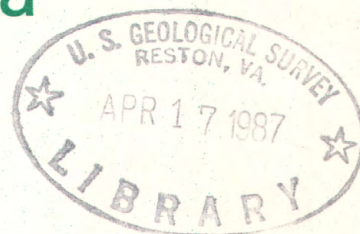


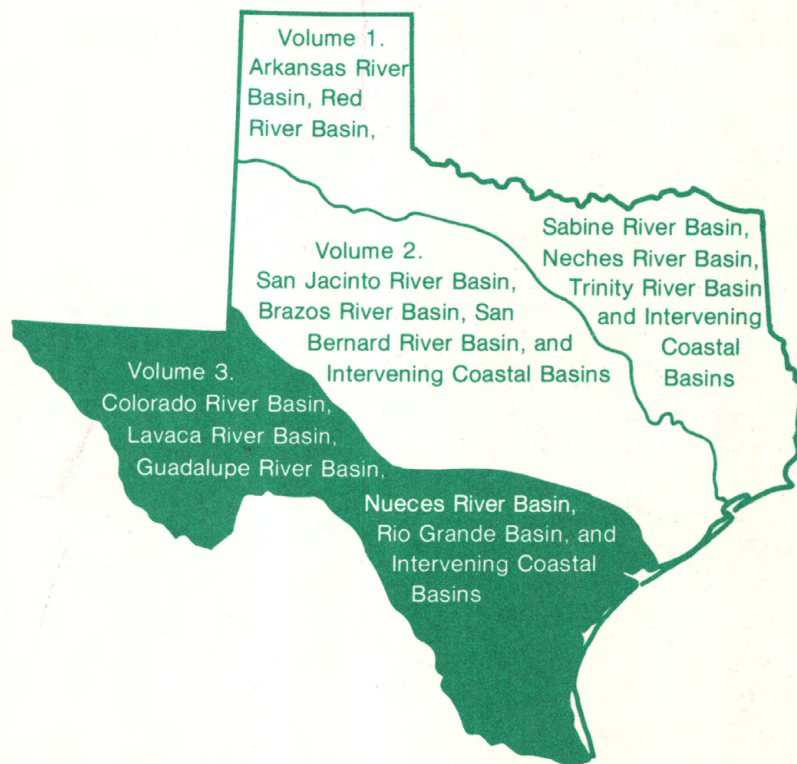
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1885, vol. 3



# Water Resources Data Texas Water Year 1985



Volume 3. Colorado River Basin, Lavaca River Basin, Guadalupe River Basin, Nueces River Basin, Rio Grande Basin, and Intervening Coastal Basins



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-85-3  
Prepared in cooperation with the State of Texas  
and with other agencies



# CALENDAR FOR WATER YEAR 1985

1984

O C T O B E R							N O V E M B E R							D E C E M B E R						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
	1	2	3	4	5	6					1	2	3							1
7	8	9	10	11	12	13								2	3	4	5	6	7	8
14	15	16	17	18	19	20	4	5	6	7	8	9	10	9	10	11	12	13	14	15
21	22	23	24	25	26	27	11	12	13	14	15	16	17	16	17	18	19	20	21	22
28	29	30	31				18	19	20	21	22	23	24	23	24	25	26	27	28	29
							25	26	27	28	29	30		30	31					

1985

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13	14	15	16	17	18	19	10	11	12	13	14	15	16	10	11	12	13	14	15	16
20	21	22	23	24	25	26	17	18	19	20	21	22	23	17	18	19	20	21	22	23
27	28	29	30	31			24	25	26	27	28			24	25	26	27	28	29	30
														31						

A P R I L							M A Y							J U N E						
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7	8	9	10	11	12	13	5	6	7	8	9	10	11	2	3	4	5	6	7	8
14	15	16	17	18	19	20	12	13	14	15	16	17	18	9	10	11	12	13	14	15
21	22	23	24	25	26	27	19	20	21	22	23	24	25	16	17	18	19	20	21	22
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														30						

J U L Y							A U G U S T							S E P T E M B E R						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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7	8	9	10	11	12	13	4	5	6	7	8	9	10	8	9	10	11	12	13	14
14	15	16	17	18	19	20	11	12	13	14	15	16	17	15	16	17	18	19	20	21
21	22	23	24	25	26	27	18	19	20	21	22	23	24	22	23	24	25	26	27	28
28	29	30	31				25	26	27	28	29	30	31	29	30					

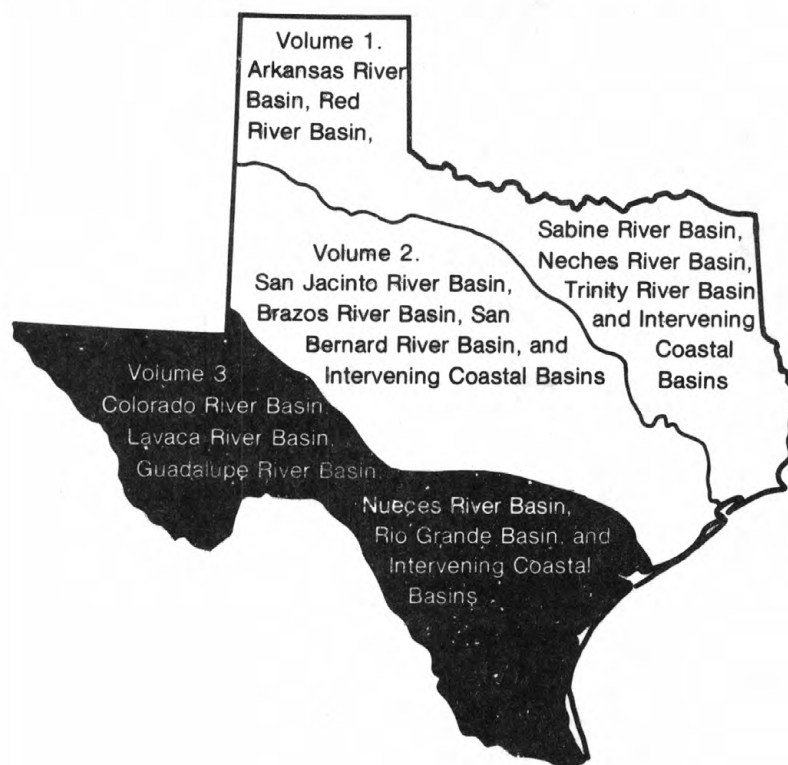




# Water Resources Data Texas Water Year 1985

Volume 3. Colorado River Basin, Lavaca River Basin,  
Guadalupe River Basin, Nueces River Basin,  
Rio Grande Basin, and Intervening Coastal Basins

by H.D. Buckner, E.R. Carrillo, and H.J. Davidson



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT TX-85-3  
Prepared in cooperation with the State of Texas  
and with other agencies



UNITED STATES DEPARTMENT OF THE INTERIOR

William P. Clark, Secretary

GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information write to  
District Chief, Water Resources Division  
U.S. Geological Survey  
300 East 8th Street  
Austin, Texas 78701



## Preface

This volume of the annual hydrologic data report of Texas is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. Records of streamflow and quality-of-water data required to provide the hydrologic information needed by State, local and Federal agencies, and the private sector for developing and managing land and water resources in Texas are contained in 3 volumes:

- Volume 1. Arkansas River Basin, Red River Basin, Sabine River Basin, Neches River Basin, Trinity River Basin, and intervening and adjacent Coastal Basins
- Volume 2. San Jacinto River Basin, Brazos River Basin, San Bernard River Basin, and intervening Coastal Basins
- Volume 3. Colorado River Basin, Lavaca River Basin, Guadalupe River Basin, Nueces River Basin, Rio Grande Basin, and intervening Coastal Basins

This report is the culmination of a concerted effort by dedicated personnel of the Texas District, U.S. Geological Survey, who collected, compiled, analyzed, verified, and organized the data, typed, edited, and assembled the report, and who assured that the information contained here is accurate, complete, and adheres to Geological Survey policy and established guidelines.

This report was prepared in cooperation with the State of Texas and other agencies under the supervision of C. W. Boning, District Chief.







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# WATER RESOURCES DATA - TEXAS, 1985

## VOLUME 3 COLORADO RIVER BASIN, LAVACA RIVER BASIN, GUADALUPE RIVER BASIN, NUECES RIVER BASIN, RIO GRANDE BASIN, AND INTERVENING COASTAL BASINS

### INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with Federal, State, and City agencies, obtains a large amount of data pertaining to the water resources of Texas each water year. Such data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the Geological Survey, the data are published annually in three volumes of this report series entitled "Water Resources Data - Texas."

This report series includes records of stage, discharge, and water quality of streams and canals; stage, contents, and water quality of lakes and reservoirs. Volume 3 contains records for water discharge at 152 gaging stations; stage only at 1 gaging station; stage and contents at 19 lakes and reservoirs; and water quality at 91 gaging stations. Also included are data for 28 partial-record stations. Additional water data were collected at 4 miscellaneous sites not involved in the systematic data-collection program. The data in this report represent that part of the National Water Data System collected by the U.S. Geological Survey and cooperating State and Federal agencies in Texas.

This series of annual reports for Texas began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report was changed to its present format, with data on quantities and quality of surface water contained in each of three volumes.

Prior to introduction of this series and for several water years concurrent with it, water resources data for Texas were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 7 and 8." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." The above mentioned Water-Supply Papers may be consulted in the libraries of the principal cities of the United States and may be purchased from U.S. Geological Survey, Books and Open-File Reports, Federal Center, Bldg. 41, Box 25425, Denver, CO 80225.

Publications similar to this report are published annually by the Geological Survey for all States. These official Geological Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this volume is identified as "U.S. Geological Survey Water Data Report TX-85-3." For archiving and general distribution, the reports for the 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or may be purchased on microfiche from the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.

Additional information, including the current prices, for ordering specific reports may be obtained from the Office Chief at the address given on the back of the title page or by telephone (512) 482-5571.

## COOPERATION

Federal agencies that assisted the Geological Survey in the collection of data in this report in the form of funds or services in 1985 are:

Corps of Engineers, U.S. Army.

International Boundary and Water Commission, United States  
and Mexico, U.S. Section.

National Park Service.

U.S. Bureau of Reclamation.

Organizations that assisted in the collection of data in this report through joint funding agreements through the Texas Department of Water Resources or through direct joint funding agreements with the Geological Survey are:

Texas Water Development Board, C. E. Nemir, Executive Administrator; the cities of Abilene, Alice, Arlington, Austin, Cleburne, Clyde, Corpus Christi, Dallas, El Paso, Gainesville, Garland, Georgetown, Graham, Houston, Lubbock, Nacogdoches, Runaway Bay, San Angelo, San Antonio, and Wichita Falls; Athens Municipal Water Authority; Bexar, Medina, and Atascosa Counties Water Control and Improvement District No. 1; Bistone Municipal Water Supply District; Brazos River Authority; Brown County Water Improvement District No. 1; Coastal Industrial Water Authority; Colorado River Municipal Water District; Dallas County; Dallas Public Works Department; Dallas/Fort Worth Airport; Dallas Utilities Water Department; Edwards Underground Water District; Franklin County Water District; Galveston County; Greenbelt Municipal and Industrial Water Authority; Guadalupe-Blanco River Authority; Harris County Flood Control District; Harris-Galveston Coastal Subsidence District; Lavaca-Navidad River Authority; Lower Colorado River Authority; Lower Neches Valley Authority; MacKenzie Municipal Water Authority; North Central Texas Municipal Water Authority; Northeast Texas Municipal Water District; Orange County; Pecos River Commission; Red Bluff Water Power Control District; Reeves County Water Improvement District No. 1; Sabine River Authority of Texas; Sabine River Compact Administration; San Antonio City Public Service Board; San Antonio City Water Board; San Antonio River Authority; San Jacinto River Authority; Tarrant County Water Control and Improvement District No. 1; Texas Parks and Wildlife, Titus County Fresh Water Supply District No. 1; Trinity River Authority; Authority; Upper Guadalupe River Authority; Upper Neches River Municipal Water Authority; Upper Trinity Basin Water Quality Compact; West Central Texas Municipal Water District; Wichita County Water Improvement District No. 2; and Wood County.

## HYDROLOGIC CONDITIONS

Large variations in precipitation, runoff, and streamflow characterize the usual hydrologic conditions in Texas. In the eastern part of the State, streams generally are deep with wide alluvial flood plains, and streamflow is perennial. In the western part of the State, streams generally flow through arroyos, and streamflow principally is ephemeral.

The major weather development in Texas during the 1985 water year was the ending of a severe, year-long drought. Intense rainstorms throughout most of the State in October, followed by substantial rainfall in November and December virtually ended the drought that had persisted over most of the State for the past year. By the end of December, streamflow was normal throughout the State. Unusual weather features for the year included an uncommonly warm winter, record-breaking snowfall across South Texas in January, and the absence of tropical storms in the State during the summer of 1985. The year was a moderately wet with precipitation more than normal in almost all parts of the State.

Conservation storage in 71 selected reservoirs throughout the State, with a combined conservation capacity of 31,987,890 acre-feet, increased from 66 percent at the end of

September 1984, to 75 percent at the end of September 1985. Records from these 71 reservoirs indicate that contents increased in 59, decreased in 11, and remained the same in 1.

Dissolved-solids concentrations in most streams in the State are inversely related to streamflow. During years when precipitation and runoff are deficient, streamflow commonly is much more mineralized than during years when precipitation and runoff are normal or excessive. However, for streams where discharge is controlled by reservoirs, the mineralization of the water may remain relatively constant, despite large fluctuations in precipitation and runoff.

The area for which water-resources data are presented in volume 3 cover the entire southwestern one-half of the State and extend from the western tip of the State near El Paso to the central Texas Gulf Coast near Bay City. Normal annual precipitation ranges from less than 8 inches at El Paso to more than 40 inches at Bay City. Average annual runoff ranges from less than 0.1 inch in parts of western Texas to more than 10 inches in some places along the central Gulf Coast. The location of selected streamflow and water-quality stations in the area of Texas covered by volume 3 is shown in figure 1.

### Streamflow

At the beginning of the 1985 water year, streamflow was below normal throughout most of the area as a result of a prolonged drought that had persisted through most of the 1984 water year. Intense rainfall occurred throughout the area in October and streamflow increased to normal. At the end of December, streamflow was normal throughout the area. Rainfall during January through March was above normal in the south and western parts of the area and by the end of March streamflow was above normal in all but the northwest and far west parts of the area. At the end of June, streamflow continued to be above normal throughout South Texas, including the Nueces, San Antonio, and Guadalupe River basins. However, streamflow was below normal in the upper Colorado River basin of west-central Texas. During July through September, rainfall was below normal throughout the area. By the end of September, streamflow was near normal in South Texas, whereas in the Colorado River basin, except for the coastal area, streamflow was below normal.

Streamflow at the hydrologic index station North Concho River near Carlsbad was excessive (within the highest 25 percent of record) during December through March, deficient (within the lowest 25 percent of record) during May and June, and near normal during the remainder of the year. For the hydrologic index station Guadalupe River near Spring Branch, streamflow was excessive during January, March, April, June, and July, and normal for the remainder of the year. A comparison of streamflow for the 1985 water year with streamflow for the period of record at four selected stations for which data are included in volume 3 is presented in the following table:

Station no. and name	Discharge during 1985 water year (cubic feet per second)			Discharge during period of record (cubic feet per second)		
	Max.	Min.	Avg.	Max.	Min.	Avg.
08134000 North Concho River near Carlsbad Tex. <sup>1/</sup>	206	0	1.73	94,600	0	32.9 (1925-85)
08167500 Guadalupe River near Spring Branch Tex.	47,500	17	541	160,000	0	310 (1923-85)
08210000 Nueces River near Three Rivers Tex. <sup>2/</sup>	4,560	.93	566	141,000	0	833 (1916-85)
08446500 Pecos River near Girvin Tex.	468	5.0	24.8	20,000	1.9	81.4 (1940-85)

<sup>1/</sup> National Stream Quality Accounting Network site.

<sup>2/</sup> Hydrologic index station.



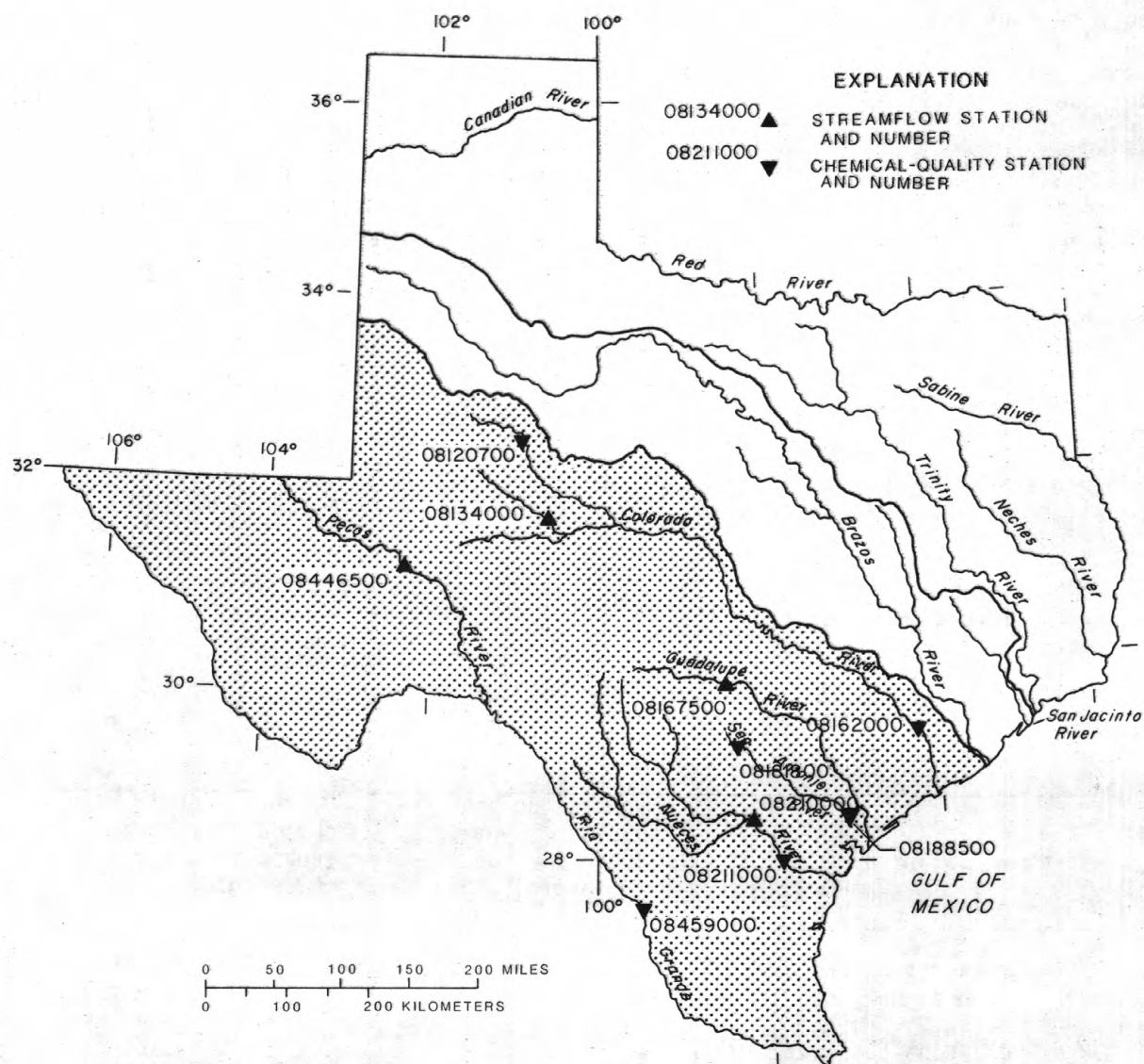


Figure 1.--Area of Texas covered by volume 3 (shaded) and location of selected streamflow and water-quality stations in volume 3.

Streamflow was variable at the other two hydrologic index stations in the State. Streamflow during the 1985 water year in the Neches River near Rockland was excessive during October through November and February through March, deficient during June, and near normal during the remainder of the year. Streamflow was normal at North Bosque River near Clifton during the entire year. Monthly mean discharges for the four hydrologic index stations in the State are plotted against the median of the long-term monthly means in figure 2.

Conservation storage in 19 selected reservoirs in this area (volume 3) of the State, with a total combined conservation capacity of 8,936,380 acre-feet, increased from 41 percent at the end of September 1984, to 53 percent at the end of September 1985. Records from the 19 reservoirs indicate that contents increased in 14 and decreased in 5 during the 1985 water year.

#### Water Quality

Records of discharge-weighted-average concentrations of dissolved solids for the 1985 water year are compared with those for the 1981-85 water years for selected long-term daily or continuous-record stations in the Colorado River, Guadalupe River, Nueces River, and Rio Grande basins in the following table:

Station no. and name	Mean discharge (cubic feet per second)		Discharge-weighted-average concentration of dissolved solids (milligrams per liter)	
	1985	1981-85	1985	1981-85
<u>Colorado River basin</u>				
08120700 Colorado River near Cuthbert Tex.	38	33	1,110	1,078
08162000 Colorado River at Wharton Tex.	1,795	1,984	256	245
<u>Guadalupe River basin</u>				
08181800 San Antonio River near Elmendorf Tex.	467	447	446	398
08188500 San Antonio River at Goliad Tex.	647	627	419	453
<u>Nueces River basin</u>				
08211000 Nueces River near Mathis Tex.	376	483	369	314
<u>Rio Grande basin</u>				
08459000 Rio Grande at Laredo Tex.	2,207	2,811	623	599

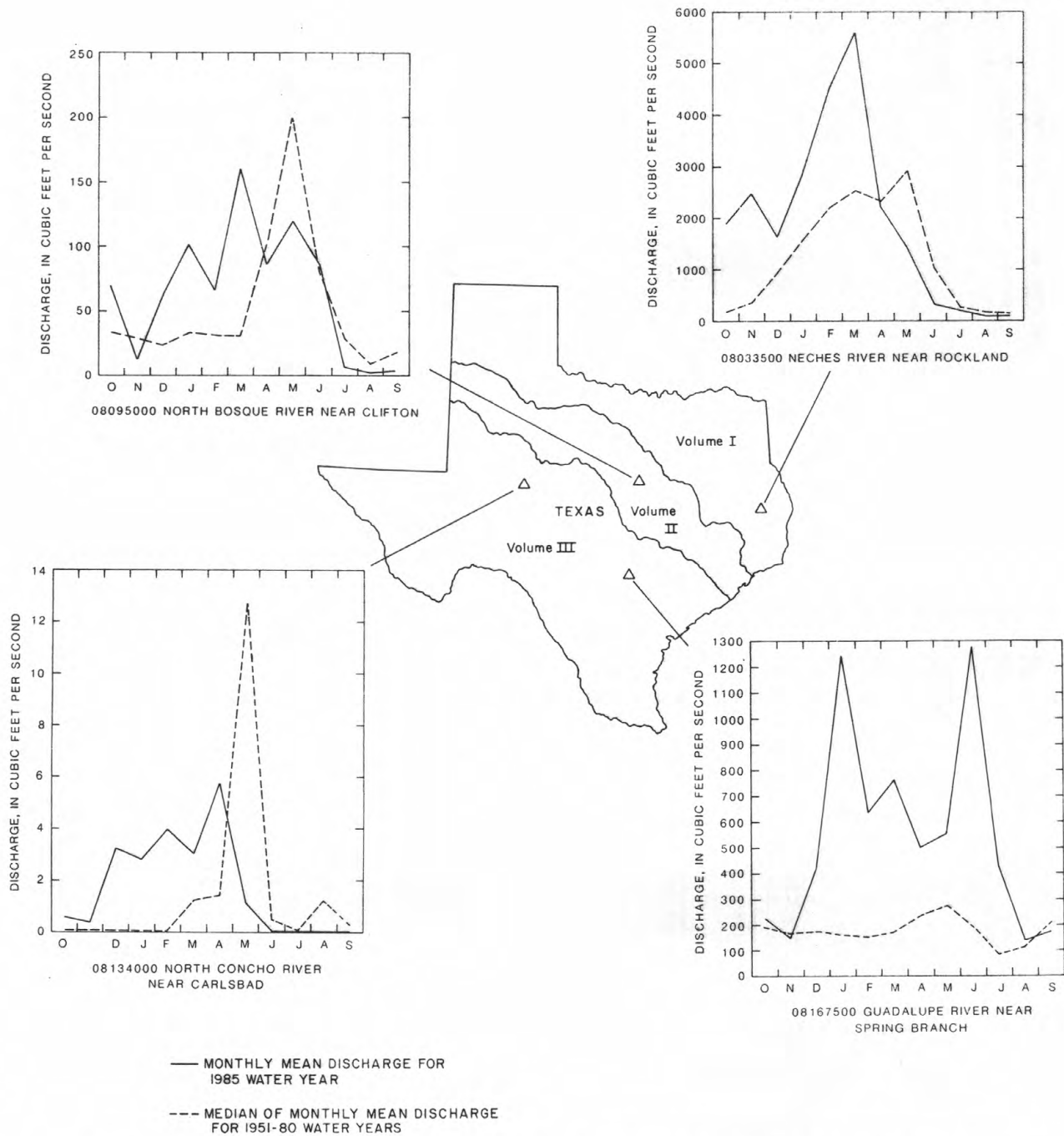


Figure 2.--Comparison of monthly mean discharge at four long-term hydrologic index gaging stations during the 1985 water year with median of the monthly mean discharge for 1951-80 water years.



## SPECIAL NETWORKS AND PROGRAMS

Hydrologic Bench-Mark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Radiochemical Program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

## EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1985 water year that began October 1, 1984, and ended September 30, 1985. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, and water-quality data for surface water. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indef

### Downstream Order Numbering

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation shows which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 08057000, which appears just to the left of the station name, includes the two-digit Part number "08" plus the six-digit downstream-order number "057000." The Part number designates the major river basin; for example, Part "08" is the Western Gulf of Mexico basin.

### Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report.

### Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relationships between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relationship between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adopted by the Geological Survey as a result of experience accumulated since 1880. These methods are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations, Book 3, Chapter A6.

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow over dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations, the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some stations the stage-discharge relation is affected by changing stage; at these stations the rate of change in stage is used as a factor in computing discharge.

In computing records of lake or reservoir contents, it is necessary to have available from surveys, curves or tables defining the relationship of stage and content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relationship changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relationship. Even when this is done, the contents computed may become increasingly in error as the lapsed time since the last survey increases. Discharges over lake or reservoir spillways are computed from stage-discharge relationships much as other stream discharges are computed.

For some gaging stations, there are periods when no gage-height record is obtained, or the recorded gage height is so faulty that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

#### Data presentation

The records published for each gaging station consist of two parts, the manuscript or station description and the data table for the current water year. The manuscript provides, under various headings, descriptive information, such as station location; period of record; average discharge; historical extremes; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.



**LOCATION.--**Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages, given for only a few stations, were determined by methods given in "River Mileage Measurement," Bulletin 14, Revision of October 1968, prepared by the Water Resources Council or were provided by the U.S. Army Corps of Engineers.

**DRAINAGE AREA.--**Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

**PERIOD OF RECORD.--**This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

**REVISED RECORDS.--**Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means that only the instantaneous maximum discharge was revised; "(m)" that only the instantaneous minimum was revised; and "(P)" that only peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

**GAGE.--**The type of gage in current use, the datum of the current gage referred to National Geodetic Vertical Datum of 1929 (see glossary), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

**REMARKS.--**All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, to special methods of computation, to conditions that affect natural flow at the station and, possibly, to other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

**COOPERATION.--**Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

**AVERAGE DISCHARGE.--**The discharge value given is the arithmetic mean of the water-year mean discharges. It is computed only for those stations having at least 5 water years of complete record, and only water years of complete record are included in the computation. It is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water developments significantly altering flow at a station are put into use after the station has been in operation for a period of years, a new average is computed as soon as 5 water years of record have accumulated following the development. The median of yearly mean discharges also is given under this heading for stations having 10 or more water years of record, if the median differs from the average given by more than 10 percent.

**EXTREMES FOR PERIOD OF RECORD.--**Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is

given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

REVISIONS.--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error. Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the offices whose addresses are given on the back of the title page of this report to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

The daily table for stream-gaging stations gives mean discharge for each day and is followed by monthly and yearly summaries. In the monthly summary below the daily table, the line headed "TOTAL" gives the sum of the daily figures. The line headed "MEAN" gives the average flow in cubic feet per second during the month. The lines headed "MAX" and "MIN" give the maximum and minimum daily discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. In the yearly summary below the monthly summary, the figures shown are the appropriate discharges for the calendar and water years. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversions or reservoir contents are given.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations, and the second is a table of annual maximum stage and discharge at crest-stage partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

### Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual State data reports are identified either by flagging individual daily values with the letter symbol "e" and printing a table footnote, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

### Accuracy of the Records

The accuracy of streamflow records depends primarily on: (1) The stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements; and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under "REMARKS." "Excellent" means that about 95 percent of the daily discharges are within 5 percent of their true values; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned are rated "poor." Different accuracies may be attributed to different parts of a given record.

Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft<sup>3</sup>/s; to the nearest tenth between 1.0 and 10 ft<sup>3</sup>/s; to whole numbers between 10 and 1,000 ft<sup>3</sup>/s; and to 3 significant figures for more than 1,000 ft<sup>3</sup>/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff due to the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation due to artificial causes, or to other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, for changes in contents of reservoirs, or for other changes incident to use and control. Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

### Other Records Available

Information used in the preparation of the records in this publication, such as discharge-measurement notes, gage-height records, temperature measurements, and rating tables is on file in the Texas District. Also, most of the daily mean discharges are in computer-readable form and have been analyzed statistically. Information on the availability of the unpublished information or on the results of statistical analyses of the published records may be obtained from the offices whose addresses are given on the back of the title page of this report.

### Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

### Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications.



A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be once or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station where random samples are collected to give better areal coverage to define water-quality conditions in the river basin. A careful distinction needs to be made between "continuing records", as used in this report, and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently.

#### Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

#### On-site Measurements and Sample Collection

In obtaining water-quality data, a major concern needs to be assuring that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, in treating the samples to prevent changes in quality pending analysis, and in shipping the samples to the laboratory.

Procedures for on site measurements and for collecting, treating, and shipping samples are given in publications on "Techniques of Water-Resources Investigations," Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed under "PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS" which appears at the end of the introductory text. Detailed information on collecting, treating, and shipping samples may be obtained from the Texas Office of the Central Regional Office.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see definitions) are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals depends on flow conditions and other factors which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake



of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the Virginia Office of the Mid-Atlantic District whose address is given on the back of the title page of this report.

#### Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Virginia Office of the Mid-Atlantic District.

#### Sediment

Suspended-sediment concentrations are determined from samples collected by using depth-integrating samplers. Samples usually are obtained at several verticals in the cross section, or a single sample may be obtained at a fixed point and a coefficient applied to determine the mean concentration in the cross sections.

During periods of rapidly changing flow or rapidly changing concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time-discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge.

At other stations, suspended-sediment samples were collected periodically at many verticals in the stream cross section. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, records of the periodic measurements of the particle-size distribution of the suspended sediment and bed material are included for some stations.

#### Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratory in Arvada, Colorado. Methods used in analyzing sediment samples and computing sediment records are given in TWRI,

Book 5, Chap. C1. Methods used by the Geological Survey laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

### Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor temperature record, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, WATSTORE, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all required data from the appropriate computer file to insure the most recent updates.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

## Remark Codes

The following remark codes may appear with the water-quality data in this report:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
>	Actual value is known to be greater than the value shown
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
L	Biological organism count less than 0.5 percent (organism may be observed rather than counted)
D	Biological organism count equal to or greater than 15 percent (dominant)
&	Biological organism estimated as dominant

## ACCESS TO WATSTORE DATA

The National WATER Data STORAGE and RETRIEVAL System (WATSTORE) was established for handling water data collected through the activities of the U.S. Geological Survey and to provide for more effective and efficient means of releasing the data to the public. The system is operated and maintained on the central computer facilities of the Survey at its National Center in Reston, Virginia.

WATSTORE can provide a variety of useful products ranging from simple data tables to complex statistical analyses. A minimal fee, plus the actual computer cost incurred in producing a desired product, is charged to the requester. Information about the availability of specific types of data, the acquisition of data or products, and user charges can be obtained locally from the District office (see address given on the back of the title page).

General inquiries about WATSTORE may be directed to:

Chief Hydrologist  
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## DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

Algae are mostly aquatic single-celled, colonial, or multi-celled plants, containing chlorophyll and lacking roots, stems, and leaves.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

Bacteria are microscopic unicellular organisms, typically spherical, rod-like, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 24 hours at 35°C. In the laboratory these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C plus or minus 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5°C plus or minus 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal streptococcal bacteria are bacteria found also in the intestine of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C plus or minus 1.0°C on KF-streptococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.



Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter ( $\text{g/m}^3$ ), and periphyton and benthic organisms in grams per square mile ( $\text{g/m}^2$ ).

Dry mass refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and ash mass and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash mass and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Cubic-foot-per-second day is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,445 cubic meters.

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common green pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic foot per second ( $\text{ft}^3/\text{s}$ ) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic feet per second per square mile [ $(\text{ft}^3/\text{s})/\text{mi}^2$ ] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Dissolved refers to that material in a representative water sample which passes through a 0.45  $\mu\text{m}$  membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Diversity index is a numerical expression of evenness of distribution of aquatic organisms. The formula for diversity index is:

$$\bar{d} = - \sum_{i=1}^S \frac{n_i}{n} \log_2 \frac{n_i}{n}$$

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise specified.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate  $\cdot +(\text{CaCO}_2)$ .

Hydrologic Bench-Mark Network is a network of 57 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram ( $\mu\text{g/g}$ ) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per liter (UG/L,  $\mu\text{g/L}$ ) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L,  $\text{mg/L}$ ) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in  $\text{mg/L}$  and is based on the mass of dry sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in natural or regional water-quality planning and management. The 500 or so sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objectives of NASQAN are (1) to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting such that the data may be used for, (2) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (3) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (4) providing a nationally consistent data base useful for water-quality assessment and hydrologic research.

The National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per area habitat, usually square meter ( $\text{m}^2$ ), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.



Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume, usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter Code is a 5-digit number used in the U.S. Geological Survey computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

Partial-record station is a particular site where limited streamflow and/or water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

<u>Classification</u>	<u>Size (mm)</u>	<u>Method of analysis</u>
Clay.....	0.00024 - 0.004	Sedimentation
Silt.....	.004 - .062	Sedimentation
Sand.....	.062 - 2.0	Sedimentation or sieve
Gravel.....	2.0 - 64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic matter is removed, and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population, in terms of types, numbers, mass, or volume.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

Picocurie (PC, pCi) is one trillionth ( $1 \times 10^{-12}$ ) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields  $3.7 \times 10^{10}$  radioactive disintegrations per second. A picocurie yields 2.22 dpm (disintegrations per minute).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.



Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algae mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [mg C/(m<sup>2</sup>.time)] for periphyton and macrophytes and [mg C/(m<sup>3</sup>.time)] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [mg O<sub>2</sub>/(m<sup>2</sup>.time)] for periphyton and macrophytes and [mg O<sub>2</sub>/(m<sup>3</sup>.time)] for phytoplankton are the units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

Runoff in inches (IN., in.) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material, such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed and very close to it. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the stream-bed.

Bed load discharge (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge ( $\text{ft}^3/\text{s}$ ) x 0.0027.

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Total sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry mass or volume, that passes a section during a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and volume of water, per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emerged or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton collection.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is the part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with the material retained on a 0.45-micrometer filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45  $\mu$ m membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.



Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45  $\mu$ m membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchial scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata, is the following:

Kingdom.....	Animal
Phylum.....	Arthropoda
Class.....	Insecta
Order.....	Ephemeroptera
Family.....	Ephemeridae
Genus.....	Hexagenia
Species.....	<u>Hexagenia limbata</u>

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined all of the constituent in the sample.)



Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross-section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1985, is called the "1985 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WSP is used as an abbreviation for "Water-Supply Paper" in reference to previously published reports.

## PUBLICATIONS OF TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Branch of Distribution, 604 South Pickett St., Alexandria, VA 22304 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. *Water temperature-influential factors, field measurements, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS--TWRI Book 1, Chapter D1. 1975. 65 p.
- 3-A1. *General field and office procedures for indirect measurements*, by M. A. Benson and Tate Dalrymple: USGS--TWRI Book 3, Chapter A1. 1967. 30 p.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS--TWRI Book 3, Chapter A2. 1967. 12 p.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS--TWRI Book 3, Chapter A3. 1968. 60 p.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS--TWRI Book 3, Chapter A4. 1967. 44 p.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS--TWRI Book 3, Chapter A5. 1967. 29 p.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS--TWRI Book 3, Chapter A6. 1968. 13 p.
- 3-A7. *Stage measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A7. 1968. 28 p.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS--TWRI Book 3, Chapter A8. 1969. 65 p.
- 3-A9. *Measurement of time of travel and dispersion in streams by dye tracing*, by E. F. Hubbard, F. A. Kilpatrick, L. A. Martens, and J. F. Wilson, Jr.: USGS--TWRI Book 3, Chapter A9. 1982. 44 p.
- 3-A10. *Discharge ratings at gaging stations*, by E. J. Kennedy: USGS--TWRI Book 3 Chapter A10. 1984. 59 p.
- 3-A11. *Measurement of discharge by moving-boat method*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 3, Chapter A11. 1969. 22 p.
- 3-A13. *Computations of continuous records of streamflow*, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A13, 1983. 53 p.
- 3-A14. *Use of flumes in measuring discharge*, by F. A. Kilpatrick and V. R. Schneider: USGS--TWRI Book 3, Chapter A14. 1983. 46 p.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS--TWRI Book 3, Chapter A15. 1984. 48 p.
- 3-C1. *Fluvial sediment concepts*, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 p.
- 3-C2. *Field methods for measurement of fluvial sediment*, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 p.
- 3-C3. *Computation of fluvial-sediment discharge*, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 p.
- 4-A1. *Some statistical tools in hydrology*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 p.
- 4-A2. *Frequency curves*, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 p.

- 4-B1. *Low-flow investigations*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 p.
- 4-B2. *Storage analyses for water supply*, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 p.
- 4-B3. *Regional analyses of streamflow characteristics*, by H. C. Riggs: USGS--TWRI Book 4, Chapter B3. 1973. 15 p.
- 5-A1. *Methods for determination of inorganic substances in water and fluvial sediments*, by M. W. Skougstad and others: USGS--TWRI Book 5, Chapter A1. 1979. 626 p.
- 5-A2. *Determination of minor elements in water by emission spectroscopy*, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 p.
- 5-A3. *Methods for analysis of organic substances in water*, by D. F. Goerlitz and Eugene Brown: USGS--TWRI Book 5, Chapter A3. 1972. 40 p.
- 5-A4. *Methods for collection and analysis of aquatic biological and microbiological samples*, edited by P. E. Greeson, T. A. Ehlike, G. A. Irwin, B. W. Lium, and K. V. Slack: USGS--TWRI Book 5, Chapter A4. 1977. 332 p.
- 5-A5. *Methods for determination of radioactive substances in water and fluvial sediments*, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 p.
- 5-A6. *Quality assurance practices for the chemical and biological analyses of water and fluvial sediments*, by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 p.
- 5-C1. *Laboratory theory and methods for sediment analysis*, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 p.
- 8-A2. *Installation and service manual for U.S. Geological Survey manometers*, by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 p.
- 8-B2. *Calibration and maintenance of vertical-axis type current meters*, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 p.

## COLORADO RIVER MAIN STEM

08118000 LAKE J. B. THOMAS NEAR VINCENT, TX

LOCATION.--Lat 32°35'09", long 101°12'18", Borden County, Hydrologic Unit 12080002, at Big Spring pump station on south side of lake, 4.0 mi upstream from dam on Colorado River, 7.3 mi north of Vincent, 12.5 mi west of Ira, and at mile 841.0.

DRAINAGE AREA.--3,389 mi<sup>2</sup>, of which 2,371 mi<sup>2</sup> probably is noncontributing. Drainage area includes 455 mi<sup>2</sup> above Bull Creek diversion dam, of which 38 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--October 1953 to current year.

REVISED RECORDS.--WRD TX-81-3: Drainage area.

GAGE.--Water-stage recorder and nonrecording gage read once daily. Datum of gage is National Geodetic Vertical Datum of 1929. Nov. 4, 1953, to Feb. 7, 1955, Colorado River Municipal Water District nonrecording gage located 4.0 mi downstream at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam, 14,500 ft long. Storage began in July 1952 and the dam was completed in September 1952. There was no appreciable storage prior to July 1953. The capacity curve is based on surveys made in 1948 and 1950. There are two uncontrolled emergency spillways, both cut through natural ground and located as follows: The first is a 500-foot-wide cut located at the left end of dam, and the second cut is 1,600 ft wide located at the right end of dam. These spillways are designed to discharge 161,000 ft<sup>3</sup>/s (elevation, 2,275.0 ft). An uncontrolled rectangular concrete drop inlet, 38.0 by 53.0 ft at the crest, discharges into two 10.0-foot concrete conduits. In addition, there is an outlet that can release water through a 24-inch gate into a 30-inch concrete pipe. The dam was built by the Colorado River Municipal Water District to impound water for municipal and industrial supply for the cities of Big Spring, Odessa, and Snyder. A diversion dam on Bull Creek diverts water through a 13,000-foot-long gravity canal into Lake J. B. Thomas. These diversions began in November 1953. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	2,280.0	-
Crest of right spillway (south).....	2,267.0	283,600
Crest of left spillway (north).....	2,264.0	255,000
Crest of drop inlet (top of conservation pool).....	2,258.0	203,600
Lowest gated outlet (invert).....	2,200.0	1,300

COOPERATION.--Area and capacity curves were furnished by the Colorado River Municipal Water District. Daily elevation record was furnished by the Colorado River Municipal Water District and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 218,600 acre-ft Sept. 8, 1962 (elevation, 2,259.85 ft); minimum since first appreciable storage, 4,960 acre-ft May 28, 1971 (elevation, 2,206.43 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 31,460 acre-ft June 9, 10, 12 (elevation, 2,222.04 ft); minimum, 17,680 acre-ft Apr. 27 (elevation, 2,215.64 ft).

Capacity table (elevation, in feet, and total contents, in acre-feet)

2,215.0	16,510	2,220.0	24,420
2,217.0	20,270	2,223.0	33,870

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20170	19860	20250	20720	20080	19690	19070	20640	26600	29910	28160	25530
2	19980	19830	20230	20800	20080	19650	19030	20720	26550	29870	28070	25400
3	19880	20000	20190	20800	20060	19650	18920	20720	26460	29770	27980	25310
4	20270	19960	20150	20840	20060	19610	18880	20680	26370	29720	27890	25220
5	20170	19980	20130	20800	20040	19540	18840	20590	26640	29670	27790	25090
6	20080	19980	20120	20800	20040	19500	18730	20510	29090	29620	27750	25000
7	19980	19960	20080	20800	20040	19460	18650	22510	30930	29530	27610	24910
8	19880	20000	20040	20800	20000	19460	18610	23150	31360	29380	27560	24860
9	20080	20000	20000	20680	20000	19420	18570	23150	31460	29340	27470	25860
10	19980	19960	20000	20680	19920	19420	18530	23110	31460	29190	27330	24640
11	20080	19920	20000	20680	19920	19380	18490	23060	31410	29140	27220	24550
12	19980	19880	19960	20590	19880	19300	18490	23020	31460	29070	27100	24460
13	20080	19810	19960	20590	19860	19340	18420	22770	31260	28950	26960	24600
14	20080	19790	19960	20590	19810	19420	18380	23230	31220	28490	27010	24690
15	20270	19790	20080	20550	19810	19380	18380	23190	31170	28720	26920	25260
16	20120	19730	19730	20510	19770	19380	18300	23110	31120	28670	26960	25260
17	20080	19770	20510	20470	19730	19340	18230	23110	31020	28580	26870	25260
18	20020	19980	20590	20430	19690	19300	18160	25090	30880	28490	26730	25220
19	19960	20000	20640	20430	19690	19270	18080	25490	30880	28350	26640	25220
20	19920	20000	20640	20390	19650	19460	18010	25530	30830	28260	26550	25170
21	19980	20000	20590	20350	19650	19500	17940	25620	30780	28160	26420	25170
22	19830	19960	20590	20310	19610	19500	17970	25750	30730	28030	26330	25090
23	19880	19920	20550	20310	19690	19460	17940	26420	30640	28210	26200	25090
24	20000	19880	20550	20270	19810	19420	17830	26960	30400	28260	26110	25040
25	20000	19880	20510	20230	19810	19420	17790	26960	30300	28260	26060	24950
26	20000	19960	20470	20190	19810	19380	17720	26920	30300	28210	25970	24820
27	19960	20270	20470	20150	19690	19340	17680	26920	30230	28160	25930	24730
28	19960	20230	20430	20120	19650	19300	17970	26870	30150	28210	25890	24640
29	19920	20310	20430	20080	---	19300	18920	26820	30150	28260	25800	24640
30	19880	20270	20430	20120	---	19230	20040	26780	30150	28260	25710	24600
31	19850	---	20680	20080	---	19110	---	26640	---	28210	25620	---
MAX	20270	20310	20680	20840	20080	19690	20040	26960	31460	29910	28160	25860
MIN	19830	19730	19730	20080	19610	19110	17680	20510	26370	28030	25620	24460
(+)	2216.78	2217.00	2217.20	2216.90	2216.68	2216.40	2216.88	2220.00	2221.50	2220.68	2219.54	2219.08
(+)	-420	+420	+410	-600	-430	-540	+930	+6600	+3510	-1940	-2590	-1020
CAL YR 1984	MAX	36270	MIN	19690	(+)	-15750						
WTR YR 1985	MAX	31460	MIN	17680	(+)	+4330						

(+) Elevation, in feet, at end of month.

(+) Change in contents, in acre-feet.



## COLORADO RIVER MAIN STEM

08119500 COLORADO RIVER NEAR IRA, TX

LOCATION.--Lat 32°32'18", long 101°03'12", Scurry County, Hydrologic Unit 12080002, on right bank 530 ft downstream from bridge on State Highway 350, 3.8 mi downstream from Bluff Creek, 4 mi upstream from Willow Creek, 4.5 mi southwest of Ira, and at mile 826.3.

DRAINAGE AREA.--3,483 mi<sup>2</sup>, of which 2,371 mi<sup>2</sup> (corrected) probably is noncontributing.

PERIOD OF RECORD.--October 1947 to September 1952 (monthly records only 1950-52), October 1958 to current year. Water-quality records: Chemical analyses: November 1958 to September 1970, November 1974 to September 1982.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,134.15 ft above National Geodetic Vertical Datum of 1929. From Oct. 1-30, 1947, nonrecording gage at site 75 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Since July 1952, flow largely regulated by Lake J. B. Thomas (station 08118000) 11 mi upstream.

AVERAGE DISCHARGE.--5 years (water years 1948-52) prior to completion of Colorado River Dam, 50.5 ft<sup>3</sup>/s (36,590 acre-ft/yr); 27 years (water years 1959-85) regulated, 9.73 ft<sup>3</sup>/s (7,050 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,500 ft<sup>3</sup>/s July 6, 1948 (gage height, 21.35 ft), from rating curve extended above 9,600 ft<sup>3</sup>/s by slope-conveyance method; maximum gage height, 22.84 ft May 15, 1980 (from shift in rating); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 16, 1913 (gage height, 32 ft), was the greatest since at least that date, from information by local resident. Flood in May 1947 reached a stage of 25.1 ft, from floodmark at site of former bridge 269 ft upstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,690 ft<sup>3</sup>/s Apr. 29 at 0300 hours (gage height, 13.66 ft); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.45	5.6	.76	32	.60	.91	.73	8.3	.48	.07	.04	.00
2	.35	1.3	.74	8.1	.70	.85	.58	3.4	.42	.07	.03	.00
3	.29	.80	.68	2.9	.80	.79	.53	1.9	.31	3.0	.01	.00
4	40	.63	.66	1.8	1.0	1.1	.49	1.6	3.8	.18	.00	.00
5	5.7	.53	.63	1.5	1.1	1.8	.45	1.3	56	.09	.00	.00
6	.83	.44	.61	1.3	.94	1.1	.42	1.1	104	.06	.00	.00
7	.52	.42	.61	1.2	.82	.88	.37	.91	21	.04	.00	.00
8	.35	.41	.61	1.1	.76	.78	.36	49	4.7	.03	.00	.00
9	35	.36	.62	1.0	.75	.71	.36	23	1.8	.01	.00	.00
10	15	.35	.61	1.0	.75	.68	.36	4.8	1.1	.00	.00	.00
11	1.2	.36	.61	.88	.66	.68	.36	4.6	.85	.00	.00	.00
12	.68	.36	.61	.78	.61	.67	.36	1.0	.68	.00	.00	.00
13	30	.42	.61	.88	.61	6.2	.31	151	.61	.00	.19	6.3
14	40	.42	.67	.89	.61	5.6	.31	70	.48	.00	.01	.12
15	2.8	.42	37	.94	.61	1.9	.31	6.3	.36	.00	.00	.02
16	.92	.31	58	.91	.62	1.5	.26	2.2	.31	.00	.00	.00
17	.56	35	12	.85	.68	1.2	.23	228	.26	.00	.00	.00
18	.44	20	2.9	.85	.68	.90	.22	55	.22	.00	.00	.00
19	.34	2.0	1.8	.84	.76	30	.21	12	.22	.00	.00	11
20	.29	1.4	1.5	.75	.98	133	.18	13	.18	.00	.00	1.4
21	.27	1.0	1.3	.68	1.1	25	.20	18	.15	.00	.00	6.7
22	6.3	.84	1.1	.68	2.0	5.3	.33	99	.12	36	.00	.09
23	12	.76	.94	.73	24	2.2	.88	88	.09	16	.00	.06
24	2.5	12	.93	1.0	8.7	1.5	.45	16	.07	3.6	.00	.02
25	1.2	8.4	.85	.86	2.0	1.2	.28	4.2	.09	.91	.00	.00
26	11	7.6	.85	.76	1.4	.91	.21	1.9	.27	.52	.00	.00
27	3.6	1.8	.85	.76	1.1	.80	.81	1.2	.20	.39	.00	.00
28	.99	1.2	.92	.76	.94	.73	199	.94	.17	.28	.00	.00
29	.69	.96	.91	.75	---	.68	776	.68	.11	.22	.00	7.1
30	.63	.86	.98	---	---	.70	34	.48	.09	.15	.00	.14
31	.61	---	46	.60	---	.81	---	.48	---	.07	.00	---
TOTAL	215.51	106.95	177.86	68.73	56.28	231.08	1099.75	869.29	199.14	61.69	.28	32.95
MEAN	6.95	3.57	5.74	2.22	2.01	7.45	36.7	28.0	6.64	1.99	.009	1.10
MAX	40	35	58	32	24	133	776	228	104	36	.19	11
MIN	.27	.31	.61	.60	.60	.67	.18	.48	.07	.00	.00	.00
AC-FT	427	212	353	136	112	458	2180	1720	395	122	.6	65

CAL YR 1984 TOTAL 1311.76 MEAN 3.58 MAX 314 MIN .00 AC-FT 2600  
WTR YR 1985 TOTAL 3119.51 MEAN 8.55 MAX 776 MIN .00 AC-FT 6190

COLORADO RIVER BASIN

31

08120500 DEEP CREEK NEAR DUNN, TX

LOCATION.--Lat 32°34'25", long 100°54'27", Scurry County, Hydrologic Unit 12080002, at center of downstream side of bridge on Farm Road 1606, 1.5 mi northwest of Dunn, 2.7 mi upstream from Sulphur Draw, and 9.6 mi upstream from mouth.

DRAINAGE AREA.--198 mi<sup>2</sup>, of which 10 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--April 1953 to current year.

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,172.17 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 21, 1955, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Nov. 1, July 28 to Aug. 6. Records good except those for periods of estimated discharges, which are fair.

AVERAGE DISCHARGE.--32 years (water years 1954-85), 11.9 ft<sup>3</sup>/s (0.86 in/yr), 8,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,700 ft<sup>3</sup>/s Aug. 14, 1972 (gage height, 31.28 ft, from floodmarks), from rating curve extended above 12,000 ft<sup>3</sup>/s by velocity-area study; no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1881, 36,400 ft<sup>3</sup>/s June 19, 1939, by slope-area measurement at site 8.0 mi upstream from gage. Flood in 1892 reached about same stage as that of June 19, 1939, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 850 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 1	1830	1,230	12.29	May 17	0515	*2,450	*18.64
Apr. 29	0330	2,070	17.07	July 26	1215	875	9.31

Minimum daily discharge, no flow Aug. 28 to Sept. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	307	2.8	9.3	3.6	1.3	3.0	7.6	2.0	2.6	2.0	.00
2	2.0	85	2.7	4.4	3.6	.89	2.5	4.9	1.9	2.3	2.0	.00
3	2.0	10	2.4	3.6	3.6	1.0	2.4	4.2	1.6	2.2	2.0	.00
4	4.8	5.4	2.4	3.7	3.9	3.1	2.3	3.7	13	2.1	1.5	.00
5	5.2	3.5	2.5	3.5	5.4	2.9	2.2	3.1	428	2.3	1.0	.00
6	2.8	3.2	2.5	3.1	4.1	1.9	2.0	2.9	307	2.2	1.0	.00
7	2.0	2.9	2.5	2.9	3.4	1.7	3.3	2.7	37	1.5	.52	.00
8	1.8	2.9	2.6	2.8	3.0	1.7	2.4	94	12	1.6	.22	.00
9	1.9	2.5	2.6	2.8	3.2	1.7	2.4	10	7.3	1.8	1.1	.00
10	3.1	2.2	2.4	2.8	3.4	1.7	2.7	5.1	5.0	1.6	1.6	.00
11	2.6	2.5	2.6	3.0	3.2	1.7	3.1	5.2	5.0	1.6	1.6	.00
12	2.2	2.7	2.7	2.9	2.9	1.7	3.2	3.9	5.7	1.3	1.3	.00
13	28	2.8	2.7	2.9	3.3	12	3.5	108	4.0	.98	2.3	45
14	18	2.9	2.5	2.9	3.1	5.9	3.7	39	3.8	.28	2.9	13
15	5.3	3.4	42	2.8	2.7	2.7	3.6	7.0	4.3	.18	5.5	3.0
16	3.4	2.7	34	3.1	3.0	3.6	3.5	58	4.6	.11	3.5	1.4
17	2.4	22	5.7	3.6	2.9	4.7	3.2	1040	4.2	.49	3.6	.60
18	2.3	16	4.0	3.1	2.9	2.8	3.3	51	3.3	.73	6.2	.62
19	2.0	5.1	3.5	3.0	2.8	2.9	2.6	14	3.3	.31	3.5	1.0
20	2.0	3.5	3.4	3.4	3.5	25	2.7	13	3.2	.11	2.2	3.5
21	2.1	2.9	3.3	3.1	7.7	4.8	2.7	25	3.3	.07	1.7	5.5
22	14	2.6	3.2	3.6	3.6	3.3	44	110	3.2	.83	2.0	3.3
23	8.3	2.6	3.2	3.7	11	2.8	8.4	78	3.1	3.9	1.8	1.9
24	4.9	16	3.0	4.0	3.9	2.4	3.1	12	2.9	5.1	1.4	1.6
25	3.5	29	2.9	4.1	2.4	2.3	2.2	5.7	2.7	6.5	.80	1.2
26	4.5	7.8	3.0	3.9	1.9	2.4	2.1	4.1	2.9	226	.08	1.2
27	7.9	4.5	3.3	3.8	1.8	2.5	105	3.4	3.3	23	.01	1.4
28	4.8	3.5	3.4	3.5	1.7	2.3	208	2.7	2.8	4.0	.00	1.7
29	3.2	3.1	3.4	3.6	---	2.7	710	2.1	2.7	3.5	.00	14
30	2.5	2.7	3.2	3.7	---	6.4	28	1.9	2.7	3.0	.00	5.1
31	2.5	---	23	3.7	---	4.4	---	1.9	---	2.5	.00	---
TOTAL	154.1	562.9	183.4	110.3	101.5	117.19	1171.1	1724.1	885.8	304.69	53.33	105.02
MEAN	4.97	18.8	5.92	3.56	3.63	3.78	39.0	55.6	29.5	9.83	1.72	3.50
MAX	28	307	42	9.3	11	25	710	1040	428	226	6.2	45
MIN	1.8	2.2	2.4	2.8	1.7	.89	2.0	1.9	1.6	.07	.00	.00
CFSM	.03	.10	.03	.02	.02	.02	.21	.30	.16	.05	.009	.02
IN.	.03	.11	.04	.02	.02	.02	.23	.34	.18	.06	.01	.02
AC-FT	306	1120	364	219	201	232	2320	3420	1760	604	106	208
CAL YR 1984	TOTAL	1300.72	MEAN	3.55	MAX	307	MIN	.00	CFSM	.02	IN	.26
WTR YR 1985	TOTAL	5473.43	MEAN	15.0	MAX	1040	MIN	.00	CFSM	.08	IN	1.08
									AC-FT	10860		

## COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX

LOCATION.--Lat 32°28'38", long 100°56'58", Mitchell County, Hydrologic Unit 12080002, on left bank at downstream side of bridge on Farm Road 1808, 4.0 mi downstream from Deep Creek, 4.8 mi east of Cuthbert, 8.0 mi northwest of Colorado City, and at mile 810.0.

DRAINAGE AREA.--3,912 mi<sup>2</sup>, of which 2,381 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1965 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,073.49 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is partly regulated by Lake J. B. Thomas (station 081180-00).

AVERAGE DISCHARGE.--20 years (water years 1966-85), 35.7 ft<sup>3</sup>/s (25,860 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft<sup>3</sup>/s Aug. 14, 1972 (gage height, 25.99 ft); maximum gage height, 27.18 ft Sept. 29, 1980; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in 1941 and 1946 reached a stage of 36.1 ft, from State Department of Highways and Public Transportation bridge plans.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,160 ft<sup>3</sup>/s Apr. 29 at 1030 hours (gage height, 14.83 ft); no flow Aug. 28 to Sept. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.9	75	7.5	87	8.1	9.3	10	148	9.9	2.9	1.6	.00
2	3.5	436	7.2	48	8.1	8.6	8.9	49	8.4	2.6	1.9	.00
3	2.3	50	6.2	23	8.1	7.9	7.1	31	6.7	15	1.6	.00
4	7.4	18	6.0	17	9.0	7.8	6.2	24	18	4.7	1.3	.00
5	44	12	6.0	14	11	9.3	6.0	19	688	4.0	.98	.00
6	15	8.5	5.2	13	13	9.5	5.5	15	717	3.5	.82	.00
7	5.8	6.9	5.1	11	11	9.2	5.2	12	285	3.1	.74	.00
8	2.9	5.3	5.0	10	9.6	8.2	6.5	111	167	2.6	.63	.00
9	4.2	4.7	5.2	9.6	8.9	7.7	5.9	110	67	2.1	.52	.00
10	19	4.3	5.2	9.2	8.5	7.2	6.3	46	45	2.1	.37	.00
11	17	3.7	5.2	8.6	8.1	7.5	6.1	29	32	2.0	.19	.00
12	6.3	3.3	5.3	8.0	7.5	6.9	6.5	24	26	1.6	.36	.00
13	4.3	3.5	5.7	7.5	7.1	7.0	6.0	43	22	1.4	.82	4.5
14	64	3.8	5.9	7.5	6.9	26	5.7	267	17	1.0	.82	42
15	47	2.9	39	7.7	6.9	18	5.6	105	15	.87	1.1	10
16	12	3.4	159	8.4	6.9	14	5.0	54	13	.76	2.9	3.6
17	5.7	31	82	8.7	6.9	14	4.4	1100	11	.60	1.7	2.0
18	3.3	137	33	9.0	6.9	13	3.9	565	9.2	.43	1.1	1.3
19	1.9	43	18	8.8	6.9	11	3.7	189	7.9	.33	3.2	2.5
20	1.5	18	15	7.4	8.5	77	3.2	76	7.5	.48	1.4	54
21	1.3	12	13	6.8	16	126	2.6	221	6.6	.82	.56	29
22	4.6	8.7	11	6.6	18	40	13	217	6.0	.77	.26	22
23	39	7.7	9.7	6.6	24	20	27	450	5.2	38	.13	7.5
24	24	15	9.5	7.4	42	15	8.3	279	4.8	45	.08	4.3
25	13	93	8.4	7.5	23	12	5.3	77	4.3	15	.06	3.0
26	17	47	8.2	7.5	14	10	4.2	41	4.8	142	.03	1.9
27	41	24	8.2	7.8	11	9.8	20	28	6.4	108	.01	1.4
28	19	15	8.9	7.2	9.4	9.0	266	21	5.3	16	.00	1.4
29	9.5	11	9.0	7.6	---	8.2	1520	16	4.2	7.2	.00	56
30	5.9	8.8	9.0	7.9	---	9.1	984	12	3.4	4.2	.00	34
31	4.4	---	37	7.5	---	15	---	11	---	2.7	.00	---
TOTAL	451.7	1112.5	558.6	403.8	325.3	553.2	2968.1	4390	2223.6	431.76	25.18	280.40
MEAN	14.6	37.1	18.0	13.0	11.6	17.8	98.9	142	74.1	13.9	.81	9.35
MAX	64	436	159	87	42	126	1520	1100	717	142	3.2	56
MIN	1.3	2.9	5.0	6.6	6.9	6.9	2.6	11	3.4	.33	.00	.00
AC-FT	896	2210	1110	801	645	1100	5890	8710	4410	856	50	556

CAL YR 1984 TOTAL 4122.10 MEAN 11.3 MAX 506 MIN .00 AC-FT 8180  
WTR YR 1985 TOTAL 13724.14 MEAN 37.6 MAX 1520 MIN .00 AC-FT 27220

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: March 1965 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: March 1965 to current year.

WATER TEMPERATURES: March 1965 to May 1980, April 1983 to current year.

INSTRUMENTATION.--Since March 1965, specific conductance is recorded continuously at this station. Since April 1983, water temperature is recorded continuously at this station.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 70,000 microsiemens Nov. 17, 1968; minimum daily, 102 microsiemens Sept. 28, 1980. WATER TEMPERATURES (1965-85): Maximum daily, 36.0°C Aug. 7, 1985; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 8,800 microsiemens Feb. 24; minimum daily, 200 microsiemens May 17.

WATER TEMPERATURES: Maximum daily, 36.0°C Aug. 7; minimum daily, 0.0°C on several days during January and February.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 24...	1140	21	3230	11.5	460	340	120	40	510
DEC 05...	0820	5.9	3960	4.5	740	520	180	70	620
FEB 20...	1055	7.1	4730	11.0	990	680	230	100	720
APR 30...	1555	934	507	20.0	130	39	41	6.1	46
MAY 15...	0910	111	1250	20.0	250	160	67	20	140
AUG 06...	1545	.76	2960	32.5	410	250	110	34	460

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 24...	11	6.3	120	280	810	.40	5.0	1800
DEC 05...	10	7.0	220	440	950	.70	7.7	2400
FEB 20...	10	7.3	310	780	1000	1.1	10	3000
APR 30...	2	6.3	89	50	67	.30	7.5	280
MAY 15...	4	8.5	90	87	280	.40	7.6	660
AUG 06...	10	8.9	162	320	700	.40	3.8	1700



## COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	451.7	3710	2310	2810	810	990	560	689	690
NOV.	1984	1112.5	2560	1600	4790	540	1620	410	1220	490
DEC.	1984	558.6	3170	1970	2980	680	1030	490	742	600
JAN.	1985	403.8	3770	2340	2550	830	901	570	624	700
FEB.	1985	325.3	5280	3280	2880	1200	1070	760	663	940
MAR.	1985	553.2	3670	2280	3410	810	1210	550	827	680
APR.	1985	2968.1	972	606	4860	210	1640	150	1240	190
MAY	1985	4390	1340	837	9920	280	3270	220	2590	260
JUNE	1985	2223.6	1310	817	4910	270	1600	210	1290	260
JULY	1985	431.76	1870	1170	1360	390	458	300	348	360
AUG.	1985	25.18	2430	1510	103	510	35	390	26	470
SEPT	1985	280.40	1560	974	737	320	239	260	195	310
TOTAL		13724.14	**	**	41300	**	14100	**	10400	**
WTD.AVG.		38	1790	1110	**	380	**	280	**	340

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	2400	2300	2340	4200	1700	3830	---	---	3480	---	---	3240
2	2400	2300	2340	2200	1600	1860	---	---	3630	---	---	3280
3	2600	2400	2490	2800	2300	2560	---	---	3800	---	---	3360
4	3200	2600	2790	3100	2800	2940	---	---	3890	---	---	3440
5	3200	3000	3080	3300	3100	3160	---	---	3960	---	---	3490
6	3300	3100	3190	3600	3300	3370	---	---	4010	---	---	3530
7	3300	3200	3270	---	---	3440	---	---	4180	---	---	3570
8	3400	3200	3260	---	---	3510	---	---	4320	---	---	3590
9	3500	3300	3390	---	---	3630	---	---	4290	---	---	3610
10	3500	3400	3450	---	---	3790	---	---	4310	3800	3600	3700
11	4000	3400	3770	---	---	4000	---	---	4370	3900	3700	3810
12	4000	3900	3910	---	---	4120	---	---	4360	4100	3800	3950
13	4000	3900	3920	---	---	4080	---	---	4320	4100	4000	4040
14	4000	3700	3810	---	---	4040	---	---	4290	4100	4000	4060
15	3800	3700	3780	---	---	4100	---	---	3810	4200	4100	4130
16	3900	3800	3850	---	---	4050	---	---	2520	4200	4000	4190
17	3900	3700	3750	---	---	3780	---	---	2660	4300	4200	4250
18	3900	3700	3800	---	---	2620	---	---	2800	4300	4200	4250
19	3800	3700	3780	---	---	2710	---	---	2930	4300	4100	4250
20	3800	3700	3710	---	---	2880	---	---	3070	4500	4300	4390
21	3700	3600	3640	---	---	3070	---	---	3140	4600	4400	4500
22	3700	3500	3580	---	---	3220	---	---	3280	4800	4400	4530
23	3500	3200	3270	---	---	3430	---	---	3350	4700	4500	4670
24	4200	2300	3370	---	---	3270	---	---	3470	4600	4100	4470
25	4800	4400	4700	---	---	2690	---	---	3540	4500	4400	4480
26	4700	4400	4580	---	---	2750	---	---	3660	4700	4500	4530
27	4500	4300	4410	---	---	2840	3700	3300	3660	4700	4500	4580
28	4400	4200	4300	---	---	3000	3800	3600	3700	4700	4500	4630
29	4300	4200	4230	---	---	3160	4100	3700	3870	4700	4500	4600
30	4300	4100	4190	---	---	3290	4300	4000	4140	4900	4600	4760
31	4200	4100	4170	---	---	---	---	---	3970	4900	4800	4840
MONTH	4800	2300	3620	4200	1600	3310	4300	3300	3700	4900	3600	4090

## 08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	5000	4700	4840	5100	4400	4860	3600	3300	3450	---	---	2630
2	5000	4600	4870	4800	4200	4570	3900	3500	3720	---	---	3780
3	5300	5000	5120	4500	4100	4400	4000	3800	3920	---	---	3840
4	5200	5000	5050	4400	4100	4280	4000	3800	3910	---	---	3970
5	5300	5100	5200	4400	4000	4210	4000	3900	3960	---	---	4100
6	5200	4800	5050	4100	3600	3840	4200	4000	4080	---	---	4170
7	5200	4800	4980	4800	4000	4420	4200	4100	4120	---	---	4220
8	5300	4900	5150	4800	4600	4750	---	---	4100	---	---	2440
9	5300	5000	5210	4900	4800	4860	---	---	4130	---	---	2320
10	5300	5100	5230	4900	4700	4810	---	---	4090	---	---	2960
11	5300	5000	5140	4900	4600	4780	---	---	4140	---	---	3250
12	5200	5000	5080	4900	4300	4780	---	---	4070	---	---	3470
13	5200	4900	5090	5000	4700	4850	---	---	4100	---	---	3110
14	5300	5000	5170	5000	4100	4610	---	---	4150	---	---	750
15	5200	4900	5070	6200	4500	5440	---	---	4190	1800	1200	1490
16	5100	4800	4980	6500	5500	6030	---	---	4270	2500	800	2010
17	5100	4900	5030	6200	5200	5660	---	---	4410	2500	200	713
18	5100	4700	4900	5400	4700	4880	---	---	4600	1600	400	950
19	4900	4800	4830	4800	4500	4640	---	---	4780	1900	600	1140
20	4900	4500	4720	5000	2800	4180	---	---	4930	3000	2000	2450
21	4900	4300	4600	3000	2000	2230	---	---	5050	2500	800	1320
22	4500	3800	4160	2300	1900	2030	---	---	4970	1100	800	967
23	6600	4300	4730	2800	2200	2510	---	---	4530	900	700	783
24	8800	4800	6070	3200	2800	2990	---	---	4410	1200	700	879
25	7400	4600	6610	3500	3200	3300	---	---	4520	2600	1200	1950
26	7300	5600	6430	3700	3500	3600	---	---	4700	3500	2600	3060
27	6100	5400	5720	3900	3600	3740	---	---	4450	3900	3500	3720
28	5500	5000	5250	4000	3800	3880	---	---	3780	4300	3900	4150
29	---	---	---	4100	3900	4020	---	---	350	4600	4300	4420
30	---	---	---	4100	4000	4060	---	---	507	4800	4500	4670
31	---	---	---	4100	3400	3770	---	---	---	4800	4700	4750
MONTH	8800	3800	5150	6500	1900	4230	4200	3300	4010	4800	200	2720

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	4800	4600	4750	3700	3300	3500	2200	1800	2010	---	---	---
2	5200	4600	4950	3500	3300	3380	2400	2100	2200	---	---	---
3	5000	4700	4820	3400	700	2160	2600	2400	2480	---	---	---
4	4800	1400	4540	3000	2800	2890	2700	2500	2600	---	---	---
5	1700	400	1050	4300	2900	3630	2900	2600	2730	---	---	---
6	1400	600	879	4100	3000	3480	3100	2800	2900	---	---	---
7	1600	700	1130	4600	3000	3620	3100	3000	3040	---	---	---
8	---	---	1250	4700	4200	4590	3200	3100	3150	---	---	---
9	1600	1100	1380	4200	3700	3930	3300	3100	3230	---	---	---
10	2100	1600	1830	3600	3200	3370	3300	3200	3270	---	---	---
11	2400	2000	2240	3300	3100	3210	3400	3200	3300	---	---	---
12	2600	2400	2500	3600	3200	3440	3400	2400	3100	---	---	---
13	2900	2400	2650	3800	3500	3700	3400	3200	3320	---	---	3250
14	3200	2900	3120	3800	3700	3750	3600	3400	3460	3700	800	1990
15	3500	3100	3360	3800	3600	3680	3600	3400	3480	1800	1500	1550
16	3600	3400	3520	3700	3500	3640	4000	2500	3280	1600	1500	1550
17	3500	3300	3420	3800	3500	3650	2400	1700	2060	1800	1500	1650
18	3500	3200	3350	3800	3600	3700	1700	1500	1630	1800	1700	1770
19	3500	3300	3400	3800	3600	3730	1500	1400	1440	1900	1100	1720
20	3700	3400	3560	3800	3600	3730	1500	1400	1450	2800	700	1480
21	3800	3600	3720	4000	3600	3830	1400	1300	1380	1900	1200	1650
22	3900	3700	3770	4000	3800	3940	1400	1300	1370	1900	1100	1530
23	3700	3500	3620	6100	1800	3950	1500	1300	1420	1400	1100	1240
24	3600	3500	3560	5200	2300	2950	1500	1400	1430	1700	1400	1600
25	3600	3400	3500	2900	1700	2100	1500	1400	1440	2000	1700	1850
26	3600	3400	3450	2800	300	1630	1500	1400	1470	2200	2000	2050
27	4100	3200	3350	700	300	538	1500	1400	1480	2400	2100	2250
28	4000	3400	3700	1000	700	879	---	---	---	2500	2300	2380
29	3800	3500	3630	1400	1100	1250	---	---	---	2200	800	1370
30	3700	3500	3610	1700	1400	1550	---	---	---	2300	900	1110
31	---	---	---	1900	1600	1800	---	---	---	---	---	---
MONTH	5200	400	3120	6100	300	3070	4000	1300	2370	3700	700	1780

## COLORADO RIVER MAIN STEM

08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	18.5	13.5	15.5	20.0	16.0	18.5	10.0	6.0	8.0	8.5	5.0	7.0
2	19.5	16.0	18.0	16.5	14.5	15.5	9.5	7.5	8.5	7.0	3.0	5.5
3	20.0	17.5	19.0	17.0	13.5	15.0	8.5	5.5	7.0	5.5	1.0	4.0
4	21.5	18.5	20.0	16.0	13.0	14.5	8.0	5.5	6.5	7.0	3.0	4.5
5	21.5	19.0	20.0	15.5	11.5	13.5	5.5	4.5	5.0	7.5	3.0	5.5
6	22.0	19.0	20.5	14.0	10.5	12.5	---	---	---	8.5	3.0	6.5
7	22.5	18.5	20.5	16.5	12.0	14.0	---	---	---	8.5	4.0	6.5
8	22.0	18.5	20.5	17.5	13.0	15.5	---	---	---	10.0	4.5	6.0
9	22.0	19.0	20.5	18.0	14.5	16.0	---	---	---	6.5	6.0	6.0
10	21.5	18.5	20.0	15.5	12.0	13.5	---	---	---	7.5	4.0	6.0
11	21.5	19.5	20.5	13.5	9.5	11.5	---	---	---	8.0	2.0	6.5
12	23.0	19.5	21.0	14.0	10.0	11.5	---	---	---	5.5	1.0	3.0
13	22.5	20.0	21.5	15.0	10.5	12.5	---	---	---	6.0	.0	3.0
14	21.5	19.0	20.5	18.0	14.0	15.5	---	---	---	7.0	.0	3.5
15	20.5	17.5	19.0	16.5	12.5	14.5	---	---	---	5.5	1.0	3.0
16	19.5	17.0	18.5	12.5	11.0	12.0	---	---	---	7.0	3.5	5.0
17	18.0	14.5	16.0	12.0	11.5	12.0	---	---	---	7.0	3.0	5.0
18	19.5	16.5	18.0	12.0	10.5	11.5	---	---	---	8.0	3.0	5.5
19	18.5	14.5	16.0	10.0	8.5	9.0	---	---	---	9.0	3.5	6.0
20	18.0	16.0	17.0	8.5	7.5	8.0	---	---	---	4.0	.0	1.0
21	17.0	14.0	15.5	9.5	7.0	8.0	---	---	---	5.5	.0	1.5
22	14.0	11.5	12.5	10.0	7.5	9.0	---	---	---	3.5	.0	2.5
23	12.0	11.5	11.5	11.0	7.5	9.5	---	---	---	4.5	1.0	3.0
24	12.0	11.0	11.5	10.5	9.0	9.5	---	---	---	7.5	2.0	4.5
25	13.5	11.5	12.0	10.5	8.0	9.0	---	---	---	8.5	3.5	6.0
26	14.0	12.5	13.0	12.0	9.5	10.5	---	---	---	8.5	4.5	6.5
27	17.0	13.0	14.5	10.0	7.0	8.5	10.5	7.0	9.0	9.0	7.0	7.5
28	17.5	13.0	15.0	10.0	6.0	8.0	15.0	10.5	13.0	7.0	5.5	6.5
29	17.5	14.0	15.5	11.0	6.5	8.5	15.5	13.5	14.5	10.5	4.0	7.0
30	18.5	14.5	16.5	9.5	6.5	8.5	13.5	10.0	11.0	9.5	5.0	8.0
31	19.5	16.5	18.0	---	---	---	10.0	8.5	9.0	6.0	.0	2.0
MONTH	23.0	11.0	17.5	20.0	6.0	12.0	15.5	4.5	9.0	10.5	.0	5.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	.0	.0	.0	17.5	10.0	13.5	18.5	13.0	15.5	---	---	---
2	.0	.0	.0	18.5	12.5	15.0	20.5	11.5	16.0	---	---	---
3	.0	.0	.0	21.5	16.0	18.5	22.0	14.0	18.0	---	---	---
4	3.0	.0	1.0	18.0	13.0	15.5	21.5	16.0	18.5	---	---	---
5	3.5	1.5	2.5	17.0	10.5	13.5	21.0	14.5	17.5	---	---	---
6	6.5	.5	3.0	15.5	12.0	14.0	22.5	15.5	19.0	---	---	---
7	4.0	2.5	3.5	18.5	14.5	16.0	20.0	15.0	17.0	---	---	---
8	8.5	2.5	5.0	22.0	16.0	18.5	---	---	---	---	---	---
9	11.5	5.5	8.0	20.0	17.5	18.5	---	---	---	---	---	---
10	10.0	7.0	8.0	21.0	16.0	18.5	---	---	---	---	---	---
11	8.5	3.5	6.0	21.0	17.5	19.0	---	---	---	---	---	---
12	9.0	3.0	6.0	17.0	13.5	15.0	---	---	---	---	---	---
13	10.5	4.5	7.5	16.5	14.5	15.0	---	---	---	---	---	---
14	10.5	5.0	7.5	17.5	13.0	15.0	---	---	---	---	---	---
15	10.5	5.0	7.5	14.5	12.0	13.0	---	---	---	25.5	21.0	24.0
16	12.5	6.0	9.0	12.5	11.0	11.5	---	---	---	28.0	20.5	24.0
17	12.0	6.5	9.0	14.5	9.0	11.5	---	---	---	24.0	19.5	20.5
18	10.5	9.0	9.5	17.0	10.0	13.0	---	---	---	21.5	19.5	20.5
19	11.0	9.0	9.5	14.0	12.0	13.0	---	---	---	23.5	20.0	21.5
20	12.5	10.0	11.0	13.0	10.5	11.5	---	---	---	24.0	20.5	22.0
21	18.5	12.5	15.0	13.0	11.0	11.5	---	---	---	22.0	19.0	21.0
22	19.0	15.5	16.5	17.0	10.0	13.5	---	---	---	22.0	19.5	20.5
23	17.5	14.0	15.5	18.5	12.5	15.5	---	---	---	22.0	19.0	20.5
24	15.5	11.5	13.5	20.0	13.0	16.0	---	---	---	25.0	21.5	23.0
25	16.0	10.0	13.0	22.0	14.0	18.0	---	---	---	28.0	23.0	25.0
26	15.0	11.0	13.0	21.0	17.0	19.0	---	---	---	29.5	23.5	26.5
27	14.5	9.5	12.0	23.0	17.0	19.5	---	---	---	31.0	25.0	27.5
28	12.5	11.5	12.0	21.0	17.0	19.0	---	---	---	31.0	26.0	28.0
29	---	---	---	22.5	18.0	20.0	---	---	---	31.0	24.5	27.5
30	---	---	---	18.5	14.5	16.5	---	---	---	30.0	25.5	27.5
31	---	---	---	18.5	11.5	14.5	---	---	---	27.5	25.0	26.0
MONTH	19.0	.0	8.0	23.0	9.0	15.5	22.5	11.5	17.5	31.0	19.0	24.0

COLORADO RIVER MAIN STEM

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08120700 COLORADO RIVER NEAR CUTHBERT, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	30.5	24.0	26.5	30.0	25.0	27.0	32.0	26.0	28.5	---	---	---
2	31.0	24.5	27.5	29.5	26.0	27.5	33.0	26.5	29.5	---	---	---
3	30.5	25.5	28.0	31.5	21.5	27.0	33.5	26.5	29.5	---	---	---
4	28.5	21.0	26.5	33.0	25.5	29.0	33.5	26.0	29.0	---	---	---
5	21.5	19.5	21.0	34.0	27.0	30.0	33.5	26.0	29.5	---	---	---
6	23.5	20.0	21.5	33.0	28.0	30.5	33.0	26.0	28.5	---	---	---
7	27.0	23.0	25.0	32.5	27.0	29.5	36.0	28.5	32.0	---	---	---
8	30.0	26.0	27.5	31.5	27.0	29.0	33.0	27.5	30.5	---	---	---
9	31.0	26.5	28.5	33.0	26.5	29.5	32.0	26.0	29.0	---	---	---
10	31.0	26.0	29.0	32.0	26.5	29.0	31.0	25.5	28.5	---	---	---
11	29.0	25.0	27.0	32.5	26.0	29.0	29.0	25.0	27.5	---	---	---
12	26.5	23.0	24.5	32.5	26.0	29.0	26.5	24.0	25.5	29.0	---	---
13	28.0	22.0	25.0	31.5	25.5	28.5	26.5	23.5	25.0	24.5	19.5	22.0
14	30.5	24.0	27.0	32.0	25.5	28.5	27.0	24.0	25.0	23.0	21.5	22.5
15	32.5	26.0	29.0	32.0	25.5	29.0	30.0	23.0	26.0	22.0	21.0	21.5
16	33.0	27.0	29.5	33.0	26.0	29.0	31.0	24.0	27.0	22.5	20.5	21.5
17	33.0	26.5	29.5	32.0	26.0	29.0	30.0	25.5	27.5	30.5	21.5	24.5
18	30.0	26.0	27.5	31.5	26.0	28.5	31.5	25.0	27.5	30.5	25.5	28.0
19	30.0	23.0	26.5	29.5	26.0	28.0	30.5	25.0	27.5	27.5	25.0	26.0
20	30.0	24.0	27.0	29.5	25.0	27.0	30.0	26.0	28.0	25.5	23.5	24.5
21	31.0	25.0	28.0	31.5	25.0	27.5	31.0	25.0	27.5	25.5	22.0	23.5
22	32.5	26.0	29.5	29.0	26.0	27.5	30.5	24.0	27.0	27.5	22.5	24.5
23	31.0	27.5	29.5	26.5	23.0	25.0	30.0	24.5	27.5	25.0	21.0	23.0
24	29.0	26.0	27.5	29.5	23.5	26.0	27.0	23.5	25.0	23.5	19.0	21.5
25	28.0	25.5	27.0	31.0	25.5	28.0	28.5	22.5	25.5	25.0	20.5	22.5
26	27.5	25.0	26.0	30.5	24.5	27.5	29.5	23.5	26.0	23.5	18.0	20.5
27	28.0	22.5	25.5	29.5	23.5	26.0	29.0	24.0	26.0	24.5	17.0	20.0
28	30.5	22.0	26.5	31.5	25.0	28.0	---	---	---	26.0	20.5	23.0
29	29.5	23.5	27.0	31.5	26.0	28.5	---	---	---	21.5	17.0	19.0
30	29.0	24.0	27.0	31.5	26.0	28.5	---	---	---	19.0	15.0	17.0
31	---	---	---	31.5	26.5	29.0	---	---	---	---	---	---
MONTH	33.0	19.5	27.0	34.0	21.5	28.0	36.0	22.5	27.5	30.5	15.0	22.5



## COLORADO RIVER MAIN STEM

08121000 COLORADO RIVER AT COLORADO CITY, TX

LOCATION.--Lat 32°23'33", long 100°52'42". Mitchell County, Hydrologic Unit 12080002, on right bank at Colorado City, 3,517 ft upstream from bridge on State Highway 377, 4,100 ft upstream from the Texas and Pacific Railroad Co. bridge, 1.3 mi downstream from bridge on Interstate Highway 20 and U.S. Highway 80, 1.6 mi upstream from Lone Wolf Creek, and at mile 796.3.

DRAINAGE AREA.--3,966 mi<sup>2</sup>, of which 2,381 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1923 to August 1925 (published as "at Colorado"), May 1946 to current year.

REVISED RECORDS.--WSP 1512: 1946(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,030.16 ft above National Geodetic Vertical Datum of 1929. Nov. 28, 1923, to Aug. 31, 1925, nonrecording gage at site 1.4 mi downstream at different datum. May 9 to Aug. 5, 1946, nonrecording gage at site 185 ft upstream at present datum.

REMARKS.--Estimated daily discharges: June 12-26. Records good. Some regulation since 1952 by Lake J. B. Thomas (station 08118000). Numerous diversions from Lake J. B. Thomas for municipal use and oilfield operation.

AVERAGE DISCHARGE.--6 years (water years 1947-52) prior to completion of Lake J. B. Thomas, 85.4 ft<sup>3</sup>/s (61,870 acre-ft/yr); 33 years (water years 1953-85) regulated, 37.8 ft<sup>3</sup>/s (27,390 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft<sup>3</sup>/s July 6, 1948 (gage height, 22.37 ft, from floodmark); maximum gage height, 27.81 ft Sept. 29, 1980, backwater from salt cedar; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1910, 35.9 ft June 20, 1939, present site and datum, based on floodmarks 1,000 ft upstream and 3,740 ft downstream from gage; discharge, 66,000 ft<sup>3</sup>/s, by slope-area measurement of peak flow at site 2.5 mi upstream from gage.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,830 ft<sup>3</sup>/s Apr. 30 at 0130 hours (gage height, 13.50 ft); minimum daily, 0.02 ft<sup>3</sup>/s Sept. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.53	31	14	165	.50	.80	.25	401	.15	.05	.28	.03
2	.41	428	8.1	100	9.2	.63	.21	89	.15	.05	.17	.03
3	.31	231	.87	1.2	10	.60	.22	35	.15	.05	.15	.03
4	1.4	132	1.5	.73	14	.56	.24	13	1.3	.05	.15	.02
5	.69	51	9.4	.62	16	.41	.24	.84	507	.05	.15	1.1
6	.33	1.1	8.4	.62	19	.41	.24	.62	715	.05	.12	1.7
7	.24	.62	8.5	.62	21	.41	.24	.57	313	.04	.09	1.3
8	.24	.53	8.8	8.8	14	.45	.24	.53	171	.03	.74	.19
9	11	.41	9.1	13	12	.41	.24	131	52	.03	.10	.15
10	.81	.41	8.7	12	11	.41	.24	66	16	.03	.09	.11
11	.41	.36	9.2	9.0	7.5	.87	.24	18	6.3	.04	.09	.05
12	.33	.31	9.2	1.4	.85	5.3	.24	12	1.3	.05	.09	.06
13	1.7	.41	10	.75	.58	4.8	.24	7.7	.89	.04	.09	.10
14	.67	.41	6.6	.62	.43	.86	.24	145	.41	.04	.14	.21
15	.33	.41	7.4	.54	.41	.41	.24	196	.41	.04	.15	.24
16	.24	.41	145	.62	.41	.58	.24	30	.24	.04	.15	.24
17	.24	17	231	.50	.41	.44	.24	443	.24	.04	.15	.24
18	.17	1.6	157	.48	.41	8.2	.24	933	.09	.03	.15	.21
19	.16	163	79	.62	.41	9.6	.24	314	.09	.03	.13	2.1
20	.20	99	45	.51	1.7	2.6	.24	77	.09	.45	.09	2.0
21	.24	48	32	.41	1.4	219	.24	133	.09	.33	.09	1.5
22	1.1	29	24	.42	.89	167	.42	235	.09	.99	.09	.32
23	.81	19	19	.58	2.6	68	.34	365	.09	108	.09	.24
24	.40	55	15	.58	42	21	.24	341	.09	61	.09	.20
25	.41	133	13	.57	63	.47	.23	103	.09	12	.09	.15
26	15	186	12	.49	17	.17	.24	24	.11	4.6	.09	.15
27	.89	99	12	.54	5.4	.15	.35	7.8	.43	182	.09	.15
28	.55	56	13	.45	1.3	1.9	.78	.42	.15	23	.09	.15
29	.41	31	14	.41	---	8.4	917	.24	.09	6.1	.09	4.1
30	.41	18	15	.48	---	7.8	1490	.21	.07	3.8	.06	.35
31	.41	---	66	.46	---	.83	---	.15	---	2.3	.03	---
TOTAL	41.04	1832.98	1011.77	323.02	273.40	533.47	2491.82	4123.08	1787.11	405.35	4.17	17.42
MEAN	1.32	61.1	32.6	10.4	9.76	17.2	83.1	133	59.6	13.1	.13	.58
MAX	15	428	231	165	63	219	1490	933	715	182	.74	4.1
MIN	.16	.31	.87	.41	.41	.15	.21	.15	.07	.03	.03	.02
AC-FT	81	3640	2010	641	542	1060	4940	8180	3540	804	8.3	35
CAL YR 1984	TOTAL	4192.05	MEAN	11.5	MAX	428	MIN	.00	AC-FT	8310		
WTR YR 1985	TOTAL	12844.63	MEAN	35.2	MAX	1490	MIN	.02	AC-FT	25480		

COLORADO RIVER MAIN STEM

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08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: May 1946 to September 1954, November 1956 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1946 to September 1954, November 1956 to current year.

WATER TEMPERATURES: November 1952 to September 1954, November 1956 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 67,400 microsiemens May 14, 17, 1961; minimum daily, 240 microsiemens Sept. 29, 1980.

WATER TEMPERATURES: Maximum daily, 37.0°C July 29, 1960, July 9, 1965, July 1, 1973, and June 29, 1979; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 19,800 microsiemens Oct. 31; minimum daily, 500 microsiemens Nov. 2.

WATER TEMPERATURES: Maximum daily, 32.5°C July 3; minimum daily, 8.5°C Dec. 18.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 24...	1500	.33	12900	12.5	1200	1000	280	120	2400
DEC 05...	1130	8.7	7690	6.5	850	670	210	79	1400
APR 29...	1910	1380	607	20.0	140	65	44	8.4	60
MAY 14...	1645	194	3410	23.0	580	410	150	51	490
JUN 26...	0750	.17	9100	23.0	1200	910	280	120	1700
	DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 24...	31		8.9	170	1100	3800	.40	4.4	7800
DEC 05...	22		6.4	180	660	2200	.50	4.7	4700
APR 29...	2		7.3	80	71	86	.40	6.4	330
MAY 14...	9		8.2	171	350	850	.50	8.1	2000
JUN 26...	22		10	284	1300	2300	.70	6.0	5900

## COLORADO RIVER MAIN STEM

## 08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1984	41.04	9160	5910	655	2500	281	1100	127	1100
NOV. 1984	1832.98	1930	1240	6140	500	2490	270	1330	250
DEC. 1984	1011.77	4380	2820	7690	1200	3160	600	1630	560
JAN. 1985	323.02	6040	3890	3390	1600	1410	800	701	760
FEB. 1985	273.40	6090	3920	2900	1600	1210	810	597	770
MAR. 1985	533.47	4480	2880	4150	1200	1710	610	878	580
APR. 1985	2491.82	1570	1010	6800	410	2750	220	1480	210
MAY 1985	4123.08	1810	1170	13000	470	5220	260	2860	240
JUNE 1985	1787.11	1260	808	3900	320	1550	180	872	170
JULY 1985	405.35	2530	1630	1780	660	724	350	385	330
AUG. 1985	4.17	5410	3480	39	1400	16	720	8.2	690
SEPT 1985	17.42	11100	7140	336	3200	148	1300	61	*
TOTAL	12844.63	**	**	50800	**	20700	**	10900	**
WTD.AVG.	35	2280	1460	**	600	**	310	**	300

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	EQUIVALENT MEAN											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6230	10400	4500	5800	8280	6900	4890	1900	7530	9770	3140	8070
2	7490	500	5500	5840	6670	7090	5770	2060	8170	9930	3550	8280
3	5210	1200	5650	6120	6500	7160	6660	3700	8780	9900	3920	8420
4	8930	2810	6270	6350	6430	7180	6910	4820	8100	9750	4250	8580
5	9000	2850	7690	7000	6310	8060	7130	5990	1870	9740	4510	7230
6	9030	4520	8280	7450	6200	8090	7350	6900	850	9820	4740	6500
7	9010	5350	8200	7920	6050	8140	7520	6800	1090	9960	4960	7010
8	9000	5980	7960	7140	7160	8070	7740	8300	1140	10000	4680	8500
9	7620	6750	7000	6690	7250	8210	7900	6700	1260	10200	4730	9860
10	6540	7620	7250	6720	7360	8400	8100	3600	1830	10400	4790	10100
11	7560	8250	7300	7070	7340	8220	8330	3800	2510	10200	4810	10200
12	7890	8830	7400	7330	7390	6500	8550	4000	3370	10100	4820	10300
13	7630	9480	5000	7590	7490	6710	8750	4300	4580	10300	5060	10400
14	8010	10800	5550	7720	7540	6940	8850	3410	4970	10500	5500	10900
15	8340	11900	6480	7900	7610	7030	9070	1800	5530	10700	5660	12000
16	9250	13100	3740	7760	7690	6810	9080	2150	6140	10800	5880	12500
17	10100	4550	3000	7890	7770	6730	9260	1600	6670	10900	6010	13300
18	11400	3710	3500	8010	7820	6830	9600	1350	7220	11100	6140	13800
19	12500	1250	3920	7900	7880	6750	9770	1920	7680	11300	6310	14400
20	12300	1510	4360	8050	6020	6680	9890	3000	7870	10300	6520	17100
21	12100	2650	4700	8260	6510	5380	10200	1700	8310	10400	6670	15500
22	10200	3780	4800	8190	6700	3380	10000	1100	8650	9940	6900	16000
23	11700	4740	5070	7980	6370	3480	10600	900	8900	4420	7090	16400
24	12500	4200	5300	8040	6100	3450	11200	950	9030	3700	7450	16300
25	13600	1890	5630	8120	4850	3570	11200	1200	9160	3080	7530	16100
26	9800	1700	6000	8230	5790	4020	11300	2300	9240	3330	7600	16200
27	8550	2400	6210	8160	6440	4350	11200	3200	9390	1020	7660	16300
28	10400	3000	6490	8220	7000	3990	8750	4300	9890	1510	7860	16200
29	13700	4120	6620	8380	---	3440	2500	6200	9960	1700	8000	7110
30	16500	3950	6850	8260	---	3520	590	6300	10200	2150	8220	11600
31	19800	---	6000	8310	---	4070	---	6900	---	2650	8080	---
MEAN	10100	5130	5880	7560	6880	6100	8290	3650	6330	8050	5900	11800

COLORADO RIVER MAIN STEM

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08121000 COLORADO RIVER AT COLORADO CITY, TX--Continued

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985											
	OCT	NOV	DEC	JAN	FEB	ONCE-DAILY		MAY	JUN	JUL	AUG	SEP
						MAR	APR					
1	25.0	20.0	12.0	12.0	---	19.0	---	18.0	---	24.5	27.5	29.0
2	18.0	16.0	10.0	11.0	---	12.0	---	22.0	---	26.0	29.0	24.5
3	17.0	15.0	9.0	10.0	---	15.0	---	22.0	26.5	32.5	28.0	24.0
4	25.0	16.0	---	10.0	---	13.0	---	---	26.5	24.5	---	24.0
5	24.0	15.0	---	9.0	---	10.0	---	---	20.5	26.5	---	25.0
6	25.0	14.0	---	---	---	---	---	24.0	21.0	25.0	---	24.5
7	20.0	20.0	---	---	---	---	---	24.5	24.0	29.0	---	---
8	25.0	21.0	---	---	---	---	---	24.5	26.0	25.0	---	---
9	25.0	12.0	---	---	---	---	16.5	24.5	29.0	25.0	---	25.0
10	25.0	19.0	13.0	---	10.0	---	16.5	24.0	27.5	25.0	---	25.0
11	23.0	20.0	12.0	---	9.0	---	---	23.0	24.0	24.5	---	27.5
12	23.0	20.0	12.0	---	10.0	---	23.0	23.0	23.5	24.5	25.0	25.0
13	23.0	22.0	9.0	---	12.0	---	---	21.5	23.0	---	26.0	24.5
14	---	---	12.0	---	---	---	23.0	---	24.0	---	28.0	23.0
15	---	---	10.0	---	---	---	21.0	---	---	25.0	27.5	22.5
16	---	---	15.0	---	---	12.0	23.0	25.0	---	25.0	29.5	22.5
17	---	---	9.0	---	---	10.0	23.0	22.0	26.0	26.5	25.0	23.0
18	---	15.0	8.5	---	---	14.0	24.5	---	24.0	26.0	29.5	23.0
19	---	10.0	---	---	---	13.0	24.5	---	26.5	25.0	25.0	23.5
20	---	16.0	---	---	10.0	11.0	---	20.5	26.0	24.0	27.0	23.0
21	---	12.0	11.0	---	12.0	13.0	---	22.0	25.0	27.0	27.0	---
22	---	13.0	10.0	---	11.0	21.0	22.0	20.0	25.0	26.0	25.0	---
23	---	10.0	10.0	---	13.0	21.0	19.0	20.0	28.0	22.0	25.0	18.5
24	15.0	11.0	11.0	---	12.0	19.0	20.0	20.5	25.0	21.5	25.5	18.5
25	16.0	15.0	10.0	---	15.0	18.0	21.0	22.5	25.0	26.0	---	18.5
26	15.0	13.0	9.0	---	14.5	---	25.0	26.5	22.0	28.0	---	18.5
27	16.0	9.0	10.0	---	14.0	---	19.0	24.0	20.0	---	25.0	19.0
28	20.0	---	15.0	---	16.0	---	20.0	28.0	23.5	---	23.5	20.5
29	18.0	11.0	12.0	---	---	---	18.5	28.0	---	27.0	24.0	17.0
30	21.0	13.0	10.0	---	---	---	18.0	28.0	23.0	27.0	24.0	13.5
31	23.0	---	9.0	---	---	---	---	24.0	---	28.0	23.5	---
MEAN	21.0	15.0	11.0	10.5	12.0	14.5	21.0	23.5	24.5	26.0	26.0	22.5



## COLORADO RIVER BASIN

## 08123000 LAKE COLORADO CITY NEAR COLORADO CITY, TX

LOCATION.--Lat 32°20'41", long 100°55'10", Mitchell County, Hydrologic Unit 12080002, on left bank at municipal water-intake structure, 1.7 mi upstream from Colorado City Dam on Morgan Creek, 2.2 mi downstream from the Texas and Pacific Railway Co. bridge, 2.5 mi upstream from mouth, and 4.0 mi southwest of Colorado City.

DRAINAGE AREA.--344.7 mi<sup>2</sup>, of which 42.7 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--April 1949 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Aug. 23, 1950, non-recording gages at or near powerplant about 0.7 mi downstream at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam 4,800 ft long. Storage began in April 1949, and the dam was completed in September 1949. The dam and lake are owned by the Texas Electric Service Co. to operate their thermal electric powerplant. The uncontrolled spillway is an excavated cut channel through natural ground 1,200 ft wide located 600 ft upstream and to the left of left end of dam. The spillway is designed to discharge 150,000 ft<sup>3</sup>/s at the maximum design flood elevation. The service spillway is an uncontrolled rectangular drop inlet located 100 ft upstream from dam with two uncontrolled openings of 10.0 by 12.0 ft. The spillway is designed for a maximum discharge of 5,000 ft<sup>3</sup>/s. A service outlet is provided for small releases downstream through a 30-inch valve-controlled concrete pipe. Records furnished by the Texas Electric Service Co. will show pumpage from Champion Creek Reservoir (station 08123600) into Lake Colorado City. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	2,090.0	-
Design flood.....	2,086.7	70,700
Crest of spillway.....	2,073.7	37,850
Crest of service spillway (top of conservation pool).....	2,070.2	31,810
Lowest gated outlet (invert).....	2,024.3	316

COOPERATION.--Capacity curve was furnished by the Texas Electric Service Co. Record of diversions for municipal use was furnished by the city of Colorado City.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 40,280 acre-ft Sept. 7, 1962 (elevation, 2,075.10 ft); minimum since first appreciable storage, 5,800 acre-ft Apr. 11-13, 1950 (elevation, 2,045.72 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 19,370 acre-ft Sept. 30 at 1500 hours (elevation, 2,061.21 ft); minimum, 16,290 acre-ft Apr. 18-20 (elevation, 2,058.45 ft).

Capacity table (elevation, in feet, and contents, in acre-feet)

2,058.0	15,820	2,061.0	19,120
2,060.0	17,980	2,062.0	20,310

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17520	17870	17740	17800	17380	17210	16700	16750	17840	18820	18970	18510
2	17530	17840	17720	17800	17360	17200	16680	16780	17790	18830	18950	18500
3	17550	17830	17700	17800	17330	17210	16640	16800	17740	18850	18910	18470
4	17620	17800	17690	17800	17320	17150	16610	16790	17850	18850	18840	18450
5	17690	17790	17680	17790	17320	17120	16540	16790	18340	18870	18800	18460
6	17780	17750	17670	17780	17310	17100	16510	16790	18460	18850	18760	18730
7	17800	17730	17650	17780	17300	17100	16460	16790	18850	18830	18740	18760
8	17820	17720	17640	17770	17310	17090	16430	16760	18900	18820	18720	18730
9	17880	17700	17640	17740	17290	17080	16390	16760	18870	18820	18700	18680
10	17900	17670	17630	17720	17270	17070	16370	16770	18850	18820	18670	18680
11	17920	17640	17630	17690	17250	17040	16360	16750	18850	18830	18670	18670
12	17940	17630	17620	17680	17220	17010	16390	16740	18880	18820	18670	18670
13	18020	17610	17610	17670	17200	16990	16350	16730	18880	18800	18670	18690
14	18030	17610	17550	17650	17190	16950	16320	16690	18870	18790	18670	18690
15	18030	17590	17710	17650	17180	16940	16310	16690	18870	18750	18680	18690
16	18010	17570	17710	17630	17150	16930	16300	16780	18850	18750	18670	18700
17	17990	17730	17740	17630	17140	16920	16300	16810	18840	18740	18670	18690
18	17940	17750	17740	17620	17130	16900	16290	17180	18840	18720	18660	18680
19	17910	17750	17750	17580	17130	16940	16290	17370	18830	18730	18640	18810
20	17880	17750	17770	17550	17250	16940	16300	17420	18820	18730	18640	18950
21	17840	17740	17740	17540	17250	16970	16330	17410	18800	18740	18610	19060
22	17880	17730	17740	17530	17320	16970	16350	17630	18800	18760	18590	19160
23	17900	17730	17740	17520	17310	16960	16340	17700	18820	18980	18580	19140
24	17890	17800	17720	17520	17290	16940	16340	17810	18850	19000	18550	19160
25	17880	17790	17710	17500	17270	16920	16350	17850	18870	19020	18550	19120
26	17910	17790	17710	17500	17240	16910	16350	17870	18880	19030	18580	19120
27	17920	17780	17710	17480	17210	16880	16380	17850	18890	19030	18550	19120
28	17910	17770	17720	17470	17220	16840	16420	17870	18880	19020	18540	19110
29	17900	17750	17710	17450	---	16820	16420	17870	18870	18990	18530	19340
30	17890	17750	17740	17410	---	16770	16690	17840	18850	18980	18530	19370
31	17890	---	17800	17390	---	16740	---	17840	---	18970	18530	---
MAX	18030	17870	17800	17800	17380	17210	16700	17870	18900	19030	18970	19370
MIN	17520	17570	17550	17390	17130	16740	16290	16690	17740	18720	18530	18450
(†)	2059.92	2059.80	2059.84	2059.47	2059.32	2058.87	2058.83	2059.88	2060.77	2060.87	2060.49	2061.21
(‡)	+380	-140	+50	-410	-170	-480	-50	+1150	+1010	+120	-440	+840

CAL YR 1984 MAX 19060 MIN 16890 (†) -1250  
WTR YR 1985 MAX 19370 MIN 16290 (†) +1860

(†) Elevation, in feet, at end of month.

(‡) Change in contents, in acre-feet.

## 08123600 CHAMPION CREEK RESERVOIR NEAR COLORADO CITY, TX

LOCATION.--Lat 32°16'53", long 100°51'30", Mitchell County, Hydrologic Unit 12080002, in service outlet structure at Champion Creek Dam on Champion Creek, 1.0 mi upstream from mouth, 4.8 mi downstream from State Highway 208, and 7.2 mi south of Colorado City.

DRAINAGE AREA.--206.8 mi<sup>2</sup>, of which 20.8 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--October 1959 to current year.

REVISED RECORDS.--WRD TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Sept. 29, 1959, non-recording gages at same site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam about 6,800 ft long. The dam was completed on Apr. 30, 1959. Closure and storage began in February 1959. The capacity curve is based on Geological Survey topographic map surveyed in 1950; excavation for borrow, estimated not to exceed 1,200 acre-ft, is not included. The dam and reservoir are owned and operated by the Texas Electric Service Company. Water may be pumped from the reservoir through a 24-inch pipeline to Lake Colorado City (station 08123000) for municipal use and for cooling operations of a steam generating powerplant. There are two spillways. The uncontrolled emergency spillway, 450 ft wide and 800 ft long, is located at the right end of dam. The controlled service spillway, is a cut channel 50 ft wide, about 1,800 ft long, and 8 ft deep, and cut into the emergency spillway at the extreme right end. There is a controlled drop-inlet structure, 4.0 by 5.0 ft, with a side opening of 1.5 by 3.0 ft. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	2,109.0	-
Design flood.....	2,104.0	90,020
Crest of spillway.....	2,091.0	56,800
Crest of spillway (top of conservation pool).....	2,083.0	42,500
Lowest gated outlet (invert).....	2,020.0	800

COOPERATION.--Record of diversions into Lake Colorado City may be obtained from Texas Electric Service Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 47,060 acre-ft June 29, 1982 (elevation, 2,085.79 ft); minimum, 1,600 acre-ft Oct. 1, 1959 (elevation, 1,025.90 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 26,360 acre-ft July 25 (elevation, 2,070.56 ft); minimum, 21,180 acre-ft Oct. 24, 25 (elevation, 2,065.36 ft).

## Capacity table (elevation, in feet, and total contents, in acre-feet)

2,065.0	20,840	2,069.0	24,720
2,067.0	22,720	2,071.0	26,830

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21970	21240	21300	21590	21730	24080	24350	25320	24450	24010	25970	24280
2	21930	21240	21300	21610	21720	24090	24350	25290	24430	23940	25930	24210
3	21880	21240	21290	21630	21720	24130	24350	25250	24390	23880	25920	24140
4	21870	21240	21290	21650	21720	24130	24350	25190	24440	23820	25890	24070
5	21840	21240	21290	21660	21730	24120	24320	25140	25080	23770	25870	24010
6	21790	21230	21280	21670	21730	24120	24310	25080	25230	23700	25820	24010
7	21740	21230	21280	21670	21730	24120	24290	25050	25250	23630	25740	24000
8	21700	21230	21280	21680	21740	24140	24280	25010	25220	23570	25670	24010
9	21680	21230	21280	21690	21740	24140	24270	24950	25210	23510	25590	23970
10	21640	21220	21280	21690	21750	24150	24270	24880	25180	23450	25520	23900
11	21600	21220	21280	21690	21750	24190	24270	24780	25160	23400	25450	23840
12	21540	21210	21280	21700	21760	24140	24220	24700	25100	23330	25580	23770
13	21500	21210	21290	21700	21760	24210	24220	24660	25050	23270	25520	23730
14	21450	21200	21280	21700	21770	24200	24220	24590	25000	23190	25470	23660
15	21390	21200	21310	21700	21770	24190	24200	24510	24950	23120	25410	23620
16	21330	21190	21350	21700	21780	24200	24140	24530	24890	23070	25350	23560
17	21260	21210	21380	21700	21780	24200	24080	24480	24820	22990	25290	23520
18	21240	21230	21390	21720	21780	24200	24020	24420	24750	22930	25240	23440
19	21230	21240	21400	21720	21790	24290	23950	24560	24690	22870	25170	23440
20	21220	21240	21410	21720	22950	24340	23920	24630	24620	22820	25100	23440
21	21200	21240	21420	21720	23380	24350	23880	24640	24560	23000	25030	23430
22	21190	21250	21420	21720	23520	24350	23970	24910	24500	23000	24960	23380
23	21190	21250	21430	21720	24000	24360	23940	24980	24430	26050	24910	23320
24	21180	21270	21430	21720	24030	24370	23890	24930	24360	26350	24820	23270
25	21180	21280	21430	21730	24040	24380	23840	24880	24330	26360	24760	23220
26	21190	21300	21430	21730	24050	24380	23790	24810	24330	26320	24690	23170
27	21210	21300	21430	21740	24050	24390	23770	24750	24280	26270	24620	23110
28	21220	21300	21440	21740	24070	24390	23860	24690	24220	26220	24550	23080
29	21230	21300	21450	21740	---	24410	25330	24630	24150	26160	24480	23160
30	21230	21300	21470	21740	---	24370	25350	24560	24080	26100	24410	23160
31	21230	---	21530	21730	---	24360	---	24500	---	26030	24350	---
MAX	21970	21300	21530	21740	24070	24410	25350	25320	25250	26360	25970	24280
MIN	21180	21190	21280	21590	21720	24080	23770	24420	24080	22820	24350	23080
(†)	2065.42	2065.49	2065.73	2065.95	2068.36	2068.65	2069.61	2068.78	2068.37	2070.25	2068.64	2067.45
(‡)	-790	+70	+230	+200	+2340	+290	+990	-850	-420	+1950	-1680	-1190
CAL YR 1984	MAX 33950	MIN 21180	(†)	-12270								
WTR YR 1985	MAX 26360	MIN 21180	(†)	+1140								

(†) Elevation, in feet, at end of month.

(‡) Change in contents, in acre-feet.

## COLORADO RIVER BASIN

08123720 BEALS CREEK NEAR COAHOMA, TX

LOCATION.--Lat 32°14'56", long 101°21'42", Howard County, Hydrologic Unit 12080007, on left bank near left end of county road bridge, 1.9 mi south of Interstate Highway 20, at Midway, on Moss Creek Lake Road, and 4.7 mi southwest of Coahoma.

DRAINAGE AREA.--1,569 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,323 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: June 5-6, 9-24. Records good except those for periods of estimated daily discharges, which are fair. Low flow is affected at times by diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 976 ft<sup>3</sup>/s Apr. 29, 1985 at 0345 hours (gage height, 9.34 ft); no flow for many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 976 ft<sup>3</sup>/s Apr. 29 at 0345 hours (gage height, 9.34 ft); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.5	4.3	6.3	17	12	12	5.2	32	5.3	.06	.04	.00
2	3.8	4.5	6.3	11	13	6.8	5.5	17	5.2	.07	.04	.00
3	3.6	4.8	6.3	9.8	9.8	6.0	4.3	11	4.0	.08	.02	.00
4	26	4.7	6.1	9.0	9.5	8.1	3.9	7.7	4.5	.09	.02	.00
5	8.5	4.1	6.4	8.2	7.7	5.7	2.2	6.0	391	.09	.01	.00
6	6.0	4.0	6.2	7.9	6.8	5.5	4.0	3.0	87	.09	.00	.06
7	5.0	3.8	6.3	7.5	6.0	5.5	3.8	4.4	9.9	.09	.00	.00
8	4.5	3.9	6.1	7.3	5.8	5.3	2.0	3.0	1.3	.09	.00	.00
9	23	5.0	6.3	7.3	5.6	5.8	1.1	2.6	.50	.09	.00	.00
10	12	5.0	6.1	7.0	5.4	5.5	1.1	3.0	.10	.09	.00	.00
11	6.4	5.4	6.3	6.5	5.2	3.8	1.3	3.3	.10	.09	.00	.00
12	6.9	5.1	6.3	6.6	5.2	4.0	4.7	2.9	2.0	.09	.02	.00
13	9.0	5.3	6.3	8.8	5.0	9.3	9.8	28	1.0	.08	.03	148
14	6.2	6.3	7.1	8.9	5.0	7.9	4.8	10	.50	.06	.02	14
15	5.0	6.5	21	12	4.9	5.3	2.3	9.6	.50	.08	.01	.01
16	4.2	6.5	20	8.2	5.0	13	3.1	9.6	.50	.08	.00	.00
17	4.2	61	8.1	7.5	5.0	7.9	2.5	9.6	.30	.06	.00	.00
18	4.4	52	7.0	6.9	5.0	5.9	.61	6.4	.30	.05	.00	.00
19	4.3	11	7.0	6.6	5.2	8.5	2.4	3.7	.20	.04	.00	.30
20	4.5	11	6.8	5.9	5.9	74	3.3	3.4	.20	.05	.00	.91
21	4.6	9.8	7.3	5.8	8.6	12	8.2	12	.10	.05	.00	87
22	16	8.5	7.0	5.8	6.6	8.5	6.4	39	.10	.09	.00	.59
23	13	8.0	7.2	6.5	29	7.2	3.1	12	.10	7.0	.00	.08
24	6.3	30	7.1	6.6	8.2	6.4	2.6	4.6	.09	9.6	.00	.07
25	6.0	31	7.2	6.1	6.4	6.0	2.9	4.7	.12	.07	.00	.06
26	6.8	9.1	7.1	5.4	5.6	6.6	3.0	4.4	4.6	.06	.00	.06
27	8.5	7.6	7.0	5.6	5.4	6.8	21	4.1	.74	.06	.00	.07
28	6.4	7.0	7.0	5.4	6.5	5.5	24	4.3	.10	.06	.00	.09
29	5.1	6.7	7.3	6.1	---	5.5	512	4.4	.06	.04	.00	24
30	5.5	6.4	7.5	5.7	---	12	83	4.1	.06	.04	.00	.19
31	4.8	---	61	5.7	---	7.2	---	5.0	---	.04	.00	---
TOTAL	236.0	338.3	291.0	234.6	209.3	289.5	734.11	274.8	520.47	18.63	.21	275.49
MEAN	7.61	11.3	9.39	7.57	7.48	9.34	24.5	8.86	17.3	.60	.007	9.18
MAX	26	61	61	17	29	74	512	39	391	9.6	.04	148
MIN	3.6	3.8	6.1	5.4	4.9	3.8	.61	2.6	.06	.04	.00	.00
AC-FT	468	671	577	465	415	574	1460	545	1030	37	.4	546
CAL YR 1984	TOTAL	2521.80	MEAN	6.89	MAX	272	MIN	1.5	AC-FT	5000		
WTR YR 1985	TOTAL	3422.41	MEAN	9.38	MAX	512	MIN	.00	AC-FT	6790		

COLORADO RIVER BASIN

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08123720 BEALS CREEK NEAR COAHOMA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: June 1983 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1983 to current year.

WATER TEMPERATURES: June 1983 to current year.

INSTRUMENTATION.--Beginning March 1981, specific conductance and water temperature are recorded continuously at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 15,900 microsiemens May 18, 1984; minimum daily, 400 microsiemens June 6, 1985.

WATER TEMPERATURES: Maximum daily, 34.0°C July 4, 5, 9, 11, 1985; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 14,100 microsiemens Nov. 24; minimum daily, 400 microsiemens June 6.

WATER TEMPERATURES: Maximum daily 34°C July 4, 5, 9, 11; minimum daily, 0.0°C on several days during January and February.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 22...	1530	32	12100	11.5	2600	2400	350	430	1900
JAN 07...	1245	7.8	13400	8.0	3200	3000	410	530	2100
APR 29...	1230	451	964	18.0	220	160	58	19	96
MAY 13...	1355	30	9960	23.0	2300	2100	350	340	1400
JUN 06...	1445	64	3120	23.0	720	600	130	95	380
AUG 05...	1445	.02	9500	31.0	2000	1700	290	300	1700
		SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 22...	16	42	240	1800	3400		.60	11	8100
JAN 07...	16	46	230	2300	3600		.80	9.1	9100
APR 29...	3	9.0	62	130	180		.30	7.5	540
MAY 13...	13	38	194	1600	2600		.60	12	6500
JUN 06...	6	14	116	460	710		.40	8.7	1900
AUG 05...	17	38	229	2100	2300		.70	5.4	6900



## COLORADO RIVER BASIN

08123720 BEALS CREEK NEAR COAHOMA, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	236.0	5480	3610	2300	1400	875	890	567	1300
NOV.	1984	338.3	6950	4460	4080	1600	1510	1200	1090	1500
DEC.	1984	291.0	9140	5760	4530	2100	1630	1600	1280	1900
JAN.	1985	234.6	8620	5480	3470	2000	1270	1500	956	1800
FEB.	1985	209.3	10200	6440	3640	2300	1310	1800	1030	*
MAR.	1985	289.5	8790	5570	4350	2000	1580	1600	1210	1900
APR.	1985	734.11	3580	2340	4640	880	1750	590	1170	810
MAY	1985	274.8	9760	6170	4580	2200	1660	1700	1290	2100
JUNE	1985	520.47	3520	2360	3320	920	1290	550	770	840
JULY	1985	18.63	5820	3830	192	1500	73	950	48	1300
AUG.	1985	0.21	10200	6420	3.6	2300	1.3	1800	1.0	*
SEPT	1985	275.49	3800	2560	1900	1000	742	590	436	910
TOTAL		3422.41	**	**	37000	**	13700	**	9850	**
WTD.AVG.		9.4	6230	4000	**	1500	**	1100	**	1400

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	4580	4600	4400	4510	13700	13300	13400	---	---	5430
2	---	---	4790	4600	4500	4570	13500	13300	13400	---	---	6760
3	---	---	5280	4500	4200	4330	13500	12600	13300	---	---	8100
4	---	---	4300	4300	4100	4200	13100	12700	12900	---	---	9420
5	---	---	4530	4300	4100	4220	13000	12700	12800	---	---	10700
6	---	---	4830	4200	4000	4150	12800	12300	12600	---	---	12100
7	---	---	5190	4300	4100	4200	12300	10700	11700	13500	12300	13100
8	---	---	5550	4300	4000	4150	10700	9200	9880	13000	12000	12700
9	---	---	4770	4200	4000	4090	11400	8900	10600	13000	12600	12700
10	---	---	4910	4100	4000	4070	13900	11600	12800	12700	12000	12600
11	---	---	5150	4200	3900	4060	11800	9100	10400	12700	12400	12600
12	---	---	5860	4300	4100	4160	---	---	10800	12600	12300	12500
13	---	---	5770	4200	3900	4050	---	---	12000	12700	12200	12300
14	---	---	6440	4000	3900	3950	---	---	10900	13200	12000	12900
15	---	---	7330	4100	3900	4020	4800	4500	4660	12800	6300	8610
16	---	---	8610	4100	4000	4050	4700	4400	4530	6900	5900	6430
17	---	---	9320	4000	3700	3880	4400	4200	4320	5900	5400	5580
18	---	---	10000	8800	2700	5690	5000	4000	4410	5500	5300	5390
19	---	---	10700	11000	8900	9780	6700	5100	5870	5500	5400	5420
20	---	---	11400	12600	11200	12100	8600	6800	7670	5800	5500	5630
21	---	---	12100	13300	12300	13000	10400	8600	9500	5900	5700	5830
22	12100	4100	6010	13900	13400	13700	12300	10500	11400	6200	6000	6050
23	9200	3300	4770	14000	13500	13700	13200	12300	13000	6400	6100	6210
24	3200	2300	2960	14100	4300	7300	13300	13100	13200	6500	6300	6420
25	3800	3000	3390	9300	5200	6890	13400	13300	13300	6800	6500	6600
26	4300	3900	4130	11600	9500	10800	---	---	12800	7000	6700	6850
27	4700	4300	4430	13000	11700	12500	---	---	12500	7200	6900	7060
28	4700	4400	4540	13700	13100	13500	---	---	12600	7500	7200	7320
29	4400	4100	4250	13800	12700	13500	---	---	12000	7700	7400	7530
30	4300	4100	4180	13500	12700	13300	---	---	11700	7900	7600	7750
31	4400	4300	4320	---	---	---	---	---	6250	8100	7900	7990
MONTH	12100	2300	5950	14100	2700	7210	13900	4000	10600	13500	5300	8600

## 08123720 BEALS CREEK NEAR COAHOMA, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8300	8100	8200	13000	11600	12300	10500	10300	10400	10500	5400	8110
2	8600	8300	8440	12100	11900	12000	12000	10300	10900	11000	10500	10700
3	8800	8600	8690	12000	11800	11900	11900	10200	10800	11800	11000	11400
4	9000	8800	8910	12900	12000	12500	11900	10300	10900	13000	11800	12500
5	9200	9000	9130	12400	12200	12300	11600	10200	11000	13000	11500	11800
6	---	---	9400	12500	12200	12400	11300	10300	10900	12000	11400	11800
7	---	---	9680	13000	12500	12800	11200	10300	11000	12700	10200	11800
8	---	---	9950	13000	12600	12800	11200	10700	11000	12200	9300	11100
9	---	---	10200	13800	12200	12700	11300	10700	11000	12200	10300	10600
10	---	---	10600	12300	11900	12100	11100	10800	11000	13000	11000	11900
11	---	---	10800	12300	11800	12000	12300	10600	11300	13100	10100	12500
12	---	---	11200	12000	11200	11700	11200	8700	9960	12400	---	11700
13	---	---	11400	---	---	10200	11000	8700	9830	12100	4400	9960
14	---	---	11500	---	---	10800	8900	6100	7480	---	---	10200
15	---	---	11800	---	---	12100	10200	9000	9590	---	---	10500
16	---	---	12200	---	---	9650	10900	10000	10400	---	---	10800
17	---	---	12400	---	---	10100	11600	10700	11000	---	---	11000
18	---	---	12700	---	---	11300	11500	11100	11300	---	---	11300
19	---	---	12600	---	---	11000	12400	10700	11300	---	---	11600
20	12400	10500	11000	---	---	4650	12500	10600	11400	---	---	11800
21	12500	10600	11700	---	---	4790	12600	9900	11000	11700	10000	10700
22	12200	10900	11600	---	---	5230	10900	9000	10200	10100	4000	7210
23	12600	6100	8460	---	---	6180	10000	8700	9620	5800	4000	4900
24	12000	9000	10200	---	---	7140	10500	9700	10100	11900	5900	9730
25	12900	11100	11600	---	---	8280	10800	9700	10200	11000	10100	10600
26	12100	11500	11900	---	---	9040	11200	10300	10800	10500	10000	10200
27	12600	11800	12200	---	---	10000	11100	5900	9720	11900	10000	10600
28	12900	12000	12200	---	---	10900	10700	8900	10100	11800	10000	10300
29	---	---	---	---	---	11900	2600	1400	1540	11700	10300	11400
30	---	---	---	---	---	9240	6800	1700	4950	11400	10000	10900
31	---	---	---	---	---	10300	---	---	---	11000	10300	10600
MONTH	12900	6100	10700	13800	11200	10300	12600	1400	10000	13100	4000	10700

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	11800	8900	10400	---	---	9410	10400	10100	10300	---	---	---
2	11500	10700	11100	10100	9900	10000	10200	9900	10100	---	---	---
3	10700	9900	10100	---	---	9870	10100	9900	10000	---	---	---
4	10000	8600	9510	---	---	9960	---	---	10400	---	---	---
5	9900	700	3540	---	---	10100	---	---	10700	---	---	---
6	1800	400	1180	---	---	10200	---	---	---	---	---	10800
7	5400	1900	4480	---	---	10000	---	---	---	---	---	---
8	---	---	6020	---	---	10100	---	---	---	---	---	---
9	---	---	7950	---	---	10200	---	---	---	---	---	---
10	---	---	8390	---	---	10100	---	---	---	---	---	---
11	---	---	9250	---	---	10100	---	---	---	---	---	---
12	---	---	8510	---	---	10300	---	---	9980	---	---	---
13	---	---	8650	---	---	10000	---	---	9920	---	---	3540
14	---	---	8830	---	---	10400	---	---	10100	---	---	5070
15	---	---	9000	---	---	10200	---	---	10300	---	---	7590
16	---	---	9060	---	---	10300	---	---	---	---	---	---
17	---	---	9480	---	---	10400	---	---	---	---	---	---
18	---	---	9540	---	---	10600	---	---	---	---	---	---
19	---	---	9790	---	---	10900	---	---	---	---	---	8550
20	---	---	9860	---	---	10700	---	---	---	9100	1200	6690
21	---	---	10000	---	---	10800	---	---	---	8400	600	3280
22	---	---	9960	---	---	10100	---	---	---	4600	3700	4260
23	---	---	9940	---	---	6550	---	---	---	5200	3400	4350
24	---	---	10000	5400	3700	4430	---	---	---	8400	4500	6540
25	10500	9700	10100	5300	4300	4730	---	---	---	---	---	9300
26	11500	4300	6470	---	---	6900	---	---	---	---	---	9800
27	---	---	7060	---	---	8670	---	---	---	10100	9800	9960
28	---	---	7650	10400	9800	10100	---	---	---	10200	9200	10100
29	---	---	8230	10500	10100	10400	---	---	---	11500	3800	6250
30	---	---	8820	10700	10200	10500	---	---	---	5500	3800	4830
31	---	---	---	10600	10200	10400	---	---	---	---	---	---
MONTH	11800	400	8430	10700	3700	9590	10400	9900	10200	11500	600	6930

## COLORADO RIVER BASIN

08123720 BEALS CREEK NEAR COAHOMA, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	18.5	14.0	16.5	21.5	17.0	19.5	10.5	7.0	8.5	9.0	3.0	6.0
2	21.0	17.0	18.5	17.5	14.0	15.5	11.0	7.5	9.0	3.0	1.0	2.0
3	20.5	18.5	19.0	17.0	13.0	14.5	8.0	6.0	6.5	4.0	1.0	3.0
4	21.5	18.0	19.5	16.5	13.5	14.5	7.0	5.0	6.0	7.5	4.5	6.0
5	21.0	17.5	19.5	16.0	11.5	13.5	6.5	4.5	5.5	8.0	6.0	6.5
6	22.5	19.0	20.5	14.5	11.0	12.5	8.0	4.5	5.5	9.0	6.0	7.0
7	23.0	19.5	21.0	16.0	11.5	13.5	8.5	4.0	6.0	8.0	7.0	7.5
8	23.0	19.5	21.0	19.0	13.5	15.5	10.5	6.0	8.0	9.0	6.0	7.5
9	22.5	13.5	19.0	17.5	15.0	16.0	12.5	8.5	10.0	10.5	7.5	9.0
10	21.0	17.0	19.0	15.5	12.5	14.0	12.0	9.0	10.0	8.5	5.0	7.0
11	21.5	19.0	20.0	13.5	10.5	12.0	13.0	9.0	11.0	5.0	1.5	4.0
12	22.5	19.0	21.0	14.0	10.5	12.0	14.0	11.5	12.5	1.0	.0	.5
13	21.5	19.0	20.0	15.5	12.0	13.5	15.0	11.5	13.0	2.0	.0	.5
14	20.5	17.0	19.0	17.0	13.5	15.0	11.0	5.0	8.0	3.5	.0	1.5
15	20.0	16.5	18.0	16.0	13.5	15.0	5.5	4.5	4.5	4.0	1.0	3.0
16	19.5	15.5	17.0	13.0	11.5	12.0	8.0	3.0	5.0	7.5	4.5	6.0
17	18.0	14.0	15.5	12.5	11.0	11.5	10.0	7.5	8.5	7.5	4.5	5.5
18	21.0	15.5	17.5	12.0	9.0	10.0	10.0	7.0	8.5	8.5	4.5	6.0
19	18.5	14.5	16.0	8.5	6.5	7.0	10.5	7.0	9.0	10.0	4.5	7.0
20	18.5	15.0	16.5	7.0	6.0	7.0	13.5	11.0	12.5	4.0	.0	2.5
21	16.0	13.5	15.5	8.5	6.5	7.5	14.0	10.5	13.0	2.5	.0	.5
22	13.5	11.0	12.0	10.0	8.0	9.0	11.0	8.0	9.5	4.0	.0	2.0
23	11.0	10.0	10.5	11.0	8.0	9.5	10.5	8.0	9.0	5.0	2.0	3.0
24	11.5	11.0	11.0	10.5	8.5	9.5	11.5	7.5	9.5	8.0	2.0	5.0
25	13.0	11.5	12.0	11.5	7.0	9.0	7.5	4.0	5.5	11.0	5.0	7.5
26	14.5	12.5	13.5	11.5	9.0	10.5	6.0	4.0	5.0	9.5	5.5	7.5
27	17.0	13.5	15.0	8.5	6.0	7.0	13.0	6.0	10.0	10.5	7.0	8.0
28	17.5	14.0	15.5	8.5	5.5	7.0	16.5	13.5	15.0	9.0	5.5	7.0
29	17.5	15.0	16.0	10.5	7.0	8.5	17.5	14.0	15.5	11.0	5.0	8.0
30	19.5	16.0	17.5	10.0	7.5	8.5	14.0	9.5	11.5	12.5	5.5	9.5
31	21.5	17.5	19.0	---	---	---	11.0	9.0	9.5	5.5	.0	2.0
MONTH	23.0	10.0	17.0	21.5	5.5	11.5	17.5	3.0	9.0	12.5	.0	5.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	.0	.0	.0	15.0	9.0	11.5	17.0	11.0	14.0	24.0	17.5	21.0
2	.0	.0	.0	15.5	12.5	14.5	19.0	12.5	14.5	24.0	19.0	21.0
3	2.5	.0	.5	20.5	14.5	17.0	21.0	12.0	16.0	23.0	20.0	21.5
4	5.0	.0	2.5	15.0	10.0	12.0	20.5	14.0	16.0	24.0	20.0	22.0
5	6.0	4.5	5.5	15.0	10.0	11.5	22.0	14.0	17.0	25.5	20.0	22.5
6	7.5	5.0	6.0	13.0	10.0	11.5	20.5	14.0	17.0	30.5	20.5	24.0
7	6.0	2.5	4.5	18.0	12.0	14.5	18.0	14.5	16.0	28.0	22.0	24.5
8	7.5	2.0	5.0	20.5	15.0	17.5	15.5	11.0	14.0	29.0	22.0	24.5
9	11.0	5.5	8.0	18.0	15.5	17.0	18.0	12.0	15.0	30.0	22.0	25.0
10	10.5	6.0	9.0	19.5	15.0	17.0	20.0	14.5	16.5	27.5	22.0	24.0
11	9.0	5.0	6.0	21.0	15.0	18.5	21.0	15.5	18.5	27.0	21.0	23.5
12	9.5	4.5	6.5	17.0	15.0	15.5	24.0	19.5	21.0	27.5	20.0	23.0
13	11.0	5.0	7.5	15.0	12.5	14.5	22.5	19.0	20.5	26.0	20.0	23.0
14	11.0	6.0	8.0	15.0	12.0	13.5	24.5	19.5	21.5	23.5	18.0	20.5
15	11.0	5.0	7.5	13.0	10.0	12.0	28.0	17.5	22.0	26.0	18.0	22.0
16	13.0	6.0	9.0	11.0	10.0	10.5	25.5	19.5	21.5	28.0	21.0	23.5
17	13.0	7.0	9.5	12.0	10.0	10.5	25.5	19.5	21.5	23.5	19.0	21.0
18	12.5	9.5	11.0	15.5	10.0	12.5	25.5	19.0	21.0	23.5	18.5	20.5
19	11.0	10.0	10.5	13.0	11.0	12.5	25.5	19.5	21.5	27.0	19.0	22.5
20	12.5	10.0	11.5	13.0	9.0	10.5	25.5	20.0	21.5	26.0	21.0	22.5
21	17.5	12.0	14.5	13.0	10.0	10.5	23.0	19.5	20.5	24.0	20.5	22.0
22	18.0	15.5	16.5	15.0	11.0	13.0	22.5	18.0	20.5	22.0	18.5	21.0
23	16.0	10.0	12.5	17.5	13.0	15.5	23.0	17.0	19.5	24.0	19.0	21.5
24	13.0	9.5	11.0	18.0	14.0	15.5	24.0	16.0	19.5	29.0	22.0	24.0
25	14.0	10.0	11.5	20.5	14.5	17.0	22.5	17.0	19.5	29.0	22.5	26.0
26	13.0	10.0	11.0	20.0	17.0	17.5	25.5	17.0	20.5	31.5	23.5	27.0
27	12.5	9.5	10.5	21.0	16.0	18.0	20.5	17.0	19.5	31.5	24.0	27.5
28	11.0	10.0	10.5	20.0	15.5	17.5	20.5	17.0	18.5	32.0	24.0	28.0
29	---	---	---	22.0	15.5	18.0	20.5	15.0	16.5	32.5	24.5	28.0
30	---	---	---	17.0	12.0	14.0	26.0	15.0	20.0	29.5	24.0	26.5
31	---	---	---	15.5	10.5	13.0	---	---	---	29.0	24.0	26.0
MONTH	18.0	.0	8.0	22.0	9.0	14.5	28.0	11.0	18.5	32.5	17.5	23.5

## COLORADO RIVER BASIN

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08123720 BEALS CREEK NEAR COAHOMA, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	29.5	24.0	27.0	31.5	19.5	24.5	32.0	24.5	28.0	---	---	---
2	32.0	24.0	27.5	30.0	21.5	25.0	30.5	25.0	28.0	---	---	---
3	31.0	26.0	27.5	31.5	21.5	25.5	30.5	25.0	27.5	---	---	---
4	29.0	24.0	27.0	34.0	21.5	26.5	31.0	24.5	27.0	---	---	---
5	24.5	20.0	22.0	34.0	22.0	27.5	31.0	25.0	27.5	---	---	---
6	29.5	19.0	23.5	32.0	23.5	27.5	---	---	---	32.5	19.5	24.5
7	30.0	22.5	26.5	32.0	21.5	26.5	---	---	---	---	---	---
8	---	---	---	31.5	22.0	26.5	---	---	---	---	---	---
9	---	---	---	34.0	22.0	27.5	---	---	---	---	---	---
10	---	---	---	32.0	24.0	28.0	---	---	---	---	---	---
11	---	---	---	34.0	23.5	28.0	---	---	---	---	---	---
12	---	---	---	32.0	22.5	27.5	32.5	22.0	25.5	---	---	---
13	---	---	---	31.5	23.5	27.0	27.5	22.5	25.5	24.5	20.5	23.0
14	---	---	---	32.5	23.5	27.0	27.5	22.5	25.0	23.0	20.5	22.5
15	---	---	---	32.0	24.0	27.5	30.0	22.0	25.5	22.5	20.0	21.0
16	---	---	---	32.0	24.0	27.5	---	---	---	---	---	---
17	---	---	---	31.5	23.5	27.0	---	---	---	---	---	---
18	---	---	---	32.0	23.5	27.0	---	---	---	---	---	---
19	---	---	---	27.5	24.5	25.5	---	---	---	25.0	22.0	23.0
20	---	---	---	27.5	23.5	25.0	---	---	---	24.5	21.0	22.5
21	---	---	---	29.5	22.0	25.5	---	---	---	22.5	20.0	21.0
22	---	---	---	27.0	24.0	25.0	---	---	---	29.0	20.0	24.0
23	---	---	---	24.0	21.5	22.5	---	---	---	25.5	17.5	21.5
24	---	---	---	32.0	21.5	26.0	---	---	---	26.0	15.5	20.5
25	27.0	21.0	24.0	30.5	24.0	27.0	---	---	---	25.0	17.0	21.0
26	24.0	21.0	22.5	32.5	25.0	28.0	---	---	---	24.5	15.0	19.5
27	28.0	19.0	22.0	32.5	25.0	28.5	---	---	---	25.5	15.0	19.5
28	30.0	16.0	23.0	32.5	24.5	28.5	---	---	---	26.0	19.5	21.5
29	30.0	19.0	24.0	30.5	24.5	27.5	---	---	---	20.5	14.5	17.5
30	30.0	19.0	24.5	32.0	24.5	27.5	---	---	---	17.5	12.0	14.5
31	---	---	---	32.0	25.0	28.0	---	---	---	---	---	---
MONTH	32.0	16.0	24.5	34.0	19.5	26.5	32.5	22.0	26.5	32.5	12.0	21.0



## COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX

LOCATION.--Lat 32°11'57", long 101°00'49", Mitchell County, Hydrologic Unit 12080007, on left bank at downstream side of bridge on State Highway 163, 2.1 mi downstream from Hackberry Creek, 10.8 mi south of Westbrook, 15.7 mi south-west of Colorado City, and 19.1 mi upstream from mouth.

DRAINAGE AREA.--9,802 mi<sup>2</sup>, of which 7,814 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1958 to current year.

REVISED RECORDS.--WDR TX-72-1: 1971. WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,048.74 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharge: Sept. 29. Records good. Low flow is affected by diversion upstream from station.

AVERAGE DISCHARGE.--27 years, 23.3 ft<sup>3</sup>/s (16,880 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,780 ft<sup>3</sup>/s May 19, 1961 (gage height, 21.65 ft m); maximum gage height, 21.94 ft Sept. 29, 1980; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1908, about 24.5 ft in 1922, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Sept. 21	2030	*669	*7.58				

Minimum daily discharge, 0.12 ft<sup>3</sup>/s July 12-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	5.8	5.8	7.9	6.0	5.7	8.8	194	4.2	1.3	.17	.89
2	9.7	4.6	6.1	29	5.9	7.4	6.5	21	4.0	.69	.17	1.1
3	7.8	4.1	5.9	13	5.7	7.9	5.3	7.0	4.0	.92	.17	1.1
4	7.6	4.2	5.7	11	6.3	6.3	5.5	4.7	4.3	.47	.15	1.1
5	11	4.6	5.6	9.3	7.2	5.8	5.1	3.4	154	.23	.14	1.2
6	31	4.4	5.9	8.8	8.0	6.7	5.0	2.6	240	.18	.14	1.2
7	24	4.2	5.8	8.3	6.6	5.8	4.8	2.4	352	.16	.15	36
8	9.1	3.8	5.8	8.1	5.9	5.6	4.3	1.8	25	.14	.17	14
9	60	3.7	5.8	7.6	5.2	5.9	5.2	2.3	8.2	.14	.17	10
10	66	3.4	5.7	7.4	5.5	5.8	5.0	2.4	4.9	.13	.21	3.9
11	24	3.1	5.8	7.2	5.4	5.9	4.3	2.4	3.5	.14	.22	3.1
12	11	3.8	5.6	6.6	5.1	5.7	4.5	3.0	3.2	.12	.28	2.8
13	130	3.9	5.9	6.9	5.1	5.6	8.2	4.7	7.0	.12	230	73
14	21	4.1	5.8	6.4	4.8	4.4	7.2	5.1	3.7	.12	103	57
15	9.1	3.8	43	6.6	4.6	7.5	11	17	3.6	.14	23	50
16	6.6	3.9	144	8.4	4.9	7.3	7.4	8.5	2.1	.14	4.3	6.9
17	5.1	52	31	9.1	4.6	6.0	6.2	6.9	1.1	.13	2.1	4.1
18	3.8	312	12	7.2	4.7	10	4.9	5.7	.77	.13	1.4	3.1
19	3.6	77	8.7	6.7	4.9	7.9	5.7	8.1	.50	.14	1.1	2.8
20	4.3	18	7.9	6.4	167	33	5.7	5.8	.38	9.4	.86	161
21	4.0	11	7.6	6.0	120	39	4.8	6.3	.29	2.8	.82	360
22	4.7	9.9	7.4	5.5	11	16	7.4	54	.20	139	.69	62
23	11	7.9	7.2	5.5	56	9.7	11	96	.17	240	.62	18
24	21	15	6.7	5.6	29	8.0	8.9	43	.14	83	.62	5.1
25	14	102	6.6	5.5	12	7.1	7.9	9.3	12	16	.62	3.5
26	30	42	6.6	5.6	6.9	6.7	6.3	6.6	13	3.8	.70	2.8
27	31	13	6.6	5.4	5.8	6.4	7.0	5.5	8.6	4.7	.71	2.3
28	11	8.7	6.8	5.3	5.7	6.5	109	5.0	5.3	1.7	.79	2.0
29	8.4	7.3	6.8	5.4	---	6.6	78	4.4	3.0	.62	.85	104
30	6.7	6.4	7.0	5.4	---	6.1	471	3.9	2.4	.31	.89	51
31	5.8	---	67	5.6	---	5.7	---	4.0	---	.20	.89	---
TOTAL	604.3	747.6	464.1	313.8	519.8	274.0	831.9	546.8	871.55	507.07	376.10	1044.99
MEAN	19.5	24.9	15.0	10.1	18.6	8.84	27.7	17.6	29.1	16.4	12.1	34.8
MAX	130	312	144	79	167	39	471	194	352	240	230	360
MIN	3.6	3.1	5.6	5.3	4.6	4.4	4.3	1.8	.14	.12	.14	.89
AC-FT	1200	1480	921	622	1030	543	1650	1080	1730	1010	746	2070
CAL YR 1984	TOTAL	3139.97	MEAN	8.58	MAX	312	MIN	.02	AC-FT	6230		
WTR YR 1985	TOTAL	7102.01	MEAN	19.5	MAX	471	MIN	.12	AC-FT	14090		

## COLORADO RIVER BASIN

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08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1958 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1958 to current year.

WATER TEMPERATURES: November 1958 to current year.

INSTRUMENTATION.--Beginning Mar. 5, 1981, specific conductance and water temperature are recorded continuously at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 22,800 microsiemens June 2, 1969; minimum daily, 219 microsiemens Sept. 13, 1964.

WATER TEMPERATURES: Maximum daily, 37.0°C June 28, 1960, and July 3, 1976; minimum daily, 0.0°C on many days during winter months.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 15,300 microsiemens May 15; minimum daily, 300 microsiemens Aug. 13.

WATER TEMPERATURES: Maximum daily, 32.0°C July 27; minimum, 0.0°C on several days during January and February.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 22...	1000	4.2	10300	13.5	2200	2100	290	360	1600
JAN 07...	0935	8.3	6190	6.0	1400	1200	200	210	880
FEB 19...	0940	4.8	13000	11.0	2800	2700	370	460	2100
APR 29...	1555	44	2090	23.0	490	390	100	59	250
MAY 13...	1030	4.2	11800	23.5	2600	2400	340	420	1900
AUG 05...	1035	.14	4280	27.0	810	630	160	100	650
DATE		SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 22...	15	32	130	1600	2800	.60	3.0	6800	
JAN 07...	11	21	160	970	1600	.50	3.6	4000	
FEB 19...	18	42	150	2200	3500	.80	3.0	8800	
APR 29...	5	14	108	280	440	.70	6.8	1200	
MAY 13...	17	43	149	2200	3200	.60	5.0	8200	
AUG 05...	10	13	179	520	1100	.70	6.5	2700	

## COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1984	604.3	4120	2620	4280	1000	1660	630	1040	900
NOV. 1984	747.6	4300	2740	5530	1100	2150	660	1340	940
DEC. 1984	464.1	6560	4320	5410	1700	2160	1000	1310	1400
JAN. 1985	313.8	8510	5700	4830	2300	1950	1400	1180	1900
FEB. 1985	519.8	6870	4510	6340	1800	2520	1100	1540	1500
MAR. 1985	274.0	9640	6430	4760	2600	1910	1600	1160	2100
APR. 1985	831.9	4740	3110	6990	1200	2780	760	1700	1000
MAY 1985	546.8	4670	3020	4460	1200	1760	730	1080	1000
JUNE 1985	871.55	2910	1830	4300	700	1650	440	1040	640
JULY 1985	507.07	886	546	747	210	282	130	180	190
AUG. 1985	376.10	1310	809	821	310	311	190	198	280
SEPT 1985	1044.99	1660	1030	2900	390	1100	250	698	360
TOTAL	7102.01	**	**	51400	**	20200	**	12400	**
WTD.AVG.	20	4130	2680	**	1100	**	650	**	910

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	2400	3960	3340	3630	7040	6500	6800	2660	1080	1760
2	---	---	2610	3900	1960	2910	7180	6780	6940	9640	2620	7610
3	---	---	2940	2760	2200	2380	7280	6740	7190	8680	6680	7290
4	---	---	3120	3320	2540	2790	7560	7260	7410	6660	6420	6560
5	---	---	3090	5360	3180	4080	8340	7300	7730	6400	5740	6030
6	---	---	2350	4840	3380	4040	9460	8420	8870	5840	5660	5710
7	---	---	2110	4760	4260	4440	9660	8540	9220	6200	5880	6040
8	---	---	3560	5800	4780	5270	9960	9020	9560	8420	6920	7580
9	---	---	3490	6380	5680	5980	10800	9320	10100	11700	8540	10000
10	---	---	3110	6640	5720	6170	11200	9820	10600	12700	11800	12400
11	---	---	3790	---	---	6110	11500	10200	10900	13500	12800	13100
12	---	---	4850	6900	5180	6050	11900	10900	11400	13700	13500	13700
13	---	---	3440	7040	5480	5990	12800	11600	12100	13900	13700	13800
14	---	---	3740	7180	5500	6070	13200	12800	13100	14000	13800	13900
15	---	---	4570	7840	5940	6890	12600	7700	10600	13800	13700	13800
16	---	---	5290	7920	6240	6740	9700	580	1780	13600	13400	13500
17	---	---	6210	13100	4320	7540	2280	780	1410	13600	13200	13400
18	---	---	7000	6100	1380	2180	7320	2360	5230	13200	13000	13100
19	---	---	7840	7800	1880	5320	9960	7220	8580	13100	13000	13100
20	---	---	8660	5440	5100	5170	10100	8220	9570	13300	13000	13100
21	---	---	9500	5400	5160	5270	8040	7000	7270	13200	12800	13000
22	10500	10100	10300	5840	5420	5590	8060	7420	7820	13600	13000	13400
23	11400	7920	10400	7220	5880	6480	8040	7260	7660	13800	13600	13700
24	11000	9700	10500	8860	5520	7680	7900	7120	7410	13500	12300	13000
25	8860	4580	5420	11000	2420	5210	8000	7840	7910	12200	11700	11900
26	8100	3800	6110	9480	2420	5150	7960	7800	7870	12700	11900	12200
27	6780	4480	5980	9460	6780	7720	12600	7300	9760	13500	12700	13100
28	6160	1300	2850	10400	8800	9940	13300	12600	13000	13600	13400	13500
29	2440	1580	2120	9560	7640	8490	13500	13300	13400	13700	13500	13600
30	3140	2480	2930	7580	6920	7170	13600	13300	13500	13700	13400	13600
31	3380	3120	3220	---	---	---	13300	3440	9690	13500	13200	13400
MONTH	11400	1300	4940	13100	1380	5620	13600	580	8850	14000	1080	11300

## 08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13300	13000	13200	10700	9760	10500	13700	12600	13400	3100	1180	2130
2	13300	12900	13100	10700	8540	10000	13700	13500	13700	5000	3140	4280
3	13300	12600	13000	8660	8120	8300	13700	13400	13600	6480	5040	5920
4	13000	12600	12700	10900	8740	9670	14000	13700	13800	6960	6340	6630
5	13000	12800	12900	12700	11000	12100	14100	14000	14100	8500	7000	7710
6	12900	12600	12700	13100	12700	13000	13900	12900	13400	9680	8560	9170
7	12700	12600	12600	13500	13200	13300	13100	12800	12900	10700	9680	10200
8	12600	12300	12400	13500	13300	13400	13400	13100	13300	10900	10600	10800
9	12300	12100	12200	13700	13400	13600	13600	13200	13400	11000	10400	10800
10	12200	12000	12100	13300	11600	12300	13700	13500	13600	10900	10700	10800
11	12500	12200	12300	12000	11600	11800	13700	12800	13500	11200	10600	10900
12	12500	12300	12400	13100	12100	12600	12700	11300	11900	11700	11200	11500
13	12500	12300	12400	13100	12800	13000	11400	10700	11000	12200	11500	11900
14	12500	11800	12100	13100	12800	13000	12500	11500	12000	13100	12100	12400
15	12100	11700	11900	12800	11900	12200	13300	12700	12900	15300	13500	14600
16	13200	12100	12600	13000	12300	12800	12900	12200	12600	14800	12600	13900
17	13400	13200	13300	13100	12900	13000	12200	12100	12100	13200	5620	8600
18	13400	13300	13400	13200	12900	13000	12200	12000	12100	9540	7800	8490
19	13300	12900	13000	13100	12000	12700	12200	11800	12000	10700	8500	9620
20	12900	760	8180	12400	7180	10700	12400	11900	12100	9720	8160	8830
21	7320	1220	2980	6880	3320	5210	12000	11700	11900	8120	7180	7560
22	2000	1600	1790	9880	5820	8410	11700	10600	11000	8940	2200	7280
23	9660	1300	3820	7300	5880	6310	12000	8140	11000	5000	1880	3060
24	3440	1940	2650	6040	5860	5970	11900	11200	11400	4620	1840	3180
25	7740	3520	5250	6060	5880	5970	11700	11300	11500	4960	4700	4860
26	7780	5340	6150	5980	5860	5900	11400	10500	11000	4760	4520	4630
27	7160	5520	6320	6500	6000	6210	10400	9920	10100	4520	4360	4440
28	9620	7220	8280	7900	6520	7090	12400	1480	7400	4400	4300	4360
29	---	---	---	9700	7940	8790	3060	1260	1950	4480	4340	4400
30	---	---	---	11000	9700	10200	5740	740	1800	4560	4380	4470
31	---	---	---	12600	11100	11900	---	---	---	4640	4520	4590
MONTH	13400	760	10200	13700	3320	10400	14100	740	11500	15300	1180	7810

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	4880	4640	4770	1860	1460	1680	3500	3280	3380	5260	5080	5160
2	5180	4840	5030	2080	1840	1970	3760	3500	3620	5380	5240	5310
3	5600	5180	5370	2200	1860	2040	4000	3760	3860	5520	5360	5440
4	6180	5420	5590	2520	2200	2340	4200	3960	4080	5620	5480	5550
5	7480	1740	4290	2720	2420	2540	4400	4220	4300	5700	5600	5650
6	3100	1880	2320	2900	2640	2750	4620	4400	4530	5780	5660	5720
7	2640	1900	2300	3140	2860	3000	4840	4640	4750	5780	600	2010
8	2900	2660	2780	3400	3140	3250	5040	4860	4960	760	660	702
9	3180	2900	3050	3580	3380	3470	5240	5040	5140	4040	800	2580
10	3480	3180	3320	3820	3620	3720	5380	5220	5310	4620	4120	4470
11	3740	3480	3590	4060	3800	3930	5500	5320	5430	4380	3740	4050
12	3840	3640	3760	4240	4020	4110	5540	5360	5480	3720	3500	3580
13	4380	3680	4070	4180	4100	4150	5700	300	1500	3480	920	2910
14	4880	4400	4680	4260	4120	4190	1440	380	623	1520	920	1050
15	5220	4880	5050	4380	4200	4290	1680	720	1120	3960	780	2390
16	5440	5180	5310	4440	4300	4390	1340	1060	1210	4620	2700	2790
17	5660	5360	5500	4860	4400	4650	1640	1340	1500	3120	2900	3010
18	5640	5600	5610	4760	4620	4700	1960	1640	1800	3300	3100	3210
19	5780	5580	5680	4760	4620	4710	2240	1940	2070	3420	3220	3350
20	5880	5660	5770	4760	540	3420	2540	2240	2370	3400	700	1880
21	6020	5760	5890	800	560	656	2840	2520	2650	1400	760	1020
22	6080	5860	5970	2180	420	829	3100	2840	2940	1200	1060	1130
23	6100	5920	6030	1200	440	727	3340	3120	3220	1340	1200	1270
24	6140	5960	6050	860	580	748	3560	3320	3430	1500	1340	1410
25	8460	3740	6740	940	640	746	3780	3580	3670	1640	1500	1580
26	13600	3740	6970	1640	960	1400	4080	3800	3960	1800	1640	1720
27	6480	680	1610	7260	1640	4540	4360	4080	4250	1880	1800	1840
28	760	520	623	6120	3220	4130	4580	4360	4480	1980	1880	1940
29	980	700	841	3160	2920	3000	4780	4600	4680	2060	1960	2030
30	1440	980	1170	3080	2920	2980	4920	4760	4830	2120	2060	2090
31	---	---	---	3340	3060	3190	5060	4900	4970	---	---	---
MONTH	13600	520	4320	7260	420	2980	5700	300	3550	5780	600	2890



## COLORADO RIVER BASIN

08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	21.5	17.5	19.5	10.0	7.0	8.5	9.0	5.0	7.0
2	---	---	---	18.0	14.0	16.0	10.0	7.5	9.0	4.5	3.5	4.0
3	---	---	---	17.5	13.0	15.0	8.0	6.0	7.5	5.0	2.5	3.5
4	---	---	---	17.0	13.5	15.0	7.0	5.5	6.5	7.0	4.0	5.5
5	---	---	---	15.5	11.5	13.5	6.5	4.5	5.5	7.5	4.5	6.0
6	---	---	---	14.0	11.0	12.5	7.5	4.5	5.5	8.5	5.0	7.0
7	---	---	---	17.0	12.0	14.0	7.5	3.5	5.5	7.5	6.0	6.5
8	---	---	---	18.5	14.0	16.0	9.5	5.5	7.5	9.5	5.5	7.5
9	---	---	---	18.5	15.0	16.5	11.5	7.5	9.5	10.5	7.5	9.0
10	---	---	---	15.5	12.5	14.0	11.0	7.5	9.5	8.5	6.0	7.0
11	---	---	---	14.5	10.0	12.0	11.5	9.0	10.5	6.5	2.0	4.0
12	---	---	---	15.0	10.0	12.5	13.5	11.0	12.0	2.0	.0	.5
13	---	---	---	15.5	11.5	13.5	15.0	12.0	13.0	2.0	.0	1.0
14	---	---	---	18.0	13.5	15.5	11.5	6.5	8.5	4.5	.0	2.0
15	---	---	---	16.0	13.0	14.5	6.0	5.5	5.5	6.0	1.5	3.5
16	---	---	---	13.0	11.5	12.0	6.0	3.0	4.5	7.0	4.0	5.5
17	---	---	---	12.5	12.0	12.0	8.0	5.5	6.5	7.0	3.5	5.5
18	---	---	---	12.0	10.0	11.5	8.0	6.5	7.0	8.5	4.5	6.5
19	---	---	---	10.0	8.0	9.0	9.0	6.5	8.0	9.5	5.0	7.0
20	---	---	---	8.0	7.0	7.5	11.5	9.0	10.0	5.0	1.0	2.5
21	---	---	---	8.5	6.5	7.5	12.5	10.5	11.5	3.5	.0	1.5
22	13.0	12.0	12.5	9.5	7.0	8.0	11.0	8.5	9.5	4.0	.5	2.5
23	12.0	11.5	12.0	10.5	7.5	9.0	11.0	7.5	9.0	4.5	1.5	3.0
24	12.0	11.5	11.5	10.0	8.5	9.0	11.5	8.0	10.0	7.0	3.0	5.0
25	12.5	11.5	12.0	10.0	8.0	9.0	7.5	5.0	6.0	9.0	5.0	7.0
26	13.5	12.0	12.5	11.0	9.0	10.0	6.5	5.0	5.5	9.0	6.0	7.5
27	16.5	13.0	14.5	9.0	7.0	8.0	12.0	6.5	9.0	10.0	7.5	8.5
28	17.0	13.5	15.5	9.0	5.5	7.5	16.0	12.0	14.5	8.5	6.5	7.5
29	17.0	14.5	16.0	10.0	6.5	8.0	16.0	14.5	15.5	11.0	6.0	8.5
30	19.0	15.5	17.0	9.5	7.0	8.5	14.5	11.0	12.5	11.5	7.0	9.5
31	20.5	17.0	18.5	---	---	---	11.0	9.5	10.5	6.5	.0	2.5
MONTH	20.5	11.5	14.0	21.5	5.5	12.0	16.0	3.0	9.0	11.5	.0	5.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	.0	.0	.0	16.0	10.5	13.5	19.5	13.5	16.5	24.0	20.0	21.5
2	.5	.0	.0	17.0	13.0	15.0	21.0	14.5	17.5	25.5	20.5	23.0
3	2.0	.0	.5	20.0	15.0	17.5	22.0	15.5	19.0	26.0	20.5	23.0
4	4.5	.5	2.5	17.0	13.5	15.5	21.5	17.0	19.5	26.5	21.0	23.5
5	5.5	3.5	4.0	16.0	12.0	14.0	21.5	16.0	19.0	27.0	21.5	24.0
6	7.5	2.5	5.0	14.5	12.0	13.0	22.5	16.5	19.5	28.0	22.5	25.0
7	5.5	4.5	4.5	18.0	14.0	16.0	20.0	17.0	18.0	29.0	22.5	25.5
8	8.5	3.5	6.0	20.0	16.0	18.0	17.5	15.5	16.5	28.0	23.0	25.5
9	11.0	6.0	8.5	19.0	17.5	18.5	20.0	15.5	17.5	29.0	23.5	26.0
10	10.0	7.5	9.0	20.5	16.0	18.0	19.5	16.5	18.0	27.0	24.0	25.0
11	9.0	5.0	7.0	22.0	17.0	19.5	22.0	17.5	19.5	26.5	22.5	24.5
12	9.0	4.5	7.0	19.0	15.5	16.5	23.5	19.0	21.0	27.5	22.0	24.5
13	10.5	6.5	8.5	16.5	15.0	15.5	24.0	20.5	22.0	26.5	22.5	24.5
14	10.5	6.5	8.5	16.0	13.5	15.0	24.5	20.0	22.0	24.0	19.5	22.0
15	11.0	6.5	8.5	14.5	12.5	13.5	25.0	20.0	23.0	25.0	20.5	22.5
16	12.5	7.5	10.0	13.0	11.5	12.5	25.0	21.0	23.0	25.5	22.5	23.5
17	12.5	8.0	10.5	14.0	10.5	12.5	25.0	20.5	23.0	23.0	21.0	22.0
18	12.0	10.5	11.0	15.5	11.5	13.5	24.5	21.0	22.5	22.5	20.5	21.5
19	12.0	10.5	11.5	14.0	12.5	13.0	25.0	20.5	22.5	24.5	20.5	22.5
20	13.5	11.5	12.5	13.0	11.0	12.0	25.5	21.5	23.5	24.0	22.0	23.0
21	17.5	13.0	15.0	12.5	10.5	11.5	24.5	21.0	22.5	25.0	21.0	23.0
22	18.5	15.0	16.5	16.0	10.5	13.0	24.0	21.0	22.0	24.0	21.5	22.5
23	16.5	13.5	14.5	17.5	13.0	15.5	23.5	19.0	21.0	23.0	20.5	22.0
24	14.0	11.5	13.0	19.0	13.5	16.5	24.0	19.0	21.5	25.0	21.5	23.0
25	15.0	10.0	12.5	20.5	15.0	18.0	24.0	20.0	22.0	26.5	22.5	24.5
26	14.0	11.5	12.5	19.0	17.0	18.0	24.5	21.0	22.5	28.0	24.0	26.0
27	13.5	10.0	12.0	21.5	17.0	19.0	23.0	20.0	21.5	28.5	25.0	26.5
28	12.5	11.5	12.0	21.5	17.5	19.5	20.0	19.0	19.5	28.5	25.5	27.0
29	---	---	---	22.0	18.5	20.0	22.5	19.0	20.5	28.5	25.5	27.0
30	---	---	---	19.5	16.0	17.5	22.5	18.5	21.0	27.5	25.0	26.5
31	---	---	---	18.0	13.0	15.5	---	---	---	26.5	25.0	25.5
MONTH	18.5	.0	8.5	22.0	10.5	15.5	25.5	13.5	20.5	29.0	19.5	24.0

## COLORADO RIVER BASIN

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08123800 BEALS CREEK NEAR WESTBROOK, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	27.5	24.0	26.0	28.5	24.5	26.0	30.0	26.0	28.0	27.0	24.0	25.5
2	28.0	24.5	26.5	27.5	25.0	26.0	30.5	26.5	28.5	26.0	23.0	24.5
3	28.5	26.0	27.0	28.5	24.5	26.5	30.5	26.5	28.5	26.0	23.5	25.0
4	27.5	25.5	26.5	29.0	25.0	27.0	30.0	26.0	28.5	26.0	23.5	25.0
5	25.5	22.0	22.5	29.0	25.5	27.5	31.0	26.5	28.5	27.0	24.5	25.5
6	24.5	21.5	22.5	29.0	25.5	27.0	30.0	26.0	28.0	26.0	24.0	25.0
7	27.0	22.5	24.5	28.0	25.0	26.5	30.0	25.5	27.5	26.0	23.0	24.5
8	29.5	25.5	27.5	27.5	25.5	26.5	29.5	26.0	27.5	26.5	24.0	25.5
9	30.0	27.0	28.5	28.5	25.0	27.0	29.0	25.0	27.0	27.5	25.0	26.0
10	30.0	26.5	28.0	28.5	25.5	27.0	29.0	25.0	27.0	26.5	24.5	25.5
11	28.5	26.0	27.0	28.0	25.5	27.0	29.0	25.5	27.0	26.0	24.0	25.0
12	27.0	24.0	25.0	28.0	25.5	27.0	27.0	25.0	26.0	25.5	24.0	25.0
13	27.0	22.5	25.0	27.5	25.5	26.5	25.5	22.0	24.0	25.0	23.0	24.0
14	29.0	24.5	26.5	27.5	25.0	26.0	25.5	24.5	24.5	23.0	23.0	23.0
15	30.5	26.0	28.0	28.0	25.5	26.5	28.0	23.5	25.5	23.0	22.5	22.5
16	30.0	27.0	28.5	28.0	25.5	27.0	29.0	25.5	27.0	23.5	22.0	22.5
17	30.5	26.5	28.5	28.0	25.5	27.0	28.5	26.0	27.5	25.5	22.5	23.5
18	28.5	25.5	26.5	30.0	25.5	27.0	28.5	26.0	27.5	25.5	23.5	24.5
19	27.5	23.5	25.5	28.0	26.0	27.0	28.5	25.5	27.0	25.0	23.5	24.0
20	28.0	23.5	26.0	29.5	24.5	26.5	28.5	26.0	27.0	23.5	22.5	23.0
21	29.0	24.5	26.5	26.5	24.0	25.0	28.5	25.5	27.0	22.5	21.5	22.0
22	29.0	25.0	27.0	27.0	23.0	25.0	29.0	25.5	27.0	23.5	21.0	22.0
23	28.5	26.0	27.0	25.0	23.0	24.0	29.0	25.5	27.0	23.5	21.5	22.5
24	26.0	25.0	25.5	28.5	24.0	26.0	27.5	25.0	26.5	22.0	19.5	21.0
25	27.0	25.0	26.0	30.0	26.0	28.0	28.5	24.5	26.5	22.0	20.0	21.0
26	26.5	25.5	26.0	31.5	27.5	29.0	28.5	25.0	26.5	21.0	19.0	20.0
27	26.0	23.5	25.0	32.0	27.0	29.5	28.0	25.5	26.5	21.0	18.0	19.5
28	26.5	22.0	24.5	31.5	27.5	29.5	26.5	25.0	26.0	22.5	20.0	21.0
29	27.5	23.0	25.0	30.5	27.0	29.0	26.5	23.5	25.0	21.5	18.5	20.0
30	27.5	24.0	25.5	30.5	26.5	28.5	26.0	23.0	25.0	18.0	16.5	17.0
31	---	---	---	30.0	26.5	28.0	26.5	23.5	25.0	---	---	---
MONTH	30.5	21.5	26.0	32.0	23.0	27.0	31.0	22.0	27.0	27.5	16.5	23.0

## COLORADO RIVER MAIN STEM

08123850 COLORADO RIVER ABOVE SILVER, TX  
(National stream-quality accounting network)

LOCATION.--Lat 32°03'13", long 100°45'42", Coke County, Hydrologic Unit 12080008, on right bank 25 ft downstream from Pan American Oil Co. bridge, 4.7 mi west of Silver, and at mile 756.0.

