9	435.7	528.0	309.6

Month	RIO GRANDE CITY (Pop. 6,750)				BROWNSVILLE (Pop. 56,400)			
	1967	Period 1958-1967			1967	Period 1958-1967		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	67.5	53.6	67.5	36.0	721.7	605.7	734.8	387.3
Feb.	62.9	51.2	63.2	33.1	689.6	575.0	700.8	420.2
Mar.	83.2	63.9	83.2	39.8	831.0	711.0	870.3	494.6
Apr.	92.1	70.4	92.1	50.7	903.8	734.6	903.8	512.9
May	88.1	75.5	88.1	58.2	952.5	760.9	952.5	644.2
June	105.3	82.6	105.3	69.8	1,047.4	855.4	1,047.4	641.7
July	102.5	90.0	107.7	68.3	1,166.8	999.5	1,191.3	795.1
Aug.	89.6	86.2	95.1	77.6	986.5	979.5	1,177.1	790.2
Sept.	69.4	69.1	92.1	50.9	665.4	755.3	927.7	580.5
Oct.	61.4	60.0	69.1	35.8	789.3	701.5	811.6	517.5
Nov.	59.8	56.3	74.0	46.0	705.4	636.8	807.3	480.3
Dec.	57.4	56.4	80.4	42.0	694.2	640.0	849.3	494.9
Yearly	939.2	815.2	939.2	622.0	10,153.6	8,955.2	10,153.6	7,301.6

* Includes Los Saenz, Escobares, Texas and Cd. Miguel Alemán, Tamaulipas
** Includes 210.1 acre-feet supplied to Cd. Miguel Alemán, Tamaulipas

MUNICIPAL AND INDUSTRIAL WATER USES
In Acre-Feet

In Mexico

Month	PIEDRAS NEGRAS (Pop. 60,175)				NUEVO LAREDO (Pop. 123,703)			
	1967	Period 1965-1967			1967	Period 1958-1967		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	186.9	187.6	212.2	163.8	870.8	730.8	939.4	537.1
Feb.	164.5	165.6	172.0	160.3	821.1	693.2	829.9	421.2
Mar.	205.8	198.6	205.8	184.6	1,037.9	865.4	1,037.9	572.7
Apr.	236.6	218.3	236.6	194.2	1,144.1	945.1	1,144.1	687.2
May	287.6	233.5	287.6	198.5	1,295.2	1,012.0	1,295.2	568.2
June	295.7	263.1	295.7	241.8	1,260.7	1,034.5	1,260.7	741.9
July	304.2	306.0	316.5	297.2	1,281.5	1,132.2	1,308.6	794.6
Aug.	292.7	273.2	292.7	248.2	1,197.0	1,112.8	1,336.4	783.1
Sept.	222.1	228.0	235.9	222.1	1,029.0	990.0	1,141.2	625.5
Oct.	218.7	219.4	231.1	208.5	1,060.9	957.0	1,107.1	592.5
Nov.	189.4	194.0	216.1	176.4	890.5	800.6	940.8	568.6
Dec.	185.2	181.4	187.9	171.1	916.3	764.6	940.3	540.9
Yearly	2,789.4	2,668.7	2,789.4	2,599.5	12,805.0	11,038.2	12,805.4	7,435.2

Month	NUEVA CD. GUERRERO (Pop. 4,881)				CD. MIER (Pop. 8,920)			
	1967	Period 1958-1967			1967	Period 1958-1967		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.	32.3	34.5	48.7	29.8	31.1	31.6	38.9	24.3
Feb.	28.9	31.7	44.3	27.6	30.4	32.3	41.3	24.4
Mar.	34.3	37.8	48.0	32.2	33.9	37.1	47.0	32.4
Apr.	35.8	38.3	52.5	33.6	35.4	37.1	46.2	32.4
May	37.1	40.7	53.8	35.2	34.9	39.2	50.3	32.4
June	37.5	41.5	52.9	35.5	34.7	38.0	49.7	32.4
July	37.0	42.3	54.6	36.5	35.8	39.7	50.3	32.4
Aug.	26.8	40.5	52.0	26.8	29.6	38.1	49.7	29.2
Sept.	22.2	37.3	46.4	22.2	24.7	36.8	47.2	24.7
Oct.	24.0	37.3	49.1	24.0	25.6	36.6	46.9	25.6
Nov.	24.6	36.3	46.5	24.6	25.4	35.0	41.3	25.4
Dec.	24.6	35.7	48.6	24.6	25.0	33.4	38.9	25.0
Yearly	365.1	453.9	552.8	365.1	366.5	434.9	533.3	366.4

Month	CD. MIGUEL ALEMAN (Pop. 10,210)				MATAMOROS (Pop. 130,000)			
	1967	Period August 1967			1967	Period 1958-1967		
		Average	Maximum	Minimum		Average	Maximum	Minimum
Jan.					566.0	472.2	730.6	278.5
Feb.					496.6	422.4	618.2	286.7
Mar.					616.5	489.7	729.7	302.9
Apr.					693.7	500.6	693.7	280.1
May					710.6	547.2	749.4	335.7
June					719.6	560.0	719.6	382.6
July					780.5	589.5	808.5	364.3
Aug.	9.7				719.4	593.8	868.3	299.9
Sept.	26.0				478.9	543.8	830.2	406.8
Oct.	19.9				503.4	545.7	821.6	350.0
Nov.	29.3				517.8	507.2	751.2	339.2
Dec.	28.9				546.1	501.7	738.9	286.2
Yearly	# 323.9				7,349.1	6,273.8	8,914.5	4,301.4

Includes 210.1 acre-feet supplied by the Roma, Texas Water Plant

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 San Esteban Reservoir on Alamito Creek which according to the Texas Water Commission has a capacity of 18,800 acre-feet. There are no monthly storage data available for this reservoir. Also presented below are data for the 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 reservoirs and the source 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; Platoro, El Vado, and Abiquiu from the Rio Grande Compact Commission; Costilla and Bluewater from the United States Geological Survey; Storrie from State Engineer Office of New Mexico; Elephant Butte, Caballo Dam, Alamogordo, McMillan, and Avalon from the United States Bureau of Reclamation; Red Bluff from the Red Bluff Water Power Control District; Lake Casa Blanca from the Webb County Office; Willacy from the Willacy County Water Control and Improvement District No. 1; Boquilla, La Colina, and Rosetilla from Industrial Electric, S. A. of Mexico; Francisco I. Madero, Centenario, San Miguel, Venustiano Carranza, La Boca, Marte R. Gómez, Culebrón, Villa Cárdenas, and Palito Blanco from the Ministry of Hydraulic Resources of Mexico; Falcon Reservoir (International) from International Boundary and Water Commission.

In United States

Month	RIO GRANDE (Capacity 51.1)		CONTINENTAL (Capacity 22.7)		SANTA MARIA (Capacity 45.1)		TERRACE (Capacity 17.2)		MOUNTAIN HOME (Capacity 18.6)	
	1967	#Average 1927-1967	1967	#Average 1928-1967	1967	#Average 1928-1967	1967	#Average 1925-1967	1967	#Average 1924-1967
Jan.	7.8	12.7	4.2	4.7	2.7	6.8	5.1	2.9	1.5	3.8
Feb.	8.9	13.9	4.7	5.1	3.1	7.3	5.4	3.2	1.7	4.1
Mar.	10.2	15.2	5.2	5.5	3.6	8.2	6.1	3.7	1.9	4.5
Apr.	10.2	15.6	5.2	6.1	3.6	9.6	6.0	4.6	2.0	5.1
May	10.2	21.1	5.2	7.9	3.1	13.7	5.9	6.9	1.7	7.0
June	2.2	22.2	3.3	8.2	.6	15.4	6.0	8.3	1.4	7.1
July	2.2	13.0	2.0	5.7	.5	10.3	6.5	5.3	1.3	5.0
Aug.	2.2	6.2	2.0	3.7	.5	5.2	7.7	3.0	1.4	3.2
Sept.	2.2	6.0	1.9	3.7	.5	4.9	7.3	2.6	1.6	2.8
Oct.	2.2	6.9	1.7	3.6	.7	5.1	6.9	2.7	1.6	2.8
Nov.	3.0	9.6	2.3	4.0	1.2	5.7	6.9	2.6	1.9	3.1
Dec.	4.9	11.2	3.0	4.4	1.7	6.2	6.8	2.9	2.1	3.4
Avg.	5.5	12.8	3.4	5.2	1.8	8.2	6.4	4.1	1.7	4.3
Max.	10.2	52.1	5.2	26.7	3.6	42.1	7.7	17.7	2.1	16.4
Min.	2.2	0	1.7	0	0.5	0	5.1	0	1.3	0

Month	SANCHEZ (Capacity 103.2)		PLATORO (Capacity 60.0)		COSTILLA (Capacity 15.7)		EL VADO (Capacity 196.5)		ABIQUIU (Capacity 1,225.4)	
	1967	#Average 1927-1967	1967	Average 1952-1967	1967	#Average 1922-1967	1967	Average 1935-1967	1967	Average 1965-1967
Jan.	9.1	10.8	3.0	6.7	5.2	4.2	1.1	33.7	0	0
Feb.	9.5	10.9	3.0	6.8	5.5	4.6	1.1	30.5	.1	.4
Mar.	9.7	11.6	3.0	6.8	6.0	5.2	1.3	29.8	.4	2.2
Apr.	9.1	13.2	3.7	7.8	6.6	6.3	19.2	72.2	.5	1.7
May	8.3	17.3	4.0	10.9	5.8	8.3	21.2	122.6	1.5	5.0
June	6.0	16.4	4.2	18.0	4.0	7.7	22.2	110.8	1.3	19.2
July	4.6	11.7	4.2	14.5	2.8	5.0	22.2	88.7	1.4	18.5
Aug.	8.5	9.2	4.2	13.0	2.8	3.5	23.9	64.4	1.5	38.3
Sept.	10.5	9.4	4.2	13.0	3.0	3.0	23.9	51.9	1.4	40.9
Oct.	11.6	10.0	4.2	12.6	3.6	3.2	23.9	47.6	1.4	41.1
Nov.	12.0	10.1	3.0	7.0	4.0	3.5	1.1	37.2	0	20.2
Dec.	12.4	10.5	3.0	7.0	4.3	3.9	1.1	32.1	0	.4
Avg.	9.3	11.8	3.6	10.3	4.5	4.9	13.5	60.1	0.8	15.7
Max.	12.4	62.4	4.2	54.0	6.6	15.1	23.9	203.5	1.5	99.0
Min.	4.6	0	3.0	0	2.8	0	1.1	0	0	0

Some months missing

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

In Thousands of Acre-Feet

In United States

Month	BLUEWATER (Capacity 43.5)		ELEPHANT BUTTE (Capacity 2,195.0)		CABALLO (Capacity 344.0)		STORRIE (Capacity 23.3)		ALAMOGORDO (Capacity 110.7)	
	1967	#Average 1927-1967	1967	Average 1915-1967	1967	#Average 1938-1967	1967	#Average 1939-1967	1967	#Average 1937-1967
Jan.	6.5	5.9	363.4	793.3	62.9	111.4	6.3	8.2	68.0	67.6
Feb.	6.4	6.7	347.8	793.2	106.9	137.7	6.2	8.1	71.7	71.5
Mar.	6.2	10.5	268.2	774.4	83.3	120.4	6.0	8.8	71.1	61.2
Apr.	5.8	13.4	215.2	773.4	90.8	109.7	5.2	9.2	66.7	54.4
May	5.0	11.6	180.7	876.7	75.6	106.6	3.9	10.1	11.0	58.4
June	4.3	9.4	179.8	911.8	57.8	85.5	2.7	8.8	14.0	52.5
July	3.8	8.0	134.1	855.3	32.2	63.1	2.9	9.2	32.6	50.6
Aug.	3.4	7.0	160.2	796.7	45.5	36.4	6.4	10.1	50.3	55.0
Sept.	3.3	6.6	188.5	766.5	25.7	27.3	8.1	9.5	55.9	54.7
Oct.	3.1	6.3	190.2	762.2	33.1	44.9	8.3	9.0	54.0	58.9
Nov.	3.0	6.1	227.5	771.6	40.2	63.1	8.1	9.2	58.0	59.8
Dec.	3.0	5.9	267.1	785.9	42.6	82.0	7.7	8.0	63.0	64.3
Avg.	4.5	8.1	226.9	805.1	58.0	82.3	6.0	9.0	51.4	59.1
Max.	6.5	47.1	Ø366.8	Ø2,302.8	Ø108.5	Ø346.6	8.3	26.3	71.7	156.3
Min.	3.0	0	Ø122.9	Ø 3.3	Ø 22.9	Ø 0.1	2.7	0	11.0	0.4

Month	McMILLAN and AVALON (Capacity 38.0)		RED BLUFF (Capacity 310.0)		LAKE CASA BLANCA (Capacity 22.1)		WILLACY (Capacity 25.0)		TOTAL IN U.S. RESERVOIRS (Capacity 4,867.1)	
	1967	#Average 1908-1967	1967	#Average 1936-1967	1967	Average 1962-1967	1967	#Average 1939-1967	1967	Estimated ‡ Average
Jan.	26.5	27.2	231.5	100.4	10.0	6.3	18.3	14.2	833.1	1,220.8
Feb.	26.4	27.3	224.0	102.2	9.6	6.0	17.5	13.5	859.5	1,253.0
Mar.	15.1	26.6	204.6	99.0	9.3	5.8	14.6	12.7	725.8	1,212.1
Apr.	4.1	17.5	171.3	83.9	9.0	6.3	18.5	13.0	652.7	1,223.0
May	29.5	20.4	158.3	88.6	8.8	7.3	17.9	13.8	557.6	1,414.2
June	27.5	19.7	147.4	91.5	8.5	8.2	16.6	14.0	509.8	1,434.7
July	15.0	18.2	128.8	80.7	8.3	7.8	18.0	13.6	423.4	1,284.2
Aug.	22.3	17.2	106.7	77.3	8.2	7.4	20.4	12.3	478.1	1,169.1
Sept.	12.6	18.2	100.3	78.5	28.2	10.8	22.6	14.0	501.7	1,124.3
Oct.	4.2	20.6	98.7	88.5	22.4	9.4	20.4	14.7	492.2	1,150.1
Nov.	5.0	22.1	98.4	91.4	22.1	9.2	19.3	14.5	517.0	1,150.0
Dec.	6.5	25.3	100.0	96.1	21.7	8.9	17.7	14.2	568.6	1,172.6
Avg.	16.2	21.7	147.5	89.8	13.8	7.8	18.5	13.7	593.3	1,234.0
Max.	29.5	85.5	231.5	327.5	28.2	28.2	22.6	22.6	859.5	
Min.	4.1	0	98.4	10.0	8.2	3.5	14.6	0	423.4	

Some months missing Ø Daily extremes ‡ Totals of period averages in all reservoirs

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

In Thousands of Acre-Feet

In Mexico

Month	LA 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)	
	1967	#Average 1914-1967	1967	Average 1940-1967	1967	Average 1940-1967	1967	#Average 1948-1967	1967	Average 1934-1967
Jan.	1,931.1	1,396.1	18.9	17.7	4.7	12.6	324.9	202.2	9.8	12.8
Feb.	1,871.1	1,365.5	18.8	18.1	15.1	13.3	324.6	200.4	12.6	12.6
Mar.	1,805.5	1,314.2	18.9	18.0	14.6	12.6	286.7	195.2	4.7	9.3
Apr.	1,710.4	1,245.2	19.1	18.5	14.8	11.9	229.8	169.3	4.5	7.9
May	1,611.7	1,188.9	18.9	18.4	14.9	11.5	192.4	149.5	1.9	8.9
June	1,575.2	1,109.2	18.7	18.4	14.3	12.0	172.0	136.4	.2	7.8
July	1,669.4	1,140.6	18.9	18.6	11.7	11.3	147.1	139.9	.1	7.3
Aug.	1,816.7	1,311.0	19.1	18.0	13.2	12.4	129.4	163.7	.5	7.8
Sept.	2,044.4	1,472.4	18.7	17.8	10.9	12.9	216.1	198.9	4.5	10.0
Oct.	2,043.2	1,478.9	18.2	17.7	14.3	12.8	220.5	204.2	11.0	12.2
Nov.	2,022.4	1,446.9	15.5	17.3	9.9	12.1	223.9	203.7	16.3	12.3
Dec.	2,011.9	1,423.0	18.6	17.9	14.3	13.2	225.1	203.6	17.7	12.6
Avg.	1,842.8	1,324.3	18.5	18.0	12.7	12.4	224.4	180.6	7.0	10.1
Max.	2,044.4	2,544.7	19.1	20.5	15.1	19.4	324.9	366.6	17.7	20.7
Min.	1,575.2	16.9	15.5	11.9	4.7	0.4	129.4	1.4	0.1	0

Month	VENUSTIANO CARRANZA (Capacity 1,122.8)		LA BOCA (Capacity 33.2)		MARTE R. GOMEZ (Capacity 898.3)		CULEBRON and VILLA CARDENAS (Capacity 90.0)		PALITO BLANCO (Capacity 124.0)	
	1967	Average 1930-1967	1967	Average 1963-1967	1967	#Average 1943-1967	1967	#Average 1939-1967	1967	Average 1942-1967
Jan.	97.0	356.2	32.4	16.2	831.5	525.9	41.8	41.1	25.5	41.6
Feb.	78.0	337.6	32.4	16.3	742.9	471.7	16.6	37.8	29.6	36.4
Mar.	76.4	317.8	32.4	15.7	752.3	438.0	41.5	34.4	31.1	37.0
Apr.	60.6	307.7	32.4	15.0	658.3	418.7	36.6	36.8	27.8	33.5
May	43.6	297.4	32.0	15.3	543.8	397.0	34.1	40.3	44.1	33.1
June	37.2	284.9	31.6	14.9	561.2	366.9	33.4	42.4	34.5	34.1
July	35.2	274.0	29.3	16.8	524.4	347.5	20.8	37.4	13.7	33.4
Aug.	42.0	276.2	33.6	18.6	1,001.7	424.0	54.7	37.3	34.5	31.2
Sept.	152.9	331.6	32.6	19.8	997.2	525.3	110.7	47.7	94.8	43.3
Oct.	247.8	361.1	32.5	20.6	910.3	580.4	39.8	50.5	42.9	49.1
Nov.	264.2	366.8	32.4	21.1	931.3	580.0	40.9	43.0	14.8	47.2
Dec.	266.2	365.6	32.4	21.3	922.3	578.6	43.5	48.1	11.4	47.4
Avg.	116.8	323.1	32.2	17.6	781.4	471.2	42.9	41.4	33.7	38.9
Max.	266.2	1,163.4	33.6	33.6	Ø 1,465.4	Ø 1,465.4	110.7	116.8	94.8	140.1
Min.	Ø 34.0	* 1.0	29.3	0	Ø 524.4	** 17.8	16.6	0	11.4	0

Month									TOTAL IN MEXICAN RESERVOIRS (Capacity 5,085.2)	
									1967	Estimated ‡ Average
Jan.									3,317.6	2,622.4
Feb.									3,141.7	2,509.7
Mar.									3,064.1	2,392.2
Apr.									2,794.3	2,264.5
May									2,537.4	2,160.3
June									2,478.3	2,027.0
July									2,470.6	2,026.8
Aug.									3,145.4	2,300.2
Sept.									3,682.8	2,679.7
Oct.									3,580.5	2,787.5
Nov.									3,571.6	2,750.4
Dec.									3,563.4	2,731.3
Avg.									3,112.3	2,437.7
Max.									3,682.8	
Min.									2,470.6	

Some months missing * Minimum since full reservoir in 1932 ** Minimum since full reservoir in 1947
Ø Daily extremes ‡ Totals of period averages in all reservoirs

STORED WATER IN LARGE RESERVOIRS OF THE RIO GRANDE BASIN

International Falcón Reservoir

Falcon 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 downstream from the American Dam, and 273.8 river miles upstream from the Gulf of Mexico.

Maximum storage for period of record: 3,490,600 acre-feet on October 19, 1958.

Storage Capacities

(1956 Survey)

Elevation	Description	At Indicated Elevation: Reservoir Capacity Acre-Feet	At Indicated Elevation: Reservoir Area Acres	Between Indicated Elevation: Storage Volume Acre-Feet	Between Indicated Elevation: Type of Storage
175.0	Original River Bed at Dam Axis	0	0		
				2,816	Silt and Dead
203.33	Lowest Outlet (Mexican Penstock)	2,816	676		
				2,368,405	Silt and Conservation
296.4	Top of Conservation Storage	2,371,221	78,342		
				909,462	Ordinary Flood
306.7	Top of Spillway Gates	3,280,683	98,959		
				800,134	Super Flood
314.2	Maximum Water Surface	4,080,817	115,613		

During winter months, 400,000 acre-feet of 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	2,574.9	2,519.9	2,432.8	2,351.7	1,956.1	1,652.0	1,522.2	1,508.9	1,638.0	2,848.6	2,784.9	2,934.4
2	2,574.9	2,513.4	2,430.5	2,351.7	1,943.9	1,663.7	1,528.0	1,500.8	1,640.4	2,870.1	2,784.0	2,938.1
3	2,571.6	2,506.9	2,429.7	2,349.4	1,931.7	1,671.8	1,529.2	1,491.1	1,651.4	2,889.9	2,787.5	2,940.8
4	2,567.5	2,502.8	2,429.7	2,345.5	1,912.8	1,678.6	1,528.0	1,481.4	1,661.3	2,907.1	2,791.0	2,941.7
5	2,562.5	2,497.9	2,428.9	2,342.4	1,896.7	1,680.4	1,537.9	1,469.5	1,687.9	2,918.0	2,798.1	2,944.5
6	2,558.4	2,495.5	2,426.5	2,338.5	1,885.4	1,676.1	1,540.3	1,456.6	1,702.2	2,927.1	2,812.2	2,949.1
7	2,554.3	2,493.1	2,421.7	2,333.8	1,871.5	1,668.7	1,537.4	1,441.5	1,708.5	2,945.4	2,824.6	2,954.6
8	2,550.2	2,490.6	2,418.5	2,329.9	1,857.6	1,662.5	1,533.8	1,425.4	1,714.2	2,948.1	2,831.7	2,958.2
9	2,552.6	2,489.0	2,415.4	2,326.1	1,838.6	1,658.2	1,529.2	1,411.1	1,719.8	2,945.4	2,836.1	2,961.9
10	2,552.6	2,488.2	2,413.0	2,322.2	1,816.4	1,654.5	1,527.4	1,401.8	1,725.5	2,943.6	2,840.5	2,964.7
11	2,551.8	2,488.2	2,410.6	2,311.4	1,792.4	1,652.7	1,524.5	1,401.8	1,731.2	2,941.7	2,845.9	2,964.7
12	2,551.0	2,487.4	2,409.0	2,298.3	1,771.2	1,647.8	1,523.4	1,399.7	1,736.8	2,938.1	2,850.4	2,966.5
13	2,551.8	2,485.0	2,406.6	2,288.4	1,752.7	1,643.5	1,524.5	1,395.9	1,741.9	2,930.7	2,854.8	2,970.2
14	2,552.6	2,481.8	2,405.1	2,275.4	1,738.7	1,636.7	1,522.8	1,391.5	1,747.6	2,920.7	2,860.2	2,970.2
15	2,553.4	2,478.5	2,401.9	2,256.4	1,731.2	1,630.0	1,515.8	1,406.8	1,757.2	2,912.5	2,864.7	2,971.2
16	2,553.4	2,474.5	2,396.4	2,237.5	1,726.7	1,624.5	1,515.2	1,408.4	1,765.5	2,900.7	2,869.2	2,969.3
17	2,554.3	2,471.3	2,389.3	2,214.2	1,723.6	1,619.1	1,512.9	1,412.2	1,798.9	2,896.2	2,874.6	2,967.5
18	2,555.1	2,468.1	2,380.6	2,191.1	1,716.0	1,613.6	1,511.2	1,424.9	1,839.9	2,888.1	2,879.1	2,967.5
19	2,555.1	2,467.3	2,372.8	2,176.3	1,708.5	1,605.2	1,510.0	1,445.9	1,874.8	2,878.2	2,883.6	2,964.7
20	2,554.3	2,464.8	2,367.3	2,157.2	1,704.1	1,595.5	1,509.5	1,454.3	1,910.1	2,867.4	2,888.1	2,962.8
21	2,554.3	2,460.0	2,361.8	2,136.7	1,702.2	1,586.5	1,507.7	1,470.1	1,998.1	2,853.9	2,891.7	2,961.9
22	2,554.3	2,454.4	2,354.0	2,116.4	1,698.5	1,578.7	1,504.9	1,487.7	2,134.5	2,841.4	2,897.1	2,961.0
23	2,552.6	2,450.4	2,352.5	2,097.6	1,694.1	1,571.6	1,504.9	1,504.9	2,276.1	2,827.2	2,902.5	2,960.1
24	2,549.3	2,447.2	2,353.2	2,074.0	1,689.1	1,565.6	1,523.9	1,528.6	2,443.2	2,816.6	2,907.1	2,958.2
25	2,546.9	2,442.4	2,356.4	2,052.0	1,684.8	1,560.9	1,528.0	1,549.1	2,572.4	2,804.2	2,911.6	2,962.8
26	2,545.2	2,438.4	2,359.5	2,037.9	1,679.2	1,555.6	1,529.8	1,562.7	2,677.1	2,793.7	2,915.3	2,964.7
27	2,540.3	2,440.8	2,358.7	2,025.9	1,674.2	1,550.3	1,529.2	1,572.8	2,758.7	2,789.3	2,920.7	2,965.6
28	2,534.6	2,436.8	2,357.9	2,005.7	1,669.3	1,543.8	1,528.0	1,593.7	2,795.4	2,786.6	2,924.4	2,967.5
29	2,529.7		2,354.0	1,986.3	1,664.4	1,533.3	1,526.3	1,608.2	2,818.4	2,784.0	2,926.2	2,968.4
30	2,527.2		2,352.5	1,970.5	1,660.0	1,526.3	1,521.6	1,622.1	2,830.8	2,784.9	2,930.7	2,967.5
31	2,523.1		2,352.5		1,657.0		1,514.7	1,632.5		2,784.9		2,965.6

Month	1967: MOMENTARY MAXIMUM Elevation	Storage	Day	MOMENTARY MINIMUM Elevation	Storage	Day	Average Storage	Period 1954-1967: Mean Monthly Storage Average	Maximum	Minimum
Jan.	298.96	2,577.4	1	298.30	2,523.1	31	2,551.9	1,910.4	2,916.5	218.7
Feb.	298.30	2,523.1	1	297.23	2,436.8	28	2,476.2	1,787.8	2,861.2	156.2
Mar.	297.23	2,436.8	1	296.16	2,352.5	†23	2,390.3	1,726.2	2,702.4	226.7
Apr.	296.16	2,352.5	1	290.95	1,970.5	30	2,210.0	1,613.0	2,556.4	325.6
May	290.95	1,970.5	1	286.12	1,657.0	31	1,766.1	1,544.7	2,427.1	490.1
June	286.50	1,680.4	5	283.94	1,526.3	30	1,616.9	1,456.4	2,403.6	273.7
July	284.18	1,540.3	6	283.57	1,504.9	†22	1,522.7	1,537.0	2,367.7	209.9
Aug.	285.72	1,632.5	31	281.54	1,391.5	14	1,479.4	1,529.7	2,370.6	208.0
Sept.	301.92	2,830.8	30	285.72	1,632.5	1	2,001.9	1,680.3	2,454.6	256.2
Oct.	303.22	2,948.1	8	301.39	2,784.0	29	2,873.7	2,021.5	3,250.2	308.3
Nov.	303.03	2,930.7	30	301.39	2,784.0	2	2,862.9	2,078.8	2,964.4	390.9
Dec.	303.47	2,971.2	15	303.03	2,930.7	1	2,960.2	2,097.6	2,960.2	343.4
Yearly	303.47	2,971.2		281.54	1,391.5		2,224.5	1,748.9	2,523.4	544.3

† And other days

FLOODS OF 1967

Around the middle of August 1967, a weather system centered over northeast Mexico, resulted in heavy rainfall on the entire Rio Grande watershed below Falcon Dam. The intense rains began August 18 and continued as an almost daily occurrence until August 30. During this period, rainfall on the Rio Grande watershed in the reach from Falcon Dam to Rio Grande City, excluding Río Alamo and Río San Juan in Mexico, averaged about 9 inches and ranged from 7.45 inches at Cd. Guerrero, Tamaulipas to 16.59 inches at Cd. Mier, Tamaulipas. On the Río Alamo watershed, rainfall averaged about 12 inches while on the Río San Juan watershed, the rainfall averaged about 15 inches. A maximum of 25.79 inches of rain was recorded during this period at Villa de Santiago, Nuevo León located on the Río San Juan watershed. On the watershed between Rio Grande City and Anzaldúas Dam, rainfall averaged about 4.5 inches and on the area from Anzaldúas Dam to the Gulf of Mexico, the average was about 4 inches.

The heavy rains on the watershed above Rio Grande City caused heavy runoff, particularly from the Río San Juan watershed, and produced, on August 29, a Rio Grande peak of 29,600 second-feet at the Fort Ringgold gaging station. The flood volume passing this station during the period August 18 to September 18 was 623,000 acre-feet of which 82% was contributed by the Río San Juan. In addition, 121,000 acre-feet of floodwaters from the Río San Juan were temporarily stored, above spillway elevation, in Marte R. Gómez Reservoir. The reservoir, which lacked 31,000 acre-feet of reaching spillway elevation when the storm began, started spilling August 24 and continued to spill throughout the period.

As the floodwaters flowed toward the Lower Rio Grande Valley and reached the head of the floodway systems, the flood peak flattened to about 24,000 second-feet. Diversions into the United States floodway system through the Mission Inlet, although small, and into the Mexican floodway system through Anzaldúas Canal, Retamal Heading, and San Rafael Floodway, which were more substantial, left a residual peak of 10,300 second-feet flowing to the Gulf of Mexico through the Rio Grande channel. A total of 106,270 acre-feet were diverted through the floodway systems, 2,200 acre-feet through the United States system and 104,070 acre-feet through the Mexican system.

On September 7, 1967, the United States Weather Bureau issued the first advisory on Hurricane Beulah classifying her as a tropical storm centered west of Martinique in the eastern Caribbean Sea. The storm reached hurricane force the next day, increased in force as she moved westerly across the Caribbean Sea, lost some of its punch as she circulated overland across several of the small Caribbean islands, and again reached hurricane force by the time she reached Cozumel Island and the lowlands of the Yucatan peninsula. Beulah entered the Gulf of Mexico on September 17 and by the early hours of September 20, when she made landfall on the Texas coast near Brownsville, Texas, she had gained so much energy as she moved over the warm waters of the Gulf of Mexico that the United States Weather Bureau later classified her as the third largest hurricane of record to strike the North American continent. (For the overland path of the hurricane see page 99 in this bulletin.)

Extremely heavy rains occurred in the wake of Hurricane Beulah during the period September 19 to 26 over the entire Rio Grande watershed from above Laredo to the Gulf of Mexico, particularly on the upper portion of the Río Alamo watershed and on the Río San Juan watershed near Monterrey, Mexico where the storm dissipated in the Sierra Madre. Rainfall on the Río Alamo watershed averaged about 20 inches, the maximum recorded being 35.67 inches at Sombreretillo, Nuevo León. Rainfall averaged about 10 inches on the entire Río San Juan watershed; however, in the portion downstream from near Monterrery, Nuevo León, the average was in excess of 15 inches, the largest amount recorded being 21.39 inches at El Manzano, Nuevo León. There were several localized areas where precipitation in the 25 to 30-inch range occurred on or near the watershed. These cells were centered in the Laredo, Texas-Nuevo Laredo, Tamaulipas area; in the Falfurrias, Texas area; in the Lyford-Sebastian, Texas area; in an area near Río Bravo, Tamaulipas south of Mercedes, Texas; in an area on the Río Alamo and Río San Juan watersheds centered at Sombreretillo, Nuevo León; and on the Río Salado watershed in an area north of Bustamante, Nuevo León.

These torrential rains, falling on an already saturated watershed as a result of the intense rains in August and with Marte R. Gómez Reservoir completely full and spilling over the uncontrolled spillway, caused flooding in the Lower Rio Grande Valley without precedent. All floodwaters from the watershed above Falcon Dam resulting from the storm were stored in Falcon Reservoir. A flood volume of 1,108,200 acre-feet was impounded by Falcon Dam during the period September 19 to October 8, 1967. There were no releases from Falcon Reservoir during this period. Had Falcon Dam not been able to impound this floodwater, the peak discharge for the Rio Grande at Fort Ringgold, Rio Grande City, Texas would have been about one-third greater or near 300,000 second-feet. Once again, International Falcon Dam spared the Lower Rio Grande Valley from a truly great disaster.

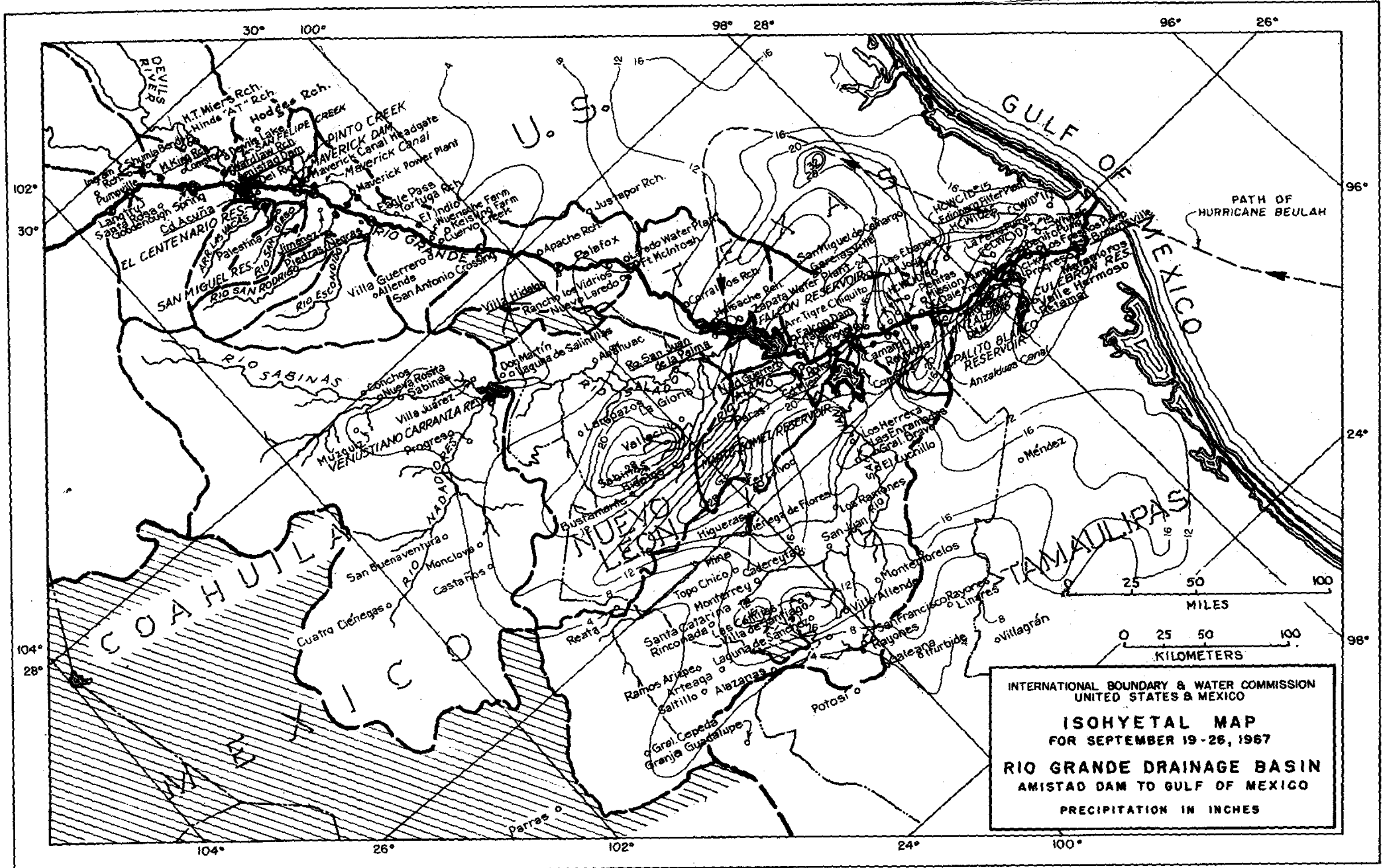
The Rio Grande reached a crest of 220,000 second-feet at midnight, September 22 at the Fort Ringgold gaging station. This peak resulted from a crest of 86,500 second-feet from the Río Alamo, 75,000 second-feet spill from Marte R. Gómez Reservoir, runoff directly into the Rio Grande from the watershed between Falcon Dam and Fort Ringgold gaging station, and from the Río San Juan watershed below Marte R. Gómez Dam. The spill from Marte R. Gómez Reservoir crested at 166,000 second-feet forty-eight hours later. This was the greatest rate of spill since the completion of the dam in 1943. Had this peak spill and the Río Alamo crest reached the Fort Ringgold gaging station simultaneously, the peak discharge would have exceeded 300,000 second-feet. A study of the daily rainfall data and discharge hydrographs presented here clearly reveals how near this observation came to being an occurrence. As it was, the Rio Grande flood of 1967 at the Fort Ringgold gaging station was the greatest flood of record since the flood of September 1909 though only slightly greater than the September 5, 1932 flood which crested at 198,000 second-feet at a station 3.0 river miles downstream. The elevation of the 1967 flood crest in the vicinity of Rio Grande City, however, was about 1.5 feet lower than the elevation attained by the 1932 flood.

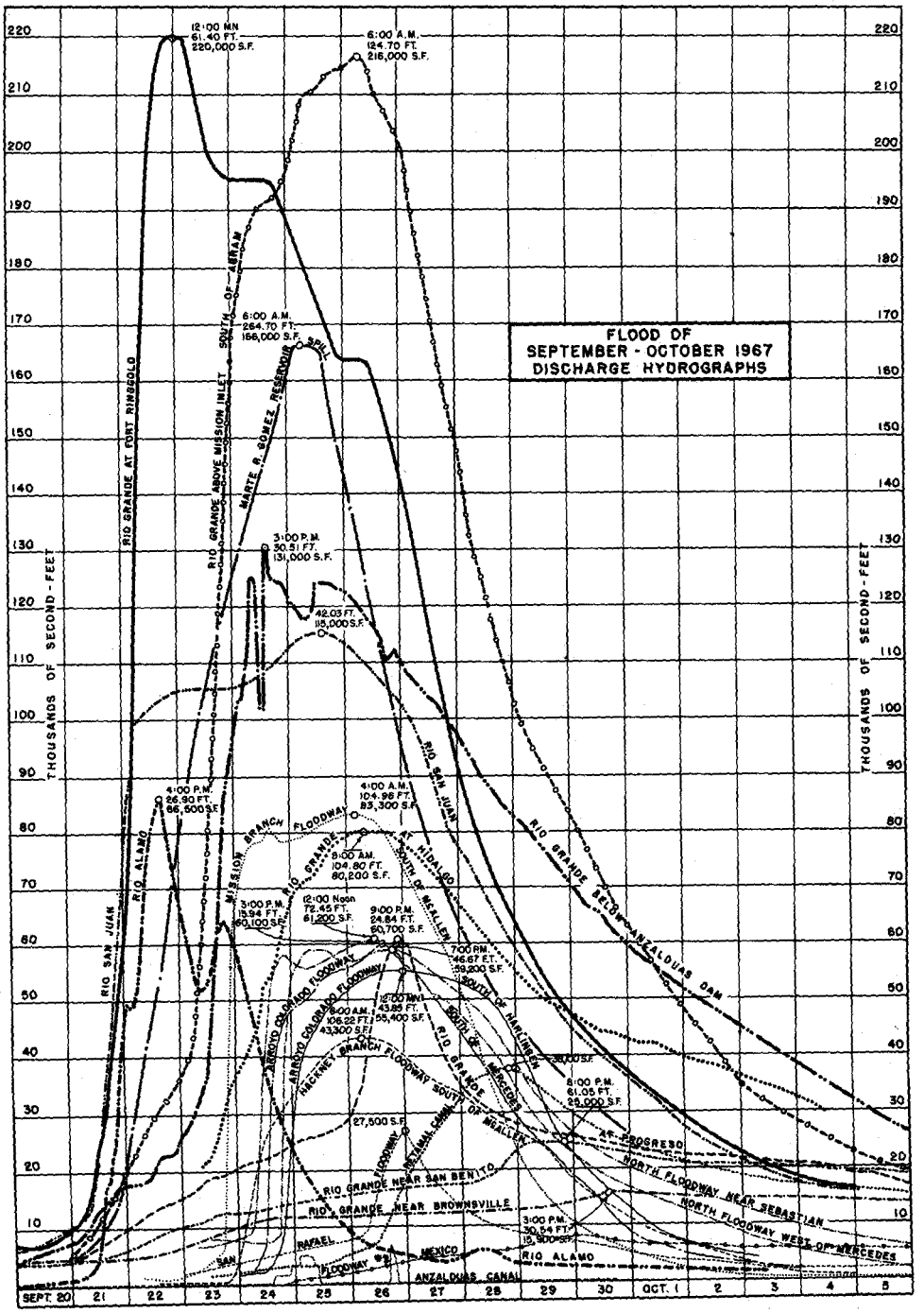
As the flood moved toward the Lower Rio Grande Valley and reached the head of the floodway systems, its flow was augmented by runoff from the watershed below the Fort Ringgold gaging station as well as from floodwaters which overflowed the right bank of the Río San Juan between Marte R. Gómez Dam and Cd. Camargo, Tamaulipas. The peak flow at the head of the floodway systems was 216,000 second-feet which was about 25% greater than the 1932 flood. Diversions to the interior floodways of the United States and Mexico left a residual peak of less than 16,000 second-feet flowing to the Gulf of Mexico through the Rio Grande channel.

Peak discharges passing the various floodway stations were the greatest since each floodway was placed in operation. In the United States, the crests at the Mission Branch and Hackney Branch floodway stations were 215% and 149%, respectively, of their previous maximums; while in Mexico, the estimated maximum mean daily discharges into Retamal Canal and Floodway No. 2 were 223% and 128%, respectively, of their previous daily maximums. A total of 2,196,072 acre-feet were diverted through the floodway systems, 1,207,941 acre-feet through the United States side and 988,131 acre-feet through the Mexican side. The Rio Grande channel carried nearly 1,000,000 acre-feet of floodwaters to the Gulf. The total volume of floodwaters resulting from Hurricane Beulah was approximately 4,300,000 acre-feet.

FLOODS OF 1967

Extensive flooding occurred in the irrigated farms, ranch lands, and villages adjacent to the river from Rio Grande City to the Gulf of Mexico. Thousands of acres of irrigated farm lands in the United States and farm and ranch lands in Mexico were inundated. In the United States, several cities suffered flood damage when water overflowed the banks of the floodways at several places. This was particularly true in the city of Harlingen where severe flooding occurred in the lower sections of the city when floodwaters topped the banks of the Arroyo Colorado floodway. There was no serious flooding due to failure of the floodway levees. In Mexico, Cd. Camargo and Reynosa were two of several cities where flood damage was material. In addition, highways and railways were seriously affected as it was necessary to breach them at several places to provide the floodwaters with unobstructed passageways to the Gulf. Although property damage was very great in both countries, no loss of lives directly attributed to the flood was reported.


INTERNATIONAL BOUNDARY & WATER COMMISSION
UNITED STATES & MEXICO
ISOHYETAL MAP
FOR SEPTEMBER 19-26, 1967
RIO GRANDE DRAINAGE BASIN
AMISTAD DAM TO GULF OF MEXICO
PRECIPITATION IN INCHES
0 25 50 100
MILES
0 25 50 100
KILOMETERS
GULF OF MEXICO
PATH OF
HURRICANE BEULAH
U. S.
TEXAS
MEXICO
COAHUILA
NUEVO LEON
TAMAULIPAS
DEVILS RIVER
PINTO CREEK
MAVERICK DAM
Maverick Canal Headgate
Maverick Canal
Maverick Power Plant
Eagle Pass
RIO GRANDE
EL CENTENARIO RES.
SAN MIGUEL RES.
RIO SAN RODRIGO
Rio Escondido
RIO SABINAS
Villa Hidalgo
Nuevo Laredo
Palafox
Justapor Rch.
Apache Rch.
Corralitos Rch.
FALCON RESERVOIR
Zapata Water Plant
San Miguel de Camargo
Rio Grande City
Los Ebanos
Mission
Progreso
Matamoros
Brownsville
CULEBRON RES.
PALITO BLANCO RESERVOIR
Valle Hermoso
Anzalduas Canal
VENUSTIANO CARRANZA RES.
Villa Juárez
Progreso
Múzquiz
Monclova
Castaños
Cuatro Ciénegas
San Buenaventura
NADADORES
Parras
Saltillo
Ramos Arizpe
Arteaga
Gral. Cepeda
Granja Guadalupe
Monterrey
Santa Catarina
Rinconada
Topo Chico
Cadereyta
Higueras
Bustamante
Sabinas Hidalgo
Vallecillo
Lampazos
Anáhuac
MARTE R. GOMEZ RESERVOIR
Los Herreras
Gral. Bravo
El Cuchillo
Los Ramones
San Juan
Montemorelos
Villa Allende
San Francisco
Rayones
Linares
Villagrán
Méndez
Galeana
Iturbide
Potosí
Reata
30° 100° 98° 28° 96° 26° 102° 104° 24°


FLOOD OF
SEPTEMBER - OCTOBER 1967
DISCHARGE HYDROGRAPHS
THOUSANDS OF SECOND-FEET
RIO GRANDE AT FORT RINGGOLD
RIO GRANDE ABOVE MISSION INLET SOUTH OF MERAN
MARTE R. GOMEZ RESERVOIR SPILL
RIO SAN JUAN
RIO ALAMO
MISSION BRANCH FLOODWAY
RIO GRANDE AT HIDALGO
RIO GRANDE BELOW ANZALDUAS DAM
ARROYO COLORADO FLOODWAY
HACIENDA BRANCH FLOODWAY
RIO GRANDE SOUTH OF MERCEDES
RIO GRANDE NEAR SAN BENITO
RIO GRANDE NEAR BROWNSVILLE
SAN RAFAEL FLOODWAY
MEXICO
ANZALDUAS CANAL
NORTH FLOODWAY NEAR SEBASTIAN
NORTH FLOODWAY WEST OF MERCEDES
12:00 MN 61.40 FT. 220,000 S.F.
6:00 A.M. 124.70 FT. 216,000 S.F.
6:00 A.M. 264.70 FT. 188,000 S.F.
3:00 P.M. 30.51 FT. 131,000 S.F.
42.03 FT. 115,000 S.F.
4:00 P.M. 26.90 FT. 86,500 S.F.
4:00 A.M. 104.98 FT. 83,300 S.F.
8:00 A.M. 104.80 FT. 80,200 S.F.
3:00 P.M. 15.94 FT. 60,100 S.F.
12:00 Noon 72.45 FT. 61,200 S.F.
9:00 P.M. 24.84 FT. 60,700 S.F.
7:00 P.M. 46.67 FT. 59,200 S.F.
12:00 MN 43.89 FT. 55,400 S.F.
8:00 A.M. 106.22 FT. 43,300 S.F.
27,500 S.F.
8:00 P.M. 61.05 FT. 29,000 S.F.
3:00 P.M. 30.54 FT. 15,900 S.F.
SEPT. 20
21
22
23
24
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29
30
OCT. 1
2
3
4
5

RAINFALL ON AND ADJACENT TO THE RIO GRANDE WATERSHED FOR THE PERIOD SEPTEMBER 19 - 26 DURING HURRICANE BEULAH AND FOR AUGUST AND SEPTEMBER 1967

IN INCHES

IN THE UNITED STATES

NAME OF STATION	LATITUDE	LONGITUDE	ELEV. (FT.)	RAINFALL IN INCHES										
				SEPTEMBER 1967										Aug. & Sept.
				19	20	21	22	23	24	25	26	Period	Month	
WATERSHED: EAGLE PASS TO LAREDO														
Batesville 3S *	28°55'	99°37'	755		1.15	0.60	1.75	0.20		0.40		4.10	8.00	11.66
Big Wells *	28°35'	99°33'	510	1.01	.06	1.01	1.76	.76	T			4.60	8.03	11.11
Cañon Diablo	28°39'	100°27'	700		#	#	#	#	#	1.30		1.30	4.15	5.05
Carrizo Springs *	28°31'	99°52'	600		.76	1.10	1.49	.51	.21			4.07	11.00	14.07
Cotulla *	28°26'	99°14'	425		.43	1.72	2.90	.44	.09			5.58	9.57	15.00
Cotulla FAA Airport *	28°27'	99°13'	459	.27	1.78	2.38	1.58	.08	T			6.09	9.10	15.36
Cuervo Creek Station	28°21'	100°19'	620		#	#	#	#	#	#	3.10	3.10	5.15	6.90
Dilley *	28°40'	99°10'	569		.21	2.09	3.81	.68	.07		.06	6.92	13.09	16.38
Eagle Pass	28°42'	100°30'	815		.06	.07	.18	.23	.04	.21		.79	2.82	5.46
El Indio	28°31'	100°19'	725	T	.40	.20	.90					1.50	5.00	7.00
Encinal 3NW *	28°05'	99°22'	562		.58	1.10	4.20	1.18	.04			7.10	11.41	19.44
Farias Ranch	28°36'	100°20'	720	.09	.27	.35	.78	.11				1.60	6.39	9.10
Fowlerton *	28°28'	98°49'	335	.27	2.20	3.20	4.50	.75	.17			11.09	13.99	21.79
Fort McIntosh (Laredo)	27°30'	99°31'	410	.61	1.12	2.79	.70	.20	.52			5.94	7.96	13.49
Indio Ranch	28°31'	100°22'	700		#	#	#	#	#	1.38		1.38	3.92	5.68
Keisling Farm	28°23'	100°17'	740		#	#	#	#	#	3.04		3.04	6.92	8.58
La Pryor *	28°57'	99°50'	741		.58	.33	.71	.21		1.32		3.15	7.21	9.76
Laredo Water Plant	27°33'	99°31'	410	.70	.51	.99	3.36	.78	.33	.02		6.69	8.24	13.63
Pearsall *	28°53'	99°05'	635		1.40	2.23	4.03	.19		.22		8.07	14.94	16.91
Rosita Creek Station	28°36'	100°24'	700		#	#	#	#	#	2.00		2.00	4.10	5.60
Trees Farm	28°38'	100°25'	720	.46	.15	.09	1.21	.07				1.98	4.47	5.69
Van Dalsern Farm	28°27'	100°19'	700		#	#	#	#	#	2.00		2.00	6.75	8.95
Wuensche Farm	28°24'	100°19'	670		#	#	#	#	#	2.70		2.70	6.15	8.04
WATERSHED: LAREDO TO FALCON DAM														
Arroyo Tigre Chiquito	26°41'	99°07'	314									20.00	22.00	31.95
Corralitos Ranch	27°07'	99°25'	346			1.95	#	#	#	#	3.65	5.60	9.44	15.84
El Peyote Ranch	27°07'	98°58'	650		#	#	#	12.00	1.00			13.00	14.60	17.80
Hebbronville *	27°18'	98°40'	559	0.02	1.13	4.00	2.60	7.00	.04	0.30		14.82	19.35	23.93
Huisache Ranch	26°57'	99°21'	383									9.50	11.10	13.90
Laredo No. 2	27°31'	99°28'	491	.71	.55	1.33	3.61	.95	.10			7.25	9.29	15.34
Los Isauros Ranch	27°24'	99°24'	490	1.50	.50	1.20	4.00	1.10				8.30	10.43	15.18
Oilton *	27°27'	98°55'	801		.38	3.31	2.22	3.52	.16			9.59	12.69	18.75
Zapata	26°54'	99°16'	301	.47	2.24	2.42	3.11	1.62	.58			10.44	13.26	15.88
Zapata Water Plant	26°54'	99°16'	380		.84	2.95	3.25	1.78		1.20	.80	10.82	14.39	17.24
WATERSHED: FALCON DAM TO RIO GRANDE CITY														
Falcon Dam	26°33'	99°08'	323		0.62	2.81	14.90	2.35		0.35		21.03	21.60	30.47
Kaffie Ranch *	27°05'	98°35'	481	2.00	5.50	2.80	3.22	.91				14.43	16.23	21.28
Rio Grande City 3W	26°23'	98°52'	170	.02	2.42	4.00	12.51	4.96	T	1.40		25.31	26.06	35.30
Roma (Int'l. Bridge)	26°24'	99°01'	230		1.47	3.50	17.50		2.00			24.47	24.71	33.23
WATERSHED: RIO GRANDE CITY TO ANZALDUAS DAM														
Dale, O. C. Farm	26°15'	98°16'	130	3.85		5.65	2.18	0.12	0.88			12.68	14.55	23.86
Edinburg Filtration Plant	26°18'	98°10'	100	2.34	3.23	7.52	1.57	.61	.26	T		15.53	18.14	23.75
Garciasville	26°20'	98°41'	200		7.20	6.00						13.20	13.20	17.52
HCWCID #15 (Edinburg Office)	26°23'	98°09'	85	.87		8.10	5.02		1.23		0.11	15.33	16.75	22.86
La Joya	26°15'	98°29'	150	1.32	2.22	10.20	.05					13.79	13.83	18.23
McAllen	26°12'	98°13'	122	.14	3.06	5.52	6.06	.87	.29	.11		16.05	17.87	24.61
McCook	26°30'	98°23'	225	.09	4.05	6.28	3.76	2.42	.44	.14		17.18	19.43	31.65
Mission	26°13'	98°17'	142	4.47	2.66	11.11	4.46					22.70	23.81	29.75
Peñitas (Edinburg Pumping Plant)	26°14'	98°27'	100	1.08	5.00	5.47	2.85	3.95				18.35	18.74	24.82
WATERSHED: ANZALDUAS DAM TO THE GULF														
Brownsville WB Airport	25°54'	97°26'	19	2.17	12.09	1.14		0.33	0.69			16.42	19.26	25.21
CCWID #11 (Bayview)	26°08'	97°21'	25	#	#	#	#	#	13.55			13.55	22.21	28.93
CCWCID #19 (Adams Gardens)	26°10'	97°47'	50	.26			3.55				0.30	4.11	4.86	8.43
Engleman Garden	26°20'	98°02'	70	.13	4.00	3.00	2.75	.25	.25			10.38	11.65	17.60
Harlingen	26°13'	97°41'	38	.45	3.85	4.81	.87	.05	1.40	0.06		11.49	14.36	20.01
La Feria Materials Yard	26°10'	97°50'	60	3.00	2.10	3.15						8.25	15.35	17.85
La Feria Pumping Plant	26°03'	97°50'	60	#	#	18.00						18.00	19.92	26.19
Lyford	26°25'	97°48'	†	3.25	15.00	8.00	.25	.50	.20			27.20		
Mercedes 6SSE	26°04'	97°54'	75	.40	2.44	2.87	2.77	.54	.21	.30		9.53	10.07	14.60
San Benito	26°08'	97°38'	37	.51	3.31	4.35	2.23	.07	.45			10.92	19.71	24.70
San Benito Pump	26°03'	97°45'	50	0.50	3.40	4.00	4.00		0.18			12.08	14.39	18.06
Weslaco 2E	26°09'	97°58'	75	1.00	2.75	7.33	.40	0.35	.37			12.20	12.99	16.80
Whipple Farm	26°04'	97°29'	25			.20	#	#	15.00			15.20	22.60	31.05