DRAINAGE AREA.--14,910 mi<sup>2</sup>, of which 10,260 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1967 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,907.66 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 4, 1972, water-stage recorder at site 0.5 mi downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. For affects of upstream diversions, see stations 08121000 and 08123720. Some regulation by Lake J. B. Thomas, Lake Colorado City, and Champion Creek Reservoir (see stations 08118000, 08123000 and 08123600).

AVERAGE DISCHARGE.--18 years, 74.3 ft<sup>3</sup>/s (53,830 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,900 ft<sup>3</sup>/s Sept. 9, 1980 (gage height, 22.73 ft); no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,940 ft<sup>3</sup>/s May 20 at 0300 hours (gage height, 14.12 ft); no flow Sept. 3-5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	9.1	27	136	8.8	39	13	1700	23	6.9	21	.02
2	27	7.0	24	103	9.3	27	15	868	20	5.1	15	.01
3	19	14	21	86	10	22	15	237	18	5.0	11	.00
4	16	179	21	53	10	17	11	120	15	3.7	7.4	.00
5	14	60	18	31	14	17	7.4	83	123	3.1	5.3	.00
6	11	37	14	24	24	15	6.0	57	629	2.8	3.8	.01
7	224	27	11	20	26	14	5.6	35	1080	2.7	2.8	.04
8	33	18	12	18	28	14	6.0	25	775	3.2	2.0	21
9	48	12	14	17	30	12	6.5	21	340	4.5	1.7	26
10	93	7.9	14	17	29	11	5.4	45	187	3.2	1.0	15
11	50	6.5	14	18	26	10	4.6	114	102	2.5	.54	31
12	32	5.6	14	20	26	9.3	4.8	71	75	1.2	.36	6.6
13	23	5.1	15	23	26	8.8	3.9	48	54	.63	14	3.1
14	126	4.4	16	23	22	12	2.9	42	37	.38	163	57
15	36	4.1	69	18	17	19	3.1	47	31	.21	113	53
16	14	4.1	156	15	13	16	5.2	295	22	.11	40	59
17	10	114	135	14	12	14	6.7	291	18	.06	24	18
18	6.8	330	101	14	12	13	5.1	154	14	.04	14	7.4
19	4.9	178	83	15	12	12	3.2	973	13	.05	5.7	3.3
20	4.0	84	57	13	260	38	2.7	2140	11	.15	3.9	25
21	5.0	53	41	13	714	68	1.4	411	9.3	.10	2.7	346
22	5.0	44	34	13	120	66	67	475	7.8	2.2	1.3	411
23	10	34	31	12	301	99	51	593	7.2	1080	.90	91
24	6.3	35	28	11	148	60	11	527	6.7	787	.28	44
25	20	54	26	10	73	43	7.5	493	6.5	263	.17	19
26	30	112	26	9.4	61	44	4.4	283	5.8	106	.11	10
27	64	79	26	9.1	54	26	3.6	124	34	55	.07	7.1
28	50	61	27	8.8	44	16	3.5	83	32	77	.04	5.2
29	24	41	24	9.1	---	13	648	56	15	96	.04	305
30	17	33	24	9.4	---	14	727	35	11	44	.03	251
31	12	---	249	9.9	---	12	---	26	---	29	.02	---
TOTAL	1071.0	1652.8	1372	792.7	2130.1	801.1	1657.5	10472	3722.3	2584.83	455.16	1814.78
MEAN	34.5	55.1	44.3	25.6	76.1	25.8	55.3	338	124	83.4	14.7	60.5
MAX	224	330	249	136	714	99	727	2140	1080	1080	163	411
MIN	4.0	4.1	11	8.8	8.8	8.8	1.4	21	5.8	.04	.02	.00
AC-FT	2120	3280	2720	1570	4230	1590	3290	20770	7380	5130	903	3600
CAL YR 1984	TOTAL	6015.54	MEAN	16.4	MAX	330	MIN	.00	AC-FT	11930		
WTR YR 1985	TOTAL	28526.27	MEAN	78.2	MAX	2140	MIN	.00	AC-FT	56580		

08123850 COLORADO RIVER ABOVE SILVER, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: December 1967 to current year. Chemical and biochemical analyses: November 1977 to current year. Pesticide analyses: October 1970 to September 1981.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1967 to current year.

WATER TEMPERATURES: December 1967 to current year.

INSTRUMENTATION.--Beginning June 22, 1981, specific conductance and water temperature are recorded continuously at this station.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 17,300 microsiemens June 13, 1984; minimum daily, 180 microsiemens June 28, 1982.

WATER TEMPERATURES: Maximum daily, 35.5°C Aug. 2, 7, 1985; minimum daily, 0.0°C on many days during winter months.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 11,400 microsiemens Aug. 22; minimum daily, 200 microsiemens May 20, July 23.

WATER TEMPERATURES: Maximum daily, 35.5°C Aug. 2, 7; minimum daily, 0.0°C on several days during January and February.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)
OCT 23...	1230	7.5	3220	7.8	12.0	38	8.7	86	4.8	520	520	710
DEC 11...	1100	15	5790	8.8	11.5	29	12.6	127	8.2	K8	K22	1200
FEB 20...	1100	10	8330	8.6	12.0	6.0	8.4	86	9.5	140	70	1800
21...	1135	780	2720	--	14.5	--	--	--	--	--	--	570
APR 09...	0930	8.8	5480	8.2	14.5	17	9.0	95	11	42	92	1200
JUN 18...	1045	14	2970	7.8	25.0	35	8.2	107	5.4	K15	27	650
AUG 20...	1145	3.7	1220	8.6	26.5	--	12.8	171	5.9	120	K33	280
DATE		HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 23...		620	160	75	430	7	9.7	94	530	730	.40	1.2
DEC 11...	1100	250	150	800	10	15	131	890	1400		.60	2.5
FEB 20...	1600	340	220	1300	14	17	180	1400	2200		.70	3.0
21...	490	110	72	400	7	9.9	79	460	610		.30	3.8
APR 09...	1000	250	130	800	11	12	151	1000	1300		.50	1.0
JUN 18...	520	160	60	400	7	11	128	510	620		.50	6.0
AUG 20...	220	73	24	140	4	5.3	66	200	230		.70	6.0
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 23...	2040	2000	<.10	.060	1.2	.150	.010	<.010	79	1.6	95	
DEC 11...	3820	3600	<.10	.110	1.6	.610	.310	.270	25	1.0	98	
FEB 20...	5820	5600	<.10	.130	1.8	.280	.140	.140	12	.32	67	
21...	--	1700	--	--	--	--	--	--	--	--	--	
APR 09...	3750	3600	<.10	.090	1.6	.170	.020	<.010	44	1.0	95	
JUN 18...	1970	1800	<.10	.140	1.1	.120	.010	<.010	46	1.7	91	
AUG 20...	729	720	<.10	.030	.80	--	<.010	<.010	18	.18	88	



## COLORADO RIVER MAIN STEM

08123850 COLORADO RIVER ABOVE SILVER, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 23...	1230	<1	<100	<10	1	<1	2	<1	50	5
FEB 20...	1100	2	100	<10	<1	<1	1	6	40	<1
JUN 18...	1045	3	<100	<10	<1	<1	<1	2	40	4
AUG 20...	1145	3	150	<.5	<1	<1	<3	2	9	2

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 23...	60	20	<.1	12	2	<1	<1	2600	22	50
FEB 20...	170	140	<.1	18	1	<1	<1	6800	49	10
JUN 18...	60	20	<.1	5	2	<1	2	2200	17	30
AUG 20...	30	2	<.1	<10	3	<1	<1	1300	13	10

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	1071.0	3670	2280	6610	830	2400	620	1790	780
NOV.	1984	1652.8	2510	1540	6860	560	2480	410	1850	520
DEC.	1984	1372	3900	2450	9060	890	3300	660	2450	830
JAN.	1985	792.7	5780	3730	7990	1400	2940	1000	2180	1300
FEB.	1985	2130.1	3710	2390	13700	880	5060	650	3750	810
MAR.	1985	801.1	6560	4260	9220	1600	3400	1200	2520	1400
APR.	1985	1657.5	3790	2380	10700	870	3890	640	2890	810
MAY	1985	10472	1500	911	25800	330	9280	240	6920	310
JUNE	1985	3722.3	1790	1090	10900	390	3940	290	2940	370
JULY	1985	2584.83	2200	1350	9390	490	3390	360	2530	460
AUG.	1985	455.16	1490	897	1100	320	397	240	296	310
SEPT	1985	1814.78	1150	693	3390	250	1220	190	910	240
TOTAL		28526.27	**	**	115000	**	41700	**	31000	**
WTD.AVG.		78	2390	1490	**	540	**	400	**	510

08123850 COLORADO RIVER ABOVE SILVER, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	2560	2460	2490	5740	5280	5560	---	---	4670	10000	2160	5610
2	2760	2520	2650	5680	5240	5450	---	---	4960	9560	2760	6510
3	2980	2760	2880	5260	2920	4490	---	---	5190	3800	2180	2880
4	3100	2980	3040	3980	1240	2510	---	---	5240	3900	3420	3640
5	3560	3100	3340	1200	980	1040	---	---	5360	4240	3460	3810
6	4280	3560	3750	---	---	1960	---	---	5080	4600	4240	4480
7	3520	1180	2720	---	---	2530	---	---	4790	4800	4600	4680
8	3600	2480	3200	---	---	3010	5200	4760	4950	5780	4800	5220
9	2520	1440	1830	---	---	3340	5540	5220	5410	6200	5780	6000
10	7260	1720	3680	---	---	3620	5680	5540	5640	6980	6540	6780
11	7020	2740	4850	---	---	3850	5680	5380	5550	7020	6520	6880
12	---	---	5010	---	---	4030	5380	5040	5220	6480	5880	6100
13	---	---	5230	---	---	4220	5040	4980	5010	5860	5640	5760
14	5840	1340	3670	---	---	4390	5200	4960	5070	5620	5280	5380
15	---	---	3340	---	---	4560	5300	4160	5040	5280	5220	5250
16	---	---	4070	---	---	4880	5700	760	3100	5240	5160	5200
17	---	---	4190	---	---	2960	9920	2760	6810	5220	5120	5170
18	---	---	4330	---	---	1890	2880	2160	2660	5140	4920	5060
19	---	---	4480	---	---	1540	4340	2060	3410	5420	5060	5180
20	---	---	4560	---	---	1920	4280	3040	3800	6340	5460	5860
21	---	---	4500	---	---	2550	3440	3200	3260	7660	6400	6990
22	---	---	4530	---	---	3030	3200	2780	3020	8980	7740	8230
23	---	---	3990	---	---	3370	3440	2820	3110	10100	9060	9570
24	---	---	4250	---	---	3350	3800	3460	3680	10500	10200	10400
25	2840	1980	2770	---	---	3220	4060	3800	3890	10500	10400	10500
26	2580	2360	2470	---	---	2210	4560	4060	4340	10500	10300	10500
27	9540	2620	5620	---	---	2980	4800	4560	4660	10400	10300	10400
28	7700	4460	5640	---	---	3720	5440	4820	5110	10400	10300	10300
29	5060	4320	4600	---	---	4010	5760	5440	5640	10300	10200	10200
30	5860	5160	5640	---	---	4450	5760	2880	5000	10200	10100	10200
31	5540	5260	5390	---	---	---	4140	540	1830	10200	10100	10200
MONTH	9540	1180	3960	5740	980	3350	9920	540	4530	10500	2160	6870

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10500	10200	10400	3260	2920	3140	5920	5540	5790	2200	980	1200
2	10800	10000	10500	5460	3100	3930	5520	5160	5280	1200	920	1000
3	10600	10200	10400	7740	5680	7140	5200	4560	4790	1960	1240	1590
4	10300	9820	10100	7440	6060	6680	5760	4940	5410	2760	2000	2380
5	10200	9640	9880	6040	5780	5880	5760	5680	5730	3400	2780	3090
6	10400	9520	9970	5780	5740	5760	5740	5560	5670	3820	3420	3630
7	10100	9540	9820	5980	5740	5840	5760	5640	5690	4080	3840	3960
8	10100	8420	9180	6620	6000	6370	5840	5660	5740	4360	4080	4240
9	8400	8080	8240	6580	6140	6390	5960	5800	5880	4700	4380	4560
10	8320	8060	8200	6500	6140	6280	6080	5920	6000	5280	4720	4890
11	8020	7420	7640	7240	6500	6850	6380	6100	6230	5500	4500	5090
12	9660	7420	8050	7980	7300	7640	6700	6380	6540	6960	4820	6140
13	10700	9860	10500	8340	8020	8190	7040	6720	6870	4700	2960	3460
14	10100	9140	9510	8320	7700	8120	7340	7040	7180	3340	3000	3150
15	9160	8720	8910	7700	7480	7570	7900	7340	7550	4220	3120	3540
16	8700	8600	8650	8780	7740	8220	8440	7900	8180	4700	2040	3870
17	8600	8420	8520	9680	8820	9360	9380	8460	8940	2600	1420	1940
18	8420	8340	8380	9840	9280	9700	9980	9400	9630	2660	1980	2310
19	8440	8300	8350	9200	7840	8670	10200	9900	10000	2040	440	891
20	8580	1420	7380	7960	6820	7390	10300	10100	10200	1500	200	851
21	2740	620	1540	8680	4940	6940	10300	10200	10300	1220	940	1100
22	2700	640	1340	9480	5560	7390	11400	3620	9300	1500	820	1270
23	4500	960	2030	10200	5720	7770	3040	2340	2680	2860	1280	2280
24	1340	1160	1280	6760	5060	5920	3200	2360	2690	2480	1480	1940
25	2300	1280	1680	6440	5380	5920	4200	3200	3660	1820	1020	1250
26	5780	2400	4570	5340	4920	5150	5100	4260	4690	1120	980	1040
27	5180	2280	3070	5660	5160	5440	5860	5120	5500	1480	1140	1290
28	3200	2820	3000	5840	5680	5770	6380	5900	6160	1960	1500	1730
29	---	---	---	5880	5800	5830	7360	1200	4060	2300	1980	2150
30	---	---	---	5980	5820	5910	5280	1100	2640	2580	2300	2450
31	---	---	---	6060	5920	6000	---	---	---	2800	2600	2690
MONTH	10800	620	7180	10200	2920	6680	11400	1100	6300	6960	200	2610

## COLORADO RIVER MAIN STEM

08123850 COLORADO RIVER ABOVE SILVER, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

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DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	3080	2800	2930	4420	4320	4370	2820	2560	2690	3480	3340	3390
2	3320	3080	3200	4340	4160	4240	2540	2400	2450	3580	3440	3520
3	3520	3320	3420	4220	4120	4170	2420	2360	2390	---	---	---
4	3540	3500	3520	4300	4080	4160	2420	2360	2390	---	---	---
5	3600	1980	3130	4580	4300	4430	2480	2380	2430	---	---	---
6	3240	1800	2770	4900	4560	4720	2600	2460	2540	4200	3840	3980
7	1620	1140	1270	5280	4900	5080	2740	2600	2650	4280	4180	4230
8	1320	1020	1090	5600	5260	5420	2860	2620	2780	4300	2820	3780
9	1680	1080	1400	5880	5560	5710	2960	2720	2870	4220	2860	3780
10	1700	1420	1550	6000	5740	5830	3120	2940	3020	4240	3580	4070
11	1540	1420	1460	5960	5720	5820	3220	3100	3160	3660	2940	3400
12	1760	1520	1640	6140	5960	6050	3360	3220	3280	3560	2880	3240
13	2020	1760	1910	6220	6040	6150	3460	3100	3390	2860	2120	2470
14	2300	2040	2170	6300	6180	6240	4080	740	1400	2080	1520	1790
15	2520	2300	2400	6340	6200	6260	1240	880	1070	1880	1320	1670
16	2740	2520	2650	6400	6220	6310	1020	940	980	1680	1060	1200
17	3000	2760	2880	6480	6280	6380	1000	880	932	1140	920	1010
18	3140	3000	3070	6580	6360	6470	1060	900	960	1040	940	990
19	3320	3160	3240	6560	6340	6460	1240	1080	1170	1180	1040	1130
20	3500	3300	3410	6340	6220	6300	1440	1260	1370	1240	960	1170
21	3640	3480	3550	6380	6240	6300	1640	1460	1550	3000	780	1400
22	3780	3620	3680	6420	5720	6200	1900	1660	1770	1340	400	632
23	3920	3760	3820	6560	200	3120	2100	1900	1990	820	420	582
24	4040	3900	3960	1340	240	930	2340	2120	2230	820	600	667
25	4120	4020	4060	1260	1140	1230	2500	2320	2410	860	660	747
26	4160	4100	4140	1800	1220	1410	2640	2480	2560	1080	860	969
27	4340	3780	4190	3000	1880	2580	2760	2640	2690	1200	1080	1140
28	4320	3840	4140	2980	2640	2870	2940	2760	2830	1340	1220	1290
29	4640	4100	4410	3060	2520	2700	3100	2920	2990	1340	360	746
30	4600	4440	4530	3860	3080	3620	3220	3040	3120	1680	760	1210
31	---	---	---	3600	2840	3140	3380	3220	3290	---	---	---
MONTH	4640	1020	2990	6580	200	4670	4080	740	2300	4300	360	2010

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	20.0	14.0	17.0	22.5	16.5	19.5	12.0	8.0	10.0	7.0	3.0	5.0
2	22.0	16.5	19.0	19.0	13.5	16.0	12.5	8.5	10.5	4.5	2.0	3.0
3	22.5	18.5	20.0	19.0	11.5	15.0	9.5	7.0	8.0	5.0	1.5	3.0
4	24.5	18.5	21.0	16.5	11.5	15.0	7.5	6.0	7.0	7.0	3.0	5.5
5	25.5	19.5	22.0	16.0	11.0	14.0	8.5	5.0	6.0	8.0	3.5	6.0
6	27.0	15.5	22.5	15.0	11.5	13.0	---	---	---	10.5	5.0	7.5
7	23.5	17.5	20.0	18.0	12.0	14.5	10.0	5.5	8.5	10.0	5.5	7.5
8	24.0	18.0	21.5	18.0	14.0	16.0	11.5	6.0	8.5	10.5	6.0	8.0
9	23.5	17.0	20.5	19.0	15.5	16.5	14.0	8.5	10.5	11.5	7.0	8.0
10	22.5	19.5	21.0	17.0	12.5	14.5	13.5	8.5	10.5	11.0	6.0	7.5
11	23.0	20.5	21.5	16.5	10.0	13.0	13.5	10.0	11.5	6.0	2.0	4.0
12	---	---	---	17.0	10.5	13.5	15.0	12.0	13.0	1.5	.0	.5
13	---	---	---	17.0	12.0	14.5	16.5	13.0	14.0	3.0	.0	1.0
14	---	---	---	20.0	14.0	16.5	14.5	7.0	10.5	6.0	.0	2.5
15	---	---	---	17.5	14.0	15.5	7.0	5.0	6.0	7.5	2.0	4.5
16	---	---	---	14.0	11.5	12.5	7.5	3.5	5.0	8.0	4.0	6.0
17	---	---	---	12.5	11.0	12.0	8.5	6.0	6.5	9.5	3.5	6.0
18	---	---	---	12.0	11.0	11.5	8.5	7.0	7.5	11.0	4.5	7.0
19	---	---	---	10.5	8.5	9.5	8.5	7.0	7.0	12.5	5.0	8.0
20	---	---	---	8.5	8.0	8.0	10.5	8.5	9.0	4.0	.0	1.5
21	---	---	---	9.0	7.5	8.0	12.5	10.5	11.5	4.5	.0	1.5
22	---	---	---	10.5	7.0	9.0	12.5	9.0	11.0	6.5	.0	3.0
23	---	---	---	11.5	7.5	9.5	12.0	10.0	11.0	7.0	1.5	4.0
24	---	---	---	11.0	8.5	9.5	12.5	5.0	8.5	11.0	3.0	6.5
25	13.5	12.0	13.0	12.0	7.5	10.0	5.5	4.5	5.0	13.0	5.5	8.5
26	15.0	12.5	13.5	12.5	10.0	11.0	8.0	4.5	6.0	11.0	6.0	8.5
27	18.0	10.5	15.0	10.0	7.5	8.5	14.0	8.0	12.0	11.0	7.5	9.0
28	18.0	13.0	16.0	10.0	6.5	8.5	18.0	14.0	16.5	10.0	6.0	7.5
29	18.0	15.5	16.5	11.5	6.5	9.0	17.5	12.5	15.5	14.0	5.5	9.5
30	20.5	14.5	16.5	11.0	7.0	9.5	13.0	9.5	11.5	14.0	7.0	10.5
31	22.0	17.5	19.0	---	---	---	9.5	7.0	8.5	6.0	.0	1.5
MONTH	27.0	10.5	18.5	22.5	6.5	12.5	18.0	3.5	9.5	14.0	.0	5.5

## 08123850 COLORADO RIVER ABOVE SILVER, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	.0	.0	.0	17.5	10.0	13.5	19.0	13.0	15.5	19.0	15.0	16.5
2	.0	.0	.0	19.5	12.5	15.5	16.5	12.0	13.5	20.5	15.5	18.0
3	1.0	.0	.5	23.0	15.5	18.5	22.0	11.5	15.5	23.5	15.0	20.0
4	5.5	.0	2.0	18.0	12.0	14.5	19.0	10.0	14.5	23.5	19.0	21.0
5	7.5	2.5	4.5	15.5	9.5	12.0	20.0	10.0	15.0	24.0	18.0	21.0
6	10.5	3.5	6.5	15.5	9.5	12.0	19.0	10.0	12.5	26.0	19.5	22.5
7	6.5	5.0	5.5	18.0	13.0	15.0	15.5	11.0	13.5	26.5	20.0	22.5
8	10.0	3.5	6.5	22.0	15.0	18.0	14.5	10.0	12.0	27.5	23.0	25.0
9	13.5	6.5	9.5	22.0	17.5	19.0	16.5	9.5	13.0	27.0	21.0	23.0
10	11.0	7.0	9.5	22.5	16.0	19.0	16.5	11.0	13.0	25.5	20.5	22.5
11	10.5	4.5	7.0	25.5	16.5	19.5	21.0	12.0	16.0	25.0	21.0	22.5
12	11.5	4.5	7.5	18.0	14.5	16.0	23.0	13.5	18.0	27.5	20.5	25.0
13	13.0	6.5	9.0	16.5	11.0	14.5	23.0	15.5	19.0	25.5	21.0	23.0
14	13.0	6.5	9.0	17.5	12.0	14.0	22.5	11.5	18.0	25.0	16.0	21.0
15	14.0	6.5	9.5	13.0	11.0	12.5	25.0	10.0	18.0	28.0	18.5	23.5
16	15.5	7.5	11.0	12.5	10.0	11.5	24.0	11.5	19.0	27.5	22.0	25.0
17	16.0	8.0	11.5	14.5	9.0	11.5	23.5	13.5	18.0	22.5	19.5	21.5
18	14.0	11.0	12.0	18.0	10.5	13.5	22.5	15.0	19.0	24.5	20.5	22.5
19	13.0	11.0	12.0	14.0	11.5	12.5	24.5	9.5	17.5	24.0	16.0	22.0
20	13.5	11.0	12.0	13.5	10.5	12.0	24.5	18.0	21.0	22.0	15.0	20.0
21	15.0	13.0	14.0	13.5	10.0	11.5	23.0	15.5	19.0	24.5	18.0	21.0
22	18.0	14.5	16.0	17.0	9.5	13.5	23.0	15.5	19.5	23.5	18.5	21.5
23	16.0	13.0	14.5	19.0	13.5	16.0	19.0	15.0	17.5	25.0	18.0	22.5
24	14.5	11.0	12.5	20.5	13.5	16.5	24.0	15.0	19.0	26.0	22.5	24.0
25	15.5	10.0	13.0	22.0	14.5	18.5	23.5	14.5	19.5	27.0	21.0	24.5
26	14.5	11.0	12.5	19.5	16.5	17.5	24.5	15.5	19.5	29.5	24.0	26.5
27	13.5	10.0	12.0	24.5	13.0	19.0	20.5	16.0	18.0	31.5	25.5	27.5
28	12.5	11.0	11.5	22.0	15.0	19.0	23.0	16.5	19.0	32.0	23.5	28.0
29	---	---	---	24.0	17.5	20.0	19.5	13.0	17.0	32.5	26.0	29.0
30	---	---	---	17.5	13.5	15.5	19.5	14.5	17.5	29.5	24.5	27.5
31	---	---	---	20.0	11.0	15.0	---	---	---	29.5	25.0	27.0
MONTH	18.0	.0	9.0	25.5	9.0	15.5	25.0	9.5	17.0	32.5	15.0	23.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	32.0	25.0	27.5	29.5	18.0	24.0	34.0	26.5	30.0	32.5	27.0	29.0
2	32.5	24.5	28.0	29.0	22.0	25.5	35.5	22.0	30.0	32.0	25.5	28.5
3	31.5	25.5	27.5	29.5	22.0	25.5	34.0	27.5	30.5	---	---	29.5
4	27.5	24.0	25.0	32.0	21.5	26.5	33.5	25.5	29.5	---	---	22.5
5	24.5	21.0	22.5	33.0	24.0	28.0	33.5	25.5	30.5	---	---	22.5
6	25.5	21.5	23.5	32.5	24.0	27.5	34.5	25.5	29.5	31.5	25.5	28.5
7	26.5	22.0	24.5	32.0	23.0	27.5	35.5	27.0	30.5	33.0	26.5	29.5
8	29.5	21.0	26.0	31.0	21.5	28.0	34.5	27.0	30.5	31.5	26.0	28.5
9	29.0	17.0	22.5	33.0	22.5	27.5	33.5	26.5	30.0	32.0	26.0	28.5
10	31.0	27.0	29.0	33.0	25.5	29.0	34.0	22.0	28.5	33.5	25.5	29.0
11	29.0	23.0	26.0	34.5	25.5	29.0	31.5	23.5	28.0	31.5	26.5	28.5
12	26.0	21.0	24.5	33.5	23.5	29.0	31.5	24.0	27.5	31.5	25.0	27.5
13	28.0	22.0	25.0	31.5	24.5	28.0	30.5	22.0	27.5	28.0	26.5	27.5
14	30.0	23.0	26.0	31.0	24.5	27.5	28.0	23.0	26.5	26.5	24.5	25.5
15	32.0	25.0	28.5	32.5	25.0	28.5	29.0	24.0	26.5	26.0	24.0	25.0
16	33.0	26.0	29.0	33.0	23.0	28.5	29.5	21.0	27.0	26.0	23.5	24.5
17	30.0	24.5	27.0	32.0	25.0	28.5	32.0	26.0	28.5	27.0	16.5	22.5
18	28.0	24.5	26.0	33.5	25.5	29.0	33.5	26.0	29.5	28.0	22.0	25.5
19	29.5	20.0	24.0	29.0	23.5	26.0	32.5	25.0	29.0	27.5	19.5	23.0
20	31.5	22.0	26.0	32.0	25.0	27.5	32.5	27.0	29.5	28.5	24.5	26.5
21	31.5	22.5	26.5	30.0	25.5	27.5	33.5	26.0	30.0	27.0	24.5	26.0
22	32.5	22.5	27.5	30.0	25.5	27.0	34.5	25.0	29.5	27.0	24.0	25.5
23	29.0	22.0	26.0	26.0	22.5	24.0	34.5	26.5	30.5	26.0	22.5	24.5
24	29.0	21.0	25.5	26.0	23.0	24.5	32.5	26.5	29.0	26.0	20.5	23.0
25	25.5	22.0	24.0	29.5	24.0	26.5	34.5	27.0	30.5	26.5	21.5	23.5
26	26.5	22.5	24.0	31.5	25.5	28.5	33.5	23.5	29.0	26.5	18.0	22.0
27	26.0	22.0	24.0	33.5	27.0	30.0	33.0	25.5	27.0	27.0	18.0	21.5
28	27.5	19.0	24.0	33.5	25.5	29.5	32.5	26.0	29.0	26.5	20.5	23.5
29	30.5	22.0	26.0	32.0	27.5	29.5	33.5	26.0	29.5	23.5	18.0	19.0
30	30.0	18.5	25.0	32.5	26.5	29.0	34.0	26.0	29.5	19.0	15.5	17.5
31	---	---	---	32.5	26.0	29.0	33.5	26.5	29.5	---	---	---
MONTH	33.0	17.0	25.5	34.5	18.0	27.5	35.5	21.0	29.0	33.5	15.5	25.5



## COLORADO RIVER MAIN STEM

08123950 E. V. SPENCE RESERVOIR NEAR ROBERT LEE, TX

LOCATION.--Lat 31°52'46", long 100°31'01", Coke County, Hydrologic Unit 12080008, in outlet works of Robert Lee Dam on the Colorado River, 2.2 mi west of Robert Lee, and at mile 712.4.

DRAINAGE AREA.--15,278 mi<sup>2</sup>, approximately, of which 10,260 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1968 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to June 24, 1969, non-recording gage at same site and datum.

REMARKS.--The reservoir is formed by a rolled earthfill dam 21,500 ft long. Closure was made Dec. 30, 1968, and dam was completed in June 1969. The dam is the property of the Colorado River Municipal Water District, which has a permit to divert 50,000 acre-ft annually for municipal, mining, and industrial uses. Inflow to reservoir is partially regulated by Lake J. B. Thomas, Lake Colorado City, and Champion Creek Reservoir (stations 08118000, 08123000, and 08123600). There are two spillways: The controlled service spillway is a morning-glory type that is partially controlled by 12 lift gates, 14.48 by 22.0 ft, and discharges through a 28.0-foot-diameter concrete conduit. And the uncontrolled spillway is a 3,200-foot-wide cut through natural ground near the right end of dam. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,928.0	-
Crest of spillway.....	1,908.0	653,400
Top of gates.....	1,900.0	519,300
Top of conservation pool.....	1,898.0	488,800
Crest of spillway.....	1,878.0	262,900
Lowest gated outlet (invert).....	1,815.85	4,000

COOPERATION.--Capacity table (dated March 1972) was furnished by the Colorado River Municipal Water District. Records of diversions may be obtained from the city of San Angelo and the Colorado River Municipal Water District.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 342,900 acre-ft July 15, 1982 (elevation, 1,885.90 ft); minimum since first appreciable storage in June 1969 (not from recorder), about 330 acre-ft May 29, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 225,300 acre-ft June 10 at 1800 hours (elevation, 1,873.68 ft); minimum, 203,200 acre-ft Apr. 28 (elevation, 1,870.84 ft).

Capacity table (elevation, in feet, and contents, in acre-feet)

1,870.0	196,900
1,872.0	211,900
1,874.0	227,900

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	206200	209300	208800	210900	208100	209900	208000	208000	222000	221700	219700	211300
2	206100	209000	208500	211000	207900	210000	207900	209700	221700	221700	219600	211000
3	206000	209000	208400	211100	207700	210400	207700	210200	221200	221500	219300	210700
4	206500	208900	208400	211200	207800	209700	207600	210200	221100	221200	218900	210200
5	206500	208800	208300	211000	207800	209500	207000	210200	221400	221000	218600	209700
6	206300	208600	208100	211000	207900	209500	207000	209800	221700	220700	218300	209400
7	206600	208700	208000	210900	207800	209600	206800	210300	223400	220400	218200	209200
8	206500	208800	207900	210700	207600	209500	206600	209700	224900	219900	217800	209000
9	207900	208800	207900	210700	207900	209400	206400	209700	225200	219900	217500	208800
10	207900	208200	207900	210400	207900	209600	206400	209400	225300	219700	217100	208400
11	207900	208000	207900	210300	207700	209500	206200	209500	225200	219700	216800	207900
12	207900	207900	207700	210300	207600	208900	206100	209200	225200	219400	216500	207700
13	208200	207800	207700	210300	207600	209100	206100	209300	224900	218900	216100	207600
14	207800	207700	207600	210100	207600	208800	206100	209100	224700	218700	216100	207300
15	207800	207500	208400	210000	207400	208700	205900	208800	224800	218500	216300	207200
16	207900	207000	208400	210000	207400	208700	205700	210300	224500	217800	216000	207000
17	207700	207900	208600	209900	207300	208600	205400	210800	224200	217300	215900	207000
18	207300	208300	208700	209800	207200	208500	204900	211000	223700	216900	215700	206700
19	207000	208600	208900	209700	207000	209100	204900	212900	223600	216900	215400	206700
20	208500	208700	208900	209400	207200	209200	204500	217900	223200	216900	215300	206400
21	208200	208600	209000	209300	208800	208800	204600	218600	222900	216700	214800	206800
22	208600	208500	208800	209100	209500	209100	204400	220000	222700	217000	214500	207300
23	208800	208300	208800	209100	209900	208900	204200	221000	222500	218200	214200	207000
24	208800	209000	208800	209200	210000	209000	203900	221700	222100	220100	213700	207000
25	208800	208800	208500	208900	209900	209100	203800	222300	221800	220700	213600	206600
26	209200	209300	208600	208800	210000	209200	203700	222700	221700	220900	213200	206300
27	209600	208800	208500	208800	210000	209200	203400	222900	222700	220800	212800	206000
28	209500	208800	208700	208700	210000	209100	203800	222900	222500	220600	212500	205700
29	209600	208800	208800	208700	---	209100	204700	222600	222300	220400	212200	206500
30	209400	208800	209100	208600	---	208300	205300	222500	222100	220100	212000	206500
31	209300	---	210700	208200	---	208200	---	222200	---	219900	211700	---
MAX	209600	209300	210700	211200	210000	210400	208000	222900	225300	221700	219700	211300
MIN	206000	207000	207600	208200	207000	208200	203400	208000	221100	216700	211700	205700
(+)	1871.65	1871.58	1871.84	1871.51	1871.75	1871.51	1871.12	1873.29	1873.27	1873.00	1871.97	1871.28
(+)	+3100	-500	+1900	-2500	+1800	-1800	-2900	+16900	-100	-2200	-8200	-5200
CAL YR 1984	MAX	259900	MIN	204600	(+)	-48100						
WTR YR 1985	MAX	225300	MIN	203400	(+)	+300						

(+) Elevation, in feet, at end of month.

(+) Change in contents, in acre-feet.

08123950 E. V. SPENCE RESERVOIR NEAR ROBERT LEE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1969 to current year. Biochemical analyses: October 1977 to September 1978, October 1979 to current year.

315235100312201 E.V.SPENCE RESERVOIR SITE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
29...	1220	1.00	3270	8.3	8.5	10.7	99
29...	1222	10.0	3270	8.3	8.5	10.7	99
29...	1224	20.0	3270	8.3	8.5	10.7	99
29...	1226	30.0	3270	8.2	8.0	10.6	97
29...	1228	43.0	3270	8.2	8.0	10.5	96
MAY							
06...	1115	1.00	3330	8.4	21.0	7.4	90
06...	1117	10.0	3330	8.4	20.5	7.3	88
06...	1119	20.0	3330	8.3	20.5	6.7	81
06...	1121	30.0	3330	8.3	20.0	6.3	75
06...	1123	40.0	3330	8.1	19.5	4.7	56
06...	1125	47.0	3320	7.8	18.0	2.5	29
AUG							
12...	1040	1.00	3270	8.2	26.5	5.2	70
12...	1042	10.0	3270	8.2	26.5	4.9	66
12...	1044	20.0	3280	8.1	26.0	4.6	61
12...	1046	30.0	3280	7.6	25.0	.5	7
12...	1048	43.0	3290	7.5	24.5	.5	6

315335100312401 E.V.SPENCE RESERVOIR SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CAC03)
JAN									
29...	1145	1.00	3260	8.3	8.0	1.70	10.6	97	670
29...	1147	10.0	3260	8.3	8.0	--	10.6	97	--
29...	1149	20.0	3260	8.3	8.0	--	10.6	97	--
29...	1151	30.0	3260	8.3	8.0	--	10.6	97	--
29...	1153	40.0	3260	8.3	8.0	--	10.6	97	--
29...	1155	50.0	3260	8.2	8.0	--	10.6	97	--
29...	1157	60.0	3260	8.2	8.0	--	10.6	97	--
29...	1159	70.0	3260	8.2	8.0	--	10.6	97	--
29...	1201	81.0	3260	8.2	7.5	--	10.5	95	670
MAY									
06...	1045	1.00	3350	8.4	21.0	2.00	7.4	90	710
06...	1047	10.0	3350	8.4	21.0	--	7.4	90	--
06...	1049	20.0	3350	8.4	20.5	--	7.0	85	--
06...	1051	30.0	3340	8.3	20.0	--	6.4	77	--
06...	1053	40.0	3340	8.2	19.5	--	5.6	66	--
06...	1055	50.0	3320	7.9	18.0	--	3.8	44	--
06...	1057	60.0	3320	7.8	17.0	--	2.9	33	--
06...	1059	70.0	3320	7.7	16.5	--	1.9	21	--
06...	1101	81.0	3320	7.7	16.5	--	.9	10	700
AUG									
12...	1005	1.00	3260	8.4	27.0	1.70	6.2	84	700
12...	1007	10.0	3270	8.3	26.5	--	5.9	79	--
12...	1009	20.0	3270	8.3	26.5	--	5.6	75	--
12...	1011	30.0	3290	7.5	25.0	--	.4	5	--
12...	1013	40.0	3300	7.5	24.0	--	.4	5	--
12...	1015	50.0	3320	7.5	22.5	--	.4	5	--
12...	1017	60.0	3350	7.5	21.5	--	.5	6	--
12...	1019	73.0	3370	7.4	20.0	--	.5	6	720

## COLORADO RIVER MAIN STEM

08123950 E. V. SPENCE RESERVOIR NEAR ROBERT LEE, TX--Continued

315335100312401 E.V.SPENCE RESERVOIR SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
JAN									
29...	560	140	79	440	8	13	120	480	760
29...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
29...	550	140	77	450	8	14	120	480	780
MAY									
06...	590	150	81	430	7	14	123	500	770
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	570	150	80	430	7	14	136	490	770
AUG									
12...	590	150	78	460	8	14	110	450	710
12...	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--
12...	570	160	79	490	8	13	160	450	740

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
29...	.40	5.3	2000	<.10	.60	.010	60	<10
29...	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--
29...	--	--	--	<.10	.60	.020	20	<10
29...	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--
29...	--	5.3	2000	<.10	.70	.010	20	<10
MAY								
06...	.50	4.7	2000	<.10	.60	.010	30	10
06...	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--
06...	--	--	--	<.10	.80	.020	30	20
06...	--	--	--	<.10	.80	.130	20	20
06...	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--
06...	--	6.2	2000	<.10	1.0	.140	40	990
AUG								
12...	.40	4.8	1900	<.10	.60	.020	30	<10
12...	--	--	--	--	--	--	--	--
12...	--	--	--	<.10	.70	.020	40	20
12...	--	--	--	<.10	.50	.020	40	180
12...	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--
12...	--	6.9	2000	<.10	1.6	.100	100	630

COLORADO RIVER MAIN STEM

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08123950 E. V. SPENCE RESERVOIR NEAR ROBERT LEE, TX--Continued

315413100312501 E.V.SPENCE RESERVOIR SITE AL

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
29...	1125	1.00	3260	8.3	8.0	10.6	97
29...	1127	10.0	3260	8.3	8.0	10.6	97
29...	1129	20.0	3260	8.3	8.0	10.6	97
29...	1131	30.0	3260	8.3	8.0	10.6	97
29...	1133	40.0	3260	8.3	8.0	10.1	92
MAY							
06...	1015	1.00	3330	8.4	21.0	7.5	91
06...	1017	10.0	3330	8.4	21.0	7.4	90
06...	1019	20.0	3330	8.4	20.5	7.1	86
06...	1021	30.0	3330	8.3	20.0	6.3	75
06...	1023	38.0	3320	8.2	19.5	5.7	67
AUG							
12...	0940	1.00	3260	8.5	27.5	6.9	95
12...	0942	10.0	3260	8.5	27.0	6.8	92
12...	0944	20.0	3260	8.4	26.5	6.5	87
12...	0946	30.0	3290	7.5	25.0	.5	7
12...	0948	39.0	3300	7.5	24.0	.5	6

315558100342601 E.V.SPENCE RESERVOIR SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN								
29...	0930	1.00	3260	8.2	7.5	1.60	10.8	97
29...	0932	10.0	3260	8.2	7.5	--	10.7	97
29...	0934	20.0	3270	8.2	7.5	--	10.7	97
29...	0936	30.0	3270	8.2	7.5	--	10.6	96
29...	0938	44.0	3270	8.2	7.5	--	10.5	95
MAY								
06...	1145	1.00	3380	8.4	22.5	1.40	7.6	95
06...	1147	10.0	3380	8.4	22.0	--	7.5	93
06...	1149	20.0	3390	8.4	22.0	--	7.3	91
06...	1151	30.0	3400	8.4	22.0	--	7.1	88
06...	1153	40.0	3360	7.8	20.0	--	2.6	31
06...	1155	45.0	3350	7.6	20.0	--	1.2	14
AUG								
12...	1130	1.00	3230	8.4	28.0	1.20	5.9	82
12...	1132	10.0	3230	8.4	28.0	--	5.8	80
12...	1134	20.0	3230	8.3	28.0	--	5.6	77
12...	1136	30.0	3270	7.5	26.0	--	.8	11
12...	1138	40.0	3300	7.4	24.0	--	.8	10
12...	1140	52.0	3320	7.3	23.5	--	.8	10



## COLORADO RIVER MAIN STEM

08123950 E. V. SPENCE RESERVOIR NEAR ROBERT LEE, TX--Continued

315558100342601 E.V.SPENCE RESERVOIR SITE BC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
JAN									
29...	670	550	140	77	440	8	13	120	450
29...	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--
29...	670	550	140	78	440	8	13	120	500
MAY									
06...	720	600	150	85	430	7	14	125	510
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	710	580	150	82	440	7	14	136	490
AUG									
12...	660	560	140	76	440	8	14	107	440
12...	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	--
12...	700	530	150	78	400	7	13	167	430

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
29...	760	5.3	2000	<.10	.50	.010	100	10
29...	--	--	--	--	--	--	--	--
29...	--	--	--	<.10	.60	.010	70	<10
29...	--	--	--	--	--	--	--	--
29...	760	5.3	2000	<.10	.50	.020	30	<10
MAY								
06...	790	4.7	2100	<.10	1.0	.080	40	10
06...	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--
06...	--	--	--	<.10	.70	.010	20	50
06...	--	--	--	<.10	.90	.040	30	210
06...	780	6.7	2000	<.10	1.3	.050	70	1100
AUG								
12...	700	5.0	1900	<.10	.70	.020	50	20
12...	--	--	--	--	--	--	--	--
12...	--	--	--	<.10	.60	.020	240	30
12...	--	--	--	<.10	1.0	--	60	240
12...	--	--	--	--	--	--	--	--
12...	710	7.5	1900	<.10	2.3	.060	110	780

COLORADO RIVER MAIN STEM

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08123950 E. V. SPENCE RESERVOIR NEAR ROBERT LEE, TX--Continued

315619100335601 E.V.SPENCE RESERVOIR SITE BL

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
29...	0955	1.00	3270	8.2	7.5	10.7	97
29...	0957	10.0	3270	8.2	7.5	10.7	97
29...	0959	20.0	3270	8.1	7.5	10.7	97
29...	1001	32.0	3270	8.1	7.5	10.5	95
MAY							
06...	1210	1.00	3360	8.5	22.5	7.7	97
06...	1212	10.0	3360	8.5	22.5	7.7	97
06...	1214	20.0	3370	8.4	22.5	7.5	94
06...	1216	28.0	3380	8.4	22.5	7.1	89
AUG							
12...	1200	1.00	3240	8.5	28.5	6.5	91
12...	1202	10.0	3240	8.5	28.5	6.5	91
12...	1204	20.0	3240	8.4	28.0	6.5	90
12...	1206	30.0	3270	7.6	26.5	1.2	16
12...	1208	41.0	3290	7.4	25.5	.7	9

315712100352001 E.V.SPENCE RESERVOIR SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
JAN							
29...	1015	1.00	3290	8.2	7.5	10.7	97
29...	1017	10.0	3290	8.2	7.5	10.7	97
29...	1019	20.0	3290	8.2	7.5	10.6	96
29...	1021	33.0	3290	8.2	7.5	10.5	95
MAY							
06...	1230	1.00	3400	8.4	23.5	7.2	92
06...	1232	10.0	3400	8.4	23.0	7.1	90
06...	1234	20.0	3370	8.4	22.5	6.9	87
06...	1236	33.0	3540	7.9	22.5	3.8	48
AUG							
12...	1222	1.00	3240	8.4	29.0	6.1	86
12...	1224	10.0	3240	8.4	29.0	6.1	86
12...	1226	20.0	3240	8.4	28.5	6.1	85
12...	1228	33.0	3250	7.7	27.5	2.3	32

315810100364901 E.V.SPENCE RESERVOIR SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	HARD- NESS (MG/L AS CAC03)
JAN									
29...	1040	1.00	3330	8.3	7.5	.90	10.2	92	670
29...	1042	10.0	3340	8.2	7.5	--	10.1	91	--
29...	1044	19.0	3690	8.1	7.5	--	7.8	70	750
MAY									
06...	1252	1.00	2720	8.2	23.0	.40	6.8	86	550
06...	1254	10.0	3110	7.8	22.5	--	3.4	43	--
06...	1256	18.0	3930	7.6	22.5	--	.5	6	850
AUG									
12...	1246	1.00	2740	8.4	28.5	.60	5.5	77	560
12...	1248	10.0	2710	8.2	28.0	--	4.8	66	--
12...	1250	18.0	2650	8.0	28.0	--	3.7	51	540

## COLORADO RIVER MAIN STEM

08123950 E. V. SPENCE RESERVOIR NEAR ROBERT LEE, TX--Continued

315810100364901 E.V.SPENCE RESERVOIR SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
JAN									
29...	560	140	79	450	8	10	120	490	790
29...	--	--	--	--	--	--	--	--	--
29...	620	160	86	500	8	10	130	550	870
MAY									
06...	430	120	60	360	7	11	116	320	590
06...	--	--	--	--	--	--	--	--	--
06...	710	180	98	500	8	13	142	650	900
AUG									
12...	470	120	64	370	7	13	97	370	560
12...	--	--	--	--	--	--	--	--	--
12...	450	120	59	360	7	12	97	350	530

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
JAN								
29...	1.3	2000	<.10	.60	--	.040	110	30
29...	--	--	<.10	1.0	--	.040	110	30
29...	1.7	2300	<.10	.70	--	.070	190	80
MAY								
06...	4.1	1500	.20	.90	1.1	.010	30	10
06...	--	--	.20	1.0	1.2	.020	30	80
06...	4.4	2400	<.10	1.5	--	.090	60	990
AUG								
12...	5.6	1600	<.10	.90	--	.050	30	<10
12...	--	--	<.10	.60	--	--	30	20
12...	5.8	1500	<.10	1.1	--	.200	30	50

COLORADO RIVER MAIN STEM

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08124000 COLORADO RIVER AT ROBERT LEE, TX

LOCATION.--Lat 31°53'07", long 100°28'49", Coke County, Hydrologic Unit 12080008, on left bank 190 ft upstream from bridge on State Highway 208 in Robert Lee, 0.4 mi upstream from Mountain Creek, 2.7 mi downstream from Messbox Creek, 3.7 mi downstream from Robert Lee Dam, and at mile 712.4.

DRAINAGE AREA.--15,307 mi<sup>2</sup>, of which 10,260 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--October 1923 to December 1927, April 1939 to May 1956, and October 1968 to current year. Prior to December 1927, published as "near Robert Lee".

REVISED RECORDS.--WSP 1723: 1925(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,771.70 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 31, 1927, nonrecording gage at site 9 mi downstream at different datum. Apr. 18 to Sept. 26, 1939, nonrecording gage, and Sept. 27, 1939, to May 9, 1956, water-stage recorder at site 200 ft downstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Since April 1949, flow has been affected by Lake Colorado City and since July 1952, by Lake J. B. Thomas. Since December 1968, flow has been regulated by E. V. Spence Reservoir (station 08123950). Many diversions above station for municipal, mining, agricultural, and industrial uses. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years (water years 1924-27, 1940-55) prior to completion of Robert Lee Dam, 207 ft<sup>3</sup>/s (150,000 acre-ft/yr); 17 years (water years 1969-85) regulated, 3.60 ft<sup>3</sup>/s (2,610 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,500 ft<sup>3</sup>/s Sept. 6, 1926 (gage height, 20.20 ft, site and datum then in use), from rating curve extended above 15,000 ft<sup>3</sup>/s; maximum gage height, 20.63 ft Sept. 9, 1980; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1907, 26.7 ft Oct. 13, 1957, from floodmarks. Flood in April 1922 reached a stage of 25.5 ft, present datum, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 582 ft<sup>3</sup>/s July 16 at 2200 hours (gage height, 7.54 ft); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	.04	.08	.74	.18	.09	.05	.04	.02	.02	.03	.00
2	.02	.03	.09	.20	.17	.07	.05	.04	.02	.02	.03	.00
3	.02	.03	.10	.16	.16	.07	.04	.04	.02	.02	.03	.00
4	.16	.03	.10	.16	.16	.09	.04	.03	.02	.02	.02	149
5	.07	.04	.10	.15	.16	.10	.04	.03	.02	.02	.02	7.6
6	.04	.03	.10	.14	.17	.07	.04	.03	.02	.02	.02	.42
7	.03	.04	.10	.14	.18	.05	.04	.02	.02	.02	.02	.13
8	.03	.05	.10	.16	.17	.07	.04	.02	.02	.01	.02	.05
9	85	.05	.10	.16	.19	.08	.04	.02	.01	.01	.02	.04
10	4.0	.05	.10	.16	.20	.09	.04	.02	.01	.01	.01	148
11	.36	.05	.10	.16	.20	.11	.04	.02	.01	.01	.01	6.0
12	.10	.05	.10	.18	.20	.09	.04	.02	.02	.01	.01	.42
13	.13	.05	.11	.20	.19	.10	.04	.02	.02	.00	.00	.20
14	.56	.05	.12	.17	.18	.10	.04	.02	.02	.00	.01	.20
15	.49	.06	.13	.16	.16	.10	.05	.02	.01	.00	.01	.10
16	.30	.07	.13	.16	.16	.10	.05	.06	.01	259	.01	.13
17	.13	.07	.13	.15	.16	.09	.04	.17	.01	32	.02	.13
18	.13	.07	.13	.16	.16	.08	.04	.04	.01	.98	.01	.13
19	.20	.07	.13	.16	.16	.10	.04	.02	.01	.16	.01	.14
20	61	.07	.13	.18	.15	.12	.04	.02	.01	.21	.01	.14
21	2.7	.07	.13	.18	.15	.08	.04	.05	.01	.54	.01	.14
22	.36	.07	.14	.16	.16	.07	.04	39	.01	.58	.01	.14
23	.42	.07	.14	.16	.19	.07	.04	2.8	.01	2.9	.01	.13
24	.20	.08	.14	.16	.10	.06	.04	.04	.01	2.1	.00	.11
25	19	.08	.13	.16	.09	.06	.04	.03	.01	.72	.00	.10
26	5.5	.07	.13	.16	.10	.06	.04	.02	.01	.28	.00	.10
27	9.2	.07	.14	.16	.09	.06	.04	.02	1.5	.11	.00	.08
28	.17	.07	.16	.16	.09	.05	.04	.02	.25	.11	.00	.08
29	.05	.07	.15	.16	---	.05	.07	.02	.03	.06	.00	.32
30	.05	.07	.17	.15	---	.05	.05	.02	.02	.04	.00	.17
31	.05	---	2.7	.16	---	.05	---	.02	---	.03	.00	---
TOTAL	190.50	1.72	6.31	5.62	4.43	2.43	1.28	42.74	2.17	300.01	.35	314.20
MEAN	6.15	.057	.20	.18	.16	.078	.043	1.38	.072	9.68	.011	10.5
MAX	85	.08	2.7	.74	.20	.12	.07	39	1.5	259	.03	149
MIN	.02	.03	.08	.14	.09	.05	.04	.02	.01	.00	.00	.00
AC-FT	378	3.4	13	11	8.8	4.8	2.5	85	4.3	595	.7	623
CAL YR 1984	TOTAL	1850.45	MEAN	5.06	MAX	191	MIN	.00	AC-FT	3670		
WTR YR 1985	TOTAL	871.76	MEAN	2.39	MAX	259	MIN	.00	AC-FT	1730		



## COLORADO RIVER MAIN STEM

08126380 COLORADO RIVER NEAR BALLINGER, TX

LOCATION.--Lat 31°42'55", long 100°01'34", Runnels County, Hydrologic Unit 12090101, at left downstream end of bridge on Farm Road 2111, 0.4 mi upstream from Rocky Creek, 5.0 mi northwest of Ballinger, and at mile 665.8.

DRAINAGE AREA.--16,358 mi<sup>2</sup>, approximately, of which 10,260 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1907 to September 1979 (published as "at Ballinger", station 08126500), October 1979 to current year. Monthly discharge only for some periods are published in WSP 1312. Gage-height records collected in this vicinity from 1903-29 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1118: Drainage area. WSP 1512: 1916-17, 1919-20, 1921(M), 1922-25, 1928(M), 1930(M). WSP 1712: 1935, 1954-55(M). WDR TX-78-3: 1975-77.

GAGE.--Water-stage recorder. Datum of gage is 1,606.51 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 29, 1930, nonrecording gages at several sites and at various datums near site 5.4 mi downstream. Nov. 29, 1930, to May 1, 1975, water-stage recorder at site 6.2 mi downstream and May 1, 1975, to Sept. 30, 1979, water-stage recorder at site 5.4 mi downstream, both at datum 12.77 ft lower.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal supplies, and for oilfield operation. Flow is affected by E. V. Spence and Oak Creek Reservoirs (see stations 08123950 and 08125000) and at times by discharge from the floodwater-retarding structures in the Kickapoo and Valley Creeks drainage basins.

AVERAGE DISCHARGE.--61 years (water years 1908-68) prior to completion of Robert Lee Dam, 336 ft<sup>3</sup>/s (243,400 acre-ft/yr); 17 years (water years 1969-85) partially regulated, 45.4 ft<sup>3</sup>/s (32,890 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 75,400 ft<sup>3</sup>/s Sept. 18, 1936 (gage height, 28.6 ft, at former site and datum); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, about 36 ft sometime in 1884, at former site and datum, from information by local residents. Flood of Aug. 6, 1906, reached a stage of about 32.0 ft, at former site and datum, from floodmarks (backwater from Elm Creek).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,580 ft<sup>3</sup>/s Dec. 31 at 1130 hours (gage height, 10.85 ft); minimum daily, 0.05 ft<sup>3</sup>/s, Sept. 7, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	14	.40	405	4.2	4.7	3.0	51	1.8	8.7	2.8	.23
2	9.0	9.8	.26	104	4.5	5.2	2.5	16	1.4	2.5	3.4	.23
3	6.8	8.5	.40	31	4.8	5.2	2.5	7.1	1.5	1.3	2.1	.23
4	11	7.2	.62	15	4.9	4.9	2.1	3.4	1.8	2.3	1.4	.23
5	27	6.3	.43	11	4.9	3.9	1.3	1.7	1.6	1.6	1.1	.23
6	42	5.6	.66	8.7	5.5	3.5	.72	1.1	1.7	1.2	1.3	.13
7	18	5.1	.65	6.7	5.2	3.1	.72	.72	1.2	1.1	.65	.05
8	11	5.2	.68	5.5	5.6	2.8	.58	.65	1.3	.96	.59	.06
9	7.3	5.1	.76	4.5	5.9	3.0	.58	.52	1.0	.94	.38	.06
10	5.5	4.5	.72	4.0	5.7	3.4	.58	.46	.89	.93	.54	.05
11	98	4.1	.67	3.6	5.8	4.0	.58	.46	8.2	1.2	1.1	.10
12	45	3.7	.70	3.2	5.6	3.1	.58	.46	1.6	1.2	1.3	.13
13	20	3.7	.89	3.0	5.3	10	.72	.72	4.3	1.3	.78	.08
14	329	3.8	.81	2.8	4.9	8.2	.58	.80	3.8	1.3	.80	.13
15	104	3.6	.94	2.8	5.3	4.0	.58	.80	2.5	1.5	.72	4.2
16	31	3.0	.90	2.7	5.7	3.4	.72	.96	1.2	1.0	.72	4.2
17	14	.85	.80	2.8	5.5	3.0	.80	258	1.1	.85	.80	2.8
18	9.5	.64	.80	2.8	5.4	3.1	.89	211	1.2	.98	.65	2.1
19	7.1	.49	.80	2.8	5.2	8.1	1.1	34	1.2	44	.52	1.4
20	186	1.4	.80	3.0	5.4	45	1.2	3.8	1.1	24	.58	.88
21	517	.58	.81	3.2	5.6	17	1.2	5.5	1.1	8.2	.80	.40
22	139	.46	.80	3.4	6.0	15	1.2	47	.96	3.8	.80	.35
23	102	.37	.80	3.6	12	16	.99	339	.96	39	.88	.31
24	112	1.7	.71	3.8	6.2	11	1.3	80	.88	137	.80	.40
25	55	5.7	.59	4.0	6.3	7.4	1.7	48	.96	110	.52	.35
26	261	4.9	.62	3.8	5.3	5.9	1.8	25	1.3	28	.20	.52
27	350	8.3	.68	4.2	4.2	5.3	1.7	14	3.2	10	.35	.52
28	229	8.0	.72	3.7	4.3	4.0	1.7	8.1	79	17	.35	.52
29	85	7.3	.65	4.1	---	4.0	561	5.2	66	12	.31	346
30	36	2.4	.79	4.5	---	2.5	210	2.9	19	5.4	.58	147
31	20	---	563	4.0	---	3.0	---	2.6	---	3.6	.31	---
TOTAL	2897.2	136.29	583.86	667.2	155.2	222.7	804.92	1170.95	213.75	472.86	28.13	513.89
MEAN	93.5	4.54	18.8	21.5	5.54	7.18	26.8	37.8	7.13	15.3	.91	17.1
MAX	517	14	563	405	12	45	561	339	79	137	3.4	346
MIN	5.5	.37	.26	2.7	4.2	2.5	.58	.46	.88	.85	.20	.05
AC-FT	5750	270	1160	1320	308	442	1600	2320	424	938	56	1020
CAL YR 1984	TOTAL	4556.20	MEAN	12.4	MAX	563	MIN	.00	AC-FT	9040		
WTR YR 1985	TOTAL	7866.95	MEAN	21.6	MAX	563	MIN	.05	AC-FT	15600		

COLORADO RIVER MAIN STEM

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08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1961 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1961 to current year.

WATER TEMPERATURES: October 1961 to current year.

SUSPENDED SEDIMENT DISCHARGE: January 1978 to September 1981.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 13,500 microsiemens May 3, 1963; minimum daily, 244 microsiemens Sept. 9, 1980.

WATER TEMPERATURES: Maximum daily, 39.0°C July 3, 1977; minimum daily, 0.0°C Jan. 9-11, 1973.

SEDIMENT CONCENTRATIONS (1978-81): Maximum daily mean, 3,740 mg/L Sept. 9 1980; minimum daily mean, 4 mg/L Feb. 2, 1980.

SEDIMENT LOADS (1978-81): Maximum daily, 94,100 tons Aug. 3, 1978; minimum daily, 0 tons on many days during 1978 and 1980-81.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,860 microsiemens Aug. 31; minimum daily, 315 microsiemens Oct. 27.

WATER TEMPERATURES: Maximum daily, 34.5°C May 29; minimum daily, 3.0°C Feb. 1.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 17...	1400	14	645	18.0	220	150	59	17	39
DEC 06...	1110	.74	2340	10.0	1100	900	280	92	150
MAR 06...	1350	3.4	3050	17.0	1100	940	270	100	270
APR 17...	0940	.80	4500	23.0	2200	2000	560	190	330
MAY 30...	1410	3.7	1320	32.0	490	370	130	41	90
AUG 13...	1315	.82	4200	32.0	2100	1900	510	190	330

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 17...	1	4.4	70	140	67	.20	6.5	380
DEC 06...	2	4.9	180	770	280	.30	8.3	1700
MAR 06...	4	6.1	150	840	490	.30	3.2	2100
APR 17...	3	6.3	217	1700	600	.50	8.8	3500
MAY 30...	2	6.6	128	340	170	.30	6.7	860
AUG 13...	3	7.1	174	1800	570	.50	9.4	3500

## COLORADO RIVER MAIN STEM

08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	2897.2	571	324	2530	89	698	86	674	150
NOV.	1984	136.29	1480	920	339	220	82	310	115	460
DEC.	1984	583.86	1640	1020	1610	250	391	350	544	510
JAN.	1985	667.2	873	514	926	130	243	150	274	240
FEB.	1985	155.2	2570	1730	725	380	158	690	289	920
MAR.	1985	222.7	2800	1930	1160	410	245	800	480	1000
APR.	1985	804.92	1250	773	1680	190	413	260	561	380
MAY	1985	1170.95	639	364	1150	100	315	99	312	170
JUNE	1985	213.75	1710	1100	635	260	148	400	230	560
JULY	1985	472.86	2000	1310	1680	300	380	500	632	680
AUG.	1985	28.13	3390	2540	193	480	36	1200	90	1500
SEPT	1985	513.89	670	399	554	100	143	120	169	190
TOTAL		7866.95	**	**	13200	**	3250	**	4370	**
WTD.AVG.		22	1010	621	**	150	**	210	**	310

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1440	800	1650	800	2280	2990	3400	1080	2000	1800	1720	4810
2	1520	1000	2850	400	2300	3010	3600	1210	2260	2040	1940	4800
3	1570	1010	2700	560	2340	3040	3570	1300	2460	2200	2120	4810
4	1310	1200	2320	650	2390	3070	3640	1470	2640	2420	2380	4830
5	650	1240	2400	700	2400	3090	3700	1600	2810	2600	2550	4800
6	700	1360	2340	940	2360	3080	3780	1830	3210	3010	2680	4780
7	975	1480	2400	1190	2440	3170	3840	2010	3410	3300	2770	4760
8	1150	1460	2370	1430	2390	3290	3900	2240	3620	3540	2850	4750
9	1480	1610	2340	1600	2370	3230	3930	2500	3790	3820	3080	4790
10	1690	1740	3000	1710	2420	3170	3920	2710	3850	4000	3300	4830
11	1330	1890	2600	1800	2410	3260	3900	2890	2480	3760	4430	4750
12	1410	2030	2630	1820	2430	3300	4080	3020	2250	3700	3940	4680
13	1460	2210	2650	1840	2450	2820	4200	3240	1710	3940	4200	4740
14	900	2180	2720	1850	2600	2990	4310	3330	1810	4170	4460	4690
15	350	2300	2600	1900	2650	3110	4400	3460	2070	4020	4500	2850
16	530	2440	2580	1930	2610	3210	4460	3200	2330	4230	4580	2700
17	650	2560	2550	1910	2650	3200	4500	765	2650	4450	4630	2610
18	920	2630	2600	1940	2720	3180	4570	700	2980	4670	4700	2440
19	1160	2700	2660	1980	2750	2950	4620	600	2860	2000	4750	2550
20	625	2500	2900	1990	2800	2240	4670	620	2730	1800	4760	2650
21	400	2890	3000	2020	2850	2450	4700	660	2950	1980	4770	2820
22	410	3240	3040	2030	2800	2670	4750	500	3470	2200	4800	3010
23	455	3600	3050	2040	2650	2650	4800	330	3960	2470	4740	3140
24	470	3050	3070	2110	2580	2970	4740	500	4290	2650	4760	3080
25	530	1760	3080	2040	2570	2990	4700	680	4170	1500	4630	3320
26	400	2020	3040	2100	2690	2980	4680	820	4320	1000	4810	3640
27	315	1200	2920	1970	2820	3000	4770	910	4190	1240	4750	3700
28	370	1100	2840	2000	3000	3300	4800	1070	1200	800	4770	3800
29	650	1230	3000	2210	---	3290	1250	1150	1550	1000	4840	344
30	740	1400	2790	2110	---	3270	780	1320	1680	1260	4850	1110
31	765	---	1600	2220	---	3310	---	1660	---	1500	4860	---
MEAN	881	1930	2650	1670	2560	3040	4030	1590	2860	2680	3970	3690

## COLORADO RIVER MAIN STEM

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08126380 COLORADO RIVER NEAR BALLINGER, TX--Continued

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	20.0	10.0	8.0	3.0	---	19.0	25.0	32.0	29.0	34.0	32.5
2	---	20.0	14.0	5.0	3.5	21.5	24.0	25.0	31.0	29.0	34.0	32.5
3	20.5	20.0	14.0	8.0	---	23.0	25.0	27.0	30.5	29.0	---	32.5
4	21.5	17.0	11.0	8.0	---	20.0	25.0	28.0	30.0	30.0	33.5	32.0
5	24.5	17.0	11.0	9.5	5.5	18.5	25.0	28.0	27.0	33.0	32.0	30.0
6	23.0	---	11.0	---	---	18.0	25.0	31.0	30.0	33.0	---	28.5
7	23.0	---	11.0	10.0	---	18.0	---	31.0	31.0	33.0	34.0	30.0
8	23.0	---	14.0	10.5	11.5	20.0	23.0	31.5	31.5	33.0	34.0	30.0
9	---	---	14.0	10.5	---	20.0	---	31.0	33.0	---	34.0	29.5
10	25.0	---	16.0	---	11.5	22.5	20.0	---	---	33.0	33.0	30.0
11	24.0	---	17.0	8.5	12.0	24.0	20.0	---	25.5	33.0	33.0	28.0
12	---	---	19.0	---	12.5	---	23.0	---	25.0	33.0	31.5	27.5
13	24.5	---	17.0	---	13.5	---	23.0	30.0	27.5	31.0	---	26.0
14	21.5	---	14.0	7.5	---	15.5	25.0	---	30.0	32.5	31.0	---
15	19.0	---	14.0	7.5	16.0	16.0	28.0	31.0	30.0	---	31.5	26.0
16	---	---	14.0	10.0	16.0	16.0	---	---	31.0	---	32.0	26.0
17	21.0	---	12.5	9.0	15.5	16.0	---	---	---	33.0	32.0	26.0
18	21.0	---	12.5	10.0	---	16.0	---	22.0	29.0	33.0	33.0	27.0
19	20.0	10.0	12.5	9.5	---	---	---	25.0	29.0	29.5	33.0	28.0
20	---	10.0	14.0	---	17.0	16.0	---	25.0	29.0	30.0	---	28.0
21	20.0	10.0	17.0	5.0	17.0	16.0	26.0	26.0	30.0	30.0	33.0	---
22	14.0	15.0	---	5.0	18.0	20.0	26.0	23.0	---	28.0	32.0	26.0
23	---	16.0	15.5	8.0	18.0	20.0	26.0	23.5	---	---	32.0	24.0
24	14.0	---	16.0	8.5	---	21.0	26.0	25.5	29.0	27.5	32.0	23.0
25	14.0	---	15.0	9.5	17.5	---	27.0	---	---	30.0	31.5	23.0
26	16.0	---	15.0	10.0	---	---	27.0	30.5	29.0	31.5	27.0	---
27	18.0	12.5	---	10.0	17.5	19.0	25.0	---	25.0	32.0	---	20.0
28	18.0	12.0	18.0	10.0	18.0	20.0	24.0	32.0	25.5	32.0	31.0	19.0
29	19.0	12.5	17.0	12.0	---	20.0	21.0	34.5	29.0	32.0	31.5	17.5
30	20.0	12.5	---	12.0	---	17.0	23.0	---	30.0	---	31.0	17.0
31	---	---	11.0	---	---	19.0	---	32.0	---	33.5	30.5	---
MEAN	20.0	14.5	14.0	9.0	13.5	19.0	24.0	28.0	29.0	31.5	32.0	26.5



## COLORADO RIVER BASIN

08127000 ELM CREEK AT BALLINGER, TX

LOCATION.--Lat 31°44'57", long 99°56'51", Runnels County, Hydrologic Unit 12090101, on right bank 1,000 ft upstream from storage dam at Ballinger and 1.9 mi upstream from mouth.

DRAINAGE AREA.--450 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1932 to current year.

REVISED RECORDS.--WSP 1442: 1935, 1946, 1954. WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and masonry dam control. Datum of gage is 1,617.72 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good except those below 100 ft<sup>3</sup>/s, which are fair. Stage-discharge relation during periods of low flow are affected by wind action and occasional accumulation of drift on dam. The city of Winters diverts water for municipal use from Lake Winters (capacity, 8,374 acre-ft at elevation 1,790 ft). Prior to June 1982, capacity was 3,060 acre-ft.

AVERAGE DISCHARGE.--53 years (water years 1933-85), 45.2 ft<sup>3</sup>/s (1.36 in/yr), 32,750 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,000 ft<sup>3</sup>/s Oct. 13, 1957 (gage height, 14.20 ft, from floodmark); no flow at times.

Highest stage, not affected by backwater from the Colorado River since at least 1904, was that of Oct. 13, 1957, from information by local residents.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1906 reached a stage of 14.5 ft, affected by backwater from Colorado River.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,340 ft<sup>3</sup>/s May 22 at 2200 hours (gage height, 4.95 ft, from floodmark); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.24	1.5	.55	138	1.2	4.2	5.9	68	.62	12	29	.00
2	.10	.90	.49	44	1.2	3.2	3.3	58	.41	3.6	17	.00
3	.06	.67	.39	18	1.3	3.0	2.7	50	.25	2.3	14	.00
4	.15	.58	.36	11	1.5	3.0	2.6	38	.16	1.8	9.7	.00
5	.24	.38	.37	7.8	1.6	2.5	2.2	29	.27	1.4	5.4	.00
6	.22	.32	.33	5.3	1.6	2.0	2.0	3.1	.60	1.0	3.6	.00
7	.34	.27	.37	3.7	1.5	2.3	1.8	.37	.59	.70	2.7	.00
8	.32	.26	.41	3.1	1.4	2.3	1.7	.20	.44	.55	2.3	.00
9	.27	.24	.44	2.7	1.4	2.0	1.6	.62	.30	.43	1.8	.00
10	.90	.20	.43	2.4	1.5	2.3	1.8	2.3	.18	.37	1.2	.00
11	.53	.17	.45	2.0	1.3	2.3	1.9	3.1	.28	.20	.92	.00
12	.32	.20	.49	1.7	1.2	3.6	1.6	2.0	.32	.13	.43	.00
13	.28	.18	.75	1.9	1.2	12	1.7	.80	.79	.09	.08	.00
14	.63	.17	.74	1.9	1.4	5.4	1.4	.49	.75	.06	.02	.00
15	1.2	.17	1.1	2.0	1.4	3.6	1.2	.43	.57	.02	.00	.00
16	.82	.15	1.2	2.6	1.4	3.1	1.1	.28	.42	.00	.00	.00
17	.37	.20	1.0	2.4	1.3	2.7	1.0	.55	.28	.00	.00	.00
18	.25	.56	.86	2.3	1.4	5.4	1.0	.80	.21	.00	.00	.00
19	.15	.56	.79	2.2	1.4	68	1.1	2.3	.25	.00	.00	.00
20	6.9	.45	.85	1.5	1.6	44	1.2	3.1	.18	.00	.00	.00
21	26	.37	.87	1.6	1.8	54	377	2.3	.12	.00	.00	.00
22	8.0	.33	.67	1.5	5.3	29	160	172	.08	.00	.00	.00
23	7.0	.29	.62	1.6	90	19	51	181	.05	.00	.00	.00
24	5.9	.61	.60	1.6	32	12	25	44	.02	.00	.00	.00
25	2.6	1.7	.46	1.7	16	8.5	12	20	.00	.00	.00	.00
26	215	1.1	.43	1.5	10	7.0	14	9.7	.00	18	.00	.00
27	202	.64	.45	1.5	5.5	5.6	2.3	3.1	28	180	.00	.00
28	72	.55	.56	1.4	4.5	30	3.1	2.3	54	133	.00	.00
29	24	.57	.65	1.4	---	36	50	1.4	33	102	.00	.00
30	8.0	.54	3.3	1.5	---	14	68	1.0	20	72	.00	.00
31	2.7	---	253	1.2	---	8.3	---	.83	---	50	.00	---
TOTAL	587.49	14.83	273.98	273.0	192.9	400.3	801.2	701.07	143.14	579.65	88.15	.00
MEAN	19.0	.49	8.84	8.81	6.89	12.9	26.7	22.6	4.77	18.7	2.84	.000
MAX	215	1.7	253	138	90	68	377	181	54	180	29	.00
MIN	.06	.15	.33	1.2	1.2	2.0	1.0	.20	.00	.00	.00	.00
CFSM	.04	.001	.02	.02	.02	.03	.06	.05	.01	.04	.006	.000
IN.	.05	.00	.02	.02	.02	.03	.07	.06	.01	.05	.01	.00
AC-FT	1170	29	543	541	383	794	1590	1390	284	1150	175	.00
CAL YR 1984	TOTAL	1206.40	MEAN	3.30	MAX 253	MIN .00	CFSM .007	IN .10	AC-FT 2390			
WTR YR 1985	TOTAL	4055.71	MEAN	11.1	MAX 377	MIN .00	CFSM .03	IN .34	AC-FT 8040			

08127000 ELM CREEK AT BALLINGER, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1957 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURES: October 1967 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,220 microsiemens Sept. 12, 17, 1970; minimum daily, 244 microsiemens Aug. 4, 1978.

WATER TEMPERATURES: Maximum daily 34.5°C Aug. 14, 1973; minimum daily, 0.0°C Jan. 8, 1968, Jan. 10, 13, 1973, and Jan. 11, 14, 1982.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,600 microsiemens Mar. 23; minimum daily, 300 microsiemens Oct. 28, Apr. 22.

WATER TEMPERATURES: Maximum daily, 32.0°C July 7, 10, Aug. 5; minimum daily, 3.0°C Feb. 2.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 17...	1530	.35	887	20.0	280	210	62	31	65
DEC 06...	1220	.30	547	9.0	200	81	49	19	32
MAR 06...	1430	4.1	1990	15.0	650	480	130	80	160
MAY 30...	1440	.80	1470	30.0	440	290	86	54	130
AUG 13...	1105	.07	540	28.0	200	45	48	20	27

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 17...	2	4.1	74	150	140	.30	7.4	500
DEC 06...	1	4.1	120	65	59	.30	7.1	310
MAR 06...	3	5.4	170	300	380	.50	4.5	1200
MAY 30...	3	6.9	144	190	270	.50	8.9	830
AUG 13...	.9	7.8	157	37	47	.30	6.5	290

## COLORADO RIVER BASIN

08127000 ELM CREEK AT BALLINGER, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1984	587.49	698	395	627	120	186	79	125	200
NOV. 1984	14.83	441	247	9.9	70	2.8	47	1.9	120
DEC. 1984	273.98	1350	773	572	240	178	160	120	380
JAN. 1985	273.0	948	538	397	160	119	110	80	270
FEB. 1985	192.9	1080	617	321	190	99	130	67	310
MAR. 1985	400.3	2160	1270	1370	420	459	290	310	630
APR. 1985	801.2	482	272	588	80	174	54	116	130
MAY 1985	701.07	450	252	477	72	137	48	91	120
JUNE 1985	143.14	1360	782	302	240	94	160	63	390
JULY 1985	579.65	604	340	532	99	155	66	103	170
AUG. 1985	88.15	550	308	73	89	21	59	14	150
SEPT 1985	0.00	*	*	0.00	*	0.00	*	0.00	*
TOTAL	4055.71	**	**	5300	**	1630	**	1090	**
WTD.AVG.	11	841	481	**	150	**	100	**	240

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	740	350	480	1150	1030	2190	2100	450	1490	1470	600	
2	720	380	485	800	1040	2100	2130	460	1470	1450	530	
3	730	400	500	685	1070	2030	2130	510	1480	1400	520	
4	700	390	520	600	1100	2020	2120	500	1480	1360	525	
5	710	400	530	612	1300	2000	2150	600	1470	1290	520	
6	720	410	535	620	1320	1970	2140	630	1460	1210	523	
7	730	430	540	625	1330	1940	2150	650	1450	1150	525	
8	740	420	547	630	1340	1930	2130	660	1440	1160	528	
9	760	420	550	650	1350	1900	2150	645	1430	1160	525	
10	780	430	558	675	1310	1870	2180	625	1450	1140	530	
11	780	440	560	693	1300	1860	2200	610	1420	1130	540	
12	800	430	580	700	1550	1850	2200	600	1440	1150	545	
13	810	435	600	705	1400	1790	2220	605	1450	1140	540	
14	830	440	610	700	1500	1820	2240	610	1440	1150	550	
15	850	460	630	710	1480	1830	2250	630	1430	1160	---	
16	880	450	620	730	1500	1850	2270	640	1440	---	---	
17	890	455	630	750	1560	1870	2280	630	1430	---	---	
18	930	445	660	760	1600	1840	2300	640	1450	---	---	
19	950	450	685	775	1640	1870	2310	670	1440	---	---	
20	970	460	700	800	1600	1900	2310	680	1440	---	---	
21	1200	465	720	780	1660	2400	460	700	1450	---	---	
22	1380	468	770	830	1700	2560	300	350	1460	---	---	
23	1460	470	795	880	750	2600	340	330	1450	---	---	
24	1480	450	810	890	900	2470	360	545	1460	---	---	
25	1400	480	830	900	1250	2460	400	760	---	---	---	
26	1000	485	840	930	1920	2450	380	1020	---	975	---	
27	420	490	860	950	2300	2570	400	1460	1370	650	---	
28	300	505	900	970	2200	2300	420	1500	1330	520	---	
29	320	500	940	980	---	2130	370	1470	1370	500	---	
30	330	495	950	1020	---	2180	340	1500	1400	490	---	
31	370	---	1400	1050	---	2170	---	1500	---	510	---	
MEAN	828	443	688	792	1430	2090	1590	748	1440	1060	536	

## COLORADO RIVER BASIN

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08127000 ELM CREEK AT BALLINGER, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985												
DAY	ONCE-DAILY											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16.0	20.0	11.0	10.0	5.0	15.0	18.0	22.0	28.0	25.0	30.0	
2	18.0	19.0	10.0	8.0	3.0	17.0	19.0	23.0	29.0	25.0	30.0	
3	21.0	19.0	10.0	9.0	4.0	21.0	18.0	24.0	28.0	29.0	30.0	
4	23.0	15.0	10.0	8.0	4.0	17.0	22.0	24.0	27.0	29.0	30.0	
5	24.0	13.0	10.0	9.0	7.0	15.0	23.0	24.0	26.0	30.0	32.0	
6	24.0	16.0	12.0	11.0	8.0	15.0	18.0	24.0	25.0	29.0	31.0	
7	25.0	19.0	12.0	10.0	8.0	17.0	20.0	25.0	29.0	32.0	31.0	
8	27.0	20.0	12.0	9.0	10.0	18.0	17.0	23.0	27.0	29.0	30.0	
9	23.0	20.0	16.0	10.0	13.0	18.0	17.0	24.0	30.0	28.0	30.0	
10	22.0	17.0	13.0	10.0	10.0	22.0	19.0	23.0	30.0	32.0	30.0	
11	24.0	18.0	15.0	6.0	10.0	18.0	21.0	24.0	26.0	29.0	31.0	
12	23.0	16.0	16.0	8.0	12.0	18.0	19.0	25.0	24.0	31.0	30.0	
13	23.0	15.0	15.0	10.0	9.0	17.0	20.0	25.0	25.0	29.0	31.0	
14	25.0	17.0	10.0	8.0	8.0	16.0	23.0	24.0	25.0	30.0	30.0	
15	25.0	15.0	11.0	5.0	14.0	15.0	24.0	25.0	27.0	30.0	---	
16	23.0	16.0	14.0	8.0	11.0	16.0	24.0	25.0	30.0	---	---	
17	23.0	15.0	13.0	11.0	15.0	17.0	24.0	---	27.0	---	---	
18	24.0	14.0	10.0	10.0	15.0	17.0	23.0	23.0	27.0	---	---	
19	22.0	12.0	10.0	13.0	12.0	17.0	24.0	26.0	27.0	---	---	
20	23.0	12.0	14.0	8.0	14.0	15.0	24.0	23.0	26.0	---	---	
21	21.0	12.0	15.0	8.0	17.0	14.0	23.0	24.0	29.0	---	---	
22	17.0	12.0	15.0	8.0	15.0	17.0	24.0	22.0	27.0	---	---	
23	18.0	14.0	16.0	9.0	14.0	15.0	20.0	24.0	30.0	---	---	
24	14.0	13.0	16.0	11.0	14.0	20.0	24.0	25.0	27.0	---	---	
25	18.0	17.0	11.0	9.0	15.0	20.0	23.0	25.0	---	---	---	
26	16.0	14.0	12.0	10.0	15.0	20.0	23.0	28.0	---	---	---	
27	17.0	11.0	14.0	11.0	11.0	24.0	21.0	29.0	26.0	28.0	---	
28	21.0	10.0	16.0	8.0	14.0	22.0	24.0	27.0	27.0	30.0	---	
29	21.0	15.0	15.0	12.0	---	23.0	22.0	28.0	28.0	29.0	---	
30	22.0	15.0	14.0	12.0	---	19.0	20.0	30.0	25.0	31.0	---	
31	22.0	---	12.0	8.0	---	21.0	---	28.0	---	29.0	---	
MEAN	21.5	15.5	13.0	9.5	11.0	18.0	21.5	25.0	27.0	29.0	30.5	



## COLORADO RIVER BASIN

## 08128000 SOUTH CONCHO RIVER AT CHRISTOVAL, TX

LOCATION.--Lat 31°11'15", long 100°30'06", Tom Green County, Hydrologic Unit 12090102, on left bank 1,000 ft downstream from U.S. Highway 277 bridge, 9.5 mi upstream from Twin Buttes Dam, and 24.7 mi upstream from mouth.

DRAINAGE AREA.--412.6 mi<sup>2</sup>, of which 58.6 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--February 1930 to current year.

REVISED RECORDS.--WSP 1118: 1943(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 2,010.22 ft above National Geodetic Vertical Datum of 1929. Prior to July 17, 1930, nonrecording gage at same site and datum. July 17, 1930, to Nov. 15, 1977, water-stage recorder at site 160 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Low flow is materially affected by diversion to South Concho Irrigation Co.'s canal (station 08127500) 900 ft upstream from station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--55 years, 31.8 ft<sup>3</sup>/s (23,040 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100,000 ft<sup>3</sup>/s July 23, 1938 (gage height, 21.95 ft, from floodmark), from rating curve extended above 15,100 ft<sup>3</sup>/s on basis of slope-area measurement of 80,100 ft<sup>3</sup>/s; no flow Feb. 28, Mar. 1, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1882, about 23 ft Aug. 6, 1906 (discharge, 115,000 ft<sup>3</sup>/s), from rating curve extended as noted above, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 160 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Oct. 5	0600	252	2.78	Dec. 31	0600	*1,660	a*5.22

a From floodmark.

Minimum daily discharge, 3.6 ft<sup>3</sup>/s, Oct. 1-3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	5.1	5.1	17	12	10	11	9.7	9.7	8.0	8.0	5.7
2	3.6	5.1	5.1	16	12	10	11	9.7	8.3	7.5	8.3	4.7
3	3.6	5.1	5.1	16	11	10	11	9.7	8.6	7.9	8.3	4.0
4	3.9	5.1	5.1	16	11	10	11	9.7	8.5	8.3	8.3	4.0
5	41	5.1	5.1	16	11	10	11	9.3	7.6	7.9	8.3	5.1
6	5.3	5.1	5.1	16	10	10	11	9.0	7.6	7.6	8.3	7.1
7	5.7	5.1	5.1	16	10	11	11	8.5	8.2	7.6	8.0	5.9
8	5.7	5.1	5.1	16	10	11	9.7	7.9	9.0	7.6	6.3	5.7
9	5.1	5.1	5.1	16	10	11	9.7	7.6	9.0	7.6	6.3	5.7
10	5.1	5.1	5.1	16	10	11	9.7	7.6	8.7	7.6	6.3	6.0
11	6.2	5.1	5.1	15	10	11	9.7	7.6	7.5	7.4	6.3	6.5
12	5.7	5.1	5.1	15	10	11	9.7	7.6	9.2	6.5	6.3	6.3
13	5.7	5.1	5.1	15	10	12	9.7	7.6	10	6.0	6.3	8.6
14	5.7	5.1	5.1	15	11	12	9.7	7.6	10	5.7	6.3	6.9
15	5.7	5.1	5.1	15	11	10	9.7	7.6	10	5.7	9.3	6.9
16	5.7	5.1	5.1	15	11	10	9.4	8.7	9.7	5.7	7.6	6.9
17	5.7	5.1	5.1	15	11	10	9.0	11	9.3	5.7	7.6	6.9
18	5.3	5.1	5.1	15	11	9.7	9.0	9.2	8.6	5.7	7.6	6.9
19	5.1	5.1	5.1	15	11	11	9.0	8.3	7.1	5.7	7.6	6.5
20	5.1	5.1	5.1	12	11	13	9.0	10	6.3	5.7	7.0	6.3
21	5.1	5.1	5.1	12	11	10	9.7	11	6.3	37	5.7	6.3
22	5.1	5.1	5.1	13	12	10	9.7	9.5	6.3	18	5.7	6.3
23	5.1	5.1	5.1	13	15	10	9.7	8.3	6.3	11	5.7	5.8
24	5.1	6.7	5.1	13	11	11	9.7	9.2	6.3	10	5.7	5.7
25	5.1	6.6	5.1	13	10	41	9.0	9.7	6.3	9.7	5.7	5.7
26	5.1	6.0	5.1	13	10	11	9.0	9.7	6.3	9.7	5.7	5.1
27	5.1	5.1	5.1	13	10	11	9.0	9.7	9.3	9.5	5.7	5.1
28	5.1	5.1	5.1	13	10	11	10	9.5	8.6	9.0	5.7	5.1
29	5.1	5.1	5.1	13	---	11	10	9.0	8.3	9.0	5.7	7.1
30	5.1	5.1	7.7	13	---	11	9.7	9.2	8.3	8.7	5.7	6.6
31	5.1	---	240	12	---	11	---	9.7	---	8.0	5.7	---
TOTAL	194.6	157.0	395.6	449	303	331.7	295.5	278.4	245.2	277.0	211.0	181.4
MEAN	6.28	5.23	12.8	14.5	10.8	10.7	9.85	8.98	8.17	8.94	6.81	6.05
MAX	41	6.7	240	17	15	13	11	11	10	37	9.3	8.6
MIN	3.6	5.1	5.1	12	10	9.7	9.0	7.6	6.3	5.7	5.7	4.0
AC-FT	386	311	785	891	601	658	586	552	486	549	419	360

CAL YR 1984 TOTAL 2082.8 MEAN 5.69 MAX 240 MIN 2.3 AC-FT 4130  
WTR YR 1985 TOTAL 3319.4 MEAN 9.09 MAX 240 MIN 3.6 AC-FT 6580

## COLORADO RIVER BASIN

79

08128400 MIDDLE CONCHO RIVER ABOVE TANKERSLEY, TX

LOCATION.--Lat 31°25'38", long 100°42'39", Irion County, Hydrologic Unit 12090103, on left bank 0.3 mi upstream from East Rocky Creek, 0.5 mi southwest of Tullos Ranch Headquarters, 6.7 mi northwest of Tankersley, and 20.9 mi upstream from mouth.

DRAINAGE AREA.--2,084 mi<sup>2</sup>, of which 968 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--March 1961 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,986.47 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 14.4 ft<sup>3</sup>/s (10,430 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,500 ft<sup>3</sup>/s Sept. 21, 1974 (gage height, 24.98 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, 29.5 ft Sept. 26, 1936. A flood in 1900 reached the same stage, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Sept. 29	0800	*1,840	*11.97	No other peak greater than base discharge.			

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	.29	.87	7.8	1.5	1.9	1.7	.67	1.5	.00	.00	.00
2	.11	.46	.90	4.6	1.4	1.9	1.5	.57	1.4	.00	.00	.00
3	.20	.60	.90	3.3	1.3	1.9	1.5	.51	1.4	.00	.00	.00
4	14	.93	.90	2.8	1.3	1.9	1.5	.45	1.2	.00	.00	.00
5	4.2	1.1	.90	2.2	1.3	1.8	1.5	.41	1.2	.00	.00	.00
6	1.9	1.1	.90	2.2	1.5	1.7	1.4	.43	1.3	.00	.00	.00
7	1.4	1.1	.90	2.1	1.5	1.6	1.2	.70	1.3	.00	.00	.00
8	1.1	1.1	.90	2.1	1.5	1.6	1.2	.78	.92	.00	.00	.00
9	.95	1.2	.96	2.1	1.5	1.6	1.2	.50	.58	.00	.00	.00
10	.90	1.4	1.0	1.9	1.5	1.5	1.2	.44	.45	.00	.00	.00
11	.92	1.3	1.0	1.8	1.5	1.5	1.1	.36	.41	.00	.00	.00
12	.87	1.4	1.0	1.8	1.5	1.5	1.1	.52	.78	.00	.00	.00
13	.51	1.5	1.1	1.8	1.5	1.5	1.1	.65	.90	.00	.00	.00
14	.23	1.3	1.1	1.8	1.3	1.5	1.1	.63	.57	.00	.00	.00
15	.27	1.4	6.3	1.8	1.3	1.3	1.1	.76	.44	.00	.00	.00
16	.36	1.5	1.8	1.8	1.3	1.3	1.0	.91	.31	.00	.00	.00
17	.26	1.5	1.6	1.9	1.3	1.3	1.0	1.6	.20	.00	.00	.00
18	.19	1.6	1.6	1.9	1.3	1.2	1.0	1.1	.12	.00	.00	.00
19	.26	1.7	1.5	1.8	1.3	1.5	1.0	.88	.09	.00	.00	.00
20	.27	1.6	1.3	1.8	1.3	3.1	1.0	416	.06	.00	.00	.00
21	.28	1.6	1.3	1.5	1.3	3.1	1.1	68	.03	.00	.00	.00
22	.39	1.5	1.2	1.5	1.5	2.3	1.0	21	.00	.00	.00	.00
23	.66	1.4	1.2	1.5	3.1	2.2	1.0	12	.00	.00	.00	.00
24	.30	1.7	1.2	1.5	2.9	1.9	.99	5.4	.00	.00	.00	.00
25	.21	1.1	1.2	1.5	2.2	1.9	.90	3.4	.00	.00	.00	.00
26	.23	.76	1.1	1.5	2.2	2.0	.85	2.6	.00	.00	.00	.00
27	.64	.63	1.0	1.5	2.2	2.1	1.2	1.8	.00	.00	.00	.00
28	.42	.52	.90	1.6	1.9	2.1	6.7	1.5	.00	.00	.00	.00
29	.30	.66	1.0	1.6	---	2.0	2.4	1.4	.00	.00	.00	522
30	.28	.81	1.3	1.7	---	1.9	1.1	1.2	.00	.00	.00	21
31	.26	---	14	1.5	---	1.7	---	1.3	---	.00	.00	---
TOTAL	33.08	34.76	52.83	66.2	45.2	56.3	41.64	548.47	15.16	.00	.00	543.00
MEAN	1.07	1.16	1.70	2.14	1.61	1.82	1.39	17.7	.51	.000	.000	18.1
MAX	14	1.7	14	7.8	3.1	3.1	6.7	416	1.5	.00	.00	522
MIN	.11	.29	.87	1.5	1.3	1.2	.85	.36	.00	.00	.00	.00
AC-FT	66	69	105	131	90	112	83	1090	30	.00	.00	1080
CAL YR 1984	TOTAL	818.43	MEAN 2.24	MAX 431	MIN .00	AC-FT 1620						
WTR YR 1985	TOTAL	1436.64	MEAN 3.94	MAX 522	MIN .00	AC-FT 2850						

## COLORADO RIVER BASIN

08129300 SPRING CREEK ABOVE TANKERSLEY, TX

LOCATION.--Lat 31°19'48", long 100°38'24", Tom Green County, Hydrologic Unit 12090102, on right bank at downstream side of bridge on Farm Road 2335, 1.4 mi south of Tankersley, 2.5 mi upstream from Dove Creek, and 10.4 mi upstream from mouth.

DRAINAGE AREA.--424.7 mi<sup>2</sup>, of which 19.7 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--October 1960 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,964.72 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 10, 1960, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Oct. 8-12. Records good. Many small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years, 13.1 ft<sup>3</sup>/s (9,490 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,400 ft<sup>3</sup>/s Aug. 12, 1971 (gage height, 16.57 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Outstanding floods since at least 1853 occurred in 1882 and 1884. Flood of Oct. 3, 1959, reached a stage of 18.4 ft, from floodmarks. At former gage near Tankersley 8 mi downstream, the flood of Oct. 3, 1959, had a discharge of 82,100 ft<sup>3</sup>/s and was found to be about 3 ft lower than the 1882 flood, the greatest at that location since at least 1853.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Apr. 28	1400	*409	*5.39	No other peak greater than base discharge.			
Minimum discharge, no flow for many days.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	6.4	13	6.4	7.4	3.0	3.4	5.9	.83	2.0	.11
2	.00	.00	6.3	9.0	6.7	6.6	2.1	4.7	4.0	.61	1.5	.11
3	.00	.00	6.0	7.9	7.1	8.8	1.5	1.7	2.1	.60	.79	.11
4	.00	.00	6.0	7.9	7.4	7.9	.73	.54	1.2	.74	.53	.11
5	.00	.02	6.7	7.9	7.4	5.1	.49	.32	.97	.81	.38	.11
6	.00	.21	6.8	7.4	7.5	4.4	.33	.25	.72	.67	.27	.13
7	.00	.84	6.5	7.4	6.9	4.4	.29	.20	.61	.57	.21	.10
8	.00	1.2	6.7	7.4	7.1	3.7	.20	.17	.56	.45	.19	.09
9	.00	1.9	7.0	7.4	7.5	3.7	.21	.17	.47	.31	.16	.10
10	.00	.73	6.7	6.9	7.2	2.7	.21	.17	.39	.27	.16	.10
11	.00	.33	6.9	6.9	6.7	2.8	.21	.17	.36	.22	.15	.10
12	.00	.95	4.4	6.9	6.3	1.8	.19	.17	.48	.20	.14	.10
13	.00	1.5	3.5	9.0	6.4	1.1	.19	.17	.51	.19	.13	.11
14	.00	1.1	3.2	9.0	6.4	1.2	.19	.17	.40	.19	.14	.13
15	.00	.64	9.6	8.4	6.4	.74	.16	.17	.37	.18	.15	.14
16	.00	.45	11	8.4	7.2	1.7	.14	.34	.37	.17	.17	.16
17	.00	.36	8.4	9.0	7.1	3.0	.12	.83	.34	.16	.17	.14
18	.00	.48	7.8	8.4	6.3	3.6	.12	.48	.32	.15	.15	.13
19	.00	.72	7.8	8.4	6.7	4.7	.10	3.5	.33	.14	.14	.11
20	.00	1.3	7.8	7.4	7.4	8.3	.10	11	.35	.15	.13	.11
21	.00	1.8	7.4	7.9	8.0	5.5	.12	12	.34	24	.12	.11
22	.00	2.2	6.9	8.4	7.9	4.9	.21	13	.32	69	.11	.11
23	.00	2.6	6.4	8.4	11	4.4	.22	11	.31	36	.11	.09
24	.00	5.5	6.9	8.6	7.8	4.5	.15	9.0	.30	19	.11	.09
25	.00	7.0	6.0	8.6	7.2	3.8	.13	40	.25	13	.13	.09
26	.00	5.6	6.0	8.3	7.0	4.0	.13	16	.27	11	.13	.07
27	.00	5.2	6.9	7.6	6.9	4.5	.13	12	1.2	9.8	.13	.06
28	.00	6.5	5.2	6.3	7.3	3.7	102	9.5	.62	8.9	.13	.06
29	.00	7.1	4.1	5.7	---	3.5	43	6.9	1.4	7.7	.12	73
30	.00	6.7	5.5	5.8	---	3.1	11	5.3	1.6	5.1	.11	10
31	.00	---	21	6.4	---	2.9	---	5.0	---	3.0	.11	---
TOTAL	.00	62.93	217.8	246.0	201.2	128.44	167.67	168.32	27.36	214.11	8.97	85.98
MEAN	.000	2.10	7.03	7.94	7.19	4.14	5.59	5.43	.91	6.91	.29	2.87
MAX	.00	7.1	21	13	11	8.8	102	40	5.9	69	2.0	73
MIN	.00	.00	3.2	5.7	6.3	.74	.10	.17	.25	.14	.11	.06
AC-FT	.00	125	432	488	399	255	333	334	54	425	18	171

CAL YR 1984 TOTAL 993.07 MEAN 2.71 MAX 21 MIN .00 AC-FT 1970  
WTR YR 1985 TOTAL 1528.78 MEAN 4.19 MAX 102 MIN .00 AC-FT 3030

COLORADO RIVER BASIN

81

08130500 DOVE CREEK AT KNICKERBOCKER, TX

LOCATION.--Lat 31°16'24", long 100°37'45", Tom Green County, Hydrologic Unit 12090102, on right bank at right end of bridge on Farm Road 2335, 0.4 mi west of Knickerbocker, and 5.7 mi upstream from mouth.

DRAINAGE AREA.--226.43 mi<sup>2</sup>, of which 8.43 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--October 1960 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,001.45 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 10, 1960, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Oct. 2-11. Records good except those for estimated daily discharges which are fair. Flow is partly regulated by storage and by diversions from two small channel dams upstream and by a small upstream diversion (for irrigation). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years, 16.9 ft<sup>3</sup>/s (12,240 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,500 ft<sup>3</sup>/s Aug. 12, 1971 (gage height, 20.66 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, 30.4 ft in 1906 and Oct. 3, 1959; floods in 1882 and 1884 reached about the same stage, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 11	0100	*616	a*7.26	July 20	1800	172	5.20
May 24	1600	228	5.73				

a From floodmark.

Minimum daily discharge, 1.9 ft<sup>3</sup>/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	14	8.2	12	11	10	9.1	5.5	6.1	5.0	12	9.7
2	2.0	11	7.9	11	11	10	9.1	6.6	4.9	4.6	11	9.4
3	2.0	12	7.9	11	11	10	9.1	6.9	3.6	5.3	10	7.6
4	2.0	13	7.9	12	11	10	9.1	6.6	3.3	6.2	10	3.6
5	2.0	12	8.1	12	11	9.4	9.0	6.5	4.9	8.5	9.4	3.2
6	2.0	13	8.0	12	11	8.9	9.3	6.0	5.6	8.2	8.8	16
7	2.0	12	7.2	12	11	9.7	9.4	6.1	4.3	7.6	8.8	6.5
8	2.0	12	7.5	12	11	9.5	8.2	6.2	3.3	8.5	9.1	5.0
9	2.0	13	7.7	12	11	9.3	7.1	6.0	3.2	9.7	6.0	3.6
10	22	9.0	7.9	12	11	9.4	7.0	5.6	2.8	9.7	8.2	3.8
11	154	9.0	7.8	12	11	9.4	8.9	5.2	4.6	8.5	11	4.4
12	24	9.3	7.6	13	11	8.9	7.5	4.7	6.7	8.2	8.2	5.5
13	13	9.2	8.1	15	11	9.8	6.4	4.8	7.6	7.6	7.9	8.8
14	13	9.0	7.8	14	11	11	5.8	4.8	5.3	7.0	8.2	17
15	12	8.2	9.0	14	11	9.7	5.3	3.8	5.3	7.0	11	9.7
16	12	8.6	9.7	14	11	9.7	5.1	3.8	4.4	6.2	11	7.3
17	11	11	8.4	14	11	9.7	4.5	5.5	3.8	6.5	10	6.5
18	11	11	8.2	12	11	8.8	4.3	6.0	3.5	7.0	10	6.8
19	11	11	8.2	12	11	8.3	3.7	4.6	3.8	6.5	9.6	6.2
20	11	10	8.1	11	11	13	3.7	15	4.3	46	9.2	6.8
21	11	9.7	8.2	11	11	10	3.5	6.9	4.6	56	9.4	6.5
22	10	9.4	7.3	11	10	9.6	3.6	5.2	5.4	29	9.4	6.0
23	10	9.1	7.5	11	12	9.4	3.3	4.5	7.0	21	9.4	5.8
24	10	12	7.5	11	11	9.3	3.2	33	5.9	18	6.8	7.0
25	9.7	13	7.5	11	9.9	8.9	3.0	12	5.2	18	4.6	7.6
26	12	9.1	7.8	11	9.6	9.0	3.3	6.0	5.3	16	7.0	7.3
27	13	9.1	8.1	11	9.4	9.4	4.9	8.3	8.5	15	9.1	7.3
28	11	8.5	8.2	11	9.9	9.1	6.2	7.6	13	14	10	7.6
29	12	7.6	8.1	11	---	9.1	5.7	7.6	7.3	14	10	19
30	13	7.6	8.6	11	---	9.1	4.8	6.7	5.8	13	10	11
31	11	---	19	11	---	9.1	---	6.3	---	12	10	---
TOTAL	434.6	312.4	259.0	370	302.8	296.5	183.1	224.3	159.3	409.8	285.1	232.5
MEAN	14.0	10.4	8.35	11.9	10.8	9.56	6.10	7.24	5.31	13.2	9.20	7.75
MAX	154	14	19	15	12	13	9.4	33	13	56	12	19
MIN	1.9	7.6	7.2	11	9.4	8.3	3.0	3.8	2.8	4.6	4.6	3.2
AC-FT	862	620	514	734	601	588	363	445	316	813	565	461

CAL YR 1984	TOTAL	2525.44	MEAN 6.90	MAX 154	MIN .02	AC-FT 5010
WTR YR 1985	TOTAL	3469.40	MEAN 9.51	MAX 154	MIN 1.9	AC-FT 6880



## COLORADO RIVER BASIN

## 08131200 TWIN BUTTES RESERVOIR NEAR SAN ANGELO, TX

LOCATION.--Lat 31°22'55", long 100°32'17", Tom Green County, Hydrologic Unit 12090102, in outlet control tower at Twin Buttes Dam on Middle Concho River, Spring Creek, and South Concho River, 3.8 mi upstream from Lake Nasworthy Dam, 8.1 mi southwest of San Angelo, and 75.0 mi upstream from mouth.

DRAINAGE AREA.--3,868 mi<sup>2</sup>, of which 1,055 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--October 1962 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder on Middle Concho-Spring Creek pool and nonrecording gage on South Concho pool. Datum of gages is National Geodetic Vertical Datum of 1929.

REMARKS.--The reservoir is formed by a rolled earthfill dam 8.1 mi long, including a 200-foot-wide uncontrolled off-channel concrete gravity spillway with ogee weir section. Outlet works consist of three 15.5-foot concrete conduits, each controlled by a 12.0- by 15.0-foot fixed-wheel gate and a 12.0- by 15.0-foot radial gate, located in the Middle Concho-Spring Creek pool. Low-flow releases are made through 2.0- by 2.0-foot gates located in the center of three fixed-wheel gates. The South Concho and Middle Concho-Spring Creek pools are connected by a 3.22-mile equalizing channel. At an elevation of 1,926.5 ft, the two pools join to form one lake. Below elevation 1,926.5 ft, daily contents are obtained from capacity tables for South Concho and Middle Concho-Spring Creek pools and summed to obtain combined daily contents. Lake level elevations below 1,926.5 ft represent Middle Concho-Spring Creek pool only. Deliberate impoundment of water began on Dec. 1, 1962; dam was completed Feb. 13, 1963. Capacity curve is based on a survey made in 1958. Reservoir was built for flood control, irrigation, and municipal uses. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,991.0	-
Crest of spillway.....	1,969.1	640,600
Top of conservation storage.....	1,940.2	186,200
Bottom of equalizing channel (Middle Concho-Spring Creek pool).....	1,926.5	86,480
Dead storage in South Concho pool.....	1,926.5	5,440
Lowest gated outlet (invert at Middle Concho-Spring Creek pool).....	1,885.0	3,750

COOPERATION.--Capacity curve furnished by the U.S. Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 205,200 acre-ft May 12, 1975 (elevation, 1,942.20 ft); minimum since first appreciable storage, 2,120 acre-ft Apr. 15, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum combined daily contents, 25,600 acre-ft Mar. 28; minimum, 16,560 acre-ft Sept. 28.

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19040	19730	19660	21120	23290	24660	25590	24280	25140	23190	21360	18020
2	19010	19720	19650	21160	23330	24700	25590	24200	25120	23140	21260	17920
3	18990	19730	19650	21210	23410	24800	25570	24170	25030	23090	21170	17810
4	19020	19710	19650	21270	23460	24820	25560	24110	24900	23040	21070	17710
5	19070	19700	19650	21360	23520	24820	25510	24040	24820	22970	20970	17630
6	19110	19690	19650	21440	23600	24840	25460	23980	24710	22850	20860	17530
7	19120	19680	19660	21520	23650	24900	25420	23950	24620	22750	20750	17460
8	19110	19670	19660	21620	23710	24890	25390	23930	24530	22630	20670	17380
9	19070	19660	19660	21700	23810	24920	25420	23890	24430	22530	20570	17290
10	19100	19620	19660	21760	23840	24960	25380	23830	24350	22430	20460	17210
11	19290	19610	19680	21810	23880	24970	25370	23750	24290	22320	20330	17120
12	19400	19600	19690	21890	23940	24960	25360	23700	24270	22200	20210	17030
13	19460	19600	19720	22040	23970	25020	25340	23590	24230	22080	20090	17020
14	19460	19590	19710	22110	24020	25010	25330	23480	24150	21950	19950	17100
15	19450	19580	19760	22200	24080	25030	25310	23370	24080	21830	19850	17100
16	19420	19570	19800	22260	24100	25050	25250	23600	24000	21680	19770	17110
17	19390	19610	19820	22370	24150	25080	25240	23810	23910	21490	19670	17110
18	19380	19610	19850	22460	24180	25100	24930	23820	23830	21280	19590	17130
19	19360	19600	19870	22500	24210	25110	24610	23850	23730	21120	19500	17100
20	19350	19580	19910	22570	24280	25300	24560	24230	23600	21370	19390	17070
21	19330	19580	19940	22630	24330	25390	24560	24680	23540	21580	19290	17050
22	19340	19570	19950	22690	24370	25440	24470	24850	23460	21800	19160	17020
23	19440	19560	19970	22760	24490	25450	24400	24990	23360	21940	19050	16950
24	19460	19650	19990	22820	24510	25480	24340	25090	23200	21950	18910	16920
25	19490	19710	20000	22890	24560	25520	24280	25250	23120	21920	18790	16810
26	19600	19720	20030	22980	24570	25560	24200	25270	23020	21880	18680	16730
27	19700	19700	20040	23020	24600	25580	24130	25280	23310	21820	18570	16650
28	19710	19700	20080	23100	24640	25600	24230	25270	23320	21760	18460	16560
29	19720	19680	20080	23160	---	25590	24320	25260	23300	21660	18340	16130
30	19730	19660	20320	23210	---	25590	24310	25220	23230	21550	18230	16270
31	19750	---	20690	23260	---	25590	---	25170	---	21450	18130	---
MAX	19750	19730	20690	23260	24640	25600	25590	25280	25140	23190	21360	18270
MIN	18990	19560	19650	21120	23290	24660	24130	23370	23020	21120	18130	16560
(†)	1898.52	1898.62	1899.44	1900.29	1900.93	1901.54	1900.98	1901.47	1900.26	1899.27	1897.16	1897.46
(‡)	+710	-90	+1030	+2570	+1380	+950	-1280	+860	-1940	-1780	-3320	+140

CAL YR 1984 MAX 43480 MIN 18670 (†) -21030  
WTR YR 1985 MAX 25600 MIN 16560 (†) -770

(†) Elevation, in feet, at end of month.  
(‡) Change in contents, in acre-feet.

## COLORADO RIVER BASIN

83

08131400 PECAN CREEK NEAR SAN ANGELO, TX

LOCATION.--Lat 31°18'32", long 100°26'44", Tom Green County, Hydrologic Unit 12090102, on left bank 200 ft upstream from U.S. Highway 277, 3.7 mi upstream from mouth, and 10.5 mi south of San Angelo.

DRAINAGE AREA.--81.1 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1961 to current year.

REVISED RECORDS.--WDR TX-75-3: 1971, 1972(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder, crest-stage gages, and concrete control. Datum of gage is 1,930.72 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 30, 1968, at site 1.2 mi downstream at datum 20.21 ft lower.

REMARKS.--Estimated daily discharges: Oct. 1-9, Dec. 20-31, and Feb. 18 to Mar. 5. Records good except those for periods of estimated daily discharges and those below 5 ft<sup>3</sup>/s, which are fair. No known diversions above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years, 2.14 ft<sup>3</sup>/s (0.36 in/yr), 1,550 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 25,600 ft<sup>3</sup>/s Sept. 8, 1980 (gage height, 10.63 ft); maximum gage height, 11.15 ft Sept. 24, 1964, site and datum then in use; no flow most of time each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1908, 14.36 ft, former site and datum, Sept. 15, 1936 (discharge, 30,500 ft<sup>3</sup>/s, by slope-area measurement).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	1600	*1,440	*2.52	No other peak greater than base discharge.			
Minimum discharge, no flow for many days.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	29	2.0	.48	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	4.5	2.0	.10	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	2.4	2.0	2.0	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	2.0	2.0	.47	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	2.0	1.6	.47	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.01	1.8	.47	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	2.0	.75	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	2.0	1.0	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	2.0	1.0	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.02	2.0	1.0	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.02	2.0	1.0	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.01	1.5	1.0	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.02	1.0	1.4	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.28	1.0	2.0	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	1.0	1.0	2.0	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	1.5	1.0	2.0	.00	4.5	.00	.00	.00	.00
17	.00	.00	.00	2.0	1.0	2.0	.02	3.0	.00	.00	.00	.00
18	.00	.00	.00	2.0	1.0	2.0	.04	.29	.00	.00	.00	.00
19	.00	.00	.00	2.0	1.0	1.4	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	1.9	1.0	2.4	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	1.4	.48	2.7	.00	1.8	.00	.00	.00	.00
22	.00	.00	.00	1.0	2.7	2.7	.00	2.0	.00	.00	.00	.00
23	.00	.00	.00	1.0	17	2.7	.00	.87	.00	.37	.00	.00
24	.00	.00	.00	1.0	14	2.1	.00	.03	.00	1.1	.00	.00
25	.00	.00	.00	1.0	9.8	1.0	.00	.00	.00	.04	.00	.00
26	.00	.00	.00	1.0	6.5	.07	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	1.0	3.8	.58	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	1.0	2.0	.02	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	1.0	---	.00	.00	.05	.00	.00	.00	.00
30	.00	.00	.00	1.5	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	225	2.0	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	225.00	63.56	87.18	36.81	.06	12.54	.00	1.51	.00	.00
MEAN	.000	.000	7.26	2.05	3.11	1.19	.002	.40	.000	.049	.000	.000
MAX	.00	.00	225	29	17	2.7	.04	4.5	.00	1.1	.00	.00
MIN	.00	.00	.00	.00	.48	.00	.00	.00	.00	.00	.00	.00
CFSM	.000	.000	.09	.03	.04	.02	.000	.005	.000	.001	.000	.000
IN.	.00	.00	.10	.03	.04	.02	.00	.01	.00	.00	.00	.00
AC-FT	.00	.00	446	126	173	73	.1	25	.00	3.0	.00	.00
CAL YR 1984	TOTAL	225.00	MEAN	.61	MAX	225	MIN	.00	CFSM	.008	IN	.10
WTR YR 1985	TOTAL	426.66	MEAN	1.17	MAX	225	MIN	.00	CFSM	.01	IN	.20
									AC-FT	446		
									AC-FT	846		

## COLORADO RIVER BASIN

## 08132000 LAKE NASWORTHY NEAR SAN ANGELO, TX

LOCATION.--Lat 31°23'19", long 100°28'41", Tom Green County, Hydrologic Unit 12090102, on left bank 250 ft upstream from Nasworthy Dam on South Concho River, 3.8 mi downstream from Twin Buttes Dam, 6.0 mi southwest of San Angelo, and 68.9 mi upstream from mouth.

DRAINAGE AREA.--3,975 mi<sup>2</sup>, of which 3,868 mi<sup>2</sup> is above Twin Buttes Reservoir and 1,055 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--March 1930 to current year. Prior to October 1969, monthend contents only.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,840.00 ft National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a 6,090-foot dam with a 5,590-foot earthen section that has an earthen spillway 300 ft long, a concrete spillway 475 ft long with a bank of fifteen 25.0- by 18.0-foot tainter gates, and a 25.0- by 3.0-foot collapsible floodgate. The dam was completed and storage began Mar. 28, 1930. Since July 1966, West Texas Utilities Co. has operated a steam generating powerplant on the lake. Since September 1962, the lake has been almost totally controlled by releases or pumpage from Twin Buttes Reservoir (station 08131200). Siltation surveys in December 1938 and May 1953 by the Soil Conservation Service show that 1,191 acre-ft of silt was deposited from March 1930 to December 1938 and an additional 1,023 acre-ft was deposited from December 1938 to May 1953, totaling 2,214 acre-ft. Water is used for part of San Angelo municipal supply and for irrigation east of San Angelo. The capacity curve is based on a survey by the Soil Conservation Service in 1953 and has been used since 1955. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam.....	43.5	-
Crest of spillway (300 ft).....	39.1	27,810
Top of gates.....	33.2	13,990
Top of collapsible floodgate.....	32.2	12,390
Lowest outlet to canal (invert).....	27.5	6,370
Crest of spillway (tainter gates sill).....	15.3	435
Lowest gated outlet (invert).....	-4.0	0

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 26,900 acre-ft Sept. 15, 1936 (gage height, 38.36 ft); minimum, 209 acre-ft Aug. 22, 1964 (gage height, 13.21 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 11,510 acre-ft Jan. 1 at 1800 hours (gage height, 31.65 ft); minimum, 9,430 acre-ft Apr. 18 (gage height, 30.22 ft).

Capacity table (gage height, in feet, and total contents, in acre-feet)

30.2	9,410
31.7	11,590

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9800	10130	10230	11490	11060	10500	9940	9830	9810	9880	10040	9850
2	9780	10130	10220	11490	10980	10520	9900	9810	9720	9850	10040	9850
3	9770	10150	10220	11480	10950	10530	9830	9810	9710	9800	10020	9870
4	9850	10120	10250	11460	10920	10490	9750	9800	9720	9760	10010	9870
5	9850	10110	10250	11450	10920	10440	9710	9780	9830	9760	9990	9900
6	9840	10110	10260	11430	10890	10440	9670	9780	9850	9760	9980	9910
7	9840	10110	10270	11430	10890	10410	9630	9840	9880	9760	9950	9940
8	9830	10120	10290	11410	11050	10400	9610	9840	9880	9770	9940	9950
9	9840	10110	10290	11410	10920	10390	9590	9840	9850	9760	9910	9950
10	9880	10080	10300	11370	10820	10400	9590	9840	9840	9770	9880	9950
11	9940	10080	10330	11330	10820	10330	9600	9830	9870	9760	9830	9970
12	9940	10080	10320	11330	10810	10320	9600	9830	9920	9760	9770	9980
13	9950	10080	10290	11380	10760	10320	9600	9770	9920	9730	9770	10120
14	9950	10080	10270	11370	10760	10270	9610	9760	9940	9730	9810	10120
15	9920	10050	10360	11370	10840	10260	9600	9760	9940	9720	9840	10080
16	9910	10050	10360	11370	10660	10230	9540	9970	9920	9730	9840	10040
17	9900	10090	10370	11350	10650	10220	9450	10050	9910	9780	9840	9980
18	9880	10090	10390	11330	10610	10190	9630	10060	9870	9840	9840	9940
19	9870	10060	10400	11270	10610	10320	9870	10080	9880	9870	9830	9910
20	9870	10080	10430	11290	10650	10300	9830	10090	9900	9900	9800	9880
21	9840	10080	10430	11270	10630	10270	9830	10060	9880	9950	9800	9850
22	9880	10080	10430	11250	10630	10260	9800	10120	9880	10020	9800	9830
23	9950	10080	10440	11250	10610	10230	9770	10090	9870	10020	9780	9770
24	9990	10200	10430	11240	10610	10220	9770	10050	9840	10050	9780	9750
25	10010	10200	10440	11210	10580	10190	9760	10050	9810	10060	9800	9750
26	10110	10220	10460	11250	10550	10180	9760	10020	9830	10080	9800	9750
27	10150	10200	10490	11210	10530	10180	9770	9980	10060	10090	9800	9760
28	10120	10220	10500	11190	10580	10130	9810	9970	10020	10090	9800	9770
29	10120	10200	10520	11190	---	10090	9830	9940	9980	10080	9810	10080
30	10120	10200	10740	11130	---	10040	9830	9900	9940	10050	9830	10050
31	10150	---	11450	11060	---	9990	---	9850	---	10050	9840	---
MAX	10150	10220	11450	11490	11060	10530	9940	10120	10060	10090	10040	10120
MIN	9770	10050	10220	11060	10530	9990	9450	9760	9710	9720	9770	9750
(†)	30.77	30.81	31.61	31.37	31.07	30.66	30.54	30.56	30.62	30.70	30.55	30.70
(‡)	+320	+50	+1250	-390	-480	-590	-160	+20	+90	+110	-210	+210
CAL YR 1984	MAX	11450	MIN	9700	(†)	+960						
WTR YR 1985	MAX	11490	MIN	9450	(†)	+220						

(†) Gage height, in feet, at end of month.

(‡) Change in contents, in acre-feet.

COLORADO RIVER BASIN

85

08133500 NORTH CONCHO RIVER AT STERLING CITY, TX

LOCATION.--Lat 31°49'48", long 100°59'36", Sterling County, Hydrologic Unit 12090104, on right bank 100 ft upstream from bridge on State Highway 163, 0.5 mi south of Sterling City, 4.0 mi upstream from Sterling Creek, 5.1 mi downstream from Lacy Creek, and at mile 57.2.

DRAINAGE AREA.--588 mi<sup>2</sup>, of which 19.6 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--September 1939 to current year (discontinued as a continuous-record station Sept. 30, 1985; converted to Flood-Hydrograph partial-record station Oct. 1, 1985).

REVISED RECORDS.--WSP 1512: 1945, 1948. WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,242.36 ft above National Geodetic Vertical Datum of 1929. Prior to Dec. 6, 1939, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. There are small diversions above station for irrigation. Several observations of water temperature were made during the year. (Beginning Oct. 1, 1985 only discharges of 100 ft<sup>3</sup>/s or greater will be published.)

AVERAGE DISCHARGE.--46 years, 7.80 ft<sup>3</sup>/s (5,650 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,300 ft<sup>3</sup>/s July 6, 1948 (gage height, 23.70 ft); no flow at times each year.

Maximum stage since at least 1891, that of July 6, 1948.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 27	1830	*30	*3.80				

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	18	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	9.9	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.06	.00	.00	.03
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.03	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.05	.03	.00	.00	.00	.00	.00	27.96	.00	.02	.05
MEAN	.000	.002	.001	.000	.000	.000	.000	.000	.93	.000	.001	.002
MAX	.00	.03	.03	.00	.00	.00	.00	.00	18	.00	.02	.03
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.10	.06	.00	.00	.00	.00	.00	55	.00	.04	.10

CAL YR 1984	TOTAL	4.23	MEAN .012	MAX 2.8	MIN .00	AC-FT 8.4
WTR YR 1985	TOTAL	28.11	MEAN .077	MAX 18	MIN .00	AC-FT 56



## COLORADO RIVER BASIN

08134000 NORTH CONCHO RIVER NEAR CARLSBAD, TX

LOCATION.--Lat 31°35'33", long 100°38'12", Tom Green County, Hydrologic Unit 12090104, near left bank at downstream side of bridge on county road, 0.6 mi southeast of Carlsbad, 1.5 mi upstream from Mule Creek, 2.5 mi upstream from Grape Creek, 16.2 mi upstream from O. C. Fisher Dam, and 21.3 mi upstream from mouth.

DRAINAGE AREA.--1,266 mi<sup>2</sup>, of which 75.1 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--March 1924 to current year.

Water-quality records: Chemical and biochemical analyses: October 1980 to September 1982.

REVISED RECORDS.--WSP 1512: 1924(M), 1925, 1926(M), 1928, 1930, 1932(M), 1935, 1937-38(M), 1941(M), 1945(M), 1947-49(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,968.02 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 4, 1925, and Sept. 27, 1936, to Feb. 7, 1937, nonrecording gage; Feb. 4, 1925, to Sept. 26, 1936, and Feb. 8, 1937, to Nov. 6, 1955, water-stage recorder, all at site 2.5 mi upstream at datum 32.76 ft higher.

REMARKS.--No estimated daily discharges. Records good. There are several diversions (by pumping) above station.

AVERAGE DISCHARGE.--61 years, 32.9 ft<sup>3</sup>/s (23,840 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,600 ft<sup>3</sup>/s Sept. 26, 1936 (gage height, 16.0 ft, at former site, 29.1 ft at present site, from floodmark), by slope-area measurement of peak flow former site; no flow at times. Maximum stage since 1853, that of Sept. 26, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Stage unknown for major flood in June 1853.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Apr. 28	1600	*206	*5.60				

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	2.1	8.9	2.9	3.8	2.9	2.4	.08	.00	.00	.00
2	.00	.00	2.1	3.8	3.2	3.8	2.6	1.5	.04	.00	.00	.00
3	.00	.00	2.1	2.6	3.5	4.1	2.6	1.3	.01	.00	.00	.00
4	.00	.00	2.1	2.4	3.8	3.5	2.4	1.2	.00	.00	.00	.00
5	.00	.00	2.1	2.1	4.1	2.6	2.6	1.3	.00	.00	.00	.00
6	.00	.00	2.1	1.9	4.1	2.4	2.6	1.3	.00	.00	.00	.00
7	.00	.00	2.1	1.9	3.8	2.6	3.5	1.0	.00	.00	.00	.00
8	.00	.00	2.1	1.7	3.5	2.9	4.1	.87	.00	.00	.00	.00
9	.00	.00	2.1	1.7	4.1	2.9	4.8	.64	.00	.00	.00	.00
10	.00	.00	2.1	1.9	5.2	2.4	5.2	.45	.00	.00	.00	.00
11	.00	.00	2.1	1.9	4.1	2.1	5.6	.37	.00	.00	.00	.00
12	.00	.00	2.1	1.7	3.5	2.1	5.6	.45	.00	.00	.00	.00
13	.00	.00	2.1	2.1	3.8	2.1	6.0	.37	.00	.00	.00	.00
14	.00	.00	2.1	2.4	3.8	2.1	5.2	.18	.00	.00	.00	.00
15	.00	.00	4.8	2.4	4.1	1.9	3.5	.08	.00	.00	.00	.00
16	.00	.00	7.2	2.4	4.1	1.9	3.2	.08	.00	.00	.00	.00
17	.00	.00	5.2	2.4	4.1	2.1	2.9	.54	.00	.00	.00	.00
18	.00	.00	3.5	2.4	4.1	1.9	1.9	1.3	.00	.00	.00	.00
19	.00	.00	2.4	2.6	3.8	3.2	2.6	1.2	.00	.00	.00	.00
20	12	.00	2.4	2.9	4.1	6.4	2.4	.64	.00	.00	.00	.00
21	1.1	.00	2.4	2.9	4.8	4.1	2.4	.87	.00	.00	.00	.00
22	.45	.00	2.1	2.9	6.0	4.1	2.1	4.5	.00	.00	.00	.00
23	.14	.00	2.6	2.9	4.5	3.5	2.4	5.2	.00	.00	.00	.00
24	.04	.00	2.9	3.2	4.5	3.5	2.4	2.6	.00	.00	.00	.00
25	.00	1.1	2.4	3.2	3.5	3.2	1.9	1.9	.00	.00	.00	.00
26	.00	1.3	2.1	3.5	3.2	3.5	1.7	1.3	.00	.00	.00	.00
27	.31	1.9	2.1	3.5	3.2	3.5	19	1.0	.00	.00	.00	.00
28	2.5	2.1	2.4	3.2	3.5	3.5	52	.54	.00	.00	.00	.00
29	.37	2.1	2.6	3.2	---	3.2	14	.37	.00	.00	.00	.00
30	.03	2.1	2.9	3.2	---	3.5	3.5	.24	.00	.00	.00	.00
31	.00	---	22	2.9	---	2.9	---	.14	---	.00	.00	---
TOTAL	16.94	10.60	101.4	86.7	110.9	95.3	173.6	35.83	.13	.00	.00	.00
MEAN	.55	.35	3.27	2.80	3.96	3.07	5.79	1.16	.004	.000	.000	.000
MAX	12	2.1	22	8.9	6.0	6.4	52	5.2	.08	.00	.00	.00
MIN	.00	.00	2.1	1.7	2.9	1.9	1.7	.08	.00	.00	.00	.00
AC-FT	34	21	201	172	220	189	344	71	.3	.00	.00	.00

CAL YR 1984 TOTAL 506.80 MEAN 1.38 MAX 22 MIN .00 AC-FT 1010  
WTR YR 1985 TOTAL 631.40 MEAN 1.73 MAX 52 MIN .00 AC-FT 1250

## 08134500 O. C. FISHER LAKE AT SAN ANGELO, TX

LOCATION.--Lat 31°29'04", long 100°28'53", Tom Green County, Hydrologic Unit 12090104, in intake structure of O. C. Fisher Dam on North Concho River, 3.1 mi northwest of San Angelo, and 6.6 mi upstream from mouth.

DRAINAGE AREA.--1,488 mi<sup>2</sup>, of which 105 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--February 1952 to current year. Published as San Angelo Reservoir prior to October 1970, and as San Angelo Lake, October 1970 to September 1974.

REVISED RECORDS.--WSP 1922: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to May 12, 1953, non-recording gage at same site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 40,885 ft long, including spillway. Closure was completed Mar. 7, 1951, and the dam was completed May 3, 1951. Deliberate impoundment began Feb. 1, 1952. The lake is operated for flood control and recreation with part as municipal supply for the city of San Angelo. The spillway is an uncontrolled off-channel concrete gravity dam with ogee weir section 1,150 ft wide located to the right and upstream from the right end of dam. The spillway is designed to discharge 356,000 ft<sup>3</sup>/s at maximum design flood level. The control outlet works consist of six gate-controlled outlets, 7.5 by 14.5 ft, opening into two 18.0-foot-diameter concrete conduits, and two 2.5-foot gate-controlled outlets for water-supply outlets. Since February 1973, the capacity is based on a survey made in 1962. Prior to 1973, the capacity was based on a survey made in 1944. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,964.0	-
Design flood.....	1,958.0	690,000
Crest of spillway.....	1,938.5	392,700
Top of conservation pool.....	1,908.0	115,700
Lowest gated outlet (invert).....	1,840.0	0

COOPERATION.--Records furnished by the U.S. Army Corps of Engineers and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 174,100 acre-ft Oct. 14, 1957 (elevation, 1,916.47 ft); minimum since first appreciable storage, lake dry July 16, 1970, to Apr. 15, 1971.

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 14,830 acre-ft Oct. 4 at 2400 hours (elevation, 1,874.22 ft); minimum daily, 8,390 acre-ft Sept. 28 (elevation, 1,867.78 ft).

## Capacity table (elevation, in feet, and total contents, in acre-feet)

1,876.0	7,810	1,873.0	13,350
1,869.0	9,380	1,875.0	15,830
1,871.0	11,190		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14690	14580	14020	14220	14190	14240	14140	13570	12610	11690	10460	9120
2	14670	14540	14000	14230	14190	14240	14130	13520	12510	11660	10400	9100
3	14640	14520	13980	14220	14150	14250	14110	13470	12420	11620	10360	9080
4	14830	14500	13980	14220	14150	14240	14090	13420	12370	11600	10330	9040
5	14820	14470	13970	14220	14170	14220	14080	13380	12400	11580	10290	9020
6	14780	14460	13950	14220	14170	14220	14040	13320	12370	11510	10270	8990
7	14770	14420	13940	14220	14170	14220	14000	13250	12340	11480	10230	8950
8	14730	14410	13920	14220	14170	14220	13970	13190	12320	11430	10170	8920
9	14780	14400	13940	14230	14150	14220	13970	13140	12270	11410	10120	8880
10	14750	14370	13920	14220	14190	14230	13960	13100	12230	11360	10060	8850
11	14770	14350	13920	14220	14180	14220	13950	13040	12230	11340	9980	8810
12	14750	14300	13920	14230	14170	14200	13960	12970	12260	11320	9930	8780
13	14780	14290	13950	14240	14170	14220	13950	12920	12230	11270	9890	8770
14	14740	14280	13950	14240	14150	14190	13940	12820	12210	11230	9840	8760
15	14720	14260	14010	14240	14150	14190	13910	12760	12180	11210	9830	8750
16	14670	14220	13980	14240	14150	14190	13900	12900	12160	11160	9780	8730
17	14630	14230	13980	14240	14140	14180	13880	12920	12120	11000	9750	8710
18	14600	14200	13980	14240	14140	14180	13860	12890	12090	10940	9710	8690
19	14570	14150	13980	14240	14140	14260	13830	12870	12060	10900	9670	8680
20	14530	14140	13970	14220	14150	14290	13780	12870	12030	10880	9650	8640
21	14510	14110	13970	14220	14170	14250	13780	12860	11990	10860	9600	8620
22	14570	14090	13960	14200	14200	14250	13730	12950	11960	10850	9560	8590
23	14560	14070	13960	14200	14250	14240	13670	12940	11930	10830	9520	8550
24	14540	14220	13950	14200	14240	14240	13610	12940	11890	10800	9490	8520
25	14540	14140	13950	14200	14230	14230	13570	12910	11870	10780	9480	8480
26	14680	14120	13940	14200	14230	14230	13530	12890	11810	10740	9430	8450
27	14650	14090	13940	14220	14220	14230	13530	12860	11860	10690	9350	8420
28	14640	14080	13950	14220	14250	14230	13590	12840	11820	10650	9280	8390
29	14630	14060	13950	14200	---	14230	13610	12810	11790	10590	9230	8900
30	14600	14030	14080	14200	---	14230	13610	12760	11790	10550	9190	8880
31	14590	---	14220	14200	---	14170	---	12680	---	10490	9150	---
MAX	14830	14580	14220	14240	14250	14290	14140	13570	12610	11690	10460	9120
MIN	14510	14030	13920	14200	14140	14170	13530	12680	11790	10490	9150	8390
(+)	1874.03	1873.57	1873.72	1873.71	1873.75	1873.68	1873.22	1872.41	1871.58	1870.27	1868.72	1868.39
(+)	-140	-560	+190	-20	+50	-80	-560	-930	-890	-1300	-1340	-270

CAL YR 1984 MAX 25810 MIN 13920 ± -10400  
WTR YR 1985 MAX 14830 MIN 8390 ± -5850

(+) Elevation, in feet, at end of month.

(±) Change in contents, in acre-feet.

## COLORADO RIVER BASIN

08135000 NORTH CONCHO RIVER AT SAN ANGELO, TX

LOCATION.--Lat 31°27'57", long 100°26'51", Tom Green County, Hydrologic Unit 12090104, near left bank at downstream side of pier of Sixth Street Bridge in San Angelo, 3.2 mi upstream from confluence with South Concho River, and 3.4 mi downstream from O. C. Fisher Dam.

DRAINAGE AREA.--1,525 mi<sup>2</sup>, of which 75.1 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--October 1915 to June 1928, February 1929 to September 1931, July 1947 to current year. Water-quality records.--Chemical and biochemical analyses: October 1980 to September 1982.

REVISED RECORDS.--WSP 568: 1916, 1918-22. WSP 1512: 1916(M), 1917-18, 1919-21(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,813.42 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 1, 1920, nonrecording gage, and Sept. 1, 1920, to Feb. 11, 1929, water-stage recorder at site 1.6 mi downstream at datum 11.02 ft lower. Feb. 12, 1929, to Sept. 30, 1931, water-stage recorder at site 1.6 mi downstream at datum 13.02 ft lower.

REMARKS.--No estimated daily discharges. Records good. Since October 1951, flow regulated by O. C. Fisher Lake (station 08134500).

AVERAGE DISCHARGE.--17 years (water years 1917-27, 1930-31, 1948-51), prior to completion of O. C. Fisher Dam, 54.5 ft<sup>3</sup>/s (39,490 acre-ft/yr); 34 years (water years 1952-85) regulated, 7.96 ft<sup>3</sup>/s (5,770 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, about 47,000 ft<sup>3</sup>/s June 13, 1930 (gage height, 22.52 ft, site and datum then in use); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Sept. 17, 1936, reached a stage of 34.6 ft, from floodmarks (discharge, 184,000 ft<sup>3</sup>/s), by slope-area measurement. The flood in 1936 was the greatest since flood in June 1853 (stage unknown).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 518 ft<sup>3</sup>/s Sept. 29 at 0315 hours (gage height, 2.93 ft); minimum daily, 0.47 ft<sup>3</sup>/s Apr. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	5.9	3.6	15	1.4	3.7	1.1	13	27	8.9	13	29
2	7.1	6.2	3.4	10	1.3	1.5	9.3	14	27	7.8	15	29
3	7.4	5.9	3.2	5.0	1.2	1.7	15	14	22	8.5	11	25
4	18	5.3	3.0	3.8	1.0	2.8	17	12	12	7.8	10	20
5	21	6.2	2.8	2.8	1.0	1.0	6.6	11	15	7.0	11	28
6	6.6	6.2	2.7	2.2	1.1	1.7	4.5	11	7.3	7.2	12	16
7	6.5	5.6	2.6	1.7	1.1	7.6	1.2	21	6.5	6.4	13	32
8	6.5	5.3	2.4	1.2	1.1	6.7	.82	22	6.6	6.1	12	34
9	6.6	5.9	2.3	1.2	1.1	7.0	1.1	21	6.3	6.6	18	10
10	15	4.8	2.2	1.2	1.1	2.0	2.7	11	6.7	5.6	25	15
11	7.7	4.3	2.1	1.5	1.0	1.7	1.8	13	24	4.2	27	22
12	7.4	5.6	1.9	1.7	.97	7.6	8.4	12	13	4.1	28	32
13	6.3	6.2	2.3	2.2	2.0	8.7	7.7	9.6	3.9	3.2	32	25
14	6.9	5.6	2.8	1.7	4.5	7.3	2.3	14	4.0	2.6	28	9.8
15	6.6	4.8	4.0	1.5	8.6	2.5	1.2	18	4.7	2.2	10	8.4
16	5.6	6.2	12	1.6	5.8	1.1	2.1	31	4.0	22	9.9	8.3
17	5.9	6.5	13	1.4	6.4	.86	.77	23	3.4	38	26	11
18	5.6	6.5	7.8	1.3	2.4	.80	.53	8.0	3.2	17	24	11
19	5.3	6.2	4.3	1.2	8.0	11	.47	6.6	3.5	9.3	9.8	9.9
20	5.3	5.9	3.2	1.0	7.9	7.6	9.7	7.6	3.1	8.2	18	8.6
21	5.3	5.9	3.0	1.0	3.5	1.3	7.8	7.9	2.5	12	34	9.6
22	8.3	5.6	3.0	1.0	1.6	.92	7.7	25	2.2	15	36	8.9
23	13	5.3	2.8	1.0	5.7	.85	11	5.9	1.9	38	36	9.2
24	6.2	15	2.6	2.7	1.5	.76	10	4.8	1.6	11	35	26
25	5.9	5.6	2.6	11	1.1	.66	9.8	4.8	5.1	10	8.5	21
26	12	5.0	2.7	5.6	1.0	.69	8.8	4.8	15	13	18	10
27	10	4.5	3.0	2.3	1.9	.74	8.0	3.9	30	13	25	9.3
28	5.9	4.3	3.0	2.3	8.3	.84	6.4	3.3	8.9	13	45	9.3
29	5.9	3.8	4.8	9.1	---	1.8	6.3	2.7	9.0	13	35	77
30	5.6	3.6	7.0	8.2	---	2.8	5.5	5.1	9.0	14	13	9.2
31	6.5	---	90	3.9	---	1.7	---	22	---	15	29	---
TOTAL	248.4	173.7	206.1	107.3	83.57	97.92	175.59	383.0	288.4	349.7	667.2	573.5
MEAN	8.01	5.79	6.65	3.46	2.98	3.16	5.85	12.4	9.61	11.3	21.5	19.1
MAX	21	15	90	15	8.6	11	17	31	30	38	45	77
MIN	5.3	3.6	1.9	1.0	.97	.66	.47	2.7	1.6	2.2	8.5	8.3
AC-FT	493	345	409	213	166	194	348	760	572	694	1320	1140

CAL YR 1984 TOTAL 2570.98 MEAN 7.02 MAX 90 MIN .17 AC-FT 5100  
WTR YR 1985 TOTAL 3354.38 MEAN 9.19 MAX 90 MIN .47 AC-FT 6650

## COLORADO RIVER BASIN

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## 08136000 CONCHO RIVER AT SAN ANGELO, TX

LOCATION.--Lat 31°27'16", long 100°24'37", Tom Green County, Hydrologic Unit 12090105, on left bank 0.4 mi downstream from confluence of North and South Concho Rivers, 1.8 mi southeast of Tom Green County Courthouse, and 61.9 mi upstream from mouth.

DRAINAGE AREA.--5,542 mi<sup>2</sup>, of which 1,131 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--September 1915 to current year. Prior to October 1969, published as "near San Angelo".

REVISED RECORDS.--WSP 568: 1915-16, 1919-22. WSP 1148: 1916-22(M), 1924(M), 1925-26, 1929(M), 1930-32, 1935-37. WSP 1512: 1917-18. WSP 1712: 1936. WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,776.79 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 11, 1917, nonrecording gage at same site and datum. Aug. 11, 1917, to May 15, 1963, water-stage recorder on right bank at same datum.

REMARKS.--Estimated daily discharges: Oct. 1-11, Mar. 2-4. Records good except those for estimated daily discharges which are fair. Many diversions upstream from station for irrigation, industrial, and municipal supply. Flow is regulated by Twin Buttes Reservoir (station 08131200) on the South Concho River and by O. C. Fisher Lake (station 08134500) on the North Concho River. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--47 years (water years 1916-62) prior to construction of Twin Buttes Dam, 158 ft<sup>3</sup>/s (114,500 acre-ft/yr); 23 years (water years 1963-85) regulated, 21.6 ft<sup>3</sup>/s (15,650 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft<sup>3</sup>/s Sept. 17, 1936 (gage height, 46.6 ft, from floodmarks), from rating curve extended above 105,000 ft<sup>3</sup>/s on basis of slope-area measurements of 167,000 and 230,000 ft<sup>3</sup>/s; no flow at times in 1921, 1952-53, 1965, and 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1853, 47.5 ft Aug. 6, 1906 (discharge, about 246,000 ft<sup>3</sup>/s), from information by local resident. Other large floods are known to have occurred in June 1853, August 1882, and April 1900.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 898 ft<sup>3</sup>/s Sept. 29 at 0500 hours (gage height, 4.17 ft); minimum daily, 0.03 ft<sup>3</sup>/s Sept. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	56	.16	.13	30	.22	1.3	.19	.16	.16	4.8	.19	.08
2	53	.16	.13	13	.22	.71	.19	.16	.13	.53	.19	.07
3	53	.17	.13	10	.22	.34	.19	.16	.15	.30	.19	.03
4	50	.23	.13	8.5	.25	.13	.19	.22	.16	.28	.19	.04
5	48	.25	.13	3.2	.33	.13	.19	.20	.27	.25	.19	.08
6	47	.25	.13	.18	.46	.13	.19	.19	2.3	.23	.19	.12
7	45	.27	.13	.16	.63	.13	.46	.19	2.7	.19	.19	.08
8	44	.29	.13	.16	.63	.13	1.8	.20	.22	.27	.19	.08
9	42	.31	.13	.16	.82	.13	.27	.16	.22	.29	.13	.08
10	41	.33	.13	.16	.82	.13	.25	.18	.19	.21	.13	.08
11	38	1.1	.13	.16	.82	.13	.22	.18	25	.19	.13	.08
12	24	.18	.13	.16	.71	.13	.22	.16	65	.19	.13	.08
13	10	.16	.13	.20	.49	.26	.22	.16	26	.18	.13	6.6
14	8.5	.14	.12	.35	.18	.26	.22	.16	12	.16	.43	29
15	2.4	.13	8.6	.34	.16	.74	.19	.16	10	.16	.27	9.2
16	.21	.13	23	.88	.16	.25	.15	15	10	.16	.44	.13
17	.16	3.0	11	.22	.16	.45	.16	118	9.0	.16	.13	2.9
18	.16	7.4	5.2	.18	.16	.97	.16	44	4.7	7.3	.11	.18
19	.16	2.2	.14	.16	.16	20	.16	18	.24	9.3	.11	2.4
20	.16	.15	.11	.16	.17	77	.16	16	.22	.35	.10	.11
21	.16	.13	.09	.16	.28	15	.16	21	.20	15	.09	.08
22	2.3	.64	.09	.16	2.6	7.1	.16	109	.18	14	.08	.07
23	82	5.6	.09	.16	13	5.4	.16	40	.16	125	.08	.06
24	26	49	.09	.16	11	4.5	.19	16	.13	56	.08	.06
25	17	39	.11	.16	6.4	4.0	.18	11	.13	21	.08	.06
26	48	15	.11	.16	.34	4.0	.16	7.8	.08	18	.07	.06
27	62	8.5	.11	.19	.26	4.4	.80	.34	56	8.4	.06	.05
28	21	3.7	.13	.22	.31	1.6	.21	.24	33	3.9	.06	.05
29	13	.16	.19	.25	---	.22	.24	.21	15	6.1	.10	298
30	4.3	.13	50	.27	---	.19	.16	.18	12	.33	.11	28
31	.18	---	315	.22	---	.19	---	.16	---	.23	.08	---
TOTAL	838.69	138.87	415.87	70.44	41.96	150.05	8.20	419.57	285.54	293.46	4.65	377.91
MEAN	27.1	4.63	13.4	2.27	1.50	4.84	.27	13.5	9.52	9.47	.15	12.6
MAX	82	49	315	30	13	77	1.8	118	65	125	.44	298
MIN	.16	.13	.09	.16	.16	.13	.15	.16	.08	.16	.06	.03
AC-FT	1660	275	825	140	83	298	16	832	566	582	9.2	750
CAL YR 1984	TOTAL	3541.77	MEAN	9.68	MAX	355	MIN	.02	AC-FT	7030		
WTR YR 1985	TOTAL	3045.21	MEAN	8.34	MAX	315	MIN	.03	AC-FT	6040		



## COLORADO RIVER BASIN

## 08136500 CONCHO RIVER AT PAINT ROCK, TX

LOCATION.--Lat 31°30'57", long 99°55'09", Concho County, Hydrologic Unit 12090105, near left bank at downstream end of pier of bridge on U.S. Highway 83, 0.5 mi north of Concho County Courthouse in Paint Rock, 2.7 mi downstream from Kickapoo Creek, and 20.0 mi upstream from mouth.

DRAINAGE AREA.--6,574 mi<sup>2</sup>, of which 1,131 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1915 to current year. Prior to October 1970, published as "near Paint Rock".

REVISED RECORDS.--WSP 458: 1915-16. WSP 568: 1919-20. WSP 1712: 1922(M). WSP 1732: 1918(M), 1923(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder with masonry dam control. Datum of gage is 1,574.36 ft above National Geodetic Vertical Datum of 1929. See WSP 1922 for history of changes prior to Jan. 15, 1940.

REMARKS.--No estimated daily discharges. Records good, except those below 0.10 ft<sup>3</sup>/s, which are poor. There are many diversions above station for irrigation and municipal supply. Regulation is the same as that for Concho River at San Angelo (station 08136000). Flow is affected at times by discharge from flood-detention pools of two flood-water-retarding structures with a combined detention capacity of 2,690 acre-ft. These structures control runoff from 16.5 mi<sup>2</sup> in the Willow Creek drainage basin.

AVERAGE DISCHARGE.--47 years (water years 1916-62) prior to construction of Twin Buttes Dam, 210 ft<sup>3</sup>/s (152,100 acre-ft/yr); 23 years (water years 1963-85) regulated, 55.8 ft<sup>3</sup>/s (40,430 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 301,000 ft<sup>3</sup>/s Sept. 17, 1936 (gage height, 43.4 ft, from flood-marks), from rating curve extended above 98,000 ft<sup>3</sup>/s on basis of slope-area measurements of 144,000 and 301,000 ft<sup>3</sup>/s; no flow at times.  
Maximum stage since at least 1853, that of Sept. 17, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in August 1882 reached a stage of about 39.9 ft, and flood in August 1906 reached a stage of 39.5 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,200 ft<sup>3</sup>/s Apr. 21 at 0430 hours (gage height, 14.19 ft); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	26	21	642	15	24	16	10	6.0	29	7.6	.00
2	41	16	17	188	14	18	15	5.6	6.0	23	4.4	.00
3	29	17	15	75	15	17	15	4.6	5.9	25	2.0	.00
4	35	16	15	46	17	16	13	1.9	4.8	17	1.0	.00
5	60	14	14	39	19	16	10	.87	5.0	15	1.3	.00
6	110	13	14	37	18	16	7.4	.84	6.0	12	1.7	.00
7	76	13	14	43	17	17	5.5	3.6	5.7	11	1.1	.00
8	38	13	15	40	17	16	4.2	19	4.0	8.5	.98	.00
9	27	14	16	37	17	16	2.8	5.7	1.9	6.1	.58	.00
10	23	13	15	32	18	16	2.0	2.9	1.2	5.0	.32	.00
11	21	13	15	31	16	15	1.7	1.9	4.1	3.8	.54	.00
12	24	14	15	31	15	14	2.1	1.0	4.1	3.1	3.3	.00
13	34	14	16	32	15	17	2.2	.63	4.8	1.9	1.7	.00
14	33	16	16	33	17	20	2.3	.27	4.0	1.2	1.7	.00
15	25	15	19	32	17	16	1.9	.22	26	1.1	1.6	.00
16	15	14	19	34	16	17	1.2	.41	19	.94	.60	.04
17	15	16	21	36	16	17	.85	.63	11	.61	.30	.06
18	16	19	27	37	18	17	.69	75	8.8	.27	.15	.04
19	13	18	32	33	19	20	.74	32	12	.10	.04	.03
20	12	18	27	13	19	55	.71	41	13	.08	.02	.02
21	11	27	24	13	18	57	406	27	8.6	.05	.00	.00
22	11	23	21	13	17	76	31	32	6.9	.05	.00	.00
23	14	21	18	15	17	44	12	57	5.7	.14	.00	.00
24	18	22	18	17	17	30	8.0	103	4.5	65	.00	.01
25	63	27	17	20	19	26	6.3	48	3.8	112	.00	.14
26	61	50	17	21	20	24	4.8	29	2.5	55	.00	.32
27	54	51	18	18	25	22	3.9	22	82	35	.00	.84
28	64	32	20	14	25	22	3.0	18	57	26	.00	4.4
29	70	26	18	15	---	22	9.6	17	33	23	.00	113
30	43	22	23	17	---	19	21	14	46	19	.00	446
31	32	---	425	16	---	18	---	8.7	---	13	.00	---
TOTAL	1156	613	982	1670	493	740	610.89	583.77	403.3	512.94	30.93	564.90
MEAN	37.3	20.4	31.7	53.9	17.6	23.9	20.4	18.8	13.4	16.5	1.00	18.8
MAX	110	51	425	642	25	76	406	103	82	112	7.6	446
MIN	11	13	14	13	14	14	.69	.22	1.2	.05	.00	.00
AC-FT	2290	1220	1950	3310	978	1470	1210	1160	800	1020	61	1120
CAL YR 1984	TOTAL	5401.68	MEAN 14.8	MAX 425	MIN .03	AC-FT 10710						
WTR YR 1985	TOTAL	8360.73	MEAN 22.9	MAX 642	MIN .00	AC-FT 16580						

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1967 to current year. Pesticide analyses: October 1967 to September 1981.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURES: October 1967 to current year.

SUSPENDED SEDIMENT DISCHARGE: February 1978 to September 1981.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,690 microsiemens June 28, Aug. 12, 1984; minimum daily, 268 microsiemens Sept. 9, 1980.

WATER TEMPERATURES (1967-73, 1975-85): Maximum daily, 35.0°C on several days during summer months; minimum daily, 0.0°C on many days during winter months.

SEDIMENT CONCENTRATIONS (1978-81): Maximum daily mean, 4,190 mg/L Sept. 9, 1980; minimum daily mean, 3 mg/L Feb. 2, 1979.

SEDIMENT LOADS (1978-81): Maximum daily, 269,000 tons Sept. 9, 1980; minimum daily, 0.0 tons on several days during September 1980.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,870 microsiemens Oct. 2; minimum daily, 500 microsiemens Apr. 21.

WATER TEMPERATURES: Maximum daily, 31.0°C July 11, 21, Aug. 7; minimum daily, 1.0°C Jan. 16.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CAC03)	
OCT 25...	1520	68	1560	7.8	15.0	55	24	10.2	107	3.2	430	
DEC 12...	1330	15	2570	8.1	13.5	5	8.9	10.3	106	3.0	720	
FEB 22...	1100	14	2400	8.5	15.0	25	12	8.3	88	13	650	
APR 10...	1330	4.0	2730	8.1	18.0	7	21	7.9	89	3.2	760	
JUN 18...	1515	8.4	2370	8.0	29.0	25	17	10.0	139	4.5	600	
AUG 22...	1530	.20	1880	8.4	30.0	25	19	12.0	170	4.2	560	
DATE		HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 25...	260	94	48	150	3	7.8	170	150	310	.50	14	
DEC 12...	480	150	84	270	4	6.0	240	280	540	.60	15	
FEB 22...	560	120	85	260	5	6.2	95	360	560	.50	9.3	
APR 10...	550	160	88	290	5	5.7	208	320	600	.50	15	
JUN 18...	460	120	73	250	5	8.1	139	250	550	.50	18	
AUG 22...	440	110	70	230	4	7.5	123	210	490	.60	20	
DATE		SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 25...	880	46	7	1.3	.050	1.3	.050	.95	1.0	.050	5.4	
DEC 12...	1500	8	6	6.7	.050	6.7	.070	1.0	1.1	.020	4.3	
FEB 22...	1500	34	12	3.2	.100	3.3	.180	1.7	1.9	.070	6.8	
APR 10...	1600	26	7	.95	.050	1.0	.190	1.4	1.6	.160	5.5	
JUN 18...	1400	33	16	.18	.020	.20	.100	1.0	1.1	.130	91	
AUG 22...	1200	46	16	--	<.010	<.10	.070	.73	.80	.100	15	

## COLORADO RIVER BASIN

08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
DEC 12...	1330	2	200	<1	<10	2	70
JUN 18...	1515	11	<100	<1	<10	2	40

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 12...	1	<10	<.1	1	1	10
JUN 18...	7	<10	.2	2	<1	30

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	1156	1800	1030	3200	360	1120	200	610	530
NOV.	1984	613	2100	1210	2010	430	713	240	402	630
DEC.	1984	982	1710	975	2590	340	904	180	489	500
JAN.	1985	1670	1630	925	4170	320	1450	170	764	480
FEB.	1985	493	2300	1330	1770	480	637	280	369	690
MAR.	1985	740	2500	1460	2920	530	1060	320	631	760
APR.	1985	610.89	922	522	861	180	297	94	154	270
MAY	1985	583.77	1730	988	1560	350	545	190	295	510
JUNE	1985	403.3	1610	913	995	320	345	170	183	470
JULY	1985	512.94	1990	1140	1580	400	558	220	310	590
AUG.	1985	30.93	1790	1020	85	360	30	190	16	520
SEPT	1985	564.90	1940	1110	1700	390	597	220	328	570
TOTAL		8360.73	**	**	23400	**	8260	**	4550	**
WTD.AVG.		23	1810	1040	**	370	**	200	**	540

## 08136500 CONCHO RIVER AT PAINT ROCK, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985												
DAY	EQUIVALENT MEAN											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2600	2020	2200	1240	2170	2260	2500	1030	1430	1610	1600	---
2	2870	2070	2350	1900	2190	2500	2570	1210	1560	1850	1710	---
3	2800	1980	2400	1960	2160	2480	2600	1270	1680	1880	1860	---
4	1780	2050	2500	2000	2100	2500	2660	1460	1950	1860	1760	---
5	1720	1960	2400	2010	2170	2520	2680	1570	1760	1880	1830	---
6	1600	2060	2250	2020	2160	2570	2660	1780	2040	1800	1820	---
7	1650	2080	2600	1950	2150	2550	2650	1610	2320	1830	1830	---
8	1700	2090	2500	2000	2160	2600	2670	1370	1950	1870	1890	---
9	1690	2100	2420	1900	2170	2630	2690	1450	2000	1880	1870	---
10	1670	2040	2450	1600	2200	2650	2700	1570	1950	1950	1930	---
11	1600	2080	2000	2000	2300	2640	2750	1610	2430	1910	1960	---
12	1580	2090	1600	2010	2330	2670	2700	1640	2480	1920	1800	---
13	1400	2090	1700	1920	2210	2650	2760	1660	2520	2060	1990	---
14	1370	2050	1800	1800	2300	2610	2600	1680	2550	2100	1960	---
15	1600	2090	2400	1940	2360	2660	2550	1700	1800	2050	1980	---
16	1630	2070	2530	1810	2180	2580	2500	1720	1680	2070	1990	2110
17	1650	2020	2600	1780	2360	2550	2700	1700	1500	2100	2010	2260
18	1850	1990	2000	1750	2380	2670	2750	1250	1710	2160	2000	2250
19	1680	2030	1900	1730	2370	2610	2720	2450	2440	2100	1990	2240
20	1640	2100	1960	1760	2400	2520	2730	2260	2520	2070	2060	2260
21	1550	2090	2000	1780	2410	2500	500	2450	1990	2040	---	---
22	1770	2080	1920	1770	2400	2430	700	2640	1540	2140	---	---
23	1660	2090	1840	1760	2440	2400	820	1900	1530	2110	---	---
24	1690	2120	1800	1780	2480	2370	900	1700	1540	2180	---	2300
25	1800	2060	1580	1790	2460	2310	810	1600	1670	2010	---	2310
26	1700	1970	1300	1810	2480	2360	600	1470	1460	2230	---	2350
27	1600	2080	1900	1700	2390	2420	920	1350	1240	2220	---	2380
28	1800	2400	1300	1530	2300	2480	1170	1500	1310	2070	---	2100
29	1700	2450	1500	1750	---	2550	1100	1400	1430	1830	---	2020
30	1750	2490	1570	1730	---	2580	970	1350	1560	1750	---	1920
31	1800	---	1300	1760	---	2600	---	1300	---	1710	---	---
MEAN	1770	2100	2020	1810	2290	2530	2050	1630	1850	1980	1890	2210

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985												
DAY	ONCE-DAILY											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22.0	24.0	21.0	---	8.0	19.0	20.0	26.0	27.0	26.0	30.0	---
2	20.0	23.0	---	5.0	---	20.0	19.0	23.0	---	29.0	30.0	---
3	21.0	24.0	20.0	6.0	---	---	20.0	24.0	26.0	25.0	29.0	---
4	22.0	23.0	19.0	8.0	9.0	18.0	20.0	25.0	27.0	26.0	29.0	---
5	23.0	22.0	19.0	8.0	9.0	16.0	20.0	24.0	28.0	27.0	30.0	---
6	23.0	24.0	17.0	10.0	---	16.0	19.0	25.0	26.0	28.0	30.0	---
7	24.0	23.0	16.0	11.0	8.0	20.0	---	26.0	27.0	---	31.0	---
8	23.0	24.0	17.0	13.0	8.0	19.0	19.0	25.0	27.0	27.0	30.0	---
9	22.0	22.0	---	15.0	10.0	19.0	19.0	25.0	---	28.0	30.0	---
10	25.0	24.0	18.0	12.0	13.0	---	18.0	25.0	25.0	29.0	30.0	---
11	24.0	23.0	20.0	9.0	14.0	19.0	20.0	26.0	26.0	31.0	28.0	---
12	25.0	21.0	19.0	5.0	13.0	18.0	20.0	---	25.0	28.0	30.0	---
13	26.0	22.0	---	4.0	11.0	19.0	22.0	24.0	26.0	29.0	29.0	---
14	23.0	23.0	17.0	6.0	13.0	18.0	27.0	24.0	27.0	28.0	---	---
15	26.0	22.0	18.0	6.0	---	19.0	---	26.0	26.0	27.0	29.0	---
16	23.0	26.0	---	1.0	16.0	18.0	26.0	25.0	28.0	29.0	30.0	25.0
17	23.0	24.0	17.0	9.0	14.0	18.0	26.0	26.0	26.0	30.0	29.0	24.0
18	23.0	---	18.0	8.0	14.0	17.0	24.0	25.0	---	30.0	---	25.0
19	20.0	23.0	17.0	---	15.0	15.0	25.0	---	28.0	29.0	30.0	26.0
20	21.0	24.0	16.0	---	16.0	16.0	---	23.0	26.0	30.0	29.0	24.0
21	22.0	23.0	17.0	12.0	18.0	17.0	---	22.0	26.0	31.0	---	---
22	23.0	21.0	---	11.0	19.0	20.0	22.0	23.0	27.0	30.0	---	---
23	20.0	20.0	---	10.0	---	19.0	23.0	23.0	27.0	29.0	---	---
24	22.0	20.0	17.0	12.0	27.0	20.0	23.0	24.0	27.0	28.0	---	24.0
25	22.0	23.0	---	11.0	21.0	22.0	26.0	23.0	27.0	27.0	---	25.0
26	23.0	---	13.0	9.0	21.0	20.0	24.0	---	26.0	---	---	26.0
27	23.0	22.0	15.0	---	20.0	24.0	---	25.0	24.0	28.0	---	26.0
28	26.0	23.0	14.0	8.0	19.0	25.0	---	27.0	25.0	28.0	---	25.0
29	24.0	18.0	15.0	13.0	---	23.0	26.0	28.0	---	29.0	---	24.0
30	24.0	20.0	---	13.0	---	21.0	---	28.0	25.0	27.0	---	23.0
31	25.0	---	13.0	10.0	---	20.0	---	28.0	---	27.0	---	---
MEAN	23.0	22.5	17.0	9.0	14.5	19.0	22.0	25.0	26.5	28.5	29.5	25.0



## COLORADO RIVER MAIN STEM

08136700 COLORADO RIVER NEAR STACY, TX

LOCATION.--Lat 31°29'37", long 99°34'25", Coleman County, Hydrologic Unit 12090106, on left bank at downstream side of bridge on Farm Road 503, 1.2 mi upstream from Bois d'Arc Creek, 1.8 mi northeast of Stacy, 24 mi downstream from Concho River, and at mile 604.8.

DRAINAGE AREA.--24,193 mi<sup>2</sup>, approximately, of which 11,391 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1968 to current year. Prior to October 1970, published as "at Stacy".

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,394.66 ft above National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation bridge plans).

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal, and oilfield operation uses. Sewage effluent is returned to the river above station. Flow is affected by reservoirs upstream (see stations 08126380 and 08136000), and at times by discharge from the flood-detention pools of 42 floodwater-retarding structures with a combined detention capacity of 56,730 acre-ft. These control runoff from 277 mi<sup>2</sup> above station.

AVERAGE DISCHARGE.--17 years (water years 1969-85), 198 ft<sup>3</sup>/s (143,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,000 ft<sup>3</sup>/s Sept. 10, 1980 (gage height, 28.00 ft); no flow at times in 1974, 1980, and 1983-85.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since since at least 1882, 356,000 ft<sup>3</sup>/s Sept. 18, 1936 (gage height, 64.59 ft), by slope-area measurement of peak flow. The flood of Sept. 18, 1936, was 4 ft higher than the 1906 flood and 7 to 8 ft higher than the 1882 flood, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,430 ft<sup>3</sup>/s Oct. 7 at 0300 hours (gage height, 10.87 ft); no flow Aug. 29 to Sept. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	106	56	1460	28	45	35	366	34	143	106	.00
2	121	85	49	808	29	43	39	183	23	107	83	.00
3	89	72	46	382	29	40	29	104	17	78	64	.00
4	65	60	43	217	28	36	24	69	14	131	49	.00
5	184	50	37	149	28	34	17	48	35	95	38	.00
6	510	39	32	117	27	28	13	35	63	56	30	.00
7	2370	31	26	99	26	27	11	34	29	39	23	.00
8	249	29	23	87	27	28	8.8	61	17	29	18	.00
9	123	24	19	80	28	28	7.7	28	11	24	14	.00
10	79	19	18	74	28	28	6.0	18	6.8	17	9.8	.00
11	118	16	16	69	24	27	5.0	9.9	6.1	12	6.1	.00
12	62	16	15	63	22	22	4.0	7.4	23	10	4.3	.00
13	45	14	17	59	22	32	3.5	6.5	18	8.2	3.4	.00
14	76	12	18	64	22	55	3.2	4.9	41	6.9	2.2	.00
15	101	11	22	61	24	53	1.7	3.9	31	5.7	1.6	.00
16	213	11	27	51	21	43	1.4	4.7	22	4.7	2.3	.00
17	120	10	26	49	20	38	1.0	117	15	3.1	2.5	.00
18	84	13	27	49	20	38	.57	36	11	1.9	2.4	.00
19	65	13	27	45	20	41	.30	139	14	1.1	1.8	.00
20	43	13	27	40	19	106	.10	176	20	.90	1.2	.00
21	34	13	38	39	18	97	262	138	18	2.6	.75	.00
22	297	15	45	39	20	145	352	205	14	6.2	.49	.00
23	218	19	39	39	21	131	306	181	10	6.5	.29	.00
24	143	30	33	38	21	110	128	386	8.4	7.6	.21	.00
25	123	52	28	33	71	87	77	283	7.6	7.5	.13	.00
26	283	39	24	31	84	74	53	173	7.1	95	.08	.00
27	523	28	21	30	62	62	40	111	107	202	.05	.00
28	515	34	20	30	49	48	28	81	137	222	.02	.00
29	309	76	20	30	---	42	106	63	222	264	.00	.18
30	224	68	22	28	---	32	420	50	177	191	.00	50
31	147	---	891	27	---	28	---	42	---	138	.00	---
TOTAL	7670	1018	1752	4387	838	1648	1983.27	3164.3	1159.0	1915.90	464.62	50.18
MEAN	247	33.9	56.5	142	29.9	53.2	66.1	102	38.6	61.8	15.0	1.67
MAX	2370	106	891	1460	84	145	420	386	222	264	106	50
MIN	34	10	15	27	18	22	.10	3.9	6.1	.90	.00	.00
AC-FT	15210	2020	3480	8700	1660	3270	3930	6280	2300	3800	922	100
CAL YR 1984	TOTAL	16073.26	MEAN	43.9	MAX	2370	MIN	.00	AC-FT	31880		
WTR YR 1985	TOTAL	26050.27	MEAN	71.4	MAX	2370	MIN	.00	AC-FT	51670		

COLORADO RIVER MAIN STEM

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08136700 COLORADO RIVER NEAR STACY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1968 to current year. Sediment analyses: October 1974 to September 1979.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1968 to current year.

WATER TEMPERATURES: April 1968 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,030 microsiemens Oct. 29, 1983; minimum daily, 188 microsiemens July 29, 1971.

WATER TEMPERATURES: Maximum daily, 35.0°C July 1, 1980; minimum daily, 0.0°C Feb. 9, 10, 1981.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,310 microsiemens Oct. 5; minimum daily, 350 microsiemens Oct. 7.

WATER TEMPERATURES: Maximum daily, 34.0°C May 29, 31, Aug. 23; minimum daily, 3.0°C Feb. 2.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 11...	1600	91	627	23.5	180	91	50	14	48
NOV 07...	1640	32	968	19.5	290	160	71	27	77
FEB 04...	0955	29	1490	3.5	490	330	120	46	140
APR 29...	0915	24	1820	23.5	510	410	110	57	160
JUL 22...	1025	6.4	1720	28.0	440	330	100	46	170

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 11...	2	3.9	92	68	93	.20	9.2	340
NOV 07...	2	5.5	130	120	160	.30	9.4	550
FEB 04...	3	5.1	160	230	280	.30	4.2	920
APR 29...	3	6.9	97	320	330	.30	2.8	1000
JUL 22...	4	8.1	110	220	360	.40	11	980

## COLORADO RIVER MAIN STEM

08136700 COLORADO RIVER NEAR STACY, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1984	7670	975	562	11600	180	3630	140	2850	290
NOV. 1984	1018	1010	572	1570	180	482	130	356	290
DEC. 1984	1752	1420	822	3890	260	1210	200	951	420
JAN. 1985	4387	905	512	6060	160	1860	120	1370	260
FEB. 1985	838	1620	941	2130	300	669	240	536	480
MAR. 1985	1648	1880	1110	4940	350	1570	290	1300	570
APR. 1985	1983.27	1380	797	4270	250	1330	200	1050	410
MAY 1985	3164.3	985	556	4750	170	1450	130	1070	280
JUNE 1985	1159.0	1010	571	1790	170	547	130	403	290
JULY 1985	1915.90	1530	891	4610	280	1450	230	1170	450
AUG. 1985	464.62	2010	1200	1500	380	481	320	407	610
SEPT 1985	50.18	1490	863	117	270	37	210	29	440
TOTAL	26050.27	**	**	47300	**	14700	**	11500	**
WTD.AVG.	71	1170	672	**	210	**	160	**	340

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	810	640	1600	420	1400	1600	2190	700	1100	1060	2420	---
2	1140	710	1540	900	1500	1670	2200	1160	1050	970	2390	---
3	1730	820	1500	1000	1480	1750	2260	1750	1160	910	2040	---
4	1950	850	1600	1100	1500	1770	2280	1250	1150	720	1880	---
5	3310	880	1650	1200	1530	1780	2300	1190	1170	910	1720	---
6	2200	900	1660	1220	1540	1790	2320	1100	1140	1210	1620	---
7	350	930	1630	1200	1560	1760	2340	1050	1120	1300	1630	---
8	410	950	1640	1260	1520	1770	2330	1000	1170	1380	1550	---
9	540	980	1710	1300	1540	1800	2340	950	1200	1440	1520	---
10	570	1000	1760	1280	1560	1880	2360	900	1240	1510	1500	---
11	607	1030	1800	1300	1600	1900	2350	1000	1210	1530	1470	---
12	830	1020	1900	1100	1630	1920	2360	1040	1160	1550	1440	---
13	560	1000	1830	1220	1610	1960	2350	1020	1200	1600	1450	---
14	510	1020	1800	1300	1600	1970	2340	1030	1020	1640	1400	---
15	770	1030	1750	1340	1580	2030	2350	1040	1060	1660	1420	---
16	1830	1050	1560	1400	1630	2060	2360	1030	1190	1690	1400	---
17	1850	1060	1600	1310	1670	2100	2370	800	1200	1720	1380	---
18	1890	1110	1650	1200	1700	2150	2400	900	1240	1740	1410	---
19	1930	1100	1600	1300	1600	2210	2380	810	1310	1750	1390	---
20	1770	1120	1820	1390	1670	1970	2390	800	1300	1730	1400	---
21	1700	1130	1780	1500	1730	2050	1650	1000	1340	1750	1390	---
22	1280	1160	1600	1530	1760	1810	1200	900	1360	1760	1400	---
23	1010	1180	1610	1510	1850	1760	1250	1150	1370	1780	1390	---
24	990	1200	1620	1540	1910	1740	1300	1100	1380	1850	1380	---
25	670	1320	1640	1520	1630	1760	1370	900	1400	1930	1400	---
26	440	1200	1670	1500	1650	1750	1500	940	1420	1960	1410	---
27	1320	1250	1700	1540	1700	1830	1660	990	1100	1700	1420	---
28	1290	1270	1730	1550	1670	1950	1730	1000	920	1610	1450	---
29	950	1300	1750	1530	---	2060	1820	1040	750	1590	---	2320
30	810	1400	1700	1560	---	2160	850	1070	880	2340	---	1490
31	670	---	1200	1600	---	2220	---	1100	---	2180	---	---
MEAN	1180	1050	1660	1310	1620	1900	2030	1020	1180	1560	1560	1910

COLORADO RIVER MAIN STEM

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08136700 COLORADO RIVER NEAR STACY, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	23.0	13.0	---	5.0	15.0	18.0	25.0	31.0	29.0	32.0	
2	19.0	20.0	---	7.0	3.0	18.0	20.0	25.0	28.0	30.0	32.0	
3	20.0	20.0	12.0	6.0	---	19.0	20.0	26.0	---	30.0	32.0	
4	---	---	10.0	8.0	5.0	---	21.0	27.0	31.0	---	---	
5	22.0	20.0	10.0	8.0	5.0	17.0	21.0	---	28.0	31.0	32.0	
6	24.0	19.0	10.0	---	8.0	16.0	22.0	27.0	27.0	33.0	32.0	
7	---	18.0	10.0	12.0	8.0	19.0	---	28.0	31.0	---	33.0	
8	---	20.0	11.0	11.0	5.0	18.0	17.0	28.0	33.0	32.0	32.0	
9	23.0	21.0	---	11.0	10.0	20.0	19.0	27.0	---	31.0	33.0	
10	21.0	20.0	15.0	11.0	---	13.0	20.0	27.0	32.0	33.0	32.0	
11	24.0	---	15.0	8.0	10.0	---	22.0	28.0	29.0	33.0	---	
12	25.0	---	15.0	6.0	11.0	19.0	21.0	---	27.0	31.0	31.0	
13	23.0	18.0	15.0	---	11.0	11.0	23.0	27.0	27.0	32.0	32.0	
14	---	18.0	13.0	5.0	13.0	11.0	---	25.0	28.0	---	32.0	
15	26.0	19.0	13.0	6.0	---	16.0	24.0	25.0	30.0	32.0	29.0	
16	24.0	17.0	---	7.0	12.0	15.0	24.0	27.0	31.0	31.0	31.0	
17	---	16.0	14.0	---	---	16.0	26.0	25.0	29.0	33.0	31.0	
18	---	---	12.0	8.0	13.0	15.0	26.0	25.0	28.0	32.0	---	
19	20.0	13.0	12.0	10.0	15.0	---	26.0	---	29.0	30.0	32.0	
20	22.0	12.0	15.0	---	15.0	15.0	26.0	24.0	---	31.0	32.0	
21	18.0	11.0	15.0	7.0	16.0	15.0	26.0	21.0	30.0	---	32.0	
22	16.0	---	15.0	7.0	17.0	15.0	25.0	21.0	30.0	30.0	33.0	
23	15.0	11.0	---	7.0	16.0	19.0	25.0	25.0	---	29.0	34.0	
24	15.0	13.0	15.0	8.0	---	---	---	25.0	29.0	29.0	31.0	
25	16.0	---	---	9.0	16.0	22.0	26.0	27.0	30.0	30.0	---	
26	18.0	13.0	10.0	9.0	17.0	20.0	27.0	---	28.0	31.0	32.0	
27	---	12.0	14.0	---	16.0	22.0	25.0	---	25.0	31.0	29.0	
28	---	11.0	15.0	11.0	13.0	23.0	---	31.0	30.0	---	30.0	
29	20.0	11.0	16.0	12.0	---	23.0	25.0	34.0	27.0	33.0	---	
30	22.0	13.0	---	14.0	---	20.0	27.0	32.0	---	32.0	---	
31	22.0	---	13.0	8.0	---	---	---	34.0	---	30.0	---	
MEAN	20.5	16.0	13.0	8.5	11.5	17.5	23.0	27.0	29.0	31.0	31.5	



## COLORADO RIVER MAIN STEM

08138000 COLORADO RIVER AT WINCHELL, TX

LOCATION.--Lat 31°28'04", long 99°09'43", McCulloch-Brown County line, Hydrologic Unit 12090106, near left bank on downstream end of pier of bridge on U.S. Highway 377, 0.3 mi south of Winchell, 5.9 mi downstream from Home Creek, and at mile 560.7.

DRAINAGE AREA.--25,179 mi<sup>2</sup>, approximately, of which 11,391 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1923 to September 1934 (published as "near Milburn"), June 1939 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,264.86 ft above National Geodetic Vertical Datum of 1929. November 1923 to September 1934, nonrecording gage at site 4.2 mi downstream at datum 10.14 ft lower. Jan. 13, 1939, to Mar. 24, 1940, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Many diversions above station for irrigation, municipal supply and oilfield operation. Flow is affected by reservoirs upstream (see stations 08126380 and 08136000) and at times by discharge from the flood-detention capacity polls of 89 floodwater-retarding structures with a combined detention of 105,100 acre-ft. These structures control runoff from 512 mi<sup>2</sup>.

AVERAGE DISCHARGE.--39 years (water years 1925-34, 1940-68) prior to completion of Robert Lee Dam, 628 ft<sup>3</sup>/s (455,000 acre-ft/yr); 17 years (water years 1969-85) partially regulated, 244 ft<sup>3</sup>/s (176,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,100 ft<sup>3</sup>/s Oct. 15, 1930 (gage height, 51.8 ft, present site and datum); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Highest stages since 1882 were 62.2 ft on Sept. 19, 1936, and 56.2 ft on Aug. 8, 1906, at railway bridge 1,000 ft upstream and converted to present site and datum, from information by Gulf, Colorado, and Santa Fe Railway Co.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,000 ft<sup>3</sup>/s Dec. 31 at 1300 hours (gage height, 23.96 ft); no flow Aug. 21 to Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	231	66	3670	35	61	42	500	48	171	135	.00
2	1.7	161	63	2270	34	52	37	390	36	146	101	.00
3	77	120	53	1230	34	48	34	225	27	108	76	.00
4	97	92	49	768	35	43	38	141	19	83	57	.00
5	100	73	48	488	36	41	35	93	294	73	44	.00
6	283	60	47	328	36	40	31	66	3280	113	36	.00
7	3760	51	45	250	36	36	27	50	431	69	28	.00
8	1220	46	40	201	35	34	24	44	142	48	23	.00
9	486	41	37	168	34	33	20	46	74	36	17	.00
10	259	36	33	140	34	32	17	60	49	28	12	.00
11	167	31	30	118	34	32	16	41	37	22	7.6	.00
12	201	28	28	104	33	31	15	27	32	18	4.3	.00
13	130	25	90	97	33	36	14	21	25	13	2.2	.00
14	693	24	143	90	31	70	13	15	18	9.2	1.3	.00
15	200	23	55	83	28	60	12	12	14	5.6	.91	.00
16	129	22	51	79	28	59	11	8.5	21	4.3	.81	.00
17	235	21	51	76	27	60	8.7	8.2	34	3.6	.63	.00
18	161	20	44	70	27	52	6.5	17	27	2.1	.32	.00
19	105	20	35	69	27	46	4.8	76	21	1.4	.09	.00
20	103	19	34	62	27	856	3.9	42	16	1.3	.03	.00
21	65	18	34	57	27	529	4.1	206	12	2.6	.00	.00
22	46	18	34	51	27	255	113	287	11	11	.00	.00
23	229	18	35	49	32	219	405	703	8.4	8.3	.00	.00
24	334	31	42	48	32	191	318	348	12	4.3	.00	.00
25	267	71	39	47	31	160	159	449	16	2.7	.00	.00
26	779	70	35	45	29	117	94	338	12	2.6	.00	.00
27	1610	53	33	42	61	94	65	224	142	1.4	.00	.00
28	1250	47	31	40	74	78	50	175	441	72	.00	.00
29	795	40	30	39	---	66	51	116	193	166	.00	.00
30	545	35	101	38	---	56	45	81	206	243	.00	.00
31	341	---	10500	36	---	48	---	60	---	186	.00	---
TOTAL	14671.1	1545	11956	10853	957	3535	1714.0	4869.7	5698.4	1655.4	547.19	.00
MEAN	473	51.5	386	350	34.2	114	57.1	157	190	53.4	17.7	.00
MAX	3760	231	10500	3670	74	856	405	703	3280	243	135	.00
MIN	1.7	18	28	36	27	31	3.9	8.2	8.4	1.3	.00	.00
AC-FT	29100	3060	23710	21530	1900	7010	3400	9660	11300	3280	1090	.00
CAL YR 1984	TOTAL	37584.73		MEAN	103	MAX	10500	MIN	.00	AC-FT	74550	
WTR YR 1985	TOTAL	58001.79		MEAN	159	MAX	10500	MIN	.00	AC-FT	115000	

## COLORADO RIVER MAIN STEM

08138000 COLORADO RIVER AT WINCHELL, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: November 1967 to September 1985 (discontinued).

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 10...	1750	236	439	23.0	150	64	45	8.2	29
NOV 07...	1000	52	877	16.0	260	150	66	24	68
DEC 17...	1535	51	699	12.0	220	120	57	18	50
FEB 04...	1545	36	1210	4.0	410	270	110	34	110
MAR 18...	1610	51	1430	15.0	450	310	110	42	120
APR 29...	1500	50	1340	24.5	420	320	100	41	110
JUN 03...	1520	27	1040	30.0	330	210	85	28	82
JUL 22...	1540	14	1290	31.0	430	320	110	37	99

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 10...	1	3.9	82	45	56	.20	8.1	240
NOV 07...	2	5.0	110	110	140	.30	8.6	490
DEC 17...	2	4.5	100	87	100	.20	6.0	380
FEB 04...	2	4.6	150	190	210	.30	5.4	750
MAR 18...	3	5.2	140	230	250	.30	2.1	840
APR 29...	2	6.0	104	260	220	.30	3.6	800
JUN 03...	2	7.3	121	190	150	.30	7.7	620
JUL 22...	2	7.2	108	220	220	.30	13	770

## COLORADO RIVER BASIN

08140600 LAKE CLYDE NEAR CLYDE, TX

LOCATION.--Lat 32°19'05", long 99°28'43", Callahan County, Hydrologic Unit 12090107, at Clyde pump station, 0.6 mi west of dam on North Prong Pecan Bayou, 2.1 mi downstream from bridge on Farm Road 604, and 7.0 mi southeast of Clyde.

DRAINAGE AREA.--36.9 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1970 to September 1985 (discontinued).

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a rolled earthfill dam, 3,950 ft long. Appreciable storage began in April 1970, and the dam was completed in May 1970. The uncontrolled emergency spillways are two 200-foot-wide cut channels through natural ground located at left end of dam. The service spillway is an uncontrolled 3.5- by 10.5-foot reinforced concrete drop inlet connected to a 42-inch concrete outlet pipe. A 14-inch controlled drain pipe is connected to the drop inlet. There are four 4.83- by 3.50-foot rectangular slots, two on each side, divided by a 10-inch concrete web. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,888.9	16,530
Crest of spillway.....	1,881.4	10,840
Crest of spillway (invert of drop inlet).....	1,872.0	5,720
Lowest gated outlet (invert).....	1,842.2	60

COOPERATION.--Record of lake elevations furnished by the city of Clyde. Capacity table was furnished by the Soil Conservation Service.

EXTREMES (AT 0700) FOR PERIOD OF RECORD.--Maximum contents, 10,580 acre-ft Oct. 14, 1971 (elevation, 1,881.0 ft); minimum, 877 acre-ft Oct. 18, 19, 1984 (elevation, 1,855.2 ft).

EXTREMES (AT 0800) FOR CURRENT YEAR.--Maximum contents observed, 1,690 acre-ft July 26-30 (elevation, 1,859.9 ft); minimum observed, 877 acre-ft Oct. 18, 19 (elevation, 1,855.2 ft).

Capacity table (elevation, in feet, and total contents, in acre-feet)

1,855.0	851	1,859.0	1,500
1,857.0	1,140	1,860.0	1,710

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	917	1310	1240	1500	1460	1500	1630	1520	1420	1380	1670	1420
2	917	1310	1240	1500	1460	1500	1610	1520	1420	1380	1650	1420
3	903	1310	1240	1520	1460	1500	1610	1500	1420	1380	1650	1400
4	903	1310	1240	1520	1460	1500	1610	1500	1400	1370	1650	1400
5	903	1310	1240	1500	1440	1500	1610	1500	1400	1370	1630	1380
6	903	1290	1240	1500	1440	1480	1610	1500	1380	1350	1630	1370
7	903	1290	1220	1500	1440	1480	1610	1500	1380	1350	1630	1370
8	903	1290	1220	1500	1440	1480	1590	1500	1370	1350	1610	1370
9	890	1290	1220	1500	1440	1480	1590	1500	1370	1330	1610	1350
10	890	1290	1220	1500	1440	1480	1590	1500	1370	1330	1610	1350
11	890	1280	1220	1500	1440	1480	1590	1480	1370	1310	1590	1350
12	890	1280	1210	1480	1440	1480	1590	1480	1350	1310	1590	1350
13	890	1280	1210	1480	1440	1480	1590	1480	1350	1310	1590	1350
14	890	1280	1210	1480	1440	1480	1590	1480	1330	1310	1560	1350
15	890	1280	1210	1480	1440	1480	1560	1460	1310	1290	1560	1330
16	890	1280	1210	1480	1420	1480	1560	1460	1310	1290	1540	1330
17	890	1280	1210	1480	1420	1480	1560	1460	1310	1280	1540	1330
18	877	1290	1210	1480	1420	1480	1560	1460	1310	1280	1540	1310
19	877	1290	1210	1480	1420	1480	1560	1440	1290	1280	1540	1310
20	973	1280	1210	1480	1420	1520	1540	1440	1290	1280	1520	1310
21	1070	1280	1210	1480	1420	1590	1540	1440	1290	1260	1520	1310
22	1090	1280	1220	1480	1420	1590	1540	1440	1280	1260	1520	1310
23	1120	1280	1220	1460	1420	1590	1540	1440	1280	1260	1520	1290
24	1120	1280	1220	1460	1500	1590	1540	1460	1280	1240	1500	1290
25	1140	1280	1220	1460	1500	1590	1540	1460	1280	1260	1500	1290
26	1190	1280	1220	1460	1500	1590	1540	1460	1280	1690	1480	1290
27	1240	1260	1220	1460	1500	1590	1520	1460	1290	1690	1480	1290
28	1310	1260	1220	1460	1500	1560	1520	1460	1400	1690	1460	1280
29	1310	1260	1220	1460	---	1560	1520	1460	1400	1690	1460	1280
30	1310	1310	1220	1460	---	1590	1520	1440	1380	1690	1440	1280
31	1310	---	1260	1460	---	1610	---	1440	---	1670	1440	---
MAX	1310	1310	1260	1520	1500	1610	1630	1520	1420	1690	1670	1420
MIN	877	1260	1210	1460	1420	1480	1520	1440	1280	1240	1440	1280
(†)	1858.0	1857.6	1857.7	1858.8	1859.0	1859.5	1859.1	1858.7	1858.4	1859.8	1858.7	1857.8
(‡)	+393	0	-50	+200	+40	+110	-90	-80	-60	+290	-230	-160
CAL YR 1984	MAX	2210	MIN	877	(†)	-980						
WTR YR 1985	MAX	1690	MIN	877	(‡)	+363						

(†) Elevation, in feet, at end of month.

(‡) Change in contents, in acre-feet.

## 08141000 HORDS CREEK LAKE NEAR VALERA, TX

LOCATION.--Lat 31°49'58", long 99°33'38", Coleman County, Hydrologic Unit 12090108, at outlet-works structure near right end of dam on Hords Creek, 5.6 mi north of Valera, and 8.8 mi west of Coleman.

DRAINAGE AREA.--48 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--April 1948 to current year. Prior to October 1970, published as Hords Creek Reservoir.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a rolled earthfill dam 6,800 ft long, including spillway. Deliberate impoundment of water began Apr. 7, 1948, and the dam was completed in June 1948. The spillway is an excavated channel through natural ground, 500 ft wide, located about 600 ft from the right end of dam. The spillway consists of three concrete conduits; two controlled by 5.0- by 6.0-foot slide gates, and a third uncontrolled ogee spillway 4.0 ft wide and 19.5 ft high. The lake is operated for flood control and municipal water supply for the city of Coleman. The capacity table of August 1974 is based on a sedimentation survey made in 1948. Flow is affected at times by discharge from the flood-detention pool of one floodwater-retarding structure with a detention capacity of 1,370 acre-ft. This structure controls runoff from 6.82 mi<sup>2</sup> in the Jim Ned Creek drainage basin. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	1,939.0	-
Design flood.....	1,933.6	-
Crest of spillway.....	1,920.0	24,730
Crest of spillway (top of conservation pool).....	1,900.0	8,110
Lowest gated outlet (invert).....	1,856.0	3

COOPERATION.--Records furnished by U.S. Army Corps of Engineers and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 12,790 acre-ft May 1, 1956 (elevation, 1,906.86 ft); minimum since first appreciable storage in June 1951, 1,550 acre-ft Sept. 2, 1984 (elevation, 1,878.01 ft).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 1,990 acre-ft Apr. 7 at 1600 hours (elevation, 1,880.66 ft); minimum daily, 1,380 acre-ft Oct. 6 at 1600 hours (elevation, 1,876.92 ft).

## Capacity table (elevation, in feet, and total contents, in acre-feet)

1,876.0	1,240	1,880.0	1,880
1,878.0	1,550	1,882.0	2,240

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1400	1580	1570	1940	1940	1950	1990	1910	1830	1780	1700	1560
2	1400	1580	1570	1940	1940	1950	1990	1910	1830	1790	1700	1560
3	1400	1580	1570	1940	1940	1940	1990	1900	1820	1790	1700	1550
4	1400	1580	1570	1940	1940	1940	1990	1900	1820	1780	1700	1540
5	1390	1580	1570	1940	1940	1940	1990	1900	1860	1780	1700	1540
6	1470	1580	1570	1940	1940	1940	1990	1890	1860	1770	1700	1670
7	1470	1570	1570	1940	1940	1930	1990	1890	1860	1770	1690	1720
8	1470	1570	1570	1940	1940	1930	1990	1880	1860	1770	1690	1710
9	1470	1570	1560	1940	1940	1930	1990	1880	1850	1760	1690	1710
10	1470	1570	1560	1930	1940	1930	1980	1880	1850	1760	1690	1710
11	1470	1560	1560	1930	1940	1930	1980	1880	1840	1760	1680	1700
12	1480	1560	1560	1930	1940	1940	1980	1880	1840	1750	1680	1700
13	1480	1560	1560	1930	1940	1960	1970	1870	1840	1750	1670	1720
14	1480	1550	1560	1930	1940	1960	1970	1860	1830	1740	1670	1720
15	1480	1550	1560	1940	1940	1960	1970	1860	1830	1740	1660	1740
16	1480	1550	1570	1960	1940	1960	1960	1860	1820	1730	1660	1740
17	1470	1560	1570	1950	1940	1960	1960	1860	1820	1730	1650	1740
18	1470	1560	1570	1950	1940	1960	1950	1850	1820	1720	1650	1740
19	1460	1560	1570	1950	1940	1980	1940	1850	1810	1720	1650	1730
20	1470	1560	1570	1950	1940	1980	1940	1850	1810	1720	1640	1720
21	1470	1560	1570	1950	1940	1980	1940	1850	1800	1720	1630	1720
22	1470	1560	1570	1940	1940	1990	1940	1860	1800	1720	1630	1720
23	1480	1550	1560	1940	1950	1990	1930	1860	1790	1730	1620	1710
24	1480	1570	1560	1940	1950	1990	1930	1860	1790	1730	1620	1700
25	1490	1580	1560	1940	1950	1990	1920	1860	1780	1730	1610	1690
26	1490	1580	1560	1940	1940	1990	1920	1860	1780	1720	1600	1690
27	1490	1580	1560	1940	1940	1990	1920	1850	1800	1720	1600	1680
28	1490	1580	1560	1940	1950	1990	1920	1850	1800	1720	1590	1680
29	1400	1570	1570	1940	---	1990	1920	1850	1790	1710	1580	1830
30	1560	1570	1710	1940	---	1990	1910	1840	1790	1710	1580	1840
31	1570	---	1920	1940	---	1990	---	1840	---	1700	1570	---
MAX	1570	1580	1920	1960	1950	1990	1990	1910	1860	1790	1700	1840
MIN	1390	1550	1560	1930	1940	1930	1910	1840	1780	1700	1570	1540
(†)	1878.12	1878.14	1880.20	1880.36	1880.40	1880.63	1880.21	1879.75	1879.46	1878.95	1878.12	1879.75
(‡)	0	0	+350	+20	+10	+40	-80	-70	-50	-90	-130	+270
CAL YR 1984	MAX	2290	MIN	1390	±	-370						
WTR YR 1985	MAX	1990	MIN	1390	±	+270						

(†) Elevation, in feet, at end of month.

(‡) Change in contents, in acre-feet.





## 08143000 LAKE BROWNWOOD NEAR BROWNWOOD, TX

LOCATION.--Lat 31°50'13", long 99°00'13", Brown County, Hydrologic Unit 12090107, at outlet structure for irrigation canal just upstream from right end of dam on Pecan Bayou, 0.2 mi downstream from Jim Ned Creek, 8 mi north of Brownwood, and 57.1 mi upstream from mouth.

DRAINAGE AREA.--1,565 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1933 to May 1941, November 1944 to current year. Fragmentary records July 1934 to April 1935, and October 1940 to May 1941. Prior to October 1970, published as Brownwood Reservoir.

REVISED RECORDS.--WSP 1212: 1948-50. WDR TX-81-3: Drainage area.

GAGE.--Nonrecording gage read once daily. Datum of gage is 0.50 ft below National Geodetic Vertical Datum of 1929. Prior to November 1944, nonrecording gages or water-stage recorder at various sites at dam at same datum.

REMARKS.--The lake is formed by a rolled earthfill dam, 1,580 ft long. The dam was completed in 1933 and deliberate impoundment began in July 1933. The capacity table is based on a 1959 survey. The uncontrolled emergency spillway is a broad-crested weir 479 ft long located 800 ft to left of dam. The controlled service spillway consists of two 12-foot horseshoe-shaped concrete conduits. Water is used for irrigation, municipal, and industrial supply by the city of Brownwood (see station 08142500). Flow is affected at times by discharge from the flood-detention pools of 59 floodwater-retarding structures with a combined capacity of 73,310 acre-ft. These structures control runoff from 353 mi<sup>2</sup> in the Jim Ned Creek and Pecan Bayou drainage basins. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam.....	1,450.0	-
Crest of spillway.....	1,425.1	143,400
Lowest gated outlet (invert).....	1,330.0	-

COOPERATION.--Record of daily gage heights were furnished by Brown County Water Improvement District No. 1. Capacity table was furnished by the Corps of Engineers and by the Soil Conservation Service.

EXTREMES (AT 1800) FOR PERIOD OF RECORD.--Maximum contents, 192,300 acre-ft May 2, 1956 (gage height, 1,431.4 ft); minimum, 11,900 acre-ft July 15, 1934 (gage height, 1,389.5 ft).

EXTREMES (AT 1800) FOR CURRENT YEAR.--Maximum contents observed, 128,700 acre-ft Mar. 27 to Apr. 4 (gage height, 1,423.0 ft); minimum, 81,310 acre-ft Oct. 3, 4 (gage height, 1,414.8 ft).

Capacity table (gage height, in feet, and total contents, in acre-feet)

1,414.0	77,530
1,418.0	97,850
1,423.0	128,700

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 1800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81790	95670	94590	119300	122400	121700	128700	127300	125200	123800	120500	113300
2	81790	96210	94590	121100	122400	121700	128700	126600	125200	123800	120500	112700
3	81310	96750	94590	121700	122400	121700	128700	126600	125200	123800	120500	112100
4	81310	96210	94590	122400	122400	121700	128700	126600	125900	123800	120500	112100
5	81790	96210	94590	123100	122400	121700	128000	127300	126600	123800	119900	112100
6	82270	96210	94590	122400	122400	121700	128000	126600	127300	123800	119900	111500
7	82270	96210	94590	123100	122400	121700	127300	126600	128000	124500	119300	111500
8	82270	96210	94590	123100	122400	121700	128000	126600	128000	124500	119300	111500
9	82270	95670	94590	123100	122400	121700	128000	126600	128700	123800	119300	110900
10	83740	95670	94590	123100	122400	121700	128000	126600	128700	123800	118700	110900
11	83250	95670	94590	123100	122400	121700	128000	126600	127300	123100	118700	110300
12	83250	96210	94050	123100	122400	121700	128000	125900	127300	123100	118100	110300
13	82760	96210	96210	123100	122400	121700	128000	125900	126600	123100	118100	109700
14	82270	96210	96750	123100	121700	121700	128000	125900	126600	123100	117500	109700
15	82760	95670	96750	123100	121700	121700	128000	125900	125900	122400	117500	109700
16	82760	95670	96750	123100	121700	121700	128000	125900	125200	122400	117500	109700
17	82760	95670	97300	123100	121700	121700	128000	125200	125900	122400	116900	109700
18	82760	95670	97300	123100	121700	123100	128000	125200	125900	122400	116300	109100
19	82760	95670	97300	123100	121700	123100	128000	125200	125900	121700	116300	109100
20	82760	95670	97300	122400	121700	123100	128000	125200	125200	121700	115700	109100
21	83740	95670	96750	122400	121700	127300	128000	125200	125200	121700	115700	109100
22	84230	95130	96750	122400	121700	127300	128000	125200	125200	121100	115700	109100
23	84230	95130	97300	122400	121700	127300	128000	125900	125200	121100	115100	109100
24	85230	95130	97300	122400	121700	128000	128000	125200	125200	121100	115100	109100
25	85230	95130	97300	122400	121700	128000	128000	125200	125200	120500	115100	108500
26	85730	95130	97300	122400	121700	128000	128000	125200	124500	120500	114500	108500
27	89310	95130	97300	122400	121700	128700	127300	125200	124500	120500	114500	108500
28	95130	95130	97300	122400	121700	128700	127300	125200	124500	120500	113900	108500
29	95130	95130	97300	122400	---	128700	127300	125200	124500	120500	113900	109100
30	95670	94590	97850	122400	---	128700	127300	125200	124500	120500	113300	109100
31	95670	---	101900	122400	---	128700	---	125200	---	120500	113300	---
MAX	95670	96750	101900	123100	122400	128700	128700	127300	128700	124500	120500	113300
MIN	81310	94590	94050	119300	121700	121700	127300	125200	124500	120500	113300	108500
(+)	1417.6	1417.3	1418.7	1422.1	1422.0	1423.0	1422.8	1422.5	1422.4	1421.8	1420.6	1419.9
(+)	+13880	-1080	+7310	+20500	-700	+7000	-1400	-2100	-700	-4000	-7200	-4200
CAL YR 1984	MAX	103100	MIN	81310	(+)	0						
WTR YR 1985	MAX	128700	MIN	81310	(+)	+27310						

(+) Gage height, in feet, at end of month.  
(+) Change in contents, in acre-feet.

## COLORADO RIVER BASIN

08143600 PECAN BAYOU NEAR MULLIN, TX

LOCATION.--Lat 31°31'02", long 98°44'25", Mills County, Hydrologic Unit 12090107, on right bank 44 ft downstream from bridge on Farm Road 573, 0.6 mi downstream from Blanket Creek, 5.5 mi southwest of Mullin, and 13.6 mi upstream from mouth.

DRAINAGE AREA.--2,073 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,202.93 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is affected by Lake Brownwood 47 mi upstream (see station 08143000). At end of year, flow from 152 mi<sup>2</sup> above this station and below Lake Brownwood was partly controlled by 41 floodwater-retarding structures with a combined detention capacity of 43,420 acre-ft below the flood-spillway crests.

AVERAGE DISCHARGE.--18 years, 105 ft<sup>3</sup>/s (76,070 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,700 ft<sup>3</sup>/s Jan. 23, 1968 (gage height, 29.26 ft); no flow at times in 1974, 1978, 1980-81, and 1984-85.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,760 ft<sup>3</sup>/s June 6 at 0130 hours (gage height, 20.74 ft); no flow Aug. 17-20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	37	11	3200	11	14	14	50	6.2	26	.97	3.1
2	5.7	27	11	619	11	14	13	28	5.0	21	.70	1.8
3	4.8	19	8.3	389	11	16	12	20	3.6	20	.52	.95
4	3.8	22	10	193	11	15	12	15	2.8	16	.31	.64
5	2.9	19	8.3	126	12	15	13	13	98	13	.18	.36
6	22	14	8.5	85	13	15	14	10	3530	11	.14	.56
7	187	12	14	59	14	15	12	9.7	510	9.3	.14	2.3
8	260	10	14	40	14	14	9.3	16	150	8.3	1.1	2.4
9	71	8.6	11	29	16	13	8.7	11	63	6.7	1.6	2.4
10	38	7.0	10	24	15	13	9.7	6.2	38	5.9	1.1	1.7
11	27	9.1	9.7	21	14	13	9.3	6.0	28	5.4	.49	1.2
12	17	8.7	8.0	20	15	11	8.8	6.7	47	6.1	.33	1.7
13	12	7.6	133	19	14	11	8.7	8.5	33	21	.27	3.7
14	54	6.5	195	17	13	70	8.4	9.2	23	15	.20	9.8
15	80	6.8	137	16	13	61	9.8	6.3	19	13	.10	13
16	35	7.2	342	16	12	26	9.2	6.4	19	11	.03	8.3
17	20	9.3	62	16	15	18	8.5	6.9	17	8.8	.00	7.2
18	13	16	43	17	13	16	8.8	6.8	14	6.0	.00	6.4
19	11	8.6	30	16	12	17	8.0	7.9	11	3.4	.00	4.7
20	7.6	6.3	23	14	12	833	7.6	7.7	11	2.9	.00	3.0
21	36	5.8	18	13	12	325	131	21	11	2.2	.73	2.4
22	30	5.8	17	13	12	107	153	178	9.4	4.9	4.7	2.4
23	18	7.2	16	13	247	57	49	192	8.8	11	4.3	2.3
24	13	30	15	12	35	39	24	111	7.5	7.9	2.0	1.7
25	303	54	13	11	29	31	16	37	6.0	7.2	1.3	1.4
26	520	38	13	11	18	26	13	23	6.1	7.7	.56	1.2
27	1470	27	12	12	14	28	11	16	192	7.5	.32	1.0
28	427	20	12	11	14	23	14	14	632	5.1	1.0	.75
29	109	16	12	11	---	20	45	13	88	3.2	1.7	1.0
30	51	14	205	11	---	17	174	11	36	2.1	2.7	81
31	36	---	3030	12	---	15	---	9.5	---	1.3	3.7	---
TOTAL	3887.5	479.5	4451.8	5066	642	1908	834.8	876.8	5625.4	289.9	31.19	170.36
MEAN	125	16.0	144	163	22.9	61.5	27.8	28.3	188	9.35	1.01	5.68
MAX	1470	54	3030	3200	247	833	174	192	3530	26	4.7	81
MIN	2.7	5.8	8.0	11	11	11	7.6	6.0	2.8	1.3	.00	.36
AC-FT	7710	951	8830	10050	1270	3780	1660	1740	11160	575	62	338
CAL YR 1984	TOTAL	11607.89	MEAN	31.7	MAX	3030	MIN	.00	AC-FT	23020		
WTR YR 1985	TOTAL	24263.25	MEAN	66.5	MAX	3530	MIN	.00	AC-FT	48130		

COLORADO RIVER BASIN

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08143600 PECAN BAYOU NEAR MULLIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURES: October 1967 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,230 micromhos May 14, 1978; minimum daily, 200 micromhos July 24, 1984.

WATER TEMPERATURES (1967-82): Maximum daily, 37.0°C July 18, 1979; minimum daily, 0.5°C Feb. 7, 1979.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,960 micromhos Jan. 3; minimum daily, 200 micromhos July 24.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT									
11...	0750	28	704	21.5	130	39	40	6.7	85
NOV									
07...	0720	13	480	14.5	150	38	48	6.8	33
DEC									
18...	0740	46	195	11.5	83	13	27	3.9	7.0
FEB									
05...	0745	11	1430	4.0	390	180	120	21	160
JUN									
04...	0820	3.0	736	27.5	230	53	69	14	58
JUL									
23...	0850	12	852	27.5	220	35	63	15	85

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT								
11...	3	7.3	89	35	140	.20	8.8	380
NOV								
07...	1	6.4	110	31	53	.20	9.0	250
DEC								
18...	.3	3.0	71	18	8.7	.10	5.8	120
FEB								
05...	4	7.4	210	130	270	.30	3.3	840
JUN								
04...	2	7.7	177	59	92	.20	6.4	410
JUL								
23...	3	9.1	184	66	120	.30	7.0	480



## COLORADO RIVER BASIN

08144500 SAN SABA RIVER AT MENARD, TX

LOCATION.--Lat 30°55'08", long 99°47'07", Menard County, Hydrologic Unit 12090109, at downstream side of bridge on U.S. Highway 83 in Menard, 1.1 mi downstream from Las Moras Creek, 1.9 mi upstream from Volkmann Draw, and 116.3 mi upstream from mouth.

DRAINAGE AREA.--1,335 mi<sup>2</sup>, of which 6.6 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--September 1915 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area. WSP 1512: 1918-20, 1922-25, 1926(M), 1927-32, 1934(M), 1936, 1938(M).

GAGE.--Water-stage recorder. Datum of gage is 1,863.05 ft above National Geodetic Vertical Datum of 1929. Sept. 14, 1915, to Mar. 12, 1924, nonrecording gage at site 635 ft downstream at datum 2.20 ft lower. Mar. 13, 1924, to Feb. 21, 1939, nonrecording gage at site 1,000 ft upstream at datum 2.00 ft higher. Feb. 22, 1939, to Jan. 25, 1940, nonrecording gage at present site and datum. Jan. 26, 1940, to Sept. 19, 1957, water-stage recorder at site 240 ft to right at present datum. Feb. 8, 1962, to Jan. 22, 1963, nonrecording gage at site 600 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. Since about 1890, low flow during irrigation season regulated by diversions to Noyes Canal 4.5 mi upstream and diversions by pumping at several locations upstream. Records of the Texas Department of Water Resources how that permits have been granted to irrigate 3,338 acres above station. See record for (station 08144000). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--70 years, 62.7 ft<sup>3</sup>/s (45,430 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 130,000 ft<sup>3</sup>/s July 23, 1938 (gage height, 22.2 ft, from floodmark), present site and datum, from rating curve extended above 56,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times as result of upstream diversion to Noyes Canal (station 08144000).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1880, 23.3 ft June 6, 1899, present site and datum, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 670 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 11	0200	2,200	7.35	Dec. 31	1830	*10,700	*12.31

Minimum daily discharge, 0.38 ft<sup>3</sup>/s July 24 (result of dam upstream).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	15	15	1180	34	36	21	13	9.5	5.5	3.9	4.3
2	9.4	13	16	161	34	34	21	12	8.5	4.4	4.2	6.4
3	8.4	11	16	72	34	33	21	12	7.9	4.4	4.2	6.1
4	8.8	11	17	55	35	32	20	12	6.7	4.9	4.3	6.2
5	17	12	18	47	35	31	19	11	7.0	5.8	3.2	7.4
6	26	16	19	43	35	31	18	11	11	5.9	3.0	8.1
7	21	20	19	41	34	34	18	11	13	5.8	3.4	7.8
8	17	26	20	39	34	27	17	8.8	11	3.8	3.7	7.5
9	14	22	21	42	35	26	20	8.6	8.8	4.0	3.4	6.8
10	15	21	22	41	36	25	20	8.4	6.8	5.6	3.6	5.6
11	249	21	24	39	35	25	20	8.0	6.7	12	3.4	7.0
12	13	22	25	38	34	23	20	8.5	8.1	12	3.7	7.0
13	9.6	29	27	41	34	25	22	9.7	8.8	12	3.4	8.5
14	11	31	28	41	34	32	24	9.9	7.9	11	4.0	16
15	7.2	28	29	39	34	30	24	9.7	7.7	11	5.0	20
16	5.9	20	33	38	34	28	21	9.2	6.6	11	6.6	17
17	6.0	19	31	38	33	26	18	18	6.7	9.9	7.1	14
18	5.9	21	28	37	33	25	17	36	5.7	10	6.7	12
19	5.4	23	27	37	34	26	15	31	4.5	11	5.9	11
20	4.9	24	27	35	34	31	17	36	3.8	13	5.6	11
21	5.7	25	28	35	35	30	26	28	3.8	10	5.0	11
22	8.5	22	27	35	35	28	26	26	3.6	5.9	5.2	10
23	7.6	22	25	36	35	26	22	25	3.9	3.6	4.9	9.7
24	9.2	25	25	36	34	25	17	25	3.5	.38	4.8	9.2
25	14	32	24	35	33	25	15	22	3.6	9.4	4.8	8.6
26	23	27	23	35	32	25	15	19	3.5	11	4.8	8.1
27	37	23	25	36	32	25	16	16	7.8	7.5	4.6	8.0
28	31	20	26	35	34	24	16	14	11	5.7	4.3	8.1
29	21	17	27	34	---	24	15	13	11	4.4	4.1	13
30	17	15	38	35	---	22	16	12	7.9	4.6	4.1	17
31	15	---	3980	35	---	21	---	10	---	4.1	4.1	---
TOTAL	654.5	633	4710	2491	955	855	577	493.8	216.3	229.58	139.0	292.4
MEAN	21.1	21.1	152	80.4	34.1	27.6	19.2	15.9	7.21	7.41	4.48	9.75
MAX	249	32	3980	1180	36	36	26	36	13	13	7.1	20
MIN	4.9	11	15	34	32	21	15	8.0	3.5	.38	3.0	4.3
AC-FT	1300	1260	9340	4940	1890	1700	1140	979	429	455	276	580

CAL YR 1984	TOTAL	8664.72	MEAN 23.7	MAX 3980	MIN .43	AC-FT 17190
WTR YR 1985	TOTAL	12246.58	MEAN 33.6	MAX 3980	MIN .38	AC-FT 24290

## COLORADO RIVER BASIN

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08144600 SAN SABA RIVER NEAR BRADY, TX

LOCATION.--Lat 31°00'14", long 99°16'07", McCulloch County, Hydrologic Unit 12090109, on right bank at downstream side of bridge on U.S. Highways 87 and 377, 0.4 mi upstream from Hudson Branch, and 8.4 mi southeast of Brady, and 72.9 mi upstream from mouth.

DRAINAGE AREA.--1,633 mi<sup>2</sup>, of which 6.60 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--July 1979 to current year.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,530.98 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Diversions above station for irrigation (see station 08144000). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--6 years, 73.0 ft<sup>3</sup>/s (52,890 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,000 ft<sup>3</sup>/s Sept. 8, 1980 (gage height, 25.50 ft); minimum, 0.24 ft<sup>3</sup>/s Aug. 1, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Highest stage since June 1899, 33.8 ft July 23, 1938, from high-water mark on left bank 150 ft upstream from present site.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 27	0830	1,050	4.56	Dec. 31	0830	*40,400	*18.13

Minimum daily discharge, 0.08 ft<sup>3</sup>/s Oct. 2-4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	45	38	4560	52	57	64	34	30	22	10	.31
2	.08	38	34	745	58	57	63	30	29	22	8.8	.25
3	.08	37	34	404	49	59	63	30	21	20	7.9	.21
4	.08	37	34	266	50	58	62	30	16	19	7.4	.19
5	.14	34	34	217	54	54	61	26	15	16	6.6	.17
6	.16	31	34	182	56	54	56	31	38	15	5.5	.26
7	3.5	28	34	153	55	54	50	35	31	14	4.7	.66
8	17	27	34	135	55	54	54	35	21	10	3.9	.72
9	23	27	35	133	57	55	57	33	22	9.1	3.3	.49
10	18	27	35	118	57	57	57	30	18	7.1	2.5	.36
11	102	30	36	113	56	57	57	26	16	6.7	2.4	.29
12	207	28	37	113	54	55	57	22	15	5.8	2.9	.20
13	74	27	41	114	55	57	59	19	13	5.4	2.4	1.1
14	43	27	41	116	55	64	89	17	16	6.9	1.8	10
15	48	28	41	123	55	60	65	14	23	6.1	1.3	5.8
16	28	28	45	124	55	61	57	14	23	4.0	1.0	3.1
17	24	28	45	114	54	62	56	16	22	3.4	.92	2.1
18	23	32	45	107	54	60	54	17	19	3.4	.78	1.8
19	21	32	45	104	55	60	53	20	15	3.1	.56	3.2
20	20	30	45	77	55	124	48	31	13	4.9	.38	8.0
21	26	30	45	69	54	96	57	57	12	4.7	.30	8.4
22	32	30	45	66	58	80	56	62	10	3.3	.23	12
23	26	30	43	65	65	76	55	56	10	11	.20	8.7
24	25	33	43	69	60	69	55	54	8.7	13	.24	6.5
25	29	50	42	73	57	66	55	95	7.9	9.0	.22	5.2
26	186	47	41	68	54	69	47	55	8.7	12	.20	4.1
27	486	44	41	68	52	177	46	47	14	14	.20	4.2
28	113	43	41	65	52	101	46	43	14	10	.27	4.4
29	73	41	41	65	---	77	46	39	12	12	.33	9.8
30	62	40	48	65	---	72	45	34	22	12	.33	11
31	49	---	14800	55	---	66	---	31	---	10	.38	---
TOTAL	1759.14	1009	15997	8746	1543	2168	1690	1083	535.3	314.9	77.94	113.51
MEAN	56.7	33.6	516	282	55.1	69.9	56.3	34.9	17.8	10.2	2.51	3.78
MAX	486	50	14800	4560	65	177	89	95	38	22	10	12
MIN	.08	27	34	55	49	54	45	14	7.9	3.1	.20	.17
AC-FT	3490	2000	31730	17350	3060	4300	3350	2150	1060	625	155	225
CAL YR 1984	TOTAL	22740.69	MEAN	62.1	MAX	14800	MIN	.02	AC-FT	45110		
WTR YR 1985	TOTAL	35036.79	MEAN	96.0	MAX	14800	MIN	.08	AC-FT	69500		



## COLORADO RIVER BASIN

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## 08145000 BRADY CREEK AT BRADY, TX

LOCATION.--Lat 31°08'17", long 99°20'05", McCulloch County, Hydrologic Unit 12090110, on left bank just upstream from bridge on U.S. Highway 377 on North Bridge Street in Brady, 0.4 mi downstream from Live Oak Creek, and 30.4 mi upstream from mouth.

DRAINAGE AREA.--588 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1939 to current year.

REVISED RECORDS.--WSP 1512: 1941(M), 1951(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,646.50 ft above National Geodetic Vertical Datum of 1929. Prior to July 9, 1940, nonrecording gage at site 3,600 ft upstream at datum 8.24 ft higher.

REMARKS.--No estimated daily discharges. Records good except those below 5 ft<sup>3</sup>/s, which are fair. The city of Brady returns sewage effluent downstream from the gage. Since May 22, 1962, flow largely controlled by Brady Creek Reservoir (station 08144900) and partly controlled by several floodwater-retarding structures upstream. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years (water years 1940-62) prior to completion of Brady Creek Reservoir, 25.2 ft<sup>3</sup>/s (18,260 acre-ft/yr); 23 years (water years 1963-85) regulated, 8.86 ft<sup>3</sup>/s (6,420 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,100 ft<sup>3</sup>/s Sept. 10, 1952 (gage height, 24.80 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, 29.1 ft July 23, 1938, present site and datum (discharge at site 5 mi downstream, 86,000 ft<sup>3</sup>/s), by slope-area measurement. Flood of Oct. 6, 1930 (second highest since 1882), reached a stage of 25.9 ft (discharge, 50,300 ft<sup>3</sup>/s, present site and datum), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,380 ft<sup>3</sup>/s Dec. 31 at 0630 hours (gage height, 12.81 ft); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	.64	.23	28	.81	.36	.03	.00	.00	.03	.10	.00
2	.04	.85	.00	10	.74	.21	.09	.00	.00	.00	.07	.00
3	.05	1.3	.01	6.2	.73	.12	.03	.00	.00	.00	.04	.00
4	.05	1.7	.04	4.8	.71	.08	.03	.00	.00	.00	.02	.00
5	.64	.68	.12	3.8	.62	.04	.03	.00	.00	.00	.01	.00
6	2.0	.85	.11	2.8	.58	.06	.04	.00	.41	.00	.00	.00
7	20	1.3	.10	2.2	.58	.04	.05	.00	.09	.00	.00	.00
8	.17	1.3	.12	2.3	.52	.07	.05	.00	.03	.00	.00	.00
9	.11	.19	.09	2.6	.56	.06	.00	.00	.00	.00	.00	.00
10	.08	.40	.00	1.7	.47	.05	.00	.00	.00	.00	.00	.00
11	4.4	.49	.00	1.4	.39	.05	.00	.00	.01	.00	.00	.00
12	.29	.64	.00	1.5	.35	.00	.00	.00	.00	.00	.00	.00
13	.19	.81	.16	1.8	.30	2.3	.00	.00	.00	.00	.00	.00
14	1.2	1.2	.04	2.3	.28	1.4	.00	.00	.00	.00	.00	.00
15	.20	1.7	.13	2.4	.25	.17	.00	.00	.05	.00	.00	.00
16	.20	1.9	.10	2.4	.25	.08	.00	.00	.03	.00	.00	.00
17	.52	2.4	.03	1.9	.21	.02	.00	.00	.01	.00	.00	.00
18	1.3	3.1	.04	1.6	.20	.01	.00	.00	.00	.00	.00	.00
19	1.3	3.0	.04	1.4	.23	.07	.00	.00	.00	.02	.00	.00
20	1.3	3.1	.11	1.2	.26	3.3	.03	.00	.00	.84	.00	.00
21	1.6	3.5	.17	1.1	.28	.91	.36	.03	.00	.75	.00	.00
22	1.8	3.6	.00	1.9	.27	.20	.00	3.0	.00	.25	.00	.00
23	2.1	2.9	.03	4.5	.76	.06	.00	.65	.00	.53	.00	.00
24	2.6	1.6	.00	3.9	.29	.02	.00	.61	.00	.56	.00	.00
25	5.7	.46	.00	2.4	.25	.02	.00	.36	.00	.73	.00	.00
26	14	.41	.00	2.4	.18	.06	.00	.12	.00	1.1	.00	.00
27	4.1	.57	.00	1.8	.13	.11	.00	.05	2.3	.91	.00	.00
28	1.8	.47	.00	1.5	.47	.22	.00	.23	.30	.23	.00	.00
29	.25	.44	.88	1.3	---	.34	.00	.06	.11	.20	.00	1.1
30	.31	.42	5.4	1.2	---	.25	.00	.03	.08	.17	.00	.25
31	.43	---	1010	.90	---	.00	---	.00	---	.13	.00	---
TOTAL	68.77	41.92	1017.95	105.20	11.67	10.68	.74	5.14	3.42	6.45	.24	1.35
MEAN	2.22	1.40	32.8	3.39	.42	.34	.025	.17	.11	.21	.008	.045
MAX	20	3.6	1010	28	.81	3.3	.36	3.0	2.3	1.1	.10	1.1
MIN	.04	.19	.00	.90	.13	.00	.00	.00	.00	.00	.00	.00
AC-FT	136	83	2020	209	23	21	1.5	10	6.8	13	.5	2.7
CAL YR 1984	TOTAL	1186.56	MEAN	3.24	MAX	1010	MIN	.00	AC-FT	2350		
WTR YR 1985	TOTAL	1273.53	MEAN	3.49	MAX	1010	MIN	.00	AC-FT	2530		

08146000 SAN SABA RIVER AT SAN SABA, TX

LOCATION.--Lat 31°12'47", long 98°43'09", San Saba County, Hydrologic Unit 12090109, on right bank at downstream side of bridge on State Highway 16, 1.2 mi north of San Saba, 2.7 mi upstream from Mill Creek, 4.8 mi downstream from China Creek, and 16.8 mi upstream from mouth.

DRAINAGE AREA.--3,046 mi<sup>2</sup>, of which 6.6 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--December 1904 to December 1906 (gage heights only), September 1915 to current year. Published as "near San Saba" December 1904 to December 1906 and September 1915 to August 1930.

REVISED RECORDS.--WSP 458: 1915-16. WSP 1282: WDR TX-81-3: Drainage area. WSP 1512: 1918-19(M), 1922, 1931(M), 1935 WSP 1922: 1917.

GAGE.--Water-stage recorder. Datum of gage is 1,162.16 ft above National Geodetic Vertical Datum of 1929. See WSP 1922 for brief history of changes prior to July 8, 1953. Since Oct. 1, 1956, supplementary water-stage recorder located 2,780 ft to right of main-channel gage used for floodflows.

REMARKS.--Estimated daily discharges: Oct. 6-15, Feb. 1-22. Records good except for estimated daily discharges, which are fair. Many diversions above station for irrigation and municipal use affect low flow. Flow partly affected by Brady Creek Reservoir (see station 08144900), capacity 90,300 acre-ft. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--70 years, 229 ft<sup>3</sup>/s (165,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 203,000 ft<sup>3</sup>/s July 23, 1938 (gage height, 39.3 ft, present site and datum), from rating curve extended above 41,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in 1918, 1930, 1954-56, 1963-64, and 1984.  
Maximum stage since at least 1899, that of July 23, 1938.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 6, 1899, reached a stage of 36.7 ft, present site and datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	2000	35,500	*29.11	No other peak greater than base discharge.			
a From supplementary gage.							
Minimum daily discharge, 4.3 ft <sup>3</sup> /s Aug. 15.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	138	59	10700	139	157	162	155	67	46	21	20
2	15	99	54	2500	159	179	153	117	64	37	21	21
3	14	78	50	1110	131	162	146	97	61	34	20	20
4	12	64	47	785	135	150	143	86	57	44	18	18
5	14	54	48	615	144	142	136	80	55	42	19	17
6	16	47	50	513	150	134	135	77	429	41	19	26
7	15	44	47	443	147	131	131	73	227	39	15	26
8	44	41	46	368	147	131	125	71	148	36	13	24
9	52	38	48	292	159	129	121	74	109	34	7.8	24
10	44	35	47	267	158	127	127	73	85	33	7.0	23
11	149	33	46	242	154	128	131	72	70	28	6.8	22
12	240	32	47	223	150	127	131	71	64	27	12	23
13	172	32	53	223	147	124	126	72	60	28	7.7	23
14	146	36	235	229	147	140	124	71	56	27	7.2	24
15	123	34	136	239	147	154	132	62	52	24	4.3	25
16	99	33	408	262	144	151	158	58	48	24	8.4	32
17	71	35	363	244	140	147	124	79	44	23	14	37
18	44	55	176	236	136	143	112	78	44	22	17	37
19	29	48	126	212	132	140	106	60	44	24	19	31
20	23	52	108	192	128	392	102	60	41	22	14	30
21	21	45	98	180	124	538	111	63	38	22	16	28
22	18	40	86	169	120	331	133	100	37	25	14	27
23	23	38	78	166	1140	256	130	175	38	26	15	26
24	35	45	72	166	462	218	110	148	35	19	18	24
25	32	115	66	162	262	194	110	123	33	15	17	22
26	35	201	64	162	187	179	107	115	29	15	21	24
27	807	113	63	159	160	235	104	137	39	16	20	25
28	1260	88	64	157	147	338	114	101	67	18	19	24
29	420	72	63	153	---	271	186	86	61	23	19	31
30	260	64	211	151	---	202	230	78	49	21	17	40
31	188	---	9190	147	---	177	---	71	---	23	17	---
TOTAL	4438	1849	12249	21667	5496	6027	3960	2783	2251	858	464.2	774
MEAN	143	61.6	395	699	196	194	132	89.8	75.0	27.7	15.0	25.8
MAX	1260	201	9190	10700	1140	538	230	175	429	46	21	40
MIN	12	32	46	147	120	124	102	58	29	15	4.3	17
AC-FT	8800	3670	24300	42980	10900	11950	7850	5520	4460	1700	921	1540
CAL YR 1984	TOTAL	25497.92	MEAN	69.7	MAX	9190	MIN	.00	AC-FT	50580		
WTR YR 1985	TOTAL	62816.20	MEAN	172	MAX	10700	MIN	4.3	AC-FT	124600		



## COLORADO RIVER MAIN STEM

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08147000 COLORADO RIVER NEAR SAN SABA, TX  
(National stream-quality accounting network)

LOCATION.--Lat 31°13'04", long 98°33'51", San Saba-Lampasas County line, Hydrologic Unit 12090201, near left bank at downstream side of pier of bridge on U.S. Highway 190, 5.2 mi downstream from San Saba River, 9.2 mi east of San Saba, and at mile 474.3.

DRAINAGE AREA.--31,217 mi<sup>2</sup>, approximately, of which 11,398 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1915 to October 1922 (published as "near Chadwick"), October 1923 to August 1930 (published as "near Tow"), September 1930 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 458: 1916. WSP 858: 1900(M), 1936(M). WDR TX-81-3: Drainage area. WSP 1512: 1916-18(M), 1936. WSP 1732: 1925-26(M).

GAGE.--Water-stage recorder. Datum of gage is 1,096.22 ft above National Geodetic Vertical Datum of 1929. See WSP 1922 for brief history of changes prior to May 23, 1940.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal use and for oilfield operation. Flow is affected by four reservoirs upstream from Winchell and one reservoir in the San Saba River and Pecan Bayou basins; combined capacity, 1,973,000 acre-ft. Flow is affected at times by discharge from the flood-detention pools of 187 floodwater-retarding structures with a combined capacity of 205,700 acre-ft. These structures control runoff from 944 mi<sup>2</sup>. Gage-height telemeter is located at station.

AVERAGE DISCHARGE.--50 years (water years 1917-19, 1921-22, 1924-68) prior to completion of Robert Lee Dam, 1,340 ft<sup>3</sup>/s (970,100 acre-ft/yr); 17 years (water years 1969-85) partially regulated, 607 ft<sup>3</sup>/s (439,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 224,000 ft<sup>3</sup>/s July 23, 1938 (gage height, 63.2 ft, present site), based on floodmarks at site then in use; no flow Aug. 27-31, 1954; Aug. 3-13, 1963; July 20 to Aug. 8, Aug. 11-14, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage during period 1878 to July 22, 1938, 58.4 ft Sept. 25, 1900, discharge, 184,000 ft<sup>3</sup>/s present site, from floodmarks at former site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 38,200 ft<sup>3</sup>/s Jan. 1 at 0530 hours (gage height, 27.59 ft); minimum daily, 16 ft<sup>3</sup>/s Aug. 17-19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	886	182	33500	228	256	287	572	188	351	26	25
2	26	613	150	18300	215	266	274	378	154	318	175	25
3	23	438	116	5620	209	306	254	725	133	296	192	25
4	30	337	113	3500	207	271	240	458	115	271	163	25
5	34	286	127	2360	207	251	230	325	97	237	141	23
6	34	224	127	1690	201	242	212	272	10200	207	125	23
7	3550	190	102	1270	198	241	203	225	11900	178	104	25
8	5120	163	92	1000	198	235	196	179	2000	153	81	26
9	2320	151	100	828	201	228	191	159	936	164	63	29
10	1600	141	100	700	202	228	188	164	561	148	47	29
11	782	126	107	598	194	224	184	151	381	125	35	30
12	387	117	107	520	188	219	182	129	307	100	24	31
13	318	108	113	484	186	214	182	146	291	85	21	32
14	375	102	150	461	182	239	177	144	261	78	19	32
15	1170	97	576	451	179	344	172	130	224	71	19	33
16	930	94	432	464	179	395	171	111	190	66	18	33
17	424	90	215	445	176	320	172	98	164	65	16	34
18	313	96	178	417	175	284	170	99	143	64	16	34
19	303	125	153	379	172	263	160	98	130	58	16	37
20	275	131	146	339	171	1380	153	98	118	52	18	40
21	193	117	143	317	171	3080	152	116	110	48	22	39
22	185	104	156	300	171	1730	166	151	107	46	22	40
23	180	93	167	286	2920	997	369	1150	102	42	21	41
24	146	86	153	278	1700	689	314	1440	97	40	20	39
25	255	362	127	270	558	577	601	933	92	38	19	39
26	944	527	133	261	353	489	440	597	85	34	19	37
27	4320	351	143	256	283	627	319	648	78	34	21	33
28	8540	312	146	244	258	507	911	465	369	24	24	31
29	3120	266	233	242	---	512	799	331	1000	22	25	30
30	1800	207	1600	240	---	367	804	281	576	22	25	32
31	1270	---	3840	239	---	315	---	243	---	24	25	---
TOTAL	38992	6940	10227	76259	10282	16296	8873	11016	31109	3461	1562	952
MEAN	1258	231	330	2460	367	526	296	355	1037	112	50.4	31.7
MAX	8540	886	3840	33500	2920	3080	911	1440	11900	351	192	41
MIN	23	86	92	239	171	214	152	98	78	22	16	23
AC-FT	77340	13770	20290	151300	20390	32320	17600	21850	61700	6860	3100	1890

CAL YR 1984 TOTAL 80329.45 MEAN 219 MAX 8540 MIN .00 AC-FT 159300  
WTR YR 1985 TOTAL 215969.00 MEAN 592 MAX 33500 MIN 16 AC-FT 428400

## COLORADO RIVER BASIN

08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1947 to current year. Chemical and biochemical analyses: October 1969 to current year. Pesticide analyses: January 1968 to September 1982.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to current year.

WATER TEMPERATURES: October 1947 to current year.

SUSPENDED SEDIMENT DISCHARGE: December 1950 to September 1962.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 5,660 microsiemens June 28, 1962; minimum daily, 150 microsiemens Sept. 14, 1981, and Jan. 1, 1985.

WATER TEMPERATURES: Maximum daily, 37.0°C Aug. 3, 1956; minimum daily, 0.0°C Jan. 29, 1948, Jan. 30, 1951.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,600 microsiemens May 5; minimum daily, 150 microsiemens Jan. 1.

WATER TEMPERATURES: Maximum daily, 35.0°C July 26; minimum daily, 4.0°C Feb. 3.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
NOV 06...	1040	98	424	7.8	17.5	--	9.2	99	.8	140	
JAN 18...	1115	418	680	7.9	9.5	28	9.8	89	2.2	84	
MAR 19...	1000	250	860	7.9	16.0	12	9.8	103	1.6	62	
MAY 14...	1145	146	850	7.8	24.5	34	9.8	122	1.6	66	
JUL 09...	0955	155	540	8.0	24.5	28	9.6	119	2.6	31	
AUG 29...	1020	21	670	8.1	27.0	70	9.8	128	2.4	K11	
DATE	100 ML)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
NOV 06...	160	170	36	48	11	20	.7	4.5	130	35	
JAN 18...	58	290	78	79	22	34	.9	3.3	210	57	
MAR 19...	25	330	120	81	31	64	2	4.0	210	80	
MAY 14...	130	320	110	76	31	55	1	4.7	205	94	
JUL 09...	62	200	36	51	18	34	1	5.6	166	32	
AUG 29...	72	250	31	46	33	46	1	3.9	220	24	
DATE	AS CL)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
NOV 06...	36	.20	9.6	229	240	.59	.010	.60	.60	.020	
JAN 18...	60	.20	11	403	390	1.6	.010	1.6	1.2	.080	
MAR 19...	120	.20	6.2	510	510	--	<.010	.20	.30	.020	
MAY 14...	100	.30	9.3	489	490	--	<.010	.20	.17	.050	
JUL 09...	56	.20	11	314	310	--	.010	<.10	<.10	.080	
AUG 29...	79	.20	14	379	380	--	<.010	<.10	<.10	.030	

08147000 COLORADO RIVER NEAR SAN SABA, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 06...	.020	.98	1.0	.100	.030	.030	78	21	100
JAN 18...	.040	.42	.50	.070	.030	.020	36	41	92
MAR 19...	<.010	.68	.70	.050	.010	<.010	25	17	99
MAY 14...	.110	.55	.60	.020	.110	.040	43	17	87
JUL 09...	.070	.72	.80	.090	.030	.020	22	9.2	97
AUG 29...	.030	.77	.80	.030	<.010	<.010	37	2.1	93

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 06...	1040	1	93	<.0	<1	<1	<3	2	33	<1
MAR 19...	1000	<1	130	<.5	<1	<1	<3	3	<3	7
JUL 09...	0955	2	130	<.5	<1	<1	<3	3	40	<1
AUG 29...	1020	2	140	<.5	<1	<1	<3	4	5	2

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 06...	13	5	<.1	<10	1	<1	<1	370	<6	21
MAR 19...	24	4	<.1	10	2	<1	<1	650	<6	17
JUL 09...	<4	5	<.1	<10	2	<1	<1	420	<6	29
AUG 29...	21	2	<.1	<10	<1	<1	<1	340	<6	7

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG)
OCT.	1984	38992	417	229	24100	41	4300	23	2390	160
NOV.	1984	6940	474	261	4880	48	905	28	521	180
DEC.	1984	10227	362	198	5480	35	972	19	537	140
JAN.	1985	76259	256	140	28800	23	4820	12	2510	99
FEB.	1985	10282	529	293	8120	58	1610	35	979	190
MAR.	1985	16296	660	366	16100	76	3360	48	2130	240
APR.	1985	8873	855	480	11500	110	2750	80	1910	290
MAY	1985	11016	995	563	16700	140	4280	100	3080	330
JUNE	1985	31109	315	172	14400	29	2410	15	1250	120
JULY	1985	3461	574	317	2960	62	583	38	354	210
AUG.	1985	1562	731	407	1720	88	371	57	241	260
SEPT	1985	952	617	342	878	69	177	43	110	230
TOTAL		215969	**	**	136000	**	26600	**	16000	**
WTD.AVG.		592	422	233	**	46	**	27	**	160

## COLORADO RIVER BASIN

C0147000 COLORADO RIVER NEAR SAN SABA, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	OCT	NOV	DEC	JAN	EQUIVALENT MEAN		APR	MAY	JUN	JUL	AUG	SEP
					FEB	MAR						
1	860	390	535	150	690	500	740	740	710	520	630	675
2	850	375	542	190	700	520	620	660	708	580	720	674
3	840	360	560	270	680	530	600	850	689	600	710	672
4	730	380	575	410	690	550	630	1090	670	550	680	671
5	715	410	555	480	700	560	635	1600	654	500	690	675
6	730	430	580	450	705	580	640	1300	253	480	750	650
7	525	455	600	510	710	590	660	850	282	500	810	642
8	410	475	620	535	730	600	661	875	353	550	850	635
9	510	500	600	560	725	605	665	900	371	540	810	641
10	570	525	625	400	715	610	668	1020	357	550	805	636
11	500	540	605	550	710	607	670	730	364	600	800	641
12	400	550	600	520	750	600	600	740	384	620	790	643
13	330	555	610	485	760	620	630	765	410	640	780	598
14	360	560	700	450	770	610	660	795	440	650	780	627
15	400	600	325	500	773	660	670	820	467	660	770	637
16	420	590	425	530	775	850	660	830	481	650	770	629
17	470	580	500	500	770	900	655	750	500	660	760	600
18	482	575	510	580	767	875	660	710	519	670	730	620
19	495	550	500	540	770	870	670	730	534	680	721	611
20	508	535	515	550	775	800	685	745	696	670	700	603
21	520	570	525	560	780	550	695	725	558	660	690	597
22	500	585	500	460	790	670	670	700	567	640	670	602
23	400	595	450	680	360	680	870	1380	569	635	660	605
24	475	600	400	690	380	695	830	1250	561	640	650	592
25	400	550	465	685	400	710	1060	1120	559	635	655	582
26	410	510	500	695	480	705	940	1000	576	630	670	568
27	375	530	480	700	475	650	880	900	560	620	700	573
28	310	500	500	680	480	710	1390	750	510	610	710	575
29	460	520	430	665	---	675	1150	680	315	620	670	579
30	425	525	350	650	---	680	820	650	450	630	685	592
31	400	---	200	670	---	710	---	685	---	680	700	---
MEAN	509	514	512	526	672	660	746	882	502	609	726	622

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	ONCE-DAILY											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	---	14.0	11.0	5.0	19.0	19.0	27.0	31.0	30.0	33.0	34.0
2	21.0	18.0	14.0	---	6.0	19.0	22.0	27.0	31.0	30.0	34.0	---
3	22.0	20.0	11.0	8.0	4.0	21.0	---	---	31.0	29.0	33.0	33.0
4	21.0	19.0	10.0	10.0	5.0	20.0	---	27.0	30.0	---	33.0	31.0
5	---	19.0	9.0	10.0	6.0	18.0	---	27.0	29.0	31.0	32.0	32.0
6	25.0	15.0	9.0	10.0	---	17.0	---	27.0	26.0	32.0	33.0	30.0
7	23.0	---	11.0	11.0	10.0	19.0	---	29.0	25.0	32.0	28.0	---
8	22.0	20.0	---	---	11.0	19.0	---	---	30.0	31.0	33.0	32.0
9	22.0	20.0	9.0	11.0	11.0	---	---	28.0	31.0	32.0	33.0	32.0
10	24.0	---	9.0	11.0	---	22.0	16.0	29.0	31.0	32.0	---	32.0
11	23.0	17.0	15.0	9.0	10.0	24.0	21.0	28.0	29.0	30.0	33.0	30.0
12	24.0	18.0	15.0	7.0	12.0	17.0	23.0	29.0	28.0	---	31.0	29.0
13	23.0	---	17.0	---	13.0	19.0	---	---	29.0	32.0	32.0	29.0
14	23.0	16.0	13.0	12.0	13.0	19.0	25.0	---	30.0	32.0	33.0	26.0
15	23.0	19.0	15.0	8.0	---	17.0	26.0	26.0	31.0	31.0	33.0	27.0
16	23.0	---	14.0	8.0	16.0	16.0	26.0	27.0	32.0	33.0	30.0	27.0
17	22.0	16.0	---	10.0	16.0	17.0	27.0	---	---	32.0	34.0	27.0
18	---	16.0	---	11.0	15.0	17.0	28.0	27.0	30.0	32.0	32.0	27.0
19	---	12.0	14.0	13.0	16.0	18.0	26.0	27.0	30.0	32.0	34.0	29.0
20	20.0	13.0	17.0	---	---	16.0	26.0	25.0	29.0	31.0	32.0	30.0
21	21.0	13.0	16.0	8.0	17.0	15.0	27.0	26.0	30.0	30.0	33.0	27.0
22	19.0	---	16.0	9.0	18.0	17.0	28.0	25.0	29.0	29.0	33.0	28.0
23	17.0	13.0	16.0	8.0	18.0	17.0	26.0	26.0	28.0	29.0	32.0	27.0
24	---	12.0	18.0	12.0	15.0	20.0	26.0	27.0	30.0	32.0	30.0	27.0
25	16.0	14.0	---	---	18.0	21.0	25.0	---	30.0	34.0	31.0	26.0
26	18.0	14.0	12.0	11.0	16.0	18.0	---	28.0	30.0	35.0	32.0	25.0
27	18.0	---	---	12.0	17.0	22.0	---	29.0	17.0	34.0	---	25.0
28	19.0	13.0	17.0	11.0	19.0	22.0	26.0	30.0	29.0	34.0	30.0	---
29	21.0	14.0	15.0	11.0	---	22.0	25.0	32.0	---	33.0	32.0	22.0
30	20.0	---	15.0	15.0	---	20.0	28.0	32.0	---	30.0	30.0	20.0
31	21.0	---	14.0	---	---	---	---	---	---	33.0	32.0	---
MEAN	21.0	16.0	13.5	10.5	13.0	19.0	25.0	27.5	29.0	31.5	32.0	28.5



## 08148000 LAKE BUCHANAN NEAR BURNET, TX

LOCATION.--Lat 30°45'04", long 98°25'06", Burnet County, Hydrologic Unit 12090201, in powerhouse at Buchanan Dam on Colorado River, 1.3 mi upstream from bridge on State Highway 29, 11 mi west of Burnet, and at mile 413.6.

DRAINAGE AREA.--31,910 mi<sup>2</sup>, approximately, of which 11,398 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--May 1937 to current year. Prior to Oct. 1, 1968, published as Buchanan Reservoir.

REVISED RECORDS.--WSP 1118: Drainage area.

GAGE.--Nonrecording gage. Datum of gage is 0.48 ft National Geodetic Vertical Datum of 1929 (levels run by Lower Colorado River Authority). Prior to July 1938, temporary staff and float gages at same site and datum.

REMARKS.--The lake is formed by two reinforced concrete multiple-arch sections, three banks of tainter gates, a 1,100-foot uncontrolled emergency concrete spillway, and natural ground. A net opening of 1,270 ft is controlled by thirty 33- by 15-foot and by seven 40- by 15-foot tainter gates. The dam was completed and storage began May 20, 1937. Water is used for power development and for irrigation below Columbus. The power generating features consist of three generating units, each with a 12,677 kilowatt capacity. A pump-back unit, with a capacity of 840 ft<sup>3</sup>/s, returns water from Inks Lake to Lake Buchanan during off-peak power demand periods. Inflow is largely regulated by twelve major reservoirs with a combined capacity of 2,438,000 acre-ft, of which 1,091,000 acre-ft is for flood control. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08147000. The capacity table is based on a 1925 survey. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam.....	1,025.5	-
Crest of gravity overflow spillway (top of conservation storage)....	1,020.0	992,000
Crest of spillway (15 ft gates).....	1,005.0	678,000
Crest of spillway (25 ft gates).....	995.0	505,000
Invert of three 12-foot-diameter penstocks.....	937.0	36,800

COOPERATION.--Capacity curve and gage-height record were furnished by the Lower Colorado River Authority.

EXTREMES (AT 2400) FOR PERIOD OF RECORD.--Maximum contents, 1,010,000 acre-ft Jan. 24, 1968 (gage height, 1,020.8 ft); minimum after initial filling of lake in July 1938, 340,800 acre-ft Sept. 8-10, 1952 (gage height, 983.4 ft).

EXTREMES (AT 2400) FOR CURRENT YEAR.--Maximum contents observed, 843,100 acre-ft July 6, 7 (gage height, 1,013.29 ft); minimum, 396,300 acre-ft Oct. 6 (gage height, 987.62 ft).

Capacity table (gage height, in feet, and total contents, in acre-feet)

987.0	387,800	1,005.0	678,000
996.0	521,000	1,014.0	858,000

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	397100	479400	491600	565500	684800	711400	756600	772000	791200	840800	802100	744600
2	396700	480000	492000	619400	684800	712000	757600	773400	791000	842300	800000	742600
3	396600	481700	492000	632400	685000	712400	757800	774000	791000	842300	797900	740200
4	396400	482700	492500	648600	685800	713900	758800	774600	790200	842900	796700	738400
5	396400	483200	492700	654700	686200	714300	759400	775000	790200	842900	795000	736400
6	396300	483500	492700	659000	686600	714500	759600	775600	797100	843100	794000	736000
7	399400	483600	492700	662000	686700	715200	760000	775800	828200	843100	792200	734100
8	407700	484200	492700	663900	686700	716000	760000	776000	836600	842000	791000	732300
9	417300	484800	493000	666200	687500	716400	759600	776000	838300	841000	789600	731000
10	420900	485100	493200	667700	689800	716800	760000	776000	839100	839900	787800	729300
11	424100	485100	493800	669300	689600	717100	757400	776000	840200	839500	786000	729100
12	425700	485100	494300	670000	689600	717500	757800	776000	840800	837800	784200	728000
13	427400	485100	495200	671500	689600	719600	757800	779600	840400	836000	782000	726500
14	427800	485000	495700	672500	690400	721100	758600	781600	840400	834100	780000	725500
15	427800	485400	497300	673400	690500	721900	758800	781600	840400	832200	778800	724400
16	427100	485600	498600	675700	690500	722700	759000	779400	840400	830700	777200	723200
17	429200	486500	502300	676500	690500	722800	759000	780200	840400	829200	774800	722100
18	430400	487100	505300	677600	690900	723400	759400	780200	840600	827300	772400	721100
19	430800	487100	506400	681400	691300	723800	759600	780200	840200	825200	770800	719600
20	431900	486800	507600	679300	691900	733500	759800	779800	839100	824000	769200	718900
21	432900	486800	508200	679300	692300	738800	760600	779800	839100	822500	764200	717500
22	433800	486800	508700	680100	693200	744000	761800	780800	839300	821000	762600	716600
23	433800	486800	509200	680500	697800	747000	762600	782400	839500	818700	760600	715800
24	435000	488100	510400	681600	704600	749000	762800	782600	839500	816800	758800	713700
25	437900	488300	510100	682600	706700	750400	762800	785000	839500	815400	757600	713200
26	438800	489300	510100	682600	708200	752600	764000	786800	839700	813300	755600	711100
27	441500	489800	510600	683300	708600	754000	764800	788800	840400	811800	754000	709400
28	457800	490400	510800	683300	710700	754000	765600	789800	839900	809900	751600	709900
29	468500	491100	511400	684100	---	754600	768400	790600	839300	808200	750200	712600
30	473600	491400	512400	685200	---	756200	770800	790800	840400	805700	748000	712000
31	476700	---	517600	685600	---	756600	---	791000	---	803800	746200	---
MAX	476700	491400	517600	685600	710700	756600	770800	791000	840800	843100	802100	744600
MIN	396300	479400	491600	565500	684800	711400	756600	772000	790200	803800	746200	709400
(†)	993.18	994.15	995.79	1005.40	1006.72	1009.08	1009.79	1010.80	1013.16	1011.42	1008.56	1006.79
(‡)	+79500	+14700	+26200	+168000	+25100	+45900	+14200	+20200	+49400	-36600	-57600	-34200

CAL YR 1984 MAX 807200 MIN 396300 (†) -274400  
WTR YR 1985 MAX 843100 MIN 396300 (‡) +314800

(†) Gage height, in feet, at end of month.

(‡) Change in contents, in acre-feet.



## COLORADO RIVER BASIN

08150000 LLANO RIVER NEAR JUNCTION, TX

LOCATION.--Lat 30°30'15", long 99°44'03", Kimble County, Hydrologic Unit 12090204, on right bank 960 ft upstream from low-water crossing, 1.0 mi east of Junction, 2.6 mi downstream from bridge on Interstate Highway 10, 2.8 mi downstream from confluence of North and South Llano Rivers, 5.3 mi upstream from Johnson Fork, and 114.8 mi upstream from mouth.

DRAINAGE AREA.--1,854.14 mi<sup>2</sup>, of which 5.14 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--September 1915 to current year.

REVISED RECORDS.--WSP 568: 1915-16, 1918-20, 1922. WDR TX-81-3: Drainage area. WSP 1922: 1920, 1923.

GAGE.--Water-stage recorder. Datum of gage is 1,636.32 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 14, 1925, nonrecording gage, and Aug. 14, 1925, to May 17, 1940, and Aug. 18, 1944, to Oct. 12, 1981, water-stage recorder at site 5,330 ft downstream at datum 6.0 ft lower, designated as regular gage (destroyed by flood of Oct. 13, 1981).

REMARKS.--No estimated daily discharges. Records good. Diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--70 years, 192 ft<sup>3</sup>/s (1.41 in/yr), 139,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 319,000 ft<sup>3</sup>/s June 14, 1935 (gage height, 43.3 ft at regular gage, 41.4 ft at former gage 5,330 ft downstream, from floodmarks), from rating curve extended above 54,000 ft<sup>3</sup>/s on basis of slope-area measurements of 154,000 and 319,000 ft<sup>3</sup>/s; minimum, 3.1 ft<sup>3</sup>/s Aug. 16, 17, 1956.  
Maximum stage since at least 1875, that of June 14, 1935.

EXTREMES OUTSIDE PERIOD OF RECORD.--There was a major flood in 1889 which was the highest known prior to June 14, 1935.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	1130	*106,000	*29.43	May 17	0300	2,980	6.58

Minimum daily discharge, 47 ft<sup>3</sup>/s, Sept. 3, 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	75	78	2630	159	129	103	87	134	101	90	54
2	65	78	76	732	159	126	101	85	128	96	89	49
3	64	76	76	512	159	122	101	84	123	494	86	47
4	65	74	76	422	159	119	101	84	117	439	87	47
5	67	73	76	370	156	113	99	80	116	233	86	55
6	64	72	76	339	154	110	100	80	127	188	84	89
7	65	72	76	292	152	112	101	80	240	165	81	73
8	63	71	77	269	150	114	99	81	181	147	80	71
9	66	69	78	258	146	114	101	80	152	140	78	65
10	69	69	78	242	145	114	103	81	134	134	76	62
11	75	68	78	231	140	114	103	77	123	128	74	61
12	72	69	78	226	140	109	103	77	122	127	70	64
13	71	70	80	231	139	109	103	79	138	127	70	81
14	88	72	80	226	137	108	102	76	132	127	73	96
15	71	71	83	210	131	109	101	74	122	127	73	78
16	66	71	92	208	132	109	98	99	116	127	76	74
17	64	72	86	202	132	109	97	1100	110	127	80	73
18	64	83	84	202	131	107	93	895	105	127	63	72
19	63	78	83	197	131	107	92	482	104	129	54	71
20	62	75	82	192	130	123	94	345	111	129	52	68
21	77	75	82	188	127	120	125	297	105	129	51	67
22	76	75	81	188	127	117	112	270	103	129	52	64
23	72	74	80	182	143	113	104	244	117	129	54	62
24	71	80	80	182	137	112	100	225	103	129	57	61
25	73	88	79	182	130	111	95	210	99	130	64	60
26	95	84	78	182	126	109	93	196	99	124	66	60
27	91	78	78	178	121	111	91	182	104	115	59	58
28	83	77	79	176	124	112	90	170	115	109	56	61
29	78	77	79	171	---	110	93	159	115	103	55	149
30	76	78	86	170	---	109	91	151	110	97	54	220
31	75	---	35700	163	---	106	---	142	---	95	55	---
TOTAL	2217	2244	38095	10153	3917	3507	2989	6372	3705	4701	2145	2212
MEAN	71.5	74.8	1229	328	140	113	99.6	206	124	152	69.2	73.7
MAX	95	88	35700	2630	159	129	125	1100	240	494	90	220
MIN	62	68	76	163	121	106	90	74	99	95	51	47
CFSM	.04	.04	.66	.18	.08	.06	.05	.11	.07	.08	.04	.04
IN.	.04	.05	.77	.20	.08	.07	.06	.13	.07	.09	.04	.04
AC-FT	4400	4450	75560	20140	7770	6960	5930	12640	7350	9320	4250	4390
CAL YR 1984	TOTAL	60978	MEAN	167	MAX	35700	MIN	49	CFSM	.09	IN	1.23
WTR YR 1985	TOTAL	82257	MEAN	225	MAX	35700	MIN	47	CFSM	.12	IN	1.65
									AC-FT	120900		
									AC-FT	163200		

## COLORADO RIVER BASIN

117

08150700 LLANO RIVER NEAR MASON, TX

LOCATION.--Lat 30°39'38", long 99°06'32", Mason County, Hydrologic Unit 12090204, on right bank 98 ft downstream from downstream bridge on U.S. Highway 87, 1.0 mi upstream from Beaver Creek, 9.1 mi southeast of Mason, 10.2 mi downstream from James River, and 61.1 mi upstream from mouth.

DRAINAGE AREA.--3,247.14 mi<sup>2</sup>, of which 5.14 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--March 1968 to current year.

REVISED RECORD.--WDR TX-75-3: 1968(P). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,230.36 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 19, 1971, at site 190 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Mar. 8-20. Records good except those for estimated daily discharges which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years (water years 1969-85), 328 ft<sup>3</sup>/s (1.37 in/yr), 237,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 260,000 ft<sup>3</sup>/s Sept. 8, 1980 (gage height, 37.00 ft, from floodmark), from rating curve extended above 151,000 ft<sup>3</sup>/s on basis of slope-area measurement and discharge measurement of 145,000 ft<sup>3</sup>/s; minimum, 16 ft<sup>3</sup>/s July 23, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875, about 46 ft June 14, 1935, from information by State Department of Highways and Public Transportation; discharge, about 380,000 ft<sup>3</sup>/s; at site 17.0 mi downstream discharge was 388,000 ft<sup>3</sup>/s by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	1700	*115,000	*25.22	May 17	2400	3,560	5.89

Minimum daily discharge, 53 ft<sup>3</sup>/s Aug. 14-16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	140	137	13300	301	410	189	147	173	108	89	65
2	61	122	133	2590	292	336	183	137	167	102	88	67
3	57	111	129	1650	300	304	181	131	162	92	82	64
4	56	106	125	1300	293	285	177	125	159	335	77	64
5	57	100	128	1080	293	265	176	121	156	684	73	62
6	60	93	128	932	292	252	171	117	173	304	70	78
7	60	88	128	815	285	251	168	114	177	214	70	119
8	61	86	125	725	278	251	174	113	178	186	72	132
9	61	86	125	643	274	251	177	109	211	169	68	111
10	61	81	125	568	274	242	176	110	182	153	65	100
11	85	76	125	497	276	240	178	108	166	142	59	94
12	114	76	122	474	262	237	179	105	154	132	55	93
13	111	76	165	529	256	232	180	109	143	120	54	94
14	95	76	148	559	253	410	214	108	144	115	53	114
15	95	76	135	585	249	388	195	104	152	110	53	117
16	93	76	173	589	246	320	176	103	150	107	53	118
17	79	74	181	573	244	296	165	284	135	104	62	117
18	68	131	164	503	239	258	157	1980	130	99	63	109
19	62	158	152	465	239	250	152	1430	125	95	64	108
20	61	117	145	419	239	600	152	718	124	103	65	105
21	67	114	141	392	240	287	186	455	115	95	65	105
22	83	106	136	380	241	251	202	373	139	105	65	102
23	95	100	132	374	1440	232	194	465	128	123	62	100
24	93	114	130	366	840	221	172	307	116	121	68	99
25	100	355	128	358	589	214	159	258	121	115	84	97
26	167	267	128	346	351	209	152	226	112	128	76	95
27	1290	189	128	337	304	253	151	213	117	125	76	93
28	757	161	128	331	305	223	148	203	122	116	76	94
29	375	149	128	326	---	210	155	195	113	111	75	147
30	293	142	133	319	---	205	162	184	111	101	71	226
31	176	---	55700	312	---	196	---	178	---	93	65	---
TOTAL	4954	3646	59805	32637	9695	8579	5201	9330	4355	4707	2118	3089
MEAN	160	122	1929	1053	346	277	173	301	145	152	68.3	103
MAX	1290	355	55700	13300	1440	600	214	1980	211	684	89	226
MIN	56	74	122	312	239	196	148	103	111	92	53	62
CFSM	.05	.04	.60	.33	.11	.09	.05	.09	.05	.05	.02	.03
IN.	.06	.04	.69	.37	.11	.10	.06	.11	.05	.05	.02	.04
AC-FT	9830	7230	118600	64740	19230	17020	10320	18510	8640	9340	4200	6130
CAL YR 1984	TOTAL	87721	MEAN 240	MAX 55700	MIN 10	CFSM .07	IN 1.01	AC-FT 174000				
WTR YR 1985	TOTAL	148116	MEAN 406	MAX 55700	MIN 53	CFSM .13	IN 1.70	AC-FT 293800				

## COLORADO RIVER BASIN

08150800 BEAVER CREEK NEAR MASON, TX

LOCATION.--Lat 30°38'36", long 99°05'44", Mason County, Hydrologic Unit 12090204, on left bank at downstream side of downstream bridge on U.S. Highway 87, 1.8 mi upstream from Llano River, 6.4 mi downstream from Spring Creek, and 11.1 mi southeast of Mason.

DRAINAGE AREA.--215 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1963 to current year.

REVISED RECORDS.--WSP 2122: 1964-65. WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,253.24 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 3, 1978, at site 300 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Nov. 21-29. Records good except those for periods of estimated daily discharges, which are fair. No known regulation or diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 16.9 ft<sup>3</sup>/s (1.07 in/yr), 12,240 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 66,900 ft<sup>3</sup>/s Aug. 3, 1978 (gage height, 24.0 ft, from floodmarks), from rating curve extended above 7,400 ft<sup>3</sup>/s on basis of slope-area measurements of 20,100 and 66,900 ft<sup>3</sup>/s; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0445	*12,900	*9.81	Mar. 20	0100	2,460	a4.96
Feb. 23	0615	2,120	4.70				

a From floodmark.

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.21	9.3	6.4	145	15	64	15	7.4	1.5	.35	.00	.00
2	.91	6.7	5.7	95	14	40	14	5.4	1.4	.12	.00	.00
3	1.8	5.6	4.9	99	14	32	13	4.9	1.1	.04	.00	.00
4	1.8	4.9	4.3	98	13	28	11	4.5	.96	.03	.00	.00
5	1.7	3.7	5.6	82	13	24	11	4.3	.84	.01	.00	.03
6	1.4	2.6	5.7	70	13	22	11	3.7	2.2	.06	.00	.14
7	2.9	2.1	4.6	62	12	24	10	3.2	3.6	.21	.00	.00
8	4.3	1.6	4.0	55	10	22	11	2.5	3.4	.82	.00	1.5
9	1.8	1.4	3.8	50	10	21	13	1.4	1.6	1.9	.00	1.2
10	9.3	1.2	3.4	45	11	22	10	1.0	1.3	1.9	.00	.60
11	9.3	.95	3.2	40	11	22	11	1.0	.74	1.1	.00	.31
12	1.9	.67	3.2	38	9.9	21	10	.84	.57	.32	.00	.21
13	1.0	.57	3.8	48	9.6	22	8.3	4.4	.65	.20	.00	4.5
14	3.6	.63	2.6	55	9.4	37	8.0	1.6	.80	.03	.00	11
15	2.5	.70	2.4	58	9.1	30	18	8.3	.61	.02	.00	7.2
16	8.7	.70	4.7	60	8.5	26	9.3	5.1	.39	.00	.00	4.3
17	3.4	1.5	2.5	57	7.9	24	7.1	3.3	.18	.00	.00	3.0
18	1.8	1.1	1.9	46	7.6	22	5.6	1.7	.16	.00	.00	2.3
19	.89	6.5	1.6	37	7.6	1.62	5.0	7.9	.16	.00	.00	1.9
20	.54	6.2	1.4	34	7.1	4.59	5.1	5.4	.37	.00	.00	1.3
21	4.3	5.4	1.2	31	7.1	4.6	6.6	5.9	.51	.00	.00	.90
22	1.9	6.2	1.0	30	7.4	3.0	6.5	1.0	.65	.17	.00	.63
23	1.4	7.1	7.5	29	5.39	2.6	5.6	2.1	.70	1.2	.00	.43
24	8.8	8.0	6.9	28	7.5	2.3	4.5	1.4	.39	.56	.00	.34
25	9.5	9.0	7.6	2.6	4.1	2.2	4.2	9.2	.25	.22	.00	.23
26	2.7	1.2	6.7	2.4	3.2	2.0	3.9	6.0	.13	.05	.00	.16
27	6.9	1.4	7.7	2.3	2.7	2.0	3.9	4.3	1.1	.01	.00	.10
28	6.0	9.6	8.4	2.1	3.3	1.9	3.9	3.4	2.5	.00	.00	.13
29	2.8	8.0	7.9	1.9	---	1.8	8.3	2.5	1.2	.00	.00	6.1
30	1.8	7.1	8.0	1.8	---	1.7	1.8	1.4	.78	.00	.00	18
31	1.2	---	14.30	1.7	---	1.7	---	1.8	---	.00	.00	---
TOTAL	491.35	154.92	1776.5	1540	974.2	1382	343.8	216.74	30.74	9.32	.00	66.51
MEAN	15.9	5.16	57.3	49.7	34.8	44.6	11.5	6.99	1.02	.30	.000	2.22
MAX	6.9	1.4	14.30	145	5.39	4.59	8.0	3.3	3.6	1.9	.00	.18
MIN	.21	.57	3.2	1.7	7.1	1.7	3.9	.84	.13	.00	.00	.00
CFSM	.07	.02	.27	.23	.16	.21	.05	.03	.005	.001	.000	.01
IN.	.09	.03	.31	.27	.17	.24	.06	.04	.01	.00	.00	.01
AC-FT	975	307	3520	3050	1930	2740	682	430	61	18	.00	132

CAL YR 1984	TOTAL	2722.49	MEAN	7.44	MAX	1430	MIN	.00	CFSM	.04	IN	.47	AC-FT	5400
WTR YR 1985	TOTAL	6986.08	MEAN	19.1	MAX	1430	MIN	.00	CFSM	.09	IN	1.21	AC-FT	13860

## COLORADO RIVER BASIN

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08151500 LLANO RIVER AT LLANO, TX  
(National stream-gaging accounting network)

LOCATION.--Lat 30°45'04", long 98°40'10", Llano County, Hydrologic Unit 12090204, on right bank in Llano, 0.4 mi downstream from bridge on State Highway 16, 7 mi upstream from Little Llano River, and 29.3 mi upstream from mouth.

DRAINAGE AREA.--4,197.14 mi<sup>2</sup>, of which 5.14 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1939 to current year.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 970.01 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are many small diversions above station. Part of low flow of Llano River disappears into various formations, many of which are faulted, between stations near Junction and Llano. Gage-height telemeter and rain gage at station.

AVERAGE DISCHARGE.--46 years, 354 ft<sup>3</sup>/s (1.15 in/yr), 256,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 232,000 ft<sup>3</sup>/s Sept. 10, 1952 (gage height, 32.6 ft), from rating curve extended above 129,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in 1952-56, 1964, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1879, 41.5 ft June 14, 1935 (discharge, 380,000 ft<sup>3</sup>/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	2045	*119,000	*24.00	No other peak greater than base discharge.			
Minimum discharge, 16 ft <sup>3</sup> /s Dec. 27; minimum gage height, 2.32 ft Oct. 1.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	198	114	19700	290	814	270	210	150	101	84	53
2	25	140	102	2340	278	645	237	154	134	97	78	40
3	25	122	90	2390	279	511	227	121	120	93	76	35
4	25	113	86	2160	298	423	216	103	106	83	69	35
5	28	106	86	1720	301	355	205	96	106	282	67	49
6	27	100	81	1420	303	317	200	86	127	573	59	85
7	365	95	81	1270	275	302	193	81	128	372	50	83
8	427	92	81	1120	257	302	203	74	146	262	49	77
9	200	88	77	1000	243	302	208	66	131	193	51	120
10	242	84	77	908	312	290	215	63	196	151	54	125
11	259	81	73	814	334	273	222	59	165	133	52	102
12	121	79	73	753	258	251	220	59	135	118	48	112
13	107	77	94	786	226	252	219	332	114	107	41	88
14	109	77	179	891	210	451	212	393	102	95	34	95
15	82	77	210	1050	206	424	352	141	98	90	55	106
16	90	75	370	976	237	332	253	99	104	82	62	117
17	103	76	320	919	236	301	200	402	105	76	60	119
18	89	99	279	767	205	290	172	1320	101	74	50	121
19	79	104	210	681	229	274	156	1590	98	72	47	124
20	73	125	184	579	199	1540	146	984	91	72	52	100
21	74	122	155	504	199	838	169	639	88	77	52	94
22	124	111	140	465	218	579	183	501	98	74	51	93
23	98	106	122	445	2110	460	211	458	106	69	44	79
24	163	110	118	436	1560	393	194	513	136	78	43	71
25	173	360	105	416	986	352	170	556	94	98	48	69
26	242	390	102	388	656	327	148	342	92	94	48	57
27	391	310	86	395	481	500	135	284	97	98	69	53
28	1350	212	86	370	451	490	129	251	105	105	64	58
29	615	163	81	356	---	368	370	223	104	101	64	118
30	352	135	105	362	---	333	357	195	104	91	58	142
31	285	---	46700	319	---	307	---	170	---	85	58	---
TOTAL	6364	4027	50667	46700	11837	13596	6392	10565	3481	4096	1737	2620
MEAN	205	134	1634	1506	423	439	213	341	116	132	56.0	87.3
MAX	1350	390	46700	19700	2110	1540	370	1590	196	573	84	142
MIN	21	75	73	319	199	251	129	59	88	69	34	35
CFSM	.05	.03	.39	.36	.10	.11	.05	.08	.03	.03	.01	.02
IN.	.06	.04	.45	.41	.11	.12	.06	.09	.03	.04	.02	.02
AC-FT	12620	7990	100500	92630	23480	26970	12680	20960	6900	8120	3450	5200

CAL YR 1984	TOTAL	76280.00	MEAN	208	MAX	46700	MIN	.00	CFSM	.05	IN	.68	AC-FT	151300
WTR YR 1985	TOTAL	162082.00	MEAN	444	MAX	46700	MIN	21	CFSM	.11	IN	1.44	AC-FT	321500

## COLORADO RIVER BASIN

08151500 LLANO RIVER AT LLANO, TX --Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: April 1979 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1979 to September 1981.

WATER TEMPERATURES: April 1979 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 487 micromhos Jan. 3, 1981; minimum daily, 191 micromhos Sept. 3, 1981.

WATER TEMPERATURES: Maximum daily, 33.0°C on several days during summer of 1980-81; minimum daily, 6.0°C Jan. 29, Feb. 9, Dec. 22, 1980, and Jan. 19, 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)
NOV 06...	1440	98	355	7.5	17.5	--	8.6	93	1.0	96	100	170
MAR 19...	1400	230	450	8.0	16.5	5.3	8.6	93	1.3	76	22	210
JUL 09...	1300	189	405	8.0	26.0	6.2	8.6	109	2.1	310	420	180
AUG 29...	1305	73	380	8.2	29.0	25	9.0	122	1.0	96	88	160

DATE	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
NOV 06...	29	36	19	12	.4	2.5	140	16	18	<.10	6.2
MAR 19...	31	48	22	19	.6	2.4	180	23	29	.30	6.3
JUL 09...	17	39	21	14	.5	2.5	167	14	21	.20	19
AUG 29...	6	27	22	17	.6	2.7	152	14	24	.30	25

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 06...	181	190	<.10	.030	.30	.010	<.010	.010	5	1.3	94
MAR 19...	248	260	.21	.010	.40	.010	--	<.010	27	17	94
JUL 09...	226	230	<.10	.040	.40	.020	<.010	.020	16	8.2	72
AUG 29...	224	220	<.10	.030	.60	.010	<.010	.020	11	2.2	77



COLORADO RIVER BASIN

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08151500 LLANO RIVER AT LLANO, TX --Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 06...	1440	1	59	<.0	<1	<1	<3	<1	12	<1
MAR 19...	1400	<1	66	<.5	<1	<1	<3	2	<3	8
JUL 09...	1300	3	74	<.5	<1	<1	<3	1	7	<1
AUG 29...	1305	3	61	<.5	<1	<1	<3	3	6	4
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 06...	7	4	<.1	<10	<1	<1	<1	210	<6	8
MAR 19...	13	9	<.1	<10	4	2	<1	250	<6	<3
JUL 09...	<4	3	<.1	<10	1	<1	<1	320	6	6
AUG 29...	9	2	<.1	<10	<1	<1	<1	270	7	5

## COLORADO RIVER BASIN

08152000 SANDY CREEK NEAR KINGSLAND, TX

LOCATION.--Lat 30°33'30", long 98°28'19", Llano County, Hydrologic Unit 12090201, on left bank at downstream side of bridge on State Highway 71, 6.6 mi upstream from mouth, and 7.3 mi south of Kingsland.

DRAINAGE AREA.--346 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1966 to current year.

Water-quality records.--Sediment records: January 1968 to September 1975.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 862.31 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharge: Oct. 7-15 and June 22-24. Records fair. Some diversions above station for irrigation (amount unknown). Several observations of water temperature were made during the year. Gage-height telemeter located at station.

AVERAGE DISCHARGE.--19 years, 59.9 ft<sup>3</sup>/s (2.35 in/yr), 43,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,500 ft<sup>3</sup>/s June 16, 1981 (gage height, 17.63 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of Sept. 11, 1952, the highest since at least 1881, reached a stage of 34.2 ft (discharge, 163,000 ft<sup>3</sup>/s), from slope-area measurement at gage site.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 20	1200	*12,900	*11.80	Oct. 25	2300	5,290	9.08
Oct. 21	0900	6,040	9.37	Feb. 23	0900	4,150	8.58

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	95	31	425	64	510	68	34	7.8	4.3	.01	.00
2	1.0	58	29	167	62	249	60	19	6.4	3.6	.01	.00
3	1.0	50	23	215	61	217	55	15	5.1	4.0	.00	.00
4	1.0	42	23	217	62	178	53	13	4.9	5.4	.00	.00
5	1.0	37	38	156	69	124	55	13	4.5	4.0	.00	.05
6	1.0	36	38	125	68	94	54	13	53	4.9	.00	16
7	3.5	27	27	110	57	106	51	12	33	8.9	.00	8.6
8	2.5	22	24	91	50	101	49	12	28	4.4	.00	3.6
9	2.0	20	23	87	55	90	53	11	19	3.9	.00	2.2
10	1.6	16	22	71	55	90	55	11	13	3.3	.00	1.5
11	1.3	13	22	66	66	85	54	10	9.4	2.9	.00	4.3
12	1.1	12	23	74	64	83	55	10	7.4	2.8	.00	16
13	10	11	26	90	55	79	54	12	5.8	2.4	.00	9.8
14	6.0	11	48	123	49	230	65	14	4.7	2.1	.00	5.2
15	3.2	11	105	191	43	195	55	11	4.3	1.7	.00	3.1
16	3.5	10	663	369	42	119	47	10	3.5	1.5	.00	2.4
17	2.8	12	253	404	39	106	41	153	2.9	1.3	.00	2.3
18	2.7	66	130	184	37	85	35	58	5.0	1.2	.00	2.8
19	2.4	69	105	131	38	83	32	29	4.3	1.2	.00	2.6
20	2090	41	89	113	39	766	33	21	3.1	1.1	.00	2.3
21	2050	29	76	88	39	337	49	35	3.0	.98	.00	2.3
22	316	24	64	98	39	188	52	34	389	.74	.00	2.3
23	66	21	61	96	1670	147	45	79	74	.58	.00	2.2
24	355	32	59	104	453	104	47	40	22	.51	.10	1.8
25	1030	211	46	98	266	99	32	33	14	.46	.00	3.0
26	1350	94	45	85	183	89	29	46	12	.41	.00	2.3
27	901	67	49	84	136	84	29	33	11	.34	.00	1.9
28	699	47	52	77	161	88	28	21	9.1	.35	.00	4.3
29	224	38	48	68	---	86	31	15	6.7	.23	.00	131
30	116	31	48	70	---	82	62	11	5.2	.11	.00	101
31	147	---	555	70	---	74	---	9.2	---	.06	.00	---
TOTAL	9392.6	1253	2845	4347	4022	4968	1428	837.2	771.1	69.67	.12	334.85
MEAN	303	41.8	91.8	140	144	160	47.6	27.0	25.7	2.25	.004	11.2
MAX	2090	211	663	425	1670	766	68	153	389	8.9	.10	131
MIN	1.0	10	22	66	37	74	28	9.2	2.9	.06	.00	.00
CFSM	.88	.12	.27	.41	.42	.46	.14	.08	.07	.007	.000	.03
IN.	1.01	.13	.31	.47	.43	.53	.15	.09	.08	.01	.00	.04
AC-FT	18630	2490	5640	8620	7980	9850	2830	1660	1530	138	.2	664

CAL YR 1984	TOTAL	14355.03	MEAN	39.2	MAX	2090	MIN	.00	CFSM	.11	IN	1.54	AC-FT	28470
WTR YR 1985	TOTAL	30268.54	MEAN	82.9	MAX	2090	MIN	.00	CFSM	.24	IN	3.25	AC-FT	60040

## COLORADO RIVER BASIN

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## 08152900 PEDERNALES RIVER NEAR FREDERICKSBURG, TX

LOCATION.--Lat 30°13'13", long 98°52'10", Gillespie County, Hydrologic Unit 12090206, on left bank at downstream side of bridge on U.S. Highway 87, 2.0 mi upstream from Mueseback Creek, 3.8 mi south of Fredericksburg, and 88.7 mi upstream from mouth.

DRAINAGE AREA.--369 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,564.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known regulation or diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--6 years, 36.9 ft<sup>3</sup>/s (26,730 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft<sup>3</sup>/s June 4, 1981 (gage height, 23.23 ft); no flow July 13-18, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of Aug. 2, 1978, which is the highest since 1907, reached a stage of 41.6 ft (discharge not determined). The highest known discharge was 64,000 ft<sup>3</sup>/s on June 1, 1979 (gage height, 34.4 ft, from floodmark), from rating curve extended above a discharge measurement of 42,300 ft<sup>3</sup>/s on June 1, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 20	1330	8,090	17.97	Dec. 31	0800	*12,800	*22.68
Oct. 21	1030	3,870	12.53	Feb. 23	0730	7,500	17.28
Oct. 27	1230	1,930	9.47	June 18	2230	2,310	10.14
Oct. 28	2230	3,220	11.56				

Minimum daily discharge, 0.04 ft<sup>3</sup>/s Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	44	16	313	35	142	50	100	15	12	.53	.31
2	.64	33	15	154	34	94	49	52	13	11	.44	.24
3	.62	27	14	119	34	85	48	38	12	10	.41	.18
4	.65	23	13	101	35	81	46	32	11	13	.41	.10
5	.70	20	15	87	37	69	42	30	10	14	.38	.04
6	.80	17	16	75	38	64	39	28	70	13	.32	6.5
7	1.3	15	16	69	35	65	38	25	41	11	.32	8.7
8	1.9	14	15	61	32	66	41	25	22	11	.31	4.9
9	1.2	12	14	58	32	64	59	25	16	11	.24	2.4
10	.97	12	13	54	33	60	60	25	12	11	.24	1.6
11	2.1	11	13	48	32	58	57	24	10	9.3	.14	1.2
12	3.0	11	13	50	29	55	56	24	8.5	16	.13	1.6
13	3.7	10	134	61	28	56	59	23	8.2	36	.13	3.6
14	8.5	10	84	63	32	94	159	23	7.7	18	.13	6.7
15	4.8	11	53	62	40	82	86	23	7.7	14	.13	7.3
16	2.9	11	495	80	34	73	63	23	7.3	11	.16	4.7
17	2.0	10	123	98	32	67	54	85	7.2	7.8	.18	4.0
18	2.3	27	74	80	32	60	50	103	93	5.5	.18	3.5
19	2.0	27	58	74	32	60	47	54	303	5.5	.18	3.6
20	2090	18	50	67	34	95	48	39	55	5.5	.16	2.8
21	1120	14	45	56	36	96	55	37	36	17	.11	2.3
22	237	12	38	53	37	72	57	62	59	6.2	.13	2.0
23	83	11	34	50	1870	65	50	53	65	4.0	.13	2.0
24	58	23	33	48	244	61	40	38	31	3.0	.14	1.7
25	111	107	29	46	126	60	36	34	26	2.6	.20	1.7
26	98	45	27	43	104	57	35	31	26	2.3	.24	1.7
27	777	27	27	42	88	65	34	28	25	2.0	.24	1.4
28	521	20	29	40	90	67	36	26	23	1.6	.18	1.7
29	482	19	31	39	---	62	36	22	18	1.2	.18	15
30	104	17	32	39	---	60	46	20	16	.97	.18	23
31	60	---	2730	38	---	55	---	17	---	.88	.26	---
TOTAL	5782.48	658	4299	2268	3265	2210	1576	1169	1054.6	287.35	7.11	116.47
MEAN	187	21.9	139	73.2	117	71.3	52.5	37.7	35.2	9.27	.23	3.88
MAX	2090	107	2730	313	1870	142	159	103	303	36	.53	23
MIN	.62	10	13	38	28	55	34	17	7.2	.88	.11	.04
AC-FT	11470	1310	8530	4500	6480	4380	3130	2320	2090	570	14	231
CAL YR 1984	TOTAL	12052.02	MEAN	32.9	MAX	2730	MIN	.00	AC-FT	23910		
WTR YR 1985	TOTAL	22693.01	MEAN	62.2	MAX	2730	MIN	.04	AC-FT	45010		

## 08153500 PEDERNALES RIVER NEAR JOHNSON CITY, TX

LOCATION.--Lat 30°17'30", long 98°23'57". Blanco County, Hydrologic Unit 12090206, near left downstream end of bridge on U.S. Highway 281, 0.2 mi downstream from Towhead Creek, 1.1 mi northeast of Johnston City, 3.4 mi downstream from Buffalo Creek, and 48.0 mi upstream from mouth.

DRAINAGE AREA.--901 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1939 to current year.

REVISED RECORDS.--WSP 1632: 1953(M), 1957, 1958(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 1,096.70 ft above National Geodetic Vertical Datum of 1929. May 4 to Sept. 13, 1939, nonrecording gage, and Sept. 14, 1939, to Sept. 10, 1952, water-stage recorder at upstream side of bridge at same datum. Sept. 11, 1952, to June 29, 1953, nonrecording gage, and June 30, 1953, to Oct. 7, 1954, water-stage recorder at site 360 ft downstream at same datum.

REMARKS.--Estimated daily discharges, Nov. 12-17, Dec. 9-11, Jan. 21, 23-25, Feb. 4-9, 12-14, and Mar. 3, 4. Records fair. There are diversions above station for irrigation. During the year, the city of Fredericksburg discharged sewage effluent (amounts unknown) into the river upstream from station. The city of Johnson City diverts varying amounts of water from the pool at gage and discharges sewage effluent in the river below gage. Flow is affected at times by discharge from the flood-detention pools of four floodwater-retarding structures with a combined detention capacity of 4,580 acre-ft. These structures control runoff from 15.6 mi<sup>2</sup> in the Williamson Creek drainage basin.

AVERAGE DISCHARGE.--46 years (water years 1940-85), 174 ft<sup>3</sup>/s (126,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 441,000 ft<sup>3</sup>/s Sept. 11, 1952 (gage height, 42.5 ft, from floodmark), from rating curve extended above 116,000 ft<sup>3</sup>/s on basis of slope-area measurement of 441,000 ft<sup>3</sup>/s; no flow at times in 1951-52, 1954, 1956-57, 1963-64, 1967-68, 1971, and 1984-85.  
Maximum stage since at least 1859, 42.5 ft Sept. 11, 1952.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1869 reached a stage of 33 ft from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 20	1400	10,900	13.67	Dec. 16	0400	4,320	12.06
Oct. 21	1030	10,000	13.50	Dec. 31	1530	*14,600	*14.31
Oct. 24	1530	5,930	12.52	Feb. 23	1530	7,950	13.03
Oct. 26	0230	8,670	13.20	June 6	0800	4,590	12.14

Minimum discharge, no flow Oct. 1-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	334	57	1430	117	771	198	253	59	52	17	1.1
2	.00	140	54	466	149	404	197	200	53	49	16	1.0
3	.00	119	45	363	142	266	198	168	47	52	13	1.0
4	.00	89	45	336	128	226	191	133	39	59	10	.98
5	.00	72	57	276	145	265	189	119	40	64	9.6	.95
6	.00	69	63	241	140	239	195	101	1470	65	8.3	36
7	.00	64	57	218	130	226	191	88	251	75	6.5	26
8	.00	61	52	192	120	226	185	88	153	71	5.3	23
9	.00	57	48	182	150	226	184	88	100	66	4.0	25
10	.00	42	45	165	130	226	191	83	69	72	3.1	25
11	.00	35	48	156	96	214	197	80	57	64	1.9	24
12	12	33	51	154	90	226	202	79	54	68	1.4	26
13	18	30	55	186	84	226	202	77	45	221	1.0	22
14	15	29	124	237	90	533	426	78	45	117	.86	23
15	13	28	225	311	96	452	311	76	42	98	.91	33
16	8.2	26	2440	341	99	380	244	72	42	90	.94	34
17	4.0	35	636	398	105	327	201	116	44	50	.87	31
18	3.0	50	317	307	105	296	180	115	42	40	.80	33
19	2.1	61	230	257	103	280	171	135	136	35	.87	30
20	3640	64	184	184	98	380	170	115	198	35	.92	31
21	5120	62	165	160	96	390	185	112	93	32	.77	26
22	1010	57	159	180	99	369	177	133	677	31	.74	24
23	315	53	140	200	3930	294	190	267	555	29	.68	17
24	1700	50	122	210	1230	279	189	162	161	33	.71	15
25	621	165	105	190	479	260	158	132	109	40	1.9	17
26	2700	198	105	180	320	252	142	135	86	39	3.4	24
27	1640	92	104	150	270	253	142	110	77	36	1.8	22
28	1390	80	96	142	440	266	132	97	72	26	1.1	21
29	960	73	96	142	---	252	129	75	65	23	1.0	35
30	395	64	96	149	---	222	133	72	59	22	1.1	40
31	649	---	3670	127	---	194	---	69	---	21	1.1	---
TOTAL	20215.30	2332	9691	8230	9181	9420	5800	3628	4940	1775	117.57	668.03
MEAN	652	77.7	313	265	328	304	193	117	165	57.3	3.79	22.3
MAX	5120	334	3670	1430	3930	771	426	267	1470	221	17	40
MIN	.00	26	45	127	84	194	129	69	39	21	.68	.95
AC-FT	40100	4630	19220	16320	18210	18680	11500	7200	9800	3520	233	1330

CAL YR 1984	TOTAL	36281.37	MEAN	99.1	MAX	5120	MIN	.00	AC-FT	71960
WTR YR 1985	TOTAL	75997.90	MEAN	208	MAX	5120	MIN	.00	AC-FT	150700

## COLORADO RIVER BASIN

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08153500 PEDERNALES RIVER NEAR JOHNSON CITY, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1948 to September 1950, October 1971 to September 1985 (discontinued).

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 15...	1218	12	769	25.0	260	55	28	45	59
NOV 26...	1124	190	658	15.0	270	65	54	34	37
JAN 07...	1115	208	587	10.0	280	36	66	27	20
FEB 19...	1315	118	656	15.5	290	52	56	36	29
APR 01...	1157	171	592	19.0	260	36	47	35	26
MAY 13...	1150	76	634	25.0	260	39	45	37	33
JUN 24...	1145	142	267	27.0	110	11	26	11	8.3
AUG 05...	0939	8.3	509	28.0	200	31	26	32	30
SEP 16...	1000	32	620	25.0	230	49	29	38	43

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)
OCT 15...	2	4.5	200	43	110	.40	7.4	420
NOV 26...	1	3.0	210	35	75	.20	6.1	370
JAN 07...	.5	2.6	240	26	37	.30	12	330
FEB 19...	.8	2.1	236	40	50	.30	1.5	360
APR 01...	.7	2.1	226	33	40	.30	4.4	320
MAY 13...	.9	3.0	226	31	52	.30	12	350
JUN 24...	.4	4.0	99	12	13	.20	9.2	140
AUG 05...	.9	3.1	166	26	48	.40	15	280
SEP 16...	1	3.4	180	36	72	.40	12	340



## COLORADO RIVER MAIN STEM

## 08154500 LAKE TRAVIS NEAR AUSTIN, TX

LOCATION.--Lat 30°23'29", long 97°54'24", Travis County, Hydrologic Unit 12090205, in powerhouse at Mansfield Dam on Colorado River, 7.3 mi downstream from Sandy Creek, 12 mi northwest of Austin, and at mile 318.0.

DRAINAGE AREA.--38,755 mi<sup>2</sup>, approximately, of which 11,403 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--September 1940 to current year. Prior to October 1948, published as Marshall Ford Reservoir near Austin.

REVISED RECORDS.--WSP 1342: Drainage area. WDR TX-83-3: 1982.

GAGE.--Nonrecording gage. Datum of gage is 0.12 ft National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Dec. 26, 1940, staff gages on left bank near dam, datum is NGVD, unadjusted. Dec. 26, 1940, to February 1942, mercury manometer in powerhouse, datum is NGVD, unadjusted.

REMARKS.--The lake is formed by a 7,098-foot-long concrete gravity, earth, and rockfill dam. Storage began Sept. 9, 1940, and dam was completed in early 1942. Capacity curve is based on an October 1939 survey. Capacity between gage heights 681.0 and 714.0 ft is 778,000 acre-ft and is reserved for flood control. Water is used for power development and for irrigation below Columbus. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08153500. Diversion for municipal and irrigation purposes are pumped from lake, and minor amounts of sewage effluent are discharged into the lake. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam (roadway).....	750.1	
Design flood.....	748.9	3,223,000
Crest of spillway.....	714.0	1,950,000
Top of power storage.....	681.0	1,172,000
Lowest gated outlet (invert).....	535.8	27,900

COOPERATION.--Records of daily gage heights and capacity curve furnished by Lower Colorado River Authority.

EXTREMES (at 2400) FOR PERIOD OF RECORD.--Maximum contents, 1,770,000 acre-ft May 18, 1957 (gage height, 707.4 ft); minimum, 332,600 acre-ft Aug. 13, 14, 1951 (gage height, 614.2 ft).

EXTREMES (at 2400) FOR CURRENT YEAR.--Maximum contents, 1,167,000 acre-ft Mar. 21, 23; maximum gage height, 680.77 ft Mar. 21; minimum contents, 536,900 acre-ft Oct. 6 (gage height, 636.58 ft).

Capacity table (gage height, in feet, and total contents, in acre-feet)

635.0	520,600	650.0	690,700	665.0	899,900	680.0	1,152,000
640.0	572,700	655.0	754,500	670.0	976,900	685.0	1,252,000
645.0	631,700	660.0	824,700	675.0	1,062,000		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	545800	682000	695500	905900	1090000	1115000	1163000	1142000	1086000	1020000	958100	878000
2	544300	682800	695900	924800	1020000	1121000	1161000	1139000	1081000	1016000	955000	874200
3	542200	683600	696700	933800	1021000	1123000	1161000	1137000	1076000	1013000	952300	873200
4	540600	684200	697500	940000	1022000	1131000	1159000	1135000	1071000	1009000	949800	869700
5	538700	685000	698300	946400	1025000	1132000	1158000	1135000	1069000	1006000	947800	868200
6	536900	685300	698100	948500	1026000	1135000	1156000	1133000	1099000	1004000	945300	869300
7	540600	685700	698600	951500	1027000	1137000	1154000	1130000	1101000	1003000	943600	868100
8	539900	685700	698900	954700	1028000	1139000	1156000	1129000	1098000	1002000	940600	867300
9	542000	685700	699300	956000	1030000	1144000	1156000	1126000	1094000	1000000	936600	867200
10	543900	686300	699300	958600	1033000	1146000	1155000	1122000	1092000	1000000	933000	866000
11	544700	686200	701400	962200	1034000	1148000	1157000	1119000	1088000	998400	931200	865200
12	544600	686800	701700	963700	1035000	1150000	1155000	1115000	1085000	996300	928400	864600
13	546900	686800	703600	966500	1036000	1153000	1155000	1117000	1081000	994200	927100	863600
14	549200	686800	704100	969800	1038000	1156000	1156000	1115000	1077000	991700	925300	863100
15	551000	686700	706800	976400	1041000	1154000	1155000	1113000	1074000	990600	922700	862200
16	551900	686700	713400	979000	1041000	1155000	1153000	1115000	1074000	988500	918300	860700
17	551700	687000	718900	983800	1041000	1155000	1153000	1113000	1069000	986100	917400	858200
18	551600	688800	723200	987700	1042000	1155000	1151000	1113000	1063000	983700	914000	856700
19	551300	688800	724700	991400	1044000	1156000	1151000	1111000	1058000	981600	910900	855300
20	581600	691300	726000	994700	1045000	1165000	1149000	1112000	1054000	979800	908000	854600
21	614800	690900	727200	995600	1047000	1167000	1151000	1113000	1050000	977400	905000	852500
22	623200	690700	729700	997600	1050000	1166000	1149000	1112000	1050000	976100	902600	851400
23	626300	690500	731200	999900	1077000	1167000	1150000	1109000	1048000	974600	900400	850200
24	635800	691300	732500	1002000	1090000	1166000	1149000	1109000	1046000	972400	897800	848100
25	644700	692900	733700	1004000	1096000	1165000	1148000	1107000	1043000	971000	895300	847500
26	653900	694400	734400	1005000	1100000	1164000	1146000	1104000	1040000	969500	893400	845400
27	660600	694900	735700	1008000	1104000	1162000	1145000	1102000	1038000	967900	889400	841700
28	667600	693600	736300	1010000	1110000	1164000	1143000	1099000	1034000	965900	888500	840800
29	672600	694700	737700	1012000	---	1165000	1143000	1095000	1029000	964200	886700	845600
30	675500	695300	742000	1015000	---	1165000	1144000	1095000	1025000	962200	883200	842900
31	679100	---	804100	1018000	---	1163000	---	1091000	---	960000	880400	---
MAX	679100	695300	804100	1018000	1110000	1167000	1163000	1142000	1101000	1020000	958100	878000
MIN	536900	682000	695500	905900	1020000	1115000	1143000	1091000	1025000	960000	880400	840800
(+)	649.02	650.37	658.59	672.48	677.65	680.55	679.54	676.62	672.90	668.91	663.71	661.21
(+)	+131300	+16200	+108800	+213900	92000	+53000	-19000	-53000	-66000	-65000	-79600	-37500
CAL YR 1984	MAX	952600	MIN	536900	(+)	+133600						
WTR YR 1985	MAX	1167000	MIN	536900	(+)	+295100						

(+) Gage height in feet, at end of month.

(+) Change in contents, in acre-feet.

## COLORADO RIVER MAIN STEM

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08154510 COLORADO RIVER BELOW MANSFIELD DAM, AUSTIN, TX

LOCATION.--Lat 30°23'30", long 97°54'28", Travis County, Hydrologic Unit 12090205, at the downstream side of Mansfield Dam, 12.9 mi northwest of the State Capitol at Austin, and at mile 318.0.

DRAINAGE AREA.--38,755 mi<sup>2</sup>, approximately, of which 11,403 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year.

GAGE.--None. Daily discharge record is based on daily releases from Lake Travis.

REMARKS.--No estimated daily discharges. Records fair.

COOPERATION.--All records of releases were furnished by the Lower Colorado River Authority.

AVERAGE DISCHARGE.--11 years 1,474 ft<sup>3</sup>/s (1,068,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 25,300 ft<sup>3</sup>/s Apr. 17-19, 1977; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 2,300 ft<sup>3</sup>/s May 31; no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	758	.00	214	.00	57	.00	1270	1030	2180	2070	1470	1630
2	737	.00	.00	245	204	.00	1280	1470	2230	2060	1740	1620
3	767	.00	196	.00	74	.00	1290	1310	2100	1910	1390	1730
4	787	.00	279	20	230	.00	1100	938	2190	2000	1600	1580
5	784	.00	.00	.00	.00	.00	951	1120	1450	1590	1910	1560
6	879	.00	.00	.00	197	22	1230	1210	.00	1350	1680	1160
7	460	.00	60	.00	.00	.00	1270	1240	19	1240	1780	1470
8	1080	114	.00	125	.00	.00	1270	1270	2080	1450	1800	1370
9	.00	.00	.00	.00	88	.00	1180	1500	2000	1430	1930	823
10	.00	275	211	.00	114	.00	1070	1660	1690	1500	1720	1540
11	.00	.00	.00	.00	66	.00	1720	1750	2010	1470	1930	1290
12	230	.00	.00	.00	.00	.00	1100	1680	1790	1340	1700	1330
13	.00	.00	136	.00	.00	549	895	1560	1830	1690	1630	1140
14	.00	163	111	.00	140	1610	968	1530	2220	1830	1950	1080
15	110	286	.00	.00	143	1790	1170	1410	1850	1740	1880	1070
16	.00	.00	285	218	.00	1130	1310	1480	2140	1630	1840	1240
17	50	.00	183	.00	.00	1800	1090	1540	1870	1480	1950	1110
18	164	.00	143	.00	.00	1800	1080	1370	1890	1600	1660	1060
19	.00	240	.00	.00	.00	1800	1100	1220	1730	1660	1720	1100
20	153	.00	.00	.00	183	1810	999	1280	2120	1480	2070	968
21	.00	154	.00	.00	169	1760	1070	1320	1810	1400	1660	1010
22	.00	114	.00	.00	.00	1840	1130	1290	1470	1480	1650	1270
23	.00	114	.00	.00	.00	1760	1080	1290	1740	1450	1740	1340
24	.00	114	.00	.00	.00	1760	1160	1220	1660	1500	2010	1050
25	.00	.00	.00	94	30	1580	1000	1460	1760	1280	1870	1130
26	.00	136	143	158	.00	1760	1050	1780	1680	1540	1990	1150
27	.00	666	71	.00	.00	1720	1060	1760	1680	1410	1910	1150
28	.00	899	.00	.00	.00	1900	1170	1750	1720	1410	1600	557
29	.00	283	80	46	---	1710	1420	1980	2160	1320	1800	.00
30	.00	.00	.00	88	---	965	1280	1900	2170	1380	1890	926
31	.00	---	.00	.00	---	1420	---	2300	---	1640	1580	---
TOTAL	6959.00	3558.00	2112.00	994.00	1695.00	30486.00	34763	45618	53239.00	48330	55050	35454.00
MEAN	224	119	68.1	32.1	60.5	983	1159	1472	1775	1559	1776	1182
MAX	1080	899	285	245	230	1900	1720	2300	2230	2070	2070	1730
MIN	.00	.00	.00	.00	.00	.00	895	938	.00	1240	1390	.00
AC-FT	13800	7060	4190	1970	3360	60470	68950	90480	105600	95860	109200	70320
CAL YR 1984	TOTAL	374454.00	MEAN	1023	MAX	2930	MIN	.00	AC-FT	742700		
WTR YR 1985	TOTAL	318258.00	MEAN	872	MAX	2300	MIN	.00	AC-FT	631300		

## COLORADO RIVER MAIN STEM

08154510 COLORADO RIVER BELOW MANSFIELD DAM, AUSTIN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1980 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
APR 17...	1315	591	8.3	14.0	10.1	99	.1	200	61
JUL 02...	0910	582	7.5	15.5	5.6	57	.8	200	58
AUG 26...	1405	547	7.5	17.5	2.7	29	.4	210	59

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
APR 17...	42	23	39	1	4.1	139	44	70	.20
JUL 02...	47	21	36	1	3.9	146	46	67	.20
AUG 26...	48	21	33	1	3.9	148	38	58	.20

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
APR 17...	4.7	310	<.010	.30	.030	.77	.80	<.010	--
JUL 02...	6.4	320	<.010	.40	.030	.27	.30	<.010	4.1
AUG 26...	7.1	300	<.010	.30	.050	.35	.40	.020	--

COLORADO RIVER BASIN

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08154700 BULL CREEK AT LOOP 360 NEAR AUSTIN, TX

LOCATION.--Lat 30°22'19", long 97°47'04", Travis County, Hydrologic Unit 12090205, on right bank at downstream side of bridge at Loop 360, 1.0 mi upstream from West Fork Bull Creek and Farm Road 2222, and 7.1 mi northwest of the State Capitol Building in Austin.

DRAINAGE AREA.--22.3 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1976 to July 1978 (operated as a flood-hydrograph partial-record station only), July 1978 to current year.

GAGE.--Water-stage recorder, concrete control, and crest-stage gage. Datum of gage is 534.08 ft above National Geodetic Vertical Datum of 1929 (levels from city of Austin bench mark).

REMARKS.--Estimated daily discharges: June 6-10. Water-discharge records good. No known regulation or diversion above station. There are two recording rain gages in the watershed. This station is part of a hydrologic research project to study the rainfall-runoff relationship for the Austin urban-rural areas.

AVERAGE DISCHARGE.--7 years, 9.95 ft<sup>3</sup>/s (6.06 in/yr), 7,210 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,700 ft<sup>3</sup>/s May 13, 1982 (gage height, 11.96 ft); no flow for several days in 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 10	1945	1,450	6.12	Oct. 22	1830	347	4.20
Oct. 13	1245	661	5.15	Feb. 23	0600	4,950	8.33
Oct. 14	0515	289	4.25	May 13	1600	1,400	5.62
Oct. 20	1400	*8,500	*10.10	June 6	0915	2,950	6.99
Oct. 21	1000	1,050	5.30				

Minimum daily discharge, 0.04 ft<sup>3</sup>/s Oct. 1, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.04	25	8.4	23	12	59	13	15	3.3	3.5	.43	.41
2	.06	22	7.7	21	12	47	13	8.3	2.8	3.4	.41	.43
3	.06	21	7.7	21	12	43	12	7.4	2.3	4.2	.41	.40
4	.07	19	8.4	22	11	41	12	6.7	2.0	8.3	.42	.34
5	.05	17	18	21	12	36	11	5.9	7.5	4.7	.47	.41
6	.04	15	12	20	13	33	9.3	5.4	441	3.4	.42	2.8
7	16	14	11	19	11	31	8.9	5.4	36	4.1	.81	1.1
8	1.7	14	9.5	18	11	31	8.8	5.4	21	3.9	.50	.68
9	19	13	9.2	18	11	29	8.3	5.4	19	2.9	.42	.55
10	109	12	9.0	17	29	26	8.5	5.3	17	1.9	.38	.62
11	35	10	8.4	15	30	24	11	4.9	19	2.0	1.7	2.4
12	14	9.5	8.4	15	19	23	10	4.7	18	2.1	3.2	1.9
13	148	9.5	12	15	17	23	22	89	13	1.8	1.2	1.2
14	116	9.5	11	16	17	29	21	20	8.6	1.8	.81	.87
15	26	8.9	9.7	16	16	24	13	8.2	7.0	2.0	.71	.92
16	16	8.1	28	32	16	23	11	6.4	6.8	1.7	.54	.84
17	11	8.0	19	28	16	22	8.9	7.6	5.1	1.4	.54	.72
18	9.5	15	23	24	15	20	8.7	5.9	4.9	1.4	.54	.62
19	7.6	10	19	22	14	18	8.3	5.1	4.6	1.2	.54	.77
20	749	8.1	18	19	13	42	8.1	4.6	4.1	1.2	.53	.57
21	295	7.6	16	18	13	24	9.7	17	3.2	1.1	.48	.48
22	126	7.2	15	17	18	22	8.2	7.4	20	.90	.43	.43
23	104	6.8	13	17	728	20	7.4	6.7	14	.73	.42	.43
24	91	16	13	17	103	19	6.5	5.4	6.9	.65	.39	.43
25	66	36	12	17	72	19	5.8	4.7	5.8	.63	.46	.43
26	52	16	11	14	57	17	6.9	4.4	5.7	.67	.51	.41
27	49	12	12	14	48	20	5.7	3.8	4.1	.61	.42	.37
28	39	11	13	13	64	19	7.8	3.3	3.8	.55	.40	.82
29	33	10	12	13	---	18	8.3	3.5	4.3	.52	.34	14
30	28	8.9	12	13	---	17	9.8	3.0	3.7	.47	.37	3.3
31	29	---	42	12	---	14	---	3.6	---	.43	.38	---
TOTAL	2190.12	400.1	428.4	567	1410	833	302.9	289.4	714.5	64.16	19.58	39.65
MEAN	70.6	13.3	13.8	18.3	50.4	26.9	10.1	9.34	23.8	2.07	.63	1.32
MAX	749	36	42	32	728	59	22	89	441	8.3	3.2	14
MIN	.04	6.8	7.7	12	11	14	5.7	3.0	2.0	.43	.34	.34
CFSM	3.17	.60	.62	.82	2.26	1.21	.45	.42	1.07	.09	.03	.06
IN.	3.65	.67	.71	.95	2.35	1.39	.51	.48	1.19	.11	.03	.07
AC-FT	4340	794	850	1120	2800	1650	601	574	1420	127	39	79
CAL YR 1984	TOTAL	3407.98	MEAN	9.31	MAX 749	MIN .00	CFSM .42	IN 5.68	AC-FT 6760			
WTR YR 1985	TOTAL	7258.81	MEAN	19.9	MAX 749	MIN .04	CFSM .89	IN 12.11	AC-FT 14400			

## COLORADO RIVER BASIN

08154700 BULL CREEK AT LOOP 360 NEAR AUSTIN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: April 1978 to current year. Radiochemical analyses: October 1979 to September 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT												
09...	1300	55	591	7.7	21.5	1000	530	8.6	99	3.4	33000	33000
20...	1242	770	362	8.1	--	2500	2200	--	--	5.6	27000	25000
20...	1327	3120	309	8.4	20.0	2500	2800	7.9	89	7.2	56000	63000
20...	1401	8500	196	8.2	19.5	2500	900	8.3	93	12	74000	55000
20...	1501	4270	208	8.1	20.0	2500	680	8.4	95	5.9	46000	18000
20...	1552	1750	236	8.2	20.5	650	450	8.2	93	3.1	35000	13000
FEB												
12...	0830	19	604	8.7	6.0	5	6.7	11.8	95	.3	K360	68
APR												
07...	0835	5.0	594	7.8	21.0	--	--	8.4	95	1.4	160	2600
MAY												
13...	1530	128	219	--	--	300	1200	--	--	5.6	70000	100000
13...	1545	730	267	--	--	--	--	--	--	4.1	50000	94000
13...	1615	1200	255	--	--	100	1900	--	--	6.5	64000	73000
13...	1700	512	370	--	--	--	--	--	--	4.1	--	--
13...	1730	274	366	--	--	90	550	--	--	5.4	50000	79000
JUN												
06...	1118	902	248	7.9	22.0	70	180	--	--	2.2	20000	48000

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT												
09...	180	68	52	12	50	2	3.6	112	94	63	.20	7.0
20...	160	54	49	10	9.0	.3	3.2	110	43	24	.10	6.5
20...	110	33	36	6.0	13	.6	2.6	82	30	16	.10	5.2
20...	100	21	33	5.0	4.6	.2	3.1	82	18	7.6	<.10	8.4
20...	99	20	32	4.7	4.3	.2	2.3	79	26	7.3	<.10	8.8
20...	110	24	35	5.2	5.5	.2	3.1	85	20	9.0	.10	7.4
FEB												
12...	310	66	86	22	20	.5	1.4	240	51	35	.20	7.9
APR												
07...	--	--	--	--	--	--	--	190	--	--	--	--
MAY												
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
06...	120	23	37	6.8	6.8	.3	2.9	98	18	11	.20	7.3



## COLORADO RIVER BASIN

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08154700 BULL CREEK AT LOOP 360 NEAR AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE (MG/L AS N)	NITRO- GEN, NITRITE (MG/L AS N)	NITRO- GEN, NO2+NO3 (MG/L AS N)	NITRO- GEN, AMMONIA (MG/L AS N)	NITRO- GEN, ORGANIC (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
09...	350	1530	264	.29	.010	.30	.060	2.9	3.0	.420	23
20...	210	3550	224	.46	.140	.60	.020	4.6	4.6	1.20	61
20...	160	4060	236	.42	.180	.60	.010	6.5	6.5	1.50	28
20...	130	3290	348	.46	.140	.60	.060	7.4	7.5	.870	62
20...	130	1790	168	.85	.050	.90	.120	3.9	4.0	.440	40
20...	140	840	100	1.1	.020	1.1	.070	2.9	3.0	.320	25
FEB											
12...	370	7	<1	--	<.010	.90	.040	.46	.50	<.010	2.6
APR											
07...	--	--	--	--	--	--	--	--	--	--	--
MAY											
13...	--	3570	520	.39	.010	.40	.140	2.5	2.6	.650	62
13...	--	--	--	.48	.020	.50	.120	1.2	1.3	.200	>80
13...	--	5210	788	.58	.020	.60	.110	3.5	3.6	.560	>80
13...	--	--	--	.68	.020	.70	.120	.68	.80	.370	>80
13...	--	2710	484	.78	.020	.80	.130	.77	.90	.480	51
JUN											
06...	150	422	50	.57	.030	.60	.160	1.6	1.8	.260	13

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT							
09...	1300	<1	34	<1	<10	2	21
20...	1242	<1	25	<1	<10	1	13
20...	1327	<1	26	1	<10	1	37
20...	1401	<1	22	<1	<10	1	220
20...	1501	<1	21	<1	<10	1	99
20...	1552	<1	21	<1	10	2	75
FEB							
12...	0830	<1	53	<1	<10	1	5
JUN							
06...	1118	2	24	<1	<10	2	18

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT						
09...	5	1	<.1	<1	<1	9
20...	<1	<1	<.1	<1	<1	<3
20...	<1	<1	.4	<1	<1	8
20...	<1	2	.1	<1	<1	7
20...	5	<2	<.1	<1	<1	<3
20...	<1	2	<.1	<1	<1	6
FEB						
12...	<1	6	<.1	<1	<1	6
JUN						
06...	5	1	<.1	<1	<1	5

DATE	TIME	AME- TRYNE TOTAL (UG/L)	ATRA- ZINE TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
OCT												
09...	1300	<.10	.10	<.10	<2.0	.1	<.1	<.10	<2.0	<2.0	<.10	<.1
20...	1242	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
20...	1327	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
20...	1401	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1

## COLORADO RIVER MAIN STEM

08154900 LAKE AUSTIN AT AUSTIN, TX

LOCATION.--Lat 30°18'53", long 97°47'10", Travis County, Hydrologic Unit 12090205, at city of Austin Waterplant No. 2 and 1.5 mi upstream from Tom Miller Dam on the Colorado River at Austin.