* Adjacent to watershed # Rainfall cumulated with following day † Not available T Trace

RAINFALL ON AND ADJACENT TO THE RIO GRANDE WATERSHED FOR THE PERIOD SEPTEMBER 19 - 26 DURING HURRICANE BEULAH AND FOR AUGUST AND SEPTEMBER 1967

IN INCHES

IN THE UNITED STATES

NAME OF STATION	LATITUDE	LONGITUDE	ELEV. (FT.)	RAINFALL IN INCHES										
				SEPTEMBER 1967										Aug. & Sept.
				19	20	21	22	23	24	25	26	Period	Month	
WATERSHED: NEAR RIO GRANDE - FALCON DAM TO THE GULF														
Alice	27°44'	98°04'	201	T	1.03	8.05	2.00	3.90	0.13	0.48		15.59	18.78	23.76
Alice 3E	27°44'	98°02'	†	0.64	6.65	2.35	4.79	.20	.01	.01		14.65		
Armstrong	26°56'	97°48'	25	1.20	#	11.50	#	2.80	#	3.00		18.50	25.01	31.40
Benavides 7S	27°30'	98°25'	394		1.75	4.75	5.75	3.85				16.10	19.27	26.34
Calligham 5N	28°33'	98°21'	†									16.50		
Calligham 8.5N	28°35'	98°23'	†	2.25	7.90	9.60	.55	.80				21.10		
Chapman Ranch	27°35'	97°27'	25	1.00	10.00	1.50	.50	.85	.30			14.15	23.83	30.11
Corpus Christi	27°48'	97°24'	14	.91	6.76	3.68	1.26	.08				12.69	20.47	23.12
Corpus Christi WB Airport	27°46'	97°30'	41	.90	3.48	6.38	3.02	.29				14.07	20.33	25.69
Falfurrias	27°13'	98°08'	124	2.90	10.00	7.00	5.20	.20	T	T	T	25.30	32.78	41.54
Falfurrias 10S	27°04'	98°09'	†	.18	2.00	6.0		13.00				21.2		
George West	28°20'	98°08'	185		1.02	5.57	9.12	1.30	1.15			18.16	19.50	24.62
Kingsville	27°32'	97°53'	62	.69	3.70	3.55	4.16	.04		.06	.01	12.21	15.36	22.08
Port Mansfield	26°33'	97°26'	9	.38	#	#	14.30					14.68	19.20	27.03
Premont 2N	27°24'	98°07'	†		3.00	6.0	5.00	5.00	.20			19.2		
Raymondville	26°29'	97°48'	31	.09		8.88	4.87	.64	1.40	.32		16.20	18.03	23.30
Realitos SE	27°21'	98°29'	†		#	#	#	#	19.50			19.50		
Ricardo	27°25'	97°49'	59	1.00	.70	8.00	2.36	.23	.27			12.56	16.38	20.80
Robstown	27°47'	97°40'	85	.68	1.68	6.38	3.48	1.76		.24		14.22	19.52	23.35
San Diego	27°46'	98°14'	†			#	#	#	#	15.8		15.8		
Sarita 7E	27°13'	97°41'	38	1.05	3.65	5.20	2.10	T		.76		12.76	16.21	23.07
Three Rivers	28°28'	98°11'	150		1.47	5.70	11.00	.75	.20	.53	.05	19.70	21.02	27.13
Tilden 6SE	28°24'	98°27'	†		3.3	3.9	4.1		1.1			12.4		
Tilden 8SE	28°21'	98°34'	†		#	#	19.3		1.1			20.4		
Whitsett 2 SW	28°37'	98°17'	221	.40	6.04	1.49	15.69	.60				24.22	29.19	33.65

IN MEXICO

WATERSHED: AMISTAD DAM TO LAREDO														
Allende, Coahuila	28°21'	100°51'	1,230		0.22	0.37	1.61	1.18	0.04	0.12		3.54	4.98	6.55
Colombia, Nuevo León	27°42'	99°46'	†										11.42	17.64
El Macho, Coahuila	28°24'	101°14'	†	T					2.36	.20	T	2.56	7.15	
El Moral, Coahuila	28°54'	100°38'	774										5.71	6.85
El Moral Km.17, SW, Coahuila	28°50'	100°46'	900										5.71	6.50
El Remolino, Coahuila	28°45'	101°05'	1,310		.55	.20	.87	.67		1.10		3.39	8.46	9.92
Nuevo Laredo, Tamps.	27°30'	99°30'	430		.55	1.69	3.27	1.65	.20	.20		7.56	10.83	17.64
Palestina, Coahuila	29°09'	100°59'	1,080		.47	.20	.59	.59	.20			2.05	8.94	9.65
Piedras Negras, Coahuila	28°43'	100°31'	820	.24	.12	.28	.43	.08	.71		.08	1.94	3.03	4.21
Piedras Negras Km. 22, SW, Coahuila	28°33'	100°38'	†										2.76	4.33
Presa Cabeceras, Coah.	29°02'	101°05'	†		.47	.28	.79	.24	.24			2.02	9.88	10.12
Presa Centenario, Coah.	29°13'	100°57'	†		.43	.20	.39					1.02	7.99	8.30
Presa San Miguel, Coah.	29°02'	100°57'	1,000		.28	.24	.71	.71				1.94	6.46	7.01
Rancho Los Vidrios, Tamaulipas	27°35'	99°37'	450										8.19	17.44
Rancho Mercedes, Coah.	28°02'	100°01'	540	.39	.12		.71	.31		.63		2.16	5.20	8.94
Rancho San Diego, Coah.	27°59'	100°35'	†	1.57	1.89							3.46	7.76	9.14
Villa Guerrero, Coah.	28°19'	100°23'	690			1.73	1.50					3.23	6.38	10.83
Villa Hidalgo, Coahuila	27°47'	99°52'	660	.59	.55	4.57	1.18	.24				7.13	9.61	19.96
WATERSHED: LAREDO TO FALCON DAM EXCLUDING RIO SALADO														
Aniego 166, Tamaulipas	26°46'	99°15'	308										19.49	26.38
Jarita, Nuevo León	27°26'	99°48'	680										9.84	15.35
La Bandera, Tamps.	26°42'	99°22'	†										18.50	26.96
Nueva Cd. Guerrero, Tamaulipas	26°34'	99°14'	350		0.69	1.69	12.80	2.01	0.08	0.37		17.64	17.95	25.39
Nuevo Laredo Km. 26, SSW, Tamaulipas	27°17'	99°37'	†										9.45	16.93
Nuevo Laredo Km. 52, SSW, Nuevo León	27°04'	99°44'	†										9.45	13.39
Rancho Arturo Guajardo, Tamaulipas	26°59'	99°24'	†									16.93		
Rancho Coronado, Tamps.	27°11'	99°26'	†									13.86		
Rancho Cuellareño, Tamaulipas	27°05'	99°26'	†									16.14		
Rancho El Popo, Tamps.	27°25'	99°31'	†									20.00		
Rancho El Porvenir, Tamaulipas	27°15'	99°27'	†									11.89		
Rancho Garza Elizondo, Tamaulipas	27°20'	99°31'	†									20.47		

† Not available T Trace * Rainfall cumulated with following day

RAINFALL ON AND ADJACENT TO THE RIO GRANDE WATERSHED FOR THE PERIOD SEPTEMBER 19 - 26

DURING HURRICANE BEULAH AND FOR AUGUST AND SEPTEMBER 1967

IN INCHES

IN MEXICO

NAME OF STATION	LATITUDE	LONGITUDE	ELEV. (FT.)	RAINFALL IN INCHES										
				SEPTEMBER 1967										Aug. & Sept.
				19	20	21	22	23	24	25	26	Period	Month	
WATERSHED: LAREDO TO FALCON DAM EXCLUDING RIO SALADO														
Rancho GEM, Tamps.	27°20'	99°34'	†									20.67		
Rancho Grande, Tamps.	27°15'	99°28'	†									12.20		
Rancho La Bonanza, Tamaulipas	27°14'	99°26'	†									12.80		
Rancho Reynaldo Garza, Tamaulipas	27°18'	99°30'	†									12.01		
Rancho Reynaldo Gonzalez, Tamaulipas	27°16'	99°30'	†									12.60		
Rancho San Juan de la Palma, Tamaulipas	26°54'	99°20'	350		0.83	2.24	3.82	1.57	1.18			9.64	11.57	17.36
Rancho Sta. Cecilia, Tamaulipas	27°24'	99°31'	†									35.98		
Rancho Sta. Cleotilde, Tamaulipas	27°05'	99°26'	†									12.60		
Rancho Sta. María, Tamps.	27°24'	99°30'	†									27.56		
San Ignacio, Tamps.	27°04'	99°28'	†										11.73	20.00
WATERSHED: RIO SALADO														
Anáhuac, Nuevo León	27°15'	100°08'	656	T	0.31	0.43	2.52	1.00	T	0.85		5.11	9.96	17.13
Bustamante, Nuevo León	26°32'	100°31'	1,450		2.20	.98	4.53	4.17	.55	.08		12.51	14.29	28.11
Candela, Coahuila	26°51'	100°40'	†		1.02	.83	4.80	5.83	.47			12.95	13.80	
Cuatro Cienegas, Coah.	26°59'	102°04'	2,430		T	.24	.31	.31	.12			.98	1.42	2.60
Don Martín, Coahuila	27°31'	100°37'	790		.08	.20	1.73	.93	.33	.04		3.31	4.41	11.61
Ejido San Miguel, Coah.	26°52'	101°49'	†			.01						.01	3.00	
El Cuervo, Nuevo León	27°35'	100°18'	†									3.94	7.09	10.67
El Treinta, Coahuila	28°20'	101°24'	†		.39	.20	.59	.79	.08	.20		2.25	7.87	9.48
Garza Ayala, Nuevo León	26°29'	100°03'	†		2.20	.81	2.36	2.38	1.21			8.96	12.23	
La Babia, Coahuila	28°33'	102°04'	†	.63	.39	1.57					0.20	2.79	5.67	6.22
La Gloria, Nuevo León	26°53'	99°49'	390	1.97	2.17	1.57	2.36					8.07	8.74	12.48
Laguna de Salinillas, Nuevo León	27°26'	100°23'	750		.14	.20	1.42	.79	T	.16		2.71	7.72	10.40
Lampazos, Nuevo León	27°02'	100°30'	1,120									9.45	9.80	17.32
Monclova, Coahuila	26°54'	101°25'	1,920	.10	1.20	1.84	4.23	.72	.07			8.16	10.08	12.99
Múzquiz, Coahuila	27°53'	101°31'	1,650		.35	.51	2.48	1.73		.08	1.02	6.17	7.99	12.75
Nva. Hda. Golondrinas, Nuevo León	26°43'	100°30'	1,310									33.00		
Nueva Rosita, Coahuila	27°56'	101°13'	1,410		.16	.28	.59	1.73	.16	.24		3.16	4.88	7.87
Ocampo, Coahuila *	27°19'	102°24'	3,770				.28	.08	.04			.40	2.76	4.77
Progreso, Coahuila	27°25'	101°00'	1,210	1.18	.43	1.93	2.24	.08				5.86	8.15	11.85
Rancho El Armadillo, Nuevo León	26°55'	100°17'	980									20.00		
Rancho El Crucillal, N.L.	26°42'	100°14'	1,060									24.00		
Rancho El Guayacán, N.L.	26°30'	100°43'	1,840									10.00		
Rancho La Leona, N. L.	26°52'	100°00'	600									15.00		
Rancho Las Estacas, N.L.	26°22'	100°52'	2,150									15.00		
Rancho Palo Blanco, N.L.	26°39'	100°11'	1,020									30.00		
Rancho Palo Blanco Viejo, Nuevo León	26°16'	100°22'	1,640									25.00		
Rancho Pascualitos, N.L.	26°50'	100°14'	980									25.00		
Rancho San Rafael, Tamps.	26°54'	99°30'	†									16.14		
Rancho San Marcos, N.L.	26°46'	99°53'	660									13.00		
Rancho Santa Cruz, N.L.	26°44'	99°59'	570									15.00		
Rancho Santa Elena, N.L.	26°49'	100°02'	710									14.00		
Río Salado Ribereña, Tamaulipas	26°48'	99°24'	330										10.63	20.32
Sabinas, Coahuila	27°51'	101°07'	1,120		.63	.08	.94	2.48	.12			4.25		
Sabinas Hidalgo, N. L.	26°30'	100°10'	1,030	.08	1.61	.79	3.31	4.06	.59	T		10.44	13.39	25.91
San Blas, Coahuila	27°25'	100°43'	†	.31	.71		.28	.79	.24			2.33	3.50	
Santa Teresa, Coahuila	26°27'	101°24'	790		.79	.20	1.85	2.13	.24			5.21		
Vallecillo, Nuevo León	26°40'	99°59'	900	.06	2.03	2.17	5.91	4.33	.47			14.97	15.91	22.68
Villa Juárez, Coahuila	27°37'	100°44'	1,000	1.50	.20	.39	.31		.87			3.27	3.66	4.41
WATERSHED: FALCON DAM TO RIO GRANDE CITY EXCLUDING RIO ALAMO AND RIO SAN JUAN														
Camargo, Tamaulipas	26°19'	98°50'	223	0.08	1.57	3.54	9.57	1.38	0.06		0.16	16.36	17.09	27.17
Cd. Mier, Tamaulipas	26°26'	99°09'	260	3.15	1.38	1.97	13.58	.31				20.39	21.10	37.71
Miguel Alemán, Tamps.	26°24'	99°02'	180		1.94	3.64	17.71	1.78	.18	0.88		26.13	26.42	35.44
WATERSHED: RIO ALAMO														
Agualeguas, Nuevo León	26°19'	99°32'	†				6.00	6.00	6.00			18.00		
Cd. Mier Km. 8, SW, Tamps.	26°23'	99°14'	†										19.49	30.51
Gral. Treviño, N. L.	26°14'	99°29'	†	0.20	0.79			9.84				10.83		
Hda. del Alamo, N. L.	26°29'	99°46'	†									9.84		

† Not available * Adjacent to watershed T Trace

RAINFALL ON AND ADJACENT TO THE RIO GRANDE WATERSHED FOR THE PERIOD SEPTEMBER 19 - 26

DURING HURRICANE BEULAH AND FOR AUGUST AND SEPTEMBER 1967

IN INCHES

IN MEXICO

NAME OF STATION	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RAINFALL IN INCHES										
				SEPTEMBER 1967										Aug. & Sept.
				19	20	21	22	23	24	25	26	Period	Month	
WATERSHED: RIO ALAMO														
Palo Alto, Nuevo León	26°30'	99°45'	†									13.03		
Parás, Nuevo León	26°30'	99°31'	540	0.79						1.57		2.36	5.91	
Rancho Montegrande, N.L.	26°25'	100°07'	1,030									22.00		
Rancho Los Náufragos, Nuevo León	26°20'	99°47'	†									30.00		
Rancho Santa María, N.L.	26°26'	99°41'	†									21.00		
San Javier, Nuevo León	26°16'	99°25'	†										19.29	27.36
Sombreretillo, N. L.	26°18'	99°58'	†	3.15	2.76	12.60	11.02	2.99	3.15			35.67	42.01	
WATERSHED: RIO SAN JUAN														
Adjuntas, Nuevo León	25°18'	100°08'	†	T	1.77	0.12	1.02	12.60	1.57	2.36		19.44	21.22	
Agua Blanca Canoas, N.L.	25°32'	100°30'	†	.43	.55	2.68	4.96	.98	.24			9.84	10.47	14.01
Alta Vista, Nuevo León	25°10'	100°02'	†	.59			.79			.59		1.97	3.15	
Apodaca, Nuevo León	25°46'	100°11'	1,330		1.65	.98	.83	5.33	3.62	1.28		13.69	15.74	34.64
Barranco Azul, Tamps. *	24°24'	99°07'	†		1.39	.85	2.18	3.37	1.55	.39		9.73	10.79	
Cabezones, Nuevo León *	24°59'	99°45'	†	.28	1.54	.14	.48	4.50	1.37	.99		9.30	10.87	33.27
Cadereyta, Nuevo León	25°35'	100°00'	1,180		1.83	.16	3.07	2.96	1.71			9.73	12.95	29.01
Carbonera, Nuevo León	24°49'	100°47'	†				.87	.39				1.26	3.03	8.31
Cerralvo, Nuevo León	26°05'	99°37'	1,130	.04	.94	.58	9.70	2.05				13.31	16.14	32.12
Cerritos, Nuevo León	25°31'	100°12'	†	.12	1.06	.71	2.99	12.60	1.50	.87		19.85	22.72	
Cerro Prieto, N. L. *	24°56'	99°23'	†	.35			.83		2.13	1.93	0.75	5.99	7.09	
China, Nuevo León	25°42'	99°14'	†		1.54	1.38	9.29	1.38		.31		13.90	15.08	
Ciénega de Flores, N.L.	25°57'	100°10'	1,770	.20	1.41	.71	8.07	3.66	.72	T		14.77	16.02	35.78
Ciénega del Torro, N. L.	25°05'	100°20'	7,010	.03			.59	1.06	.47	.02		2.17	2.28	6.14
Comales, Tamaulipas	26°11'	98°55'	260		1.71	3.52	11.89	2.27	.10			19.49	19.68	29.64
El Cuchillo, Nuevo León	25°43'	99°16'	590	.08	.67	.68	9.29	1.36	2.81	.58		15.47	16.06	23.15
El Manzano, Nuevo León	25°32'	100°28'	†	.08	2.72	.12	1.30	13.11	2.76	1.30	T	21.39	27.03	
El Realito, Nuevo León	25°18'	99°21'	†	5.16	2.83	.35	7.48	.55	2.05	.39		18.81	24.37	
Estación Camacho, N. L.*	24°53'	99°35'	†	.49	.75	.15	.50	2.72	.96	.35		5.92	9.50	
Gral. Bravo, Nuevo León	25°48'	99°11'	590	.08	1.73	1.52	11.79	.87	1.42	.41		17.82	19.13	29.60
Gral. Cepeda, Coah.	25°23'	101°29'	4,920		.24	.24	1.61	2.09	T	T		4.18	4.80	9.68
Hda. El Mirador, N. L.	25°35'	99°19'	†									18.50		
Hedionda Grande, Coah. *	25°06'	100°51'	†	.67	.39	.28	.51					1.85	2.80	7.09
Hidalgo, Tamaulipas *	24°15'	99°26'	†	.02	.04	.27	.36	3.84	1.59	.43	.43	6.98	9.01	
Higueras, Nuevo León	25°58'	100°01'	1,640	1.06	1.42	11.81	2.83	.67				17.79	18.74	31.22
Icamole, Nuevo León	25°55'	100°43'	4,900	T	.79	.36	1.24	1.84	.51	.04		4.78	7.76	10.44
Inst. Nac. Invest. Agr., Nuevo León	25°18'	99°36'	1,090	.12	2.20	.16	2.52	1.97	1.77	1.57	1.18	11.49		
Iturbide, Nuevo León *	24°44'	99°54'	†	.58	.69	.02	1.02	3.76	.70	.23	.12	7.12	8.70	17.60
La Arena, Nuevo León	25°46'	100°01'	†		.73	.39	10.86	2.23	2.03	.81		17.05	19.67	
La Cruz, Nuevo León	25°28'	100°26'	†	.47	.63	2.99	5.20	.91	.12			10.32	10.79	14.18
Laguna de Sanchez, N.L.	25°22'	100°17'	6,500	.08	1.38	.31	1.83	6.69	1.65	.65		12.59	14.72	25.43
La Popa, Nuevo León	26°10'	100°50'	3,230		1.42	1.38	2.09	1.89				6.78	7.17	14.57
Las Comitas, N. L.	25°26'	100°09'	1,670	.79		1.89	.55	3.23	.61	.67	.63	8.37	11.26	23.23
Las Enramadas, N. L.	25°30'	99°31'	730	T	2.76	.59	7.30	3.35	1.97			15.97	20.91	40.87
La Presas, Nuevo León *	24°19'	100°02'	†				.91	.87	.47			2.25	4.33	
Linares, Nuevo León *	24°52'	99°34'	1,180	.49	.75	.15	.50	2.72	.96	.35		5.92	9.49	27.13
Los Aldamas, N. L.	26°04'	99°12'	†			4.13	5.91					10.04		
Los Herreras, N. L.	25°54'	99°24'	820	.30	1.65	.57	10.63	3.15				16.30	16.30	26.34
Los Ramones, N. L.	25°42'	99°38'	260	.16	1.26	.16	6.30	1.89	1.89	.31		11.97	13.11	30.71
Magueles, Tamps. *	24°34'	99°33'	†	.36	.33	.09	.65	4.33	1.04	1.00	.04	7.84	12.08	
Mina, Nuevo León	26°00'	100°32'	†		.75	.69	4.21	.71	.55	.12		7.03	8.70	15.55
Montemorelos, N. L.	25°12'	99°50'	1,420	.04	1.57	.14	1.02	6.89	1.10	.04		10.80	13.11	32.79
Monterrey, Nuevo León	25°40'	100°18'	1,740		1.54	T	2.13	5.63	1.16	.26		10.72	13.66	32.87
Pajonal, Nuevo León	25°29'	100°23'	†		1.57	.59	2.56	3.98	.79	.79		10.28	11.77	25.94
Parras, Coahuila *	25°27'	102°10'	5,510			.10	.81	1.20		.01		2.12	3.03	13.03
Potrero Redondo, N. L.	25°16'	100°10'	†										24.02	48.98
Ramos Arizpe, Coahuila	25°32'	100°57'	4,590		.79	.59	2.40	.47				4.25	5.00	5.94
Rayones, Nuevo León	25°01'	100°05'	1,970	.39	.83	T	.87	1.18	1.14	1.16	T	5.57	6.14	15.71
Reata, Coahuila	26°07'	101°04'	3,070				.79	1.38	1.10			3.27	3.35	6.34
Rinconada, Nuevo León	25°41'	100°42'	4,790	.24	.79	.63	4.72	1.10				7.48	9.09	15.07
Rusio, Nuevo León *	24°42'	100°26'	6,570	T	.47	.31	.28			T		1.06	2.28	3.93
Saltillo, Coahuila	25°26'	101°00'	5,280		.37	.85	2.52	.98	T	T	T	4.72	8.66	11.10
San Antonio de las Alazanas, Coahuila	25°16'	100°35'	†	.12	.16	.24	.20	.71	.39			1.82	1.85	7.44
San Juan, Nuevo León	25°33'	99°50'	880	.83	3.17	1.61	.83	1.42	.16	.53		8.55	15.04	32.60
Santa Catarina, N. L.	25°40'	100°29'	2,230		.87	.12	1.81	6.10	.87	.24		10.01	13.43	30.28
San Vicente, Coahuila	25°40'	102°09'	†		T	.38	.53	.66	1.40	T		2.97	4.30	
Topo Chico, Nuevo León	25°44'	100°20'	1,640			.81	2.46	4.76	.79	.28		9.20	12.76	30.48
Tunel San Francisco, N.L.	25°25'	100°10'	†	.09	1.33			8.66	.02	.75	.06	10.91	16.69	41.49
Villa Allende, N. L.	25°17'	100°01'	2,210	.20	1.81	.20	1.10	9.92	1.06	.71	T	15.00	18.93	42.32
Villa de Santiago, N. L.	25°25'	100°09'	1,460	.17	1.07	.08	1.20	13.08	1.73	.79	.05	18.17	22.32	48.86
Villagran, Tamps.	24°29'	99°29'	†	.08	.39	.31	.47	.75	.12	.08	.28	2.48	6.73	

† Not available * Adjacent to watershed T Trace

RAINFALL ON AND ADJACENT TO THE RIO GRANDE WATERSHED FOR THE PERIOD SEPTEMBER 19 - 26

DURING HURRICANE BEULAH AND FOR AUGUST AND SEPTEMBER 1967

IN INCHES

IN MEXICO

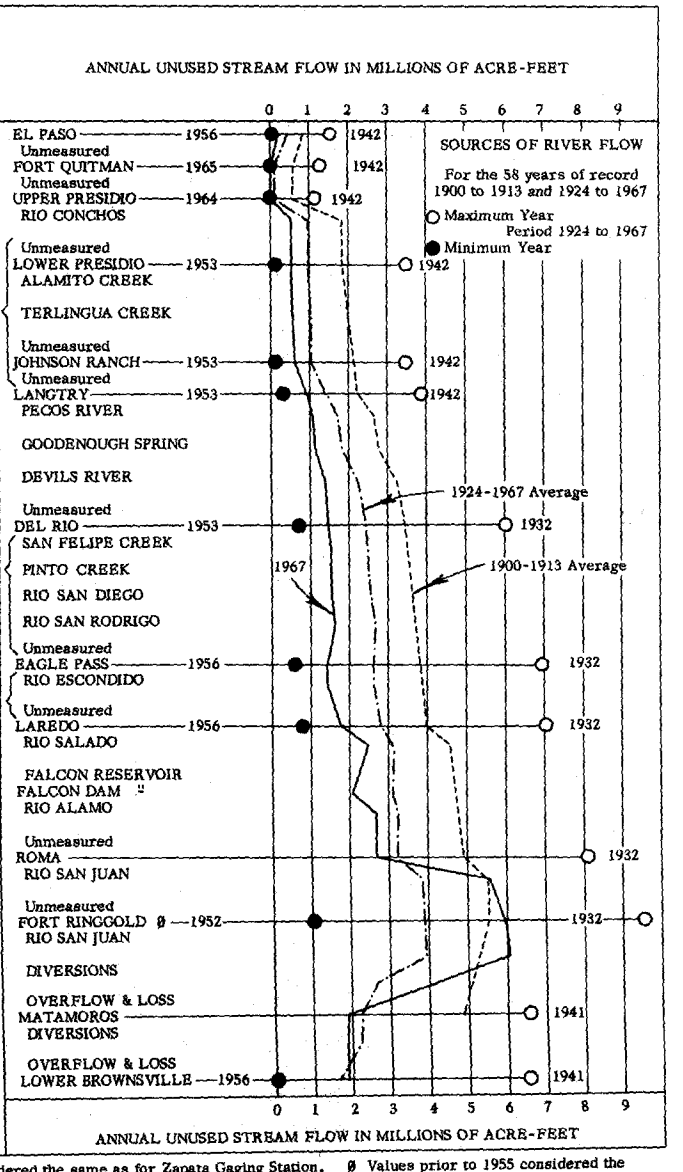
NAME OF STATION	LATITUDE	LONGITUDE	ELEV. (FT.)	RAINFALL IN INCHES										
				SEPTEMBER 1967										Aug. & Sept.
				19	20	21	22	23	24	25	26	Period	Month	
WATERSHED: RIO GRANDE CITY TO ANZALDUAS DAM														
Argüelles, Tamps.	26°11'	98°28'	†		2.95	3.23	12.20	1.58				19.96	19.96	26.46
Bajo Río San Juan, Tamps.														
No. 2-29	26°10'	98°38'	†		2.95	3.94	6.50	2.58	0.10	1.36		17.43	18.11	24.02
No. 2-33	26°10'	98°28'	†	0.16	2.95	3.23	12.20	1.57				20.11	20.71	28.74
No. 2-38	26°06'	98°34'	†		.30	1.57	3.35	5.53	1.77			12.52	12.52	19.61
Presa Anzalduas, Tamps.	26°08'	98°20'	105										12.91	16.49
Reynosa Km. 22, SW, Tamaulipas	26°00'	98°30'	†										21.26	33.86
Reynosa Km. 40, SW, Nuevo León	25°56'	98°39'	492	.94	7.09	5.51	5.12	2.36	.71			21.73	22.44	32.20
San Miguel de Camargo, Tamaulipas	26°14'	98°36'	130	.12	3.19	2.95	2.30	1.57		.43		10.56	11.54	17.92
Valadeces, Tamps.	26°14'	98°40'	†	.06	3.25	3.56	4.40	2.05		1.06		14.38	14.68	19.01
WATERSHED: ANZALDUAS DAM TO THE GULF														
Bajo Río Bravo, Tamps.														
No. 1-2	25°56'	97°46'	†	0.39	3.21	4.70	4.90	0.39	0.10			13.69	17.09	21.34
No. 1-3	25°50'	97°42'	†	.16	3.15	3.94	.98	.47	.31	0.39		9.40	13.39	18.94
No. 1-4	25°51'	97°45'	†	.20	3.31	4.06	3.74	.71	.55			12.57	18.94	22.52
No. 1-12	25°56'	97°38'	†	.79	2.48	3.23	1.46	.12	T	1.18	T	9.26	10.90	14.09
No. 1-13	25°44'	97°40'	†		#	7.09	1.77	.49	.91			10.26	15.28	20.44
No. 2-5	25°48'	97°49'	†	.16	#	#	12.60			.67		13.43	16.97	21.54
No. 2-6	25°44'	97°53'	†	.20	1.50	1.65	4.72	1.57				9.64	15.35	21.89
No. 2-7	25°39'	97°42'	†		#	6.50	.98	.39				7.87	11.42	18.94
No. 2-8	25°40'	97°55'	†	.12	#	5.91	4.72	1.57	.16	.24		12.72	15.83	24.65
No. 2-10	25°36'	97°52'	†		#	5.39	5.24	1.50	.35			12.48	16.57	24.05
No. 3-14	25°56'	97°59'	†	.26	2.05	3.03	1.63	.81	1.56	.06		9.40	10.67	13.50
No. 3-15	25°46'	98°01'	†	.24	1.97	2.64	2.95	1.77	.43	.39		10.39	11.54	18.86
No. 3-17	25°49'	97°58'	†	.28	#	#	10.24	.79	.79	.20		12.30	13.82	18.07
No. 4-16	25°35'	98°00'	†	.24	3.54	3.15	2.40	2.56	.67	.31		12.87	13.70	22.83
Bajo Río San Juan, Tamps.														
No. 3-42	26°04'	98°19'	†	.13	2.85	5.05	4.79	1.29		1.52		15.63	17.49	22.03
No. 3-47	25°58'	98°07'	†		1.77	4.64	3.87	2.30	.24	.17	.67	13.66	14.09	23.15
No. 3-55	25°52'	98°12'	†		5.91	3.54	2.13	.20				11.78	12.05	17.80
No. 3-58	25°50'	98°11'	†		4.33	5.12	2.95	2.05	.79	.47	1.77	17.48	17.95	23.70
No. 3-60	25°46'	98°10'	†		4.53	5.04	3.27	1.85	.98	.51	1.10	17.28	17.64	22.84
No. 3-63	25°41'	98°06'	†		4.53	4.72	3.74	1.57	.35	.28	1.30	16.49	16.89	26.93
Burgos, Tamaulipas *	24°57'	98°48'	†	.31	2.56	.79	4.33	3.27	1.77	.20		13.23	15.35	
Control, Tamaulipas	25°58'	97°49'	59	.47	#	#	9.00	.24	.20	.08		9.99	12.28	18.19
Cruillas, Tamaulipas *	24°45'	98°32'	†	.31	3.43	.79	1.73	7.32	1.77	1.57		16.92	20.28	
El Ocotillal, Tamps. *	24°24'	98°28'	†	.24	.65	.51	.18	5.91	2.40	.22		10.11	12.01	
Jiménez, Tamaulipas *	24°13'	98°29'	†	.09	.59	.41	.17	8.78	4.56	.20		14.80	15.98	
Las Norias, Tamps. *	24°37'	98°18'	†	.79	2.48	.87	1.38	9.31	2.00	.25	T	17.08	21.40	
Méndez, Tamaulipas *	25°07'	98°35'	430	T	1.97	.24	3.74	8.46	1.97	1.06		17.44	19.33	28.54
Reynosa, Tamaulipas	26°06'	98°17'	130	.20	3.94	7.48	3.15	1.06				15.83	16.93	21.85
Río Bravo, Tamaulipas	25°59'	98°06'	85		7.48	5.91	3.56	.98	.31	.20	.48	18.92	19.65	25.87
San Carlos, Tamps. *	24°35'	98°56'	†	.37	3.78	1.36	2.99	6.61	1.54	.11		16.76	19.99	
San Fernando, Tamps. *	24°51'	98°14'	†	.91	2.48	.91	.79	4.98	2.56	2.05	T	14.68	16.71	22.81
San Nicolas, Tamps. *	24°42'	98°50'	†		.91	7.09	1.28	1.75	5.61	1.52	.16	18.32	21.87	
Tenacitas, Tamps.	25°59'	98°02'	†	2.24	3.25	.51	.33	13.58	6.38	.37		26.66	30.45	
Valle Hermoso, Tamps.	25°41'	97°49'	52	.28	#	5.51	7.68	.98			.20	14.65	18.46	23.50

† Not available * Adjacent to watershed # Rainfall cumulated with following day T Trace

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	1924-1967	1924-1967	
29.7	14.5	15.4	EL PASO — 1956 — 1942
			Unmeasured
19.6	4.1	4.8	FORT QUITMAN — 1965 — 1942
			Unmeasured
16.4	3.5	4.2	UPPER PRESIDIO — 1964 — 1942
42.6	28.8	28.7	RIO CONCHOS
			Unmeasured
			LOWER PRESIDIO — 1953 — 1942
			ALAMITO CREEK
19.8	20.2	20.2	TERLINGUA CREEK
			Unmeasured
			JOHNSON RANCH — 1953 — 1942
			Unmeasured
26.4	16.3	16.5	LANGTRY — 1953 — 1942
12.4	9.2	9.1	PECOS RIVER
			GOODENOUGH SPRING
103.1	95.1	95.1	DEVILS RIVER
			Unmeasured
67.6	80.8	80.8	
26.9	19.0	19.2	DEL RIO — 1953 — 1932
			SAN FELIPE CREEK
110.8	55.1	55.0	PINTO CREEK
			RIO SAN DIEGO
			RIO SAN RODRIGO
			Unmeasured
29.2	20.0	20.2	EAGLE PASS — 1956 — 1932
			RIO ESCONDIDO
			Unmeasured
32.4	33.4	33.4	
29.3	20.6	20.7	LAREDO — 1956 — 1932
23.1	13.2	12.9	RIO SALADO
			FALCON RESERVOIR
			FALCON DAM ¤
			RIO ALAMO
			Unmeasured
			ROMA — 1932
** 48.4	** 48.3	** 46.8	RIO SAN JUAN
			Unmeasured
			FORT RINGGOLD ø — 1952 — 1932
			RIO SAN JUAN
			DIVERSIONS
			OVERFLOW & LOSS
			MATAMOROS — 1941
			DIVERSIONS
			OVERFLOW & LOSS
			LOWER BROWNSVILLE — 1956 — 1941



¤ Values prior to 1953 considered the same as 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.

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-neck 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 2-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	1967							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: Sept. 1947-1967

Jan.	5,064,000	95.4	30	0.001884			0.07	0.21	1.4	0
Feb.	3,263,000	228	27	.007000			.16	.28	2.2	.01
Mar.	62,628,000	33,900	31	.05420			23.3	20.6	52.7	.89
Apr.	34,442,000	4,550	30	.01320			3.1	12.2	45.2	3.0
May	32,901,000	3,450	31	.01050			2.4	9.1	63.3	.03
June	34,381,000	43,800	30	.1275			30.2	23.9	152	2.4
July	43,032,000	21,000	31	.04870			14.5	37.5	124	1.1
Aug.	49,092,000	81,300	31	.1656			56.0	40.3	112	2.0
Sept.	37,340,000	19,100	30	.05120			13.2	25.3	123	1.1
Oct.	6,923,000	450	31	.006500			.31	5.4	51.0	.01
Nov.	3,428,000	114	29	.003320			.08	.32	1.5	.01
Dec.	3,818,000	125	30	.003280			.09	.32	2.1	.01
Yearly	316,312,000	208,112.4	361	0.06579			143.41	175.43	436.87	34.37

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

Río Conchos near Ojinaga, Chihuahua

Period: 1956-1967

Jan.	41,322,000	0	10	0	0	0	0	0	0	0
Feb.	31,004,000	0	8	0	0	0	0	.38	4.5	0
Mar.	30,678,000	0	9	0	0	0	0	0	0	0
Apr.	17,172,000	0	8	0	0	0	0	.48	5.8	0
May	26,415,000	0	9	0	0	0	0	34.6	145	0
June	85,056,000	457,000	14	.5376	1.7646	0	315	201	688	0
July	73,586,000	237,000	13	.3218	.9460	0	163	207	873	0
Aug.	61,943,000	180,000	12	.2904	1.3197	0	124	638	2,650	8.1
Sept.	184,822,000	741,000	17	.4011	1.5476	.1081	510	1,553	9,330	14.4
Oct.	80,516,000	11,300	13	.0140	.0533	0	7.8	1,154	12,400	0
Nov.	60,963,000	0	11	0	0	0	0	9.4	70.2	0
Dec.	41,781,000	0	9	0	0	0	0	1.7	14.0	0
Yearly	735,258,000	1,626,300	133	0.2212	1.7646	0	1,119.8	3,799.56	21,903.3	284.7

Samples and Analyses by Mexican Section, Method B

Rio Grande below Rio Conchos near Presidio, Texas

Period: 1955-1967

Jan.	42,934,000	2,110	9	0.004920			1.5	3.7	14.4	0.70
Feb.	33,598,000	1,560	8	.004640			1.1	4.0	22.2	.45
Mar.	32,927,000	103,000	9	.3142	2.0711	0.007400	70.9	7.4	70.9	.34
Apr.	17,530,000	1,080	8	.006185			.74	7.9	95.7	.12
May	25,660,000	1,620	9	.006320			1.1	34.1	161	.21
June	93,942,000	402,000	10	.4275	1.9209	.01910	277	151	465	2.1
July	77,170,000	123,000	7	.1594			84.7	327	1,420	2.0
Aug.	64,767,000	105,000	9	.1614	.8810	.02210	72.3	457	1,360	21.8
Sept.	195,328,000	328,000	9	.1681			226	707	3,610	14.9
Oct.	77,719,000	18,900	9	.02428			13.0	466	4,770	4.8
Nov.	60,971,000	6,220	9	.01020			4.3	11.0	45.2	1.3
Dec.	42,761,000	2,610	8	.006096			1.8	3.8	13.7	.90
Yearly	765,307,000	1,095,100	104	0.1431			754.44	2,179.9	8,793.44	172.78

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

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

Month	1967							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 Johnson Ranch near Castolon, Texas — Period: Oct. 1951-1967										
Jan.	42,791,000	1,700	5	0.003975			1.2	3.4	14.4	0.72
Feb.	36,205,000	1,850	5	.005100			1.3	18.5	253	.32
Mar.	35,604,000	6,050	6	.01700			4.2	2.7	9.4	.19
Apr.	17,435,000	994	7	.005700			.68	63.0	692	.01
May	21,968,000	1,120	9	.005100			.77	148	426	0
June	140,811,000	1,182,000	10	.8392	2.4494	0.009900	814	470	1,570	31.6
July	88,578,000	223,000	7	.2516			154	848	4,030	51.6
Aug.	62,356,000	74,000	8	.1186			51.0	1,024	3,840	2.8
Sept.	190,084,000	702,000	10	.3691			483	1,082	8,990 *	98.5
Oct.	79,631,000	45,500	9	.05710			31.3	960	13,500 ¤	2.4
Nov.	61,059,000	6,130	8	.01004			4.2	16.9	151	.28
Dec.	43,570,000	3,080	8	.007080			2.1	7.3	48.3	.41
Yearly	820,092,000	2,247,424	92	0.2740			1,547.75	4,643.8	23,869.62	803.27
Rio Grande at Langtry, Texas — Period: April 1944-1967										
Jan.	67,703,000	1,080	4	0.001598			0.74	8.4	83.3	0.74
Feb.	55,621,000	30,800	5	.05540			21.2	16.8	238	.31
Mar.	57,959,000	7,070	8	.01220			4.9	5.7	27.0	.29
Apr.	40,319,000	5,810	7	.01440			4.0	51.2	614	.14
May	41,495,000	9,290	6	.02240			6.4	234	873	.95
June	131,498,000	550,000	5	.4179	1.1842	0.01790	379	572	2,450	.91
July	210,524,000	670,000	4	.3182			461	1,142	5,780	4.6
Aug.	160,951,000	597,000	7	.3711	1.6881	.005600	411	1,057	3,900	4.7
Sept.	233,141,000	1,082,000	4	.4640			745	1,606	8,300	1.0
Oct.	133,833,000	523,000	4	.3909			360	981	8,760	5.1
Nov.	85,275,000	10,000	8	.01176			6.9	109	1,850	1.3
Dec.	71,121,000	2,220	7	.003120			1.5	8.4	46.8	.18
Yearly	1,289,440,000	3,488,270	69	0.2705			2,401.64	5,791.5	17,860.74	645.10
Pecos River near Langtry, Texas — Period: Nov. 1954-1967										
Jan. +	16,648,000	168	5	0.001011			0.12	0.26	0.62	0.05
Feb. +	14,091,000	747	4	.005300			.51	.24	.70	.05
Mar. +	14,357,000	1,150	4	.008000			.79	.30	.79	.05
Apr. +	15,645,000	892	4	.005700			.61	14.9	167	.06
May +	10,791,000	464	5	.004300			.32	31.7	407	.07
June +	9,121,000	538	3	.005900			.37	3.8	41.7	.12
July	13,737,000	522	3	.003800			.36	2.7	22.2	.05
Aug.	13,979,000	657	3	.004700			.45	2.2	23.8	.04
Sept.	19,198,000	1,900	3	.009900			1.3	38.5	359	.10
Oct.	10,424,000	188	2	.001800			.13	10.6	59.8	.07
Nov.	10,429,000	117	4	.001120			.08	.34	1.1	.03
Dec.	11,254,000	180	3	.001600			.12	.19	.55	.05
Yearly	159,674,000	7,523	43	0.004711			5.16	105.73	577.44	3.12
Rio Grande near Del Rio, Texas — Period: Aug. 1955-1967										
Jan.	136,078,000	4,140	12	0.003040			2.9	9.9	44.1	0.61
Feb.	111,790,000	7,570	11	.006773			5.2	20.4	178	.50
Mar.	119,473,000	10,400	14	.008720			7.2	9.1	34.6	.73
Apr.	101,735,000	11,200	12	.01096			7.7	82.3	612	.83
May	90,357,000	8,710	14	.009637			6.0	220	1,600	1.2
June	160,609,000	1,061,000	13	.6605	2.4528	0.02480	731	660	1,720	48.9
July	264,231,000	948,000	13	.3586	1.0117	.04070	653	645	2,240	8.7
Aug.	201,772,000	457,000	13	.2267			315	966	3,290	105
Sept.	341,758,000	824,000	11	.2412			567	1,541	4,800	154
Oct.	206,894,000	542,000	13	.2618	.9992	.06090	373	1,235	9,350	114
Nov.	146,321,000	23,400	12	.01598			16.1	73.1	410	3.7
Dec.	131,279,000	11,600	12	.008810			8.0	11.0	45.5	3.3
Yearly	2,012,297,000	3,909,020	150	0.1943			2,692.1	5,472.8	15,563.3	1,008.37

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

* Partly estimated ¤ Estimated + Pecos River near Shumla, Texas

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

Month	1967							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 Laredo, Texas

Period: #1953-1967

Jan.	142,289,000	3,210	31	0.002253			2.2	11.1	28.0	2.2
Feb.	115,919,000	8,930	28	.007700			6.2	18.5	95.7	1.7
Mar.	121,964,000	21,000	31	.01720			14.5	11.8	26.8	.78
Apr.	125,381,000	44,900	30	.03580			30.9	208	1,920	.47
May	65,913,000	7,650	31	.01160			5.3	410	3,540	2.3
June	105,505,000	40,700	30	.03860			28.0	1,276	12,400	.62
July	264,139,000	1,686,000	31	.6384	1.9996	0.04690	1,160	780	3,440	5.0
Aug.	227,440,000	582,000	31	.2557	.6858	.02430	401	619	1,960	4.2
Sept.	631,792,000	1,610,000	28	.2548			1,110	1,400	5,010	41.3
Oct.	285,158,000	637,000	31	.2233			439	1,042	7,520	29.7
Nov.	180,186,000	45,000	30	.02496			31.0	125	1,190	6.1
Dec.	154,388,000	15,300	31	.009880			10.5	13.8	67.6	2.8
Yearly	2,420,074,000	4,701,690	363	0.1943			3,238.6	5,915.2	19,257.72	734.10

Samples by Laredo Water Plant and Analyses by U. S. Section, Method C

Ø Rio Grande below Falcon Dam, Texas - U. S. Tailrace

Period: July 1955-1967

Jan.	200,610,000	866	13	0.0004316			0.60	1.6	5.4	0.14
Feb.	192,544,000	5,390	12	.002800			3.7	2.2	9.1	.06
Mar.	203,788,000	6,110	13	.003000			4.2	1.3	4.3	.15
Apr.	627,258,000	12,500	10	.002000			8.6	3.2	12.2	.25
May	422,412,000	5,070	12	.001200			3.5	2.9	5.3	.19
June	245,684,000	1,350	12	.0005479			.93	4.0	18.7	.42
July	190,827,000	1,040	12	.0005468			.72	.89	1.9	.41
Aug.	205,724,000	1,210	6	.0005895			.83	1.1	2.8	.22
Sept.	1,941,000	5.8	0	".0003000			0	1.4	5.7	0
Oct.	413,178,000	1,020	5	.0002475			.70	3.8	37.5	.18
Nov.	12,742,000	25.5	0	".0002000			.02	1.0	5.5	.02
Dec.	83,973,000	159	5	.0001895			.11	2.0	14.7	.11
Yearly	2,800,681,000	34,746.3	100	0.001241			23.91	25.39	92.15	7.24

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

Río Alamo at Cd. Mier, Tamaulipas

Period: 1934-1967

Jan.	317,000	0	0	" 0			0	1.9	21.8	0
Feb.	120,000	0	0	" 0			0	3.2	48.6	0
Mar.	719,000	1,160	5	.162	0.2532	0	.80	7.1	91.6	0
Apr.	1,984,000	1,150	3	.058	.0727	.0066	.79	31.1	229	0
May	4,554,000	28,200	7	.620	.7057	0	19.4	50.1	281	0
June	896,000	5,280	4	.589	.8048	0	3.6	56.1	471	0
July	1,485,000	4,630	3	.312	.3303	0	3.2	18.2	143	0
Aug.	90,232,000	439,000	8	.486	.6111	.0600	302	141	1,610	0
Sept.	590,355,000	2,426,000	17	.411	.8533	.1156	1,670	242	2,920	0
Oct.	76,566,000	68,900	12	.090	.1376	.0292	47.5	89.8	753	0
Nov.	34,201,000	3,760	12	.011	.0264	.0011	2.6	2.4	40.7	0
Dec.	21,720,000	217	7	.001	.0011	.0011	.15	1.7	33.7	0
Yearly	823,149,000	2,978,297	78	0.362	0.8533	0	2,050.04	644.6	3,156.57	97.18

Samples and Analyses by Mexican Section, Method B

Rio Grande at Fort Ringgold, Rio Grande City, Texas

Period: May 1959-1967

Jan.	198,033,000	4,000	12	0.002021			2.8	11.2	32.6	0.52
Feb.	195,939,000	8,620	11	.004400			5.9	6.9	13.7	.35
Mar.	205,012,000	8,000	13	.003900			5.5	6.8	26.7	.39
Apr.	608,604,000	31,000	12	.005100			21.3	24.5	51.0	10.0
May	441,148,000	79,800	11	.01810			55.0	69.3	259	4.0
June	256,952,000	107,000	12	.04170	0.3642	0.03350	73.7	38.9	94.4	4.7
July	196,583,000	27,700	12	.01410			19.1	22.4	90.9	2.1
Aug.	710,231,000	740,000	14	.1042	.3783	.005600	510	85.0	510	1.2
Sept.	3,686,774,000	1,158,000	11	.03140			798	162	798	12.3
Oct.	1,118,815,000	267,000	10	.02390			184	48.2	184	2.6
Nov.	248,946,000	13,400	9	.005400			9.2	3.6	9.2	1.3
Dec.	235,980,000	9,530	12	.004040			6.6	4.4	12.1	1.0
Yearly	8,103,017,000	2,454,050	139	0.03029			1,691.1	483.2	1,691.1	202.3

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

Some months missing Ø Discharge based on record of total releases from Falcon Reservoir " Estimated

SUSPENDED SILT IN THE RIO GRANDE AND TRIBUTARIES

Month	1967							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 1956-1967										
Jan.	198,033,000	4,360	9	0.002200			3.0	22.0	107	0.76
Feb.	195,939,000	3,750	8	.001912			2.6	7.7	16.0	.74
Mar.	205,012,000	6,510	9	.003173			4.5	9.5	40.2	.65
Apr.	608,604,000	46,700	8	.007680			32.2	84.4	635	3.0
May	441,148,000	8,090	9	.001833			5.6	102	289	5.3
June	256,952,000	35,400	9	.01378			24.4	71.8	209	3.2
July	196,583,000	10,500	8	.005339			7.2	15.0	79.9	.74
Aug.	710,231,000	1,664,000	9	.2343			1,150	119	1,150	2.0
Sept.	3,686,774,000	667,000	9	.01808			459	130	459	6.1
Oct.	1,118,815,000	123,000	9	.01100			84.7	54.9	314	3.2
Nov.	248,946,000	18,800	8	.007560			12.9	9.5	75.1	.62
Dec.	235,980,000	3,760	9	.001594			2.6	5.1	16.3	1.8
Yearly	8,103,017,000	2,591,870	104	0.03199			1,788.7	630.90	1,788.7	92.9
Samples and Analyses by U. S. Section, Method A										
δ Rio Grande below Anzaldúas Dam, Texas										
Period: May 1956-1967										
Jan.	121,222,000	2,280	9	0.001880			1.6	9.7	49.0	0.79
Feb.	73,120,000	1,520	11	.002072			1.0	3.3	11.9	.42
Mar.	93,158,000	1,710	14	.001833			1.2	4.5	27.3	.25
Apr.	187,392,000	27,100	12	.01444			18.7	53.9	279	3.5
May	219,911,000	26,500	15	.01204			18.3	36.8	79.9	1.4
June	210,933,000	12,800	11	.006080			8.8	57.2	414	4.5
July	133,255,000	2,980	12	.002240			2.1	37.7	333	.92
Aug.	349,680,000	729,000	14	.2084	0.5618	0.005000	502	47.9	502	.73
Sept.	2,531,718,000	2,149,000	12	.08490			1,480	194	1,480	.81
Oct.	1,417,362,000	718,000	11	.05064			494	120	676	.71
Nov.	312,897,000	9,010	11	.002880			6.2	25.1	274	.51
Dec.	251,801,000	10,300	11	.004096			7.1	13.7	135	.41
Yearly	5,902,449,000	3,690,200	143	0.06252			2,541.0	603.8	2,541.0	117.9
Samples and Analyses by U. S. Section, Method A										
Rio Grande near San Benito, Texas										
Period: April 1955-1967										
Jan.	36,819,000	1,490	6	0.004040			1.0	12.9	121	0.13
Feb.	20,019,000	691	6	.003454			.48	10.5	97.8	.15
Mar.	24,269,000	932	5	.003840			.64	5.4	50.6	.11
Apr.	36,514,000	6,020	7	.01648			4.1	6.5	17.9	.11
May	83,946,000	21,900	7	.02606			15.1	32.4	265	2.2
June	54,089,000	3,470	6	.006414			2.4	13.0	34.1	2.1
July	35,486,000	1,850	9	.005202			1.3	10.9	91.6	.11
Aug.	185,769,000	64,900	6	.03492			44.7	9.2	48.5	.07
Sept.	814,958,000	225,000	5	.02764			155	56.7	218	.30
Oct.	1,123,667,000	924,000	6	.08224	0.6502	0.04090	636	77.1	636	.34
Nov.	281,941,000	41,200	1	.01460			28.4	22.2	247	.35
Dec.	228,485,000	8,320	2	.003640			5.7	14.6	163	.06
Yearly	2,925,962,000	1,299,773	66	0.04442			894.82	271.4	894.82	23.27
Samples and Analyses by U. S. Section, Method A										
Rio Grande near Brownsville, Texas										
Period: April 1955-1967										
Jan.	13,828,000	824	9	0.005960			0.57	6.3	67.4	0.02
Feb.	10,190,000	296	8	.002908			.20	12.8	80.6	.04
Mar.	10,906,000	269	9	.002470			.19	6.4	70.2	.08
Apr.	8,058,000	302	9	.003745			.21	3.7	27.7	.04
May	50,182,000	4,420	8	.008800			3.0	10.0	58.5	.38
June	25,645,000	1,180	10	.004582			.81	10.0	58.4	.29
July	13,521,000	763	10	.005640			.53	33.7	292	.08
Aug.	132,896,000	65,400	7	.04924			45.0	6.9	45.0	.01
Sept.	701,713,000	370,000	12	.05271			255	54.5	255	0
Oct.	1,003,790,000	351,000	10	.03492			242	39.6	242	.03
Nov.	313,022,000	61,100	5	.01952			42.1	26.0	283	.12
Dec.	243,527,000	25,100	4	.01032			17.3	12.9	142	.02
Yearly	2,527,278,000	880,654	101	0.03485			606.91	222.8	1,072.26	1.97

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

‡ Discharge based on record of flow at Fort Ringgold δ Discharge based on record of flow at "Below Anzaldúas Dam" plus return flow at "Poniente Drain." There was no flow through this drain in 1967

CHEMICAL ANALYSES OF WATER SAMPLES FROM THE RIO GRANDE AND TRIBUTARIES - 1967

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 $EC \times 10^6$ at 25°C, is a relative measure of the total salt concentration.

Month	No. of Samples	Dissolved Solids: Tons Per Acre-Foot	Dissolved Solids: Total Tons	$EC \times 10^6$ @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
Rio Grande at El Paso, Texas (Sampling by U. S. Section)															
Jan.	30	2.23	8,310	2,420	0.29	8.0	64	34	6.66	2.52	16.25	5.25	11.49	8.80	0.01
Feb.	27	2.37	5,690	2,620	.14	8.1	67	36	6.34	2.85	18.34	5.30	12.50	10.00	.01
Mar.	31	.89	41,000	1,030	.02	7.8	47	26	4.10	1.40	4.86	3.50	4.23	2.65	.01
Apr.	30	1.14	28,900	1,260	.21	8.2	52	26	4.63	1.50	6.59	3.80	5.88	3.45	.01
May	31	1.13	27,400	1,250	.15	8.3	53	26	4.54	1.48	6.72	3.75	5.82	3.40	.01
June	30	1.09	27,600	1,200	.02	7.8	51	26	4.48	1.44	6.28	3.80	5.38	3.20	.03
July	31	1.03	32,600	1,140	.07	7.8	51	25	4.22	1.38	5.87	3.65	5.00	2.95	.02
Aug.	31	.94	34,000	1,080	.07	8.2	50	24	4.02	1.28	5.37	3.45	4.85	2.65	.04
Sept.	30	1.12	30,800	1,230	.19	7.7	52	25	4.50	1.36	6.46	3.35	6.25	3.15	.02
Oct.	31	1.96	9,980	2,170	.33	8.0	63	32	6.12	2.13	13.80	5.00	10.23	7.20	.03
Nov.	29	2.26	5,700	2,470	.36	7.8	65	34	6.44	2.51	16.58	5.45	11.43	8.80	.04
Dec.	30	2.29	6,430	2,460	.38	8.1	66	34	6.26	2.29	16.89	5.30	11.65	8.85	.04
Mean ⊕	Ø361	1.11	Ø258,410	1,240	0.11	8.0	53	27	4.46	1.47	6.59	3.71	5.64	3.39	0.02
Period Avg.		1.10	463,000	1,220			52	29	4.37	1.58	6.56	3.51	5.45	3.68	
Tons of Constituents, 1967									28,300	5,660	48,000	35,200	85,700	38,000	
Avg. Tons, Period 1930-1967									50,100	11,000	86,400	60,300	150,000	74,800	
Rio Grande at Fort Quitman, Texas (Sampling by U. S. Section)															
Jan.	2	10.4	1,200	10,800	0.67	7.9	66	67	26.80	14.52	80.40	4.10	36.41	82.06	0.01
Feb.	4	10.8	2,140	11,500	1.00	7.9	67	69	26.53	15.17	85.60	2.60	37.97	88.50	.01
Mar.	4	11.2	1,060	11,800	.96	7.9	67	69	26.90	16.02	88.15	2.70	38.13	90.50	.02
Apr.	3	.73	267	819	.14	8.1	38	22	4.20	.95	3.11	4.00	2.56	1.90	.05
May	1	13.5	29.7	13,800	1.18	7.8	67	71	32.93	19.37	104.1	3.55	42.15	111.5	.02
June	3	.71	1,070	770	.21	7.8	29	18	4.54	.99	2.31	3.40	3.08	1.45	.12
July	1	5.54	3,080	6,060	.43	8.0	63	68	15.62	7.93	40.10	3.40	17.22	43.25	.01
Aug.	5	1.22	551	1,490	.08	8.3	53	46	5.32	1.56	7.70	3.90	4.04	6.80	.05
Sept.	3	1.88	127	2,310	.13	7.8	58	60	6.82	2.75	13.02	3.60	5.54	13.60	.02
Oct.	1	10.7	84.5	11,300	.67	7.9	65	73	28.22	15.98	83.90	3.60	30.21	91.50	
Nov. ¨	0	10.7	8.6	11,300	.67	7.9	65	73	28.22	15.98	83.90	3.60	30.21	91.50	
Dec.	2	7.37	1,140	8,020	.80	7.8	67	63	18.89	9.57	57.53	5.20	27.06	54.00	.02
Mean ⊕	Ø29	3.05	Ø10,757.8	3,310	0.33	7.9	61	60	9.67	4.26	21.49	3.57	10.57	21.53	0.07
Period Avg.		2.39	325,000	2,710			61	55	7.69	3.13	16.90	3.62	8.84	15.40	
Tons of Constituents, 1967									928	248	2,370	513	2,430	3,660	
Avg. Tons, Period 1930-1967									28,500	7,030	71,900	20,100	78,500	101,000	

** Percent of total cations *** Percent of total anions ⊕ Weighted mean Ø Total ¨ Estimated

CHEMICAL ANALYSES OF WATER SAMPLES FROM THE RIO GRANDE AND TRIBUTARIES - 1967

Month	No. of Samples	Dissolved Solids: Tons Per Acre-Foot	Dissolved Solids: Total Tons	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
Rio Grande above Rio Conchos near Presidio, Texas (Sampling by U. S. Section)															
Jan.	3	9.72	46.7	9,460	0.75	7.7	54	59	36.60	13.32	59.60	2.20	43.05	65.36	0.01
Feb.	No	Flow													
Mar.	No	Flow													
Apr.	No	Flow													
May	No	Flow													
June	3	.90	337	906			27		# 6.90		2.54	2.30		.95	
July	5	.83	276	850	.11	7.9	36	13	4.95	.61	3.14	2.15	5.59	1.11	.03
Aug.	8	.60	578	702			39		# 4.16		2.68	2.30		.80	
Sept.	5	.65	1,020	737			35		# 4.82		2.55	1.95		1.00	
Oct.	2	.72	105	837			51		# 3.83		4.06	2.40		1.95	
Nov.	No	Flow													
Dec.	No	Flow													
Mean ⊕	Ø26	0.70	Ø2,362.7	773					# 4.96		2.79	2.13		1.08	
Period Avg.		1.90	226,000	2,140					# 8.82		12.71	3.13		10.91	
Tons of Constituents, 1967											296	294		177	
Avg. Tons, Period 1935-1967											47,300	15,200		62,600	
Río Conchos near Ojinaga, Chihuahua (Sampling by Mexican Section)															
Jan.	10	1.42	43,200	1,470	0.32	7.9	51	19	5.90	1.62	7.88	3.30	9.32	2.95	0.06
Feb.	8	1.39	31,700	1,460			54		# 7.01		8.25	3.05		2.90	
Mar.	9	1.37	30,900	1,440			53		# 6.93		7.90	3.05		2.90	
Apr.	8	1.56	19,700	1,620			55		# 7.40		9.04	3.20		3.60	
May	9	1.49	29,000	1,540			57		# 6.70		9.06	3.10		3.20	
June	14	1.14	71,300	1,140			41		# 7.10		4.89	3.10		1.50	
July	13	1.16	62,800	1,170	.21	7.9	47	15	5.38	1.08	5.64	2.95	7.49	1.80	.07
Aug.	11	1.09	49,700	1,180			51		# 5.96		6.15	3.10		1.95	
Sept.	17	.78	106,000	859			39		# 5.44		3.53	3.15		1.00	
Oct.	13	1.15	68,100	1,190			52		# 5.84		6.37	3.40		1.90	
Nov.	11	1.23	55,200	1,280			54		# 6.08		7.00	3.30		2.05	
Dec.	9	1.35	41,500	1,430			54		# 6.82		7.86	3.20		2.60	
Mean ⊕	Ø132	1.13	Ø609,100	1,180			48		# 6.29		5.92	3.16		1.90	
Period Avg.		0.71	531,000	758			40		# 4.63		3.15	2.67		1.12	
Tons of Constituents, 1967											100,000	69,800		49,600	
Avg. Tons, Period 1935-1967											73,200	81,000		40,300	
Rio Grande at Johnson Ranch near Castolon, Texas (Sampling by U. S. Section)															
Jan.	5	1.54	48,500	1,600	0.27	8.0	51	20	6.54	1.62	8.52	3.20	10.35	3.34	0.06
Feb.	5	1.50	40,000	1,580			54		# 7.52		8.87	2.80		3.35	
Mar.	6	1.48	38,800	1,530			53		# 7.49		8.31	2.70		3.15	
Apr.	7	1.69	21,700	1,740			55		# 8.07		9.74	2.80		4.00	
May	9	1.72	27,800	1,770			57		# 7.81		10.51	2.60		4.15	
June	10	1.04	108,000	1,040			39		# 6.67		4.30	3.30		1.20	
July	7	1.01	65,800	1,010	.10	7.9	42	12	5.25	.79	4.36	2.95	6.11	1.30	.07
Aug.	8	1.12	51,400	1,130			49		# 5.94		5.61	3.10		1.90	
Sept.	10	.86	120,000	887			41		# 5.34		3.77	3.10		1.05	
Oct.	9	1.17	68,600	1,210			51		# 6.00		6.32	3.25		1.95	
Nov.	8	1.24	55,700	1,280			53		# 6.16		7.00	3.10		2.15	
Dec.	8	1.41	45,200	1,450			53		# 7.00		8.04	3.20		2.65	
Mean ⊕	Ø92	1.15	Ø691,500	1,170			48		# 6.36		5.76	3.09		1.88	
Period Avg.		0.92	590,000	964			44		# 5.57		4.34	2.82		1.67	
Tons of Constituents, 1967											109,000	76,100		54,700	
Avg. Tons, Period 1948-1967											87,300	73,900		51,900	

** Percent of total cations *** Percent of total anions # Sum of calcium and magnesium ⊕ Weighted mean
Ø Total

CHEMICAL ANALYSES OF WATER SAMPLES FROM THE RIO GRANDE AND TRIBUTARIES - 1967

Month	No. of Samples	Dissolved Solids: Tons Per Acre-Foot	Dissolved Solids: Total Tons	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

Rio Grande at Langtry, Texas

Sampling by U. S. Section

Jan.	4	1.19	59,300	1,250	0.19	8.0	47	17	5.08	1.84	6.11	3.30	7.62	2.21	0.06
Feb.	5	1.12	45,800	1,220	.30	7.8	48	19	4.77	1.70	6.03	3.10	7.21	2.40	.04
Mar.	8	1.13	48,200	1,220	.36	7.9	49	20	4.61	1.74	6.05	2.80	7.29	2.50	.03
Apr.	7	1.02	30,300	1,060	.23	7.9	44	18	4.46	1.66	4.75	2.90	6.13	2.00	.03
May	6	.98	29,900	1,050	.16	8.1	45	20	4.24	1.58	4.81	3.00	5.65	2.15	.03
June	5	1.14	110,000	1,170	.22	7.9	46	17	5.46	1.16	5.54	3.60	6.52	2.05	.08
July	4	.99	153,000	1,000	.13	7.8	40	13	5.62	.71	4.16	3.40	5.99	1.35	.03
Aug.	7	.77	91,200	813	.05	8.0	35	12	4.44	.99	2.94	3.10	4.52	1.05	.08
Sept.	4	.68	117,000	722	.17	7.9	39	10	3.93	.62	2.86	3.45	3.34	.80	.05
Oct.	4	.95	93,600	999	.19	7.8	41	13	5.02	1.02	4.24	3.10	5.83	1.40	.09
Nov.	8	1.04	65,300	1,100	.14	7.7	50	16	4.15	1.55	5.60	3.00	6.54	1.80	.07
Dec.	7	1.04	54,400	1,110	.25	7.8	48	16	4.48	1.53	5.53	3.15	6.41	1.90	.06
Mean ⊕	Ø69	0.95	Ø898,000	992	0.17	7.9	43	15	4.74	1.11	4.40	3.25	5.61	1.54	0.06
Period Avg.		0.78	781,000	842			40	18	4.05	1.05	3.46	2.87	4.15	1.51	
Tons of Constituents, 1967									123,000	17,400	131,000	126,000	348,000	70,500	
Avg. Tons, Period 1945-1967									111,000	17,400	109,000	118,000	273,000	73,300	

* Pecos River near Langtry, Texas

Sampling by U. S. Section

Jan.	5	2.44	29,900	2,880	0.12	8.0	59	62	7.06	4.86	17.12	3.35	7.61	18.03	0.05
Feb.	4	2.37	24,600	2,880	.18	7.9	60	63	6.28	4.97	16.73	2.60	7.76	17.85	.04
Mar.	4	2.68	28,300	3,200	.12	8.0	60	64	7.06	5.56	19.11	2.90	8.56	20.31	T
Apr.	4	2.50	28,800	2,940	.19	8.1	60	64	6.35	5.01	17.20	2.75	7.61	18.30	.02
May	5	1.86	14,800	2,260	.18	8.1	62	64	3.88	4.40	13.36	1.85	5.98	13.95	.01
June	3	1.84	12,300	2,250	.17	7.7	59	62	4.95	3.98	12.80	2.55	5.76	13.55	.02
July	3	1.47	14,900	1,760	.12	7.7	57	59	4.44	2.90	9.61	2.70	4.16	10.05	.04
Aug.	3	1.64	16,900	2,060	.12	7.9	58	61	4.59	3.65	11.58	2.65	5.05	12.10	.03
Sept.	3	1.62	22,900	2,030	.18	7.8	56	60	5.30	3.31	11.08	2.95	5.01	11.95	.01
Oct.	2	1.63	12,500	1,980	.16	7.9	57	59	4.74	3.41	10.95	2.90	4.88	11.42	.04
Nov.	4	1.68	12,900	2,050	.15	7.7	56	59	5.08	3.65	11.05	3.00	5.15	11.90	.04
Dec.	3	1.99	16,500	2,380	.18	7.8	57	61	5.84	4.21	13.27	3.05	6.09	14.40	.04
Mean ⊕	Ø43	2.00	Ø235,300	2,420	0.16	7.9	59	62	5.57	4.19	13.84	2.80	6.21	14.69	0.03
Period Avg.		1.99	402,000	2,330			57	61	5.98	3.98	13.12	2.66	6.29	14.27	
Tons of Constituents, 1967									17,800	8,140	50,900	13,400	47,700	83,200	
Avg. Tons, Period 1955-1967									32,900	13,300	82,900	21,900	83,000	139,000	

Rio Grande at Laredo, Texas

Sampling by Laredo Water Plant

Jan.	31	0.99	104,000	1,120	0.12	8.0	49	32	3.84	1.92	5.47	2.55	5.02	3.59	0.07
Feb.	28	.95	81,000	1,110			49		# 5.56		5.35	2.45		3.70	
Mar.	31	1.02	91,500	1,140			50		# 5.66		5.55	2.60		5.80	
Apr.	30	.95	87,600	1,050			48		# 5.32		4.86	2.60		3.60	
May	31	.98	47,500	1,100			49		# 5.52		5.32	2.55		4.05	
June	30	.93	72,200	1,030			49		# 5.17		4.98	2.60		3.05	
July	31	.81	157,000	827	.08	7.8	39	17	4.30	.83	3.28	2.85	4.04	1.45	.12
Aug.	31	.60	100,000	710			38		# 4.24		2.64	2.70		1.45	
Sept.	28	.50	232,000	557			38		# 3.43		2.06	2.35		1.15	
Oct.	31	.70	147,000	784			39		# 4.82		3.04	2.90		1.50	
Nov.	30	.83	110,000	910			44		# 5.02		4.01	2.90		2.15	
Dec.	31	.85	96,600	945			46		# 5.18		4.36	2.90		2.40	
Mean ⊕	Ø363	0.74	Ø1,326,400	829			43		# 4.67		3.55	2.64		2.20	
Period Avg.		0.66	1,529,000	752			40		# 4.47		2.99	2.51		2.06	
Tons of Constituents, 1967											198,000	192,000		189,000	
Avg. Tons, Period 1956-1967											217,000	238,000		231,000	

** Percent of total cations *** Percent of total anions ⊕ Weighted mean Ø Total T Trace

* Samples prior to July were collected at Pecos River near Shumla station. # Sum of calcium and magnesium

CHEMICAL ANALYSES OF WATER SAMPLES FROM THE RIO GRANDE AND TRIBUTARIES - 1967

Month	No. of Samples	Dissolved Solids: Tons Per Acre-Foot	Dissolved Solids: Total Tons	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
Río Salado at Las Tortillas, Tamaulipas															
Sampling by Mexican Section															
Jan.	1	1.54	300	1,760	0.56	7.9	45	30	6.32	3.82	8.38	2.45	10.57	5.65	0.02
Feb.	No	Flow													
Mar.	1	7.37	796	6,590			51		# 38.80		40.80	2.50		27.69	
Apr.	2	2.28	13,200	2,330			52		# 11.67		12.81	2.35		8.10	
May	1	2.13	1,490	2,240			53		# 10.89		12.30	2.20		7.70	
June	3	.74	5,990	798			37		# 4.97		2.97	2.10		1.80	
July	No	Flow													
Aug.	1	.36	18,800	445			16		# 3.75		.72	2.50		.50	
Sept.	1	.35	172,000	428			19		# 3.45		.82	2.25		.60	
Oct. ¤	0	1.47	123,000	1,600			43		# 9.70		7.40	2.70		5.62	
Nov.	1	1.84	53,500	1,930			42		# 11.68		8.60	2.85		7.40	
Dec.	1	1.90	32,800	2,040			44		# 12.00		9.28	2.60		8.00	
Mean ⊕	Ø12	0.61	Ø421,876	699			32		# 4.90		2.30	2.36		1.77	
Period Avg.		0.65	176,000	716			31		# 5.16		2.27	2.57		1.62	
Tons of Constituents, 1967											49,500	66,300		58,800	
Avg. Tons, Period 1955-1967											19,200	28,400		21,200	
‡ Rio Grande below Falcon Dam, Texas–U. S. Tailrace															
Sampling by U. S. Section															
Jan.	13	0.65	96,000	769	0.10	7.9	44	27	3.20	1.08	3.32	2.30	3.34	2.06	0.02
Feb.	12	.65	92,100	783	.14	7.8	44	28	3.21	1.09	3.37	2.20	3.44	2.20	.02
Mar.	13	.69	104,000	817	.39	7.8	44	28	3.25	1.12	3.43	2.35	3.41	2.20	.02
Apr.	10	.72	332,000	825	.17	7.8	45	28	3.17	1.16	3.56	2.25	3.56	2.30	.01
May	12	.74	230,000	842	.15	7.8	46	29	3.19	1.24	3.75	2.25	3.68	2.40	.01
June	12	.77	139,000	874	.04	7.6	47	30	3.27	1.28	3.96	2.30	3.91	2.60	T
July	12	.79	111,000	897	.13	7.7	48	31	3.25	1.32	4.18	2.15	3.98	2.75	T
Aug.	6	.76	115,000	916	.07	8.1	48	30	3.17	1.44	4.26	2.15	4.23	2.70	.01
Sept. ¤	0	.76	1,080	916			48	30	3.17	1.44	4.27	2.15	4.23	2.70	.01
Oct.	5	.65	198,000	768	.13	7.9	48	28	2.89	1.06	3.58	2.08	3.40	2.10	.05
Nov. ¤	0	.65	6,090	768			48	28	2.89	1.06	3.58	2.08	3.40	2.10	.05
Dec.	5	.62	38,300	735	.13	7.7	42	26	3.13	1.00	3.05	2.20	3.11	1.85	.03
Mean ⊕	Ø100	0.71	Ø1,462,570	825			46	29	3.15	1.18	3.67	2.22	3.61	2.33	0.02
Period Avg.		0.67	1,479,000	778			42	29	3.25	1.17	3.22	2.30	3.15	2.27	
Tons of Constituents, 1967									177,000	40,200	237,000	187,000	486,000	232,000	
Avg. Tons, Period 1956-1967									196,000	42,800	223,000	208,000	456,000	242,000	
Rio Grande at Fort Ringgold, Rio Grande City, Texas															
Sampling by U. S. Section															
Jan.	12	0.67	97,600	796	0.02	7.8	45	28	3.24	1.08	3.55	2.40	3.39	2.26	T
Feb.	11	.67	96,600	808	.10	7.9	45	29	3.23	1.07	3.57	2.05	3.54	2.30	.02
Mar.	13	.71	107,000	833	.39	8.1	45	29	3.31	1.16	3.70	2.40	3.51	2.40	.01
Apr.	12	.75	336,000	832	.18	8.0	45	29	3.27	1.10	3.64	2.35	3.54	2.40	.01
May	11	.76	247,000	852	.14	8.0	45	28	3.37	1.20	3.80	2.45	3.71	2.35	.01
June	12	.88	166,000	988	.08	7.6	49	32	3.63	1.40	4.79	2.60	4.27	3.20	.01
July	12	.82	119,000	934	.17	7.8	49	32	3.35	1.28	4.46	2.20	4.10	2.95	.01
Aug.	14	.56	293,000	664	.15	8.0	40	24	3.02	.81	2.60	2.40	2.72	1.65	.03
Sept.	11	.38	1,031,000	473	.12	7.8	32	23	2.69	.46	1.46	2.10	1.53	1.10	.06
Oct.	10	.61	502,000	717	.14	7.9	38	28	3.43	.88	2.65	2.55	2.60	2.00	.08
Nov.	9	.89	163,000	1,040	.17	7.8	43	37	4.40	1.34	4.41	2.75	3.52	3.85	.17
Dec.	12	.89	155,000	1,010	.25	7.8	44	35	4.28	1.28	4.36	2.65	3.70	3.50	.13
Mean ⊕	Ø139	0.56	Ø3,313,200	657	0.14	7.9	39	27	3.09	0.79	2.53	2.29	2.47	1.79	0.05
Period Avg.		0.68	1,769,000	796			43	30	3.32	1.13	3.37	2.35	3.19	2.37	
Tons of Constituents, 1967									502,000	77,900	472,000	557,000	962,000	515,000	
Avg. Tons, Period 1959-1967									234,000	48,200	273,000	248,000	540,000	296,000	

** Percent of total cations *** Percent of total anions # Sum of calcium and magnesium ¤ Estimated
⊕ Weighted mean Ø Total ‡ Tonnage figures based on total release from Falcon Reservoir T Trace

CHEMICAL ANALYSES OF WATER SAMPLES FROM THE RIO GRANDE AND TRIBUTARIES - 1967

Month	No. of Samples	Dissolved Solids: Tons Per Acre-Foot	Dissolved Solids: Total Tons	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
Morillo Drain in Mexico, 8.4 River Miles above Anzaldúas Dam															
Sampling by Mexican Section															
Jan.	4	11.3	23,000	12,100	6.22	8.0	76	69	18.60	14.08	101.3	2.30	39.19	91.89	0.01
Feb.	7	11.2	52,800	11,800	6.32	7.8	74	67	19.60	13.98	97.70	2.65	41.47	87.75	.03
Mar.	8	13.9	46,400	14,500	8.49	7.7	75	68	22.88	17.91	121.1	2.85	49.42	109.8	.03
Apr.	5	11.2	49,300	11,700	6.07	7.7	75	67	18.58	14.20	95.88	2.60	40.08	87.5	.02
May	6	11.0	68,400	11,500	5.80	7.7	74	67	18.89	13.33	94.12	3.40	38.83	84.5	.02
June	10	13.0	45,000	13,100	7.45	7.7	75	68	20.83	15.98	112.60	3.10	44.43	102.5	T
July	4	13.3	22,100	14,100	7.25	7.7	75	69	21.22	17.20	117.8	3.40	45.12	108.5	.02
Aug.	3	11.3	18,600	12,100	5.87	8.0	76	68	17.53	14.81	99.94	2.70	40.10	90.75	.02
Sept.	2	11.7	19,800	12,400	6.33	8.0	75	69	19.81	14.95	103.4	2.85	40.66	95.00	T
Oct.	2	13.3	83,900	14,100	7.40	7.6	75	69	23.36	15.35	115.2	3.05	45.14	107.0	.07
Nov.	5	14.3	111,000	14,100	6.89	4.2	74	72	25.15	15.51	114.3	¹¹3.05	39.93	112.8	.01
Dec.	4	14.4	58,600	15,100	7.96	7.8	75	71	24.91	17.42	126.9	3.30	46.15	120.5	.04
Mean ⊕	Ø60	12.7	Ø598,900	13,100	6.86	7.2	75	69	21.55	15.25	108.5	2.99	42.37	100.7	0.03
Period Avg.		13.0	352,000	13,600			74	70	22.07	16.42	112.0	3.13	42.37	106.4	
Tons of Constituents, 1967									27,800	11,900	160,000	5,770	131,000	230,000	
Avg. Tons, Period 1962-1967									16,300	7,360	94,900	3,460	75,000	139,000	
Rio Grande below Anzaldúas Dam, Texas															
Sampling by U. S. Section															
Jan.	31	0.91	81,200	1,100	0.21	7.9	52	39	3.68	1.46	5.67	2.40	4.22	4.23	0.02
Feb.	28	1.15	61,900	1,390	.31	8.0	57	45	4.16	1.70	7.70	2.45	5.21	6.15	.01
Mar.	31	1.22	83,600	1,450	.95	7.8	57	46	4.20	1.87	8.12	2.45	5.26	6.50	.01
Apr.	30	.97	134,000	1,120	.25	7.8	52	38	3.67	1.50	5.62	2.40	4.34	4.20	T
May	31	1.06	172,000	1,250	.30	8.0	55	41	3.81	1.66	6.58	2.50	4.62	5.05	.01
June	30	1.17	182,000	1,370	.45	7.8	57	44	3.94	1.76	7.55	2.50	4.86	5.90	T
July	31	1.12	110,000	1,300	.30	7.8	56	42	3.85	1.70	7.02	2.35	5.05	5.35	T
Aug.	31	.63	162,000	743	.06	8.0	42	29	3.31	.91	3.08	2.65	2.55	2.15	.02
Sept.	26	.40	745,000	501	.22	8.0	35	23	2.63	.50	1.72	2.15	1.69	1.15	.03
Oct.	30	.73	761,000	869	.18	7.8	44	35	3.69	.92	3.66	2.60	2.79	3.00	.09
Nov.	30	1.54	355,000	1,800	.48	7.7	54	51	5.92	2.21	9.51	3.05	5.59	9.15	.08
Dec.	31	1.40	259,000	1,680	.48	8.0	53	49	5.58	2.17	8.73	2.90	5.42	8.25	.10
Mean ⊕	Ø360	0.72	Ø3,106,700	858	0.25	7.9	47	37	3.44	0.99	3.87	2.42	2.91	3.10	0.05
Period Avg.		0.90	1,389,000	1,070			51	40	3.70	1.40	5.24	2.41	3.82	4.23	
Tons of Constituents, 1967									407,000	71,100	526,000	429,000	826,000	649,000	
Avg. Tons, Period 1959-1967									155,000	35,700	252,000	151,000	384,000	314,000	

** Percent of total cations *** Percent of total anions T Trace ¹¹ Estimated
⊕ Weighted mean Ø Total

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES
1967

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 concentration 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 watershed indicates that the relationship may be expressed within 10% by the following equations:

Tons per Acre-Foot = .0008878 (EC x 10^6 at 25° C) when conductivity (EC x 10^6 at 25° C) is below 7,520 micromhos.

Tons per Acre-Foot = .001052 (EC x 10^6 at 25° C) - 1.235 when conductivity (EC x 10^6 at 25° C) ranges between 7,520 and 22,000 micromhos.

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 El Paso, Texas

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	2,350	17	2,480	4	1,190	20	1,300	3	1,040	17	1,340	1	1,910	15	2,460
3	2,320	18	2,490	5	1,170	21	1,230	4	1,090	18	1,290	2	1,890	16	2,430
4	2,340	19	2,500	6	1,170	22	1,210	5	1,160	19	1,100	3	1,910	17	2,480
5	2,320	20	2,520	7	1,250	23	1,210	6	1,290	20	1,130	4	1,970	18	2,460
6	2,340	21	2,530	8	1,300	24	1,140	7	1,300	21	1,140	5	2,050	19	2,470
7	2,340	23	2,520	9	1,280	25	1,210	8	1,240	22	1,130	6	2,090	20	2,450
8	2,380	24	2,530	10	1,320	26	1,180	9	1,290	23	1,220	7	2,140	21	2,470
9	2,490	25	2,630	11	1,230	27	1,180	10	1,310	24	1,360	8	2,140	22	2,470
10	2,440	26	2,570	12	1,270	28	1,230	11	1,240	25	1,170	9	2,150	23	2,460
11	2,290	27	2,520	13	1,300	29	1,210	12	1,260	26	1,170	10	2,130	25	2,510
12	2,300	28	2,520	14	1,310	30	1,200	13	1,220	27	1,060	11	2,070	26	2,520
13	2,300	March		15	1,310	31	1,240	14	1,290	28	966	12	2,100	27	2,490
14	2,290	1	2,560	16	1,310	June		15	1,290	29	945	13	2,090	28	2,450
15	2,300	2	2,570	17	1,300	1	1,220	16	1,180	30	996	14	2,120	29	2,420
16	2,300	3	1,270	18	1,330	2	1,260	17	1,270	31	1,010	15	2,130	30	2,430
17	2,310	4	1,120	19	1,380	3	1,310	18	1,170	September		16	2,170	December	
18	2,320	5	1,070	20	1,340	4	1,320	19	1,150	1	971	17	2,160	1	2,490
19	2,310	6	1,040	21	1,340	5	1,290	20	1,220	2	965	18	2,160	2	2,490
20	2,310	7	990	22	1,390	6	1,330	21	1,200	3	985	19	2,170	3	2,520
21	2,340	8	976	23	1,430	7	1,370	22	1,110	4	1,050	20	2,170	4	2,450
22	2,630	9	973	24	1,310	8	1,390	23	1,090	5	1,060	21	2,200	5	2,430
23	2,620	10	985	25	1,200	9	1,500	24	1,100	6	1,100	22	2,190	6	2,430
24	2,670	11	978	26	1,220	10	1,520	25	1,050	7	1,060	23	2,190	7	2,520
25	2,670	12	990	27	1,270	11	1,560	26	1,070	8	1,030	24	2,210	8	2,500
26	2,600	13	1,010	28	1,250	12	1,580	27	1,150	9	1,160	25	2,290	9	2,480
27	2,670	14	983	29	1,210	13	1,410	28	1,070	10	1,190	26	2,350	10	2,490
28	2,600	15	986	30	1,220	14	1,300	29	1,060	11	1,210	27	2,400	11	2,480
29	2,590	16	1,010	May		15	1,360	30	1,080	12	1,200	28	2,390	12	2,490
30	2,690	17	992	1	1,310	16	1,330	31	1,040	13	1,170	29	2,390	13	2,510
31	2,600	18	1,010	2	1,340	17	1,370	August		14	1,210	30	2,390	14	2,570
February		19	981	3	1,300	18	1,320	1	947	15	1,160	31	2,410	15	2,560
1	2,570	20	936	4	1,230	19	1,240	2	999	16	1,180	November		16	2,470
2	2,510	21	953	5	1,290	20	1,040	3	1,140	17	1,250	1	2,420	17	2,330
3	2,480	22	1,030	6	1,370	21	999	4	1,220	18	1,350	2	2,410	18	2,300
4	2,760	23	1,080	7	1,320	22	947	5	1,210	19	1,480	3	2,440	19	2,380
5	2,710	24	1,120	8	1,270	23	1,230	6	995	20	1,600	4	2,460	20	2,390
6	2,760	25	1,080	9	1,260	24	1,240	7	1,020	21	1,660	5	2,420	21	2,340
7	2,750	26	1,120	10	1,270	25	1,200	8	1,000	22	1,840	6	2,400	22	2,400
8	2,810	27	1,060	11	1,290	26	1,130	9	1,060	23	1,890	7	2,420	23	2,440
9	2,810	28	1,040	12	1,310	27	1,110	10	1,110	24	1,990	8	2,390	24	2,420
10	2,780	29	1,010	13	1,400	28	1,110	11	920	25	1,910	9	2,420	26	2,410
11	2,440	30	1,060	14	1,350	29	1,080	12	1,080	26	1,800	10	2,400	27	2,400
12	2,500	31	1,120	15	1,330	30	987	13	750	27	1,940	11	2,390	28	2,410
13	2,920	April		16	1,310	July		14	951	28	1,850	12	2,420	29	2,440
14	2,870	1	1,180	17	1,240	1	968	15	963	29	1,950	13	2,410	30	2,410
15	2,880	2	1,160	18	1,240	2	1,060	16	1,250	30	1,940	14	2,460	31	2,390
16	2,520	3	1,200	19	1,240										

Sampling by U. S. Section

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1967

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 Quitman, Texas

January		February		March		April		June		August		August		October	
18	10,670	15	11,880	15	12,090	4	623	26	1,700	4	904	30	13,430	4	11,300
25	11,020	23	10,910	29	11,990	12	11,050	30	668	15	959	September		December	
February		March		April		June		July		16	354	6	12,640	20	6,590
1	11,610	1	11,610	3	660	1	13,860	5	6,050	23	13,270	25	631	27	11,250
8	11,880	8	11,700			7	8,760					29	569		

Sampling by U. S. Section

Rio Grande above Rio Conchos near Presidio, Texas

January		June		July		July		August		August		September		September	
3	9,310	26	956	3	1,160	24	1,280	4	871	14	692	18	763	29	915
6	9,600	28	869	6	527	28	833	7	659	17	582	19	722	October	
9	9,490	30	1,100	10	804	August		10	738	18	716	21	619	2	780
						1	877			21	700	25	580	5	816

Sampling by U. S. Section

Río Conchos near Ojinaga, Chihuahua

January		February		April		June		July		September		October		November	
2	1,600	23	1,470	20	1,680	12	1,090	20	1,280	1	634	2	1,150	10	1,250
5	1,460	27	1,430	24	1,660	15	1,190	22	1,030	4	1,060	4	1,120	13	1,250
9	1,410	March		27	1,650	20	1,270	24	1,200	5	1,010	6	1,080	16	1,240
11	1,290	2	1,470	May		21	1,180	26	1,190	6	921	9	948	17	1,230
13	1,320	6	1,460	1	1,640	23	1,180	28	1,070	7	684	11	969	20	1,220
16	1,480	9	1,460	4	1,630	26	1,040	31	1,270	8	547	13	1,130	23	1,280
19	1,570	13	1,490	8	1,620	26	861	August		9	530	16	1,190	27	1,370
23	1,620	16	1,600	11	1,630	27	1,020	2	1,170	11	620	18	1,270	29	1,320
26	1,600	21	1,590	15	1,650	28	1,230	4	1,220	13	718	20	1,370	December	
30	1,610	23	1,230	18	1,590	30	1,120	10	1,350	15	828	23	1,310	1	1,340
February		27	1,420	22	1,570	July		12	479	18	1,060	25	1,240	4	1,270
1	1,470	30	1,450	25	1,500	3	1,130	14	1,030	20	1,190	27	1,370	7	1,260
6	1,430	April		29	1,370	5	1,190	16	1,240	22	981	30	1,350	11	1,410
9	1,520	3	1,610	June		7	1,180	18	1,250	25	972	November		14	1,460
13	1,590	6	1,500	1	1,410	10	1,070	21	1,290	27	896	2	1,340	18	1,500
16	1,570	10	1,630	5	1,410	12	1,140	24	1,240	28	801	6	1,240	21	1,550
20	1,480	13	1,680	7	1,280	14	1,250	28	1,320	29	1,130	8	1,290	25	1,510
		17	1,660	9	1,240	17	1,300	31	1,270					28	1,400

Sampling by Mexican Section

Rio Grande below Rio Conchos near Presidio, Texas

January		February		April		May		June		August		October		November	
3	1,390	16	1,710	3	1,750	18	1,770	30	1,050	14	850	2	1,130	14	1,230
6	1,600	20	1,570	6	1,740	22	1,680	July		17	1,250	5	1,110	17	1,210
9	1,390	23	1,530	10	1,850	25	1,550	3	1,120	21	1,290	9	1,050	21	1,290
12	1,260	27	1,590	13	1,860	29	1,500	6	1,110	24	1,280	12	1,110	24	1,300
16	1,570	March		17	1,890	June		10	1,180	28	1,320	16	1,330	28	1,400
19	1,620	2	1,530	20	1,800	1	1,450	13	1,230	September		19	1,300	December	
23	1,690	6	1,580	24	1,870	5	1,420	19	1,360	2	716	23	1,330	1	1,280
26	1,740	9	1,550	27	1,810	8	1,120	24	1,010	5	941	26	1,320	5	1,250
30	1,760	13	1,640	May		12	1,180	27	1,210	8	553	30	1,370	11	1,450
February		16	1,670	1	1,750	15	1,160	August		11	581	November		14	1,530
2	1,510	20	1,770	4	1,760	19	844	1	1,380	14	726	1	1,360	18	1,580
6	1,450	23	1,620	8	1,670	22	1,230	4	1,090	18	1,100	3	1,420	21	1,600
9	1,610	27	1,510	11	1,790	26	1,190	7	1,030	21	1,000	6	1,360	26	1,540
13	1,650	31	1,640	15	1,720	28	1,970	10	1,380	25	936	9	1,270	29	1,450
										29	1,080				

Sampling by U. S. Section

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1967

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 Johnson Ranch near Castolon, Texas

January		March		May		June		July		September		October		November	
3	1,680	6	1,550	1	1,900	8	1,380	14	1,310	1	1,290	6	1,120	13	1,260
11	1,530	13	1,570	5	1,880	9	1,230	20	1,360	5	1,050	10	1,110	20	1,230
16	1,420	20	1,710	9	1,860	13	1,020	24	793	8	841	13	1,220	24	1,260
23	1,670	28	1,370	12	1,800	16	1,130	27	1,190	12	584	16	1,140	28	1,290
30	1,750	31	1,530	16	1,790	23	1,130	August		15	709	19	1,330	December	
February		April		19	1,800	27	930	1	1,250	18	938	23	1,280	1	1,400
3	1,600	3	1,500	22	1,820	27	1,020	7	1,020	20	998	26	1,330	5	1,320
7	1,530	10	1,750	25	1,780	28	877	11	1,130	22	1,090	30	1,290	11	1,350
13	1,630	14	1,790	29	1,640	July		15	597	26	860	November		14	1,450
20	1,680	17	1,850	June		3	862	18	1,200	28	973	1	1,300	18	1,530
28	1,570	21	1,840	1	1,540	6	915	22	1,280	October		3	1,340	21	1,570
March		24	1,900	5	1,480	11	1,100	25	1,300	2	1,120	7	1,340	26	1,570
3	1,570	27	1,880					29	1,340			9	1,330	29	1,530

Sampling by U. S. Section

Rio Grande at Langtry, Texas

January		March		April		May		July		August		October		November	
3	1,260	2	1,290	10	988	8	1,090	10	1,080	24	894	26	1,120	27	1,050
9	1,240	6	1,220	13	1,080	18	1,170	17	1,070	31	1,040	30	1,130	30	1,060
16	1,400	9	1,200	17	1,010	22	457	24	917	September		November		December	
23	1,100	13	1,180	20	1,030	June		31	849	11	953	2	1,120	4	1,100
February		17	1,170	24	1,160	2	1,300	August		14	554	6	1,100	7	1,090
13	1,180	20	1,140	27	1,070	5	1,360	7	950	18	697	9	1,150	11	1,130
16	1,160	27	1,310	May		12	1,000	14	599	21	594	13	1,140	14	1,090
20	1,150	30	1,260	1	1,090	20	1,130	17	1,100	October		20	1,070	18	1,070
23	1,180	April		4	1,080	26	1,230	21	1,140	3	864	24	1,030	21	1,090
28	1,260	3	1,090					22	1,160	16	1,010			26	1,160

Sampling by U. S. Section

#Pecos River near Langtry, Texas

January		February		March		April		June		August		September		November	
3	2,870	14	2,950	21	2,980	25	2,970	6	2,270	1	2,060	19	1,260	7	2,030
10	2,900	21	2,900	28	3,830	May		13	2,320	11	2,100	October		21	2,070
17	2,890	28	2,970	April		2	2,440	27	2,160	29	1,960	10	1,950	28	2,120
24	2,870	March		4	2,930	9	2,340	July		September		25	1,970	December	
31	2,880	7	3,010	11	2,990	16	2,360	11	2,220	6	2,480	November		5	2,160
February		14	3,000	18	2,780	23	2,270	18	2,230	12	2,080	2	1,870	12	2,320
7	2,860					29	2,240	25	1,430					26	2,580

Sampling by U. S. Section # Water samples prior to July were collected at Pecos River near Shumla

Devils River at Mouth near Del Rio, Texas

January		March		April		May		June		August		October		November	
5	394	2	380	14	389	26	374	30	361	9	360	2	367	29	369
12	396	9	393	28	374	June		July		16	357	18	351	December	
20	393	16	382	May		1	354	6	367	23	356	November		6	385
26	387	24	363	4	378	9	366	13	357	September		8	368	13	384
February		30	382	12	373	16	357	27	359	7	329	15	367	20	385
2	397	April		19	372	22	371	August		13	331	22	378	28	387
		6	390					3	363						

Sampling by U. S. Section

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES
1967

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 near Del Rio, Texas

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		June		August		October		November	
3	1,120	17	1,070	3	1,280	17	963	30	889	14	441	2	686	17	930
5	1,150	20	1,090	5	1,190	19	953	July		17	683	4	741	20	943
9	1,160	24	1,090	7	979	22	1,180	3	776	18	849	6	780	22	923
11	1,100	27	1,110	10	1,030	24	1,020	5	836	21	873	9	939	24	922
13	1,140	March		12	1,030	26	801	7	804	23	980	11	870	27	918
16	1,220	1	1,080	14	1,030	29	927	10	794	25	696	13	907	29	928
18	1,230	3	1,150	17	1,060	31	965	12	948	28	706	16	649	December	
20	1,200	6	1,180	19	991	June		14	944	30	886	18	933	1	928
23	1,100	8	1,100	21	1,120	2	972	17	735	September		20	581	4	940
25	1,050	10	1,130	24	1,280	5	1,030	19	927	1	917	23	611	6	944
27	1,030	13	1,140	26	843	7	1,090	21	510	5	926	25	834	8	947
30	1,080	15	1,100	28	969	9	1,140	24	612	8	1,150	27	871	11	999
February		17	1,120	May		12	794	26	878	11	956	30	879	13	1,000
1	1,070	20	1,090	1	1,070	14	1,140	28	955	13	912	November		15	950
3	1,050	22	1,110	3	1,020	16	1,020	31	834	15	624	1	923	18	961
6	1,180	24	1,090	5	942	19	963	August		18	554	3	957	20	947
8	1,140	27	1,140	8	963	21	1,070	2	895	20	661	6	959	22	957
10	1,200	29	1,120	10	957	23	1,210	4	951	22	721	8	922	27	1,010
13	1,200	31	1,200	12	939	26	1,010	7	1,010	25	854	13	988	29	1,030
15	1,150			15	929	28	1,010	9	988	27	866	15	983		
								11	825						

Sampling by U. S. Section

Rio Grande below Maverick Dam near Del Rio, Texas

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	1,130	16	1,130	2	1,140	18	963	2	888	17	677	1	621	17	958
2	1,130	17	1,090	3	1,150	19	930	3	903	18	868	2	796	18	942
3	1,140	18	1,090	4	1,230	20	930	4	905	19	881	3	675	19	977
4	1,130	19	1,080	5	1,220	21	967	5	830	20	1,160	4	798	20	931
5	1,140	20	1,080	6	1,080	22	1,010	6	829	21	890	5	819	21	922
6	1,120	21	1,070	7	986	23	1,050	7	836	22	826	6	845	22	951
7	1,110	22	1,210	8	985	24	988	8	861	23	907	7	809	23	916
8	1,110	23	1,080	9	1,040	25	1,000	9	963	24	991	8	811	24	904
9	1,150	24	1,090	10	1,020	26	937	10	848	25	958	9	987	25	914
10	1,140	25	1,070	11	992	27	768	11	826	26	697	10	669	26	920
11	1,140	26	1,140	12	979	28	681	12	893	27	844	11	697	27	904
12	1,130	27	1,090	13	1,010	29	757	13	967	28	774	12	904	28	890
13	1,110	28	1,090	14	1,030	30	914	14	1,000	29	754	13	918	29	906
14	1,130	March		15	959	31	926	15	827	30	854	14	918	30	921
15	1,160	1	1,130	16	1,010	June		16	871	31	910	15	836	December	
16	1,180	2	1,120	17	1,050	1	974	17	805	September		16	668	1	908
17	1,180	3	1,110	18	1,020	2	968	18	756	1	926	17	819	2	911
18	1,190	4	1,100	19	840	3	964	19	930	2	892	18	854	3	922
19	1,210	5	1,140	20	961	4	1,010	20	917	3	690	19	831	4	942
20	1,200	6	1,130	21	980	5	1,000	21	1,150	4	513	20	657	5	921
21	1,180	7	1,120	22	1,160	6	1,040	22	447	5	843	21	634	6	986
22	1,120	8	1,170	23	1,370	7	1,090	23	449	6	1,250	22	660	7	923
23	1,100	9	1,130	24	1,270	8	954	24	829	7	1,130	23	637	8	919
24	1,060	10	1,110	25	1,230	9	1,110	25	635	8	1,050	24	659	9	954
25	1,060	11	1,100	26	949	10	1,210	26	869	9	1,270	25	845	10	1,020
26	1,030	12	1,100	27	824	11	1,130	27	771	10	977	27	885	11	951
27	1,030	13	1,080	28	799	12	903	28	814	11	968	28	897	12	1,010
28	1,050	14	1,100	29	945	13	842	29	1,080	12	1,010	29	934	13	985
29	1,050	15	1,090	30	1,020	14	1,100	30	1,090	13	936	30	878	14	968
30	1,050	16	1,100	May		15	1,100	31	966	14	806	31	788	15	952
31	1,040	17	1,090	1	1,040	16	936	August		15	650	November		16	949
February		18	1,090	2	1,020	17	900	1	724	16	461	1	942	17	913
1	1,060	19	1,070	3	1,000	18	806	2	801	17	503	2	941	18	940
2	1,060	20	1,070	4	1,000	19	1,010	3	888	18	515	3	948	19	928
3	1,070	21	1,040	5	982	20	1,020	4	865	19	677	4	917	20	896
4	1,080	22	1,070	6	923	21	1,040	5	901	20	573	5	949	21	938
5	1,080	23	1,050	7	943	22	990	6	928	21	599	6	963	22	945
6	1,080	24	1,040	8	918	23	910	7	1,020	22	579	7	966	23	960
7	1,140	25	1,050	9	926	24	1,080	8	1,060	23	618	8	964	24	943
8	1,140	26	1,110	10	922	25	1,040	9	1,040	24	747	9	930	25	962
9	1,140	27	1,150	11	927	26	1,040	10	947	25	833	10	944	26	964
10	1,170	28	1,130	12	918	27	911	11	865	26	882	11	889	27	977
11	1,190	29	1,200	13	912	28	850	12	820	27	846	12	973	28	985
12	1,160	30	1,140	14	920	29	848	13	493	28	895	13	988	29	987
13	1,170	31	1,170	15	915	30	953	14	463	29	914	14	974	30	1,010
14	1,220	April		16	891	July		15	463	30	725	15	954	31	1,010
15	1,230	1	1,190	17	974	1	873	16	641			16	975		

Sampling by U. S. Section

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES
1967

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 El Indio, Texas

January		February		April		May		July		August		October		November	
3	1,160	21	1,170	11	1,050	31	1,100	11	888	30	820	10	856	22	935
10	1,160	28	1,170	18	1,120	June		18	1,020	September		17	759	25	942
17	1,160	March		25	1,090	6	1,060	22	604	6	689	24	692	December	
24	1,200	7	1,190	May		13	1,170	25	528	12	1,030	31	894	5	949
31	1,090	21	1,220	2	968	20	1,060	August		19	490	November		13	1,000
February		28	1,140	9	1,060	27	1,080	9	981	26	661	7	945	19	992
7	1,110	April		16	1,070	July		14	520	October		14	936	27	977
14	1,210	4	1,240	23	1,110	4	799	22	910	3	701				