DRAINAGE AREA.--38,846 mi<sup>2</sup>, of which 11,403 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: October 1978 to current year.

## 301739097471601 LAKE AUSTIN SITE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT							
10...	1100	1.00	582	8.2	24.0	7.0	84
10...	1102	10.0	584	8.2	24.0	6.9	83
10...	1104	20.0	585	8.1	23.5	6.7	80
24...	1025	1.00	525	7.6	20.0	6.9	77
24...	1027	10.0	525	7.7	20.0	6.9	77
24...	1029	17.0	525	7.8	20.0	6.9	77
FEB							
26...	0935	1.00	537	8.3	14.0	8.7	85
26...	0937	10.0	543	8.2	14.0	8.6	84
26...	0939	20.0	564	8.3	13.0	8.6	82
26...	0941	28.0	578	8.3	13.0	8.8	84
AUG							
21...	0940	1.00	541	7.8	25.5	7.4	92
21...	0942	10.0	531	7.5	21.5	5.3	61
21...	0944	18.0	531	7.5	21.5	4.9	56

## 301739097471201 LAKE AUSTIN SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
10...	1030	1.00	581	8.2	24.0	2.40	7	2.0	7.3	88
10...	1032	10.0	581	8.2	23.5	--	--	--	7.2	86
10...	1034	20.0	581	8.1	23.5	--	--	--	7.0	83
10...	1036	30.0	582	8.0	23.0	--	--	--	6.1	72
10...	1038	40.0	593	7.9	23.0	--	--	--	4.9	58
10...	1040	53.0	595	7.8	22.5	--	25	7.1	4.9	57
24...	0945	1.00	527	7.9	20.0	.90	30	7.5	7.0	78
24...	0947	10.0	527	7.8	20.0	--	--	--	7.1	79
24...	0949	20.0	527	7.8	20.0	--	--	--	7.1	79
24...	0951	30.0	529	7.7	20.0	--	--	--	7.2	80
24...	0953	40.0	529	7.7	20.0	--	--	--	7.2	80
24...	0955	50.0	529	7.8	20.0	--	--	--	7.2	80
24...	0957	55.0	530	7.4	20.0	--	55	20	7.2	80
FEB										
26...	0910	1.00	536	8.2	14.0	.70	25	9.4	8.9	87
26...	0912	10.0	538	8.2	13.5	--	--	--	8.6	83
26...	0914	20.0	548	8.4	13.0	--	--	--	8.7	83
26...	0916	30.0	579	8.4	12.0	--	--	--	8.8	82
26...	0918	40.0	592	8.4	11.0	--	--	--	8.8	81
26...	0920	54.0	604	8.4	9.5	--	8	3.0	8.7	77
AUG										
21...	0905	1.00	531	7.8	25.5	1.80	5	21	7.7	95
21...	0908	10.0	531	7.6	21.5	--	--	--	5.5	63
21...	0910	20.0	532	7.4	21.0	--	--	--	5.0	57
21...	0912	30.0	538	7.5	20.5	--	--	--	4.7	53
21...	0914	40.0	541	7.4	20.5	--	--	--	4.2	47
21...	0916	53.0	548	7.4	20.5	--	10	16	3.1	35

COLORADO RIVER MAIN STEM

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LAKE AUSTIN AT AUSTIN, TX--Continued

301739097471201 LAKE AUSTIN SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
OCT										
10...	.6	180	K23	200	60	42	23	38	1	4.2
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	.7	--	--	200	64	42	24	38	1	4.4
24...	.9	92	340	200	57	46	20	31	1	4.0
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	1.1	--	--	210	50	51	20	28	.9	4.1
FEB										
26...	1.5	590	1100	230	65	61	20	27	.8	2.9
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	.8	--	--	260	83	67	23	31	.9	3.1
AUG										
21...	.3	58	28	210	55	49	21	34	1	3.7
21...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
21...	.1	--	--	210	59	50	21	34	1	3.6
DATE	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)
OCT										
10...	140	44	73	.30	5.5	310	<1	<1	--	<.010
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	<.010
10...	--	--	--	--	--	--	--	--	--	--
10...	140	47	73	.30	7.1	320	9	6	--	<.010
24...	140	43	57	.20	6.3	290	13	1	.29	.010
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	.29	.010
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	160	45	53	.20	10	310	8	4	.39	.010
FEB										
26...	170	41	44	.20	5.9	300	6	5	--	<.010
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	<.010
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	179	47	54	.20	6.8	340	6	2	--	<.010
AUG										
21...	154	41	63	.20	6.8	310	1	<1	--	<.010
21...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	.29	.010
21...	--	--	--	--	--	--	--	--	--	<.010
21...	--	--	--	--	--	--	--	--	--	--
21...	153	40	63	.20	7.3	310	8	2	--	<.010

## COLORADO RIVER MAIN STEM

## LAKE AUSTIN AT AUSTIN, TX--Continued

301739097471201 LAKE AUSTIN SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	NITRO- GEN, NO2+NO3 (MG/L AS N)	NITRO- GEN, AMMONIA (MG/L AS N)	NITRO- GEN, ORGANIC (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)
OCT										
10...	<.10	<.010	--	.20	--	.010	2.6	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	<.10	.010	.19	.20	--	.010	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	<.10	.120	.38	.50	--	.020	2.9	--	--	--
24...	.30	.050	.75	.80	1.1	.020	2.6	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	.30	.070	.53	.60	.90	.020	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	.40	.070	.13	.20	.60	.030	3.2	--	--	--
FEB										
26...	.30	.040	.56	.60	.90	.010	3.3	<1	60	2
26...	--	--	--	--	--	--	--	--	--	--
26...	.30	.050	.25	.30	.60	.010	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	.30	.070	.33	.40	.70	<.010	2.7	<1	71	<1
AUG										
21...	.20	.030	.37	.40	.60	.010	3.5	1	77	<1
21...	--	--	--	--	--	--	--	--	--	--
21...	.30	.040	.26	.30	.60	.010	--	--	--	--
21...	.20	.030	.27	.30	.50	.020	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
21...	.30	.050	.25	.30	.60	.010	3.4	1	77	<1

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT									
10...	--	--	8	--	<1	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	20	--	10	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	95	--	110	--	--	--	--
24...	--	--	6	--	2	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
24...	--	--	90	--	30	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
24...	--	--	200	--	73	--	--	--	--
FEB									
26...	<10	<1	25	<1	<1	<.1	<1	<1	5
26...	--	--	--	--	--	--	--	--	--
26...	--	--	20	--	<10	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
26...	10	<1	<3	<1	9	<.1	<1	<1	14
AUG									
21...	<10	1	<3	3	3	<.1	<1	<1	9
21...	--	--	--	--	--	--	--	--	--
21...	--	--	10	--	<10	--	--	--	--
21...	--	--	10	--	<10	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
21...	<10	1	<3	4	10	<.1	<1	<1	9

DATE	TIME	SAM- PLING DEPTH (FEET)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)
FEB							
26...	0910	1.00	<.10	<.10	<.10	<2.0	<.1
26...	0920	54.0	<.10	<.10	<.10	<2.0	<.1
AUG							
21...	0905	1.00	<.10	<.10	<.10	<2.0	<.1
21...	0916	53.0	<.10	<.10	<.10	<2.0	<.1

## COLORADO RIVER MAIN STEM

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## LAKE AUSTIN AT AUSTIN, TX--Continued

## 301739097471201 LAKE AUSTIN SITE AC--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
FEB						
26...	<.1	<.10	<2.0	<2.0	<.10	<.1
26...	<.1	<.10	<2.0	<2.0	<.10	<.1
AUG						
21...	<.1	<.10	<2.0	<2.0	<.10	<.1
21...	<.1	<.10	<2.0	<2.0	<.10	<.1

## 301739097470901 LAKE AUSTIN SITE AL

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT							
10...	1050	1.00	580	8.2	24.0	7.9	95
10...	1052	13.0	580	8.2	23.5	7.1	84
24...	1015	1.00	522	7.6	20.0	6.9	77
24...	1017	10.0	522	7.7	20.0	6.9	77
24...	1019	18.0	522	7.6	20.0	6.8	76
FEB							
26...	0945	1.00	537	8.2	14.5	8.4	83
26...	0947	10.0	540	8.3	14.0	8.5	83
26...	0949	17.0	550	8.2	13.5	8.0	78
AUG							
21...	0955	1.00	541	7.8	25.5	7.5	93
21...	0958	10.0	533	7.7	22.5	5.2	61
21...	1000	19.0	532	7.7	21.5	4.1	47

## 302043097472401 LAKE AUSTIN SITE BC

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)
OCT									
10...	1115	1.00	578	8.2	24.5	2.40	6.9	84	--
10...	1117	10.0	578	8.2	24.0	--	6.6	79	--
10...	1119	20.0	578	8.1	23.5	--	6.1	73	--
10...	1121	27.0	578	7.9	23.5	--	5.0	59	--
24...	1045	1.00	500	7.9	20.0	.70	6.5	72	.29
24...	1047	10.0	500	7.9	20.0	--	6.6	74	--
24...	1049	20.0	507	7.8	19.5	--	6.5	72	--
24...	1051	28.0	550	7.9	18.5	--	7.1	77	.89
FEB									
26...	1005	1.00	570	8.4	14.5	1.10	9.1	90	--
26...	1007	10.0	570	8.4	14.0	--	8.7	85	--
26...	1009	20.0	561	8.4	13.5	--	8.7	84	--
26...	1011	28.0	585	8.3	11.5	--	7.8	72	--
AUG									
21...	1015	1.00	542	7.9	27.0	1.80	7.7	98	--
21...	1018	10.0	529	7.6	21.5	--	5.2	60	--
21...	1020	20.0	528	7.6	21.0	--	4.9	56	--
21...	1022	28.0	528	7.6	21.0	--	4.5	51	--



## COLORADO RIVER MAIN STEM

## LAKE AUSTIN AT AUSTIN, TX--Continued

302043097472401 LAKE AUSTIN SITE BC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT									
10...	<.010	<.10	.010	.29	.30	--	.010	70	10
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	<.010	<.10	.040	.26	.30	--	.010	30	20
24...	.010	.30	.050	.55	.60	.90	.030	100	<10
24...	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
24...	.010	.90	.060	.74	.80	1.7	.040	60	10
FEB									
26...	<.010	.30	.040	.36	.40	.70	.010	40	<10
26...	--	--	--	--	--	--	--	--	--
26...	<.010	.40	.050	.35	.40	.80	.010	50	<10
26...	<.010	.20	.100	.30	.40	.60	.010	40	10
AUG									
21...	<.010	.20	.030	.37	.40	.60	.010	10	<10
21...	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--
21...	<.010	.20	.040	.36	.40	.60	.020	20	10

302044097472301 LAKE AUSTIN SITE BL

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
21...	1025	1.00	542	8.0	27.5	7.2	92
21...	1028	12.0	528	7.6	22.0	4.2	49

301926097502201 LAKE AUSTIN SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
10...	1145	1.00	580	8.2	25.0	2.40	5	1.6	6.4	78
10...	1147	10.0	580	8.1	24.5	--	--	--	6.3	76
10...	1149	20.0	593	7.8	23.0	--	--	--	4.2	50
10...	1151	29.0	593	7.7	23.0	--	35	15	3.4	40
24...	1105	1.00	488	7.7	20.5	.70	35	9.3	5.9	66
24...	1107	10.0	487	7.8	20.5	--	--	--	5.9	66
24...	1109	20.0	486	7.8	20.5	--	--	--	5.9	66
24...	1111	29.0	497	7.8	20.0	--	60	30	6.0	67
FEB										
26...	1030	1.00	536	8.5	15.0	.80	25	8.2	8.8	88
26...	1032	10.0	538	8.5	14.0	--	--	--	8.7	85
26...	1034	15.0	560	8.5	13.5	--	--	--	8.6	83
26...	1036	20.0	579	8.6	12.0	--	--	--	9.0	84
26...	1038	27.0	579	8.5	11.5	--	5	3.2	8.8	81
AUG										
21...	1040	1.00	531	7.8	26.0	2.50	5	1.5	6.7	84
21...	1042	10.0	531	7.5	21.0	--	--	--	4.9	56
21...	1044	20.0	531	7.6	21.0	--	--	--	4.7	53
21...	1046	25.0	531	7.6	20.5	--	5	1.4	4.3	48

## LAKE AUSTIN AT AUSTIN, TX--Continued

301926097502201 LAKE AUSTIN SITE CC--CONTINUED

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS./ PER 100 ML)	HARD- NESS (MG/L CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
OCT										
10...	.3	K18	K6	200	60	42	23	39	1	4.1
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	.2	--	--	200	60	42	23	39	1	4.1
24...	.1	600	310	190	56	43	19	28	.9	3.9
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	1.1	--	--	200	51	49	19	25	.8	3.8
FEB										
26...	1.3	K380	230	220	61	52	21	32	1	3.3
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	1.0	--	--	230	63	55	23	35	1	3.3
AUG										
21...	.5	K28	K14	200	50	47	21	34	1	3.7
21...	--	--	--	--	--	--	--	--	--	--
21...	--	--	--	--	--	--	--	--	--	--
21...	.3	--	--	210	58	50	21	33	1	3.6
DATE	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)
OCT										
10...	140	45	70	.30	5.3	310	<1	<1	--	<.010
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	<.010
10...	140	43	71	.30	6.2	310	18	5	--	<.010
24...	130	35	53	.20	8.0	270	3	1	.19	.010
24...	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	.19	.010
24...	150	32	47	.20	11	280	13	3	--	<.010
FEB										
26...	156	41	51	.20	3.9	300	12	4	--	<.010
26...	--	--	--	--	--	--	--	--	--	<.010
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	169	44	56	.20	3.9	320	2	1	--	<.010
AUG										
21...	154	40	62	.20	6.8	310	1	<1	--	<.010
21...	--	--	--	--	--	--	--	--	--	<.010
21...	--	--	--	--	--	--	--	--	.19	.010
21...	154	39	61	.20	6.8	310	1	<1	--	<.010
DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)
OCT										
10...	<.10	<.010	--	<.20	--	.010	2.5	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	<.10	.050	.25	.30	--	.010	--	--	--	--
10...	<.10	.110	.39	.50	--	.020	2.7	--	--	--
24...	.20	.050	.45	.50	.70	.020	3.4	--	--	--
24...	--	--	--	--	--	--	--	--	--	--
24...	.20	.050	.15	.20	.40	.020	--	--	--	--
24...	.20	.040	.16	.20	.40	.020	3.4	--	--	--
FEB										
26...	.10	.030	.47	.50	.60	.010	3.0	<1	60	<1
26...	.10	.060	.34	.40	.50	.010	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--	--
26...	<.10	.050	.25	.30	--	.010	2.3	<1	69	<1
AUG										
21...	.20	.020	.28	.30	.50	.010	3.5	1	78	<1
21...	.20	.030	.47	.50	.70	.030	--	--	--	--
21...	.20	.040	.36	.40	.60	.020	--	--	--	--
21...	.20	.040	.36	.40	.60	.010	3.4	1	76	<1

## COLORADO RIVER MAIN STEM

## LAKE AUSTIN AT AUSTIN, TX--Continued

301926097502201 LAKE AUSTIN SITE CC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	CHROMIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGANESE, DIS- SOLVED (UG/L AS MN)	MERCURY, DIS- SOLVED (UG/L AS HG)	SELENIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT									
10...	--	--	4	--	<1	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	10	--	20	--	--	--	--
10...	--	--	8	--	4	--	--	--	--
24...	--	--	7	--	<1	--	--	--	--
24...	--	--	--	--	--	--	--	--	--
24...	--	--	60	--	<10	--	--	--	--
24...	--	--	7	--	9	--	--	--	--
FEB									
26...	<10	<1	<3	<1	<1	<.1	<1	<1	12
26...	--	--	10	--	<10	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
26...	--	--	--	--	--	--	--	--	--
26...	<10	<1	<3	<1	<1	<.1	<1	<1	8
AUG									
21...	<10	<1	<3	2	4	<.1	<1	<1	6
21...	--	--	20	--	<10	--	--	--	--
21...	--	--	20	--	<10	--	--	--	--
21...	<10	2	<3	4	7	<.1	<1	<1	5

DATE	TIME	SAMPLING DEPTH (FEET)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)
FEB							
26...	1030	1.00	<.10	<.10	<.10	<2.0	<.1
26...	1038	27.0	<.10	<.10	<.10	<2.0	<.1
AUG							
21...	1040	1.00	<.10	<.10	<.10	<2.0	<.1
21...	1046	25.0	<.10	<.10	<.10	<2.0	<.1

DATE	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
FEB						
26...	<.1	<.10	<2.0	<2.0	<.10	<.1
26...	<.1	<.10	<2.0	<2.0	<.10	<.1
AUG						
21...	<.1	<.10	<2.0	<2.0	<.10	<.1
21...	<.1	<.10	<2.0	<2.0	<.10	<.1

302021097540001 LAKE AUSTIN SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CON- DUCTANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)
OCT									
10...	1215	1.00	584	8.1	25.0	2.50	5.8	71	--
10...	1217	12.0	586	8.1	24.5	--	5.6	68	--
24...	1150	1.00	472	7.6	19.5	.60	5.0	55	--
24...	1152	10.0	480	7.6	19.5	--	5.0	55	--
24...	1154	14.0	510	7.6	19.5	--	5.0	55	.19
FEB									
26...	1110	1.00	554	8.2	15.5	.90	7.4	75	.09
26...	1112	10.0	551	8.1	14.5	--	6.4	63	--
26...	1114	18.0	546	8.1	14.5	--	6.4	63	--
AUG									
21...	1145	1.00	533	7.6	20.5	3.8	4.5	51	--
21...	1148	10.0	533	7.6	20.0	--	4.4	49	--
21...	1150	15.0	533	7.6	20.0	--	4.0	45	--

302021097540001 LAKE AUSTIN SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT									
10...	<.010	<.10	.020	.18	.20	--	.010	10	10
10...	<.010	<.10	.020	.28	.30	--	.010	70	20
24...	<.010	.20	.040	.26	.30	.50	.020	50	<10
24...	--	--	--	--	--	--	--	--	--
24...	.010	.20	.050	.75	.80	1.0	.020	70	10
FEB									
26...	.010	.10	.060	.34	.40	.50	.010	10	<10
26...	--	--	--	--	--	--	--	--	--
26...	<.010	.10	.080	.32	.40	.50	.010	20	10
AUG									
21...	<.010	.20	.030	.27	.30	.50	.010	10	10
21...	--	--	--	--	--	--	--	--	--
21...	<.010	.20	.030	.37	.40	.60	.010	10	<10

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
10...	1240	1.00	593	8.0	24.5	2.00	8	1.5	5.0	61
10...	1242	8.00	591	8.0	24.0	--	7	2.0	5.1	61
24...	1215	1.00	463	7.8	17.0	.40	60	19	6.1	64
24...	1217	7.00	474	7.8	17.0	--	55	20	6.0	63
FEB										
26...	1135	1.00	561	8.5	15.0	1.00	10	4.8	9.0	90
26...	1140	8.00	565	8.5	14.5	--	25	17	9.3	92
AUG										
21...	1155	1.00	530	7.5	19.0	2.40	--	--	5.5	60
21...	1158	8.00	530	7.6	19.0	--	--	--	4.3	47

[illegible][illegible]

COLORADO RIVER MAIN STEM  
LAKE AUSTIN AT AUSTIN, TX--Continued

302314097544901 LAKE AUSTIN SITE EC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)
OCT										
10...	<.10	.050	.55	.60	--	.010	2.3	--	--	--
10...	<.10	.040	.16	.20	--	.010	2.6	--	--	--
24...	.30	.050	.45	.50	.80	.020	4.2	--	--	--
24...	.20	.060	--	<.20	--	.020	2.7	--	--	--
FEB										
26...	.20	.050	.35	.40	.60	.010	2.6	<1	68	<1
26...	.20	.050	.55	.60	.80	.020	3.9	<1	68	<1
AUG										
21...	.30	.030	.37	.40	.70	.020	3.9	1	76	<1
21...	--	--	--	--	--	--	--	--	--	--

DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT									
10...	--	--	23	--	42	--	--	--	--
10...	--	--	29	--	64	--	--	--	--
24...	--	--	13	--	5	--	--	--	--
24...	--	--	8	--	3	--	--	--	--
FEB									
26...	<10	<1	<3	<1	2	<.1	<1	<1	9
26...	<10	<1	<3	<1	2	<.1	<1	3	5
AUG									
21...	<10	<1	<3	2	31	<.1	<1	<1	4
21...	--	--	--	--	--	--	--	--	--

DATE	TIME	SAM- PLING DEPTH (FEET)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)
FEB							
26...	1135	1.00	<.10	<.10	<.10	<2.0	<.1
26...	1140	8.00	<.10	<.10	<.10	<2.0	<.1
AUG							
21...	1155	1.00	<.10	<.10	<.10	<2.0	<.1

DATE	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
FEB						
26...	<.1	<.10	<2.0	<2.0	<.10	<.1
26...	<.1	<.10	<2.0	<2.0	<.10	<.1
AUG						
21...	<.1	<.10	<2.0	<2.0	<.10	<.1



COLORADO RIVER BASIN

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08155260 BARTON CREEK NEAR CAMP CRAFT ROAD NEAK AUSTIN, TX

LOCATION.--Lat 30°16'12", long 97°49'43", Travis County, Hydrologic Unit 12090205, on left bank about 0.5 mi south of Camp Craft Road, 1.0 mi downstream from bridge on Lost Creek Blvd., and 5 mi west of the State Capitol Building in Austin.

DRAINAGE AREA.--109 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1982 to current year.

GAGE.--Water-stage recorder. Altitude of gage is 570 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Apr. 6 and June 27 to July 12. Records good above 10 ft<sup>3</sup>/s and poor below, except those for estimated daily discharges, which are poor. Daily discharges are not published above 250 ft<sup>3</sup>/s. Station is equipped with an automatic water-quality sampler. Discharge records for samples collected by the sampler are poor. There are three recording rain gages upstream from this station.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 12.94 ft June 6, 1985 (discharge not determined); no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 12.94 ft June 6 (discharge not determined); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	98	34	258	101	406	105	32	4.2	27	.07	.00
2	.00	91	34	210	101	279	102	30	2.1	25	.06	.00
3	.00	87	32	210	96	244	99	27	1.0	24	.04	.00
4	.00	84	32	218	96	229	96	26	.28	39	.04	.00
5	.00	74	36	205	97	206	93	24	.60	40	.03	.00
6	.00	59	38	194	97	196	90	23	1780	35	.02	.00
7	.00	53	36	181	94	191	85	21	302	30	.02	.00
8	.00	49	35	167	88	184	76	21	136	28	.02	.00
9	.00	46	34	159	88	171	69	20	106	25	.02	.00
10	100	44	34	145	88	159	70	19	92	22	.01	.00
11	140	41	33	130	103	151	80	18	84	20	.00	.00
12	22	39	32	128	94	141	69	17	75	18	.00	.00
13	76	38	34	131	88	134	67	28	59	17	.00	.00
14	126	37	57	135	86	213	113	33	48	16	.00	.00
15	44	37	46	160	82	188	84	26	45	14	.00	.00
16	31	35	170	194	82	175	59	20	42	13	.00	.00
17	24	34	148	267	80	159	48	18	40	12	.00	.00
18	21	38	200	211	73	147	45	17	37	11	.00	.00
19	19	35	171	197	73	143	43	16	37	10	.00	.00
20	102	33	156	179	69	218	43	15	36	10	.00	.00
21	578	30	143	161	67	187	43	16	34	9.3	.00	.00
22	397	28	126	160	69	165	42	16	117	8.5	.00	.00
23	458	28	115	156	1410	157	40	16	209	6.7	.00	.00
24	309	35	112	147	503	144	37	13	84	3.2	.00	.00
25	288	66	100	138	408	138	35	11	58	.97	.00	.00
26	199	60	96	127	328	129	37	10	62	.61	.00	.00
27	173	41	96	124	270	133	36	9.9	55	.51	.00	.00
28	152	37	98	119	276	126	36	9.1	42	.23	.00	.00
29	153	36	95	114	---	120	35	9.4	35	.15	.00	.00
30	121	35	92	113	---	117	34	8.5	30	.11	.00	.03
31	111	---	377	107	---	110	---	7.0	---	.08	.00	---
TOTAL	3644.00	1448	2842	5145	5107	5460	1911	576.9	3653.18	466.36	.33	.03
MEAN	118	48.3	91.7	166	182	176	63.7	18.6	122	15.0	.011	.001
MAX	578	98	377	267	1410	406	113	33	1780	40	.07	.03
MIN	.00	28	32	107	67	110	34	7.0	.28	.08	.00	.00
CFSM	1.08	.44	.84	1.52	1.67	1.62	.58	.17	1.12	.14	.000	.000
IN.	1.24	.49	.97	1.76	1.74	1.86	.65	.20	1.25	.16	.00	.00
AC-FT	7230	2870	5640	10210	10130	10830	3790	1140	7250	925	.7	.06
CAL YR 1984	TOTAL	8428.72	MEAN	23.0	MAX	578	MIN	.00	CFSM	.21	IN	2.88
WTR YR 1985	TOTAL	30253.80	MEAN	82.9	MAX	1780	MIN	.00	CFSM	.76	IN	10.33
									AC-FT	16720		
									AC-FT	60010		



08155260 BARTON CREEK NEAR CAMP CRAFT ROAD NEAR AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
11...	--	--	--	.95	.050	1.0	.040	4.8	4.8	.330	32
11...	--	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	.89	.110	1.0	.310	6.2	6.5	.910	--
11...	90	--	--	.96	.140	1.1	.390	6.1	6.5	.800	68
11...	--	2640	200	.94	.160	1.1	.430	4.6	5.0	.650	45
11...	--	--	--	1.0	.170	1.2	.440	4.1	4.5	.550	36
DEC											
31...	--	245	35	.29	.010	.30	.070	.63	.70	.140	28
31...	--	--	--	--	--	--	--	--	--	--	--
31...	--	--	--	--	<.010	.30	.020	.18	.20	.020	2.4
31...	--	--	--	--	<.010	.30	.020	.18	.20	.030	2.2
31...	--	44	17	--	<.010	.30	.030	--	<.20	.020	2.1
31...	--	--	--	--	<.010	.30	.050	.25	.30	.020	2.6
FEB											
20...	270	2	1	--	<.010	.20	.040	--	<.20	.010	.9
23...	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	.29	.010	.30	.050	.45	.50	.060	3.2
23...	--	197	25	.29	.010	.30	.050	.75	.80	.080	5.3
23...	230	--	--	.29	.010	.30	.040	1.7	1.7	.100	14
23...	--	--	--	.29	.010	.30	.040	3.6	3.6	.190	26
23...	--	--	--	--	--	--	--	--	--	--	--
JUN											
06...	--	--	--	.19	.010	.20	.080	.82	.90	.120	9.9
06...	--	288	32	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	.19	.010	.20	.070	.63	.70	.100	6.7
06...	180	--	--	.19	.010	.20	.070	1.3	1.4	.190	14
06...	--	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	.14	.060	.20	.250	2.8	3.0	.250	43

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT							
11...	2115	13	<100	<1	<10	3	320
DEC							
31...	0530	1	25	<1	<10	2	<3
31...	0615	<1	24	<1	<10	3	10
FEB							
20...	1030	<1	37	<1	<10	1	5
23...	0730	<1	23	<1	<10	<1	8
23...	0815	<1	17	<1	<10	<1	4
JUN							
06...	0900	2	19	<1	<10	2	5

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT						
11...	9	<10	<.1	<1	<1	<10
DEC						
31...	<1	3	<.1	<1	<1	<3
31...	3	1	<.1	<1	<1	<3
FEB						
20...	3	2	<.1	<1	<1	11
23...	<1	<1	<.1	<1	1	<3
23...	3	3	<.1	<1	<1	<3
JUN						
06...	12	<1	<.1	<1	<1	9

## COLORADO RIVER BASIN

08155260 BARTON CREEK NEAR CAMP CRAFT ROAD NEAR AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
OCT												
11...	2015	--	--	--	<2.0	--	--	--	<2.0	<2.0	--	--
11...	2030	<.10	<.10	<.10	--	<.1	<.1	<.10	--	--	<.10	<.1
DEC												
31...	0515	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
FEB												
23...	0715	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
23...	0830	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
JUN												
06...	0930	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
06...	1100	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1

## 08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX

LOCATION.--Lat 30°14'40", long 97°48'07", Travis County, Hydrologic Unit 12090205, on Loop 360, 0.9 mi west of the intersection of Ben White and Lamar Boulevards, and 4.3 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--116 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1975 to January 1977 (periodic gage-height and discharge measurements only), February 1977 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 510.32 ft above National Geodetic Vertical Datum of 1929 (State Department of Highways and Public Transportation bench mark).

REMARKS.--Estimated daily discharges: Oct. 1-10, 13, 17-20, May 12-13, 20-22, May 26 to June 6, July 15 to Sept. 30. Water-discharge records fair except those below 5 ft<sup>3</sup>/s, which are poor. No known regulation or diversions. There are three recording rain gages located in the watershed.

AVERAGE DISCHARGE.--8 years, 35.6 ft<sup>3</sup>/s (4.17 in/yr), 25,790 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,100 ft<sup>3</sup>/s May 25, 1981 (gage height, 15.03 ft); no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--The flood of May 28, 1929, was probably the highest since that date (discharge 39,400 ft<sup>3</sup>/s), based on a slope-area measurement of peak flow at a site about 2 mi upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 10	2230	6,650	9.29	Feb. 23	1245	9,090	10.56
Oct. 21	1845	2,390	6.89	June 6	1715	*11,300	*11.96

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	75	13	.00	77	356	79	20	.00	20	.00	.00
2	.00	64	11	183	76	249	74	16	.00	15	.00	.00
3	.00	59	8.7	185	75	226	77	13	.00	13	.00	.00
4	.00	54	8.8	195	74	209	72	11	.00	27	.00	.00
5	.00	46	14	179	74	182	66	9.1	.00	28	.00	.00
6	.00	39	21	165	74	170	59	7.9	2990	16	.00	.00
7	2.2	35	20	151	68	163	56	5.7	336	15	.00	.00
8	.00	32	18	140	61	155	52	4.3	142	8.1	.00	.00
9	.00	28	15	132	61	143	50	3.7	105	6.6	.00	.00
10	447	25	13	123	59	135	49	2.8	85	7.5	.00	.00
11	275	21	12	111	80	129	58	1.6	71	4.8	.00	.00
12	4.6	18	11	111	69	121	53	.48	64	3.6	.00	.00
13	58	15	12	116	63	116	53	11	63	1.6	.00	.00
14	144	13	38	118	59	177	100	32	56	1.4	.00	.00
15	36	12	39	134	55	169	65	21	49	.68	.00	.00
16	5.7	8.3	135	167	54	151	47	8.4	52	.30	.00	.00
17	1.3	6.9	131	233	53	138	40	6.0	56	.00	.00	.00
18	.00	14	175	189	49	129	34	4.4	51	.00	.00	.00
19	.00	11	146	171	49	126	32	3.4	51	.00	.00	.00
20	57	7.4	135	150	46	206	32	3.1	48	.00	.00	.00
21	1030	5.9	123	139	46	167	32	2.7	37	.00	.00	.00
22	411	4.7	112	134	51	143	33	2.2	129	.00	.00	.00
23	428	3.7	105	132	2650	136	30	1.6	265	.00	.00	.00
24	269	8.3	102	116	544	128	25	1.1	97	.00	.00	.00
25	249	59	92	114	347	121	22	.54	74	.00	.00	.00
26	177	51	88	105	280	115	25	.04	68	.00	.00	.00
27	147	30	88	103	242	118	23	.00	54	.00	.00	.00
28	125	22	89	97	241	114	23	.00	38	.00	.00	.00
29	112	19	85	93	---	107	23	.00	33	.00	.00	.00
30	100	16	79	90	---	101	21	.00	24	.00	.00	.00
31	89	---	342	84	---	93	---	.00	---	.00	.00	---
TOTAL	4167.80	803.2	2281.5	4160.00	5677	4793	1405	193.06	5038.00	168.58	.00	.00
MEAN	134	26.8	73.6	134	203	155	46.8	6.23	168	5.44	.000	.000
MAX	1030	75	342	233	2650	356	100	32	2990	28	.00	.00
MIN	.00	3.7	8.7	.00	46	93	21	.00	.00	.00	.00	.00
CFSM	1.16	.23	.63	1.16	1.75	1.34	.40	.05	1.45	.05	.000	.000
IN.	1.34	.26	.73	1.33	1.82	1.54	.45	.06	1.62	.05	.00	.00
AC-FT	8270	1590	4530	8250	11260	9510	2790	383	9990	334	.00	.00
CAL YR 1984	TOTAL	7252.50	MEAN	19.8	MAX	1030	MIN	.00	CFSM	.17	IN	2.33
WTR YR 1985	TOTAL	28687.14	MEAN	78.6	MAX	2990	MIN	.00	CFSM	.68	IN	9.20
									AC-FT	14390		
										56900		



PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1979 to current year. Radiochemical analyses: October 1979 to September 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

[illegible]

COLORADO RIVER BASIN

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08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
11...	100	380	48	1.5	.030	1.5	.020	1.8	1.8	.110	16
11...	--	324	48	1.4	.090	1.5	.220	1.5	1.7	.110	17
21...	160	840	72	--	<.010	.60	.050	1.3	1.3	.410	11
21...	140	508	45	.49	.010	.50	.050	1.6	1.6	.210	12
21...	160	888	64	--	<.010	.60	.040	2.0	2.0	.230	17
22...	200	240	24	--	<.010	.80	.020	1.1	1.1	.070	7.7
DEC											
16...	--	--	--	--	<.010	.10	<.010	--	.30	.020	6.8
16...	--	--	--	--	<.010	.10	<.010	--	.40	.030	3.6
16...	--	--	--	--	<.010	.10	<.010	--	.50	.060	4.4
16...	--	--	--	--	<.010	.10	<.010	--	.20	.010	2.5
FEB											
20...	270	3	2	--	<.010	.20	.030	.27	.30	.010	1.1
23...	150	1820	180	.28	.020	.30	.070	7.1	7.2	.340	41
23...	130	2250	236	.28	.020	.30	.100	7.0	7.1	.600	55
23...	140	3020	296	--	<.010	.30	.100	11	11	.820	83
23...	130	1480	152	.29	.010	.30	.050	5.0	5.0	.330	45
JUN											
06...	140	1390	144	.86	.040	.90	.110	.79	.90	.880	34
06...	--	428	84	.18	.020	.20	.080	.52	.60	.190	14
06...	--	--	--	.18	.020	.20	.070	2.9	3.0	.340	32
06...	--	1850	172	.05	.150	.20	.550	3.3	3.8	.510	62

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT							
11...	1000	<1	10	1	<10	3	65
21...	0930	<1	19	1	<10	1	18
21...	1100	<1	16	<1	10	2	37
21...	1230	<1	15	<1	<10	2	34
22...	1215	<1	20	<1	<10	1	32
FEB							
20...	0955	<1	34	<1	<10	<1	4
23...	0924	<1	14	<1	<10	2	31
23...	1045	<1	14	<1	<10	1	52
23...	1210	<1	16	<1	<10	<1	13
23...	1505	<1	14	<1	<10	1	24
JUN							
06...	1000	2	27	<1	<10	2	12
06...	1515	1	13	<1	<10	2	13

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT						
11...	10	3	<.1	<1	<1	7
21...	<1	<1	<.1	<1	<1	<3
21...	5	<1	<.1	<1	<1	6
21...	3	<1	<.1	<1	<1	12
22...	<1	<1	<.1	<1	<1	<3
FEB						
20...	4	<1	<.1	<1	<1	10
23...	<1	<1	2.3	<1	<1	<3
23...	4	2	<.1	<1	<1	14
23...	<1	<1	<.1	<1	<1	14
23...	5	<1	<.1	<1	<1	6
JUN						
06...	4	2	<.1	<1	<1	17
06...	5	<1	<.1	<1	<1	28

## COLORADO RIVER BASIN

08155300 BARTON CREEK AT LOOP 360, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
OCT												
21...	0930	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
21...	1100	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
FEB												
23...	0924	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
23...	1045	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
23...	1210	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
23...	1505	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
JUN												
06...	1000	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
06...	1515	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1

## COLORADO RIVER BASIN

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08155500 BARTON SPRINGS AT AUSTIN, TX

LOCATION.--Lat 30°15'48", long 97°46'16", Travis County, Hydrologic Unit 12090205, at ground-water well (YD 58-42-903), on right bank 0.4 mi upstream from Barton Springs Road bridge over Barton Creek, 0.7 mi upstream from mouth, and 1.8 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--Not applicable. Only springflow is published for this station.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1894 to April 1917, and October 1918 to February 1978 (discharge measurements only), May 1917 to September 1918 (published as "Barton Creek at Austin, Texas"), and March 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage, at ground-water well (YD 58-42-903), is 462.34 ft above National Geodetic Vertical Datum of 1929. May 1917 to September 1918, nonrecording gage at site 1,000 ft downstream at different datum.

REMARKS.--Records fair. Only springflow from the Edwards and associated limestones in the Balcones Fault Zone is published for this station. This station is part of an urban hydrologic project to study the ground-water resources in the Austin urban area.

AVERAGE DISCHARGE.--8 years (water years 1918, 1979-85), 53.1 ft<sup>3</sup>/s (38,470 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD (DISCHARGE MEASUREMENTS ONLY).--Maximum measured discharge, 166 ft<sup>3</sup>/s May 10, 1941; minimum measured, 9.6 ft<sup>3</sup>/s Mar. 29, 1956.

EXTREMES FOR PERIOD OF RECORD (1917-18 AND SINCE MARCH 1978).--Maximum daily spring discharge, 108 ft<sup>3</sup>/s June 9-11, 16, 20, 21, 1979; minimum daily spring discharge, 12 ft<sup>3</sup>/s Feb. 25, 1918.

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge, 90 ft<sup>3</sup>/s Feb. 25, 26; minimum daily, 24 ft<sup>3</sup>/s Oct. 1-6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	a51	48	a60	72	a87	81	a76	66	a72	a64	53
2	24	a50	a48	a62	72	a86	81	a75	66	a71	a63	53
3	24	a50	a48	a64	72	a85	81	75	a66	71	63	52
4	a24	49	a48	a68	72	a84	a81	75	a67	72	63	52
5	a24	49	a48	a70	72	a83	a80	75	a67	72	a63	a52
6	24	48	a49	a70	72	a82	80	a75	a68	72	a62	a51
7	a26	48	a49	a70	72	a81	80	a74	a68	72	62	51
8	a28	47	a50	a70	72	a80	80	74	a69	a72	a62	51
9	a30	47	a50	a71	72	a80	80	a74	a69	a71	a61	51
10	32	46	a51	a71	72	a80	80	a73	a70	70	61	50
11	a34	46	a51	a71	72	a80	a80	73	a70	a70	61	50
12	a34	46	a52	a71	71	a80	a80	72	70	a70	a61	a50
13	a36	45	a53	a71	71	a80	a80	a72	a69	70	a60	a50
14	a36	45	a54	a71	71	a80	a80	a73	a69	69	60	a51
15	a38	45	a55	71	71	a80	a80	73	69	a69	a60	a51
16	a38	45	a55	a71	71	a80	80	a73	69	a68	a59	51
17	a40	a45	a55	a72	71	a80	80	a72	a69	68	59	51
18	a40	a45	a55	a74	a71	a80	a80	72	a70	a68	59	50
19	a42	45	a56	74	a71	a80	a79	71	a70	a68	a58	a50
20	a42	45	a56	74	a71	a80	a79	a71	a71	a67	a58	a49
21	a44	44	a56	74	a75	a80	a79	a71	a71	67	57	48
22	a44	44	a56	74	a80	a80	a78	70	a72	a67	a57	48
23	a48	44	a57	74	a85	a80	a78	a70	a72	a66	a56	47
24	a48	44	a57	74	89	a80	78	a69	a72	66	56	47
25	a48	a44	57	74	a90	a80	a78	68	a72	a66	55	46
26	a50	a45	57	74	a90	a80	a77	68	72	a65	a55	a46
27	a50	a45	57	74	a88	a80	a77	68	a72	65	a55	a45
28	a50	a46	58	74	a88	a81	a77	68	a72	65	55	45
29	a51	a47	58	73	---	a81	a76	67	72	a65	a54	a45
30	a51	48	58	73	---	a81	a76	a67	72	a64	a54	a45
31	a51	---	a58	73	---	81	---	66	---	64	53	---
TOTAL	1175	1388	1660	2207	2116	2512	2376	2220	2091	2122	1826	1481
MEAN	37.9	46.3	53.5	71.2	75.6	81.0	79.2	71.6	69.7	68.5	58.9	49.4
MAX	51	51	58	74	90	87	81	76	72	72	64	53
MIN	24	44	48	60	71	80	76	66	66	64	53	45
AC-FT	2330	2750	3290	4380	4200	4980	4710	4400	4150	4210	3620	2940
CAL YR 1984	TOTAL	12673	MEAN 34.6	MAX 58	MIN 24	AC-FT	25140					
WTR YR 1985	TOTAL	23174	MEAN 63.5	MAX 90	MIN 24	AC-FT	45970					

a Estimated.

## COLORADO RIVER BASIN

08155500 BARTON SPRINGS AT AUSTIN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: December 1978 to current year. Radiochemical analyses: October 1979 to September 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)
OCT												
12...	1215	--	697	7.2	21.5	10	5.0	4.6	53	.2	960	1300
22...	1120	55	601	7.1	21.5	10	4.5	4.8	55	.2	K1500	K1700
FEB												
12...	1000	72	586	7.2	18.0	5	.70	7.8	82	.0	46	K1
JUN												
07...	1430	74	557	7.2	21.5	5	11	6.4	73	--	1040	3080
AUG												
13...	1210	59	609	7.0	22.0	5	1.0	6.8	80	.1	86	K1

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT											
12...	290	56	83	21	28	.7	2.1	238	43	45	.30
22...	270	39	78	18	17	.5	1.8	230	34	27	.30
FEB											
12...	290	45	85	20	13	.3	1.1	250	28	23	.20
JUN											
07...	270	34	79	18	15	.4	2.0	238	25	23	.20
AUG											
13...	300	45	84	21	13	.3	1.3	252	23	32	.20

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
12...	11	380	4	3	<.010	1.9	.010	.39	.40	.010	1.0
22...	11	330	9	1	<.010	1.5	<.010	--	.30	.020	1.2
FEB											
12...	10	330	3	1	<.010	1.2	<.010	--	.40	.010	.6
JUN											
07...	11	320	24	4	<.010	1.2	.080	.22	.30	.030	1.5
AUG											
13...	12	340	1	<1	<.010	1.4	.030	.17	.20	.020	1.9

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT							
12...	1215	<1	57	1	<10	2	4
22...	1120	<1	52	<1	<10	1	4
FEB							
12...	1000	<1	45	<1	<10	1	<3
JUN							
07...	1430	2	50	<1	<10	1	5

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT						
12...	7	<1	<.1	<1	<1	<3
22...	<1	<1	<.1	<1	<1	<3
FEB						
12...	2	<1	<.1	<1	<1	8
JUN						
07...	4	2	<.1	<1	<1	4



COLORADO RIVER BASIN

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08155500 BARTON SPRINGS AT AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
OCT 12...	1215	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1

## COLORADO RIVER BASIN

08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX

LOCATION.--Lat 30°16'35", long 97°45'00", Travis County, Hydrologic Unit 12090205, on left bank at downstream side of bridge at 12th Street and 0.6 mi west of the State Capitol Building in Austin.

DRAINAGE AREA.--12.3 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1984 to September 1985. Periodic discharge measurements, periodic QW sample collection and associated peak discharges along with annual maximum, November 1974 to September 1985.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 455.33 ft above National Geodetic Vertical Datum of 1929 (City of Austin bench mark). Apr. 2 1975, to Nov. 14, 1984, operated as a flood-hydrograph partial-record station at same site and datum.

REMARKS.--Estimated daily discharges: Oct. 1 to Nov. 14. Records fair, except those for estimated periods which are poor. No known regulation or diversions. This station is part of a hydrologic research project to study the rain-fall-runoff relationship in the Austin urban area. Station is equipped with an automatic water-quality sampler. There are two recording rain gages in the watershed above station.

EXTREMES FOR PERIOD OF RECORD.-- Maximum discharge, 16,000 ft<sup>3</sup>/s May 24, 1981 (gage height, 23.22 ft); no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 7	0530	1,700	9.37	Dec. 16	0015	1,280	8.32
Oct. 10	2145	1,770	9.53	May 13	1715	2,160	10.39
Oct. 13	1245	2,850	11.73	June 22	1300	1,050	7.67
Oct. 20	1330	*2,940	*11.90	Sept. 14	1715	1,010	7.54
Oct. 21	0845	2,050	10.15				

Minimum discharge, no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	18	.20	2.1	.07	5.7	.76	11	.00	.06	.00	.00
2	.00	9.2	.20	2.4	.56	2.4	.82	.89	.00	.06	.00	.00
3	.00	.65	.14	4.0	1.1	2.1	.79	.23	.00	5.7	.00	.00
4	.00	.58	2.2	2.2	.94	2.8	.74	.18	.10	27	.00	.00
5	.00	.42	10	1.8	1.4	2.1	.68	.06	27	2.0	.00	1.9
6	.00	.27	1.1	1.6	.54	1.8	.50	.00	109	.98	.00	14
7	165	.20	.35	1.5	.26	1.7	.49	.00	1.4	.55	.00	.28
8	2.2	.20	.14	1.5	.14	1.7	.37	.00	1.4	.34	.00	.00
9	49	.20	.09	1.4	.09	1.7	.35	.00	.33	.16	.00	.00
10	123	.20	.09	1.2	23	1.6	1.1	.00	.13	.11	.00	.00
11	58	.20	.10	1.1	2.6	1.5	17	.00	.06	.07	.00	1.1
12	39	.14	.14	1.6	.74	1.5	2.3	.00	.05	1.1	.00	.02
13	232	.14	6.3	2.2	.48	1.4	38	124	.13	.40	.00	.00
14	100	.14	3.0	1.9	.31	23	9.3	21	.06	.19	.00	60
15	2.7	.14	30	1.4	.11	2.9	1.5	.96	.04	.07	.29	2.8
16	1.4	.14	104	26	.08	2.2	1.1	.36	.02	.04	.19	.02
17	1.0	.27	7.6	2.1	.02	1.6	.92	6.4	.02	.04	.00	.00
18	.91	36	3.3	1.5	.00	1.4	.45	.63	.05	.03	.00	.00
19	.91	.90	1.3	1.4	.00	1.3	.32	.08	.44	.14	.41	.00
20	222	.11	.75	.97	.00	110	.25	.02	.05	.05	.00	.00
21	207	.04	.53	.87	.00	5.0	2.6	29	.04	.04	.00	.00
22	43	.02	.24	.84	20	2.8	1.7	1.9	137	.04	.00	.00
23	21	.01	.09	.72	98	2.3	.59	1.1	24	.04	.00	.00
24	31	54	.05	.65	3.2	2.0	.48	.12	2.4	.02	.00	.00
25	7.4	34	.00	.62	2.3	1.7	.40	.02	1.4	.02	.00	.00
26	3.6	7.8	.00	.61	2.1	1.7	12	.01	.66	.00	.00	.00
27	2.7	2.3	2.8	.84	2.4	10	.99	.00	.48	.00	.00	.00
28	2.3	.60	1.3	.50	38	1.9	.35	.00	.34	.00	.00	5.0
29	2.0	.28	.06	.89	---	1.4	1.7	.00	.15	.00	.38	57
30	1.6	.22	.00	.70	---	1.2	14	.00	.08	.00	.00	2.0
31	1.2	---	59	.24	---	1.2	---	.00	---	.00	.00	---
TOTAL	1319.92	167.37	235.07	67.35	198.44	201.6	112.55	197.96	306.83	39.25	1.27	144.12
MEAN	42.6	5.58	7.58	2.17	7.09	6.50	3.75	6.39	10.2	1.27	.041	4.80
MAX	232	54	104	26	98	110	38	124	137	27	.41	60
MIN	.00	.01	.00	.24	.00	1.2	.25	.00	.00	.00	.00	.00
CFSM	3.46	.45	.62	.18	.58	.53	.31	.52	.83	.10	.003	.39
IN.	3.99	.51	.71	.20	.60	.61	.34	.60	.93	.12	.00	.44
AC-FT	2620	332	466	134	394	400	223	393	609	78	2.5	286

WTR YR 1985 TOTAL 2991.73 MEAN 8.20 MAX 232 MIN .00 CFSM .67 IN 9.05 AC-FT 5930

## COLORADO RIVER BASIN

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08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1975 to current year. Water temperatures: January 1975 to current year. Radiochemical analyses: October 1979 to September 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT												
07...	0501	396	125	--	--	--	--	--	--	13	980000	240000
07...	0516	1480	194	--	--	3500	1900	--	--	--	--	--
07...	0531	1690	192	--	--	--	--	--	--	--	500000	860000
07...	0546	1450	154	6.8	--	--	--	--	--	11	--	--
07...	0601	1270	141	--	--	2500	2000	--	--	--	K180000	760000
07...	0616	1180	133	--	--	--	--	--	--	5.9	--	--
FEB												
12...	0740	1.0	582	8.5	6.0	10	2.9	9.5	76	.7	K1400	420
22...	0659	186	--	--	--	--	--	--	--	--	K22000	160000
22...	0714	245	405	--	--	--	--	--	--	21	46000	170000
22...	0729	209	487	--	--	1000	--	--	--	13	--	--
22...	0744	164	453	7.1	--	--	--	--	--	--	K22000	390000
22...	0759	136	422	--	--	--	--	--	--	14	--	--
22...	0814	100	405	--	--	1000	2200	--	--	--	42000	580000
MAR												
20...	0245	173	--	--	--	600	370	--	--	12	56000	710000
20...	0300	275	--	--	--	800	560	--	--	18	40000	128000
20...	0315	303	--	--	--	500	790	--	--	11	58000	160000
20...	0330	331	--	--	--	800	560	--	--	13	44000	102000
20...	0345	419	--	--	--	500	790	--	--	14	58000	160000
20...	0400	441	--	--	--	--	--	--	--	14	--	--
APR												
13...	1844	185	373	--	--	30	230	--	--	9.9	330000	K160000
13...	1859	318	220	--	--	--	--	--	--	16	--	--
13...	1914	339	315	--	--	25	730	--	--	16	K130000	K200000
13...	1929	294	332	--	--	25	780	--	--	14	88000	130000
13...	1944	247	278	--	--	--	--	--	--	13	--	--
13...	1959	207	262	--	--	30	580	--	--	13	K61000	140000
MAY												
13...	1645	185	402	--	--	--	--	--	--	--	710000	330000
13...	1700	1100	302	--	--	--	--	--	--	7.0	80000	180000
JUN												
06...	0919	862	138	7.7	22.0	90	700	--	--	5.0	K120000	110000
06...	1034	324	144	7.7	22.0	60	360	--	--	4.4	46000	920000

## COLORADO RIVER BASIN

08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT												
07...	--	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--	--
07...	84	29	30	2.3	3.9	.2	3.3	56	29	5.9	.20	13
07...	--	--	--	--	--	--	--	--	--	--	--	--
07...	--	--	--	--	--	--	--	--	--	--	--	--
FEB												
12...	260	100	94	6.4	25	.7	3.1	160	85	49	.30	5.7
22...	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--
22...	190	76	67	4.5	16	.5	2.6	110	66	32	.30	5.3
22...	--	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	--	--	--	--	--	--	--	--	--
MAR												
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
MAY												
13...	--	--	--	--	--	--	--	--	--	--	--	--
13...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
06...	61	22	22	1.4	2.6	.2	2.2	39	22	3.6	.10	2.3
06...	64	23	23	1.5	2.3	.1	2.2	41	25	3.1	.10	2.5

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLATILE, TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
07...	--	--	--	.46	.040	.50	.060	4.4	4.5	.830	31
07...	--	4440	460	.45	.050	.50	.150	8.4	8.5	3.40	61
07...	--	--	--	.36	.040	.40	.110	6.9	7.0	2.40	--
07...	120	--	--	.37	.030	.40	.100	2.7	2.8	2.60	52
07...	--	2660	300	.37	.030	.40	.070	3.8	3.9	2.10	--
07...	--	--	--	.27	.030	.30	.080	4.1	4.2	1.50	33
FEB											
12...	360	2	2	1.2	.010	1.2	<.010	--	.40	.030	3.1
22...	--	--	--	--	--	--	--	--	--	--	--
22...	--	--	--	.45	.050	.50	.110	--	--	1.40	31
22...	--	--	--	.56	.040	.60	.070	3.8	3.9	--	29
22...	260	--	--	.65	.050	.70	.060	5.4	5.5	.300	34
22...	--	--	--	.55	.050	.60	.050	--	--	.210	33
22...	--	3130	256	.57	.030	.60	.040	5.1	5.1	3.20	45
MAR											
20...	--	768	204	.67	.030	.70	.030	3.8	3.8	.900	28
20...	--	1040	192	.67	.030	.70	.020	3.6	3.6	1.90	32
20...	--	1450	308	.68	.020	.70	.070	2.6	2.7	.950	25
20...	--	1040	192	.49	.010	.50	.040	2.3	2.3	.890	26
20...	--	1450	308	.48	.020	.50	.060	4.5	4.6	1.80	32
20...	--	--	--	.48	.020	.50	.090	3.9	4.0	1.90	32
APR											
13...	--	444	108	.56	.040	.60	.050	3.7	3.7	.680	25
13...	--	--	--	.35	.050	.40	.090	2.1	2.2	1.20	32
13...	--	1520	292	.44	.060	.50	.120	3.5	3.6	1.10	37
13...	--	1200	212	.54	.060	.60	.160	3.8	4.0	1.20	26
13...	--	--	--	.44	.060	.50	.140	3.7	3.8	.970	26
13...	--	1370	224	.44	.060	.50	.120	3.7	3.8	1.00	27
MAY											
13...	--	--	--	.63	.070	.70	.650	3.0	3.6	7.60	>80
13...	--	--	--	.47	.030	.50	.450	1.5	1.9	.420	>80
JUN											
06...	80	1960	184	.12	.180	.30	.620	.18	.80	.770	35
06...	84	944	800	.25	.050	.30	.200	.80	1.0	.390	10

## COLORADO RIVER BASIN

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08156800 SHOAL CREEK AT 12TH STREET, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 07...	0501	<1	<100	<1	<10	6	80
FEB 12...	0740	<1	56	<1	<10	2	4
22...	0714	1	38	<1	<10	2	8
22...	0814	1	49	<1	<10	1	3
MAR 20...	0245	--	--	<1	<10	--	--
20...	0330	--	--	<1	<10	--	--
20...	0345	--	--	<1	<10	--	--
APR 13...	1844	--	--	--	--	--	--
13...	1914	--	--	--	--	--	--
13...	1929	--	--	--	--	--	--
13...	1959	--	--	--	--	--	--
MAY 13...	1645	1	51	<1	<10	3	49
13...	1700	--	--	--	<10	3	--
JUN 06...	0919	1	13	<1	<10	2	6
06...	1034	2	14	<1	<10	2	20

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 07...	17	10	<.1	<1	<1	<10
FEB 12...	<1	4	<.1	<1	<1	21
22...	<1	<1	<.1	<1	<1	4
22...	<1	<1	<.1	<1	<1	<3
MAR 20...	--	--	--	--	--	--
20...	--	--	--	--	--	--
20...	--	--	--	--	--	--
APR 13...	--	--	--	--	--	--
13...	--	--	--	--	--	--
13...	--	--	--	--	--	--
13...	--	--	--	--	--	--
MAY 13...	3	92	<.1	<1	<1	9
13...	--	--	--	--	--	--
JUN 06...	8	<1	<.1	<1	<1	4
06...	3	<1	<.1	<1	<1	<3

DATE	TIME	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
OCT 07...	0531	--	--	--	<2.0	--	--	--	<2.0	<2.0	--	--
FEB 22...	0659	<.10	.10	<.10	<2.0	.2	<.1	<.10	<2.0	<2.0	.10	<.1



## COLORADO RIVER MAIN STEM

## 08157900 TOWN LAKE AT AUSTIN, TX

LOCATION.--Lat 30°14'56", long 97°43'03", Travis County, Hydrologic Unit 12090205, at Longhorn Dam on the Colorado River at Austin, 1.5 mi downstream from Interstate Highway 35, and 2.3 mi southeast of the State Capitol in Austin.

DRAINAGE AREA.--39,003 mi<sup>2</sup>, approximately, of which 11,403 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: February 1975 to current year.

## 301559097424801 TOWN LAKE AR

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT							
11...	0950	1.00	525	7.7	25.0	5.4	66
11...	0952	10.0	487	7.6	24.0	5.4	65
11...	0954	20.0	453	7.6	23.0	5.4	63
11...	0956	28.0	401	7.7	23.0	5.8	68
FEB							
25...	1110	1.00	382	8.1	16.0	7.0	71
25...	1112	10.0	382	8.2	15.5	7.0	70
25...	1114	21.0	452	8.1	15.5	7.0	70
JUN							
06...	1108	1.00	574	7.7	21.5	6.7	78
06...	1110	10.0	570	7.7	21.5	6.7	78
06...	1112	21.0	574	7.7	21.5	6.7	78
AUG							
20...	0910	1.00	555	7.7	24.0	6.5	78
20...	0912	10.0	555	7.6	23.0	5.7	67
20...	0914	18.0	555	7.5	23.0	4.5	53

## 301500097424801 TOWN LAKE AC

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
11...	0900	1.00	475	7.6	25.0	.20	70	46	5.4	66
11...	0902	10.0	425	7.6	23.0	--	--	--	5.9	69
11...	0904	20.0	345	7.6	22.0	--	--	--	6.1	70
11...	0906	30.0	349	7.3	22.0	--	250	160	6.2	71
FEB										
25...	1020	1.00	377	8.0	16.0	.30	50	34	7.0	71
25...	1022	10.0	365	8.1	15.5	--	--	--	7.0	70
25...	1024	20.0	452	8.1	15.5	--	--	--	6.9	69
25...	1026	28.0	533	8.0	15.0	--	25	15	6.0	60
JUN										
06...	1015	1.00	543	7.7	21.5	.40	12	12	6.6	77
06...	1018	10.0	548	7.7	21.5	--	--	--	7.5	87
06...	1020	20.0	550	7.7	21.5	--	--	--	7.5	87
06...	1022	23.0	552	7.7	21.5	--	8	120	7.4	86
AUG										
20...	0830	1.00	555	7.7	24.0	1.60	5	1.9	6.3	76
20...	0832	10.0	555	7.6	23.0	--	--	--	5.4	64
20...	0834	15.0	555	7.6	23.0	--	--	--	5.1	60
20...	0836	20.0	555	7.5	22.5	--	--	--	4.9	57
20...	0838	25.0	555	7.5	22.5	--	5	1.0	4.8	56

COLORADO RIVER MAIN STEM

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TOWN LAKE AT AUSTIN, TX--Continued

301500097424801 TOWN LAKE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOGOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
OCT										
11...	1.0	K6500	K13000	160	45	38	17	29	1	3.7
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	1.5	--	--	120	21	32	10	19	.8	3.6
FEB										
25...	1.5	K6000	3700	180	32	52	12	11	.4	2.2
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	1.2	--	--	250	53	70	18	18	.5	2.1
JUN										
06...	1.2	1960	1600	200	67	47	20	34	1	3.8
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	1.1	--	--	200	68	48	20	35	1	3.9
AUG										
20...	.4	150	23	200	48	46	21	33	1	3.5
20...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
20...	.1	--	--	210	61	51	21	32	1	3.8

DATE	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)
OCT										
11...	120	36	53	.30	5.3	250	36	8	--	<.010
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	<.010
11...	100	27	33	.20	4.6	190	104	21	--	<.010
FEB										
25...	148	26	18	.20	8.4	220	25	7	.39	.010
25...	--	--	--	--	--	--	--	--	.39	.010
25...	--	--	--	--	--	--	--	--	.49	.010
25...	196	35	30	.20	7.0	300	11	6	.49	.010
JUN										
06...	133	43	61	.20	5.7	290	15	7	--	<.010
06...	--	--	--	--	--	--	--	--	--	<.010
06...	--	--	--	--	--	--	--	--	--	--
06...	135	47	66	.20	5.9	310	226	28	--	<.010
AUG										
20...	154	39	63	.20	7.1	310	4	3	--	<.010
20...	--	--	--	--	--	--	--	--	--	<.010
20...	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	<.010
20...	153	38	61	.30	7.3	310	18	6	.29	.010

## COLORADO RIVER MAIN STEM

## TOWN LAKE AT AUSTIN, TX--Continued

301500097424801 TOWN LAKE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)
DATE										
OCT										
11...	.20	.040	.46	.50	.70	.070	3.6	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	.60	.060	.64	.70	1.3	.170	--	--	--	--
11...	.60	.070	.63	.70	1.3	.180	5.6	--	--	--
FEB										
25...	.40	.090	.41	.50	.90	.030	4.2	<1	44	<1
25...	.40	.080	.52	.60	1.0	<.010	--	--	--	--
25...	.50	.090	.41	.50	1.0	.020	--	--	--	--
25...	.50	.140	.26	.40	.90	.020	2.3	<1	61	<1
JUN										
06...	.40	.070	.53	.60	1.0	.040	5.0	<1	73	<1
06...	.40	.060	.44	.50	.90	.040	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	.40	.060	.34	.40	.80	.100	10	<1	76	<1
AUG										
20...	.30	.030	.37	.40	.70	.010	2.5	1	75	<1
20...	.30	.050	.35	.40	.70	.010	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--
20...	.30	.060	.34	.40	.70	<.010	--	--	--	--
20...	.30	.080	.42	.50	.80	.040	2.7	1	77	<1
DATE	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT										
11...	--	--	25	--	<1	--	--	--	--	
11...	--	--	--	--	--	--	--	--	--	
11...	--	--	50	--	10	--	--	--	--	
11...	--	--	39	--	4	--	--	--	--	
FEB										
25...	<10	2	210	<1	10	<.1	<1	<1	5	
25...	--	--	120	--	10	--	--	--	--	
25...	--	--	90	--	<10	--	--	--	--	
25...	<10	2	13	5	10	<.1	<1	1	19	
JUN										
06...	<10	2	12	<1	5	<.1	1	<1	5	
06...	--	--	20	--	10	--	--	--	--	
06...	--	--	--	--	--	--	--	--	--	
06...	<10	1	34	5	36	<.1	<1	<1	5	
AUG										
20...	<10	1	<3	1	6	<.1	<1	<1	12	
20...	--	--	210	--	<10	--	--	--	--	
20...	--	--	--	--	--	--	--	--	--	
20...	--	--	20	--	<10	--	--	--	--	
20...	<10	2	4	<1	6	<.1	<1	<1	7	

## COLORADO RIVER MAIN STEM

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## TOWN LAKE AT AUSTIN, TX--Continued

## 301500097424801 TOWN LAKE AC--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	SAM- PLING DEPTH (FEET)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)
OCT							
11...	0900	1.00	--	--	--	--	--
11...	0902	10.0	--	--	--	--	--
11...	0904	20.0	--	--	--	--	--
11...	0906	30.0	--	--	--	--	--
FEB							
25...	1020	1.00	<.10	<.10	<.10	<2.0	.1
25...	1022	10.0	--	--	--	--	--
25...	1024	20.0	--	--	--	--	--
25...	1026	28.0	<.10	<.10	<.10	<2.0	.1
JUN							
06...	1015	1.00	<.10	<.10	<.10	<2.0	<.1
06...	1018	10.0	--	--	--	--	--
06...	1020	20.0	--	--	--	--	--
06...	1022	23.0	--	--	--	--	--
AUG							
20...	0830	1.00	<.10	<.10	<.10	<2.0	<.1
20...	0832	10.0	--	--	--	--	--
20...	0834	15.0	--	--	--	--	--
20...	0836	20.0	--	--	--	--	--
20...	0838	25.0	<.10	<.10	<.10	<2.0	<.1

DATE	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
OCT						
11...	--	--	--	--	--	--
11...	--	--	--	--	--	--
11...	--	--	--	--	--	--
11...	--	--	--	--	--	--
FEB						
25...	<.1	<.10	<2.0	<2.0	<.10	<.1
25...	--	--	--	--	--	--
25...	--	--	--	--	--	--
25...	<.1	<.10	<2.0	<2.0	<.10	<.1
JUN						
06...	<.1	<.10	<2.0	<2.0	<.10	<.1
06...	--	--	--	--	--	--
06...	--	--	--	--	--	--
06...	--	--	--	--	--	--
AUG						
20...	<.1	<.10	<2.0	<2.0	<.10	<.1
20...	--	--	--	--	--	--
20...	--	--	--	--	--	--
20...	--	--	--	--	--	--
20...	<.1	<.10	<2.0	<2.0	<.10	<.1

## 301503097424701 TOWN LAKE AL

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT							
11...	0940	1.00	510	7.6	25.0	5.3	65
11...	0942	10.0	418	7.7	23.0	5.9	69
11...	0944	22.0	341	7.7	22.0	6.1	70
FEB							
25...	1100	1.00	382	8.1	17.0	7.2	75
25...	1102	10.0	366	8.1	15.5	7.1	71
25...	1104	21.0	476	8.0	15.5	7.0	70
JUN							
06...	1100	1.00	560	7.7	21.5	6.0	70
06...	1102	10.0	556	7.7	21.5	6.1	71
06...	1104	17.0	560	7.7	21.5	6.1	71
AUG							
20...	0925	1.00	550	7.3	24.5	6.5	79
20...	0928	10.0	551	7.6	23.5	5.7	68
20...	0930	15.0	551	7.6	23.5	5.5	65
20...	0932	19.0	551	7.6	23.0	4.7	55

COLORADO RIVER MAIN STEM  
TOWN LAKE AT AUSTIN, TX--Continued

301500097440801 TOWN LAKE BR

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT							
11...	1015	1.00	491	7.7	24.0	5.5	66
11...	1017	10.0	311	7.8	21.5	6.2	71
11...	1019	14.0	296	7.8	21.5	6.2	71
FEB							
25...	1130	1.00	416	8.1	15.0	7.1	71
25...	1132	10.0	482	8.2	14.5	7.1	70
25...	1134	13.0	506	8.2	14.5	7.1	70
JUN							
06...	1125	1.00	440	7.6	21.5	6.3	73
06...	1127	12.0	463	7.6	21.5	6.5	75
AUG							
20...	0955	1.00	548	7.6	23.5	5.8	69
20...	0958	10.0	548	7.6	23.0	5.6	66
20...	1000	15.0	548	7.6	23.0	5.5	65

301504097440901 TOWN LAKE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT							
11...	1000	1.00	500	7.7	24.5	5.5	66
11...	1002	10.0	428	7.7	23.0	5.8	68
11...	1004	15.0	394	7.8	22.5	5.9	69
11...	1006	20.0	292	7.8	22.0	6.0	69
11...	1008	28.0	296	7.8	21.0	6.2	70
FEB							
25...	1120	1.00	440	8.2	15.0	7.2	72
25...	1122	10.0	470	8.3	14.5	7.2	71
25...	1124	15.0	470	8.2	14.5	7.2	71
25...	1126	20.0	506	8.3	14.5	7.3	72
25...	1128	27.0	511	8.3	14.5	7.2	71
JUN							
06...	1115	1.00	430	7.6	21.5	6.5	75
06...	1118	10.0	430	7.6	21.5	6.6	77
06...	1120	20.0	448	7.6	21.5	6.6	77
06...	1122	25.0	462	7.7	21.5	6.6	77
AUG							
20...	0945	1.00	548	7.6	23.5	5.9	70
20...	0948	10.0	548	7.6	23.0	5.6	66
20...	0950	20.0	548	7.6	23.0	5.5	65
20...	0952	25.0	548	7.5	23.0	5.1	60

301544097445201 TOWN LAKE CR

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT							
11...	1045	1.00	288	7.8	21.0	6.3	71
11...	1047	6.00	288	7.8	21.0	6.2	70
FEB							
25...	1155	1.00	520	8.2	14.5	7.6	75
25...	1157	8.00	524	8.2	14.5	7.4	73
JUN							
06...	1140	1.00	520	7.6	21.5	6.0	70
06...	1142	7.00	520	7.6	21.5	5.7	66
AUG							
20...	1015	1.00	548	7.5	22.5	5.3	62
20...	1018	10.0	548	7.5	22.0	5.2	60



## COLORADO RIVER MAIN STEM

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## TOWN LAKE AT AUSTIN, TX--Continued

301546097445101 TOWN LAKE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT							
11...	1030	1.00	291	7.8	21.0	6.5	73
11...	1032	10.0	298	7.9	21.0	6.4	72
11...	1034	16.0	282	7.8	21.0	6.3	71
FEB							
25...	1145	1.00	520	8.2	15.0	7.6	76
25...	1147	10.0	527	8.2	14.0	7.6	74
25...	1149	13.0	530	8.2	14.5	7.5	74
JUN							
06...	1130	1.00	535	7.7	21.5	6.1	71
06...	1132	10.0	538	7.7	21.5	6.1	71
06...	1134	15.0	515	7.7	21.5	5.9	69
AUG							
20...	1005	1.00	548	7.6	22.0	5.3	61
20...	1008	10.0	548	7.5	22.0	5.2	60
20...	1010	14.0	548	7.5	22.0	5.0	58

301556097452301 TOWN LAKE DR

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT							
11...	1130	1.00	466	7.9	23.0	6.0	70
11...	1132	10.0	255	7.8	20.5	6.4	71
FEB							
25...	1240	1.00	520	8.2	14.5	7.4	73
25...	1242	10.0	526	8.2	14.0	7.5	73
25...	1244	14.0	527	8.2	14.0	7.4	72
JUN							
06...	1200	1.00	545	7.5	21.5	6.1	71
06...	1202	10.0	541	7.5	21.0	6.2	71
06...	1204	16.0	538	7.6	21.0	6.2	71
AUG							
20...	1040	1.00	550	7.4	22.5	5.1	60
20...	1042	10.0	545	7.5	22.0	5.1	59

301558097452201 TOWN LAKE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT										
11...	1100	1.00	465	7.8	22.5	.20	100	63	6.1	71
11...	1102	10.0	252	7.8	20.5	--	--	--	6.4	71
11...	1104	19.0	269	7.7	20.5	--	500	410	6.2	69
FEB										
25...	1200	1.00	519	8.2	14.5	.60	25	18	7.5	74
25...	1202	10.0	537	8.3	14.0	--	--	--	7.6	74
25...	1206	19.0	539	8.2	14.0	--	60	36	7.4	72
JUN										
06...	1145	1.00	533	7.6	21.0	.20	8	40	6.3	72
06...	1148	10.0	540	7.6	21.0	--	--	--	6.3	72
06...	1150	20.0	548	7.6	21.0	--	8	61	6.3	72
AUG										
20...	1025	1.00	548	7.5	22.5	1.70	5	2.0	5.4	63
20...	1028	10.0	548	7.5	22.0	--	--	--	5.3	61
20...	1030	15.0	543	7.6	22.0	--	5	4.9	5.1	59

## COLORADO RIVER MAIN STEM

## TOWN LAKE AT AUSTIN, TX--Continued

301558097452201 TOWN LAKE DC--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)
OCT										
11...	1.2	K7000	7100	160	55	38	17	28	1	3.9
11...	--	--	--	--	--	--	--	--	--	--
11...	3.4	--	--	130	27	39	7.2	9.4	.4	3.5
FEB										
25...	.8	K1500	840	250	41	73	17	14	.4	1.8
25...	--	--	--	--	--	--	--	--	--	--
25...	.9	--	--	240	45	66	19	20	.6	2.2
JUN										
06...	.9	1160	K720	200	67	48	20	33	1	3.7
06...	--	--	--	--	--	--	--	--	--	--
06...	1.0	--	--	200	66	48	20	34	1	3.8
AUG										
20...	.4	230	42	210	50	50	20	33	1	3.8
20...	--	--	--	--	--	--	--	--	--	--
20...	.4	--	--	210	59	50	21	33	1	3.8

DATE	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)
OCT										
11...	110	37	55	.20	5.4	250	49	12	--	<.010
11...	--	--	--	--	--	--	--	--	1.3	.020
11...	100	24	15	.10	7.2	170	--	43	1.4	.020
FEB										
25...	212	29	23	.20	7.9	290	21	11	--	<.010
25...	--	--	--	--	--	--	--	--	--	<.010
25...	198	34	32	.20	7.2	300	72	18	--	<.010
JUN										
06...	135	42	59	.20	6.0	290	--	--	--	<.010
06...	--	--	--	--	--	--	--	--	--	<.010
06...	136	41	62	.20	6.0	300	--	--	--	<.010
AUG										
20...	157	37	60	.20	7.1	310	3	3	--	<.010
20...	--	--	--	--	--	--	--	--	--	<.010
20...	153	39	62	.20	7.1	310	8	6	--	<.010

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	IRON, DIS- SOLVED (UG/L AS FE)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT									
11...	.40	.020	.38	.40	.80	.060	4.5	23	<1
11...	1.3	.030	1.3	1.3	2.6	.210	--	730	70
11...	1.4	.050	1.8	1.8	3.2	.190	16	300	34
FEB									
25...	.60	.050	.35	.40	1.0	.010	2.6	6	6
25...	.50	.050	.35	.40	.90	.010	--	30	<10
25...	.50	.080	.62	.70	1.2	.030	3.4	8	8
JUN									
06...	.40	.050	.35	.40	.80	.070	4.7	10	5
06...	.40	.060	.24	.30	.70	.060	--	30	<10
06...	.40	.050	.45	.50	.90	.090	5.2	5	5
AUG									
20...	.30	.050	.35	.40	.70	.010	2.5	<3	5
20...	.30	.050	.25	.30	.60	.010	--	20	10
20...	.30	.040	.36	.40	.70	.010	2.9	<3	8

## COLORADO RIVER MAIN STEM

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## TOWN LAKE AT AUSTIN, TX--Continued

301712097470701 TOWN LAKE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT												
11...	1210	1.00	578	7.8	23.5	1.50	5	1.6	5.6	66	.5	K620
11...	1212	10.0	553	7.3	22.5	--	--	--	5.4	63	--	--
11...	1214	13.0	565	6.8	21.0	--	45	20	5.4	61	.6	--
FEB												
25...	1300	1.00	559	8.0	15.0	.90	15	7.0	7.3	73	1.1	480
25...	1304	13.0	--	--	--	--	17	6.5	--	--	.8	--
JUN												
06...	1220	1.00	596	7.8	21.0	.90	5	3.9	6.9	79	.7	192
06...	1222	10.0	596	7.8	21.0	--	--	--	6.9	79	--	--
06...	1224	19.0	596	7.8	21.0	--	5	13	6.9	79	.6	--
AUG												
20...	1100	1.00	548	7.7	23.0	1.86	5	1.9	6.1	72	.3	21
20...	1102	13.0	548	7.6	23.0	--	5	2.0	5.9	70	.5	--

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT												
11...	3000	200	62	43	23	38	1	4.1	140	45	70	.30
11...	--	--	--	--	--	--	--	--	--	--	--	--
11...	--	250	19	70	18	14	.4	2.0	230	<15	26	.20
FEB												
25...	740	240	61	66	19	22	.6	2.6	182	41	41	.20
25...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
06...	292	210	68	49	22	39	1	4.0	145	46	72	.20
06...	--	--	--	--	--	--	--	--	--	--	--	--
06...	--	210	70	49	22	38	1	4.0	143	49	71	.20
AUG												
20...	K123	210	55	49	21	32	1	3.8	154	37	62	.20
20...	--	210	59	50	21	33	1	3.6	153	39	62	.20

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT												
11...	5.7	310	2	1	<.010	<.10	.030	.17	.20	--	.010	2.5
11...	--	--	--	--	<.010	.60	.030	.37	.40	1.0	.030	--
11...	9.0	--	24	4	<.010	2.0	.010	.79	.80	2.8	.050	3.2
FEB												
25...	6.3	310	8	3	<.010	.50	.040	.36	.40	.90	.030	2.8
25...	--	--	7	2	<.010	.40	.060	.34	.40	.80	.010	2.9
JUN												
06...	5.9	330	24	12	<.010	.30	.040	.36	.40	.70	.010	4.1
06...	--	--	--	--	<.010	.30	.030	.37	.40	.70	.010	--
06...	5.8	320	9	6	<.010	.30	.030	.47	.50	.80	.010	5.9
AUG												
20...	6.9	300	4	3	<.010	.30	.030	.37	.40	.70	<.010	2.6
20...	6.8	310	1	1	<.010	.30	.030	.27	.30	.60	<.010	2.7

## COLORADO RIVER MAIN STEM

## TOWN LAKE AT AUSTIN, TX--Continued

301712097470701 TOWN LAKE EC--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT												
11...	--	--	--	--	--	<3	--	<1	--	--	--	--
11...	--	--	--	--	--	20	--	10	--	--	--	--
11...	--	--	--	--	--	8	--	<1	--	--	--	--
FEB												
25...	<1	65	<1	<10	<1	33	<1	<1	<.1	<1	<1	10
25...	--	--	--	--	--	--	--	--	--	--	--	--
JUN												
06...	<1	83	<1	<10	1	6	<1	1	<.1	<1	<1	3
06...	--	--	--	--	--	10	--	<10	--	--	--	--
06...	--	--	--	--	--	3	--	2	--	--	--	--
AUG												
20...	1	78	<1	<10	2	<3	<1	2	<.1	<1	<1	7
20...	<1	75	<1	<10	2	<3	3	5	<.1	<1	<1	<3

DATE	TIME	SAM- PLING DEPTH (FEET)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)
OCT							
11...	1210	1.00	--	--	--	--	--
11...	1212	10.0	--	--	--	--	--
11...	1214	13.0	--	--	--	--	--
FEB							
25...	1300	1.00	<.10	<.10	<.10	<2.0	<.1
25...	1304	13.0	<.10	<.10	<.10	<2.0	<.1
JUN							
06...	1220	1.00	<.10	<.10	<.10	<2.0	<.1
06...	1222	10.0	--	--	--	--	--
06...	1224	19.0	--	--	--	--	--
AUG							
20...	1100	1.00	<.10	<.10	<.10	<2.0	<.1
20...	1102	13.0	<.10	<.10	<.10	<2.0	<.1

DATE	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
OCT						
11...	--	--	--	--	--	--
11...	--	--	--	--	--	--
11...	--	--	--	--	--	--
FEB						
25...	<.1	<.10	<2.0	<2.0	<.10	<.1
25...	<.1	<.10	<2.0	<2.0	<.10	<.1
JUN						
06...	<.1	<.10	<2.0	<2.0	<.10	<.1
06...	--	--	--	--	--	--
06...	--	--	--	--	--	--
AUG						
20...	<.1	<.10	<2.0	<2.0	<.10	<.1
20...	<.1	<.10	<2.0	<2.0	<.10	<.1

301601097454001 TOWN LAKE FC

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SAM- PLING DEPTH (FEET)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
OCT							
11...	1135	1.00	294	7.5	21.0	6.1	69
FEB							
25...	1250	1.00	498	8.1	15.5	7.4	74
JUN							
06...	1210	1.00	420	7.2	22.0	5.3	62
AUG							
20...	1120	1.00	631	7.2	23.5	8.5	101

COLORADO RIVER MAIN STEM

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08158000 COLORADO RIVER AT AUSTIN, TX  
(National stream-quality accounting network)

LOCATION.--Lat 30°14'40", Long 97°41'39", Travis County, Hydrologic Unit 12090205, on right bank 1,000 ft upstream from upstream bridge on U.S. Highway 183 in Austin, 1.4 mi downstream from Longhorn Dam, and at mile 290.3.

DRAINAGE AREA.--39,009 mi<sup>2</sup>, approximately, of which 11,403 mi<sup>2</sup> probably is noncontributing.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1898 to current year. Records of daily discharge for Dec. 13-26, 1914, and Feb. 9-17, 1915, published in WSP 408, have been found unreliable and should not be used.

REVISED RECORDS.--WSP 508: 1915(m). WSP 528: 1900(M), 1918(m). WSP 548: 1901-16. WSP 1342: Drainage area. WSP 1562: 1908, 1929(M), 1936.

GAGE.--Water-stage recorder. Datum of gage is 402.27 ft above National Geodetic Vertical Datum of 1929. Prior to June 19, 1939, all records collected at or near Congress Avenue Bridge 3.9 mi upstream at datum 19.6 ft higher; prior to June 18, 1915, nonrecording gages, recording gages thereafter; June 20, 1939, to Oct. 16, 1963, at site 1,000 ft downstream from present site at datum 5.0 ft higher.

REMARKS.--Estimated daily discharge: May 4-6. Records fair. Flow largely regulated by Lake Travis (station 08154500) 28 miles upstream. Since 1937, at least 10 percent of drainage area has been regulated by upstream reservoirs. The city of Austin diverts water for municipal use upstream from station and returns sewage effluent downstream. There many other diversions above Lake Buchanan for irrigation, municipal supplies, and oilfield operations. Gage-height telemeter at station.

AVERAGE DISCHARGE.--38 years (water years 1899-1936) unregulated, 2,711 ft<sup>3</sup>/s (1,964,000 acre-ft/yr); 49 years (water years 1937-85) regulated, 1,946 ft<sup>3</sup>/s (1,410,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 481,000 ft<sup>3</sup>/s June 15, 1935 (gage height, 50 ft, present site and datum, from floodmark); minimum daily, 2.4 ft<sup>3</sup>/s Feb. 28, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1833, 51 ft July 7, 1869, present site and datum (adjusted to present site on basis of record for flood of June 15, 1935), determined from information concerning stage at former site furnished by Dean T. U. Taylor.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,600 ft<sup>3</sup>/s Oct. 11 at 0030 hours (gage height, 11.77 ft); minimum daily, 58 ft<sup>3</sup>/s Oct. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	699	219	136	524	224	526	1320	1330	2570	1660	1410	1600
2	659	204	121	488	219	805	1250	1480	2450	1650	1370	1590
3	648	178	110	458	222	413	1330	1320	2310	1720	1620	1460
4	650	170	102	366	228	401	1280	1350	2250	1900	1550	1400
5	634	139	160	344	222	366	1260	1500	2450	1350	1670	1690
6	669	130	116	315	211	597	1270	1480	4350	1160	1660	1400
7	1260	143	110	316	202	346	1250	1370	727	1150	1700	1270
8	772	139	99	295	192	338	1270	1570	2150	1120	1730	1330
9	397	118	130	271	195	323	1240	1730	2130	1110	1720	1110
10	627	141	130	276	228	314	1260	1690	2060	1150	1680	1110
11	1840	124	141	264	249	303	1620	1870	2070	1130	1840	1310
12	207	124	136	250	202	296	1270	1910	2050	1170	1710	1240
13	1060	117	179	266	197	816	1430	2250	2010	1370	1850	1200
14	831	117	136	287	191	2150	1310	1900	1990	1380	1950	1350
15	181	124	174	269	190	2090	1270	1710	2000	1370	1890	1170
16	99	124	961	295	183	1490	1260	1740	1960	1410	1770	1050
17	62	133	619	411	190	2060	1260	1650	1940	1320	1900	1010
18	74	176	404	396	187	2060	1220	1450	1780	1310	1850	955
19	58	92	429	351	184	2040	1180	1430	1860	1320	1870	938
20	1730	106	282	331	180	2790	1140	1460	1780	1260	1870	781
21	2640	118	272	312	184	2120	1210	1700	1780	1230	1880	989
22	989	94	241	275	294	2060	1390	1570	2770	1250	1870	1110
23	912	87	239	290	3480	2100	1260	1560	2020	1240	1560	1010
24	740	239	234	262	982	1990	1190	1540	1760	1270	2100	969
25	600	405	198	274	547	1800	1200	1760	1720	1290	2010	994
26	338	485	196	268	904	2030	1310	1730	1690	1290	1980	967
27	589	726	197	269	429	2130	1230	1940	1660	1300	1930	785
28	270	594	238	257	527	1940	1260	2030	1630	1310	1630	626
29	254	316	207	253	---	1810	1250	2150	1630	903	1650	991
30	250	194	200	252	---	1440	1400	2210	1770	1330	1640	568
31	206	---	469	236	---	1300	---	2130	---	1800	1600	---
TOTAL	20945	6076	7366	9721	11443	41244	38390	52510	61317	41223	54460	33973
MEAN	676	203	238	314	409	1330	1280	1694	2044	1330	1757	1132
MAX	2640	726	961	524	3480	2790	1620	2250	4350	1900	2100	1690
MIN	58	87	99	236	180	296	1140	1320	727	903	1370	568
AC-FT	41540	12050	14610	19280	22700	81810	76150	104200	121600	81770	108000	67390

CAL YR 1984 TOTAL 379829.2 MEAN 1038 MAX 3670 MIN 2.4 AC-FT 753400  
WTR YR 1985 TOTAL 378668.0 MEAN 1037 MAX 4350 MIN 58 AC-FT 751100



## COLORADO RIVER MAIN STEM

08158000 COLORADO RIVER AT AUSTIN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1947 to October 1973. Chemical and biochemical analyses: October 1973 to current year. Sediment records: October 1974 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to current year.

WATER TEMPERATURES: October 1947 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 795 microsiemens Mar. 10, 1984; minimum daily, 243 microsiemens Dec. 2, 1953.

WATER TEMPERATURES: Maximum daily, 33.0°C July 25, 1979; minimum daily, 5.0°C Jan. 3, 1984.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 635 microsiemens Dec. 26; minimum daily, 340 microsiemens Oct. 11.

WATER TEMPERATURES: Maximum daily, 25.5°C June 8.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER AS)	HARD- NESS (MG/L AS CAC03)
OCT 23...	1225	1880	407	7.8	21.0	20	6.0	68	1.1	K1800	1100	160
FEB 21...	0925	184	575	7.7	19.0	.90	7.0	76	.3	120	540	270
JUL 03...	0915	2970	588	7.7	22.0	2.1	5.6	65	.7	124	224	220
AUG 22...	1100	286	566	8.0	26.0	1.3	11.0	138	.4	51	71	210
DATE		HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 23...		48	44	13	19	.7	3.3	116	34	32	.20	7.1
FEB 21...		43	73	20	19	.5	1.6	223	37	29	.20	7.1
JUL 03...		66	51	22	37	1	3.8	153	46	65	.20	6.7
AUG 22...		58	51	21	34	1	3.7	157	39	59	.20	7.7
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 23...		238	220	.45	.100	.60	.050	.030	<.010	21	107	95
FEB 21...		323	320	.68	.070	.50	<.010	.010	<.010	11	5.5	19
JUL 03...		348	320	.36	.060	.50	<.010	<.010	<.010	25	200	29
AUG 22...		345	310	.25	.080	.50	.020	<.010	<.010	5	3.9	68

COLORADO RIVER MAIN STEM

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08158000 COLORADO RIVER AT AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 23...	1225	<1	45	<.0	<1	1	<3	1	16	2
FEB 21...	0925	<1	59	<.5	<1	1	<3	3	5	<1
JUL 03...	0915	<1	82	<.5	<1	<1	<3	2	<3	6
AUG 22...	1100	1	79	<.5	<1	<1	<3	2	6	<1

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 23...	11	6	<.1	<10	<1	<1	4	340	<6	<3
FEB 21...	10	10	<.1	<10	<1	<1	<1	490	<6	11
JUL 03...	14	6	<.1	<10	<1	<1	<1	510	<6	6
AUG 22...	14	19	<.1	<10	<1	<1	<1	500	<6	18

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1984	20945	492	269	15200	43	2430	32	1790	190
NOV. 1984	6076	496	272	4460	43	707	32	521	200
DEC. 1984	7366	604	328	6520	56	1120	40	793	230
JAN. 1985	9721	600	325	8540	56	1460	40	1040	230
FEB. 1985	11443	562	306	9450	51	1570	37	1130	220
MAR. 1985	41244	561	306	34000	51	5660	37	4080	220
APR. 1985	38390	596	323	33500	55	5710	39	4060	230
MAY 1985	52510	592	321	45500	55	7730	39	5510	230
JUNE 1985	61317	564	307	50800	51	8480	37	6100	220
JULY 1985	41223	582	316	35200	53	5940	38	4250	220
AUG. 1985	54460	566	308	45300	51	7550	37	5430	220
SEPT 1985	33973	546	298	27300	49	4490	35	3250	210
TOTAL	378668	**	**	316000	**	52800	**	37900	**
WTD.AVG.	1037	568	309	**	52	**	37	**	220

## COLORADO RIVER MAIN STEM

08158000 COLORADO RIVER AT AUSTIN, TX--Continued

DAY	SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985											
	EQUIVALENT MEAN											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	586	517	529	594	615	550	595	596	600	589	574	552
2	588	432	542	590	617	541	603	433	598	589	573	559
3	592	473	550	592	608	549	597	601	602	591	577	550
4	583	413	563	595	600	555	590	595	595	581	572	552
5	593	517	555	597	604	559	580	601	426	580	572	556
6	589	515	583	600	607	551	593	595	568	578	573	555
7	572	508	599	598	610	560	602	599	565	582	571	551
8	567	512	615	601	612	563	604	596	415	579	570	549
9	580	520	622	602	605	567	605	597	540	588	575	546
10	587	506	633	597	583	569	598	598	548	580	572	548
11	340	511	628	600	559	572	595	598	550	581	570	543
12	417	515	630	604	565	575	598	602	537	580	565	545
13	455	520	612	600	568	560	599	601	545	581	560	544
14	477	523	620	593	574	545	568	594	565	582	551	541
15	464	518	615	598	575	547	583	591	576	584	568	544
16	470	521	580	596	577	560	598	592	579	582	568	541
17	483	511	591	584	569	552	590	590	584	582	567	542
18	505	495	603	593	571	554	600	589	595	580	564	549
19	502	515	600	599	573	555	599	590	586	584	564	543
20	540	510	614	603	579	547	600	592	591	580	565	542
21	450	500	618	606	575	558	598	591	594	584	560	545
22	347	517	622	611	570	562	600	593	593	579	563	547
23	445	528	625	604	535	560	584	592	518	584	565	542
24	477	512	627	607	550	568	602	597	568	582	566	542
25	440	501	633	602	561	571	604	595	587	573	564	540
26	498	484	635	606	555	565	586	598	586	580	564	538
27	445	477	631	605	563	560	599	600	586	581	561	545
28	465	485	622	609	549	576	601	599	588	581	560	540
29	485	503	628	612	---	582	601	601	587	580	561	532
30	497	514	630	614	---	590	602	599	585	579	553	513
31	533	---	607	613	---	597	---	598	---	578	556	---
MEAN	502	502	605	601	580	562	596	591	565	582	566	545

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
ONCE-DAILY

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0						---	19.5	---	19.5	---	21.0
2	20.0						16.5	20.5	---	16.0	---	21.0
3	20.0						15.5	20.5	---	16.5	23.0	24.0
4	20.5						---	20.5	---	16.0	23.5	24.0
5	21.5						---	21.0	24.5	16.0	23.0	22.0
6	21.5						---	21.0	---	16.0	22.0	22.0
7	21.5						---	19.0	---	16.0	22.0	23.0
8	21.5						---	19.0	25.5	16.5	22.0	22.0
9	21.0						---	20.5	23.5	21.0	22.0	22.0
10	23.0						18.0	20.0	23.5	21.0	23.0	24.0
11	22.0						16.5	20.0	24.0	20.5	23.0	23.0
12	23.5						16.5	19.0	23.5	22.0	23.0	22.0
13	23.5						---	20.0	23.0	21.0	21.5	22.0
14	21.5						15.5	19.5	---	---	22.0	22.0
15	21.5						---	21.0	23.5	15.0	22.0	22.0
16	22.0						16.5	19.5	18.0	21.0	23.0	22.0
17	20.5						19.0	19.5	19.5	22.0	21.5	21.0
18	24.5						19.5	20.5	19.5	---	21.0	22.0
19	22.0						---	19.5	19.0	23.0	23.0	21.5
20	23.0						18.5	19.0	21.0	20.5	22.0	22.0
21	22.0						19.0	20.5	18.0	13.0	22.0	21.0
22	19.0						19.0	20.5	18.0	22.0	22.0	22.0
23	19.0						19.5	19.5	18.5	22.0	23.0	24.5
24	18.5						19.5	19.0	18.0	20.5	22.0	21.5
25	19.0						19.5	18.0	20.0	21.5	---	21.5
26	19.0						19.5	20.0	20.0	23.5	21.5	21.0
27	---						20.5	19.5	18.0	23.0	23.0	22.0
28	---						20.5	19.5	18.5	---	22.0	21.5
29	---						20.0	20.0	16.0	21.5	21.5	22.0
30	---						19.0	20.5	16.5	21.5	21.5	21.0
31	---						---	21.5	---	21.0	22.0	---
MEAN	21.0						18.5	20.0	20.5	19.5	22.5	22.0

## 08158050 BOGGY CREEK AT U.S. HIGHWAY 183, AUSTIN, TX

LOCATION.--Lat 30°15'47", long 97°40'20", Travis County, Hydrologic Unit 12090205, on U.S. Highway 183, 1.6 mi south of the intersection of Webberville Road and U.S. Highway 183, 4.1 mi east of the State Capitol Building in Austin, and 0.7 mi upstream from mouth.

DRAINAGE AREA.--13.1 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January to July 1975 (periodic discharge measurements only), August 1975 to June 1977 (operated as a flood-hydrograph partial-record station only), June 1977 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 411.29 ft above National Geodetic Vertical Datum of 1929 (levels from city of Austin bench mark).

REMARKS.--No estimated daily discharges. Records fair. No known regulation or diversions. The station is part of a hydrologic research project to study the rainfall-runoff relationship for the Austin urban area. Station is equipped with an automatic water-quality sampler. There is a recording rain gage in the watershed.

AVERAGE DISCHARGE.--8 years (water years 1978-85), 6.13 ft<sup>3</sup>/s (6.35 in/yr) 4,440 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,100 ft<sup>3</sup>/s May 23, 1975 (gage height, 17.03 ft, from floodmark), from rating curve extended above 500 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 13	1330	2,690	12.02	June 6	0930	1,660	10.35
Oct. 21	0845	2,420	11.57	June 22	1315	2,420	11.57
Dec. 16	0045	2,170	11.20	Sept. 14	1730	*3,140	*13.23

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.10	.10	2.5	.40	1.1	.29	1.7	.03	.11	.01	.05
2	.00	.17	.08	5.2	1.6	.47	.28	.20	.03	16	.00	.07
3	.00	.09	.03	7.3	1.2	.31	.27	.14	.02	2.9	.00	.06
4	.00	.07	.57	2.8	1.7	.55	.28	.14	.06	87	.00	.00
5	.00	.05	2.1	1.8	1.5	.34	.26	.14	38	2.1	.00	.38
6	.00	.04	.15	1.3	1.3	.30	.24	.14	194	.89	.00	8.3
7	138	.04	.08	.98	1.4	.25	.22	.14	1.5	.77	.00	.05
8	1.8	.00	.06	.92	.45	.23	.21	.14	.81	.50	.00	.02
9	.71	.00	.07	.89	.65	.23	.23	.13	.67	.21	.03	.00
10	43	.00	.06	.83	2.1	.29	.44	.13	1.6	.19	.02	.00
11	120	.00	.06	.56	.67	.28	7.7	.13	.40	.22	.03	.01
12	9.0	.00	.08	1.7	.29	.28	.21	.14	.44	.66	.04	.00
13	190	.00	2.2	4.2	.25	.29	28	46	.53	.32	.00	.00
14	87	.00	.74	2.7	.22	22	1.1	15	.50	.31	.00	173
15	3.6	.00	7.5	1.7	.21	1.2	.31	.23	.54	.22	.00	3.3
16	2.6	.00	180	14	.21	.52	.22	.18	.44	.18	.02	1.3
17	2.2	.00	5.2	2.1	.19	.27	.19	1.9	.33	.19	.01	.79
18	1.1	8.8	4.4	1.3	.13	.23	.19	.11	1.1	.24	.02	.05
19	.34	.16	2.4	.94	.13	.23	.19	.05	1.3	.31	.00	.00
20	119	.09	1.9	.57	.14	82	.21	.04	.68	.34	.00	.00
21	235	.09	1.7	.46	.12	.93	1.4	28	.64	.28	.00	.00
22	2.6	.12	1.5	.52	15	.60	12	.73	248	.22	.00	.00
23	4.9	.11	1.4	.51	68	.47	.37	.13	5.8	.19	.00	.00
24	5.8	67	1.3	.47	.59	.44	.08	.07	.23	.29	.00	.00
25	.98	27	.99	.47	.29	.42	.11	.12	.14	.29	.00	.00
26	6.7	.42	1.2	.47	.25	.38	14	.13	.29	.36	.00	.00
27	1.3	.20	6.1	1.3	.59	1.8	.21	.17	.17	.27	.00	.00
28	.24	.14	3.3	.57	43	.45	.15	.07	.13	.15	.00	.30
29	.15	.17	1.4	.47	---	.38	.24	.04	.13	.14	.16	66
30	.11	.15	1.2	.47	---	.39	.40	.03	.15	.00	.26	.54
31	.10	---	67	.41	---	.31	---	.03	---	.00	.06	---
TOTAL	976.23	105.01	294.87	60.41	142.58	117.94	70.00	96.30	498.66	115.85	.66	254.22
MEAN	31.5	3.50	9.51	1.95	5.09	3.80	2.33	3.11	16.6	3.74	.021	8.47
MAX	235	67	180	14	68	82	28	46	248	87	.26	173
MIN	.00	.00	.03	.41	.12	.23	.08	.03	.02	.00	.00	.00
CFSM	2.41	.27	.73	.15	.39	.29	.18	.24	1.27	.29	.002	.65
IN.	2.77	.30	.84	.17	.40	.33	.20	.27	1.42	.33	.00	.72
AC-FT	1940	208	585	120	283	234	139	191	989	230	1.3	504

CAL YR 1984	TOTAL	1661.41	MEAN	4.54	MAX	235	MIN	.00	CFSM	.35	IN	4.72	AC-FT	3300
WTR YR 1985	TOTAL	2732.73	MEAN	7.49	MAX	248	MIN	.00	CFSM	.57	IN	7.76	AC-FT	5420

08158050 BOGGY CREEK AT U.S. HIGHWAY 183, AUSTIN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1975 to current year. Radiochemical analyses: October 1979 to September 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

[illegible]



WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

[illegible]

08158050 BOGGY CREEK AT U.S. HIGHWAY 183, AUSTIN, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
07...	--	--	--	.46	.040	.50	.080	3.3	3.4	3.60	50
07...	--	3700	392	.37	.030	.40	.080	2.3	2.4	4.10	45
07...	--	--	--	.47	.030	.50	.050	4.0	4.0	2.50	--
07...	100	--	--	.47	.030	.50	.060	.64	.70	2.10	38
07...	--	--	--	.48	.020	.50	.060	1.5	1.6	1.70	--
07...	--	--	--	.38	.020	.40	.060	1.8	1.9	1.30	31
10...	--	--	--	.18	.020	.20	<.010	--	1.5	.840	37
10...	--	4500	432	.28	.020	.30	<.010	--	1.8	.920	47
10...	--	--	--	.27	.030	.30	.040	3.6	3.6	2.00	39
10...	90	--	--	.27	.030	.30	.040	2.2	2.2	1.60	31
10...	--	2400	296	.28	.020	.30	.030	2.1	2.1	1.50	49
10...	--	--	--	.28	.020	.30	.010	1.6	1.6	.840	28
20...	--	--	--	.08	.020	.10	.640	7.9	8.5	.790	56
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	2920	168	.18	.020	.20	.040	3.2	3.2	.260	30
20...	--	--	--	--	--	--	--	--	--	--	--
20...	--	--	--	--	--	--	--	--	--	--	--
DEC											
15...	--	--	--	.04	.060	.10	.120	9.9	10	1.60	42
16...	--	--	--	--	--	--	--	--	--	--	--
16...	--	3530	300	.18	.020	.20	.030	15	15	2.60	57
16...	--	--	--	.18	.020	.20	.040	16	16	2.70	53
16...	76	--	--	.18	.020	.20	.040	11	11	1.80	45
16...	--	3040	240	.19	.010	.20	.030	11	11	1.80	37
FEB											
19...	350	5	5	--	<.010	.10	.050	--	<.20	.050	1.4
JUN											
06...	--	--	--	.27	.030	.30	.090	.51	.60	.810	33
06...	--	3240	276	.27	.030	.30	.110	2.3	2.4	1.10	45
06...	--	--	--	.27	.030	.30	.100	4.5	4.6	.240	32
06...	--	3290	232	.27	.030	.30	.100	.90	1.0	.980	59
06...	75	--	--	.28	.020	.30	.090	2.5	2.6	1.50	25
06...	--	1950	196	.24	.060	.30	.150	1.1	1.2	.460	43
SEP											
14...	--	--	--	--	--	.80	--	--	11	8.30	78
14...	--	4440	684	--	--	--	--	--	--	--	--
14...	--	--	--	.61	.090	.70	.230	5.2	5.4	3.50	53
14...	--	--	--	.57	.030	.60	.110	5.3	5.4	<3.50	40

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS.) PER 100 ML)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)
SEP								
14...	1800	2200	450	130	--	--	5700	468
14...	1815	1180	--	--	260000	126000	--	--

DATE	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
SEP								
14...	--	--	--	--	--	--	--	--
14...	.53	.070	.60	.210	6.5	6.7	4.20	43

COLORADO RIVER BASIN

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08158050 BOGGY CREEK AT U.S. HIGHWAY 183, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT							
07...	0600	3	36	<1	<10	5	460
10...	2300	1	<100	<1	<10	4	60
20...	1345	1	37	<1	10	2	200
20...	1430	1	28	<1	<10	3	54
DEC							
15...	2346	2	39	<1	10	5	45
16...	0031	2	26	<1	<10	2	76
16...	0101	2	23	<1	<10	3	110
FEB							
19...	1055	<1	96	<1	<10	1	4

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT						
07...	14	31	<.1	1	1	8
10...	7	<10	<.1	<1	<1	<10
20...	<1	11	<.1	<1	<1	8
20...	<1	2	<.1	<1	<1	<3
DEC						
15...	<1	4	<.1	<1	1	7
16...	<1	<1	<.1	<1	<1	<3
16...	<1	4	<.1	<1	<1	<3
FEB						
19...	<1	9	<.1	<1	<1	<3

DATE	TIME	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
OCT												
07...	0630	<.10	<.10	<.10	--	.1	<.1	<.10	--	--	<.10	<.1
07...	0700	--	--	--	<2.0	--	--	--	<2.0	<2.0	--	--
20...	1330	<.10	.10	<.10	<2.0	.3	<.1	<.10	<2.0	<2.0	.10	<.1
DEC												
16...	0001	<.10	<.10	<.10	<2.0	.3	<.1	<.10	<2.0	<2.0	<.10	<.1

## COLORADO RIVER BASIN

08158200 WALNUT CREEK AT DESSAU ROAD, AUSTIN, TX  
(Flood-hydrograph partial-record station)

LOCATION.--Lat 30°22'30", long 97°39'37", Travis County, Hydrologic Unit 12090205, on downstream side of bridge on Dessau Road and 8.4 mi northeast of the State Capitol Building in Austin.

DRAINAGE AREA.--26.2 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1975 to current year.

GAGE.--Digital water-stage recorder and crest-stage gage. Datum of gage is 553.44 ft National Geodetic Vertical Datum of 1929.

REMARKS.--Additional storm rainfall-runoff data for this site can be obtained from the report "Hydrologic Data for Urban Studies in the Austin, Texas Metropolitan Area, 1984." Two recording rain gages are located in the watershed.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,600 ft<sup>3</sup>/s May 25, 1981 (gage height, 26.20 ft).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,810 ft<sup>3</sup>/s Oct. 20 at 0830 hours (gage height, 14.46 ft).

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: October 1979 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)
OCT 09...	1400	872	108	8.1	20.0	5000	2600	--	--	5.8	160000	230000
FEB 19...	0747	8.7	693	8.4	13.5	5	.80	8.5	82	.4	620	600
AUG 14...	0730	.04	738	7.2	26.1	30	2.6	2.5	31	4.4	--	19200

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 09...	62	15	23	1.0	2.7	.2	2.5	47	10	3.6	.30	4.9
FEB 19...	320	83	120	5.6	25	.6	2.4	240	57	43	.40	5.3
AUG 14...	240	54	84	7.0	52	2	3.5	185	60	76	.20	12

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 09...	76	5480	404	.56	.040	.60	.170	2.0	2.2	3.20	66
FEB 19...	400	1	<1	2.0	.040	2.0	.050	.35	.40	.220	2.0
AUG 14...	410	7	6	.26	.040	.30	.050	.75	.80	.170	15

COLORADO RIVER BASIN

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08158200 WALNUT CREEK AT DESSAU ROAD, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 09...	1400	1	16	<1	<10	3	180
FEB 19...	0747	<1	88	<1	<10	1	5

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 09...	13	15	<.1	<1	<1	10
FEB 19...	2	2	<.1	<1	<1	22



## COLORADO RIVER BASIN

08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX

LOCATION.--Lat 30°16'59", long 97°39'17", Travis County, Hydrologic Unit 12090205, on left bank 190 ft downstream from bridge on Farm Road 969, 0.8 mi downstream from Little Walnut Creek, 2.8 mi upstream from Colorado River, 5.2 mi east of the State Capitol Building in Austin, and 2.8 mi upstream from mouth.

DRAINAGE AREA.--51.3 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1966 to current year.

GAGE.--Water-stage recorder. Datum of gage is 425.96 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 2-3. Records fair. No known regulation or diversion. Station is part of a hydrologic research project to study rainfall-runoff relation for urban areas. Five recording rain gages are located in the watershed above this station.

AVERAGE DISCHARGE.--19 years, 24.4 ft<sup>3</sup>/s (6.46 in/yr), 17,680 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,300 ft<sup>3</sup>/s May 25, 1981 (gage height, 27.24 ft); no flow at times in 1967, 1971, and 1982-84.

Maximum stage since at least 1891, that of May 25, 1981.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 15, 1935, reached a stage of 24 ft, backwater from Colorado River. A flood in 1919 reached a stage of 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 10	2345	4,060	17.20	Dec. 16	0200	1,830	12.34
Oct. 13	1345	4,330	17.70	Feb. 23	1000	2,470	13.93
Oct. 20	1700	4,230	17.51	May 13	1815	2,780	14.60
Oct. 21	1000	*5,590	*19.78	Sept. 14	1800	5,140	19.07

Minimum daily discharge, 0.15 ft<sup>3</sup>/s Sept. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.75	70	18	36	16	74	16	17	4.9	6.0	2.0	.25
2	.67	59	17	39	19	44	15	8.8	4.9	78	2.2	.33
3	.34	34	16	53	18	39	15	7.8	4.9	48	2.2	.39
4	.32	33	24	42	21	43	14	8.7	5.0	142	1.9	.15
5	1.2	28	45	35	21	32	14	8.9	27	22	1.8	6.5
6	1.1	26	20	32	18	31	13	7.6	249	14	4.3	17
7	215	23	17	30	16	30	13	7.3	34	11	1.4	1.4
8	6.3	22	17	27	15	29	13	6.4	19	9.6	1.2	.55
9	90	21	16	27	16	28	12	7.3	11	10	1.3	.23
10	357	20	15	24	83	26	15	7.6	7.8	8.7	1.1	3.1
11	369	19	16	23	57	25	34	7.1	18	7.9	1.1	3.8
12	55	17	14	24	26	25	16	6.8	22	9.3	1.5	1.5
13	810	19	31	29	23	23	36	391	8.3	6.8	.62	1.1
14	301	20	19	27	21	56	25	65	6.7	6.3	1.5	448
15	34	19	30	24	20	29	13	12	6.2	5.8	.96	22
16	21	19	427	83	19	25	11	9.7	5.4	5.5	.81	5.2
17	15	18	49	38	18	22	10	19	5.3	5.2	.95	3.5
18	14	65	41	30	18	20	10	9.1	10	5.3	1.3	3.2
19	12	19	33	27	17	20	10	7.6	8.0	7.0	1.2	2.5
20	1040	17	30	23	17	229	11	7.0	6.2	6.2	.63	2.0
21	1020	19	28	22	17	31	19	70	5.2	5.3	.55	2.0
22	201	16	25	22	66	26	13	20	267	4.5	.70	2.0
23	160	16	24	24	551	23	13	13	44	3.9	.81	2.0
24	140	80	23	22	70	22	10	9.2	24	3.3	.78	1.7
25	107	157	21	20	51	21	9.9	8.2	25	3.2	.94	2.1
26	95	33	20	19	45	19	24	7.4	13	2.6	.70	2.7
27	111	27	29	20	44	29	10	6.7	9.8	2.6	.37	1.7
28	76	21	26	18	135	19	9.6	6.9	8.2	2.4	.32	5.6
29	72	20	21	18	---	18	12	6.4	7.3	2.3	.85	84
30	57	19	20	18	---	19	31	5.8	6.5	1.7	1.5	24
31	54	---	173	17	---	16	---	5.7	---	2.0	.48	---
TOTAL	5436.68	976	1305	893	1458	1093	467.5	781.0	873.6	448.4	37.97	650.50
MEAN	175	32.5	42.1	28.8	52.1	35.3	15.6	25.2	29.1	14.5	1.22	21.7
MAX	1040	157	427	83	551	229	36	391	267	142	4.3	448
MIN	.32	16	14	17	15	16	9.6	5.7	4.9	1.7	.32	.15
CFSM	3.41	.63	.82	.56	1.02	.69	.30	.49	.57	.28	.02	.42
IN.	3.94	.71	.95	.65	1.06	.79	.34	.57	.63	.33	.03	.47
AC-FT	10780	1940	2590	1770	2890	2170	927	1550	1730	889	75	1290

CAL YR 1984	TOTAL	9356.75	MEAN	25.6	MAX	1040	MIN	.00	CFSM	.50	IN	6.78	AC-FT	18560
WTR YR 1985	TOTAL	14420.65	MEAN	39.5	MAX	1040	MIN	.15	CFSM	.77	IN	10.46	AC-FT	28600

COLORADO RIVER BASIN

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08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1975 to current year. Sediment records: October 1977 to September 1982. Radiochemical analyses: October 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR PER (COLS. 100 ML)
OCT 09...	1500	230	127	8.2	23.5	1000	920	--	--	4.6	K170000	170000
FEB 19...	1125	18	656	8.5	15.0	5	1.8	10.5	104	.3	440	230
JUN 06...	1045	1220	245	7.6	22.5	30	940	6.7	79	6.8	440000	94000
AUG 14...	0825	1.4	564	7.5	27.2	10	1.8	6.0	76	.7	K280	K1360

DATE	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS S04)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 09...	57	14	21	1.1	3.4	.2	2.1	43	17	5.4	.20	2.9
FEB 19...	300	100	110	6.2	26	.7	2.5	200	75	55	.40	4.4
JUN 06...	100	28	37	2.7	9.2	.4	3.1	76	26	11	.40	4.5
AUG 14...	190	82	64	6.6	34	1	4.0	105	56	69	.40	7.9

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 09...	79	1420	236	.28	.020	.30	.080	2.4	2.5	1.20	22
FEB 19...	400	5	4	1.6	.020	1.6	.050	.35	.40	.060	1.9
JUN 06...	140	2720	208	.31	.090	.40	.400	2.2	2.6	2.10	38
AUG 14...	300	1	1	--	<.010	<.10	.040	.26	.30	.020	3.1

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 09...	1500	<1	17	<1	<10	3	45
FEB 19...	1125	<1	86	<1	<10	<1	5
JUN 06...	1045	1	28	<1	<10	2	25

## COLORADO RIVER BASIN

08158600 WALNUT CREEK AT WEBBERVILLE ROAD, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 09...	8	2	<.1	<1	<1	6
FEB 19...	<1	2	<.1	<1	<1	<3
JUN 06...	3	2	<.1	<1	<1	7

DATE	TIME	AME- TRYNE TOTAL (UG/L)	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)
JUN 06...	1045	<.10	<.10	<.10	<2.0	2.0	.1

DATE	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
JUN 06...	<.1	<.10	<2.0	<2.0	<.10	<.1

COLORADO RIVER BASIN

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08158640 WALNUT CREEK AT SOUTHERN PACIFIC RAILROAD BRIDGE, AUSTIN, TX  
(Reconnaissance partial-record station)

LOCATION.--Lat 30°15'58", long 97°39'24", Travis County, Hydrologic Unit 12090205, at Southern Pacific Railroad bridge, 1.2 mi south of Webberville Road, and 5.0 mi east of the State Capitol in Austin.

DRAINAGE AREA.--53.5 mi<sup>2</sup>.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1975 to current year. Radiochemical analyses: October 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, U.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 09...	1545	420	230	7.7	23.5	500	1400	--	--	4.5	K140000	94000
FEB 19...	1200	42	855	7.4	18.0	5	3.3	8.6	91	.9	96	K12
AUG 14...	0855	58	872	6.8	28.9	25	3.1	4.9	64	2.0	100	84

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 09...	82	30	28	2.9	8.0	.4	3.1	52	22	18	.40	4.6
FEB 19...	230	99	67	15	65	2	7.3	130	90	83	1.8	8.7
AUG 14...	170	75	36	19	98	3	12	93	110	120	2.1	10

DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDEDED (MG/L)	SOLIDS, VOLATILE, SUS- PENDEDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 09...	120	1790	96	1.6	.030	1.6	.100	2.4	2.5	2.00	23
FEB 19...	420	9	5	8.2	.010	8.2	.070	1.8	1.9	5.00	6.1
AUG 14...	460	8	5	6.2	.890	7.1	2.50	1.4	3.9	<.010	10

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 09...	1545	1	23	<1	<10	3	170
FEB 19...	1200	<1	44	<1	<10	2	33

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 09...	6	11	<.1	<1	<1	9
FEB 19...	<1	14	<.1	<1	<1	18

## COLORADO RIVER MAIN STEM

08158650 COLORADO RIVER BELOW AUSTIN, TX  
(Low-flow partial-record station)

LOCATION.--Lat 30°12'28", long 97°38'15", Travis County, Hydrologic Unit 12090205, at bridge on Farm Road 973, 0.3 mi northeast of intersection of State Highway 71 and Farm Road 973, 8.8 mi downstream from Govalle Sewage Treatment Plant outfall, and 9.6 mi downstream from gaging station at Austin.

PERIOD OF RECORD.--Chemical and biochemical analyses: February 1968 to current year. Pesticide analyses: October 1974 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)
OCT 24...	1000	487	7.6	19.0	70	43	6.4	70	2.6	1000	2500	190
DEC 11...	0900	648	7.4	17.0	25	2.5	4.6	48	4.8	K17	K7	230
FEB 21...	1215	650	7.4	18.5	8	1.7	6.2	67	5.1	100	46	260
APR 16...	1010	599	8.2	20.5	2	2.0	9.8	110	.4	88	88	230
JUL 03...	1300	544	7.6	23.5	10	59	6.5	77	1.3	2800	1800	210
AUG 23...	1520	583	8.0	28.0	7	1.5	10.2	132	.5	59	120	220

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 24...	54	55	12	24	.8	3.5	133	46	39	.40	8.3
DEC 11...	64	64	18	42	1	5.0	170	55	58	.80	7.9
FEB 21...	55	73	18	36	1	3.9	202	55	49	.90	7.1
APR 16...	72	57	21	35	1	3.6	157	55	61	.30	5.8
JUL 03...	59	56	18	33	1	3.9	155	47	57	.30	6.4
AUG 23...	65	53	21	36	1	4.0	154	42	62	.30	7.7

DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 24...	270	62	13	1.5	.130	1.6	.410	.89	1.3	.520	4.3
DEC 11...	350	8	4	1.9	.310	2.2	2.50	.60	3.1	2.30	6.1
FEB 21...	360	4	4	2.6	.360	3.0	1.40	.60	2.0	1.90	3.8
APR 16...	330	23	10	.73	.070	.80	.120	.68	.80	.280	3.2
JUL 03...	310	87	16	.66	.040	.70	.110	.69	.80	.250	4.1
AUG 23...	320	4	2	.71	.090	.80	.110	.39	.50	.330	3.4

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 24...	1000	<1	54	<1	<10	2	19
FEB 21...	1215	1	55	<1	<10	1	10
JUL 03...	1300	<1	69	<1	<10	2	8
AUG 23...	1520	1	76	<1	<10	1	3



COLORADO RIVER MAIN STEM

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08158650 COLORADO RIVER BELOW AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 24...	3	17	<.1	<1	2	8
FEB 21...	<1	24	<.1	<1	1	13
JUL 03...	7	6	.1	<1	<1	11
AUG 23...	<1	6	<.1	<1	<1	27

DATE	TIME	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
FEB 21...	1215	<.10	<.10	<.10	--	.2	<.1	<.10	--	--	<.10	<.1
AUG 23...	1520	<.10	<.10	<.10	<2.0	.1	<.1	<.10	<2.0	<2.0	<.10	<.1

## COLORADO RIVER BASIN

08158700 ONION CREEK NEAR DRIFTWOOD, TX

LOCATION.--Lat 30°04'59", long 98°00'29", Hays County, Hydrologic Unit 12090205, on left bank at upstream side of low-water crossing on Farm Road 150, 3.2 mi southeast of Driftwood, and 10 mi west of Buda.

DRAINAGE AREA.--124 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1958, November 1961 to June 1979 (periodic discharge measurements only), July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage 878.13 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: June 22 to July 12. Records fair except those for estimated daily discharges, which are poor. Station is part of hydrologic research project to study rainfall-runoff relationship in the Austin urban-rural areas. There is a recording rain gage in the watershed.

AVERAGE DISCHARGE.--6 years 37.8 ft<sup>3</sup>/s (4.14 in/yr) 27,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,990 ft<sup>3</sup>/s June 6, 1985 (gage height, 16.38 ft); no flow for several days in August and September 1984, and Oct. 1-10, 1984.

Flood of Mar. 20, 1979, reached a stage of 11.48 ft (discharge, 4,980 ft<sup>3</sup>/s), on basis of peak flow over dam, 1.5 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 21	1515	860	5.94	Feb. 23	0815	7,680	14.86
Oct. 28	2400	1,400	6.62	June 6	1300	*8,990	*16.38

Minimum daily discharge, no flow Oct. 1-10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	38	19	220	121	250	139	40	10	70	13	2.2		
2	.00	35	18	198	120	218	136	37	10	65	12	3.4		
3	.00	32	18	193	115	212	128	31	9.3	60	11	3.4		
4	.00	30	18	197	115	200	123	28	9.2	100	10	2.8		
5	.00	26	19	187	120	185	105	27	14	90	11	3.1		
6	.00	23	20	177	112	181	104	27	2850	80	11	4.7		
7	.00	22	19	162	104	180	102	25	264	75	10	2.9		
8	.00	21	19	149	99	174	91	25	207	70	9.6	2.0		
9	.00	20	19	146	97	168	85	25	186	65	9.8	3.4		
10	.00	18	19	142	98	162	98	25	145	60	8.7	3.2		
11	75	16	20	138	93	165	104	24	116	75	8.2	4.0		
12	27	16	20	140	85	157	96	25	93	89	7.6	4.2		
13	18	16	31	145	83	153	99	26	83	75	8.6	8.8		
14	26	15	42	147	79	198	123	32	74	64	11	10		
15	30	15	30	177	75	198	95	26	59	53	9.2	6.3		
16	15	14	209	208	74	195	79	22	44	46	8.0	4.0		
17	9.4	14	148	225	70	185	70	24	38	41	5.7	3.4		
18	8.3	17	149	209	69	180	65	22	43	36	4.5	3.0		
19	4.1	15	134	198	67	177	70	19	82	35	3.5	3.2		
20	3.4	13	123	183	66	211	61	19	42	33	3.0	2.4		
21	169	13	112	173	67	189	57	20	38	33	3.6	2.0		
22	55	12	101	173	67	182	54	21	38	31	4.1	1.9		
23	56	10	97	169	1710	175	51	22	300	29	3.7	2.0		
24	57	14	94	161	304	167	43	18	200	26	3.7	1.3		
25	78	35	83	148	253	160	41	16	150	24	3.3	2.1		
26	46	28	78	143	230	153	45	15	120	21	3.1	1.3		
27	43	20	81	144	212	185	42	14	100	19	3.1	1.2		
28	82	18	86	140	224	166	40	14	90	17	2.9	2.5		
29	206	18	78	137	---	155	41	12	85	16	3.2	8.9		
30	58	19	79	137	---	151	39	12	80	15	3.4	4.6		
31	44	---	440	127	---	141	---	11	---	15	3.5	---		
TOTAL	1110.20	603	2423	5193	4929	5573	2426	704	5579.5	1528	213.0	108.2		
MEAN	35.8	20.1	78.2	168	176	180	80.9	22.7	186	49.3	6.87	3.61		
MAX	206	38	440	225	1710	250	139	40	2850	100	13	10		
MIN	.00	10	18	127	66	141	39	11	9.2	15	2.9	1.2		
CFSM	.29	.16	.63	1.36	1.42	1.45	.65	.18	1.50	.40	.06	.03		
IN.	.33	.18	.73	1.56	1.48	1.67	.73	.21	1.67	.46	.06	.03		
AC-FT	2200	1200	4810	10300	9780	11050	4810	1400	11070	3030	422	215		
CAL YR 1984	TOTAL	4943.19	MEAN	13.5	MAX	440	MIN	.00	CFSM	.11	IN	1.48	AC-FT	9800
WTR YR 1985	TOTAL	30389.90	MEAN	83.3	MAX	2850	MIN	.00	CFSM	.67	IN	9.12	AC-FT	60280

COLORADO RIVER BASIN

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08158700 ONION CREEK NEAR DRIFTWOOD, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year. Radiochemical analyses: October 1979 to September 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 11...	1020	116	322	7.7	22.0	500	550	8.6	101	4.2	27000	19000
FEB 20...	0750	103	498	8.3	15.5	5	.80	9.2	94	.0	130	96
JUN 06...	1240	8800	142	8.2	21.5	250	480	8.8	101	6.5	24000	43000
AUG 13...	1055	8.5	486	7.7	27.5	5	9.0	6.8	88	.2	120	112

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 11...	160	55	48	9.5	4.6	.2	3.7	104	43	9.0	.20	7.9
FEB 20...	240	35	70	17	7.6	.2	1.4	210	29	18	.20	6.9
JUN 06...	71	9	23	3.3	1.6	.0	2.6	62	8.9	2.6	.10	6.8
AUG 13...	240	43	70	17	8.1	.2	1.2	202	26	13	.20	11

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 11...	190	1620	180	.66	.040	.70	.080	3.0	3.1	.130	19
FEB 20...	280	1	<1	--	<.010	.40	.040	--	<.20	.070	.8
JUN 06...	86	1380	168	.16	.040	.20	.130	.57	.70	.210	38
AUG 13...	270	2	2	--	<.010	<.10	.060	.34	.40	.100	1.9

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 11...	1020	<1	26	<1	<10	2	25
FEB 20...	0750	<1	40	<1	<10	2	4
JUN 06...	1240	2	11	<1	<10	2	38

## COLORADO RIVER BASIN

08158700 ONION CREEK NEAR DRIFTWOOD, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE		LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)						
OCT													
11...		10	<1	<.1	<1	<1	3						
FEB													
20...		3	3	<.1	<1	<1	7						
JUN													
06...		5	2	<.1	<1	<1	<3						

DATE	TIME	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
OCT												
11...	1020	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
JUN												
06...	1240	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1

08158810 BEAR CREEK BELOW FARM ROAD 1826 NEAR DRIFTWOOD, TX

LOCATION.--Lat 30°09'19", long 97°56'23", Hays County, Hydrologic Unit 12090205, 0.8 mi southeast of Farm Road 1826 and 5.9 mi northeast of Driftwood.

DRAINAGE AREA.--12.2 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1978 to July 1979 (periodic discharge measurements only), October 1978 to June 1979 (peak discharges above base only), July 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is 860 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Feb. 23 to Mar. 11. Records good except those for period of estimated daily discharges, which are fair. Station is part of a hydrologic research project to study rainfall-runoff relationship in the Austin urban-rural areas. There is one recording rain gage located in the watershed above station.

AVERAGE DISCHARGE.--6 years 5.91 ft<sup>3</sup>/s (6.58 in/yr) 4,280 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,330 ft<sup>3</sup>/s June 11, 1981 (gage height, 13.05 ft, from floodmarks), from slope-area measurements of peak flow; no flow in 1980 and 1983-84.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 9, 1919, reached a stage of 16.2 ft (discharge unknown) and was the highest since at least 1924, from information by local resident. A flood in 1915 was 2 ft higher than the 1939 flood, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 23	Unknown	*2,210	*8.15	June 6	0915	1,670	7.42

Minimum discharge, no flow Oct. 1-13, 18-20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	5.9	2.6	4.4	2.9	3.4	12	1.8	.37	1.8	.15	.00
2	.00	4.7	2.5	3.1	2.6	2.1	11	1.6	.33	1.5	.14	.00
3	.00	4.4	2.0	4.1	2.6	1.7	10	1.4	.29	1.9	.13	.00
4	.00	4.1	2.2	4.5	2.6	1.5	9.6	1.2	.26	2.9	.12	.00
5	.00	3.0	3.3	3.4	2.6	1.1	8.5	1.2	3.2	2.2	.10	.00
6	.00	2.6	2.7	2.1	2.6	1.1	7.7	1.1	209	1.6	.09	.03
7	.08	2.6	2.6	1.7	2.3	1.0	7.2	.98	1.7	1.3	.08	.00
8	.00	2.6	2.6	1.5	2.2	9.0	6.5	.88	8.5	1.2	.08	.00
9	.00	2.4	2.6	1.3	2.2	8.3	6.2	.82	5.5	1.2	.07	.00
10	.12	1.7	2.4	1.0	2.2	7.8	7.2	.80	4.0	1.1	.06	.00
11	.00	.91	2.2	8.9	1.6	7.0	8.4	.71	3.2	.97	.05	.01
12	.00	.91	2.2	8.4	1.3	5.9	7.3	.66	2.6	1.1	.04	.06
13	.65	.92	3.5	8.4	1.3	5.7	6.7	.95	2.4	.80	.03	.01
14	1.0	1.1	2.5	1.2	1.3	3.6	8.0	1.9	2.2	.71	.03	.09
15	.00	1.2	2.1	1.7	1.2	1.5	5.6	.95	1.9	.65	.03	.01
16	.00	1.2	3.2	5.3	1.2	1.5	3.9	.71	1.6	.56	.02	.00
17	.00	1.2	2.9	3.8	1.0	1.3	3.0	.74	1.5	.50	.02	.00
18	.00	1.8	3.9	2.5	1.0	1.1	2.7	.66	1.4	.45	.01	.00
19	.00	1.2	3.3	1.9	1.0	1.1	2.0	.65	1.6	.42	.01	.00
20	.01	1.0	3.1	1.1	.91	8.3	2.1	.59	1.4	.42	.00	.00
21	27	1.0	2.6	1.0	.91	3.2	2.5	.70	1.2	.41	.00	.00
22	50	1.0	2.0	9.8	.91	2.7	2.6	.59	2.8	.36	.00	.00
23	26	1.0	1.9	9.8	2.41	2.3	2.4	.59	9.1	.34	.00	.00
24	18	1.3	1.9	8.1	4.7	2.1	2.1	.52	5.6	.32	.00	.00
25	15	1.5	1.4	7.0	2.7	1.8	2.1	.52	4.3	.26	.00	.00
26	19	5.2	1.4	5.7	1.8	1.7	3.0	.48	3.6	.26	.00	.00
27	21	3.1	1.4	5.7	1.5	2.0	2.2	.46	3.1	.27	.00	.00
28	16	2.6	1.5	4.8	3.9	1.7	2.5	.46	2.7	.26	.00	.00
29	11	2.8	1.4	4.8	---	1.6	2.2	.45	2.2	.23	.00	.49
30	8.5	2.9	5.2	4.7	---	1.5	2.1	.43	2.0	.21	.00	.07
31	6.9	---	1.43	3.6	---	1.3	---	.40	---	.19	.00	---
TOTAL	220.26	93.04	570.9	545.7	425.43	565.7	159.3	25.90	330.05	26.39	1.26	.77
MEAN	7.11	3.10	18.4	17.6	15.2	18.2	5.31	.84	11.0	.85	.041	.026
MAX	50	15	143	53	241	83	12	1.9	209	2.9	.15	.49
MIN	.00	.91	2.0	3.6	.91	5.7	2.0	.40	.26	.19	.00	.00
CFSM	.86	.38	2.23	2.14	1.85	2.21	.64	.10	1.34	.10	.005	.003
IN.	.99	.42	2.58	2.46	1.92	2.55	.72	.12	1.49	.12	.01	.00
AC-FT	437	185	1130	1080	844	1120	316	51	655	52	2.5	1.5

CAL YR 1984	TOTAL	977.98	MEAN 2.67	MAX 143	MIN .00	CFSM .32	IN 4.41	AC-FT 1940
WTR YR 1985	TOTAL	2964.70	MEAN 8.12	MAX 241	MIN .00	CFSM .99	IN 13.38	AC-FT 5880



## COLORADO RIVER BASIN

08158810 BEAR CREEK BELOW FARM ROAD 1826 NEAR DRIFTWOOD, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: March 1978 to current year. Radiochemical analyses: October 1979 to September 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
FEB 20...	0825	5.7	550	8.1	15.9	5	.70	8.4	87	.0	80	K40
JUN 06...	1125	204	137	8.2	21.0	110	120	8.5	97	6.2	K24000	40000
AUG 13...	1020	.37	493	7.5	28.5	7	1.1	6.0	79	.0	K260	320

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
FEB 20...	290	63	89	17	8.5	.2	.90	230	41	18	.20	6.7
JUN 06...	65	5	21	3.1	1.5	.0	2.9	60	5.2	2.4	.10	8.5
AUG 13...	240	43	67	17	9.4	.3	1.0	195	31	16	.20	13

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
FEB 20...	320	1	1	--	<.010	.60	.040	.36	.40	.010	1.0
JUN 06...	81	146	22	.16	.040	.20	.130	.97	1.1	.110	20
AUG 13...	270	5	4	--	<.010	<.10	.040	.16	.20	.020	2.1

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
FEB 20...	0825	<1	42	<1	<10	<1	5
JUN 06...	1125	1	11	<1	<10	1	53

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
FEB 20...	2	3	<.1	<1	<1	8
JUN 06...	1	4	<.1	<1	<1	<3

COLORADO RIVER BASIN

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08158840 SLAUGHTER CREEK AT FARM ROAD 1826 NEAR AUSTIN, TX

LOCATION.--Lat 30°12'32", long 97°54'11", Travis County, Hydrologic Unit 12090205, 1.7 mi south the intersection of U.S. Highway 290 and Farm Road 1826 and 11.9 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--8.24 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 876.14 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known regulation or diversion. There is a recording rain gage in the watershed.

AVERAGE DISCHARGE.--7 years (water years 1979-85), 5.43 ft<sup>3</sup>/s (8.95 in/yr), 3,930 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,080 ft<sup>3</sup>/s June 11, 1981 (gage height, 10.79 ft); no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 23	0530	*1,910	*8.35	June 6	0915	1,390	7.66

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	5.9	2.6	44	2.9	34	12	1.8	.37	1.8	.15	.00
2	.00	4.7	2.5	31	2.6	21	11	1.6	.33	1.5	.14	.00
3	.00	4.4	2.0	41	2.6	17	10	1.4	.29	1.9	.13	.00
4	.00	4.1	2.2	45	2.6	15	9.6	1.2	.26	2.9	.12	.00
5	.00	3.0	3.3	34	2.6	11	8.5	1.2	3.2	2.2	.10	.00
6	.00	2.6	2.7	21	2.6	11	7.7	1.1	209	1.6	.09	.03
7	.08	2.6	2.6	17	2.3	10	7.2	.98	17	1.3	.08	.00
8	.00	2.6	2.6	15	2.2	9.0	6.5	.88	8.5	1.2	.08	.00
9	.00	2.4	2.6	13	2.2	8.3	6.2	.82	5.5	1.2	.07	.00
10	.12	1.7	2.4	10	2.2	7.8	7.2	.80	4.0	1.1	.06	.00
11	.00	.91	2.2	8.9	1.6	7.0	8.4	.71	3.2	.97	.05	.01
12	.00	.91	2.2	8.4	1.3	5.9	7.3	.66	2.6	1.1	.04	.06
13	.65	.92	3.5	8.4	1.3	5.7	6.7	.95	2.4	.80	.03	.01
14	1.0	1.1	2.5	12	1.3	36	8.0	1.9	2.2	.71	.03	.09
15	.00	1.2	21	17	1.2	15	5.6	.95	1.9	.65	.03	.01
16	.00	1.2	32	53	1.2	15	3.9	.71	1.6	.56	.02	.00
17	.00	1.2	29	38	1.0	13	3.0	.74	1.5	.50	.02	.00
18	.00	1.8	39	25	1.0	11	2.7	.66	1.4	.45	.01	.00
19	.00	1.2	33	19	1.0	11	2.0	.65	1.6	.42	.01	.00
20	.01	1.0	31	11	.91	83	2.1	.59	1.4	.42	.00	.00
21	27	1.0	26	10	.91	32	2.5	.70	1.2	.41	.00	.00
22	50	1.0	20	9.8	.91	27	2.6	.59	28	.36	.00	.00
23	26	1.0	19	9.8	241	23	2.4	.59	9.1	.34	.00	.00
24	18	13	19	8.1	47	21	2.1	.52	5.6	.32	.00	.00
25	15	15	14	7.0	27	18	2.1	.52	4.3	.26	.00	.00
26	19	5.2	14	5.7	18	17	3.0	.48	3.6	.26	.00	.00
27	21	3.1	14	5.7	15	20	2.2	.46	3.1	.27	.00	.00
28	16	2.6	15	4.8	39	17	2.5	.46	2.7	.26	.00	.00
29	11	2.8	14	4.8	---	16	2.2	.45	2.2	.23	.00	.49
30	8.5	2.9	52	4.7	---	15	2.1	.43	2.0	.21	.00	.07
31	6.9	---	143	3.6	---	13	---	.40	---	.19	.00	---
TOTAL	220.26	93.04	570.9	545.7	425.43	565.7	159.3	25.90	330.05	26.39	1.26	.77
MEAN	7.11	3.10	18.4	17.6	15.2	18.2	5.31	.84	11.0	.85	.041	.026
MAX	50	15	143	53	241	83	12	1.9	209	2.9	.15	.49
MIN	.00	.91	2.0	3.6	.91	5.7	2.0	.40	.26	.19	.00	.00
CFSM	.86	.38	2.23	2.14	1.85	2.21	.64	.10	1.34	.10	.005	.003
IN.	.99	.42	2.58	2.46	1.92	2.55	.72	.12	1.49	.12	.01	.00
AC-FT	437	185	1130	1080	844	1120	316	51	655	52	2.5	1.5
CAL YR 1984	TOTAL	977.98	MEAN	2.67	MAX	143	MIN	.00	CFSM	.32	IN	4.41
WTR YR 1985	TOTAL	2964.70	MEAN	8.12	MAX	241	MIN	.00	CFSM	.99	IN	13.38
									AC-FT	1940		5880

## COLORADO RIVER BASIN

08158840 SLAUGHTER CREEK AT FARM ROAD 1826 NEAR AUSTIN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1983 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC- CI FECAL, KF AGAR (COLS. PER 100 ML)	
OCT 21...	1537	26	208	8.1	19.0	250	83	8.8	96	2.0	44000	49000	
FEB 20...	0850	1.0	764	8.0	15.6	5	1.0	8.8	91	.2	K68	K68	
JUN 06...	1055	463	203	8.0	21.5	100	150	8.7	100	5.6	K34000	60000	
AUG 13...	0745	.04	630	7.5	26.5	12	2.0	5.6	71	.2	K180	2800	
DATE	TIME	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 21...	91	21	29	4.6	4.2	.2	2.3	71	20	9.1	.10		7.7
FEB 20...	360	120	100	26	26	.6	.60	240	76	61	.20		5.6
JUN 06...	88	19	26	5.7	5.9	.3	2.6	70	18	9.5	<.10		7.1
AUG 13...	270	73	70	23	23	.6	.70	197	41	54	.20		12
DATE	TIME	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	
OCT 21...	120	133	21	.29	.010	.30	.070	.73	.80	.110		6.7	
FEB 20...	440	5	3	--	<.010	.40	.050	.25	.30	<.010		1.1	
JUN 06...	120	218	24	.13	.070	.20	.220	1.1	1.3	.140		14	
AUG 13...	340	3	3	--	<.010	<.10	.040	.26	.30	.060		3.2	
DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)						
OCT 21...	1537	<1	16	<1	<10	2	52						
FEB 20...	0850	<1	49	<1	<10	<1	3						
JUN 06...	1055	1	13	<1	<10	1	46						
DATE	TIME	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)						
OCT 21...		<1	<1	<.1	<1	<1	11						
FEB 20...		2	6	<.1	<1	<1	21						
JUN 06...		5	2	<.1	<1	<1	6						
DATE	TIME	AME- TRYNE TOTAL (UG/L)	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)	
OCT 21...	1537	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1	

## COLORADO RIVER BASIN

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08158920 WILLIAMSON CREEK AT OAK HILL, TX

LOCATION.--Lat 30°06'06", long 97°51'36", Travis County, Hydrologic Unit 12090205, at downstream side of bridge on U.S. Highway 290 in Oak Hill, 0.8 mi east of the intersection of U.S. Highway 290 and State Highway 71, and 7.7 mi southwest of the State Capitol Building in Austin.

DRAINAGE AREA.--6.30 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1974 to February 1977 (periodic discharge measurements only), January 1978 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 798.68 ft above National Geodetic Vertical Datum of 1929 (levels from city of Austin bench mark).

REMARKS.--No estimated daily discharges. Records fair. Station is part of a hydrologic-research project to study rainfall-runoff relations for the Austin urban-rural areas. Station is equipped with an automatic water-quality sampler. There are two recording rain gages in the watershed above this station.

AVERAGE DISCHARGE.--7 years, 4.18 ft<sup>3</sup>/s (9.01 in/yr), 3.030 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,170 ft<sup>3</sup>/s June 11, 1981 (gage height, 8.55 ft); no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 10	2115	*1,500	*5.58	Feb. 23	0500	787	4.42
Oct. 13	1200	686	4.22	June 6	0800	1,200	5.13
Oct. 21	1000	852	4.54	June 23	1830	731	4.31

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	4.5	.85	10	4.3	8.0	7.0	.64	.14	.85	.00	.00		
2	.00	4.1	.89	8.7	5.8	6.1	7.3	.57	.09	.84	.00	.00		
3	.00	3.8	.85	13	5.0	6.4	7.5	.50	.08	3.1	.00	.00		
4	.00	3.2	1.1	10	4.5	6.5	7.8	.37	.13	4.3	.00	.00		
5	.00	2.4	1.9	7.1	5.4	5.9	8.1	.37	13	1.2	.00	.03		
6	.00	2.3	1.0	5.3	5.3	5.0	7.3	.37	123	1.5	.00	2.6		
7	16	2.0	1.0	4.4	5.5	5.8	6.7	.37	9.1	1.1	.00	.00		
8	.01	2.0	1.2	2.4	5.4	5.6	5.9	.45	4.4	1.1	.00	.00		
9	.00	1.7	1.2	2.0	5.9	5.5	5.9	.46	3.4	1.0	.00	.00		
10	87	1.4	1.0	1.5	7.4	4.9	6.7	.37	2.4	.72	.00	.00		
11	5.8	1.2	1.2	2.1	6.3	4.9	7.1	.37	1.7	.50	.00	.00		
12	.19	1.2	1.6	3.0	5.8	5.2	3.3	.32	1.7	.72	.00	.00		
13	53	1.1	4.0	4.5	6.0	5.2	3.5	5.5	1.5	.35	.00	.00		
14	31	1.2	2.1	6.5	6.0	16	2.6	1.4	1.5	.27	.00	3.4		
15	3.7	1.2	6.5	7.4	6.1	9.2	2.0	.67	1.0	.20	.00	.00		
16	1.3	1.0	9.2	18	6.2	8.8	1.7	.55	.70	.18	.00	.00		
17	.55	.70	9.2	14	5.9	7.7	1.8	.77	1.0	.13	.00	.00		
18	.44	2.3	8.5	11	5.1	7.8	2.0	.41	1.4	.11	.00	.00		
19	.37	1.2	6.7	8.6	5.0	7.9	1.7	.37	1.2	.10	.00	.00		
20	5.8	1.0	5.9	6.0	4.9	30	1.5	.30	1.9	.06	.00	.00		
21	98	.97	4.6	6.4	4.2	11	1.5	1.0	1.6	.03	.00	.00		
22	36	.70	3.3	6.3	4.7	9.3	1.2	.47	14	.02	.00	.00		
23	29	.93	3.0	5.7	71	7.6	1.0	.35	33	.01	.00	.00		
24	23	9.5	3.2	8.1	11	7.0	.85	.33	10	.01	.00	.00		
25	18	5.8	2.7	7.1	7.8	7.1	1.4	.32	3.2	.01	.00	.00		
26	16	1.9	2.7	7.0	6.2	7.0	2.9	.30	2.0	.01	.00	.00		
27	13	1.4	3.4	8.7	5.5	8.9	1.0	.29	1.7	.01	.00	.00		
28	9.6	1.2	3.3	7.3	11	7.8	3.3	.29	1.7	.00	.00	.04		
29	7.8	1.1	3.2	5.3	---	7.5	1.2	.25	1.3	.00	.00	22		
30	5.5	.87	8.6	6.5	---	7.4	.79	.17	1.0	.00	.00	.01		
31	5.7	---	27	5.2	---	7.2	---	.14	---	.00	.00	---		
TOTAL	466.76	63.87	130.89	219.1	233.2	250.2	112.54	19.04	238.84	18.43	.00	28.08		
MEAN	15.1	2.13	4.22	7.07	8.33	8.07	3.75	.61	7.96	.59	.000	.94		
MAX	98	9.5	27	18	71	30	8.1	5.5	123	4.3	.00	22		
MIN	.00	.70	.85	1.5	4.2	4.9	.79	.14	.08	.00	.00	.00		
CFSM	2.40	.34	.67	1.12	1.32	1.28	.60	.10	1.26	.09	.000	.15		
IN.	2.76	.38	.77	1.29	1.38	1.48	.66	.11	1.41	.11	.00	.17		
AC-FT	926	127	260	435	463	496	223	38	474	37	.00	56		
CAL YR 1984	TOTAL	741.86	MEAN	2.03	MAX	98	MIN	.00	CFSM	.32	IN	4.38	AC-FT	1470
WTR YR 1985	TOTAL	1780.95	MEAN	4.88	MAX	123	MIN	.00	CFSM	.78	IN	10.51	AC-FT	3530

## COLORADO RIVER BASIN

08158920 WILLIAMSON CREEK AT OAK HILL, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Occasional discharge measurements: January 1974 to current year. Chemical, biochemical, and pesticide analyses: January 1974 to current year. Radiochemical analyses: October 1979 to September 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC- CI FECAL, KF AGAR (COLS. PER 100 ML)	
OCT 21...	1320	68	340	8.0	18.5	250	84	8.4	91	1.9	140000	81000	
DEC 31...	0430	59	571	--	--	--	--	--	--	11	3200	440000	
31...	0445	63	317	--	--	1000	930	--	--	--	--	--	
31...	0500	62	240	--	--	--	--	--	--	--	--	--	
31...	0515	58	223	--	--	1500	960	--	--	--	150000	360000	
31...	0530	52	218	--	--	--	--	--	--	14	--	--	
31...	0545	48	214	--	--	--	--	--	--	14	K190000	24000	
FEB 20...	0915	4.9	697	7.9	15.7	5	.50	6.5	67	.2	220	K52	
23...	0345	59	--	--	--	--	--	--	--	--	12000	K50000	
23...	0400	105	281	--	--	--	--	--	--	9.8	--	--	
23...	0415	119	183	7.9	--	500	2600	--	--	--	--	--	
23...	0430	221	169	--	--	--	--	--	--	18	140000	500000	
23...	0445	442	244	--	--	100	2400	--	--	--	K140000	360000	
23...	0500	787	--	--	--	--	--	--	--	--	K140000	K210000	
MAR 20...	0330	63	--	--	--	400	220	--	--	4.0	8400	52000	
20...	0345	111	--	--	--	--	--	--	--	5.6	20000	120000	
20...	0400	164	--	--	--	4500	840	--	--	12	20000	120000	
20...	0415	140	--	--	--	--	--	--	--	9.9	--	--	
20...	0430	125	--	--	--	--	--	--	--	8.1	--	--	
20...	0445	95	--	--	--	800	570	--	--	6.9	38000	150000	
JUN 06...	1020	334	194	8.2	21.5	80	180	8.0	92	5.9	36000	78000	
DATE		HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 21...	160	31	48	10	5.9	.2	2.6	130	22	11	.10	7.5	
DEC 31...	--	--	--	--	--	--	--	--	--	--	--	--	
31...	--	--	--	--	--	--	--	--	--	--	--	--	
31...	--	--	--	--	--	--	--	--	--	--	--	--	
31...	--	--	--	--	--	--	--	--	--	--	--	--	
31...	--	--	--	--	--	--	--	--	--	--	--	--	
FEB 20...	360	71	100	27	17	.4	1.1	290	46	32	.20	2.2	
23...	--	--	--	--	--	--	--	--	--	--	--	--	
23...	--	--	--	--	--	--	--	--	--	--	--	--	
23...	80	14	24	4.8	3.3	.2	1.9	66	13	5.4	.10	3.0	
23...	--	--	--	--	--	--	--	--	--	--	--	--	
23...	--	--	--	--	--	--	--	--	--	--	--	--	
23...	--	--	--	--	--	--	--	--	--	--	--	--	
MAR 20...	--	--	--	--	--	--	--	--	--	--	--	--	
20...	--	--	--	--	--	--	--	--	--	--	--	--	
20...	--	--	--	--	--	--	--	--	--	--	--	--	
20...	--	--	--	--	--	--	--	--	--	--	--	--	
20...	--	--	--	--	--	--	--	--	--	--	--	--	
20...	--	--	--	--	--	--	--	--	--	--	--	--	
JUN 06...	86	11	25	5.8	4.0	.2	3.1	75	14	6.3	.10	5.9	



COLORADO RIVER BASIN

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08158920 WILLIAMSON CREEK AT OAKHILL, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 21...	190	195	25	1.1	.010	1.1	.070	1.3	1.4	.170	28
DEC 31...	--	--	--	.68	.020	.70	.070	3.0	3.1	.700	36
31...	--	4920	436	.68	.020	.70	.070	3.0	3.1	.700	36
31...	--	4920	436	--	--	--	--	--	--	--	--
31...	--	--	--	--	--	--	--	--	9.0	1.50	--
31...	--	4380	412	.37	.030	.40	.080	8.9	9.0	1.50	83
31...	--	--	--	.37	.030	.40	.080	7.9	8.0	1.00	77
FEB 20...	400	1	<1	.57	.030	.60	.060	--	<.20	.240	1.6
23...	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	.37	.030	.40	.290	12	12	2.50	78
23...	96	4550	344	.45	.050	.50	.150	9.4	9.5	1.70	62
23...	--	--	--	.57	.030	.60	.100	6.4	6.5	1.30	59
23...	--	4680	308	.66	.040	.70	.140	8.4	8.5	1.80	69
23...	--	--	--	--	--	--	--	--	--	--	--
MAR 20...	--	374	100	.49	.010	.50	.070	1.5	1.6	.350	15
20...	--	--	--	.49	.010	.50	.050	3.4	3.4	.610	28
20...	--	2000	268	.49	.010	.50	.070	3.9	4.0	.780	36
20...	--	--	--	.48	.020	.50	.090	4.7	4.8	.720	35
20...	--	--	--	.58	.020	.60	.110	4.5	4.6	.620	33
20...	--	566	110	.58	.020	.60	.110	3.4	3.5	.510	25
JUN 06...	110	292	46	.33	.070	.40	.260	1.3	1.6	.300	12

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 21...	1320	<1	22	<1	<10	2	43
DEC 31...	0445	1	27	<1	<10	2	<3
31...	0500	1	27	<1	<10	2	<3
31...	0545	1	20	<1	<10	2	32
FEB 20...	0915	<1	49	<1	<10	<1	4
23...	0400	<1	24	<1	<10	2	9
23...	0415	<1	24	<1	<10	2	9
23...	0430	<1	15	<1	<10	2	22
23...	0445	<1	15	<1	<10	2	22
JUN 06...	1020	2	16	<1	<10	1	58

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 21...	2	<1	<.1	<1	<1	8
DEC 31...	2	3	<.1	<1	<1	<3
31...	2	3	<.1	<1	<1	<3
31...	2	4	<.1	<1	<1	<3
FEB 20...	1	<1	<.1	<1	<1	11
23...	<1	400	4.4	<1	<1	<3
23...	<1	400	4.4	<1	<1	<3
23...	<1	1	--	<1	<1	<3
23...	<1	1	--	<1	<1	<3
JUN 06...	4	4	<.1	<1	<1	4

## COLORADO RIVER BASIN

08158920 WILLIAMSON CREEK AT OAKHILL, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
DEC												
31...	0500	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
31...	0515	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
FEB												
23...	0345	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
23...	0400	<.10	<.10	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1
23...	0500	<.10	.20	<.10	<2.0	<.1	<.1	<.10	<2.0	<2.0	<.10	<.1

08158970 WILLIAMSON CREEK AT JIMMY CLAY ROAD, AUSTIN, TX

LOCATION.--Lat 30°11'21", long 97°43'56", Travis County, Hydrologic Unit 12090205, at Jimmy Clay Road, 0.5 mi south-east of the intersection of Jimmy Clay and Nuckles Crossing Roads, and 5.9 mi south of the State Capitol in Austin.

DRAINAGE AREA.--27.6 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1974 to September 1975 (periodic discharge measurements only), September 1975 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 493.88 ft above National Geodetic Vertical Datum of 1929 (city of Austin bench mark). Prior to Oct. 1, 1982, at datum 3.30 ft higher.

REMARKS.--Estimated daily discharges: Feb. 23 to Mar. 6 and Mar. 21 to Apr. 15. Records good except those for periods of estimated daily discharges, which are poor. No known regulation or diversion in watershed above station. There are three recording rain gages located in the watershed above station. The station is part of a hydrologic research project to study the rainfall-runoff relationships for the Austin urban-rural areas.

AVERAGE DISCHARGE.--10 years, 8.97 ft<sup>3</sup>/s (4.41 in/yr), 6,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,100 ft<sup>3</sup>/s June 11, 1981 (gage height, 20.55 ft), present datum; no flow Aug. 16, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--The maximum flood since 1869 occurred on Sept. 9 or 10, 1921 (stage and discharge not determined).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 7	0930	648	8.45	Dec. 16	0045	1,040	9.83
Oct. 11	0115	*7,080	a*16.79	Feb. 23	Unknown	537	7.98
Oct. 21	1400	666	8.52	June 6	1215	1,650	11.26
Nov. 25	0015	629	8.37	June 22	1400	570	8.12

a From floodmark.