Sampling by U. S. Section

Rio Grande at Laredo, Texas

January		February		April		May		July		August		October		November	
1	1,150	16	1,190	2	1,130	18	1,060	2	952	17	386	2	800	16	859
2	1,120	17	1,160	3	1,180	19	1,080	3	766	18	424	3	792	17	895
3	1,130	18	1,160	4	1,150	20	1,100	4	892	19	371	4	788	18	895
4	1,150	19	1,190	5	1,190	21	1,110	5	820	20	403	5	722	19	914
5	1,140	20	1,200	6	1,220	22	1,110	6	699	21	502	6	666	20	957
6	1,070	21	1,210	7	1,200	23	1,100	7	742	22	561	7	739	21	950
7	1,080	22	1,200	8	1,250	24	856	8	804	23	676	8	682	22	938
8	1,150	23	1,200	9	1,220	25	597	9	860	24	683	9	737	23	934
9	1,110	24	1,150	10	1,240	26	737	10	873	25	549	10	755	24	928
10	1,080	25	1,160	11	1,180	27	1,010	11	923	26	841	11	787	25	930
11	1,090	26	1,160	12	1,240	28	988	12	893	27	864	12	796	26	926
12	1,110	27	1,150	13	1,170	29	1,110	13	899	28	957	13	819	27	922
13	1,160	28	1,120	14	826	30	1,130	14	883	29	562	14	851	28	911
14	1,140	March		15	786	31	1,130	15	869	30	591	15	877	29	909
15	1,090	1	1,110	16	844	June		16	962	31	697	16	750	30	909
16	1,090	2	1,160	17	835	1	1,130	17	949	September		17	845	December	
17	1,110	3	1,160	18	983	2	1,070	18	905	1	786	18	835	1	908
18	1,150	4	1,150	19	1,120	3	738	19	916	3	813	19	603	2	915
19	1,090	5	1,100	20	938	4	829	20	967	4	800	20	763	3	924
20	1,080	6	1,110	21	877	5	763	21	1,000	5	383	21	676	4	909
21	1,100	7	1,150	22	857	6	799	22	1,020	6	387	22	876	5	907
22	1,170	8	1,140	23	659	7	832	23	910	7	402	23	906	6	910
23	1,160	9	1,150	24	831	8	853	24	569	8	469	24	911	7	912
24	1,150	10	1,180	25	925	9	890	25	496	9	516	25	844	8	885
25	1,170	11	1,190	26	1,050	10	978	26	464	10	742	26	716	9	885
26	1,170	12	1,190	27	971	11	984	27	435	11	1,060	27	671	10	905
27	1,180	13	1,220	28	1,050	12	1,040	28	438	12	1,060	28	683	11	909
28	1,170	14	1,230	29	1,040	13	1,080	29	570	13	1,040	29	684	12	918
29	1,150	15	1,210	30	968	14	1,110	30	716	14	1,100	30	702	13	939
30	1,130	16	1,210	May		15	1,130	31	729	15	923	31	780	14	929
31	1,100	17	1,220	1	1,240	16	1,150	August		16	930	November		15	935
February		18	1,210	2	1,380	17	1,110	1	653	17	571	1	845	16	961
1	1,090	19	1,210	3	1,330	18	1,150	2	724	18	436	2	874	17	969
2	1,080	20	1,170	4	1,310	19	1,200	3	850	19	398	3	879	18	966
3	1,070	21	1,160	5	1,230	20	1,200	4	864	20	419	4	883	19	981
4	1,060	22	1,190	6	1,070	21	1,190	5	867	21	512	5	783	20	990
5	1,070	23	1,190	7	975	22	1,100	6	934	22	496	6	843	21	959
6	1,090	24	1,200	8	944	23	1,140	7	1,010	23	324	7	871	22	959
7	1,070	25	1,040	9	1,010	24	1,140	8	1,020	24	399	8	902	23	941
8	1,060	26	1,010	10	1,100	25	1,060	9	980	25	446	9	902	24	952
9	1,080	27	1,070	11	1,160	26	993	10	881	26	536	10	877	25	964
10	1,070	28	1,040	12	1,170	27	1,050	11	908	27	641	11	926	26	942
11	1,060	29	1,110	13	1,160	28	1,120	12	914	29	602	12	910	27	962
12	1,120	30	1,160	14	1,140	29	1,180	13	886	30	688	13	907	28	946
13	1,080	31	1,160	15	1,140	30	1,140	14	946	October		14	914	29	970
14	1,140	April		16	1,120	July		15	431	1	711	15	854	30	970
15	1,160	1	1,130	17	1,090	1	1,100	16	392					31	928

Sampling by Laredo Water Plant

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1967

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

Río Salado at Las Tortillas, Tamaulipas

January		April		May		June		June		September		November		December	
18	1,770	1	6,540	5	2,240	4	720	5	1,020	1	439	4	1,980	1	2,040
								6	1,220	2	426				

Sampling by Mexican Section

Rio Grande below Falcon Dam, Texas - U. S. Tailrace

January		February		March		April		May		June		July		August	
3	763	1	797	3	782	6	807	10	834	12	874	12	891	16	908
5	756	3	770	6	788	7	806	12	844	14	870	14	894	18	911
6	758	7	771	8	787	10	807	18	847	19	872	17	894	October	
9	759	8	772	10	790	14	804	19	856	21	875	21	899	11	776
11	759	10	772	13	798	17	810	22	854	23	875	24	900	13	755
13	759	13	773	17	795	21	797	24	853	26	885	26	902	16	763
16	761	15	776	20	801	24	816	26	853	28	876	28	901	18	745
18	759	17	776	22	802	26	814	29	855	30	879	31	903	27	753
20	761	20	775	24	800	28	811	June		July		August		December	
23	765	22	775	27	800	May		2	866	3	885	4	912	18	720
25	767	24	777	29	802	1	816	5	859	5	890	7	907	20	723
27	761	27	782	31	812	3	815	7	864	7	886	9	908	22	721
30	767	March		April		5	816	9	877	10	889	14	909	27	740
		1	787	3	804	8	825							29	721

Sampling by U. S. Section

Rancherías Drain in Mexico, 69.3 River Miles above Anzaldúas Dam

January		February		March		April		June		July		August		November	
4	8,240	9	5,890	17	7,710	20	5,300	1	6,780	6	7,300	10	7,600	3	7,800
11	9,960	15	6,600	22	7,970	27	5,320	8	7,710	14	7,190	17	6,780	16	8,270
18	8,040	23	7,820	April		May		15	7,710	20	6,890	September		23	8,270
26	6,420	March		1	8,150	4	7,620	22	7,610	27	6,960	8	8,720	30	8,310
February		2	7,880	6	4,470	18	5,520	29	7,320	August		14	8,580	December	
2	5,810	9	7,780	13	5,900	25	7,030			3	7,120			28	7,920

Sampling by Mexican Section

Río San Juan at Camargo, Tamaulipas

January		February		March		April		June		July		August		November	
4	1,570	9	1,220	17	3,630	20	1,720	1*	2,790	6	3,350	10*	1,860	16	805
11	1,440	15	1,770	22	3,330	27*	2,830	8	1,980	14	3,520	17	3,260	23	765
18	1,860	23	2,770	April		May		15	2,790	20	3,380	November		25	766
26	2,040	March		1	3,610	4*	1,160	22	3,320	27	3,540	3	939	December	
February		2	2,980	6	3,810	18	2,130	29	3,230	August		11	767	19	987
2	2,220	9	3,280	13	3,880	25	3,000			3	3,930			30	913

* Samples collected below Marte R. Gómez Dam
Sampling by Mexican Section

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1967

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

January		February		March		May		June		August		September		November	
2	774	13	846	29	829	8	836	26	927	7	912	18	654	13	1,040
4	794	15	796	31	849	10	844	28	907	9	950	19	564	20	1,040
6	770	17	796	April		15	875	30	895	11	938	October		22	1,020
9	772	20	807	3	986	17	930	July		14	924	7	613	27	1,030
11	844	21	797	5	838	19	881	3	912	16	927	8	577	29	1,050
16	962	27	807	7	848	22	1,090	5	898	18	669	9	598	December	
18	796	March		10	839	24	933	7	918	20	474	10	649	1	1,050
20	783	1	825	12	821	29	901	10	910	21	585	13	722	4	1,070
23	787	3	806	14	819	June		12	910	23	402	16	734	6	1,120
25	780	6	949	17	826	2	1,505	17	924	25	411	20	791	9	1,160
27	795	8	837	20	830	5	993	19	974	28	578	23	808	11	1,130
30	793	10	831	21	816	7	895	21	1,070	29	577	25	818	13	1,160
February		13	873	24	820	9	906	24	1,050	September		30	1,020	18	827
1	796	15	834	26	818	12	1,120	26	970	1	497	November		20	802
3	789	17	803	28	820	14	909	28	940	4	470	1	1,010	22	860
6	814	20	801	May		19	898	31	913	6	548	3	927	25	1,000
8	805	24	806	1	827	22	896	August		8	539	6	1,070	27	1,110
10	929	27	1,060	3	706	23	896	2	942	12	538	9	1,090	29	1,110
				5	826			4	920	15	575				

Sampling by U. S. Section

Puertecitos Drain in Mexico, 46.8 River Miles above Anzaldúas Dam

January		February		April		May		June		August		October		November	
4	5,930	15	6,040	1	6,060	18	5,140	22	6,310	3	5,060	17	7,030	30	7,070
11	5,950	23	6,040	6	6,160	25	5,660	29	6,310	10	5,040	November		December	
19	5,950	March		13	5,060	June		July		17	5,560	3	6,780	7	6,940
26	4,960	2	6,090	20	5,830	1	5,740	6	6,250	September		10	7,190	14	7,030
February		9	6,100	27	3,830	8	6,240	14	6,220	8	6,280	16	7,220	21	7,010
2	5,590	17	6,130	May		15	6,280	20	6,150	15	6,240	24	7,130	28	7,050
9	5,980	22	6,070	4	6,270			27	6,170						

Sampling by Mexican Section

Los Indios Drain in Mexico, 46.8 River Miles above Anzaldúas Dam

January		February		April		May		June		August		October		November	
4	5,080	15	4,780	1	5,220	18	4,580	22	4,920	3	4,710	17	4,020	30	4,660
11	5,050	23	5,090	6	5,200	25	4,820	29	4,910	10	4,850	November		December	
19	5,050	March		13	5,410	June		July		17	4,810	3	4,530	7	4,590
26	5,050	2	5,170	20	3,420	1	4,700	6	4,890	September		10	4,320	14	4,570
February		9	5,230	27	2,490	8	4,760	14	4,850	8	4,840	16	4,640	21	4,530
2	5,320	17	5,230	May		15	4,860	20	4,790	15	4,790	24	4,570	28	4,530
9	5,470	22	5,220	4	5,040			27	4,940						

Sampling by Mexican Section

Huizache Drain in Mexico, 41.8 River Miles above Anzaldúas Dam

January		February		April		May		June		August		October		November	
4	5,060	15	5,360	1	5,220	18	5,300	22	5,190	3	4,690	17	5,610	30	5,200
11	5,030	23	5,330	6	4,470	25	4,400	29	4,910	10	3,660	November		December	
19	4,940	March		13	4,580	June		July		17	4,610	3	5,340	7	5,050
26	5,170	7	5,290	20	5,300	1	5,470	6	4,830	September		10	5,310	14	5,110
February		9	5,300	27	4,740	8	5,470	14	4,870	8	4,670	16	5,340	21	5,080
2	4,850	17	5,320	May		15	5,290	20	4,840	15	4,630	24	5,160	28	5,090
9	5,230	22	5,240	4	5,470			27	4,810						

Sampling by Mexican Section

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1967

Rio Grande near Los Ebanos, Texas

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	
3	775	17	925	4	971	19	1,130	4	1,150	18	951	2	598	17	1,190
6	1,010	21	925	7	972	23	1,070	7	1,140	22	442	6	672	21	1,250
10	1,010	24	928	11	836	26	1,060	11	1,150	25	476	10	592	24	1,250
13	1,020	28	929	14	837	30	1,060	14	1,140	29	483	13	866	28	1,250
17	853	March		18	832	June		18	1,160	September		17	877	December	
20	858	3	998	21	844	2	1,070	21	1,010	1	684	20	873	1	1,390
24	878	7	999	25	841	5	1,070	25	1,000	5	591	24	875	5	1,390
27	880	10	997	28	854	9	1,060	28	1,030	8	570	27	873	8	1,390
31	841	14	1,305	May		12	1,060	August		12	679	31	875	12	1,390
February		17	1,310	2	860	16	1,070	1	927	15	527	November		17	1,400
3	918	21	1,310	5	880	20	932	4	945	19	672	3	1,180	19	1,390
6	913	24	1,320	9	883	23	935	8	939	22	402	7	1,190	22	1,400
10	915	28	1,320	12	882	27	927	11	927	26	487	10	1,190	26	1,400
13	914	31	1,320	16	880	30	934	15	935	29	490	14	1,190	29	1,390

Sampling by U. S. Section

Rio Grande at Penitas, Texas

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		March		May		June		July		September		November	
9	804	17	893	29	1,080	5	864	19	968	31	1,040	18	748	15	1,290
11	887	20	919	31	1,070	8	883	21	931	August		October		20	1,330
13	886	24	940	April		10	870	23	933	2	940	2	554	22	1,420
16	905	27	893	3	1,110	12	869	26	966	4	959	11	1,070	24	1,530
18	1,110	March		5	989	15	895	28	1,010	7	950	13	765	27	1,420
20	848	1	916	7	963	17	930	30	941	9	945	16	900	30	1,410
23	926	3	994	10	914	19	1,220	July		11	924	18	822	December	
25	840	6	952	12	919	22	1,020	3	981	14	1,050	20	1,030	1	1,380
27	851	8	981	14	837	24	1,220	5	964	16	978	23	932	4	1,500
30	830	10	959	17	844	26	1,150	7	987	18	975	25	934	6	1,450
February		13	932	19	843	29	1,080	10	975	21	511	27	934	8	1,440
1	872	15	944	21	855	31	1,080	12	979	23	646	30	1,210	11	1,530
6	900	17	871	24	845	June		14	1,030	25	425	November		13	1,650
8	876	20	848	26	841	5	885	17	939	28	483	1	1,380	15	1,560
10	896	22	865	29	833	7	1,260	19	1,060	September		3	1,390	18	1,060
13	1,280	24	847	May		12	1,020	21	1,220	11	640	6	1,400	20	1,030
15	930	27	908	1	855	15	1,010	24	1,200	13	624	8	1,420	22	1,040
				3	883	16	985	27	1,190	15	625	13	1,330	29	1,660

Sampling by U. S. Section

Rio Grande above Anzaldúas Dam, South of Abram, Texas

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		June		August		October		November	
9	804	17	913	3	1,060	10	871	21	957	2	969	2	516	20	1,280
11	880	20	880	5	1,090	12	879	23	983	4	958	11	761	22	1,320
13	868	24	958	7	935	15	897	26	984	7	949	13	751	24	1,310
16	971	27	870	10	935	17	924	28	998	9	954	16	785	27	1,330
18	1,240	March		12	950	19	1,240	30	995	11	998	18	905	30	1,350
20	920	1	922	14	842	22	995	July		14	1,020	20	819	December	
23	896	3	1,010	17	852	24	1,090	3	954	16	989	23	888	1	1,360
25	832	6	1,000	19	864	26	1,160	5	998	18	973	25	908	4	1,350
27	831	8	1,080	21	848	29	1,150	7	981	21	554	27	908	6	1,400
30	837	10	1,010	24	842	31	1,100	10	991	23	530	30	1,100	8	1,440
February		13	988	26	840	June		12	963	25	451	November		11	1,580
1	859	15	937	28	857	5	868	14	1,050	28	606	1	1,650	13	1,430
6	877	17	892	May		7	1,140	17	1,020	September		3	1,380	15	1,540
8	868	20	883	1	858	12	1,060	19	994	11	632	6	1,350	18	1,060
10	986	22	859	3	867	15	1,020	21	1,190	13	622	8	1,450	20	1,040
13	1,180	27	913	5	864	16	998	24	1,220	15	635	13	1,320	22	1,040
15	1,030	29	1,130	8	851	19	1,010	27	1,280	18	652	15	1,290	29	1,530
		31	1,010					31	1,090						

Sampling by U. S. Section

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1967

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

Morillo Drain in Mexico, 8.4 River Miles above Anzaldúas Dam

January		February		March		April		May		June		August		October	
4	∅ 12,360	16	∅ 10,670	13	∅ 12,340	19	∅ 9,870	29	∅ 10,680	19	* 17,510	3	∅ 11,860	25	* 16,670
4	* 17,550	16	* 14,060	13	* 17,320	19	* 10,860	29	* 14,670	19	14,910	3	* 14,060	November	
11	∅ 12,780	20	∅ 10,880	16	15,130	26	∅ 9,880	June		22	∅ 11,880	10	∅ 11,510	1	∅ 12,420
11	* 12,780	20	* 13,890	17	∅ 12,070	26	* 12,700	1	∅ 10,920	22	* 18,080	10	* 11,740	1	* 17,050
18	∅ 12,480	23	∅ 11,800	17	* 17,620	May		1	* 14,910	28	∅ 12,140	17	∅ 11,620	10	13,510
18	* 9,610	23	* 14,040	22	∅ 12,220	3	∅ 10,990	5	∅ 8,110	28	* 19,700	17	* 13,240	15	13,150
25	∅ 12,360	27	∅ 11,920	22	* 16,880	3	* 14,850	5	* 16,220	July		September		22	15,140
25	* 11,700	27	* 15,210	30	∅ 12,710	10	∅ 9,860	8	∅ 10,810	5	∅ 12,190	8	∅ 10,970	30	15,110
February		March		30	* 18,390	10	* 12,610	8	* 16,460	5	* 19,850	8	* 14,930	December	
1	∅ 10,060	2	∅ 12,390	April		17	∅ 8,900	12	∅ 11,610	12	∅ 12,270	14	∅ 11,560	2	∅ 12,640
1	* 12,300	2	* 15,210	5	∅ 12,400	17	* 12,030	12	* 16,970	12	* 20,980	14	* 14,930	2	* 17,410
9	∅ 10,570	6	∅ 12,070	5	* 16,450	22	∅ 9,640	15	∅ 11,730	19	∅ 10,490	October		7	∅ 12,000
9	* 11,190	6	* 16,040	5	15,150	22	* 11,900	15	* 17,510	19	* 19,160	19	∅ 11,780	14	15,450
13	∅ 9,640	9	∅ 11,780	12	∅ 11,430	25	∅ 10,180	15	14,320	27	∅ 11,920	19	* 16,130	20	15,040
13	* 12,330	9	* 16,520	12	* 13,560	25	* 13,710	19	∅ 11,760	27	* 22,350	25	∅ 12,210	28	15,080

∅ Samples collected from Esterito Drain which flows into Morillo Drain upstream from the flow measuring station.
* Samples collected upstream from the Esterito Drain confluence.
Sampling by Mexican Section

Rio Grande below Anzalduas Dam, Texas

January		February		April		May		June		August		October		November	
1	1,040	15	1,940	1	1,640	15	1,060	29	1,240	12	1,030	3	670	17	1,690
2	981	16	1,540	2	1,670	16	1,060	30	1,200	13	1,140	4	741	18	1,580
3	980	17	1,370	3	1,770	17	1,270	July		14	1,220	5	1,000	19	1,670
4	1,040	18	1,380	4	1,760	18	1,610	1	1,150	15	1,190	6	832	20	1,670
5	1,050	19	1,360	5	1,630	19	1,820	2	1,100	16	1,140	7	803	21	1,750
6	1,070	20	1,440	6	1,510	20	2,000	3	1,160	17	1,140	8	822	22	1,760
7	1,010	21	1,540	7	1,460	21	1,710	4	1,280	18	1,090	9	819	23	1,770
8	966	22	1,470	8	1,480	22	1,590	5	1,230	19	1,060	10	811	24	1,760
9	925	23	1,500	9	1,550	23	1,630	6	1,190	20	1,080	11	879	25	1,780
10	895	24	1,470	10	1,300	24	1,810	7	1,190	21	676	12	911	26	1,740
11	991	25	1,510	11	1,330	25	1,950	8	1,210	22	679	13	903	27	1,750
12	1,020	26	1,460	12	1,340	26	1,990	9	1,220	23	1,120	14	913	28	1,770
13	1,010	27	1,370	13	1,200	27	2,190	10	1,190	24	692	15	906	29	1,780
14	1,150	28	1,400	14	998	28	2,140	11	1,190	25	541	16	934	30	1,810
15	1,280	March		15	998	29	1,890	12	1,140	26	532	17	921	December	
16	1,330	1	1,490	16	974	30	1,880	13	1,210	27	579	18	963	1	1,830
17	1,430	2	1,520	17	971	31	1,750	14	1,320	28	710	19	911	2	1,840
18	1,590	3	1,560	18	970	June		15	1,970	29	651	20	946	3	1,840
19	1,280	4	1,620	19	976	1	1,680	16	1,410	30	644	21	977	4	1,820
20	1,320	5	1,650	20	995	2	1,620	17	1,230	31	611	22	1,030	5	1,840
21	1,120	6	1,560	21	972	3	1,570	18	1,190	September		23	1,050	6	1,790
22	1,130	7	1,650	22	934	4	1,290	19	1,170	1	543	24	1,060	7	1,870
23	1,200	8	1,650	23	1,000	5	1,320	20	1,220	2	540	25	1,070	8	2,020
24	1,210	9	1,720	24	999	6	1,380	21	1,350	3	520	26	1,090	9	2,060
25	1,100	10	1,690	25	1,000	7	1,750	22	1,470	4	569	27	1,100	10	2,060
26	1,040	11	1,570	26	976	8	1,670	23	1,670	5	575	28	1,090	11	2,010
27	1,050	12	1,490	27	1,120	9	1,540	24	1,640	6	629	29	1,160	12	2,070
28	1,120	13	1,510	28	998	10	1,360	25	1,630	7	658	30	1,350	13	1,970
29	1,150	14	1,660	29	1,000	11	1,440	26	1,670	8	630	31	1,590	14	1,950
30	1,110	15	1,620	30	976	12	1,540	27	1,700	9	676	November		15	2,070
31	1,100	16	1,480	May		13	1,690	28	1,660	10	679	1	1,840	16	2,090
February		17	1,360	1	1,000	14	1,580	29	1,350	11	711	2	1,900	17	1,870
1	1,100	18	1,150	2	1,020	15	1,400	30	1,240	12	717	3	2,110	18	1,640
2	1,080	19	1,120	3	1,040	16	1,310	31	1,210	13	716	4	1,760	19	1,340
3	1,070	20	1,110	4	1,180	17	1,260	August		14	728	5	1,710	20	1,310
4	1,120	21	1,140	5	988	18	1,290	1	1,170	15	750	6	1,680	21	1,270
5	1,220	22	1,100	6	959	19	1,280	2	1,140	16	781	7	1,860	22	1,260
6	1,240	23	1,120	7	1,000	20	1,290	3	1,130	17	810	8	2,190	23	1,240
7	1,250	24	1,140	8	1,030	21	1,210	4	1,070	18	823	9	2,050	24	1,280
8	1,250	25	1,100	9	1,070	22	1,130	5	1,020	19	850	10	2,090	25	1,360
9	1,370	26	1,130	10	1,050	23	1,190	6	1,050	20	979	11	2,020	26	1,430
10	1,340	27	1,310	11	1,030	24	1,230	7	1,020	21	659	12	1,680	27	1,470
11	1,520	28	1,480	12	971	25	1,240	8	1,020	22	548	13	1,670	28	1,610
12	1,590	29	1,510	13	1,000	26	1,220	9	1,030	23	439	14	1,720	29	1,830
13	2,010	30	1,760	14	1,030	27	1,300	10	1,010	October		15	1,700	30	2,010
14	2,060	31	1,780			28	1,270	11	1,000	2	627	16	1,720	31	1,730

Sampling by U. S. Section

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1967

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

Arroyo Colorado, South of Mercedes, Texas

January		March		April		May		July		July		August		September	
4	4,630	7	5,460	4	5,670	2	5,010	3	4,280	18	4,440	22	4,380	6	1,670
February														October	
7	5,560													3	649

Sampling by U. S. Section

North Floodway near Sebastian, Texas

January		February		April		May		July		August		October		November	
4	5,730	21	6,220	5	5,540	18	6,390	5	3,480	15	3,670	3	662	21	6,490
11	5,150	March		12	5,740	24	4,970	12	3,370	22	3,220	16	2,930	28	6,680
17	5,320	1	5,220	19	5,400	31	6,300	19	5,080	29	1,730	24	5,030	December	
25	5,700	8	5,930	26	5,590	June		24	4,310	September		31	5,970	5	6,550
February		15	6,100	May		7	5,660	26	4,460	5	5,480	November		12	6,960
1	5,730	20	5,170	3	5,050	14	4,650	August		12	5,230	7	6,300	19	7,460
8	5,500	22	5,430	10	4,720	21	4,350	8	4,180	19	3,670	14	2,510	26	7,820
15	5,640	29	5,790	17	3,440	28	4,250								

Sampling by U. S. Section

Rio Grande at Mercedes, Texas, Pumps

January		February		April		May		July		August		October		November	
1	1,010	16	1,580	2	1,780	18	1,080	2	1,160	17	1,270	1	522	16	1,630
2	1,050	17	2,040	3	1,850	19	1,150	3	1,140	18	1,190	2	528	17	1,680
3	1,100	18	2,050	4	1,700	20	1,260	4	1,160	19	1,150	3	599	18	1,700
4	1,030	19	1,770	5	1,720	21	1,700	5	1,200	20	1,200	4	595	19	1,670
5	984	20	1,450	6	1,740	22	2,100	6	1,290	21	1,080	5	649	20	1,530
6	1,060	21	1,480	7	1,760	23	1,760	7	1,210	22	920	6	746	21	1,670
7	1,040	22	1,350	8	1,650	24	1,610	8	1,230	23	665	7	910	22	1,710
8	1,120	23	1,390	9	1,520	25	1,580	9	1,260	24	773	8	845	23	1,650
9	1,040	24	1,570	10	1,490	26	1,580	10	1,280	25	775	9	787	24	1,650
10	1,010	25	1,520	11	1,580	27	2,120	11	1,290	26	524	10	808	25	1,800
11	939	26	1,600	12	1,520	28	1,960	12	1,230	27	500	11	818	26	1,800
12	921	27	1,570	13	1,260	29	2,090	13	1,220	28	499	12	854	27	1,800
13	942	28	1,560	14	1,370	30	2,220	14	1,140	29	619	13	875	28	1,810
14	998	March		15	1,230	31	2,150	15	1,150	30	653	14	888	29	1,790
15	1,060	1	1,490	16	1,030	June		16	1,240	31	623	15	903	30	1,700
16	1,050	2	1,410	17	1,000	1	1,860	17	1,360	September		16	894	December	
17	1,170	3	1,600	18	996	2	1,690	18	1,590	1	617	17	896	1	1,760
18	1,240	4	1,460	19	1,020	3	1,600	19	1,350	2	563	18	902	2	1,790
19	1,420	5	1,500	20	955	4	1,640	20	1,150	3	567	19	1,020	3	1,840
20	1,410	6	1,550	21	966	5	1,790	21	1,180	4	566	20	947	4	1,840
21	1,630	7	1,500	22	968	6	1,350	22	1,270	5	543	21	949	5	1,860
22	1,340	8	1,560	23	988	7	1,380	23	1,250	6	590	22	963	6	1,860
23	1,320	9	1,550	24	923	8	1,290	24	1,280	7	637	23	1,010	7	1,800
24	1,100	10	1,610	25	947	9	1,820	25	1,510	8	707	24	1,030	8	1,810
25	1,160	11	1,600	26	999	10	1,770	26	1,550	9	657	25	1,050	9	1,870
26	1,210	12	1,670	27	1,000	11	1,700	27	1,730	10	697	26	1,060	10	2,020
27	1,220	13	1,660	28	963	12	1,400	28	1,690	11	707	27	1,070	11	2,030
28	1,110	14	1,580	29	1,100	13	1,330	29	1,660	12	729	28	1,070	12	1,920
29	1,080	15	1,500	30	998	14	1,430	30	1,710	13	748	29	1,080	13	2,040
30	1,060	16	1,440	May		15	1,640	31	1,680	14	742	30	1,090	14	2,060
31	1,110	17	1,720	1	1,010	16	1,590	August		15	739	31	1,160	15	2,000
February		18	1,530	2	984	17	1,400	1	1,800	16	742	November		16	1,970
1	1,180	19	1,630	3	1,000	18	1,260	2	1,370	17	786	1	1,080	17	1,980
2	1,190	20	1,320	4	1,020	19	1,240	3	1,290	18	768	2	1,360	18	2,060
3	1,180	21	1,190	5	1,050	20	1,220	4	1,290	19	816	3	1,560	19	1,830
4	1,160	22	1,170	6	1,160	21	1,250	5	1,200	20	932	4	1,840	20	1,600
5	1,130	23	1,230	7	1,000	22	1,240	6	1,140	21	950	5	2,100	21	1,640
6	1,120	24	1,190	8	939	23	1,200	7	1,160	22	630	6	1,870	22	1,330
7	1,170	25	1,160	9	993	24	1,080	8	1,070	23	634	7	1,670	23	1,260
8	1,200	26	1,210	10	1,060	25	1,120	9	1,090	24	457	8	1,640	24	1,260
9	1,320	27	1,140	11	1,160	26	1,240	10	1,080	25	443	9	1,640	25	1,310
10	1,280	28	1,140	12	1,060	27	1,310	11	1,050	26	462	10	2,110	26	1,310
11	1,310	29	1,180	13	1,030	28	1,210	12	1,030	27	464	11	2,120	27	1,410
12	1,320	30	1,330	14	997	29	1,270	13	1,060	28	474	12	1,990	28	1,360
13	1,500	31	1,530	15	1,010	30	1,230	14	1,030	29	475	13	1,980	29	1,460
14	1,420	April		16	1,030	July		15	1,070	30	486	14	1,640	30	1,600
15	1,630	1	1,570	17	1,080	1	1,180	16	1,210			15	1,620	31	1,810

Sampling by U. S. Section

ELECTRICAL CONDUCTIVITY OF WATER SAMPLES

1967

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 near San Benito, Texas

January		February		March		May		June		July		August		October	
3	1,070	13	1,380	29	1,160	1	995	12	1,440	14	1,220	27	475	16	890
9	1,040	16	1,510	April		8	998	13	1,460	17	1,300	30	665	20	950
16	995	20	1,680	3	1,600	8	973	19	1,340	24	1,330	September		24	1,080
16	1,070	27	1,500	5	1,840	15	1,010	22	1,300	25	1,270	1	595	27	1,080
23	1,370	March		10	1,560	17	1,130	26	1,220	31	1,700	3	567	31	1,120
30	1,060	13	1,690	10	1,570	22	1,830	July		August		5	538	November	
February		15	1,730	17	986	29	2,080	3	1,200	8	1,170	12	676	14	1,700
6	1,120	20	1,220	24	944	June		3	1,230	14	1,080	28	462	December	
9	1,220	27	1,090	25	945	5	1,600	10	1,180	21	1,140	October		5	1,850
								11	1,200	22	1,040	11	820	13	2,060

Sampling by U. S. Section

Rio Grande near Brownsville, Texas

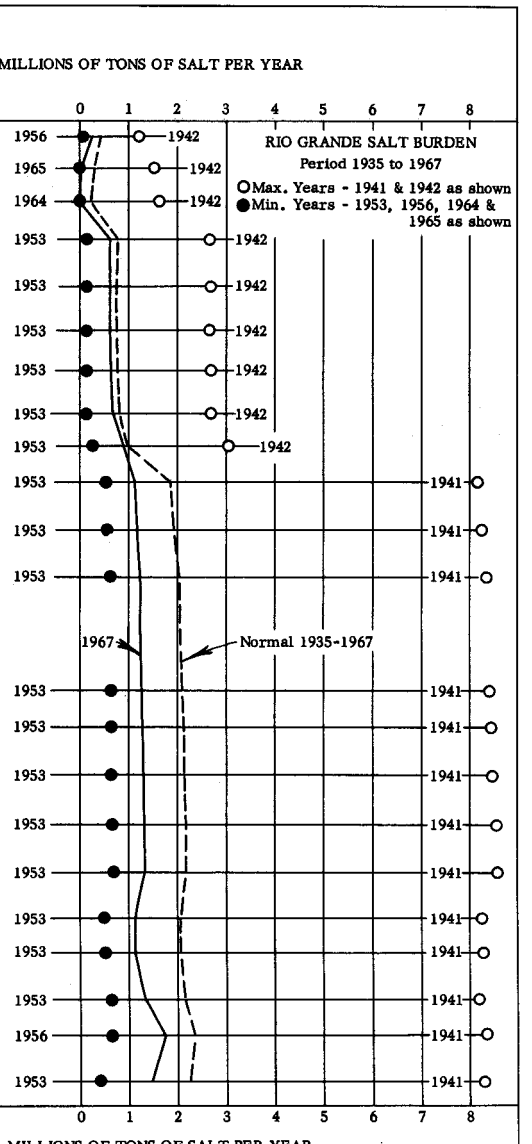
January		February		April		May		June		August		September		October	
3	1,350	17	1,530	3	1,330	12	1,090	29	1,360	1	1,490	12	675	20	933
6	1,470	20	1,430	5	1,270	15	1,120	30	1,300	7	1,780	14	743	24	1,000
9	1,140	24	2,150	7	1,510	19	1,110	July		14	1,120	18	760	27	1,050
13	939	27	2,130	10	1,840	26	1,910	3	1,340	21	1,150	26	473	November	
16	934	March		14	1,910	29	1,730	7	1,300	23	1,100	28	456	3	1,310
20	1,320	3	1,710	17	1,620	June		10	1,220	29	482	30	475	7	1,950
23	1,290	10	1,530	21	1,270	2	2,140	14	1,280	31	612	October		9	1,630
27	1,570	13	1,620	24	1,010	5	1,620	14	1,300	September		1	481	14	1,990
30	1,810	15	1,740	28	1,060	9	1,830	17	1,240	1	625	2	567	28	1,750
February		17	1,720	May		12	1,330	21	1,470	3	551	5	546	December	
3	1,400	20	1,770	1	1,060	16	1,470	24	1,590	4	561	9	786	6	1,820
6	1,290	24	1,680	5	1,040	19	1,570	26	1,440	5	576	11	804	8	1,780
10	1,200	27	1,220	8	1,070	23	1,360	31	1,430	6	556	13	813	13	2,010
13	1,260	31	1,240			26	1,330			7	542	17	885	26	1,320

Sampling by U. S. Section

RIO GRANDE SALT BURDEN

The term "salt", as used herein, means total dissolved solids. The 1967 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 1935-1967 are the weighted means of the values determined for the 33-year period indicated.

CONCENTRATION Tons per Acre-Foot		
1967	Average 1935-1967	
* 1.11	1.07	EL PASO
		Unmeasured
* 3.05	2.33	FORT QUITMAN
		Unmeasured
* .70	1.89	UPPER PRESIDIO
* 1.13	.72	RIO CONCHOS
.31	.32	ALAMITO CREEK
		Unmeasured
1.10	.87	BELOW PRESIDIO
.65	.63	TERLINGUA CREEK
		Unmeasured
* 1.15	.86	JOHNSON RANCH
		Unmeasured
* .95	.75	LANGTRY
* 2.00	2.81	PECOS RIVER
.32	.47	GOODENOUGH SPRING
.32	.28	DEVILS RIVER
.50	.49	ARROYO LAS VACAS
		Unmeasured
.86	.92	DEL RIO
.49	.48	SAN FELIPE CREEK
.50	.48	PINTO CREEK
.37	.36	RIO SAN DIEGO
.24	.28	RIO SAN RODRIGO
		Unmeasured
.78	.85	EAGLE PASS
.59	.49	RIO ESCONDIDO
		Unmeasured
* .74	.81	LAREDO
* .61	.76	RIO SALADO
** .71	.81	FALCON RESERVOIR BELOW FALCON DAM



* Based on 1967 chemical analyses of samples collected at stations indicated

** Based on 1967 chemical analyses of samples collected at Falcon 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 Wastewater," Twelfth Edition (1965), prepared jointly by the American Public Health Association, the American Water Works Association and the Water Pollution Control Federation. These analyses were made in the laboratories of the El Paso Water Plant, the Cameron County Health Unit, and the United States Section of 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 stations.

Franklin Canal at El Paso, Texas, Water Plant

Date 1967	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1967	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)
Jan. 3	35.1	23.5	33,000	25,000	July 18		1.0	33,000	176,000
10	85.8	2.7	48,000	40,250	25	87.4	2.5	40,000	140,000
17	78.8	2.0	46,000	34,000	31	80.4	2.1	21,000	22,500
24	117	5.7	330,000	176,000	Aug. 8	85.9	1.4	24,000	180,000
*31	120	2.9	400,000	149,000	15	91.9	2.0	33,000	
Feb.* 7	89.8	7.5	65,000	261,000	22	96.1	4.4	48,000	40,250
*14	117	8.2	620,000		29	88.9	2.1	40,000	149,000
*21	96.1	8.3	6,000	5,300	Sept. 5	88.9	1.1	56,000	143,000
28	92.9	6.1	27,000	6,100	12	87.8	1.5	56,000	181,000
Mar. 7	108	6.4	48,000	10,200	19	89.8		65,000	67,500
14	96.0	3.0	33,000	10,000	26			2,600,000	68,000
21	79.3	2.5	330,000	94,000	Oct. 10	102	2.5		
28	100	2.7	480,000		17	127	3.0	16,000	2,200
Apr. 4	95.4	1.8	41,000	132,000	24	117		2,400,000	10,000
11	101	1.2	330,000	125,000	31		2.1	2,600	3,450
18	111	2.2	390,000	131,000	Nov. 7	89.1	1.8	2,300	300
25	84.2	1.8	2,100,000	129,000	14	81.2	4.1	0	345
May 2	101	2.9	3,300,000	178,000	21	85.5	6.9	36,000	1,830
9	106	2.4	2,100,000	152,000	28	89.3	6.4	13,000	1,210
16	100		4,100,000		Dec.* 5	89.5	5.3	62,000	45,400
23	111	2.2	3,300,000	178,000	12	86.8	3.6	3,600	3,300
29	104	1.8	2,100,000	152,000	19	119	5.6	16,000	3,600
June 6	111	4.6	330,000	10,000	*26	93.9	5.6	5,400	260
13	103	4.4	330,000						
20	67.3	3.3	400,000						
27			400,000	129,000	Total	4,453.5	181.4	27,348,900	3,629,995
July 3	74.4	3.0	41,000	132,000	Average	94.8	3.9	547,000	82,500
11	94.0	3.3	48,000	132,000					

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

Date 1967	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1967	D. O. Percent Saturation	B. O. D. Parts Per Million	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)
Jan. 3	31.8	20.1	480,000	40,000	July 18	34.3	3.7	2,700,000	176,000
10	61.9	25.6	3,300,000	77,500	25	43.5	2.0	410,000	178,500
17	62.8	17.8	480,000	74,500	31	56.7	8.2	240,000	108,000
24	75.0	12.7	280,000,000	211,500	Aug. 8	51.6	4.5	400,000	170,000
31	85.8	20.5	4,800,000	213,000	15	65.2	4.1	2,700,000	
Feb. 7	23.9	31.1	3,300,000	290,000	22	42.6	5.5	3,300,000	77,500
14	17.3	24.4	6,200,000		29	66.6	5.2	410,000	213,000
21	14.5	21.8	38,000,000	163,000	Sept. 5	64.1	4.4	3,300,000	163,000
28	6.7	44.1	34,000,000	144,000	12	53.3	1.6	3,400,000	266,000
Mar. 7	81.2	24.8	41,000,000	142,000	19	48.7		41,000,000	193,000
14	74.3	27.0	27,000,000	82,000	26			33,000,000	111,000
21	73.2	16.3	4,800,000	137,000	Oct. 3	23.3			
28	55.0	6.5	33,000,000	128,000	10	25.2	24.6		
Apr. 4	44.4	10.5	3,400,000	152,500	17	25.0	30.5	14,000,000	305,300
11	54.0	3.5	3,300,000	182,500	24	8.7		60,000	8,920,000
18	52.7	17.4	4,100,000	170,000	31		34.7	140,000	199,850
25	56.2	25.5	8,100,000	158,500	Nov. 7	23.8	33.2	3,800,000	58,000
May 2	44.7	11.3	13,000,000	203,500	14	2.0	33.2	23,000	5,150
9	36.8	32.7	16,000,000	194,000	21	22.9	34.7	24,000,000	1,218,000
16	46.9		22,000,000		28	61.9	21.6	2,300,000	230,500
23	56.5	17.4	13,000,000	203,500	Dec. 5	41.6	21.9	620,000	45,000
29	56.4	12.1	22,000,000	150,000	12	42.0	34.2	24,000,000	916,000
June 6	54.3	29.2	480,000	137,000	19	13.5	35.3	16,000,000	2,635,000
13	27.9	9.2	2,700,000		26	52.2	18.8	11,000,000	354,000
20	44.4	7.6	480,000						
27			560,000	158,000	Total	2,190.5	837.0	777,183,000	20,259,800
July 3	52.0	6.0	3,300,000	152,500	Average	44.7	18.6	15,544,000	450,200
11	31.2		1,600,000	152,500					

* Samples taken from the Rio Grande at the Water Plant

\# Samples and Analyses by El Paso Water Plant θ Samples by U. S. Section and Analyses by El Paso Water Plant

SANITARY ASPECTS OF WATER QUALITY

#·Rio Grande at Laredo, Texas, Water Plant

Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)
Jan. 3	26	350	May 8	360	900	Sept. 11	2,300	1,500
9	60	35	15	60	525	18	38,000	55,000
16	110	65	22	2,300	675	25	3,600	7,000
23	26	110	29	360	2,500	Oct. 2	6,200	8,500
30	60	165	June 5	2,300	1,625	9	38,000	38,500
Feb. 6	620	800	12	2,300	1,225	16	6,200	8,000
13	60	575	19	230	1,375	23	2,300	3,000
20	60	100	26	2,300	775	30	9,400	9,000
27	60	375	July 3	3,600	3,750	Nov. 6	3,600	5,500
Mar. 6	93	275	10	11,000	5,250	13	2,300	2,000
13	110	425	17	1,100	1,500	20	620	400
20	60	550	24	1,100	70,000	27	620	680
27	2,300	1,200	31	9,400	20,500	Dec. 4	620	545
Apr. 3	360	600	Aug. 7	1,100	7,500	18	1,100	625
10	2,300	800	14	16,000	2,500	26	60	55
17	1,100	1,500	21	24,000	2,500	Total	248,635	279,780
24	2,300	1,575	28	6,200	1,500	Average	4,880	5,490
May 1	2,300	375	Sept. 5	38,000	5,000			

δ Rio Grande at 8.6 Miles below Laredo, Texas, R. R. Bridge

Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)
Jan. 16	36,000		Apr. 17	110,000	37,500	Aug. 14	5,400	32,500
23	240,000		24	110,000	27,500	Sept. 11	55,000	22,500
30	240,000	37,500	May 1	36,000		Oct. 16	94,000	27,500
Feb. 6	62,000		8	36,000	35,000	30	110,000	80,000
13	11,000	37,500	June 12	130,000	8,500	Nov. 20	110,000	
20	36,000		19	240,000	17,500	27	36,000	20,500
27	36,000	19,000	26	62,000	37,000	Dec. 4	110,000	59,000
Mar. 6	380,000	10,000	July 3	62,000	67,500	11	36,000	
13	16,000	30,000	10	62,000	32,000	18	23,000	18,500
20	240,000	77,500	17	240,000	75,000			
27	62,000	37,500	24	94,000	184,000	Total	4,038,400	1,861,500
Apr. 3	62,000	27,500	30	700,000	283,000	Average	115,400	66,500
10	62,000	40,000	Aug. 7	94,000	480,000			

Rio Grande below Falcon Dam, Texas–U. S. Tailrace

Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)
Jan. 3	11.0	10	Apr. 24	0	135	Aug. 14	0	200
9	11.0	10	May 1	0	80	21	23.0	250
16	11.0	100	8	2.6	90	28	62.0	200
23	2.6	60	15	0	185	Sept. 11	23.0	300
30	2.6	60	22	0	125	18	36.0	350
Feb. 13	2.6	60	29	0	80	Oct. 9	23.0	475
20	6.0	60	June 5	5.2	160	16	6.0	225
27	2.3	550	19	6.0	175	23	16.0	175
Mar. 6	0	40	26	0	260	30	230	455
13	6.0	160	July 3	2.6	160	Dec. 4	2.6	125
20	0	100	10	0	180	18	6.0	85
27	2.6	135	17	0	350			
Apr. 3	23.0	80	24	5.2	885	Total	557.9	8,895
10	6.0	75	31	0	515	Average	13.6	217
17	6.0	85	Aug. 7	16.0	1,090			

θ Rio Grande at Mercedes, Texas, Pumps

Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)	Date 1967	Coliform Organisms per 100 c. c.	Total Bacteria per c. c. (plate count)
Jan. 4	1,100		May 9	2,300		Oct. 3	70,000	
10	620		16	11,000		24	1,100	
17	930		23	1,100		31	11,000	
24	800		29	1,100		Nov. 7	620	
31	1,100		June 6	1,100		14	930	
Feb. 7	3,600		27	620		22	24,000	
14	360		July 3	1,100		28	930	
21	2,300		11	3,600		Dec. 5	210	
28	360		18	1,100		12	360	
Mar. 7	620		25	620		19	2,300	
14	930		Aug. 1	1,600		26	930	
Apr. 4	3,600		8	9,400				
18	2,300		15	3,600		Total	186,240	
25	2,300		22	11,000		Average	4,540	
May 2	1,600		Sept. 12	2,100				

Samples and Analyses by U. S. Section δ Samples by Mexican Section and Analyses by U. S. Section
θ Samples by U. S. Section and Analyses by Cameron County Health Unit

RAINFALL ON THE RIO GRANDE WATERSHED IN THE UNITED STATES

In Inches

Tabulated below, in approximate downstream order, are monthly records of United States rainfall stations located in Texas 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 155 through 158 in 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.

Rainfall data for the September 1967 flood (Hurricane Beulah) and antecedent rainfall data are shown on pages 100 through 104 in this bulletin.