Minimum daily discharge, 0.23 ft<sup>3</sup>/s Aug. 28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	7.4	4.5	17	11	11	15	8.3	6.1	6.9	4.0	5.3
2	1.9	5.4	4.6	17	13	9.0	15	8.1	5.5	7.0	3.8	5.3
3	1.8	4.8	2.9	21	12	8.0	16	7.3	6.1	6.0	4.1	5.2
4	1.8	4.5	4.2	18	12	9.5	17	7.3	6.1	53	4.1	1.9
5	1.9	3.9	5.6	14	11	7.5	16	6.9	19	11	4.0	1.2
6	2.2	3.8	5.0	12	11	8.8	16	7.0	338	7.2	2.1	5.0
7	66	3.9	4.5	11	11	7.9	15	6.8	17	8.2	.24	3.1
8	5.6	4.0	3.2	11	11	7.3	14	6.5	8.7	7.4	.33	3.6
9	3.6	3.8	5.7	11	10	7.2	14	7.0	7.7	6.9	.45	3.3
10	56	3.6	4.0	11	11	6.9	15	6.2	7.2	6.9	2.7	3.2
11	667	3.7	2.9	11	11	7.2	15	7.5	6.9	6.9	3.4	3.8
12	23	3.4	3.7	12	11	7.2	13	7.1	7.4	8.5	3.6	3.8
13	77	2.8	6.5	15	10	7.6	12	9.6	7.2	7.7	2.7	2.8
14	114	3.0	5.4	16	10	51	12	13	6.9	7.9	.46	2.7
15	13	3.7	6.7	11	10	15	11	8.3	6.7	6.9	1.5	3.0
16	8.1	3.6	134	21	9.9	13	10	7.5	6.9	6.7	3.5	2.7
17	6.9	3.3	24	17	9.4	11	9.5	7.5	7.2	6.0	3.7	3.1
18	6.1	15	18	12	10	9.6	9.5	5.6	7.4	6.0	3.6	3.7
19	5.5	4.8	11	10	9.9	8.9	7.5	4.9	7.9	12	3.7	3.4
20	6.3	3.7	9.7	9.8	10	73	8.3	5.2	6.9	8.2	3.7	3.2
21	184	3.7	8.8	8.1	10	70	12	7.2	6.7	6.7	3.6	3.6
22	38	3.3	7.6	8.6	21	30	9.6	6.2	135	6.4	3.5	4.6
23	51	3.4	7.8	10	50	21	10	6.2	26	2.8	3.3	4.4
24	27	24	6.5	11	15	16	8.2	6.0	14	5.1	3.6	4.9
25	17	71	5.9	9.4	8.2	15	8.4	6.2	8.5	5.1	3.7	5.0
26	16	6.1	6.1	10	7.0	17	18	5.7	8.2	4.2	3.8	5.8
27	16	5.1	9.5	12	12	17	9.6	4.9	6.7	3.5	2.4	6.2
28	11	4.2	12	11	16	16	9.1	5.1	6.4	3.2	.23	6.1
29	14	3.0	9.2	11	---	16	8.9	6.3	6.7	3.8	.27	60
30	6.3	4.3	9.3	11	---	16	9.0	5.9	6.9	4.0	2.9	11
31	6.8	---	74	10	---	15	---	5.5	---	3.9	5.4	---
TOTAL	1457.5	220.2	422.8	389.9	353.4	535.6	363.6	212.8	717.9	246.0	88.38	180.9
MEAN	47.0	7.34	13.6	12.6	12.6	17.3	12.1	6.86	23.9	7.94	2.85	6.03
MAX	667	71	134	21	50	73	18	13	338	53	5.4	60
MIN	1.8	2.8	2.9	8.1	7.0	6.9	7.5	4.9	5.5	2.8	.23	1.2
CFSM	1.70	.27	.49	.46	.46	.63	.44	.25	.87	.29	.10	.22
IN.	1.96	.30	.57	.53	.48	.72	.49	.29	.97	.33	.12	.24
AC-FT	2890	437	839	773	701	1060	721	422	1420	488	175	359
CAL YR 1984	TOTAL	2619.26	MEAN	7.16	MAX 667	MIN .08	CFSM .26	IN 3.53	AC-FT	5200		
WTR YR 1985	TOTAL	5188.98	MEAN	14.2	MAX 667	MIN .23	CFSM .51	IN 6.99	AC-FT	10290		

## COLORADO RIVER BASIN

08158970 WILLIAMSON CREEK AT JIMMY CLAY ROAD, AUSTIN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1975 to current year. Radiochemical analyses: October 1979 to September 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 11...	1100	85	297	7.6	21.0	350	190	6.8	78	3.1	50000	72000
FEB 19...	0910	9.6	739	7.4	18.0	10	2.7	7.0	74	8.4	25	K4
JUN 06...	0840	68	273	7.9	22.0	40	340	6.7	78	6.2	K130000	40000
AUG 14...	1040	.63	875	7.3	25.5	10	1.7	5.4	67	.5	3600	8600

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L CACO3)	SULFATE AS SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 11...	120	34	42	4.5	12	.5	5.0	90	33	19	.20	7.6
FEB 19...	200	54	55	16	62	2	8.1	150	80	76	.60	9.4
JUN 06...	120	19	41	3.9	14	.6	5.0	100	26	23	.30	6.6
AUG 14...	310	120	87	22	62	2	7.8	189	120	100	.70	15
DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	
OCT 11...	180	216	28	2.0	.030	2.0	.100	1.0	1.1	1.20	11	
FEB 19...	400	4	2	11	.470	11	3.80	5.4	9.2	8.00	6.9	
JUN 06...	180	1060	100	1.5	.020	1.5	.100	.90	1.0	.960	25	
AUG 14...	530	4	3	7.8	.330	8.1	.140	.86	1.0	<.010	4.5	

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 11...	1100	<1	31	<1	<10	2	41
FEB 19...	0910	3	55	<1	<10	2	25
JUN 06...	0840	3	25	<1	<10	3	12

COLORADO RIVER BASIN

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08158970 WILLIAMSON CREEK AT JIMMY CLAY ROAD, AUSTIN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 11...	8	2	<.1	1	<1	11
FEB 19...	<1	65	<.1	<1	<1	51
JUN 06...	4	<1	<.1	<1	<1	6

DATE	TIME	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
JUN 06...	0840	<.10	<.10	<.10	<2.0	.2	<.1	<.10	<2.0	<2.0	<.10	<.1



## 08159000 ONION CREEK AT U.S. HIGHWAY 183 NEAR AUSTIN, TX

LOCATION.--Lat 30°10'40", long 97°41'18", Travis County, Hydrologic Unit 12090205, on right bank at downstream side of downstream bridge on U.S. Highway 183, 2.4 mi downstream from Williamson Creek, 3.2 mi southwest of Del Valle, and 7.5 mi southeast of the State Capitol Building in Austin.

DRAINAGE AREA.--321 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1924 to March 1930, March 1976 to current year. In 1924-30 station was published as "near Del Valle."

GAGE.--Water-stage recorder. Datum of gage is 442.85 ft above National Geodetic Vertical Datum of 1929 (from Texas State Department of Highways and Public Transportation bench mark). May 15, 1924, to Mar. 15, 1930, nonrecording gage at highway bridge 1,700 ft upstream at 6.42-foot higher datum.

REMARKS.--Estimated daily discharges: Dec. 13 to Jan. 21. Records fair except those for estimated daily discharges, which are poor. Flow is slightly regulated by several small ponds on main channel and tributaries above station. There are eleven recording rain gages in the watershed.

AVERAGE DISCHARGE.--14 years (water years 1925-29, 1977-85), 78.6 ft<sup>3</sup>/s (3.33 in/yr), 56,950 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,000 ft<sup>3</sup>/s May 28, 1929 (gage height, 30.5 ft), present datum; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1869 occurred about July 3, 1869, stage about 38 ft from newspaper accounts, and Sept. 9, 1921, stage 38.0 ft, from floodmark, present site and datum.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 11	0215	6,280	15.55	June 6	2200	*10,300	*19.33
Feb. 23	1815	7,240	16.87	June 22	2245	5,490	14.45

Minimum daily discharge, no flow Aug. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	41	11	95	79	459	124	32	11	81	8.7	4.0
2	5.8	20	11	100	85	297	115	27	10	75	7.8	4.1
3	2.9	14	10	110	94	246	113	24	9.9	78	7.2	4.0
4	2.0	13	11	95	94	220	101	23	9.9	444	7.2	3.3
5	2.7	10	19	82	100	181	100	21	13	234	7.2	.50
6	3.6	9.9	17	73	100	171	94	18	3930	116	6.9	3.1
7	179	9.8	14	64	85	168	88	16	1760	110	3.4	3.1
8	16	9.3	11	56	71	161	79	16	308	112	2.4	2.0
9	4.7	9.3	10	50	66	148	77	15	160	90	1.8	2.0
10	2.8	9.0	13	45	124	139	75	15	119	85	1.8	2.2
11	1230	8.2	11	64	160	132	129	15	95	76	3.4	2.3
12	151	8.2	9.4	90	76	128	110	15	78	193	3.3	2.3
13	253	7.5	9.8	120	60	121	98	16	67	90	3.5	2.7
14	493	6.8	60	170	59	298	123	26	56	73	1.9	4.7
15	62	6.8	500	300	53	304	101	17	44	58	1.1	5.4
16	22	6.8	250	250	48	210	75	15	36	50	1.5	4.1
17	12	6.8	130	230	48	179	69	15	32	45	3.0	3.2
18	8.9	43	80	200	44	161	66	16	32	38	3.5	3.0
19	6.5	20	52	170	42	156	60	13	44	36	3.3	3.0
20	8.8	12	45	150	34	550	54	13	49	41	3.3	3.0
21	556	10	41	140	34	272	59	15	33	31	3.2	2.7
22	210	9.5	40	148	76	190	52	15	1560	27	2.6	3.1
23	297	9.3	40	148	2230	178	54	13	1580	18	2.6	3.3
24	166	10	42	149	927	170	46	12	332	16	2.6	3.6
25	70	385	43	135	393	155	39	12	203	14	2.6	4.0
26	43	46	45	118	290	150	58	12	163	13	2.6	4.6
27	71	22	43	111	242	158	47	12	131	12	2.6	5.0
28	35	15	42	103	281	176	42	11	112	10	1.6	5.9
29	47	11	40	93	---	151	37	11	99	9.9	.06	65
30	114	10	200	88	---	139	35	12	88	9.8	.00	28
31	45	---	800	80	---	133	---	11	---	8.7	2.6	---
TOTAL	4129.0	799.2	2650.2	3827	5995	6301	2320	504	11164.8	2294.4	105.26	187.20
MEAN	133	26.6	85.5	123	214	203	77.3	16.3	372	74.0	3.40	6.24
MAX	1230	385	800	300	2230	550	129	32	3930	444	8.7	65
MIN	2.0	6.8	9.4	45	34	121	35	11	9.9	8.7	.00	.50
CFSM	.41	.08	.27	.38	.67	.63	.24	.05	1.16	.23	.01	.02
IN.	.48	.09	.31	.44	.69	.73	.27	.06	1.29	.27	.01	.02
AC-FT	8190	1590	5260	7590	11890	12500	4600	1000	22150	4550	209	371
CAL YR 1984	TOTAL	9103.85	MEAN	24.9	MAX	1230	MIN	.00	CFSM	.08	IN	1.06
WTR YR 1985	TOTAL	40277.06	MEAN	110	MAX	3930	MIN	.00	CFSM	.34	IN	4.67
										AC-FT	18060	
										AC-FT	79890	

08159000 ONION CREEK AT U.S. HIGHWAY 183 NEAR AUSTIN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: October 1976 to current year. Sediment analyses: October 1976 to September 1982. Radiochemical analyses: October 1979 to September 1980.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 11...	1000	461	217	7.7	21.0	600	500	7.0	80	4.1	70000	98000
FEB 19...	1004	42	616	8.3	15.0	10	6.5	9.0	89	1.9	14000	110
JUN 06...	0955	468	354	7.7	22.5	35	160	6.2	72	11	78000	49000
AUG 14...	0945	1.7	626	8.1	29.0	10	4.0	5.1	68	.4	K900	192

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 11...	95	29	33	3.0	6.2	.3	4.2	66	25	10	.20	6.7
FEB 19...	260	58	80	14	30	.8	3.4	200	54	40	.40	4.7
JUN 06...	140	31	45	5.7	15	.6	4.1	105	32	21	.20	8.3
AUG 14...	220	40	61	16	43	1	5.2	179	51	56	.50	14

DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 11...	130	672	100	.86	.140	1.0	.360	1.7	2.1	.620	17
FEB 19...	350	12	6	2.4	.340	2.7	.900	.70	1.6	1.40	2.9
JUN 06...	190	412	46	.77	.030	.80	.110	.89	1.0	1.90	29
AUG 14...	350	4	2	.19	.010	.20	.110	.49	.60	1.70	3.6

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
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OCT 11...	1000	1	26	<1	<10	4	21
FEB 19...	1004	1	61	<1	<10	2	6

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
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OCT 11...	5	2	<.1	<1	1	5
FEB 19...	<1	<1	<.1	<1	<1	23

DATE	TIME	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	METHO- MYL TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)
JUN 06...	0955	<.10	<.10	<.10	<2.0	.4	<.1	<.10	<2.0	<2.0	<.10	<.1

## COLORADO RIVER BASIN

08159165 BIG SANDY CREEK NEAR MCDADE, TX

LOCATION.--Lat 30°18'18", long 97°17'48", Bastrop County, Hydrologic Unit 12090301, on left bank at upstream side of left abutment of U.S. Highway 290 bridge, 3.8 mi northwest of McDade, 5.3 mi southeast of Elgin, and 14.2 mi upstream from mouth.

DRAINAGE AREA.--38.7 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1979 to September 1985 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 422 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Mar. 26, 29, 30 and Apr. 2-13, 17-20. Records good except those for estimated daily discharges, which are poor. No known regulation or diversion. Two recording rain gages are located in the watershed above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--6 years, 8.82 ft<sup>3</sup>/s (3.09 in/yr), 6,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,410 ft<sup>3</sup>/s June 11, 1981, (gage height, 15.74 ft); no flow for many days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 325 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 20	2315	729	9.92	Dec. 31	1545	805	10.26
Oct. 21	1715	1,200	11.61	Feb. 10	2015	343	7.67
Oct. 24	0015	518	8.81	Mar. 20	1415	387	8.00
Dec. 13	1730	408	8.14	June 6	1815	*2,320	*13.51
Dec. 16	1145	408	8.14				

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	2.0	.37	72	1.4	66	1.0	51	.22	.04	3.5	.01
2	.00	1.3	.48	16	1.3	20	.60	4.8	.18	.06	2.0	.00
3	.00	1.2	.63	18	.96	8.3	.53	2.4	.16	.53	8.3	.00
4	.00	.74	25	57	2.1	6.0	.50	.06	.06	1.6	7.3	.00
5	.00	.47	12	15	2.6	4.9	.48	.00	.11	36	2.7	.00
6	.00	.48	8.6	8.8	2.5	5.1	.45	.00	711	5.8	1.2	.00
7	.00	.59	3.6	6.6	2.1	4.5	.44	.00	153	.97	3.3	.00
8	.00	.78	1.8	5.1	2.1	3.6	.42	.00	24	.34	5.1	.00
9	.00	.71	1.4	4.6	2.6	3.1	.55	.00	7.8	1.0	5.9	.00
10	.00	.65	.79	3.7	82	2.5	1.0	.33	4.8	3.8	5.5	.00
11	.00	.43	.54	2.9	61	2.3	1.2	.51	2.6	2.3	.81	.00
12	.00	.28	.62	2.3	10	3.6	1.4	.14	1.2	.90	.27	.00
13	.00	.42	163	2.4	6.9	4.3	1.8	.26	.95	.48	.19	.00
14	28	.54	57	3.3	5.7	5.8	8.7	69	.72	.25	.07	.01
15	6.3	.62	13	3.3	4.8	4.4	6.3	17	.64	.06	.13	.00
16	.30	.68	169	42	2.6	3.3	2.4	4.4	.59	.03	.11	.00
17	.03	.62	42	68	1.4	2.0	1.7	2.0	.35	.12	.22	.00
18	.00	.87	19	17	1.2	1.7	1.2	1.2	.26	.65	.22	.00
19	.00	.97	11	8.4	1.3	1.2	1.0	.82	.31	2.4	.05	.00
20	82	.83	6.8	5.3	1.5	152	.80	.67	.36	2.0	.03	.00
21	467	.96	4.8	2.8	1.6	64	.70	2.6	.36	.21	.28	.00
22	73	.99	3.4	2.6	1.8	18	4.0	5.1	.36	.07	.15	.00
23	106	.96	1.6	2.6	7.8	5.7	31	4.1	1.7	.24	.04	.00
24	150	1.3	2.1	2.6	7.9	3.5	8.7	2.0	2.6	.21	.01	.00
25	22	12	1.6	2.6	3.2	3.4	.92	1.2	.57	.19	.00	.00
26	11	4.3	1.1	2.0	1.8	3.4	4.2	.73	.28	.18	.00	.00
27	7.8	2.0	1.0	2.1	1.6	3.3	.80	.44	.18	.67	.45	.00
28	16	.82	1.6	2.0	9.6	3.3	.02	.35	.12	1.2	1.2	.00
29	76	.49	1.9	1.7	---	3.2	.13	.33	.07	1.2	.91	4.7
30	11	.47	1.3	1.7	---	3.0	.70	.35	.05	1.0	.24	13
31	4.1	---	367	1.5	---	2.4	---	.30	---	1.2	.10	---
TOTAL	1060.53	39.47	924.03	385.9	231.36	417.8	83.64	172.09	915.60	65.70	50.28	17.72
MEAN	34.2	1.32	29.8	12.4	8.26	13.5	2.79	5.55	30.5	2.12	1.62	.59
MAX	467	12	367	72	82	152	31	69	711	36	8.3	13
MIN	.00	.28	.37	1.5	.96	1.2	.02	.00	.05	.03	.00	.00
CFSM	.88	.03	.77	.32	.21	.35	.07	.14	.79	.06	.04	.02
IN.	1.02	.04	.89	.37	.22	.40	.08	.17	.88	.06	.05	.02
AC-FT	2100	78	1830	765	459	829	166	341	1820	130	100	35
CAL YR 1984	TOTAL	2121.88	MEAN	5.80	MAX	467	MIN	.00	CFSM	.15	IN	2.04
WTR YR 1985	TOTAL	4364.12	MEAN	12.0	MAX	711	MIN	.00	CFSM	.31	IN	4.19
									AC-FT	4210		8660

## COLORADO RIVER BASIN

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08159170 BIG SANDY CREEK NEAR ELGIN, TX

LOCATION.--Lat 30°15'54", long 97°19'39". Bastrop County, Hydrologic Unit 12090301, on right bank at downstream side of bridge on State Highway 95, 6.1 mi south of Elgin, 10.7 mi north of Bastrop, and 10.8 mi upstream from mouth.

DRAINAGE AREA.--63.8 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1979 to September 1985 (discontinued).

Water-quality records.--Chemical, biochemical, and pesticide analyses: May 1979 to September 1981. Radiochemical analyses: May to September 1979.

GAGE.--Water-stage recorder. Elevation of gage is 392 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Mar. 2-17. Records good, except those for estimated daily discharges, which are poor. No known regulation or diversion. Three recording rain gages are located in the watershed above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--6 years, 10.8 ft<sup>3</sup>/s (2.30 in/yr), 7,820 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,760 ft<sup>3</sup>/s June 11, 1981 (gage height, 21.54 ft); no flow for several days each year.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 21	2245	948	13.04	June 6	2345	*1,480	*15.01
Dec. 31	1830	905	12.86				

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	6.2	1.4	129	1.8	17	3.3	6.8	.47	.18	.13	.00
2	.00	4.3	.77	16	1.7	13	2.8	5.2	.44	.17	.21	.00
3	.00	3.5	.47	15	1.2	7.1	2.7	3.5	.42	.66	.37	.00
4	.00	3.3	6.3	32	1.5	5.8	2.7	2.5	.41	2.5	1.0	.00
5	.00	3.1	24	16	2.3	5.1	2.6	1.9	.40	4.2	.32	.00
6	.00	2.2	18	11	2.5	4.3	2.4	1.4	300	5.0	.04	.00
7	.00	1.6	12	8.5	2.2	4.0	2.3	1.0	375	3.3	.02	.00
8	.00	1.1	8.5	7.0	1.7	3.8	2.1	.77	8.7	1.9	.01	.00
9	5.6	1.4	6.2	6.3	1.9	3.5	1.9	.64	5.9	.61	.01	.00
10	6.2	.79	5.1	5.6	23	3.2	2.0	.58	4.5	1.4	.02	.00
11	2.3	.52	4.4	4.7	77	3.0	2.5	1.9	3.8	2.7	.04	.00
12	3.0	.42	3.6	4.3	11	2.8	2.6	2.1	3.3	2.6	.03	.00
13	2.3	.33	113	4.3	7.6	2.7	2.8	2.0	2.8	1.6	.01	.00
14	5.0	.30	83	4.5	6.6	8.0	3.9	13	2.6	.58	.00	.00
15	14	.26	13	4.5	6.1	5.8	3.4	9.0	2.3	.34	.00	.02
16	5.4	.27	108	20	5.8	4.2	2.4	4.7	2.1	.24	.00	.01
17	3.1	.26	34	48	4.8	3.3	1.8	3.6	1.8	.21	.00	.00
18	2.2	.35	16	15	4.3	2.7	1.4	2.8	.96	.18	.00	.00
19	1.7	.31	12	9.5	4.0	2.6	.87	2.3	1.1	.19	.00	.00
20	.82	.26	8.7	6.4	4.1	90	.84	2.0	.66	.46	.00	.00
21	345	.25	6.7	4.0	4.6	33	1.5	2.4	.72	.89	.00	.00
22	179	.26	5.4	3.1	4.9	8.3	2.8	3.3	.86	.32	.00	.00
23	56	.23	4.2	3.0	6.3	6.2	4.0	3.8	1.4	.23	.00	.00
24	184	.30	3.3	3.0	9.8	5.2	6.0	2.8	2.9	.19	.00	.00
25	32	10	3.0	2.9	7.1	4.7	4.0	2.0	2.6	.17	.00	.00
26	20	13	2.5	2.6	5.9	4.3	3.4	1.5	1.4	.17	.00	.00
27	16	7.0	1.9	2.5	5.5	4.1	3.2	1.0	.51	.15	.00	.00
28	16	3.9	1.7	2.7	5.7	4.1	2.3	.85	.30	.15	.00	.00
29	102	2.7	1.8	2.7	---	4.1	1.5	.77	.23	.15	.00	2.3
30	23	2.1	1.7	2.4	---	4.0	1.1	.60	.20	.15	.00	3.3
31	11	---	361	2.1	---	3.7	---	.52	---	.13	.00	---
TOTAL	1035.62	70.51	871.64	398.6	220.9	273.6	77.11	87.23	728.78	31.72	2.21	5.63
MEAN	33.4	2.35	28.1	12.9	7.89	8.83	2.57	2.81	24.3	1.02	.071	.19
MAX	345	13	361	129	77	90	6.0	13	375	5.0	1.0	3.3
MIN	.00	.23	.47	2.1	1.2	2.6	.84	.52	.20	.13	.00	.00
CFSM	.52	.04	.44	.20	.12	.14	.04	.04	.38	.02	.001	.003
IN.	.60	.04	.51	.23	.13	.16	.04	.05	.42	.02	.00	.00
AC-FT	2050	140	1730	791	438	543	153	173	1450	63	4.4	11
CAL YR 1984	TOTAL	2078.76	MEAN	5.68	MAX	361	MIN	.00	CFSM	.09	IN	1.21
WTR YR 1985	TOTAL	3803.55	MEAN	10.4	MAX	375	MIN	.00	CFSM	.16	IN	2.22
									AC-FT	4120		
									AC-FT	7540		

## COLORADO RIVER MAIN STEM

08159200 COLORADO RIVER AT BASTROP, TX

LOCATION.--Lat 30°06'20", long 97°19'08". Bastrop County, Hydrologic Unit 12090301, on left bank in city park at Bastrop, 400 ft upstream from bridge on State Highway 71, 0.3 mi upstream from Gills Creek, 1.1 mi downstream from Piney Creek, and at mile 236.7.

DRAINAGE AREA.--39,979 mi<sup>2</sup>, approximately, of which 11,403 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1960 to September 1973, October 1975 to current year.

GAGE.--Water-stage recorder. Datum of gage is 307.38 ft above National Geodetic Vertical Datum of 1929. Prior to May 10, 1960, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation and municipal supply. Regulation is the same as that for Colorado River at Austin (station 08158000). The city of Austin diverts water upstream from station by pumping into Decker Lake. The Lower Colorado River Authority diverts water upstream from station by pumping into Lake Bastrop. Gage-height telemeter located at station.

AVERAGE DISCHARGE.--25 years, 2,070 ft<sup>3</sup>/s (1,500,000 acre-ft yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,600 ft<sup>3</sup>/s Oct. 29, 1960 (gage height, 34.45 ft); minimum daily, 75 ft<sup>3</sup>/s Apr. 1, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1845, 60.3 ft July 7 or 8, 1869. Flood of June 16, 1935, reached a stage of 57.0 ft, and flood of Dec. 4, 1913, reached a stage of 53.3 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,200 ft<sup>3</sup>/s June 7 at 1200 hours (gage height, 13.98 ft); minimum daily, 305 ft<sup>3</sup>/s Oct. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	930	814	866	2630	571	1720	1740	1720	2140	2360	1830	1650
2	865	689	547	577	571	1790	1870	1620	2460	2260	1680	1620
3	845	762	391	946	556	1570	1640	1700	2450	2370	1590	1630
4	802	677	391	1580	583	1160	1790	1700	2390	2580	1780	1600
5	776	585	540	1210	581	1030	1630	1370	2350	4690	1680	1460
6	765	547	499	967	609	920	1610	1360	4920	2750	1810	1720
7	800	512	456	838	598	970	1590	1410	13800	1900	1830	1620
8	1380	486	371	765	585	883	1570	1440	3710	1890	1810	1440
9	1560	468	352	727	548	805	1580	1740	2290	1820	1840	1460
10	1170	444	338	656	551	770	1620	1790	2600	1800	1830	1410
11	3840	419	335	640	1030	729	1730	1780	2490	1840	1940	1160
12	4510	398	328	604	1060	699	2040	1990	2410	1750	1700	1480
13	1610	381	602	614	670	684	1690	1960	2390	2110	1770	1400
14	3860	335	1050	648	580	879	1780	3150	2320	1960	1880	1410
15	3480	367	590	706	539	2570	1820	2560	2310	1950	1940	2020
16	1260	367	1480	765	524	2670	1610	1940	2300	1970	1920	1550
17	691	349	2540	1530	515	2040	1630	1910	2270	1950	1870	1280
18	481	345	1330	1330	503	2540	1440	1850	2260	1910	1940	1190
19	367	380	1040	1000	493	2530	1470	1660	2280	1760	1840	1160
20	305	512	931	822	498	3490	1410	1580	2270	1760	1780	1100
21	8200	385	710	795	514	4520	1460	1590	2090	1840	1770	1020
22	10000	330	630	734	524	2920	1440	1800	2240	1630	1780	1020
23	3740	319	576	718	705	2750	1760	1740	5070	1720	1660	1140
24	4450	316	523	712	6030	2690	1690	1720	3700	1570	1580	1210
25	2270	602	478	697	2430	2540	1400	1680	2780	1600	2030	1140
26	1670	1430	457	676	1630	2380	1420	1710	2470	1600	1930	1190
27	1360	719	433	659	1500	2510	1560	1760	2360	1610	1820	1110
28	1390	863	433	646	1430	2620	1460	1990	2280	1610	1890	1020
29	3230	938	496	625	---	2520	1490	2020	2250	1610	1680	1090
30	1410	942	471	616	---	2380	1590	2140	2170	1330	1670	1580
31	919	---	1450	578	---	1980	---	2240	---	1560	1700	---
TOTAL	68936	16681	21634	27011	26928	60259	48530	56620	89820	61060	55770	40880
MEAN	2224	556	698	871	962	1944	1618	1826	2994	1970	1799	1363
MAX	10000	1430	2540	2630	6030	4520	2040	3150	13800	4690	2030	2020
MIN	305	316	328	577	493	684	1400	1360	2090	1330	1580	1020
AC-FT	136700	33090	42910	53580	53410	119500	96260	112300	178200	121100	110600	81090
CAL YR 1984	TOTAL	516179	MEAN	1410	MAX	10000	MIN	155	AC-FT	1024000		
WTR YR 1985	TOTAL	574129	MEAN	1573	MAX	13800	MIN	305	AC-FT	1139000		



COLORADO RIVER MAIN STEM

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08159200 COLORADO RIVER AT BASTROP, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1967 to September 1973, October 1975 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
OCT 23...	1415	2700	328	7.7	16.5	8.0	82	2.0	130	39
DEC 11...	1135	319	642	8.2	16.0	10.4	106	.6	240	58
FEB 22...	0950	527	644	7.8	18.5	7.2	78	1.4	250	47
APR 17...	0920	1070	604	7.7	22.5	7.2	84	.5	220	71
JUL 02...	1220	2200	582	7.8	27.5	7.8	99	.7	220	60
AUG 23...	1255	1600	575	8.0	29.0	8.6	113	.4	220	63

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
OCT 23...	42	5.5	17	.7	2.6	89	46	23	.40
DEC 11...	67	17	39	1	4.7	180	55	55	.70
FEB 22...	70	18	39	1	3.7	202	59	50	.70
APR 17...	55	20	39	1	4.1	149	60	64	.30
JUL 02...	52	21	36	1	3.8	157	47	62	.30
AUG 23...	52	21	36	1	4.1	154	43	63	.30

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
OCT 23...	8.2	200	.46	.040	.50	.090	1.7	1.8	1.20
DEC 11...	2.2	350	2.7	.060	2.8	.050	.85	.90	1.30
FEB 22...	6.5	370	2.6	.040	2.6	.100	.60	.70	1.00
APR 17...	5.2	340	1.3	.050	1.3	.130	.77	.90	.580
JUL 02...	6.6	320	--	<.100	.50	.030	.37	.40	.190
AUG 23...	7.3	320	.79	.010	.80	.040	.36	.40	.330

## COLORADO RIVER MAIN STEM

08160700 COLORADO RIVER ABOVE COLUMBUS, TX

LOCATION.--Lat 29°43'09", long 96°34'16", Colorado County, Hydrologic 12090301, at right downstream side of bridge on State Highway 71 and 1.8 mi north of the intersection of State Highway 71 and Interstate Highway 10.

DRAINAGE AREA.--41,313 mi<sup>2</sup>, approximately, of which 11,403 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1983 to October 1985 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 169 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Estimated daily discharges: Jan. 21 to Feb. 11. Records good except those for estimated daily discharges, which are fair. Regulation is the same as that for Colorado River at Austin (station 08158000) and Colorado River at Bastrop (station 08159200). The Lower Colorado River Authority diverts water upstream from this station to Cedar Creek Reservoir, but there are many other diversions above the station for irrigation and municipal supply.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,300 ft<sup>3</sup>/s June 8, 1985, (gage height, 16.87 ft); minimum daily, 194 ft<sup>3</sup>/s Mar. 7, 1984.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,300 ft<sup>3</sup>/s June 8 at 2200 hours (gage height, 16.87 ft); minimum daily, 358 ft<sup>3</sup>/s Nov. 25.

EXTREMES FOR OCTOBER 1985.--Maximum discharge, 4,220 ft<sup>3</sup>/s Oct. 21 (gage height, 11.14 ft); minimum daily, 327 ft<sup>3</sup>/s Oct. 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1370	1640	887	1550	740	3670	2430	1560	2100	2220	1440	1590
2	1320	1280	895	3090	710	2990	2040	1770	2130	2270	1550	1600
3	1210	1060	856	2470	700	2470	2010	2100	2180	2320	1730	1550
4	1100	908	703	1890	670	1980	1920	1660	2340	2390	1630	1540
5	1060	835	543	1950	650	1840	1890	1860	2330	2530	1560	1550
6	1020	819	439	1680	640	1510	1900	1480	2290	3830	1710	1550
7	994	738	481	1290	640	1390	1840	1410	2700	3910	1660	1450
8	964	670	534	1080	640	1280	1820	1410	9190	2480	1730	1650
9	1000	624	499	936	650	1320	1820	1460	7230	2040	1730	1540
10	1030	579	449	844	670	1230	1820	1510	2730	1950	1740	1420
11	1450	534	392	771	2000	1150	1930	1700	2710	1870	1740	1420
12	1670	493	366	803	1710	1110	3930	1770	2680	1870	1790	1400
13	4460	469	365	819	1360	1060	3080	1800	2550	2110	1700	1390
14	4210	443	714	847	1230	1110	2660	1980	2540	2460	1640	1460
15	2800	422	1630	1020	958	1760	2220	3060	2480	2140	1660	1410
16	3810	412	1500	1510	798	1980	2230	3360	2450	2060	1740	1470
17	2960	436	3400	4020	726	2780	2020	2350	2430	2030	1750	1850
18	1900	531	3420	2890	689	2480	1830	2140	2460	2040	1750	1530
19	1410	456	2110	2090	658	2340	1750	2030	3450	2000	1730	1360
20	1750	384	1510	1510	631	2920	1640	1900	2730	1940	1710	1270
21	1940	360	1210	1300	608	5620	1640	1730	2450	1850	1620	1220
22	4450	387	1020	1130	599	5330	1610	1690	2340	1840	1600	1190
23	9790	439	801	1020	5160	3650	1580	1690	2300	1800	1590	1150
24	6710	380	703	980	7000	2990	1620	1840	3560	1680	1580	1090
25	5480	358	690	930	4480	2890	1870	1750	4840	1710	1510	1180
26	3670	382	652	860	3990	2660	1740	1710	3180	1630	1580	1220
27	2630	563	609	900	2440	2670	1590	1670	2740	1650	1790	1180
28	2030	1180	585	1050	2160	2940	1590	1740	2500	1650	1740	1230
29	1980	917	548	950	---	2700	1620	1790	2380	1630	1680	1610
30	2330	784	509	850	---	2760	1550	1930	2280	1610	1760	2080
31	2610	---	1130	770	---	2560	---	2000	---	1600	1600	---
TOTAL	81108	19483	30150	43800	43907	75140	59190	57850	90270	65110	51740	43150
MEAN	2616	649	973	1413	1568	2424	1973	1866	3009	2100	1669	1438
MAX	9790	1640	3420	4020	7000	5620	3930	3360	9190	3910	1790	2080
MIN	964	358	365	770	599	1060	1550	1410	2100	1600	1440	1090
AC-FT	160900	38640	59800	86880	87090	149000	117400	114700	179100	129100	102600	85590
CAL YR 1984	TOTAL	515442	MEAN	1408	MAX	9790	MIN	194	AC-FT	1022000		
WTR YR 1985	TOTAL	660898	MEAN	1811	MAX	9790	MIN	358	AC-FT	1311000		

COLORADO RIVER MAIN STEM

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08160700 COLORADO RIVER ABOVE COLUMBUS, TX

LOCATION.--Lat 29°43'09", long 96°34'16", Colorado County, Hydrologic Unit 12090301, at bridge on State Highway 71 and 1.8 mi north of the intersection of State Highway 71 and Interstate 10.

PERIOD OF RECORD.--Chemical, biochemical, pesticide, and sediment analyses: October 1982 to September 1983.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1983 to October 1985.

WATER TEMPERATURES: October 1983 to October 1985.

INSTRUMENTATION.--Beginning October 1983, specific conductance was recorded continuously at this station. Monitor discontinued October 1985.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 924 microsiemens Nov. 19, 1983; minimum daily, 186 microsiemens Dec. 18, 1984.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 776 microsiemens May 10; minimum daily, 186 microsiemens Dec. 18.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PEK- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
OCT											
13...	1130	5230	552	7.6	24.5	350	150	6.9	83	1.5	3400
13...	1930	6480	420	7.7	23.5	250	200	6.8	80	2.2	K9300
14...	0955	4650	265	7.7	22.0	2500	1600	7.3	84	1.6	11000
14...	1740	3640	284	7.6	22.5	2500	790	6.8	80	2.0	13000
NOV											
26...	1550	400	609	8.5	14.5	5	1.6	12.3	121	.5	30
JAN											
07...	1610	1280	449	7.8	10.0	80	35	9.4	83	1.2	310
FEB											
11...	1630	1870	615	8.7	12.0	80	44	11.8	109	2.2	780
26...	1108	3530	474	8.1	17.0	1200	500	7.2	74	5.3	8800
MAY											
06...	1600	1400	604	7.9	27.5	8	67	8.8	112	.3	76
JUL											
29...	1615	1700	585	9.2	32.5	5	3.8	9.0	125	.6	K13

DATE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT										
13...	4700	200	70	47	20	42	1	5.3	130	51
13...	K15000	130	29	30	13	29	1	4.2	100	34
14...	38000	99	25	32	4.6	18	.8	3.9	74	29
14...	27000	98	28	32	4.5	16	.7	3.7	71	25
NOV										
26...	84	230	42	63	18	41	1	4.5	190	56
JAN										
07...	200	180	30	54	11	19	.6	3.9	150	41
FEB										
11...	2100	250	58	74	17	33	.9	3.5	197	55
26...	3000	190	32	56	13	23	.7	3.9	162	43
MAY										
06...	90	220	58	56	19	37	1	4.4	160	50
JUL										
29...	26	190	45	46	19	37	1	4.1	148	55

## COLORADO RIVER MAIN STEM

08160700 COLORADO RIVER ABOVE COLUMBUS, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
OCT										
13...	67	.50	6.6	320	328	38	.88	.020	.90	--
13...	45	.40	6.4	220	526	48	.68	.020	.70	--
14...	21	.40	8.3	160	2210	236	.78	.020	.80	--
14...	20	.40	8.9	150	1260	152	.68	.020	.70	--
NOV										
26...	55	.60	1.4	350	5	1	--	<.010	.70	--
JAN										
07...	26	.30	10	260	46	24	.98	.020	1.0	--
FEB										
11...	45	.50	2.7	350	112	13	1.7	.040	1.7	1.7
26...	28	.40	7.8	270	1000	112	1.4	.060	1.5	1.6
MAY										
06...	65	.30	7.3	340	151	23	.99	.010	1.0	.98
JUL										
29...	65	.30	2.7	320	12	11	--	<.010	.10	.15

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	PHENOLS TOTAL (UG/L)
OCT										
13...	.030	1.7	1.7	--	.640	--	.400	6.1	5.1	<1
13...	.070	2.3	2.4	--	.550	--	.220	11	5.5	--
14...	<.010	--	4.7	--	.800	--	.060	12	1.6	<1
14...	.040	2.7	2.7	--	.370	--	.110	18	5.3	--
NOV										
26...	.020	.58	.60	--	.440	--	--	2.7	--	--
JAN										
07...	.100	.40	.50	--	.310	--	--	4.4	--	--
FEB										
11...	.090	.51	.60	.70	.680	.540	.530	4.4	--	--
26...	.080	3.2	3.3	1.3	.760	.190	.190	19	--	--
MAY										
06...	.050	.75	.80	1.0	.420	.290	.260	3.9	--	--
JUL										
29...	.010	.39	.40	.50	.230	.220	.190	3.3	--	--

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, TOTAL RECOV- ERABLE (UG/L AS BA)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV- ERABLE (UG/L AS CD)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, TOTAL RECOV- ERABLE (UG/L AS CR)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)
OCT									
13...	1130	4	--	500	--	1	--	10	--
14...	0955	22	--	700	--	1	--	100	--
NOV									
26...	1550	--	3	--	93	--	<1	--	<10
FEB									
11...	1630	--	1	--	85	--	<1	--	10
26...	1108	--	1	--	87	--	<1	--	<10
MAY									
06...	1600	--	1	--	82	--	<1	--	<10
JUL									
29...	1615	--	2	--	77	--	<1	--	<10

DATE	COPPER, TOTAL RECOV- ERABLE (UG/L AS CU)	COPPER, DIS- SOLVED (UG/L AS CU)	CYANIDE TOTAL (MG/L AS CN)	IRON, TOTAL RECOV- ERABLE (UG/L AS FE)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV- ERABLE (UG/L AS PB)	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, TOTAL RECOV- ERABLE (UG/L AS MN)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
OCT									
13...	14	--	<.01	6200	--	5	--	250	--
14...	37	--	<.01	52000	--	35	--	830	--
NOV									
26...	--	2	--	--	10	--	12	--	12
FEB									
11...	--	1	--	--	11	--	2	--	<1
26...	--	3	--	--	14	--	<1	--	<1
MAY									
06...	--	2	--	--	4	--	5	--	12
JUL									
29...	--	1	--	--	4	--	<1	--	3

COLORADO RIVER MAIN STEM

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08160700 COLORADO RIVER ABOVE COLUMBUS, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE		MERCURY TOTAL RECOV- ERABLE (UG/L AS HG)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, TOTAL (UG/L AS SE)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, TOTAL RECOV- ERABLE (UG/L AS AG)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV- ERABLE (UG/L AS ZN)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT									
13...		.5	--	<1	--	<1	--	30	--
14...		.1	--	<1	--	<1	--	180	--
NOV									
26...		--	<.1	--	<1	--	<1	--	12
FEB									
11...		--	<.1	--	<1	--	<1	--	46
26...		--	<.1	--	<1	--	<1	--	22
MAY									
06...		--	<.1	--	<1	--	<1	--	26
JUL									
29...		--	<.1	--	<1	--	<1	--	17

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
OCT										
13...	1130	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.01	<.01
14...	0955	<.1	<.10	<.01	<.1	<.01	.01	<.01	.01	<.01
NOV										
26...	1550	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.01	<.01
FEB										
11...	1630	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.03	<.01
26...	1108	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.04	<.01
MAY										
06...	1600	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.02	<.01
JUL										
29...	1615	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.01	<.01

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
OCT										
13...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
14...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
NOV										
26...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
FEB										
11...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
26...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
MAY										
06...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JUL										
29...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT									
13...	<.01	<.01	<.1	<1	<.01	.02	<.01	<.01	<.01
14...	<.01	<.01	<.1	<1	<.01	.02	<.01	.01	<.01
NOV									
26...	<.01	<.01	<.1	<1	<.01	.01	<.01	<.01	<.01
FEB									
11...	<.01	<.01	<.1	<1	<.01	.02	<.01	<.01	<.01
26...	<.01	<.01	<.1	<1	<.01	.02	<.01	<.01	<.01
MAY									
06...	<.01	<.01	<.1	<1	<.01	.03	<.01	<.01	<.01
JUL									
29...	<.01	<.01	<.1	<1	<.01	.03	<.01	<.01	<.01



## COLORADO RIVER MAIN STEM

08160700 COLORADO RIVER ABOVE COLUMBUS, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1984	81108	399	214	46900	49	10700	23	5090	150
NOV. 1984	19483	558	308	16200	58	3030	41	2150	210
DEC. 1984	30150	396	212	17200	49	4020	22	1830	150
JAN. 1985	43800	515	281	33200	57	6740	35	4100	190
FEB. 1985	43907	502	274	32500	55	6560	34	4040	190
MAR. 1985	75140	518	283	57400	57	11600	35	7070	190
APR. 1985	59190	578	320	51100	59	9420	43	6850	210
MAY 1985	57850	564	311	48600	59	9160	41	6400	210
JUNE 1985	90270	479	260	63300	56	13500	30	7410	180
JULY 1985	65110	558	307	54000	59	10300	40	7020	210
AUG. 1985	51740	585	324	45200	60	8320	43	6070	220
SEPT 1985	43150	538	295	34400	58	6800	37	4340	200
TOTAL	660898	**	**	500000	**	100000	**	62400	**
WTD.AVG.	1811	512	280	**	56	**	35	**	190

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	638	635	636	503	346	446	576	549	560	519	450	491
2	638	633	636	371	331	345	588	493	574	452	448	450
3	644	638	640	442	375	410	564	483	514	457	445	451
4	651	643	648	474	444	464	496	477	483	448	441	446
5	661	651	656	475	464	467	535	484	516	454	435	446
6	667	661	664	505	464	479	530	521	526	452	448	450
7	671	667	669	561	505	534	555	529	546	450	431	439
8	679	671	675	594	563	580	552	525	542	523	481	512
9	679	676	677	617	593	606	549	517	535	521	480	501
10	678	667	675	627	609	621	523	512	518	574	523	548
11	666	658	660	644	627	632	541	514	520	591	572	581
12	659	600	630	659	634	646	547	540	543	591	572	581
13	593	489	537	672	636	654	559	549	554	597	579	588
14	520	445	477	---	---	656	550	536	546	633	597	622
15	386	319	359	---	---	650	542	394	481	640	634	638
16	448	317	381	---	---	646	487	389	427	640	553	617
17	443	364	385	---	---	640	452	248	330	550	360	417
18	370	351	356	644	622	635	248	186	206	495	436	468
19	367	342	358	---	---	638	298	237	274	504	496	501
20	372	280	358	---	---	632	297	277	288	541	498	510
21	264	211	223	---	---	636	333	238	323	559	543	552
22	342	210	276	---	---	640	326	272	294	561	557	559
23	360	255	309	---	---	638	281	272	276	564	552	562
24	273	253	261	---	---	640	341	268	301	576	565	569
25	285	238	268	---	---	642	408	325	367	590	578	583
26	322	278	300	---	---	643	433	410	422	592	573	580
27	316	280	296	647	625	637	437	399	418	625	585	599
28	359	318	339	642	596	627	471	406	435	637	621	629
29	415	362	386	627	595	616	531	474	515	641	626	633
30	447	353	410	610	577	591	564	524	540	677	641	664
31	494	382	428	---	---	---	567	521	553	683	677	681
MONTH	679	210	470	672	331	590	588	186	449	683	360	544

## COLORADO RIVER MAIN STEM

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08160700 COLORADO RIVER ABOVE COLUMBUS, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	680	651	674	439	422	430	611	600	606	616	607	613
2	654	635	643	434	403	413	615	609	612	613	603	609
3	653	639	646	429	393	406	619	600	614	618	585	606
4	639	609	617	588	419	511	615	600	605	596	503	547
5	622	603	612	641	590	611	611	600	606	613	548	579
6	619	612	616	616	594	607	615	602	607	616	605	610
7	614	609	611	591	535	556	615	600	607	663	616	642
8	611	597	608	547	538	543	615	607	610	757	624	691
9	608	595	603	547	527	533	617	607	611	769	729	752
10	610	596	604	568	535	544	615	600	609	776	664	744
11	617	406	503	591	570	579	618	599	606	654	570	591
12	511	410	472	592	573	585	617	354	472	579	569	574
13	508	479	493	595	575	587	508	343	409	570	557	567
14	605	529	577	596	576	585	559	441	509	569	550	564
15	641	602	628	576	533	550	546	447	492	555	506	541
16	635	628	632	541	486	517	589	506	542	510	466	488
17	631	613	619	533	485	515	612	583	600	517	502	508
18	630	610	617	542	533	538	619	602	612	520	505	512
19	621	605	612	545	540	542	617	543	607	518	503	513
20	643	616	630	550	532	546	618	597	608	516	498	508
21	642	636	638	539	400	469	612	599	605	512	499	505
22	636	602	621	477	399	431	617	599	612	540	511	522
23	606	304	487	493	478	487	609	603	606	550	537	543
24	352	281	315	520	484	499	609	604	606	555	533	546
25	519	286	343	545	507	515	616	603	610	553	540	549
26	592	530	573	564	546	553	658	601	616	557	552	554
27	591	568	579	588	559	575	659	611	626	552	534	539
28	582	469	546	590	500	550	641	600	612	549	536	543
29	---	---	---	589	504	557	606	601	602	554	546	550
30	---	---	---	604	587	596	619	601	606	563	544	554
31	---	---	---	608	595	601	---	---	---	584	549	561
MONTH	680	281	576	641	393	533	659	343	588	776	466	572

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	596	584	590	588	550	556	581	545	567	598	528	572
2	591	541	556	587	581	584	584	551	575	594	522	573
3	558	536	545	592	552	578	591	581	585	598	527	574
4	548	533	538	585	541	557	591	585	589	591	522	572
5	550	537	543	582	550	559	591	585	589	595	487	560
6	548	540	544	589	548	570	596	582	590	594	493	561
7	552	533	544	547	396	441	602	579	593	595	524	568
8	543	347	450	457	401	429	601	586	595	594	484	559
9	350	332	341	518	455	496	596	576	589	592	527	560
10	347	320	334	559	514	548	590	582	585	557	539	552
11	413	337	379	588	540	569	594	579	584	556	480	545
12	427	407	418	598	557	584	610	548	593	557	538	544
13	414	366	381	600	557	590	610	578	600	556	541	548
14	483	420	443	594	444	555	634	572	602	553	501	527
15	535	472	507	541	442	487	609	586	597	548	505	531
16	535	514	527	580	540	552	634	585	601	555	536	545
17	566	540	549	593	541	578	637	577	599	555	536	544
18	559	540	548	589	556	579	639	533	596	554	494	527
19	555	401	486	602	559	589	636	543	595	553	495	532
20	546	405	474	595	584	590	634	538	594	537	436	466
21	558	540	550	604	587	595	632	495	585	540	473	503
22	582	554	567	605	588	596	626	493	573	550	541	544
23	585	582	583	608	584	600	600	497	575	551	532	539
24	590	552	586	609	584	600	624	525	582	589	544	553
25	557	385	461	605	588	598	629	486	570	576	539	549
26	419	345	376	603	588	597	628	531	582	576	546	558
27	491	410	453	601	584	595	625	495	569	584	542	562
28	514	402	483	598	586	593	596	522	570	548	532	540
29	550	500	513	598	557	587	600	469	565	532	333	476
30	558	541	552	585	546	564	600	490	577	485	331	412
31	---	---	---	581	553	562	599	484	560	---	---	---
MONTH	596	320	494	609	396	564	639	469	585	598	331	540

## COLORADO RIVER MAIN STEM

08160700 COLORADO RIVER ABOVE COLUMBUS, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1986

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)
OCT 22...	1615	2750	334	8.0	23.5	80	150	8.0	95	1.2
DATE	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CAC03)
OCT 22...	4600	20000	120	37	38	6.6	19	.8	3.9	85
DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
OCT 22...	39	26	.30	9.4	190	1550	160	.70	.200	.90
DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	
OCT 22...	<.10	.420	3.4	3.8	1.1	.860	.190	<.010	22	
DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON DIS- SOLVED (UG/L AS FE)			
OCT 22...	1615	4	46	<1	<10	2	30			
DATE	TIME	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)			
OCT 22...	2	<1	<.1	<.1	<1	1	11			
DATE	TIME	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	
OCT 22...	1615	<.1	<.10	<.010	<.1	<.010	<.010	<.010	.04	<.010
DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, EPOXIDE TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
OCT 22...	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.01	<.01	<.01
DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)	
OCT 22...	<.01	<.01	<.1	<1	<.01	.01	<.01	<.01	<.01	<.01



## COLORADO RIVER BASIN

08160700 COLORADO RIVER ABOVE COLUMBUS, TX--Continued

Phytoplankton Analyses October 1984 to September 1985

Date	10-13-84
Time	1130

TOTAL CELLS/ml	4,481
NUMBER OF SPECIES	30
DEPTH COLLECTED (ft.)	N/A

Organisms	Cells/ml
BACILLARIOPHYTA (Diatoms)	
Order Centrales	
<u>Biddulphia</u> sp.	341
<u>Cyclotella</u> <u>meneghiniana</u>	41
Order Pennales	
<u>Achnanthes</u> <u>exigua</u>	41
<u>Achnanthes</u> <u>lancoolata</u>	20
<u>Amphora</u> <u>submontana</u>	102
<u>Bacillaria</u> <u>paradoxa</u>	172
<u>Cocconeis</u> <u>fluviatilis</u>	1914
<u>Cocconeis</u> <u>placentula</u>	570
<u>Diploneis</u> sp.	20
<u>Navicula</u> <u>circumtexta</u>	20
<u>Navicula</u> <u>graciloides</u>	102
<u>Navicula</u> <u>heuffleri</u>	20
<u>Navicula</u> <u>lateropunctata</u>	41
<u>Navicula</u> <u>minima</u>	20
<u>Navicula</u> <u>minuscule</u>	20
<u>Navicula</u> <u>schroeteri</u> var. <u>escambia</u>	61
<u>Navicula</u> <u>symmetrica</u>	41
<u>Navicula</u> sp.	20
<u>Nitzschia</u> <u>amphibia</u>	61
<u>Nitzschia</u> <u>denticula</u>	20
<u>Nitzschia</u> <u>filiformis</u>	20
<u>Nitzschia</u> <u>frustulum</u>	285
<u>Nitzschia</u> <u>inconspicua</u>	61
<u>Nitzschia</u> <u>longissima</u> var. <u>reversa</u>	20
<u>Nitzschia</u> <u>palea</u>	122
<u>Nitzschia</u> <u>parvula</u>	163
<u>Pleurosigma</u> sp.	61
<u>Synedra</u> <u>minuscule</u>	41
<u>Synedra</u> <u>ulna</u> var. <u>ramesi</u>	20
<u>Thalassiosira</u> <u>fluviatilis</u>	41



COLORADO RIVER BASIN

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08160700 COLORADO RIVER ABOVE COLUMBUS, TX--Continued

Phytoplankton Analyses October 1984 to September 1985

Date	10-13-84
Time	1930
TOTAL CELLS/ml	9,956
NUMBER OF SPECIES	27
DEPTH COLLECTED (ft.)	N/A

Organisms	Cells/ml
CHLOROPHYTA (Green algae)	
Resting spore	682
CYANOPHYTA (Blue-green algae)	
<u>Chroococcus giganteus</u>	682
<u>Lyngbya</u> sp.	5455
BACILLARIOPHYTA (Diatoms)	
Order Pennales	
<u>Achnanthes lanceolata</u> var. <u>dubia</u>	28
<u>Amphora submontans</u>	71
<u>Amphora</u> sp.	14
<u>Anomoeoneis vitrea</u>	14
<u>Caloneis</u> sp.	28
<u>Cocconeis fluviatilis</u>	1677
<u>Cocconeis placentula</u>	479
<u>Navicula canalis</u>	32
<u>Navicula capitata</u>	14
<u>Navicula circumtexta</u>	28
<u>Navicula gottlandica</u>	14
<u>Navicula graciloides</u>	28
<u>Navicula rhyncocephala</u>	14
<u>Navicula</u> sp.	14
<u>Nitzschia frustulum</u>	327
<u>Nitzschia hungarica</u>	14
<u>Nitzschia inconspicua</u>	57
<u>Nitzschia microcephala</u>	43
<u>Nitzschia palea</u>	28
<u>Nitzschia paleacea</u>	57
<u>Nitzschia parvula</u>	57
<u>Pleurosigma</u> sp.	28
<u>Synedra minuscula</u>	28
<u>Thalassiosira fluviatilis</u>	43

## COLORADO RIVER BASIN

08160700 COLORADO RIVER ABOVE COLUMBUS, TX--Continued

Phytoplankton Analyses October 1984 to September 1985

Date	10-14-84
Time	0955

TOTAL CELLS/ml	35,161
NUMBER OF SPECIES	21
DEPTH COLLECTED (ft.)	N/A

Organisms	Cells/ml
CYANOPHYTA (Blue-green algae)	
<u>Oscillatoria angustissima</u>	30682
BACILLARIOPHYTA (Diatoms)	
Order Pennales	
<u>Achnanthes detha</u>	23
<u>Bacillaria paradoxa</u>	69
<u>Caloneis ventricosa</u>	46
<u>Caloneis sp.</u>	46
<u>Cocconeis fluviatilis</u>	2991
<u>Cocconeis pediculus</u>	23
<u>Cocconeis placentula</u>	160
<u>Diploneis sp.</u>	23
<u>Navicula canalis</u>	46
<u>Navicula graciloides</u>	137
<u>Navicula halophila</u>	23
<u>Nitzschia amphibia</u>	23
<u>Nitzschia fonticola</u>	23
<u>Nitzschia frustulum</u>	297
<u>Nitzschia inconspicua</u>	46
<u>Nitzschia microcephala</u>	114
<u>Nitzschia palea</u>	46
<u>Nitzschia paleacea</u>	23
<u>Nitzschia parvula</u>	274
<u>Surirella angustata</u>	46

Colorado River above Columbus, Texas (08160700)

Phytoplankton Analyses October 1984 to September 1985

Date	10-14-84
Time	1740

TOTAL CELLS/ml	18,143
NUMBER OF SPECIES	6
DEPTH COLLECTED (ft.)	N/A

Organisms	Cells/ml
CYANOPHYTA (Blue-green algae)	
<u>Oscillatoria angustissima</u>	15909
BACILLARIOPHYTA (Diatoms)	
Order Pennales	
<u>Cocconeis fluviatilis</u>	1827
<u>Nitzschia amphioxys</u>	89
<u>Navicula cincta</u>	46
<u>Navicula sabiniana</u>	134
<u>Nitzschia parvula</u>	138

## COLORADO RIVER BASIN

213

08160800 REDGATE CREEK NEAR COLUMBUS, TX

LOCATION.--Lat 29°47'56", long 96°31'55", Colorado County, Hydrologic Unit 12090301, on left bank at downstream side of bridge on Farm Road 109, 1.9 mi upstream from Cummins Creek, and 7.0 mi north of Columbus.

DRAINAGE AREA.--17.3 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1962 to current year.

REVISED RECORDS.--WSP 2122: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 210.82 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1975, at datum 10.00 ft higher.

REMARKS.--Estimated daily discharges: Oct. 10-11, Apr. 16-24, May 5-13, June 22-26, June 30-July 2, July 8-14, Aug. 18-27, and Aug. 30 to Sept. 30. Records fair except those for estimated daily discharges, which are poor. No known diversions above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 5.61 ft<sup>3</sup>/s, 4.40 in/yr, 4,060 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,360 ft<sup>3</sup>/s May 22, 1979, gage height, 27.19 ft, from rating curve extended above 2,170 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow of Jan. 22, 1965; no flow for many days.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1860, about 33.4 ft in late June or early July 1940, from information by State Department of Highways and Public Transportation and local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 20	0730	*802	*15.85				
Minimum discharge, no flow for many days.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.88	.60	3.7	1.6	27	2.9	1.4	.20	a.23	.05	a.00
2	.08	1.8	.59	12	1.5	8.3	2.8	1.1	.19	a.23	.04	a.00
3	.08	1.0	.58	6.9	1.5	6.3	2.7	.96	.18	.30	.04	a.00
4	.08	.75	1.0	3.5	1.5	5.1	2.6	.90	.16	1.6	.03	a.00
5	.33	.59	.96	2.4	1.5	4.4	2.5	a.85	.15	.76	.03	a.00
6	.40	.56	.79	1.9	1.5	3.9	2.4	a.80	.14	.53	.02	a.00
7	.51	.54	.75	2.0	1.5	3.8	2.3	a.75	.13	.46	.02	a.00
8	.58	.52	.72	1.9	1.5	3.8	2.3	a.70	.12	a.43	.02	a.00
9	2.5	.51	.70	1.8	1.5	3.8	2.3	a.66	.11	a.40	.01	a.00
10	a4.0	.50	.68	1.8	11	3.6	2.2	a.63	.11	a.37	.01	a.00
11	a2.3	.49	.67	1.8	9.5	3.5	8.7	a.60	.10	a.34	.01	a.00
12	.68	.48	.66	2.2	2.7	3.5	5.3	a.58	.09	a.31	.01	a.00
13	4.2	.47	3.8	2.6	2.2	3.5	3.1	a.56	.09	a.30	.01	a.00
14	2.0	.46	1.5	3.2	2.4	15	2.8	1.2	.08	a.29	.01	a.00
15	1.7	.45	.81	2.3	2.3	7.0	2.3	1.2	.08	.37	.01	a.00
16	1.4	.77	3.4	24	2.0	8.3	a2.1	.88	.08	.30	.01	a.00
17	1.0	.68	48	6.9	1.6	5.2	a1.9	.77	.08	.25	.01	a.00
18	.88	3.2	4.2	2.8	1.8	4.1	a1.8	.68	2.2	.25	a.01	a.00
19	2.0	.85	2.3	2.2	1.8	3.8	a1.7	.58	9.1	.27	a.00	a.00
20	.88	.72	1.6	1.8	1.8	112	a1.6	.47	.97	.38	a.00	a.00
21	1.5	.71	1.5	1.7	1.8	13	a1.5	.40	.44	.47	a.00	a.00
22	1.5	.63	1.2	1.7	1.8	8.3	a1.4	.33	a.35	.24	a.00	a.00
23	1.5	.60	1.1	1.7	75	5.8	a1.3	.30	a.25	.20	a.00	a.00
24	.88	.60	1.0	1.7	11	4.8	a1.2	.29	a.20	.16	a.00	a.00
25	2.8	.70	.98	1.7	7.2	4.6	1.2	.28	a.15	.13	a.00	a.00
26	.88	.81	.96	1.7	4.9	4.9	1.4	.27	a.10	.11	a.00	a.00
27	.77	.80	.94	3.3	11	5.8	a1.3	.25	.23	.10	a.00	a.00
28	.68	.68	.92	2.7	57	4.0	a1.3	.24	.34	.08	.00	a.00
29	.63	.65	.90	2.0	---	3.6	1.5	.23	.27	.07	.00	a1.2
30	.59	.62	2.4	2.0	---	3.3	1.5	.22	a.25	.06	a.00	a.20
31	.59	---	32	1.7	---	3.1	---	.21	---	.06	a.00	---
TOTAL	38.00	23.02	118.21	109.6	222.4	297.1	69.9	19.29	16.94	10.05	.35	1.40
MEAN	1.23	.77	3.81	3.54	7.94	9.58	2.33	.62	.56	.32	.011	.047
MAX	4.2	3.2	48	24	75	112	8.7	1.4	9.1	1.6	.05	1.2
MIN	.08	.45	.58	1.7	1.5	3.1	1.2	.21	.08	.06	.00	.00
CFSM	.07	.05	.22	.21	.46	.55	.14	.04	.03	.02	.001	.003
IN.	.08	.05	.25	.24	.48	.64	.15	.04	.04	.02	.00	.00
AC-FT	75	46	234	217	441	589	139	38	34	20	.7	2.8
CAL YR 1984	TOTAL 655.84	MEAN 1.79	MAX 200	MIN .06	CFSM .10	IN 1.41	AC-FT 1300					
WTR YR 1985	TOTAL 926.26	MEAN 2.54	MAX 112	MIN .00	CFSM .15	IN 1.99	AC-FT 1840	214				

a Estimated daily discharges.

## 08161000 COLORADO RIVER AT COLUMBUS, TX

LOCATION.--Lat 29°42'22", long 96°32'12", Colorado County, Hydrologic Unit 12090302, near right bank at downstream side of pier of bridge on U.S. Highway 90 at eastern edge of Columbus, 340 ft downstream from Texas and New Orleans Railroad Co. bridge, 2.6 mi downstream from Cummins Creek, and at mile 135.1.

DRAINAGE AREA.--41,640 mi<sup>2</sup>, approximately, of which 11,403 mi<sup>2</sup> probably is noncontributing; 41,730 mi<sup>2</sup>, approximately, at site "near Eagle Lake".

PERIOD OF RECORD.--January 1903 to December 1911 (gage heights only), May 1916 to current year. Discharge records for 1902-11, published in WSP 84, 99, 132, 174, 210, 288, and 308, have been found to be unreliable and should not be used. Records collected at site 23 mi downstream October 1930 to May 1939, published as "near Eagle Lake". Gage-height records collected in this vicinity since 1903 are contained in reports of the National Weather Service. Water-quality records.--Chemical analyses: October 1967 to September 1971. Chemical and biochemical analyses: February 1968 to September 1981.

REVISED RECORDS.-- WSP 1562: 1920-21(M), 1922. WDR TX-81-3: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 155.52 ft above National Geodetic Vertical Datum of 1929. Prior to May 1, 1919, various nonrecording gages at sites in the immediate vicinity at datum 3.00-foot lower. May 1, 1919, Nov. 23, 1930, water-stage recorder at site about 300 ft downstream at datum 3.00-foot lower. Sept. 17, 1930, to June 12, 1939 (Oct. 1, 1930, to May 31, 1939, used herein), water-stage recorder at site 23 mi downstream at different datum. May 17 to Nov. 14, 1939, nonrecording gage at present site and datum. Gage-height telemeter located at station.

REMARKS.--Estimated daily discharges: Oct. 10 to Nov. 5, Nov. 8-21, Dec. 28-30 and Feb. 3-9, 18-22. Records good except those for Oct. 10 to Nov. 5, which are poor. At times, low-flow releases from Lake Travis (station 08154500) are made for generation of electric power and (or) to fulfill downstream water contracts. The Lower Colorado River Authority reported that 17,090 acre-ft was diverted from the river to Cedar Creek Reservoir during the current year. This reservoir is located 10 mi north of the Colorado River and 3.5 mi west of Fayetteville. Flow is also affected at times by discharge from the flood-detention pools of 20 floodwater-retarding structures with a combined detention capacity of 25,570 acre-ft. These structures control runoff from 73.1 mi<sup>2</sup> in the Cummins Creek watershed. There are many other diversions above station for irrigation and municipal supply.

AVERAGE DISCHARGE.--20 years (water years 1917-36) unregulated, 3,809 ft<sup>3</sup>/s (2,760,000 acre-ft/yr); 49 years (water years 1937-85) regulated, 2,850 ft<sup>3</sup>/s (2,065,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 190,000 ft<sup>3</sup>/s June 18, 1935 (gage height, 38.5 ft), present site and datum, computed on basis of records for station near Eagle Lake; minimum, 93 ft<sup>3</sup>/s Sept. 1, 1918.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 41.6 ft, present datum, in July 1869 and Dec. 6, 1913, from information by local resident. River divided each time and left Columbus on an island.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 17,700 ft<sup>3</sup>/s Feb. 24 at 0300 hours (gage height, 13.57 ft); minimum daily, 501 ft<sup>3</sup>/s Nov. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1320	2000	1000	1940	738	5360	2390	1560	1990	2180	1470	1640
2	1320	1600	1010	3250	718	3610	2000	1700	2040	2180	1550	1650
3	1180	1300	972	2940	700	2590	1880	2060	2030	2260	1710	1620
4	1090	1100	859	2170	680	2000	1870	1660	2220	2670	1650	1590
5	1020	1000	702	2100	660	1740	1760	1800	2220	2530	1590	1610
6	998	940	584	1820	650	1450	1810	1570	2180	3550	1710	1610
7	962	874	577	1450	640	1310	1730	1440	2310	4300	1670	1510
8	938	810	649	1200	640	1200	1700	1440	8790	2600	1740	1660
9	931	750	633	1060	650	1180	1700	1490	8780	2020	1750	1600
10	1000	700	593	951	700	1140	1700	1530	2910	1920	1750	1490
11	1310	650	540	868	2220	1030	1930	1700	2580	1840	1760	1490
12	1570	610	515	878	1800	972	4120	1750	2570	1820	1790	1490
13	4500	580	517	902	1400	922	3340	1750	2440	1990	1790	1420
14	4300	550	660	932	1220	964	2850	1920	2400	2420	1690	1510
15	3000	540	1750	1040	956	1640	2210	2860	2360	2130	1720	1460
16	3900	540	1580	1420	790	1800	2170	3500	2300	2000	1790	1490
17	3200	550	3750	5610	717	2580	1980	2420	2270	1970	1810	1810
18	2200	610	4140	3590	680	2420	1760	2130	2290	2000	1810	1580
19	1800	580	2570	2290	650	2010	1700	2040	3540	1950	1780	1420
20	1900	550	1740	1650	620	2980	1600	1890	2770	1910	1790	1320
21	2000	520	1400	1330	600	6560	1610	1720	2310	1810	1710	1270
22	5000	511	1190	1150	590	6130	1590	1660	2210	1790	1680	1230
23	9800	587	970	1050	5230	4200	1580	1660	2110	1780	1670	1190
24	8000	536	855	986	12600	3110	1590	1780	2980	1660	1670	1110
25	6500	501	806	927	5270	2900	1810	1710	5260	1690	1600	1210
26	4500	511	752	883	5170	2690	1720	1680	3330	1610	1610	1260
27	3100	618	713	883	2890	2600	1580	1650	2760	1620	1830	1230
28	2400	1200	680	1090	2350	2990	1570	1680	2470	1620	1790	1260
29	2200	1110	660	920	---	2760	1620	1720	2340	1610	1720	1550
30	2400	907	640	845	---	2760	1560	1850	2230	1600	1790	2480
31	2700	---	1640	789	---	2520	---	1900	---	1600	1670	---
TOTAL	87039	23835	35647	48914	52529	78118	58430	57220	88990	64630	53060	44760
MEAN	2808	795	1150	1578	1876	2520	1948	1846	2966	2085	1712	1492
MAX	9800	2000	4140	5610	12600	6560	4120	3500	8790	4300	1830	2480
MIN	931	501	515	789	590	922	1560	1440	1990	1600	1470	1110
AC-FT	172600	47280	70710	97020	104200	154900	115900	113500	176500	128200	105200	88780
CAL YR 1984	TOTAL	523603	MEAN	1431	MAX	9800	MIN	159	AC-FT	1039000		
WTR YR 1985	TOTAL	693172	MEAN	1899	MAX	12600	MIN	501	AC-FT	1375000		

08162000 COLORADO RIVER AT WHARTON, TX  
(National stream-quality accounting and radiochemical network)

LOCATION.--Lat 29°18'32", long 96°06'13", Wharton County, Hydrologic Unit 12090302, near left bank at downstream side of downstream bridge on U.S. Highway 59 in Wharton, 1,100 ft downstream from Texas and New Orleans Railroad Co. bridge, 12 mi upstream from Jones Creek, and at mile 66.6.

DRAINAGE AREA.--42,003 mi<sup>2</sup>, approximately, of which 11,403 mi<sup>2</sup> probably is noncontributing.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1916 to August 1918 (intermittent periods), March 1919 to September 1925, July and August 1938 (flood discharge measurements only), October 1938 to current year. June to November 1901 and May to September 1902, daily records published in U.S. Department of Agriculture, Office of Experiment Stations, Bulletin Nos. 119 and 133. Gage-height records collected in this vicinity since 1935 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 878: 1938(M). WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 52.42 ft (revised) above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1938, various types of recording and nonrecording gages 800 ft upstream at different datum. Oct. 1, 1938, to June 1, 1966, nonrecording gage 100 ft upstream at datum 13.00 ft higher. June 1, 1956, to Sept. 30, 1975, water-stage recorder at present site at datum 13 ft higher. Oct. 1, 1975, to Mar. 1, 1983, water-stage recorder at present site at datum 10 ft higher.

REMARKS.--No estimated daily discharges. Records good. There are many diversions above station for irrigation, municipal supply, cooling water for thermal-electric powerplant, and oilfield operations. For statement regarding upstream regulation, see station 08161000. Gage-height telemeter located at station.

AVERAGE DISCHARGE.--5 years (water years 1920-25) unregulated, 3,680 ft<sup>3</sup>/s (2,666,000 acre-ft/yr); 47 years (water years 1939-85) regulated, 2,628 ft<sup>3</sup>/s (1,904,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 100,000 ft<sup>3</sup>/s July 3, 1940 (gage height, 38.99 ft); no flow Aug. 6, 1925 (result of pumping).

Flood of July 30, 1938, reached a stage of 50.4 ft (revised), present datum, observed by Geological Survey engineers (discharge, 145,000 ft<sup>3</sup>/s).

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1869, 51.9 ft (revised), Dec. 8, 1913, present datum, from information by local residents; below Wharton floodwater combined with that of the Brazos River. Flood of about July 12, 1869, reached about same height. Flood of June 20, 1935, reached a stage of 51.2 ft (revised), present datum, furnished by National Weather Service (discharge, 159,000 ft<sup>3</sup>/s), from rating curve defined by current-meter measurements below 145,000 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,900 ft<sup>3</sup>/s Feb. 25 at 0100 hours (gage height, 23.50 ft); minimum daily, 470 ft<sup>3</sup>/s Sept. 26 (result of regulation and pumping).

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	312	2940	1200	1450	967	4320	2800	1810	260	600	256	672
2	271	3350	1100	2860	916	6280	2620	1460	320	520	230	591
3	346	2870	1150	3390	859	6560	2420	1240	414	497	138	560
4	332	2180	1200	4210	815	4020	2100	1270	408	1810	87	537
5	393	1720	1150	3420	787	3210	2030	1310	321	2910	223	484
6	392	1450	1050	2650	762	2500	1920	1010	465	2330	262	466
7	348	1290	945	2420	743	2170	1840	893	528	1960	240	486
8	332	1210	811	2010	736	1800	1760	742	529	3230	300	484
9	341	1150	750	1590	743	1600	1630	502	2090	2700	400	430
10	457	1050	750	1360	752	1450	1500	460	7730	1440	420	530
11	352	964	750	1150	1020	1390	1580	468	3850	781	400	609
12	415	881	700	1070	2200	1310	1870	447	1770	572	550	637
13	782	886	660	1100	3180	873	4010	668	1490	409	570	752
14	3540	1130	630	1220	2230	5290	4750	730	1260	356	600	910
15	6680	805	610	1200	1680	8810	3580	831	1040	493	450	882
16	4800	905	665	1160	1450	5450	2770	1140	979	787	452	946
17	3710	1290	1510	1330	1190	3950	2300	2230	922	624	455	890
18	4130	1240	1810	3660	991	3150	2160	2560	1310	548	452	849
19	8810	1320	3860	5620	873	3200	1740	1830	3730	645	495	1000
20	12700	1110	3720	3510	777	5650	2160	1620	3320	949	532	794
21	7070	930	2570	2570	724	7670	6790	1440	3810	951	472	525
22	10300	787	1920	1920	690	7070	4700	1160	2570	823	450	387
23	6730	715	1570	1560	701	7020	2710	873	1980	740	337	318
24	9110	685	1360	1330	1270	5610	2130	626	1670	712	311	260
25	16400	717	1170	1190	11900	3920	1960	534	1500	636	348	183
26	19300	741	996	1120	7210	3340	2520	511	3000	523	396	158
27	13200	690	949	1100	6300	3150	4070	369	3500	500	422	142
28	7300	750	932	986	4980	2900	2990	258	1500	456	455	210
29	4400	1000	859	982	---	2940	2190	193	1000	388	633	299
30	3120	1400	824	1130	---	3120	1970	190	700	390	688	524
31	2750	---	908	1070	---	2890	---	178	---	307	650	---
TOTAL	149123	38156	39079	61338	57446	122613	79570	29553	53966	30587	12674	16515
MEAN	4810	1272	1261	1979	2052	3955	2652	953	1799	987	409	551
MAX	19300	3350	3860	5620	11900	8810	6790	2560	7730	3230	688	1000
MIN	271	685	610	982	690	873	1500	178	260	307	87	142
AC-FT	295800	75680	77510	121700	113900	243200	157800	58620	107000	60670	25140	32760
CAL YR 1984	TOTAL	373822.1	MEAN	1021	MAX	19300	MIN	3.1	AC-FT	741500		
WTR YR 1985	TOTAL	690620.0	MEAN	1892	MAX	19300	MIN	87	AC-FT	1370000		



## COLORADO RIVER BASIN

08162000 COLORADO RIVER AT WHARTON, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1944 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: February 1968 to current year. Sediment analyses: October 1974 to current year. Radiochemical analyses: December 1973 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1944 to current year.

WATER TEMPERATURES: October 1945 to September 1948, March 1950 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 904 microsiemens Oct. 29, 1963; minimum daily, 146 microsiemens Sept. 27, 1957.

WATER TEMPERATURES: Maximum daily, 35.0°C July 26, 1954; minimum daily, 0.0°C Dec. 26, 1983.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 652 microsiemens May 13; minimum daily, 210 microsiemens Feb. 25.

WATER TEMPERATURES: Maximum daily, 30.0°C on several days during July, August, and September; minimum daily, 3.0°C Feb. 2.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
NOV 15...	1340	634	614	8.2	21.5	20	7.0	9.5	107	1.4	26
FEB 19...	1615	755	587	8.1	18.0	35	22	11.2	117	1.0	20
APR 03...	1430	2330	593	8.1	22.5	30	70	8.6	99	1.5	80
MAY 15...	1055	1350	628	8.1	25.0	40	96	7.9	95	1.3	240
JUN 26...	1140	4800	600	8.0	28.5	8	180	8.2	106	1.3	210
AUG 07...	1520	813	615	8.4	32.0	8	18	7.2	98	1.3	K12

DATE	TIME 100 ML	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 15...	32	240		45	73	15	33	1	4.2	200	44	48
FEB 19...	33	250		60	74	15	33	1	3.6	187	48	45
APR 03...	60	230		87	60	20	36	1	4.2	145	47	60
MAY 15...	190	240		74	61	21	40	1	4.1	166	53	67
JUN 26...	950	220		66	54	20	38	1	4.3	151	48	65
AUG 07...	K4	230		63	56	21	40	1	4.4	164	46	68

DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
NOV 15...	.40	13	378	350	17	1	<.010	1.1	1.1	<.010
FEB 19...	.40	4.2	336	340	120	8	<.010	1.2	1.2	.050
APR 03...	.30	8.3	353	320	59	13	<.010	1.0	1.0	<.010
MAY 15...	.40	6.9	346	350	153	17	<.010	1.0	.95	.050
JUN 26...	.30	7.7	341	330	318	64	<.010	.80	.86	.020
AUG 07...	.30	6.0	342	340	11	6	.020	<.10	<.10	.020

COLORADO RIVER BASIN

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08162000 COLORADO RIVER AT WHARTON, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI- MENT, SUS- PENDEED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDEED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 15...	.020	--	.60	.360	.320	.310	3.0	16	27	88
FEB 19...	.040	.65	.70	.360	.330	.330	3.6	21	43	95
APR 03...	.030	--	.70	.370	.240	.220	4.8	215	1350	70
MAY 15...	.060	.55	.60	.500	.300	.270	4.9	188	685	94
JUN 26...	.030	.38	.40	.450	.220	.240	7.3	604	7830	83
AUG 07...	.030	.28	.30	.190	.180	.180	4.6	18	40	94

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 15...	1340	4	100	.9	<1	<1	<3	1	3	2
FEB 19...	1615	2	110	2.3	3	<1	<3	1	11	1
MAY 15...	1055	2	92	<.5	<1	<1	<3	1	7	5
AUG 07...	1520	4	83	<.5	<1	<1	<3	2	<3	<1

	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 15...	18	26	<.1	<10	4	<1	1	510	<6	7
FEB 19...	13	3	<.1	<10	3	<1	<1	430	<6	7
MAY 15...	19	<1	<.1	<10	<1	<1	<1	520	<6	15
AUG 07...	13	5	<.1	<10	<1	<1	<1	550	<6	8

DATE	TIME	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS SR/ YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR/ YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)	URANIUM NATURAL DIS- SOLVED (UG/L AS U)
NOV 15...	1340	<7.6	<.4	7.1	.6	6.1	.5	.13	1.4

## COLORADO RIVER BASIN

08162000 COLORADO RIVER AT WHARTON, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	86829	361	200	47000	30	7000	26	6070	140
NOV.	1984	28253	507	279	21300	43	3250	35	2660	190
DEC.	1984	36404	460	254	24900	38	3780	32	3150	170
JAN.	1985	61233	396	219	36300	33	5420	28	4670	150
FEB.	1985	59018	380	210	33500	32	5020	27	4280	140
MAR.	1985	99050	436	241	64500	36	9710	31	8220	170
APR.	1985	73540	504	277	55000	42	8390	35	6900	190
MAY	1985	36958	601	329	32800	51	5090	40	4020	230
JUNE	1985	67600	475	262	47800	40	7260	33	6040	180
JULY	1985	49804	556	305	41000	47	6310	38	5090	210
AUG.	1985	29335	606	332	26300	51	4080	41	3220	230
SEPT	1985	27307	576	316	23300	49	3590	39	2870	220
TOTAL		655331	**	**	454000	**	68900	**	57200	**
WTD.AVG.		1795	465	256	**	39	**	32	**	180

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	EQUIVALENT MEAN											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	613	411	641	512	550	360	490	605	626	521	604	599
2	616	381	620	387	584	311	513	611	633	557	606	599
3	615	434	633	302	595	307	567	617	636	580	625	596
4	615	444	598	345	607	323	500	620	638	579	615	602
5	614	344	581	397	617	312	573	625	633	530	610	600
6	616	375	596	327	625	402	584	616	630	519	614	604
7	616	431	558	387	635	442	577	549	630	563	617	606
8	618	472	533	391	641	502	619	595	627	589	611	600
9	619	480	548	386	640	516	625	622	400	468	605	574
10	605	487	578	418	638	500	629	643	372	432	600	589
11	621	528	587	461	598	509	626	644	354	478	602	582
12	611	566	589	470	446	540	510	642	362	527	607	574
13	585	591	590	489	301	548	403	652	406	574	605	572
14	527	607	592	501	412	487	379	649	459	594	603	555
15	500	613	589	518	431	450	381	635	454	602	608	570
16	450	619	571	520	455	412	418	624	466	593	604	568
17	355	582	573	460	476	465	455	622	541	569	610	567
18	354	611	400	348	541	469	512	477	572	529	609	557
19	340	580	369	284	578	525	554	559	543	565	608	574
20	354	592	238	290	600	516	486	561	465	535	607	587
21	335	618	307	297	601	465	405	548	445	540	606	590
22	285	631	372	443	596	439	498	586	434	555	609	595
23	249	622	429	463	582	359	550	595	537	567	606	598
24	305	620	454	481	350	400	569	611	574	580	609	531
25	301	612	432	497	210	475	591	615	586	590	602	568
26	282	622	436	518	234	459	513	620	510	600	603	583
27	262	615	450	526	300	501	435	628	497	605	605	591
28	287	636	474	525	436	536	528	630	391	608	602	604
29	308	633	517	561	---	559	568	632	445	611	595	591
30	315	620	544	539	---	567	597	619	499	607	589	475
31	354	---	554	526	---	526	---	623	---	605	600	---
MEAN	456	546	515	438	510	457	522	609	512	560	606	580

## COLORADO RIVER BASIN

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08162000 COLORADO RIVER AT WHARTON, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985												
ONCE-DAILY												
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19.0	25.0	17.0	16.5	---	16.0	19.0	26.0	28.0	27.0	30.0	29.0
2	19.0	23.0	17.0	13.0	3.0	16.0	19.0	25.5	28.5	28.0	30.0	30.0
3	20.5	20.0	15.0	9.0	4.5	18.0	20.0	24.0	28.5	28.0	29.0	30.0
4	22.0	20.0	17.0	9.0	5.0	20.0	20.0	---	28.5	26.0	---	29.0
5	22.0	19.0	11.5	9.0	5.0	16.0	21.5	---	28.5	25.0	30.0	29.0
6	25.0	18.0	10.0	9.0	6.0	19.0	20.5	24.5	20.5	27.0	30.0	29.0
7	25.0	18.0	9.0	9.5	5.0	17.0	22.0	24.5	28.0	28.0	29.5	29.0
8	---	21.0	10.0	10.0	6.0	19.0	21.0	20.0	29.0	28.0	30.0	28.0
9	25.0	22.0	14.0	11.0	11.0	20.0	18.0	25.5	---	28.0	30.0	28.0
10	27.5	21.0	15.0	12.0	14.0	21.0	19.0	26.5	27.0	29.0	---	28.0
11	23.5	12.0	16.0	11.0	10.0	22.0	19.0	26.5	28.0	28.0	---	28.0
12	24.0	15.0	---	---	9.0	22.0	19.5	26.5	28.0	28.0	30.0	28.0
13	25.0	17.0	19.0	5.5	11.0	22.0	20.0	26.0	26.5	29.0	29.0	26.5
14	22.5	18.0	20.5	6.5	11.5	17.0	20.0	26.0	26.5	29.0	29.0	27.0
15	---	20.0	22.0	6.5	10.5	---	21.5	24.0	28.0	29.0	28.5	27.0
16	---	21.0	19.0	11.0	11.0	16.5	22.5	25.5	29.0	28.0	29.0	26.0
17	24.0	17.0	21.0	8.0	9.0	15.0	24.0	26.0	29.0	29.0	30.0	26.0
18	---	20.0	---	10.0	14.0	16.0	24.5	---	29.0	29.0	29.0	27.0
19	---	16.0	20.0	10.0	15.0	17.0	24.5	24.0	26.0	28.0	30.0	27.0
20	---	14.0	19.0	---	18.0	17.0	24.5	26.0	---	---	30.0	25.0
21	25.0	12.0	20.0	5.0	18.0	18.0	21.0	25.0	27.0	---	30.0	---
22	25.0	11.0	19.0	5.5	19.0	17.0	23.0	25.0	26.5	---	29.0	---
23	20.0	11.0	18.0	7.0	20.0	17.5	23.5	26.0	27.5	---	29.0	26.5
24	19.5	11.0	19.0	7.0	---	---	22.5	27.0	28.5	---	30.0	25.0
25	20.0	15.0	16.0	8.0	16.0	18.5	23.0	---	28.0	---	29.0	26.0
26	20.0	18.0	16.0	10.0	16.0	20.0	23.0	---	28.5	---	29.0	24.0
27	21.0	16.5	17.0	13.0	16.0	22.0	24.0	26.5	28.0	---	28.5	22.0
28	22.0	12.5	20.0	12.0	15.5	---	25.0	25.0	27.5	30.0	28.5	25.0
29	23.0	13.0	21.0	11.0	---	22.0	25.5	26.0	26.5	30.0	---	25.0
30	23.0	15.0	21.0	14.0	---	22.0	25.5	27.0	27.5	30.0	22.0	---
31	25.0	---	21.0	11.0	---	18.0	---	28.0	---	30.0	29.0	---
MEAN	22.5	17.0	17.0	9.5	11.5	18.5	22.0	25.5	27.5	28.5	29.0	27.0

## COLORADO RIVER MAIN STEM

08162500 COLORADO RIVER NEAR BAY CITY, TX

LOCATION.--Lat 28°58'26", log 96°00'44", Matagorda County, Hydrologic Unit 12090302, on right bank, 6,300 ft downstream from bridge on State Highway 35, 7,100 ft downstream from Texas and New Orleans Railroad Co. bridge, 2.8 mi west of Bay City, and at mile 32.5.

DRAINAGE AREA.--42,240 mi<sup>2</sup>, approximately, of which 11,403 mi<sup>2</sup> probably is noncontributing.

PERIOD OF RECORD.--July 1940 (WSP 1046), April 1948 to current year. Records of elevation collected in this vicinity since 1946 are contained in reports of the National Weather Service.

Water-quality records.--Chemical and biochemical analyses: Oct. 1974 to September 1975.

REVISED RECORDS.--WDR TX-81-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. July 2-6, 1940, nonrecording gage at highway bridge, 6,300 ft upstream at datum 30.60 ft lower.

REMARKS.--Estimated daily discharges: Nov. 28 to Dec. 6, 9-14, June 25 to July 2, Aug. 7-15. Records fair except those for estimated daily discharges, which are poor. There are many diversions above station for irrigation and municipal supply. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08161000. Gage-height telemetry located at station.

AVERAGE DISCHARGE.--37 years (water years 1949-85), 2,332 ft<sup>3</sup>/s (1,690,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 84,100 ft<sup>3</sup>/s June 26, 1960; maximum elevation, 48.2 ft, present datum, July 4, 1940, at site 6,300 ft upstream at bridge on State Highway 35, observed by U. S. Army Corps of Engineers, elevation 46.6 ft, adjusted to present site; no flow at times in 1951-53 and 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation since 1869, 56.1 ft Dec. 10, 1913. Flood in July 1869 probably reached about same elevation. Elevation of other floods are as follows: May 8, 1922, 55.4 ft; June 1929, 55.0 ft; June 22, 1935, 54.6 ft; Oct. 5, 1936, 52.2 ft; Aug. 2, 1938, 53.4 ft; Nov. 27, 1940, 47.6 ft. All above flood data from information by Texas and New Orleans Railroad Co. and adjusted present site.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 24,500 ft<sup>3</sup>/s Oct. 25 at 2000 hours (elevation, 24.60 ft); minimum daily, 87 ft<sup>3</sup>/s Aug. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	692	3080	907	1870	907	4280	2910	1580	766	1430	913	980
2	759	2260	895	3190	855	7460	2750	1390	845	1350	819	915
3	780	1810	927	4020	809	5140	2380	1400	932	1330	714	910
4	764	1520	929	4180	782	3520	2150	1540	857	1660	916	863
5	775	1270	903	2970	767	2820	2170	1270	1050	2170	949	825
6	709	1110	767	2630	743	2350	2000	1100	1130	2440	858	831
7	709	1030	645	2240	732	1990	2050	1120	1160	3110	869	855
8	692	966	581	1730	729	1740	1940	768	1200	4230	951	803
9	703	891	599	1400	725	1590	1910	714	6780	2730	1060	811
10	563	829	620	1220	780	1490	1880	632	7240	1700	1090	921
11	594	785	606	1080	1300	1450	1770	648	2730	1470	1090	922
12	779	739	567	1010	3080	1310	3080	827	1870	1310	1230	1020
13	1120	700	534	982	2550	1230	5080	935	1830	1200	1280	1290
14	2830	657	507	1020	1800	1400	4330	1010	1680	1270	1300	1280
15	4890	628	507	1040	1470	1670	3560	1340	1610	1660	967	1310
16	3270	796	1210	1130	1220	2410	2630	2040	1610	1540	969	1290
17	3350	700	1460	1810	998	2550	2510	3000	1540	1350	1010	1200
18	3460	717	3360	6240	872	3090	2100	2370	1490	1380	995	1330
19	2890	688	4570	4740	783	2980	1790	1950	2070	1470	1020	1260
20	2050	705	3190	3000	717	3310	2110	1810	3780	1620	942	881
21	1820	623	2110	2160	671	4270	2920	1460	3270	1520	894	690
22	3680	572	1640	1610	642	7110	2130	1170	2440	1460	782	613
23	4420	544	1330	1360	616	6510	1890	955	2280	1430	729	532
24	9990	559	1120	1230	7020	4710	1800	839	2060	1350	776	494
25	8830	583	969	1140	11300	3640	1730	840	2320	1210	770	472
26	7840	562	888	1070	6260	3350	3350	795	4530	1170	758	470
27	5980	533	845	1030	5920	3110	2800	720	2940	1160	738	643
28	3990	543	795	991	3970	2990	2110	679	2220	1100	935	623
29	2940	773	764	1070	---	3320	1880	656	1800	1070	1020	743
30	2380	1080	740	1100	---	3150	1830	652	1570	988	991	1530
31	2580	---	919	970	---	3110	---	748	---	926	1000	---
TOTAL	86829	28253	36404	61233	59018	99050	73540	36958	67600	49804	29335	27307
MEAN	2801	942	1174	1975	2108	3195	2451	1192	2253	1607	946	910
MAX	9990	3080	4570	6240	11300	7460	5080	3000	7240	4230	1300	1530
MIN	563	533	507	970	616	1230	1730	632	766	926	714	470
AC-FT	172200	56040	72210	121500	117100	196500	145900	73310	134100	98790	58190	54160
CAL YR 1984	TOTAL	397939	MEAN	1087	MAX	9990	MIN	228	AC-FT	789300		
WTR YR 1985	TOTAL	655331	MEAN	1795	MAX	11300	MIN	470	AC-FT	1300000		



## TRES PALACIOS RIVER MAIN STEM

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08162600 TRES PALACIOS RIVER NEAR MIDFIELD, TX

LOCATION.--Lat 28°55'40", long 96°10'15", Matagorda County, Hydrologic Unit 12100401, at left downstream end of bridge on Farm Road 456, 1.0 mi downstream from Juanita Creek, and 2.4 mi southeast of Midfield.

DRAINAGE AREA.--145 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1970 to current year. Prior to October 1973, published as Tres Palacios Creek near Midfield. Water-quality records: Chemical, biochemical, and pesticide analyses: October 1968 to September 1981.

GAGE.--Water-stage recorder. Datum of gage is 5.38 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Ten known diversions above station (amounts unknown). An undetermined amount of water from irrigated ricefields enters river upstream at various points. Extensive channel cleaning upstream and downstream from gage was begun in the 1983 water year and completed during the 1984 water year.

AVERAGE DISCHARGE.--15 years, 164 ft<sup>3</sup>/s (118,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft<sup>3</sup>/s Oct. 17, 1984 (gage height, 32.43 ft, from floodmark); minimum daily, 1.0 ft<sup>3</sup>/s Nov. 3-5, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1885, 37 ft in June 1960 and 35 ft in August 1945, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 14	2400	1,760	15.81	Mar. 20	2100	4,050	24.36
Oct. 22	0600	*6,690	*28.21	Apr. 21	0600	4,790	25.90
Oct. 26	0900	5,610	27.12	June 19	1000	4,330	25.00
Mar. 15	0200	5,430	26.90	July 4	2100	3,540	23.02

Minimum daily discharge, 6.5 ft<sup>3</sup>/s Sept. 26.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	139	18	201	20	529	19	30	14	18	25	12
2	14	553	16	338	17	319	18	24	18	20	26	10
3	14	636	15	394	17	141	17	21	19	168	25	9.6
4	15	265	195	196	17	79	19	20	17	2590	20	8.6
5	14	139	400	95	16	53	19	20	13	2240	19	8.1
6	18	92	220	55	17	39	16	22	16	645	20	8.1
7	16	66	88	34	17	31	14	19	20	249	14	8.6
8	15	50	46	25	16	26	15	25	15	232	12	11
9	25	39	30	20	14	24	14	26	17	117	14	15
10	39	30	23	82	17	22	15	32	13	61	18	45
11	44	25	20	47	126	20	24	29	10	40	16	86
12	44	23	18	69	104	20	587	21	99	30	14	136
13	56	22	16	223	48	19	462	24	440	25	16	155
14	1050	20	14	339	33	2180	168	20	99	24	16	76
15	1430	16	13	214	26	4700	56	27	35	27	21	34
16	866	15	16	115	23	2780	29	21	21	31	19	20
17	763	38	16	116	28	975	19	22	14	30	16	13
18	804	79	21	107	18	320	15	27	539	31	15	11
19	2040	142	13	71	16	123	13	25	3970	32	13	9.8
20	5730	74	11	47	14	2190	1190	17	1870	77	19	8.2
21	4950	40	9.8	32	14	2500	4140	23	695	53	14	7.4
22	6320	28	9.6	26	13	581	1610	21	356	40	23	7.9
23	3740	23	9.0	24	16	166	537	23	133	42	30	8.6
24	1320	20	8.6	23	65	73	243	21	58	40	28	8.7
25	1910	17	7.8	23	320	45	105	19	33	32	48	7.2
26	5420	17	7.1	19	196	34	257	18	23	29	87	6.5
27	3590	22	7.1	72	174	30	271	17	18	33	55	7.1
28	1290	41	7.0	76	372	29	118	17	16	23	39	7.9
29	566	31	6.7	46	---	31	59	16	14	19	38	18
30	316	22	6.7	33	---	22	39	19	16	26	24	278
31	204	---	103	25	---	20	---	16	---	25	17	---
TOTAL	42636	2724	1391.4	3187	1774	18121	10108	682	8621	7049	761	1042.3
MEAN	1375	90.8	44.9	103	63.4	585	337	22.0	287	227	24.5	34.7
MAX	6320	636	400	394	372	4700	4140	32	3970	2590	87	278
MIN	13	15	6.7	19	13	19	13	16	10	18	12	6.5
AC-FT	84570	5400	2760	6320	3520	35940	20050	1350	17100	13980	1510	2070
CAL YR 1984	TOTAL	60927.4	MEAN 166	MAX 6320	MIN 6.7	AC-FT 120800						
WTR YR 1985	TOTAL	98096.7	MEAN 269	MAX 6320	MIN 6.5	AC-FT 194600						

## LAVACA RIVER MAIN STEM

08164000 LAVACA RIVER NEAR EDNA, TX  
(National stream-quality accounting network)

LOCATION.--Lat 28°57'35", long 96°41'10", Jackson County, Hydrologic Unit 12100101, at downstream side near center of upstream bridge of two bridges on U.S. Highway 59, 660 ft upstream from Texas and New Orleans Railroad Co. bridge, and 2.8 mi southwest of Edna.

DRAINAGE AREA.--817 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1938 to current year.

REVISED RECORDS.--WSP 1923: 1955. WDR TX-73-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 13.88 ft above National Geodetic Vertical Datum of 1929. Prior to June 6, 1939, nonrecording gage (property of U. S. Army Corps of Engineers); June 6, 1939, to Apr. 3, 1957, nonrecording gage at site 110 ft downstream; Apr. 4, 1957, to Mar. 21, 1961, nonrecording gage; all at same datum.

REMARKS.--No estimated daily discharges. Records good. Small diversions above station for irrigation.

AVERAGE DISCHARGE.--47 years, 330 ft<sup>3</sup>/s (5.49 in/yr), 239,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,000 ft<sup>3</sup>/s July 1, 1940 (gage height, 32.51 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1880, 33.8 ft May 25, 1936 (discharge, 83,400 ft<sup>3</sup>/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 15	1100	4,140	18.19	Apr. 23	1400	*24,400	*27.17
Apr. 13	0900	5,490	19.81	Apr. 28	2400	4,840	19.06

Minimum daily discharge, 6.5 ft<sup>3</sup>/s Oct. 3-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.7	67	22	1640	60	1610	109	498	89	49	27	15
2	7.0	126	22	722	57	2480	104	367	85	48	25	14
3	6.5	183	22	710	54	738	98	1330	82	113	22	14
4	6.5	172	24	560	53	343	93	587	79	676	21	13
5	6.5	86	33	314	53	234	91	294	76	2400	19	13
6	6.5	57	31	192	52	182	89	228	76	543	18	13
7	6.5	45	28	127	52	150	85	188	77	256	18	13
8	9.5	38	26	96	51	136	83	184	77	177	17	13
9	159	34	25	79	49	125	80	170	75	167	16	13
10	213	32	25	69	52	117	77	166	72	126	15	14
11	167	28	24	60	834	111	78	159	72	96	14	13
12	470	25	24	60	550	104	184	152	93	81	14	14
13	335	24	24	120	220	97	4720	147	87	72	14	20
14	1370	23	24	329	154	1450	3540	145	80	66	13	33
15	866	22	24	571	141	3530	676	140	75	62	16	25
16	320	23	45	519	99	1800	351	145	69	54	16	16
17	122	168	132	1510	80	1280	228	146	67	51	16	15
18	73	300	232	1630	69	625	171	143	66	49	13	14
19	173	88	133	498	64	351	142	191	79	88	13	14
20	122	55	73	232	59	1230	123	137	369	65	13	14
21	285	41	53	148	58	1640	112	126	166	55	12	14
22	855	33	43	116	56	778	3700	113	126	46	12	13
23	956	29	37	100	73	316	18800	111	166	43	13	13
24	342	27	33	91	2120	211	10800	107	147	41	13	13
25	518	27	31	84	3160	167	1550	103	119	37	15	13
26	868	26	28	78	697	142	2070	101	85	35	22	13
27	1510	25	28	79	521	124	1470	101	67	32	15	13
28	387	24	28	78	810	119	3310	100	58	30	14	14
29	174	23	28	71	---	115	3270	97	54	29	16	33
30	114	22	29	67	---	109	815	96	53	27	31	922
31	84	---	502	64	---	110	---	93	---	30	18	---
TOTAL	10539.7	1873	1833	11014	10298	20524	57019	6665	2886	5644	521	1373
MEAN	340	62.4	59.1	355	368	662	1901	215	96.2	182	16.8	45.8
MAX	1510	300	502	1640	3160	3530	18800	1330	369	2400	31	922
MIN	6.5	22	22	60	49	97	77	93	53	27	12	13
CFSM	.42	.08	.07	.44	.45	.81	2.33	.26	.12	.22	.02	.06
IN.	.48	.09	.08	.50	.47	.93	2.60	.30	.13	.26	.02	.06
AC-FT	20910	3720	3640	21850	20430	40710	113100	13220	5720	11190	1030	2720

CAL YR 1984	TOTAL	38235.4	MEAN 104	MAX 3240	MIN 6.5	CFSM .13	IN 1.74	AC-FT 75840
WTR YR 1985	TOTAL	130189.7	MEAN 357	MAX 18800	MIN 6.5	CFSM .44	IN 5.93	AC-FT 258200

## LAVACA RIVER BASIN

08164000 LAVACA RIVER NEAR EDNA, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1960 to September 1977. Chemical and biochemical analyses: October 1977 to current year. Pesticide analyses: January 1968 to September 1981.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1977 to September 1981.

WATER TEMPERATURES: November 1977 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 899 microsiemens April 22, 1978; minimum daily, 100 microsiemens May 5, 1979, and May 20, 1980.

WATER TEMPERATURES: Maximum daily, 33.0°C July 16, 1978; minimum daily, 5.0°C January 22, 1978.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
DATE	TIME										
OCT 18...	1300	70	270	7.9	23.5	54	7.8	92	2.7	1300	
JAN 23...	1410	100	390	8.1	6.5	28	7.8	63	1.4	350	
MAR 12...	1600	101	660	8.4	25.0	--	7.7	93	1.6	--	
MAY 08...	1530	181	700	7.9	26.0	15	6.9	85	1.2	210	
JUL 10...	1400	125	378	8.0	29.0	43	6.5	84	1.7	640	
AUG 14...	1220	14	740	8.2	27.5	--	7.2	91	.9	--	
		STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
DATE	100 ML)										
OCT 18...	800	96	0	34	2.7	16	.7	5.4	97	14	
JAN 23...	230	150	9	53	3.9	25	.9	3.9	140	19	
MAR 12...	--	250	10	92	6.0	44	1	4.2	245	20	
MAY 08...	280	280	11	100	6.4	37	1	3.3	266	20	
JUL 10...	1120	140	8	48	4.2	23	.9	3.4	130	11	
AUG 14...	--	280	26	100	7.0	42	1	2.5	253	17	
		CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
DATE											
OCT 18...	16	.20	17	159	160	--	--	--	.12	--	
JAN 23...	31	.20	16	239	240	.29	.010	.30	.24	.070	
MAR 12...	58	.30	21	--	390	--	<.010	.20	--	.030	
MAY 08...	54	.20	25	426	410	--	<.010	.20	.22	.060	
JUL 10...	28	.20	18	225	210	.08	.020	.10	.12	.100	
AUG 14...	75	.20	26	--	420	--	--	--	--	--	

## LAVACA RIVER BASIN

08164000 LAVACA RIVER NEAR EDNA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

		NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DATE										
OCT 18...		.030	--	1.0	.240	.150	.140	83	16	95
JAN 23...		.060	.53	.60	.140	.100	.090	39	11	97
MAR 12...		--	.77	.80	.160	--	--	--	--	--
MAY 08...		.030	4.7	4.8	.160	.120	.110	68	33	62
JUL 10...		.030	.80	.90	.170	.100	.070	86	29	97
AUG 14...		--	--	--	--	--	--	--	--	--

		ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
DATE	TIME									
OCT 18...	1300	2	160	<.0	<1	<1	<3	3	75	3
JAN 23...	1410	2	200	<.5	<1	1	<3	1	64	<1
MAY 08...	1530	3	370	<.5	<1	<1	<3	1	7	1
JUL 10...	1400	3	230	<.5	<1	<1	<3	1	26	3

		LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
DATE											
OCT 18...	5	3	<.1	<10	7	<1	<1	<1	130	7	34
JAN 23...	8	5	<.1	<10	4	<1	<1	<1	190	<6	<3
MAY 08...	12	17	<.1	<10	4	<1	<1	<1	290	<6	5
JUL 10...	6	9	<.1	<10	4	<1	<1	<1	160	<6	21

## LAVACA RIVER BASIN

225

08164300 NAVIDAD RIVER NEAR HALLETTSVILLE, TX

LOCATION.--Lat 29°28'00", long 96°48'45", Lavaca County, Hydrologic Unit 12100102, on right bank 28 ft downstream from bridge on U.S. Highway 90-A, 0.8 mi downstream from Mixons Creek, 1.2 mi southwest of Sublime, and 8 mi northeast of Hallettsville.

DRAINAGE AREA.--332 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1961 to current year.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 159.28 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station.

AVERAGE DISCHARGE.--24 years, 150 ft<sup>3</sup>/s (6.14 in/yr), 108,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,500 ft<sup>3</sup>/s Sept. 13, 1974 (gage height, 36.05 ft); no flow Aug. 5-7, 22, Sept. 2-16, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1860, 40 ft in June 1940; flood in July 1936 reached a stage of 39 ft, from information by local residents and Southern Pacific Railroad Co.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 24	1300	*5,710	*23.69	No other peak greater than base discharge.			
Minimum daily discharge, 0.27 ft <sup>3</sup> /s Sept. 24.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.40	17	11	474	26	1880	40	27	11	3.5	.87	.35
2	.40	27	9.7	126	26	329	38	25	9.5	3.3	.87	.35
3	.43	17	8.9	176	26	186	37	24	8.7	8.7	.87	.35
4	.45	16	8.9	233	26	146	36	23	8.2	73	.79	.35
5	.56	14	9.4	117	27	113	35	22	7.9	30	.78	.74
6	1.7	12	9.9	60	27	93	33	21	8.2	12	.70	.76
7	2.3	11	9.4	44	26	85	32	20	8.5	8.0	.70	.52
8	1.3	11	8.7	36	26	79	31	20	8.4	6.5	.69	.46
9	2.4	11	8.8	32	25	74	31	21	7.3	5.8	.66	.50
10	46	11	11	30	156	68	31	19	6.6	5.0	.63	.51
11	103	9.7	10	26	318	65	54	19	6.1	4.5	.63	.81
12	243	8.9	10	28	65	61	142	18	8.9	4.1	.51	.77
13	213	8.8	9.8	38	43	58	73	18	6.9	6.4	.50	1.2
14	327	8.6	28	72	35	138	47	34	5.2	7.9	.64	3.6
15	77	11	36	178	30	167	40	46	4.8	4.5	.57	2.5
16	28	9.5	172	225	28	144	36	33	4.6	3.3	.51	1.0
17	17	34	342	1320	28	106	34	137	4.6	2.8	.45	.57
18	13	20	163	217	27	74	32	50	5.7	2.5	.45	.45
19	15	14	69	93	26	62	31	26	25	2.9	.42	.37
20	26	11	40	61	27	187	244	22	21	8.6	.35	.35
21	499	9.8	30	46	26	192	63	20	13	2.7	.35	.33
22	422	10	25	41	26	100	37	19	10	2.1	.31	.31
23	62	9.5	22	39	1760	65	34	18	9.6	2.0	.31	.30
24	59	9.4	22	36	4740	55	32	16	9.2	1.9	.36	.27
25	351	10	21	34	728	52	30	15	8.7	1.7	1.9	.29
26	768	11	20	33	186	47	84	15	8.1	1.6	1.1	.51
27	174	10	20	30	211	46	48	14	6.9	1.4	.45	.38
28	60	17	21	35	335	46	38	14	5.6	1.3	.36	.61
29	36	16	21	39	---	45	32	14	4.8	1.1	.31	143
30	25	12	22	33	---	45	29	13	3.9	1.0	.33	202
31	20	---	918	29	---	44	---	12	---	.96	.35	---
TOTAL	3593.94	397.2	2117.5	3981	9030	4852	1504	795	256.9	221.06	18.72	364.51
MEAN	116	13.2	68.3	128	323	157	50.1	25.6	8.56	7.13	.60	12.2
MAX	768	34	918	1320	4740	1880	244	137	25	73	1.9	202
MIN	.40	8.6	8.7	26	25	44	29	12	3.9	.96	.31	.27
AC-FT	7130	788	4200	7900	17910	9620	2980	1580	510	438	37	723
CAL YR 1984	TOTAL	12190.59	MEAN	33.3	MAX	936	MIN	.40	AC-FT	24180		
WTR YR 1985	TOTAL	27131.83	MEAN	74.3	MAX	4740	MIN	.27	AC-FT	53820		



## LAVACA RIVER BASIN

08164350 NAVIDAD RIVER NEAR SPEAKS, TX

LOCATION.--Lat 29°19'18", long 96°42'32", Lavaca County, Hydrologic Unit 12100102, at right downstream end of bridge on Farm Road 530, 100 ft downstream from Ragsdale Creek, and 4.6 mi north of Speaks.

DRAINAGE AREA.--437 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 120.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good except those for Oct. 1 to Nov. 27, May 21 to Sept. 18, which are fair, and those below 15 ft<sup>3</sup>/s, which are poor. There are no known diversions above this station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft<sup>3</sup>/s May 14, 1982 (gage height, 27.89 ft, from floodmark); minimum daily, 1.2 ft<sup>3</sup>/s Sept. 26, 27, 1985.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 25	0600	5,360	a21.06	Apr. 20	2000	*10,000	*24.56
Mar. 1	2300	3,070	a17.37				

a From floodmark.

Minimum daily discharge, 1.2 ft<sup>3</sup>/s Sept. 26, 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	31	19	1520	35	2230	55	57	11	10	7.6	2.7
2	17	96	18	259	30	1670	52	50	9.8	3.8	7.6	2.7
3	13	70	17	392	29	269	49	45	8.7	16	7.1	2.7
4	22	44	16	289	28	171	46	41	8.0	161	6.7	3.0
5	16	36	16	225	28	124	45	38	7.6	183	6.3	3.0
6	4.4	30	16	102	28	99	44	36	7.4	54	6.3	3.0
7	3.6	24	17	68	28	87	41	34	7.1	24	5.9	3.0
8	4.8	22	16	51	26	80	40	33	7.5	18	5.6	3.3
9	11	21	15	43	25	75	39	32	7.3	15	4.8	3.3
10	11	19	15	37	25	68	41	32	6.4	15	4.5	3.3
11	240	18	15	32	682	63	76	31	5.8	14	4.2	3.3
12	78	17	16	32	146	57	291	28	7.3	14	3.9	3.3
13	368	16	16	69	94	52	145	27	8.6	14	3.3	3.1
14	658	15	16	143	69	239	90	35	8.9	14	3.3	3.3
15	271	14	49	186	56	315	70	85	6.2	13	3.0	3.3
16	58	15	52	284	48	313	58	65	5.1	12	2.7	3.5
17	30	19	529	1360	44	181	51	86	4.7	12	2.5	3.6
18	15	43	214	1000	42	117	45	172	13	12	2.5	2.9
19	10	32	137	188	39	89	41	58	102	11	2.5	2.3
20	11	23	77	111	36	570	3430	36	126	12	2.1	2.1
21	109	19	52	78	35	444	3620	32	42	13	2.2	1.9
22	1250	17	39	63	35	178	239	30	23	12	2.9	1.7
23	213	17	31	57	406	106	139	24	19	12	3.3	1.6
24	170	16	26	53	3550	85	148	20	27	11	3.3	1.4
25	687	15	24	49	4230	76	87	18	15	11	3.3	1.3
26	915	15	21	45	364	71	390	16	16	10	3.1	1.2
27	724	15	19	43	349	67	208	15	12	9.7	2.2	1.2
28	145	16	19	42	409	68	104	14	12	9.3	2.2	3.3
29	87	23	18	50	---	65	77	14	11	9.3	2.2	22
30	58	24	26	49	---	64	64	14	11	8.4	2.3	671
31	41	---	361	41	---	63	---	13	---	8.0	2.7	---
TOTAL	6259.8	782	1922	6961	10916	8156	9825	1231	556.4	741.5	122.1	767.3
MEAN	202	26.1	62.0	225	390	263	328	39.7	18.5	23.9	3.94	25.6
MAX	1250	96	529	1520	4230	2230	3620	172	126	183	7.6	671
MIN	3.6	14	15	32	25	52	39	13	4.7	3.8	2.1	1.2
AC-FT	12420	1550	3810	13810	21650	16180	19490	2440	1100	1470	242	1520
CAL YR 1984	TOTAL	20284.2	MEAN	55.4	MAX	1530	MIN	1.8	AC-FT	40230		
WTR YR 1985	TOTAL	48240.1	MEAN	132	MAX	4230	MIN	1.2	AC-FT	95680		

## LAVACA RIVER BASIN

227

08164450 SANDY CREEK NEAR LOUISE, TX

LOCATION.--Lat 29°09'36", long 96°32'46", Jackson County, Hydrologic Unit 12100102, on left bank at downstream end of bridge on Farm Road 710, 0.9 mi upstream from Goldenrod Creek, and 9.1 mi northwest of Louise.

DRAINAGE AREA.--289 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 59.72 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: May 6-14. Records are good except for discharges below 5 ft<sup>3</sup>/s, which are poor. Much of the low flow during the irrigation season (April to September) comes from drainage from ricefields irrigated by water originally diverted from the Colorado River. No known diversion above station.

AVERAGE DISCHARGE.--8 years, 180 ft<sup>3</sup>/s (8.46 in/yr), 130,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,000 ft<sup>3</sup>/s Sept. 14, 1978 (gage height, 23.03 ft), from rating curve extended above 7,800 ft<sup>3</sup>/s; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 22	1400	2,070	12.56	Feb. 24	1200	1,910	12.18
Oct. 26	0600	1,790	11.92	Mar. 1	1900	2,730	13.91
Jan. 1	1100	1,700	11.67	Mar. 15	0700	1,500	11.17
Jan. 17	1800	1,690	11.63	Mar. 21	0700	2,110	12.63
Feb. 11	1800	1,820	11.97	Apr. 21	1400	*3,810	*15.62

Minimum daily discharge, no flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	47	.05	1180	26	1900	13	27	.00	4.3	30	32
2	36	103	.06	584	18	1320	11	7.1	.71	3.5	33	28
3	26	112	.14	764	11	856	7.8	.26	.83	14	56	15
4	23	75	.21	712	8.2	413	5.6	.14	1.5	124	36	1.2
5	32	38	9.2	404	6.2	151	4.5	.08	.06	578	26	.31
6	39	24	7.6	174	4.9	75	3.3	.06	2.6	606	24	.03
7	37	12	3.1	96	5.6	41	2.5	.05	3.0	396	16	.00
8	29	8.3	1.1	61	5.2	27	2.1	.04	.55	199	13	.00
9	20	6.0	.23	44	3.8	19	1.8	.03	.07	109	14	.00
10	43	4.0	.12	29	44	14	1.8	.03	.26	57	8.8	2.7
11	81	2.9	.11	21	1090	12	127	.02	.05	26	6.2	59
12	76	2.2	.11	19	588	8.3	865	.02	.07	17	8.6	96
13	79	1.3	.14	35	161	5.8	943	.01	.00	30	3.9	160
14	458	.83	.15	137	81	170	492	.01	.00	20	6.2	180
15	700	.78	.15	214	49	1200	156	4.2	.00	16	4.4	141
16	545	.43	1.3	192	31	1070	69	22	.00	23	3.6	101
17	277	.15	27	1120	20	854	32	12	.00	44	3.1	67
18	128	2.2	97	829	13	390	14	30	.07	32	2.3	54
19	129	11	58	377	9.1	156	1.6	34	42	82	.41	31
20	219	7.1	27	168	6.4	799	501	9.0	453	158	.00	13
21	463	4.2	18	94	4.8	1700	3530	.84	460	269	.00	8.3
22	1660	2.5	6.9	58	3.7	660	2620	.08	368	220	.00	9.7
23	1110	1.3	3.5	39	13	236	1410	.18	211	154	.00	11
24	1080	.50	2.9	30	1220	112	685	.03	137	115	.69	11
25	886	.11	1.5	29	448	63	299	.06	89	72	3.9	17
26	1450	.04	.58	42	269	37	565	.71	44	55	16	9.6
27	897	.04	.18	37	210	26	866	.78	24	44	22	9.4
28	558	.03	.13	29	601	20	365	.81	19	57	15	27
29	277	.03	.11	23	---	18	129	.04	7.1	45	18	99
30	144	.03	.13	34	---	14	52	.00	5.4	51	42	786
31	79	---	52	39	---	14	---	.00	---	41	36	---
TOTAL	11625	466.97	318.70	7614	4950.9	12381.1	13775.0	149.58	1869.27	3661.8	449.10	1969.24
MEAN	375	15.6	10.3	246	177	399	459	4.83	62.3	118	14.5	65.6
MAX	1660	112	97	1180	1220	1900	3530	34	460	606	56	786
MIN	20	.03	.05	19	3.7	5.8	1.6	.00	.00	3.5	.00	.00
CFSM	1.30	.05	.04	.85	.61	1.38	1.59	.02	.22	.41	.05	.23
IN.	1.50	.06	.04	.98	.64	1.59	1.77	.02	.24	.47	.06	.25
AC-FT	23060	926	632	15100	9820	24560	27320	297	3710	7260	891	3910
CAL YR 1984	TOTAL	33281.44	MEAN	90.9	MAX	2050	MIN	.00	CFSM	.32	IN	4.28
WTR YR 1985	TOTAL	59230.66	MEAN	162	MAX	3530	MIN	.00	CFSM	.56	IN	7.62
									AC-FT	66010		
									AC-FT	117500		

## LAVACA RIVER BASIN

08164450 SANDY CREEK NEAR LOUISE, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1977 to current year. Pesticide analyses: October 1977 to September 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
OCT 18...	1500	115	390	7.8	24.5	22	7.4	89	2.3	110	15
JAN 24...	1420	30	195	7.4	9.0	50	12.4	107	2.2	56	13
MAR 13...	1330	5.8	250	7.7	24.5	17	8.4	101	1.9	79	13
MAY 09...	1345	.03	320	7.2	28.0	6.4	7.8	100	1.8	110	0
JUL 09...	1350	107	415	7.8	29.0	23	6.7	87	2.1	130	39
AUG 14...	1430	6.1	780	8.2	32.0	6.0	7.2	98	1.7	210	30

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 18...	27	11	28	1	9.8	98	18	53	.30	30
JAN 24...	15	4.4	13	.8	4.9	43	17	20	.10	8.5
MAR 13...	23	5.3	15	.8	4.8	66	16	24	.20	11
MAY 09...	32	6.6	18	.8	3.5	109	10	30	.20	20
JUL 09...	35	11	26	1	3.5	94	25	50	.30	16
AUG 14...	61	15	69	2	5.7	184	27	130	.40	25

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 18...	240	42	--	<.010	.10	.030	1.3	1.3	.290	12
JAN 24...	110	26	--	.030	<.10	.080	1.1	1.2	.130	12
MAR 13...	140	10	--	<.010	<.10	.040	1.3	1.3	.120	8.4
MAY 09...	190	11	--	<.010	<.10	.090	2.1	2.2	.210	6.8
JUL 09...	220	44	.26	.040	.30	.090	.71	.80	.120	8.1
AUG 14...	440	6	--	<.010	<.10	.040	.56	.60	.120	6.9

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 18...	1500	3	110	<1	<10	1	450
MAY 09...	1345	2	190	<1	<10	<1	770

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 18...	2	7	<.1	<1	<1	8
MAY 09...	<1	470	<.1	<1	<1	12

## LAVACA RIVER BASIN

229

U8164503 WEST MUSTANG CREEK NEAR GANADO, TX

LOCATION.--Lat 29°04'17", long 96°28'01", Jackson County, Hydrologic Unit 12100102, on right bank at downstream end of downstream bridge on U.S. Highway 59, 2.1 mi upstream from Middle Mustang Creek, and 3.6 mi east of Ganado.

DRAINAGE AREA.--178 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1977 to current year.

GAGE.--Water-stage recorder. Datum of gage is 40.12 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Much of low flow during the irrigation season (April to September) comes from drainage from ricefields irrigated by diversions originating from the Colorado River.

AVERAGE DISCHARGE.--8 years, 161 ft<sup>3</sup>/s (12.3 in/yr), 116,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,400 ft<sup>3</sup>/s Jan. 21, 1980 (gage height, 24.49 ft, from floodmark), from rating curve extended above 8,800 ft<sup>3</sup>/s; minimum daily, 0.03 ft<sup>3</sup>/s Jan. 18, 19, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 23	0500	2,180	14.79	Apr. 21	1800	1,940	14.39
Mar. 15	0600	1,660	13.83	Apr. 27	1100	1,920	14.32
Mar. 21	1100	*2,720	*15.45				

Minimum daily discharge, 0.94 ft<sup>3</sup>/s Dec. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	68	1.7	505	7.8	485	4.9	85	10	22	39	82
2	21	339	1.4	245	6.5	462	4.0	58	13	22	38	46
3	23	610	.94	473	5.1	210	3.8	44	18	35	32	33
4	23	157	.97	390	4.0	86	3.4	34	13	252	25	18
5	27	69	1.1	153	3.3	39	2.9	21	9.5	428	30	8.3
6	29	35	1.6	76	2.9	25	2.6	19	13	398	27	7.2
7	28	23	9.6	43	2.5	15	2.3	11	14	255	30	9.5
8	32	17	6.7	26	2.1	9.5	2.0	10	13	135	33	6.7
9	26	14	4.5	17	1.9	6.1	2.0	12	17	67	27	7.5
10	38	9.7	3.7	12	2.3	4.2	1.9	9.5	14	33	33	24
11	289	8.1	2.9	8.2	714	3.4	20	7.0	15	29	25	43
12	211	7.5	2.3	7.5	891	2.8	1040	11	14	31	19	99
13	163	5.5	2.0	37	138	2.8	1050	14	14	44	18	121
14	775	4.6	1.7	126	53	637	395	22	19	31	18	184
15	857	4.2	1.5	129	51	1560	175	19	15	25	19	191
16	547	3.6	4.0	79	23	1110	54	112	9.7	26	25	120
17	262	6.2	68	597	13	843	27	97	12	39	21	64
18	141	16	220	523	8.2	280	15	81	29	41	22	38
19	387	89	119	176	5.7	89	9.4	52	142	56	27	26
20	1360	13	58	80	4.2	1120	431	31	326	171	23	18
21	1230	13	30	44	4.1	2500	1820	21	308	219	25	12
22	1640	7.2	18	28	3.7	1170	1780	16	256	174	29	10
23	1970	5.8	11	22	3.3	208	1200	15	156	106	29	11
24	1350	4.6	7.4	13	10	79	433	8.6	88	68	23	11
25	908	3.7	5.0	9.0	172	37	145	7.6	51	46	55	16
26	1210	3.2	3.8	7.4	137	21	1130	9.1	36	54	69	15
27	1340	2.5	3.2	8.6	141	14	1860	16	25	58	57	18
28	668	2.9	2.8	11	286	9.8	1310	18	20	51	46	19
29	273	5.0	2.3	13	---	7.5	303	20	17	59	43	80
30	145	2.7	2.1	23	---	6.2	129	17	22	56	118	1020
31	99	---	40	11	---	5.5	---	11	---	49	142	---
TOTAL	16095	1550.0	637.21	3892.7	2696.6	11047.8	13356.2	908.8	1709.2	3080	1167	2358.2
MEAN	519	51.7	20.6	126	96.3	356	445	29.3	57.0	99.4	37.6	78.6
MAX	1970	610	220	597	891	2500	1860	112	326	428	142	1020
MIN	21	2.5	.94	7.4	1.9	2.8	1.9	7.0	9.5	22	18	6.7
AC-FT	31920	3070	1260	7720	5350	21910	26490	1800	3390	6110	2310	4680
CAL YR 1984	TOTAL	33753.71	MEAN	92.2	MAX	1970	MIN	.94	AC-FT	66950		
WTR YR 1985	TOTAL	58498.71	MEAN	160	MAX	2500	MIN	.94	AC-FT	116000		

## LAVACA RIVER BASIN

08164503 WEST MUSTANG CREEK NEAR GANADO, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1977 to current year. Pesticide analyses: October 1977 to September 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L CaCO3)
OCT 18...	1400	134	430	7.9	23.5	46	7.0	83	2.8	130	21
JAN 24...	1310	13	322	7.1	6.5	79	10.5	85	1.5	98	25
MAR 13...	1100	2.8	476	7.8	23.5	33	7.2	85	--	160	43
MAY 09...	1230	10	450	7.6	24.5	25	6.8	81	1.7	150	54
JUL 09...	1305	67	486	7.8	29.0	45	6.3	81	2.1	150	47
AUG 14...	1330	18	818	8.0	28.5	21	7.1	92	1.1	250	64

DATE	CALCIUM DIS- SOLVED (MG/L AS Ca)	MAGNE- SIUM, DIS- SOLVED (MG/L AS Mg)	SODIUM, DIS- SOLVED (MG/L AS Na)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CaCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS Cl)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 18...	37	9.2	34	1	8.3	110	18	62	.30	36
JAN 24...	29	6.1	23	1	5.5	73	24	37	.20	11
MAR 13...	49	8.7	34	1	7.5	115	34	61	.20	15
MAY 09...	49	7.2	29	1	4.9	98	29	56	.20	20
JUL 09...	45	10	33	1	3.6	107	24	65	.30	21
AUG 14...	75	16	62	2	4.9	190	29	140	.40	26

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 18...	270	82	--	<.010	.10	.040	1.2	1.2	.270	12
JAN 24...	180	37	.25	.050	.30	.120	1.1	1.2	.160	9.8
MAR 13...	280	22	.19	.010	.20	.060	1.3	1.4	.210	12
MAY 09...	250	81	.61	.090	.70	.160	.64	.80	.150	7.9
JUL 09...	270	88	.27	.030	.30	.120	.88	1.0	.140	5.8
AUG 14...	470	29	.19	.010	.20	.050	.65	.70	1.30	5.9



## LAVACA RIVER BASIN

231

08164503 WEST MUSTANG CREEK NEAR GANADO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 18...	1400	4	160	<1	<10	2	200
MAY 09...	1230	2	170	<1	<10	6	29

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 18...	2	3	<.1	<1	<1	9
MAY 09...	8	17	2.8	<1	<1	9

## GARCITAS CREEK MAIN STEM

08164600 GARCITAS CREEK NEAR INEZ, TX

LOCATION.--Lat 28°53'28", long 96°49'08", Victoria County, Hydrologic Unit 12100402, at right downstream end of bridge on U.S. Highway 59 access road, 0.3 mi upstream from Southern Pacific Railroad bridge, 2.0 mi southwest of Inez, and 3.6 mi upstream from Casa Blanca Creek.

DRAINAGE AREA.--91.7 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 29.16 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. An undetermined amount of return water from irrigation enters stream above station. Recording rain gage located at station.

AVERAGE DISCHARGE.--15 years, 56.7 ft<sup>3</sup>/s (8.40 in/yr), 41,080 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,700 ft<sup>3</sup>/s June 12, 1981 (gage height, 29.00 ft); no flow for a few days in 1971 and 1985.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage during period 1903-70, 24.5 ft Oct. 26, 1960. In 1929, a flood nearly as high as the 1960 flood occurred, and a flood in September 1967 reached a stage of 23.4 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 15	0200	3,340	17.74	Apr. 21	1100	*5,170	*19.97

Minimum daily discharge, no flow Sept. 6-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	10	1.5	236	6.9	171	17	58	2.6	2.7	1.4	.60
2	2.8	30	1.5	93	6.1	107	16	90	2.4	2.6	4.2	.24
3	2.9	36	1.5	154	5.7	45	15	41	2.2	3.0	13	.09
4	2.9	22	1.7	77	5.4	26	15	24	2.2	46	4.8	.04
5	2.9	13	6.4	39	5.2	17	15	17	2.2	617	2.7	.02
6	2.7	11	9.1	25	5.0	12	13	14	2.3	149	1.9	.00
7	2.5	11	6.3	18	4.6	9.9	13	11	2.4	38	1.6	.00
8	15	6.8	4.5	14	4.4	8.5	13	10	2.4	20	1.5	.00
9	7.3	5.7	3.6	11	4.2	7.5	12	9.1	2.2	12	1.3	.02
10	4.6	5.1	3.0	34	4.2	6.9	18	8.6	2.0	8.8	1.2	.09
11	3.9	4.2	2.7	16	293	6.4	299	8.3	2.4	6.4	3.9	.12
12	3.6	3.7	2.4	20	79	5.8	468	9.1	10	4.8	12	.92
13	13	3.3	2.3	44	27	6.5	146	11	6.1	3.9	4.2	3.5
14	51	3.1	2.2	105	18	1060	61	9.4	4.1	3.4	2.3	2.4
15	17	2.7	2.2	118	14	1930	39	6.6	2.6	3.5	1.5	1.8
16	7.2	31	2.6	86	11	865	29	7.6	1.9	3.2	1.0	1.3
17	4.6	27	4.8	235	8.8	264	22	7.8	1.8	3.5	1.4	1.1
18	3.9	43	3.0	114	7.4	111	18	7.8	7.3	2.6	1.9	1.5
19	13	26	2.2	48	6.4	65	16	6.6	51	2.3	1.6	1.4
20	18	11	1.9	28	5.8	858	1190	5.5	36	2.6	1.2	.92
21	26	6.8	1.8	19	5.2	345	4070	5.0	19	2.4	.83	.67
22	117	4.8	1.8	14	4.9	100	558	4.6	55	2.2	.53	.67
23	77	3.7	1.6	12	5.4	55	189	4.2	28	1.8	1.0	.60
24	49	3.2	1.5	10	28	39	172	3.7	30	1.8	.53	.87
25	106	2.9	1.5	9.1	30	30	110	4.1	36	1.5	1.0	.53
26	28?	2.5	1.5	8.0	23	26	493	4.4	15	1.4	2.6	.65
27	124	2.3	1.7	9.8	31	23	307	4.1	8.0	1.4	1.3	.53
28	55	1.9	1.6	10	103	22	114	4.2	5.0	1.4	.46	.70
29	29	1.7	1.5	9.7	---	20	69	4.4	4.1	1.3	.92	18
30	19	1.6	2.1	8.6	---	19	45	3.7	3.2	1.4	3.7	17
31	13	---	206	7.7	---	18	---	3.0	---	1.4	1.5	---
TOTAL	1078.4	337.0	288.0	1632.9	752.6	6279.5	8562	407.8	349.4	953.3	78.97	56.28
MEAN	34.8	11.2	9.29	52.7	26.9	203	285	13.2	11.6	30.8	2.55	1.88
MAX	282	43	206	236	293	1930	4070	90	55	617	13	18
MIN	2.5	1.6	1.5	7.7	4.2	5.8	12	3.0	1.8	1.3	.46	.00
CFSM	.38	.12	.10	.58	.29	2.21	3.11	.14	.13	.34	.03	.02
IN	.44	.14	.12	.66	.31	2.55	3.47	.17	.14	.39	.03	.02
AC-FT	2140	668	571	3240	1490	12460	16980	809	693	1890	157	112

CAL YR 1984	TOTAL	4398.05	MEAN	12.0	MAX	446	MIN	.03	CFSM	.13	IN	1.78	AC-FT	8720
WTR YR 1985	TOTAL	20776.15	MEAN	56.9	MAX	4070	MIN	.00	CFSM	.62	IN	8.43	AC-FT	41210

## GARCITAS CREEK MAIN STEM

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08164600 GARCITAS CREEK NEAR INEZ, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1969 to current year. Pesticide analyses: October 1969 to September 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	
DATE	TIME										
OCT 18...	1135	3.7	470	7.9	25.0	20	6.0	73	1.0	140	
JAN 24...	1145	10	370	7.6	9.0	43	10.8	93	1.4	140	
MAR 12...	1350	5.9	498	8.2	25.5	18	8.4	103	1.7	190	
MAR 16...	1200	1000	60	--	--	53	--	--	--	23	
MAY 09...	1100	9.5	510	7.7	25.0	14	6.8	82	1.4	200	
JUL 09...	1125	13	322	7.6	28.0	30	5.8	74	1.3	110	
		HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
DATE											
OCT 18...	0	44	6.9	41	2	3.8	140	21	46		.30
JAN 24...	19	46	5.7	22	.9	2.2	120	25	25		.10
MAR 12...	18	63	8.2	29	1	2.2	173	29	33		.20
MAR 16...	3	7.2	1.3	4.0	.4	2.0	20	9.5	4.0		<.10
MAY 09...	17	67	8.2	25	.8	1.5	184	30	27		.20
JUL 09...	17	38	4.5	16	.7	2.1	97	22	19		.20
		SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
DATE											
OCT 18...	24	270	6	<.010	<.10	.020	.58	.60	.020		7.9
JAN 24...	16	210	25	.020	<.10	.080	.72	.80	.040		7.8
MAR 12...	14	280	13	<.010	<.10	.070	.73	.80	.040		9.6
MAR 16...	8.4	49	246	.020	<.10	.090	1.1	1.2	.070		18
MAY 09...	27	300	16	.010	<.10	.080	.52	.60	.030		7.9
JUL 09...	20	180	24	.030	<.10	.130	.67	.80	.050		11
			ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)			
DATE	TIME										
OCT 18...	1135		3	200	<1	20	2	62			
MAR 16...	1200		<1	44	<1	<10	2	190			
		LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)				
DATE											
OCT 18...		6	26	<.1	<1	<1	11				
MAR 16...		7	<1	--	<1	1	13				

## PLACEDO CREEK MAIN STEM

08164800 PLACEDO CREEK NEAR PLACEDO, TX

LOCATION.--Lat 28°43'30", long 96°46'07", Victoria County, Hydrologic Unit 12100401, on right bank at downstream end of bridge on Farm Road 616, 0.1 mi downstream from confluence of Lone Tree Creek and Arroyo Palo Alto, 1.2 mi upstream from Ninemile Creek, and 4.4 mi northeast of Placedo.

DRAINAGE AREA.--68.3 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 5.58 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 3-23, Apr. 26 to June 11, June 22 to July 23, and Aug. 31 to Sept. 11. Records good except those for estimated daily discharges, which are fair. No known diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--15 years, 72.7 ft<sup>3</sup>/s (52,670 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,300 ft<sup>3</sup>/s Oct. 31, 1981 (gage height, 30.8 ft); no flow at times in 1971, and 1981-84.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1930, 31.9 ft in September 1967 and 30.4 ft in 1960 (probably October), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 26	1800	2,510	20.67	Mar. 20	1500	*5,190	*23.81
Mar. 14	2100	3,680	22.27	Apr. 21	0900	2,580	20.78

Minimum daily discharge, 0.54 ft<sup>3</sup>/s Sept. 22-25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.3	16	6.5	679	8.9	225	13	200	10	22	3.5	2.5
2	6.8	251	6.4	175	7.9	107	13	270	9.2	45	3.2	3.0
3	5.1	265	6.5	208	7.4	46	12	62	8.5	138	3.3	3.6
4	5.5	76	7.7	96	7.2	28	13	28	7.8	560	4.7	3.0
5	6.2	37	8.9	46	7.2	19	13	17	7.4	1030	5.9	2.1
6	7.3	24	17	29	6.8	13	13	10	7.1	490	5.4	1.7
7	8.7	18	24	21	6.6	11	14	7.5	7.0	100	4.8	1.9
8	11	14	14	16	6.5	9.7	14	90	7.0	62	4.2	2.1
9	34	12	10	12	6.5	8.7	14	354	7.0	48	3.6	2.5
10	30	13	8.4	14	7.1	7.9	29	46	6.8	30	3.3	3.2
11	29	12	7.8	97	12	7.4	253	23	6.6	17	2.5	2.5
12	26	15	7.8	71	17	7.3	1030	15	6.9	12	2.6	2.0
13	50	14	8.4	205	14	7.3	261	14	42	10	3.2	1.7
14	425	13	8.4	359	9.6	2130	303	12	24	9.4	4.6	.99
15	117	16	8.4	185	8.7	1640	76	10	12	8.6	5.0	.60
16	94	179	8.6	84	8.6	977	33	8.8	7.4	7.6	4.0	2.2
17	78	257	8.9	217	9.1	216	22	9.2	5.4	8.0	3.9	15
18	73	57	8.9	116	7.3	77	16	12	15	9.0	5.1	21
19	377	63	8.7	49	6.7	42	13	18	184	11	4.8	8.8
20	221	31	8.4	29	6.5	3150	245	36	96	15	4.6	3.4
21	125	18	7.5	21	6.5	955	2220	17	52	7.8	4.2	1.1
22	149	11	6.4	16	6.4	129	668	15	46	5.6	3.8	.54
23	566	8.4	6.0	13	6.4	55	128	14	44	5.2	2.6	.54
24	493	7.0	5.9	11	7.3	33	59	13	39	4.9	1.9	.54
25	469	7.5	5.6	9.7	7.9	24	35	12	35	4.7	2.9	.54
26	2110	7.7	5.3	8.9	6.6	19	743	12	32	4.3	4.6	2.2
27	991	7.0	5.3	15	68	18	127	11	29	4.2	5.2	1.8
28	179	6.7	5.5	36	121	16	49	10	27	4.1	5.1	2.0
29	64	6.7	5.5	24	---	15	29	11	25	3.5	4.9	2.7
30	34	6.7	6.8	16	---	14	18	13	23	3.5	2.2	37
31	23	---	735	11	---	13	---	11	---	3.4	2.0	---
TOTAL	6815.9	1469.7	988.5	2889.6	401.7	10020.3	6476	1381.5	829.1	2683.8	121.6	132.75
MEAN	220	49.0	31.9	93.2	14.3	323	216	44.6	27.6	86.6	3.92	4.43
MAX	2110	265	735	670	121	3150	2220	354	184	1030	5.9	37
MIN	5.1	6.7	5.3	8.9	6.4	7.3	12	7.5	5.4	3.4	1.9	.54
AC-FT	13520	2920	1960	5730	797	19880	12850	2740	1640	5320	241	263
CAL YR 1984	TOTAL	17829.79	MEAN	48.7	MAX	2110	MIN	.00	AC-FT	35370		
WTR YR 1985	TOTAL	34210.45	MEAN	93.7	MAX	3150	MIN	.54	AC-FT	67860		

## GUADALUPE RIVER BASIN

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08165300 NORTH FORK GUADALUPE RIVER NEAR HUNT, TX

LOCATION.--Lat 30°03'36", long 99°23'40", Kerr County, Hydrologic Unit 12100201, on right bank 410 ft downstream from Ranch Road 1340, 1.3 mi downstream from Bear Creek, 3.7 mi west of Hunt, and 4.1 mi upstream from Honey Creek.

DRAINAGE AREA.--168 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1967 to current year.

REVISED RECORDS.--WDR TX-74-1: 1971(P).

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,800.10 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--18 years, 38.8 ft<sup>3</sup>/s (3.14 in/yr), 28,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,300 ft<sup>3</sup>/s Aug. 3, 1978 (gage height, 26.80 ft, from high-water mark), from rating curve extended above 170 ft<sup>3</sup>/s on basis of slope-area measurements of 7,460 and 38,400 ft<sup>3</sup>/s; minimum, 0.68 ft<sup>3</sup>/s May 30, 1969.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900 occurred July 1, 1932 (gage height, 37.3 ft), discharge 140,000 ft<sup>3</sup>/s, by slope-area measurements, combined flow of North Fork Guadalupe River 5 mi upstream and Bear Creek 2 mi upstream from mouth, and adjusted for difference in drainage area.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 27	1030	3,100	10.02	Feb. 23	0145	1,430	8.17
Dec. 31	0500	*21,500	*21.43	May 17	0145	9,020	14.78

Minimum daily discharge, 11 ft<sup>3</sup>/s Oct. 1-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	69	28	186	40	50	30	41	44	27	25	21
2	11	63	28	110	39	47	31	35	40	27	25	21
3	11	59	27	92	38	45	30	32	39	27	24	21
4	11	51	27	82	38	43	30	30	39	28	24	20
5	11	49	28	74	38	40	30	29	39	28	24	20
6	11	47	27	69	38	39	29	28	40	30	24	26
7	11	45	26	65	37	39	29	28	39	38	24	24
8	12	42	26	62	36	39	30	27	37	30	23	22
9	13	41	26	60	36	38	32	29	36	29	23	22
10	13	38	26	56	36	37	30	24	34	28	23	22
11	15	35	26	52	36	38	30	25	34	27	23	21
12	16	33	26	53	34	37	30	25	33	39	22	21
13	14	33	27	54	34	37	30	26	34	40	22	21
14	15	33	27	49	34	38	32	26	33	35	22	22
15	14	33	27	49	33	35	31	24	33	33	22	23
16	13	31	31	53	33	35	31	25	32	32	22	22
17	12	31	35	53	32	35	29	2660	31	31	22	22
18	12	34	37	51	32	34	29	143	30	30	22	22
19	12	36	36	51	32	34	29	91	32	30	21	23
20	35	32	34	48	31	37	29	81	32	29	21	22
21	36	30	32	47	33	36	30	75	31	29	21	22
22	31	29	30	47	36	33	31	68	31	28	21	22
23	26	28	29	47	536	34	30	64	32	27	20	22
24	23	30	29	46	86	33	28	59	31	26	21	21
25	23	36	27	45	62	33	27	57	30	26	25	20
26	26	32	27	44	56	33	27	53	30	26	23	20
27	884	30	27	44	52	33	28	51	29	26	21	20
28	157	29	28	42	53	33	28	49	29	26	21	24
29	98	29	28	42	---	32	29	46	28	25	21	39
30	83	28	221	42	---	31	36	44	28	25	21	34
31	75	---	8130	40	---	30	---	44	---	24	21	---
TOTAL	1735	1136	9183	1855	1621	1138	895	4039	1010	906	694	682
MEAN	56.0	37.9	296	59.8	57.9	36.7	29.8	130	33.7	29.2	22.4	22.7
MAX	884	69	8130	186	536	50	36	2660	44	40	25	39
MIN	11	28	26	40	31	30	27	24	28	24	20	20
CFSM	.33	.23	1.76	.36	.35	.22	.18	.77	.20	.17	.13	.14
IN.	.38	.25	2.03	.41	.36	.25	.20	.89	.22	.20	.15	.15
AC-FT	3440	2250	18210	3680	3220	2260	1780	8010	2000	1800	1380	1350

CAL YR 1984	TOTAL	15549.7	MEAN 42.5	MAX 8130	MIN 9.3	CFSM .25	IN 3.44	AC-FT 30840
WTR YR 1985	TOTAL	24894.0	MEAN 68.2	MAX 8130	MIN 11	CFSM .41	IN 5.51	AC-FT 49380



## GUADALUPE RIVER MAIN STEM

08165500 GUADALUPE RIVER AT HUNT, TX

LOCATION.--Lat 30°04'08", long 99°19'23", Kerr County, Hydrologic Unit 12100201, on right bank 56 ft upstream and 137 ft to right of right end of bridge on State Highway 39, 0.6 mi downstream from confluence of North and South Forks, 0.8 mi east of Hunt, and at mile 430.9.

DRAINAGE AREA.--288 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1941 to September 1949, discharge not computed above 600 ft<sup>3</sup>/s, and April 1965 to current year. Occasional discharge measurements made 1950-64.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 1,722.7 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are numerous diversions for irrigation above station, but amounts are unknown. Gage-height telemeter at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years, 72.3 ft<sup>3</sup>/s (3.41 in/yr), 52,380 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 62,900 ft<sup>3</sup>/s Aug. 2, 1978 (gage height, 23.5 ft, from floodmark), from rating curve extended above 3,700 ft<sup>3</sup>/s on basis of channel geometry and flow-over-dam measurement of peak flow; minimum, 6.9 ft<sup>3</sup>/s June 17, 1948.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, 36.6 ft July 2, 1932, from information by local resident (discharge, 206,000 ft<sup>3</sup>/s, determined by slope-area measurement 4.5 mi downstream from gage).

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 27	1345	2,490	8.20	Feb. 23	0145	3,140	a9.08
Dec. 31	0230	*28,800	a*18.46	May 17	0445	8,770	13.19

a From floodmark.

Minimum daily discharge, 19 ft<sup>3</sup>/s Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	83	38	517	76	127	63	168	81	49	42	33
2	19	72	37	300	76	115	63	103	77	45	39	33
3	20	65	36	228	74	109	63	74	59	44	36	36
4	21	61	37	192	74	101	64	67	66	48	36	33
5	21	58	42	166	73	108	62	59	69	49	33	31
6	20	56	40	151	71	90	61	57	79	50	37	47
7	21	54	37	139	69	90	62	58	69	62	37	44
8	21	53	39	128	69	89	63	54	65	57	39	40
9	23	51	41	124	69	84	66	58	66	51	37	37
10	25	49	40	115	68	82	65	54	60	50	37	36
11	34	45	33	104	68	79	64	39	59	49	37	36
12	42	44	32	108	62	76	51	44	58	94	34	37
13	33	43	46	112	63	76	59	48	61	78	33	37
14	33	42	42	99	64	87	68	47	61	59	33	37
15	33	40	44	101	61	83	60	43	59	57	33	37
16	27	40	66	111	60	82	54	45	57	55	34	37
17	24	40	59	116	61	77	53	3050	56	58	34	37
18	24	52	57	112	58	76	51	379	53	52	35	37
19	24	49	54	110	53	76	49	221	62	51	35	36
20	69	46	51	102	52	82	51	176	56	51	34	36
21	76	43	49	96	55	77	59	169	56	51	32	35
22	63	40	47	95	63	70	55	141	56	51	32	35
23	58	37	45	94	945	68	51	121	55	51	32	35
24	51	42	44	94	255	69	47	112	60	47	33	34
25	53	58	43	91	166	68	46	90	55	47	38	33
26	56	50	41	85	144	68	47	113	54	46	39	31
27	833	45	41	87	126	70	51	91	53	45	37	31
28	313	40	43	82	124	68	47	91	52	45	34	32
29	150	38	44	80	---	68	58	87	50	48	34	69
30	112	40	186	81	---	66	135	82	49	44	34	66
31	96	---	8540	77	---	63	---	76	---	42	34	---
TOTAL	2415	1476	9994	4097	3199	2544	1788	6017	1813	1626	1094	1138
MEAN	77.9	49.2	322	132	114	82.1	59.6	194	60.4	52.5	35.3	37.9
MAX	833	83	8540	517	945	127	135	3050	81	94	42	69
MIN	19	37	32	77	52	63	46	39	49	42	32	31
CFSM	.27	.17	1.12	.46	.40	.29	.21	.67	.21	.18	.12	.13
IN	.31	.19	1.29	.53	.41	.33	.23	.78	.23	.21	.14	.15
AC-FT	4790	2930	19820	8130	6350	5050	3550	11930	3600	3230	2170	2260
CAL YR 1984	TOTAL	20685.3	MEAN	56.5	MAX	8540	MIN	8.2	CFSM	.20	IN	2.67
WTR YR 1985	TOTAL	37201.0	MEAN	102	MAX	8540	MIN	19	CFSM	.35	IN	4.81
									AC-FT	41030		
									AC-FT	73790		

## GUADALUPE RIVER BASIN

237

08166000 JOHNSON CREEK NEAR INGRAM, TX

LOCATION.--Lat 30°06'00", long 99°16'58", Kerr County, Hydrologic Unit 12100201, on right bank 1.6 mi upstream from Henderson Branch, 3.4 mi northwest of Ingram, 3.8 mi upstream from mouth, and 9.2 mi northwest of Kerrville.

DRAINAGE AREA.--114 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1941 to November 1959, October 1961 to current year.

REVISED RECORDS.--WSP 1058: 1942-45. WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,721.30 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are numerous small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--42 years (water years 1942-59, 1962-85), 20.0 ft<sup>3</sup>/s (2.38 in/yr), 14,490 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,900 ft<sup>3</sup>/s Oct. 4, 1959 (gage height, 24.25 ft), from rating curve extended above 4,400 ft<sup>3</sup>/s on basis of slope-area measurements of 9,100 and 16,000 ft<sup>3</sup>/s and conveyance study; minimum daily, 0.4 ft<sup>3</sup>/s July 26, 27, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 35 ft July 2, 1932, from information by local resident; discharge, 138,000 ft<sup>3</sup>/s, by slope-area measurement at point 0.5 mi downstream from State fish hatchery and 6 or 7 mi upstream from gage. Flood of June 14, 1935, reached a stage of 31 or 32 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	0200	*41,700	*16.65	Feb. 23	0145	4,420	7.33

Minimum daily discharge, 7.9 ft<sup>3</sup>/s Oct. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	8.0	29	17	135	23	50	26	36	23	14	16	12		
2	9.4	24	17	64	24	47	27	31	22	14	14	11		
3	11	23	17	33	24	49	28	28	22	17	14	8.9		
4	11	22	17	26	24	42	29	30	23	19	15	11		
5	10	21	17	21	23	42	26	27	23	14	14	12		
6	9.3	21	16	15	23	45	28	27	30	19	15	37		
7	9.9	25	15	14	24	43	29	26	28	29	14	20		
8	9.6	24	19	28	23	40	33	26	27	19	17	17		
9	9.2	22	16	50	24	39	34	26	22	18	14	15		
10	9.2	21	16	37	24	35	31	26	22	17	14	16		
11	14	16	17	35	20	39	33	27	17	14	14	15		
12	14	16	17	37	19	39	33	27	17	45	14	14		
13	12	15	26	42	19	36	43	30	19	33	19	19		
14	14	16	21	35	19	37	46	28	21	24	18	15		
15	11	15	24	37	21	35	37	24	20	21	14	16		
16	11	14	42	40	24	34	37	23	18	20	13	16		
17	9.2	14	31	44	21	31	37	57	19	20	18	16		
18	9.2	20	32	38	21	33	36	43	19	19	13	16		
19	7.9	16	30	37	21	35	35	32	24	18	13	16		
20	67	15	28	32	21	38	35	32	20	18	14	13		
21	56	15	26	32	22	33	38	34	18	18	12	13		
22	34	13	24	34	23	34	34	31	19	17	12	13		
23	27	12	23	33	756	31	32	31	20	16	10	13		
24	24	16	23	33	82	31	38	27	23	18	11	12		
25	24	27	21	32	62	33	32	26	19	21	13	12		
26	28	22	21	31	53	34	31	27	17	15	13	11		
27	89	17	23	30	48	32	30	26	14	15	11	12		
28	75	15	24	30	49	31	29	24	15	15	12	16		
29	44	17	23	36	---	33	35	26	16	15	12	49		
30	35	17	36	31	---	30	37	23	14	15	11	28		
31	33	---	4840	27	---	27	---	23	---	15	12	---		
TOTAL	734.9	560	5519	1149	1537	1138	999	904	611	592	426	494.9		
MEAN	23.7	18.7	178	37.1	54.9	36.7	33.3	29.2	20.4	19.1	13.7	16.5		
MAX	89	29	4840	135	756	50	46	57	30	45	19	49		
MIN	7.9	12	15	14	19	27	26	23	14	14	10	8.9		
CFSM	.21	.16	1.56	.33	.48	.32	.29	.26	.18	.17	.12	.15		
IN.	.24	.18	1.80	.37	.50	.37	.33	.29	.20	.19	.14	.16		
AC-FT	1460	1110	10950	2280	3050	2260	1980	1790	1210	1170	845	982		
CAL YR 1984	TOTAL	9555.5	MEAN	26.1	MAX	4840	MIN	2.8	CFSM	.23	IN	3.12	AC-FT	18950
WTR YR 1985	TOTAL	14664.8	MEAN	40.2	MAX	4840	MIN	7.9	CFSM	.35	IN	4.79	AC-FT	29090

## GUADALUPE RIVER MAIN STEM

08166140 GUADALUPE RIVER ABOVE BEAR CREEK AT KERRVILLE, TX

LOCATION.--Lat 30°04'10", long 99°11'42", Kerr County, Hydrologic Unit 12100201, on left bank 600 ft downstream from Goat Creek, 900 ft upstream from Bear Creek and Bear Creek Crossing, and 2.4 mi east of intersection of State Highways 27 and 39 in Ingram.

DRAINAGE AREA.--494 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,623.20 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: July 12 to Aug. 21. Records good except those for estimated daily discharges which are fair. Discharge not computed above 400 ft<sup>3</sup>/s. Numerous diversions for irrigation above station, amounts unknown. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum stage, 32.79 ft Aug. 3 1978 (discharge not known); minimum daily discharge, 13 ft<sup>3</sup>/s July 10, 14-18, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1900, 34.1 ft July 2, 1932, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 21.70 ft Dec. 31 at 0300 hours (discharge unknown); minimum daily, 25 ft<sup>3</sup>/s Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	136	66	---	136	223	100	203	124	59	70	57
2	25	113	64	---	138	206	98	166	125	59	70	57
3	26	97	62	347	134	202	101	144	113	62	65	55
4	28	90	62	326	132	196	101	131	59	69	65	57
5	28	80	69	310	133	196	99	116	79	69	60	58
6	27	73	69	302	131	191	95	107	101	81	65	92
7	28	69	63	297	113	186	96	102	98	131	60	81
8	27	73	59	256	111	185	108	96	93	114	80	68
9	29	64	60	208	108	183	133	95	77	83	65	63
10	31	59	59	202	112	177	119	94	67	77	65	60
11	42	55	59	194	112	177	117	78	63	71	65	59
12	48	51	58	200	106	176	107	64	60	140	65	63
13	48	51	84	208	103	174	111	83	65	115	85	71
14	44	50	102	196	106	192	147	83	69	105	85	66
15	43	51	92	192	104	182	126	75	68	90	75	63
16	41	50	189	206	102	179	115	70	63	85	60	66
17	35	51	165	221	102	172	108	---	62	90	70	65
18	33	69	150	205	103	170	99	245	64	80	60	65
19	31	69	141	202	106	170	98	186	78	80	60	64
20	113	60	121	191	104	177	100	170	80	80	60	62
21	150	57	107	183	109	172	114	164	71	80	55	60
22	82	52	96	181	109	169	117	155	73	80	55	59
23	47	49	88	179	---	169	106	147	72	75	56	58
24	36	59	83	178	---	167	95	141	91	75	56	57
25	36	109	78	172	265	143	91	137	80	80	66	55
26	43	104	74	161	235	124	89	135	71	75	65	54
27	---	80	76	157	214	133	90	134	69	75	61	53
28	---	71	94	153	214	129	88	130	68	75	58	60
29	187	67	88	156	---	123	96	129	66	75	57	125
30	158	67	104	154	---	123	136	127	62	70	57	144
31	144	---	---	144	---	105	---	124	---	70	54	---
TOTAL	---	2126	---	---	---	5271	3200	---	2331	2570	1990	2017
MEAN	---	70.9	---	---	---	170	107	---	77.7	82.9	64.2	67.2
MAX	---	136	---	---	---	223	147	---	125	140	85	144
MIN	---	49	---	---	---	105	88	---	59	59	54	53
AC-FT	---	4220	---	---	---	10460	6350	---	4620	5100	3950	4000

## 08167000 GUADALUPE RIVER AT COMFORT, TX

LOCATION.--Lat 29°58'10", long 98°53'33", Kendall County, Hydrologic Unit 12100201, on right bank at downstream side of southbound bridge on Interstate Highway 10, at Comfort, 0.5 mi downstream from Cypress Creek, and at mile 396.2.

DRAINAGE AREA.--839 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1939 to current year.

REVISED RECORDS.--WSP 1632: 1958. WSP 1732: 1939(M). WSP 2123: Drainage area, 1944(M), 1952(M), 1957(M), 1960(M).

GAGE.--Water-stage recorder. Datum of gage is 1,371.83 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 27, 1939, nonrecording gage. Nov. 27, 1939 to June 2, 1980, water-stage recorder at site 0.4 mi upstream at datum 0.22 ft higher.

REMARKS.--Estimated daily discharges: Jan. 1-15 and May 18 to June 2. Records good. Many small diversions above station for irrigation. Several observations of water temperature were made during the year. Satellite telemeter located at station.

AVERAGE DISCHARGE.--46 years (water years 1940-85), 185 ft<sup>3</sup>/s (134,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 240,000 ft<sup>3</sup>/s Aug. 2, 1978 (gage height, 40.90 ft), from high-water mark in well, from rating curve extended above 74,000 ft<sup>3</sup>/s on basis of current-meter measurement of 124,000 ft<sup>3</sup>/s at gage height 32.47 ft and slope-area measurement of 182,000 ft<sup>3</sup>/s at gage height 38.4 ft, made at former gaging station "near Comfort" 5 mi upstream; no flow at times in 1952-57, 1963-64. All stages are at site and datum then in use.

Maximum stage since at least 1848, that of Aug. 2, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1869 reached a stage of 40.3 ft, from report by U.S. Army Corps of Engineers. Flood of July 1, 1932, reached a stage of 38.4 ft, from floodmark, and from information by State Department of Highways and Public Transportation. Flood of July 16, 1900, reached about the same stage as that of July 1, 1932, from information by local residents. All stages are at site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	0800	*43,900	*19.88	May 17	1300	8,760	10.51
Feb. 23	1200	3,170	6.28				

Minimum daily discharge, 21 ft<sup>3</sup>/s Oct. 1, 2, and 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	177	92	2470	263	469	293	272	190	138	94	62
2	21	158	91	880	260	405	286	301	189	105	76	55
3	23	141	89	488	254	386	282	297	189	99	84	57
4	21	130	85	362	248	371	278	272	184	122	74	54
5	23	119	95	330	248	338	275	255	180	135	72	52
6	26	109	98	300	246	329	265	241	402	132	74	154
7	60	106	73	260	247	343	263	232	266	170	72	150
8	31	102	87	240	246	339	259	229	149	156	70	130
9	27	104	86	212	230	329	262	225	184	156	68	118
10	25	98	86	195	228	323	266	200	185	148	69	103
11	34	89	87	180	230	318	287	222	158	143	70	115
12	62	85	87	165	222	293	278	223	170	649	69	95
13	53	83	133	150	226	316	287	216	167	285	67	91
14	69	82	156	140	225	676	398	209	165	226	64	113
15	59	80	158	180	218	447	305	192	164	199	63	103
16	50	80	440	250	216	429	278	181	158	175	63	97
17	47	80	240	387	215	386	262	8600	152	167	61	94
18	41	98	199	383	215	358	252	3500	199	160	61	93
19	38	107	176	359	215	352	183	1100	271	156	61	91
20	37	93	162	240	212	390	267	560	179	147	61	88
21	139	91	152	231	214	373	268	370	167	138	61	87
22	214	90	140	257	215	349	259	300	212	129	60	87
23	177	83	133	303	1520	327	251	302	209	122	55	82
24	137	83	127	295	932	314	235	244	175	107	51	79
25	256	129	122	293	547	315	227	225	174	108	44	79
26	218	127	114	285	442	308	229	210	165	106	40	78
27	279	122	114	281	380	378	235	202	159	105	54	76
28	1180	109	135	272	382	338	234	199	154	102	56	75
29	395	102	153	269	---	318	237	196	148	97	55	107
30	255	99	144	279	---	314	250	194	143	92	65	160
31	202	---	11500	278	---	297	---	191	---	82	84	---
TOTAL	4220	3156	15554	11214	9296	11228	7951	20120	5607	4856	2018	2825
MEAN	136	105	502	362	332	362	265	649	187	157	65.1	94.2
MAX	1180	177	11500	2470	1520	676	398	8600	402	649	94	160
MIN	21	80	73	140	212	293	183	181	143	82	40	52
AC-FT	8370	6260	30850	22240	18440	22270	15770	39910	11120	9630	4000	5600
CAL YR 1984	TOTAL	34187.0	MEAN	93.4	MAX	11500	MIN	1.8	AC-FT	67810		
WTR YR 1985	TOTAL	98045.0	MEAN	269	MAX	11500	MIN	21	AC-FT	194500		

## GUADALUPE RIVER MAIN STEM

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX

LOCATION.--Lat 29°23'00", long 98°23'00", Comal County, Hydrologic Unit 12100201, at downstream side of bridge on Ranch Road 311, 1.9 mi southeast of Spring Branch Post Office, 7.5 mi downstream from Curry Creek, and at mile 334.4.

DRAINAGE AREA.--1,315 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1922 to current year.

Water-quality records.--Chemical Biochemical analyses: October 1980 to September 1982.

REVISED RECORDS.--WSP 1562: 1923-24, 1926, 1927-28(M), 1929, 1930(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 948.10 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 14, 1981, at site 220 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Mar. 16 to Apr. 13, June 25 to July 11, and July 16 to Aug. 24. Records good except those for periods of estimated daily discharges, which are fair. Several small diversions above station for irrigation. Several observations of water temperature were made during the year. A satellite telemeter is located at station.

AVERAGE DISCHARGE.--63 years, 310 ft<sup>3</sup>/s (224,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 160,000 ft<sup>3</sup>/s Aug. 3, 1978 (gage height, 45.25 ft, from floodmark), from rating curve extended above 55,600 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times in 1951-52, 1954-56, and 1963-64.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1859, about 53 ft in 1869; flood in July 1900 reached a stage of about 49 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan. 1	0300	32,000	26.39	June 22	1900	5,230	9.34
May 18	0900	7,540	11.58	July 12	0800	4,970	9.06
June 6	0300	*47,500	*30.65				

Minimum daily discharge, 17 ft<sup>3</sup>/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	418	128	17000	455	913	520	475	295	330	195	121
2	18	263	122	2280	443	913	500	451	279	320	200	128
3	18	227	116	1470	432	808	495	467	274	350	185	105
4	19	203	116	1110	432	765	490	459	262	310	178	99
5	20	180	118	921	432	677	480	427	3800	300	172	99
6	22	164	121	782	432	617	470	401	17400	300	167	114
7	761	153	129	684	416	617	450	382	1830	285	163	225
8	263	144	122	624	416	624	440	363	936	300	159	215
9	86	137	120	596	405	596	445	354	568	290	154	179
10	49	131	118	534	395	582	460	344	502	280	150	179
11	71	125	115	472	374	522	465	318	438	270	144	185
12	62	118	116	484	364	460	470	334	438	2320	142	192
13	50	113	122	522	360	534	470	339	432	1690	139	165
14	102	111	131	554	360	1590	921	346	421	692	139	176
15	84	110	248	603	345	1440	757	319	400	575	134	266
16	76	107	2110	684	340	1130	589	303	369	470	135	195
17	64	105	942	861	340	990	534	371	340	410	132	165
18	55	111	617	861	331	880	502	3980	443	370	130	145
19	51	106	484	816	326	790	486	1320	1010	350	128	153
20	48	129	418	700	326	810	427	700	548	330	125	140
21	44	122	378	632	326	810	490	575	443	315	127	128
22	49	115	334	589	340	760	506	534	2180	300	123	125
23	249	113	308	575	2140	690	503	466	1540	290	117	125
24	182	116	294	561	2930	640	468	421	624	275	112	118
25	159	131	267	554	1570	610	442	478	560	260	105	116
26	700	145	255	528	1020	580	439	443	510	250	103	112
27	707	167	255	528	843	730	436	374	440	235	93	116
28	797	154	258	502	757	750	428	355	400	225	85	121
29	1270	147	260	490	---	670	432	350	370	215	105	449
30	554	131	357	484	---	630	431	336	350	210	105	515
31	370	---	3420	472	---	570	---	317	---	205	103	---
TOTAL	7017	4496	12899	38473	17650	23698	14946	17102	38402	13322	4249	5171
MEAN	226	150	416	1241	630	764	498	552	1280	430	137	172
MAX	1270	418	3420	17000	2930	1590	921	3980	17400	2320	200	515
MIN	17	105	115	472	326	460	427	303	262	205	85	99
AC-FT	13920	8920	25590	76310	35010	47000	29650	33920	76170	26420	8430	10260

CAL YR 1984	TOTAL	38899.8	MEAN 106	MAX 3420	MIN 1.1	AC-FT 77160
WTR YR 1985	TOTAL	197425.0	MEAN 541	MAX 17400	MIN 17	AC-FT 391600



## 08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX

LOCATION.--Lat 29°52'07", long 98°11'55", Comal County, Hydrologic Unit 12100201, in intake structure of Canyon Dam on Guadalupe River, 12 mi northwest of New Braunfels, and at mile 303.0.

DRAINAGE AREA.--1,432 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1962 to current year. Prior to October 1970, published as Canyon Reservoir.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). Prior to Sept. 24, 1964, nonrecording gage at present site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 6,830 ft long, consisting of the main dam 4,410 ft long, an earthen dike 210 ft long, a 1,260-foot-long uncontrolled broad-crested-type spillway, and a 950-foot concrete and earthen nonoverflow section. Deliberate impoundment began June 16, 1964, and main part of dam was completed in August 1964. The flood-control outlet works consist of a 10.0-foot-diameter conduit controlled by two 5.7 by 10.0-foot hydraulically operated slide gates. The lake was built for water conservation and flood control. Capacity table beginning Oct. 1, 1974, is based on a sedimentation survey of August 1972. Small diversions above the lake for irrigation. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	974.0	-
Crest of spillway.....	943.0	736,700
Top of conservation pool.....	909.0	382,000
Lowest gated outlet (invert).....	775.0	240

COOPERATION.--Records furnished by the U.S. Army Corps of Engineers and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 588,400 acre-ft Aug. 4, 1978 (elevation, 930.61 ft); minimum observed since conservation pool first reached in April 1968, 311,200 acre-ft Nov. 24, 1984 (elevation, 899.85 ft).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 405,000 acre-ft July 14 at 0800 hours (elevation, 911.73 ft); minimum daily, 311,200 acre-ft Nov. 24 at 1600 hours (elevation, 899.85 ft).

## Capacity table (elevation, in feet, and total contents, in acre-feet)

899.0	305,100	905.0	349,900	911.0	398,700
901.0	319,600	907.0	365,800	913.0	415,900
903.0	334,500	909.0	382,000		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	314400	320000	311600	345900	335300	340300	342900	333000	332500	397700	389900	374100
2	314200	318600	311400	348600	334500	340500	342400	333000	331800	397200	388800	373800
3	314100	317700	311100	348900	333700	340600	342000	332800	331000	400200	387600	373400
4	314100	316700	311100	349200	332900	340600	341600	332700	330300	400900	386400	373200
5	313900	315700	311000	349200	332000	341100	341100	332500	336600	401000	385100	373000
6	314200	314700	310900	348800	331100	340800	340500	332200	380100	401100	383800	373000
7	316100	314300	310700	348300	330400	340600	339900	332000	383600	401000	383000	373000
8	316600	314000	310500	347700	329400	340400	339200	332100	385000	400700	382500	372900
9	316800	313800	310300	347300	328800	340000	338500	331900	385400	400000	382100	372900
10	316800	313600	310300	346500	328000	339700	338300	331400	385700	399400	381600	373200
11	317600	313400	310200	345700	327200	339300	337900	331000	385900	398700	381000	374200
12	317700	313100	310100	345300	327300	338900	337300	330600	385800	403200	380600	374200
13	317900	313000	310500	344900	327300	338600	336800	330400	385600	404700	380300	374800
14	318600	312900	310500	344300	327300	340200	336900	330100	385600	404800	380100	375000
15	318800	312900	311500	343800	327300	341400	336600	329900	385500	404600	379800	375100
16	318800	312600	313800	343800	327300	342000	336000	329700	385300	404200	379500	375100
17	318500	312700	315300	343700	327300	342200	335400	330100	385000	403800	379100	375000
18	318500	312800	315600	343600	327300	342500	334700	335200	386700	403100	378800	374900
19	318000	312300	315800	343400	327300	342800	334100	336600	388000	402600	378600	374600
20	317900	312000	315800	342600	327300	343600	333200	337100	388400	401900	378200	374300
21	317900	311800	315800	342200	327400	343400	332500	337200	388500	401000	377800	374100
22	317700	310900	315400	341700	327700	343400	332500	337000	393800	400300	377500	373700
23	318000	311300	315000	341200	333400	343500	332500	336700	396400	399400	377100	373400
24	318100	312100	314700	340800	337800	343300	332400	336500	398000	398500	376700	373300
25	318000	312000	314000	340200	339200	343100	332400	336100	399100	397400	376300	373000
26	318500	312100	313600	339600	339700	343400	332500	335900	399500	396500	376000	372600
27	319300	312000	313300	339200	339800	343500	332300	335400	399700	395600	375600	372200
28	319900	311600	312900	338300	340200	343700	332400	335000	399300	394400	375100	372400
29	321300	311600	312600	337700	---	343500	332400	334400	398800	393300	374900	375000
30	321500	311600	312900	337100	---	343600	332500	333900	398300	392100	374600	375000
31	320900	---	314100	336200	---	343300	---	333200	---	391100	374300	---
MAX	321500	320000	315800	349200	340200	343700	342900	337200	399700	404800	389900	375500
MIN	313900	310900	310100	336200	327200	338600	332300	329700	330300	391100	374300	372200
(†)	901.18	899.91	900.25	903.22	903.74	904.15	902.73	902.83	910.95	910.09	908.06	908.21
(‡)	+6400	-9300	+2500	+22100	+4000	+3100	-10800	+700	+65100	-7200	-16800	+1200

CAL YR 1984 MAX 344600 MIN 310100 ‡ -27500  
WTR YR 1985 MAX 404800 MIN 310100 ‡ +61000

(†) Elevation, in feet, at end of month.  
(‡) Change in contents, in acre-feet.

## GUADALUPE RIVER MAIN STEM

08167800 GUADALUPE RIVER AT SATTLE, TX

LOCATION.--Lat 29°51'32", long 98°10'47", Comal County, Hydrologic Unit 12100202, on right bank 200 ft upstream from Horseshoe Falls, 0.8 mi north of Sattler, 1.8 mi downstream from Canyon Dam, 2.3 mi upstream from Heiser Hollow, 11.2 mi north of New Braunfels, and at mile 301.2.

DRAINAGE AREA.--1,436 mi<sup>2</sup>, of which 1,432 mi<sup>2</sup> is above Canyon Dam.

PERIOD OF RECORD.--March 1960 to current year.

Water-quality records.--Chemical and biochemical analyses: October 1980 to September 1982.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 742.24 ft above National Geodetic Vertical Datum of 1929 (U. S. Army Corps of Engineers bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated since July 21, 1962, by Canyon Lake (station 08167700) 1.8 mi upstream. Small diversions above station for irrigation. Satellite telemeter at station.

AVERAGE DISCHARGE.--23 years (water years 1962-85) since regulation began at Canyon Lake, 385 ft<sup>3</sup>/s (278,900 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft<sup>3</sup>/s Oct. 29, 1960 (gage height, 12.20 ft). Maximum discharge since closure of Canyon Dam on July 21, 1962, 5,850 ft<sup>3</sup>/s Aug. 5, 1978 (gage height, 8.31 ft); no flow July 31 to Aug. 6, 1962 (result of closure of Canyon Dam), and part of Jan. 29, 30, Feb. 1, 1965 (result of closure while constructing present control).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1869 (stage unknown) has not been exceeded since that date; flood in July 1900 (stage unknown) exceeded 39 ft; maximum stage since at least 1904, 39 ft in July 1932 and June 1935, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 866 ft<sup>3</sup>/s Mar. 19 at 2400 hours, June 6 at 1100 hours (gage height, 6.04 ft); minimum daily, 1.8 ft<sup>3</sup>/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.8	772	155	482	837	818	856	483	614	763	784	195
2	7.7	706	155	635	837	818	856	482	614	763	781	195
3	8.2	649	155	791	837	818	856	482	614	702	781	171
4	8.3	649	155	795	837	737	856	482	614	627	781	143
5	8.3	649	155	800	837	182	851	482	456	621	781	143
6	8.2	563	155	800	837	809	847	491	322	616	781	143
7	9.6	309	155	803	837	847	847	512	290	614	539	143
8	21	309	155	809	837	856	847	513	550	714	376	143
9	43	239	151	809	837	856	847	518	549	791	360	143
10	48	155	157	809	837	856	847	518	544	791	360	146
11	50	155	157	809	663	856	847	518	542	790	360	160
12	51	155	157	809	390	856	847	518	542	807	357	142
13	51	155	157	809	380	856	847	518	542	800	292	142
14	52	155	157	809	380	856	839	477	529	793	247	146
15	75	155	157	809	380	856	837	442	518	791	247	143
16	99	155	158	809	380	856	837	442	518	800	247	143
17	99	155	227	809	380	856	837	442	518	792	247	186
18	99	157	365	809	380	856	837	438	520	791	247	224
19	99	157	365	809	380	857	837	437	526	791	241	224
20	99	157	365	809	380	866	837	437	524	791	241	224
21	100	157	401	809	380	866	837	535	524	791	241	224
22	101	155	476	809	380	859	613	614	524	791	241	224
23	170	155	476	809	380	856	423	614	524	791	241	192
24	277	156	476	837	380	856	473	614	524	791	241	157
25	268	157	476	837	530	860	476	614	596	791	241	157
26	262	157	476	837	818	866	476	614	670	791	238	157
27	251	155	476	837	818	866	476	614	710	792	213	157
28	251	155	476	837	818	866	476	614	763	791	195	157
29	251	155	476	837	---	866	476	614	763	791	195	173
30	353	155	478	837	---	865	478	614	763	791	195	162
31	714	---	482	837	---	856	---	614	---	791	195	---
TOTAL	3936.1	8113	8982	24746	16967	25650	22116	16307	16807	23650	11486	5059
MEAN	127	270	290	798	606	827	737	526	560	763	371	169
MAX	714	772	482	837	837	866	856	614	763	807	784	224
MIN	1.8	155	151	482	380	182	423	437	290	614	195	142
AC-FT	7810	16090	17820	49080	33650	50880	43870	32340	33340	46910	22780	10030
CAL YR 1984	TOTAL	37961.2	MEAN	104	MAX	772	MIN	1.1	AC-FT	75300		
WTR YR 1985	TOTAL	183819.1	MEAN	504	MAX	866	MIN	1.8	AC-FT	364600		

## GUADALUPE RIVER MAIN STEM

243

08168500 GUADALUPE RIVER ABOVE COMAL RIVER AT NEW BRAUNFELS, TX

LOCATION.--Lat 29°42'53", long 98°06'35", Comal County, Hydrologic Unit 12100202, on right bank at New Braunfels, 1.1 mi upstream from Comal River, 21.9 mi downstream from Canyon Lake, and at mile 281.1.

DRAINAGE AREA.--1,518 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1927 to current year.

REVISED RECORDS.--WSP 898: 1935. WSP 1562: 1932. WSP 2123: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 586.65 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diversions for irrigation below station 08167800 and above this station. Since July 21, 1962, flow is largely regulated by Canyon Lake (station 08167700) 21.9 mi upstream. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--34 years (water years 1929-62) prior to regulation by Canyon Lake, 372 ft<sup>3</sup>/s (269,500 acre-ft/yr); 23 years (water years 1963-85) regulated, 473 ft<sup>3</sup>/s (342,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 101,000 ft<sup>3</sup>/s June 15, 1935 (gage height, 32.95 ft); no flow July 8, 9, July 17 to Aug. 20, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1845, 38 ft July 8, 1869, and in December 1913, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,000 ft<sup>3</sup>/s June 6 at 1500 hours (gage height, 6.80 ft); minimum daily, 2.6 ft<sup>3</sup>/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	877	153	575	1040	1040	979	566	635	920	920	258
2	9.0	832	153	664	1030	1030	977	549	633	918	918	255
3	5.2	710	156	991	1030	1030	978	542	631	1010	919	250
4	3.2	711	164	991	1030	1010	979	537	629	1420	919	206
5	2.7	708	165	983	1030	517	978	529	574	1110	918	202
6	2.8	701	157	979	1030	925	972	524	1520	991	918	204
7	4.2	336	157	972	1030	992	968	555	634	915	790	201
8	11	305	160	966	1030	991	967	556	800	928	485	198
9	16	296	161	966	1030	990	966	557	738	1060	454	196
10	36	161	157	960	1040	976	981	550	701	1040	449	199
11	62	157	157	956	922	962	972	546	676	1020	441	233
12	64	157	158	975	437	954	962	544	665	1240	438	219
13	63	157	165	980	435	954	974	537	654	1110	416	206
14	94	161	160	981	443	1000	958	536	645	1060	322	212
15	95	161	161	1010	442	1010	954	462	637	1020	318	216
16	115	161	184	1050	445	1000	954	458	629	1000	316	208
17	120	164	197	1080	450	1000	954	515	626	986	316	213
18	120	169	335	1090	454	993	954	488	648	972	313	288
19	123	161	429	1080	458	991	954	480	720	964	309	288
20	120	161	420	1060	458	1020	950	475	666	953	308	287
21	121	163	412	1050	463	1000	947	514	658	943	306	287
22	124	161	463	1040	465	1000	835	638	689	937	305	284
23	131	161	501	1050	528	996	519	635	695	930	305	276
24	296	166	500	1050	556	991	563	634	705	926	306	210
25	299	173	492	1060	655	991	562	631	738	922	306	208
26	309	157	492	1040	1030	991	571	631	864	924	303	205
27	290	154	492	1050	1030	997	558	631	862	930	294	200
28	284	156	493	1040	1040	991	556	629	948	927	261	209
29	281	153	492	1040	---	991	556	627	933	921	261	287
30	281	153	499	1050	---	986	552	622	926	920	260	269
31	707	---	569	1040	---	979	---	629	---	919	257	---
TOTAL	4191.7	8843	9354	30819	21031	30298	25550	17327	22079	30836	14351	6974
MEAN	135	295	302	994	751	977	852	559	736	995	463	232
MAX	707	877	569	1090	1040	1040	981	638	1520	1420	920	288
MIN	2.6	153	153	575	435	517	519	458	574	915	257	196
AC-FT	8310	17540	18550	61130	41710	60100	50680	34370	43790	61160	28470	13830
CAL YR 1984	TOTAL	41360.0	MEAN	113	MAX	877	MIN	2.6	AC-FT	82040		
WTR YR 1985	TOTAL	221653.7	MEAN	607	MAX	1520	MIN	2.6	AC-FT	439600		

## GUADALUPE RIVER BASIN

08169000 COMAL RIVER AT NEW BRAUNFELS, TX

LOCATION.--Lat 29°42'21", long 98°07'20", Comal County, Hydrologic Unit 12100202, on right bank 200 ft upstream from San Antonio Street viaduct in New Braunfels and 1.1 mi upstream from mouth.

DRAINAGE AREA.--130 mi<sup>2</sup>. Normal flow of river comes from springs; drainage area not applicable.

PERIOD OF RECORD.--1882 to current year (1882 to November 1927, discharge measurements only).

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Concrete control since Oct. 1, 1955. Datum of gage is 582.80 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. The flow from Comal Springs emerges from the Edwards and associated limestones in the Balcones Fault Zone. Except during periods of rainfall, flow of river is primarily from Comal Springs about 1.0 mi upstream. Flow is affected at times by cleanup operations by the city of New Braunfels at Landa Park Lake and at times by discharge from the flood-detention pools of five floodwater-retarding structures with a combined detention capacity of 17,580 acre-ft. These structures control runoff from 74.6 mi<sup>2</sup> above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--53 years (water years 1933-85), 294 ft<sup>3</sup>/s (213,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,800 ft<sup>3</sup>/s May 11, 1972 (gage height, 36.55 ft, from floodmark), from rating curve extended above 13,000 ft<sup>3</sup>/s on basis of contracted-opening measurements on Blieders and Dry Comal Creeks and unit rainfall-runoff studies; no flow from Comal Springs from June 13 to Nov. 3, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood information begins with flood of July 8, 1869, which reached a stage of 36.91 ft, from painted and dated marks in old Remmert Brewery 0.5 mi downstream; the flood of Oct. 17, 1870, reached a stage of 37.65 ft at same site (probably some backwater from Guadalupe River).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 6	1600	1,700	6.67	July 3	2300	2,330	7.72
July 3	0300	1,310	6.02	July 4	1400	*3,860	*9.96

Minimum daily discharge, 54 ft<sup>3</sup>/s Oct. 1, 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	147	156	187	222	230	254	262	230	262	254	204
2	54	147	159	187	222	226	255	254	222	250	246	204
3	55	147	157	184	219	230	258	254	222	872	250	197
4	57	150	156	186	222	226	258	254	211	1760	254	194
5	63	147	156	191	219	230	254	254	219	484	246	194
6	65	147	153	194	219	230	254	250	736	326	246	197
7	76	147	153	194	222	222	254	250	352	299	242	204
8	78	147	156	194	222	230	254	242	246	290	246	204
9	80	147	159	197	222	234	254	234	242	282	234	197
10	84	147	159	194	226	234	262	238	238	286	234	197
11	107	147	159	197	222	234	262	234	238	282	230	246
12	96	147	159	201	219	230	262	238	234	299	230	219
13	118	147	165	204	219	230	262	242	242	290	222	222
14	128	147	162	215	222	246	270	249	242	282	222	215
15	117	147	162	234	222	246	266	234	238	282	226	219
16	117	147	184	242	222	246	262	234	238	274	219	219
17	115	153	177	238	222	250	258	252	242	278	222	219
18	115	153	174	215	222	250	258	230	258	278	219	222
19	166	153	174	215	219	250	262	234	242	274	219	222
20	128	150	171	211	219	258	258	234	242	278	208	226
21	123	150	171	211	222	250	258	234	238	278	211	226
22	169	150	171	215	226	258	258	238	258	270	211	226
23	156	153	171	215	252	254	258	238	282	262	201	226
24	144	166	174	219	234	254	254	230	320	262	211	226
25	139	172	174	219	226	258	258	242	290	266	211	226
26	147	159	177	219	226	258	262	238	262	260	211	222
27	144	156	171	222	226	258	258	238	266	266	208	222
28	144	153	174	222	236	258	258	234	259	266	208	230
29	144	156	171	222	---	258	262	234	258	262	208	286
30	141	156	174	222	---	266	256	234	254	254	204	246
31	143	---	218	222	---	258	---	227	---	250	208	---
TOTAL	3467	4535	5197	6488	6271	7562	7759	7460	8021	10824	6961	6557
MEAN	112	151	168	209	224	244	259	241	267	349	225	219
MAX	169	172	218	242	252	266	270	262	736	1760	254	286
MIN	54	147	153	184	219	222	254	227	211	250	201	194
AC-FT	6880	9000	10310	12870	12440	15000	15390	14800	15910	21470	13810	13010

CAL YR 1984	TOTAL	46117	MEAN 126	MAX 270	MIN 26	AC-FT 91470
WTR YR 1985	TOTAL	81102	MEAN 222	MAX 1760	MIN 54	AC-FT 160900

GUADALUPE RIVER BASIN

245

08169580 GUADALUPE RIVER BELOW NEW BRAUNFELS, TX

LOCATION.--Lat 29°40'00", long 98°04'14", Comal County, Hydrologic Unit 12100202, in Lake Dunlap, 8 mi southeast of New Braunfels, and 15 mi downstream from Interstate Highway 35 bridge.

PERIOD OF RECORD.--Periodic chemical and biochemical analyses: January 1968 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATURATION)	OXYGEN DEMAND, BIO-CHEMICAL, 5 DAY (MG/L)	HARDNESS (MG/L AS CaCO3)	HARDNESS, NONCARBONATE (MG/L AS CaCO3)
OCT 17...	1044	483	7.7	23.5	4.6	55	2.6	210	22
DEC 11...	0910	500	7.9	17.0	8.3	88	2.1	220	12
FEB 25...	1630	481	7.9	19.5	9.0	100	1.3	220	20
APR 19...	0900	459	7.9	19.5	7.5	84	.9	210	22

DATE	CALCIUM DIS-SOLVED (MG/L AS Ca)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM ADSORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)	ALKALINITY FIELD AS CaCO3	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS Cl)	FLUORIDE, DIS-SOLVED (MG/L AS F)
OCT 17...	60	15	18	.6	2.1	190	25	25	.20
DEC 11...	59	18	16	.5	1.9	210	23	24	.30
FEB 25...	60	17	15	.5	1.9	200	23	18	.20
APR 19...	57	17	12	.4	4.3	191	23	18	.20

DATE	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)
OCT 17...	12	270	.88	.020	.90	.140	.56	.70	.200
DEC 11...	11	280	.89	.010	.90	.190	.31	.50	.110
FEB 25...	10	270	--	--	--	--	--	--	--
APR 19...	9.4	260	--	<.010	.60	.080	.42	.50	.060



## Q3170000 SAN MARCOS RIVER SPRINGFLOW AT SAN MARCOS, TX

LOCATION.--Lat 29°52'06", long 97°55'38", Hays County, Hydrologic Unit 12100203, on left bank 0.7 mi downstream from bridge on Interstate Highway 35 and U.S. Highway 81, 1.2 mi southeast of courthouse in San Marcos, and 2.1 mi upstream from Blanco River.

DRAINAGE AREA.--93.0 mi<sup>2</sup>. Normal flow of river comes from springs, drainage area of stream not applicable.

PERIOD OF RECORD.--May 1956 to current year. June 1915 to January 1916, March 1916 to September 1921, and May to September 1956, published as San Marcos River at San Marcos; records include some surface runoff. Periodic measurements of springflow were made at this location outside periods of records since Nov. 14, 1894, and are published as miscellaneous measurements.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 536.82 ft above National Geodetic Vertical Datum of 1929. June 10, 1915, to Jan. 19, 1916, nonrecording gage at site 1.2 mi upstream, and Mar. 13, 1916, to Sept. 7, 1921, water-stage recorder near present site, datum relations unknown.

REMARKS.--No estimated daily discharges. Records good. Flow slightly regulated by utilities dam about 1.5 mi upstream. Flow is affected at times by discharge from the flood-detention pool of one floodwater-retarding structure with a detention capacity of 8,580 acre-ft. This structure controls runoff from 33.6 mi<sup>2</sup>. Entire flow of river is from San Marcos springs, about 1.8 mi upstream, except during periods of local runoff. San Marcos springs emerge from the Edwards and associated limestones in the Balcones Fault Zone. There is small diversion for operation of State fish hatchery, some of which is returned above gage. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--29 years (water years 1957-85), 164 ft<sup>3</sup>/s (118,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily spring discharge (estimated), 350 ft<sup>3</sup>/s June 20, 1981; maximum discharge, 76,600 ft<sup>3</sup>/s May 15, 1970 (gage height, 35.12 ft); minimum daily spring discharge, 46 ft<sup>3</sup>/s Aug. 15, 16, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1913, 38.6 ft Sept. 10, 1921 (from floodmark, backwater from Blanco River), present datum.

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge, 284 ft<sup>3</sup>/s June 23; maximum gage height, 18.67 ft June 6 at 1500 hours (flood runoff), from floodmark; minimum daily spring discharge, 72 ft<sup>3</sup>/s Oct. 2, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	75	99	100	132	141	162	167	169	140	213	226	192
2	72	100	100	132	141	162	167	160	138	209	226	192
3	72	100	100	131	141	158	168	158	136	224	219	192
4	74	100	102	127	141	157	167	158	135	275	214	191
5	74	100	104	125	144	156	167	157	144	280	213	190
6	75	98	99	124	145	154	167	152	192	250	212	194
7	82	99	100	124	144	156	167	153	272	250	212	190
8	78	100	101	122	144	157	166	157	233	244	208	188
9	79	101	101	122	147	157	167	159	202	246	206	186
10	74	99	99	121	148	157	172	158	191	238	208	189
11	81	99	100	120	147	158	177	157	184	236	208	186
12	83	98	102	122	147	157	172	157	179	283	206	186
13	82	95	105	125	147	158	174	156	177	279	202	188
14	90	96	104	136	145	168	175	167	173	250	202	189
15	89	96	105	132	147	174	172	159	172	242	201	188
16	88	95	110	139	148	168	172	156	170	238	199	188
17	85	96	114	145	149	163	169	159	167	233	199	186
18	86	100	125	145	149	162	169	157	177	231	196	185
19	89	96	120	145	152	163	170	154	194	230	199	183
20	89	94	121	140	153	175	170	154	178	228	195	178
21	93	95	120	139	154	167	170	156	173	231	196	178
22	89	98	118	139	154	163	168	156	223	243	195	179
23	89	100	119	139	156	162	168	153	284	242	195	179
24	95	101	119	140	163	163	167	150	246	240	194	177
25	93	107	119	140	164	166	167	152	236	238	195	174
26	100	101	119	140	158	166	174	150	230	240	192	172
27	100	99	122	147	154	172	166	150	226	236	192	177
28	100	100	126	141	154	170	166	149	221	232	190	179
29	99	100	124	144	---	167	164	149	218	232	186	188
30	99	100	124	144	---	172	164	145	216	231	191	179
31	98	---	127	141	---	169	---	141	---	227	191	---
TOTAL	2672	2962	3449	4163	4177	5059	5069	4808	5827	7471	6268	5543
MEAN	86.2	98.7	111	134	149	163	169	155	194	241	202	185
MAX	100	107	127	147	164	175	177	169	284	283	226	194
MIN	72	94	99	120	141	154	164	141	135	209	186	172
AC-FT	5300	5880	6840	8260	8290	10030	10050	9540	11560	14820	12430	10990
CAL YR 1984	TOTAL	36471	MEAN	99.6	MAX	135	MIN	64	AC-FT	72340		
WTR YR 1985	TOTAL	57468	MEAN	157	MAX	284	MIN	72	AC-FT	114000		

## GUADALUPE RIVER BASIN

247

08171000 BLANCO RIVER AT WIMBERLEY, TX

LOCATION.--Lat 29°59'39", long 98°05'19", Hays County, Hydrologic Unit 12100203, on left bank at downstream side of highway, near left end of bridge on Ranch Road 12, 0.3 mi southeast of Wimberley, 2,200 ft downstream from Cypress Creek, and at mile 29.0.

DRAINAGE AREA.--355 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1924 to September 1926, June 1928 to current year.

REVISED RECORDS.--WSP 1562: 1929, 1930-31(M), 1935-36(M), 1938(M), 1941-42(M), 1947(M), 1949(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 797.23 ft above National Geodetic Vertical Datum of 1929. Aug. 6, 1924, to Sept. 30, 1926, nonrecording gage at site 1,030 ft upstream at datum 5.00 ft higher. From June 6, 1928, to June 12, 1975, nonrecording gage at site 1,000 ft upstream at datum 5.00 ft higher.

REMARKS.--Estimated daily discharges: Aug. 4-27. Records good. Many small diversions above station. Several observations of water temperature were made during the year. Satellite telemeter located at station.

AVERAGE DISCHARGE.--59 years (water years 1925-26, 1929-85), 123 ft<sup>3</sup>/s (4.71 in/yr), 89,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 113,000 ft<sup>3</sup>/s May 28, 1929 (gage height, 33.3 ft, from floodmark), present site and datum, from rating curve extended above 30,000 ft<sup>3</sup>/s on basis of slope-area measurements of 95,000 and 113,000 ft<sup>3</sup>/s; minimum, 0.6 ft<sup>3</sup>/s Aug. 16, 1956. Maximum stage since at least 1869, that of May 28, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1869 reached a stage of 25 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 23	0600	7,440	10.57	June 22	2130	3,690	8.14
June 6	0800	*44,200	*23.03				

Minimum daily discharge, 13 ft<sup>3</sup>/s Oct. 1-5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	66	40	449	201	520	276	142	69	238	111	56
2	13	60	41	311	197	421	266	138	66	222	108	56
3	13	59	39	301	193	393	262	123	66	486	105	56
4	13	60	39	304	193	381	256	116	66	543	102	54
5	13	54	39	285	200	342	248	114	250	369	100	54
6	14	50	36	267	197	323	233	109	14400	309	97	63
7	57	50	36	250	185	322	224	105	1270	287	95	54
8	47	49	38	236	174	328	214	108	679	256	93	54
9	59	44	39	229	170	306	210	102	500	242	91	56
10	34	40	39	215	170	295	217	97	401	227	89	61
11	74	38	38	195	163	287	220	94	345	209	87	70
12	66	38	36	197	156	276	217	91	304	470	85	82
13	65	37	44	218	151	269	207	91	273	364	83	70
14	112	37	40	233	150	477	219	96	254	305	81	62
15	81	37	44	279	146	467	235	97	237	254	79	55
16	60	35	369	343	146	432	203	93	218	232	81	52
17	47	33	287	430	146	397	185	92	198	211	78	54
18	37	38	199	383	142	375	174	86	261	198	76	55
19	31	33	166	358	139	369	169	89	516	186	74	56
20	27	33	149	318	137	445	163	89	330	174	72	56
21	48	32	132	293	136	397	156	86	262	165	71	56
22	80	30	120	294	136	368	158	83	879	158	69	52
23	119	30	113	293	2480	355	156	82	776	150	67	50
24	133	37	110	288	701	336	152	81	453	148	66	47
25	110	50	102	273	478	324	148	80	412	141	65	47
26	110	44	97	254	422	313	150	78	400	134	63	47
27	102	44	97	253	384	361	145	76	339	127	62	44
28	90	44	98	240	380	334	139	75	307	123	61	44
29	83	44	105	227	---	311	134	75	278	120	61	104
30	76	43	130	227	---	338	129	73	254	116	60	86
31	72	---	770	214	---	293	---	69	---	112	58	---
TOTAL	1899	1289	3632	8657	8473	11155	5865	2930	25063	7276	2490	1753
MEAN	61.3	43.0	117	279	303	360	196	94.5	835	235	80.3	58.4
MAX	133	66	770	449	2480	520	276	142	14400	543	111	104
MIN	13	30	36	195	136	269	129	69	66	112	58	44
CFSM	.17	.12	.33	.79	.85	1.01	.55	.27	2.35	.66	.23	.17
IN.	.20	.14	.38	.91	.89	1.17	.61	.31	2.63	.76	.26	.18
AC-FT	3770	2560	7200	17170	16810	22130	11630	5810	49710	14430	4940	3480
CAL YR 1984	TOTAL	14269	MEAN	39.0	MAX	770	MIN	10	CFSM	.11	IN	1.50
WTR YR 1985	TOTAL	80482	MEAN	220	MAX	14400	MIN	13	CFSM	.62	IN	8.43
									AC-FT	28300		
									AC-FT	159600		

LOCATION.--Lat 29°58'45", long 97°54'35", Hays County, Hydrologic Unit 12100203, on left bank 800 ft downstream from Tarbutton Ranch House (Hatchett Ranch), 2.2 mi southwest of Kyle, 4.2 mi downstream from Halifax Creek, and 6.3 mi upstream from bridge on U.S. Highway 81.

PERIOD OF RECORD.--May 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 620.12 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers).

AVERAGE DISCHARGE.--29 years, 146 ft<sup>3</sup>/s (4.81 in/yr), 105,800 acre-ft/yr.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, about 40 ft in May 1929, from information by local residents (discharge, 139,000 ft<sup>3</sup>/s). Flood of Sept. 11, 1952, reached a stage of 38.0 ft (discharge, 115,000 ft<sup>3</sup>/s).

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 23	1000	5,500	13.70	June 22	1330	3,190	11.55
June 6	1030	*50,700	a*29.43				

Minimum daily discharge, no flow Oct. 1-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	18	17	612	194	500	290	132	61	272	95	37
2	.00	16	16	334	189	431	278	135	59	254	90	36
3	.00	15	16	306	184	385	267	119	58	313	87	35
4	.00	14	18	306	184	373	259	111	57	985	83	34
5	.00	14	19	294	186	342	250	104	62	533	80	35
6	.00	13	18	272	187	317	235	101	16200	408	77	48
7	.00	12	16	254	173	313	226	97	1640	365	75	38
8	.00	12	17	233	160	319	216	99	852	335	72	33
9	.00	11	17	225	154	302	210	116	601	315	70	33
10	.00	10	18	212	160	288	217	95	470	295	67	35
11	.00	9.6	18	196	150	280	229	90	399	271	66	45
12	11	9.9	18	196	141	271	216	87	357	569	64	56
13	13	9.6	23	214	135	260	206	86	328	451	62	78
14	36	9.2	26	223	132	408	206	93	311	365	61	54
15	37	8.9	24	266	129	512	233	87	293	297	59	55
16	16	8.3	155	315	124	433	202	86	269	259	60	40
17	8.9	8.0	332	430	123	401	184	86	248	232	56	41
18	5.6	11	182	387	121	370	169	80	268	210	54	40
19	3.1	12	148	359	117	365	163	81	659	194	52	40
20	2.0	8.9	124	328	115	455	160	81	417	182	51	37
21	2.0	9.2	109	297	116	419	158	76	330	170	49	35
22	11	9.6	97	293	118	376	156	73	1100	160	48	34
23	38	9.2	89	289	2100	363	154	72	1190	151	46	33
24	70	9.9	84	286	880	343	147	71	550	142	45	31
25	51	27	78	272	508	327	144	71	486	134	44	30
26	45	21	75	251	431	314	150	68	454	127	43	30
27	40	18	76	245	387	352	138	67	385	120	41	28
28	35	18	77	235	368	346	133	69	349	115	40	30
29	28	18	77	220	---	315	130	67	321	109	40	73
30	24	18	98	214	---	350	125	64	297	104	41	92
31	21	---	519	206	---	311	---	63	---	100	40	---
TOTAL	497.60	388.3	2601	8770	7966	11141	5851	2727	29071	8537	1858	1266
MEAN	16.1	12.9	83.9	283	285	359	195	88.0	969	275	59.9	42.2
MAX	70	27	519	612	2100	512	290	135	16200	985	95	92
MIN	.00	8.0	16	196	115	260	125	63	57	100	40	28
CFSM	.04	.03	.20	.69	.69	.87	.47	.21	2.35	.67	.15	.10
IN.	.04	.04	.23	.79	.72	1.01	.53	.25	2.62	.77	.17	.11
AC-FT	987	770	5160	17400	15800	22100	11610	5410	57660	16930	3690	2510
CAL YR 1984	TOTAL	6679.86	MEAN	18.3	MAX	519	MIN	.00	CFSM	.04	IN	.60
WTR YR 1985	TOTAL	80673.90	MEAN	221	MAX	16200	MIN	.00	CFSM	.54	IN	7.28
										AC-FT	13250	
										AC-FT	160000	

## GUADALUPE RIVER BASIN

249

08172000 SAN MARCOS RIVER AT LULING, TX

LOCATION.--Lat 29°39'54", long 97°38'59", Caldwell-Guadalupe County line, Hydrologic Unit 12100203, on left bank 390 ft downstream from bridge on State Highway 80, 1.0 mi south of U.S. Post Office at Luling, and 9.4 mi upstream from Plum Creek.

DRAINAGE AREA.--838 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1939 to current year.

REVISED RECORDS.--WSP 958: 1940. WSP 1312: 1940(M), 1945(M), 1947(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 322.05 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Aug. 15-19. Records good. Flow is affected at times by discharge from the flood-detention pools of 18 floodwater-retarding structures with a combined detention capacity of 26,830 acre-ft. These structures control runoff from 105 mi<sup>2</sup> in the Town and York Creeks drainage basins. Satellite telemeter located at station.

AVERAGE DISCHARGE.--46 years, 366 ft<sup>3</sup>/s (265,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft<sup>3</sup>/s Sept. 12, 1952 (gage height, 34.95 ft); minimum daily, 43 ft<sup>3</sup>/s Aug. 12, 1951.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1859, 40.4 ft in 1869 or 1870, from information by State Department of Highways and Public Transportation. Flood of May 29, 1929, reached a stage of 37.1 ft and is the second highest known.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 7	0700	*27,400	*31.47	June 23	0800	11,500	28.69

Minimum daily discharge, 61 ft<sup>3</sup>/s Oct. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68	119	117	715	377	607	495	818	192	718	355	232
2	68	116	112	793	366	678	470	467	188	669	348	228
3	66	114	108	547	356	644	455	314	183	741	340	222
4	62	113	105	511	352	592	442	289	180	2910	334	216
5	61	111	110	480	350	568	433	271	178	2490	329	219
6	61	111	109	454	350	537	420	260	508	1070	324	223
7	75	113	106	425	351	512	406	250	15000	845	318	225
8	79	110	105	402	344	503	393	248	2890	758	313	228
9	88	108	105	383	332	497	387	813	1450	703	305	219
10	86	107	106	369	324	491	388	363	1090	654	296	220
11	104	105	102	354	320	474	515	275	891	613	295	228
12	91	104	103	348	318	462	597	252	778	1470	292	245
13	160	102	116	349	303	450	428	242	691	1220	289	263
14	419	102	117	389	296	533	403	1600	609	834	284	265
15	143	104	117	792	291	627	392	615	553	727	279	271
16	103	294	186	551	286	721	394	328	513	654	274	250
17	93	117	176	786	280	654	382	1160	478	600	269	242
18	89	104	371	665	276	611	359	507	694	562	264	233
19	105	102	326	607	276	575	342	293	1920	532	259	230
20	96	100	275	562	273	579	331	287	934	513	255	225
21	94	94	248	521	268	713	327	273	709	492	250	220
22	99	94	226	488	267	633	326	252	1120	474	250	218
23	182	94	211	473	288	582	319	239	6660	459	247	217
24	140	95	200	468	1740	561	312	229	2020	442	245	214
25	122	115	192	464	1030	539	314	221	1320	429	248	211
26	113	138	186	451	721	518	343	217	1140	416	246	205
27	128	108	186	444	641	512	322	212	1020	404	240	202
28	137	102	189	434	596	524	302	207	911	392	236	225
29	131	105	193	418	---	531	291	205	836	384	233	271
30	125	105	189	405	---	507	289	202	772	374	238	302
31	124	---	392	390	---	519	---	198	---	364	236	---
TOTAL	3512	3406	5384	15438	11972	17454	11577	12107	46428	23913	8691	6969
MEAN	113	114	174	498	428	563	386	391	1548	771	280	232
MAX	419	294	392	793	1740	721	597	1600	15000	2910	355	302
MIN	61	94	102	348	267	450	289	198	178	364	233	202
AC-FT	6970	6760	10680	30620	23750	34620	22960	24010	92090	47430	17240	13820
CAL YR 1984	TOTAL	39784	MEAN 109	MAX 419	MIN 56	AC-FT 78910						
WTR YR 1985	TOTAL	166851	MEAN 457	MAX 15000	MIN 61	AC-FT 330900						

## GUADALUPE RIVER BASIN

08172000 SAN MARCOS RIVER AT LULING, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1961 to April 1966, October 1968 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
11...	1023	90	590	8.1	23.0	260	24	76	18
NOV									
21...	1023	99	650	8.3	14.5	310	49	90	20
JAN									
10...	1340	367	540	8.3	13.5	280	38	83	17
FEB									
21...	1600	268	559	8.2	17.5	270	36	79	18
APR									
04...	1430	446	527	8.2	20.5	260	39	78	17
MAY									
23...	1154	233	564	8.2	25.6	260	32	75	17
JUL									
10...	1105	654	562	8.0	26.5	270	37	79	17
AUG									
22...	1622	256	573	8.2	28.5	270	35	77	19

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT									
11...	19	.5	1.9	240	29	29	.20	11	330
NOV									
21...	24	.6	2.2	259	33	38	.30	11	370
JAN									
10...	13	.4	1.7	240	28	19	.20	10	320
FEB									
21...	17	.5	1.6	236	30	23	.20	6.7	320
APR									
04...	13	.4	1.6	226	27	19	.20	9.5	300
MAY									
23...	19	.5	2.2	226	35	29	.20	11	320
JUL									
10...	16	.4	2.1	231	27	25	.20	12	320
AUG									
22...	16	.4	1.8	236	28	25	.20	12	320



## GUADALUPE RIVER BASIN

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08172400 PLUM CREEK AT LOCKHART, TX

LOCATION.--Lat 29°55'22", long 97°40'44", Caldwell County, Hydrologic Unit 12100203, on right bank 548 ft upstream from bridge on U.S. Highway 183, 2.7 mi north of Lockhart, 3.7 mi upstream from Town Creek, 5.0 mi downstream from Brushy Creek, and 30.4 mi upstream from mouth.

DRAINAGE AREA.--112 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1959 to current year.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 431.19 ft above National Geodetic Vertical Datum of 1929. Apr. 30, 1959, to July 25, 1968, at site 548 ft downstream at present datum.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Flow is affected at times by discharge from the flood-detention pools of 17 floodwater-retarding structures with a combined detention capacity of 24,850 acre-ft. These structures control runoff from 67.8 mi<sup>2</sup> above this station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years, 45.8 ft<sup>3</sup>/s (33,180 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,600 ft<sup>3</sup>/s Oct. 29, 1960 (gage height, 20.62 ft); no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1905, 22 ft in June 1936 at present site; flood in 1951 reached a stage of 20 ft at present site, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 7	0100	4,040	15.71	July 4	2200	2,750	a15.12
June 23	0300	*5,260	a*16.09				

a From floodmark.

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.02	50	5.3	20	13	38	.11	32	1.2	.00
2	.00	.00	.00	24	4.8	22	11	9.7	.08	21	.94	.00
3	.00	.00	.00	20	4.0	17	9.7	5.8	.06	152	.72	.00
4	.00	.00	.00	29	4.1	16	8.8	4.3	.03	1440	.47	.00
5	.00	.00	.00	20	4.4	15	8.2	3.5	.02	892	.23	.00
6	.00	.00	.00	16	5.2	12	7.3	3.0	889	359	.17	.00
7	.00	.00	.00	13	5.3	9.6	9.2	2.5	1430	285	.07	.00
8	.00	.00	.00	11	5.1	6.9	8.4	35	411	235	.03	.00
9	.00	.00	.00	9.5	4.7	6.2	7.5	151	289	166	.00	.00
10	.00	.00	.00	8.2	4.8	5.7	7.0	33	190	93	.00	.00
11	.00	.00	.00	7.2	8.3	5.2	176	20	126	50	.00	.00
12	.00	.00	.00	7.1	13	4.7	143	15	95	599	.00	.00
13	.00	.00	.00	7.8	10	4.3	60	12	79	119	.00	.00
14	.00	.00	.00	40	8.2	12	50	32	65	71	.00	.00
15	.00	.00	.00	67	6.9	33	29	22	51	46	.00	.00
16	.00	.00	1.9	108	6.0	28	21	15	35	31	.00	.00
17	.00	.00	8.9	99	5.1	21	16	11	24	21	.00	.00
18	.00	.00	15	38	4.6	15	13	8.7	87	15	.00	.00
19	.00	.00	25	24	4.2	12	10	6.7	69	12	.00	.00
20	.00	.00	12	17	3.8	385	8.7	5.3	23	9.8	.00	.00
21	.00	.00	7.3	13	3.8	208	7.5	4.5	17	8.3	.00	.00
22	.00	.00	4.8	8.8	4.1	91	6.9	4.5	590	6.5	.00	.00
23	.00	.00	3.5	7.9	18	51	6.3	4.1	1700	5.2	.00	.00
24	.00	.00	2.8	7.5	68	33	5.4	3.2	415	4.4	.00	.00
25	.00	3.5	2.1	6.9	27	24	4.7	2.6	312	3.7	.00	.00
26	.00	.46	1.7	6.3	16	20	5.3	2.0	219	3.1	.00	.00
27	.00	.11	1.6	6.3	11	18	5.3	1.5	144	2.5	.00	.00
28	.00	.05	1.8	6.7	9.8	17	5.1	1.2	108	1.9	.00	.00
29	.00	.04	2.0	6.9	---	16	5.2	.83	70	1.6	.00	.02
30	.00	.03	2.3	5.9	---	14	5.2	.43	47	1.3	.00	2.8
31	.00	---	50	5.6	---	14	---	.21	---	1.3	.00	---
TOTAL	.00	4.19	142.72	697.6	275.5	1156.6	673.7	458.57	7485.30	4688.6	3.83	2.82
MEAN	.000	.14	4.60	22.5	9.84	37.3	22.5	14.8	250	151	.12	.094
MAX	.00	3.5	50	108	68	385	176	151	1700	1440	1.2	2.8
MIN	.00	.00	.00	5.6	3.8	4.3	4.7	.21	.02	1.3	.00	.00
AC-FT	.00	8.3	283	1380	546	2290	1340	910	14850	9300	7.6	5.6

CAL YR 1984	TOTAL	470.79	MEAN	1.29	MAX	54	MIN	.00	AC-FT	934
WTR YR 1985	TOTAL	15589.43	MEAN	42.7	MAX	1700	MIN	.00	AC-FT	30920

## GUADALUPE RIVER BASIN

08173000 PLUM CREEK NEAR LULING, TX

LOCATION.--Lat 29°41'58", long 97°36'12", Caldwell County, Hydrologic Unit 12100203, near left bank at downstream side of pier of bridge on county road, 1.2 mi upstream from West Fork, 1.9 mi upstream from Southern Pacific Railroad Co. bridge, 2.2 mi upstream from McNeil Creek, 2.9 mi northeast of Luling, and at mile 7.5.

DRAINAGE AREA.--309 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to current year.

REVISED RECORDS.--WSP 1923: 1933. WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 321.57 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 18, 1976, at datum 5.0 ft higher.

REMARKS.--Estimated daily discharges: Apr. 16, 17, and Aug. 18. Records good. Low flow is slightly regulated by oilfield operations above station. At end of year, flow from 119 mi<sup>2</sup> above this station was partly controlled by 27 floodwater-retarding structures with a combined detention capacity of 41,840 acre-ft. No other known diversion above station.

AVERAGE DISCHARGE.--55 years, 101 ft<sup>3</sup>/s (73,170 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,500 ft<sup>3</sup>/s July 1, 1936 (gage height, 30.7 ft, from floodmarks), present datum, from rating curve extended above 37,500 ft<sup>3</sup>/s; no flow at times.  
Maximum stage since at least 1868, that of July 1, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1913 reached about same stage as that of July 1, 1936, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 12	1200	2,330	a18.40	July 5	0600	*2,630	*18.97

a From floodmark.

Minimum daily discharge, 0.48 ft<sup>3</sup>/s Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	6.8	5.5	134	12	48	22	1020	4.0	92	21	2.8
2	.98	5.9	4.7	81	12	62	20	760	3.6	72	21	2.8
3	.70	5.4	4.0	52	12	53	18	129	3.3	120	19	2.8
4	.48	5.5	3.9	79	11	40	16	67	3.0	1640	19	1.6
5	.62	5.1	4.9	69	11	35	14	46	2.9	2450	18	1.6
6	.59	4.5	6.9	43	11	32	13	32	10	1080	17	1.6
7	.81	4.0	7.0	30	12	27	11	25	989	397	16	7.3
8	7.4	4.1	4.9	23	20	24	13	21	867	269	14	5.3
9	147	4.0	5.1	18	13	20	13	171	415	212	14	3.6
10	11	4.2	5.8	15	13	18	13	137	272	171	13	3.0
11	20	4.0	5.6	13	15	18	520	78	197	132	12	9.9
12	32	4.0	4.9	12	18	17	1970	53	157	420	12	28
13	289	4.2	6.7	14	26	16	625	42	137	540	12	32
14	371	3.5	8.2	24	22	32	303	269	124	177	11	45
15	63	3.5	9.0	189	20	70	219	161	115	133	10	32
16	15	5.1	7.5	131	17	80	173	72	97	110	9.2	10
17	5.9	4.0	8.1	294	16	67	125	62	73	90	8.2	8.2
18	3.3	5.0	4.3	148	15	50	95	71	63	73	6.1	7.6
19	60	4.8	3.6	86	13	38	73	41	262	62	4.9	6.8
20	45	5.4	4.5	53	13	75	61	30	110	54	3.9	6.5
21	13	4.7	2.7	37	13	498	51	23	69	48	2.8	6.2
22	23	4.7	1.9	29	13	194	46	19	274	43	2.8	5.9
23	359	4.9	1.4	21	17	127	40	17	1390	39	2.2	5.7
24	204	4.8	1.1	19	67	88	32	15	1290	35	2.2	5.3
25	61	1.5	8.6	18	97	63	28	12	576	33	2.2	5.0
26	33	2.3	7.4	17	52	46	48	10	394	30	2.2	4.7
27	25	1.4	6.7	14	35	38	32	8.5	256	29	2.2	4.3
28	17	9.1	7.6	16	28	32	23	7.4	180	27	2.5	5.4
29	14	7.1	9.6	15	---	29	20	6.9	142	26	2.8	120
30	10	6.8	7.4	17	---	26	19	6.0	114	24	1.8	175
31	7.2	---	3.1	14	---	23	---	4.7	---	22	2.5	---
TOTAL	1841.08	187.1	516.4	1725	624	1986	4656	3416.5	8589.8	8650	287.5	555.9
MEAN	59.4	6.24	16.7	55.6	22.3	64.1	155	110	286	279	9.27	18.5
MAX	371	2.3	8.1	294	97	498	1970	1020	1390	2450	21	175
MIN	.48	3.5	3.9	12	11	16	11	4.7	2.9	22	1.8	1.6
AC-FT	3650	371	1020	3420	1240	3940	9240	6780	17040	17160	570	1100
CAL YR 1984	TOTAL	5032.36	MEAN 13.7	MAX 371	MIN .36	AC-FT 9980						
WTR YR 1985	TOTAL	33035.28	MEAN 90.5	MAX 2450	MIN .48	AC-FT 65530						

GUADALUPE RIVER BASIN

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08173000 PLUM CREEK NEAR LULING, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1967 to current year.

WATER TEMPERATURES: October 1967 to current year.

INSTRUMENTATION.--Beginning March 1981, specific conductance and water temperature are recorded continuously at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 6,210 microsiemens Feb. 27, 1977; minimum daily, 100 microsiemens Feb. 10, 1983.

WATER TEMPERATURES: Maximum daily, 35.0°C July 24, 1969; minimum daily, 2.5°C Jan. 14, 1982.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,790 microsiemens Dec. 11; minimum daily, 150 microsiemens Oct. 9, 14, 23.

WATER TEMPERATURES: Minimum daily, 1.5°C Feb. 2.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
DATE	TIME								
OCT 11...	1508	11	420	7.6	21.5	110	30	40	3.4
NOV 26...	1438	18	1200	8.0	14.0	--	--	--	--
JAN 11...	1400	11	916	8.1	9.5	290	81	100	10
FEB 22...	1016	13	1150	8.0	17.5	350	110	120	12
APR 03...	1600	18	1360	7.9	19.0	350	130	120	13
MAY 22...	1413	20	958	7.9	23.5	290	88	100	9.8
JUL 10...	1533	164	415	7.8	27.0	150	17	52	4.4
AUG 20...	1240	4.3	1170	8.0	27.5	310	51	110	9.6
DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 11...	35	1	5.7	84	31	56	.20	9.6	230
NOV 26...	--	--	--	278	88	170	--	--	--
JAN 11...	77	2	5.5	210	95	110	.50	17	540
FEB 22...	110	3	4.6	235	110	160	.60	6.6	660
APR 03...	150	4	8.0	227	91	250	.50	17	790
MAY 22...	85	2	5.7	203	77	150	.40	17	570
JUL 10...	25	.9	5.7	131	35	28	.30	17	250
AUG 20...	130	3	5.4	264	70	180	.50	17	680

## GUADALUPE RIVER BASIN

08173000 PLUM CREEK NEAR LULING, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	1841.08	389	225	1120	48	236	38	189	120
NOV.	1984	187.1	1090	633	319	160	82	94	47	310
DEC.	1984	516.4	952	552	770	140	197	82	115	270
JAN.	1985	1725	645	374	1740	85	394	61	283	200
FEB.	1985	624	988	573	965	140	243	87	146	290
MAR.	1985	1986	756	438	2350	100	552	70	373	230
APR.	1985	4656	365	211	2650	45	566	36	448	110
MAY	1985	3416.5	391	226	2090	48	447	38	351	120
JUNE	1985	8589.8	318	184	4260	37	860	32	741	100
JULY	1985	8650	376	217	5080	45	1040	37	875	120
AUG.	1985	287.5	862	500	388	120	94	78	60	250
SEPT	1985	555.9	820	475	714	120	176	73	110	240
TOTAL		33035.28	**	**	22400	**	4890	**	3740	**
WTD.AVG.		91	435	252	**	55	**	42	**	130

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1530	1520	1520	700	620	657	1510	1080	1240	1200	560	742
2	1550	1530	1540	700	680	693	1690	1530	1640	680	650	661
3	1550	1540	1540	760	690	703	1600	1540	1560	750	680	714
4	1550	1530	1540	970	790	919	1540	1510	1520	800	570	746
5	1540	1520	1530	1030	910	971	1510	1470	1500	630	540	571
6	1530	1520	1530	---	---	995	1480	1450	1460	650	630	636
7	1540	1530	1530	---	---	1020	1460	1420	1440	750	630	689
8	1530	1450	1500	---	---	1010	1440	1410	1420	810	750	780
9	1450	150	669	---	---	1030	1420	1400	1410	870	820	850
10	820	640	757	---	---	1020	1410	1390	1400	960	870	905
11	620	420	513	---	---	1040	1790	1400	1630	990	930	950
12	720	350	479	---	---	1070	1780	1750	1760	1050	970	994
13	790	170	535	---	---	1060	1750	1700	1720	1130	1000	1020
14	330	150	231	---	---	1110	1700	1600	1650	1120	1010	1030
15	390	320	353	---	---	1140	1600	1420	1520	1150	430	679
16	490	390	444	---	---	1080	1410	370	1200	560	450	496
17	740	500	580	---	---	1170	540	380	472	570	400	469
18	1200	760	1020	---	---	1150	820	480	624	560	490	524
19	1330	180	463	---	---	1260	640	600	623	610	560	584
20	340	190	282	---	---	1230	730	620	687	700	620	639
21	660	340	496	---	---	1300	850	700	744	680	650	664
22	780	670	735	---	---	1330	930	860	911	700	680	688
23	540	150	270	---	---	1360	950	930	939	720	690	710
24	310	260	276	---	---	1380	1000	950	976	750	720	731
25	350	270	306	---	---	1160	1080	1010	1050	770	740	754
26	440	360	400	---	---	1020	1110	1080	1100	790	760	777
27	510	440	477	1280	1200	1250	1140	1110	1130	810	780	798
28	550	500	530	1280	1240	1260	1180	1140	1160	---	---	921
29	560	540	552	1270	1110	1190	1190	1160	1180	---	---	1020
30	610	560	580	1100	1030	1070	1200	1170	1180	---	---	1040
31	630	610	623	---	---	---	1210	880	1140	1050	1020	1030
MONTH	1550	150	768	1280	620	1090	1790	370	1230	1200	400	768

## GUADALUPE RIVER BASIN

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08173000 PLUM CREEK NEAR LULING, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	1050	1040	1050	980	860	900	970	860	904	---	---	201
2	1080	1050	1060	1000	860	919	1210	870	1070	---	---	255
3	1090	1070	1080	920	790	832	1320	1110	1210	---	---	330
4	1120	1090	1110	810	790	800	---	---	1250	610	470	547
5	1130	1120	1130	820	800	812	---	---	1270	740	620	678
6	1140	1130	1140	820	800	810	---	---	1310	850	740	793
7	1190	1140	1170	830	800	814	---	---	1330	980	850	909
8	1210	1140	1180	880	830	853	---	---	1260	1040	960	994
9	1250	1200	1220	930	870	902	---	---	1280	1110	380	608
10	1240	1170	1210	1020	930	960	---	---	1300	510	380	434
11	1230	1190	1210	1090	1030	1070	---	---	570	580	510	548
12	1190	1180	1190	---	---	1110	280	200	234	630	580	600
13	1200	1160	1180	---	---	1160	280	250	263	690	630	655
14	1170	1150	1160	---	---	1010	290	260	274	720	320	535
15	1160	1100	1140	---	---	970	310	280	298	420	370	392
16	1120	1100	1110	---	---	915	340	310	326	520	420	470
17	1110	1070	1090	---	---	925	520	340	372	650	530	591
18	1080	1050	1070	---	---	1020	430	380	406	640	600	618
19	1060	1050	1050	---	---	1040	460	410	436	650	620	629
20	1080	1050	1070	---	---	985	520	460	483	710	650	674
21	1100	1080	1090	---	---	555	570	510	535	800	720	756
22	1190	1090	1130	---	---	600	610	570	589	860	800	842
23	1170	1130	1150	---	---	645	650	610	627	910	870	890
24	1140	720	1030	---	---	680	710	640	675	980	910	943
25	720	670	690	---	---	710	740	630	699	1000	960	976
26	780	690	723	760	720	736	950	690	785	1060	1000	1030
27	830	770	794	790	760	775	1190	740	835	1130	1060	1100
28	860	830	839	830	790	813	970	910	933	1180	1130	1160
29	---	---	---	870	830	852	970	900	926	1230	1170	1200
30	---	---	---	900	870	883	---	---	990	1410	1230	1310
31	---	---	---	920	900	910	---	---	---	1470	1410	1440
MONTH	1250	670	1070	1090	720	870	1320	200	781	1470	320	745

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	1570	1480	1520	460	420	439	820	730	773	---	---	1380
2	1580	1380	1470	520	450	487	760	730	746	---	---	1400
3	1360	1330	1340	570	450	465	760	750	755	---	---	1390
4	1360	1340	1350	440	300	340	750	710	729	---	---	1400
5	1350	1330	1340	340	300	321	740	720	732	---	---	1410
6	1350	1220	1250	380	330	355	750	730	738	---	---	1420
7	780	220	302	380	320	345	780	720	757	---	---	1330
8	320	270	295	370	340	354	780	770	773	---	---	1340
9	350	320	339	400	370	387	780	760	770	---	---	1350
10	360	350	356	420	390	405	780	770	774	---	---	1370
11	370	360	363	440	420	430	810	770	799	---	---	1230
12	390	370	378	490	310	403	---	---	825	---	---	925
13	400	380	388	450	330	395	---	---	869	---	---	910
14	400	390	398	440	420	433	---	---	912	---	---	875
15	410	400	409	480	450	465	---	---	955	---	---	920
16	430	400	413	500	470	483	---	---	1000	---	---	970
17	450	420	436	530	500	509	---	---	1040	---	---	1010
18	470	450	459	560	530	539	---	---	1090	---	---	1050
19	480	250	362	560	540	552	---	---	1140	---	---	1120
20	490	340	398	580	550	563	---	---	1170	---	---	1140
21	580	490	550	580	560	573	---	---	1200	---	---	1180
22	550	290	468	590	570	580	---	---	1220	---	---	1200
23	270	220	242	---	---	594	---	---	1260	1250	1220	1240
24	290	250	269	---	---	607	---	---	1290	1320	1250	1300
25	300	280	293	---	---	630	---	---	1310	1400	1320	1360
26	310	280	302	---	---	655	---	---	1330	1430	1400	1420
27	340	310	324	---	---	676	---	---	1340	1430	1410	1420
28	360	330	349	---	---	687	---	---	1350	1450	1420	1440
29	390	350	374	---	---	700	---	---	1370	1420	190	958
30	420	390	405	810	730	766	---	---	1390	580	310	364
31	---	---	---	840	810	827	---	---	1350	---	---	---
MONTH	1580	220	571	840	300	515	820	710	1020	1450	190	1190



GUADALUPE RIVER BASIN  
08173000 PLUM CREEK NEAR LULING, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	19.0	16.5	17.5	23.5	23.0	23.0	12.5	11.0	12.0	18.5	14.5	17.0
2	19.5	16.5	18.0	23.0	19.0	21.0	14.0	12.5	13.0	14.5	8.5	11.0
3	20.0	17.5	18.5	19.0	17.5	18.0	13.0	12.5	12.5	8.0	7.0	7.5
4	20.0	18.5	19.5	18.5	17.5	18.0	12.5	11.0	11.5	7.5	6.0	7.0
5	22.5	20.0	21.0	18.0	17.0	17.5	10.5	9.0	10.0	7.5	6.0	7.0
6	24.0	21.5	22.5	16.5	15.5	16.0	9.5	8.5	8.5	8.0	6.5	7.5
7	22.5	22.0	22.5	17.0	16.0	16.5	8.5	7.0	8.0	8.5	7.5	8.0
8	23.0	21.5	22.5	19.0	17.0	18.0	9.0	7.0	8.0	9.0	7.5	8.0
9	22.5	18.5	20.5	20.5	19.0	20.0	11.5	9.0	10.5	11.0	9.0	10.0
10	21.5	20.5	21.0	20.5	18.5	19.5	13.5	11.5	12.5	11.5	10.5	11.0
11	21.5	21.0	21.5	18.0	15.5	16.5	15.0	13.0	14.0	10.5	8.0	9.0
12	22.5	21.5	22.0	15.5	14.5	15.0	16.0	14.5	15.5	8.0	3.5	5.5
13	22.5	21.0	22.0	15.0	14.0	15.0	17.5	16.0	16.5	3.5	2.5	3.0
14	21.5	21.0	21.0	16.5	15.0	16.0	19.0	17.5	18.0	5.0	3.5	4.5
15	22.5	21.0	21.5	18.0	16.5	17.5	20.0	19.0	19.5	7.0	5.0	6.0
16	23.5	22.5	23.0	18.0	18.0	18.0	19.5	15.5	18.0	8.0	7.0	7.5
17	23.0	22.0	22.5	18.0	17.0	17.5	16.5	15.0	15.5	9.0	8.0	8.5
18	23.5	22.0	22.5	18.5	17.0	17.5	18.0	16.5	17.5	9.0	7.5	8.5
19	23.5	21.0	22.5	17.0	14.5	15.5	18.0	17.5	17.5	10.0	8.0	9.0
20	22.0	21.0	21.5	14.5	12.5	13.0	19.0	18.0	18.5	9.5	5.0	7.0
21	22.0	20.5	21.5	12.5	11.0	12.0	19.0	18.5	18.5	5.0	4.0	4.5
22	20.5	16.5	19.0	11.0	10.0	10.5	18.5	17.0	17.5	4.5	3.5	4.0
23	17.0	15.0	15.5	10.0	9.5	10.0	17.0	16.5	16.5	5.5	4.0	5.0
24	15.5	15.5	15.5	11.5	9.5	10.5	18.0	17.0	17.5	8.0	5.5	6.5
25	17.0	15.5	16.0	13.5	11.5	12.5	17.5	13.5	15.0	10.0	7.5	8.5
26	19.0	17.0	17.5	14.5	13.5	14.0	13.0	12.5	13.0	10.0	9.0	9.5
27	20.5	19.0	19.5	14.5	12.0	13.5	15.0	13.0	14.0	12.0	9.5	11.0
28	21.5	20.5	21.0	12.0	11.0	11.5	17.5	15.0	16.5	11.5	10.5	11.0
29	22.0	21.5	22.0	12.0	10.0	11.0	19.0	17.5	18.5	11.5	10.5	11.0
30	22.5	22.0	22.0	12.5	11.0	12.0	20.0	19.0	19.5	13.0	11.5	12.0
31	23.5	22.0	22.5	---	---	---	20.0	18.5	19.5	13.0	7.0	10.0
MONTH	24.0	15.0	20.5	23.5	9.5	15.5	20.0	7.0	15.0	18.5	2.5	8.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.5	3.0	4.5	16.5	14.0	15.0	19.0	17.0	18.0	---	---	---
2	3.0	1.5	2.5	17.5	16.0	17.0	18.5	16.5	17.5	---	---	---
3	3.0	2.0	2.5	19.5	17.5	18.5	19.5	17.0	18.0	---	---	---
4	3.5	3.0	3.0	19.5	18.0	19.0	20.0	18.0	19.0	23.0	21.5	22.5
5	4.5	3.5	4.0	18.0	16.5	17.0	21.0	19.5	20.0	23.5	21.5	22.5
6	5.0	4.5	4.5	17.0	16.0	16.5	20.5	18.0	19.5	23.0	21.5	22.0
7	6.0	4.5	5.5	18.5	16.5	17.5	20.5	20.0	20.0	23.5	22.0	22.5
8	8.0	5.5	7.0	20.0	18.5	19.0	19.5	17.0	18.0	24.0	23.0	23.5
9	11.0	8.0	9.0	21.0	19.0	20.0	18.0	16.0	17.0	23.5	22.5	23.0
10	13.0	11.0	12.0	21.0	20.0	20.5	18.0	17.0	17.5	24.0	22.5	23.0
11	12.5	10.0	11.0	22.5	20.5	21.5	18.0	16.5	17.0	24.5	23.5	24.0
12	10.0	8.0	9.0	22.5	21.5	22.0	21.0	18.0	19.5	24.5	24.0	24.0
13	10.5	8.5	9.5	22.5	21.5	22.0	20.5	19.5	20.0	24.5	24.0	24.5
14	11.5	10.0	11.0	21.5	16.0	18.5	21.0	19.0	20.0	24.5	21.5	22.5
15	11.0	9.5	10.5	16.5	15.0	15.5	21.5	20.0	20.5	22.5	21.5	22.0
16	11.5	9.0	10.5	15.5	14.5	15.0	22.0	20.5	21.5	23.5	22.0	23.0
17	13.0	11.0	12.0	15.5	14.0	15.0	23.0	22.5	22.5	23.5	23.0	23.5
18	14.0	12.5	13.5	16.0	14.0	15.0	23.5	22.5	23.0	23.5	22.5	23.0
19	15.0	14.0	14.5	16.0	15.5	16.0	22.5	22.0	22.5	23.5	21.5	22.5
20	15.5	15.0	15.0	18.5	16.0	17.0	23.5	21.5	22.5	23.5	22.5	23.0
21	17.0	15.5	16.0	17.5	16.0	17.0	23.0	22.0	22.0	23.5	22.5	23.0
22	18.5	17.0	17.5	17.0	16.0	16.5	23.5	22.0	22.5	24.0	22.5	23.5
23	19.0	18.0	18.5	18.0	16.0	17.0	24.5	23.0	23.5	24.5	23.0	24.0
24	18.0	15.5	16.5	19.0	16.5	18.0	23.5	22.0	23.0	24.5	23.5	24.0
25	16.5	15.0	15.5	20.5	18.0	19.0	22.5	21.0	22.0	24.5	22.5	23.5
26	16.0	15.0	15.5	20.0	19.5	20.0	22.0	21.0	21.5	25.0	23.5	24.0
27	16.0	14.5	15.0	21.0	20.0	20.5	23.5	22.0	22.5	24.5	24.0	24.5
28	14.5	14.5	14.5	22.0	21.0	21.5	23.5	23.0	23.5	24.5	24.0	24.5
29	---	---	---	22.0	21.5	21.5	24.0	23.0	23.5	26.0	24.0	25.0
30	---	---	---	21.5	19.5	21.0	---	---	---	27.0	25.0	26.0
31	---	---	---	19.5	17.5	18.5	---	---	---	27.5	26.0	26.5
MONTH	19.0	1.5	10.5	22.5	14.0	18.5	24.5	16.0	20.5	27.5	21.5	23.5

## GUADALUPE RIVER BASIN

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08173000 PLUM CREEK NEAR LULING, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	28.0	26.0	27.0	25.5	23.5	24.5	28.0	27.0	27.5	---	---	---
2	27.5	26.5	27.0	25.5	24.5	25.0	28.0	27.0	27.5	---	---	---
3	27.5	26.0	26.5	25.5	22.5	25.0	28.0	27.0	27.5	---	---	---
4	27.5	26.5	27.0	23.5	22.5	23.0	28.0	27.0	27.5	---	---	---
5	27.0	26.5	26.5	26.5	23.0	24.0	28.0	27.0	27.5	---	---	---
6	26.0	25.0	25.5	25.5	24.5	25.0	28.0	27.0	27.5	---	---	---
7	26.0	23.0	24.5	26.0	25.0	25.5	28.0	27.0	27.5	---	---	---
8	26.5	25.0	25.5	26.5	25.5	26.0	28.0	27.5	28.0	---	---	---
9	27.0	26.0	26.5	27.0	26.0	26.5	28.0	27.5	28.0	---	---	---
10	27.0	26.0	26.5	27.5	26.5	27.0	28.0	27.0	27.5	---	---	---
11	27.5	26.0	27.0	27.5	26.5	27.0	28.0	27.0	27.5	---	---	---
12	27.0	26.0	26.5	27.5	23.5	26.0	---	---	---	---	---	---
13	26.5	25.0	25.5	27.0	24.5	26.5	---	---	---	---	---	---
14	26.0	24.5	25.0	27.0	26.0	26.5	---	---	---	---	---	---
15	26.5	25.0	25.5	27.5	26.5	27.0	---	---	---	---	---	---
16	27.0	25.5	26.0	27.5	26.5	27.0	---	---	---	---	---	---
17	27.5	26.0	27.0	27.5	26.5	27.0	---	---	---	---	---	---
18	27.0	24.5	26.5	27.5	26.5	27.0	---	---	---	---	---	---
19	25.5	24.5	25.0	27.0	26.5	27.0	---	---	---	---	---	---
20	25.0	24.0	24.5	27.0	26.5	26.5	---	---	---	---	---	---
21	25.5	24.5	25.0	27.5	26.5	27.0	---	---	---	---	---	---
22	25.5	24.5	25.0	28.0	26.5	27.0	---	---	---	---	---	---
23	26.5	24.0	25.0	28.0	27.0	27.5	---	---	---	25.5	24.5	25.0
24	26.5	25.5	26.0	28.0	27.0	27.5	---	---	---	24.5	23.5	24.0
25	26.5	26.0	26.0	28.0	27.0	27.5	---	---	---	25.5	24.0	24.5
26	27.0	26.5	26.5	28.0	27.0	27.5	---	---	---	24.0	22.5	23.5
27	27.5	27.0	27.0	28.0	27.0	27.5	---	---	---	22.5	21.0	21.5
28	27.0	26.0	26.5	27.5	26.5	27.0	---	---	---	21.5	21.5	21.5
29	26.0	24.5	25.0	27.5	26.5	27.0	---	---	---	21.5	20.5	21.0
30	25.0	24.0	24.5	27.5	26.5	27.0	---	---	---	20.5	18.5	19.5
31	---	---	---	27.5	26.5	27.0	---	---	---	---	---	---
MONTH	28.0	23.0	26.0	28.0	22.5	26.5	28.0	27.0	27.5	25.5	18.5	22.5

08175000 SANDIES CREEK NEAR WESTHOFF, TX

LOCATION.--Lat 29°12'54", long 97°26'57", De Witt County, Hydrologic Unit 12100202, on left bank 100 ft downstream from bridge on county highway, 1.9 mi upstream from Birds Creek, 2.0 mi northeast of Westhoff, and 20.4 mi upstream from mouth.

DRAINAGE AREA.--549 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to November 1934, August 1959 to current year.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 178.27 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 9, 1934, water-stage recorder at site 150 ft upstream at datum 0.86 ft higher. Aug. 10, 1959, to Feb. 2, 1960, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Oct. 1-25, and Oct. 31 to Dec. 12. Records good except those for estimated daily discharges, which are poor. No known diversion above station.

AVERAGE DISCHARGE.--30 years (water years 1931-34, 1960-85), 125 ft<sup>3</sup>/s (3.09 in/yr), 90,560 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,700 ft<sup>3</sup>/s Sept. 22, 1967 (gage height, 32.34 ft), from rating curve extended above 21,000 ft<sup>3</sup>/s on basis of slope-area measurement of 92,700 ft<sup>3</sup>/s; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1864, 92,700 ft<sup>3</sup>/s July 2, 1936 (gage height, 33.1 ft, from floodmarks), on basis of computation of peak flow, at present site and datum.  
Flood in October 1913 reached a stage of 26.0 ft, present site and datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 17	0100	*733	*11.23				
Minimum daily discharge, 1.0 ft <sup>3</sup> /s Aug. 15, 28.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.1	19	5.8	45	11	233	10	51	11	7.8	2.2	1.9
2	2.0	15	5.8	41	11	264	9.9	103	10	8.3	2.2	1.9
3	1.9	14	5.8	39	11	162	9.7	45	10	8.0	2.1	1.9
4	1.9	13	5.7	39	11	76	9.2	26	9.4	16	2.0	1.9
5	1.8	12	5.7	37	11	38	9.1	19	9.1	15	1.9	2.0
6	1.7	11	11	23	12	25	9.2	15	7.7	17	1.9	2.0
7	1.7	10	20	19	12	19	8.5	12	6.7	22	1.8	2.1
8	1.7	9.8	35	16	12	17	8.1	9.7	6.4	15	1.7	2.0
9	2.1	9.1	50	13	12	15	7.8	9.4	6.5	10	1.5	1.8
10	3.7	8.7	28	12	12	13	29	108	6.6	8.0	1.4	1.8
11	3.2	8.3	17	10	13	13	212	146	6.6	6.8	1.2	3.0
12	3.1	7.9	14	10	12	12	241	102	10	6.0	1.1	15
13	4.0	7.7	12	13	13	12	247	40	7.5	5.5	1.2	4.8
14	33	7.4	9.6	45	13	27	350	26	6.8	5.2	1.2	3.4
15	54	7.2	11	206	11	244	225	24	6.5	4.6	1.0	7.5
16	32	7.1	14	313	11	571	144	72	6.2	4.3	1.1	7.3
17	15	7.0	29	353	11	598	101	132	5.9	4.1	1.2	5.7
18	7.0	6.8	41	293	10	200	37	69	6.0	3.9	1.6	3.9
19	51	6.7	39	165	11	75	21	34	6.1	3.6	1.7	3.3
20	35	6.6	24	75	11	41	16	26	6.7	3.3	1.7	3.0
21	25	6.5	18	38	11	27	37	24	15	3.0	1.8	2.8
22	80	6.4	14	26	11	21	35	19	22	2.7	2.2	2.6
23	45	6.4	11	20	333	18	16	17	21	2.5	2.1	2.4
24	26	6.3	9.6	16	252	16	13	17	31	2.5	1.9	2.2
25	54	6.2	8.4	12	112	14	11	16	53	2.8	1.6	2.1
26	124	6.2	7.9	12	62	13	31	16	22	2.8	1.5	2.1
27	82	6.1	7.9	12	44	12	75	13	16	2.5	1.2	2.0
28	51	6.0	7.8	12	51	12	89	13	12	2.4	1.0	2.0
29	28	6.0	7.9	12	---	12	66	12	9.9	2.1	1.4	88
30	20	5.9	8.2	12	---	12	33	12	9.6	2.1	1.7	430
31	19	---	23	11	---	11	---	11	---	2.2	1.8	---
TOTAL	811.9	256.3	507.1	1950	1107	2823	2110.5	1239.1	363.2	202.0	49.9	612.4
MEAN	26.2	8.54	16.4	62.9	39.5	91.1	70.4	40.0	12.1	6.52	1.61	20.4
MAX	124	19	50	353	333	598	350	146	53	22	2.2	430
MIN	1.7	5.9	5.7	10	10	11	7.8	9.4	5.9	2.1	1.0	1.8
CFSM	.05	.02	.03	.12	.07	.17	.13	.07	.02	.01	.003	.04
IN.	.06	.02	.03	.13	.08	.19	.14	.08	.02	.01	.00	.04
AC-FT	1610	508	1010	3870	2200	5600	4190	2460	720	401	99	1210
CAL YR 1984	TOTAL	5771.99	MEAN 15.8	MAX 647	MIN .80	CFSM .03	IN .39	AC-FT 11450				
WTR YR 1985	TOTAL	12032.40	MEAN 33.0	MAX 598	MIN 1.0	CFSM .06	IN .82	AC-FT 23870				

GUADALUPE RIVER BASIN

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08175000 SANDIES CREEK NEAR WESTHOFF, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: April 1962 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 19...	1120	50	800	--	45	0	14	2.5	160
JAN 25...	1430	13	652	11.0	97	0	29	5.9	98
MAR 14...	1030	21	850	18.0	150	16	47	7.6	130
MAY 10...	1550	146	745	26.0	160	10	47	10	96
JUL 11...	1240	6.8	1030	--	76	0	21	5.6	190
AUG 15...	1515	.78	1430	--	110	0	33	6.2	270

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 19...	11	6.3	180	36	130	.50	12	470
JAN 25...	5	8.4	130	63	94	.20	18	390
MAR 14...	5	9.1	133	88	150	.30	20	530
MAY 10...	3	3.5	149	76	91	.30	18	430
JUL 11...	10	8.2	234	31	170	.50	17	580
AUG 15...	12	14	427	36	190	.70	20	830

## GUADALUPE RIVER MAIN STEM

08175800 GUADALUPE RIVER AT CUERO, TX

LOCATION.--Lat 29°03'57", long 97°19'16", De Witt County, Hydrologic Unit 12100204, on left bank at downstream side of bridge on U.S. Highways 77A, 87, and 183, 2.1 mi upstream from Gohlke Creek, 2.4 mi southwest of Cuero, 4.2 mi downstream from Sandies Creek, and at mile 100.6.

DRAINAGE AREA.--4,934 mi<sup>2</sup>, of which 1,432 mi<sup>2</sup> is above Canyon Dam.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1902 to December 1906, August 1916 to December 1935, January 1964 to current year. Published as "near Cuero" 1902-6, and as "below Cuero" 1916-35. Gage-height records collected at site 7.1 mi upstream from Sandies Creek from 1941 to 1966 (published in reports of the National Weather Service) and at present site since June 12, 1968.

REVISED RECORDS.--WDR TX-68-1, TX-69-1: Drainage areas at all sites.

GAGE.--Water-stage recorder. Datum of gage is 128.64 ft above National Geodetic Vertical Datum of 1929. Dec. 26, 1902, to June 1903, nonrecording gage at site 7.1 mi upstream at different datum, gage heights moved to site 3.3 mi upstream from present site before computation; July 1903 to December 1906 nonrecording gage 3.3 mi upstream at different datum; Aug. 19, 1916, to Dec. 16, 1935, water-stage recorder at site 5.0 mi downstream at datum 3.19 ft lower.

REMARKS.--No estimated daily discharges. Records good. Since July 21, 1962, flow regulated by Canyon Lake (station 08167700) 202.4 mi upstream. Flow below New Braunfels is partly regulated by a series of small power dams, combined capacity of six largest dams 33,550 acre-ft. Flow is affected at times by discharge from the flood-detention pools of 53 floodwater-retarding structures with combined detention capacity of 87,200 acre-ft. These structures control runoff from 302 mi<sup>2</sup> in the Comal, San Marcos, and Plum Creek drainage basins. Many small diversions above station. Satellite telemeter located at station.

AVERAGE DISCHARGE.--20 years (water years 1904-6, 1917-18, 1921-35) prior to regulation by Canyon Lake, 1,303 ft<sup>3</sup>/s (944,000 acre-ft/yr); 21 years (water years 1965-85) regulated, 1,962 ft<sup>3</sup>/s (1,421,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 132,000 ft<sup>3</sup>/s Sept. 1, 1981 (gage height, 41.83 ft); minimum daily, 28 ft<sup>3</sup>/s July 22, 1984. Floods at this station since at least 1900 occurred Mar. 1, 1903, 43.0 ft, at different site and datum; Oct. 20, 1919, 32.2 ft, site and datum then in use; May 30, 1929, 35.2 ft, site and datum then in use; all from information by local residents.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, probably occurred July 2, 1936, 44.33 ft, present site and datum, from information by State Department of Highways and Public Transportation. Other floods at this station occurred Oct. 4, 1913, 37.57 ft, at different site and datum; Dec. 6, 1913, 34.57 ft, at different site and datum; June 21, 1961, 37.0 ft, present site and datum; all from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,700 ft<sup>3</sup>/s June 10 at 0500 hours (gage height, 16.54 ft); minimum daily, 59 ft<sup>3</sup>/s Oct. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	86	486	453	1230	1550	2200	1710	1550	1080	2150	1460	716
2	88	422	453	1970	1520	2560	1710	2390	1040	2050	1460	727
3	83	976	451	2080	1480	2630	1670	2710	997	1920	1440	669
4	70	961	442	1750	1450	2170	1660	2190	1010	1830	1440	682
5	59	967	464	1720	1450	1920	1640	1480	1080	2860	1420	767
6	59	828	464	1810	1470	1810	1600	1230	1010	6370	1460	623
7	70	811	436	1670	1440	1630	1600	1200	1030	6580	1320	549
8	81	784	469	1580	1430	1460	1590	1190	2470	3780	1290	612
9	103	760	454	1560	1410	1630	1570	1290	7240	2610	1290	589
10	198	611	444	1550	1450	1650	1590	1130	7980	2300	1190	616
11	275	533	436	1500	1430	1650	1840	1550	3980	2130	986	683
12	300	488	440	1430	1380	1640	2100	1560	2560	2020	891	641
13	355	454	581	1540	1510	1630	3450	1280	1870	1970	926	645
14	480	439	524	1790	1410	2370	4440	1170	1770	3020	915	708
15	1120	464	535	1900	1070	2340	3010	1280	1760	2790	924	785
16	1650	432	766	2620	963	2500	2250	2230	1680	2180	877	729
17	846	453	1560	3270	954	2750	2060	1940	1580	2050	836	724
18	248	784	2370	3700	923	2510	1900	1610	1580	1960	830	705
19	282	734	2340	3630	878	2110	1780	2150	1680	1910	800	703
20	385	518	1260	2530	878	1980	2150	1920	2250	1850	808	595
21	1050	459	672	2060	852	1910	2310	1260	3010	1850	773	677
22	1980	461	806	1800	891	2160	1840	1130	2110	1810	767	701
23	1230	434	889	1740	1000	2430	1730	1120	1830	1690	742	683
24	800	421	850	1710	2650	2060	1660	1140	3280	1680	680	642
25	777	430	856	1670	2360	1930	1490	1170	6410	1640	781	639
26	1580	426	892	1530	3000	1840	1840	1150	5820	1650	746	639
27	1040	494	875	1640	2060	1810	1680	1100	3200	1590	768	600
28	891	551	850	1610	1810	1770	1600	1090	2540	1490	739	607
29	880	484	847	1610	---	1750	1420	1070	2320	1520	681	628
30	684	444	894	1500	---	1760	1290	1090	2250	1560	713	1100
31	590	---	1120	1480	---	1680	---	1080	---	1530	679	---
TOTAL	18340	17509	24893	59180	40669	62240	58180	45450	78417	72340	30632	20384
MEAN	592	584	803	1909	1452	2008	1939	1466	2614	2334	988	679
MAX	1980	976	2370	3700	3000	2750	4440	2710	7980	6580	1460	1100
MIN	59	421	436	1230	852	1460	1290	1070	997	1490	679	549
AC-FT	36380	34730	49380	117400	80670	123500	115400	90150	155500	143500	60760	40430
CAL YR 1984	TOTAL	157610	MEAN	431	MAX	2370	MIN	28	AC-FT	312600		
WTR YR 1985	TOTAL	528234	MEAN	1447	MAX	7980	MIN	59	AC-FT	1048000		



GUADALUPE RIVER MAIN STEM  
08175800 GUADALUPE RIVER AT CUERO, TX--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: March 1968 to September 1985 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
DATE	TIME								
OCT 19...	1000	282	500	--	--	170	20	50	11
JAN 25...	1030	1700	480	8.2	10.0	210	24	59	16
MAR 14...	1345	2750	348	--	19.5	140	19	42	9.2
MAY 10...	1240	1130	498	8.1	--	210	21	61	14
JUL 11...	1030	2100	441	--	--	200	32	58	13
AUG 15...	1045	928	485	--	30.0	230	31	63	17
		SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
DATE	SODIUM, DIS- SOLVED (MG/L AS NA)								
OCT 19...	40	1	4.2	150	32	47	.30	12	290
JAN 25...	17	.5	2.3	190	26	23	.20	10	270
MAR 14...	13	.5	2.7	124	21	17	.20	7.6	190
MAY 10...	23	.7	3.6	189	26	32	.20	11	280
JUL 11...	16	.5	3.5	167	25	20	.20	12	250
AUG 15...	18	.5	2.3	197	24	27	.30	11	280

## GUADALUPE RIVER MAIN STEM

08176500 GUADALUPE RIVER AT VICTORIA, TX  
(National stream-quality accounting network)

LOCATION.--Lat 28°47'34", long 97°00'46", Victoria County, Hydrologic Unit 12100204, on left bank just upstream from pier of upstream bridge of two bridges on U.S. Highway 59 in Victoria, 1,300 ft upstream from Southern Pacific Railroad Co. bridge, 15 mi upstream from Coletto Creek, and at mile 50.7.

DRAINAGE AREA.--5,198 mi<sup>2</sup>, of which 1,432 mi<sup>2</sup> is above Canyon Dam.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1934 to current year. Gage-height records collected in this vicinity since 1904 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 29.15 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Since July 21, 1962, flow is regulated by Canyon Lake (station 08167700) 252.3 mi upstream. Many diversions above station. Records provided by the city of Victoria show a discharge of about 8,180 acre-ft of sewage effluent below station. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08175800. Satellite telemeter located at station.

AVERAGE DISCHARGE.--27 years (water years 1936-62) prior to regulation by Canyon Lake, 1,626 ft<sup>3</sup>/s (1,178,000 acre-ft/yr); 23 years (water years 1963-85) regulated, 1,943 ft<sup>3</sup>/s (1,408,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 179,000 ft<sup>3</sup>/s July 3, 1936 (gage height, 31.22 ft); minimum daily, 14 ft<sup>3</sup>/s Aug. 20, 1956.  
Maximum stage since at least 1833, that of July 3, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 1, 1929, reached a stage of 30.2 ft, present site and datum.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,600 ft<sup>3</sup>/s Apr. 21 at 0300 hours (gage height, 23.85 ft); minimum daily, 42 ft<sup>3</sup>/s Oct. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	91	665	515	1360	1570	2150	1760	1580	1150	2450	1510	708
2	103	808	521	1570	1590	2750	1780	2310	1130	2330	1460	760
3	106	608	521	2280	1560	3070	1760	2520	1100	2160	1470	750
4	114	1080	536	2120	1510	2720	1730	3110	1090	2460	1440	698
5	95	1040	564	1750	1490	2220	1730	2100	1090	2270	1440	738
6	59	1020	547	1810	1510	1970	1700	1490	1140	4210	1410	796
7	42	907	538	1830	1510	1880	1660	1330	1090	6950	1390	629
8	84	892	506	1670	1500	1610	1660	1340	1150	6020	1280	567
9	77	862	542	1590	1480	1590	1650	1290	3940	3550	1260	632
10	85	830	525	1620	1490	1720	1730	1380	7660	2790	1240	596
11	94	674	515	1580	1590	1720	2900	1230	6910	2500	1140	670
12	253	605	505	1560	1550	1710	4060	1700	3620	2330	987	732
13	302	550	515	1560	1470	1700	3170	1540	2560	2170	926	667
14	398	518	650	1820	1620	4000	4320	1310	1880	2380	944	699
15	490	505	588	1870	1400	4350	4240	1270	1820	3330	933	784
16	1250	567	649	2300	1160	3220	2980	1530	1740	2790	926	811
17	1520	508	884	3180	1080	3000	2350	2520	1630	2350	872	784
18	778	534	1890	3810	1070	2880	2180	1910	1650	2200	846	788
19	388	882	2650	4090	1050	2450	1980	1730	1730	2090	829	748
20	377	789	2030	3620	1010	2770	3880	2430	1810	2000	798	712
21	472	589	1210	2470	1030	2430	7940	1790	2860	1940	806	640
22	1520	530	755	2070	999	2130	3220	1280	2930	1910	813	732
23	1960	534	924	1830	1080	2430	2220	1220	2100	1840	799	758
24	1240	503	946	1800	1680	2370	2160	1210	2070	1710	775	719
25	899	486	931	1760	2720	2080	1850	1230	4410	1700	725	676
26	1130	495	952	1690	2830	1970	2730	1230	6740	1650	832	676
27	1830	487	978	1650	3080	1910	2510	1210	5100	1660	775	664
28	1080	558	961	1720	2170	1870	1930	1160	3160	1570	784	655
29	987	622	924	1680	---	1840	1790	1170	2730	1500	763	727
30	933	555	947	1670	---	1820	1530	1160	2520	1550	766	1150
31	760	---	1280	1520	---	1810	---	1160	---	1570	740	---
TOTAL	19517	20203	26999	62850	43799	72140	77100	49440	80510	77930	31679	21666
MEAN	630	673	871	2027	1564	2327	2570	1595	2684	2514	1022	722
MAX	1960	1080	2650	4090	3080	4350	7940	3110	7660	6950	1510	1150
MIN	42	486	505	1360	999	1590	1530	1160	1090	1500	725	567
AC-FT	38710	40070	53550	124700	86880	143100	152900	98060	159700	154600	62840	42970
CAL YR 1984	TOTAL	177156	MEAN	484	MAX	2650	MIN	42	AC-FT	351400		
WTR YR 1985	TOTAL	583833	MEAN	1600	MAX	7940	MIN	42	AC-FT	1158000		

GUADALUPE RIVER MAIN STEM

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08176500 GUADALUPE RIVER AT VICTORIA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1945 to September 1946, October 1948 to current year. Chemical and biochemical analyses: October 1972 to current year. Pesticide analyses: October 1973 to September 1981. Sediment records: October 1972 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1945 to September 1981.

WATER TEMPERATURES: November 1950 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,950 microsiemens on several days during January 1946; minimum daily, 135 microsiemens Sept. 3, 1981.

WATER TEMPERATURES: Maximum daily, 32.0°C Aug. 4, 27, 1952; minimum daily, 2.0°C Jan. 11, 12, 1962, Jan. 24, 1963.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)
OCT 17...	1610	1400	420	8.0	23.5	23	6.9	81	2.9	390	470	140
JAN 23...	1700	1820	434	8.0	7.0	74	8.6	70	1.1	130	82	200
MAY 08...	1030	1300	460	8.0	25.5	90	7.2	88	.7	280	160	190
JUL 10...	0930	2800	415	8.0	28.0	95	6.8	87	1.0	280	290	170

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)
OCT 17...	9	40	10	32	1	4.1	133	28	33	.30	12
JAN 23...	30	55	15	19	.6	2.9	170	28	25	.20	11
MAY 08...	33	57	12	21	.7	4.6	159	28	30	.20	13
JUL 10...	21	53	10	14	.5	4.1	153	23	17	.30	14

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, DIS- SUS- PENDE (MG/L)	SEDI- MENT, CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 17...	240	240	.70	.080	1.9	.360	.070	.070	608	2300	97
JAN 23...	251	260	.76	.080	.90	.180	.080	.080	147	722	91
MAY 08...	247	260	.95	.030	.60	.250	.130	.120	144	505	100
JUL 10...	230	230	.55	.030	.90	.230	.080	.060	192	1450	99

GUADALUPE RIVER MAIN STEM  
08176500 GUADALUPE RIVER AT VICTORIA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

		ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
DATE	TIME									
OCT 17...	1610	1	68	<.0	<1	<1	<3	1	21	5
JAN 23...	1700	1	59	<.5	1	6	<3	1	27	<1
MAY 08...	1030	1	75	<.5	<1	<1	<3	4	14	6
JUL 10...	0930	3	68	<.5	<1	<1	<3	1	16	1
	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 17...	15	<1	<.1	<10	2	<1	<1	310	<6	13
JAN 23...	11	<1	<.1	<10	<1	<1	1	420	<6	14
MAY 08...	10	2	<.1	<10	3	<1	<1	370	7	9
JUL 10...	10	2	.1	<10	2	<1	<1	350	<6	24

GUADALUPE RIVER BASIN

265

08176550 FIFTEENMILE CREEK NEAR WESER, TX

LOCATION.--Lat 28°53'51", long 97°21'17", De Witt County, Hydrologic Unit 12100204, at DeWitt-Goliad County line, on left downstream end of bridge on U. S. Highway 183, and 2.4 mi northeast of Weser.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1984 to September 1985.

GAGE.--Water-stage recorder. Datum of gage is 158.37 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1-18, 21-24, May 26 to June 12, July 12 to Aug. 21, and Aug. 23 to Sept. 23. Records fair except those for estimated daily discharges, which are poor. No known diversions above station. Guadalupe Blanco River Authority gage-height telemeter located at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,000 ft<sup>3</sup>/s Mar. 14, 1985 (gage height, 11.00 ft); minimum daily, 1.0 ft<sup>3</sup>/s Oct. 1-3, 1984.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 26	0100	1,760	10.65	Mar. 14	2000	*2,000	*11.00

Minimum daily discharge, 1.0 ft<sup>3</sup>/s Oct. 1-3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	12	3.3	26	7.7	11	17	18	6.5	10	3.3	3.5
2	1.0	34	3.4	16	7.4	12	16	17	6.4	8.9	3.2	2.5
3	1.0	25	3.5	15	7.3	9.9	16	16	6.0	11	3.1	2.0
4	1.5	17	3.8	12	7.7	8.8	15	15	6.0	230	2.9	1.8
5	2.0	13	7.3	10	7.7	8.0	15	14	6.0	90	2.8	1.8
6	2.0	12	8.6	8.7	7.7	7.4	15	14	6.2	28	2.7	1.8
7	2.0	11	6.7	7.7	7.7	7.3	15	13	6.2	19	2.6	1.7
8	2.5	9.9	5.9	6.5	7.3	7.3	14	13	6.0	16	2.6	1.8
9	5.0	9.5	5.4	5.9	7.3	7.3	14	76	5.5	14	2.5	2.3
10	8.6	8.8	5.0	5.5	7.5	7.2	68	47	5.5	12	2.4	2.5
11	5.0	8.3	5.0	5.2	8.1	7.0	336	22	5.5	11	2.4	2.6
12	3.5	7.9	5.0	7.6	7.3	7.0	83	18	7.0	10	2.4	2.2
13	3.0	7.6	5.7	10	7.3	6.9	39	16	6.5	9.5	2.3	9.0
14	4.0	7.2	6.0	14	7.0	628	28	15	6.0	9.0	2.3	7.0
15	4.0	7.4	6.0	18	6.9	245	23	14	5.5	8.0	2.3	6.6
16	3.5	6.7	6.2	15	6.7	88	21	13	5.5	7.5	2.2	6.4
17	3.5	5.4	6.0	30	6.6	43	19	14	5.5	7.0	2.1	6.0
18	3.5	4.9	5.9	18	6.9	32	19	13	33	6.5	2.0	5.8
19	15	4.5	5.3	12	6.9	27	18	12	617	6.0	2.0	5.4
20	7.0	4.1	5.2	11	7.1	27	35	11	175	6.0	2.0	5.0
21	6.0	4.1	5.0	8.9	7.3	23	21	11	37	6.0	1.9	4.7
22	5.0	4.1	4.9	8.4	7.4	21	19	10	27	5.5	1.8	4.3
23	4.5	4.1	4.7	8.4	9.8	20	18	9.6	30	5.0	1.8	4.0
24	4.0	4.1	4.7	8.3	11	20	17	8.7	23	5.0	1.8	3.5
25	121	4.2	4.7	7.9	14	19	17	8.4	17	5.0	1.8	2.9
26	468	4.4	4.7	7.7	10	19	116	8.0	15	4.5	2.0	2.6
27	34	4.2	4.7	9.1	11	19	42	8.0	15	4.0	1.9	2.3
28	23	3.8	4.6	8.9	10	19	24	7.5	15	3.7	1.8	2.3
29	19	3.8	4.7	8.5	---	18	21	7.0	19	3.5	2.0	12
30	16	3.7	4.7	8.0	---	18	19	7.0	13	3.4	3.0	218
31	14	---	17	7.7	---	17	---	6.5	---	3.3	3.5	---
TOTAL	793.1	256.7	173.6	345.9	226.6	1410.1	1140	482.7	1137.8	568.3	73.4	334.3
MEAN	25.6	8.56	5.60	11.2	8.09	45.5	38.0	15.6	37.9	18.3	2.37	11.1
MAX	468	34	17	30	14	628	336	76	617	230	3.5	218
MIN	1.0	3.7	3.3	5.2	6.6	6.9	14	6.5	5.5	3.3	1.8	1.7
AC-FT	1570	509	344	686	449	2800	2260	957	2260	1130	146	663

CAL YR 1984	TOTAL	-	MEAN	-	MAX	-	MIN	-	AC-FT	-
WTR YR 1985	TOTAL	6942.5	MEAN	19.0	MAX	628	MIN	1.0	AC-FT	13770



## GUADALUPE RIVER BASIN

08176900 COLETO CREEK AT ARNOLD ROAD CROSSING NEAR SCHROEDER, TX

LOCATION.--Lat 28°51'41", long 97°13'34", Goliad County, Hydrologic Unit 12100204, on right bank at downstream side of Arnold Road Crossing, 0.7 mi downstream from confluence of Twelvemile and Fifteenmile Creeks, 3.2 mi north of Schroeder, 12.8 mi upstream from Coletto Creek Reservoir, and 26.0 mi upstream from mouth.

DRAINAGE AREA.--357 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1978 to current year. Records equivalent for January 1930 to December 1933 and October 1952 to September 1979, published as "near Schroeder".

GAGE.--Water-stage recorder. Datum of gage is 100.43 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Gage-height telemeter located at station.

AVERAGE DISCHARGE.--7 years, 86.3 ft<sup>3</sup>/s (62,520 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,500 ft<sup>3</sup>/s Aug. 31, 1981 (gage height, 17.78 ft); minimum daily, 2.6 ft<sup>3</sup>/s July 18, 19, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharges since at least 1872 at site 3.5 mi downstream, 122,000 ft<sup>3</sup>/s Sept. 21, 1967 (slope-area measurement of peak flow), 63,700 ft<sup>3</sup>/s Oct. 16, 1946, and 46,700 ft<sup>3</sup>/s in October 1925, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 14	1400	*2,960	*9.88				
Minimum daily discharge, 3.1 ft <sup>3</sup> /s Sept. 7, 8.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.4	20	8.0	37	14	40	39	69	16	29	8.6	5.9
2	3.3	155	8.4	35	14	30	38	50	16	26	8.1	4.5
3	3.4	84	7.7	32	14	24	37	37	15	28	7.8	3.6
4	3.5	41	8.4	24	14	19	36	33	15	284	7.8	3.3
5	4.3	25	10	19	14	17	36	30	15	635	7.6	3.2
6	4.6	19	10	17	14	16	34	28	16	126	7.0	3.3
7	4.2	17	9.7	16	13	16	33	27	16	67	6.8	3.1
8	5.0	15	9.3	14	13	15	33	26	15	47	6.5	3.1
9	5.4	14	9.2	14	14	14	32	84	14	37	6.2	4.2
10	5.7	13	9.0	15	16	14	251	95	14	30	5.9	4.5
11	6.8	12	8.8	13	22	13	1400	49	13	25	5.6	4.9
12	6.4	12	8.6	17	15	14	344	35	18	23	5.5	3.9
13	5.5	12	8.9	22	13	14	154	30	16	20	5.5	4.5
14	8.0	11	9.0	30	14	1480	104	28	14	18	5.4	12
15	7.6	11	9.1	37	13	1060	75	27	13	17	5.4	13
16	6.6	11	9.5	36	13	498	57	27	12	16	5.0	9.8
17	6.1	11	9.5	74	14	188	48	28	12	15	4.8	9.2
18	6.1	11	9.6	62	14	110	42	28	19	14	4.7	8.9
19	40	9.6	9.3	35	14	81	38	25	359	13	4.4	8.3
20	31	9.0	9.0	24	15	292	325	23	597	13	4.0	7.2
21	15	9.0	8.7	19	14	118	396	23	135	13	3.9	6.0
22	11	8.7	8.7	18	14	72	105	23	72	12	3.7	5.3
23	9.6	8.7	8.7	17	25	59	62	21	76	11	3.5	4.9
24	9.5	8.8	8.7	16	30	52	45	20	98	11	3.5	4.8
25	11	9.3	8.3	16	29	48	40	20	63	11	3.5	4.6
26	801	9.1	8.2	15	25	46	540	19	41	10	3.7	4.2
27	142	8.7	9.0	18	30	46	233	18	32	10	3.6	4.1
28	64	8.0	9.4	16	34	45	106	18	36	9.7	3.5	4.4
29	42	8.4	9.3	16	---	44	70	18	42	9.2	3.6	122
30	30	8.4	9.3	15	---	43	54	18	39	8.8	6.5	410
31	24	---	25	15	---	41	---	17	---	8.5	7.3	---
TOTAL	1326.0	599.7	294.3	754	488	4569	4807	994	1859	1597.2	168.9	690.7
MEAN	42.8	20.0	9.49	24.3	17.4	147	160	32.1	62.0	51.5	5.45	23.0
MAX	801	155	25	74	34	1480	1400	95	597	635	8.6	410
MIN	3.3	8.0	7.7	13	13	13	32	17	12	8.5	3.5	3.1
AC-FT	2630	1190	584	1500	968	9060	9530	1970	3690	3170	335	1370
CAL YR 1984	TOTAL	10468.0	MEAN	28.6	MAX	3220	MIN	2.6	AC-FT	20760		
WTR YR 1985	TOTAL	18147.8	MEAN	49.7	MAX	1480	MIN	3.1	AC-FT	36000		

## GUADALUPE RIVER BASIN

267

08176990 COLETO CREEK RESERVOIR INFLOW (GUADALUPE DIVERSION) NEAR SCHROEDER, TX

LOCATION.--Lat 28°50'21", long 97°11'20", Victoria County, Hydrologic Unit 12100204, on right bank of small tributary 1,200 ft upstream from Coleta Creek and 2.6 mi northeast of Schroeder.

PERIOD OF RECORD.--March 1980 to current year.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 100.52 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Discharge represents flow diverted by pumping from the Guadalupe River to be used as makeup water for the Central Power and Light Co. generating plant on Coleta Creek Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 36 ft<sup>3</sup>/s Apr. 2, 11, Sept. 11, 1980; no flow most of time.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 35 ft<sup>3</sup>/s Aug. 6-10; no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.06	.00	.00	.00	.00	.00	.00	.00	.00	31
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	31
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	30
4	9.6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	29
5	32	.00	.00	.00	.00	.00	.00	.00	.00	.00	20	28
6	33	.00	.00	.00	.00	.00	.00	11	.00	.00	35	29
7	31	.00	.00	.00	.00	.00	.00	.57	.00	.00	35	28
8	28	.00	.00	.00	.00	.00	.00	.27	.00	.00	35	28
9	16	.00	.00	.00	.00	.00	.00	.00	.00	.00	35	28
10	27	.00	.16	.00	.00	.00	.00	.00	.00	.00	35	27
11	23	.00	7.2	.00	.00	.00	.00	.00	.00	.00	34	27
12	25	.00	.44	.00	.00	.00	.00	.00	.00	.00	34	30
13	28	.00	.35	.00	.00	.00	.00	.00	.00	.00	33	31
14	27	.00	.04	.00	.00	.00	.00	.00	.00	.00	32	31
15	26	.00	.00	.00	.00	.00	.00	.00	.00	.00	32	31
16	26	.00	.00	.00	.00	.00	.00	.00	.00	.00	32	31
17	30	.00	.00	.00	.00	.00	.00	.00	.00	.00	29	31
18	29	.00	.00	.00	.00	.00	.00	.00	.00	.00	21	31
19	13	.00	.00	.00	.00	.00	.00	.00	.00	.00	34	30
20	.43	.00	.00	.00	.00	.00	.00	.00	.00	.00	34	30
21	.04	.00	.00	.00	.00	.00	.00	.00	.00	.00	34	30
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	34	30
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	11	33	29
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.54	32	30
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	29	32
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	26	31
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	30	31
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	29	31
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	27	30
30	.00	.11	.00	.00	---	.00	.00	.00	.00	.00	31	28
31	.00	---	.00	.00	---	.00	---	.00	---	.00	31	---
TOTAL	404.07	.11	8.25	.00	.00	.00	.00	11.84	.00	11.54	846.00	894
MEAN	13.0	.004	.27	.000	.000	.000	.000	.38	.000	.37	27.3	29.8
MAX	33	.11	7.2	.00	.00	.00	.00	11	.00	11	35	32
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	27
AC-FT	801	.2	16	.00	.00	.00	.00	23	.00	23	1680	1770
CAL YR 1984	TOTAL	2972.67	MEAN	8.12	MAX	34	MIN	.00	AC-FT	5900		
WTR YR 1985	TOTAL	2175.81	MEAN	5.96	MAX	35	MIN	.00	AC-FT	4320		

## GUADALUPE RIVER BASIN

08177300 PERDIDO CREEK AT FARM ROAD 622 NEAR FANNIN, TX

LOCATION.--Lat 28°45'05", long 97°19'01", Goliad County, Hydrologic Unit 12100204, at right downstream end of bridge on Farm Road 622, 1.2 mi downstream from Farmer Creek, 3.1 mi upstream from Kilgore Creek, and 6.1 mi northwest of Fannin.

DRAINAGE AREA.--28.0 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 134.66 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above gage. Gage-height telemeter at station.

AVERAGE DISCHARGE.--7 years, 6.41 ft<sup>3</sup>/s (3.11 in/yr), 4,640 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,600 ft<sup>3</sup>/s May 29, 1981 (gage height, 13.80 ft, from floodmark), from rating curve extended above 1,160 ft<sup>3</sup>/s; maximum gage height, 14.60 ft Oct. 31, 1981; minimum daily discharge, 0.04 ft<sup>3</sup>/s July 7, 8, 1980.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Apr. 20, 1976, reached a stage of 26.28 ft, and flood of Sept. 15, 16, 1967, reached a stage of 26.08 ft, from information by the State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 14	0830	1,250	8.05	July 4	0830	*1,290	*8.20
Apr. 10	2000	575	7.00	Sept. 29	2300	741	7.34

Minimum daily discharge, 0.09 ft<sup>3</sup>/s Aug. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.14	.33	.28	.49	.20	1.2	.65	2.6	.47	.40	.19	.13
2	.16	.68	.28	.63	.19	.52	.63	1.4	.47	2.5	.19	.12
3	.15	.65	.28	.63	.17	.41	.57	1.1	.46	.91	.20	.11
4	.16	.54	.34	.33	.17	.36	.60	1.1	.45	231	.19	.10
5	.34	.44	.68	.33	.17	.28	.56	1.0	.48	55	.19	.20
6	.26	.38	.30	.24	.17	.28	.48	.98	.47	4.9	.19	.12
7	.31	.38	.28	.23	.17	.31	.48	.98	.45	2.1	.18	.22
8	.51	.35	.28	.20	.17	.33	.49	1.8	.43	1.3	.16	.18
9	.35	.33	.28	.20	.17	.33	.45	1.9	.42	.98	.15	.15
10	.30	.32	.28	.24	.48	.32	126	.98	.42	.81	.15	.16
11	.24	.28	.28	.25	.32	.30	129	.87	.42	.75	.15	.18
12	.24	.28	.28	.47	.17	.30	31	.86	.61	.76	.15	.30
13	.24	.28	.32	.47	.19	.31	16	.87	.36	.74	.16	.29
14	.83	.28	.33	.59	.19	227	13	.84	.38	.75	.14	.21
15	.40	.30	.33	.48	.17	33	5.0	.83	.37	.74	.11	.19
16	.29	.33	.28	.56	.17	26	3.9	.83	.36	.76	.11	.18
17	.28	.33	.28	1.4	.17	2.4	3.4	1.2	.37	.73	.11	.18
18	.31	.33	.28	.52	.18	.64	3.0	1.0	.85	.53	.11	.17
19	12	.33	.28	.32	.19	.43	3.0	.80	.84	.50	.14	.19
20	2.2	.33	.27	.24	.20	77	4.1	.84	.47	.48	.10	.17
21	.91	.33	.24	.24	.20	8.0	4.3	.94	.52	.40	.09	.15
22	.72	.33	.24	.24	.20	2.4	2.8	.82	.58	.40	.16	.15
23	.96	.33	.24	.24	.70	1.8	2.3	.74	.57	.36	.12	.16
24	1.0	.33	.24	.24	.36	1.5	1.9	.66	.41	.35	.12	.15
25	.92	.33	.24	.24	.36	1.2	2.4	.59	.41	.34	.12	.15
26	2.7	.38	.24	.24	.33	1.1	10	.57	.40	.32	.11	.13
27	2.0	.37	.23	.52	.70	1.1	3.2	.58	.39	.33	.10	.15
28	.76	.33	.22	.27	.70	1.0	2.4	.59	.57	.31	.12	.19
29	.47	.28	.20	.24	---	.97	1.9	.55	.45	.30	.16	126
30	.36	.31	.20	.24	---	.89	1.7	.51	.38	.28	.18	116
31	.33	---	1.5	.22	---	.68	---	.50	---	.27	.13	---
TOTAL	30.84	10.79	10.00	11.75	7.56	392.36	375.21	29.83	14.23	310.30	4.48	246.78
MEAN	.99	.36	.32	.38	.27	12.7	12.5	.96	.47	10.0	.14	8.23
MAX	12	.68	1.5	1.4	.70	227	129	2.6	.85	231	.20	126
MIN	.14	.28	.20	.20	.17	.28	.45	.50	.36	.27	.09	.10
CFSM	.04	.01	.01	.01	.01	.45	.45	.03	.02	.36	.005	.29
IN.	.04	.01	.01	.02	.01	.52	.50	.04	.02	.41	.01	.33
AC-FT	61	21	20	23	15	778	744	59	28	615	8.9	489
CAL YR 1984	TOTAL	229.91	MEAN	.63	MAX	18	MIN	.09	CFSM	.02	IN	.31
WTR YR 1985	TOTAL	1444.13	MEAN	3.96	MAX	231	MIN	.09	CFSM	.14	IN	1.92
									AC-FT	456		
									AC-FT	2860		

## 08177400 COLETO CREEK RESERVOIR NEAR VICTORIA, TX

LOCATION.--Lat 28°43'51", long 97°09'53". Victoria County, Hydrologic Unit 12100204, on right bank 175 ft upstream from right end of spillway of dam on Coletto Creek, 1.6 mi upstream from U.S. Highway 59, 11.6 mi west of Victoria, and 12.8 mi upstream from mouth. Record includes reservoir contents for Coletto Creek Reservoir (Turkey Creek Arm) near Schroeder (station 08177240), and Coletto Creek Reservoir (Sulphur Creek Arm) near Fannin (station 08177380).

DRAINAGE AREA.--494 mi<sup>2</sup>.

PERIOD OF RECORD.--February 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is 80.00 ft above National Geodetic Vertical Datum of 1929.

Supplementary gage (Turkey Creek Arm).--Water-stage recorder 2.7 mi upstream at datum 90.00 ft above National Geodetic Vertical Datum of 1929. Coletto Creek Reservoir (Turkey Creek Arm) near Schroeder (station 08177240) is locally known as Dike No. 2.

Supplementary gage (Sulphur Creek Arm).--Water-stage recorder 2.8 mi upstream at datum 90.00 ft above National Geodetic Vertical Datum of 1929. Coletto Creek Reservoir (Sulphur Creek Arm) near Fannin (station 08177380) is known locally as Dike No. 1.

REMARKS.--The reservoir system consists of the main reservoir (station 08177400), Turkey Creek Arm (station 08177240), and Sulphur Creek Arm (station 08177380). Figures shown below are the total contents for the three stations. Cooling water is diverted from the main reservoir through a Central Power and Light coal-fired generating plant, through a canal to the Sulphur Creek Arm, and then through a canal to Turkey Creek Arm where it is released back into the main reservoir. The system was built for the Guadalupe-Blanco River Authority, and storage began in February 1980.

The main reservoir is formed by a compacted earthfill dam 20,800 ft long, including a 2,000-foot uncontrolled spillway and a 403-foot wide concrete outlet structure with seven 40- x 28-foot spillway gates. Low-flow releases are made through the dam by a controlled 8-inch pipe. Turkey Creek Arm is formed by a compacted earthfill dam 2,250 ft long, including a 186-foot wide concrete outlet structure with two 40- x 11-foot spillway gates. Sulphur Creek Arm is formed by a compacted earthfill dam 1,030 ft long, including a 186-foot wide concrete outlet structure with two 40- by 11-foot spillway gates. Data regarding the dams and reservoirs are given in the following table:

	Coletto Creek Reservoir		Turkey Creek Arm		Sulphur Creek Arm	
	Gage height	Contents	Gage height	Contents	Gage height	Contents
	(feet)	(acre-feet)	(feet)	(acre-feet)	(feet)	(acre-feet)
Top of dam	39.0	140,200	17.0	7,330	17.0	2,550
Spillway	27.3	63,560	-	-	-	-
Top of spillway gates	19.0	34,000	12.9	4,950	12.9	1,640
Crest of spillway	-9.0	954	1.89	1,400	1.91	306

COOPERATION.--Elevations and capacity tables were provided by Forrest and Cotton Engineers, Consulting Engineers for the Guadalupe-Blanco River Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily contents, 40,330 acre-ft Feb. 25, 1982; no appreciable storage prior to Feb. 28, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge contents, 38,120 acre-ft Apr. 13; minimum daily contents, 33,690 acre-ft Sept. 26.

## GUADALUPE RIVER BASIN

## 08177400 COLETO CREEK RESERVOIR NEAR VICTORIA, TX--Continued

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33940	37490	37330	36780	37200	38000	37710	37200	37480	37910	35770	34270
2	33900	37100	37260	36890	37140	37750	37690	37280	37410	37980	35660	34250
3	33810	37380	37160	37020	37240	37820	37710	37360	37330	37690	35570	34140
4	33810	37470	37220	37040	37250	37680	37740	37360	37270	37830	35460	34100
5	33740	37400	37270	37000	37290	37740	37680	37380	37210	37090	35370	34050
6	33740	37480	37180	37090	37260	37700	37730	37410	37180	37360	35330	34010
7	33760	37580	37190	37060	37320	37800	37730	37520	37140	37460	35290	33960
8	34130	37610	37320	37150	37330	37820	37600	37530	37050	37510	35230	33970
9	34170	37620	37350	37240	37490	37820	37650	37830	36960	37480	35160	33960
10	34230	37370	37380	37100	37580	37830	37620	37770	36870	37460	35130	34000
11	34230	37350	37400	36950	37530	37850	37020	37860	36810	37440	35090	33940
12	34280	37360	37410	37120	37560	37840	37710	37880	36860	37380	35040	33940
13	34330	37440	37460	37290	37710	37820	38120	37950	36750	37350	34980	33930
14	34540	37490	37470	37680	37620	37450	37890	37810	36690	37270	34970	33950
15	34590	37510	37510	37920	37590	38090	37600	37830	36610	37210	34970	33930
16	34650	37480	37490	37680	37710	37060	37720	37870	36550	37130	34880	33930
17	34780	37540	37570	37750	37720	37580	37800	37880	36420	37090	34820	33950
18	34870	37500	37540	37620	37760	37870	37860	37890	36410	37030	34730	33960
19	36310	37390	37510	37780	37820	38010	37940	37930	36940	36940	34730	33950
20	36570	37340	37500	37390	37880	37170	37300	37940	38060	36880	34670	33930
21	36600	37290	37500	37410	37910	37480	37920	37850	37990	36780	34570	33930
22	36550	37220	37410	37540	37910	37690	38000	37900	38120	36690	34540	33900
23	36840	37260	37410	37580	37690	37840	37680	37830	37740	36640	34480	33930
24	36920	37440	37380	37600	37730	37940	37760	37870	37880	36540	34460	33840
25	37210	37470	37100	37660	37810	37670	38050	37800	37930	36430	34450	33850
26	37240	37510	37190	37660	37940	37790	37600	37740	37960	36340	34420	33690
27	37100	37230	37270	37870	37760	37890	37940	37730	37960	36270	34370	33700
28	37240	37210	37240	37810	37800	37970	37820	37670	37950	36150	34260	33700
29	37310	37320	37240	37950	---	37930	38010	37600	37930	36050	34280	34860
30	37410	37190	37240	37660	---	37620	37720	37580	37910	35920	34280	36030
31	37430	---	36820	37280	---	37610	---	37560	---	35850	34260	---
MAX	37430	37620	37570	37950	37940	38090	38120	37950	38120	37980	35770	36030
MIN	33740	37100	36820	36780	37140	37060	37020	37200	36410	35850	34260	33690
(†)	+870	-240	-370	+460	+520	-190	+110	-160	+350	-2060	-1590	+1770

CAL YR 1984 MAX 38050 MIN 33740 † -400  
WTR YR 1985 MAX 38120 MIN 33690 † -530

† Change in contents, in acre-feet.

## GUADALUPE RIVER BASIN

08177500 COLETO CREEK NEAR VICTORIA, TX

LOCATION.--Lat 28°43'51", long 97°08'18", Victoria County, Hydrologic Unit 12100204, on left bank at downstream side of westbound bridge on U.S. Highway 59, 1.6 mi downstream from Coletto Creek dam, 9.0 mi southwest of Victoria, and 11.2 mi upstream from mouth.

DRAINAGE AREA.--514 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1939 to September 1954, June 1978 to current year.

REVISED RECORDS.--WSP 1562: 1939-40. WSP 1732: 1941.

GAGE.--Water-stage recorder. Datum of gage is 44.18 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 17, 1955, at datum 5.0 ft higher.

REMARKS.--Estimated daily discharges: Mar. 29, 30, Apr. 11, 21-24, May 26 to June 11, and Aug. 25-28. Records good. Flow completely regulated since Feb. 21, 1980, by Coletto Creek Reservoir, 1.6 mi upstream. Diversions from Guadalupe River basin to Coletto Creek basin upstream from Coletto Creek Reservoir began Mar. 6, 1980 (see station 08176990). No other large diversion above station. Gage-height telemeter located at station.

AVERAGE DISCHARGE.--16 years (water years 1940-54, 1979) prior to regulation by Coletto Creek Reservoir, 92.7 ft<sup>3</sup>/s (67,160 acre-ft/yr); 5 years (water years 1981-85) regulated, 109 ft<sup>3</sup>/s (78,970 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 89,000 ft<sup>3</sup>/s Oct. 16, 1946 (gage height, 36.64 ft, present datum, from floodmark) on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1875, 236,000 ft<sup>3</sup>/s Sept. 22, 1967 (gage height, 42.0 ft, from floodmark), present site and datum, on basis of slope-area measurement of peak flow. Flood of Apr. 20, 1976, reached a stage of 37.85 ft, at site 0.2 mi upstream at present datum. Flood of July 1, 1936, reached a stage of 32.2 ft, present site and datum, from information by railroad company.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,590 ft<sup>3</sup>/s July 4 at 1400 hours (gage height, 16.35 ft); minimum daily, 4.0 ft<sup>3</sup>/s Sept. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	5.4	4.8	14	7.8	119	6.1	631	5.4	5.2	5.1	4.5
2	4.9	578	4.5	8.9	7.0	180	5.4	20	5.4	5.2	5.2	4.4
3	4.9	12	4.4	7.9	6.6	9.9	5.1	11	5.4	115	5.1	4.4
4	4.9	6.4	5.5	6.9	7.2	8.1	5.2	9.0	5.4	2330	5.1	4.5
5	5.1	5.5	6.8	6.4	7.4	6.9	4.9	8.1	5.4	1210	5.0	5.5
6	5.3	5.3	5.3	6.0	6.8	6.3	4.5	7.7	5.3	12	4.9	4.2
7	5.2	5.0	5.1	5.8	7.1	6.0	4.1	7.4	5.3	8.0	5.0	4.3
8	11	4.9	5.1	5.7	7.0	5.8	4.1	6.9	5.3	7.3	4.9	4.2
9	6.7	4.9	4.8	5.5	6.4	5.2	4.3	6.8	5.3	6.7	5.1	4.2
10	6.1	4.9	4.8	5.3	6.2	4.9	1860	65	5.2	6.3	5.2	4.9
11	5.8	5.0	4.9	5.1	6.3	4.9	2900	11	5.2	6.1	5.2	4.9
12	5.5	5.1	4.7	6.1	5.7	4.8	315	7.4	5.5	5.7	5.1	4.0
13	6.0	5.1	4.7	6.5	5.5	5.0	411	6.8	5.7	5.5	5.1	4.5
14	6.8	5.4	4.6	7.8	5.4	3700	770	44	5.6	5.2	5.1	4.2
15	6.2	5.5	4.7	6.7	5.1	1540	228	9.1	5.5	5.0	5.7	4.3
16	5.9	5.6	4.8	234	5.3	1400	17	7.4	5.3	5.1	6.5	4.4
17	6.2	5.7	4.6	120	5.4	71	12	7.4	5.3	5.0	6.4	4.3
18	6.5	5.8	4.6	163	5.1	19	11	6.8	5.7	5.2	6.1	4.3
19	9.1	5.4	4.4	12	5.1	20	9.9	6.5	5.8	5.2	5.1	4.1
20	7.7	5.3	4.5	8.2	5.1	1570	1000	6.5	5.7	5.2	5.1	4.3
21	6.9	5.3	4.7	7.5	5.1	21	490	28	89	5.0	5.1	4.2
22	7.0	5.1	4.6	6.8	16	13	315	8.3	7.1	4.9	5.2	4.2
23	11	4.9	4.7	6.4	173	11	430	5.8	160	4.8	5.3	4.2
24	8.8	5.2	4.7	6.1	14	9.4	14	5.2	6.7	5.1	5.5	4.2
25	7.8	5.3	4.6	5.9	7.3	125	22	5.0	6.7	5.0	5.3	4.3
26	791	5.3	4.6	5.4	6.1	9.9	875	5.1	6.0	4.9	5.3	4.4
27	358	5.3	4.8	6.3	213	7.9	141	5.0	5.5	4.8	5.1	4.5
28	11	5.3	5.9	5.5	101	7.1	146	5.0	5.5	4.8	4.9	5.1
29	11	5.0	5.2	5.3	---	9.7	17	5.5	5.5	4.7	4.9	8.5
30	8.6	4.9	4.9	152	---	141	132	5.5	5.3	4.7	4.9	10
31	6.5	---	553	9.3	---	7.3	---	5.4	---	4.6	4.6	---
TOTAL	1352.2	737.8	699.3	858.3	659.0	9049.1	10159.6	969.6	406.0	3812.2	162.1	142.0
MEAN	43.6	24.6	22.6	27.7	23.5	292	339	31.3	13.5	123	5.23	4.73
MAX	791	578	553	234	213	3700	2900	631	160	2330	6.5	10
MIN	4.8	4.9	4.4	5.1	5.1	4.8	4.1	5.0	5.2	4.6	4.6	4.0
AC-FT	2680	1460	1390	1700	1310	17950	20150	1920	805	7560	322	282
CAL YR 1984	TOTAL	12986.5	MEAN	35.5	MAX	4670	MIN	3.5	AC-FT	25760		
WTR YR 1985	TOTAL	29007.2	MEAN	79.5	MAX	3700	MIN	4.0	AC-FT	57540		



## GUADALUPE RIVER BASIN

271

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX  
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°29'56", long 98°30'36", Bexar County, Hydrologic Unit 12100301, on right bank 30 ft downstream from low-water bridge on Dresden Drive at San Antonio, 0.15 mi west of intersection of Blanco Road and Dresden Drive, and 4.0 mi upstream from Olmos Dam.

DRAINAGE AREA.--21.2 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1968 to September 1981 (operated as a continuous-record station), October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 726.10 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Recording rain gage located at station, with three additional recording rain gages located in watershed. Rain gage and gage-height telemeters at station.

AVERAGE DISCHARGE.--13 years (water years 1968-81), 4.34 ft<sup>3</sup>/s (2.78 in/yr), 3,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,450 ft<sup>3</sup>/s Sept. 13, 1978 (gage height, 14.82 ft, from floodmark); no flow at times.  
Maximum stage since 1935, that of Sept. 13, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in September and November 1947 reached a stage of 8.5 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Feb. 23	0635	1,100	5.27	June 22	0810	1,600	5.80
Mar. 14	0355	846	4.91	July 3	1645	1,220	5.41
Apr. 29	1045	694	4.69	Aug. 24	2145	460	4.26
May 17	0425	433	4.20	Sept. 6	0400	864	4.94
24	1525	*2,250	*6.38	11	1155	811	4.85
June 5	1935	600	4.52	13	1215	823	4.87
6	1350	1,530	5.73	29	1035	1,520	5.72

No flow at at times.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: October 1972 to September 1973. Water temperatures: November 1968 to current year. Bacteria analyses: April 1976 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	
OCT													
11...	1000	584	98	8.0	22.0	2500	2700	8.2	96	4.0	62000	90000	
11...	1315	95	140	8.1	22.0	500	580	8.0	93	2.4	42000	82000	
APR													
29...	1210	404	121	8.3	20.0	350	1800	8.2	92	4.9	K260000	K80000	
MAY													
24...	1815	386	130	8.1	15.5	150	700	8.0	82	6.3	--	--	
JUN													
22...	1100	774	117	7.8	23.5	60	400	7.8	95	3.0	K25000	K40000	
JUL													
03...	1640	430	86	7.8	21.5	140	1600	8.0	92	7.5	K28000	50000	
		HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT													
11...	43	7	16	.80	2.9	.2	2.5	36	11	2.5	.20	4.0	
11...	57	8	21	1.1	2.4	.1	3.6	49	13	2.8	.10	5.6	
APR													
29...	46	5	17	.90	3.2	.2	3.1	41	11	3.0	.20	4.9	
MAY													
24...	54	7	20	1.1	2.6	.2	4.3	48	11	3.6	.10	6.7	
JUN													
22...	54	6	20	.97	1.8	.1	3.3	48	11	2.4	<.10	8.1	
JUL													
03...	35	5	13	.70	3.0	.2	2.5	30	10	2.8	.20	4.4	

## GUADALUPE RIVER BASIN

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 11...	62	5380	101	.28	.020	.30	.050	3.9	3.9	4.80	41
OCT 11...	79	768	27	.48	.020	.50	.020	1.4	1.4	1.00	15
APR 29...	68	3880	561	.58	.020	.60	.440	1.7	2.1	3.40	26
MAY 24...	78	1490	200	.86	.040	.90	.150	1.9	2.0	.580	26
JUN 22...	76	1350	220	--	--	--	--	--	--	--	23
JUL 03...	55	4610	500	.28	.020	.30	.050	.85	.90	3.10	42

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 11...	1000	<1	25	<1	<10	3	16
APR 29...	1210	1	19	<1	<10	4	68
MAY 24...	1815	<1	21	<1	<10	4	220
JUL 03...	1640	2	14	<1	<10	4	81

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 11...	5	2	<.1	<1	<1	<3
APR 29...	1	5	.3	<1	<1	<3
MAY 24...	12	<1	.1	<1	1	15
JUL 03...	1	3	<.1	<1	<1	14

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
OCT 11...	1000	--	--	--	--	--	--	--	.17	--
MAY 24...	1815	<.1	<.10	<.01	.1	<.01	<.01	<.01	.71	<.01
JUL 03...	1640	<.1	<.10	<.01	.2	<.01	.01	.03	.43	.01

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
OCT 11...	--	--	<.01	--	--	--	.01	--	<.01	<.01
MAY 24...	<.01	<.01	<.01	<.01	.01	.02	.14	<.01	<.01	<.01
JUL 03...	<.01	<.01	<.01	.01	.02	<.01	.02	<.01	<.01	<.01

GUADALUPE RIVER BASIN

273

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT 11...	--	.01	--	--	<.01	.01	<.01	<.01	<.01
MAY 24...	<.01	<.01	<.1	<1	<.01	.04	<.01	<.01	<.01
JUL 03...	<.01	<.01	<.1	<1	<.01	.05	<.01	<.01	<.01

LOCATION.--Lat 29°28'24", long 98°28'26", Bexar County, Hydrologic Unit 12100301, in gate house near middle of dam on Olmos Drive, 0.8 mi upstream from Hildebrand Street, 1.5 mi upstream from Brackenridge Park Zoo, and 4.0 mi downstream from gaging station 08177700.

PERIOD OF RECORD.--June 1968 to September 1971, April 1976 to current year.

REMARKS.--Dam is a concrete gravity-type structure with a maximum height of 50 ft, a total length of 1,941 ft, and a spillway crest length of 1,051 ft. The dam, spillway section, and gate house, were rebuilt in 1980. The outlet structure consists of six vertical slide-gate-controlled concrete conduits with entrance dimensions of 5.75 ft wide by 7.83 ft high. Gates are maintained and operated by city of San Antonio Fire Department as required to control downstream flooding. Reservoir is empty except during flooding when it is used as a detention reservoir. Reservoir has a surface area of about 950 acres at top of dam. Dam is owned by city of San Antonio. Rain gage and gage-height telemeter are located at station. Prior to 1983 water year, elevation published at 2400 hours. Data regarding dam and reservoir are given in the following table:

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 706.97 ft Oct. 7, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 698.91 ft June 22.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MAXIMUM VALUES

[illegible]

## GUADALUPE RIVER BASIN

275

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX

LOCATION.--Lat 29°24'34", long 98°29'41", Bexar County, Hydrologic Unit 12100301, on left bank 193 ft downstream from South Alamo Street Bridge in San Antonio, 2.1 mi upstream from San Pedro Creek, and 230.6 mi upstream from mouth.

DRAINAGE AREA.--41.8 mi<sup>2</sup>. Flow of river comes from intermittent spring flow and from artesian wells; drainage area of streams not applicable.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--December 1895 to June 1906 (periodic discharge measurements only), January 1915 to November 1929, February 1939 to current year. Ground-water discharge into river is discussed by Petit and George, Texas Board of Water Engineers Bull. 5608, vol. 1 (1956, p. 45).

REVISED RECORDS.--WSP 1312: 1917. WSP 1923: Drainage area. WDR TX-72-1: 1971(m).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 605.26 ft above National Geodetic Vertical Datum of 1929. Jan. 26, 1915, to Feb. 27, 1916, nonrecording gage at site 1.3 mi upstream at different datum. Feb. 28, 1916, to Apr. 7, 1920, nonrecording gage at site 1.1 mi upstream at different datum. Apr. 8, 1920, to Nov. 16, 1929, and Feb. 15, 1939, to Apr. 25, 1967, water-stage recorder in vicinity of South Alamo Street Bridge at 7.00-foot higher datum. Apr. 25, 1967, to May 13, 1969, water-stage recorder at site 307 ft downstream at same datum.

REMARKS.--Estimated daily discharges: Apr. 15-24. Records good except for estimated daily discharges, which are fair. Floodflow is regulated by Olmos flood-control reservoir (capacity, 14,240 acre-ft), about 8.5 mi upstream. Dam completed in 1926 and rebuilt in 1980. Springs emerge intermittently from the Edwards and associated limestones along the Balcones Fault Zone. Rain gage and gage-height telemeters at station.

AVERAGE DISCHARGE.--60 years, 54.2 ft<sup>3</sup>/s (17.61 in/yr), 39,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,300 ft<sup>3</sup>/s Sept. 10, 1921 (gage height, 20.14 ft, from floodmark), at former site and datum, from rating curve extended above 2,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times due to regulation.  
Maximum stage since 1819, that of Sept. 10, 1921.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 5, 1819, equaled or exceeded that of Sept. 10, 1921.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,270 ft<sup>3</sup>/s Oct. 19 at 0420 hours (gage height, 12.79 ft); minimum daily, 0.34 ft<sup>3</sup>/s Oct. 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	1.7	12	25	12	8.5	15	23	13	14	13	11
2	15	19	11	30	12	13	16	9.5	12	15	12	17
3	15	21	12	21	13	14	16	8.8	12	468	10	30
4	16	22	17	19	16	17	16	17	14	768	11	13
5	16	22	29	19	16	16	15	16	87	45	12	13
6	42	11	12	17	13	17	14	17	500	15	9.6	63
7	192	27	10	17	13	19	13	17	204	20	1.4	.56
8	30	4.9	12	19	14	26	18	17	14	18	13	3.2
9	17	3.3	12	20	15	19	18	24	13	19	12	12
10	5.0	12	14	22	13	15	124	17	13	17	13	12
11	362	9.6	14	31	13	17	36	15	14	18	11	318
12	14	12	17	43	13	16	12	13	12	33	27	21
13	25	13	64	43	14	24	82	15	20	22	20	100
14	105	12	11	133	30	631	44	35	12	19	10	20
15	12	13	145	70	16	66	25	17	10	31	7.8	13
16	.34	247	164	80	14	17	15	15	10	17	10	6.0
17	9.4	15	36	31	13	13	15	292	13	16	12	17
18	12	45	19	19	15	19	15	47	56	17	12	88
19	376	15	3.9	9.0	15	19	15	8.6	50	16	12	18
20	11	11	14	.43	14	65	15	4.6	6.5	21	12	7.5
21	30	12	13	.98	33	9.7	15	16	10	14	11	1.7
22	23	10	13	13	34	11	15	19	602	15	13	11
23	41	10	11	14	302	17	15	18	325	15	12	12
24	18	103	12	14	21	16	15	214	31	14	112	23
25	44	116	10	14	1.8	17	112	219	23	13	49	13
26	137	18	15	14	12	17	79	10	21	11	10	13
27	35	8.6	18	46	17	18	21	1.7	18	13	2.4	12
28	13	.42	21	17	76	18	17	13	17	12	11	49
29	14	11	21	16	---	17	103	13	15	13	13	286
30	14	12	86	16	---	19	32	15	14	12	11	117
31	9.5	---	261	12	---	15	---	14	---	13	11	---
TOTAL	1672.24	837.52	1109.9	845.41	790.8	1226.2	963	1181.2	2161.5	1754	496.2	1320.96
MEAN	53.9	27.9	35.8	27.3	28.2	39.6	32.1	38.1	72.1	56.6	16.0	44.0
MAX	376	247	261	133	302	631	124	292	602	768	112	318
MIN	.34	.42	3.9	.43	1.8	8.5	12	1.7	6.5	11	1.4	.56
CFSM	1.29	.67	.86	.65	.68	.95	.77	.91	1.73	1.35	.38	1.05
IN.	1.49	.75	.99	.75	.70	1.09	.86	1.05	1.92	1.56	.44	1.18
AC-FT	3320	1660	2200	1680	1570	2430	1910	2340	4290	3480	984	2620

CAL YR 1984 TOTAL 7227.05 MEAN 19.7 MAX 376 MIN .17 CFSM .47 IN 6.43 AC-FT 14330  
WTR YR 1985 TOTAL 14358.93 MEAN 39.3 MAX 768 MIN .34 CFSM .94 IN 12.78 AC-FT 28480



## GUADALUPE RIVER BASIN

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: May 1970 to September 1973. Water temperatures: November 1968 to current year. Bacteria analyses: May 1976 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)
OCT 09...	1351	25	340	7.9	26.0	15	3.6	7.9	--	2.4	60000	K18000
MAR 14...	1040	660	157	7.7	14.0	800	360	4.8	--	7.6	60000	140000
JUN 22...	1515	716	124	8.2	25.0	100	580	7.5	95	4.7	48000	120000
JUL 03...	1640	1810	135	7.3	24.0	60	240	7.5	91	13	K42000	82000
03...	1746	1920	213	7.2	24.0	80	240	7.4	89	11	44000	84000

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 09...	150	--	47	7.6	12	.4	3.6	--	25	15	.20	8.7
MAR 14...	67	16	23	2.2	4.1	.2	4.4	51	17	5.8	.10	6.6
JUN 22...	51	7	18	1.4	3.2	.2	3.3	44	13	3.6	.10	5.4
JUL 03...	54	7	17	2.9	3.9	.2	2.6	47	10	5.5	<.10	3.8
03...	87	20	27	4.7	6.3	.3	3.6	67	20	9.3	.10	6.3

DATE	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLATILE, TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 09...	--	6	2	--	<.010	1.1	.020	--	<.20	.070	1.3
MAR 14...	94	217	19	1.1	.040	1.1	.160	3.1	3.3	1.10	24
JUN 22...	74	940	112	.37	.030	.40	.130	.37	.50	.400	24
JUL 03...	74	1050	156	.47	.030	.50	.190	4.2	4.4	.980	52
03...	120	738	216	.56	.040	.60	.250	1.6	1.8	.740	17

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 09...	1351	1	51	<1	20	5	20
MAR 14...	1040	1	35	<1	<10	1	48
JUL 03...	1640	<1	27	<1	<10	2	36
03...	1746	2	31	<1	<10	2	51

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 09...	10	4	<.1	<1	<1	16
MAR 14...	<1	11	.1	<1	1	16
JUL 03...	1	12	<.1	<1	<1	16
03...	2	16	<.1	<1	<1	14

## GUADALUPE RIVER BASIN

277

08178000 SAN ANTONIO RIVER AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELURIN TOTAL (UG/L)
OCT 09...	1351	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.13	<.01
MAR 14...	1040	<.1	<.10	<.01	.3	.02	.02	.06	.46	.02
JUL 03...	1640	<.1	<.10	<.01	.3	<.01	.03	.16	.26	.03
03...	1746	<.1	<.10	<.01	.2	.03	.02	.08	.28	.03

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
OCT 09...	<.01	<.01	<.01	<.01	<.01	<.01	.19	<.01	<.01	<.01
MAR 14...	<.01	<.01	<.01	<.01	.01	<.01	<.01	<.01	<.01	<.01
JUL 03...	<.01	<.01	<.01	.01	.02	.01	.27	<.01	<.01	<.01
03...	<.01	<.01	<.01	.01	.02	<.01	.10	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT 09...	<.01	<.01	<.1	<1	<.01	.03	<.01	<.01	<.01
MAR 14...	<.01	<.01	<.1	<1	<.01	.27	<.01	<.01	<.01
JUL 03...	<.01	<.01	<.1	<1	<.01	.04	<.01	<.01	<.01
03...	<.01	<.01	<.1	<1	<.01	.01	<.01	<.01	<.01

## GUADALUPE RIVER BASIN

08178620 LORENCE CREEK AT THOUSAND OAKS BOULEVARD, SAN ANTONIO, TX  
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°35'24", long 98°27'47", Bexar County, Hydrologic Unit 123100301, on right bank 30 ft upstream from Thousand Oaks Boulevard and 4.2 mi upstream from mouth.

DRAINAGE AREA.--4.05 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1980 to current year.

GAGE.--Digital recorders (stage and rainfall), concrete control, and crest-stage gages. Gage is not referenced to National Geodetic Vertical Datum of 1929. (Gage removed Sept. 5-30, 1984.)

REMARKS.--Water-discharge records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 5.90 ft May 6, 1982 (discharge not determined); no flow most of time.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 6	Unknown	Unknown	*5.29	June 22	1550	550	2.82

No flow most of time.

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1980 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	
JAN 14...	1230	.07	87	8.6	4.0	--	--	12.0	92	8.5	
FEB 23...	1000	.76	226	8.0	16.5	600	59	--	--	2.7	
JUN 06...	1335	50	119	8.6	22.0	600	750	8.3	97	3.6	
06...	1400	150	103	8.6	22.0	400	520	8.3	97	4.0	
06...	1825	10	150	7.1	29.0	250	140	7.4	99	3.9	
22...	1250	10	159	--	--	140	86	--	--	3.1	
22...	1312	534	70	7.9	25.5	--	--	6.9	--	--	
JUL 03...	1700	--	84	8.1	21.0	230	320	8.2	94	5.0	
DATE	TIME	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)
JAN 14...	--	--	K4800	--	--	--	--	--	--	--	38
FEB 23...	13000	98000	110	10	39	1.9	5.3	.2	4.8	95	
JUN 06...	50000	90000	53	12	20	.80	1.7	.1	4.1	41	
06...	54000	90000	48	5	18	.80	1.6	.1	4.1	43	
06...	K28000	84000	68	--	25	1.3	2.4	.1	5.5	--	
22...	20000	105000	71	5	26	1.4	3.2	.2	4.8	66	
22...	--	--	--	--	--	--	--	--	--	--	
JUL 03...	80000	120000	35	5	13	.70	1.4	.1	3.5	30	

## GUADALUPE RIVER BASIN

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08178620 LORENCE CREEK AT THOUSAND OAKS BOULEVARD, SAN ANTONIO, TX

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
JAN 14...	--	--	--	--	--	--	--	--	--	--
FEB 23...	18	5.6	.10	13	140	180	12	4.7	.080	4.8
JUN 06...	15	2.2	.10	10	79	2780	328	.58	.220	.80
06...	10	2.0	<.10	8.9	71	1670	260	.59	.110	.70
06...	14	3.0	<1.0	11	--	158	34	.94	.060	1.0
22...	13	3.2	<.10	12	100	46	7	.77	.030	.80
22...	--	--	--	--	--	--	--	--	--	--
JUL 03...	9.8	1.8	<.10	7.9	56	1010	180	.37	.030	.40

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
JAN 14...	--	--	--	--	--	--	--	--	--
FEB 23...	4.8	.180	13	13	1.0	.220	.130	17	11
JUN 06...	--	.520	1.4	1.9	--	.590	--	78	--
06...	--	.280	.92	1.2	--	.470	--	50	--
06...	--	.140	2.0	2.1	--	.330	--	12	--
22...	--	.070	.83	.90	--	.240	--	23	--
22...	--	--	--	--	--	--	--	--	--
JUL 03...	--	.100	1.3	1.4	--	.340	--	33	--

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
FEB 23...	1000	<1	16	<1	<10	2	50
JUN 06...	1335	2	14	<1	<10	6	56
06...	1400	2	10	<1	<10	5	130
JUL 03...	1700	<1	9	<1	<10	3	190

DATE	TIME	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
FEB 23...		<1	7	3.2	<1	<1	13
JUN 06...		3	2	<.1	<1	<1	7
06...		6	2	<.1	<1	<1	<3
JUL 03...		<1	6	<.1	<1	<1	6

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
JUN 06...	1335	<.1	<.10	<.01	<.1	<.01	<.01	.01	.38	<.01
06...	1400	<.1	<.10	<.01	<.1	<.01	<.01	.01	.33	.01
JUL 03...	1700	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.31	.01

## GUADALUPE RIVER BASIN

08178620 LORENCE CREEK AT THOUSAND OAKS BOULEVARD, SAN ANTONIO, TX

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)
JUN										
06...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
06...	<.01	<.01	<.01	<.01	<.01	<.01	.01	<.01	<.01	<.01
JUL										
03...	<.01	<.01	<.01	<.01	<.01	<.01	.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN									
06...	<.01	<.01	<.1	<1	<.01	.03	<.01	<.01	<.01
06...	<.01	<.01	<.1	<1	<.01	.02	<.01	.02	<.01
JUL									
03...	<.01	<.01	<.1	<1	<.01	.02	<.01	<.01	<.01



## GUADALUPE RIVER BASIN

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08178640 WEST ELM CREEK AT SAN ANTONIO, TX  
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°37'23", long 98°26'29", Bexar County, Hydrologic Unit 12100301, at mid-channel, 1.8 mi upstream from mouth of East Elm Creek, 2.1 mi upstream from Farm Road 1604, and 7.0 mi north of San Antonio International Airport.

DRAINAGE AREA.--2.45 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1976 to current year.