Month	American Dam		Island Station		County Line Station		Fort Hancock Bridge		Guayuco Arroyo	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.40	0	0.33	0	0.35	0	0.36	0	0.31
Feb.	.01	.33	0	.26	0	.21	0	.24	0	.18
Mar.	.11	.33	0	.24	.01	.26	.05	.23	0	.16
Apr.	.04	.22	0	.17	.02	.23	.05	.29	.70	.20
May	.09	.23	.08	.33	.10	.36	.12	.55	.10	.36
June	.80	.63	1.15	.57	1.33	.60	2.74	.86	2.00	.58
July	1.44	1.36	1.03	1.03	.08	1.03	.36	1.14	0	1.32
Aug.	.37	1.34	.31	1.20	2.15	1.28	1.00	1.59	1.05	1.61
Sept.	.76	1.07	.78	.88	.44	.99	.54	.95	.15	1.07
Oct.	.15	.60	.14	.75	.07	.91	.16	1.03	.15	1.10
Nov.	.38	.21	.19	.21	.43	.23	.43	.23	.38	.18
Dec.	.72	.42	1.11	.38	.90	.35	.90	.42	.58	.36
Yearly	4.87	7.14	4.79	6.35	5.53	6.80	6.35	7.89	5.11	7.43

Month	Fort Quitman		Neely Ranch		Moody Bennett Ranch		La Nutria Station		Bill Shannon Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.40	0	0.34	0	0.32			0.20	0.53
Feb.	0	.23	0	.17	.01	.31			.50	.32
Mar.	.15	.22	.20	.17	.42	.12	0.30		.75	.41
Apr.	.05	.26	0	.13	.08	.15	0		.25	.08
May	0	.43	.20	.38	.04	.56	.10		0	1.11
June	2.28	.89	2.31	.82	2.48	.88	2.50		1.50	1.09
July	.34	1.46	.89	1.62	1.38	1.55	1.13		.75	1.56
Aug.	1.36	1.65	.75	1.67	1.42	1.79	2.27		.80	1.95
Sept.	1.17	.98	.25	1.31	.49	.99	.70		1.25	1.32
Oct.	.12	.86	.08	1.01	.18	.67	T		1.00	1.12
Nov.	.58	.26	.43	.20	.57	.33	.30		.50	.19
Dec.	.53	.36	.45	.40	.28	.27	T		.75	.49
Yearly	6.58	8.00	5.56	8.22	7.35	7.94			8.25	10.17

Month	Adobes Ranch		Livingston Ranch		Presidio (IB&WC Gage)		Quebec Ranch		Kelly Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.33	0.41	0	0.60	0.20	0.34	0	0.56	0	0.43
Feb.	.40	.22	.55	.42	.20	.21	0	.24	0	.18
Mar.	.30	.19	.50	.23	.40	.14	.90	.28	1.60	.34
Apr.	0	.14	0	.15	0	.17	.35	.25	.40	.45
May	.21	.64	0	.39	0	.45	.40	1.03	.50	1.12
June	1.87	1.28	3.70	1.69	1.60	1.15	3.85	2.06	4.25	1.93
July	.60	1.67	.65	1.33	1.35	1.07	2.10	2.14	2.00	3.07
Aug.	2.20	1.68	.65	1.83	1.10	1.19	2.00	2.13	1.50	2.17
Sept.	4.41	1.71	2.16	1.37	1.60	1.06	1.55	1.83	1.45	2.35
Oct.	0	.63	0	.97	.35	.54	0	.78	0	.83
Nov.	.22	.20	.20	.31	.10	.23	.50	.35	0	.23
Dec.	.31	.31	0	.30	.25	.24	0	.37	1.00	.38
Yearly	10.85	9.08	8.41	9.59	7.15	6.79	11.65	12.02	12.70	13.48

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN THE UNITED STATES

In Inches

Month	Bloys Camp		Kerr Mitchell Ranch		Loma Vista Ranch		H. T. Fletcher Ranch		♦ Van Eman - Hord Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.17	0.74	0.37	0.57	0.09	0.78	0.60	0.86	0.62	0.62
Feb.	.34	.64	T	.37	0	.35	0	.31	0	.28
Mar.	.86	.49	T	.18	.60	.19	.40	.35	1.25	.30
Apr.	.55	.45	0	.44	.10	.53	.15	.45	0	.30
May	.29	1.57	2.48	1.12	0	.92	.25	1.14	0	.59
June	5.82	2.68	5.01	1.88	3.90	1.91	5.35	1.64	3.27	1.42
July	2.46	3.17	1.41	1.78	.60	1.96	2.50	2.83	.81	1.71
Aug.	2.77	3.72	2.59	1.87	1.25	1.73	1.40	2.75	.32	1.85
Sept.	3.13	2.57	2.38	1.50	1.46	1.45	2.50	1.87	3.32	1.48
Oct.	.36	1.54	.20	1.36	.21	1.06	.40	1.40	.43	.97
Nov.	.72	.52	.35	.27	.38	.28	.40	.35	0	.37
Dec.	.85	.65	.31	.42	.33	.46	1.05	.45	.40	.44
Yearly	18.32	18.74	15.10	11.76	8.92	11.62	15.00	14.40	10.42	10.33

Month	L. T. Van Eman Ranch		Casa Piedra		H. M. Greenwood (Cienega Ranch)		Redford		Lajitas	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.		0.61	0	0.44	0.97	0.69	T	0.40		
Feb.		.25	.40	.28	.50	.30	.15	.21		
Mar.		.20	1.30	.33	2.00	.28	1.60	.17		
Apr.		.43	0	.28	0	.52	0	.28		
May		.95	0	.42	.15	.87	0	.47		
June		1.98	3.30	1.83	12.15	2.07	1.60	.92	2.38	
July		2.13	.30	1.70	1.75	2.00	3.00	1.06	.86	
Aug.	1.50	1.93	1.20	2.64	3.35	2.00	1.30	1.06	2.30	
Sept.	4.95	2.34	1.70	.76	2.40	2.41	2.20	1.65	.85	
Oct.	.40	.83	.40	.68	.40	1.29	.10	.86	0	
Nov.	.25	.44	0	.40	.30	.40	.30	.30	0	
Dec.	.80	.38	.20	.35	.60	.63	.25	.19	.28	
Yearly		12.47	8.80	10.11	24.57	13.46	10.50	7.57		

Month	02 Ranch		Earl Hammond Ranch		Big Bend Chevron Station		Maverick Ranger Station		Terlingua Creek Station	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.42	0.55	0.47	0.18			0	0.49	0.05	0.29
Feb.	.40	.39	.28	.50			.25	.26	.15	.12
Mar.	.70	.31	.40	.18				.10	.30	.13
Apr.	.20	.34	0	.28				.19	0	.37
May	0	1.06	0	.63				.92	.15	.52
June	3.92	1.47	2.95	1.79				1.39	2.60	1.05
July	.57	1.66	.80	1.33			2.15	1.74	2.00	.93
Aug.	2.17	2.20	1.08	1.86	1.47			1.65	2.10	.81
Sept.	.81	1.64	1.72	1.20	.69			1.36	.25	.80
Oct.	.11	1.47	.40	1.16	.61			.92	.40	.59
Nov.	.22	.57	.10	.31	0			.24	T	.13
Dec.	.51	.40	.48	.46	.20			.35	.15	.26
Yearly	10.03	12.06	8.68	9.88				9.61	8.15	6.00

Month	Castolon		Johnson Ranch		Ray Willoughby Ranch		J. F. Woodward Ranch		Yarborough Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.24	T	0.38	0.50	0.60	0	0.63	0.45	0.55
Feb.	0	.15	.05	.18	0	.52	.04	.38	.25	.12
Mar.	.76	.29	.60	.15	.40	.26	.30	.15	.23	.12
Apr.	.10	.35	0	.42	0	.41	.16	.40	.02	.11
May	.09	.91	.10	1.06	0	1.58	0	1.19	0	1.02
June	3.12	1.57	1.40	1.06	4.50	2.10	5.21	2.01	2.58	2.70
July	1.69	1.56	.40	1.06	2.20	2.93	1.87	1.95	0	
Aug.	2.59	1.59	1.35	.90	2.73	2.28	2.09	2.61	3.82	3.92
Sept.	1.07	1.36	.65	1.18	1.75	2.45	.88	1.64	.58	1.95
Oct.	.60	.65	T	.63	0	1.07	.14	1.04	.42	1.48
Nov.	0	.06	0	.18	.50	.48	.56	.44	1.02	.51
Dec.	.28	.31	.30	.31	.45	.42	.33	.29	.22	.11
Yearly	10.30	9.04	4.85	7.51	13.03	15.10	11.58	12.73	9.59	

T Trace ♦ Formerly Baugh - Van Eman Ranch

RAINFALL ON THE RIO GRANDE WATERSHED IN THE UNITED STATES

In Inches

Month	Kokernot Ranch Headquarters		Buttrill Ranch		A. M. Potter Ranch		Black Gap Game Refuge		Stillwell Crossing	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.55	0.63	0.90	0.69	0.40	0.40	0.71	0.53	0.45	0.58
Feb.	.11	.29	0	.19	.60	.53	0	.50	.35	.34
Mar.	.50	.13	0	.22	.50	.20	.35	.23	.42	.27
Apr.	0	.52	0	.52	.68	.27	0	.45	.15	.19
May	.02	.79	0	1.03	.76	1.04	.64	1.35	0	.84
June	3.86	1.26	3.75	1.30	1.90	1.09	2.95	1.20	1.70	1.23
July	.81	1.46	2.00	1.66	2.10	1.24	.42	1.60	1.47	2.50
Aug.	1.42	1.02	0	.72	2.60	1.34	1.74	1.05	.77	.82
Sept.	.96	.89	0	1.33	.30	1.63	2.29	1.47	3.38	2.44
Oct.	.11	.82	0	.78	.40	.20	1.00	.88	.30	.84
Nov.	.58	.33	0	.23	0	.50	0	.26	0	.15
Dec.	.65	.22	.50	.28	1.32	.57	.37	.31	.45	.43
Yearly	9.57	8.36	7.15	8.95	11.56	9.01	10.47	9.83	9.44	10.63

Month	Persimmon Gap Ranger Station		Sheep Pasture		Mouth of Maravillas Creek		Heath Crossing		Dove Mountain Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.43	0.49	0.65		0.58	0.18	0.90		0	0.63
Feb.	.36	.42	.58		0	.03	.40		0	.25
Mar.	.46	.16	.47		.53	.35	0		0	.22
Apr.	0	.47	0	0.25	0	.63	0		0	.40
May	.70	.94	.64	.44	.28	.67	0		T	.96
June	.61	1.20	.92	1.84	1.75	1.75	1.97		2.05	1.41
July	1.84	1.45	.65	.77	.50	.97	1.63	1.52	.78	1.42
Aug.	.89	.77	.78	.80	3.60	1.95	.88	1.34	.30	.75
Sept.	1.32	1.01	3.92	2.71	2.70	1.06	2.82	3.12	1.50	1.08
Oct.	.80	1.14	.78	1.34	.69	.65	.39	1.54	.40	1.32
Nov.	.31	.26	0	.24	0	.19	0	0	0	.28
Dec.	.61	.33	.37	.29	T	.11	.61	.30	.60	.41
Yearly	8.33	8.64	9.76		10.63	8.54	9.60		5.63	9.13

Month	Slaughter Ranch		Steve Stumberg Ranch		McGonagill Ranch Headquarters		McGonagill Ranch East Mill		Arvin and Harkins Header	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.50	0.63	1.00	0.62	1.00	0.47	1.00	0.48	0	0.53
Feb.	.50	.75	.50	.43	1.00	.63	.70	.20	.40	.54
Mar.	.20	.27	2.00	.40	.70	.42	1.20	.48	0	.27
Apr.	.30	.20	0	.69	.30	.44	.40	.62	1.60	1.32
May	0	.60	.70	1.44	0	1.05	.40	.99	0	1.45
June	1.40	1.20	5.95	1.71	4.52	2.16	3.10	1.91	3.50	1.75
July	1.40	1.05	3.50	1.96	3.20	2.10	.60	1.05	1.80	1.48
Aug.	1.02	1.99	.50	1.33	0	1.11	0	1.03	.60	1.23
Sept.	1.40	1.45	3.25	2.13	4.25	1.67	3.60	1.84	.90	1.85
Oct.	.90	1.58	1.80	1.66	.50	.96	1.00	1.07	3.20	1.99
Nov.	.60	.33	2.00	.45	0	.17	0	.18	.60	.34
Dec.	.60	.27	0	.56	0	.18	0	.26	.60	.34
Yearly	8.82	10.32	21.20	13.38	15.47	11.36	12.00	10.11	13.20	13.09

Month	Arvin and Harkins Bean		Arvin and Harkins Headquarters		Arvin and Harkins Camel		Arvin and Harkins Monty Corder		E. W. Hardgrave Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.56	0	0.53	0	0.44	0	0.53	0.06	0.59
Feb.	.40	.53	.40	.54	.40	.50	.40	.54	.54	.73
Mar.	0	.28	0	.23	0	.26	0	.28	.08	.31
Apr.	1.10	1.28	1.10	1.21	.60	1.23	.40	1.24	.94	1.10
May	0	1.16	0	1.25	0	1.14	0	1.14	.34	1.33
June	2.80	1.70	2.70	1.41	2.10	1.42	1.80	1.43	.88	1.83
July	1.00	1.64	2.20	1.28	1.90	1.22	.90	1.21	3.94	1.20
Aug.	.30	1.42	.30	1.05	.60	.83	.30	.68	2.41	.86
Sept.	.80	1.60	1.50	1.29	1.60	1.39	1.80	1.43	3.99	2.43
Oct.	3.00	1.83	3.00	1.85	3.10	1.56	3.40	1.65	.22	1.70
Nov.	.50	.42	.60	.34	.50	.31	.50	.33	.76	.46
Dec.	.50	.34	.90	.36	.90	.33	.60	.30	.65	.37
Yearly	10.40	12.76	12.70	11.34	11.70	10.63	10.10	10.76	14.81	12.91

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN THE UNITED STATES

In Inches

Month	Lewis James Ranch		Dryden		Bricker Ranch		Ross Foster Ranch		Billings Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.60	0.14	0.56	0.15	0.44	0.05	0.64	T	
Feb.	.53	.70	.42	.49	.57	.59	.62	.63	.50	
Mar.	.27	.22	.27	.39	.15	.35	.07	.10	.20	0.50
Apr.	.37	1.16	1.82	.86	.47	.91	T	.80	.50	.86
May	.52	.60	.52	1.78	.35	1.11	.50	1.54	.50	.58
June	2.03	1.98	.37	1.14	0	1.52	0	1.51	0	.20
July	4.58	3.24	5.01	1.09	2.85	.70	.80	.27	1.40	.70
Aug.	3.82	2.26	5.17	1.22	4.41	.80	.18	.33	1.00	2.15
Sept.	1.95	3.24	1.15	1.72	1.49	1.72	.77	2.62	7.30	4.90
Oct.	.42	1.63	.22	1.21	.40	1.10	.54	1.10	.60	1.05
Nov.	.44	.22	.88	.37	.17	.27	T	.06	1.00	.50
Dec.	.87	.44	.51	.46	.93	.38	.65	.28	1.60	.80
Yearly	15.80	16.29	16.48	11.29	11.94	9.89	4.18	9.88	14.60	

Month	W. A. Arledge Ranch		Hoffman Ranch		C. L. Arthur Ranch		Owens Ranch		Todd Field	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.07	0.73	0	0.45	0.30	0.79	0	0.22	0	0.25
Feb.	.46	.49	.02	.50	0	.42	0	.50	.50	.80
Mar.	.07	.47	1.04	.30	.80	.35	1.92	.88	1.00	.56
Apr.	0	1.19	.06	.34	0	.30	.50	1.06	.60	1.85
May	.08	1.82	.12	1.15	0	1.13	0	1.53	.40	1.07
June	0	1.75	9.96	2.23	6.50	1.90	1.75	1.77	2.24	2.35
July	1.45	.94	1.53	1.68		2.44	1.20	.30	0	.10
Aug.	1.13	1.14	.90	2.16	4.14	2.33	1.90	1.56	.66	1.94
Sept.	4.18	1.91	3.63	1.77	1.80	1.46	2.72	2.80	3.63	3.67
Oct.	.59	1.53	.55	1.17	.59	1.08	.46	.79	.45	1.39
Nov.	.77	.44	.35	.38	.37	.31	1.30	.96	.93	.42
Dec.	1.00	.55	.63	.43	.68	.38	.91	.46	.84	.37
Yearly	9.80	12.96	18.79	12.56		12.89	12.66	12.83	11.25	14.77

Month	Hunt Ranch		Wills Ranch		Terrell Plant (E. P. N. G. Co.)		✝ Latham Ranch		Prosser Ranch No. 3	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0		0	0.32	0	0.41	0	0.70	0	0.45
Feb.			.35	.72	.64	.65	.60	1.30	.60	.60
Mar.	.60		.32	.41	.09	.13	1.00	.92	.60	.43
Apr.	3.44		2.36	1.99	2.84	2.30		2.00	.10	1.13
May	.22	1.96	.43	1.27	.84	1.13		4.58	0	2.03
June	1.25	1.50	1.62	1.89	.41	2.40		3.65	T	.87
July	0	.02	1.15	1.17	2.06	.73	3.40	2.20	4.40	1.47
Aug.			1.60	2.02	2.00	.60	1.25	2.50	1.30	1.75
Sept.			2.34	3.39	.84	2.12	5.30	5.55	3.80	2.85
Oct.			.79	1.13	.02	1.26	.90	1.20	1.40	1.27
Nov.			.90	.41	.83	.49	2.10	.93	.60	.27
Dec.			1.00	.41	.68	.38	.90	.77	.70	.38
Yearly			12.86	15.13	11.25	12.60		26.30	13.50	13.50

Month	Lausen Ranch		Ingram Ranch		Shumla Bend		Pecos River near Langtry Station		Dead Mans Canyon Near Comstock	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0		T	0.87	T	0.50				
Feb.	.50	1.06	.29	.67	.74	.79				
Mar.	.60	.57	.01	.42	.02	.29				
Apr.	0	.91	T	1.17	0	.98				
May	.06	2.46	.20	1.57	.30	1.86				
June	0	.71	0	1.73	0	1.68				
July	4.75	1.85		.56		.28	2.10			
Aug.	2.45	1.46		.75		1.13	.27			
Sept.	1.29	1.86		2.58		1.74	3.38		1.44	
Oct.	.95	1.25		1.66		1.70	1.43		.60	
Nov.	.26	.13		.33		.40	.21		.58	
Dec.	.56	.28		.42		.37	.30		.64	
Yearly	11.42			12.73		11.72				

T Trace ✝ Formerly Oberkampf Ranch

RAINFALL ON THE RIO GRANDE WATERSHED IN THE UNITED STATES

In Inches

Month	Prosser Ranch No. 1		Continental Ranch		Martin King Ranch		Brotherton Ranch		P. W. Kelly Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.38	0	0.52	T	0.61	0	1.07	0	0.32
Feb.	.30	.65	.55	.64	.56	.78	.53	.96	.42	.83
Mar.	.20	.27	.22	.41	.14	.21	.11	.24	.17	.50
Apr.	.30	1.37	0	1.07	0	.84	.22	.94	.23	.86
May	0	1.78	.70	2.08	.08	1.55	.17	1.13	T	1.68
June	.50	1.05	0	1.17	0	1.53	0	2.15	0	1.89
July	5.70	1.90	3.05	1.23	1.96	1.11	1.54	.37	1.63	.54
Aug.	3.90	2.17	1.70	1.25	.51	.85	.20	1.26	.40	1.06
Sept.	4.40	2.68	5.00	3.50	1.69	2.64	2.47	2.63	2.65	2.13
Oct.	1.80	1.63	1.60	1.53	1.52	2.25	1.42	1.85	2.35	1.92
Nov.	.60	.27	.40	.23	.31	.40	.50	.34	.62	.28
Dec.	.70	.33	.50	.32	.61	.47	.57	.20	.68	.49
Yearly	18.40	14.48	13.72	13.95	7.38	13.24	7.73	13.14	9.15	12.50

Month	Haby Ranch		Comstock		Cow Creek Near Comstock		Goodenough Spring		Cow Creek Near Mouth	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.14	0.40	T	0.65	0.03	0.36	0.02	0.30	0.05	0.42
Feb.	.21	.90	.49	.86	.50	.54	.35	.54	.35	.62
Mar.	.12	.34	.17	.58	.09	.20	0	.19	T	.25
Apr.	.29	.85	.35	1.34	.22	.81	.53	.98	.29	.37
May	0	.72	.02	1.92	.13	.80	.03	1.14	.05	.88
June	0	2.10	0	2.22	.01	1.21	T	2.25	T	1.12
July	1.30	.43	1.44	.91	.86	.30	1.10	.65	1.00	.33
Aug.	0	1.03	.39	1.59	.60	.98	0	.83	.25	.97
Sept.	1.69	2.24	3.72	2.16	2.40	2.23	2.90	3.18	4.10	2.66
Oct.	1.83	1.48	2.15	1.86	2.26	1.48	1.00	1.99	2.00	1.41
Nov.	.33	.22	.67	.52	.30	.22	.18	.31	.45	.24
Dec.	.59	.29	.92	.74	.88	.49	.63	.41	.83	.56
Yearly	6.50	11.00	10.32	15.35	8.28	9.62	6.74	12.77	9.37	9.83

Month	Feely		Lock Store		W. E. Sawyer Ranch		Sub-Station 14		J. M. Baggett Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.50	0	0.50	T		0.07	1.05	0.06	0.55
Feb.	.50	.85	.47	1.14	.54		.56	1.06	.22	1.12
Mar.	.40	.58		.68	.66		.13	.97	1.50	.63
Apr.	.80	1.33	1.11	1.26	1.10		1.39	1.67	.40	1.11
May	.10	2.13		1.97	1.47		2.14	2.95	.75	3.35
June	.15	1.98	2.00	1.30	.97		.39	2.92	.23	1.45
July	.60	.30		1.24	2.51	1.67	2.61	2.11	2.03	.72
Aug.	T	.93	1.10	1.27	.84	1.66	1.47	1.79	1.02	1.95
Sept.	3.40	2.38	4.45	3.10	4.30	4.06	3.95	3.11	8.58	5.71
Oct.	2.50	1.70	.20	.87	1.10	1.38	1.28	2.24	1.59	1.59
Nov.	.90	.40	1.27	.70	1.80	.90	2.57	.92	.96	.61
Dec.	.80	.62	0	.27	1.20	.60	1.00	1.18	1.72	.87
Yearly	10.15	13.70		14.30	16.49		17.56	21.97	19.06	19.66

Month	J. S. Pierce Ranch		L. D. Whitehead Ranch		Whitehead Brothers Ranch		Prosser Ranch No. 2		Bakers Crossing	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0		0	0.40	0.01		0	0.42	T	1.00
Feb.	.55		.45	.66	.35		.95	.82	.38	1.18
Mar.	.85		0	.36	.20		.60	.48	.38	.60
Apr.	1.40		2.09	4.37	.11		.15	.98	.13	.89
May	.85			3.60	.10	0.64	0	2.03	.36	2.28
June	0			2.40	.74	1.52	.70	1.37	.16	1.92
July	.65	0.42		.56	2.85	1.68	4.90	1.63	1.84	1.11
Aug.	2.85	3.05		1.34	.20	1.24	3.70	2.08	3.89	1.18
Sept.	4.15	3.80		4.51	5.80	4.54	4.55	3.18	3.68	3.23
Oct.	.60	1.65		1.33	2.25	2.08	1.00	1.27	1.62	1.41
Nov.	.75	.38		.03	1.25	.88	.60	.23	.77	.52
Dec.	1.35	.68		.40	.80	.40	.70	.33	.92	.71
Yearly	14.00			19.96	14.66		17.85	14.82	14.13	16.03

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN THE UNITED STATES

In Inches

Month	Allen Dunbar Ranch		Erekson Ranch		Vinegarone		Loma Alta		Dolan Springs	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.83	0	1.01	0.01				0	
Feb.	.55	1.38	.51	1.33	.30		0.50		.35	0.72
Mar.	.30	.66	.39	.61	.03		.20		.08	.46
Apr.	2.05	2.50	1.35	2.20	.20		.65		0	2.58
May	.50	2.59	.73	2.47	.31	0.57	.49		0	.40
June	0	3.50	0	3.47	.81	1.94	.68		0	1.05
July	1.40	1.87	1.40	1.89	1.35	.69	1.70		1.08	.58
Aug.	3.20	2.05	3.38	1.53	.50	2.22	.84		1.80	3.28
Sept.	4.10	3.83	2.84	3.56	3.70	3.92	4.26		6.80	5.26
Oct.	1.70	2.59	1.70	2.33	1.95	1.92	3.12		1.30	1.70
Nov.	2.20	.77	2.00	.86	1.60	.80	1.91		1.00	.50
Dec.	.40	.63		.40	.75	.38	.92		1.00	.50
Yearly	16.40	23.20		21.66	11.51				13.41	

Month	H. K. Fawcett Ranch		Ed. Crane Ranch		Hinds "AT" Ranch		H. T. Miers Ranch Headquarters		H. T. Miers Ranch No. 2	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.74	0	0.84	0	0.61	T	0.78	0.10	0.49
Feb.	.34	.68	.43	1.24	0	1.04	.52	1.37	.64	.96
Mar.	.30	.79	.71	.66	.98	.52	.40	.65	.45	.53
Apr.	0	1.38	.16	1.66	.30	1.27	.40	1.83	.59	1.50
May	.77	2.05	.24	2.51	0	1.72	1.03	2.69	.64	2.16
June	0	1.81	0	2.21	0	2.06	.98	3.73	.45	2.86
July	1.70	.87	2.78	1.47	.61	.75	.83	1.45	1.36	.93
Aug.	.90	1.61	1.55	1.19	.94	1.17	.40	1.28	.56	1.46
Sept.	6.29	4.22	3.25	3.06	4.40	2.70	5.85	3.33	4.65	4.28
Oct.	2.20	2.17	1.35	2.17	3.13	2.52	2.78	3.42	4.10	1.84
Nov.	1.20	.67	1.09	.78	.90	.55	1.50	.78	1.63	.62
Dec.	.90	.44	.91	.67	.85	.60	.65	.61	.92	.55
Yearly	14.60	17.43	12.47	18.46	12.11	15.51	15.34	21.92	16.09	18.18

Month	A. A. Baker Ranch		Gillis Ranch		Pafford Crossing		Cliff Lowry Ranch		Lowry Ranch No. 2	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.32	0.01	0.33	0	0.52	0.02	0.41	0	0.40
Feb.	.45	.87	.35	.95	.42	.86	.73	1.19	.53	.94
Mar.	.28	.49	.63	.53	.20	.18	.41	.36	.22	.39
Apr.	.20	1.16	.31	1.48	.30	1.11	.93	1.78	1.07	2.53
May	.08	1.77	.75	1.74	.20	1.76	.02	2.56	.03	1.68
June	.02	1.07	0	2.71	0	2.45	.65	1.51	.05	1.78
July	.83	.25	.54	.41	T	.75	.70	.37	.35	.13
Aug.	.40	1.00	.18	1.64	.10	1.11	.21	1.09	.16	1.05
Sept.	4.34	3.43	4.54	2.73	7.65	3.44	7.36	5.36	6.68	3.77
Oct.	1.74	1.62	4.20	2.40	2.31	2.21	2.36	1.54	2.64	1.64
Nov.	.86	.48	.93	.45	1.10	.36	1.24	.56	1.44	.65
Dec.	.78	.44	1.20	.66	.60	.53	.58	.47	.75	.59
Yearly	9.98	12.90	13.64	16.03	12.88	15.28	15.21	17.20	13.92	15.55

Month	Tuffy Whitehead Ranch		Stewart Ranch		Devils Lake		Sellers Ranch		J. G. Brite Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.04	0.31	0.01	0.41		0.70	0	0.45	0.02	0.36
Feb.	.39	.90	.50	1.01		.88	.36	.77	.41	1.17
Mar.	.41	.32	.32	.20		.59	.72	.30	.64	.42
Apr.	.30	.98	1.35	1.59	1.47	1.68	1.95	1.33	1.67	1.83
May	.17	1.34	.05	1.52	T	1.85	.10	1.47	0	2.42
June	0	1.21	.22	2.41	0	2.40	0	2.73	.14	1.46
July	1.34	.50	.44	1.11		.88	.90	.69	1.16	.51
Aug.	.13	.58	.22	.69		1.29	.05	.94	.61	1.16
Sept.	4.13	3.62	5.97	3.76		2.18	5.25	2.24	7.92	4.26
Oct.	3.02	1.68	1.98	1.73		1.80	2.00	1.62	2.12	1.28
Nov.	.79	.42	.99	.48		.59	.79	.36	.91	.43
Dec.	.87	.45	.54	.58		.76	.23	.42	.76	.43
Yearly	11.59	12.31	12.59	15.49		15.60	12.35	13.32	16.36	15.73

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN THE UNITED STATES

In Inches

Month	A. O. Baker Ranch		Hutto Ranch No. 1		Hutto Ranch No. 2		Wardlaw Ranch		Amistad Dam	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.46	0.05	0.47	0.02	0.44	0.02	0.56	0.04	0.38
Feb.	.37	.65	.87	1.20	.47	1.16	.51	1.03	.39	.97
Mar.	.50	.42	.49	.44	.39	.44	.84	.32	.69	.56
Apr.	1.53	3.79	1.56	2.24	1.05	2.58	.82	1.74	.56	1.80
May	.01	1.70	.01	1.01	.06	1.72	.06	2.10	.01	2.45
June	.16	1.68	1.21	1.52	1.88	2.07	.15	2.15	.21	1.18
July	1.55	.66	1.23	.76	1.22	.45	1.48	1.32	.42	.42
Aug.	.58	.99	.74	1.41	1.30	1.51	2.14	1.30	.69	1.01
Sept.	8.00	4.08	4.22	5.61	6.95	7.13	7.21	3.49	7.23	5.02
Oct.	1.86	1.35	2.12	1.28	1.57	1.28	1.70	1.96	1.74	1.18
Nov.	1.16	.54	1.49	.70	1.24	.45	.93	.49	.81	.35
Dec.	.61	.54	.88	.62	.59	.50	.54	.46	.56	.44
Yearly	16.33	16.86	14.87	17.26	16.74	19.73	16.40	16.92	13.35	15.76

Month	Below Amistad Dam Station		Laughlin Air Force Base		Lewis Ranch		Hodges Ranch		Maverick County Canal Headgate	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.43	0.10	0.54	0	0.72	0.15	0.76	0	0.50
Feb.	.40	.72	.18	.94	.70	1.24	.63	1.40	.64	1.08
Mar.	.55	.33	.78	.36	.46	.55			.80	.60
Apr.	.50	1.24	1.75	2.10	2.75	2.75			.66	1.78
May	0	1.90	.02	1.60	.05	1.94			0	2.21
June	T	1.94	.54	3.26	2.39	2.37			.50	2.26
July	T	.71	.49	1.30	.64	.26			.55	1.56
Aug.	.56	.97	1.25	1.56	.86	1.65			1.64	1.32
Sept.	6.48	2.82	5.26	3.50	4.34	7.37			7.53	3.11
Oct.	.60	1.94	2.11	2.50	2.56	2.25			3.45	1.95
Nov.	.70	.43	1.32	.66	1.65	.71			1.02	.61
Dec.	.40	.36	.55	.62	.79	.84			.06	.58
Yearly	10.19	13.85	14.35	18.94	17.19	22.65			16.85	17.56

Month	Sultenfuss Ranch		Pinto Creek Station		Las Moras Creek		Wipff Ranch		Lateral No. 2 Spill	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.01	0.61	0	0.39	0.01	0.67	T	0.47	T	0.51
Feb.	.70	1.66	.05	.83	.25	1.26	.15	1.00	.10	.89
Mar.	1.31	.78	.65	.50	1.25	.58	1.90	.66	1.15	.58
Apr.	1.52	3.87	.25	1.57	.93	1.61	2.20	1.88	.20	1.76
May	.50	1.80	T	1.83	T	2.12	0	1.73	0	2.35
June	.51	2.47	.15	3.05	.40	3.18	.05	1.93	.35	1.66
July	.20	.08	.85	1.07	.73	1.10	1.45	1.65	.80	1.79
Aug.	1.54	1.66	2.05	1.00	2.17	1.50	.70	1.28	.20	1.67
Sept.	6.12	6.64	7.10	3.50	10.92	4.51	10.60	3.30	9.10	3.20
Oct.	4.21	2.14	3.40	2.23	3.95	2.34	3.20	1.69	2.60	1.90
Nov.	2.10	.82	.85	.62	1.20	1.06	1.10	.88	1.05	.92
Dec.	.98	1.19	.25	.59	.70	.76	.65	.69	.55	.64
Yearly	19.70	23.72	15.60	17.18	22.51	20.69	22.00	17.16	16.10	17.87

Month	Normandy		Lateral No. 12 Headgate		Lateral No. 15 Spill		Maverick Power Plant		Cooper Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.03	0.51	T	0.43	T	0.43	0.04	0.60	T	0.46
Feb.	.13	.80	.10	.64	.20	.71	.40	.78	.30	.74
Mar.	1.68	.81	1.55	.58	1.90	.47	2.07	.87	2.10	.54
Apr.	.34	1.82	1.90	2.01	.75	1.72	.79	1.96	.50	1.93
May	0	2.38	T	2.38	T	2.43	0	2.54	0	2.06
June	.46	1.53	.95	1.48	1.00	1.23	1.36	1.96	1.40	1.52
July	.98	1.89	1.10	1.52	2.45	1.73	2.67	1.36	.25	2.15
Aug.	.61	1.74	1.00	1.15	.95	1.13	1.04	1.48	1.10	1.33
Sept.	10.34	3.57	7.95	3.10	4.95	2.37	3.70	2.81	6.00	3.11
Oct.	3.03	1.88	3.30	2.08	2.65	2.30	1.77	2.26	2.35	2.06
Nov.	1.04	.81	.90	.58	.90	.50	.33	.60	1.00	.56
Dec.	.46	.79	.55	.68	.50	.70	.42	.68	.15	.61
Yearly	19.10	18.53	19.30	16.63	16.25	15.72	14.59	17.90	15.15	17.07

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN THE UNITED STATES

In Inches

Month	Coal Mine		Elm Creek Station		Chittim Ranch		Eagle Pass		Cañon Diablo	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.42	T	0.33	T	0.34	0.09	0.42	T	0.34
Feb.	.44	.83	.50	.67	.35	.73	.34	.77	.20	.66
Mar.	3.83	.70	2.65	.55	3.45	.63	2.50	1.28	3.06	1.36
Apr.	2.12	2.11	2.40	2.00	2.75	2.09	2.08	1.92	3.10	2.60
May	0	2.38	0	2.72	0	2.74	.01	4.15	T	4.58
June	.93	1.34	1.60	1.04	1.40	.95	1.86	.84	1.60	.52
July	.62	2.55	.70	2.20	.90	2.09	1.70	1.16	.65	.34
Aug.	1.60	1.35	.60	1.25	2.70	1.29	2.64	2.22	.90	1.41
Sept.	3.77	3.28	2.20	2.56	2.60	3.14	2.82	5.50	4.15	5.32
Oct.	1.84	2.30	1.10	2.37	1.80	2.53	1.62	1.05	1.65	.80
Nov.	.85	.47	1.00	.51	.80	.46	.84	.53	.70	.54
Dec.	.57	.54	.45	.66	.55	.68	.58	1.10	.45	.84
Yearly	16.57	18.27	13.20	16.86	17.30	17.67	17.08	20.94	16.46	19.31

Month	Rosita Creek Siphon		Weyrich Farm		Trees Farm		Rosita Creek Station		Farias Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	T	0.32	0	0.30	T	0.32	T	0.29	0	0.36
Feb.	.10	.81	.50	.98	.25	.83	.25	.66	.27	1.13
Mar.	2.80	.59	2.30	.78	2.20	.53	3.15	.63	3.20	.64
Apr.	1.55	2.04	2.80	2.85	2.82	1.92	3.65	2.61	3.52	2.70
May	.05	2.47	0	3.52	0	2.39	T	2.23	.06	2.88
June	1.00	1.02	1.00	.54	2.13	1.13	1.20	1.05	.89	1.63
July	.25	1.96	0	.30	1.40	1.97	.40	1.00	1.14	2.44
Aug.	2.25	.89	2.40	.73	1.22	.98	1.50	1.10	2.71	1.43
Sept.	3.85	2.98	5.20	3.93	4.47	2.62	4.10	2.88	6.39	4.11
Oct.	2.00	2.24	1.70	.80	1.91	2.83	1.82	2.41	2.52	2.56
Nov.	.95	.63	1.00	.70	.83	.51	.75	.54	1.24	.70
Dec.	.60	.72	.75	.74	.68	.69	.65	.68	.69	.92
Yearly	15.40	16.67	17.65	16.17	17.91	16.72	17.47	16.08	22.63	21.50

Month	Indio Ranch		El Indio		Van Dalsem Farm		Wuensche Farm		Keisling Farm	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.03	0.44	0	0.74	T	0.34	0.05	0.58	0.05	0.37
Feb.	.30	.90	.30	.92	.25	.96	.29	1.06	.29	.99
Mar.	3.27	.69	4.50	.66	2.30	.67	2.47	.77	2.66	.94
Apr.	4.58	3.08	4.30	1.82	3.45	2.69	2.71	2.00	2.92	2.55
May	.12	2.45	.40	3.25	1.25	2.69	1.55	2.72	1.48	2.68
June	1.50	1.32	1.70	1.55	.40	1.32	.35	1.25	.26	1.25
July	.45	2.05	.10	1.00	.20	1.35	1.23	1.20	.62	1.32
Aug.	1.76	1.32	2.00	1.89	2.20	.92	1.89	1.21	1.66	.98
Sept.	3.92	4.05	5.00	3.17	6.75	3.70	6.15	3.41	6.92	3.09
Oct.	2.45	2.31	1.55	1.67	1.70	2.17	1.56	1.85	1.50	1.96
Nov.	.76	.83	1.10	.59	.75	.56	.88	.66	.95	.53
Dec.	.65	.75	.90	.68	.70	.77	.85	.64	.79	1.05
Yearly	19.79	20.19	21.85	17.94	19.95	18.14	19.98	17.35	20.10	17.71

T Trace

Month	Cuervo Creek Station		Apache Ranch		La Mesa Ranch		Laredo Water Plant		Fort McIntosh (Laredo)	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	T	0.58	0	0.76	T		0.20	0.79	0.39	0.72
Feb.	.35	.75	1.00	1.06	1.50		1.09	.79	1.45	.86
Mar.	2.35	.55	2.20	.25	1.50		.11	.55	.70	.71
Apr.	2.50	1.95	3.50	1.65	2.70		.79	1.06	.76	1.27
May	2.30	2.43	.50	2.26	0		T	2.34	T	2.58
June	.35	1.19			1.50		.74	1.96	.87	2.07
July	1.00	1.26			0		0	1.14	0	1.39
Aug.	1.75	1.29			6.70		5.39	1.57	5.53	1.80
Sept.	5.15	3.35			15.10		8.24	2.99	7.96	2.79
Oct.	1.75	2.01			0		.83	1.50	.93	1.61
Nov.	.70	.69			7.50		1.05	.85	1.81	1.16
Dec.	.60	.63			0		.76	.94	.59	.88
Yearly	18.80	16.68			36.50		19.20	16.48	20.99	17.84

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN THE UNITED STATES

In Inches

Month	Los Isauros Ranch		Corralitos Ranch		Huisache Ranch		Zapata Water Plant		El Peyote Ranch	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.30	0.89	0.51	0.65	0.38	0.80	0.85	0.91	1.10	1.60
Feb.	.50	1.21	.20	.62	.40	.80	.30	.69	.70	.85
Mar.	1.37	.54	.63	.25	.85	.40	.60	.47	.60	.35
Apr.	.60	.42	2.30	1.15	5.20	1.52	2.88	1.75	.40	1.92
May	0	2.16	0	1.47	0	2.10	0	2.88	.30	4.32
June	3.50	2.19	2.05	2.24	1.10	2.00	1.10	1.49	2.10	3.65
July	0	.42	.60	.62	.65	.95	.64	.87	0	1.00
Aug.	4.75	2.34	6.40	1.79	2.80	1.39	2.85	1.50	3.20	2.28
Sept.	10.43	5.80	9.44	2.67	11.10	2.91	14.39	3.58	14.60	8.35
Oct.	1.00	1.10	.32	1.47	.25	1.89	.40	1.40	1.75	1.25
Nov.	1.62	.62	2.20	.85	2.75	.94	2.91	1.11	2.10	1.05
Dec.	2.35	1.60	.20	.53	.20	.76	.50	.69	.30	.15
Yearly	26.42	19.29	24.85	14.31	25.68	16.46	27.42	17.34	27.15	26.77

Month	Arroyo Tigre Chiquito		Falcon Dam		Roma (International Bridge)		Garciasville		Los Ebanos	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.80	0.94	1.00	0.84	1.16	0.93	1.45	0.99	1.40	1.23
Feb.	.50	.85	.39	.77	1.08	1.02	0	.89	.07	.72
Mar.	.20	.35	.54	.80	0	.79	0	.42	0	.44
Apr.	3.50	1.19	1.70	1.25	1.92	1.39	1.85	1.08	1.80	1.80
May	0	2.37	.48	2.51	.54	2.03	.45	1.94	.25	1.85
June	1.35	2.01	.48	2.42	.70	1.93	1.13	1.82	.50	1.80
July	0	.72	.20	.62	.80	.77	2.60	.95	.45	.37
Aug.	9.95	2.62	8.87	2.61	8.52	2.28	4.32	1.42	5.20	1.90
Sept.	22.00	4.47	21.60	4.04	24.71	4.35	13.20	4.09		2.88
Oct.	.70	2.16	.94	2.35	.28	2.30	.90	2.07		2.04
Nov.	2.75	1.31	3.35	1.26	2.03	.81	2.30	1.24	.12	.86
Dec.	.55	.68	.75	.71	0	.56	.63	.86	.57	.80
Yearly	42.30	19.67	40.30	20.18	41.74	19.16	28.83	17.77		16.69

Month	La Joya		HCWCID #6 Goodwin Pump No. 4B		HCWCID #6 Goodwin Pump No. 3		HCWCID #6 Goodwin Pump No. 5		HCWCID #6 Goodwin Pump No. 3A	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.50	1.24	1.69	1.02	1.66	1.16	1.75	1.14	1.67	0.98
Feb.	.35	.94	.73	.95	.69	1.11	.82	1.02	.53	1.09
Mar.	.22	.40	.21	.56	.75	.64	0	.59	.51	.64
Apr.	1.50	1.08	.98	1.16	1.20	1.33	1.25	1.30	1.39	1.62
May	.75	2.06	.20	1.93	.50	2.13	.85	2.68	1.02	1.90
June	1.15	2.50	2.10	2.06	2.88	2.03	1.50	2.01	2.63	2.44
July	.70	.43	.04	.49	.04	.43	0	.48	0	.46
Aug.	4.40	1.62	6.37	1.40	4.96	1.48	6.64	1.91	5.39	1.36
Sept.	13.83	3.49	15.16	3.32	14.57	3.16	15.26	3.73	12.54	3.28
Oct.	.57	1.92	2.99	2.99	2.70	3.19	3.59	2.95	3.23	3.16
Nov.	2.32	1.22	3.33	1.22	3.30	1.07	2.30	1.14	3.40	1.18
Dec.	1.16	1.17	1.25	1.11	1.57	1.24	1.40	1.23	1.26	1.18
Yearly	28.45	18.07	35.05	18.21	34.82	18.97	35.36	20.18	33.57	19.29

Month	HCWCID #6 Goodwin Pump No. 4		Penitas (Edinburg Pumping Plant)		New Mission Pumping Plant		O. C. Dale Farm		HCWCID #15 (Edinburg Office)	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.67	1.48	1.53	1.29	1.44	0.75	1.75	1.32	1.42	1.18
Feb.	.52	1.06	.37	1.04	.70	.76	.79	1.15	1.01	1.01
Mar.	.44	.53	0	.50	.33	.58	.41	.66	.81	.64
Apr.	1.57	1.30	1.17	.96	1.75	1.47	1.55	1.85	.24	1.45
May	.62	2.37	.79	2.06	.85	3.11	1.66	1.96	1.83	2.00
June	2.02	2.36	2.03	2.72	1.75	2.92	1.15	2.52	.80	2.21
July	0	.42	.33	.52	0	.48	.09	.79	T	.67
Aug.	5.48	1.27	6.08	1.41	2.86	1.50	9.31	1.81	6.11	1.62
Sept.	16.73	4.34	18.74	3.95		2.60	14.55	3.41	16.75	3.54
Oct.	4.61	3.57	2.66	2.98		2.31	3.34	3.37	4.01	2.59
Nov.	3.81	1.28	3.14	1.23		.88	3.34	1.44	1.76	1.18
Dec.	1.96	1.47	1.86	1.43	0	1.23	1.92	1.31	1.58	1.17
Yearly	39.43	21.45	38.70	20.09		18.59	39.86	21.59	36.32	19.26

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN THE UNITED STATES

In Inches

Month	Edinburg Filtration Plant		La Feria Pumping Plant		La Feria Materials Yard		CCWCID #19 (Adams Gardens)		San Benito Pump	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.38	1.24	1.80	1.20	1.38	1.07	1.50	0.86	0.87	1.17
Feb.	.96	1.08	.80	1.48	.65	1.12	.95	1.09	.13	.90
Mar.	.47	.73	2.10	.78	1.34	.64	1.82	.60	1.36	.86
Apr.	.39	1.59	0	1.93	0	1.44	0	1.45	0	1.29
May	2.35	2.17	2.55	3.36	2.66	4.03	2.93	2.54	2.01	2.41
June	.87	2.37	1.30	2.72	1.80	2.84	1.67	2.34	.50	2.14
July	.44	.65	.40	1.68	0	1.26	.22	.76	.48	1.45
Aug.	5.61	1.31	6.27	2.59	2.50	2.30	3.57	1.99	3.67	1.91
Sept.	18.14	3.42	19.92	6.31	15.35	4.71	4.86	3.25	14.39	3.96
Oct.	1.61	2.45	6.45	4.10	3.21	3.10	4.06	2.72	3.27	2.30
Nov.	2.54	1.34	10.10	2.49	5.74	2.30	4.51	1.61	3.16	1.04
Dec.	1.37	1.27	.50	1.68	2.10	2.80	2.64	1.28	2.23	1.41
Yearly	36.13	19.62	52.19	30.32	36.73	27.61	28.73	20.49	32.07	20.84

Month	Whipple Farm		⊕ CCWCID #11 (Bayview Dist. Office)		Los Fresnos Pumping Plant					
	1967	Average	1967	Average	1967	Average				
Jan.	2.60	1.37	2.29	1.28	1.80	1.10				
Feb.	1.00	1.76	1.72	1.64	.20	1.56				
Mar.	.70	.62	.42	.81	1.50	.52				
Apr.	0	1.96	0	1.77	0	1.78				
May	1.55	2.74	1.94	2.33	1.90	2.32				
June	.20	2.69	1.19	2.06	1.00	3.49				
July	1.80	1.74	1.98	1.26	.02	1.45				
Aug.	8.45	2.53	6.72	2.81	9.10	2.10				
Sept.	22.60	6.21	22.21	5.68		5.10				
Oct.	4.15	3.32	3.29	2.28	7.55	4.26				
Nov.	1.12	1.60	.30	1.37	1.80	1.78				
Dec.	1.36	1.71	1.70	1.66	1.30	1.52				
Yearly	45.53	28.25	43.76	24.95		26.98				

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Tabulated below, in approximate 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 159 through 163 in 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 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.

Rainfall data for the September 1967 flood (Hurricane Beulah) and antecedent rainfall data are shown on pages 100 through 104 in this bulletin.

Month	Juárez, Chihuahua		Zaragoza, Chihuahua		Garita Km. 28, Chihuahua		Samalayuca, Chihuahua		San Agustín, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.39	0	0.35	0	0.34	0	0.36	0	0.39
Feb.	T	.42	T	.39	T	.29	0	.39	T	.26
Mar.	.12	.38	.08	.51	.12	.24	.08	.35	T	.34
Apr.	.12	.33	.04	.19	0	.10	0	.13	T	.17
May	.20	.36	.28	.17	0	.10	0	.13	.28	.26
June	.71	.67	1.34	.86	1.69	.80	1.34	.89	1.54	.78
July	2.52	1.27	.24	1.22	1.22	1.17	1.65	1.25	1.54	1.29
Aug.	1.42	1.50	.59	.88	.79	1.55	.63	1.60	.12	1.01
Sept.	.67	1.33	.47	1.82	.24	1.62	1.77	1.90	1.30	1.34
Oct.	T	.99	.04	.41	0	.70	.35	.59	0	.60
Nov.	.39	.50	.12	.25	.20	.22	.35	.28	.16	.19
Dec.	.59	.54	1.02	.59	1.10	.55	1.22	.54	1.34	.58
Yearly	6.74	8.68	4.22	7.64	5.36	7.68	7.39	8.41	6.28	7.21

Month	Guadalupe, Chihuahua		Tinajas, Chihuahua		Praxedis G. Guerrero, Chihuahua		San Antonio, Chihuahua		Porvenir, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.32	0	0.24	0	0.31	0	0.31	0	0.33
Feb.	0	.33	0	.24	0	.27	0	.21	0	.30
Mar.	0	.44	.04	.29	T	.35	.16	.24	T	.25
Apr.	T	.07	.08	.08	0	.07	T	.05	.31	.14
May	.20	.19	.12	.25	0	.20	.16	.17	.12	.49
June	1.50	.84	2.01	.82	1.46	.90	3.62	1.38	2.99	1.03
July	.55	.94	1.73	1.44	1.22	1.30	.35	1.84	.67	1.34
Aug.	.39	1.25	1.18	1.58	1.89	1.21	2.44	2.25	.43	1.57
Sept.	1.10	1.20	.43	1.33	.47	.95	.59	1.37	.67	1.07
Oct.	.47	1.05	.59	.87	.04	.96	0	.89	T	.93
Nov.	.55	.30	.39	.29	.51	.34	.24	.44	.12	.38
Dec.	1.34	.40	1.10	.38	.87	.40	1.02	.51	.75	.40
Yearly	6.10	7.33	7.67	7.81	6.46	7.26	8.58	9.66	6.06	8.23

Month	Vado de Cedillos, Chihuahua		Los Barriles, Chihuahua		Banderas, Chihuahua		Luis L. León, Chihuahua		El Cuarenta, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.23	T	0.55	0	0.06	0	0.33	0	0.19
Feb.	T	.19	T	.27	0	.08	0	.15	T	.23
Mar.	T	.13	.51	.20		.24	.08	.15	.08	.28
Apr.	.71	.18	0	.18	0	.04	.08	.16	T	.07
May	.08	.36	.16	.39	.16	.19	0	.30	.20	.18
June	4.21	1.36	4.33	1.51	2.83	1.28	3.31	1.45	2.36	1.01
July	.28	1.38	.87	1.74	.47	.73	.31	1.42	2.28	1.16
Aug.	1.06	1.82	1.73	2.49	1.18	2.86	1.38	2.00	1.73	2.09
Sept.	.63	1.14	.55	2.05	.04	1.37	.35	1.13	1.26	1.62
Oct.	.12	1.07	.20	1.24	0	.58	.16	1.10	.24	.60
Nov.	.35	.26	.75	.60	.31	.18	.51	.44	.63	.35
Dec.	1.18	.47	.79	.50	.31	.20	.79	.40	.75	.46
Yearly	8.62	8.59	9.89	11.72		7.81	6.97	9.03	9.53	8.24

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches.

Month	El Cuervo, Chihuahua		El Llano, Chihuahua		Carichic, Chihuahua		Siquírichic, Chihuahua		El Vergel, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.29	0.35	0.27	0.16	0.26	0	1.13	0.67	1.79
Feb.	0	.20	0	.08	1.85	.46	1.42	.48	1.02	.75
Mar.	.16	.13	.47	.20	.51	.14	0	.27	.16	.57
Apr.	.04	.17	.31	.10	0	T	0	.16	.08	.35
May	T	.47	.28	.25	1.22	.30	2.48	.45	.94	.79
June	.91	1.60	1.93	1.68	5.59	1.91	3.39	1.89	7.56	3.21
July	1.10	.82	.31	.38	6.61	5.97		5.13	6.02	6.52
Aug.	3.39	3.32	.59	2.52	6.73	4.95	4.45	5.55	9.21	7.19
Sept.	1.89	2.12	3.35	2.97	3.90	3.00	3.54	3.10	3.62	5.03
Oct.	T	.75	.12	.71	4.33	1.22		1.20	2.05	1.75
Nov.	.31	.08	.39	.14	3.19	.69	.08	.24	.35	.46
Dec.	.12	.09	.28	.36	3.19	.93	2.20	1.13	2.91	1.97
Yearly	7.92	10.04	8.38	9.66	37.28	19.83		20.73	34.59	30.38

Month	Balleza, Chihuahua		El Sitio, Chihuahua		La Boquilla, Chihuahua		Ojo Caliente, Chihuahua		Villa Coronado, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.47	0.38	0	0.29	T	0.31	T	0.19	0.79	0.61
Feb.	.12	.31	.08	.31	.12	.14	.16	.13	.08	.09
Mar.	.04	.10	.39	.08	1.14	.16	1.18	.16	.04	.01
Apr.	.08	.21	0	.20	T	.17	T	.15	T	.08
May	.20	.22	.20	.57	.04	.55	.08	.55	.31	.76
June	5.04	1.59	2.05	2.08	3.19	1.44	6.46	1.77	5.24	2.14
July	4.76	4.40	2.87	3.90	1.69	2.84	.47	2.98	4.09	3.63
Aug.	5.55	4.83	3.98	4.96	3.35	2.94	3.74	2.66	3.15	4.02
Sept.	3.62	3.37	2.68	3.43	4.57	2.93	4.17	2.53	3.31	4.23
Oct.	1.06	.86	.12	.81	.39	.91	.51	1.21	.55	1.09
Nov.	.20	.49	.20	.41	0	.32	T	.14	T	.34
Dec.	.67	.55	.12	.40	.08	.39	.24	.27	.04	.42
Yearly	21.81	17.31	12.69	17.44	14.57	13.10	17.01	12.74	17.60	17.42

Month	Santa Bárbara, Chihuahua		Valle Allende, Chihuahua		Jiménez, Chihuahua		Parral, Chihuahua		Camargo, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.26	0.49	0.59	0.28	0	0.26	0.39	0.20	0.04	0.46
Feb.	.16	.47	.08	.03	.16	.06	T	.15	.20	.18
Mar.	T	.04	T	.01	0	.05	.04	.10	.79	.08
Apr.	.35	.13	T	.09	0	.13	0	.17	T	.14
May	.75	1.37	.31	.82	.31	.46	T	.46	.12	.74
June	4.96	3.28	5.83	2.35	2.91	1.16	5.55	1.82	5.51	1.85
July	2.80	2.42	1.73	2.90	1.61	2.91	5.31	4.00	.28	2.69
Aug.	6.50	5.63	5.75	4.90	4.57	2.23	5.00	4.23	.16	2.55
Sept.	5.31	5.52	4.72	3.51	.71	2.43	5.79	4.21	5.39	3.00
Oct.	.94	.70	.47	1.00	.12	1.51	.28	1.21	.79	1.11
Nov.	.12	.32	T	.06	0	.14	T	.49	T	.36
Dec.	.35	.65	.35	.36	0	.23	.16	.37	.47	.43
Yearly	23.50	21.02	19.83	16.31	10.39	11.57	22.52	17.41	13.75	13.59

Month	Santa Rita, Chihuahua		Victoria, Chihuahua		Tacubaya, Chihuahua		Rosetilla, Chihuahua		La Cieneguilla, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.42	T	0.16	0	0.06	T	0.43	T	T
Feb.	0	.21	.28	.08	.16	.23	.16	.11	0	.13
Mar.	.12	.13	.28	.08	.16	.03	.12	.10		T
Apr.	0	.25	.16	.18	0	.29	T	.21		0
May		.63	.04	1.38	0	1.34	T	.28	0	.42
June	2.99	1.89	3.62	2.71	3.31	2.27	2.24	1.15	3.11	3.27
July	1.14	2.06	3.07	1.66	4.09	3.14	1.26	2.32		3.14
Aug.	4.33	2.18	2.76	3.44	2.99	2.31	3.86	2.59	4.06	3.87
Sept.	1.81	2.11	2.68	2.44	4.17	3.22	1.54	1.96	5.12	3.48
Oct.	.12	.92	1.26	.48	.71	.76	.28	.79	0	.43
Nov.	T	.17	0	.03	0	.06	T	.20	.12	.18
Dec.	.20	.48	.31	.32	.55	.60	.28	.38	.24	.43
Yearly		11.45	14.46	12.96	16.14	14.31	9.74	10.52		15.35

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Month	El Maguey, Chihuahua		Tres Hermanos, Chihuahua		San Lorenzo, Chihuahua		Villalba, Chihuahua		Las Vírgenes, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	T	0.31	0	0.24		0.26	0	0.35	T	0.29
Feb.	.16	.17	0	.06		.19	T	.11	.04	.08
Mar.	.31	.10	.35	.08		T	.39	.04	.08	.03
Apr.	0	.15	T	.03		0	0	.14	T	.17
May	T	.51	T	.40		.27	0	.37	T	.29
June	2.01	1.98	1.97	2.22		2.07	3.07	1.07	3.74	1.15
July	3.07	3.67	3.07	3.62	3.74	3.69	.63	3.17	1.10	2.06
Aug.	2.68	3.87	2.40	2.85	3.07	4.10	2.72	2.89	2.01	2.30
Sept.	2.83	3.49	1.38	1.70	4.09	3.37	2.99	2.52	3.03	1.91
Oct.	.28	.87		.83		1.16	.91	.99	.24	.74
Nov.	.08	.16	.20	.23		.49	.04	.27	.08	.23
Dec.	T	.36	T	.25		.68	.08	.40	.20	.37
Yearly	11.42	15.64		12.51		16.28	10.83	12.32	10.52	9.62

Month	Km. 135, Chihuahua		Km. 99, Chihuahua		Delicias, Chihuahua		Lázaro Cárdenas, Chihuahua		Meoqui, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	T	0.06	T	0.05	T	0.36	0	0.27	T	0.17
Feb.	0	.05	.04	.13	.12	.11	.08	.11	T	.07
Mar.	.16	.03	.43	.07	.71	.10	.20	.03	.35	.07
Apr.	0	.26	0	.09	T	.21	0	.28	T	.33
May	0	.52	T	.52	T	.29	0	.55	T	.52
June	3.07	1.86	3.82	1.98	2.68	1.19	2.60	2.11	1.57	1.48
July	.94	1.36	1.10	1.88	1.06	2.31	1.10	1.86	1.30	1.66
Aug.	3.43	2.82	2.60	2.37	2.76	2.51	3.46	2.49	2.83	2.16
Sept.	2.87	2.65	2.44	2.45	1.97	2.00	2.40	2.42	1.89	1.42
Oct.	.16	.52	.16	.68	.16	.83	.20	.57	.04	.69
Nov.	0	.18	.04	.26	.04	.26	.08	.25	T	.10
Dec.	.16	.28	.16	.49	.24	.41	.28	.27	.12	.47
Yearly	10.79	10.59	10.79	10.97	9.74	10.58	10.40	11.21	8.10	9.14

Month	Las Burras, Chihuahua		Cd. Guerrero, Chihuahua		Bachiniva, Chihuahua		Cuauhtémoc, Chihuahua		La Trasquila, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	T	0.27	T	0.62	0	0.45	T	0.28	T	0.14
Feb.	.20	.13	T	.39	0	.13	.08	.12	0	.24
Mar.	.71	.12	T	.19	.47	.25	.55	.10	0	.06
Apr.	0	.17	0	.18	0	.10	0	.18	0	.02
May	.04	.34	.87	.28	.67	.18	.20	.35	.31	.39
June	2.36	1.19	3.78	1.58	7.64	1.79	1.89	1.56	2.68	1.68
July	.83	2.32	4.13	4.61	8.35	5.14	3.46	4.60	2.44	3.45
Aug.	3.94	2.46	5.63	5.28	1.26	4.53	3.27	4.16	2.20	2.94
Sept.	1.65	2.00	1.57	3.07	2.20	2.50	1.34	2.68	2.44	3.42
Oct.	.08	.53	.35	1.18		1.16	.08	1.03	.87	.65
Nov.	T	.15	1.42	.50	.87	.34	.55	.25	1.10	.39
Dec.	.20	.40	.71	.73	1.42	.50	.83	.44	1.10	.36
Yearly	10.01	10.08	18.46	18.61		17.07	12.25	15.75	13.14	13.74

Month	Colonia Anáhuac, Chihuahua		Presa Chihuahua, Chihuahua		Chihuahua, Chihuahua		Majalca, Chihuahua		Planta Zootécnica, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	T	0.28	0.04	0.11	T	0.28	T	0.19	0	0.28
Feb.	.12	.22	.04	.06	.04	.19	.12	.09	T	.08
Mar.	.28	.05	.35	.07	1.38	.20	1.10	.30	1.34	.14
Apr.	.04	.11	0	.09	.08	.18	T	.34	.51	.26
May	.47	.53	.08	.80	T	.37	.67	1.15	.08	.36
June	2.13	1.72	4.25	3.36	6.06	1.52	4.84	3.35	5.28	1.99
July	4.57	4.21	3.94	3.46	4.06	3.33	7.24	4.78	3.70	3.05
Aug.	5.63	5.22	4.02	4.15	3.66	3.36	4.61	4.92	6.14	3.99
Sept.	2.87	3.54	3.23	3.02	2.91	2.81	4.33	3.62	3.07	2.39
Oct.	.04	.85	.04	.85	.12	.83	.04	.63	T	.93
Nov.	.55	.32	.12	.23	.04	.42	.67	.20	.04	.28
Dec.	.39	.35	.20	.46	.16	.37	.35	.29	.08	.41
Yearly	17.09	17.40	16.31	16.66	18.51	13.86	23.97	19.86	20.24	14.16

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Month	Los Ojos, Chihuahua		Los Pozos, Chihuahua		Villa Aldama, Chihuahua		La Campana, Chihuahua		Las Choyas, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.49	0	0.36	T	0.26	0	0.30	0	0.32
Feb.	.08	.16		.20	0	.04	.08	.24	.12	.30
Mar.	.39	.11	.63	.11	1.10	.16	.39	.11	.35	.07
Apr.	0	.20	0	.20	.28	.11	.04	.10	.31	.20
May	T	.68	0	.57	0	.50	T	.24	.08	.28
June	1.50	1.30	1.97	1.44	3.94	2.41	2.83	2.00	1.97	1.06
July	.87	3.30	.79	2.17	2.20	2.96	1.97	3.04	4.09	2.42
Aug.	2.68	2.60	2.83	2.38	5.16	2.95	4.33	3.29	1.81	3.03
Sept.	2.60	3.10	1.73	2.31	1.57	2.90	2.76	3.20	1.50	1.71
Oct.	.12	1.00	.51	.90	T	.49	1.02	.98	0	1.03
Nov.	.08	.31	.12	.43	.16	.22	.04	.26	.47	.27
Dec.	.47	.26	.12	.25	.31	.41	.39	.33	.16	.27
Yearly	8.79	13.51		11.32	14.72	13.41	13.85	14.09	10.86	10.96

Month	Cerros Prietos, Chihuahua		Presa El Granero, Chihuahua		El Anteojo, Chihuahua		Parrita, Chihuahua		Maijoma, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	T	0.14	T	0.05	0	0.01	0	0.07	T	0.56
Feb.	T	.07	.20	.20	0	.09	.08	.14	.28	.34
Mar.	.16	.04	.71	.24	.12	.03	T	.02	.47	.09
Apr.	.24	.07	T	.18	0	.35	1.81	.61	.04	.19
May	T	.42	0	.18	0	.65	.63	.35	.08	.67
June	1.65	1.57	1.81	2.32	4.25	2.98	6.77	2.36	3.46	1.61
July	2.48	1.45	1.57	.72	.91	.98	1.30	1.91	1.10	2.52
Aug.	2.52	4.43	3.70	2.70	2.20	2.43	5.39	3.08	1.89	3.22
Sept.	2.17	2.06	1.30	2.86	1.34	1.76	2.13	3.09	2.13	2.62
Oct.	T	1.14	.79	.37	.35	.38	1.10	1.07	.24	1.08
Nov.	.28	.20	T	.03	0	.07	0	.22	0	.38
Dec.	.12	.30	.08	.32	.20	.47	0	.17	.31	.39
Yearly	9.62	11.89	10.16	10.17	9.37	10.20	19.21	13.09	10.00	13.67

Month	Coyame, Chihuahua		Las Varas, Chihuahua		Gallego, Chihuahua		El Sueco, Chihuahua		El Nopal, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.09	0.20	0.35	T	0.23	T	0.43		0.28
Feb.	T	.15	.47	.50	.20	.37	.31	.46		.24
Mar.	.08	.08	.39	.16	.04	.10	.16	.22	0	.12
Apr.	0	.17	T	.13	.47	.11	.08	.14	0	.03
May	T	.55	T	.26	.04	.19	.16	.11	.08	.32
June	3.86	1.63	3.46	1.16	2.44	1.09	1.77	.80	1.93	1.54
July	.79	1.50	2.91	3.01	3.07	2.26	4.88	2.61	5.91	2.26
Aug.	1.50	1.59	3.35	3.67	2.52	3.59	2.36	4.04	2.28	2.86
Sept.	4.17	2.52	4.21	2.83	2.99	2.32	2.56	2.44	1.89	2.13
Oct.	.75	.78	.51	1.31	.16	1.11	.08	.88		.72
Nov.	.28	.20	.63	.50	.47	.31	.63	.48		.35
Dec.	.24	.20	.83	.31	.20	.23	.28	.22		.15
Yearly	11.67	9.46	16.96	14.19	12.60	11.91	13.27	12.83		11.00

Month	Tosisihua, Chihuahua		Ojinaga (IB&WC) Chihuahua		Ojinaga (M. S. of Mexico), Chihuahua		Potrero del Llano, Chihuahua		Manuel Benavides, Chihuahua	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0	0.31	0.47	0.31	0.34	T	0.04	T	0.06
Feb.	0	T	.31	.26	.71	.22	.16	.22	.12	.11
Mar.	0	T	.47	.11	.51	.17	2.76	.92	.71	.15
Apr.	0	.10	T	.23	0	.25	0	.04	0	.20
May	0	.32	0	.39	T	.54	0	.20	.24	1.06
June	2.05	1.19	2.76	1.35	3.35	1.03	2.76	1.94	3.66	1.81
July	.47	.84	.63	1.12	.87	1.22	.47	.97	1.61	1.79
Aug.	1.77	3.58	1.06	1.47	1.46	1.44	2.28	2.31	3.62	2.33
Sept.	2.80	2.18	2.36	1.24	2.68	1.43	.98	1.54	2.32	2.03
Oct.	0	.13	.39	.88	.55	.94	0	.42	.51	.69
Nov.	.43	.20	.08	.33	T	.37	0	.01	T	.12
Dec.	.12	.10	.31	.30	.71	.42	.39	.57	.12	.27
Yearly	7.64	8.64	8.68	8.15	11.15	8.37	9.80	9.18	12.91	10.62

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Month	Sierra Mojada, Coahuila		Mina La Borrada, Coahuila		Las Norias, Coahuila		Santa Rosa, Coahuila		I. D. 8, Coahuila	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	T	0.55	0.39	0.28	0	0.48	0	0.91	0.03	0.41
Feb.	.08	.27	.98	.34	.16	.57	0	.78	.43	.92
Mar.	.43	.29	.08	.18	.08	.28	0	.44	.14	.25
Apr.	T	.27	0	.22	.39	.76	1.50	.92	.31	1.45
May	T	1.06	0	1.04	0	1.45	0	.97	0	.96
June	2.72	2.35	2.72	2.08	.83	2.60	0	1.72	0	.62
July	2.32	2.69	.35	.78	.16	2.00	0	1.54	2.99	1.50
Aug.	2.05	2.71	.55	1.63	.08	2.04	.75	.87	.93	2.50
Sept.	3.03	2.92	3.98	1.95	.51	2.38	.51	2.08	1.64	2.20
Oct.	.12	1.32	1.54	.95	.12	1.51	0	2.55	2.65	2.62
Nov.	0	.51	0	.21	.08	.41	0	1.11	.32	.20
Dec.	1.02	.64	.31	.24	.08	.50	0	.45	.39	.34
Yearly	11.77	15.58	10.90	9.90	2.49	14.98	2.76	14.34	9.83	13.97

Month	San Fernando, Coahuila		El Cedrito, Coahuila		Hacienda San Miguel, Coahuila		San Gregorio, Coahuila		I. D. 12, Coahuila	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.08	0.22	0	0.20	T	0.19	0	0.13	0.02	0.42
Feb.	.31	.61	.20	.60	.31	.46	.39	.56	.40	.74
Mar.	.43	.18	.79	.13	4.57	.85	.39	.11	.06	.75
Apr.	0	.95	.39	1.05	1.61	1.32	1.06	1.17	1.58	2.26
May	0	.90	0	1.21	.87	1.64	0	1.52	0	.82
June	0	.69	1.97	.94	1.10	2.71	0	1.34	.12	1.08
July	.39	.41	1.26	1.14	.59	.95	0	.04	.66	.38
Aug.	.16	1.29	0	1.52	T	.98	1.57	2.16	.59	1.74
Sept.	3.50	3.42	6.97	3.11	4.65	3.70	4.25	4.25	3.15	3.11
Oct.	1.10	1.38	.51	1.46	1.02	1.97	2.76	1.58	2.52	2.03
Nov.	.16	.12	0	.07	.87	.38	.47	.16	.48	.25
Dec.	.47	.39	.24	.24	.20	.34	.20	.13	.50	.43
Yearly	6.60	10.56	12.33	11.67	15.79	15.49	11.09	13.15	10.08	14.01

Month	Presa Amistad, Coahuila		Manantial Maris, Coahuila		El Paisano, Coahuila		Presa Centenario, Coahuila		Cd. Acuña, Coahuila	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.23	0	0.23	0	0.17	0	0.39	0.12	0.58
Feb.	.39	.75	0	.72	.39	.75	.16	.96	.31	.82
Mar.	.59	.42	.43	.26	.39	.22	.79	.38	.91	.78
Apr.	.31	2.06	.55	1.72	1.02	1.25	.35	1.79	.75	1.54
May	T	1.68	T	1.92	.63	1.60	0	1.60	.98	2.51
June	T	1.10	T	1.22	0	1.75	.79	2.13	.28	2.56
July	.20	.11	.31	.05	0	.18	.12	.32	.83	.89
Aug.	.12	.96	0	.92	1.38	1.39	.31	1.91	1.50	1.46
Sept.	5.83	4.87	6.89	4.67	7.17	4.88	7.99	7.63	5.28	3.45
Oct.	1.50	1.23	1.14	1.14	1.57	1.27	1.69	1.38	1.34	2.09
Nov.	.31	.18	.20	.07	.39	.28	.35	.72	.67	.51
Dec.	.59	.19	.47	.28	.67	.27	.63	.59	.79	.55
Yearly	9.84	13.78	9.99	13.20	13.61	14.01	13.18	19.80	13.76	17.74

Month	Cd.Acuña Km. 22 SE, Coahuila		Presa Cabeceras, Coahuila		Presa San Miguel, Coahuila		Palestina, Coahuila		Chupadero, Coahuila	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.14	0	0.36	0	0.38	0	0.94	0	0.45
Feb.	.43	.94	.12	.64	.16	.86	.16	.99	0	.85
Mar.	.59	.41	.63	.51	.55	.66	.94	.64	.75	.47
Apr.	.51	2.31	.28	1.87	.28	1.21	.35	1.71	.24	2.18
May	0	4.18	0	2.20	0	1.88	0	2.54	.04	1.70
June	1.42	1.90	.94	1.26	.94	1.58	.47	2.35	1.22	2.36
July	1.26	.32	.16	.36	.16	.17	.28	1.70	.47	.87
Aug.	.75	1.10	.24	.83	.55	1.24	.71	1.92	1.50	1.35
Sept.	9.69	5.84	10.35	8.59	6.46	5.70	8.94	3.27	9.65	4.70
Oct.	3.35	2.48	2.72	1.57	1.85	1.62	2.20	1.75	2.95	2.35
Nov.	1.22	.94	.79	.54	1.14	.63	1.14	.68	1.18	.66
Dec.	.67	.59	.51	.47	.94	.83	.83	.86	.63	.53
Yearly	19.89	21.15	16.74	19.20	13.03	16.76	16.02	19.35	18.63	18.47

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Month	Jiménez, Coahuila		El Remolino, Coahuila		El Moral Km. 17, SW., Coahuila		El Moral, Coahuila		Piedras Negras, Coahuila	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.65	0	0.39	0	0.21	0	0.56	0.04	0.61
Feb.	.16	.95	.28	.64	.20	.76	0	.82	.51	.91
Mar.	1.10	.75	1.18	.54	1.30	.77		.92	1.89	.74
Apr.	.16	1.94	.98	2.12	1.02	1.57	.20	1.84	.67	2.16
May	0	2.72	0	1.93	0	3.52	0	2.86	T	2.99
June	.31	2.90	.79	3.28	1.50	.96	1.46	.90	2.09	1.61
July	2.48	1.34	.39	.82	.59	.19	.79	.16	.79	2.17
Aug.	1.42	1.57	1.46	1.10	.79	.99	1.14	1.97	1.18	1.96
Sept.	10.39	3.36	8.46	4.94	5.71	4.92	5.71	4.95	3.03	3.17
Oct.	3.50	2.19	1.26	2.76	.47	1.10	2.76	.89	3.15	2.77
Nov.	1.10	.77	1.18	.43	.83	.48	0	.39	1.26	.68
Dec.	.83	.71	0	.59	.67	.66	.60	.66	.55	.69
Yearly	21.45	19.85	15.98	19.54	13.08	16.13		16.92	15.16	20.46

Month	Piedras Negras, Km. 22 SW, Coahuila		Allende, Coahuila		Villa Guerrero, Coahuila		Rancho San Diego, Coahuila		Rancho Mercedes, Coahuila	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.39	0	0.55	0	0.41	0	0.06	0	0.13
Feb.	.20	.80	.31	1.10	0	.72	0	.38	0	.62
Mar.	1.26	.97	1.26	.39	2.20	.51	1.81	.33	3.23	.77
Apr.	2.76	3.24	2.28	1.22	3.46	1.90	4.49	1.75	3.35	2.48
May	0	2.95	.35	2.24	1.85	2.75	4.92	3.31	.83	2.82
June	.51	.56	.79	1.71	0	1.51	0	1.64	0	1.25
July	.79	.48	.59	1.54	1.10	1.06	5.31	1.10	0	.77
Aug.	1.57	1.63	1.57	2.39	4.45	1.44	1.38	1.50	3.74	1.45
Sept.	2.76	5.32	1.34	3.06	6.38	4.87	7.76	4.06	5.20	2.32
Oct.	1.89	3.17	1.34	1.82	.79	2.55	.59	1.11	.39	1.00
Nov.	.35	.32	.63	.45	.94	.45	1.38	.51	2.44	.92
Dec.	.39	.77	.47	.61	.28	.74	.59	.52	1.85	.95
Yearly	12.48	20.60	10.93	17.08	21.45	18.91	28.23	16.27	21.03	15.48

Month	Villa Hidalgo, Coahuila		Colombia, Nuevo León		Rancho Los Vidrios, Tamaulipas		Nuevo Laredo (M.S. of Mexico), Tamps.		Nuevo Laredo (IB&WC), Tamps.	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.76	0	0.12	0.39	1.03	0.04	0.76	0.51	0.55
Feb.	.98	.95	T	.50	.67	1.00	2.17	.90	1.81	.88
Mar.	2.52	.56	1.22	.79	1.18	.34	.83	.65	.91	.38
Apr.	3.46	1.62	2.64	1.70	1.38	1.55	.91	1.21	.59	1.01
May	1.26	2.55	0	3.44	0	2.66	0	2.26	.04	2.11
June	.04	1.36	4.69	1.66	1.57	1.61	1.14	1.89	1.26	1.72
July	0	.78	0	.59	.31	1.14	0	1.29	T	.94
Aug.	10.35	2.03	6.22	4.57	9.25	2.26	7.80	1.55	6.81	1.96
Sept.	9.61	3.14	11.42	6.28	8.19	2.88	9.96	2.73	10.83	2.70
Oct.	.20	1.62	0	.71	0	2.00	.87	1.37	.79	1.21
Nov.	2.13	1.00	2.09	1.21	2.01	1.09	2.36	.98	2.20	1.01
Dec.	.51	.76	1.85	.98	1.77	.99	.71	.93	.79	.73
Yearly	31.06	17.13	30.13	22.55	26.72	18.55	26.79	16.52	26.54	15.20

Month	Escuela Preparatoria, Nuevo Laredo, Tamps.		Jarita, Nuevo León		Nuevo Laredo Km. 26 SSW, Tamps.		✝ Nuevo Laredo Km. 52 SSW, N. León		San Ignacio, Tamaulipas	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.			0	0.20	0.08	0.60	0.08	0.34	0.39	0.51
Feb.	1.38	1.12	1.57	.81	.39	.67	T	.52	.39	.77
Mar.	.83	.46	1.61	.55	.79	.48	1.18	.51	1.14	.63
Apr.	.55	1.69	1.18	1.21	1.18	1.81	1.18	1.28	2.32	2.01
May	0	2.65	0	2.30	0	1.72	0	1.64	0	3.85
June	1.14	1.73	1.38	1.22	1.18	.94	1.50	1.52	.79	.67
July	0	.38	0	.12	.24	.41	.47	.14	.08	.21
Aug.	6.77	4.60	5.51	2.37	7.48	2.18	3.94	2.02	8.27	2.78
Sept.	9.65	5.43	9.84	4.13	9.45	3.18	9.45	4.49	11.73	4.64
Oct.	.59	.58	0	1.04	.39	1.23	1.97	2.02	2.36	1.64
Nov.	2.01	1.17	1.57	1.14	3.11	1.16	2.76	.85	2.95	1.11
Dec.	.75	1.44	.98	.82	1.10	.97	1.38	.99	.79	1.02
Yearly			23.64	15.91	25.39	15.35	23.91	16.32	31.21	19.84

T Trace ✝ Formerly published as Nuevo Laredo Km. 50 SSW, Tamaulipas

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Month	Rancho San Juan de la Palma, Tamps.		Santo Domingo, Coahuila		La Babia, Coahuila		El Treinta, Coahuila		Conchos, Coahuila	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.06	0.76	0.16	0.56	0	0.33	0	0.44	0.04	0.30
Feb.	.55	.92	1.14	.73	0	.13	0	.19	.20	.58
Mar.	1.34	.60	.35	.19	.87	.39	2.36	.69	.79	.28
Apr.	5.35	2.04	1.97	.91	1.26	.74	1.26	1.46	0	1.77
May	.12	2.11	.43	2.16	.59	1.55	0	1.90	.12	2.41
June	2.05	1.68	1.22	4.63	1.18	1.96	1.34	2.41	5.51	1.84
July	.55	.78	2.80	2.92	1.97	1.55	1.77	1.06	.31	1.74
Aug.	5.79	1.78	3.86	3.47	.55	1.02	1.61	1.70	4.37	2.17
Sept.	11.57	3.61	8.35	4.03	5.67	3.12	7.87	4.09	5.51	3.27
Oct.	0	1.40	4.57	2.20	1.30	1.15	.87	1.57	.79	2.15
Nov.	2.99	1.21	1.57	.57	0	.14	.43	.29	0	.58
Dec.	.67	.88	T	.66	.28	.27	0	.31	.47	.58
Yearly	32.04	17.71	26.42	23.03	13.67	12.35	17.51	16.11	18.11	17.67

Month	Nueva Rosita, Coahuila		Villa Juárez, Coahuila		Cuatro Ciénegas, Coahuila		Ocampo, Coahuila		San Buenaventura, Coahuila	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.62	0.08	0.59	0	0.32	0	0.46		0.64
Feb.	0	.48	.55	.46	.04	.33	0	.09	0.20	.48
Mar.	1.89	.36	.87	.24	.87	.09	.28	.09	2.20	.29
Apr.	2.09	1.29	1.30	1.22	.04	.29	.87	.94	1.81	.73
May	2.09	2.62	0	1.98	T	.81	0	1.01		1.54
June	.28	2.06	.20	1.03	.08	.60	0	1.32		1.49
July	1.54	1.42	1.65	.82	1.50	.80	.28	2.38	3.70	1.46
Aug.	2.99	1.83	.75	1.54	1.18	.94	2.01	1.77	1.50	1.72
Sept.	4.88	2.74	3.66	3.20	1.42	1.45	2.76	2.53	5.98	2.39
Oct.	0	1.63	.39	1.75	.24	.78	.31	1.18	.87	1.30
Nov.	.47	.53	.75	.51	0	.36	0	.15	.39	.52
Dec.	.28	.66	0	.39	.59	.43	.55	.50	.39	.62
Yearly	16.51	16.24	10.20	13.73	5.96	7.20	7.06	12.42		13.18

Month	Monclova, Coahuila		Progreso, Coahuila		Don Martín, Coahuila		Laguna de Salinillas, Nuevo León		El Cuervo, Nuevo León	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0	0.48	T	0.47		0.74	0.08	0.64	0	0.38
Feb.	.31	.48	T	.48	0.47	.64	.59	.62	0	.43
Mar.	1.54	.30	2.64	.31	1.10	.46	.79	.48	0	1.25
Apr.	1.14	.60	2.44	1.30	1.89	1.23	2.20	1.05	2.05	1.52
May	T	1.50	.16	2.28	.04	2.21	.20	2.43	1.73	3.98
June	.24	1.21	.43	1.26	2.20	1.58	1.18	1.40	1.50	.83
July	.31	1.41	.28	.74	.94	.94	.24	.67	0	0
Aug.	2.91	1.58	3.70	2.00	7.20	2.01	2.68	2.43	3.58	2.08
Sept.	10.08	3.00	8.15	3.03	4.41	2.89	7.72	3.09	7.09	5.74
Oct.	2.40	1.23	.31	1.81	1.22	1.66	1.42	1.72	0	.37
Nov.	.39	.57	.91	.49	.75	.58	1.26	.59	0	.15
Dec.	.28	.54	.51	.57	.55	.69	.39	.59	0	.05
Yearly	19.60	12.90	19.53	14.74		15.63	18.75	15.71	15.95	16.78

Month	Lampazos, Nuevo León		Anáhuac, Nuevo León		La Gloria, Nuevo León		Bustamante, Nuevo León		Sabinas Hidalgo, Nuevo León	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.20	0.65	0.16	0.73	0.55	0.43	0.39	0.61	0	0.51
Feb.	.43	.91	.51	.61	0	.73	.91	.73	.31	1.12
Mar.	4.29	.63	.63	.51	.63	.24	.98	.58	2.52	.77
Apr.	2.91	1.45	1.10	1.14	1.50	1.40	.94	1.26	1.30	1.43
May	.79	2.67	.16	2.50	0	2.83	.63	1.66	.08	2.50
June	.39	1.99	1.30	1.40	1.97	1.76	0.	2.31	0	2.84
July	1.30	1.23	.16	1.17	0	1.57	1.06	.83	2.28	1.73
Aug.	7.52	1.96	7.17	2.13	3.74	1.86	13.82	3.40	12.52	3.01
Sept.	9.80	5.20	9.96	3.19	8.74	5.28	14.29	6.45	13.39	8.06
Oct.	1.26	1.55	1.57	1.52	.39	1.46	1.42	1.76	.59	3.10
Nov.	.79	.54	1.26	.58	1.85	.77	1.85	.92	1.38	1.30
Dec.	.04	.50	.31	.77	.71	.85	.20	.72	.39	.86
Yearly	29.72	19.28	24.29	16.25	20.08	19.18	36.49	21.23	34.76	27.23

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches.

Month	Vallecillo, Nuevo León		Las Tortillas, Tamaulipas		Río Salado Ribereña, Tamaulipas		Aniego 166, Tamaulipas		La Bandera, Tamaulipas	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.47	0.42	0.08	0.37	0.35	0.52	0.59	0.80	0.59	0.65
Feb.	1.02	.97	.39	.90	.31	1.05	.12	1.11	.20	.77
Mar.	.79	.42	.75	.60	.39	.68	.59	.75	2.05	1.02
Apr.	.16	1.13	1.77	1.94	1.61	2.53	1.38	1.33	1.65	1.60
May	.16	1.81	0	3.33	0	4.43	.39	4.81	.20	4.10
June	0	2.08	1.22	1.72	1.97	1.44	2.56	.90	2.76	2.83
July	.94	.96	0	.60	.59	.34	.39	.24	1.18	.52
Aug.	6.77	1.70	1.77	.89	9.69	3.69	6.89	3.81	8.46	3.21
Sept.	15.91	5.56		3.51	10.63	4.62	19.49	7.74	18.50	6.05
Oct.	.47	2.33	.83	1.12	.79	1.73	.79	1.11	.87	1.51
Nov.	1.38	.75	3.07	1.25	2.56	1.19	2.76	1.21	2.56	1.03
Dec.	.55	.79	.79	1.08	.71	1.44	.43	.92	.43	.94
Yearly	28.62	18.92		17.31	29.60	23.66	36.38	24.73	39.45	24.23

Month	Nueva Cd. Guerrero, Tamaulipas		San Javier, Nuevo León		Cd. Mier Km. 8 SW, Tamaulipas		Cd. Mier, Tamaulipas		Miguel Alemán, Tamaulipas	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.02	1.05	0.79	0.71	0.79	0.74	1.14	1.18	1.02	0.88
Feb.	.16	.84	.24	.84	.16	1.04	.12	1.21	.55	1.16
Mar.	1.18	.60	2.36	1.15	.79	1.20	.47	.90	.04	.14
Apr.	3.11	1.49	3.23	2.00	1.06	1.42	1.61	1.58	1.38	1.90
May	.20	2.18	1.97	4.53	1.18	4.26	.75	3.56	.63	3.91
June	.79	2.23	.39	2.96	1.97	2.26	.39	2.05	1.22	1.72
July	.47	.68	0	.28	0	.28	0	.34	.51	.81
Aug.	7.44	1.99	8.07	3.42	11.02	3.68	16.61	2.98	9.02	3.16
Sept.	17.95	3.81	19.29	6.38	19.49	6.21	21.10	4.71	26.42	9.10
Oct.	1.46	2.38	.91	1.90	1.06	2.09	.98	2.41	.63	1.19
Nov.	3.03	1.02	3.15	1.50	3.35	1.14	3.78	1.32	2.56	1.52
Dec.	.47	.63	.47	1.06	.39	1.11	.39	.81	.24	1.00
Yearly	37.28	18.90	40.87	26.73	41.26	25.43	47.34	23.05	44.22	26.49

Month	Parras, Coahuila		General Cepeda, Coahuila		Reata, Coahuila		San Antonio de las Alazanas, Coahuila		Saltillo, Coahuila	
	1967	Average	1967	Average	1967	Average	1967	Average	1906	1913
Jan.	0.67	0.45	1.65	0.53	0.47	0.38	1.54	1.01		
Feb.	.16	.36	1.34	.50	0	.23	.20	.94		
Mar.	2.28	.39	1.73	.33	.94	.19	.35	.39		
Apr.	.04	.30	1.30	.42	0	.33	.35	1.00		
May	.08	1.07	.43	.86	.24	.77	.71	1.87		
June	.67	1.90	2.13	2.17	.98	.83	1.26	2.29		3.62
July	3.82	2.51	1.97	3.27	0	.51	3.86	3.24	5.98	
Aug.	10.00	2.83	4.88	2.96	2.99	1.73	5.59	3.00	6.89	
Sept.	3.03	2.58	4.80	2.83	3.27	1.45	1.85	2.45	8.23	
Oct.	1.50	1.35	1.81	1.33	1.73	.83	1.14	2.28		
Nov.	0	.47	.04	.51	.31	.42	0	1.44		
Dec.	.91	1.00	.16	.56	0	.32	.08	1.12		
Yearly	23.16	15.21	22.24	16.27	10.93	7.99	16.93	21.03	25.86	19.68

Month	Saltillo, Coahuila									
	1914	1915	1916	1917	1918	1919	1922	1923	1924	1925
Jan.		1.50	0.43	0.08	0.04	1.10		0.20	0.24	
Feb.		.04			.08	.55		2.83	2.64	
Mar.		.39	.20					1.85		2.48
Apr.		3.46	1.34		.63	1.02		1.73	1.06	3.03
May	4.84	2.09		.63	2.52	3.50	0.59	.47	1.10	2.44
June	.47		1.30	.35	9.33	7.13		.59	.79	2.28
July	1.26	2.44	3.82	.04	.31	4.25		.43	3.07	.79
Aug.	3.43	7.76	1.26	2.28	.51	2.72	.79	.91	1.69	1.18
Sept.		6.61	3.74	2.32			5.94		5.94	3.07
Oct.			.04		4.65		.71		1.18	.94
Nov.			.24		1.69					.94
Dec.		.39			.04			2.32	.24	.94
Yearly	22.35							19.26		

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Month	Saltillo, Coahuila						Ramos Arizpe, Coahuila		Hedionda Grande, Coahuila	
	1926	1933	1938	1967	Average		1967	Average	1967	Average
Jan.	0.35			0.59	0.57		0.87	0.48	0.79	0.72
Feb.			0.43	.55	.55		.94	.37	1.26	1.00
Mar.	1.18		.24	.43	.40		1.57	.29	1.06	.45
Apr.			4.25	.83	.84		.47	.47	.12	.98
May				1.18	1.19		.43	.86	.67	2.16
June				2.20	2.20		T	1.04	.31	1.47
July				2.56	2.58		1.10	1.36	2.13	2.26
Aug.				2.44	2.43		.94	1.34	4.29	2.41
Sept.		2.40		2.76	2.69		5.00	1.80	2.80	3.42
Oct.		2.24		1.30	1.29		1.57	.79	1.42	2.32
Nov.	.12			.83	.85		.04	.46	.08	1.02
Dec.	.28			.63	.66		.08	.54	.16	.58
Yearly		12.32	21.09	16.30	16.25		13.01	9.80	15.09	18.79

Month	Carbonera, Nuevo León		Icamole, Nuevo León		Mina, Nuevo León		La Popa, Nuevo León		Ciénega de Flores, Nuevo León	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	2.76	1.07	0.63	0.39	0.39	0.49	0.55	0.54	1.73	1.26
Feb.	0	1.02	.20	.30	.55	.48	.24	.36	0	.87
Mar.	3.23	.79	.98	.13	0	.12	1.02	.18	6.77	1.13
Apr.	1.30	1.03	.63	.32	1.18	.55	.31	.65	2.80	1.52
May	.20	2.33	1.06	.77	0	.55	0	1.10	.79	2.45
June	1.02	1.36	0	.70	.08	1.14	0	.86	1.50	2.70
July	2.83	2.73	.31	.48	.47	.46	0	.75	.16	1.74
Aug.	5.28	3.16	2.68	.86	6.85	1.45	7.40	2.03	19.76	4.36
Sept.	3.03	3.58	7.76	2.42	8.70	3.40	7.17	3.40	16.02	5.58
Oct.	1.10	1.90	.39	.98	.16	1.37	.47	.97	1.54	2.71
Nov.	.98	1.13	.20	.48	.55	.72	.63	.66	2.60	1.11
Dec.	.39	1.38	.12	.59	.24	.54	.35	.69	1.42	1.09
Yearly	22.12	21.48	14.96	8.42	19.17	11.27	18.14	12.19	55.09	26.52

Month	Topo Chico, Nuevo León		Higueras, Nuevo León		Los Ramones, Nuevo León		Los Herrera (La Tableta), Nuevo León		Rinconada, Nuevo León	
	1967	Average	1967	Average	1967	Average	1967.	Average	1967	Average
Jan.	0	0.38	0.24	0.67	0.79	0.64	0.91	0.62	0.75	0.27
Feb.	.31	.60	0	.54	.51	.77	.12	.71	T	.31
Mar.	0	.50	3.50	.62	1.57	.64	.08	.60	.91	.19
Apr.	1.65	1.00	2.05	1.19	1.02	1.86	4.80	1.51	T	.53
May	3.54	1.24	.31	1.85	T	2.36	.04	2.74	T	.51
June	1.10	1.99	2.24	2.29	4.92	2.97	.71	2.39	0	.81
July	2.99	1.14	.24	1.90	.59	1.43	.08	1.07	0	.29
Aug.	17.72	3.07	12.48	2.95	17.60	3.72	10.04	2.61	5.98	1.26
Sept.	12.76	4.22	18.74	4.78	13.11	5.12	16.30	4.44	9.09	1.70
Oct.	4.80	2.51	1.57	1.72	1.73	3.07	1.50	2.58	2.64	.93
Nov.	1.85	.69	2.20	.81	2.72	.64	2.20	.69	.08	.28
Dec.	.04	.45	.55	.66	.43	.49	.47	.49	0	.34
Yearly	46.76	17.79	44.12	19.98	44.99	23.71	37.25	20.45	19.45	7.42

Month	Santa Catarina, Nuevo León		Monterrey, Nuevo León		Apodaca, Nuevo León		A. Blanca Canoas, Nuevo León		Pajonal, Nuevo León	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.63	0.70	0.39	0.62	0.79	1.21	0.59	0.91	0.75	0.64
Feb.	.51	.46	1.18	.65	1.18	1.07	.43	.87	1.57	.78
Mar.	1.73	.31	3.07	.77	2.20	1.20	1.26	.30	1.46	.25
Apr.	.24	.70	1.10	1.18	.28	1.02	0	.64	.24	.70
May	.08	.85	1.93	1.58	.47	2.12	.91	2.12	.08	1.85
June	.71	1.86	.31	2.68	.16	2.34	0	1.85	0	2.27
July	1.10	1.12	2.13	2.26	0	.21	.87	1.37	0	2.64
Aug.	16.85	3.02	19.21	3.18	18.90	5.81	3.54	2.96	14.17	4.37
Sept.	13.43	3.89	13.66	5.86	15.74	7.86	10.47	4.77	11.77	5.75
Oct.	2.13	1.77	3.03	3.18	1.73	1.52	0	2.29	1.69	2.60
Nov.	.08	.50	1.42	1.27	1.97	1.10	0	.81	0	.73
Dec.	0	.58	.16	.72	.87	1.04	0	.55	0	.66
Yearly	37.49	15.76	47.59	23.95	44.29	26.50	18.07	19.44	31.73	23.24

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Month	Cadereyta, Nuevo León		La Cruz, Nuevo León		Túnel San Francisco, Nuevo León		Las Comitas, Nuevo León		Villa de Santiago, Nuevo León	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.94	0.75	0.71	0.76	0.79	0.51	0.63	0.34	1.61	0.91
Feb.	1.97	.97	.39	.74	3.07	1.33	.83	.39	1.97	1.05
Mar.	3.62	1.17	1.06	.29	2.13	1.84	1.46	.30	2.76	1.16
Apr.	1.81	2.07	0	.48	2.48	2.25	.20	.81	2.28	1.69
May	T	2.27	.87	1.71	.12	2.72	.47	1.03	1.18	2.65
June	.87	3.21	0	1.99	2.44	5.99	.51	2.40	3.03	5.26
July	4.17	2.32	1.22	2.33	1.30	2.78	1.89	1.72	2.36	3.10
Aug.	16.06	3.52	3.39	3.68	24.80	7.48	11.97	3.55	26.54	6.10
Sept.	12.95	4.92	10.79	4.48	16.69	10.72	11.26	4.53	22.32	9.04
Oct.	1.18	3.19	0	2.38	3.15	5.68	2.01	2.05	2.80	5.12
Nov.	2.76	1.16	0	.75	2.36	1.86	0	.51	1.38	1.45
Dec.	T	.73	0	.34	.12	1.06	0	.40	.08	.93
Yearly	46.33	26.28	18.43	19.93	59.45	44.22	31.23	18.03	68.31	38.46

Month	Villa Allende, Nuevo León		San Juan, Nuevo León		Laguna de Sánchez, Nuevo León		Casillas, Nuevo León		Ciénega del Toro, Nuevo León	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.79	0.88	T	0.45	1.30	0.54	0.12	0.45	2.64	1.74
Feb.	2.99	1.19	T	.76	.79	.62	.47	.94	.28	1.06
Mar.	2.44	1.27	.47	.79	1.69	.48	2.05	.60	.63	.62
Apr.	3.39	2.45	2.01	1.98	2.05	1.20	1.10	.97	.08	1.28
May	.31	3.39	T	2.05	.31	1.98	.24	1.97	2.17	3.26
June	1.42	4.49	0	2.21	1.42	3.30	1.69	3.64	1.38	2.26
July	3.62	2.67	0	.91	1.97	2.54	.79	1.87	2.99	2.36
Aug.	23.39	5.40	17.56	3.78	10.71	4.45	12.05	3.09	3.86	3.42
Sept.	18.93	7.62	15.04	4.96	14.72	5.48	12.24	3.93	2.28	4.85
Oct.	1.77	5.65	3.07	3.00	1.97	3.09	.08	3.22	.59	4.00
Nov.	2.24	1.59	.31	.93	.24	.56	.79	.67	.91	1.01
Dec.	.59	1.02	T	.52	.08	.59	2.29	1.01	.20	1.15
Yearly	61.88	37.62	38.46	22.34	37.25	24.83	33.91	22.36	18.01	27.01

Month	Potrero Redondo, Nuevo León		Mimbres, Nuevo León		Rayones, Nuevo León		Rusio, Nuevo León		Galeana, Nuevo León	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	0.47	0.62	1.38	0.97	T	0.32	1.46	0.85	0	0.23
Feb.	3.11	1.84	1.30	1.38	.16	.31	T	.80	1.22	.40
Mar.	3.39	1.12	5.31	1.22	.28	.29	3.43	.77	1.26	.31
Apr.	1.46	2.16	.98	1.50	.08	.98	.31	1.31	.63	.81
May	1.30	3.03	1.97	2.35	0	1.34	1.02	2.10	.79	1.08
June	3.98	7.40	1.77	2.42	0	2.04	.79	1.40	1.97	2.13
July	2.64	4.39	2.72	2.27	0	.91	.71	1.04	1.77	1.40
Aug.	24.96	6.13	3.62	3.55	9.57	2.85	1.65	1.25	5.39	2.94
Sept.	24.02	11.79	3.70	2.82	6.14	3.04	2.28	1.92	4.49	2.89
Oct.	1.77	6.65	1.30	1.60	0	1.57	.71	1.62	0	1.41
Nov.	.71	1.48	.20	.77	0	.35	.39	.77	0	.24
Dec.	0	1.10	.16	1.62	0	.27	1.18	1.19	0	.52
Yearly	67.81	47.71	24.41	22.47	16.23	14.27	13.93	15.02	17.52	14.36

Month	Iturbide, Nuevo León		Cabezones, Nuevo León		Linares, Nuevo León		Montemorelos, Nuevo León		Gral. Teran (Expermt. Station), Nuevo León	
	1967	Average	1967	Average	1967	Average	1967	Average	1958	1959
Jan.	1.38	0.54	0.63	0.86	0.83	0.91	0.87	0.79		
Feb.	.98	.63	.98	.80	.71	.90	1.42	.98		1.34
Mar.	1.30	.52	2.83	1.21	2.32	1.14	4.92	1.17		.08
Apr.	.28	1.07	1.93	2.42	.94	2.29	2.20	2.29		.91
May	.35	1.89	.35	3.42	.24	3.56	.39	3.05		.39
June	2.60	3.30	2.17	3.82	5.35	3.51	1.73	3.54		2.76
July	2.01	2.35	2.28	2.03	1.61	2.50	1.22	1.88		2.68
Aug.	8.90	4.09	22.40	5.89	17.64	3.68	19.68	4.18	0.87	.87
Sept.	8.31	5.37	10.87	7.74	9.49	6.27	13.11	5.57	4.96	2.72
Oct.	1.77	2.70	2.36	2.66	1.34	3.39	1.54	3.69	12.13	2.28
Nov.	1.02	.56	1.30	1.33	2.17	1.19	3.07	1.70	.94	.12
Dec.	0	.51	.31	.93	.47	.92	.43	.92	0	0
Yearly	28.90	23.53	48.41	33.11	43.11	30.26	50.58	29.76		

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Month	Gral. Teran (Experiment Station), Nuevo León									
	1960	1961	1962	1963	1964	1965	1966	1967	Average	
Jan.	0.08	0.71	0.20	0.24	0.24	0.43	2.13	0.59	0.58	
Feb.	1.81	.08	0	.28	.55	1.69	2.20	.94	.99	
Mar.	.59	1.42	.39	.28	.83	1.57	3.98	1.57	1.19	
Apr.	.16	.16	1.14	1.18	.79	.67	5.55	1.50	1.34	
May	3.46	1.10	1.18	8.11	4.65	1.46	6.30	2.95	3.29	
June	2.13	4.72	6.30	.43	.51	1.54	4.41	2.91	2.86	
July	1.85	.16	.43	1.42	3.11	.55	1.81	1.46	1.50	
Aug.	4.45	2.64	0	.28	.51	2.20	4.06	3.27	1.92	
Sept.	3.46	5.55	1.50	8.50	9.53	8.74	1.61	6.22	5.28	
Oct.	1.46	5.04	2.87	5.08	6.10	3.43	5.35	4.57	4.83	
Nov.	1.18	2.20	3.78	1.02	.31	1.38	.28	1.42	1.26	
Dec.	.31	.20	1.50	2.52	.39	2.20	0	.75	.79	
Yearly	20.94	23.98	19.29	29.34	27.52	25.86	37.68	28.15	25.83	

Month	San Rafael, Nuevo León		El Cuchillo, Nuevo León		Gral. Bravo, Nuevo León		Las Enramadas, Nuevo León		Cerralvo, Nuevo León	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.46	1.13	0.71	0.64	1.02	0.76	0.98	0.90	0.31	0.66
Feb.	.47	.97	.08	.53	.16	.50	.59	.72	.59	.63
Mar.	2.05	.58	.35	.53	0	.57		.74	1.10	.61
Apr.	.75	.80	1.65	1.40	4.09	1.55	2.95	1.81	.16	1.96
May	.39	2.01	.08	2.12	.79	2.89	0	3.03	.08	2.75
June	.28	1.90	.79	2.34	.87	2.47	.39	3.27	2.76	2.44
July		2.91	.04	1.50	.16	2.00		2.00	.31	1.30
Aug.		1.57	7.09	2.73	10.47	2.59	19.96	3.61	15.98	3.73
Sept.	4.88	3.08	16.06	4.08	19.13	4.17	20.91	6.10	16.14	5.04
Oct.	.39	1.17	1.65	2.17	1.57	2.11	1.97	2.59	1.02	2.70
Nov.	.39	.77	1.57	.55	2.76	.90	2.32	.74	1.69	.73
Dec.	.08	1.20	.39	.51	.51	.78	.39	.77	.16	.49
Yearly		18.09	30.46	19.10	41.53	21.29		26.28	40.30	23.04

Month	Comales, Tamaulipas		Camargo, Tamaulipas		Valadeces, Tamaulipas		Reynosa Km. 40 SW, Nuevo León		Bajo Río San Juan, Tamaulipas No. 2-29	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.38	0.80	1.46	0.96	1.89	1.27	1.50	0.78	1.65	0.97
Feb.	.24	.69	.28	.95	.47	1.06	.16	.84	.43	1.06
Mar.	T	.64	T	.55	.08	.67	0	.37	T	.46
Apr.	.71	1.56	2.36	1.80	1.54	1.93	2.05	1.43	2.36	1.66
May	1.97	2.18	.91	2.12	1.73	4.70	2.13	3.02	.59	4.93
June	2.40	1.85	2.17	1.80	.31	2.48	2.20	1.55	.55	2.19
July	.55	.93	1.89	.86	1.89	1.06	2.60	.90	1.18	.51
Aug.	9.96	2.53	10.08	1.72	4.33	1.49	9.76	2.40	5.91	1.98
Sept.	19.68	4.06	17.09	4.18	14.68	6.62	22.44	6.47	18.11	7.02
Oct.	3.07	2.35	1.30	1.89	.83	2.65	1.65	2.12	.94	1.92
Nov.	2.44	.74	4.65	1.34	3.90	1.64	0	.64	3.50	1.64
Dec.	.35	.76	.59	.83	1.18	1.45	1.02	1.33	.59	1.35
Yearly	42.75	19.09	42.78	19.00	32.83	27.02	45.51	21.85	35.81	25.69

Month	San Miguel de Camargo, Tamaulipas		Reynosa Km. 22 SW, Tamaulipas		Bajo Río San Juan, Tamaulipas No. 2-38		Bajo Río San Juan, Tamaulipas No. 2-33		Argüelles, Tamaulipas	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.73	0.64	1.97	0.94	1.81	1.09	1.65	1.09	1.97	0.96
Feb.	.55	.87	.20	.52	.08	.88	.59	.94	.20	1.06
Mar.	.31	.47	0	.35	0	.37	.55	.40	0	.71
Apr.	2.95	1.80	1.97	.96	1.85	1.52	1.57	1.75	1.57	1.06
May	1.06	2.08	.98	3.47	.63	4.60	.79	4.33	.98	3.07
June	.94	1.70	1.38	2.62	.79	3.69	1.42	3.67	1.77	2.68
July	1.65	.67	2.36	.88	2.36	.61	.59	.15	0	.43
Aug.	6.38	1.61	12.60	2.78	7.09	3.27	8.03	2.48	6.50	1.60
Sept.	11.54	4.02	21.26	6.31	12.52	5.49	20.71	7.64	19.96	5.81
Oct.	1.46	2.42	1.57	2.23	1.10	2.03	1.06	2.72	1.57	1.16
Nov.	3.70	1.15	2.36	1.12	4.61	2.08	3.78	1.67	1.97	1.02
Dec.	.87	.93	1.57	1.67	1.10	1.65	1.73	2.25	1.97	2.00
Yearly	33.14	18.36	48.22	23.85	33.94	27.28	42.47	29.09	38.46	21.56

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Month	Presa Anzaldúas, Tamaulipas		Reynosa, Tamaulipas		Méndez, Tamaulipas		Bajo Río San Juan, Tamaulipas No. 3-55		Bajo Río San Juan, Tamaulipas No. 3-58	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.10	0.67	1.54	0.94	2.20	0.93	1.61	1.57	1.57	1.50
Feb.	.20	.39	.31	.83	2.60	.90	.35	1.27	.35	1.07
Mar.	.51	.30	.31	.70	1.02	.87	.39	.58	.59	.49
Apr.	1.18	1.55	.94	1.16	.63	1.74	0	1.10	0	1.33
May	1.10	2.73	.75	2.32	1.02	2.49	2.91	4.21	2.20	4.02
June	1.65	2.09	1.06	2.02	1.73	2.60	1.10	1.48	1.06	1.83
July	.47	.52	.20	.90	1.34	.90	.08	.80	.12	.38
Aug.	3.58	1.64	4.92	1.46	9.21	3.16	5.75	2.16	5.75	2.11
Sept.	12.91	3.76	16.93	3.10	19.33	4.56	12.05	4.80	17.95	6.19
Oct.	1.65	2.25	2.13	2.12	.87	2.34	3.82	4.82	3.19	4.47
Nov.	2.20	.97	3.70	1.03	3.54	.70	1.34	.94	3.90	1.85
Dec.	1.18	1.05	.67	.90	.43	.49	1.10	1.49	1.38	1.56
Yearly	27.73	17.92	33.46	17.48	43.92	21.68	30.50	25.22	38.06	26.80

Month	Bajo Río San Juan, Tamaulipas No. 3-60		Bajo Río San Juan, Tamaulipas No. 3-47		Bajo Río San Juan, Tamaulipas No. 3-63		Río Bravo, Tamaulipas		Retamal, Tamaulipas	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.22	1.29	1.65	1.60	1.54	1.37	1.81	0.84	1.42	0.78
Feb.	.28	.98	.35	1.20	.20	1.48	.28	1.15	.39	.92
Mar.	.43	.38	1.26	.66	.98	.45	.87	.62	1.26	.65
Apr.	0	1.52	0	1.78	0	.65	0	1.52	0	1.33
May	1.73	4.02	1.57	5.68	1.10	3.67	1.73	2.29	2.05	2.34
June	1.97	2.26	2.80	2.98	1.54	2.51	1.85	2.30	.83	2.10
July	.24	.52	.28	.59	0	.53	0	1.08	0	.72
Aug.	5.20	1.85	9.06	2.82	10.04	3.27	6.22	2.32	6.57	2.24
Sept.	17.64	5.71	14.09	5.52	16.89	7.02	19.65	4.38		2.83
Oct.	3.07	4.18	.24	3.36	.39	2.86	3.07	2.63		2.43
Nov.	3.07	1.77	2.91	2.00	1.02	1.32	2.13	1.26	4.72	1.37
Dec.	1.02	1.34	.83	1.94	1.34	1.56	1.42	1.06	1.46	1.01
Yearly	35.87	25.82	35.04	30.13	35.04	26.69	39.03	21.45		18.72

Month	Bajo Río Bravo, Tamaulipas No. 3-15		Bajo Río Bravo, Tamaulipas No. 4-16		Bajo Río Bravo, Tamaulipas No. 3-14		Bajo Río Bravo, Tamaulipas No. 3-17		Bajo Río Bravo, Tamaulipas No. 2-8	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.50	1.27	1.38	1.51	1.65	1.38	1.46	1.32	1.54	1.34
Feb.	.39	.98	.83	1.23	.16	.51	.51	1.29	.87	1.32
Mar.	1.54	.70	2.24	.90	.75	.42	1.46	.80	3.70	1.21
Apr.	0	1.13	0	.76	0	.99	0	.73	0	1.10
May	2.83	3.95	1.06	3.64	2.99	4.54	3.19	4.72	2.60	3.98
June	1.34	2.36	2.56	2.91	2.05	2.63	2.87	3.14	.75	1.56
July	.08	1.50	.55	.98	.16	.95	1.06	.90	.20	1.37
Aug.	7.32	3.40	9.13	3.19	2.83	1.29	4.25	2.08	8.82	3.71
Sept.	11.54	4.11	13.70	5.38	10.67	3.52	13.82	4.85	15.83	5.32
Oct.	2.80	2.90	2.60	3.02	2.80	2.28	2.09	2.04	2.83	2.76
Nov.	1.81	1.83	3.70	3.05	1.54	1.39	2.44	2.18	3.78	4.00
Dec.	2.24	1.70	1.10	1.58	1.42	1.56	2.01	1.75	1.22	1.58
Yearly	33.39	25.83	38.85	28.15	27.02	21.46	35.16	25.80	42.14	29.25

Month	Bajo Río Bravo, Tamaulipas No. 2-6		Bajo Río Bravo, Tamaulipas No. 2-10		Valle Hermoso, Tamaulipas		Control, Tamaulipas		Bajo Río Bravo, Tamaulipas No. 2-5	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.46	1.62	2.05	1.41	1.65	0.83	1.26	1.13	1.50	1.52
Feb.	.67	1.22	.47	3.32	.47	1.25	.75	.96	.35	1.36
Mar.	4.84	1.68	5.00	1.54	1.42	.54	1.77	.66	2.28	.86
Apr.	0	1.00	0	.71	0	1.43	0	1.46	0	.90
May	3.19	3.65	1.85	2.90	2.44	2.52	1.89	2.77	2.17	3.84
June	.98	1.64	1.06	1.52	.59	2.73	1.18	2.73	1.02	1.68
July	1.97	1.13	0	.60	.94	1.28	1.42	1.25		.70
Aug.	6.54	2.86	7.48	2.35	5.04	1.65	5.91	2.73	4.57	2.36
Sept.	15.35	4.76	16.57	5.02	18.46	5.35	12.28	4.84	16.97	5.57
Oct.	2.56	2.35	2.20	1.93	1.34	2.36	3.35	2.40	2.01	2.16
Nov.	2.32	2.36	3.15	1.94	3.62	1.60	1.85	1.31	3.07	2.10
Dec.	2.24	2.04	.79	1.39	.94	.94	1.42	1.03	1.57	1.70
Yearly	42.14	26.31	40.62	24.63	36.91	22.48	33.08	23.27		24.75