GAGE.--Digital recorders (stage and rainfall) and crest-stage gages. Gage is not referenced to National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records poor.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,000 ft<sup>3</sup>/s Nov. 1, 1977 (gage height, 5.82 ft); maximum gage height, 6.88 ft May 6, 1982; no flow most of time.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 7	1015	122	3.85	June 18	1745	350	4.50
14	0150	260	4.30	22	0615	3,050	6.58
22	0955	265	4.31	July 3	1510	2,000	6.10
Dec. 12	0020	295	4.36	12	0550	245	4.26
Apr. 13	1805	2,050	6.11	Sept. 29	0955	780	5.17
June 6	1355	*3,950	*6.92				

No flow most of time.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
DEC											
30...	1752	.14	68	8.4	21.1	200	140	7.6	--	2.0	--
31-31	0520	13	92	--	--	150	85	--	--	5.0	K47000
31-31	0550	16	97	--	--	200	85	--	--	2.8	K40000
31-31	0620	23	112	--	--	200	180	--	--	2.2	22500
31...	1035	9.1	199	8.5	18.5	100	75	7.9	87	2.4	K130000
FEB											
23...	0248	26	98	--	--	800	450	--	--	9.0	K140000
23...	0348	9.9	115	--	--	1200	610	--	--	5.1	K84000
23...	0448	6.5	137	--	--	700	530	--	--	6.0	K98000
23...	1030	9.9	166	7.8	15.5	150	43	--	--	4.3	58000
23...	1230	1.4	175	7.9	17.0	150	36	--	--	3.7	K31000
MAR											
14-14	0449	5.7	112	--	--	150	53	--	--	--	60000
14-14	0549	7.2	126	--	--	450	69	--	--	3.9	32000
14...	0609	6.3	131	7.7	13.0	250	100	9.4	91	3.2	K17000
JUN											
05...	1830	8.4	116	--	--	130	63	--	--	4.8	--
06...	1430	380	117	7.4	22.0	140	110	7.8	91	2.6	K24000
06...	1620	62	147	--	--	150	75	--	--	3.6	--
06...	1720	26	176	--	--	130	27	--	--	--	<1
22...	0423	7.0	80	--	--	60	130	--	--	3.4	K4000
22...	0523	290	125	--	--	200	380	--	--	3.9	K32000
22...	0620	750	157	--	--	150	150	--	--	3.5	K6000

## GUADALUPE RIVER BASIN

08178640 WEST ELM CREEK AT SAN ANTONIO TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
DEC											
30...	--	--	--	--	--	--	--	--	--	--	--
31-31	--	--	--	--	--	--	--	--	--	--	--
31-31	--	--	--	--	--	--	--	--	--	--	--
31-31	--	--	--	--	--	--	--	--	--	--	--
31...	K480000	93	16	35	1.4	2.3	.1	5.2	77	20	3.7
FEB											
23...	K230000	--	--	--	--	--	--	--	--	--	--
23...	K340000	--	--	--	--	--	--	--	--	--	--
23...	K430000	49	7	18	.90	3.4	.2	3.9	42	13	5.7
23...	K370000	--	--	--	--	--	--	--	--	--	--
23...	K350000	88	11	33	1.3	2.6	.1	3.8	77	18	3.3
MAR											
14-14	86000	--	--	--	--	--	--	--	--	--	--
14-14	74000	--	--	--	--	--	--	--	--	--	--
14...	50000	56	13	21	.90	2.3	.1	4.0	43	15	3.5
JUN											
05...	--	--	--	--	--	--	--	--	--	--	--
06...	K39000	56	5	21	.80	1.4	.0	3.4	51	8.2	1.9
06...	--	66	9	25	.90	1.6	.0	3.8	57	12	2.2
06...	42000	77	12	29	1.1	1.8	.0	3.9	65	17	2.6
22...	K2000	--	--	--	--	--	--	--	34	--	--
22...	--	--	--	--	--	--	--	--	--	--	--
22...	--	66	--	25	.90	2.4	.1	4.3	--	15	3.5
DATE	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRATE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
DEC											
30...	--	--	--	138	26	.18	--	.020	--	.20	--
31-31	--	--	--	94	13	.07	--	.030	--	.10	--
31-31	--	--	--	202	24	.17	--	.030	--	.20	--
31-31	--	--	--	1190	29	.17	--	.030	--	.20	--
31...	<.10	11	120	37	20	.27	--	.030	--	.30	--
FEB											
23...	--	--	--	1020	104	.45	--	.050	--	.50	--
23...	--	--	--	988	120	.57	--	.030	--	.60	--
23...	<.10	6.1	76	536	72	.68	--	.020	--	.70	.61
23...	--	--	--	62	8	.37	--	.030	--	.40	.36
23...	<.10	9.8	120	49	9	.37	--	.030	--	.40	.35
MAR											
14-14	--	8.5	--	83	12	.76	.72	.040	.030	.80	.75
14-14	--	--	--	200	36	.86	--	.040	--	.90	--
14...	<.10	5.7	78	115	19	.86	--	.040	--	.90	--
JUN											
05...	--	--	--	83	20	.55	--	.050	--	.60	--
06...	<.10	8.5	76	412	80	.56	--	.040	--	.60	--
06...	<1.0	10	90	186	24	.75	--	.050	--	.80	--
06...	<1.0	11	110	41	13	.87	--	.030	--	.90	--
22...	--	--	--	474	90	.26	--	.040	--	.30	--
22...	--	--	--	460	100	.56	--	.040	--	.60	--
22...	<.10	7.8	--	214	36	.74	--	.060	--	.80	--

GUADALUPE RIVER BASIN

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08178640 WEST ELM CREEK AT SAN ANTONIO TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	CARBON, ORGANIC SUS- PENDE TOTAL (MG/L AS C)
DEC											
30...	.100	--	.30	--	.40	--	.160	--	6.8	--	--
31-31	.130	--	.37	--	.50	--	.170	--	8.3	--	--
31-31	.110	--	.59	--	.70	--	.210	--	8.6	--	--
31-31	.090	--	.61	--	.70	--	.220	--	10	--	--
31...	.090	--	1.0	--	1.1	--	.180	--	14	--	--
FEB											
23...	.500	--	2.9	--	3.4	--	.850	--	--	5.8	>11
23...	.100	--	5.4	--	5.5	--	--	--	35	8.0	--
23...	.110	--	3.3	--	3.4	1.1	.640	.180	--	--	--
23...	.150	--	.75	--	.90	1.0	.130	.120	--	--	--
23...	.110	--	.59	--	.70	.40	.100	.040	11	9.6	--
MAR											
14-14	.180	.190	.92	.51	1.1	.70	.260	--	8.2	6.7	--
14-14	.160	--	1.1	--	1.3	--	.300	--	--	--	--
14...	.140	--	1.3	--	1.4	--	.310	--	8.9	--	--
JUN											
05...	.170	--	1.2	--	1.4	--	.260	--	9.8	--	--
06...	.110	--	1.9	--	2.0	--	.220	--	16	--	--
06...	.110	--	1.2	--	1.3	--	.150	--	14	--	--
06...	.090	--	1.2	--	1.3	--	.110	--	11	--	--
22...	.240	--	1.3	--	1.5	--	.240	--	15	--	--
22...	.190	--	1.7	--	1.9	--	.390	--	38	--	--
22...	.200	--	.90	--	1.1	--	.330	--	15	--	--

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
DEC							
31-31	0520	<1	15	<1	<10	4	8
31-31	0550	<1	14	<1	<10	6	27
31-31	0620	--	--	<1	--	--	--
FEB							
23...	0248	<1	15	<1	<10	3	250
23...	1230	<1	15	<1	<10	6	69
MAR							
14-14	0449	<1	200	<1	<10	1	50
JUN							
06...	1430	2	10	<1	<10	6	62
22...	0423	<1	6	1	<10	1	130
22...	0523	<1	16	2	<10	4	120

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC						
31-31	<1	4	<.1	<1	<1	6
31-31	<1	4	<.1	<1	<1	<3
31-31	--	--	--	--	--	--
FEB						
23...	1	4	90	<1	<1	15
23...	3	4	2.0	<1	<1	16
MAR						
14-14	<1	<10	--	<1	<1	20
JUN						
06...	4	5	<.1	<1	<1	6
22...	<1	2	<.1	<1	1	15
22...	2	2	.1	<1	<1	5

## GUADALUPE RIVER BASIN

08178640 WEST ELM CREEK AT SAN ANTONIO TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
DEC										
31-31	0520	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
31-31	0550	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
FEB										
23...	0248	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1230	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
MAR										
14-14	0449	<.1	<.10	<.01	<.10	3.0	<.1	<.10	<.01	<.01
JUN										
06...	1430	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
22...	0423	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
22...	0523	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)
DEC										
31-31	<.01	.18	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
31-31	<.01	.23	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
FEB										
23...	<.01	.15	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	<.01	.02	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
MAR										
14-14	<.01	1.2	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JUN										
06...	<.01	.23	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
22...	<.01	.76	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
22...	<.01	.67	<.01	<.01	<.01	<.01	<.01	<.01	.01	.01

DATE	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)
DEC										
31-31	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
31-31	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
FEB										
23...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
MAR										
14-14	<2.0	<.01	<.01	<.01	<.01	<.01	<.1	<.1	<.1	<.10
JUN										
06...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
22...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
22...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
DEC										
31-31	--	--	--	--	<1	<.01	.01	<.01	<.01	<.01
31-31	--	--	--	--	<1	<.01	.01	<.01	<.01	<.01
FEB										
23...	--	--	--	--	<1	<.01	.62	<.01	<.01	<.01
23...	--	--	--	--	<1	<.01	.01	<.01	<.01	<.01
MAR										
14-14	<2.0	<2.0	.10	<.1	<1	<.01	.73	<.01	<.01	<.01
JUN										
06...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
22...	--	--	--	--	<1	<.01	.01	<.01	<.01	<.01
22...	--	--	--	--	<1	<.01	--	--	--	--





## GUADALUPE RIVER BASIN

08178645 EAST ELM CREEK AT SAN ANTONIO TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDEDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDEDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)
FEB 23...	8.0	2.2	<.10	14	85	84	14	.27	.030
JUN 22...	4.6	1.5	<.10	12	55	51	16	.28	.020
22...	--	--	--	--	--	70	20	.48	.020
22...	6.5	1.5	<.10	13	68	56	13	.18	.020
22...	8.9	1.5	<.10	17	--	8	5	--	.010
JUL 03...	--	--	--	--	--	130	44	.38	.020
03...	--	--	--	--	--	54	36	.28	.020
03...	--	--	--	--	--	100	46	.57	.030

DATE	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
FEB 23...	.30	.090	1.2	1.3	.70	.010	<.010	15	15
JUN 22...	.30	.070	1.5	1.6	--	.080	--	13	--
22...	.50	.080	1.4	1.5	--	.090	--	20	--
22...	.20	.060	1.1	1.2	--	.080	--	16	--
22...	<.10	.030	.87	.90	--	.030	--	17	--
JUL 03...	.40	.100	1.2	1.3	--	.120	--	--	--
03...	.30	.080	1.2	1.3	--	.080	--	--	--
03...	.60	.110	.79	.90	--	.070	--	--	--

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
FEB 23...	1240	<1	10	<1	<10	4	58
JUN 22...	0507	<1	16	<1	<10	2	68
22...	0607	<1	17	<1	<10	2	41

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
FEB 23...	3	7	.4	<1	<1	14
JUN 22...	7	3	<.1	<1	<1	14
22...	3	2	.1	<1	<1	10

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
FEB 23...	1240	<.1	<.10	<.01	<.1	<.01	<.01	<.01	<.01	<.01
JUN 22...	0507	<.1	<.10	<.01	<.1	<.01	<.01	<.01	--	<.01
22...	0607	<.1	<.10	<.01	<.1	<.01	<.01	<.01	--	<.01

GUADALUPE RIVER BASIN

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08178645 EAST ELM CREEK AT SAN ANTONIO TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)	METHYL-PARA-THION, TOTAL (UG/L)	METHYL-TRI-THION, TOTAL (UG/L)
FEB 23...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JUN 22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.19	<.01
22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.12	<.01

DATE	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	PER-THANE TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB 23...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
JUN 22...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
22...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01

08178650 ELM CREEK RESERVOIR SITE 11 AT SAN ANTONIO, TX--Continued

## WATER-QUALITY RECORDS

LOCATION.--Lat 29°36'11", long 98°25'50", Bexar County, Hydrologic Unit 12100301, located on left bank on upstream side of dam, 2.4 mi east of U.S. Highway 281, 0.7 mi upstream from highway 1604, and 8.0 mi upstream from mouth.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: March to September 1983.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
FEB 23...	1400	--	155	--	19.0	450	70	8.3	4.8	K26000
JUN 07...	1514	10	149	--	--	120	43	8.1	3.6	K4000
22...	1750	--	112	--	--	90	43	--	2.7	10000
JUL 05...	1505	--	131	7.8	31.0	--	--	--	--	--

DATE	TIME	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
FEB 23...	K560000		69	11	26	1.0	2.8	.2	4.2	58	16
JUN 07...	33000		69	13	26	1.1	1.3	.0	4.3	57	15
22...	30000		54	8	20	.90	.90	.0	4.0	46	12
JUL 05...	--		61	2	23	.90	.90	.0	3.6	59	5.8

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)
FEB 23...	3.9	<.10	8.9	98	76	4	.47	.030	.50
JUN 07...	2.0	<.10	9.9	94	76	24	.36	.040	.40
22...	1.1	<.10	12	79	45	7	.47	.030	.50
JUL 05...	1.4	<.10	12	83	--	--	.27	.030	.30

DATE	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
FEB 23...	.49	.090	2.2	2.3	.40	.270	.080	16	11
JUN 07...	--	.130	.77	.90	--	.160	--	13	--
22...	--	.090	1.1	1.2	--	.430	--	16	--
JUL 05...	--	.090	.71	.80	--	.080	--	9.1	8.9

GUADALUPE RIVER BASIN

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08178650 ELM CREEK RESERVOIR NO.11 AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
FEB 23...	1400	<1	11	<1	<10	2	78
JUN 07...	1514	2	13	<1	<10	3	67
22...	1750	<1	9	<1	<10	2	77
JUL 05...	1505	<1	22	<1	<10	3	77

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
FEB 23...	<1	2	1.7	<1	<1	11
JUN 07...	5	15	<.1	<1	<1	9
22...	2	4	<.1	<1	<1	8
JUL 05...	4	10	<.1	<1	<1	18

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
FEB 23...	1400	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.06	<.01
JUN 07...	1514	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.35	<.01
22...	1750	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.09	<.01
JUL 05...	1505	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.10	<.01

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
FEB 23...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JUN 07...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.10	<.01
JUL 05...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB 23...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
JUN 07...	<.01	<.01	<.1	<1	<.01	.02	<.01	<.01	<.01
22...	<.01	.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
JUL 05...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01

## GUADALUPE RIVER BASIN

08178700 SALADO CREEK (UPPER STATION) AT SAN ANTONIO, TX

LOCATION.--Lat 29°30'57", long 98°25'51", Bexar County, Hydrologic Unit 12100301, on right bank at downstream side of eastbound bridge on Interstate Highway 410 in San Antonio, 1.0 mi west of Northeast School, 1.1 mi upstream from Perrin-Beitel Creek, and 2.7 mi east of San Antonio International Airport.

DRAINAGE AREA.--137 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1960 to current year.

GAGE.--Water-stage recorder with concrete control. Datum of gage is 684.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Flow is affected at times by discharge from the flood-detention pools of eleven floodwater-retarding structures with a combined detention capacity of 26,770 acre-ft. These structures control runoff from 74.6 mi<sup>2</sup> above this station. Recording rain gage located at station with four additional recording rain gages located in watershed.

AVERAGE DISCHARGE.--25 years, 9.25 ft<sup>3</sup>/s (6,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft<sup>3</sup>/s May 12, 1972 (gage height, 15.22 ft), from rating curve extended above 8,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1853, 23 to 24 ft in October 1913. Flood in September 1921 reached a stage of 18 ft, and flood of Sept. 27, 1946, reached a stage of 18.2 ft, and are the second and third highest since 1899.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 6	1800	1,910	7.21	July 3	1930	*7,550	*10.64
June 22	1000	2,580	7.90	Sept. 29	1700	564	4.93

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	19	.16	5.3	.38	.56	.02	1.0	.34	.03
2	.00	.00	.00	4.3	.17	2.4	.18	.26	.00	3.6	.14	.00
3	.00	.00	.00	3.2	.24	.36	.16	.32	.00	1360	.11	.00
4	.00	.08	.19	3.9	.31	.27	.16	.19	.00	679	.09	.06
5	.00	.09	.96	2.9	.48	.17	.16	.14	7.4	79	.07	.22
6	.08	.07	.10	2.4	.29	.14	.14	.65	457	26	.07	3.5
7	24	.07	.04	2.3	.19	.14	.23	4.3	213	15	.06	.18
8	7.1	.07	.02	2.2	.16	.40	2.1	4.3	35	12	.05	.10
9	.95	.06	.00	2.0	.16	1.5	2.9	.78	15	11	.03	.06
10	.42	.06	.00	1.8	.16	1.6	11	.16	7.5	10	1.0	.01
11	31	.04	.05	.88	.26	1.8	9.5	.12	7.6	13	1.5	7.6
12	13	.04	.09	2.5	.64	1.8	4.5	.11	7.1	19	1.5	1.1
13	4.5	.05	5.1	4.3	.11	1.8	22	.11	5.6	25	1.6	.96
14	56	.05	.29	22	3.1	52	45	1.5	1.3	14	.32	.24
15	11	4.8	1.0	19	.32	25	9.6	.27	.16	9.7	.11	.09
16	3.0	5.6	27	16	.17	10	5.1	.15	.11	6.7	.06	.06
17	.26	.19	10	8.9	.13	5.9	3.9	12	.09	1.3	.02	.02
18	.10	1.9	2.7	3.2	.11	4.5	3.4	5.9	7.5	.85	.00	4.8
19	.44	.19	.46	3.3	.11	4.0	3.0	3.4	11	.75	.00	2.3
20	.04	.11	.17	1.3	.11	9.2	2.6	2.8	2.5	2.4	.00	.17
21	.00	.05	.17	.26	1.7	4.8	2.6	2.6	5.0	2.6	.00	.09
22	.03	.01	.18	.40	3.2	3.7	2.6	1.9	984	2.6	.03	.05
23	1.9	.00	.22	.41	43	3.4	2.5	.31	415	2.5	.13	.01
24	.57	4.8	.24	1.5	30	3.3	2.3	.83	23	2.6	.96	.00
25	.19	19	.40	1.6	5.4	3.2	7.0	.86	20	2.5	4.2	.00
26	4.3	.82	.28	1.9	3.2	2.9	13	.22	11	2.2	.12	.00
27	1.1	.13	.13	6.4	2.6	2.9	4.7	.15	7.9	1.9	.20	.00
28	.22	.07	.47	2.7	8.1	2.9	3.6	.12	4.8	.31	.42	.44
29	.10	.04	.16	2.5	---	2.9	5.4	.10	1.9	.14	.38	192
30	.05	.01	28	.50	---	2.3	3.2	.07	1.8	.60	.37	32
31	.02	---	65	.21	---	1.9	---	.03	---	.13	.10	---
TOTAL	160.37	38.40	143.42	143.76	104.58	162.48	172.91	45.21	2252.28	2307.38	13.98	246.09
MEAN	5.17	1.28	4.63	4.64	3.74	5.24	5.76	1.46	75.1	74.4	.45	8.20
MAX	56	19	65	22	43	52	45	12	984	1360	4.2	192
MIN	.00	.00	.00	.21	.11	.14	.14	.03	.00	.13	.00	.00
AC-FT	318	76	284	285	207	322	343	90	4470	4580	28	488
CAL YR 1984	TOTAL	488.49	MEAN	1.33	MAX	65	MIN	.00	AC-FT	969		
WTR YR 1985	TOTAL	5790.86	MEAN	15.9	MAX	1360	MIN	.00	AC-FT	11490		



## GUADALUPE RIVER BASIN

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08178700 SALADO CREEK (UPPER STATION) AT SAN ANTONIO, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: November 1971 to September 1973. Water temperatures: November 1968 to current year. Bacteria analyses: May 1976 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)
OCT 09...	1150	.77	190	7.8	23.5	350	190	6.0	72	3.9	K59	K5500
MAR 14...	0908	60	261	7.8	13.5	500	510	9.0	88	4.0	17000	88000
JUN 22...	1050	31	122	7.8	24.5	200	400	7.5	92	1.4	K50000	--
24...	1455	22	448	7.6	27.0	30	51	6.2	79	--	6200	9400

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 09...	82	18	30	1.6	4.8	.2	4.7	64	22	5.7	.30	6.1
MAR 14...	97	33	35	2.3	10	.5	8.3	64	41	11	.40	7.5
JUN 22...	54	10	20	.90	2.2	.1	4.2	44	15	2.9	<.10	8.3
24...	190	38	70	3.8	11	.4	16	153	59	12	.40	15

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 09...	110	122	24	.38	.020	.40	.100	.40	.50	.310	8.8
MAR 14...	150	614	102	.77	.030	.80	.050	1.2	1.2	.540	11
JUN 22...	80	548	172	.38	.020	.40	.070	1.0	1.1	.500	24
24...	280	60	15	.36	.040	.40	.180	.72	.90	.170	7.3

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 09...	1150	2	35	<1	20	4	48
MAR 14...	0908	1	37	<1	<10	2	31
JUN 22...	1050	5	5	18	<10	15	150

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 09...	5	<1	<.1	<1	<1	11
MAR 14...	<1	<1	<.1	<1	<1	10
JUN 22...	8	6	<.1	<1	<1	13

## GUADALUPE RIVER BASIN

08178700 SALADO CREEK (UPPER) AT SAN ANTONIO TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
OCT 09...	1150	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.10	<.01
MAR 14...	0908	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.37	.01
JUN 22...	1050	<.1	<.10	<.01	.1	<.01	<.01	<.01	.50	<.01

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
OCT 09...	<.01	<.01	<.01	<.01	<.01	<.01	.04	<.01	<.01	<.01
MAR 14...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JUN 22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	.19	<.01

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2, 4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2, 4, 5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT 09...	<.01	<.01	<.1	<1	<.01	.05	<.01	<.01	<.01
MAR 14...	<.01	<.01	<.1	<1	<.01	.01	<.01	<.01	<.01
JUN 22...	<.01	.01	<.1	<1	<.01	.03	<.01	<.01	<.01

GUADALUPE RIVER BASIN

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08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX

LOCATION.--Lat 29°21'25", long 98°24'45", Bexar County, Hydrologic Unit 12100301, on right bank at upstream side of bridge on Loop 13 at San Antonio, 1.4 mi east of Brooks Air Force Base, and 3.3 mi upstream from Rosillo Creek.

DRAINAGE AREA.--189 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 526.95 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diversions above station. Recording rain gages located in watershed above station. Most of low flow comes from artesian wells and springs in the city of San Antonio. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08178700. Satellite telemeter located at station.

AVERAGE DISCHARGE.--25 years, 41.4 ft<sup>3</sup>/s (2.97 in/yr), 29,990 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,100 ft<sup>3</sup>/s Sept. 27, 1973 (gage height, 28.83 ft); no flow Aug. 13, 1967.  
Maximum stage since at least 1941, that of Sept. 27, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of Sept. 27, 1946, and Aug. 15, 1960, were about of equal magnitude. Flood of Aug. 15, 1960, reached a stage of 26.8 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,190 ft<sup>3</sup>/s July 4 at 0600 hours (gage height, 21.60 ft); minimum daily, 5.5 ft<sup>3</sup>/s Oct. 2, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	6.7	17	12	118	35	84	33	39	27	38	16	13		
2	5.5	15	12	59	34	46	31	34	26	40	16	12		
3	5.5	15	11	64	35	40	31	32	26	300	15	9.6		
4	5.8	16	13	53	37	37	31	32	24	2950	15	9.9		
5	6.0	15	17	44	38	34	32	31	30	299	14	9.2		
6	10	15	16	40	36	35	32	31	318	92	15	11		
7	135	14	15	37	36	36	33	31	861	64	15	18		
8	123	15	14	36	36	36	35	32	117	56	14	12		
9	19	14	15	37	38	35	32	33	61	55	15	11		
10	10	15	15	35	39	35	62	31	49	52	14	9.3		
11	410	13	15	34	36	36	104	30	43	50	14	65		
12	201	13	16	49	34	35	50	30	40	100	15	59		
13	39	13	35	60	36	35	71	29	51	64	15	51		
14	149	13	35	150	41	399	265	39	46	56	15	26		
15	71	15	30	174	45	118	64	38	36	49	14	12		
16	27	582	143	130	37	90	44	29	33	47	13	11		
17	18	38	63	105	37	51	39	133	33	43	13	10		
18	15	27	59	57	36	44	36	69	32	38	13	33		
19	272	23	35	49	37	43	36	42	81	38	14	43		
20	39	15	28	44	37	51	37	33	52	44	13	16		
21	45	13	26	43	42	51	36	31	46	39	12	12		
22	30	12	24	39	54	40	37	30	366	37	14	11		
23	28	12	24	40	131	37	35	30	833	36	12	10		
24	50	18	25	41	115	36	33	37	98	34	15	9.7		
25	28	238	23	41	53	35	41	62	94	34	68	10		
26	65	38	22	40	42	35	131	32	67	33	14	9.6		
27	57	18	25	59	39	36	52	30	51	33	10	9.1		
28	23	14	29	51	48	35	40	29	51	31	10	17		
29	18	13	27	41	---	35	40	29	43	29	13	172		
30	16	13	40	42	---	36	43	28	39	25	18	236		
31	16	---	434	37	---	33	---	27	---	19	16	---		
TOTAL	1943.5	1292	1298	1849	1264	1729	1586	1153	3674	4825	490	937.4		
MEAN	62.7	43.1	41.9	59.6	45.1	55.8	52.9	37.5	122	156	15.8	31.2		
MAX	410	582	434	174	131	399	265	133	861	2950	68	236		
MIN	5.5	12	11	34	34	33	31	27	24	19	10	9.1		
CFSM	.33	.23	.22	.32	.24	.30	.28	.20	.65	.83	.08	.17		
IN.	.38	.25	.26	.36	.25	.34	.31	.23	.72	.95	.10	.18		
AC-FT	3850	2560	2570	3670	2510	3430	3150	2310	7290	9570	972	1860		
CAL YR 1984	TOTAL	7852.26	MEAN	21.5	MAX	582	MIN	.83	CFSM	.11	IN	1.55	AC-FT	15570
WTR YR 1985	TOTAL	22050.90	MEAN	60.4	MAX	2950	MIN	5.5	CFSM	.32	IN	4.34	AC-FT	43740

## GUADALUPE RIVER BASIN

08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: November 1971 to September 1973. Water temperatures: November 1968 to current year. Bacteria analyses: December 1975 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT												
09...	1402	20	321	7.5	22.0	350	150	5.7	--	5.7	K10000	K40000
19...	0940	248	520	7.5	22.0	800	310	--	--	2.8	6800	6400
MAR												
14...	1416	702	254	6.8	16.0	550	190	8.1	--	6.7	34000	120000
JUN												
22...	1830	421	368	7.8	25.5	25	130	5.0	64	5.6	36000	54000
24...	1632	84	333	7.9	25.5	40	55	6.1	76	1.4	K520	5400

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT												
09...	120	32	42	4.7	16	.7	4.5	92	39	18	.30	8.0
19...	200	36	66	7.6	30	1	6.0	160	53	34	.30	14
MAR												
14...	110	23	35	4.8	9.6	.4	5.0	84	23	12	.20	7.1
JUN												
22...	150	25	47	7.4	13	.5	5.4	123	26	17	.20	9.4
24...	170	26	57	6.5	16	.6	5.4	143	33	19	.20	14

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT											
09...	190	134	37	.59	.010	.60	.030	.17	.20	.070	11
19...	310	474	118	.48	.020	.50	.080	1.8	1.9	.460	14
MAR											
14...	150	340	60	.97	.030	1.0	.140	2.0	2.1	.470	13
JUN											
22...	200	310	70	--	<.010	.80	.070	.93	1.0	.410	16
24...	240	64	9	.58	.020	.60	.090	.51	.60	.140	5.8

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT							
09...	1402	3	55	<1	<10	4	51
MAR							
14...	1416	1	43	<1	<10	3	53

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT						
09...	5	4	<.1	<1	<1	12
MAR						
14...	1	10	<.1	1	<1	21

GUADALUPE RIVER BASIN

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08178800 SALADO CREEK (LOWER STATION) AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
OCT 09...	1402	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.16	<.01
MAR 14...	1416	<.1	<.10	<.01	.1	<.01	<.01	<.01	.30	<.01

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
OCT 09...	<.01	<.01	<.01	<.01	<.01	<.01	.03	<.01	<.01	<.01
MAR 14...	<.01	<.01	<.01	<.01	<.01	<.01	.02	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT 09...	<.01	.03	<.1	<1	<.01	.04	<.01	<.01	<.01
MAR 14...	<.01	<.01	<.1	<1	<.01	.49	.13	<.01	.01



## GUADALUPE RIVER BASIN

08178880 MEDINA RIVER AT BANDERA, TX

LOCATION.--Lat 29°43'25", long 99°04'11", Bandera County, Hydrologic Unit 12100302, on left bank, 40 ft downstream from centerline of State Highway 173 at Bandera, 1.9 mi upstream from Bandera Creek, and 5.6 mi downstream from Indian Creek.

DRAINAGE AREA.--427 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,189.46 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1-19, Dec. 31, 1982, to Jan. 16, 1983, Jan. 28, Feb. 4 to Mar. 6, July 7-10, Nov. 10-19, Dec. 1, 18-22, Dec. 24, 1983, to Jan. 23, 1984, Jan. 26 to Feb. 29, Mar. 2-7, Mar. 9 to Apr. 2, and Apr. 6-15, 17, 19-22, 1984. Records good except those for estimated daily discharges, which are fair. Several small diversions upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,400 ft<sup>3</sup>/s Dec. 31, 1984 (gage height, 16.09 ft); minimum daily, 2.2 ft<sup>3</sup>/s Aug. 7, 11, 13, 14, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1880, 46.62 ft Aug. 2, 1978.

EXTREMES FOR WATER YEAR 1983.--Maximum discharge, 708 ft<sup>3</sup>/s June 6 at 1000 hours (gage height, 6.98 ft); minimum daily, 14 ft<sup>3</sup>/s Sept. 22-30.

EXTREMES FOR WATER YEAR 1984.--Maximum discharge, 376 ft<sup>3</sup>/s Nov. 5 at 1900 hours (gage height, 5.86 ft); minimum daily, 2.2 ft<sup>3</sup>/s Aug. 7, 11, 13, 14.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,400 ft<sup>3</sup>/s Dec. 31 at 1100 hours (gage height, 16.09 ft); minimum daily, 4.9 ft<sup>3</sup>/s Oct. 8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1982 TO SEPTEMBER 1983  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	26	53	37	37	31	61	36	48	103	29	18
2	30	30	49	43	37	30	56	34	47	97	27	18
3	31	32	46	39	34	29	55	34	46	92	25	16
4	32	28	46	34	30	29	54	33	46	87	25	17
5	34	30	47	32	45	58	53	33	194	80	25	20
6	37	30	46	34	39	120	53	32	262	76	26	20
7	43	30	45	35	32	74	53	34	148	71	29	21
8	61	29	43	35	34	70	51	32	124	67	32	18
9	49	29	41	35	38	65	50	28	106	63	44	43
10	41	29	45	34	35	62	50	28	94	59	38	45
11	35	29	46	33	43	58	50	30	85	56	32	39
12	39	27	45	32	54	54	49	33	82	54	36	34
13	46	25	44	31	48	52	48	38	75	50	31	29
14	37	26	42	30	37	52	46	37	84	50	27	26
15	33	26	41	30	47	59	45	39	167	53	25	25
16	30	27	39	33	66	62	44	39	305	56	24	24
17	29	28	39	38	100	64	46	41	243	61	24	23
18	28	28	39	43	70	58	45	41	195	56	23	21
19	27	29	38	43	44	54	42	36	176	59	23	23
20	26	28	38	42	39	53	42	120	158	56	23	21
21	26	29	37	48	45	51	41	104	141	52	23	17
22	26	29	37	47	39	48	42	88	128	49	22	14
23	26	30	37	46	37	53	43	68	119	46	23	14
24	26	31	38	43	36	53	42	60	112	42	25	14
25	26	31	37	42	35	52	40	57	217	41	27	14
26	26	52	36	40	34	97	37	54	158	38	26	14
27	26	91	40	39	34	69	37	52	165	37	25	14
28	26	100	41	38	33	66	36	51	143	34	22	14
29	25	74	42	37	---	62	36	50	125	33	21	14
30	25	60	39	37	---	62	36	49	113	31	17	14
31	27	---	35	38	---	62	---	48	---	30	18	---
TOTAL	1003	1093	1291	1168	1202	1809	1383	1459	4106	1779	817	644
MEAN	32.4	36.4	41.6	37.7	42.9	58.4	46.1	47.1	137	57.4	26.4	21.5
MAX	61	100	53	48	100	120	61	120	305	103	44	45
MIN	25	25	35	30	30	29	36	28	46	30	17	14
AC-FT	1990	2170	2560	2320	2380	3590	2740	2890	8140	3530	1620	1280

CAL YR 1982 TOTAL - MEAN - MAX - MIN - AC-FT -  
WTR YR 1983 TOTAL 17754 MEAN 48.6 MAX 305 MIN 14 AC-FT 35220

## 08178880 MEDINA RIVER AT BANDERA, TX--Continued

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1983 TO SEPTEMBER 1984  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	34	56	39	74	34	30	20	15	9.1	5.8	5.2
2	16	35	51	44	68	37	27	22	15	8.3	4.5	7.0
3	16	34	56	55	62	37	28	21	15	7.9	3.8	6.6
4	16	43	56	46	60	37	29	18	15	7.2	3.7	14
5	15	189	51	42	58	36	30	18	16	7.0	3.9	11
6	15	291	48	40	60	35	36	17	55	7.7	3.0	9.6
7	14	197	45	49	65	37	41	16	25	7.0	2.2	8.5
8	14	157	45	110	69	38	50	15	19	6.1	2.8	7.5
9	108	142	45	170	74	36	57	14	20	5.5	3.1	6.6
10	54	135	45	140	64	44	64	14	22	5.5	3.5	6.6
11	37	122	43	120	68	50	60	15	21	4.7	2.2	5.7
12	39	110	39	96	78	60	50	13	22	5.0	2.5	5.2
13	31	102	39	88	67	74	40	12	21	5.2	2.2	4.7
14	33	98	38	77	62	80	32	13	19	4.6	2.2	4.7
15	33	92	36	73	59	66	28	13	17	4.0	2.5	5.2
16	31	86	36	68	55	61	26	14	17	3.8	3.9	4.7
17	31	80	36	66	52	56	28	16	14	3.5	7.0	4.3
18	30	76	35	66	50	54	26	23	14	3.5	6.6	4.3
19	28	70	34	64	50	52	23	22	14	3.7	3.9	3.9
20	49	67	35	60	48	50	21	20	13	5.2	3.5	4.3
21	92	67	37	58	45	48	19	21	12	6.5	3.5	8.0
22	107	67	42	58	50	46	21	29	11	5.5	4.7	8.5
23	80	85	34	60	44	40	22	28	11	4.7	3.9	9.6
24	62	80	32	54	41	34	22	25	12	3.9	3.9	9.1
25	53	73	35	54	41	31	21	24	9.0	6.0	3.1	7.0
26	46	69	35	52	43	30	22	19	8.7	8.6	3.1	6.2
27	41	63	37	52	37	29	21	18	8.5	12	4.3	5.7
28	38	63	43	54	36	27	19	20	8.2	13	4.7	6.2
29	37	61	49	58	36	26	20	19	9.6	7.5	4.3	7.0
30	36	61	44	60	---	26	20	18	9.6	5.7	4.3	7.0
31	35	---	38	65	---	27	---	16	---	5.8	4.3	---
TOTAL	1253	2849	1295	2138	1616	1338	933	573	488.6	193.7	116.9	203.9
MEAN	40.4	95.0	41.8	69.0	55.7	43.2	31.1	18.5	16.3	6.25	3.77	6.80
MAX	108	291	56	170	78	80	64	29	55	13	7.0	14
MIN	14	34	32	39	36	26	19	12	8.2	3.5	2.2	3.9
AC-FT	2490	5650	2570	4240	3210	2650	1850	1140	969	384	232	404
CAL YR 1983	TOTAL	19764.0	MEAN	54.1	MAX	305	MIN	14	AC-FT	39200		
WTR YR 1984	TOTAL	12998.1	MEAN	35.5	MAX	291	MIN	2.2	AC-FT	25780		

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	58	29	1010	176	252	231	234	176	95	40	27
2	6.2	50	28	816	176	242	224	191	172	91	40	25
3	6.7	47	26	659	172	238	221	170	168	94	42	20
4	7.1	43	26	593	170	229	212	158	163	96	46	20
5	7.1	37	31	549	169	218	211	147	159	96	43	22
6	6.8	32	31	496	163	213	201	138	181	94	40	87
7	6.6	31	31	453	151	217	191	129	224	90	42	97
8	4.9	30	31	427	146	214	190	125	176	97	39	69
9	5.4	30	32	391	144	205	186	121	168	94	38	53
10	8.1	28	31	360	142	198	187	120	164	89	38	45
11	17	26	29	324	136	192	185	118	157	85	36	39
12	14	26	29	327	130	188	178	126	151	210	38	39
13	11	26	51	324	128	187	180	129	148	146	38	50
14	22	26	54	285	124	373	186	138	146	112	36	39
15	14	25	53	217	119	295	179	119	145	98	36	35
16	8.8	25	162	250	117	294	166	113	139	91	35	34
17	6.5	25	117	294	114	285	158	1120	129	81	35	34
18	6.0	28	120	299	112	286	152	547	167	76	34	34
19	8.2	28	110	285	113	282	148	424	130	69	34	33
20	11	27	102	269	111	288	146	358	123	69	30	33
21	11	29	96	245	115	277	143	332	117	72	31	32
22	13	29	87	233	117	273	143	313	126	65	32	33
23	24	28	80	228	431	268	137	289	128	62	32	33
24	23	26	75	221	342	260	127	271	131	62	32	31
25	50	32	69	216	262	256	121	261	122	59	31	31
26	54	31	65	208	240	252	119	247	116	54	31	30
27	100	36	68	210	223	371	118	230	110	52	31	29
28	91	34	91	204	231	291	116	219	106	49	27	29
29	99	33	87	203	---	270	214	206	102	48	26	96
30	81	31	96	199	---	260	235	192	99	43	26	134
31	68	---	3710	180	---	244	---	183	---	41	28	---
TOTAL	797.9	957	5647	10975	4774	7918	5205	7468	4343	2580	1087	1313
MEAN	25.7	31.9	182	354	171	255	174	241	145	83.2	35.1	43.8
MAX	100	58	3710	1010	431	373	235	1120	224	210	46	134
MIN	4.9	25	26	180	111	187	116	113	99	41	26	20
AC-FT	1580	1900	11200	21770	9470	15710	10320	14810	8610	5120	2160	2600
CAL YR 1984	TOTAL	15003.0	MEAN	41.0	MAX	3710	MIN	2.2	AC-FT	29760		
WTR YR 1985	TOTAL	53064.9	MEAN	145	MAX	3710	MIN	4.9	AC-FT	105300		

## GUADALUPE RIVER BASIN

08178880 MEDINA RIVER AT BANDERA, TX--Continued

## WATER-QUALITY RECORDS

LOCATION.--Lat 29°43'25", long 99°04'11", Bandera County, Hydrologic Unit 12100302, on left bank 40 ft downstream from centerline of State Highway 173, 1.9 mi upstream from Bandera Creek, and 5.6 mi downstream from Indian Creek.

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: October 1982 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
FEB 26...	1020	1120	501	8.8	14.0	10	7.0	7.6	75	.7	--	370
APR 30...	1255	247	502	7.8	23.0	25	45	8.2	99	1.6	K1100	K2300
AUG 22...	1300	245	568	7.9	29.5	7	2.0	7.2	98	.9	K32	K22

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
FEB 26...	280	87	84	18	5.8	.2	1.1	197	68	11	.20	9.4
APR 30...	260	85	79	16	5.8	.2	1.6	179	77	9.8	.30	10
AUG 22...	280	110	79	21	8.5	.2	1.4	172	110	12	.20	13

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
FEB 26...	320	10	5	.89	.010	.90	.120	.48	.60	.060	1.3
APR 30...	310	56	21	--	<.010	.70	.050	.55	.60	.010	2.0
AUG 22...	350	8	6	--	<.010	.10	.050	.15	.20	<.010	2.0

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM, DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
FEB 26...	1020	<1	27	1	<10	2	8
AUG 22...	1300	<1	50	<1	<10	<1	4

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
FEB 26...	<1	<1	3.9	<1	1	22
AUG 22...	<1	3	<.1	<1	<1	21

GUADALUPE RIVER BASIN

299

08178880 MEDINA RIVER AT BANDERA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
FEB 26...	1020	<.1	<.10	<.01	<.1	<.01	<.01	<.01	<.01	<.01
AUG 22...	1300	<.1	<.10	<.01	<.1	<.01	<.01	<.01	<.01	<.01

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
FEB 26...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG 22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
FEB 26...	<.01	<.01	<.1	<.1	<.01	<.01	<.01	<.01	<.01
AUG 22...	<.01	<.01	<.1	<.1	<.01	<.01	<.01	<.01	<.01

## GUADALUPE RIVER BASIN

## 08179500 MEDINA LAKE NEAR SAN ANTONIO, TX

LOCATION.--Lat 29°32'24", long 98°56'01", Medina County, Hydrologic Unit 12100302, at gate-operating platform, 576 ft from left end of Medina Dam on Medina River, 4.2 mi upstream from Medina diversion dam, 13 mi north of Castroville, 28 mi west of San Antonio, and 70.4 mi upstream from mouth. Water-quality sampling site at the center of low-water bridge 0.6 mi downstream.

DRAINAGE AREA.--634 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1913 to current year. Prior to October 1965, monthend contents only.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Nonrecording gage read once daily if stage changing materially, otherwise intermittently. Datum of gage is 7.80 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a gravity-type concrete dam, 1,580 ft long. The dam was completed and storage began May 7, 1913. The uncontrolled spillway is a cut through natural rock 880 ft long, with a 3-foot-wide cutoff wall, located near right end of dam. The dam and lake are owned and operated by Bexar-Medina-Atascosa Counties Water Improvement District No. 1, that has a permit (from the Texas Department of Water Resources) to irrigate 150,000 acres annually. An undetermined amount of water from the lake enters the Edwards and associated limestones in the Balcones Fault Zone, part of which is above and part below the dam. Water is released downstream to Medina Diversion Reservoir where it is diverted into Medina Canal by the Water District. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam.....	1,084.0	-
Crest of spillway.....	1,072.0	254,000
Water-supply outlet pipes (invert).....	966.5	4,780
Lowest gated outlet (invert).....	920.0	0

COOPERATION.--Capacity table, based on survey made prior to June 1912, and gage-height record were provided by the Bexar-Medina-Atascosa Counties Water Improvement District No. 1.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents observed, 288,800 acre-ft Sept. 16, 1919, (gage height, 1,078.0 ft); minimum observed since lake first filled, 780 acre-ft about Apr. 11, 1948, (gage height, 944.0 ft).

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents, 145,700 acre-ft July 13, 14, (gage height, 1,048.8 ft); minimum, 65,840 acre-ft Oct. 10, (gage height, 1,021.4 ft).

Capacity table (gage height, in feet, and contents, in acre-feet)

1,021.0	64,910	1,035.0	100,200	1,045.0	132,200
1,025.0	74,220	1,040.0	114,500	1,049.0	146,400
1,030.0	85,860				

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	68170	68630	67930	80740	96460	104800	121600	130500	141400	143600	141800	130800
2	67930	68870	67930	81900	96460	105300	122300	130500	141400	143600	141400	130500
3	67470	68630	68170	81900	96750	105900	122700	130800	141400	143600	141400	130100
4	67240	69100	68400	82370	97040	106500	123000	131200	141400	143600	141100	129400
5	67000	68630	68630	83070	97900	107100	123000	131200	141100	143600	140700	129000
6	66770	68630	67930	83530	97610	107100	123700	131200	141100	143600	140000	129000
7	66300	68630	67930	84000	98180	107600	124400	131200	141400	143900	139700	128700
8	66070	68630	67930	84230	98470	107900	125100	131200	142200	143600	139300	128300
9	66070	68400	67930	84700	98760	108500	124800	131500	142200	143900	139300	128300
10	65840	68170	67930	85390	99040	108500	124800	131500	142200	143900	139000	128000
11	66300	67930	68170	86150	99330	108800	125100	131500	142200	143900	138600	127600
12	66300	67700	67930	86430	99330	109100	125500	131500	143200	144300	137900	127600
13	66300	67700	68170	87010	99620	109400	125900	131200	142900	145700	137500	127600
14	66300	67700	68170	87010	99620	110500	126200	131500	142500	145700	137200	127300
15	66300	67700	68400	87580	99620	111700	126600	131500	142900	145300	137200	127300
16	66300	68170	68630	87870	99330	112500	126900	130800	142900	145300	136500	127300
17	66540	67930	68870	88440	99330	113400	127300	131900	142500	145300	136500	127300
18	66300	67930	69100	89010	99330	113400	127300	135800	142500	145000	135800	126900
19	66070	67930	69330	89870	99330	113700	127600	136500	143600	145000	135400	126900
20	66070	67930	69330	91020	99330	114200	128000	137200	143600	144600	134400	126600
21	66540	67930	69560	91020	99620	114500	128000	137900	143600	144600	134400	126600
22	66300	67700	69560	91590	99620	115900	128000	138300	143600	144300	134400	126200
23	66770	67700	69800	92170	100200	116300	128300	139000	143600	143900	133700	125900
24	66770	67700	69800	92740	101900	117400	128700	139300	143900	143900	133700	126200
25	66540	67700	69800	93020	102500	117700	128700	139700	143900	143600	133300	125500
26	67000	67930	70030	93600	103100	118100	128700	140400	143900	143200	132900	125100
27	67700	67930	70030	94170	103600	118800	128700	140400	143900	143200	132600	124800
28	67930	67930	70260	94740	103900	119800	129400	140700	143900	143200	131900	124800
29	67930	67930	70500	94740	---	120500	129400	141100	143900	142500	132200	125100
30	68170	67930	70500	95320	---	120900	129800	141100	143900	142500	131900	125900
31	68170	---	70960	95600	---	121600	---	141400	---	142200	131500	---
MAX	68170	69100	70960	95600	103900	121600	129800	141400	143900	145700	141800	130800
MIN	65840	67700	67930	80740	96460	104800	121600	130500	141100	142200	131500	124800
(+)	1022.4	1022.3	1023.6	1033.4	1036.3	1042.0	1044.3	1047.6	1048.3	1047.8	1048.8	1043.2
(#)	-460	-240	+3030	+24640	+8300	+17700	+8200	+11300	+2500	-1700	-10700	-5600

CAL YR 1984 MAX 149600 MIN 65840 (+) +57270  
WTR YR 1985 MAX 145700 MIN 65840 (+) -78640

(+) Elevation, in feet, at end of month.

(#) Change in contents, in acre-feet.



## GUADALUPE RIVER BASIN

301

08180000 MEDINA CANAL NEAR RIOMEDINA, TX

LOCATION (revised).--Lat 29°30'19", long 98°54'11", Medina County, Hydrologic Unit 12100302, in center of canal, 350 ft downstream from head of canal and diversion dam, 4.6 mi downstream from Medina Dam, 4.7 mi north of Riomedina, and 25 mi northwest of San Antonio.

PERIOD OF RECORD.--March 1922 to May 1934, July 1957 to current year.

REVISED RECORDS.--WSP 568: 1922. WSP 1712: 1922(M), 1924, 1926.

GAGE.--Water-stage recorder. Elevation of gage is 910 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good except those for Feb. 13 to Mar. 31 and May 1 to July 27, which are fair. Station is above all diversions from canal. Canal diverts from right end of Medina Diversion Dam 1,900 ft upstream from gage for irrigation downstream near Lacoste and Natalia. Prior to November 1984, double-barrel flume in canal 54 ft downstream from gage. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--39 years (water years 1923-33, 1958-85), 42.6 ft<sup>3</sup>/s (30,860 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 216 ft<sup>3</sup>/s May 6, 1971; no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	.43	.00	.00	.00	.00	44	.00	98	80	57	22
2	67	.00	.00	.00	.00	.00	48	.00	98	117	57	22
3	58	.00	.00	.00	.00	.00	42	14	98	42	57	22
4	63	.00	.00	.00	.00	.00	42	30	133	13	48	26
5	67	.00	.00	.00	.00	.00	42	26	76	.00	48	32
6	68	.00	.00	.00	.00	16	42	33	.00	.00	48	30
7	43	.00	.00	.00	.00	50	33	38	.00	.00	38	30
8	48	4.2	.00	.00	.00	57	26	71	.00	16	38	30
9	8.9	18	.00	.00	.00	57	35	113	16	33	38	30
10	29	28	.00	.00	.00	27	20	166	40	42	38	29
11	5.2	34	.00	.00	.00	7.6	.00	166	47	71	38	26
12	.00	33	.00	.00	.00	17	.00	166	57	98	38	26
13	.00	24	.00	.00	13	22	.00	113	71	88	38	13
14	.00	14	.00	.00	26	11	.00	94	71	117	38	.00
15	.00	6.5	.00	.00	28	.00	.00	117	101	140	37	.00
16	.00	2.0	.00	.00	30	.00	.00	117	140	121	37	2.3
17	.00	.00	.00	.00	32	.00	.00	38	140	107	37	13
18	.00	.00	.00	.00	33	.00	.00	.00	140	88	37	19
19	.00	.00	.00	.00	33	.00	.00	.00	140	121	37	17
20	.00	.00	.00	.00	36	.00	.00	.00	117	128	37	17
21	4.1	.00	.00	.00	33	.00	18	.00	98	113	37	13
22	23	.00	.00	.00	38	.00	38	.00	66	135	26	12
23	15	.00	.00	.00	38	.00	52	.00	47	153	26	26
24	1.4	.00	.00	.00	19	.00	71	.00	47	153	26	52
25	.00	.00	.00	.00	.00	28	71	.00	54	153	26	57
26	.00	.00	.00	.00	.00	57	16	.00	71	153	26	63
27	.00	.00	.00	.00	.00	63	.00	38	66	166	26	63
28	.00	.00	.00	.00	.00	57	.00	52	66	63	26	63
29	.00	.00	.00	.00	---	47	.00	52	80	57	26	26
30	.31	.00	.00	.00	---	33	.00	63	80	57	26	.00
31	.89	---	.00	.00	---	33	---	80	---	57	26	---
TOTAL	575.80	164.13	.00	.00	359.00	582.60	640.00	1587.00	2258.00	2682.00	1138	781.30
MEAN	18.6	5.47	.000	.000	12.8	18.8	21.3	51.2	75.3	86.5	36.7	26.0
MAX	74	34	.00	.00	38	63	71	166	140	166	57	63
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	26	.00
AC-FT	1140	326	.00	.00	712	1160	1270	3150	4480	5320	2260	1550
CAL YR 1984	TOTAL	26793.93	MEAN	73.2	MAX	160	MIN	.00	AC-FT	53150		
WTR YR 1985	TOTAL	10767.83	MEAN	29.5	MAX	166	MIN	.00	AC-FT	21360		

## GUADALUPE RIVER BASIN

08180700 MEDINA RIVER NEAR MACDONA, TX

LOCATION.--Lat 29°20'05", long 98°41'22", Bexar County, Hydrologic Unit 12100302, at downstream side of Loop 1604 bridge, 0.1 mi downstream from Polecat Creek, 0.7 mi north of Macdonia, 2.2 mi downstream from Potranca Creek, and 21.2 mi upstream from mouth.

DRAINAGE AREA.--885 mi<sup>2</sup>, of which 634 mi<sup>2</sup> is above dam forming Medina Lake.

PERIOD OF RECORD.--January 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 589.86 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is regulated by Medina Lake (station 08179500) and by Medina Diversion Lake (capacity, 4,500 acre-ft) 41 mi upstream. For diversion of canal records, see Medina Canal near Riomedina (station 08180000). A large part of the streamflow is lost into the Edwards and associated limestone where the Balcones Fault crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam. Several observations of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,810 ft<sup>3</sup>/s June 15, 1981 (gage height, 16.08 ft); minimum daily, 14 ft<sup>3</sup>/s Jan. 11, 12, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,580 ft<sup>3</sup>/s Oct. 11 at 1200 hours (gage height, 12.31 ft); minimum daily, 14 ft<sup>3</sup>/s Jan. 11, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	46	20	19	19	45	39	46	29	39	32	32
2	36	34	20	19	18	46	39	41	28	40	32	29
3	37	31	18	19	18	43	39	38	30	43	30	29
4	34	29	18	19	18	41	39	36	28	53	30	29
5	37	28	19	19	18	40	38	35	28	46	31	29
6	38	25	18	19	18	39	38	35	200	44	33	30
7	40	24	18	18	18	39	38	35	260	44	33	31
8	46	23	17	17	17	40	38	34	146	43	33	31
9	52	23	18	17	17	41	39	34	76	43	33	30
10	52	23	18	16	17	40	41	34	55	42	32	31
11	1230	22	17	14	17	39	45	28	48	41	31	32
12	216	26	17	14	16	39	44	28	48	41	32	37
13	204	28	18	15	17	38	43	31	48	39	32	38
14	190	28	20	22	17	192	42	31	47	37	31	40
15	84	28	20	32	16	210	40	29	45	37	30	37
16	65	28	19	47	16	92	39	28	45	36	25	34
17	57	28	19	49	17	68	37	173	43	36	26	35
18	54	27	19	35	16	52	36	141	40	35	29	36
19	93	26	20	28	18	49	36	70	52	34	29	36
20	72	25	20	24	23	48	35	51	56	34	23	35
21	48	23	18	22	28	48	35	48	46	34	21	32
22	42	23	18	21	31	46	36	45	45	36	25	31
23	39	21	16	20	238	45	36	43	45	36	29	30
24	46	21	18	20	123	44	36	42	45	35	29	28
25	40	26	16	20	59	44	35	42	44	35	28	27
26	49	24	15	19	45	44	44	41	43	35	30	27
27	117	23	16	20	41	43	43	39	43	35	30	27
28	54	21	17	21	42	43	39	39	43	35	28	31
29	41	17	16	20	---	42	37	39	42	35	28	47
30	36	20	16	20	---	41	53	37	41	34	30	48
31	43	---	18	19	---	40	---	34	---	34	31	---
TOTAL	3229	771	557	684	958	1721	1179	1427	1789	1191	916	989
MEAN	104	25.7	18.0	22.1	34.2	55.5	39.3	46.0	59.6	38.4	29.5	33.0
MAX	1230	46	20	49	238	210	53	173	260	53	33	48
MIN	34	17	15	14	16	38	35	28	28	34	21	27
AC-FT	6400	1530	1100	1360	1900	3410	2340	2830	3550	2360	1820	1960

CAL YR 1984 TOTAL 14432 MEAN 39.4 MAX 1230 MIN 15 AC-FT 28630  
WTR YR 1985 TOTAL 15411 MEAN 42.2 MAX 1230 MIN 14 AC-FT 30570

## GUADALUPE RIVER BASIN

303

08180800 MEDINA RIVER NEAR SOMERSET, TX

LOCATION.--Lat 29°15'45", long 98°34'56", Bexar County, Hydrologic Unit 12100302, on left bank 300 ft upstream from bridge on State Highway 16, 2.1 mi upstream from Elm Creek, 4.9 mi downstream from Medio Creek, 5.2 mi northeast of Somerset, and 14.1 mi upstream from mouth.

DRAINAGE AREA.--967 mi<sup>2</sup>, of which 634 mi<sup>2</sup> is above dam forming Medina Lake.

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 493.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 14-29 and Jan. 1-21. Records good. Flow is regulated by Medina Lake (station 08179500) 56 mi upstream and by Medina Diversion Lake (capacity, 4,500 acre-ft). For diversion of canal records, see Medina Canal near Riomedina (station 08180000). A large part of the streamflow is lost into the Edwards and associated limestones in the Balcones Fault Zone, that crosses the basin between the upstream end of Medina Lake and about 5 mi downstream from Medina Dam, or 0.9 mi downstream from the diversion dam. There are several small diversions below Medina Diversion Dam. Several observations of water temperature were made during the year. Satellite telemeter located at station.

AVERAGE DISCHARGE.--15 years, 223 ft<sup>3</sup>/s (161,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,500 ft<sup>3</sup>/s July 17, 1973 (gage height, 29.39 ft); minimum daily, 16 ft<sup>3</sup>/s Sept. 19, 20, 1984.  
Maximum stage since about 1890, that of July 17, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 585 ft<sup>3</sup>/s Mar. 15 at 0600 hours (gage height, 9.10 ft); minimum daily, 26 ft<sup>3</sup>/s Oct. 1, Jan. 9, Aug. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	63	33	31	34	61	56	68	43	45	35	41
2	27	54	32	31	34	67	54	57	37	44	35	34
3	28	47	31	31	33	70	54	52	38	54	36	31
4	28	45	31	31	34	59	54	48	40	122	35	30
5	29	42	32	31	35	53	52	45	37	85	35	29
6	30	41	32	31	35	51	51	43	37	60	35	30
7	33	39	31	31	35	50	49	44	115	55	35	30
8	38	38	31	28	34	50	49	43	191	53	34	30
9	42	38	32	26	33	51	51	42	136	52	33	30
10	51	37	33	33	33	51	57	45	85	51	33	30
11	84	36	33	30	33	51	80	42	65	51	31	34
12	91	36	32	29	32	50	71	38	58	49	30	36
13	260	38	34	31	32	49	62	39	55	48	30	47
14	100	37	36	33	33	229	59	39	52	45	30	60
15	80	38	36	50	32	387	47	39	51	44	30	58
16	74	38	40	80	32	155	54	39	49	43	29	49
17	64	39	41	50	32	95	53	60	47	42	32	45
18	60	39	40	45	32	85	52	213	48	41	32	50
19	100	38	36	42	32	74	51	103	56	40	32	55
20	70	38	36	41	34	74	50	72	63	40	32	47
21	55	36	35	40	38	72	49	57	57	40	32	43
22	46	35	34	40	42	68	49	54	156	40	32	41
23	44	35	34	40	154	65	48	52	108	40	32	41
24	50	37	33	39	255	62	45	51	69	39	32	39
25	45	47	32	38	114	61	46	51	58	40	32	37
26	56	47	32	36	79	61	79	93	54	39	30	36
27	113	42	33	37	64	61	78	60	52	37	28	36
28	60	37	32	38	58	61	61	54	50	37	27	38
29	45	36	31	39	---	61	55	52	48	37	26	52
30	59	32	31	37	---	60	60	51	46	36	28	99
31	55	---	31	35	---	57	---	46	---	36	31	---
TOTAL	1943	1205	1040	1154	1468	2501	1676	1792	2001	1485	984	1258
MEAN	62.7	40.2	33.5	37.2	52.4	80.7	55.9	57.8	66.7	47.9	31.7	41.9
MAX	260	63	41	80	255	387	80	213	191	122	36	99
MIN	26	32	31	26	32	49	45	38	37	36	26	29
AC-FT	3850	2390	2060	2290	2910	4960	3320	3550	3970	2950	1950	2500
CAL YR 1984	TOTAL	14048	MEAN 38.4	MAX 260	MIN 16	AC-FT 27860						
WTR YR 1985	TOTAL	18507	MEAN 50.7	MAX 387	MIN 26	AC-FT 36710						

## GUADALUPE RIVER BASIN

08181400 HELOTES CREEK AT HELOTES, TX

LOCATION.--Lat 29°34'42", long 98°41'29", Bexar County, Hydrologic Unit 12100302, 42 ft to left and 44 ft downstream from centerline of bridge on State Highway 16, 0.1 mi northwest of Helotes, and 8.6 mi upstream from mouth.

DRAINAGE AREA.--15.0 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1968 to current year.

REVISED RECORDS.--WRD TX-73-1: 1972(M).

GAGE.--Water-stage recorder. Datum of gage is 1,014.82 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Feb. 22-25. Records fair. An undetermined amount of flow is diverted for domestic use above station, and some flow enters the Edwards and associated limestones through the Balcones fault zone in the vicinity of the gage. A recording rain gage is located at station and two additional recording rain gages are located in the watershed above station.

AVERAGE DISCHARGE.--17 years, 4.02 ft<sup>3</sup>/s (3.64 in/yr), 2,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,680 ft<sup>3</sup>/s July 16, 1973 (gage height, 10.8 ft, from floodmarks), from rating curve extended above 5,000 ft<sup>3</sup>/s; no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1923, 13.7 ft in 1927, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 14	0600	197	2.55	June 5	2300	*3,910	*7.35

Minimum daily discharge, no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	.00	.00	.00	.00	12	6.4	.00	.00	.78	.00	.00		
2	.00	.00	.00	.00	.00	11	4.7	.00	.00	.56	.00	.00		
3	.00	.00	.00	.00	.00	11	2.5	.00	.00	2.7	.00	.00		
4	.00	.00	.00	.00	.00	7.3	.81	.00	.00	2.7	.00	.00		
5	.00	.00	.00	.00	.00	4.3	.00	.00	159	1.8	.00	.00		
6	.00	.00	.00	.00	.00	2.9	.00	.00	361	1.9	.00	.00		
7	1.5	.00	.00	.00	.00	3.1	.00	.00	136	1.5	.00	.00		
8	.00	.00	.00	.00	.00	.99	.00	.00	73	1.3	.00	.00		
9	.00	.00	.00	.00	.00	.00	.00	.00	44	1.1	.00	.00		
10	.00	.00	.00	.00	.00	.00	.73	.00	26	.81	.00	.00		
11	1.1	.00	.00	.00	.00	.00	1.3	.00	18	.68	.00	.00		
12	.00	.00	.00	.00	.00	.00	.00	.00	13	4.2	.00	.00		
13	.00	.00	.00	.00	.00	.76	.22	.00	10	.89	.00	.02		
14	.03	.00	.00	.10	.00	119	1.2	.00	7.9	.44	.00	.00		
15	.00	.00	.00	.00	.00	132	.89	.00	6.6	.21	.00	.00		
16	.00	.00	.00	4.4	.00	120	.00	.00	5.1	.09	.00	.00		
17	.00	.00	.00	9.7	.00	95	.00	.28	4.1	.02	.00	.00		
18	.00	.00	.00	9.1	.00	79	.00	.00	5.7	.00	.00	.00		
19	.00	.00	.00	7.5	.00	65	.00	.00	5.5	.00	.00	.00		
20	.00	.00	.00	3.9	.00	71	.00	.00	3.2	.00	.00	.00		
21	.00	.00	.00	2.1	.00	49	.00	.00	3.0	.00	.00	.00		
22	.14	.00	.00	.84	49	41	.00	.00	3.0	.00	.00	.00		
23	.02	.00	.00	.10	58	33	.00	.00	3.8	.00	.00	.00		
24	.15	.11	.00	.00	32	27	.00	.08	3.6	.00	.00	.00		
25	.04	.00	.00	.00	20	24	.00	.00	3.1	.00	.03	.00		
26	9.2	.00	.00	.00	11	21	.00	.00	2.8	.00	.00	.00		
27	12	.00	.00	.00	9.6	21	.00	.00	2.4	.00	.00	.00		
28	2.1	.00	.00	.00	15	16	.00	.00	2.0	.00	.00	.00		
29	.00	.00	.00	.00	---	13	.61	.00	1.5	.00	.00	.70		
30	.00	.00	.00	.00	---	13	.09	.00	1.1	.00	.00	.00		
31	.00	---	.00	.00	---	8.3	---	.00	---	.00	.00	---		
TOTAL	26.28	.11	.00	37.74	194.60	1000.65	19.45	.36	904.40	21.68	.03	.72		
MEAN	.85	.004	.000	1.22	6.95	32.3	.65	.012	30.1	.70	.001	.024		
MAX	12	.11	.00	9.7	58	132	6.4	.28	361	4.2	.03	.70		
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00		
CFSM	.06	.000	.000	.08	.46	2.15	.04	.001	2.01	.05	.000	.002		
IN.	.07	.00	.00	.09	.48	2.48	.05	.00	2.24	.05	.00	.00		
AC-FT	52	.2	.00	75	386	1980	39	.7	1790	43	.06	1.4		
CAL YR 1984	TOTAL	27.32	MEAN	.075	MAX	12	MIN	.00	CFSM	.005	IN	.07	AC-FT	54
WTR YR 1985	TOTAL	2206.02	MEAN	6.04	MAX	361	MIN	.00	CFSM	.40	IN	5.47	AC-FT	4380

## GUADALUPE RIVER BASIN

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08181400 HELOTES CREEK NEAR HELOTES, TX

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: May 1969 to current year. Sediment analyses: May 1972 to September 1973. Water temperatures: May 1969 to current year. Bacteria analyses: April 1976 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
OCT 22...	1441	3.9	78	8.1	16.0	120	55	9.2	95	5.7	71000	49200
FEB 26...	1408	12	496	8.6	14.5	8	2.0	9.6	96	.3	--	500
APR 29...	1130	.54	78	8.2	20.5	55	12	8.1	93	2.0	120000	K50000
JUN 07...	1320	151	437	7.8	24.5	30	23	8.3	102	1.1	800	3000

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 22...	32	5	12	.60	.40	.0	2.5	28	7.1	1.4	<.10	4.1
FEB 26...	250	30	79	14	9.4	.3	1.0	225	22	16	.10	6.5
APR 29...	39	0	14	.90	.60	.0	3.0	39	2.8	.20	<.10	4.7
JUN 07...	210	12	70	9.7	5.4	.2	1.7	203	14	10	.10	11

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 22...	45	68	7	.29	.010	.30	.060	.74	.80	.190	8.2
FEB 26...	280	3	2	--	<.010	1.7	.030	.27	.30	<.010	2.5
APR 29...	50	4	3	.28	.020	.30	.070	.93	1.0	.130	3.8
JUN 07...	240	34	14	--	<.010	1.4	.060	.34	.40	.020	5.4

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 22...	1441	<1	20	<1	30	2	23
FEB 26...	1408	<1	25	<1	<10	<1	6
JUN 07...	1320	2	24	<1	<10	1	9

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 22...	6	8	<.1	<1	<1	7
FEB 26...	<1	5	.3	<1	<1	5
JUN 07...	4	4	<.1	<1	<1	7



## GUADALUPE RIVER BASIN

08181400 HELOTES CREEK AT HELOTES, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)
OCT 22...	1441	<.1	<.10	<.01	<.1	<.01	<.01	<.01	.02	<.01
FEB 26...	1408	<.1	<.10	<.01	<.1	<.01	<.01	<.01	<.01	<.01
JUN 07...	1320	<.1	<.10	<.01	<.1	<.01	<.01	<.01	<.01	<.01

DATE	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
OCT 22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
FEB 26...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JUN 07...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT 22...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
FEB 26...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01
JUN 07...	<.01	<.01	<.1	<1	<.01	<.01	<.01	<.01	<.01

## GUADALUPE RIVER BASIN

307

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX

LOCATION.--Lat 29°19'47", long 98°35'02", Bexar County, Hydrologic Unit 12100302, on left bank of Leon Creek between bridges on Interstate Highway 35.

PERIOD OF RECORD.--Chemical and biochemical analyses: July to September 1984.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
OCT												
09...	1022	4.7	370	7.5	22.4	60	25	3.9	46	4.0	130	40
11...	1525	494	149	7.6	21.0	450	500	6.5	74	6.8	55	7
JAN												
18...	1118	23	620	8.3	10.0	35	21	10.4	93	28	240	69
MAR												
11...	1310	20	932	8.2	24.0	5	7.4	9.9	120	--	390	130
APR												
22...	1406	19	840	8.3	25.5	5	8.6	6.8	86	1.7	340	69
MAY												
14...	1220	22	839	7.6	23.0	7	8.0	5.6	67	1.4	330	83
JUN												
07...	1335	1160	225	7.7	24.0	200	460	6.0	73	2.9	99	7
14...	1330	20	724	7.6	25.5	10	8.1	6.3	78	1.1	330	83
AUG												
23...	1100	19	732	7.6	27.0	7	--	6.8	87	2.5	260	24

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT											
09...	45	4.6	21	.8	3.3	92	58	17	.20	7.5	210
11...	19	1.8	5.7	.4	4.0	48	15	6.0	.20	5.3	86
JAN											
18...	80	9.6	40	1	3.5	171	95	41	.30	13	390
MAR											
11...	130	16	55	1	4.2	262	140	71	.40	13	590
APR											
22...	110	15	53	1	4.3	268	97	64	.40	15	520
MAY											
14...	110	13	71	2	4.5	246	120	64	.50	16	550
JUN											
07...	35	2.7	4.0	.2	4.6	92	16	4.8	.10	11	130
14...	110	14	44	1	4.7	250	81	50	.30	18	470
AUG											
23...	81	13	57	2	4.3	232	86	51	.80	14	450

DATE	SOLIDS, RESIDUE AT 105 DEG. C SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
OCT											
09...	26	9	--	<.010	.80	.070	.43	.50	.260	5.2	--
11...	608	17	.58	.020	.60	.230	3.4	3.6	1.10	18	--
JAN											
18...	28	11	1.2	.050	1.2	.210	.69	.90	.590	4.8	--
MAR											
11...	19	3	.98	.020	1.0	.110	.49	.60	.100	3.3	--
APR											
22...	27	13	1.4	.030	1.4	.170	.53	.70	.150	3.5	--
MAY											
14...	16	5	1.8	.060	1.9	.300	.40	.70	.240	3.6	--
JUN											
07...	576	132	.27	.130	.40	.470	1.1	1.6	.530	25	--
14...	18	2	1.2	.030	1.2	.120	.58	.70	.820	5.7	--
AUG											
23...	--	7	1.9	.060	2.0	.380	.72	1.1	.750	4.3	4.3

## GUADALUPE RIVER BASIN

08181480 LEON CREEK AT INTERSTATE HIGHWAY 35 AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT							
09...	1022	<1	31	1	<10	5	47
11...	1525	1	25	<1	20	2	61
JAN							
18...	1118	1	59	2	<10	5	12
MAY							
14...	1220	<1	83	1	10	2	48
JUN							
07...	1335	3	28	<1	<10	5	76

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT						
09...	8	15	<.1	<1	<1	33
11...	3	<1	<.1	<1	<1	8
JAN						
18...	<1	<1	<.1	<1	1	19
MAY						
14...	7	34	<.1	<1	<1	16
JUN						
07...	<1	2	<.1	<1	<1	14

## GUADALUPE RIVER BASIN

309

08181500 MEDINA RIVER AT SAN ANTONIO, TX

LOCATION.--Lat 29°15'14", long 98°28'20", Bexar County, Hydrologic Unit 12100302, near left bank at downstream side of pier of upstream bridge of two bridges on U.S. Highway 281 in San Antonio and 6.8 mi upstream from mouth.

DRAINAGE AREA.--1,317 mi<sup>2</sup>, of which 634 mi<sup>2</sup> is above dam forming Medina Lake.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1929 to December 1930, and July 1939 to current year. October 1929 to December 1930, records below about 50 ft<sup>3</sup>/s in connection with seepage investigation (published as "at Losoya"). Published as "near San Antonio" July 1939 to September 1970.

REVISED RECORDS.--WSP 1562: 1957. WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 439.0 ft above National Geodetic Vertical Datum of 1929 (levels by U.S. Army Corps of Engineers). October 1929 to December 1930, nonrecording gage at Losoya 1.5 mi downstream at different datum.

REMARKS.--Estimated daily discharges: Nov. 24 to Dec. 18. Records fair. Flow is slightly regulated by Medina Lake (station 08179500) 60 mi upstream, and by diversion dam reservoir, capacity 4,500 acre-ft. For diversion of canal records, see Medina Canal near Riomedina (station 08180000). For statement concerning losses into the Edwards and associated limestones formation, see Medina River near Somerset (station 08180800). Several small diversions below diversion dam reservoir. Records furnished by the city of San Antonio show that during the current year 28,750 acre-ft of sewage effluent was discharged from the Leon Creek plant into the Medina River above this station. No sewage effluent was discharged from Mitchell Lake plant during year. Satellite telemeter located at station.

AVERAGE DISCHARGE.--46 years (water years 1940-85), 170 ft<sup>3</sup>/s (123,200 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,900 ft<sup>3</sup>/s July 17, 1973 (gage height, 43.59 ft); minimum daily, 3.3 ft<sup>3</sup>/s Apr. 18, Nov. 1, 1956, and Jan. 24, 1957.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 55 ft sometime prior to construction of Medina Dam in 1913, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,080 ft<sup>3</sup>/s Oct. 11 at 1100 hours (gage height, 18.87 ft); minimum daily, 63 ft<sup>3</sup>/s Aug. 28, 29, 31, and Sept. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	66	91	88	95	82	109	141	147	118	97	86	65
2	65	86	88	92	83	102	136	135	110	97	85	64
3	65	91	82	97	83	102	134	127	109	104	84	64
4	64	102	82	93	84	95	132	122	109	351	82	64
5	64	102	84	90	84	90	132	118	108	237	80	64
6	67	98	85	87	83	87	126	115	188	143	80	74
7	78	100	82	86	82	87	124	115	1660	123	80	66
8	96	98	82	71	81	88	131	116	497	114	80	64
9	79	98	83	71	80	88	136	114	243	109	80	64
10	100	95	87	81	79	87	166	116	176	104	80	63
11	1660	93	88	81	78	92	205	114	145	101	80	92
12	1060	93	86	86	79	95	164	106	129	99	80	80
13	233	93	88	94	78	92	147	108	123	98	80	91
14	419	93	94	122	77	382	161	110	115	94	80	113
15	224	96	100	181	77	776	142	110	112	94	80	74
16	158	100	105	168	76	254	135	108	109	94	77	70
17	130	98	108	175	76	172	132	172	107	91	75	67
18	121	102	108	135	76	146	129	303	105	92	74	69
19	152	100	100	114	76	136	127	203	136	91	73	72
20	171	96	94	101	75	145	127	160	132	90	75	67
21	134	96	91	96	79	143	124	143	134	89	75	66
22	124	95	90	94	85	140	125	133	533	90	68	65
23	113	93	87	89	112	141	124	126	400	90	67	65
24	110	91	87	88	400	143	120	125	178	91	68	65
25	111	110	87	87	173	150	118	150	140	92	67	64
26	213	123	85	84	119	147	202	146	125	91	106	64
27	306	110	87	88	102	148	177	128	116	87	64	64
28	204	100	88	86	97	145	147	121	110	87	63	65
29	124	94	86	81	---	148	142	121	103	87	63	93
30	94	90	87	83	---	150	142	119	99	87	64	141
31	88	---	103	81	---	144	---	119	---	85	63	---
TOTAL	6693	2927	2792	3077	2756	4824	4248	4150	6469	3399	2359	2199
MEAN	216	97.6	90.1	99.3	98.4	156	142	134	216	110	76.1	73.3
MAX	1660	123	108	181	400	776	205	303	1660	351	106	141
MIN	64	86	82	71	75	87	118	106	99	85	63	63
AC-FT	13280	5810	5540	6100	5470	9570	8430	8230	12830	6740	4680	4360
CAL YR 1984	TOTAL	33305	MEAN	91.0	MAX	1660	MIN	43	AC-FT	66060		
WTR YR 1985	TOTAL	45893	MEAN	126	MAX	1660	MIN	63	AC-FT	91030		

## GUADALUPE RIVER BASIN

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1970 to current year. Pesticide analyses: October 1970 to September 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L CaCO3)
OCT 09...	1133	112	742	7.8	24.5	70	--	3.3	40	38	--	--
JAN 18...	1430	130	815	8.8	9.7	40	36	10.2	91	7.4	290	79
MAR 11...	1440	95	1000	8.3	23.5	10	14	4.5	54	--	370	110
APR 22...	1600	125	882	8.4	25.5	8	22	4.0	50	7.7	320	68
MAY 14...	1400	111	941	7.7	25.0	13	16	3.1	39	6.0	360	78
JUN 14...	1500	123	790	7.7	27.0	20	24	4.7	60	12	290	42
AUG 23...	1300	67	914	7.7	29.5	10	3.0	3.4	46	17	300	81
SEP 04...	1234	119	874	7.9	28.0	10	14	3.0	39	21	290	55

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CaCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 09...	--	--	--	--	--	--	--	--	--	--	--
JAN 18...	85	19	56	1	4.8	212	100	70	.30	12	470
MAR 11...	110	23	71	2	5.4	258	130	90	.40	13	600
APR 22...	94	20	62	2	5.0	250	100	74	<.10	15	520
MAY 14...	110	21	64	2	5.5	284	100	87	.40	14	570
JUN 14...	87	17	55	1	6.2	246	79	69	.40	16	480
AUG 23...	87	20	66	2	5.9	219	90	80	.50	14	490
SEP 04...	84	19	65	2	5.6	233	80	79	.50	15	490

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLATILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
OCT 09...	--	--	2.3	.770	3.1	2.70	1.3	4.0	2.90	5.7	--
JAN 18...	65	11	3.0	.110	3.1	.260	.84	1.1	.900	5.4	--
MAR 11...	21	2	1.6	.790	2.4	3.90	4.9	8.8	1.70	5.7	--
APR 22...	44	16	1.7	1.40	3.1	3.20	.90	4.1	1.50	5.0	--
MAY 14...	25	9	1.8	1.10	2.9	3.70	1.8	5.5	2.60	4.2	--
JUN 14...	46	4	1.7	.940	2.6	2.40	1.5	3.9	.640	6.0	--
AUG 23...	9	5	1.7	1.80	3.5	3.90	.90	4.8	1.30	--	5.5
SEP 04...	13	6	2.0	1.50	3.5	3.90	1.8	5.7	1.30	6.6	--



GUADALUPE RIVER BASIN

311

08181500 MEDINA RIVER AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
JAN 18...	1430	1	56	2	<10	3	<3
MAY 14...	1400	<1	61	<1	<10	5	16
AUG 23...	1300	1	65	<1	<10	3	<3

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
JAN 18...	<1	<1	<.1	<1	<1	16
MAY 14...	<1	22	<.1	1	<1	25
AUG 23...	<1	17	.2	<1	<1	27

## GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX

LOCATION.--Lat 29°13'19", long 98°21'20", Bexar County, Hydrologic Unit 12100301, at downstream side of bridge on Farm Road 1604, 2.7 mi southwest of Elmendorf, 3.3 mi downstream from Braunig Plant Lake, and 203.0 mi upstream from mouth.

DRAINAGE AREA.--1,743 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1962 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 385 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 19, 1980, at site 2.5 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Jan. 26-28, June 11,12, and July 5-7. Records good. Flow slightly regulated by Medina Lake (station 08179500) and by Olmos flood-control reservoir (combined capacity, 269,500 acre-ft). Storage began in Medina Lake in 1913, and Olmos Dam was completed in 1926. Water is diverted above station from Medina River for irrigation in the vicinity of Devine and Lytle, with some water diverted for irrigation near San Antonio. During the current year, the city of San Antonio discharged 144,200 acre-ft of sewage effluent into the San Antonio River from the Rilling Road, Leon Creek, Salado Creek, and Mitchell Lake plants upstream from this station. The San Antonio City Public Service Board pumped 3,940 acre-ft into Braunig Lake, released 663 acre-ft from Braunig Lake, and pumped 16,140 acre-ft into Calaveras Lake, upstream from this station. For additional information relative to sewage effluent, see station 08181500. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08178700. Satellite telemeter located at station.

AVERAGE DISCHARGE.--23 years (water years 1963-85), 503 ft<sup>3</sup>/s (364,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,000 ft<sup>3</sup>/s Sept. 27, 1973 (gage height, 47.60 ft); minimum, 12 ft<sup>3</sup>/s Aug. 24-26, 1963. All stages at site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, 61 ft in 1946. Second highest stage was 53 ft in 1913, from information by local residents. All site and datum in use prior to Dec. 19, 1980.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 11	1800	*10,500	*38.98	No other peak greater than base discharge.			
Minimum daily discharge, 144 ft <sup>3</sup> /s Oct. 6.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	212	294	273	798	306	618	355	363	227	236	254	187
2	183	288	276	375	303	387	347	296	209	236	224	185
3	176	276	282	503	313	362	348	243	213	576	214	228
4	168	297	285	394	325	357	343	232	226	5000	206	201
5	148	303	334	345	332	333	342	231	226	2000	207	196
6	144	298	312	315	319	318	334	231	1300	1200	214	431
7	679	305	289	310	309	324	334	230	4140	700	211	340
8	816	296	276	292	302	333	402	239	1550	520	204	255
9	386	277	279	271	295	326	398	294	541	443	209	216
10	604	270	291	293	299	317	598	272	413	422	204	193
11	5350	266	289	287	298	330	835	229	350	403	204	884
12	4050	270	287	394	296	338	474	219	314	599	228	973
13	734	268	397	396	290	335	381	219	280	546	209	520
14	1260	275	415	655	298	2660	1100	246	250	384	218	869
15	853	278	678	982	314	2000	469	268	229	349	208	350
16	440	2210	1140	877	287	1060	375	230	218	301	207	316
17	360	545	541	700	281	571	355	1020	217	276	202	296
18	340	377	476	465	284	479	342	788	226	272	192	431
19	1830	344	362	366	288	442	337	497	553	266	198	634
20	761	299	325	314	284	509	329	338	361	270	207	327
21	486	288	314	296	294	458	328	274	293	266	204	280
22	492	279	301	284	383	394	330	262	1390	252	200	266
23	434	266	287	279	778	377	330	246	3120	256	201	278
24	462	270	287	276	1080	368	317	351	718	255	196	245
25	366	1280	285	275	546	371	312	838	548	254	648	214
26	993	478	274	273	393	369	980	361	396	251	254	208
27	1180	340	304	320	359	373	483	299	300	236	207	198
28	527	303	324	309	362	369	360	260	299	234	186	214
29	393	287	314	297	---	369	377	238	270	235	201	1240
30	322	291	374	311	---	363	508	234	243	243	243	1780
31	305	---	1830	310	---	354	---	230	---	267	198	---
TOTAL	25454	12118	12701	12562	10218	16564	13123	10278	19620	17748	6958	12955
MEAN	821	404	410	405	365	534	437	332	654	573	224	432
MAX	5350	2210	1830	982	1080	2660	1100	1020	4140	5000	648	1780
MIN	144	266	273	271	281	317	312	219	209	234	186	185
AC-FT	50490	24040	25190	24920	20270	32850	26030	20390	38920	35200	13800	25700
CAL YR 1984	TOTAL	113659	MEAN	311	MAX	5350	MIN	105	AC-FT	225400		
WTR YR 1985	TOTAL	170299	MEAN	467	MAX	5350	MIN	144	AC-FT	337800		

## GUADALUPE RIVER BASIN

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08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1966 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to September 1981.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1966 to current year.

pH: June 1984 to September 1984.

WATER TEMPERATURES: October 1966 to current year.

DISSOLVED OXYGEN: June 1984 to September 1984.

INSTRUMENTATION.--Beginning June 1984, a four-parameter water-quality monitor records temperature, DO, pH, and specific conductance.

REMARKS.--Interruptions in the record were due to malfunctions of the instruments. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,240 microsiemens Jan. 29, 1973, Aug. 8, 1975; minimum daily, 253 microsiemens Oct. 7, 1981.

pH: Maximum, 8.0 units Sept. 7, 27, 1985; minimum, 7.3 units Aug. 13-17, 1984.

WATER TEMPERATURES: Maximum daily, 32.0°C on several days during summer months; minimum daily, 5.5°C Jan. 10, 1973.

DISSOLVED OXYGEN: Maximum, 8.9 mg/L July 23, 1984; minimum, 0.0 mg/L Mar. 2, Apr. 14, 15, 1985.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 1,060 microsiemens Aug. 14, 23, Sept. 28; minimum, 340 microsiemens June 23.

WATER TEMPERATURES: Maximum, 32.0°C Aug. 18-22; minimum, 7.0°C Jan. 21, 27.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)
OCT 09...	1230	353	624	7.7	26.0	250	79	3.6	--	37	200
JAN 18...	1225	447	852	8.5	14.0	50	4.2	9.2	92	32	290
FEB 27...	1140	362	867	7.8	18.5	70	33	5.4	59	14	270
MAY 16...	1310	231	926	7.8	26.0	25	5.1	2.9	37	6.3	310
JUN 24...	1552	451	552	7.8	27.0	30	110	4.0	50	17	200
JUL 18...	1535	232	928	7.6	30.0	25	6.8	3.4	46	13	300
SEP 06...	1305	397	960	7.7	29.0	25	54	3.1	42	48	270

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)
OCT 09...	45	62	12	46	1	5.8	160	61	52	.30	12
JAN 18...	62	88	16	60	2	6.4	224	89	77	.40	14
FEB 27...	39	85	15	66	2	7.1	235	80	82	.40	15
MAY 16...	40	93	19	74	2	6.9	271	78	90	.50	16
JUN 24...	38	66	9.3	35	1	5.9	165	53	40	.30	14
JUL 18...	28	89	19	71	2	7.6	273	74	87	.60	16
SEP 06...	0	81	17	78	2	7.5	281	64	100	.50	15

## GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 09...	350	96	21	3.6	.550	4.1	.790	1.5	2.3	1.70	8.4
JAN 18...	490	102	34	1.5	.380	1.9	3.90	4.1	8.0	2.80	15
FEB 27...	490	33	10	2.2	1.00	3.2	4.40	1.6	6.0	2.00	9.5
MAY 16...	540	8	3	1.4	.840	2.2	6.60	1.0	7.6	2.50	7.0
JUN 24...	320	620	136	.93	.370	1.3	2.50	1.2	3.7	.930	14
JUL 18...	530	32	13	.91	.790	1.7	7.30	.10	7.4	<.010	8.8
SEP 06...	530	152	27	1.1	.900	2.0	9.00	.00	8.9	2.50	14

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
OCT 09...	1230	2	50	2	10	3	37
JAN 18...	1225	1	60	<1	<10	6	5
MAY 16...	1310	1	74	<1	<10	4	19
JUN 24...	1552	2	55	<1	<10	2	17

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 09...	10	6	<.1	<1	<1	91
JAN 18...	<1	<1	<.1	<1	<1	31
MAY 16...	1	32	<.1	<1	<1	30
JUN 24...	7	10	<.1	<1	<1	10

## GUADALUPE RIVER BASIN

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08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	25454	751	427	29300	64	4360	67	4610	270
NOV.	1984	12118	846	478	15600	77	2530	73	2390	280
DEC.	1984	12701	852	481	16500	79	2690	73	2520	280
JAN.	1985	12562	840	475	16100	78	2630	72	2450	280
FEB.	1985	10218	912	514	14200	88	2440	77	2120	290
MAR.	1985	16564	824	466	20800	75	3360	71	3190	280
APR.	1985	13123	816	462	16400	73	2580	71	2530	280
MAY	1985	10278	861	487	13500	80	2220	74	2050	280
JUNE	1985	19620	625	356	18900	50	2650	57	3030	230
JULY	1985	17748	644	367	17600	52	2490	59	2810	230
AUG.	1985	6958	981	551	10400	99	1860	81	1520	300
SEPT	1985	12955	806	457	16000	72	2510	71	2470	280
TOTAL		170299	**	**	205000	**	32300	**	31700	**
WTD.AVG.		467	788	446	**	70	**	69	**	270

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	840	799	821	869	826	734	925	919	922	---	---	723
2	851	829	841	873	848	740	935	922	926	---	---	851
3	887	829	868	889	872	877	932	892	912	---	---	801
4	906	866	894	926	894	908	900	885	891	---	---	820
5	914	886	903	934	915	923	937	904	920	886	789	832
6	909	893	904	917	898	906	922	879	892	---	---	873
7	910	756	850	916	905	911	922	897	910	---	---	925
8	786	744	763	928	884	910	945	904	915	---	---	982
9	810	629	760	923	913	918	---	---	925	---	---	975
10	799	526	640	944	917	934	---	---	929	---	---	986
11	790	624	691	943	920	934	---	---	936	---	---	941
12	667	616	638	928	899	916	952	919	939	960	896	940
13	754	670	713	913	897	901	956	872	927	891	800	821
14	770	758	764	927	917	923	864	809	835	797	670	739
15	769	755	762	958	931	939	922	644	825	---	---	574
16	805	770	784	961	653	767	815	602	683	---	---	596
17	818	805	812	---	---	849	---	---	700	674	625	641
18	820	810	816	---	---	899	---	---	767	852	695	819
19	827	790	807	---	---	916	---	---	834	---	---	994
20	822	802	808	---	---	924	---	---	904	---	---	1010
21	884	822	852	---	---	926	---	---	926	---	---	1010
22	886	841	859	---	---	935	---	---	955	---	---	1010
23	840	817	827	---	---	938	---	---	968	---	---	1020
24	836	816	828	---	---	941	---	---	980	---	---	1020
25	825	760	817	---	---	734	---	---	991	---	---	1010
26	844	756	829	---	---	740	---	---	993	---	---	1020
27	823	804	808	822	660	746	---	---	978	---	---	1000
28	811	803	807	898	823	853	---	---	971	927	866	873
29	817	807	812	925	893	903	---	---	975	---	---	925
30	822	814	818	933	899	915	---	---	956	---	---	990
31	826	818	823	---	---	---	---	---	694	---	---	1010
MONTH	914	526	804	961	653	879	956	602	899	960	625	895



08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	1020	899	632	727	915	885	896	---	---	791
2	---	---	1020	898	728	814	905	888	895	---	---	840
3	---	---	1030	957	899	929	921	899	913	---	---	869
4	---	---	1020	904	875	887	918	905	910	---	---	893
5	---	916	996	953	873	901	910	891	899	---	---	914
6	---	---	1000	979	950	961	916	885	895	---	---	938
7	---	---	1010	963	933	946	918	889	904	---	---	960
8	---	---	1010	---	---	960	887	810	858	---	---	984
9	---	---	1020	---	---	965	803	785	792	---	---	969
10	---	---	1010	---	---	974	934	702	886	---	---	963
11	---	---	1020	---	---	967	730	678	714	---	---	980
12	---	---	1010	---	---	979	831	701	784	---	---	991
13	---	---	1020	---	---	998	869	820	848	---	---	994
14	---	---	1020	---	---	593	870	552	670	---	---	1000
15	---	---	1030	---	---	638	737	583	667	---	---	1010
16	---	---	1030	---	---	767	853	743	805	---	---	1000
17	---	---	1030	---	---	850	889	856	873	---	---	736
18	---	---	978	---	---	873	886	873	879	---	---	705
19	968	933	945	---	---	891	897	880	888	---	---	814
20	---	---	984	---	---	882	889	864	878	---	---	870
21	---	---	919	---	---	909	883	869	876	---	---	898
22	---	---	845	---	---	940	874	854	864	---	---	940
23	---	---	747	---	---	959	---	---	875	---	---	964
24	781	646	706	---	---	970	---	---	881	---	---	940
25	751	564	656	---	---	992	---	---	900	880	620	702
26	803	735	763	---	---	1000	---	---	719	820	630	722
27	912	807	868	---	---	965	---	---	798	850	810	827
28	918	873	891	---	---	976	---	---	824	900	860	873
29	---	---	---	968	---	965	---	---	810	970	880	922
30	---	---	---	940	909	923	---	---	776	1000	960	976
31	---	---	---	934	913	920	---	---	---	980	970	975
MONTH	968	564	950	979	632	904	934	552	839	1000	620	902

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	980	970	974	900	870	880	1000	970	991	990	970	981
2	1000	960	984	890	880	887	1010	980	1000	1000	970	992
3	950	930	940	900	570	821	1010	980	1000	980	940	959
4	970	930	951	540	390	445	1020	980	1010	960	890	929
5	990	960	972	500	380	434	1000	970	983	1000	950	987
6	990	410	776	630	510	575	980	960	970	1010	810	959
7	440	360	413	680	620	661	---	---	984	850	820	838
8	520	420	469	700	680	688	---	---	996	990	850	900
9	700	540	640	720	700	707	---	---	1000	950	920	933
10	790	690	748	720	710	712	---	---	1020	---	---	950
11	850	780	810	720	710	713	---	---	1010	---	---	780
12	930	860	887	720	600	689	---	---	1000	---	---	721
13	930	860	900	650	600	619	990	970	979	---	---	817
14	930	890	915	700	650	671	1060	1000	1040	---	---	709
15	960	910	927	700	680	692	1030	990	1010	---	---	794
16	970	920	936	---	---	711	1030	1000	1010	---	---	849
17	950	920	930	---	---	784	1040	1010	1030	---	---	899
18	930	910	916	---	---	856	1050	1010	1030	---	---	818
19	950	700	818	---	---	922	1020	980	1000	---	---	686
20	830	740	786	---	---	947	1000	970	988	---	---	791
21	870	760	832	---	---	800	1040	1010	1030	---	---	825
22	880	480	714	970	730	850	1040	1020	1030	---	---	844
23	460	340	396	970	940	954	1060	1020	1040	---	---	869
24	650	400	537	990	970	983	1040	1010	1030	---	---	886
25	710	620	666	1010	980	990	1010	810	886	920	880	894
26	830	710	778	1010	980	999	840	820	831	930	900	920
27	870	820	847	1000	980	989	930	840	885	---	---	948
28	890	850	868	1010	970	989	1000	950	978	---	---	1060
29	890	850	864	980	940	962	1000	940	980	---	---	836
30	910	880	897	990	950	970	990	930	961	700	580	633
31	---	---	---	1010	980	991	980	950	968	---	---	---
MONTH	1000	340	803	1010	380	803	1060	810	989	1010	580	867

## GUADALUPE RIVER BASIN

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08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	23.5	22.0	22.5	26.0	25.5	25.5	18.5	17.0	18.0	20.5	17.5	19.0
2	24.0	23.0	23.5	25.5	23.0	24.0	20.0	18.5	19.5	17.5	13.5	15.5
3	24.5	23.5	24.0	23.0	22.0	22.5	20.0	18.0	18.5	14.0	11.5	13.0
4	25.0	24.0	24.5	23.5	22.0	22.5	18.0	16.5	17.0	15.0	13.0	14.0
5	26.5	24.5	25.5	23.0	22.0	22.0	17.0	16.0	16.5	15.5	14.5	15.0
6	27.5	26.0	26.5	21.5	20.5	21.0	16.5	15.0	15.5	16.0	15.0	15.5
7	27.0	24.0	26.5	22.5	21.0	21.5	16.0	15.0	15.5	16.0	15.0	15.5
8	25.0	24.0	24.5	24.0	22.5	23.0	16.5	15.5	16.0	16.5	15.5	16.0
9	25.5	25.0	25.0	24.5	23.5	24.0	18.5	17.0	17.5	18.5	16.5	17.5
10	25.5	21.5	23.5	24.5	22.5	23.5	19.5	18.5	19.0	18.0	16.5	17.0
11	25.5	21.0	23.0	22.5	20.5	21.0	20.5	19.5	20.0	17.0	15.0	16.0
12	23.5	22.0	22.5	20.5	19.5	20.0	21.0	20.0	20.5	15.0	10.0	13.0
13	24.5	23.5	24.0	21.5	20.0	21.0	22.0	20.5	21.0	11.0	10.0	10.5
14	24.5	23.5	24.0	22.5	21.5	22.0	21.5	20.5	21.0	12.0	10.0	10.5
15	25.0	23.0	24.0	23.5	22.5	23.0	22.5	21.0	21.5	10.0	9.0	9.5
16	26.0	24.5	25.5	23.5	19.5	21.0	21.5	18.0	19.5	12.5	10.0	11.5
17	26.0	24.5	25.0	21.0	20.0	20.0	19.5	18.5	19.0	12.5	12.0	12.0
18	26.0	24.5	25.5	22.0	21.0	21.5	21.0	19.5	20.5	14.0	10.5	13.0
19	26.0	22.0	24.0	21.5	19.5	20.0	22.0	21.0	21.5	15.5	13.5	14.5
20	25.0	23.0	24.0	19.5	18.0	18.5	22.5	22.0	22.5	15.5	13.0	14.0
21	25.0	24.0	24.5	18.0	17.5	17.5	22.5	22.0	22.5	13.0	7.0	12.0
22	24.0	21.0	22.0	18.0	17.0	17.5	22.0	21.0	21.5	13.5	12.5	13.0
23	21.0	20.5	20.5	17.0	16.5	17.0	20.5	20.0	20.5	14.0	13.0	13.5
24	21.0	20.0	20.0	18.0	17.0	17.5	21.5	20.5	21.0	16.0	12.5	14.5
25	21.5	20.0	20.5	19.0	17.0	17.5	21.5	18.5	20.0	---	---	---
26	23.0	21.0	21.5	19.0	17.0	18.0	18.5	17.5	17.5	17.0	12.0	16.0
27	22.5	22.5	22.5	19.0	18.0	18.5	20.0	18.0	19.0	18.5	7.0	17.0
28	24.0	22.5	23.5	18.0	16.5	17.0	21.5	20.0	21.0	17.0	16.0	16.5
29	25.0	23.5	24.5	18.0	16.5	17.5	22.5	21.5	22.0	16.5	16.0	16.5
30	25.5	24.5	25.0	18.5	17.5	18.0	23.0	22.0	22.5	18.5	16.5	17.5
31	26.0	25.0	25.5	---	---	---	23.0	20.5	21.5	18.0	14.0	16.5
MONTH	27.5	20.0	24.0	26.0	16.5	20.5	23.0	15.0	19.5	20.5	7.0	14.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	14.0	11.5	12.5	19.5	17.0	18.5	22.5	20.5	21.5	27.5	25.0	26.0
2	12.0	11.0	11.5	20.5	19.0	20.0	23.0	20.5	21.5	27.0	25.5	26.0
3	12.0	11.5	11.5	22.0	20.5	21.0	23.0	20.5	22.0	26.5	24.5	25.5
4	12.5	11.0	11.5	22.0	20.5	21.5	23.5	21.5	22.5	26.5	24.0	25.0
5	13.5	12.5	13.0	20.5	19.0	19.5	24.0	22.5	23.0	26.5	24.0	25.5
6	14.0	13.5	13.5	19.0	19.0	19.0	24.0	21.5	23.0	26.5	24.0	25.5
7	14.5	13.5	14.0	21.0	19.0	20.0	23.5	22.5	23.0	27.0	24.5	26.0
8	15.5	14.0	14.5	22.0	20.5	21.5	22.5	20.0	21.0	26.5	25.5	26.0
9	17.5	15.5	16.0	23.0	21.5	22.5	19.5	19.0	19.0	---	---	---
10	19.0	17.5	18.0	23.5	22.0	22.5	21.0	19.0	20.5	---	---	---
11	18.5	16.5	17.0	24.5	22.5	23.5	21.0	19.0	20.0	---	---	---
12	16.5	14.5	15.5	24.0	23.5	23.5	22.5	20.5	21.5	---	---	---
13	17.5	15.0	16.5	24.0	23.0	23.5	23.0	22.0	22.5	---	---	---
14	18.0	16.5	17.5	23.5	17.0	19.0	23.5	21.0	21.5	---	---	---
15	17.5	16.5	17.0	17.0	16.0	16.5	24.0	21.0	22.5	---	---	---
16	17.5	16.0	17.0	17.0	16.5	16.5	25.0	23.0	24.0	---	---	---
17	18.5	17.0	18.0	18.0	16.5	17.0	26.0	24.0	25.0	---	---	---
18	19.0	18.0	18.5	18.5	17.5	18.0	26.0	24.5	25.0	---	---	---
19	19.5	19.0	19.5	19.0	18.0	18.5	25.0	24.0	24.5	---	---	---
20	20.0	19.5	19.5	21.5	19.0	20.0	25.5	23.5	24.5	---	---	---
21	20.5	19.5	20.0	20.5	19.5	20.0	25.0	24.5	24.5	---	---	---
22	21.0	20.5	20.5	21.0	19.5	20.5	26.0	24.0	25.0	---	---	---
23	21.0	19.5	20.5	22.0	20.0	21.0	27.0	25.5	26.0	---	---	---
24	20.0	18.0	19.0	22.5	20.5	21.5	26.0	24.5	25.5	28.0	27.0	27.5
25	19.0	17.5	18.5	23.5	21.5	22.5	25.5	23.5	24.5	27.0	23.0	24.0
26	19.5	18.5	19.0	23.0	22.5	22.5	25.0	22.5	23.5	27.5	23.5	25.5
27	19.5	18.5	19.0	23.5	22.0	23.0	25.0	23.5	24.0	27.0	26.0	26.5
28	19.0	18.0	18.5	24.5	23.0	24.0	26.0	24.5	25.0	27.5	26.0	27.0
29	---	---	---	24.5	24.0	24.0	25.5	25.0	25.5	29.5	26.5	28.0
30	---	---	---	24.5	23.0	23.5	25.5	24.5	25.0	29.5	27.5	28.5
31	---	---	---	23.0	21.5	22.5	---	---	---	30.0	27.5	29.0
MONTH	21.0	11.0	16.5	24.5	16.0	21.0	27.0	19.0	23.0	30.0	23.0	26.5

## GUADALUPE RIVER BASIN

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

## TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	30.5	28.0	29.0	29.0	26.5	27.5	31.5	29.0	30.5	31.0	28.5	30.0
2	30.5	28.0	29.0	28.0	27.0	27.5	31.5	29.0	30.5	31.0	28.5	30.0
3	30.0	27.5	29.0	28.5	25.0	27.5	31.0	29.0	30.5	31.0	28.5	30.0
4	29.5	28.0	29.0	24.5	23.0	23.5	31.0	29.0	30.0	30.5	28.5	30.0
5	29.0	28.0	28.0	26.0	24.0	25.0	31.5	29.0	30.5	30.5	29.0	29.5
6	28.0	24.0	27.0	28.0	26.0	27.0	31.0	29.0	30.0	30.0	28.5	29.0
7	25.5	24.5	25.0	28.5	27.5	28.0	---	---	---	30.0	28.0	29.0
8	27.5	25.5	26.5	28.5	27.5	28.0	---	---	---	30.5	28.5	29.5
9	29.0	27.5	28.0	29.5	28.0	28.5	---	---	---	30.5	28.5	29.5
10	29.5	28.0	28.5	30.0	28.5	29.0	---	---	---	30.0	28.5	29.5
11	30.0	28.0	29.0	30.0	28.5	29.5	---	---	---	29.5	25.5	28.0
12	29.0	27.5	28.5	29.5	27.5	28.5	---	---	---	27.0	26.5	27.0
13	27.5	26.0	26.5	29.5	27.5	28.5	31.0	30.5	30.5	28.5	27.0	27.5
14	28.5	25.5	27.0	30.0	28.5	29.0	31.0	29.0	30.0	28.0	26.5	27.5
15	29.5	27.0	28.5	30.0	28.5	29.0	31.5	29.0	30.0	27.5	27.0	27.5
16	30.0	27.5	29.0	30.5	28.5	29.5	31.5	29.0	30.5	28.5	26.5	27.5
17	30.5	28.0	29.5	30.5	28.5	29.5	31.5	29.0	30.5	28.0	27.0	27.5
18	30.0	28.0	29.0	31.0	28.5	30.0	32.0	29.0	30.5	29.0	27.0	28.0
19	28.0	26.5	27.0	30.0	29.0	30.0	32.0	29.0	30.5	28.5	27.0	28.0
20	27.0	26.0	26.5	30.0	28.5	29.5	32.0	29.0	30.5	29.0	27.5	28.0
21	27.5	26.0	27.0	30.5	28.5	29.5	32.0	29.0	30.5	28.5	27.5	28.0
22	27.5	26.0	27.0	31.0	29.0	30.0	32.0	29.5	30.5	29.0	27.0	28.0
23	27.0	25.5	26.0	31.0	29.0	30.0	31.5	29.0	30.5	29.5	27.5	28.5
24	28.0	26.5	27.5	30.5	29.0	30.0	31.5	29.0	30.5	28.5	26.5	27.5
25	28.5	27.5	28.0	31.0	29.0	30.0	31.0	28.5	29.5	29.0	27.0	28.0
26	29.0	27.5	28.5	31.5	29.0	30.0	30.5	28.5	29.5	28.5	26.5	27.0
27	29.0	28.0	28.5	31.5	29.0	30.5	31.0	29.0	30.0	26.5	24.5	25.5
28	28.0	27.5	27.5	31.5	29.0	30.5	30.5	28.5	29.5	26.0	25.0	26.0
29	28.0	26.0	27.0	31.5	29.0	30.0	29.0	28.0	28.5	27.0	23.0	25.0
30	28.5	26.0	27.5	31.0	29.0	30.0	30.0	28.0	29.0	24.0	21.5	22.0
31	---	---	---	31.0	29.0	30.0	31.0	28.5	30.0	---	---	---
MONTH	30.5	24.0	28.0	31.5	23.0	29.0	32.0	28.0	30.0	31.0	21.5	28.0

## OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	5.4	4.8	5.0	---	---	---	---	---	---
2	---	---	---	5.5	4.9	5.2	---	---	---	---	---	---
3	---	---	---	5.7	5.4	5.6	---	---	---	---	---	---
4	---	---	---	5.7	5.3	5.6	6.1	6.0	6.0	6.1	6.0	6.0
5	---	---	---	---	---	---	6.1	5.2	5.6	---	---	---
6	---	---	---	---	---	---	5.7	4.6	5.4	---	---	---
7	---	---	---	---	---	---	5.8	5.1	5.5	---	---	---
8	---	---	---	5.5	5.1	5.3	5.7	5.3	5.5	---	---	---
9	---	---	---	5.4	5.1	5.3	5.4	4.0	4.9	---	---	---
10	---	---	---	6.0	5.3	5.6	5.5	4.6	5.1	---	---	---
11	---	---	---	7.3	5.9	6.6	5.4	4.9	5.2	---	---	---
12	---	---	---	---	---	---	7.2	5.2	6.0	---	---	---
13	---	---	---	---	---	---	7.5	6.8	7.2	---	---	---
14	---	---	---	---	---	---	7.7	6.1	7.0	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	8.0	7.0	7.4	---	---	---
18	---	---	---	---	---	---	7.1	5.4	6.2	---	---	---
19	---	---	---	---	---	---	6.4	5.1	5.8	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	6.7	5.1	5.9	---	---	---
22	---	---	---	---	---	---	6.5	5.0	5.6	---	---	---
23	7.0	5.8	6.5	---	---	---	6.9	5.3	6.3	---	---	---
24	7.2	6.0	6.6	---	---	---	6.7	5.4	6.1	---	---	---
25	6.7	2.8	5.4	---	---	---	5.9	5.0	5.5	---	---	---
26	---	---	---	---	---	---	5.7	4.8	5.4	---	---	---
27	---	---	---	---	---	---	5.7	4.9	5.3	---	---	---
28	---	---	---	---	---	---	5.6	5.1	5.3	---	---	---
29	---	---	---	---	---	---	5.0	4.8	5.0	---	---	---
30	---	---	---	---	---	---	4.9	4.1	4.7	---	---	---
31	---	---	---	---	---	---	4.9	4.2	4.5	---	---	---
MONTH	7.2	2.8	6.2	7.3	4.8	5.5	8.0	4.0	5.7	---	---	---

## GUADALUPE RIVER BASIN

319

08181800 SAN ANTONIO RIVER NEAR ELMENDORF, TX--Continued

OXYGEN, DISSOLVED (DO), MG/L, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	6.1	5.1	5.8	6.4	4.7	5.6	3.4	2.6	3.1	---	---	---
2	6.5	6.1	6.3	5.4	4.0	4.0	3.7	3.2	3.5	---	---	---
3	6.2	5.7	6.0	4.5	2.1	4.2	3.7	3.2	3.5	---	---	---
4	6.4	5.7	6.1	4.5	4.1	4.4	3.5	3.2	3.4	---	---	---
5	5.8	5.1	5.5	4.8	4.4	4.6	3.9	3.3	3.6	---	---	---
6	5.6	4.3	5.0	4.5	4.0	4.4	4.0	3.4	3.7	---	---	---
7	5.3	4.7	5.0	4.4	2.9	4.0	3.7	3.4	3.6	---	---	---
8	5.2	4.6	5.0	3.1	1.7	2.6	5.2	3.7	4.2	---	---	---
9	4.8	4.2	4.5	2.5	1.6	2.1	5.5	5.3	5.4	---	---	---
10	4.1	2.4	3.3	2.2	1.0	1.9	5.4	3.2	4.4	---	---	---
11	4.3	3.5	3.9	---	---	---	5.4	4.4	4.9	---	---	---
12	4.5	4.3	4.4	---	---	---	4.4	3.7	4.1	---	---	---
13	5.0	4.4	4.8	---	---	---	3.8	3.5	3.7	---	---	---
14	4.6	3.9	4.4	---	---	---	3.9	.0	2.5	---	---	---
15	4.7	3.9	4.3	---	---	---	5.1	.0	3.4	---	---	---
16	4.8	4.3	4.5	---	---	---	5.1	4.4	4.8	---	---	---
17	4.3	3.8	4.0	---	---	---	4.6	4.1	4.4	---	---	---
18	4.0	3.6	3.8	---	---	---	4.3	3.9	4.1	---	---	---
19	3.8	3.4	3.7	---	---	---	4.0	3.6	3.8	---	---	---
20	3.6	3.2	3.4	---	---	---	3.9	3.4	3.7	---	---	---
21	3.4	3.0	3.2	---	---	---	3.5	2.9	3.2	---	---	---
22	3.1	2.0	2.7	5.8	5.2	5.6	3.4	3.0	3.3	---	---	---
23	---	---	---	5.3	4.7	5.1	3.0	2.3	2.7	---	---	---
24	5.9	1.7	3.7	4.9	4.3	4.7	2.8	2.2	2.5	---	---	---
25	6.0	5.7	5.8	4.5	3.8	4.2	3.0	2.4	2.6	---	---	---
26	6.0	5.4	5.7	3.9	3.6	3.8	3.4	1.0	2.5	---	---	---
27	5.4	5.2	5.3	3.6	2.1	3.0	3.5	1.1	2.3	---	---	---
28	5.5	5.2	5.4	2.0	1.3	1.7	2.6	1.7	2.0	---	---	---
29	---	---	---	1.4	.8	1.0	2.0	.8	1.7	---	---	---
30	---	---	---	1.8	.9	1.4	2.2	.7	1.5	---	2.5	2.7
31	---	---	---	2.6	1.5	2.3	---	---	---	2.7	2.0	2.3
MONTH	6.5	1.7	4.7	6.4	.0	3.5	5.5	.0	3.4	2.7	2.0	2.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	2.8	2.1	2.3	3.8	3.7	3.7	---	---	---	3.7	2.6	3.1
2	2.9	1.8	2.2	3.7	3.5	3.6	---	---	---	4.0	2.9	3.3
3	3.3	1.7	2.4	4.6	2.9	3.7	---	---	---	3.7	2.9	3.3
4	---	---	---	---	---	---	---	---	---	3.6	2.8	3.2
5	---	---	---	8.7	5.6	6.7	---	---	---	3.6	2.9	3.1
6	---	---	---	5.7	5.0	5.4	---	---	---	3.1	1.5	2.7
7	---	---	---	5.7	5.1	5.3	---	---	---	3.7	3.0	3.2
8	---	---	---	5.2	4.7	5.1	---	---	---	2.8	2.5	2.6
9	---	---	---	4.9	4.1	4.5	---	---	---	3.4	2.8	3.1
10	---	---	---	4.2	3.7	4.0	---	---	---	3.6	3.3	3.4
11	---	---	---	4.2	3.7	3.8	---	---	---	3.4	.1	2.7
12	---	---	---	4.2	3.2	3.7	---	---	---	4.5	3.5	4.2
13	---	---	---	4.2	3.2	3.6	4.1	2.3	3.1	4.7	2.6	4.3
14	---	---	---	3.4	3.1	3.3	3.6	1.7	2.3	4.5	3.8	4.1
15	3.7	3.4	3.5	3.6	3.2	3.4	3.7	1.9	2.5	4.7	4.3	4.5
16	3.5	3.3	3.3	3.6	3.1	3.4	3.5	1.6	2.3	4.7	4.4	4.6
17	3.5	3.2	3.3	3.2	3.0	3.2	3.0	1.4	2.0	4.6	4.3	4.5
18	3.3	2.8	3.0	3.4	3.0	3.2	2.9	1.3	1.9	4.3	2.8	3.6
19	3.2	1.9	2.5	3.3	3.0	3.1	3.0	1.3	2.0	4.0	3.2	3.8
20	3.1	2.8	2.9	---	---	---	3.2	1.6	2.2	3.7	3.0	3.3
21	2.9	2.2	2.5	---	---	---	2.9	1.3	2.0	3.6	3.0	3.3
22	5.3	.9	3.1	---	---	---	2.6	1.4	1.9	3.9	3.6	3.8
23	6.2	5.3	5.9	---	---	---	2.5	1.5	1.9	4.1	3.8	3.9
24	5.6	4.9	5.3	---	---	---	3.0	1.9	2.3	4.3	3.8	4.1
25	5.4	4.7	5.0	---	---	---	2.8	.9	1.8	4.1	2.4	3.0
26	5.0	4.5	4.8	3.5	2.3	2.8	3.5	2.8	3.4	4.2	3.5	3.8
27	4.6	4.1	4.4	3.4	2.1	2.6	3.5	3.4	3.4	4.4	3.8	4.1
28	4.4	4.0	4.2	3.2	1.8	2.4	3.3	2.9	3.1	4.1	3.7	3.9
29	4.1	3.7	4.0	3.2	1.7	2.4	3.3	2.4	2.9	5.5	1.8	3.9
30	4.0	3.7	3.8	2.8	1.7	2.1	3.5	.5	2.1	6.6	5.5	6.2
31	---	---	---	---	---	---	2.7	.7	1.8	---	---	---
MONTH	6.2	.9	3.6	8.7	1.7	3.7	4.1	.5	2.4	6.6	.1	3.7

## GUADALUPE RIVER BASIN

## 08183500 SAN ANTONIO RIVER NEAR FALLS CITY, TX

LOCATION.--Lat 28°57'05", long 98°03'50". Karnes County, Hydrologic Unit 12100303, on left bank 23 ft downstream from bridge on Farm Road 791, 0.9 mi upstream from Scared Dog Creek, 3.6 mi southwest of Fall City, and 150.5 mi upstream from mouth.

DRAINAGE AREA.--2,113 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1925 to current year.

Water-quality records: Chemical and biochemical analyses: January 1968 to September 1981. Sediment analyses: January 1966 to September 1975.

REVISED RECORDS.--WSP 1732: 1947(M). WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 285.49 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Jan. 3-6. Records fair. For diversions and regulation above station, see REMARKS for Salado Creek (upper station) at San Antonio (station 08178700), Medina River at San Antonio (station 08181500), and San Antonio River near Elmendorf (station 08181800). Flow is slightly regulated by Calaveras Lake on Calaveras Creek, which enters the San Antonio River downstream from the station near Elmendorf. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 26,130 acre-ft. These structures control runoff from 73.8 mi<sup>2</sup>. Records provided by San Antonio City Public Service Board show that during the current year no water was released into Calaveras Creek from Calaveras Lake. Satellite telemeter located at station.

AVERAGE DISCHARGE.--60 years (water years 1926-85), 403 ft<sup>3</sup>/s (292,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,400 ft<sup>3</sup>/s Sept. 29, 1946 (gage height, 33.80 ft), from floodmark; minimum daily, 19 ft<sup>3</sup>/s June 27, 1956.

Maximum stage since at least 1875, that of Sept. 29, 1946.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1913 reached a stage of 28.4 ft, from floodmark, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 13	1700	4,250	7.23	July 6	1400	*4,380	*7.44

Minimum daily discharge, 161 ft<sup>3</sup>/s Oct. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	185	330	328	1700	327	396	370	490	252	315	270	200
2	220	311	305	1250	319	620	368	370	240	292	268	205
3	200	309	310	630	335	494	366	315	236	347	250	231
4	191	323	335	500	349	406	364	278	232	897	242	222
5	173	329	380	555	350	393	363	265	228	5000	235	239
6	161	325	426	435	348	377	362	271	222	3190	230	209
7	635	331	345	381	341	361	360	283	1250	1400	225	267
8	656	335	322	336	329	357	355	307	3110	800	220	510
9	812	348	316	320	326	362	370	328	2250	530	220	319
10	705	308	320	342	330	368	506	292	750	600	220	276
11	903	300	322	353	321	356	587	273	440	580	221	228
12	2070	299	320	370	315	345	1040	252	350	675	222	465
13	3990	309	321	400	317	364	652	260	315	590	220	1170
14	2750	321	360	500	323	372	515	273	297	535	219	700
15	1200	330	450	776	320	2800	1170	289	272	480	218	961
16	984	349	580	1340	356	2480	714	267	252	450	217	504
17	518	1900	1130	999	315	1350	495	486	247	420	216	366
18	390	980	705	977	312	707	448	940	250	380	214	351
19	339	440	540	604	320	548	420	670	352	350	212	371
20	1850	360	460	450	325	502	400	475	624	330	210	764
21	1040	338	400	395	330	509	388	390	549	310	209	450
22	590	321	357	357	328	533	375	319	428	300	208	322
23	540	316	329	353	397	449	368	308	1350	290	207	300
24	475	310	316	347	667	416	360	300	2850	284	209	309
25	480	309	308	341	1150	404	507	297	920	278	210	313
26	470	1090	312	340	714	408	1180	770	680	277	212	257
27	844	600	338	339	474	400	860	500	510	276	372	240
28	1190	450	335	357	407	398	605	355	415	274	318	275
29	600	348	371	423	---	390	530	303	365	272	264	650
30	432	320	430	366	---	382	475	284	335	271	235	1390
31	344	---	505	335	---	375	---	260	---	270	208	---
TOTAL	25937	13239	12576	17171	11045	18622	15873	11470	20571	21263	7201	13064
MEAN	837	441	406	554	394	601	529	370	686	686	232	435
MAX	3990	1900	1130	1700	1150	2800	1180	940	3110	5000	372	1390
MIN	161	299	305	320	312	345	355	252	222	270	207	200
AC-FT	51450	26260	24940	34060	21910	36940	31480	22750	40800	42180	14280	25910

CAL YR 1984	TOTAL	143828	MEAN	393	MAX	3990	MIN	161	AC-FT	285300
WTR YR 1985	TOTAL	188032	MEAN	515	MAX	5000	MIN	161	AC-FT	373000



## GUADALUPE RIVER BASIN

321

08183900 CIBOLO CREEK NEAR BOERNE, TX

LOCATION.--Lat 29°46'26", long 98°41'50", Kendall County, Hydrologic Unit 12100304, on left bank 0.6 mi upstream from Southern Pacific Lines bridge, 0.9 mi downstream from Menger Creek, and 2.5 mi southeast of Boerne.

DRAINAGE AREA.--68.4 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1962 to current year.

REVISED RECORDS.--WDR TX-73-1: 1964-65, 1966(P), 1968-72(P).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,339.61 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Dec. 31 to Jan. 22. Records are good except those for estimated daily discharges, which are poor. No known diversion above station. Flow is affected at times by discharge from the flood-detention pools of four floodwater-retarding structures with a combined detention capacity of 8,850 acre-ft. These structures control runoff from 34.0 mi<sup>2</sup>. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 27.2 ft<sup>3</sup>/s (5.40 in/yr), 19,710 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,400 ft<sup>3</sup>/s Sept. 27, 1964 (gage height, 19.15 ft, from floodmark), from rating curve extended above 2,500 ft<sup>3</sup>/s on basis of slope-area measurement at 12,000 ft<sup>3</sup>/s and contracted-opening measurement of 36,400 ft<sup>3</sup>/s; no flow at times in 1962-64, 1966-67, 1971, and 1984.  
Maximum stage since at least 1892, that of Sept. 27, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.-- Second highest flood in 1952 reached a stage of 16.3 ft (discharge, 25,600 ft<sup>3</sup>/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	Unknown	*3,000	*Unknown	June 22	1700	1,510	4.83
Feb. 23	0200	900	4.20	Sept. 29	1030	1,360	4.88

Minimum daily discharge, 0.03 ft<sup>3</sup>/s Oct. 1, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.03	6.9	3.3	250	13	39	39	26	12	33	28	3.1		
2	.04	3.4	3.7	80	13	32	37	23	11	30	22	2.4		
3	.05	3.2	3.6	50	13	31	36	20	10	36	19	2.3		
4	.04	3.1	3.7	38	14	31	36	19	10	48	19	2.0		
5	.05	3.1	4.3	30	14	29	36	18	22	36	18	2.2		
6	.03	3.0	3.2	25	14	28	35	17	174	31	15	4.7		
7	.14	2.8	3.2	21	13	34	34	17	32	28	13	2.7		
8	.15	3.0	3.5	18	12	33	33	18	23	25	13	2.3		
9	.06	3.1	4.1	16	12	33	33	23	19	24	11	2.0		
10	.08	3.1	4.2	14	12	33	37	21	16	22	11	1.9		
11	1.0	2.9	3.9	12	12	32	40	24	14	20	11	3.4		
12	.43	3.0	3.8	11	11	29	36	22	13	244	9.6	3.4		
13	.32	3.0	7.5	9.5	11	56	38	23	12	114	8.9	3.0		
14	5.9	3.0	4.5	8.2	12	150	42	26	11	65	8.6	2.7		
15	.80	3.2	5.5	9.2	11	73	37	20	11	45	7.7	2.1		
16	.42	3.3	4.2	10	11	66	35	18	10	36	7.2	1.7		
17	.33	3.4	6.5	12	11	57	34	80	9.5	30	7.3	1.5		
18	.31	5.8	5.5	13	11	53	32	51	22	26	7.0	2.4		
19	.28	3.4	4.7	15	11	51	31	36	54	24	5.4	2.0		
20	.24	2.9	4.4	14	11	57	32	27	30	22	5.1	1.4		
21	.32	3.0	4.4	13	13	51	30	23	24	18	4.8	1.0		
22	.57	3.1	4.3	12	13	50	31	20	225	18	5.2	1.1		
23	1.4	3.1	4.2	14	210	52	30	17	92	19	4.2	2.0		
24	1.6	6.7	4.2	14	45	52	28	37	57	18	3.9	2.1		
25	1.7	7.3	4.0	14	37	53	27	33	96	17	4.2	1.9		
26	25	3.5	4.4	14	31	51	28	25	104	15	6.5	1.6		
27	11	3.1	6.2	15	28	58	27	20	64	16	5.5	1.4		
28	5.4	2.9	5.4	14	41	59	27	17	50	18	5.1	5.1		
29	3.1	3.0	5.1	14	---	55	73	15	41	22	4.7	195		
30	2.4	3.2	4.8	13	---	51	32	14	37	27	3.9	20		
31	10	---	900	14	---	41	---	13	---	27	3.4	---		
TOTAL	73.19	107.5	1072.1	806.9	660	1520	1046	763	1305.5	1154	298.2	280.4		
MEAN	2.36	3.58	34.6	26.0	23.6	49.0	34.9	24.6	43.5	37.2	9.62	9.35		
MAX	25	7.3	900	250	210	150	73	80	225	244	28	195		
MIN	.03	2.8	3.2	8.2	11	28	27	13	9.5	15	3.4	1.0		
CFSM	.04	.05	.51	.38	.35	.72	.51	.36	.64	.54	.14	.14		
IN.	.04	.06	.58	.44	.36	.83	.57	.41	.71	.63	.16	.15		
AC-FT	145	213	2130	1600	1310	3010	2070	1510	2590	2290	591	556		
CAL YR 1984	TOTAL	2026.57	MEAN	5.54	MAX	900	MIN	.00	CFSM	.08	IN	1.10	AC-FT	4020
WTR YR 1985	TOTAL	9086.79	MEAN	24.9	MAX	900	MIN	.03	CFSM	.36	IN	4.94	AC-FT	18020

## GUADALUPE RIVER BASIN

08185000 CIBOLO CREEK AT SELMA, TX

LOCATION.--Lat 29°35'38", long 98°18'39", Bexar-Guadalupe County line, Hydrologic Unit 12100304, on right bank 0.6 mi downstream from Missouri-Kansas-Texas Railroad Co. bridge and 0.9 mi upstream from bridge on Interstate Highway 35 at Selma.

DRAINAGE AREA.--274 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1946 to current year. Figures for water year 1960 in WSP 1813 are in error and should be disregarded.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 728.34 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Small diversion above station. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08183900. Considerable flow of Cibolo Creek enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between this station and the station near Boerne (station 08183900).

AVERAGE DISCHARGE.--39 years, 14.9 ft<sup>3</sup>/s (10,800 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,000 ft<sup>3</sup>/s July 16, 1973 (gage height, 26.2 ft, from floodmark), from rating curve extended above 16,000 ft<sup>3</sup>/s on basis of field estimate of 54,000 ft<sup>3</sup>/s and contracted-opening measurement of 65,000 ft<sup>3</sup>/s; no flow most of time.  
Maximum stage since at least 1869, that of July 16, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 26 ft occurred in 1889, but stage for flood in 1913 is unknown, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 6	1900	*32,700	a*19.42	July 4	0200	1,900	6.82
June 22	2200	1,100	5.85				

a From floodmark.

Minimum daily discharge, no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	138	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	918	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	172	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	8490	85	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	1300	46	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	144	20	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	26	6.1	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.15	.19	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	1.1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.03	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	2.0	.00	.00	.00	.00	.00	.00	.00	107	.00	.00	.00
23	2.7	.00	.00	.00	.00	.00	.00	.00	503	.00	.00	.00
24	.28	.00	.00	.00	.00	.00	.00	.00	142	.00	.00	.00
25	.08	.00	.00	.00	.00	.00	.00	.00	57	.00	.00	.00
26	.27	.00	.00	.00	.00	.00	.00	.00	16	.00	.00	.00
27	.13	.00	.00	.00	.00	.00	.00	.00	.52	.00	.00	.00
28	.02	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	40.61	.00	.00	.00	.00	.00	.00	.00	10785.67	1385.29	.00	.00
MEAN	1.31	.000	.000	.000	.000	.000	.000	.000	360	44.7	.000	.000
MAX	34	.00	.00	.00	.00	.00	.00	.00	8490	918	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	81	.00	.00	.00	.00	.00	.00	.00	21390	2750	.00	.00
CAL YR 1984	TOTAL	40.61	MEAN	.11	MAX	34	MIN	.00	AC-FT	81		
WIR YR 1985	TOTAL	12211.57	MEAN	33.5	MAX	8490	MIN	.00	AC-FT	24220		

GUADALUPE RIVER BASIN

323

08186000 CIBOLO CREEK NEAR FALLS CITY, TX

LOCATION.--Lat 29°00'50", long 97°55'48", Karnes County, Hydrologic Unit 12100304, on right bank at downstream side of pier of bridge on State Highway 123, 5.7 mi northeast of Falls City, and 10.4 mi upstream from mouth.

DRAINAGE AREA.--827 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1930 to current year. Monthly discharge only for some periods, published in WSP 1312.

REVISED RECORDS.--WSP 733: 1931. WSP 1058: 1935. WSP 1562: 1931(M), 1933. WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 264.28 ft above National Geodetic Vertical Datum of 1929. Nov. 4, 1930, to Aug. 4, 1940, water-stage recorder at site 1,600 ft upstream at datum 0.56 ft higher. Aug. 5 to Sept. 13, 1940, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Dec. 27 to Jan. 8. Records good. There are several diversions for irrigation above station. Much of the base flow is effluent from the Carrizo Sands in the vicinity of Sutherland Springs. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 16,620 acre-ft. These structures control runoff from 62.9 mi<sup>2</sup>.

AVERAGE DISCHARGE.--55 years, 120 ft<sup>3</sup>/s (86,940 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,600 ft<sup>3</sup>/s July 6, 1942 (gage height, 34.45 ft); maximum gage height, 35.44 ft Sept. 28, 1973; no flow July 30, 31, Aug. 4-22, 1956, and Aug. 1, 1971. Maximum stage since at least 1890, that of Sept. 28, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--In October 1913, a stage of 35 ft occurred (discharge, about 35,000 ft<sup>3</sup>/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
June 8	1500	*5,670	*19.35	July 5	2400	3,960	16.68

Minimum daily discharge, 6.4 ft<sup>3</sup>/s Oct. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.0	51	28	21	25	38	22	30	13	46	18	14
2	8.3	383	23	40	24	38	21	27	12	40	18	20
3	7.9	59	21	92	22	46	20	23	11	59	17	15
4	6.4	34	21	74	22	38	20	22	11	809	16	12
5	8.6	28	21	60	22	33	18	22	13	2590	15	10
6	9.2	24	23	50	23	30	17	22	12	1610	15	10
7	66	22	21	40	24	28	17	21	241	373	15	10
8	32	20	19	34	23	27	17	20	4060	290	14	9.6
9	9.7	18	20	31	23	26	17	19	766	248	13	9.0
10	224	17	21	28	23	25	76	18	231	212	12	9.1
11	303	15	21	26	23	25	250	17	148	190	12	11
12	81	15	22	28	21	24	83	20	115	169	12	13
13	137	14	24	31	21	24	67	18	83	189	11	74
14	206	14	24	43	22	1270	606	19	67	147	11	31
15	196	14	33	130	22	1290	305	19	55	98	10	43
16	104	105	42	303	21	218	95	17	48	76	11	30
17	58	72	58	323	21	149	53	19	42	65	10	20
18	44	94	73	234	22	97	38	21	40	56	10	17
19	34	55	50	120	22	71	32	19	62	49	9.8	17
20	538	44	49	84	22	57	28	19	44	46	8.9	14
21	261	34	41	63	23	47	26	19	71	41	12	13
22	199	26	34	51	23	41	25	19	53	35	13	14
23	361	24	29	43	26	37	23	18	51	31	11	13
24	172	23	26	38	32	32	22	16	66	28	9.0	12
25	124	23	24	34	72	29	22	16	289	26	12	11
26	130	37	23	32	52	27	274	15	211	25	11	13
27	225	73	23	31	44	26	96	14	119	23	8.4	11
28	116	48	23	28	38	25	67	14	86	22	9.9	112
29	80	39	22	27	---	24	44	14	58	21	11	366
30	76	33	22	29	---	24	35	13	54	20	11	240
31	129	---	22	27	---	22	---	13	---	19	11	---
TOTAL	3954.1	1458	903	2195	758	3888	2436	583	7132	7653	378.0	1193.7
MEAN	128	48.6	29.1	70.8	27.1	125	81.2	18.8	238	247	12.2	39.8
MAX	538	383	73	323	72	1290	606	30	4060	2590	18	366
MIN	6.4	14	19	21	21	22	17	13	11	19	8.4	9.0
AC-FT	7840	2890	1790	4350	1500	7710	4830	1160	14150	15180	750	2370
CAL YR 1984	TOTAL	10240.6	MEAN 28.0	MAX 538	MIN 1.1	AC-FT 20310						
WTR YR 1985	TOTAL	32531.8	MEAN 89.1	MAX 4060	MIN 6.4	AC-FT 64530						

## GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1968 to current year. Chemical and biochemical analyses: October 1969 to current year. Sediment records: October 1968 to September 1969.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1968 to current year.

WATER TEMPERATURES: October 1968 to current year.

INSTRUMENTATION.--Beginning March 1981, specific conductance and water temperature are recorded continuously at this station.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,270 microsiemens May 20, 21, 1971; minimum daily, 120 microsiemens Oct. 7, 1981.

WATER TEMPERATURES: Maximum daily, 34.0°C July 31, Aug. 8, 9, 1980; minimum daily, 0.0°C Dec. 25, 26, 1983.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,920 microsiemens Oct. 5-7; minimum daily, 170 microsiemens Nov. 16, June 8, Sept. 13.

WATER TEMPERATURES: Maximum daily, 29.0°C June 1; minimum daily, 3.0°C Jan. 13, Feb. 2.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L CaCO3)
DEC 03...	1540	22	964	8.9	13.5	12.6	--	2.5	270	79
JAN 24...	1600	37	798	8.5	9.5	14.6	129	1.1	270	86
MAR 11...	1706	5.8	1150	9.0	25.0	10.7	131	1.8	360	140
APR 26...	1530	427	362	7.2	20.8	8.8	99	2.5	100	24
MAY 16...	1045	19	1240	8.1	24.5	8.4	101	.5	370	130
JUN 14...	1055	69	825	7.8	29.0	7.0	92	5.8	260	75
AUG 22...	1710	14	1480	7.8	29.0	9.2	121	1.7	380	190
DATE		CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CaCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
DEC 03...	83	15	90	2	6.4	190	150	100		.40
JAN 24...	85	13	68	2	5.8	180	140	72		.40
MAR 11...	110	21	120	3	7.3	220	200	140		.40
APR 26...	33	5.0	29	1	6.7	79	47	30		.30
MAY 16...	110	22	130	3	8.0	236	220	150		.40
JUN 14...	84	13	65	2	7.4	189	120	75		.30
AUG 22...	110	25	150	3	8.3	192	260	190		.40

## GUADALUPE RIVER BASIN

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08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
DEC 03...	8.9	570	.39	.010	.40	.130	1.3	1.4	.530
JAN 24...	14	510	1.3	.010	1.3	.050	.75	.80	.360
MAR 11...	4.2	730	.79	.010	.80	.060	.84	.90	.460
APR 26...	8.0	210	--	--	--	--	--	--	--
MAY 16...	8.2	790	.39	.010	.40	.100	.70	.80	.300
JUN 14...	16	490	.86	.040	.90	.350	2.4	2.7	.180
AUG 22...	8.9	870	--	<.010	<.10	.150	1.3	1.4	.100

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	3954.1	709	423	4520	69	735	100	1090	230
NOV.	1984	1458	756	450	1770	73	285	110	425	240
DEC.	1984	903	1130	687	1680	120	301	180	440	340
JAN.	1985	2195	719	427	2530	68	405	100	604	230
FEB.	1985	758	1210	742	1520	140	280	200	407	360
MAR.	1985	3888	832	499	5230	83	867	120	1280	260
APR.	1985	2436	552	323	2130	48	313	72	476	180
MAY	1985	583	1150	702	1110	130	201	190	293	350
JUNE	1985	7132	388	228	4380	34	656	51	992	130
JULY	1985	7653	354	206	4250	29	597	44	915	120
AUG.	1985	378.0	1320	814	831	150	158	220	228	390
SEPT	1985	1193.7	657	393	1270	65	209	96	311	210
TOTAL		32531.8	**	**	31200	**	5010	**	7470	**
WTD.AVG.		89	597	355	**	57	**	85	**	190



## GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	1880	1860	1870	1360	1330	1350	920	890	903	1200	1140	1180
2	1890	1860	510	---	---	520	950	910	929	1130	1080	1110
3	1900	1880	450	---	---	565	1040	920	974	---	---	865
4	1910	1890	785	---	---	619	1050	1040	1050	---	---	750
5	1920	1900	750	---	---	701	1060	1030	1050	---	---	775
6	1920	1910	684	---	---	779	1070	1020	1040	---	---	810
7	1920	880	1090	840	780	807	1090	1020	1060	---	---	842
8	1110	900	1210	890	840	868	1100	1070	1090	---	---	888
9	1270	1110	1160	930	880	903	1100	1050	1080	---	---	920
10	---	---	510	940	920	931	1120	1030	1080	970	930	948
11	---	---	450	960	930	948	1150	1050	1120	990	970	975
12	---	---	785	990	960	972	1170	1140	1150	1010	980	995
13	---	---	750	1020	990	1000	1440	1140	1260	1000	990	998
14	---	---	684	1060	1020	1040	1420	1400	1410	1010	980	994
15	---	---	1090	1100	1050	1070	1410	1390	1400	---	---	746
16	---	---	1210	1100	170	713	1390	980	1090	---	---	530
17	---	---	1330	980	450	646	1100	1050	1080	---	---	504
18	---	---	1440	820	740	773	1140	1100	1120	---	---	521
19	---	---	1550	870	790	837	1140	1110	1120	---	---	596
20	---	---	472	920	870	893	1150	1120	1130	---	---	620
21	---	---	504	930	910	919	1160	1130	1140	---	---	645
22	---	---	689	930	900	914	1150	1130	1140	---	---	673
23	---	---	423	920	900	909	1140	1120	1130	---	---	747
24	---	---	536	910	890	901	1140	1120	1130	---	---	798
25	---	---	770	930	900	914	1130	1110	1120	---	---	940
26	---	---	750	950	920	929	1120	1100	1110	1170	1140	1150
27	---	---	572	940	860	885	1220	1100	1130	1180	1150	1160
28	---	---	950	880	860	866	1240	1210	1220	1190	1170	1180
29	---	---	1210	890	860	876	1240	1220	1230	1190	1170	1180
30	---	---	1390	900	880	888	1240	1210	1230	1220	1180	1200
31	---	---	1160	---	---	---	1230	1190	1220	1240	1200	1230
MONTH	1920	880	895	1360	170	865	1440	890	1130	1240	930	886

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	1240	1220	1230	1240	1220	1230	1020	960	990	---	---	777
2	1240	1210	1230	1240	1210	1230	970	910	950	---	---	829
3	1240	1220	1230	1260	1220	1240	920	880	902	---	---	889
4	1230	1230	1230	1240	1180	1210	880	840	858	---	---	956
5	1240	1220	1230	1200	1170	1180	850	790	821	---	---	997
6	1240	1220	1230	1180	1160	1170	780	730	744	---	---	1040
7	1240	1210	1230	1220	1160	1190	730	700	709	---	---	1090
8	1240	1210	1230	1210	1170	1190	690	650	665	---	---	1130
9	1240	1210	1230	1200	1150	1180	680	650	660	---	---	1140
10	1280	1220	1240	1160	960	1130	660	640	647	---	---	1160
11	1270	1230	1250	1250	1050	1150	670	620	633	---	---	1190
12	1280	1240	1260	1230	1180	1210	660	610	627	---	---	1210
13	1280	1230	1260	1230	1170	1200	640	600	621	---	---	1220
14	1280	1260	1270	1200	540	742	---	---	495	---	---	1210
15	1290	1260	1280	970	490	631	---	---	515	---	---	1230
16	1300	1250	1280	1030	970	1000	630	590	608	---	---	1240
17	1300	1270	1280	1070	1030	1050	610	580	598	---	---	1260
18	1320	1280	1290	1100	1060	1080	590	560	574	---	---	1210
19	1300	1290	1290	1130	1090	1110	560	550	555	---	---	1230
20	1330	1280	1300	1210	1120	1150	550	540	547	---	---	1220
21	1340	1290	1310	1160	1130	1140	540	520	526	---	---	1240
22	1350	1270	1320	1190	1120	1150	530	510	521	---	---	1260
23	1330	980	1290	1180	1120	1150	530	520	523	---	---	1250
24	---	---	1020	1200	1110	1150	640	530	595	1280	1270	1270
25	---	---	910	1220	1060	1150	---	---	618	1300	1270	1280
26	---	---	1170	1170	1120	1140	---	---	362	1320	1290	1310
27	1270	1240	1260	1140	1120	1130	---	---	459	1320	1300	1310
28	1260	1240	1250	1140	1110	1120	---	---	611	1330	1300	1320
29	---	---	---	1120	1080	1110	---	---	656	1340	1300	1320
30	---	---	---	1090	1000	1040	---	---	703	1350	1320	1330
31	---	---	---	1020	980	997	---	---	---	1360	1340	1350
MONTH	1350	980	1240	1260	490	1110	1020	510	643	1360	1270	1180

## GUADALUPE RIVER BASIN

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08186000 CIBOLO CREEK NEAR FALLS CITY, TX-Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	1360	1340	1350	740	670	713	1210	1190	1200	1390	1370	1380
2	1360	1340	1350	890	680	786	1230	1200	1210	1390	1280	1360
3	1360	1340	1350	900	760	855	1230	1210	1220	1280	1210	1240
4	1370	1350	1360	660	210	320	1250	1230	1240	1230	1210	1220
5	1380	1320	1360	290	200	239	1270	1240	1250	1250	1230	1240
6	1350	1330	1340	290	210	248	1270	1250	1260	1270	1250	1260
7	1340	320	1220	350	290	328	1290	1250	1270	1320	1270	1300
8	260	170	196	380	350	367	1280	1260	1270	1350	1320	1330
9	370	250	312	410	380	393	1290	1270	1280	1360	1340	1350
10	460	370	418	440	410	427	1310	1280	1300	1370	1350	1360
11	570	470	518	460	440	449	1330	1300	1310	1380	1320	1360
12	640	570	597	510	450	481	1340	1320	1330	1350	1290	1340
13	740	640	685	490	470	480	1340	1330	1340	1320	170	618
14	810	740	774	560	410	465	1360	1340	1350	1060	810	984
15	880	810	846	610	450	535	1380	1360	1370	980	880	928
16	940	880	908	710	610	675	1400	1370	1390	900	850	873
17	990	940	961	740	690	708	1390	1380	1390	940	900	925
18	1010	970	995	810	750	782	1400	1370	1380	980	920	941
19	1630	600	906	850	800	829	1410	1380	1390	1100	980	1040
20	1060	930	1010	880	840	869	1410	1390	1400	1140	1090	1120
21	1050	900	965	920	880	900	1410	1390	1400	1180	1120	1150
22	910	850	892	970	920	945	1420	1380	1410	1200	1180	1190
23	990	900	948	1020	970	995	1400	1340	1370	1210	1180	1190
24	1050	980	1000	1040	1010	1030	1340	1330	1340	1190	1000	1140
25	1000	650	715	1070	1040	1060	1400	1340	1370	1230	1120	1190
26	680	440	541	1090	1070	1080	1410	1350	1380	1230	1070	1180
27	470	420	443	1120	1090	1100	1350	1330	1340	1180	990	1110
28	550	470	509	1140	1110	1120	1380	1330	1350	1140	270	826
29	640	550	589	1160	1130	1140	1430	1320	1390	480	190	320
30	690	640	656	1180	1140	1160	1390	1330	1360	410	190	316
31	---	---	---	1190	1170	1180	1390	1360	1370	---	---	---
MONTH	1630	170	857	1190	200	731	1430	1190	1330	1390	170	1090

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	20.0	17.0	18.5	23.5	22.0	22.5	14.0	11.5	13.0	18.0	15.5	16.5
2	20.5	18.5	19.5	23.0	18.0	20.0	16.0	14.0	15.0	15.0	11.0	13.0
3	21.5	19.0	20.0	19.0	18.5	18.5	14.0	12.5	13.0	11.5	10.0	10.5
4	21.0	20.0	20.5	20.0	18.5	19.0	13.0	11.0	12.0	11.0	9.5	10.0
5	24.0	20.5	22.0	19.0	17.5	18.5	11.5	10.5	11.0	11.0	9.5	10.0
6	25.0	23.0	24.0	18.5	16.0	17.5	11.0	9.5	10.0	11.0	9.0	10.0
7	24.5	21.5	23.0	19.0	16.5	18.0	10.5	8.5	9.5	11.5	9.0	10.0
8	24.0	21.5	22.5	21.0	18.5	19.5	11.5	8.5	10.0	11.5	9.0	10.0
9	23.5	22.0	22.5	21.5	20.0	20.5	13.5	10.5	12.0	12.0	10.5	11.0
10	22.5	20.5	21.5	20.5	18.0	19.5	14.0	12.5	13.0	12.0	10.5	11.5
11	22.5	21.5	21.5	17.5	16.0	17.0	15.5	13.0	14.0	11.0	8.5	9.5
12	23.5	21.5	22.5	17.0	15.0	16.0	16.5	14.5	15.5	8.5	3.5	6.0
13	23.5	23.0	23.0	17.0	15.0	16.0	18.0	16.0	17.0	4.0	3.0	3.5
14	23.0	22.0	22.5	19.0	16.5	17.5	19.5	17.5	18.5	6.0	4.0	5.0
15	22.5	22.0	22.5	20.0	17.5	18.5	20.0	19.0	19.5	7.0	5.0	6.0
16	24.0	22.5	23.0	19.0	18.0	18.5	20.0	17.0	18.0	7.0	5.5	6.5
17	23.5	22.0	22.5	19.0	17.5	18.0	18.5	17.5	18.0	7.0	5.5	6.0
18	24.0	22.0	23.0	19.0	17.0	18.0	19.0	18.0	18.5	8.0	6.5	7.5
19	23.5	22.0	23.0	17.0	15.5	16.5	19.5	18.0	19.0	9.5	7.5	8.5
20	22.5	21.0	21.5	15.0	13.5	14.0	20.0	19.0	19.5	9.0	5.5	7.0
21	21.0	21.0	21.0	14.0	12.5	13.0	20.0	19.0	19.0	6.0	4.5	5.0
22	21.0	19.5	20.0	13.0	11.5	12.0	19.0	18.0	18.5	5.5	4.5	5.0
23	19.0	18.0	19.0	12.0	11.0	11.5	18.0	17.0	17.5	6.0	5.5	6.0
24	18.0	16.5	17.0	13.5	11.0	12.5	19.5	17.5	18.5	8.5	6.0	7.0
25	17.5	16.0	16.5	15.5	13.0	14.0	18.0	14.5	16.0	10.5	7.5	9.0
26	19.0	17.5	18.0	16.5	14.5	15.0	14.5	13.5	14.0	10.5	8.5	9.5
27	19.0	19.0	19.0	15.5	13.5	14.5	16.5	14.5	15.5	12.0	10.0	10.5
28	21.0	19.0	20.0	13.5	12.0	13.0	19.0	16.5	17.5	11.5	9.5	11.0
29	21.5	20.0	21.0	14.5	11.5	12.5	20.0	18.0	19.0	11.5	10.0	10.5
30	22.0	20.5	21.0	14.0	12.0	13.0	20.0	18.5	19.5	13.0	11.0	12.0
31	22.5	21.0	22.0	---	---	---	20.0	18.0	19.5	12.5	7.5	10.0
MONTH	25.0	16.0	21.0	23.5	11.0	16.5	20.0	8.5	16.0	18.0	3.0	9.0

## GUADALUPE RIVER BASIN

08186000 CIBOLO CREEK NEAR FALLS CITY, TX-Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985-Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.0	4.0	5.5	15.5	14.0	14.5	21.0	17.5	19.0	26.0	23.0	24.5
2	5.5	3.0	4.0	17.0	15.0	15.5	21.0	17.5	19.0	25.0	22.5	24.0
3	4.5	3.5	3.5	19.0	16.5	17.5	21.5	17.5	19.5	25.0	22.0	23.5
4	4.0	3.5	4.0	19.0	17.0	18.0	21.5	19.0	20.0	25.0	21.5	23.0
5	6.0	4.0	5.0	17.0	15.0	16.0	22.5	20.0	21.0	25.0	22.0	23.5
6	6.5	5.0	5.5	16.0	14.5	15.0	23.0	18.5	20.5	24.5	22.0	23.0
7	7.5	5.0	6.0	18.0	15.5	16.5	21.5	20.0	21.0	25.0	22.5	23.5
8	9.0	6.5	7.5	19.5	17.0	18.0	20.0	18.0	19.0	26.0	23.5	24.5
9	11.5	8.5	9.5	20.5	18.0	19.0	20.5	17.0	18.5	26.5	23.5	25.0
10	13.5	11.5	12.0	21.0	18.5	19.5	19.0	17.0	17.5	26.5	24.5	25.5
11	12.5	9.5	11.0	23.5	19.0	21.0	17.5	16.5	17.0	26.0	24.0	25.0
12	11.0	8.0	9.5	23.0	21.0	22.0	21.0	17.5	19.5	26.0	24.5	25.0
13	12.0	8.5	10.0	23.0	21.0	22.0	21.0	19.5	20.5	25.5	24.5	25.0
14	12.5	10.5	11.5	22.0	14.5	17.5	20.0	18.0	19.0	25.0	23.0	24.0
15	12.0	9.5	11.0	14.5	14.0	14.0	19.5	18.0	18.5	24.5	22.0	23.5
16	12.5	9.0	11.0	14.5	14.5	14.5	21.5	18.5	20.0	24.5	22.5	24.0
17	13.5	11.5	12.0	15.5	14.0	15.0	23.5	20.5	22.0	23.5	22.5	23.0
18	14.0	12.5	13.5	16.5	14.5	15.5	24.5	21.0	22.5	24.0	21.5	22.5
19	14.5	13.5	14.0	16.5	15.5	16.0	22.5	22.0	22.0	23.5	21.0	22.0
20	15.5	14.0	14.5	19.5	16.5	17.5	23.5	21.5	22.5	22.5	21.5	22.0
21	16.0	15.0	15.5	19.0	16.5	17.5	22.5	21.5	22.0	22.5	21.0	22.0
22	17.5	16.0	16.5	19.5	16.0	17.5	24.0	22.0	23.0	24.5	21.0	22.5
23	18.0	16.5	17.5	19.5	17.0	18.0	25.5	23.0	24.0	26.0	22.0	24.0
24	17.0	14.5	15.5	21.0	16.5	18.5	25.0	22.0	23.5	26.5	24.0	25.0
25	16.5	14.0	15.0	22.0	18.0	20.0	24.0	21.5	23.0	26.5	23.0	24.5
26	16.0	14.5	15.0	21.0	19.5	20.0	22.5	20.5	21.5	26.5	23.5	25.0
27	16.0	14.0	15.0	22.5	20.0	21.0	22.5	20.5	21.5	26.0	23.5	24.5
28	15.0	14.0	14.5	23.0	21.0	22.0	24.0	22.5	23.0	26.0	24.0	24.5
29	---	---	---	22.0	21.5	22.0	24.5	23.0	23.5	28.0	23.5	25.5
30	---	---	---	22.0	20.5	21.5	24.5	23.0	24.0	28.0	24.5	26.0
31	---	---	---	21.5	18.0	19.5	---	---	---	28.5	25.0	26.5
MONTH	18.0	3.0	11.0	23.5	14.0	18.0	25.5	16.5	21.0	28.5	21.0	24.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	29.0	25.5	27.0	26.5	23.0	24.5	25.5	22.5	24.0	24.5	21.0	22.5
2	28.0	25.0	26.5	27.0	24.0	25.0	25.5	22.5	24.0	24.5	21.5	23.0
3	28.5	25.5	26.5	25.5	24.0	24.5	25.0	22.5	23.5	24.5	21.5	23.0
4	28.0	25.5	26.5	24.5	16.5	19.0	25.5	22.5	23.5	24.0	21.5	22.5
5	26.5	25.5	26.0	20.0	17.0	18.5	25.5	22.5	23.5	24.0	22.0	22.5
6	27.0	25.0	26.0	21.0	19.0	20.0	26.0	22.5	24.0	23.5	21.5	22.5
7	28.5	24.0	26.0	21.0	19.5	20.5	26.0	22.5	24.0	24.5	21.5	22.5
8	23.5	22.0	23.0	21.5	20.5	21.0	26.0	22.5	24.0	24.5	21.5	23.0
9	24.0	23.0	23.5	22.0	21.0	21.5	25.5	22.5	24.0	24.5	21.5	23.0
10	25.5	24.0	24.5	23.0	22.0	22.5	25.5	22.0	23.5	23.0	21.5	22.0
11	27.0	24.5	25.5	23.5	22.5	23.0	25.5	22.0	23.5	22.0	20.5	21.0
12	26.5	25.0	25.5	24.0	22.5	23.0	25.0	22.0	23.5	22.0	20.0	21.0
13	24.5	23.5	24.0	23.5	22.5	23.0	25.0	22.5	23.5	20.5	18.0	19.5
14	26.0	23.5	24.5	23.5	22.5	22.5	25.5	22.5	24.0	22.0	19.5	20.5
15	27.0	24.0	25.5	23.0	21.5	22.5	25.5	22.5	24.0	21.0	20.0	20.5
16	28.5	24.5	26.5	24.0	22.0	22.5	26.0	22.5	24.5	21.5	19.5	20.5
17	28.5	26.0	27.0	24.0	22.0	23.0	26.5	23.0	24.5	21.5	19.5	20.5
18	27.0	25.0	26.0	24.5	22.0	23.0	26.5	23.0	24.5	21.5	20.0	20.5
19	25.0	23.0	24.5	23.5	22.5	23.0	26.5	23.0	24.5	21.5	20.0	20.5
20	25.5	24.0	24.5	23.5	22.0	22.5	26.5	23.0	24.5	22.0	19.5	20.5
21	25.5	24.0	25.0	24.5	21.5	23.0	26.5	23.0	24.5	21.0	19.0	20.0
22	25.5	24.5	25.0	25.0	22.0	23.0	26.0	23.0	24.0	22.0	19.5	20.5
23	27.0	24.5	25.5	25.0	22.0	23.5	25.0	22.0	23.5	22.5	20.0	21.0
24	26.5	25.0	25.5	24.5	22.5	23.5	25.0	22.0	23.0	21.5	18.0	20.0
25	26.0	24.5	25.0	25.0	22.0	23.5	25.5	22.0	23.5	22.5	19.5	21.0
26	26.0	25.0	25.0	25.0	22.5	23.5	25.0	21.5	23.0	20.5	17.5	19.0
27	26.5	25.0	26.0	25.5	22.5	23.5	23.5	22.0	23.0	19.0	16.5	18.0
28	25.5	24.5	25.0	25.0	22.0	23.5	23.5	21.0	22.0	20.0	17.5	18.5
29	25.5	23.0	24.5	25.0	22.5	23.5	22.0	20.5	21.0	19.5	16.0	18.5
30	26.0	23.0	24.5	24.5	22.5	23.5	23.5	20.0	21.5	16.0	14.5	15.0
31	---	---	---	25.0	22.5	23.5	24.5	21.0	22.5	---	---	---
MONTH	29.0	22.0	25.5	27.0	16.5	22.5	26.5	20.0	23.5	24.5	14.5	21.0

GUADALUPE RIVER BASIN

329

08186500 ECLETO CREEK NEAR RUNGE, TX

LOCATION.--Lat 28°55'12", long 97°46'19", Karnes County, Hydrologic Unit 12100303, on left bank 55 ft downstream from Farm Road 81, 215 ft to left of left end of bridge, 2.6 mi upstream from Salt Branch, 4.5 mi northwest of Runge, and 5.2 mi upstream from mouth.

DRAINAGE AREA.--239 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1962 to current year.

Water-quality records.--Sediment records: February 1966 to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 215.03 ft above National Geodetic Vertical Datum of 1929, from State Department of Highways and Public Transportation datum.

REMARKS.--Estimated daily discharges: Oct. 7-10, Oct. 31 to Nov. 5, Mar. 19-25, Apr. 10-19, and Apr. 25 to May 1. Records fair except those for periods of estimated daily discharges, which are poor. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 36.8 ft<sup>3</sup>/s (2.09 in/yr), 26,660 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 74,000 ft<sup>3</sup>/s Aug. 31, 1981 (gage height, 34.10 ft, from floodmark), from rating curve extended above 7,300 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood information begins with the flood in June 1903, which reached a stage of 34 ft, discharge 71,000 ft<sup>3</sup>/s. A stage of 32 ft, discharge 39,000 ft<sup>3</sup>/s, occurred in September 1952, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Nov. 16	1330	*1,470	*11.82	June 19	1200	718	7.99
Mar. 15	1830	1,220	10.67				

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	6.6	.00	4.2	.04	41	.00	.40	.00	.00	.00	.00
2	.00	2.1	.00	2.1	.04	45	.00	.00	.00	.00	.00	.00
3	.00	.07	.00	.65	.02	21	.00	.00	.00	4.4	.00	.00
4	.00	.04	.00	2.4	.00	10	.00	.00	.00	50	.00	.00
5	.00	.01	.00	1.9	.00	5.6	.00	.00	.00	22	.00	.00
6	.00	.00	.00	.73	.00	3.3	.00	.00	.00	2.4	.00	.00
7	.10	.00	.00	.29	.00	2.4	.00	.00	.00	.16	.00	.00
8	.82	.00	.00	.14	.00	1.8	.00	.00	.00	.00	.00	.00
9	.10	.00	.00	.06	.00	1.1	.00	.00	.00	.00	.00	.00
10	.05	.00	.00	.03	.00	.91	4.4	.00	.00	.00	.00	.00
11	.96	.00	.04	.00	.00	.78	316	.00	.00	.00	.00	.00
12	7.9	.00	.09	.06	.00	.61	140	.00	.00	.00	.00	.00
13	6.1	.00	.10	.12	.07	.61	36	.00	.00	.00	.00	.00
14	11	.00	.14	.27	.09	136	22	.00	.00	.00	.00	6.6
15	24	.00	.14	158	.07	986	111	.54	.00	.00	.00	17
16	7.6	808	.13	82	.03	404	30	.09	.00	.00	.00	9.4
17	14	605	20	65	.03	117	8.6	.00	.00	.00	.00	.71
18	.12	51	4.3	62	.00	59	.91	.00	.00	.00	.00	.29
19	.00	19	.69	18	.00	13	.40	.00	174	.00	.00	.07
20	.00	5.0	.23	4.9	.00	4.7	.00	.00	33	.00	.00	.00
21	.00	1.1	.08	1.5	.00	1.8	.00	.00	.61	.00	.00	.00
22	.00	.37	.00	.60	.01	.67	.00	.00	.34	.00	.00	.00
23	.00	.14	.00	.33	17	.34	.00	.00	.12	.00	.00	.00
24	.00	.06	.00	.21	6.6	.14	.00	.00	.03	.00	.00	.00
25	2.3	.03	.00	.13	7.5	.03	.40	.00	.03	.00	.00	.00
26	71	.00	.00	.08	2.1	.00	23	.00	.00	.00	.00	.00
27	36	.00	.00	.07	1.1	.00	40	.00	.00	.00	.00	.00
28	18	.00	.00	.06	.65	.00	7.7	.00	.00	.00	.00	.00
29	17	.00	.00	.04	---	.00	1.8	.00	.00	.00	.00	.01
30	16	.00	.00	.04	---	.00	.40	.00	.00	.00	.00	36
31	14	---	.05	.04	---	.00	---	.00	---	.00	.00	---
TOTAL	247.05	1498.52	25.99	405.95	35.35	1856.79	742.61	1.03	208.13	78.96	.00	70.08
MEAN	7.97	50.0	.84	13.1	1.26	59.9	24.8	.033	6.94	2.55	.000	2.34
MAX	71	808	20	158	17	986	316	.54	174	50	.00	36
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	.03	.21	.004	.06	.005	.25	.10	.000	.03	.01	.000	.01
IN.	.04	.23	.00	.06	.01	.29	.12	.00	.03	.01	.00	.01
AC-FT	490	2970	52	805	70	3680	1470	2.0	413	157	.00	139
CAL YR 1984	TOTAL	2668.10	MEAN	7.29	MAX	808	MIN	.00	CFSM	.03	IN	.42
WTR YR 1985	TOTAL	5170.46	MEAN	14.2	MAX	986	MIN	.00	CFSM	.06	IN	.80
									AC-FT	5290		
									AC-FT	10260		

## GUADALUPE RIVER BASIN

08188500 SAN ANTONIO RIVER AT GOLIAD, TX  
(National stream-quality accounting network)

LOCATION.--Lat 28°38'58", long 97°23'04", Goliad County, Hydrologic Unit 12100303, on right bank at upstream side of bridge on U.S. Highway 183, 1.2 mi southeast of courthouse in Goliad, 11.7 mi upstream from Manahuilla Creek, and 66.5 mi upstream from mouth.

DRAINAGE AREA.--3,921 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1924 to March 1929, February 1939 to current year.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 91.08 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 31, 1929, nonrecording gage at Texas and New Orleans Railroad Co. bridge 0.9 mi upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Many diversions and regulations above station (see station 08181800). Flow is affected at times by discharge from the flood-detention pools of 36 floodwater-retarding structures with a combined detention capacity of 66,730 acre-ft. These structures control runoff from 213 mi<sup>2</sup>.

AVERAGE DISCHARGE.--50 years (water years 1925-28, 1940-85), 662 ft<sup>3</sup>/s (479,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 138,000 ft<sup>3</sup>/s Sept. 23, 1967 (gage height, 53.7 ft, from floodmark), from rating curve extended above 26,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum observed, 1.2 ft<sup>3</sup>/s June 16, 1956.