T Trace

RAINFALL ON THE RIO GRANDE WATERSHED IN MEXICO

In Inches

Month	Bajo Río Bravo, Tamaulipas No. 2-11		Bajo Río Bravo, Tamaulipas No. 1-2		Bajo Río Bravo, Tamaulipas No. 2-7		Bajo Río Bravo, Tamaulipas No. 1-4		Bajo Río Bravo, Tamaulipas No. 1-18	
	1967	Average	1967	Average	1967	Average	1967	Average	1967	Average
Jan.	1.65	1.28	1.10	1.13	1.81	1.48	1.69	1.60	1.89	1.60
Feb.	.47	.88	.24	1.08	.39	1.07	.55	1.17	.39	1.19
Mar.	2.01	.86	1.54	.57	2.36	.91	1.61	.70	.55	.26
Apr.	0	.84	0	.75	0	.69	0	.73	0	.61
May	2.13	4.08	1.54	4.26	1.97	3.40	2.64	4.48	.16	2.84
June	.83	2.80	.55	2.50	.98	2.37	.91	2.01	.87	2.34
July	0	1.31	2.68	1.16	1.30	1.07	.79	.55	0	.90
Aug.	8.07	3.55	4.25	3.54	7.52	3.35	3.58	2.26	4.65	2.22
Sept.		1.97	17.09	5.47	11.42	4.82	18.94	6.42		2.20
Oct.	1.85	1.54	3.62	3.06	2.36	1.58	4.25	2.46		2.33
Nov.	2.52	1.69	5.20	1.93	2.36	2.51	1.73	1.52	.91	1.24
Dec.	1.38	1.88	1.10	1.56	1.06	1.81	1.77	1.88	1.26	2.31
Yearly		22.68	38.91	27.01	33.53	25.06	38.46	25.78		20.04

Month	Bajo Río Bravo, Tamaulipas No. 1-3		Bajo Río Bravo, Tamaulipas No. 1-13		Bajo Río Bravo, Tamaulipas No. 1-12		Matamoros, Tamaulipas			
	1967	Average	1967	Average	1967	Average	1967	Average		
Jan.	1.97	1.55	2.05	1.50	1.89	1.45	1.73	1.70		
Feb.	.24	1.28	.31	1.14	.20	.98	.51	1.92		
Mar.	1.42	.61	2.13	.81	1.02	.39	.63	.50		
Apr.	0	.61	0	.55	0	.63	0	1.30		
May	1.26	4.18	1.69	2.16	1.50	3.11	.98	2.19		
June	.39	1.40	.87	1.82	.35	1.77	.79	2.61		
July	1.34	1.10	0	.92	1.14	1.15	T	1.26		
Aug.	5.55	2.38	5.16	2.40	3.19	1.09	7.64	2.17		
Sept.	13.39	4.54	12.87	4.53	10.90	5.24	22.05	6.64		
Oct.	4.57	2.30	4.37	1.99	3.66	3.23	4.02	3.16		
Nov.	1.85	3.00	1.73	2.30	2.36	1.74	1.14	1.46		
Dec.	.91	1.76	.59	1.66	.79	1.71	1.42	2.17		
Yearly	32.89	24.71	31.77	21.78	27.00	22.49	40.91	27.08		

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AVERAGE RAINFALL ON SUBDIVISIONS OF THE RIO GRANDE WATERSHED

With Averages for the 97 Years 1871-1967, Inclusive

In Inches

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 Above Río Conchos (2,953 Square Miles)		Above Río Conchos to Johnson Ranch (3,886 Square Miles)		Johnson Ranch to Langtry (14,080 Square Miles)	
	1967	Period Average	1967	Period Average	1967	Period Average	1967	Period Average
Jan.	0	0.44	0.09	0.40	0.05	0.36	0.26	0.51
Feb.	0	.38	.14	.26	.19	.28	.37	.37
Mar.	.08	.33	.41	.25	1.03	.19	.43	.42
Apr.	.14	.28	.09	.36	.01	.40	.41	.82
May	.12	.40	.09	.61	.09	.77	.27	1.53
June	2.11	.82	2.28	1.21	3.02	1.10	1.77	1.76
July	.88	2.29	.94	3.03	1.29	1.80	1.52	1.90
Aug.	1.09	1.93	1.35	2.41	2.10	1.85	1.63	2.12
Sept.	.69	1.37	1.13	1.87	1.68	1.46	2.39	2.18
Oct.	.17	.91	.22	1.01	.24	.84	.98	1.22
Nov.	.38	.43	.46	.40	.06	.33	.37	.59
Dec.	.96	.60	.38	.55	.28	.41	.38	.57
Total	6.62	10.18	7.58	12.36	10.04	9.79	10.78	13.99

Month	Pecos River below Sheffield (3,519) Square Miles)		# Langtry to Amistad Dam (2,014 Square Miles)		Devils River (4,305 Square Miles)		‡ Amistad Dam to Eagle Pass (1,695 Square Miles)	
	1967	Period Average	1967	Period Average	1967	Period Average	1967	Period Average
Jan.	0.04	0.73	0.02	0.52	0.02	0.69	0.01	0.76
Feb.	.45	.89	.36	.63	.47	.70	.36	.91
Mar.	.62	.78	1.18	.79	.55	1.08	1.12	1.02
Apr.	1.08	1.90	.62	1.33	.90	1.76	1.37	1.71
May	.43	1.79	.24	1.96	.95	2.58	.12	2.93
June	1.42	2.54	.70	2.26	.84	2.73	1.19	2.48
July	1.69	1.86	1.24	1.18	1.55	1.71	.81	1.85
Aug.	1.43	1.95	.48	1.59	1.29	2.02	1.10	1.88
Sept.	2.84	2.34	4.46	2.32	4.99	2.95	6.20	3.14
Oct.	.85	1.81	1.36	1.43	1.39	2.16	2.45	1.99
Nov.	.89	.93	.38	.75	1.46	1.56	1.09	1.02
Dec.	.76	.76	.39	.65	.98	1.03	.61	.90
Total	12.50	18.28	11.43	15.41	15.39	20.97	16.43	20.59

Month	⊕ Eagle Pass to Laredo (4,117 Square Miles)		ð Laredo to Falcon Dam (3,394 Square Miles)		† Falcon Dam to Rio Grande City (1,166 Square Miles)		United States Side below Rio Grande City (443 Square Miles)	
	1967	Period Average	1967	Period Average	1967	Period Average	1967	Period Average
Jan.	0.03	0.74	0.54	0.76	1.07	0.91	1.64	1.22
Feb.	.43	.81	.55	.77	.57	.81	.69	1.07
Mar.	2.05	.96	.85	.82	.31	.99	.69	1.07
Apr.	3.02	1.62	1.60	1.42	2.12	1.21	.68	1.36
May	1.15	3.15	.09	3.22	.45	2.45	1.51	2.82
June	.82	2.38	1.70	1.84	1.29	2.03	1.48	2.45
July	1.01	1.42	.23	2.10	.40	1.89	.51	1.70
Aug.	4.27	2.29	5.69	1.83	8.84	2.18	5.79	2.25
Sept.	7.22	3.02	12.82	2.94	20.81	3.42	16.58	4.34
Oct.	.75	1.80	.92	1.55	1.10	1.95	3.56	2.52
Nov.	2.06	.97	2.33	1.60	2.86	.79	2.81	1.41
Dec.	.85	1.02	.91	.85	.49	.69	1.49	1.30
Total	23.66	20.18	28.23	19.70	40.31	19.32	37.43	23.51

* 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 ð Excluding Río Salado above Old Cd. Guerrero
† Excluding Río Alamo and Río San Juan

INTERNATIONAL BOUNDARY & WATER COMMISSION
UNITED STATES & MEXICO
ISOHYETAL MAP
FOR YEAR 1967
RIO GRANDE DRAINAGE BASIN
EL PASO, TEXAS TO THE GULF OF MEXICO
PRECIPITATION IN INCHES
LEGEND
Stream Gaging Station
Rainfall Station
Watershed Boundary
Closed Basin
Note: Evaporation stations located at or near underlined names
INDEX MAP
UNITED STATES
MEXICO
NEW MEXICO
TEXAS
CHIHUAHUA
COAHUILA
NUEVO LEON
TAMAULIPAS
DURANGO
GULF OF MEXICO
RIO GRANDE
PECOS RIVER
DEVILS RIVER
MILES
KILOMETERS
McMILLAN RESERVOIR
AVALON RESERVOIR
ELEPHANT BUTTE RESERVOIR
CABALLO RESERVOIR
RED BLUFF RESERVOIR
MAVERICK DAM
EL CENTENARIO RES.
SAN MIGUEL RES.
VENUSTIANO CARRANZA RES.
FALCON RESERVOIR
MARTE GOMEZ RESERVOIR
PALITO BLANCO RESERVOIR
ANZALDUAS DAM
CULEBRON RES.
ROSETILLA RESERVOIR
LA BOQUILLA RESERVOIR
LA COLINA RES.
F.I. MADERO RESERVOIR
San Marcial
Abilene
Big Spring
San Angelo
Junction
San Antonio
Ft. Stockton
Sheffield
Girvin
Balmorhea
Presidio
Redford
Ojinaga
Cuchillo Parado
Falomir
Chilicote
Maiquez
Santa Rita
Jiménez
Escalon
Parral
Siquirichic
Balleza
El Vergel
Cuauhtemoc
Bachiniva
Chihuahua
Las Choyas
Los Ojos
Los Pozos
Planta Zootecnica
Cd. Guerrero
La Junta
Villalba
Ojo Caliente
Camargo
La Boquilla
El Maguey
El Sitio
Las Burras
Rosetilla
Delicias
Las Virgenes
Cd. Acuña
Del Rio
Eagle Pass
Piedras Negras
Palestina
Jimenez
Villa Guerrero
Allende
San Antonio Crossing
Villa Hidalgo
Palafox
Laredo
Nuevo Laredo
Rancho los Vidrios
Conchos
Nueva Rosita
Sabinas
Don Martín
Laguna de Salinillas
Muzquiz
Villa Juarez
Progreso
Anahuac
Corralitos Rch.
Huisache Rch.
Zapata Water Plant
Arr. Tigre Chiquito
Falcon Dam
Ft. Ringold
Mier
Camargo
Reynosa
Comales
Lampazos
La Gloria
Vallecillo
Sabinas Hidalgo
Bustamante
San Buenaventura
Monclova
Castaños
Cuatro Ciénegas
Cerralvo
Los Herreras
Las Enramadas
Graal-Bravo
El Cuchillo
Los Ramones
San Juan
Montemorelos
Linares
Galeana
Villagrán
Mendez
Reata
Parras
Potosí
Saltillo
Arteaga
Ramos Arizpe
Santa Catarina
Rinconada
Cadereyta
Monterrey
Topo Chico
Villa Aldama
Alazanas
Gral. Cepeda
Granja Guadalupe
Brownsville
Matamoros
Valle Hermoso
Reynosa
Anzalduas Canal
Maverick Canal
Maverick Power Plant
Maverick Canal Headgate
Hodges Rch.
Devils Lake
Langtry
Santa Rosa
Goodenough Spring
Pumpville
Comstock
Dryden
Sanderson
Marfa
Alpine
Presidio
Redford
Ojinaga
Terlingua
Johnson Rch
Santo Domingo
Black Gap Game Refuge
Sand Valley Rch.
Persimmon Gap Rgr. Station
Maverick Rgr. Station
Woodward Rch
Buttrill Rch.
Dove
Mt. Rch.
Marathon
Marfa Exp. Station
Loma Vista
Alpine
Fabens
Guadalupe
Island Station
Zaragoza
Acequia Madre
Juarez
American Dam
El Paso
American Canal
Garita km 26
San Augustin
Praxedis Guerrero
Samalayuca
Vado de Cedillo
Luis L. Leon
San Antonio
Los Barriles
Felix U. Gomez
Neely Rch
Ft. Quitman
Madden Arroyo
Guayuco Arroyo
Ft. Hancock Brdg.
County Line
Bennett Rch.
Quebec Rch.
Mitchell Rch.
Sauz Rch.
Fletcher Rch.
Shannon Rch.
Livingston Rch.
Adobes Rch.
Cienega Rch.
Hoffman Rch.
Arthur Rch.
Basin Camp
Williams Rch.
Arvin & Harkins Rch.
Hardgrave Rch.
McGonagill Rch.
Adams Bros. Rch.
Bricker Rch.
Ingram Rch.
Pumpville
H.T. Miers Rch.
Hinds "A" Rch.
Hodges Rch.
Devils Lake
Langtry
Santa Rosa
Goodenough Spring
Cd. Acuña
Del Rio
Palestina
Jimenez
Piedras Negras
Eagle Pass
Tortuga Rch.
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Wuenscher Farm
Keisling Farm
Cuervo Creek
Justapor Rch.
Apache Rch.
Palafox
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Ft. McIntosh
Don Martín
Laguna de Salinillas
Corralitos Rch.
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HCWCID #15
HCWCID #6
CCWID #13
La Feria Pump
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Los Fresnos Pump
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Valle Hermoso
Reynosa
Camargo
Mier
Comales
Los Herreras
Las Enramadas
Graal-Bravo
El Cuchillo
Los Ramones
Montemorelos
Linares
Galeana
Villagrán
Mendez
Reata
Parras
Potosí
Saltillo
Arteaga
Ramos Arizpe
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Cadereyta
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Villa Aldama
Alazanas
Gral. Cepeda
Granja Guadalupe
Brownsville
Matamoros
Valle Hermoso
Reynosa
Anzalduas Canal
Maverick Canal
Maverick Power Plant
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Devils Lake
Langtry
Santa Rosa
Goodenough Spring
Pumpville
Comstock
Dryden
Sanderson
Marfa
Alpine
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Redford
Ojinaga
Terlingua
Johnson Rch
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Black Gap Game Refuge
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Acequia Madre
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El Paso
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San Augustin
Praxedis Guerrero
Samalayuca
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Luis L. Leon
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Sauz Rch.
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Langtry
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Jimenez
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Wuenscher Farm
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Cuervo Creek
Justapor Rch.
Apache Rch.
Palafox
Laredo Water Plant
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El Cuchillo
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Galeana
Villagrán
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Reata
Parras
Potosí
Saltillo
Arteaga
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Santa Catarina
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Cadereyta
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Gral. Cepeda
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Brownsville
Matamoros
Valle Hermoso
Reynosa
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Maverick Power Plant
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Hodges Rch.
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Langtry
Santa Rosa
Goodenough Spring
Pumpville
Comstock
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Sanderson
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Alpine
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Terlingua
Johnson Rch
Santo Domingo
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Maverick Rgr. Station
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Buttrill Rch.
Dove
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Marfa Exp. Station
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Alpine
Fabens
Guadalupe
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Zaragoza
Acequia Madre
Juarez
American Dam
El Paso
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Santa Rosa
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Piedras Negras
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Las Enramadas
Graal-Bravo
El Cuchillo
Los Ramones
Montemorelos
Linares
Galeana
Villagrán
Mendez
Reata
Parras
Potosí
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Arteaga
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Santa Catarina
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LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

The precipitation records of stations listed below began on the date shown and extend through 1967. For detailed information regarding sources of data, 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 Bulletins Nos. 10, 14, 22, and 26. All United States precipitation stations listed below are in Texas, while those in Mexico are in the indicated state as shown.

In United States

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Adobes Ranch	S	29° 46'	104° 34'	2,550	1950	Fort Quitman - Above Río Conchos	T. C. Davis
American Dam	S	31° 47'	106° 32'	3,730	1938	El Paso - Fort Quitman	I. B. & W. C.
Amistad Dam	R	29° 28'	101° 02'	1,150	July 1962	Langtry - Below Amistad Dam	I. B. & W. C.
Apache Ranch	C	27° 56'	99° 56'	500	# 1953	Eagle Pass - Laredo	Leroy Tibiletti
Arledge, W. A. Ranch	S	29° 58'	101° 38'	1,950	June 1933	Johnson Ranch - Langtry	W. A. Arledge
Arroyo Tigre Chiquito	C	26° 41'	99° 07'	314	Apr. 1954	Laredo - Falcon 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° 20'	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
Baggett, J. M. Ranch	R	30° 21'	101° 03'	2,050	July 1962	Devils River	J. M. Baggett, Jr.
Baker, A. A. Ranch	R	29° 44'	101° 09'	1,720	July 1962	Devils River	I. B. & W. C.
Baker, A. O. Ranch	R	29° 33'	100° 58'	1,150	May 1965	Devils River	I. B. & W. C.
Bakers Crossing	S	29° 58'	101° 09'	1,520	#Apr. 1955	Devils River	James Baker
Below Amistad Dam Station	C	29° 25'	101° 02'	980	Oct. 1954	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Bennett, Moody Ranch	S	30° 37'	104° 52'	3,240	July 1956	Fort Quitman - Above Río Conchos	Moody Bennett
Big Bend Chevron Station	S	29° 19'	103° 32'	2,550	Aug. 1967	Terlingua Creek	Howard Gibson
Billings Ranch	S	30° 02'	101° 38'	1,970	Mar. 1966	Johnson Ranch - Langtry	Newman Billings
Black Gap Game Refuge	S	29° 35'	103° 21'	2,250	# 1952	Johnson Ranch - Langtry	Ben Martin
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
Brite, J. G. Ranch	R	29° 33'	101° 01'	1,150	Sept. 1962	Devils River	I. B. & W. C.
Brotherton Ranch	V	29° 42'	101° 19'	1,400	1961	Langtry - Below Amistad Dam	Perry Calk
Buttrill Ranch	S	30° 00'	103° 16'	3,500	Mar. 1952	Johnson Ranch - Langtry	Tom B. Leary
Cañon Diablo	C	28° 39'	100° 27'	700	1964	Eagle Pass - Laredo	I. B. & W. C.
Casa Piedra	V	29° 44'	104° 04'	3,430	# 1960	Alamito Creek	C. L. Vasquez
Castolon	S	29° 08'	103° 30'	2,124	#Mar. 1953	Above Río Conchos - Johnson Ranch	National Park Service
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
Chittim Ranch	C	28° 44'	100° 28'	810	Mar. 1959	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Coal Mine	R	28° 48'	100° 28'	770	Mar. 1959	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Comstock	S	29° 41'	101° 10'	1,530	May 1939	Langtry - Below Amistad Dam	George Humphries
Continental Ranch	S	29° 51'	101° 18'	1,560	Mar. 1965	Pecos River Below Sheffield	Julio Crowder
Cooper Ranch	C	28° 50'	100° 27'	800	Mar. 1959	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Corralitos Ranch	C	27° 07'	99° 25'	346	1953	Laredo - Falcon Dam	I. B. & W. C.
County Line Station	R	31° 23'	105° 59'	3,550	1938	El Paso - Fort Quitman	I. B. & W. C.
Cow Creek near Comstock	R	29° 36'	101° 12'	1,210	Apr. 1965	Langtry - Below Amistad Dam	I. B. & W. C.
Cow Creek near Mouth	C	29° 32'	101° 13'	1,080	Apr. 1965	Langtry - Below Amistad Dam	I. B. & W. C.
Crane, Ed. Ranch	S	29° 51'	101° 05'	1,630	1955	Devils River	Ed. Crane
Cuervo Creek Station	C	28° 21'	100° 19'	620	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
Dead Mans Canyon near Comstock	C	29° 45'	101° 19'	1,320	Sept. 1967	Pecos River below Sheffield	I. B. & W. C.
Devils Lake	S	29° 34'	100° 59'	1,080	May 1939	Devils River	C. P. & L. Co.

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

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

In United States

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Dolan Springs	C	29° 54'	100° 59'	1,360	Feb. 1966	Devils River	I. B. & W. C.
Dove Mountain Ranch	S	29° 49'	102° 53'	2,770	#Mar. 1952	Johnson Ranch - Langtry	Sam Cavness
Dryden	S	30° 03'	102° 07'	2,130	# 1931	Johnson Ranch - Langtry	Lewis Cash
Dunbar, Allen Ranch	V	29° 57'	100° 32'	2,200	1955	Devils River	Allen Dunbar
Eagle Pass	S	28° 42'	100° 30'	815	1964	Eagle Pass - Laredo	I. B. & W. C.
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
Elm Creek Station	C	28° 46'	100° 30'	720	1959	Below Amistad Dam - Eagle Pass	I. B. & W. C.
El Peyote Ranch	C	27° 07'	98° 58'	650	1966	Laredo - Falcon Dam	F. J. Saldana
Erekson Ranch	S	29° 56'	100° 34'	2,330	1955	Devils River	Bob Erekson
Falcon Dam	S	26° 33'	99° 08'	323	Apr. 1950	Laredo - Falcon Dam	I. B. & W. C.
Farias Ranch	R	28° 36'	100° 20'	720	Mar. 1959	Eagle Pass - Laredo	I. B. & W. C.
Fawcett, H. K. Ranch	S	29° 52'	100° 54'	1,550	# 1941	Devils River	H. K. Fawcett
Feely	C	29° 34'	101° 07'	1,250	Apr. 1965	Langtry - Below Amistad 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	# 1850	Eagle Pass - Laredo	I. B. & W. C.
Fort Quitman	R	31° 06'	105° 36'	3,430	# 1937	Fort Quitman - Above Río Conchos	I. B. & W. C.
Foster, Ross Ranch	C	29° 47'	101° 45'	1,230	May 1961	Johnson Ranch - Langtry	I. B. & W. C.
Garciasville	R	26° 20'	98° 41'	200	Apr. 1957	Lower Rio Grande Valley	I. B. & W. C.
Gillis Ranch	S	29° 41'	101° 03'	1,440	Apr. 1965	Devils River	Walter Gillis
Goodenough Spring	C	29° 32'	101° 15'	1,020	Aug. 1958	Langtry - Below Amistad Dam	I. B. & W. C.
Greenwood, H. M. (Ciénega 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.
Haby Ranch	S	29° 43'	101° 14'	1,660	1965	Langtry - Below Amistad Dam	R. R. Williams
Hammond, Earl Ranch	S	29° 41'	103° 51'	3,700	Apr. 1963	Terlingua Creek	Earl Hammond
Hardgrave, E. W. Ranch	S	30° 18'	102° 09'	2,650	Apr. 1952	Johnson Ranch - Langtry	Jack Hardgrave
HCWCID #6 Goodwin Pump No. 3	S	26° 16'	98° 24'	175	# 1953	Lower Rio Grande Valley	HCWCID #6
HCWCID #6 Goodwin Pump No. 3A	S	26° 14'	98° 22'	130	# 1953	Lower Rio Grande Valley	HCWCID #6
HCWCID #6 Goodwin Pump No. 4	S	26° 16'	98° 21'	185	1958	Lower Rio Grande Valley	HCWCID #6
HCWCID #6 Goodwin Pump No. 4B	S	26° 18'	98° 23'	210	# 1953	Lower Rio Grande Valley	HCWCID #6
HCWCID #6 Goodwin Pump No. 5	S	26° 22'	98° 21'	225	# 1953	Lower Rio Grande Valley	HCWCID #6
HCWCID #15 (Edinburg Office)	S	26° 23'	98° 09'	85	1952	Lower Rio Grande Valley	HCWCID #15
Heath Crossing	S	29° 28'	102° 50'	1,775	July 1966	Johnson Ranch - Langtry	Dow Chemical Co.
Hinds "AT" Ranch	S	29° 46'	101° 03'	1,690	Sept. 1954	Devils River	Lucious Hinds
Hodges Ranch	S	29° 35'	100° 40'	1,510	Dec. 1951	Below Amistad Dam - Eagle Pass	Floyd Hodges
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 - Falcon Dam	I. B. & W. C.
Hunt Ranch	S	30° 36'	101° 17'	2,490	May 1966	Pecos River Below Sheffield	G. E. Butterfield
Hutto Ranch No. 1	R	29° 30'	100° 50'	1,240	Jan. 1964	Devils River	I. B. & W. C.
Hutto Ranch No. 2	R	29° 29'	100° 54'	1,210	Jan. 1964	Devils River	I. B. & W. C.
Ingram Ranch	C	29° 52'	101° 29'	1,580	#Sept. 1954	Pecos River Below Sheffield	Lee Billings, Jr.
Indio Ranch	S	28° 31'	100° 22'	700	1959	Eagle Pass - Laredo	Earnest Scales
Island Station	R	31° 32'	106° 14'	3,630	1939	El Paso - Fort Quitman	I. B. & W. C.
James, Lewis Ranch	S	30° 11'	102° 07'	2,275	1966	Johnson Ranch - Langtry	Lewis James
Johnson Ranch	C	29° 01'	103° 23'	2,050	#July 1933	Johnson Ranch - Langtry	I. B. & W. C.
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	Adjacent to Alamito Creek	Bryan A. Harris
Kelly, P. W. Ranch	S	29° 46'	101° 12'	1,750	1965	Langtry - Below Amistad Dam	Bobby Kelly
King, Martin Ranch	R	29° 44'	101° 22'	1,460	Nov. 1954	Langtry - Below Amistad Dam	I. B. & W. C.
Kokernot Ranch - Hqtrs.	S	29° 58'	103° 34'	4,120	# 1952	Johnson Ranch - Langtry	David Kokernot
La Feria Materials Yard	V	26° 10'	97° 50'	60	1960	Lower Rio Grande Valley	CCWCID #3
La Feria Pumping Plant	S	26° 03'	97° 50'	60	1952	Lower Rio Grande Valley	CCWCID #3
Lajitas	S	29° 16'	103° 48'	2,320	June 1967	Above Río Conchos - Johnson Ranch	Texas Hwy. Dept.
La Joya	R	26° 15'	98° 29'	150	Apr. 1957	Lower Rio Grande Valley	I. B. & W. C.
La Mesa Ranch	C	27° 54'	99° 44'	790	1967	Eagle Pass - Laredo	Joe Nieto
La Nutria Station	C	30° 15'	104° 44'	2,880	Mar. 1967	Fort Quitman - Above Río Conchos	I. B. & W. C.

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

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

In United States

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
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	Below Amistad Dam - Eagle Pass	Lou McGee
Lateral No. 2 Spill	C	28° 56'	100° 38'	760	Mar. 1959	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Lateral No. 12 Headgate	C	28° 54'	100° 34'	800	1959	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Lateral No. 15 Spill	C	28° 51'	100° 34'	740	1959	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Latham Ranch ‡	S	30° 13'	101° 22'	2,120	1965	Pecos River Below Sheffield	John & Bob Latham
Laughlin Air Force Base	S	29° 22'	100° 47'	1,080	Dec. 1958	Below Amistad Dam - Eagle Pass	U. S. A. F.
Lausen Ranch	S	29° 58'	101° 22'	1,800	Feb. 1965	Pecos River Below Sheffield	Richard Hinds
Lewis, Billie C. Jr. Ranch	S	29° 33'	100° 40'	1,400	1967	Below Amistad Dam - Eagle Pass	Billie C. Lewis, Jr.
Livingston Ranch	S	29° 49'	104° 22'	4,150	# 1951	Above Río Conchos - Johnson Ranch	J. S. Livingston
Lock Store	S	30° 40'	100° 57'	2,400	Oct. 1962	Devils River	Claud Ward
Loma Alta	S	29° 55'	100° 46'	2,050	Feb. 1967	Devils River	Luther Wilson
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 Plant	S	25° 57'	97° 34'	30	1952	Lower Rio Grande Valley	CCWCID #6
Los Isauros Ranch	V	27° 24'	99° 24'	490	1964	Laredo - Falcon Dam	I. Martinez
Lowry, Cliff Ranch	R	29° 39'	100° 52'	1,490	June 1962	Devils River	I. B. & W. C.
Lowry Ranch No. 2	R	29° 37'	100° 56'	1,160	May 1965	Devils River	I. B. & W. C.
Maverick County Canal Headgate	S	29° 10'	100° 46'	870	Mar. 1948	Below Amistad Dam - Eagle Pass	MCWCID #1
Maverick Power Plant	S	28° 50'	100° 33'	800	June 1952	Below Amistad Dam - Eagle Pass	C. P. & L. Co.
Maverick Ranger Station	S	29° 19'	103° 27'	2,780	Feb. 1955	Terlingua Creek	Park Ranger
McGonagill Ranch - East Mill	V	30° 20'	102° 55'	4,050	#May 1952	Johnson Ranch - Langtry	W. E. McGonagill
McGonagill Ranch - Headquarters	S	30° 20'	102° 58'	4,150	Apr. 1952	Johnson Ranch - Langtry	W. E. McGonagill
Miers, H. T. Ranch - Headquarters	C	29° 44'	100° 51'	1,760	1957	Devils River	I. B. & W. C.
Miers, H. T. Ranch No. 2	R	29° 44'	100° 53'	1,600	Apr. 1964	Devils River	I. B. & W. C.
Mitchell, Kerr Ranch	S	30° 13'	104° 00'	4,450	# 1941	Alamito Creek	Mrs. K. Mitchell
Mouth of Maravillas Creek	S	29° 34'	102° 47'	1,810	Apr. 1965	Johnson Ranch - Langtry	Black Gap Game Refuge
Neely Ranch	S	30° 59'	105° 32'	3,350	Aug. 1941	Fort Quitman - Above Río Conchos	Mrs. Tom Neely
New Mission Pumping Plant	S	26° 11'	98° 24'		Aug. 1961	Lower Rio Grande Valley	HCWCID #14
Normandy	S	28° 55'	100° 36'	780	Dec. 1958	Below Amistad Dam - Eagle Pass	Fannin G. Lowe
02 Ranch	S	29° 51'	103° 45'	3,780	# 1914	Terlingua Creek	Cavin Woodward
Owens Ranch	S	30° 45'	101° 40'	2,170	July 1963	Pecos River Below Sheffield	Jeff Owens
Pafford Crossing	C	29° 41'	101° 00'	1,180	Feb. 1960	Devils River	I. B. & W. C.
Pecos River near Langtry Station	C	29° 48'	101° 27'	1,260	July 1967	Pecos River Below Sheffield	I. B. & W. C.
Penitas (Edinburg Pumping Plant)	S	26° 14'	98° 27'	100	July 1957	Lower Rio Grande Valley	B. Leadbetter
Persimmon Gap Ranger Station	S	29° 40'	103° 10'	2,900	# 1948	Johnson Ranch - Langtry	Park Ranger
Pierce, J. S. Ranch	S	30° 22'	101° 14'	2,020	July 1966	Devils River	Joe Pierce IV
Pinto Creek Station	C	29° 09'	100° 43'	870	Dec. 1958	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Potter, A. M. Ranch	S	29° 46'	103° 25'	3,440	# 1952	Johnson Ranch - Langtry	A. M. Potter
Presidio (IB&WC Gage)	C	29° 34'	104° 23'	2,550	Oct. 1949	Above Río Conchos - Johnson Ranch	I. B. & W. C.
Prosser Ranch No. 1	C	29° 54'	101° 14'	1,710	Mar. 1965	Pecos River Below Sheffield	I. B. & W. C.
Prosser Ranch No. 2	C	29° 59'	101° 16'	1,850	Mar. 1965	Devils River	I. B. & W. C.
Prosser Ranch No. 3	C	30° 02'	101° 16'	2,020	Mar. 1965	Pecos River Below Sheffield	I. B. & W. C.
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	Above Río Conchos - Johnson Ranch	I. B. & W. C.
Roma (Internat'l Bridge)	S	26° 24'	99° 01'	230	1941	Falcon Dam - Rio Grande City	Starr County Bridge Co.
Rosita Creek Siphon	C	28° 41'	100° 24'	760	# 1959	Eagle Pass - Laredo	I. B. & W. C.
Rosita Creek Station	C	28° 36'	100° 24'	700	# 1959	Eagle Pass - Laredo	I. B. & W. C.
San Benito Pump	S	26° 03'	97° 45'	50	Oct. 1933	Lower Rio Grande Valley	I. B. & W. C.

S Standard C Cumulative V Visual R Recording # Some months or years missing
‡ Formerly Oberkampf Ranch

LOCATION OF RAINFALL STATIONS ON THE RIO GRANDE WATERSHED

In United States

NAME OF STATION	TYPE GAGE	LATI-TUDE	LONGI-TUDE	ELEV. (FT.)	RECORD BEGAN	WATERSHED SUBDIVISION	OBSERVER
Sawyer, W. E. Ranch	S	30° 28'	100° 47'	2,100	July 1966	Devils River	Geo. Powell
Sellers Ranch	C	29° 34'	101° 02'	1,190	#Feb. 1960	Devils River	I. B. & W. C.
Shannon, Bill Ranch	C	29° 58'	104° 41'	2,750	# 1956	Fort Quitman - Above Río Conchos	Bill Shannon
Sheep Pasture	S	29° 33'	102° 55'	2,210	May 1965	Johnson Ranch - Langtry	Black Gap Game Refuge
Shumla Bend	C	29° 49'	101° 25'	1,350	Nov. 1954	Pecos River Below Sheffield	I. B. & W. C.
Slaughter Ranch	V	29° 57'	102° 41'	2,560	1965	Johnson Ranch - Langtry	Mrs. J. Garner
Stewart Ranch	R	29° 35'	100° 52'	1,330	Feb. 1960	Devils River	I. B. & W. C.
Stillwell Crossing	S	29° 24'	102° 50'	1,820	# 1960	Johnson Ranch - Langtry	Ulice Adams
Stumberg, Steve Ranch	C	30° 11'	102° 53'	4,300	# 1943	Johnson Ranch - Langtry	Mrs. S. Stumberg
Sub-Station 14	R	30° 16'	100° 35'	2,300	# 1922	Devils River	Texas A&M Experiment Station
Sultenfuss Ranch	S	29° 21'	100° 37'	1,110	1965	Pinto Creek	Udo Sultenfuss
Terlingua Creek Station	C	29° 12'	103° 36'	2,260	Mar. 1952	Above Río Conchos - Johnson Ranch	I. B. & W. C.
Terrell Plant (El Paso Nat. Gas Co.)	R	30° 22'	101° 50'	2,510	July 1962	Pecos River Below Sheffield	Bob Norred
Todd Field	S	30° 51'	101° 27'	2,650	Sept. 1964	Pecos River Below Sheffield	R. B. Stephens
Trees Farm	R	28° 38'	100° 25'	720	Mar. 1959	Eagle Pass - Laredo	I. B. & W. C.
Van Dalsem Farm	C	28° 27'	100° 19'	700	1959	Eagle Pass - Laredo	I. B. & W. C.
Van Eman - Hord Ranch θ	S	29° 52'	104° 02'	3,820	#July 1942	Alamito Creek	L. T. Van Eman
Van Eman, L. T. Ranch	S	29° 52'	103° 59'	3,890	# 1947	Alamito Creek	L. T. Van Eman
Vinegarone	C	29° 57'	100° 46'	1,780	May 1966	Devils River	I. B. & W. C.
Wardlaw Ranch	R	29° 28'	100° 58'	1,110	Aug. 1955	Devils River	I. B. & W. C.
Weyrich Farm	C	28° 40'	100° 24'	760	Sept. 1962	Eagle Pass - Laredo	I. B. & W. C.
Whipple Farm	S	26° 04'	97° 29'	25	1952	Lower Rio Grande Valley	Harry Whipple
Whitehead Bros. Ranch	S	30° 02'	100° 52'	1,900	May 1966	Devils River	I. B. & W. C.
Whitehead, L. D. Ranch	S	30° 10'	100° 46'	2,110	May 1965	Devils River	L.D.Whitehead, Jr.
Whitehead, Tuffy Ranch	R	29° 38'	101° 07'	1,420	July 1962	Devils River	I. B. & W. C.
Willoughby, Ray Ranch	V	30° 12'	103° 33'	5,050	1952	Johnson Ranch - Langtry	Cliff St. Clair
Wills Ranch	S	30° 26'	101° 36'	2,450	Sept. 1964	Pecos River Below Sheffield	Sam Wills
Wipff Ranch	C	29° 00'	100° 35'	840	Mar. 1959	Below Amistad Dam - Eagle Pass	I. B. & W. C.
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.
Yarborough Ranch	S	30° 06'	103° 36'	4,550	1966	Johnson Ranch - Langtry	Venancio Victorino
Zapata Water Plant	S	26° 54'	99° 16'	380	May 1953	Laredo - Falcon Dam	Zapata Water Plant

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

θ Formerly Baugh-Van Eman Ranch

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	S	25° 32'	100° 30'	†	# 1958	Río San Juan	Hydr. Resources
Allende, Coahuila	S	28° 21'	100° 51'	1,230	# 1947	Río Escondido	Hydr. Resources
Anáhuac, Nuevo León	S	27° 15'	100° 08'	656	#June 1933	Río Salado	Hydr. Resources
Aniego 166, Tamaulipas	C	26° 46'	99° 15'	308	Jan. 1964	Laredo - Falcon Dam	I. B. & W. C.
Apodaca, Nuevo León	S	25° 46'	100° 11'	1,330	Feb. 1964	Río San Juan	Hydr. Resources
Argüelles, Tamaulipas	C	26° 11'	98° 28'	†	1962	Lower Rio Grande Valley	I. B. & W. C.
Bachiniva, Chihuahua	S	28° 46'	107° 15'	6,250	# 1952	Adjacent to Río Conchos	Meteor. Service of Mexico
Bajo Río Bravo, Tamaulipas							
No. 1-2	S	25° 56'	97° 46'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 1-3	S	25° 50'	97° 42'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 1-4	S	25° 51'	97° 45'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 1-12	S	25° 56'	97° 38'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 1-13	S	25° 44'	97° 40'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 1-18	S	25° 49'	97° 42'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 2-5	S	25° 48'	97° 49'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 2-6	S	25° 44'	97° 53'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 2-7	S	25° 39'	97° 42'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 2-8	S	25° 40'	97° 55'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 2-10	S	25° 36'	97° 52'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 2-11	S	25° 35'	97° 46'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 3-14	S	25° 56'	97° 59'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 3-15	S	25° 46'	98° 01'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 3-17	S	25° 49'	97° 58'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 4-16	S	25° 35'	98° 00'	†	1964	Lower Rio Grande Valley	Hydr. Resources
Bajo Río San Juan, Tamaulipas							
No. 2-29	S	26° 10'	98° 38'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 2-33	S	26° 10'	98° 28'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 2-38	S	26° 06'	98° 34'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 3-47	S	25° 58'	98° 07'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 3-55	S	25° 52'	98° 12'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 3-58	S	25° 50'	98° 11'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 3-60	S	25° 46'	98° 10'	†	1964	Lower Rio Grande Valley	Hydr. Resources
No. 3-63	S	25° 41'	98° 06'	†	1964	Lower Rio Grande Valley	Hydr. Resources
Balleza, Chihuahua	S	26° 57'	106° 21'	5,870	# 1903	Río Conchos	Meteor. Service of Mexico
Banderas, Chihuahua	S	31° 00'	105° 39'	†	1963	Fort Quitman - Above Río Conchos	Hydr. Resources
Bustamante, Nuevo León	S	26° 32'	100° 31'	1,450	# 1958	Río Salado	Hydr. Resources
Cabezones, Nuevo León	S	24° 59'	99° 45'	†	1962	Adjacent to Río San Juan	Hydr. Resources
Cadereyta, Nuevo León	S	25° 35'	100° 00'	1,180	#Sept. 1904	Río San Juan	Hydr. Resources
Camargo, Chihuahua	S	27° 42'	105° 10'	5,420	Oct. 1956	Río Conchos	Hydr. Resources
Camargo, Tamaulipas	S	26° 19'	98° 50'	223	# 1953	Falcon Dam - Rio Grande City	Hydr. Resources
Carbonera, Nuevo León	S	24° 49'	100° 47'	†	# 1958	Río San Juan	Hydr. Resources
Carichic, Chihuahua	S	27° 55'	107° 04'		May 1961	Río Conchos	Meteor. Service of Chihuahua
Casillas, Nuevo León	S	25° 12'	100° 12'	4,060	# 1958	Río San Juan	Hydr. Resources
Cd. Acuña, Coahuila	S	29° 20'	100° 57'	900	1951	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Cd. Acuña Km. 22, SE., Coahuila	C	29° 08'	100° 50'	1,100	# 1962	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Cd. Guerrero, Chihuahua	S	28° 33'	107° 29'	6,560	#May 1903	Adjacent to Río Conchos	Meteor. Service of Mexico
Cd. Mier, Tamaulipas	S	26° 26'	99° 09'	260	Oct. 1955	Falcon Dam - Rio Grande City	I. B. & W. C.
Cd. Mier Km. 8, SW., Tamaulipas	C	26° 23'	99° 14'	†	1962	Río Alamo	I. B. & W. C.
Cerralvo, Nuevo León	R	26° 05'	99° 37'	1,130	#Nov. 1938	Río San Juan	Hydr. Resources
Cerros Prietos, Chihuahua	S	29° 13'	106° 04'	4,270	Oct. 1962	Adjacent to Río Conchos	Meteor. Service of Mexico
Chihuahua, Chihuahua	S	28° 38'	106° 04'	4,690	# 1900	Río Conchos	Meteor. Service of Mexico
Chupadero, Coahuila	S	29° 05'	100° 51'	980	1961	Río San Diego	F. Jakubesch
Ciénega de Flores, Nuevo León	R	25° 57'	100° 10'	1,770	Apr. 1938	Río San Juan	Hydr. Resources
Ciénega del Toro, Nuevo León	S	25° 05'	100° 20'	7,010	# 1958	Río San Juan	Hydr. Resources
Colombia, Nuevo León	C	27° 42'	99° 46'	†	Jan. 1964	Eagle Pass - Laredo	I. B. & W. C.
Colonia Anáhuac, Chihuahua	S	28° 29'	106° 44'	6,550	1961	Río Conchos	Celulosa de Chihuahua, S. A.
Comales, Tamaulipas	R	26° 11'	98° 55'	260	#Mar. 1938	Río San Juan	Hydr. Resources
Conchos, Coahuila	S	28° 01'	101° 20'	†	#Oct. 1950	Río Salado	Hydr. Resources
Control, Tamaulipas	S	25° 58'	97° 49'	59	#June 1942	Lower Rio Grande Valley	Hydr. Resources
Coyame, Chihuahua	S	29° 28'	105° 06'	†	Nov. 1961	Río Conchos	Meteor. Service of Chihuahua

S Standard C Cumulative R Recording † Not available # Some months or years missing

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
Cuatro Ciénegas, Coahuila	S	26° 59'	102° 04'	2,430	# 1923	Río Salado	Hydr. Resources
Cuauhtémoc, Chihuahua	S	28° 24'	106° 52'	7,250	#June 1923	Adjacent to Río Conchos	Meteor. Service of Mexico
Delicias, Chihuahua	S	28° 11'	105° 28'	3,710	#Aug. 1933	Río Conchos	Hydr. Resources
Don Martín, Coahuila	S	27° 31'	100° 37'	790	#June 1927	Río Salado	Hydr. Resources
El Anteojo, Chihuahua	S	28° 29'	104° 48'	4,130	1963	Adjacent to Río Conchos	Meteor. Service of Mexico
El Cedrito, Coahuila	S	29° 13'	101° 53'	†	Aug. 1961	Langtry - Below Amistad Dam	I. B. & W. C.
El Cuarenta, Chihuahua	S	30° 33'	105° 50'	†	1965	Adjacent to Ft. Quitman Above Río Conchos	Meteor. Service of Mexico
El Cuchillo, Nuevo León	S	25° 43'	99° 16'	590	June 1938	Río San Juan	Hydr. Resources
El Cuervo, Chihuahua	S	30° 15'	105° 08'	3,840	# 1961	Adjacent to Ft. Quitman Above Río Conchos	Hydr. Resources
El Cuervo, Nuevo León	S	27° 35'	100° 18'	†	1964	Río Salado	Mr. Reniu
El Llano, Chihuahua	S	30° 02'	105° 05'	4,000	1965	Adjacent to Ft. Quitman Above Río Conchos	I. B. & W. C.
El Maguey, Chihuahua	S	27° 37'	106° 09'	4,380	July 1955	Río Conchos	Meteor. Service of Chihuahua
El Moral, Coahuila	C	28° 54'	100° 38'	774	# 1962	Below Amistad Dam - Eagle Pass	I. B. & W. C.
El Moral Km. 17, SW., Coahuila	C	28° 50'	100° 46'	900	# 1962	Below Amistad Dam - Eagle Pass	I. B. & W. C.
El Nopal, Chihuahua	S	30° 02'	106° 05'	†	# 1961	Adjacent to Río Conchos	Meteor. Service of Chihuahua
El Paisano, Coahuila	C	29° 20'	101° 09'	1,250	1962	Below Amistad Dam - Eagle Pass	I. B. & W. C.
El Remolino, Coahuila	S	28° 45'	101° 05'	1,310	June 1958	Río San Rodrigo	I. B. & W. C.
El Sitio, Chihuahua	S	27° 31'	106° 16'	†	July 1955	Río Conchos	Meteor. Service of Chihuahua
El Sueco, Chihuahua	S	29° 54'	106° 24'	5,090	1958	Adjacent to Río Conchos	Meteor. Service of Chihuahua
El Treinta, Coahuila	S	28° 20'	101° 24'	†	1961	Río Salado	I. B. & W. C.
El Vergel, Chihuahua	S	26° 22'	106° 30'	7,350	# 1957	Río Conchos	Meteor. Service of Mexico
Escuela Ganadería, Chihuahua	S	28° 42'	106° 04'	4,680	1961	Río Conchos	Meteor. Service of Chihuahua
Escuela Preparatoria Nuevo Laredo, Tamps.	S	27° 29'	99° 31'	427	May 1965	Eagle Pass - Laredo	I. B. & W. C.
Galeana, Nuevo León	S	24° 50'	100° 04'	5,430	# 1958	Adjacent to Río San Juan	Hydr. Resources
Gallego, Chihuahua	S	29° 50'	106° 23'	5,100	1958	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Garita Km. 28, Chihuahua	S	31° 33'	106° 28'	3,990	May 1958	El Paso - Fort Quitman	I. B. & W. C.
Gral. Bravo, Nuevo León	S	25° 48'	99° 11'	590	#Sept. 1906	Río San Juan	Hydr. Resources
Gral. Cepeda, Coahuila	S	25° 23'	101° 29'	4,920	#Aug. 1926	Río San Juan	Hydr. Resources
Gral. Teran (Experiment Station) Nuevo León	S	25° 16'	99° 38'	1,090	# 1958	Río San Juan	Agriculture and Livestock Dept.
Guadalupe, Chihuahua	S	31° 23'	106° 06'	3,650	1958	El Paso - Fort Quitman	I. B. & W. C.
Hacienda San Miguel, Coahuila	S	29° 13'	101° 30'	†	1961	Langtry - Below Amistad Dam	I. B. & W. C.
Hedionda Grande, Coahuila	S	25° 06'	100° 51'	†	# 1958	Adjacent to Río San Juan	Hydr. Resources
Higueras, Nuevo León	S	25° 58'	100° 01'	1,640	#Sept. 1906	Río San Juan	Meteor. Service of Mexico
Icamole, Nuevo León	S	25° 55'	100° 43'	4,900	# 1958	Río San Juan	Hydr. Resources
I. D. 8, Coahuila	R	29° 35'	101° 23'	1,430	Nov. 1965	Langtry - Below Amistad Dam	I. B. & W. C.
I. D. 12, Coahuila	R	29° 27'	101° 14'	1,230	Nov. 1965	Langtry - Below Amistad Dam	I. B. & W. C.
Iturbide, Nuevo León	S	24° 44'	99° 54'	†	1941	Adjacent to Río San Juan	Hydr. Resources
Jarita, Nuevo León	C	27° 26'	99° 48'	680	#Mar. 1961	Laredo - Falcon Dam	I. B. & W. C.
Jimenéz, Chihuahua	S	27° 08'	104° 55'	4,490	# 1951	Río Conchos	Hydr. Resources
Jimenéz, Coahuila	S	29° 04'	100° 40'	810	# 1951	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Juárez, Chihuahua	S	31° 44'	106° 29'	3,740	# 1903	El Paso - Fort Quitman	Hydr. Resources
Km. 99, Chihuahua	S	28° 08'	105° 35'	†	# 1962	Río Conchos	Hydr. Resources
Km. 135, Chihuahua	S	28° 13'	105° 37'	†	# 1962	Río Conchos	Hydr. Resources
La Babia, Coahuila	S	28° 33'	102° 04'	†	1961	Río Salado	I. B. & W. C.
La Bandera, Tamaulipas	C	26° 42'	99° 22'	†	1962	Laredo - Falcon Dam	I. B. & W. C.
La Boquilla, Chihuahua	S	27° 32'	105° 25'	4,330	# 1910	Río Conchos	Electric Industry of Mexico
La Campana, Chihuahua	S	29° 20'	106° 20'	4,820	1958	Adjacent to Río Conchos	Meteor. Service of Mexico
La Cieneguilla, Chihuahua	S	27° 40'	106° 21'	†	# 1963	Río Conchos	Meteor. Service of Mexico

S Standard C Cumulative R Recording # Some months or years missing † Not available

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 Cruz, Nuevo León	S	25° 28'	100° 26'	†	1958	Río San Juan	Hydr. Resources
La Gloria, Nuevo León	S	26° 53'	99° 49'	390	#May 1958	Río Salado	I. B. & W. C.
La Popa, Nuevo León	S	26° 10'	100° 50'	3,230	# 1958	Río San Juan	Hydr. Resources
La Trasquila, Chihuahua	S	29° 08'	107° 08'	†	# 1962	Río Conchos	Hydr. Resources
Laguna de Salinillas, Nuevo León	S	27° 26'	100° 23'	750	# 1940	Río Salado	Hydr. Resources
Laguna de Sánchez, Nuevo León	R	25° 22'	100° 17'	6,500	Apr. 1941	Río San Juan	Hydr. Resources
Lampazos, Nuevo León	S	27° 02'	100° 30'	1,120	# 1958	Río Salado	Meteor. Service of Mexico
Las Burras, Chihuahua	S	28° 31'	105° 26'	3,590	July 1949	Río Conchos	Hydr. Resources
Las Choyas, Chihuahua	S	29° 38'	106° 02'	4,340	# 1955	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Las Comitas, Nuevo León	S	25° 26'	100° 09'	1,670	# 1940	Río San Juan	Hydr. Resources
Las Enramadas, Nuevo León	S	25° 30'	99° 31'	730	#Sept. 1926	Río San Juan	Hydr. Resources
Las Norias, Coahuila	S	29° 14'	102° 22'	†	#May 1959	Johnson Ranch - Langtry	I. B. & W. C.
Las Tortillas, Tamaulipas	C	26° 50'	99° 34'	360	May 1961	Laredo - Falcon Dam	I. B. & W. C.
Las Varas, Chihuahua	S	29° 48'	106° 42'	†	1958	Adjacent to Río Conchos	Meteor. Service of Mexico
Las Vírgenes, Chihuahua	S	28° 10'	105° 38'	4,070	# 1943	Río Conchos	Hydr. Resources
Lázaro Cárdenas, Chihuahua	S	28° 23'	105° 37'	3,940	1961	Río Conchos	Meteor. Service of Mexico
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	El Paso - Fort Quitman	I. B. & W. C.
Los Herrera (La Tableta), Nuevo León	R	25° 54'	99° 24'	820	Sept. 1939	Río San Juan	Hydr. Resources
Los Ojos, Chihuahua	S	29° 10'	106° 21'	4,990	1957	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Los Pozos, Chihuahua	S	28° 53'	106° 02'	3,940	# 1956	Río Conchos	Meteor. Service of Chihuahua
Los Ramones, Nuevo León	R	25° 42'	99° 38'	260	#Sept. 1939	Río San Juan	Hydr. Resources
Luis L. León, Chihuahua	S	31° 05'	105° 38'	3,460	Apr. 1958	El Paso - Fort Quitman	I. B. & W. C.
Maijoma, Chihuahua	S	28° 55'	104° 21'	4,270	Aug. 1955	Río Conchos	Meteor. Service of Chihuahua
Majalca, Chihuahua	S	28° 53'	106° 21'	6,860	June 1963	Río Conchos	Meteor. Service of Mexico
Manantial Maris, Coahuila	C	29° 24'	101° 02'	910	1962	Below Amistad Dam - Eagle Pass	I. B. & W. C.
Manuel Benavides, Chihuahua	S	29° 06'	103° 54'	†	Oct. 1961	Above Río Conchos - Johnson Ranch	Meteor. Service of Mexico
Matamoros, Tamaulipas	S	25° 52'	97° 30'	33	# 1958	Lower Rio Grande Valley	Hydr. Resources
Méndez, Tamaulipas	S	25° 07'	98° 35'	430	#Sept. 1939	Adjacent to Lower Rio Grande Valley	Hydr. Resources
Meoqui, Chihuahua	S	28° 16'	105° 29'	3,790	1961	Río Conchos	Meteor. Service of Mexico
Miguel Alemán, Tamaulipas	S	26° 24'	99° 02'	180	1964	Falcon Dam - Rio Grande City	Hydr. Resources
Mimbres, Nuevo León	S	24° 58'	100° 16'	†	# 1958	Río Salado	Hydr. Resources
Mina, Nuevo León	S	26° 00'	100° 32'	†	# 1958	Río San Juan	Hydr. Resources
Mina La Borrada, Coahuila	S	29° 21'	102° 36'	†	Aug. 1961	Johnson Ranch - Langtry	I. B. & W. C.
Monclova, Coahuila	S	26° 54'	101° 25'	1,920	# 1897	Río Salado	Hydr. Resources
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
Nonoava, Chihuahua	S	27° 29'	106° 44'	†	Nov. 1963	Río Conchos	Meteor. Service of Chihuahua
Nueva Cd. Guerrero, Tamaulipas	S	26° 34'	99° 14'	350	#May 1954	Laredo - Falcon Dam	I. B. & W. C.
Nueva Rosita, Coahuila	S	27° 56'	101° 13'	1,410	#Aug. 1925	Río Salado	Meteor. Service of Mexico
Nuevo Laredo, Tamaulipas	V	27° 30'	99° 30'	430	1950	Laredo - Falcon Dam	I. B. & W. C.
Nuevo Laredo, Tamaulipas	S	27° 30'	99° 30'	430	# 1909	Laredo - Falcon Dam	Meteor. Service of Mexico
Nuevo Laredo Km. 26, SSW., Tamaulipas	C	27° 17'	99° 37'	†	Apr. 1961	Laredo - Falcon Dam	I. B. & W. C.
Nuevo Laredo Km. 52, SSW., Nuevo León θ	C	27° 04'	99° 44'	†	Apr. 1961	Laredo - Falcon Dam	I. B. & W. C.
Ocampo, Coahuila	S	27° 19'	102° 24'	3,770	# 1960	Adjacent to Río Salado	Hydr. Resources
Ojinaga, Chihuahua	S	29° 34'	104° 24'	2,590	#Apr. 1954	Río Conchos	I. B. & W. C.
Ojinaga, Chihuahua	S	29° 34'	104° 25'	2,620	#Nov. 1906	Río Conchos	Meteor. Service of Mexico
Ojo Caliente, Chihuahua	S	27° 41'	105° 12'	4,010	1942	Río Conchos	Hydr. Resources
Pajonal, Nuevo León	S	25° 29'	100° 23'	†	1958	Río San Juan	Hydr. Resources
Palestina, Coahuila	S	29° 09'	100° 59'	1,080	# 1931	Río San Diego	Hydr. Resources
Parral, Chihuahua	S	26° 56'	105° 39'	5,450	# 1903	Río Conchos	Meteor. Service of Mexico
Parras, Coahuila	S	25° 27'	102° 10'	5,510	1958	Adjacent to Río San Juan	Hydr. Resources

S Standard R Recording C Cumulative V Visual † Not available # Some months or years missing
θ Data for this station previously published under "Nuevo Laredo, Km. 50, SSW, Tamaulipas"

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
Parrita, Chihuahua	S	29° 25'	106° 29'	†	#Sept. 1958	Adjacent to Río Conchos	Hydr. Resources
Piedras Negras, Coahuila	S	28° 43'	100° 31'	820	# 1951	Below Amistad Dam - Eagle Pass	Meteor. Service of Mexico
Piedras Negras Km. 22, SW., Coahuila	C	28° 33'	100° 38'	†	# 1962	Eagle Pass - Laredo	I. B. & W. C.
Planta Zootécnica, Chihuahua	S	28° 41'	106° 04'	4,770	# 1957	Río Conchos	Meteor. Service of Mexico
Porvenir, Chihuahua	S	31° 14'	105° 52'	3,530	1958	El Paso - Fort Quitman	I. B. & W. C.
Potrero del Llano, Chihuahua	S	29° 13'	104° 26'	3,540	June 1964	Above Río Conchos - Johnson Ranch	I. B. & W. C.
Potrero Redondo, Nuevo León	S	25° 16'	100° 10'	†	# 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 Amistad, Coahuila	R	29° 26'	101° 04'	1,040	1962	Langtry - Below Amistad Dam	I. B. & W. C.
Presa Anzaldúas, Tamaulipas	V	26° 08'	98° 20'	105	Apr. 1960	Lower Rio Grande Valley	I. B. & W. C.
Presa Cabeceras, Coahuila	S	29° 02'	101° 05'	†	1964	Below Amistad Dam - Eagle Pass	Hydr. Resources
Presa Centenario, Coahuila	S	29° 13'	100° 57'	†	1964	Arroyo Las Vacas	Hydr. Resources
Presa Chihuahua, Chihuahua	S	28° 34'	106° 10'	5,230	Oct. 1961	Río Conchos	Hydr. Resources
Presa El Granero, Chihuahua	S	28° 57'	105° 17'	†	Oct. 1964	Río Conchos	Hydr. Resources
Presa San Miguel, Coahuila	S	29° 02'	100° 57'	1,000	1964	Río San Diego	Hydr. Resources
Progreso, Coahuila	S	27° 25'	101° 00'	1,210	#Feb. 1943	Río Salado	Hydr. Resources
Ramos Arizpe, Coahuila	S	25° 32'	100° 57'	4,590	#Apr. 1907	Río San Juan	Meteor. Service of Mexico
Rancho Los Vidrios, Tamaulipas	C	27° 35'	99° 37'	450	Sept. 1956	Eagle Pass - Laredo	I. B. & W. C.
Rancho Mercedes, Coahuila	S	28° 02'	100° 01'	540	May 1959	Eagle Pass - Laredo	I. B. & W. C.
Rancho San Diego, Coahuila	S	27° 59'	100° 35'	†	May 1959	Eagle Pass - Laredo	I. B. & W. C.
Rancho San Juan de la Palma, Tamaulipas	S	26° 54'	99° 20'	350	Apr. 1955	Laredo - Falcon Dam	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° 03'	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
Reynosa Km. 22, SW., Tamaulipas	C	26° 00'	98° 30'	†	# 1962	Lower Rio Grande Valley	I. B. & W. C.
Reynosa Km. 40, SW., Nuevo León	S	25° 56'	98° 39'	492	#Feb. 1959	Lower Rio Grande Valley	I. B. & W. C.
Rinconada, Nuevo León	S	25° 41'	100° 42'	4,790	#Apr. 1944	Río San Juan	Hydr. Resources
Río Bravo, Tamaulipas	S	25° 59'	98° 06'	85	#Sept. 1950	Lower Rio Grande Valley	Hydr. Resources
Río Salado Riberena, Tamaulipas	S	26° 48'	99° 24'	330	July 1964	Laredo - Falcon Dam	I. B. & W. C.
Rosetilla, Chihuahua	S	28° 15'	105° 18'	3,780	1940	Río Conchos	Electric Industry of Mexico
Rusio, Nuevo León	S	24° 42'	100° 26'	6,570	#June 1956	Adjacent to Río San Juan	Hydr. Resources
Sabinas Hidalgo, Nuevo León	S	26° 30'	100° 10'	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	S	31° 21'	106° 28'	4,180	1958	El Paso - Fort Quitman	Meteor. Service of Mexico
San Agustín, Chihuahua	S	31° 31'	106° 15'	3,650	1958	El Paso - Fort Quitman	I. B. & W. C.
San Antonio de las Alazanas, Coahuila	S	25° 16'	100° 35'	†	1958	Río San Juan	Hydr. Resources
San Antonio, Chihuahua	S	31° 01'	106° 00'	4,490	July 1958	El Paso - Fort Quitman	I. B. & W. C.
San Buenaventura, Coahuila	S	27° 04'	101° 33'	2,300	#Dec. 1926	Río Salado	Meteor. Service of Mexico
San Fernando, Coahuila	S	29° 25'	101° 43'	†	Aug. 1961	Langtry - Below Amistad Dam	I. B. & W. C.
San Gregorio, Coahuila	C	29° 22'	101° 20'	†	1962	Langtry - Below Amistad Dam	I. B. & W. C.
San Ignacio, Tamaulipas	C	27° 04'	99° 28'	†	1964	Laredo - Falcon Dam	I. B. & W. C.
San Javier, Nuevo León	C	26° 16'	99° 25'	†	1962	Río Alamo	I. B. & W. C.
San Juan, Nuevo León	S	25° 33'	99° 50'	880	#Nov. 1943	Río San Juan	Hydr. Resources
San Lorenzo, Chihuahua	S	28° 09'	106° 29'	3,770	1961	Río Conchos	Hydr. Resources
San Miguel de Camargo, Tamaulipas	S	26° 14'	98° 36'	130	# 1953	Lower Rio Grande Valley	Hydr. Resources
San Rafael, Nuevo León	S	25° 02'	100° 33'	†	# 1958	Adjacent to Río San Juan	Hydr. Resources
Santa Bárbara, Chihuahua	S	26° 48'	105° 49'	6,460	1964	Río Conchos	Hydr. Resources
Santa Catarina, Nuevo León	R	25° 40'	100° 29'	2,230	Oct. 1937	Río San Juan	Hydr. Resources

S Standard C Cumulative R Recording V Visual † Not available # Some months or years missing

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
Santa Rita, Chihuahua	S	27° 49'	104° 31'	3,950	1956	Adjacent to Río Conchos	Meteor. Service of Chihuahua
Santa Rosa, Coahuila	V	29° 38'	101° 28'	†	# 1958	Langtry - Below Amistad Dam	Ind. Co-operator
Santo Domingo, Coahuila	S	28° 57'	102° 24'	†	July 1960	Río Salado	I. B. & W. C.
Sierra Mojada, Coahuila	S	27° 17'	103° 42'	4,120	# 1897	Adjacent to Johnson Ranch - Langtry	Hydr. Resources
Siquírichic, Chihuahua	S	27° 16'	107° 13'	7,610	July 1956	Adjacent to Río Conchos	Meteor. Service of Mexico
Tacubaya, Chihuahua	S	28° 08'	104° 23'	5,150	July 1962	Adjacent to Río Conchos	Meteor. Service of Mexico
Tinajas, Chihuahua	S	31° 08'	106° 05'	4,320	1958	El Paso - Fort Quitman	I. B. & W. C.
Topo Chico, Nuevo León	R	25° 44'	100° 20'	1,640	#Aug. 1939	Río San Juan	Hydr. Resources
Tosisihua, Chihuahua	S	29° 45'	105° 25'	†	# 1963	Adjacent to Río Conchos	Hydr. Resources
Tres Hermanos, Chihuahua	S	27° 46'	106° 08'	4,300	1961	Río Conchos	Meteor. Service of Chihuahua
Túnel San Francisco, Nuevo León	S	25° 25'	100° 10'	4,300	# 1958	Río San Juan	Hydr. Resources
Vado de Cedillos, Chihuahua	S	31° 13'	105° 48'	3,500	Apr. 1958	El Paso - Fort Quitman	I. B. & W. C.
Valadeces, Tamaulipas	S	26° 14'	98° 40'	†	1964	Lower Rio Grande Valley	Hydr. Resources
Vallecillo, Nuevo León	S	26° 40'	99° 59'	900	#June 1958	Río Salado	Hydr. Resources
Valle Allende, Chihuahua	S	26° 56'	105° 23'	†	Mar. 1962	Río Conchos	Meteor. Service of Chihuahua
Valle Hermoso, Tamaulipas	S	25° 41'	97° 48'	52	#June 1949	Lower Rio Grande Valley	Hydr. Resources
Victoria, Chihuahua	S	27° 58'	104° 33'	4,810	June 1963	Adjacent to Río Conchos	Meteor. Service of Mexico
Villa Aldama, Chihuahua	S	28° 50'	105° 55'	4,140	1961	Río Conchos	Meteor. Service of Mexico
Villa Allende, Nuevo León	S	25° 17'	100° 01'	2,210	#Nov. 1938	Río San Juan	Hydr. Resources
Villa Coronado, Chihuahua	S	26° 44'	105° 08'	4,790	Aug. 1964	Río Conchos	Hydr. Resources
Villa de Santiago, Nuevo León	S	25° 25'	100° 09'	1,460	# 1923	Río San Juan	Hydr. Resources
Villa Guerrero, Coahuila	S	28° 19'	100° 23'	690	#June 1958	Eagle Pass - Laredo	I. B. & W. C.
Villa Hidalgo, Coahuila	S	27° 47'	99° 52'	660	1951	Eagle Pass - Laredo	I. B. & W. C.
Villa Juárez, Coahuila	S	27° 37'	100° 44'	1,000	# 1943	Río Salado	Hydr. Resources
Villalba, Chihuahua	S	28° 10'	105° 46'	3,940	Oct. 1940	Río Conchos	Hydr. Resources
Zaragoza, Chihuahua	S	31° 39'	106° 21'	3,750	Feb. 1958	El Paso - Fort Quitman	Hydr. Resources

S Standard V Visual R Recording † Not available # Some months or years missing

EVAPORATION IN THE RIO GRANDE BASIN IN THE UNITED STATES

In Inches

Tabulated below are records of evaporation observed at eight stations in Texas operated by the United States Section of this Commission from Presidio to Brownsville. 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 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 155 through 158 in this bulletin.

Records were obtained by means of:

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 and is measured with a micrometer gage. This type of pan was in operation at Amistad Dam and Falcon Dam.

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 Falcon Dam. 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, Wardlaw Ranch, and Eagle Pass.

3. 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 at a location 7 miles east of Brownsville.

Month	Presidio		Johnson Ranch		Martin King Ranch		Wardlaw Ranch	
	1967	Average 1950-1967	1967	Average 1950-1967	1967	#Average 1956-1967	1967	#Average 1955-1967
Jan.	3.68	3.67	2.84	3.66	3.56	3.24	3.78	3.16
Feb.	5.30	5.19	5.17	5.24	4.05	3.74	4.00	3.72
Mar.	7.92	8.52	8.94	8.65	6.28	6.37	6.05	6.16
Apr.	10.27	10.30	11.85	10.81	7.22	7.57	6.63	6.87
May	11.76	12.43	12.61	12.46	10.53	8.77	11.61	8.12
June	11.31	13.34	12.27	12.97	11.94	10.82	16.95	10.68
July	11.67	12.78	10.90	13.24	13.38	11.94	14.86	12.29
Aug.	10.65	12.00	10.30	11.96	10.27	11.02	9.74	10.70
Sept.	8.85	10.14	7.53	9.82	4.88	7.93	7.41	8.12
Oct.	7.33	7.81	6.18	7.60	5.89	5.99	5.36	5.71
Nov.	4.47	4.97	4.03	4.92	3.50	3.97	3.17	3.90
Dec.	3.52	3.35	3.75	3.45	3.30	3.19	2.84	2.94
Total	96.73	104.50	96.37	104.78	84.80	84.55	92.40	82.37

Month	Amistad Dam		Eagle Pass		Falcon Dam				Brownsville	
					2-Foot Pan		4-Foot Pan			
	1967	Average March 1963-1967	1967	#Average 1964-1967	1967	#Average 1950-1967	1967	#Average 1956-1967	1967	#Average 1958-1967
Jan.	5.07	4.67	3.18	3.23	3.64	3.58	4.88	4.18	2.63	2.26
Feb.	5.36	4.73	4.10	3.42	4.66	4.60	5.86	5.56	4.35	3.01
Mar.	9.16	9.20	5.79	5.42	6.79	6.68	9.52	8.64	5.15	4.12
Apr.	9.46	10.57	7.91	7.05	9.40	8.11	13.88	10.92	7.66	5.44
May	15.11	11.39	10.43	6.62	10.08	9.87	13.84	12.94	8.32	5.69
June	17.51	14.18	11.91	10.49	12.48	11.28	15.96	14.02	* 8.09	6.17
July	19.12	17.99	12.04	12.60	15.53	13.62	19.25	16.97	10.64	7.19
Aug.	14.26	15.10	10.06	10.58	9.07	12.06	13.39	15.51	7.48	6.62
Sept.	9.81	10.50	6.77	6.29	5.94	8.49	7.45	10.64	5.15	5.12
Oct.	8.83	8.23	5.75	6.27	5.22	6.77	6.20	7.96	5.58	4.16
Nov.	3.59	5.08	3.20	3.54	2.55	4.78	2.97	5.52	3.32	3.63
Dec.	3.62	3.65	3.49	3.83	3.04	3.76	2.97	3.95	2.89	2.78
Total	120.90	115.29	84.63	79.34	88.40	93.60	116.17	116.81	71.26	56.19

Some months missing * Partly estimated

EVAPORATION IN THE RIO GRANDE BASIN IN MEXICO

In Inches

Tabulated below are records of evaporation observed at ten stations operated and maintained by the Mexican Section of this Commission. Nine 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 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 159 through 163 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 37 published by the Mexican Section of this Commission.

Month	Ojinaga, Chihuahua		Cd. Acuña, Coahuila		Jiménez, Coahuila		Hidalgo, Coahuila	
	1967	#Average April 1954-1967	1967	#Average 1951-1967	1967	#Average 1951-1967	1967	Average Feb. 1951-1967
Jan.	3.94	3.51	4.29	3.61	5.87	3.51	5.55	4.24
Feb.	5.59	5.02	4.24	4.85	5.00	4.39	5.83	5.50
Mar.	10.20	8.50	8.66	8.11	6.61	6.83	5.55	8.26
Apr.	12.32	10.86	8.31	9.15	6.14	7.67	10.63	10.82
May	15.20	13.38	13.19	10.31	9.45	8.90	13.43	12.66
June	13.86	13.49	13.54	12.13	10.79	10.64	15.08	14.54
July	14.06	13.41	15.12	13.82	12.44	12.31	16.97	16.52
Aug.	12.48	11.34	11.50	12.46	8.78	10.94	12.01	14.81
Sept.	9.49	9.11	7.24	9.13	5.51	7.74	7.76	10.44
Oct.	8.82	7.15	6.85	6.38	4.33	5.29	6.46	7.66
Nov.	4.96	4.38	2.83	3.93	2.32	3.28	4.13	4.94
Dec.	3.74	3.16	2.95	3.17	2.80	2.87	3.54	3.92
Total	114.66	103.31	99.32	97.05	80.04	84.37	106.94	114.31

Month	Nuevo Laredo, Tamaulipas		Escuela Preparatoria, Nuevo Laredo, Tamaulipas				Rancho San Juan de la Palma, Tamaulipas	
	1967	Average Aug. 1964-1967	1965	1966	1967	#Average May 1965-1967	1967	#Average April 1955-1967
Jan.	5.08	4.53		2.80			5.24	3.89
Feb.	5.87	4.92		3.74	6.50	5.12	4.84	5.12
Mar.	9.02	7.84		8.31	8.27	8.29	9.69	7.74
Apr.	11.89	10.96		11.18	9.96	10.57	11.93	10.15
May	13.03	10.81	10.20	8.66	11.81	10.22	11.97	12.16
June	13.94	13.52	12.83	11.06	13.19	12.36	13.82	12.87
July	15.98	15.56	14.25	12.64	15.28	14.06	11.57	14.58
Aug.	11.57	13.38	12.28	13.78	11.50	12.52	11.54	14.19
Sept.	8.43	10.15	11.26	10.00	8.98	10.08	7.87	10.31
Oct.	7.32	7.45	5.87	6.16	5.87	6.00		7.74
Nov.	3.35	4.95	4.96	5.28	5.20	5.15		5.14
Dec.	3.70	3.95	3.62		2.72	3.17	2.76	3.73
Total	109.18	108.02						107.62

Some months missing

EVAPORATION IN THE RIO GRANDE BASIN IN MEXICO

In Inches

Month	Nueva Cd. Guerrero, Tamaulipas		Cd. Mier, Tamaulipas		Retamal, Tamaulipas			
	1967	#Average June 1954-1967	1967	#Average Oct. 1955-1967	1967	#Average 1951-1967		
Jan.	3.94	3.69	4.45	3.75	3.66	4.14		
Feb.	4.65	4.48	5.20	4.94	4.21	4.82		
Mar.	8.03	7.29	8.78	7.70	8.27	6.67		
Apr.	10.79	9.35	12.52	9.72	9.37	8.31		
May	11.77	11.10	12.32	11.43	10.47	8.90		
June	13.46	11.91	13.74	12.74	10.47	9.27		
July	15.39	14.26	15.47	15.46	12.09	10.24		
Aug.	10.51	12.99	10.47	13.90	8.94	10.20		
Sept.	6.73	9.54	6.89	10.39		7.52		
Oct.	5.59	7.07	6.42	7.90		6.16		
Nov.	2.76	4.88	2.80	4.89	4.37	4.36		
Dec.	3.07	3.50	2.91	3.68	2.91	3.68		
Total	96.69	100.06	101.97	106.50		84.27		

Some months missing

TEMPERATURE, HUMIDITY, AND WIND

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

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. The maximum and minimum temperatures shown below are the extreme temperatures for the month as recorded on the charts except for Falcon Dam and Amistad Dam where the readings are based on daily maximum and minimum thermometer observations.

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.

Temperature – Degrees Fahrenheit
In the United States

Month	Amistad Dam, Texas				Eagle Pass, Texas				Falcon Dam, Texas			
	Mean 1967	Average March 1963-1967	1967 Max.	1967 Min.	Mean 1967	#Average 1964-1967	1967 Max.	1967 Min.	Mean 1967	Average July 1950-1967	1967 Max.	1967 Min.
Jan.	52.2	50.5	83	28	50.5	51.4	80	27	55.6	56.6	86	26
Feb.	54.9	51.4	80	28	54.9	52.9	82	26	58.6	60.7	88	29
Mar.	69.1	63.0	98	39	68.3	63.4	98	40	71.2	67.7	100	39
Apr.	77.1	73.9	101	58	76.1	74.8	95	58	80.0	75.8	104	61
May	80.5	76.8	107	54	80.0	77.4	104	67	81.3	80.5	110	56
June	86.4	83.0	102	68	85.5	84.0	105	56	85.0	84.8	106	66
July	87.6	86.9	104	73	87.2	88.5	104	73	86.4	86.9	104	68
Aug.	83.6	84.9	103	69	82.0	85.6	102	68	82.1	86.4	106	65
Sept.	76.9	79.5	95	55	75.5	78.9	95	52	76.7	81.8	101	49
Oct.	70.0	70.0	86	44	67.3	68.6	86	43	70.6	74.0	87	44
Nov.	61.6	62.9	88	38	60.5	62.9	88	35	63.7	64.6	92	40
Dec.	51.8	51.1	77	29	52.0	53.7	78	30	55.4	57.7	82	30
Yearly	71.0	69.5	107	28	70.0	70.2	105	26	72.2	73.1	110	26

Temperature – Degrees Fahrenheit
In Mexico

Month	Ojinaga, Chihuahua				Cd. Acuña, Coahuila				Chupadero, Coahuila			
	Mean 1967	#Average April 1954-1967	1967 Max.	1967 Min.	Mean 1967	#Average April 1951-1967	1967 Max.	1967 Min.	Mean 1967	#Average 1961-1967	1967 Max.	1967 Min.
Jan.	48.2	48.3	82	18	50.0	49.3	86	21	50.0	49.0	79	28
Feb.	53.6	53.2	82	25	51.8	55.0	82	23	55.4	54.9	73	28
Mar.	68.0	60.9	97	39	69.8	63.3	99	34	69.8	64.4	95	37
Apr.	77.0	70.7	99	45	77.0	72.7	99	52	77.0	74.2	95	61
May	78.8	78.7	108	46	78.8	79.1	109	48	78.8	78.0	100	59
June	86.0	84.8	106	59	86.0	85.6	104	64	86.0	83.4	99	72
July	87.8	85.8	106	70	87.8	88.2	104	72	87.8	87.0	100	75
Aug.	84.2	83.9	104	63	84.2	88.1	104	66	84.2	85.5	99	72
Sept.	77.0	79.5	102	55	77.0	82.3	97	46	77.0	81.6	95	59
Oct.	69.8	69.7	97	34	66.2	71.9	93	39	69.8	71.3	82	46
Nov.	59.0	58.0	86	34	60.8	59.6	91	32	60.8	62.3	82	41
Dec.	50.0	49.8	77	25	48.2	51.1	77	23	51.8	52.1	75	32
Yearly	70.0	68.6	108	18	69.8	70.5	109	21	70.7	70.3	100	28

Month	Jiménez, Coahuila				El Remolino, Coahuila				Piedras Negras, Coahuila			
	Mean 1967	#Average March 1951-1967	1967 Max.	1967 Min.	Mean 1967	Average June 1958-1967	1967 Max.	1967 Min.	Mean 1967	#Average April 1951-1967	1967 Max.	1967 Min.
Jan.	51.8	51.8	91	23	59.0	54.8	95	28	51.8	50.5	82	23
Feb.	53.6	56.6	90	25	60.8	59.2	88	30	55.4	55.4	77	25
Mar.	68.0	63.3	95	34	73.4	66.9	108	36	68.0	62.0	97	37
Apr.	75.2	72.2	97	52	80.6	75.0	108	52	77.0	71.5	102	55
May	78.8	77.8	106	54	84.2	78.9	115	50	80.6	77.6	104	52
June	84.2	84.0	106	66	87.8	84.4	111	64	86.0	84.2	104	66
July	86.0	86.1	102	70	87.8	86.6	113	66	87.8	86.9	104	70
Aug.	80.6	85.9	99	68	87.8	85.9	115	63	84.2	86.3	104	68
Sept.	75.2	80.6	91	52	80.6	82.2	104	50	77.0	80.2	95	52
Oct.	69.8	71.8	88	41	71.6	72.7	99	41	69.8	70.0	86	41
Nov.	62.6	61.1	88	36	68.0	65.2	95	41	60.8	58.9	88	34
Dec.	51.8	53.5	77	27	60.8	57.3	93	23	51.8	51.5	81	25
Yearly	69.8	70.4	106	23	75.2	72.4	115	23	70.8	69.6	104	23

Some months missing

TEMPERATURE, HUMIDITY, AND WIND

Temperature – Degrees Fahrenheit
In Mexico

Month	Cd. Juárez, Chihuahua							Rancho Mercedes, Coahuila			
	Mean 1966	Mean 1967	#Average July 1960-1967	1966 Max.	1966 Min.	1967 Max.	1967 Min.	Mean 1967	#Average June 1959-1967	1967 Max.	1967 Min.
Jan.	41.0	44.6	43.9	64	19	70	14	55.4	56.0	88	27
Feb.	44.6	48.2	48.9	64	28	75	30	68.0	57.5	95	36
Mar.	59.0	59.0	57.6	82	37	84	30	69.8	66.0	97	43
Apr.	62.6	62.6	64.4	84	39	93	32	68.0	73.0	95	45
May	75.2	71.6	75.6	95	52	93	45	71.6	76.7	106	41
June	78.8	80.6	80.6	104	57	102	61	84.2	83.5	99	68
July	86.0	84.2	83.7	104	66	102	64	89.6	86.7	104	70
Aug.	75.2	78.8	80.5	102	55	100	61	78.8	85.5	99	54
Sept.	73.4	77.0	75.2	97	57	91	63	75.2	81.7	97	50
Oct.	64.4		65.2	90	39			73.4	75.9	97	50
Nov.	55.4		53.0	81	30			66.2	66.3	91	32
Dec.	42.8		46.1	75	18			60.8	59.2	84	28
Yearly	63.2		64.6	104	18			71.8	72.5	106	27

Month	Nuevo Laredo, Tamps., C.I.L.A.				Nuevo Laredo, Tamps., M.S. of M.				Rancho San Juan de la Palma, Tamps.			
	Mean 1967	Average August 1964-1967	1967 Max.	1967 Min.	Mean 1967	Average 1945-1967	1967 Max.	1967 Min.	Mean 1967	#Average April 1955-1967	1967 Max.	1967 Min.
Jan.	57.2	57.2	86	30	55.4	56.2	86	27	57.2	56.2	84	32
Feb.	59.0	57.2	90	32	57.2	60.5	90	28	60.8	60.8	84	34
Mar.	73.4	67.4	99	45	71.6	67.7	95	43	73.4	66.8	97	45
Apr.	82.4	80.0	102	63	78.8	75.4	100	63	80.6	76.3	100	57
May	84.2	81.8	108	61	84.2	80.9	104	57	82.4	81.6	104	61
June	87.8	86.6	104	68	87.8	84.7	102	68	86.0	86.1	104	64
July	89.6	89.0	106	70	89.6	88.1	104	70	89.6	89.2	106	73
Aug.	84.2	87.8	106	66	84.2	87.7	104	68	84.2	88.5	106	68
Sept.	78.8	83.8	100	54	77.0	82.5	97	54	80.6	84.0	104	55
Oct.	71.6	73.4	90	41	71.6	73.5	90	41		76.3		
Nov.	66.2	69.4	95	39	62.6	64.7	86	39		67.2		
Dec.	55.4	58.1	81	32	50.0	56.8	77	30	51.8	58.1	95	36
Yearly	74.2	74.3	108	30	72.5	73.2	104	27		74.3		

Month	El Treinta, Coahuila				Sabinas Hidalgo, Nuevo León				Nueva Cd. Guerrero, Tamps.			
	Mean 1967	Average 1961-1967	1967 Max.	1967 Min.	Mean 1967	Average October 1961-1967	1967 Max.	1967 Min.	Mean 1967	Average 1958-1967	1967 Max.	1967 Min.
Jan.	48.2	50.1	88	27	59.0	56.6	95	28	55.4	53.2	84	28
Feb.	55.4	55.7	86	23	60.8	60.5	90	30	59.0	57.9	86	32
Mar.	66.2	65.9	99	34	71.6	66.8	102	37	73.4	66.0	97	43
Apr.	75.2	73.9	100	54	78.8	77.9	102	55	82.4	76.0	104	63
May	80.6	78.8	108	48	80.6	80.6	108	54	82.4	81.0	108	61
June	84.2	82.4	104	64	86.0	84.8	106	66	86.0	85.1	104	64
July	84.2	85.2	104	61	86.0	86.9	108	64	87.8	87.0	104	70
Aug.	82.4	84.5	106	63	82.4	86.3	106	63	84.2	86.6	104	68
Sept.	75.2	79.6	100	55	77.0	82.1	95	52	78.8	82.3	95	52
Oct.	68.0	70.3	88	41	71.6	74.4	91	46	71.6	73.6	90	45
Nov.	60.8	61.8	91	32	64.4	66.5	97	36	66.2	65.3	100	45
Dec.	59.0	52.8	82	23	55.4	59.3	86	27	57.2	56.0	82	30
Yearly	70.0	70.1	108	23	72.8	73.6	108	27	73.7	72.5	108	28

Month	Cd. Mier, Tamaulipas				Reynosa Km. 40, SW., Nuevo León				Retamal, Tamaulipas			
	Mean 1967	Average October 1955-1967	1967 Max.	1967 Min.	Mean 1967	Average March 1959-1967	1967 Max.	1967 Min.	Mean 1967	#Average 1951-1967	1967 Max.	1967 Min.
Jan.	51.8	55.0	84	19	60.8	57.8	93	25	59.0	60.9	95	25
Feb.	57.2	59.4	86	25	62.6	61.8	95	30	62.6	63.3	99	28
Mar.	69.8	67.0	97	36	71.6	68.4	100	41	73.4	70.1	102	39
Apr.	80.6	76.5	100	61	75.2	75.9	104	52	80.6	77.5	102	63
May	80.6	80.9	102	55	78.8	80.3	106	52	80.6	80.8	100	59
June	84.2	84.9	100	64	87.8	83.8	106	59	82.4	84.6	97	68
July	86.0	86.9	102	68	86.0	85.0	106	61	86.0	86.4	99	68
Aug.	82.4	86.5	102	63	82.4	84.8	106	57	82.4	87.1	100	68
Sept.	77.0	82.3	97	55	77.0	81.3	102	52		83.6		
Oct.	69.8	74.5	90	41	73.4	74.3	99	48		76.8		
Nov.	62.6	65.0	88	34	71.6	68.3	95	48	69.8	68.8	97	43
Dec.	53.6	57.4	81	25	62.6	59.1	91	27	60.8	61.7	91	32
Yearly	71.3	73.0	102	19	74.2	73.4	106	25		75.1		

Some months missing

TEMPERATURE, HUMIDITY, AND WIND

Mean Wind Speed – Miles Per Hour
In the United States

Month	Martin King Ranch, Texas		Amistad Dam, Texas		Eagle Pass, Texas		Falcon Dam, Texas	
	1967	Average 1957-1967	1967	#Average March 1963-1967	1967	#Average December 1963-1967	1967	#Average July 1950-1967
Jan.	3.3	4.2	3.2	3.6	2.3	2.8	4.3	3.9
Feb.	4.5	5.0	3.8	4.5	3.4	3.8	5.2	4.8
Mar.	6.2	6.6	4.8	5.3	3.8	4.0	5.6	5.2
Apr.	7.3	6.5	5.5	4.9	4.2	3.8	7.0	5.9
May	6.4	7.2	5.1	5.2	3.8	3.9	5.3	6.1
June	8.4	7.7	6.4	5.7	4.3	4.4	6.7	6.3
July	7.2	7.2	5.8	5.4	3.9	4.2	7.6	6.8
Aug.	5.4	6.3	4.5	4.8	3.0	3.6	4.4	5.7
Sept.	5.2	5.4	3.9	4.0	2.9	3.2		4.4
Oct.	6.0	4.8	4.7	3.8	2.6	2.4	2.9	3.7
Nov.	3.8	4.2	3.0	3.1	2.0	2.3	2.9	4.0
Dec.	4.2	3.8	4.0	3.5	2.7	2.4	3.3	3.7
Yearly	5.7	5.7	4.6	4.5	3.2	3.4		5.0

Mean Relative Humidity-Percent
In the United States

Month	Amistad Dam, Texas		Eagle Pass, Texas		Falcon Dam, Texas	
	1967	Average March 1963-1967	1967	#Average 1964-1967	1967	Average July 1950-1967
Jan.	53.2	52.0	48.9	62.7	65.0	65.3
Feb.	52.8	56.2	57.8	65.4	62.8	63.8
Mar.	58.5	50.8	65.5	62.6	66.3	61.4
Apr.	68.0	56.2	68.7	64.6	64.0	61.9
May	50.7	61.4	54.9	75.4	61.2	64.9
June	58.2	57.6	58.2	65.4	61.4	64.1
July	53.8	51.1	52.5	59.6	60.3	59.4
Aug.	61.0	55.2	58.6	64.7	71.9	61.4
Sept.	74.3	62.9	72.2	74.5	74.9	65.4
Oct.	68.7	59.4	65.9	68.1	69.6	66.5
Nov.	78.9	60.4	68.3	70.6	81.8	67.5
Dec.	69.5	60.2	63.9	66.3	74.6	64.7
Yearly	62.3	57.0	61.3	66.7	67.8	63.9

Some months missing

DRAINAGE BASIN AND IRRIGATED AREAS

Along the Rio Grande and Tributaries – 1967

The total area within the outer rim of the Rio Grande Basin is about 335,500 square miles but it contains large areas, especially along its southwestern boundary, that contribute no surface runoff to the Rio Grande. Such non-contributing areas constitute about 45% of the total area, leaving 182,215 square miles of productive watershed which is the only one included in the list below.

The irrigated areas shown below are listed in accordance with the location of their diversion points and are all within the Rio Grande Basin, except in the Lower Rio Grande Valley where large portions of irrigated lands in both countries lie outside the basin boundary line.

Only areas irrigated in 1967 are shown except that, in the United States below Falcon Dam, the figures shown represent acreages which were subject to irrigation in 1967 but for which data on the portion actually irrigated is not known. On the Mexican side, part of the data may have been gathered previous to 1967.

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	85,590	0	85,590
Above El Paso Gaging Station	29,267	0	29,267	85,590	0	85,590
El Paso Station to American Dam	4	0	4	13,476	0	13,476
Above American Dam	29,271	0	29,271	99,066	0	99,066
American Dam to Island Station	187	493	680	32,994	15,493	48,487
Above Island Gaging Station	29,458	493	29,951	132,060	15,493	147,553
Island Station to County Line Station	485	174	659	0	0	0
American Dam to County Line Station - Total	672	667	1,339	32,994	15,493	48,487
Above County Line Gaging Station	29,943	667	30,610	132,060	15,493	147,553
County Line Station to Fort Quitman Station	663	762	1,425	8,566	0	8,566
Above Fort Quitman Gaging Station	30,606	1,429	32,035	140,626	15,493	156,119
Fort Quitman Station to Above Presidio Station	1,621	1,332	2,953	716	292	1,008
Above Presidio Station above Río Conchos	32,227	2,761	34,988	141,342	15,785	157,127
Río Conchos above Boquilla Dam	0	8,202	8,202	0	a) 5,832	5,832
Río Conchos below Boquilla Dam	0	21,065	21,065	0		
Río Conchos - Total	0	29,267	29,267	0	320,156	320,156
Alamito Creek above Gaging Station	1,504	0	1,504	15	0	15
Presidio Station above Río Conchos to Presidio Station below Río Conchos - excluding above tributaries	367	77	444	3,480	457	3,937
Presidio Station above Río Conchos to Presidio Station below Río Conchos - Total	1,871	29,344	31,215	3,495	320,613	324,108
Above Presidio Station below Río Conchos	34,098	32,105	66,203	144,837	336,398	481,235
Terlingua Creek above Gaging Station	1,070	0	1,070	b) 2,405	0	2,405
Presidio Station below Río Conchos to Johnson Ranch Station - excluding Terlingua Creek	1,093	2,349	3,442	976	3,541	4,517
Presidio Station below Río Conchos to Johnson Ranch Station - Total	2,163	2,349	4,512	c) 3,381	3,541	6,922
Above Johnson Ranch Gaging Station	36,261	34,454	70,715	148,218	339,939	488,157
Johnson Ranch Station to Foster Ranch Station	6,412	6,993	13,405	d) 2,771	0	2,771
Above Foster Ranch Gaging Station	42,673	41,447	84,120	150,989	339,939	490,928
Foster Ranch Station to Langtry Station	182	493	675	0	0	0
Above Langtry Gaging Station	42,855	41,940	84,795	150,989	339,939	490,928
Pecos River above Girvin	29,562	0	29,562		0	
Pecos River, Girvin to Shumla Station	5,600	0	5,600	0	0	0
Pecos River, Shumla to Langtry Station	17	0	17	0	0	0
Pecos River above Station at Mouth	35,308	0	35,308	0	0	0
Goodenough Spring above Gaging Station	1	0	1	0	0	0
Devils River above Pafford Crossing Station	3,961	0	3,961	0	0	0
Devils River above Station at Old Highway Bridge	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 Amistad Dam Station - excluding above tributaries	221	1,793	2,014	0	0	0
Langtry Station to Below Amistad Dam Station - Total	39,835	1,793	41,628	0	0	0
Above the Below Amistad Dam Gaging Station	82,690	43,733	126,423	150,989	339,939	490,928

a) Includes area above Madero Reservoir b) Irrigated by spreader dams c) Includes 2,405 acres irrigated by spreader dams
d) Includes 2,500 acres irrigated by spreader dams

DRAINAGE BASIN AND IRRIGATED AREAS

Along the Rio Grande and Tributaries – 1967

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	311	311
Below Amistad Dam Station to Del Rio Station - excluding Arroyo Las Vacas	60	99	159	299	0	299
Below Amistad Dam Station to Del Rio Station - Total	60	457	517	299	311	610
Above Del Rio Gaging Station	82,750	44,190	126,940	151,288	340,250	491,538
San Felipe Creek above Gaging Station	46	0	46	2,325	0	2,325
Pinto Creek above Gaging Station	249	0	249	500	0	500
Río San Diego above Gaging Station	0	848	848	0	13,391	13,391
Río San Diego - Total	0	856	856	0	14,085	14,085
Del Rio Station to Below Maverick Dam Station near Quemado - excluding above tributaries	669	139	808	37,075	2,155	39,230
Del Rio Station to Below Maverick Dam Station near Quemado - Total	964	995	1,959	39,900	16,240	56,140
Above the Below Maverick Dam Gaging Station near Quemado	83,714	45,185	128,899	191,188	356,490	547,678
Río San Rodrigo near Mouth above Gaging Station	0	958	958	0	5,313	5,313
Río San Rodrigo - Total	0	958	958	0	5,313	5,313
Below Maverick Dam Station near Quemado to Maverick Power Plant - excluding Río San Rodrigo	287	153	440	425	0	425
Below Maverick Dam Station near Quemado to Maverick Power Plant - Total	287	1,111	1,398	425	5,313	5,738
Above Maverick Power Plant	84,001	46,296	130,297	191,613	361,803	553,416
Maverick Power Plant to Eagle Pass Station	244	34	278	125	2,110	2,235
Above Eagle Pass Gaging Station	84,245	46,330	130,575	191,738	363,913	555,651
Río Escondido above Gaging Station	0	1,279	1,279	0	10,544	10,544
Río Escondido - Total	0	1,284	1,284	0	10,544	10,544
Eagle Pass Station to San Antonio Crossing Station - excluding Río Escondido	237	251	488	300	709	1,009
Eagle Pass Station to San Antonio Crossing Station - Total	237	1,535	1,772	300	11,253	11,553
Above San Antonio Crossing Gaging Station	84,482	47,865	132,347	192,038	375,166	567,204
San Antonio Crossing Station to Palafox Station	629	1,949	2,578	1,515	2,211	3,726
Above Palafox Gaging Station	85,111	49,814	134,925	193,553	377,377	570,930
Palafox Station to Laredo Station	607	444	1,051	4,853	3,156	8,009
Above Laredo Gaging Station	85,718	50,258	135,976	198,406	380,533	578,939
Río Salado above Venustiano Carranza Dam	0	17,296	17,296	0	75,312	75,312
Río Salado above Las Tortillas Gaging Station	0	24,877	24,877	0	85,671	85,671
Río Salado above Cd. Guerrero Gaging Station	0	25,112	25,112	0	85,671	85,671
Laredo Station to Falcon Dam - excluding Río Salado	2,042	1,352	3,394	e)10,577	7,499	18,076
Laredo Station to Falcon Dam - Total	2,042	26,464	28,506	10,577	93,170	103,747
Amistad Dam to Falcon Dam - excluding above tributaries	4,775	4,421	9,196	55,169	17,840	73,009
Above Falcon Dam	87,760	76,722	164,482	208,983	473,703	682,686
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	168,201	168,201
Río San Juan - Total	0	13,601	13,601	0	270,750	270,750
Falcon Dam to Fort Ringgold Station - excluding above tributaries	222	399	621	9,155	6,096	15,251
Falcon Dam to Fort Ringgold Station - Total	222	15,692	15,914	9,155	284,506	293,661
Above Fort Ringgold Gaging Station	87,982	92,414	180,396	218,138	758,209	976,347
Fort Ringgold Station to Anzaldúas Dam	952	790	1,742	185,989	492,347	678,336
Above Anzaldúas Dam	88,934	93,204	182,138	404,127	1,250,556	1,654,683
Anzaldúas Dam to Progreso Station	13	22	35	145,711	5,498	151,209
Above Progreso Gaging Station	88,947	93,226	182,173	549,838	1,256,054	1,805,892
Progreso Station to San Benito Station	7	7	14	313,891	3,193	317,084
Above San Benito Gaging Station	88,954	93,233	182,187	863,729	1,259,247	2,122,976
San Benito Station to Brownsville Station	14	14	28	117,453	761	118,214
Falcon Dam to Brownsville Station - excluding Río Alamo and Río San Juan	1,208	1,232	2,440	772,199	507,895	1,280,094
Above Brownsville Gaging Station	88,968	93,247	182,215	981,182	1,260,008	2,241,190

e) Includes 45 acres irrigated from small reservoirs

DRAINAGE BASIN AND IRRIGATED AREAS

Along the Rio Grande and Tributaries – 1967

DESIGNATIONS OF AREAS AND GAGING STATIONS	Drainage Basin Square Miles			Irrigated Areas - Acres		
	United States	Mexico	Total	United States	Mexico	Total
Brownsville Station to Gulf of Mexico				6,230	1,374	7,604
Falcon Dam to Gulf of Mexico - excluding Río Alamo and Río San Juan				778,429	509,269	1,287,698
Amistad Dam to Gulf of Mexico - excluding above tributaries				833,598	527,109	1,360,707
Above Gulf of Mexico				987,412	1,261,382	2,248,794

SUPPLEMENTARY DATA–INTERNATIONAL FALCON RESERVOIR

Deduced Inflows

Considering that a knowledge of the mean daily inflows reaching the International Falcon Reservoir would serve a useful purpose, such data have been deduced for 1967 showing the flows as close as they can be approximated. These data are based on the daily operation of the International Falcon 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 1956 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 diversion between Laredo and Falcon, river channel losses, reservoir evaporation, accuracy of gage-height records, displacement due to wind action on the reservoir, and bank storage and return incident to changes in reservoir level, 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 noted above and others that may occur, the data shown below represent a reasonable approximation of the flows entering the International Falcon Reservoir.

Mean Daily Discharge in Second-Feet 1967 — Annual and Period Summary

Day	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1	1,850	2,970	487	2,000	2,170	1,930	1,890	1,840	3,300	9,360	2,360	1,920
2	2,150	1,030	1,420	2,490	259	8,970	6,570	1,340	1,750	11,300	2,020	2,580
3	1,400	209	2,330	1,840	1,210	6,390	4,800	685	5,930	10,500	2,540	1,690
4	1,580	1,040	2,370	999	18.4	5,400	4,100	1,420	5,330	9,290	2,060	689
5	957	1,350	2,550	1,640	660	2,980	9,250	1,180	13,900	5,970	3,740	1,760
6	2,200	2,130	1,280	1,510	2,720	1,710	5,230	1,030	7,700	5,300	7,310	2,350
7	2,200	1,500	501	766	703	544	2,250	463	3,810	9,640	6,390	2,950
8	1,210	494	795	1,980	1,080	526	2,660	319	3,670	2,130	3,710	2,050
9	3,260	565	1,080	1,390	117	1,020	2,100	1,010	3,530	3,640	2,300	2,100
10	982	1,020	1,270	1,810	876	622	3,390	1,870	3,410	4,170	2,900	1,610
11	893	2,410	1,730	1,240	50.9	1,440	2,000	3,010	3,410	4,590	2,810	403
12	1,590	2,250	2,190	1,840	798	1,010	1,380	1,650	3,490	4,940	2,540	1,340
13	1,730	1,880	1,730	3,200	1,250	1,900	2,400	2,160	3,280	3,490	2,460	2,320
14	1,100	1,780	2,090	2,740	3,600	1,050	3,670	1,790	3,530	2,950	2,990	96.1
15	2,110	2,450	3,190	1,620	314	1,030	262	11,600	5,370	4,800	2,540	3,170
16	2,220	1,600	1,830	2,830	42.4	1,130	2,140	4,100	4,660	2,790	2,700	1,750
17	2,560	1,540	245	448	140	1,160	791	3,850	17,300	6,820	2,960	1,750
18	2,930	1,180	128	317	164	1,410	1,240	7,350	21,300	5,830	2,630	2,790
19	1,390	1,980	886	5,370	182	1,520	1,420	11,200	18,000	4,800	2,540	1,350
20	1,310	2,130	2,120	4,340	152	180	1,670	4,700	18,000	4,410	2,710	1,880
21	1,480	220	1,740	4,770	950	147	1,130	8,480	44,500	3,400	2,100	3,250
22	2,910	590	562	2,380	724	161	445	7,520	68,900	3,710	2,850	1,010
23	2,780	1,140	3,510	2,490	424	498	2,190	10,800	71,700	2,470	2,830	1,650
24	1,860	1,730	3,220	374	224	1,530	11,900	12,300	84,400	3,670	2,730	2,030
25	2,370	569	3,030	2,300	537	1,960	5,260	10,600	66,000	2,890	2,690	1,010
26	2,470	848	3,570	6,530	127	1,510	4,520	7,270	53,300	2,780	2,180	1,230
27	597	2,810	2,150	4,170	565	2,090	2,860	5,260	42,000	3,810	3,000	1,590
28	830	1,610	1,660	1,080	484	1,840	1,950	11,000	19,300	1,100	2,110	2,850
29	1,580		759	1,530	618	206	2,760	7,660	12,000	1,050	1,020	2,580
30	2,620		1,730	2,480	901	908	2,630	7,520	6,890	2,770	2,510	1,620
31	3,170		2,320		1,530		1,400	5,690		2,200		1,180
Sum	58,289	41,025	54,473	68,474	23,590.7	52,772	96,258	156,667	619,660	146,570	86,230	56,548.1

Month	Current Year 1967: Extreme Gage Feet High	Extreme Gage Feet Low	Extreme Second-Feet* High Day	High	Low Day	Low	Average Second-Feet	Total Acre-Feet	Period 1957-1967: Acre-Feet Average	Maximum	Minimum
Jan.			9	3,260	27	597	1,880	115,617	137,752	283,000	52,390
Feb.			1	2,970	3	209	1,470	81,382	126,052	261,200	72,210
Mar.			26	3,570	18	128	1,760	108,050	109,089	177,800	64,448
Apr.			26	6,530	18	317	2,280	135,873	156,766	439,100	92,710
May			14	3,600	4	18.4	763	46,819	323,330	1,356,000	46,819
June			2	8,970	21	147	1,760	104,661	269,521	666,700	77,660
July			24	11,900	15	262	3,100	190,897	168,222	333,300	54,820
Aug.			24	12,300	8	319	5,050	310,758	191,908	310,758	91,794
Sept.			24	84,400	2	1,750	20,700	1,229,477	608,029	1,570,361	174,581
Oct.			2	11,300	29	1,050	4,730	290,548	481,587	2,516,000	136,035
Nov.			6	7,310	29	1,020	2,870	171,037	207,577	885,100	76,861
Dec.			21	3,250	14	96.1	1,830	112,221	150,001	442,200	86,453
Yearly				84,400		18.4	3,990	2,897,340	2,929,834	6,683,310	1,595,238

* Mean daily

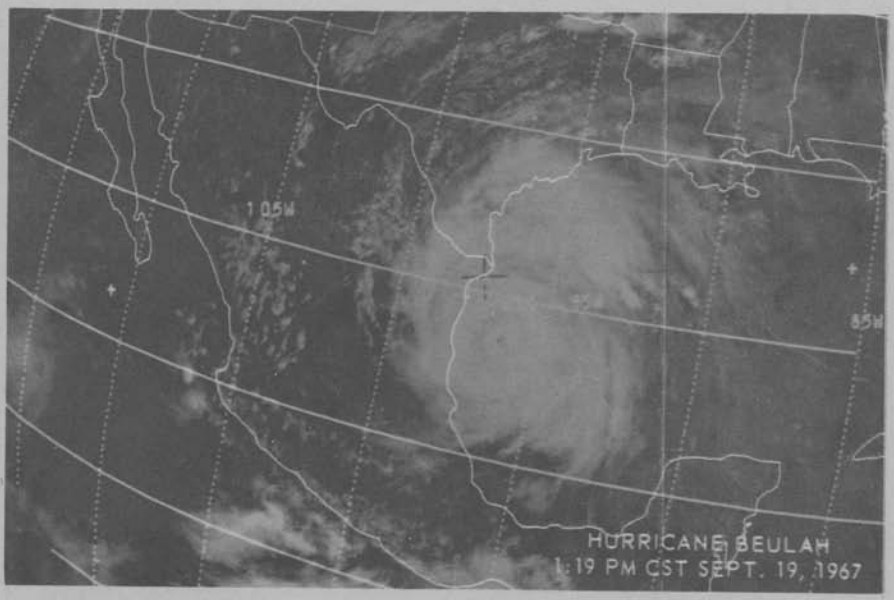
CORRECTIONS TO PREVIOUS WATER BULLETINS

Water Bulletin and Page Numbers	Station	Reference		Published As	Correction
7-17	Terlingua Creek near Terlingua, Texas	Mean Daily Discharge in Second-Feet Tabulation:	Sept. 29	* 0	* 6.4
			30	* 0	* 5.6
			Oct. 1	* 1.2	* 5.0
			2	* 1.6	* 4.8
			3	* 2.2	* 4.8
			4	* 2.3	* 4.5
			5	* 2.4	* 4.2
			6	* 2.5	* 3.8
			7	* 2.6	* 3.6
			8	* 2.8	* 3.3
		Annual Summary: Extreme Low Second-Feet		* 0 on Sept. 30 * 1.2 on Oct. 1 Yearly - 0	1.8 on Sept. 6 * 1.6 on Oct. 31 Yearly - 0.8
		Average Second-Feet:	Sept.	234	228
			Oct.	* 98.3	* 98.8
			Yearly	125	146
		Total Acre-Feet:	Sept.	13,900	13,600
			Oct.	* 6,040	* 6,080
			Yearly	90,407	105,847
14 to 19 Various Pages	Terlingua Creek near Terlingua, Texas	COMPARATIVE FLOWS FROM RECORDS Extreme Low and Daily Minimum:		‡ 0 Sept. 29-30, 1937	* 0.2 Jan. 27 & Feb. 3, 1935
20 to 36 Various Pages	Terlingua Creek near Terlingua, Texas	COMPARATIVE FLOWS FROM RECORDS Extreme Low and Daily Minimum		‡ 0 Sept. 29-30, 1937	* 0.1 Several days in June & July 1950
29-57	Diversions - Maverick Canal at Mile 13 near Quemado, Texas	Mean Daily Discharge for June 18		1,200	1,280

* Partly estimated ‡ Estimated

Flow of the Rio Grande and Related Data

1967



UNITED STATES OF AMERICA
DEPARTMENT OF STATE

INTERNATIONAL BOUNDARY AND WATER COMMISSION
UNITED STATES AND MEXICO

WATER BULLETIN NUMBER 37