Maximum stage since 1869, that of Sept. 23, 1967. Flood of July 9, 1942, reached a stage of 44.9 ft.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in October 1913 and June 15, 1935, reached about the same stage as flood in 1942. Maximum stage since about 1800 occurred in 1869 and was several feet higher than flood of Sept. 23, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
July 7	2000	*5,990	*21.44				

Minimum daily discharge, 136 ft<sup>3</sup>/s Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	165	771	406	406	413	529	425	527	277	479	269	219
2	136	684	371	673	402	502	417	542	268	435	274	217
3	212	695	356	1660	400	570	413	579	260	400	277	248
4	238	763	341	885	392	669	396	470	253	752	301	232
5	196	460	334	561	392	520	392	407	237	1410	268	213
6	171	470	334	621	396	462	386	341	217	3320	255	203
7	205	415	332	563	404	444	380	318	216	5650	244	212
8	1020	372	460	466	409	422	375	322	247	4140	231	222
9	1820	439	386	431	400	403	369	371	3020	1300	229	209
10	666	360	350	407	394	398	570	306	5050	996	234	410
11	1020	477	335	390	384	407	2290	303	1950	902	229	368
12	994	533	334	380	374	407	2150	324	931	823	224	281
13	1180	525	331	400	368	395	1430	341	724	728	228	262
14	3150	523	334	404	364	895	1440	298	605	719	229	286
15	3730	380	347	470	365	1350	948	279	500	956	226	1070
16	1700	315	400	792	363	3520	1510	272	452	748	245	646
17	1440	921	563	1580	362	3330	1190	274	458	625	228	802
18	979	1340	847	1550	381	1930	688	381	400	536	231	654
19	660	1850	1120	1460	368	1130	540	322	392	464	225	417
20	548	647	718	1040	355	896	491	954	782	429	220	359
21	877	533	566	712	347	712	464	836	603	398	215	390
22	2010	462	468	576	354	616	446	583	716	384	204	581
23	1120	409	423	514	361	648	427	435	598	367	203	387
24	837	378	392	481	375	581	419	352	559	356	214	325
25	986	362	373	460	450	512	406	324	2090	334	217	292
26	1080	349	356	450	987	479	481	301	2220	324	213	289
27	1150	516	347	446	1020	460	1250	446	1210	316	213	284
28	906	1080	341	439	671	452	1410	726	897	309	330	248
29	1440	623	340	419	---	448	1090	452	646	303	454	675
30	1110	456	354	481	---	443	688	354	512	292	291	1960
31	729	---	406	475	---	437	---	318	---	280	246	---
TOTAL	32475	18108	13365	20592	12251	24967	23881	13058	27290	29475	7667	12961
MEAN	1048	604	431	664	438	805	796	421	910	951	247	432
MAX	3730	1850	1120	1660	1020	3520	2290	954	5050	5650	454	1960
MIN	136	315	331	380	347	395	369	272	216	280	203	203
AC-FT	64410	35920	26510	40840	24300	49520	47370	25900	54130	58460	15210	25710
CAL YR 1984	TOTAL	133878	MEAN	366	MAX	3730	MIN	117	AC-FT	265500		
WTR YR 1985	TOTAL	236090	MEAN	647	MAX	5650	MIN	136	AC-FT	468300		



08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1945 to September 1946, September 1958 to current year. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to September 1982. Sediment records: October 1974 to current year.

## PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1945 to September 1946, September 1958 to current year.  
WATER TEMPERATURES: September 1958 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

## EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,580 microsiemens July 22, 1978; minimum daily, 138 microsiemens Oct. 27, 1960.  
WATER TEMPERATURES: Maximum daily, 36.0°C June 5, 1969; minimum daily, 0.0°C on many days during winter months.

## EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,230 microsiemens Aug. 23; minimum daily, 276 microsiemens July 7.  
WATER TEMPERATURES: Maximum, 34.0°C Aug. 7; minimum daily, 7.0°C Feb. 1.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
OCT												
13...	1345	868	419	7.8	25.5	--	--	--	--	--	--	
17...	1200	1500	470	7.7	23.0	1000	1600	6.3	73	2.8	5200	
JAN												
22...	1500	683	660	7.8	6.5	100	75	10.8	87	5.8	7500	
MAR												
11...	1500	411	1030	8.0	24.0	70	28	7.8	93	2.3	52	
MAY												
07...	1640	320	990	8.4	29.0	30	45	9.3	122	1.9	240	
JUL												
08...	1355	3900	315	7.0	29.0	50	280	3.4	44	1.5	--	
AUG												
12...	1400	225	1270	8.4	30.0	30	--	7.3	97	2.3	96	
DATE	TIME	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
OCT												
13...	--	150	24	50	6.9	24	.9	5.7	130	34	27	
17...	3400	160	37	50	7.6	31	1	6.4	120	53	35	
JAN												
22...	170	230	59	73	11	49	1	5.7	170	72	60	
MAR												
11...	40	330	100	100	20	91	2	7.1	233	120	120	
MAY												
07...	400	330	98	100	18	90	2	7.2	227	100	130	
JUL												
08...	--	120	26	38	4.9	15	.6	5.2	90	29	16	
AUG												
12...	450	340	74	100	22	110	3	7.3	267	110	160	

## GUADALUPE RIVER BASIN

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
OCT 13...	.30	10	--	240	--	--	--	--	--	--	--
17...	.30	11	258	270	--	--	2.1	.030	2.1	2.2	.080
JAN 22...	.30	14	390	390	162	26	2.7	.210	2.9	3.0	.320
MAR 11...	.40	15	623	620	58	2	6.7	.170	6.9	7.4	.070
MAY 07...	.40	15	598	600	97	19	4.0	.040	4.0	4.0	.080
JUL 08...	.20	12	187	180	620	140	1.1	.110	1.2	1.3	.290
AUG 12...	.50	10	714	680	129	29	3.7	.040	3.7	3.6	.050

DATE	NITRO- GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS-SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI- MENT, SUS-PENDED (MG/L)	SEDI- MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 13...	--	--	--	--	--	--	--	--	--	--
17...	.020	4.2	4.3	1.50	.280	.280	30	1840	7450	98
JAN 22...	.280	1.4	1.7	1.10	.950	.930	--	189	349	96
MAR 11...	.070	.93	1.0	2.30	1.90	2.30	5.6	70	78	97
MAY 07...	.030	.82	.90	1.80	1.60	1.30	8.8	86	74	99
JUL 08...	.030	1.5	1.8	.760	.210	.180	13	647	6810	97
AUG 12...	.040	.75	.80	1.50	1.30	1.20	7.6	138	84	98

DATE	TIME	ARSENIC, DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL- LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM, DIS-SOLVED (UG/L AS CD)	CHRO- MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)
OCT 17...	1200	1	72	.0	<1	3	<3	2	19	4
JAN 22...	1500	2	71	<.5	<1	7	<3	3	22	<1
MAY 07...	1640	3	100	<.5	<1	<1	<3	4	6	3
JUL 08...	1355	2	60	<.5	<1	<1	<3	2	19	2

DATE	LITHIUM, DIS-SOLVED (UG/L AS LI)	MANGA- NESE, DIS-SOLVED (UG/L AS MN)	MERCURY, DIS-SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE- NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON- TIUM, DIS-SOLVED (UG/L AS SR)	VANA- DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT 17...	13	2	<.1	<10	4	<1	<1	430	8	24
JAN 22...	32	<1	<.1	<10	3	<1	<1	680	<6	17
MAY 07...	35	3	<.1	<10	7	<1	<1	1000	8	12
JUL 08...	22	3	.1	<10	3	<1	<1	300	6	15

## GUADALUPE RIVER BASIN

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08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	32475	490	281	24600	39	3440	46	4070	180
NOV.	1984	18108	724	420	20500	72	3530	73	3570	250
DEC.	1984	13365	912	533	19200	100	3660	95	3440	300
JAN.	1985	20592	796	463	25700	83	4600	81	4520	270
FEB.	1985	12251	1050	614	20300	120	4130	110	3700	330
MAR.	1985	24967	712	413	27800	71	4810	72	4850	240
APR.	1985	23881	747	434	28000	76	4880	76	4880	250
MAY	1985	13058	944	552	19500	110	3760	99	3500	310
JUNE	1985	27290	591	341	25100	54	3970	58	4280	210
JULY	1985	29475	583	337	26800	54	4300	58	4580	200
AUG.	1985	7667	1150	681	14100	150	3020	130	2610	360
SEPT	1985	12961	754	438	15300	77	2710	77	2690	250
TOTAL		236090	**	**	267000	**	46800	**	46700	**
WTD.AVG.		647	721	419	**	73	**	73	**	240

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1170	552	658	1080	1070	807	1090	674	790	717	1130	885
2	1140	553	738	904	1100	745	1110	795	989	779	1140	911
3	1040	725	844	655	1020	978	1120	855	1030	859	1150	944
4	1000	413	954	500	1050	928	1120	936	1080	594	1130	1020
5	1030	705	1010	540	1110	987	1130	956	1110	763	1120	1090
6	1040	826	1080	628	1100	958	1160	937	1160	527	1130	1110
7	966	881	1100	730	1120	906	1120	1030	1180	276	1110	1100
8	552	929	1080	850	1100	990	1130	1120	1170	320	1140	1070
9	400	952	1060	850	1080	1040	1160	1090	550	395	1180	1090
10	685	983	1060	938	1050	1050	913	1170	348	479	1190	986
11	431	1020	1040	1000	1070	1060	535	1200	390	588	1190	863
12	483	996	1090	1040	1100	1100	650	1190	450	666	1200	1000
13	439	1030	1060	1070	1130	1110	694	1140	500	718	1190	987
14	420	1040	1090	1080	1090	748	736	1130	610	758	1160	852
15	367	1070	1110	1060	1140	602	694	1190	695	770	1170	729
16	502	1060	1090	1000	1110	430	467	1180	770	815	1180	826
17	495	867	1030	840	1120	417	500	1200	840	814	1190	433
18	507	550	966	560	1110	508	561	1180	910	808	1180	591
19	472	410	722	515	1120	560	606	1100	961	806	1170	611
20	517	420	547	625	1140	538	647	985	900	878	1170	634
21	574	480	541	618	1130	681	819	800	710	958	1150	646
22	427	570	670	694	1060	788	947	676	916	978	1160	794
23	418	730	778	811	1140	850	1020	769	871	1010	1230	908
24	430	890	872	908	1120	916	1060	819	956	1040	1170	903
25	465	920	888	987	1080	976	1090	878	700	1060	1180	982
26	447	940	968	1010	1020	985	1070	948	416	1070	1200	991
27	479	990	1020	1040	838	1020	900	1000	430	1080	1150	1100
28	497	900	1040	1060	659	1060	428	926	500	1100	1120	1070
29	652	500	1060	1090	---	1070	794	875	580	1090	1140	840
30	548	600	1080	1110	---	1080	606	707	640	1070	1070	325
31	434	---	1030	1090	---	1060	---	725	---	1090	1090	---
MEAN	614	783	944	867	1070	869	863	974	772	802	1160	876

## GUADALUPE RIVER BASIN

08188500 SAN ANTONIO RIVER AT GOLIAD, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985												
	ONCE-DAILY											
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23.5	25.5	17.0	20.0	7.0	19.0	23.0	27.0	30.0	30.0	32.0	32.0
2	23.0	24.0	18.0	15.0	9.0	20.0	24.0	27.0	31.0	29.0	32.0	30.0
3	23.5	23.0	15.0	16.0	8.0	21.0	24.0	28.0	30.0	30.0	30.0	32.0
4	26.0	22.0	14.0	14.0	8.0	21.0	23.0	23.0	30.0	26.0	32.0	31.0
5	25.5	25.0	14.0	14.0	10.0	18.0	25.0	27.0	28.0	28.0	33.0	31.0
6	27.0	21.0	13.0	14.0	10.0	19.0	26.0	28.0	29.0	27.0	31.0	31.0
7	24.5	22.0	12.0	14.0	10.0	21.0	24.0	28.0	31.0	27.0	34.0	30.0
8	23.0	23.0	15.0	14.0	12.0	23.0	21.0	29.0	32.0	27.0	32.0	29.0
9	24.5	24.0	16.0	15.0	15.0	24.0	23.0	28.0	28.0	28.0	31.0	31.0
10	24.0	23.0	19.0	14.0	17.0	24.0	20.0	28.0	28.0	30.0	33.0	29.0
11	25.0	20.0	18.0	12.0	14.0	25.0	21.0	28.0	28.5	31.0	32.0	27.0
12	25.5	19.0	19.0	9.0	15.0	25.0	22.0	27.0	29.0	31.0	32.0	30.0
13	25.0	20.0	20.0	8.0	15.0	24.0	23.0	28.0	30.0	30.0	31.0	29.0
14	25.5	21.0	21.0	10.0	15.0	19.0	24.0	27.0	30.0	30.0	32.0	30.0
15	26.0	23.0	22.0	11.0	16.0	17.0	24.0	28.0	30.0	31.0	32.0	28.0
16	25.5	20.0	20.0	12.0	17.0	16.0	24.0	28.0	29.0	32.0	32.0	28.0
17	25.5	21.0	20.0	12.0	17.0	17.0	24.0	27.0	31.0	28.0	32.0	27.0
18	28.0	20.0	22.0	12.0	18.0	18.0	22.0	26.0	29.0	32.0	33.0	29.0
19	25.5	19.0	22.0	10.0	17.0	18.0	21.0	24.0	29.0	30.0	32.0	29.0
20	25.0	16.0	22.0	10.0	19.0	22.0	21.0	26.0	28.0	29.0	32.0	29.0
21	26.0	15.0	22.0	9.0	20.0	20.0	---	25.0	29.0	31.0	31.0	28.0
22	22.0	15.0	20.0	9.0	22.0	22.0	24.0	28.0	29.0	32.0	31.0	29.0
23	20.0	15.0	21.0	9.0	21.0	22.0	26.0	28.0	29.0	32.0	31.0	30.0
24	20.0	16.0	22.0	13.0	19.0	22.0	27.0	28.0	30.0	32.0	29.0	29.0
25	22.0	17.0	18.0	14.0	20.0	23.0	26.0	29.0	30.0	32.0	32.0	28.0
26	22.0	19.0	18.0	14.0	18.0	23.0	26.0	30.0	29.0	32.0	32.0	27.0
27	23.0	16.0	20.0	16.0	18.0	24.0	25.0	28.0	30.0	32.0	32.0	26.0
28	25.0	16.0	21.0	15.0	18.0	24.0	24.0	28.0	27.0	32.0	31.0	25.0
29	24.0	17.0	22.0	15.0	---	23.0	26.0	30.0	28.0	31.0	29.0	26.0
30	24.0	16.0	22.0	18.0	---	22.0	27.0	30.0	29.0	31.0	31.0	21.0
31	25.5	---	23.0	11.0	---	21.0	---	30.5	---	32.0	30.0	---
MEAN	24.5	20.0	19.0	13.0	15.0	21.0	24.0	27.5	29.5	30.0	31.5	28.5

GUADALUPE RIVER BASIN

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08188600 GUADALUPE-BLANCO RIVER AUTHORITY CALHOUN CANAL FLUME NO. 1 NEAR LONG MOTT, TX

LOCATION.--Lat 28°29'44", long 96°46'18". Calhoun County, Hydrologic Unit 12100204, on right bank at concrete Parshall flume No. 1, 518 ft upstream from State Highway 185, 1,900 ft downstream from pumping station on Goff Bayou, and 1.1 mi northwest of Long Mott.

PERIOD OF RECORD.--March 1968 to February 1970 (monthly discharge only), March 1970 to current year.

GAGE.--Water-stage and velocity recorders, duplex water-stage recorder, and Parshall flume. Datum of gage is 23.53 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 6, 1981, deflection-vane recorder.

REMARKS.--Estimated daily discharges: Jan. 1, 4-7, Feb. 17-25, Mar. 1-8, 13-29, Apr. 2, 3, 20-24, May 8-14, May 19 to June 1, and July 25 to Sept. 30. Records fair. Flow is diverted from Guadalupe River 550 ft upstream from Guadalupe River near Tivoli (station 08188800), and then through a system of canals, Hog Bayou, and Goff Bayou, a distance of 8.9 mi to the pumping station on Goff Bayou 1,900 ft upstream from Flume No. 1. Several observations of water temperature were made during the year.

COOPERATION.--Log of pumping station on Goff Bayou provided by Guadalupe-Blanco River Authority.

AVERAGE DISCHARGE.--17 years (water years 1969-85), 94.7 ft<sup>3</sup>/s (68,610 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 311 ft<sup>3</sup>/s July 7, 1968; no flow at times in 1968-74 and 1977-85.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	26	.00	17	40	8.0	.00	52	122	191	167	76
2	112	.00	.00	.00	46	15	24	51	67	213	167	76
3	123	.00	.00	.00	20	15	27	30	89	207	167	104
4	138	.00	.00	7.0	9.0	32	8.0	48	108	160	167	105
5	144	26	13	15	25	61	.00	68	106	126	174	79
6	144	13	29	15	30	61	.00	71	115	137	172	61
7	144	15	47	48	30	61	24	61	103	137	167	61
8	137	38	58	91	30	37	71	70	84	142	167	61
9	88	26	58	66	30	.00	76	76	76	159	160	70
10	52	10	74	22	41	.00	40	85	157	167	152	85
11	58	9.0	86	.00	.00	.00	15	82	213	164	152	91
12	68	30	54	.00	.00	.00	7.0	76	200	160	152	91
13	80	43	29	.00	.00	9.0	.00	76	149	167	152	91
14	72	33	23	.00	.00	15	.00	85	113	176	170	73
15	78	29	15	.00	.00	7.0	27	116	106	191	166	61
16	86	19	15	.00	.00	.00	55	137	106	198	152	50
17	74	.00	23	.00	8.0	.00	53	116	115	198	161	46
18	58	.00	29	.00	15	6.0	46	98	144	179	159	38
19	37	26	29	.00	15	27	37	106	119	150	143	42
20	15	28	23	.00	15	46	40	106	113	144	145	71
21	27	15	15	9.0	23	46	36	81	95	152	140	76
22	58	15	15	15	46	46	23	61	95	152	122	76
23	58	15	15	42	46	46	32	70	106	168	122	76
24	50	15	15	61	46	46	51	95	122	182	117	76
25	36	15	15	49	30	14	59	97	177	182	106	76
26	20	19	15	15	.00	9.0	21	82	192	174	106	76
27	15	29	27	15	.00	15	15	118	178	167	106	74
28	15	38	46	15	.00	15	15	142	182	177	93	91
29	15	45	46	15	---	7.0	34	179	178	182	90	84
30	15	16	46	15	---	.00	46	213	167	182	89	65
31	27	---	46	21	---	.00	---	189	---	177	76	---
TOTAL	2153	593.00	906.00	553.00	545.00	644.00	882.00	2937	3897	5261	4379	2202
MEAN	69.5	19.8	29.2	17.8	19.5	20.8	29.4	94.7	130	170	141	73.4
MAX	144	45	86	91	46	61	76	213	213	213	174	105
MIN	15	.00	.00	.00	.00	.00	.00	30	67	126	76	38
AC-FT	4270	1180	1800	1100	1080	1280	1750	5830	7730	10440	8690	4370
CAL YR 1984	TOTAL	31118.00	MEAN	85.0	MAX	265	MIN	.00	AC-FT	61720		
WTR YR 1985	TOTAL	24952.00	MEAN	68.4	MAX	213	MIN	.00	AC-FT	49490		



## GUADALUPE RIVER BASIN

08188750 GUADALUPE-BLANCO RIVER AUTHORITY CALHOUN CANAL FLUME NO. 2 NEAR LONG MOTT, TX

LOCATION.--Lat 28°30'09", long 96°45'40", Calhoun County, Hydrologic Unit 12100204, on left bank at concrete Parshall flume No. 2, 3,700 ft downstream from State Highway 185, 4,200 ft downstream from streamflow station 08188600, and 1.4 mi north of Long Mott.

PERIOD OF RECORD.--October 1971 to June 1972 (monthly discharge only), July 1972 to current year.

GAGE.--Water-stage and velocity recorders, water-stage recorder, and Parshall flume. Datum of gage is 22.37 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 6, 1981, deflection-vane recorders.

REMARKS.--Estimated daily discharges: Oct. 4 to Nov. 1, 7-9, 12-16, 19-23, 26-30, Dec. 5, Jan. 9, 10, Jan. 21 to Feb. 1, 4-10, 19-21, Mar. 1-8, 13-15, 18, 26-29, Apr. 2-4, 8-12, 15-26, Apr. 29 to May 3, and May 24 to June 12. Records poor. Flow is diverted from Guadalupe River 550 ft upstream from Guadalupe River near Tivoli (station 08188800), and then through a system of canals, Hog Bayou, and Goff Bayou, a distance of 8.9 mi to the pumping station on Goff Bayou 1,900 ft upstream from flume No. 1. Diversions to the Union Carbide Co. between flumes 1 (station 08188600) and 2 during the current year were 8,580 acre-ft. Several observations of water temperature were made during the year.

COOPERATION.--Log of pumping station on Goff Bayou provided by Guadalupe-Blanco River Authority.

AVERAGE DISCHARGE.--14 years, 75.2 ft<sup>3</sup>/s (54,480 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 282 ft<sup>3</sup>/s June 23, 1975; no flow at times in 1972-85.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	109	16	.00	.00	13	8.0	.00	38	122	176	152	61
2	106	.00	.00	.00	.00	15	8.0	36	67	198	152	61
3	92	.00	.00	.00	.00	15	12	15	89	192	152	70
4	92	.00	.00	7.0	9.0	15	8.0	33	108	144	152	77
5	98	.00	6.0	15	25	15	.00	53	106	111	159	64
6	98	.00	14	15	30	15	.00	56	115	122	167	46
7	98	15	16	32	30	15	.00	46	103	122	167	46
8	91	28	12	45	30	8.0	26	55	84	127	167	46
9	70	11	12	40	30	.00	61	61	76	143	160	55
10	52	.00	28	12	41	.00	40	69	147	152	152	69
11	58	.00	40	.00	.00	.00	15	67	198	149	152	76
12	68	15	26	.00	.00	.00	7.0	61	185	144	152	76
13	80	27	14	.00	.00	9.0	.00	61	134	152	152	76
14	72	28	8.0	.00	.00	15	.00	69	98	161	170	58
15	71	29	.00	.00	.00	7.0	27	101	91	176	166	46
16	71	19	.00	.00	.00	.00	55	122	91	182	152	46
17	67	.00	8.0	.00	.00	.00	53	101	100	182	161	46
18	58	.00	14	.00	.00	6.0	46	83	129	163	159	38
19	37	26	14	.00	9.0	.00	37	91	104	135	143	42
20	15	28	8.0	.00	15	.00	30	91	98	129	136	61
21	27	15	.00	9.0	8.0	.00	30	69	80	137	125	61
22	58	15	.00	15	.00	.00	14	46	80	137	107	61
23	58	5.0	.00	15	.00	.00	17	55	91	153	107	61
24	41	.00	.00	15	.00	.00	36	80	106	167	102	61
25	21	.00	.00	19	.00	.00	44	82	162	167	91	61
26	14	4.0	.00	15	.00	9.0	6.0	67	177	159	91	61
27	15	22	.00	15	.00	15	.00	103	162	152	91	59
28	15	38	.00	15	.00	15	.00	127	167	162	80	76
29	15	45	.00	15	---	7.0	19	164	162	167	77	68
30	15	16	.00	15	---	.00	30	199	152	167	74	49
31	19	---	.00	21	---	.00	---	184	---	162	61	---
TOTAL	1801	402.00	220.00	335.00	240.00	189.00	621.00	2485	3584	4790	4129	1778
MEAN	58.1	13.4	7.10	10.8	8.57	6.10	20.7	80.2	119	155	133	59.3
MAX	109	45	40	45	41	15	61	199	198	198	170	77
MIN	14	.00	.00	.00	.00	.00	.00	15	67	111	61	38
AC-FT	3570	797	436	664	476	375	1230	4930	7110	9500	8190	3530
CAL YR 1984	TOTAL	25714.00	MEAN	70.3	MAX	244	MIN	.00	AC-FT	51000		
WTR YR 1985	TOTAL	20574.00	MEAN	56.4	MAX	199	MIN	.00	AC-FT	40810		

## GUADALUPE RIVER MAIN STEM

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08188800 GUADALUPE RIVER NEAR TIVOLI, TX

LOCATION.--Lat 28°30'20", long 96°53'04", Calhoun-Refugio County line, Hydrologic Unit 12100204, on right bank at diversion and saltwater barrier, one orifice located upstream and one downstream (from barrier), 550 ft downstream from Calhoun County Irrigation Canal intake, 0.4 mi downstream from San Antonio River, 3.5 mi north of Tivoli, and at mile 10.2. Water-quality sampling site on left bank 474 ft upstream.

DRAINAGE AREA.--10,128 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1965 to current year.

REVISED RECORDS.--WDR TX-68-1: Drainage area.

GAGE.--Duplex water-stage recorder. Datum of gage is 0.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Many small diversions above station. Some regulation by powerplants. Upstream regulation same as that for Guadalupe River at Cuero (station 08175800) and San Antonio River at Goliad (station 08188500).

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height (upstream from barrier), 13.7 ft Sept. 22, 1967; minimum, 1.2 ft July 2, 1984. Maximum gage height (downstream from barrier), 13.6 ft Sept. 22, 1967; minimum, 0.5 ft July 12, 14, 1967.

Maximum stage since at least 1936, that of Sept. 22, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1936 reached a stage of 11 ft, present site and datum. Levees along the Navigation Canal from San Antonio Bay to Victoria were built in 1961 thus decreasing the flood plain.

EXTREMES FOR CURRENT YEAR.--Maximum gage height (upstream from barrier), 8.3 ft Mar. 18, Apr. 12-14; minimum, 2.2 ft Aug. 26. Maximum gage height (downstream from barrier), 8.2 ft Mar. 18-21, Apr. 12-14; minimum, 1.5 ft Oct. 2.

MAXIMUM DAILY GAGE HEIGHT, IN FEET, UPSTREAM AND DOWNSTREAM FROM SALTWATER BARRIER,  
WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	OCT up down	NOV up down	DEC up down	JAN up down	FEB up down	MAR up down	APR up down	MAY up down	JUNE up down	JULY up down	AUG up down	SEPT up down
1	3.9 1.8	6.5 6.4	4.0 -	4.4 -	6.1 6.0	7.2 7.1	6.7 6.6	7.7 7.6	4.2 4.1	7.4 7.4	5.0 4.9	3.1 3.0
2	3.8 1.6	5.6 5.5	3.6 -	4.8 4.7	6.0 -	7.1 7.0	6.5 6.4	7.4 7.2	4.1 4.0	7.2 7.1	4.9 4.8	3.2 3.1
3	3.7 1.7	6.2 6.1	3.1 3.0	5.5 5.4	5.9 -	7.1 7.0	6.4 6.3	7.1 7.0	4.3 4.2	7.1 7.0	4.7 4.6	3.2 3.1
4	3.7 2.2	5.8 5.7	3.2 3.1	7.0 6.9	5.8 5.6	7.1 7.1	6.3 6.3	7.1 7.0	4.3 4.2	7.2 7.0	4.6 4.5	3.0 2.9
5	3.9 2.4	5.5 5.4	3.3 3.2	7.0 -	5.6 5.5	7.1 7.0	6.3 6.2	7.1 7.0	4.2 4.1	7.6 7.5	4.5 4.4	3.1 3.0
6	4.0 2.5	5.5 5.4	3.0 2.9	6.9 -	5.6 5.5	7.0 6.9	6.2 6.1	7.0 6.9	4.2 4.1	7.8 7.7	4.5 4.4	3.1 3.0
7	3.8 2.3	5.1 5.0	2.6 2.3	6.6 6.5	5.5 5.4	6.9 6.8	6.1 6.0	6.8 6.7	4.1 4.0	8.1 8.0	4.5 4.4	3.1 2.9
8	3.8 2.1	4.8 4.7	2.5 -	6.3 6.2	5.4 5.3	6.8 6.7	6.1 6.0	6.5 6.4	3.8 3.7	8.2 8.1	4.3 4.2	2.9 2.7
9	4.1 2.4	4.4 4.3	2.5 -	6.3 6.1	5.3 -	6.6 6.5	5.9 5.8	6.2 6.1	4.9 4.7	8.2 8.1	4.2 4.1	2.6 2.5
10	4.4 4.0	4.4 4.3	2.5 2.3	6.1 6.0	5.3 -	6.3 6.2	6.3 6.2	6.2 6.1	7.5 7.4	8.2 8.1	4.1 4.0	2.6 2.5
11	4.2 4.0	3.6 3.5	2.5 2.3	5.9 5.8	5.3 5.2	6.2 6.1	7.6 7.6	6.2 6.1	8.1 8.0	8.1 8.1	3.9 3.8	2.9 2.7
12	4.4 3.2	3.3 3.2	2.6 2.3	5.7 -	5.4 5.3	6.2 6.1	8.3 8.2	5.9 5.8	8.2 8.1	7.8 7.7	3.7 3.6	3.0 2.8
13	3.7 3.2	3.2 3.0	2.8 2.3	5.4 -	5.3 5.3	6.1 6.0	8.3 8.2	5.9 5.8	8.2 8.1	7.6 7.5	3.5 3.4	3.0 2.8
14	3.9 3.2	3.2 3.1	3.4 2.3	5.5 5.4	5.2 5.2	6.2 6.2	8.3 8.2	5.8 5.7	7.8 7.7	7.4 7.3	3.1 3.0	2.9 2.7
15	5.2 5.1	3.1 2.9	3.7 -	6.0 5.9	5.3 5.2	7.7 7.6	8.2 8.1	5.6 5.5	7.6 7.6	7.2 7.1	3.0 3.0	3.5 3.4
16	5.8 5.7	2.9 2.7	3.6 -	6.2 6.1	5.2 5.2	8.0 7.9	8.1 8.0	5.2 5.2	7.3 7.3	7.1 7.0	3.2 3.1	4.7 4.6
17	6.9 6.8	3.2 3.1	3.3 2.3	6.6 6.5	4.9 4.8	8.2 8.1	8.0 7.9	5.4 5.3	7.0 7.0	7.2 7.1	3.2 3.1	4.6 4.5
18	7.1 7.0	3.6 3.4	5.3 5.2	7.4 7.3	4.6 4.6	8.3 8.2	8.0 7.9	5.5 5.4	6.8 6.7	7.1 7.0	3.0 2.9	4.5 4.4
19	7.2 7.1	4.7 4.6	6.4 6.2	7.7 -	4.3 4.3	8.2 8.2	7.9 7.8	5.5 5.4	6.6 6.6	6.9 6.8	3.0 2.9	4.5 4.4
20	7.1 7.0	5.8 5.6	6.9 6.8	7.8 -	4.2 4.1	8.2 8.2	7.7 7.6	5.9 5.8	6.5 6.5	6.8 6.7	2.8 2.7	4.1 4.0
21	5.8 5.7	5.8 5.6	6.9 6.8	7.8 7.7	4.1 4.1	8.2 8.2	7.5 7.4	6.4 6.3	7.1 7.0	6.6 6.5	2.6 2.5	3.8 3.7
22	4.5 4.4	5.0 -	6.4 6.3	7.6 7.5	4.2 4.1	8.1 8.0	7.5 7.4	6.4 6.4	7.2 7.1	6.4 6.3	2.7 2.6	3.8 3.7
23	7.0 6.9	3.7 3.6	5.7 -	7.5 7.4	4.2 4.1	7.9 7.8	7.5 7.4	6.3 6.3	7.2 7.1	6.3 6.2	2.7 2.6	4.1 4.0
24	7.1 7.0	3.4 -	4.8 -	7.2 7.1	4.3 4.2	7.7 7.6	7.5 7.4	5.8 5.8	7.2 7.1	6.2 6.1	2.7 2.6	4.0 3.9
25	6.8 6.7	3.2 -	4.5 -	6.8 6.7	5.7 5.6	7.6 7.5	7.4 7.3	5.4 5.3	7.1 7.0	6.1 6.0	2.6 2.5	3.5 3.4
26	7.0 6.9	3.0 2.5	4.1 4.1	6.7 -	6.0 5.9	7.4 7.4	7.4 7.3	5.1 5.1	7.8 7.7	5.9 5.8	2.6 2.5	3.3 3.2
27	7.5 7.4	3.0 2.5	4.2 4.1	6.8 -	6.8 6.9	7.3 7.3	7.4 7.3	4.9 4.8	8.0 8.0	5.7 5.7	2.7 2.6	3.2 3.1
28	7.5 7.4	2.6 2.4	4.2 4.1	7.2 7.1	7.2 7.1	7.3 7.2	7.8 7.7	4.8 4.7	8.1 8.0	5.5 5.4	2.9 2.8	3.5 3.4
29	7.3 7.2	4.2 4.0	4.1 -	7.1 7.0	---	7.1 7.0	7.9 7.8	5.0 4.9	7.9 7.8	5.2 5.1	3.0 2.8	3.4 3.3
30	6.8 6.7	4.3 4.1	4.3 4.1	6.6 6.5	---	7.0 -	7.9 7.8	4.9 4.8	7.7 7.6	5.1 5.1	3.3 3.2	3.4 3.3
31	6.8 6.7	---	4.4 4.2	6.2 6.1	---	6.9 -	---	4.5 4.4	---	5.1 5.0	3.3 3.2	---

## GUADALUPE RIVER MAIN STEM

08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1965 to current year. Chemical and biochemical analyses: October 1968 to current year. Pesticide analyses: October 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1965 to current year.

WATER TEMPERATURES: October 1965 to current year.

INSTRUMENTATION.--Beginning July 1965, specific conductance was recorded continuously at this station. Beginning March 1981, water temperature was recorded continuously at this station. Continuous recording of specific conductance and water temperature was discontinued October 1982.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
DEC 06...	1120	700	8.3	13.0	30	41	11.0	102	2.4	240	27
JAN 22...	1400	428	8.3	7.0	250	140	11.1	90	3.1	150	38
MAR 14...	1415	651	8.6	21.0	35	64	7.6	85	2.1	250	31
APR 26...	1040	564	7.9	24.5	45	58	6.2	75	3.0	180	18
JUN 12...	1510	359	7.6	29.0	40	300	7.8	101	5.5	150	23
AUG 20...	1500	696	7.9	28.6	10	--	8.1	107	1.9	240	47

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
DEC 06...	70	15	63	2	4.5	210	53	71	.30	13	420
JAN 22...	45	8.7	26	1	3.5	110	37	34	.60	10	230
MAR 14...	71	17	39	1	4.0	217	41	54	.30	12	370
APR 26...	61	7.6	38	1	4.2	166	34	53	.30	13	310
JUN 12...	47	7.5	20	.7	6.2	125	26	23	.20	11	220
AUG 20...	69	17	48	1	3.9	196	47	72	.30	12	390

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
DEC 06...	63	9	--	<.010	1.5	.450	.85	1.3	.550	5.1
JAN 22...	256	42	1.3	.070	1.4	.150	1.8	1.9	.630	9.1
MAR 14...	136	18	2.0	.020	2.0	.040	.96	1.0	.570	4.1
APR 26...	101	28	1.3	.030	1.3	.110	.99	1.1	.540	4.5
JUN 12...	650	86	1.2	.020	1.2	.170	1.5	1.7	.730	23
AUG 20...	--	17	1.1	.010	1.1	.070	.93	1.0	.360	6.2

GUADALUPE RIVER MAIN STEM

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08188800 GUADALUPE RIVER NEAR TIVOLI, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

				ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)			
		DATE	TIME									
		JAN 22...	1400		1	57	1	<10	2	24		
		AUG 20...	1500		3	98	2	<10	3	<3		
				LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)			
		JAN 22...		<1	2	<.1	<1	<1	11			
		AUG 20...		<1	9	.1	<1	<1	24			
DATE	TIME	PCB, TOTAL (UG/L)	PCB, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	PCN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ALDRIN, TOTAL (UG/L)	ALDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	CHLOR- DANE, TOTAL (UG/L)	CHLOR- DANE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDD, TOTAL (UG/L)	DDD, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	
AUG 20...	1500	<.1	2	<.10	<1.0	<.01	<.1	<.1	5.0	<.01	<.1	
DATE		DDE, TOTAL (UG/L)	DDE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DDT, TOTAL (UG/L)	DDT, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	DI- ELDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ENDRIN, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	ETHION, TOTAL (UG/L)
AUG 20...	<.01	.2	<.01	<.1	.03	<.01	.1	<.01	<.01	<.01	<.1	<.01
DATE		HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	HEPTA- CHLOR EPOXIDE TOT. IN BOTTOM MATL. (UG/KG)	LINDANE TOTAL (UG/L)	LINDANE TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	MALA- THION, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)
AUG 20...	<.01	<.1	<.01	<.1	<.01	<.1	<.01	<.01	<.01	<.1	<.01	<.01
DATE		MIREX, TOTAL (UG/L)	MIREX, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOXA- PHENE, TOTAL IN BOT- TOM MA- TERIAL (UG/KG)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
AUG 20...	<.01	<.1	<.01	<.1	<.1	<1	<10	<.01	.02	<.01	<.01	<.01

## COPANO CREEK MAIN STEM

08189200 COPANO CREEK NEAR REFUGIO, TX

LOCATION.--Lat 28°18'12", long 97°06'44". Refugio County, Hydrologic Unit 12100405, on right bank at bridge on Farm Road 774, 3.6 mi upstream from Alameda Creek, 8.1 mi east of Refugio, and 11.9 mi upstream from mouth.

DRAINAGE AREA.--87.8 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1970 to current year.

GAGE.--Water-stage recorder. Datum of gage is 17.25 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known diversion above station. Recording rain gage at station.

AVERAGE DISCHARGE.--15 years, 51.6 ft<sup>3</sup>/s (7.98 in/yr), 37,380 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,300 ft<sup>3</sup>/s Sept. 12, 1971 (gage height, 21.00 ft), from rating curve extended above 3,800 ft<sup>3</sup>/s; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1921, 22 ft in September 1967, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 12	2000	*711	*11.08	No other peak greater than base discharge.			
Minimum daily discharge, no flow for many days.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.16	.00	14	17	28	3.5	13	.00	.00	.00	.00
2	.00	.09	.00	21	11	30	2.1	8.4	.00	.00	.00	.00
3	.00	.06	.00	20	6.2	31	1.7	5.3	.00	.00	.00	.00
4	.00	.02	.00	15	4.1	29	1.1	3.4	.00	.23	.00	.00
5	.00	.00	.00	6.6	3.6	28	.69	2.1	.00	.59	.00	.00
6	.00	.00	.00	5.1	2.7	21	.42	1.3	.00	.12	.00	.00
7	.00	.00	.00	4.1	1.6	9.4	.28	.77	.00	.10	.00	.00
8	.00	.00	.00	3.3	1.1	5.0	.14	.40	.00	.01	.00	.00
9	.00	.00	.00	2.3	.86	3.3	.09	.26	.00	.00	.00	.00
10	.00	.00	.00	1.5	.66	2.3	4.2	.11	.00	.00	.00	.00
11	.00	.00	.00	.93	.50	1.5	375	.06	.00	.00	.00	.00
12	.00	.00	.00	1.5	.29	1.0	681	.02	.00	.00	.00	.00
13	.00	.00	.00	9.1	.23	.65	582	.01	.00	.00	.00	.00
14	.00	.00	.00	20	.15	2.7	389	.01	.00	.00	.00	.00
15	.00	.00	.00	24	.09	17	282	.00	.00	.00	.00	.00
16	.00	.00	.00	22	.06	79	228	.00	.00	.00	.00	.00
17	.00	.00	.00	20	.04	88	179	.00	.00	.00	.00	.00
18	.00	.00	.00	18	.03	71	128	1.5	.00	.00	.00	.00
19	86	.00	.00	17	.02	62	83	1.8	.00	.00	.00	.00
20	126	.00	.00	16	.02	89	53	.54	.00	.00	.00	.00
21	35	.00	.00	15	.01	166	33	.38	.00	.00	.00	.00
22	9.8	.00	.00	13	.01	117	20	.21	.00	.00	.00	.00
23	3.7	.00	.00	7.2	.01	136	12	.41	.00	.00	.00	.00
24	1.6	.00	.00	3.3	.01	146	7.6	.50	.00	.00	.00	.00
25	.79	.00	.00	2.2	.01	131	4.7	.27	.00	.00	.00	.00
26	1.2	.00	.00	1.5	.01	85	9.0	.08	.00	.00	.00	.00
27	1.5	.00	.00	14	1.3	50	19	.01	.00	.00	.00	.00
28	2.8	.00	.00	14	15	31	27	.01	.00	.00	.00	.00
29	1.8	.00	.00	6.7	---	16	22	.00	.00	.00	.00	4.6
30	.88	.00	.00	5.5	---	7.7	18	.00	.00	.00	.00	65
31	.38	---	1.1	17	---	5.2	---	.00	---	.00	.00	---
TOTAL	271.45	.33	1.10	340.83	66.61	1489.75	3166.52	40.85	.00	1.05	.00	69.60
MEAN	8.76	.011	.035	11.0	2.38	48.1	106	1.32	.000	.034	.000	2.32
MAX	126	.16	1.1	24	17	166	681	13	.00	.59	.00	65
MIN	.00	.00	.00	.93	.01	.65	.09	.00	.00	.00	.00	.00
CFSM	.10	.000	.000	.13	.03	.55	1.21	.02	.000	.000	.000	.03
IN.	.12	.00	.00	.14	.03	.63	1.34	.02	.00	.00	.00	.03
AC-FT	538	.7	2.2	676	132	2950	6280	81	.00	2.1	.00	138
CAL YR 1984	TOTAL	3180.47	MEAN	8.69	MAX	328	MIN	.00	CFSM	.10	IN	1.35
WTR YR 1985	TOTAL	5448.09	MEAN	14.9	MAX	681	MIN	.00	CFSM	.17	IN	2.31
									AC-FT	6310	AC-FT	10810



## COPANO CREEK MAIN STEM

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08189200 COPANO CREEK NEAR REFUGIO, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: June 1970 to current year. Pesticide analyses: June 1970 to September 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
JAN 22...	1600	13	176	8.3	5.0	89	11.6	89	2.3	33	0
MAR 13...	1600	.62	373	8.0	24.5	310	9.0	108	4.4	83	6
APR 24...	1714	6.9	201	7.3	25.5	230	6.4	78	6.0	61	0

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINEITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)
JAN 22...	9.7	2.1	21	2	4.6	34	28	17	.10	15	120
MAR 13...	26	4.4	48	2	6.8	77	39	50	.20	22	240
APR 24...	19	3.4	22	1	5.1	74	19	17	.20	23	150

DATE	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, ORTHOPHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN 22...	32	--	.080	<.10	.140	1.7	1.8	.130	<.010	25
MAR 13...	100	.11	.090	.20	.270	2.8	3.1	.290	--	35
APR 24...	234	.10	.100	.20	.240	2.5	2.7	.160	--	22

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
JAN 22...	1600	<1	49	1	80	7	350

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
JAN 22...	<1	4	<.1	<1	<1	20

08189500 MISSION RIVER AT REFUGIO, TX

LOCATION.--Lat 28°17'30", long 97°16'44", Hydrologic Unit 12100406, on left bank at upstream side of upstream bridge of two bridges on U.S. Highway 77, 560 ft upstream from Missouri Pacific Railroad Co. bridge, and 0.2 mi southwest of Refugio.

DRAINAGE AREA.--690 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1939 to current year.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1.00 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 25, 1958, nonrecording gage at site 59 ft downstream at same datum. Nov. 26, 1958, to Apr. 18, 1963, nonrecording gage at present site and datum.

REMARKS.--Estimated daily discharges: Mar. 10, 11. Records good. There are several small diversions above station.

AVERAGE DISCHARGE.--46 years, 121 ft<sup>3</sup>/s (2.38 in/yr), 87,660 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 79,000 ft<sup>3</sup>/s Sept. 12, 1971 (gage height, 38.25 ft); minimum observed, 0.7 ft<sup>3</sup>/s Oct. 7, 9, 1940, Aug. 18-20, Sept. 5, 1945, Dec. 29, 31, 1949, Jan. 1, 1950, July 13, Aug. 28, 1963, July 18, 19, 22-26, 31, Aug. 1, 2, 1971.  
Maximum stage since about 1899, that of Sept. 12, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in August 1914 and May 17, 1938, reached a stage of 32.3 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 12	2100	*5,280	*24.16	No other peak greater than base discharge.			

Minimum daily discharge, 2.2 ft<sup>3</sup>/s for several days in August and September.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	21	11	61	15	159	19	47	22	27	12	2.4
2	2.9	19	11	60	14	139	17	42	21	22	11	2.4
3	2.7	22	11	34	13	89	16	39	21	19	10	2.2
4	2.7	21	13	27	12	51	15	37	21	59	8.7	2.2
5	2.7	18	13	23	12	28	15	35	20	87	7.6	2.2
6	2.7	18	13	19	11	19	15	33	20	66	6.6	2.2
7	56	17	12	18	11	15	15	32	20	45	5.4	2.2
8	75	15	12	15	11	15	15	32	20	31	4.4	2.2
9	209	14	12	14	11	13	15	32	20	27	4.0	2.2
10	171	13	12	13	11	13	60	111	20	26	4.9	2.2
11	104	13	12	13	11	13	1900	55	20	23	5.0	2.3
12	86	13	14	15	11	12	4840	40	20	21	4.2	2.5
13	35	12	15	18	11	12	4120	34	22	19	2.8	2.5
14	67	12	14	45	11	107	1300	32	23	18	2.7	2.8
15	93	12	14	110	11	179	1340	30	22	17	2.7	5.1
16	42	12	13	114	12	523	475	28	20	17	2.7	3.1
17	31	12	13	81	12	574	216	54	20	16	2.7	2.8
18	23	12	12	98	11	266	138	102	21	19	2.7	2.6
19	96	12	12	69	12	118	105	82	22	20	2.4	2.4
20	293	11	11	40	12	248	87	52	23	20	2.4	2.4
21	225	11	11	25	11	694	76	66	22	21	2.4	2.4
22	68	11	11	18	11	305	69	41	22	20	2.4	2.3
23	30	11	11	16	10	123	63	33	29	20	2.4	2.2
24	21	11	11	14	10	77	57	29	23	19	2.4	2.2
25	18	11	11	13	11	54	53	27	22	18	2.4	2.2
26	25	11	11	12	12	40	106	26	21	18	2.4	2.7
27	53	11	11	24	25	33	144	24	19	17	2.4	2.4
28	91	11	10	45	136	29	86	23	21	16	2.2	2.4
29	48	11	11	64	---	25	64	23	22	16	2.3	20
30	44	11	11	43	---	23	54	22	25	15	2.4	1020
31	28	---	83	20	---	21	---	22	---	14	2.4	---
TOTAL	2048.6	409	442	1181	461	4017	15495	1285	644	793	131.0	1109.7
MEAN	66.1	13.6	14.3	38.1	16.5	130	517	41.5	21.5	25.6	4.23	37.0
MAX	293	22	83	114	136	694	4840	111	29	87	12	1020
MIN	2.7	11	10	12	10	12	15	22	19	14	2.2	2.2
CFM	.10	.02	.02	.06	.02	.19	.75	.06	.03	.04	.006	.05
IN.	.11	.02	.02	.06	.02	.22	.84	.07	.03	.04	.01	.06
AC-FT	4060	811	877	2340	914	7970	30730	2550	1280	1570	260	2200

CAL YR 1984	TOTAL	10648.9	MEAN 29.1	MAX 893	MIN 1.7	CFM .04	IN .57	AC-FT 21120
WTR YR 1985	TOTAL	28016.3	MEAN 76.8	MAX 4840	MIN 2.2	CFM .11	IN 1.51	AC-FT 55570

## MISSION RIVER MAIN STEM

08189500 MISSION RIVER AT REFUGIO, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: September 1961 to current year. Chemical and biochemical analyses: January 1968 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1961 to September 1981.

WATER TEMPERATURES: September 1961 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 100,000 micromhos Nov. 28, 1965; minimum daily, 85 micromhos Sept. 13, 1971.

WATER TEMPERATURES: Maximum daily, 39.0°C June 20, 1981; minimum daily, 0.0°C Jan. 18, 1977.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)
OCT 17...	0930	33	745	7.6	24.0	37	6.6	78	2.2	750	290	160
JAN 23...	1700	17	1140	7.6	6.0	22	11.7	92	2.6	120	110	220
MAY 07...	1430	32	1920	7.9	25.0	14	7.9	96	1.0	960	1240	440
JUL 08...	1800	29	1280	7.8	31.0	31	4.8	64	1.5	--	--	230
DATE		HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 17...		51	50	8.5	91	3	5.1	110	24	170	.20	22
JAN 23...		92	67	13	150	5	3.3	130	31	290	.20	18
MAY 07...		180	120	33	220	5	6.7	262	51	440	.30	36
JUL 08...		94	69	14	180	5	4.0	138	32	310	.30	28
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, DIS- SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	
OCT 17...		432	440	.12	.080	1.0	.080	.050	.040	59	5.3	82
JAN 23...		684	650	.15	.090	.90	.030	.010	<.010	32	1.5	65
MAY 07...		1140	1100	<.10	.050	.80	.050	.010	.020	80	6.9	68
JUL 08...		773	720	.13	.060	.70	.050	<.010	.020	63	4.9	88
DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)		
OCT 17...	0930	5	250	<.0	<1	<1	<3	1	66	2		
JAN 23...	1700	2	290	<.5	<1	7	<3	2	100	<1		
MAY 07...	1430	6	510	<.5	<1	<1	<3	3	6	<1		
JUL 08...	1800	7	340	<.5	<1	<1	<3	2	9	1		
DATE	TIME	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	
OCT 17...		16	31	<.1	<10	4	<1	<1	540	7	30	
JAN 23...		29	80	<.1	<10	<1	<1	<1	960	<6	12	
MAY 07...		47	98	<.1	<10	1	<1	<1	1600	7	20	
JUL 08...		31	29	<.1	<10	1	<1	<1	1100	10	12	

## ARANSAS RIVER MAIN STEM

08189700 ARANSAS RIVER NEAR SKIDMORE, TX

LOCATION.--Lat 28°16'56", long 97°37'14", Bee County, Hydrologic Unit 12100407, on right bank 160 ft downstream from centerline of county road bridge, 3.8 mi downstream from confluence of West Aransas and Poesta Creeks, and 4.4 mi northeast of Skidmore.

DRAINAGE AREA.--247 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1964 to current year.

Water-quality records: Chemical analyses: October 1965 to September 1966. Sediment records: February 1966 to September 1975.

GAGE.--Water-stage recorder. Datum of gage is 72.37 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Nov. 15 to Dec. 3, Jan. 3-23, and Apr. 12-22. Records good. No known diversion above station. Chase Field Naval Air Station and the city of Beeville discharge sewage effluent into the stream via Poesta Creek. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--21 years, 40.6 ft<sup>3</sup>/s (2.23 in/yr), 29,410 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,800 ft<sup>3</sup>/s Sept. 22, 1967 (gage height, 42.22 ft, from floodmark), from rating curve extended above 14,000 ft<sup>3</sup>/s on basis of slope-area measurements of 29,600 and 82,800 ft<sup>3</sup>/s; no flow at times in 1964-67 and 1971.

Maximum stage since at least 1914, that of Sept. 22, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of September 1954 reached a stage of 33 ft (discharge, 19,600 ft<sup>3</sup>/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 11	0100	*8,660	a*25.32	May 25	0500	1,140	12.49

a From floodmark.

Minimum daily discharge, 0.07 ft<sup>3</sup>/s Sept. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	5.9	6.6	84	4.4	15	3.2	6.2	5.3	2.6	.61	.90
2	2.3	182	7.8	32	3.3	10	3.1	6.1	4.8	2.1	.87	.43
3	2.6	116	6.4	22	3.0	7.3	2.9	5.5	4.4	3.8	.90	.18
4	2.5	39	3.8	19	3.2	5.4	2.9	4.9	4.0	12	.79	.11
5	2.5	23	4.6	14	3.3	4.5	3.9	4.9	3.5	12	.79	.09
6	2.5	16	6.9	12	3.3	4.0	4.2	4.3	3.7	6.3	.65	.07
7	9.8	12	5.8	11	3.2	3.4	4.3	4.2	3.6	3.2	.61	.14
8	189	10	4.2	9.7	3.0	3.4	5.1	6.8	2.7	2.4	.79	.15
9	46	7.9	3.8	8.9	2.9	3.5	5.1	40	2.7	1.9	.77	.14
10	52	6.3	3.8	8.1	2.7	3.1	1340	26	2.9	1.7	.75	.11
11	34	6.1	3.8	7.7	2.7	2.9	3390	12	2.5	1.4	.75	.35
12	21	5.4	3.8	8.2	2.7	2.7	254	7.0	2.2	1.3	.68	.40
13	18	5.2	3.8	13	2.6	2.9	68	5.5	2.2	1.5	.61	.24
14	163	5.7	3.8	15	2.6	3.7	39	5.1	1.9	1.3	.78	.24
15	160	6.2	4.0	21	2.6	6.8	29	4.6	1.8	1.2	.95	.14
16	40	6.1	4.4	21	2.6	20	23	4.0	1.9	1.1	1.0	.99
17	18	6.0	9.4	15	2.6	21	19	5.6	2.1	1.2	.85	2.2
18	11	6.0	8.6	17	2.6	9.9	16	27	2.1	1.3	.81	3.2
19	7.9	6.0	5.9	11	2.6	6.4	13	26	2.7	1.2	.74	8.2
20	6.9	5.9	5.3	8.0	2.7	23	12	15	21	1.2	.66	7.8
21	6.0	5.8	5.2	5.9	3.0	53	10	8.7	22	1.2	.61	1.4
22	5.1	5.8	5.2	4.5	3.1	19	9.2	21	20	.99	.61	.57
23	4.7	5.7	5.2	3.5	3.5	9.1	8.2	10	72	.94	.53	.40
24	13	5.7	5.2	2.9	4.1	6.4	7.1	20	15	.95	.45	.19
25	10	5.7	5.2	2.9	4.2	5.0	6.4	603	6.6	.92	.41	.13
26	32	5.7	5.7	3.0	4.7	4.4	13	81	49	.83	.37	.11
27	48	5.7	6.1	9.7	8.7	4.2	16	25	55	.99	.31	.10
28	29	5.7	6.7	43	26	4.0	9.4	13	14	.91	.30	.21
29	23	5.8	8.0	16	---	4.0	7.6	9.4	5.9	.90	.62	13
30	13	6.0	7.3	8.7	---	3.9	6.6	7.8	3.4	.71	5.2	61
31	8.1	---	30	5.8	---	3.7	---	6.5	---	.51	2.8	---
TOTAL	982.9	534.3	196.3	463.5	115.9	275.6	5331.2	1026.1	340.9	70.55	27.57	103.19
MEAN	31.7	17.8	6.33	15.0	4.14	8.89	178	33.1	11.4	2.28	.89	3.44
MAX	189	182	30	84	26	53	3390	603	72	12	5.2	61
MIN	2.0	5.2	3.8	2.9	2.6	2.7	2.9	4.0	1.8	.51	.30	.07
CFSM	.13	.07	.03	.06	.02	.04	.72	.13	.05	.009	.004	.01
IN.	.15	.08	.03	.07	.02	.04	.80	.15	.05	.01	.00	.02
AC-FT	1950	1060	389	919	230	547	10570	2040	676	140	55	205

CAL YR	1984	TOTAL	3251.23	MEAN	8.88	MAX	189	MIN	.62	CFSM	.04	IN	.49	AC-FT	6450
WTR YR	1985	TOTAL	9468.01	MEAN	25.9	MAX	3390	MIN	.07	CFSM	.11	IN	1.43	AC-FT	18780

## ARANSAS RIVER BASIN

345

08189800 CHILTIPI CREEK AT SINTON, TX

LOCATION.--Lat 28°02'48", long 97°30'13", San Patricio County, Hydrologic Unit 12100407, on left bank at upstream end of bridge on U.S. Highway 77, 0.2 mi upstream from Missouri Pacific Railroad Co. bridge, and 0.8 mi northeast of Sinton.

DRAINAGE AREA.--128 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1970 to current year.

REVISED RECORDS.--WDR TX-72-1: 1971(P).

GAGE.--Water-stage recorder. Datum of gage is 16.74 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 23, 1985, at datum 2.00 ft higher.

REMARKS.--Estimated daily discharges: Jan. 23 to Mar. 15, May 25 to June 9, June 25 to July 17, and July 19-22. Records good except those for estimated daily discharges, which are poor. No known diversions above station. An undetermined amount of water from oilfield operations enters the stream upstream at various points. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--15 years, 51.0 ft<sup>3</sup>/s (5.01 in/yr), 36,950 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,800 ft<sup>3</sup>/s Apr. 11, 1985 (gage height, 29.45 ft); maximum gage height, 31.10 ft Sept. 12, 1971, present datum; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stages since 1910, 32.2 ft Sept. 22, 1967, and 30.8 ft in April 1930, present datum, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 20	0900	13,500	26.90	Apr. 11	0500	*23,800	*29.45

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	1.2	1.0	.36	.00	6.8	.02	.00
2	.00	2.0	.00	.00	.00	.68	1.0	.11	.00	6.8	.01	.00
3	.00	2.0	.00	.00	.00	.54	1.3	.00	.00	8.5	.01	.00
4	.00	.08	.00	.00	.00	.20	1.3	.00	.00	12	.02	.00
5	.00	.00	.00	.00	.00	.10	1.4	.00	.00	12	.02	.00
6	.00	.00	.00	.00	.00	.00	1.2	.00	.00	12	.01	.00
7	14	.00	.00	.00	.00	.00	1.2	.00	.00	14	.00	.00
8	268	.00	.00	.00	.00	.00	1.4	.00	.00	15	.00	.00
9	48	.00	.00	.00	.00	.10	1.4	.31	.30	14	.01	.00
10	33	.00	.00	.00	1.4	.18	3.1	3.5	.92	15	.00	.00
11	2.5	.01	.00	.00	.08	.18	17000	1.1	1.0	.00	.00	.00
12	.12	.01	.00	.00	.00	.22	1890	.54	.68	.00	.00	.13
13	.00	.00	.00	.00	.00	.18	248	.26	1.1	.00	.00	.70
14	61	.00	.00	.00	.00	1.5	60	.18	.68	.00	.00	.03
15	78	.00	.00	.00	.00	5.6	24	.14	.68	.00	.00	.01
16	10	.00	.00	.00	.00	69	14	.68	1.0	.00	.00	.26
17	2.0	.00	.00	.00	.00	22	10	2.4	1.1	.00	.00	.00
18	.60	.00	.00	.00	.00	13	5.8	5.2	1.2	.00	.00	.00
19	2130	.00	.00	.00	.00	10	4.1	15	20	.00	.00	.00
20	10100	.00	.00	.00	.00	9.5	2.6	6.2	111	.00	.00	.00
21	2940	.00	.00	.00	.18	8.5	1.7	49	293	.00	.00	.00
22	201	.00	.00	.00	.00	4.8	.83	63	148	.00	.00	1.2
23	4.8	.00	.00	.00	.00	3.1	.36	15	26	.03	.00	.36
24	.86	.00	.00	.00	16	2.4	.08	6.0	12	.08	.00	.00
25	.05	.00	.00	.00	13	2.0	1.5	1.7	8.0	.14	.00	.00
26	.10	.00	.00	.00	6.0	1.8	8.7	.10	3.0	.08	.00	.43
27	.00	.00	.00	1.1	3.5	1.8	24	.00	1.5	.00	.00	.77
28	.00	.00	.00	.01	2.1	1.7	12	.00	.80	.00	.00	.82
29	.00	.00	.00	.00	---	1.7	3.1	.00	.40	.02	.13	.00
30	.00	.00	.00	.00	---	1.7	1.2	.00	.10	.02	.00	6.1
31	.00	---	.00	.00	---	1.3	---	.00	---	.05	.00	---
TOTAL	15894.03	4.10	.00	1.11	42.26	164.98	19326.27	170.78	632.46	116.52	.23	10.81
MEAN	.513	.14	.000	.036	1.51	5.32	644	5.51	21.1	3.76	.007	.36
MAX	10100	2.0	.00	1.1	16	69	17000	63	293	15	.13	6.1
MIN	.00	.00	.00	.00	.00	.00	.08	.00	.00	.00	.00	.00
CFSM	4.01	.001	.000	.000	.01	.04	5.03	.04	.17	.03	.000	.003
IN.	4.62	.00	.00	.00	.01	.05	5.62	.05	.18	.03	.00	.00
AC-FT	31530	8.1	.00	2.2	84	327	38330	339	1250	231	.5	21
CAL YR 1984	TOTAL	16789.82	MEAN	45.9	MAX	10100	MIN	.00	CFSM	.36	IN	4.88
WTR YR 1985	TOTAL	36363.55	MEAN	99.6	MAX	17000	MIN	.00	CFSM	.78	IN	10.57
									AC-FT	33300		
									AC-FT	72130		



## NUECES RIVER MAIN STEM

08190000 NUECES RIVER AT LAGUNA, TX

LOCATION.--Lat 29°25'42", long 99°59'49". Uvalde County, Hydrologic Unit 12110101, on right bank 0.5 mi downstream from Sycamore Creek, 1.0 mi northeast of Laguna, and at mile 370.8.

DRAINAGE AREA.--737 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to current year.

REVISED RECORDS.--WSP 1562: 1930, 1931(M), 1932, 1939. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,119.72 ft above National Geodetic Vertical Datum of 1929. Prior to Jan. 26, 1925, nonrecording gage at site 2 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Many small diversions above station for irrigation.

AVERAGE DISCHARGE.--62 years, 148 ft<sup>3</sup>/s (2.73 in/yr), 107,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 307,000 ft<sup>3</sup>/s Sept. 24, 1955, (gage height, 29.95 ft, in gage well, 32.7 ft, from floodmarks), from rating curve extended above 40,000 ft<sup>3</sup>/s on basis of float measurement of 110,000 ft<sup>3</sup>/s and slope-area measurements of 213,000 and 307,000 ft<sup>3</sup>/s; minimum, 2.6 ft<sup>3</sup>/s Mar. 14-16, 1957.  
Maximum stage since at least 1866, that of Sept. 24, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1913 reached a stage of about 29 ft, discharge 210,000 ft<sup>3</sup>/s; flood of Sept. 21, 1923, reached a stage of about 26.5 ft, discharge 160,000 ft<sup>3</sup>/s; from information by local residents. Discharges based on rating curve mentioned above.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	1330	*53,700	*18.53	July 3	1330	4,400	7.25
Feb. 23	1400	1,810	5.88	Sept. 29	2100	1,580	5.73
June 12	2200	830	4.49				

Minimum daily discharge, 13 ft<sup>3</sup>/s Oct. 2-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	50	61	3670	199	375	153	233	101	116	92	43
2	13	48	59	1450	196	342	150	217	97	112	89	43
3	13	50	58	894	196	316	148	184	94	1060	86	42
4	13	51	59	719	193	296	146	167	92	714	83	41
5	13	49	61	608	187	273	139	159	94	397	81	41
6	13	50	58	542	180	259	136	154	94	285	78	44
7	13	52	58	464	173	255	196	151	92	238	78	41
8	13	53	59	396	168	242	214	151	90	212	75	40
9	13	53	59	351	166	236	169	198	88	197	72	39
10	14	52	58	322	164	232	165	167	84	186	70	39
11	29	53	59	297	155	227	160	154	82	174	68	39
12	21	53	60	303	151	217	154	150	278	167	65	39
13	45	54	65	311	151	217	154	147	416	161	65	40
14	38	55	62	297	147	215	150	140	239	151	62	41
15	31	56	64	314	144	208	146	133	176	142	60	40
16	28	56	63	349	143	209	142	129	151	135	59	41
17	26	55	64	365	141	200	139	129	137	129	57	41
18	26	56	63	346	139	192	136	191	155	122	56	40
19	26	56	61	324	140	190	136	173	134	115	56	40
20	26	57	61	296	138	190	137	154	123	117	55	40
21	24	57	61	285	137	181	140	156	119	116	54	39
22	24	58	60	265	144	177	137	150	115	113	53	38
23	24	58	60	260	966	172	130	139	111	110	52	36
24	29	64	60	256	820	168	123	133	147	114	51	34
25	28	64	58	247	653	165	120	127	160	125	50	33
26	36	63	59	235	529	165	121	123	141	118	50	32
27	72	63	60	234	438	172	118	120	135	111	48	31
28	98	65	60	226	392	167	120	117	132	105	47	34
29	79	64	61	217	---	163	228	112	125	102	46	431
30	62	61	377	211	---	157	237	108	121	96	44	907
31	53	---	17800	205	---	152	---	104	---	93	44	---
TOTAL	957	1676	19928	15259	7350	6730	4544	4670	4123	6133	1946	2429
MEAN	30.9	55.9	643	492	263	217	151	151	137	198	62.8	81.0
MAX	98	65	17800	3670	966	375	237	233	416	1060	92	907
MIN	13	48	58	205	137	152	118	104	82	93	44	31
CFSM	.04	.07	.84	.64	.34	.28	.20	.20	.18	.26	.08	.11
IN.	.05	.08	.97	.74	.36	.33	.22	.23	.20	.30	.09	.12
AC-FT	1900	3320	39530	30270	14580	13350	9010	9260	8180	12160	3860	4820
CAL YR 1984	TOTAL	33268	MEAN	90.9	MAX	17800	MIN	13	CFSM	.12	IN	1.62
WTR YR 1985	TOTAL	75745	MEAN	208	MAX	17800	MIN	13	CFSM	.27	IN	3.69
									AC-FT	65990		
									AC-FT	150200		

NUECES RIVER MAIN STEM

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08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
DEC 31...	1624	28400	218	7.4	17.5	500	600	--	--	2.6	21000	26000
JAN 23...	0900	260	412	7.8	12.0	--	--	--	--	--	--	--
MAR 06...	1830	257	423	7.3	16.0	--	--	--	--	--	--	--
MAY 02...	1015	220	425	7.9	21.0	3	.60	8.3	95	1.2	K17	--
AUG 29...	1100	44	429	7.4	27.0	3	.30	7.7	100	.9	K7	K9

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
DEC 31...	100	10	34	4.5	2.5	.1	2.7	94	11	4.9	<.10	8.7
JAN 23...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 02...	220	29	64	14	7.4	.2	1.0	189	17	12	.20	11
AUG 29...	220	23	62	15	8.5	.3	.90	194	16	13	.10	13

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
DEC 31...	120	1460	83	1.4	.010	1.4	.060	3.9	4.0	.370	52	7.8
JAN 23...	--	--	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	--	--	--	--	--	--	--	--	--	--	--
MAY 02...	240	2	1	--	<.010	1.5	.010	.49	.50	.010	.7	--
AUG 29...	240	1	1	--	<.010	.80	.010	.39	.40	<.010	1.0	--

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
DEC 31...	1624	<1	22	<1	<10	4	73
AUG 29...	1100	<1	56	<1	<10	1	4

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
DEC 31...	<1	8	<.1	<1	<1	3
AUG 29...	<1	<1	<.1	<1	<1	9

NUECES RIVER MAIN STEM  
08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
DEC 31...	1624	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
JAN 23...	0900	--	--	--	<.10	<.10	--	<.10	--	--
MAR 06...	1830	<.1	<.10	<.01	<.10	<.10	<.1	<.10	<.01	<.01
AUG 29...	1100	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)
DEC 31...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
JAN 23...	--	--	--	--	--	--	--	--	--	--
MAR 06...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG 29...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)
DEC 31...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
JAN 23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
MAR 06...	<2.0	<.01	<.01	<.01	<.01	<.01	<.1	<.1	<.1	<.10
AUG 29...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
DEC 31...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
JAN 23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
MAR 06...	<2.0	<2.0	<.10	<.1	<1	<.01	<.01	<.01	<.01	<.01
AUG 29...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

NUECES RIVER BASIN

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08190500 WEST NUECES RIVER NEAR BRACKETTVILLE, TX

LOCATION.--Lat 29°28'21", long 100°14'10", Kinney County, Hydrologic Unit 12110102, at Wilson Ranch on Farm Road 3199, 1.3 mi upstream from Miguel Canyon, 16.0 mi northeast of Brackettville, and 40.2 mi upstream from mouth.

DRAINAGE AREA.--694 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1939 to September 1950, April 1956 to current year.

REVISED RECORDS.--WSP 1312: 1949(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,326.79 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 14, 1940, nonrecording gage at same site and datum.

REMARKS.--Estimated daily discharges: Oct. 1 to Dec. 30, Feb. 10-24, Feb. 27 to June 20, June 23 to July 2, 16-25, and July 27 to Sept. 30. Records good except those for estimated daily discharges and those below 1 ft<sup>3</sup>/s, which are poor. In ordinary years, a large part of streamflow is lost by seepage into the Balcones fault zone of the Edwards and associated limestones above station. No known diversion above station. Three observations of water temperature were made during the year.

AVERAGE DISCHARGE.--40 years (water years 1940-50, 1957-85), 35.9 ft<sup>3</sup>/s (26,010 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 246,000 ft<sup>3</sup>/s Sept. 20, 1964, (gage height, 31.3 ft, from floodmark), from rating curve extended above 4,500 ft<sup>3</sup>/s on basis of slope-area measurements of 10,000, 51,000, 150,000, and 246,000 ft<sup>3</sup>/s; no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1879, about 40 ft June 14, 1935 (discharge, 550,000 ft<sup>3</sup>/s, based on slope-area measurements of 580,000 ft<sup>3</sup>/s at site 33 mi upstream from gage) and 536,000 ft<sup>3</sup>/s (at site 24 mi downstream from gage, present site and datum), from gage-height relation of 1935 and 1955 flood peaks at site 0.6 mi upstream. Flood in 1900 reached a stage of about 34 ft, and flood of Sept. 24, 1955, reached a stage of 27.1 ft, from floodmark at present site (discharge, 150,000 ft<sup>3</sup>/s, by slope-area measurement).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	1600	*24,600	a*16.26	No other peak greater than base discharge.			
a From floodmark.							
Minimum daily discharge, 0.07 ft <sup>3</sup> /s Oct. 1-12.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	.30	.14	1150	5.1	2.6	1.3	.69	.52	2.7	2.2	.34
2	.07	.25	.14	208	5.1	2.4	1.2	.68	.51	2.7	2.1	.33
3	.07	.22	.14	123	5.0	2.3	1.2	.67	.51	47	1.9	.32
4	.07	.20	.14	96	4.4	2.3	1.2	.66	.50	12	1.7	.31
5	.07	.18	.14	79	4.2	2.2	1.1	.65	.50	14	1.6	.30
6	.07	.16	.14	67	4.1	2.2	1.1	.64	.49	16	1.5	.30
7	.07	.15	.14	50	3.6	2.1	1.1	.63	.48	14	1.4	.30
8	.07	.15	.14	41	3.4	2.1	1.0	.63	.47	13	1.3	.30
9	.07	.15	.14	30	3.2	2.1	1.0	.63	.46	12	1.2	.30
10	.07	.15	.14	20	3.1	2.1	.95	.63	.45	10	1.1	.30
11	.07	.15	.14	13	2.9	2.0	.90	.62	.45	8.8	1.1	.30
12	.07	.15	.14	11	2.8	2.0	.90	.62	.44	7.4	.95	.30
13	.08	.15	.15	12	2.7	2.0	.90	.61	.44	6.6	.90	.30
14	.08	.15	.15	9.2	2.6	1.9	.85	.61	.43	5.7	.85	.30
15	.08	.15	.15	10	2.5	1.9	.85	.60	.43	4.9	.80	.30
16	.08	.14	.16	15	2.5	1.9	.84	.60	.42	4.7	.78	.30
17	.08	.14	.16	25	2.4	1.8	.84	.60	.42	4.4	.75	.30
18	.08	.14	.17	26	2.3	1.8	.83	.60	.41	4.3	.70	.29
19	.08	.14	.17	23	2.3	1.7	.81	.60	.41	4.2	.65	.29
20	.08	.14	.17	17	2.2	1.7	.80	.60	.41	4.0	.63	.29
21	.08	.14	.18	14	2.2	1.7	.80	.59	4.8	4.0	.58	.29
22	.08	.14	.18	12	2.2	1.6	.79	.58	3.9	3.9	.55	.29
23	.08	.14	.19	10	2.1	1.6	.78	.57	3.6	3.8	.53	.29
24	.08	.14	.19	9.2	2.1	1.6	.78	.56	3.5	3.8	.50	.29
25	.08	.14	.20	8.2	3.9	1.5	.77	.55	3.4	3.8	.50	.29
26	.09	.14	.20	7.8	3.8	1.5	.77	.54	3.2	4.8	.48	.29
27	.09	.14	.20	7.3	3.2	1.5	.75	.54	3.1	4.3	.45	.29
28	1.0	.14	.20	7.0	2.7	1.4	.73	.53	3.0	3.7	.43	.28
29	.80	.14	.20	6.7	---	1.4	.71	.53	2.9	3.2	.40	.28
30	.45	.14	.20	6.3	---	1.4	.70	.52	2.8	2.8	.38	.28
31	.35	---	5090	5.5	---	1.3	---	.52	---	2.4	.35	---
TOTAL	4.66	4.76	5094.90	2119.2	88.6	57.6	27.25	18.60	43.35	238.9	29.26	8.94
MEAN	.15	.16	164	68.4	3.16	1.86	.91	.60	1.45	7.71	.94	.30
MAX	1.0	.30	5090	1150	5.1	2.6	1.3	.69	4.8	47	2.2	.34
MIN	.07	.14	.14	5.5	2.1	1.3	.70	.52	.41	2.4	.35	.28
AC-FT	9.2	9.4	10110	4200	176	114	54	37	86	474	58	18
CAL YR 1984	TOTAL	5111.81	MEAN 14.0	MAX 5090	MIN .00	AC-FT 10140						
WTR YR 1985	TOTAL	7736.02	MEAN 21.2	MAX 5090	MIN .07	AC-FT 15340						

## 08192000 NUECES RIVER BELOW UVALDE, TX

LOCATION.--Lat 29°07'25", long 99°53'40", Uvalde County, Hydrologic Unit 12110103, on right bank at McDaniel Ranch, 5.7 mi upstream from bridge on U.S. Highway 83, 8.8 mi southwest of Uvalde, 18.2 mi downstream from West Nueces River, and at mile 338.7.

DRAINAGE AREA.--1,861 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1939 to current year. October 1927 to April 1939, published as "near Uvalde"; records equivalent only during periods of flood flow.

REVISED RECORDS.--WSP 1732: 1956(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 796.12 ft above National Geodetic Vertical Datum of 1929. Oct. 4, 1927, to Apr. 30, 1939, water-stage recorder at site 6.2 mi upstream at different datum.

REMARKS.--Estimated daily discharges: Jan. 23 to Feb. 10. Records good. Part of flow of Nueces River enters Edwards and associated limestones in the Balcones Fault Zone that crosses basin downstream from Laguna (station 08190000) and upstream from this station. At low stage, most of headwater flow enters this formation. Many small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--46 years, 119 ft<sup>3</sup>/s (86,220 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 189,000 ft<sup>3</sup>/s Sept. 24, 1955 (gage height, 24.61 ft, from floodmark), from rating curve extended above 34,000 ft<sup>3</sup>/s on basis of conveyance study and slope-area measurement of peak flow; no flow at times in 1951-57.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1836, 40.4 ft June 14, 1935, from floodmark (discharge at former site, 616,000 ft<sup>3</sup>/s, by slope-area measurement). Large floods also occurred in 1901 and 1913, stages unknown.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft<sup>3</sup>/s and maximum(\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 11	0900	287	4.33	July 4	0600	1,130	5.18
Dec. 31	2030	*44,600	*14.92	Sept. 29	1600	7,920	9.60
Feb. 24	0600	894	4.95				

Minimum daily discharge, 2.4 ft<sup>3</sup>/s Oct. 1-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	11	8.4	10100	130	282	94	56	50	39	36	29
2	2.4	11	8.4	2780	125	259	92	67	48	39	35	29
3	2.4	11	8.4	1100	120	243	90	79	47	39	35	29
4	2.4	11	8.4	680	120	227	86	80	47	593	35	28
5	2.4	11	8.4	474	120	208	86	76	47	300	35	29
6	2.4	10	8.2	364	115	194	81	72	46	191	33	41
7	2.4	10	8.1	300	115	189	79	68	44	139	32	29
8	2.4	10	8.3	263	115	184	79	66	44	109	32	29
9	3.1	10	8.4	250	110	175	99	65	43	94	32	28
10	3.1	9.6	8.4	233	110	170	101	62	42	83	31	28
11	77	9.5	8.4	204	109	163	92	63	40	76	31	27
12	16	9.5	8.4	203	104	158	88	65	45	70	31	27
13	48	9.5	9.8	212	101	153	86	63	43	65	30	28
14	24	9.5	9.0	203	101	150	81	60	40	61	30	28
15	14	9.5	8.4	203	96	154	79	59	39	56	30	27
16	12	9.5	8.3	212	94	149	77	58	38	53	30	27
17	11	9.5	8.4	230	94	142	74	57	38	51	29	28
18	11	8.9	8.4	243	92	136	70	60	40	48	28	27
19	11	8.9	8.4	232	90	131	68	55	42	47	28	27
20	11	9.3	8.4	196	90	126	67	59	42	46	28	25
21	11	9.1	8.4	170	90	122	65	65	42	44	28	25
22	11	8.9	8.4	164	90	119	63	62	42	43	28	25
23	11	8.4	8.4	160	149	115	62	59	46	43	28	25
24	11	9.7	8.4	155	714	111	61	67	44	43	27	24
25	11	9.6	8.4	150	652	108	61	63	43	42	27	24
26	34	9.0	8.4	150	465	105	60	59	43	39	27	23
27	18	8.3	8.2	145	361	104	59	56	46	39	27	23
28	13	8.8	8.2	140	306	105	58	54	42	38	26	24
29	13	9.0	8.0	140	---	104	58	53	41	37	26	1890
30	12	9.0	11	135	---	99	57	52	40	36	26	729
31	12	---	14800	135	---	96	---	51	---	36	27	---
TOTAL	417.4	288.0	15055.1	20326	4978	4781	2273	1931	1294	2639	928	3382
MEAN	13.5	9.60	486	656	178	154	75.8	62.3	43.1	85.1	29.9	113
MAX	77	11	14800	10100	714	282	101	80	50	593	36	1890
MIN	2.4	8.3	8.0	135	90	96	57	51	38	36	26	23
AC-FT	828	571	29860	40320	9870	9480	4510	3830	2570	5230	1840	6710
CAL YR 1984	TOTAL	18793.2	MEAN	51.3	MAX	14800	MIN	2.1	AC-FT	37280		
WTR YR 1985	TOTAL	58292.5	MEAN	160	MAX	14800	MIN	2.4	AC-FT	115600		



NUECES RIVER MAIN STEM

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08193000 NUECES RIVER NEAR ASHERTON, TX

LOCATION.--Lat 28°30'00", long 99°40'54", Dimmit County, Hydrologic Unit 12110103, on right bank 28 ft downstream from bridge on Farm Road 190, 0.1 mi downstream from El Moro Creek, 5.8 mi northeast of Asherton, and at mile 266.0.

DRAINAGE AREA.--4,082 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1939 to current year.

REVISED RECORDS.--WSP 1118: 1944.

GAGE.--Water-stage recorder. Datum of gage is 470.92 ft above National Geodetic Vertical Datum of 1929. Prior to Feb. 2, 1940, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Part of the flow of the Nueces River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Considerable loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Since March 1948, flow slightly regulated by Upper Nueces Reservoir (capacity, 7,590 acre-ft), 13 mi upstream. Many small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--46 years, 178 ft<sup>3</sup>/s (129,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,500 ft<sup>3</sup>/s Oct. 6, 1959 (gage height, 30.88 ft); no flow for many days each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1900, 33 ft June 17, 1935; flood of June 30, 1913, reached about same stage, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 15	2000	7,150	26.94	Jan. 3	0800	*7,210	*27.00

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	92	.26	143	100	370	61	434	12	3.2	.00	.00
2	.00	85	.30	5000	99	330	56	353	4.1	2.9	.00	.00
3	.00	64	.31	6800	97	298	48	151	1.4	2.0	.00	.00
4	.00	49	.32	3640	94	267	42	106	.49	1.6	.00	.00
5	.00	37	.35	1280	90	238	40	84	.18	.40	.00	.00
6	.00	27	.31	725	85	221	37	51	.10	.12	.00	.00
7	.00	22	.31	537	83	208	33	33	.04	.03	.00	.00
8	.00	18	.44	405	81	197	32	22	.05	.02	.00	.00
9	.98	14	.44	313	79	182	38	108	.04	.02	.00	.00
10	16	8.7	.33	245	79	168	57	125	.02	.02	.00	.00
11	88	5.2	.31	200	75	157	57	102	.02	.02	.00	.00
12	1380	2.2	.27	187	67	147	46	69	11	.02	.00	.00
13	2360	1.2	.30	213	61	137	44	43	46	.02	.00	.00
14	4580	1.1	.31	211	54	128	49	30	7.1	.02	.00	.00
15	6830	.71	.31	215	49	134	45	23	1.1	.02	.00	.00
16	6840	.52	.26	199	45	152	35	17	.14	.02	.00	.00
17	5600	.52	.26	184	41	153	22	11	.01	.02	.00	.00
18	3120	.37	.24	179	40	141	15	17	.01	.01	.00	.00
19	877	.26	.17	181	41	131	9.3	58	.79	.00	.00	.00
20	163	.23	.15	182	44	122	7.0	539	.01	.00	.00	.00
21	114	.26	.15	172	46	110	120	343	2.3	.00	.00	.00
22	82	.26	.15	153	49	105	154	207	1.8	.00	.00	.00
23	62	.22	.18	140	66	101	446	404	.83	.00	.00	.00
24	51	.37	.22	132	58	96	511	243	25	.00	.00	.00
25	43	.61	.20	126	66	96	316	157	20	.00	.00	.00
26	38	.61	.22	117	394	98	274	108	13	.00	.00	.00
27	42	.44	.26	117	436	92	249	72	3.9	.00	.00	.00
28	44	.37	.28	115	393	80	242	51	1.7	.00	.00	.00
29	71	.37	.31	114	---	82	211	41	1.6	.00	.00	.00
30	115	.27	7.0	112	---	81	235	30	2.1	.00	.00	.00
31	96	---	108	104	---	71	---	21	---	.00	.00	---
TOTAL	32612.98	432.79	122.92	22441	2912	4893	3531.3	4053	156.83	10.46	.00	.00
MEAN	1052	14.4	3.97	724	104	158	118	131	5.23	.34	.000	.000
MAX	6840	92	108	6800	436	370	511	539	46	3.2	.00	.00
MIN	.00	.22	.15	104	40	71	7.0	11	.01	.00	.00	.00
AC-FT	64690	858	244	44510	5780	9710	7000	8040	311	21	.00	.00
CAL YR 1984	TOTAL	33292.61	MEAN	91.0	MAX	6840	MIN	.00	AC-FT	66040		
WTR YR 1985	TOTAL	71166.28	MEAN	195	MAX	6840	MIN	.00	AC-FT	141200		

## 08194000 NUECES RIVER AT COTULLA, TX

LOCATION.--Lat 28°25'34", long 99°14'23", La Salle County, Hydrologic Unit 12110105, on left bank at downstream side of bridge on U.S. Highway 81, 0.4 mi upstream from Missouri Pacific Railroad Co. bridge, 0.8 mi southwest of Cotulla, 1.0 mi upstream from Lind Dam, and at mile 216.9.

DRAINAGE AREA.--5,171 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1923 to current year. November 1923 to September 1926 monthly discharge only, published in WSP 1312; figures of daily discharge for Oct. 31, 1923, to Sept. 30, 1926, published in WSP 588, 608, and 628, have been found to be unreliable and should not be used. Gage-height records collected in this vicinity in 1914-17 and since 1922 are contained in reports of the National Weather Service.

REVISED RECORDS.--WSP 1732: 1957(M). WDR TX-83-3: Drainage area. See PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 368.08 ft above National Geodetic Vertical Datum of 1929. Oct. 31, 1923, to Aug. 3, 1924, nonrecording gage at approximate site of present gage at datum 7.28 ft higher. Aug. 4, 1924, to Nov. 19, 1934, nonrecording gage at site 5,000 ft downstream at datum 8.42 ft higher. Nov. 20, 1934, to July 14, 1938, water-stage recorder, and July 15, 1938, to Apr. 30, 1963, nonrecording gage, at present site and datum.

REMARKS.--Estimated daily discharges: Oct. 1-8, 14-16, and Nov. 22-28. Records good. Part of flow of Nueces River and its headwater tributaries enter the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Considerable loss of flow into various permeable formations occurs downstream from the Balcones Fault Zone. Low flow is slightly regulated by small storage reservoirs above station, with most diverted above station by pumping (see REMARKS for Nueces River near Asherton, station 08193000). Satellite telemeter located at station.

AVERAGE DISCHARGE.--61 years (water years 1925-85), 267 ft<sup>3</sup>/s (193,400 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,600 ft<sup>3</sup>/s June 18, 1935 (gage height, 32.4 ft, from floodmark), from rating curve extended above 43,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times each year.

Maximum stage since at least 1879, that of June 18, 1935.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 19, 1899, reached a stage of 29.7 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 18	1400	*6,530	*15.84	Jan. 5	2400	5,650	15.20

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	108	.18	.03	120	540	65	253	88	35	.00	.00
2	.00	100	.18	.02	112	360	64	244	58	31	.00	.00
3	.00	84	.09	219	110	300	58	463	45	36	.00	.00
4	.00	81	.06	1300	108	265	51	465	39	28	.00	.00
5	.00	60	.06	4720	106	243	46	240	30	25	.00	.00
6	.00	37	.04	5140	102	218	39	152	19	43	.00	.00
7	.00	28	.03	3260	98	200	34	120	14	51	.00	.00
8	1.5	21	.02	2190	94	190	30	90	10	40	.00	.00
9	801	17	.02	1420	91	170	25	63	7.7	35	.00	.00
10	449	15	.01	740	89	160	28	47	5.5	29	.00	.00
11	110	12	.01	427	82	150	23	76	3.7	27	.00	.00
12	370	10	.01	336	82	141	20	116	2.9	25	.00	.00
13	523	7.2	.02	285	80	137	25	101	2.7	21	.00	.00
14	1060	5.0	.03	273	71	176	35	82	3.4	15	.00	.00
15	2020	4.1	.03	298	63	132	35	58	6.8	11	.00	.00
16	3650	2.6	.03	298	57	126	31	42	22	7.1	.00	.00
17	5450	2.0	.02	276	50	117	31	32	96	4.7	.00	.00
18	6440	1.8	.02	252	45	124	32	32	137	3.3	.00	.00
19	6090	1.5	.01	222	42	129	31	24	130	2.4	.00	.00
20	4430	1.1	.01	206	38	123	25	20	115	1.7	.00	.00
21	2580	.93	.01	201	35	114	19	58	100	1.1	.00	.00
22	1180	.92	.00	198	35	107	15	471	87	.70	.00	.00
23	269	.78	.00	191	36	102	16	762	81	.40	.00	.00
24	138	.64	.00	172	40	94	123	851	69	.17	.00	.00
25	92	.52	.00	158	61	92	297	1140	56	.04	.00	.00
26	62	.45	.00	148	150	88	517	1280	47	.00	.00	.00
27	45	.36	.00	142	300	86	371	961	47	.00	.00	.00
28	34	.30	.00	131	550	84	260	557	54	.00	.00	.00
29	28	.24	.00	128	---	83	285	338	46	.00	.00	.00
30	25	.18	.00	126	---	73	251	202	40	.00	.00	.00
31	32	---	.06	122	---	66	---	126	---	.00	.00	---
TOTAL	35879.50	603.62	.95	23579.05	2847	4990	2882	9466	1462.7	473.61	.00	.00
MEAN	1157	20.1	.031	761	102	161	96.1	305	48.8	15.3	.000	.000
MAX	6440	108	.18	5140	550	540	517	1280	137	51	.00	.00
MIN	.00	.18	.00	.02	35	66	15	20	2.7	.00	.00	.00
AC-FT	71170	1200	1.9	46770	5650	9900	5720	18780	2900	939	.00	.00
CAL YR 1984	TOTAL	36523.80	MEAN	99.8	MAX	6440	MIN	.00	AC-FT	72440		
WTR YR 1985	TOTAL	82184.43	MEAN	225	MAX	6440	MIN	.00	AC-FT	163000		

## NUECES RIVER BASIN

08194200 SAN CASIMIRO CREEK NEAR FREER, TX

LOCATION.--Lat 27°57'53", Long 98°58'00", Webb County, Hydrologic Unit 12110105, at downstream side of bridge on State Highway 44, 11.4 mi upstream from mouth, and 22 mi northwest of Freer.

DRAINAGE AREA.--469 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1962 to current year.

GAGE.--Water-stage recorder. Datum of gage is 298 ft, from State Department of Highways and Public Transportation datum.

REMARKS.--No estimated daily discharges. Records good except those for Mar. 14-16, which are fair. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 64.8 ft<sup>3</sup>/s (46,950 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 82,000 ft<sup>3</sup>/s Oct. 17, 1971 (gage height, 26.87 ft), from rating curve extended above 21,000 ft<sup>3</sup>/s on basis of flow-through-culverts, contracted opening, and flow-over-road determination of 82,000 ft<sup>3</sup>/s; no flow for many days each year.  
Maximum stage since at least 1946, that of Oct. 17, 1971.

EXTREMES OUTSIDE PERIOD OF RECORD.--Second highest stage, 26 ft (discharge 65,200 ft<sup>3</sup>/s), occurred in 1954, from information by State Department of Highways and Public Transportation.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Mar. 12	Unknown	1,560	Unknown	May 19	0500	*4,240	*20.48
Apr. 12	0300	2,380	18.92	June 13	1500	507	13.21
Apr. 26	1600	2,270	18.77	July 4	1500	1,700	17.87

Minimum daily discharge, no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	51	3.0	.30	5.2	238	2.5	90	.01	.00
2	.00	88	.00	41	1.9	.30	4.6	55	2.0	8.0	.01	.00
3	.00	360	.00	26	1.4	.26	4.3	16	1.5	12	.01	.00
4	.00	327	.00	6.0	1.1	.18	4.0	8.0	1.2	1240	.01	.00
5	.00	115	.00	2.2	.91	.15	3.8	5.9	1.0	802	.01	.00
6	.00	26	.00	.92	.74	.15	3.5	4.4	.86	486	.01	.00
7	.00	10	2.2	.49	.64	.15	3.5	3.2	.80	55	.00	.00
8	.00	4.2	1.3	.28	.52	.10	4.3	2.4	.77	23	.00	.00
9	.00	1.7	.28	.13	.45	.08	9.8	1.9	.64	11	.00	.00
10	.00	.66	.33	.08	.41	.06	313	1.6	.54	5.7	.00	.00
11	.00	.26	.16	.04	.26	.03	1590	1.3	.48	3.2	.00	.00
12	.00	.14	.08	.64	.21	.01	2170	1.1	7.9	1.9	.00	.00
13	.00	.07	.03	4.4	.18	.00	958	.91	327	1.2	.00	.00
14	38	.03	.01	2.6	.18	242	102	.77	65	.75	.00	44
15	61	.01	.00	9.7	.18	1000	31	.69	22	.59	.00	36
16	21	.00	.00	9.4	.15	1450	18	157	7.6	.48	.00	3.8
17	8.9	.00	.00	4.5	.15	1170	11	753	3.0	.41	.00	1.6
18	2.5	.00	.00	2.7	.15	393	7.2	1810	1.6	.35	.00	.99
19	.26	.00	.00	1.8	.15	61	4.9	3660	16	.30	.00	.47
20	.03	.00	.00	1.2	.15	39	3.8	2320	73	.26	.00	.26
21	.00	.00	.00	.90	.15	27	3.3	781	233	.20	.00	.16
22	.00	.00	.00	.71	2.4	20	2.8	855	134	.15	.00	.09
23	.00	.00	.00	.57	1.3	16	2.4	675	23	.10	.00	.03
24	.00	.00	.00	.47	.80	13	2.0	132	18	.08	.00	.01
25	.00	.00	.00	.40	.56	11	74	44	9.0	.07	.00	.00
26	.00	.00	.00	.36	.36	10	1840	25	3.5	.07	.00	.00
27	.00	.00	.00	79	.30	9.3	1340	14	1.9	.06	.00	.00
28	.00	.00	.00	58	.30	8.0	255	9.1	83	.05	.00	.00
29	.00	.00	.00	23	---	7.2	29	6.3	69	.04	.00	.00
30	.00	.00	.00	10	---	6.8	99	4.6	158	.03	.00	.00
31	.00	---	32	5.2	---	5.5	---	3.2	---	.02	.00	---
TOTAL	131.69	933.07	36.39	343.69	19.00	4490.57	8899.4	11590.37	1267.79	2743.01	.06	87.41
MEAN	4.25	31.1	1.17	11.1	.68	145	297	374	42.3	88.5	.002	2.91
MAX	61	360	32	79	3.0	1450	2170	3660	327	1240	.01	44
MIN	.00	.00	.00	.04	.15	.00	2.0	.69	.48	.02	.00	.00
AC-FT	261	1850	72	682	38	8910	17650	22990	2510	5440	.1	173
CAL YR 1984	TOTAL	1328.89	MEAN	3.63	MAX	360	MIN	.00	AC-FT	2640		
WTR YR 1985	TOTAL	30542.45	MEAN	83.7	MAX	3660	MIN	.00	AC-FT	60580		

## NUECES RIVER MAIN STEM

08194500 NUECES RIVER NEAR TILDEN, TX

LOCATION.--Lat 28°18'31", long 98°33'25", McMullen County, Hydrologic Unit 12110105, on right bank at downstream side of pier of bridge on State Highway 16, 1.8 mi upstream from Kings Branch, 10.5 mi south of Tilden, and at mile 135.4.

DRAINAGE AREA.--8,093 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1942 to current year.

REVISED RECORDS.--WSP 1512: 1947. WSP 1732: 1951(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 183.5 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Part of flow of Nueces River and its headwater tributaries enters Edwards and associated limestones in the Balcones fault zone, that crosses basin between Laguna and Uvalde (stations 08190000 and 08192000, respectively). Some loss of flow into various permeable formations occurs downstream from the Balcones fault zone. Some diversions for irrigation above station. Several observations of water temperature were made during the year. Satellite telemeter located at station.

AVERAGE DISCHARGE.--42 years (water years 1944-85), 428 ft<sup>3</sup>/s (310,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,500 ft<sup>3</sup>/s Sept. 24, 1967 (gage height, 26.57 ft); no flow at times.  
Maximum stage since about 1902, that of Sept. 24, 1967. Flood of Oct. 11, 1946, reached a stage of 26.46 ft (discharge, 70,000 ft<sup>3</sup>/s).

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in June 1935 reached a stage of 23.7 ft and in July 1942 about 22 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Oct. 25	1800	3,790	17.53	May 25	0200	*5,040	*18.56
Jan. 13	2000	2,780	16.65	July 11	1800	3,210	17.35
Apr. 18	2100	1,960	15.47	Sept. 30	2100	1,890	15.24
May 3	0900	3,440	17.56				

Minimum daily discharge, no flow Oct. 1-8 and Sept. 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	76	1.0	28	129	38	69	1890	1290	938	1.0	.04
2	.00	634	1.0	49	119	53	64	2890	291	998	.93	.04
3	.00	1100	.93	185	114	203	54	3380	145	1060	.86	.03
4	.00	870	.91	120	111	346	48	3060	98	1050	.80	.03
5	.00	832	.89	84	106	350	46	2640	70	922	.71	.03
6	.00	694	.86	65	101	319	43	2250	51	1010	.63	.01
7	.00	354	.79	522	98	284	37	1980	39	1160	.58	.02
8	.00	139	.71	760	96	251	33	1400	35	1410	.56	.01
9	53	98	.70	912	94	227	29	289	37	1900	.49	.01
10	527	69	.70	1000	90	207	223	148	26	2600	.33	.00
11	463	47	.68	1190	85	189	419	104	19	3120	.31	.27
12	811	35	.66	1680	81	175	654	83	14	3110	.26	4.5
13	898	26	.70	2600	78	162	827	61	140	2260	.24	1.7
14	959	19	.70	2650	75	152	925	50	954	298	.24	.27
15	986	15	.64	2190	72	142	1050	84	1250	76	.24	1.7
16	979	11	.58	1340	71	372	1260	88	1440	51	.24	.93
17	938	9.7	.50	478	69	676	1550	80	1550	36	.20	13
18	943	8.0	.50	377	63	837	1910	347	1640	26	.18	16
19	978	5.9	.51	329	57	949	1300	775	1710	21	.14	4.8
20	1030	4.4	.51	289	51	1060	145	946	1530	16	.10	2.1
21	1100	3.5	.53	251	45	1160	71	1140	959	10	.09	1.2
22	1180	3.0	.54	218	40	656	47	1480	1120	7.2	.07	.77
23	1340	2.5	.55	200	37	203	34	2250	1420	5.4	.06	1.3
24	2030	2.2	.54	194	32	145	27	4030	1700	4.2	.06	210
25	3540	2.1	.41	191	28	119	21	4780	1580	3.2	.06	70
26	3540	1.9	.32	184	26	106	203	3950	608	2.6	.05	14
27	2900	1.6	.31	179	27	96	711	3360	157	2.1	.05	5.6
28	2090	1.4	11	182	28	89	935	2940	125	1.8	.05	2.2
29	484	1.2	13	303	---	83	1110	2640	373	1.5	.04	441
30	128	1.2	2.6	240	---	77	1350	2340	801	1.3	.04	1730
31	90	---	1.7	154	---	72	---	2020	---	1.1	.05	---
TOTAL	27987.00	5067.6	45.97	19144	2023	9798	15195	53475	21172	22102.4	9.66	2521.56
MEAN	903	169	1.48	618	72.3	316	507	1725	706	713	.31	84.1
MAX	3540	1100	1.3	2650	129	1160	1910	4780	1710	3120	1.0	1730
MIN	.00	1.2	.31	28	26	38	21	50	14	1.1	.04	.00
AC-FT	55510	10050	91	37970	4010	19430	30140	106100	41990	43840	19	5000
CAL YR 1984	TOTAL	34053.80	MEAN	93.0	MAX	3540	MIN	.00	AC-FT	67550		
WTR YR 1985	TOTAL	178541.19	MEAN	489	MAX	4780	MIN	.00	AC-FT	354100		

## NUECES RIVER BASIN

355

08195000 FRIO RIVER AT CONCAN, TX

LOCATION.--Lat 29°29'18", long 99°42'16", Uvalde County, Hydrologic Unit 12110106, on left bank 0.7 mi southeast of Concan Post Office, 15 mi upstream from Dry Frio River, and 222.8 mi upstream from mouth.

DRAINAGE AREA.--389 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to September 1929, October 1930 to current year.

REVISED RECORDS.--WSP 1342: Drainage area. WSP 1512: 1926, 1931-32, 1934(M), 1935-36. WSP 1712: 1958. WSP 1923: 1954(M), 1957(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,203.71 ft above National Geodetic Vertical Datum of 1929. Oct. 26, 1923, to July 28, 1924, nonrecording gage at site 86 ft upstream at datum 5.08 ft lower. July 29, 1924, to Oct. 3, 1930, nonrecording gage, and Oct. 4, 1930, to May 18, 1939, water-stage recorder, at site 130 ft downstream at present datum.

REMARKS.--Estimated daily discharges: Jan. 2-9. Records good. Many small diversions for irrigation above station.

AVERAGE DISCHARGE.--60 years (water years 1925-29, 1931-85), 113 ft<sup>3</sup>/s (3.94 in/yr), 81,870 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 162,000 ft<sup>3</sup>/s July 1, 1932 (gage height, 34.44 ft, from floodmarks), from rating curve extended above 44,000 ft<sup>3</sup>/s on basis of flow-over-dam measurement of 56,600 ft<sup>3</sup>/s and slope-area measurement of 162,000 ft<sup>3</sup>/s; no flow Aug. 5, 1956, to Jan 6, 1957.  
Maximum stage since at least 1869, that of July 1, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 28	0030	705	4.95	May 18	0530	670	4.91
Dec. 31	0800	*47,500	*21.59	Sept. 29	0900	723	4.96
Feb. 23	1400	887	5.14				

Minimum daily discharge, 13 ft<sup>3</sup>/s Oct. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	125	75	1600	263	275	178	174	126	91	72	46
2	13	114	75	830	259	264	176	159	120	89	72	45
3	14	108	73	610	253	256	174	150	118	159	70	44
4	14	102	74	550	249	246	175	144	116	142	70	44
5	14	96	76	510	244	238	171	138	116	116	67	44
6	16	93	72	470	238	234	167	133	122	107	66	50
7	17	91	72	440	230	236	167	130	121	105	65	54
8	18	88	71	410	223	233	167	130	114	104	64	54
9	16	86	70	380	219	228	162	131	105	104	63	52
10	18	82	70	350	217	223	161	124	106	103	63	50
11	30	80	70	320	208	218	162	122	105	102	62	49
12	30	79	70	333	203	217	161	122	116	102	60	68
13	69	78	75	342	199	213	156	122	128	104	59	65
14	79	77	74	318	195	222	154	118	113	98	59	61
15	43	75	74	322	190	216	150	114	107	97	58	53
16	35	75	72	343	189	214	147	114	104	94	57	52
17	33	75	73	394	185	207	144	185	100	93	56	54
18	32	78	75	402	181	203	137	396	98	91	56	54
19	31	75	75	386	180	198	134	229	102	92	55	54
20	31	75	75	366	180	196	133	196	104	107	53	54
21	32	74	73	352	180	193	129	194	99	91	52	53
22	32	73	72	343	181	190	133	171	97	88	51	53
23	34	72	72	337	465	189	129	160	142	88	51	52
24	38	78	72	328	426	185	125	161	111	90	50	51
25	38	84	71	319	327	185	124	190	101	89	50	50
26	107	79	72	310	289	183	126	157	97	85	51	49
27	143	74	74	306	270	248	126	150	99	82	50	50
28	457	73	78	298	266	200	122	144	101	79	50	52
29	239	74	76	292	---	191	192	139	96	77	48	225
30	168	75	629	286	---	186	189	132	94	75	48	138
31	140	---	17500	273	---	180	---	129	---	75	47	---
TOTAL	1995	2508	20250	13120	6709	6667	4571	4858	3278	3019	1795	1820
MEAN	64.4	83.6	653	423	240	215	152	157	109	97.4	57.9	60.7
MAX	457	125	17500	1600	465	275	192	396	142	159	72	225
MIN	13	72	70	273	180	180	122	114	94	75	47	44
CFSM	.16	.21	1.61	1.04	.59	.53	.38	.39	.27	.24	.14	.15
IN.	.18	.23	1.86	1.21	.62	.61	.42	.45	.30	.28	.16	.17
AC-FT	3960	4970	40170	26020	13310	13220	9070	9640	6500	5990	3560	3610
CAL YR 1984	TOTAL	33968.0	MEAN	92.8	MAX	17500	MIN	5.8	CFSM	.23	IN	3.12
WTR YR 1985	TOTAL	70590.0	MEAN	193	MAX	17500	MIN	13	CFSM	.48	IN	6.48
									AC-FT	67380		
									AC-FT	140000		



## NUECES RIVER BASIN

08195000 FRIO RIVER AT CONCAN, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 11...	1355	307	466	8.2	14.0	5	.50	9.6	95	--	64
23...	1130	337	446	8.0	10.5	--	--	--	--	--	--
MAR 06...	1515	235	445	7.6	16.0	--	--	--	--	--	--
MAY 01...	1130	176	427	8.0	22.5	4	1.4	8.0	95	1.4	K100
AUG 28...	1720	50	390	7.7	29.0	3	.40	7.4	99	.6	K22

DATE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
JAN 11...	96	230	20	69	14	6.8	.2	.90	210	17
23...	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	240	--	71	15	7.0	.2	.90	--	18
MAY 01...	K130	220	29	65	13	6.6	.2	1.1	187	14
AUG 28...	K13	210	24	59	15	8.0	.2	1.0	185	16

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)
JAN 11...	11	.10	11	260	1	1	<.010	--	2.4	--
23...	--	--	--	--	--	--	--	--	--	--
MAR 06...	12	.20	11	--	--	--	--	<.010	--	1.6
MAY 01...	11	.20	11	230	3	2	<.010	--	1.1	--
AUG 28...	13	.10	14	240	4	2	<.010	--	.40	--

DATE	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
JAN 11...	.010	--	.29	.30	--	<.010	--	--	1.3	--
23...	--	--	--	--	--	--	--	--	--	--
MAR 06...	--	<.010	--	--	.40	--	<.010	<.010	--	.8
MAY 01...	.010	--	.39	.40	--	<.010	--	--	1.4	--
AUG 28...	.010	--	.19	.20	--	<.010	--	--	1.1	--

NUECES RIVER BASIN

357

08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
JAN 11...	1355	<1	45	<1	<10	<1	4
AUG 28...	1720	<1	42	<1	<10	<1	9

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
JAN 11...	<1	<1	<.1	<1	<1	9
AUG 28...	<1	4	<.1	<1	<1	9

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN 11...	1355	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1130	--	--	--	<.10	<.10	--	<.10	--	--
MAR 06...	1515	<.1	<.10	<.01	<.10	<.10	<.1	<.10	<.01	<.01
AUG 28...	1720	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)
JAN 11...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	--	--	--	--	--	--	--	--	--	--
MAR 06...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
AUG 28...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)
JAN 11...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
MAR 06...	<2.0	<.01	<.01	<.01	<.01	<.01	<.1	<.1	<.1	<.10
AUG 28...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 11...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
MAR 06...	<2.0	<2.0	<.10	<.1	<1	<.01	<.01	<.01	<.01	<.01
AUG 28...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

## NUECES RIVER BASIN

08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX

LOCATION.--Lat 29°30'16", long 99°46'52", Uvalde County, Hydrologic Unit 12110106, on right bank 2.3 mi upstream from bridge on U.S. Highway 83, 3.1 mi upstream from Rocky Creek, 4.3 mi southeast of Reagan Wells, and 25.9 mi upstream from mouth.

DRAINAGE AREA.--126 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1952 to current year.

REVISED RECORDS.--WSP 1712: 1953. WSP 1923: 1955(M). WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,335.2 ft above National Geodetic Vertical Datum of 1929, from State Department of Highways and Public Transportation datum.

REMARKS.--Estimated daily discharges: Nov. 10 to Dec. 11, Dec. 14 to Jan. 9, and Jan. 12-22. Records good except those for Nov. 10 to Dec. 11 and Jan. 12-22, which are fair, and Dec. 14 to Jan. 9, which are poor. There are several small diversions above station.

AVERAGE DISCHARGE.--33 years, 34.4 ft<sup>3</sup>/s (3.71 in/yr), 24,920 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 123,000 ft<sup>3</sup>/s Aug. 13, 1966 (gage height, 27.6 ft, from floodmark), from rating curve extended above 900 ft<sup>3</sup>/s on basis of slope-area measurements of 11,400, 30,700, 64,700, and 123,000 ft<sup>3</sup>/s; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875 occurred in 1880 (about 33 ft). Flood of June 14, 1935, reached a stage of 26.0 ft (discharge, 64,700 ft<sup>3</sup>/s, determined at site 2.6 mi upstream), and flood of July 1, 1932, reached a stage of 23 ft (discharge, 30,700 ft<sup>3</sup>/s, determined at site 2.0 mi upstream), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 27	1700	324	3.64	June 23	1130	244	3.64
Dec. 31	Unknown	*16,190	*16.85	July 3	1545	1,580	5.38

Minimum daily discharge, 5.7 ft<sup>3</sup>/s Oct. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	50	19	385	59	59	41	118	36	34	24	8.5
2	6.3	44	19	235	56	56	40	96	35	32	22	8.1
3	7.5	41	18	150	54	54	38	80	32	503	21	8.0
4	7.9	37	18	130	53	51	38	72	31	426	20	7.8
5	9.8	34	17	118	51	48	37	67	30	191	20	8.0
6	11	31	17	110	50	47	37	62	34	111	19	9.5
7	15	30	17	100	46	48	37	59	32	94	18	11
8	16	29	17	95	44	47	38	56	29	83	18	10
9	21	29	16	90	43	47	36	54	28	76	17	9.8
10	23	28	16	86	41	47	36	53	27	70	17	9.9
11	15	27	16	82	40	46	37	51	25	65	16	9.8
12	13	26	16	80	38	44	36	48	38	61	15	11
13	21	26	16	79	37	43	36	47	60	57	15	12
14	17	26	16	78	36	47	35	44	41	52	14	12
15	13	25	16	78	35	46	35	43	36	49	13	10
16	12	25	16	84	34	47	35	41	32	45	13	10
17	10	24	16	92	34	46	34	38	31	42	13	10
18	9.8	24	15	96	34	44	32	80	29	39	12	10
19	9.4	23	15	93	34	44	32	92	30	38	12	9.9
20	9.4	23	15	89	34	43	32	70	29	53	12	9.9
21	9.0	22	15	86	34	43	32	73	29	49	12	9.8
22	8.6	22	14	83	34	43	32	67	29	46	11	9.6
23	8.6	21	14	80	78	41	32	59	122	42	11	9.4
24	12	21	14	80	72	40	30	57	106	41	11	9.4
25	14	21	14	76	69	38	32	53	61	38	10	9.3
26	36	20	15	72	62	65	31	50	50	35	9.8	8.7
27	161	20	15	70	57	91	30	48	46	32	9.3	8.4
28	146	20	16	69	59	51	29	46	44	30	9.2	9.1
29	82	19	17	65	---	47	81	43	39	28	9.1	278
30	64	19	200	64	---	44	94	40	36	27	9.1	109
31	56	---	4250	60	---	43	---	37	---	26	8.9	---
TOTAL	850.0	807	4915	3155	1318	1500	1145	1844	1227	2515	441.4	655.9
MEAN	27.4	26.9	159	102	47.1	48.4	38.2	59.5	40.9	81.1	14.2	21.9
MAX	161	50	4250	385	78	91	94	118	122	503	24	278
MIN	5.7	19	14	60	34	38	29	37	25	26	8.9	7.8
CFSM	.23	.23	1.36	.87	.40	.41	.33	.51	.35	.69	.12	.19
IN.	.27	.26	1.56	1.00	.42	.48	.36	.59	.39	.80	.14	.21
AC-FT	1690	1600	9750	6260	2610	2980	2270	3660	2430	4990	876	1300

CAL YR 1984	TOTAL	7850.01	MEAN 21.4	MAX 4250	MIN .04	CFSM .18	IN 2.50	AC-FT 15570
WTR YR 1985	TOTAL	20373.30	MEAN 55.8	MAX 4250	MIN 5.7	CFSM .48	IN 6.48	AC-FT 40410

NUECES RIVER BASIN

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08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN 10...	1250	93	447	8.0	14.5	5	1.1	9.3	94	--	41	89
23...	1100	82	420	8.0	9.0	--	--	--	--	--	--	--
MAY 01...	1310	134	389	7.8	24.0	5	.90	7.8	96	1.1	100	300
AUG 28...	1540	12	391	7.4	30.0	3	.30	7.4	102	.7	K10	K19

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
JAN 10...	220	16	65	13	6.3	.2	.70	200	16	11	.10
23...	--	--	--	--	--	--	--	--	--	--	--
MAY 01...	200	30	61	12	5.4	.2	.50	172	15	10	.20
AUG 28...	190	23	57	12	7.0	.2	.70	169	15	10	<.10

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN 10...	9.5	240	1	1	<.010	1.8	.010	.59	.60	<.010	1.5
23...	--	--	--	--	--	--	--	--	--	--	--
MAY 01...	9.8	220	5	3	<.010	1.0	.030	.37	.40	<.010	1.2
AUG 28...	12	220	7	5	<.010	.20	.010	.19	.20	<.010	1.1

DATE	THIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
JAN 10...	1250	<1	44	<1	<10	<1	3
AUG 28...	1540	<1	50	<1	<10	4	6

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
JAN 10...	1	<1	<.1	1	<1	10
AUG 28...	1	3	<.1	<1	<1	8

## NUECES RIVER BASIN

08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN 10...	1250	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1100	--	--	--	<.10	<.10	--	<.10	--	--
AUG 28...	1540	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)
JAN 10...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	--	--	--	--	--	--	--	--	--	--
AUG 28...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)
JAN 10...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
AUG 28...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 10...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
AUG 28...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01



## 08197500 FRIO RIVER BELOW DRY FRIO RIVER NEAR UVALDE, TX

LOCATION.--Lat 29°14'44", long 99°40'27", Uvalde County, Hydrologic Unit 12110106, on right bank 1.1 mi upstream from Farm Road 1023, 5.7 mi downstream from Dry Frio River, 6.3 mi downstream from bridge on U.S. Highway 90, 7.2 mi northeast of Uvalde, and 194.5 mi upstream from mouth.

DRAINAGE AREA.--631 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1952 to current year. Sum of records published as Frio River at Knippa and Dry Frio River at Knippa for period September 1952 to September 1953 is equivalent to record for this station.

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 882.47 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Part of flow of Frio River enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Concan (station 08195000) and this station. Most of low flow enters this formation. Many diversions for irrigation above station. Satellite telemeter is located at station.

AVERAGE DISCHARGE.--33 years, 30.0 ft<sup>3</sup>/s (21,740 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 88,500 ft<sup>3</sup>/s Aug. 13, 1966 (gage height, 23.88 ft, from floodmark), from rating curve extended above 12,000 ft<sup>3</sup>/s on basis of slope-area measurements of 24,400, 53,000, and 88,500 ft<sup>3</sup>/s; no flow most of time each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1887, about 35 ft in 1894. Flood of July 1, 1932, reached a stage of about 30 ft. A higher flood than that of 1894 occurred prior to 1887. Above information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	1330	*58,500	a*20.29	Sept. 29	1730	1,430	6.00

a From floodmark.

Minimum discharge, no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	3000	.08	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	884	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	505	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	329	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	243	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	186	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	146	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	116	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	98	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	75	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	56	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	57	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	78	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	65	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	56	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	63	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	81	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	105	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	97	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	78	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	63	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	56	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	53	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	49	32	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	39	30	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	25	1.5	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	16	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	9.5	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	3.2	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.63	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	22000	.27	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	22000.00	6632.60	63.58	.00	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	710	214	2.27	.000	.000	.000	.000	.000	.000	.000
MAX	.00	.00	22000	3000	32	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.27	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	43640	13160	126	.00	.00	.00	.00	.00	.00	.00
CAL YR 1984	TOTAL	22000.00	MEAN	60.1	MAX	22000	MIN	.00	AC-FT	43640		
WTR YR 1985	TOTAL	28696.18	MEAN	78.6	MAX	22000	MIN	.00	AC-FT	56920		

## NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX

LOCATION.--Lat 29°29'27", long 99°29'33", Uvalde County, Hydrologic Unit 12110106, on right bank 108 ft upstream from concrete dam, 2.3 mi downstream from mouth of Onion Creek, 12.5 mi north of Sabinal, and 41.6 mi upstream from mouth.

DRAINAGE AREA.--206 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WSP 1312: 1943(M), 1944(M), 1947(M).

GAGE.--Water-stage recorder. Datum of gage is 1,131.20 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 9, 1971, at site 0.3 mi downstream at same datum.

REMARKS.--Estimated daily discharges: Oct. 1-9. Records good. There are several small diversions above station for irrigation.

AVERAGE DISCHARGE.--43 years, 56.0 ft<sup>3</sup>/s (3.69 in/yr), 40,580 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,200 ft<sup>3</sup>/s June 17, 1958 (gage height, 28.3 ft, from floodmark, at present site), from rating curve extended above 6,900 ft<sup>3</sup>/s on basis of slope-area measurement of 55,200 ft<sup>3</sup>/s; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1892, about 33 ft July 2, 1932, from information by local residents. There is a legend that a flood in the middle 1800's reached a stage of nearly 63 ft, see flood history for station 08198500.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	0500	*9,850	*11.91	No other peak greater than base discharge.			
Minimum daily discharge, 0.14 ft <sup>3</sup> /s Oct. 6.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.18	20	28	473	145	141	127	117	81	44	24	10
2	.18	19	27	283	142	139	124	106	78	45	24	11
3	.17	19	27	235	141	138	124	99	75	43	23	10
4	.16	19	27	204	141	133	123	94	77	46	23	10
5	.15	18	28	186	138	130	121	92	78	44	22	10
6	.14	18	27	176	132	130	116	90	87	42	22	22
7	.17	17	26	171	129	130	115	88	82	42	22	16
8	.19	17	26	167	124	130	115	87	77	40	20	12
9	.20	17	27	165	124	130	115	92	75	40	20	11
10	1.6	18	27	154	124	127	115	84	71	40	20	10
11	4.3	18	27	148	115	127	115	81	67	40	19	10
12	15	18	27	149	113	125	113	81	65	40	18	24
13	12	18	33	159	113	124	107	81	68	40	18	18
14	19	18	30	152	111	142	108	79	68	39	18	13
15	15	18	29	155	107	138	105	77	65	35	18	10
16	8.7	19	29	172	105	135	102	77	62	34	17	10
17	6.0	19	32	182	105	131	99	95	59	33	16	10
18	4.3	22	35	186	105	127	97	155	57	31	16	10
19	4.1	22	35	183	105	127	96	124	60	30	14	9.7
20	4.1	22	37	176	102	125	97	113	60	30	14	9.6
21	3.7	22	37	175	102	124	94	117	58	32	13	9.6
22	3.8	23	38	175	103	124	93	107	58	30	13	9.6
23	4.1	23	39	175	199	124	90	101	59	30	12	9.6
24	4.1	25	39	172	162	119	85	97	55	32	13	8.2
25	6.1	32	39	171	148	121	85	100	54	31	12	8.1
26	6.6	26	39	168	141	123	85	99	52	29	14	8.1
27	7.9	26	42	168	136	178	84	97	51	27	13	8.3
28	35	26	43	161	136	151	81	93	50	27	12	9.9
29	31	27	45	161	---	139	162	90	48	26	12	122
30	22	29	107	160	---	135	138	88	47	24	11	62
31	20	---	3330	147	---	128	---	83	---	24	11	---
TOTAL	239.94	635	4382	5709	3548	4095	3231	2984	1944	1090	524	501.7
MEAN	7.74	21.2	141	184	127	132	108	96.3	64.8	35.2	16.9	16.7
MAX	35	32	3330	473	199	178	162	155	87	46	24	122
MIN	.14	17	26	147	102	119	81	77	47	24	11	8.1
CFSM	.04	.10	.68	.89	.62	.64	.52	.47	.32	.17	.08	.08
IN	.04	.11	.79	1.03	.64	.74	.58	.54	.35	.20	.09	.09
AC-FT	476	1260	8690	11320	7040	8120	6410	5920	3860	2160	1040	995

CAL YR 1984	TOTAL	9425.00	MEAN	25.8	MAX	3330	MIN	.14	CFSM	.13	IN	1.70	AC-FT	18690
WTR YR 1985	TOTAL	28883.64	MEAN	79.1	MAX	3330	MIN	.14	CFSM	.38	IN	5.22	AC-FT	57290

NUECES RIVER BASIN

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08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN 09...	1547	163	517	7.8	15.0	5	1.0	9.6	98	--	100	230
23...	1330	189	480	8.0	10.5	--	--	--	--	--	--	--
MAY 01...	0926	117	455	8.0	22.0	5	1.9	8.3	98	1.7	K160	570
AUG 23...	1130	13	434	7.7	28.0	3	--	7.7	101	.9	K160	52

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
JAN 09...	240	28	72	14	7.0	.2	1.0	210	30	10	.20
23...	--	--	--	--	--	--	--	--	--	--	--
MAY 01...	240	42	76	12	6.5	.2	.80	198	25	11	.20
AUG 23...	210	31	63	13	8.8	.3	1.1	180	26	12	.20

DATE	SILICA, DIS- SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLATILE, TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN 09...	12	270	2	2	<.010	1.3	.010	--	<.20	<.010	1.0
23...	--	--	--	--	--	--	--	--	--	--	--
MAY 01...	12	260	5	2	<.010	.70	.030	.37	.40	.010	.9
AUG 23...	16	250	--	1	<.010	.20	.020	.28	.30	.010	6.0

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
JAN 09...	1547	<1	44	<1	<10	<1	4
AUG 23...	1130	<1	49	<1	<10	<1	10

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
JAN 09...	<1	<1	<.1	1	<1	4
AUG 23...	<1	4	<.1	<1	<1	14

## NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN 09...	1547	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1330	--	--	--	<.10	<.10	--	<.10	--	--
AUG 23...	1130	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
DATE	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)
JAN 09...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	--	--	--	--	--	--	--	--	--	--
AUG 23...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
DATE	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)
JAN 09...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
AUG 23...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 09...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
AUG 23...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

## 08198500 SABINAL RIVER AT SABINAL, TX

LOCATION.--Lat 29°18'05", long 99°28'46", Uvalde County, Hydrologic Unit 12110106, on left bank 80 ft downstream from bridge on U.S. Highway 90, 1,100 ft downstream from Southern Pacific Lines railroad bridge, 0.8 mi west of Sabinal, 5.8 mi upstream from Ranchero Creek, and 223 mi upstream from mouth.

DRAINAGE AREA.--241 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1952 to current year.

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 882.17 ft above National Geodetic Vertical Datum of 1929. Prior to July 29, 1958, nonrecording gage, and July 29, 1958, to Mar. 19, 1964, water-stage recorder at site 80 ft upstream at same datum.

REMARKS.--Estimated daily discharges: Dec. 15-30, June 6 to July 8, and July 12-31. Records good. There are several small diversions for irrigation above station. Most of the Sabinal River low flow enters the Edwards and associated limestones in the Balcones Fault Zone, that crosses the basin upstream from this station and downstream from the Sabinal River near Sabinal (station 08198000). Several observations of water temperature were made during the year. A satellite telemeter is located at station.

AVERAGE DISCHARGE.--33 years, 30.8 ft<sup>3</sup>/s (22,310 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,300 ft<sup>3</sup>/s June 17, 1958 (gage height, 33.3 ft); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, 40 ft Aug. 24, 1919, from information by local residents. Flood of July 2, 1932, reached a stage of 31 ft (discharge, 60,000 ft<sup>3</sup>/s), from information by Southern Pacific Lines. There is a legend that a flood in 1858 covered the townsite of Sabinal. The stage would have been 70 to 80 ft, which seems unlikely. However, it is possible that a flood occurred in 1858 that covered part of the townsite and was higher than any flood since that date.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	0930	13,900	a*19.10	Mar. 27	2330	109	5.29
Feb. 23	2030	127	5.42				

a From floodmark.

Minimum daily discharge, 0.09 ft<sup>3</sup>/s Oct. 1-4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	1.5	1.1	615	47	47	35	5.6	6.8	2.4	1.2	.85
2	.09	1.5	1.1	274	49	46	33	13	6.5	2.4	1.2	.91
3	.09	1.6	1.1	196	48	39	30	10	6.0	2.4	1.1	.86
4	.09	2.0	1.1	151	47	36	29	8.4	5.0	2.3	1.1	.86
5	.11	2.0	1.2	120	44	34	28	6.7	4.6	2.3	1.0	1.0
6	.12	2.2	1.1	97	40	33	26	6.0	4.4	2.3	.96	1.4
7	.12	2.3	1.2	81	36	34	23	5.8	4.3	2.2	.90	.93
8	.12	2.5	1.4	68	33	35	22	7.6	4.3	2.2	.93	.92
9	.15	2.5	1.4	61	31	33	23	11	4.3	2.7	.92	.93
10	.16	1.9	1.1	54	30	30	24	9.0	4.2	2.4	.92	.90
11	.76	1.8	1.1	47	29	28	25	9.4	4.2	2.4	.95	.88
12	.22	1.7	1.1	49	27	28	23	9.9	4.1	2.3	.89	.93
13	.62	1.9	1.7	63	25	27	20	9.7	4.0	2.2	.86	.93
14	.60	2.0	1.4	59	24	38	18	9.3	3.9	2.2	.92	.84
15	.52	2.0	1.2	55	23	51	15	9.1	3.9	2.1	.87	.92
16	.56	1.7	1.2	65	20	51	13	8.9	3.8	2.1	.85	.92
17	.58	1.6	1.2	83	19	45	11	11	3.7	2.0	.87	.84
18	.65	1.7	1.2	95	18	39	8.5	11	3.7	2.0	.85	.82
19	.72	1.4	1.2	92	17	37	7.3	8.5	3.6	2.0	.84	.86
20	.85	1.3	1.2	85	16	37	6.6	8.3	3.5	1.9	.83	.85
21	.86	1.8	1.2	78	15	33	6.3	7.5	3.3	1.9	.85	.88
22	.99	1.8	1.2	78	15	32	6.0	5.1	3.1	1.9	.85	.88
23	1.0	1.7	1.2	81	41	31	6.1	5.0	3.0	1.9	.82	.85
24	1.1	2.8	1.2	82	88	28	6.1	6.5	2.9	3.0	.85	.86
25	1.3	2.0	1.2	75	62	26	6.1	5.9	2.8	2.4	.85	.93
26	1.3	1.5	1.2	66	50	23	6.1	5.9	2.8	2.0	.87	.97
27	1.5	1.1	1.2	64	43	38	5.9	6.6	2.7	1.9	.93	1.1
28	1.3	1.1	1.2	59	39	82	5.7	7.4	2.6	1.8	.93	1.3
29	.76	1.2	1.2	53	---	53	5.7	7.4	2.6	1.8	.93	6.8
30	.91	1.2	1.0	52	---	45	5.4	7.3	2.5	1.7	.98	1.7
31	1.4	---	2560	49	---	40	---	7.2	---	1.7	.90	---
TOTAL	19.64	53.3	2605.1	3147	976	1179	479.8	250.0	117.1	66.8	28.72	34.62
MEAN	.63	1.78	84.0	102	34.9	38.0	16.0	8.06	3.90	2.15	.93	1.15
MAX	1.5	2.8	2560	615	88	82	35	13	6.8	3.0	1.2	6.8
MIN	.09	1.1	1.1	47	15	23	5.4	5.0	2.5	1.7	.82	.82
AC-FT	39	106	5170	6240	1940	2340	952	496	232	132	57	69
CAL YR 1984	TOTAL	2872.93	MEAN	7.85	MAX	2560	MIN	.09	AC-FT	5700		
WTR YR 1985	TOTAL	8957.08	MEAN	24.5	MAX	2560	MIN	.09	AC-FT	17770		



## NUECES RIVER BASIN

08200000 HONDO CREEK NEAR TARPLEY, TX

LOCATION.--Lat 29°34'10", long 99°14'47", Medina County, Hydrologic Unit 12110107, on left bank 460 ft downstream from bridge on Ranch Road 462, 6.3 mi southeast of Tarpley, and 16.6 mi northwest of Hondo.

DRAINAGE AREA.--95.6 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1952 to current year.

REVISED RECORDS.--WSP 1712: 1957. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,169.1 ft above National Geodetic Vertical Datum of 1929, from Magnolia Oil Company datum.

REMARKS.--Estimated daily discharges: Oct. 12-21. Records good except those for estimated daily discharges, which are fair. There are several small diversions for irrigation above station.

AVERAGE DISCHARGE.--33 years, 38.1 ft<sup>3</sup>/s (5.41 in/yr), 27,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,800 ft<sup>3</sup>/s June 17, 1958 (gage height, 28.2 ft, from floodmark), from rating curve extended above 2,600 ft<sup>3</sup>/s on basis of slope-area measurements of 18,600 and 69,800 ft<sup>3</sup>/s; no flow at times in 1952-57, 1962-64, 1967, 1971, and 1984.  
Maximum stage since at least 1907, that of June 17, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1932 reached a stage of about 26 ft (discharge, 58,500 ft<sup>3</sup>/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 30	2230	*12,700	*12.56	Apr. 29	1000	1,090	4.10
Feb. 23	0130	1,680	4.77	May 17	0200	5,370	7.75
Mar. 13	2130	2,710	5.62				

Minimum daily discharge, no flow Oct. 1-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	6.5	4.1	238	60	91	70	153	86	38	14	6.2		
2	.00	5.9	4.1	182	58	85	69	62	80	37	13	5.9		
3	.00	6.5	3.8	152	57	84	65	59	79	38	12	5.6		
4	.00	6.8	4.1	124	56	77	65	57	76	38	12	5.3		
5	.00	6.5	5.5	110	54	70	63	55	75	35	12	5.5		
6	.00	5.9	4.1	96	51	69	60	54	89	34	11	14		
7	.00	5.6	3.1	86	48	72	59	53	87	34	10	5.0		
8	.00	6.2	2.7	78	47	66	57	52	71	32	10	3.8		
9	.00	6.2	3.5	70	47	64	56	50	66	31	9.6	3.5		
10	.00	5.6	3.8	65	49	62	58	49	63	31	9.3	3.5		
11	.00	5.3	3.5	62	43	59	56	48	60	29	9.3	3.5		
12	2.5	5.3	3.5	74	42	58	54	47	59	33	9.0	3.3		
13	9.3	5.3	11	76	42	322	54	49	58	33	8.6	3.8		
14	3.5	5.3	11	69	40	298	54	60	56	30	8.6	3.5		
15	2.1	5.3	8.2	82	39	110	50	46	54	29	8.6	2.9		
16	1.4	7.3	10	116	38	106	47	44	51	26	9.0	2.9		
17	1.2	4.7	9.3	128	38	102	46	972	49	25	7.9	2.9		
18	1.0	5.6	9.6	130	38	98	45	302	54	24	7.6	4.1		
19	.90	4.4	9.3	126	38	98	46	224	55	23	7.2	3.1		
20	.80	4.4	9.3	112	39	97	46	199	49	23	6.8	2.9		
21	.60	4.4	9.3	102	39	88	46	188	46	24	6.5	2.9		
22	.50	4.4	9.0	98	42	86	45	170	75	23	6.8	2.5		
23	1.4	4.1	8.2	97	308	84	42	155	78	21	6.5	2.3		
24	1.4	6.1	8.2	90	100	80	40	150	51	26	6.5	2.1		
25	2.9	10	7.9	85	91	79	39	142	46	20	6.2	2.3		
26	4.3	5.6	7.9	80	86	79	40	130	45	20	6.2	2.3		
27	13	4.4	9.2	82	84	124	40	122	42	18	5.9	2.1		
28	5.9	4.1	15	72	94	86	38	114	41	18	5.6	2.5		
29	4.1	4.1	13	70	---	80	263	106	40	16	5.6	98		
30	4.7	4.4	941	69	---	82	68	98	38	16	5.7	3.6		
31	5.9	---	822	62	---	72	---	94	---	14	6.8	---		
TOTAL	67.40	166.2	1974.2	3083	1768	3028	1781	4104	1819	839	263.8	211.8		
MEAN	2.17	5.34	63.7	99.5	63.1	97.7	59.4	132	60.6	27.1	8.51	7.06		
MAX	13	10	941	238	308	322	263	972	89	38	14	98		
MIN	.00	4.1	2.7	62	38	58	38	44	38	14	5.6	2.1		
CFSM	.03	.06	.74	1.15	.73	1.13	.69	1.53	.70	.31	.10	.08		
IN.	.03	.07	.85	1.33	.76	1.31	.77	1.77	.78	.36	.11	.09		
AC-FT	134	330	3920	6120	3510	6010	3530	8140	3610	1660	523	420		
CAL YR 1984	TOTAL	3033.27	MEAN	8.29	MAX	941	MIN	.00	CFSM	.10	IN	1.31	AC-FT	6020
WTR YR 1985	TOTAL	19105.40	MEAN	52.3	MAX	972	MIN	.00	CFSM	.61	IN	8.24	AC-FT	37900

NUECES RIVER BASIN

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08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOC- CI FECAL, KF AGAR (COLS. PER 100 ML)
JAN												
08...	1224	75	470	8.3	11.0	5	1.0	10.8	100	--	--	--
09...	1026	70	468	8.1	12.5	--	--	10.2	99	--	50	92
23...	1640	98	442	8.1	9.0	--	--	--	--	--	--	--
APR												
30...	1412	68	419	8.0	25.0	40	20	7.9	99	2.1	K1360	K565
AUG												
22...	1600	7.2	382	7.8	32.0	3	.90	9.1	128	1.0	240	K28

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
JAN												
08...	240	43	81	9.8	5.5	.2	1.4	200	32	9.1	.20	10
09...	--	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--	--
APR												
30...	220	40	71	9.2	5.7	.2	1.5	176	32	9.4	.30	9.9
AUG												
22...	180	43	53	11	9.1	.3	1.1	135	33	15	.20	16

DATE	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
08...	270	1	--	--	<.010	1.0	.010	.29	.30	<.010	1.4
09...	--	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--	--
APR											
30...	240	33	17	.49	.010	.50	.050	.55	.60	.010	1.5
AUG											
22...	220	2	2	--	<.010	<.10	.040	.36	.40	<.010	1.7

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
JAN							
08...	1224	<1	33	<1	<10	1	3
AUG							
22...	1600	1	35	<1	<10	<1	5

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
JAN						
08...	<1	<1	<.1	1	<1	9
AUG						
22...	<1	3	<.1	<1	<1	11

## NUECES RIVER BASIN

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN 08...	1224	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1640	--	--	--	<.10	<.10	--	<.10	--	--
AUG 22...	1600	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

DATE	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)
JAN 08...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	--	--	--	--	--	--	--	--	--	--
AUG 22...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)
JAN 08...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
AUG 22...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--

DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 08...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
AUG 22...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

NUECES RIVER BASIN

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08200700 HONDO CREEK AT KING WATERHOLE NEAR HONDO, TX

LOCATION.--Lat 29°23'26", long 99°09'04", Medina County, Hydrologic Unit 12110107, on left bank 0.3 mi downstream from county road low-water crossing, 3.1 mi north of Hondo, 7.8 mi upstream from Verde Creek, and 55.4 mi upstream from mouth.

DRAINAGE AREA.--149 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1960 to current year.

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 897.87 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Most of the low flow of Hondo Creek enters Edwards and associated limestones in the Balcones Fault Zone, that crosses basin between Tarpley (station 08200000) and this station. Small diversions above station for irrigation, amounts unknown. Satellite telemeter located at station.

AVERAGE DISCHARGE.--25 years, 13.1 ft<sup>3</sup>/s (9,490 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,900 ft<sup>3</sup>/s July 15, 1973 (gage height, 16.4 ft, from floodmark), from rating curve extended above 9,800 ft<sup>3</sup>/s on basis of contracted-opening measurement of peak flow; no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875, 21 ft in September 1919, from information by local resident. Other floods occurred in July 1932, stage 18 ft and June 17, 1958, stage 17 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 31	0300	*9,900	a*8.33	May 17	0630	4,280	6.11

a From floodmark.

Minimum daily discharge, no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	60	.00	.00	.00	.00	.00	.00	.02	.02
2	.00	.00	.00	22	.00	.00	.00	.00	.00	.00	.02	.02
3	.00	.00	.00	10	.00	.00	.00	.00	.00	.00	.02	.02
4	.00	.00	.00	2.0	.00	.00	.00	.00	.00	.00	.02	.02
5	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00	.02	.02
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
14	.00	.00	.00	.00	.00	76	.00	.00	.00	.00	.02	.02
15	.00	.00	.00	.00	.00	5.9	.00	.00	.00	.00	.02	.02
16	.00	.00	.00	.00	.00	1.3	.00	.00	.00	.00	.02	.02
17	.00	.00	.00	.00	.00	.05	.00	508	.00	.00	.02	.02
18	.00	.00	.00	.00	.00	.00	.00	76	.03	.00	.02	.02
19	.00	.00	.00	.00	.00	.00	.00	43	.00	.00	.02	.02
20	.00	.00	.00	.00	.00	.00	.00	18	.00	.00	.02	.02
21	.00	.00	.00	.00	.00	.00	.00	8.2	.00	.00	.02	.02
22	.00	.00	.00	.00	.00	.00	.00	.88	.00	.00	.02	.02
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.02
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.02	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.02	.00
31	.00	---	969	.00	---	.00	---	.00	---	.02	.02	---
TOTAL	.00	.00	969.00	94.04	.00	83.25	.00	654.08	.03	.02	.62	.48
MEAN	.000	.000	31.3	3.03	.000	2.69	.000	21.1	.001	.001	.020	.016
MAX	.00	.00	969	60	.00	76	.00	508	.03	.02	.02	.02
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02	.00
AC-FT	.00	.00	1920	187	.00	165	.00	1300	.06	.04	1.2	1.0
CAL YR 1984	TOTAL	1074.28	MEAN	2.94	MAX	969	MIN	.00	AC-FT	2130		
WTR YR 1985	TOTAL	1801.52	MEAN	4.94	MAX	969	MIN	.00	AC-FT	3570		

## NUECES RIVER BASIN

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX

LOCATION.--Lat 29°34'23", long 99°24'10", Medina County, Hydrologic Unit 12110107, on right bank 200 ft upstream from county road crossing, 4.5 mi downstream from Cascade Creek, 7.9 mi southeast of Utopia, and 58.0 mi upstream from mouth.

DRAINAGE AREA.--45.0 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1961 to current year.

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder, crest-stage gages, and concrete control. Datum of gage is 1,265.8 ft above National Geodetic Vertical Datum of 1929, from Magnolia Oil Company datum, adjustment unknown.

REMARKS.--Estimated daily discharges: Apr. 7-14. Records good. No known diversion above station.

AVERAGE DISCHARGE.--24 years, 18.0 ft<sup>3</sup>/s (5.43 in/yr), 13,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft<sup>3</sup>/s July 15, 1973 (gage height, 14.4 ft, from floodmark), from rating curve extended above 910 ft<sup>3</sup>/s on basis of field estimate of flow over and around end of dam, 14,100 ft<sup>3</sup>/s, and slope-area measurement of 52,600 ft<sup>3</sup>/s; no flow for many days in 1963-64.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1901, 16.4 ft June 17, 1958, from floodmarks (discharge 52,600 ft<sup>3</sup>/s, by slope-area measurement of peak flow).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Dec. 30	2300	*2,840	*5.01	Apr. 29	0900	1,500	4.14
Feb. 23	0030	843	3.53				

Minimum daily discharge, 0.07 ft<sup>3</sup>/s Oct. 1-4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.07	9.9	4.3	118	37	57	43	45	31	11	3.1	1.4
2	.07	8.2	4.3	88	36	55	40	36	29	11	3.1	1.4
3	.07	7.9	4.3	77	37	54	38	34	28	10	2.8	1.4
4	.07	7.0	4.3	69	38	51	39	33	28	11	2.8	1.6
5	.08	6.8	6.2	63	33	50	39	30	28	11	2.8	1.3
6	.09	6.2	4.7	59	32	50	37	28	39	9.6	2.8	4.2
7	12	6.1	4.3	54	29	50	36	27	29	9.3	2.6	1.9
8	2.2	5.9	4.3	51	28	48	35	27	29	8.4	2.6	1.3
9	2.7	5.7	4.3	46	28	47	34	25	24	8.3	2.4	1.3
10	2.2	4.9	4.3	46	27	44	33	22	25	7.7	2.4	1.3
11	9.9	4.9	4.3	43	24	44	32	21	21	7.8	2.0	1.4
12	6.0	4.9	4.3	44	24	43	31	21	21	9.3	2.0	1.7
13	7.7	4.9	15	45	24	41	30	22	21	7.8	2.0	1.5
14	28	4.9	7.7	46	22	70	29	22	20	6.9	1.9	1.5
15	6.5	4.9	7.0	51	21	51	27	19	19	6.3	2.0	1.3
16	4.7	4.9	7.5	58	21	54	26	19	18	6.1	2.2	1.3
17	3.7	4.6	7.0	63	21	51	24	116	17	5.6	1.8	1.3
18	3.3	5.3	7.0	64	20	52	24	110	17	5.3	1.8	1.3
19	2.9	4.6	6.5	64	20	52	24	72	18	5.3	1.8	1.3
20	2.6	4.3	6.5	60	19	51	23	65	17	5.3	1.8	1.4
21	2.3	4.3	6.5	59	19	46	21	63	16	5.2	1.7	1.4
22	3.1	4.3	6.5	57	33	46	21	56	23	4.6	2.0	1.4
23	3.1	4.3	6.5	56	140	46	21	53	24	4.7	1.5	1.3
24	2.6	6.2	6.5	54	67	44	19	50	18	6.1	1.5	1.2
25	2.6	9.1	6.2	54	61	43	18	49	17	4.5	1.6	1.2
26	3.6	5.3	6.1	47	59	43	18	44	15	3.9	2.2	1.2
27	8.8	4.6	6.4	47	57	65	18	42	15	3.9	1.4	1.1
28	8.7	4.3	12	44	59	48	17	38	15	3.9	1.3	1.2
29	19	4.3	14	44	---	48	173	38	13	3.6	1.4	12
30	9.5	4.3	250	45	---	45	45	36	12	3.4	1.4	12
31	11	---	1600	40	---	43	---	34	---	3.3	1.4	---
TOTAL	169.15	167.8	2038.8	1756	1036	1532	1015	1297	647	210.1	64.1	65.1
MEAN	5.46	5.59	65.8	56.6	37.0	49.4	33.8	41.8	21.6	6.78	2.07	2.17
MAX	28	9.9	1600	118	140	70	173	116	39	11	3.1	12
MIN	.07	4.3	4.3	40	19	41	17	19	12	3.3	1.3	1.1
CFSM	.13	.13	1.53	1.31	.86	1.15	.78	.97	.50	.16	.05	.05
IN.	.15	.14	1.76	1.52	.89	1.32	.88	1.12	.56	.18	.06	.06
AC-FT	336	333	4040	3480	2050	3040	2010	2570	1280	417	127	129

CAL YR 1984	TOTAL	2873.68	MEAN	7.85	MAX	1600	MIN	.04	CFSM	.18	IN	2.48	AC-FT	5700
WTR YR 1985	TOTAL	9998.05	MEAN	27.4	MAX	1600	MIN	.07	CFSM	.64	IN	8.63	AC-FT	19830



08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI KF AGAR (COLS. PER 100 ML)
JAN 09...	1127	46	516	8.2	14.0	5	1.0	10.0	101	--	K130	140
23...	1600	52	482	8.0	10.0	--	--	--	--	--	--	--
APR 30...	1545	55	447	8.0	27.0	5	1.9	7.4	--	1.5	200	320
AUG 23...	1430	1.6	360	8.1	34.0	10	--	9.5	140	1.3	K890	K8

DATE	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)
JAN 09...	250	38	81	11	6.0	.2	1.0	210	37	11	.20
23...	--	--	--	--	--	--	--	--	--	--	--
APR 30...	230	51	75	11	5.9	.2	1.3	182	43	10	.30
AUG 23...	170	52	49	11	8.6	.3	1.2	116	47	15	.20

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDE PENDE (MG/L)	SOLIDS, VOLA- TILE, SUS- PENDE (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN 09...	11	280	2	2	<.010	1.3	<.010	--	.20	<.010	1.1
23...	--	--	--	--	--	--	--	--	--	--	--
APR 30...	11	270	5	2	<.010	.70	.050	.35	.40	<.010	1.0
AUG 23...	15	220	--	1	<.010	.10	.030	.37	.40	.010	5.9

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
JAN 09...	1127	<1	35	<1	<10	<1	3
AUG 23...	1430	<1	32	<1	<10	<1	4

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
JAN 09...	<1	<1	<.1	1	<1	9
AUG 23...	<1	3	<.1	<1	<1	16

DATE	TIME	PCB, TOTAL (UG/L)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	AME- TRYNE TOTAL	ATRA- ZINE, TOTAL (UG/L)	CHLOR- DANE, TOTAL (UG/L)	CYAN- AZINE TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)
JAN 09...	1127	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01
23...	1600	--	--	--	<.10	<.10	<.1	<.10	--	--
AUG 23...	1430	<.1	<.10	<.01	--	--	<.1	--	<.01	<.01

## NUECES RIVER BASIN

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	DDT, TOTAL (UG/L)	DI- AZINON, TOTAL (UG/L)	DI- ELDRIN TOTAL (UG/L)	ENDO- SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA- CHLOR, TOTAL (UG/L)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA- THION, TOTAL (UG/L)
JAN 09...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
23...	--	--	--	--	--	--	--	--	--	--
AUG 23...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01
DATE	METHO- MYL TOTAL (UG/L)	METH- OXY- CHLOR, TOTAL (UG/L)	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	PER- THANE TOTAL (UG/L)	PROME- TONE TOTAL (UG/L)	PROME- TRYNE TOTAL (UG/L)	PRO- PAZINE TOTAL (UG/L)
JAN 09...	--	<.01	<.01	<.01	<.01	<.01	<.1	--	--	--
23...	<2.0	--	--	--	--	--	--	<.1	<.1	<.10
AUG 23...	--	<.01	.02	<.01	<.01	<.01	<.1	--	--	--
DATE	PROPHAM TOTAL (UG/L)	SEVIN, TOTAL (UG/L)	SIMA- ZINE TOTAL (UG/L)	SIME- TRYNE TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2, 4-DP TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 09...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01
23...	<2.0	<2.0	<.10	<.1	--	--	--	--	--	--
AUG 23...	--	--	--	--	<1	<.01	<.01	<.01	<.01	<.01

## NUECES RIVER BASIN

373

08202700 SECO CREEK AT ROWE RANCH NEAR D'HANIS, TX

LOCATION.--Lat 29°21'43", long 99°17'05", Medina County, Hydrologic Unit 12110107, on left bank 2.9 mi north of D'Hanis and 8.0 mi downstream from Rocky Creek.

DRAINAGE AREA.--168 mi<sup>2</sup>.

PERIOD OF RECORD.--November 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 900.88 ft above National Geodetic Vertical Datum of 1929. Prior to October 1970, published as "at Crook Ranch, near D'Hanis".

REMARKS.--No estimated daily discharges. Records good. All of low flow of Seco Creek enters Edwards and associated limestones in the Balcones fault zone, that crosses the basin between Miller Ranch (station 08201500) and this station. No known diversion above station.

AVERAGE DISCHARGE.--24 years (water years 1962-85), 7.95 ft<sup>3</sup>/s (5,760 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,500 ft<sup>3</sup>/s July 15, 1973 (gage height, 26.0 ft, from floodmark), from rating curve extended above 16,000 ft<sup>3</sup>/s on basis of slope-area measurement of 35,800 ft<sup>3</sup>/s; no flow most of time each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 35.7 ft May 31, 1935, from information by local resident. Other floods occurred Aug. 31, 1894, 33 ft; September 1919, 28 ft; July 2, 1932, 28.2 ft (discharge, 35,800 ft<sup>3</sup>/s), by slope-area measurement; and June 17, 1958, 32.4 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage Height (ft)
Dec. 31	0200	*11,800	a*17.43	No other peak greater than base discharge.			

a From floodmark.

Minimum daily discharge, no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	11	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	1.9	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	1.2	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.69	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.31	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.07	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	2.3	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	77	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	3.3	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	2.0	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	1.2	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.63	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.20	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.04	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	2.7	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	---	1740	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	1742.70	15.17	.00	86.67	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	56.2	.49	.000	2.80	.000	.000	.000	.000	.000	.000
MAX	.00	.00	1740	11	.00	77	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	3460	30	.00	172	.00	.00	.00	.00	.00	.00
CAL YR 1984	TOTAL	1742.70	MEAN	4.76	MAX	1740	MIN	.00	AC-FT	3460		
WTR YR 1985	TOTAL	1844.54	MEAN	5.05	MAX	1740	MIN	.00	AC-FT	3660		

## NUECES RIVER BASIN

08205500 FRIO RIVER NEAR DERBY, TX

LOCATION.--Lat 28°44'11", long 99°08'40", Frio County, Hydrologic Unit 12110106, on right bank 17 ft downstream from centerline of railroad tracks, 35 ft right of the Missouri Pacific Railroad Co. bridge abutment, 167 ft downstream from Interstate Highway 35, 917 ft downstream from Leona River, 2.5 mi south of Derby, and 115.1 mi upstream from mouth.

DRAINAGE AREA.--3,429 mi<sup>2</sup>.

PERIOD OF RECORD.--August 1915 to current year.

REVISED RECORDS.--WSP 568: 1915-16, 1918-22. WSP 1312: 1917-18(M). WSP 1923: 1954. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 449.11 ft above National Geodetic Vertical Datum of 1929. Aug. 1, 1915, to Apr. 21, 1931, nonrecording gage, and Apr. 22, 1931, to Mar. 6, 1940, water-stage recorder at same site and datum. Mar. 7, 1940, to May 4, 1972, water-stage recorder, and May 5 to Nov. 1, 1972, nonrecording gage at site 167 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Part of flow of Frio River and its headwater tributaries enters the Edwards and associated limestones in the Balcones Fault Zone upstream from U.S. Highway 90 (see REMARKS for stations 08197500, 08198500, 08200700, and 08202700). There is considerable loss of flow into various permeable formations downstream from the Balcones Fault Zone. There are many small diversions for irrigation above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--70 years, 136 ft<sup>3</sup>/s (98,530 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 230,000 ft<sup>3</sup>/s July 4, 1932 (gage height 29.45 ft, from floodmarks), from rating curve extended above 76,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times most years.

Maximum stage since at least 1860, that of July 4, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 13	1800	4,200	8.67	Jan. 2	1200	*7,070	a*10.22

a From floodmark.

Minimum daily discharge, no flow for many days

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	11	.66	1280	62	44	39	106	22	.00	.00	.00
2	.00	5.2	.72	5460	57	40	32	48	18	.00	.00	.00
3	.00	3.1	.79	3310	51	45	31	24	14	13	.00	.00
4	.00	2.8	.84	1240	48	46	29	13	12	32	.00	.00
5	.00	2.5	1.1	728	49	44	26	9.4	9.7	4.3	.00	.00
6	.00	1.9	1.1	533	49	38	25	11	11	6.3	.00	.00
7	.00	1.7	1.1	411	47	32	22	7.7	7.6	5.2	.00	.00
8	.00	1.5	1.0	331	43	30	20	5.0	4.7	1.5	.00	.00
9	.00	1.4	.93	269	39	29	16	4.7	2.9	1.1	.00	.00
10	.00	1.3	.86	220	34	28	19	4.3	2.4	1.9	.00	.00
11	307	1.2	.40	181	30	26	18	3.5	1.6	1.5	.00	.00
12	2210	1.1	.30	156	27	26	16	2.2	.96	.66	.00	.00
13	3860	1.1	.35	138	24	25	17	4.2	.93	.30	.00	.00
14	3410	1.0	.33	131	22	55	18	8.8	1.3	.16	.00	.00
15	2340	.96	.30	137	20	561	18	5.9	.65	.00	.00	.00
16	997	.92	.30	148	17	588	17	4.9	.20	.00	.00	.00
17	566	.88	.39	130	16	194	16	4.2	.00	.00	.00	.00
18	219	.85	.45	120	15	121	15	5.6	.00	.00	.00	.00
19	78	.82	.45	147	14	81	11	461	.00	.00	.00	.00
20	45	.80	.45	201	13	62	9.6	218	.00	.00	.00	.00
21	30	.78	.45	194	11	50	8.1	122	.00	.00	.00	.00
22	22	.78	.34	169	11	43	7.5	70	.00	.00	.00	.00
23	15	.78	.30	148	11	38	6.7	52	.00	.00	.00	.00
24	13	1.3	.25	138	34	33	5.7	36	.00	.00	.00	.00
25	9.5	1.7	.25	142	87	31	5.2	27	.00	.00	.00	.00
26	49	1.7	.30	133	40	30	6.6	19	.00	.00	.00	.00
27	575	1.5	.34	126	54	28	6.9	22	.00	.00	.00	.00
28	144	1.1	.59	109	52	29	8.3	148	.00	.00	.00	.00
29	62	.83	.73	91	---	27	8.4	122	.00	.00	.00	.00
30	28	.66	.79	81	---	23	6.3	51	.00	.00	.00	.00
31	16	---	1.2	70	---	42	---	32	---	.00	.00	---
TOTAL	14995.50	53.16	18.36	16672	977	2489	484.3	1652.4	109.94	67.92	.00	.00
MEAN	484	1.77	.59	538	34.9	80.3	16.1	53.3	3.66	2.19	.000	.000
MAX	3860	11	1.2	5460	87	588	39	461	22	32	.00	.00
MIN	.00	.66	.25	70	11	23	5.2	2.2	.00	.00	.00	.00
AC-FT	29740	105	36	33070	1940	4940	961	3280	218	135	.00	.00

CAL YR	TOTAL	MEAN	MAX	MIN	AC-FT
1984	16266.75	44.4	3860	.00	32270
1985	37519.58	103	5460	.00	74420

NUECES RIVER BASIN

375

08206600 FRIIO RIVER AT TILDEN, TX

LOCATION.--Lat 28°28'02", long 98°32'50", McMullen County, Hydrologic Unit 12110108, on left end at downstream side of bridge on State Highway 16 in Tilden, 300 ft downstream from Leoncita Creek, 1.3 mi upstream from Salt Branch, 1.8 mi downstream from Big Slough, and 44.2 mi upstream from mouth.

DRAINAGE AREA.--4,493 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1978 to current year.

GAGE.--Water-stage recorder. Datum of gage is 216.04 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Part of flow of Frio River and its headwater tributaries enter the Edwards and associated limestones in the Balcones Fault Zone, that crosses basin upstream from U.S. Highway 90 (see REMARKS for station 08205500). Considerable loss of flow into various permeable formations also occurs downstream from the Balcones Fault Zone. There are many small diversions above station for irrigation.

AVERAGE DISCHARGE.--7 years, 149 ft<sup>3</sup>/s (108,000 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft<sup>3</sup>/s May 19, 1980 at 0900 hours (gage height, 26.35 ft); no flow for many days in 1984-85.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1932 reached a stage of 38.44 ft, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 17	Unknown	8,930	a24.71	Sept. 29	1500	*11,800	a*26.73
Jan. 6	0600	4,460	21.73				

Minimum daily discharge, no flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	93	.59	17	76	56	37	218	56	23	.00	.21
2	1.1	103	.72	72	70	42	37	255	38	11	.00	.18
3	.89	283	.86	87	63	48	36	100	29	7.0	.00	.16
4	.73	76	1.1	450	59	47	45	84	22	5.3	.06	.21
5	1.0	29	2.0	1920	55	41	45	66	18	77	.02	.26
6	.65	18	2.1	4140	52	38	40	48	15	329	.02	.27
7	.64	13	2.5	2430	49	38	39	36	13	371	.02	.31
8	.90	9.5	2.6	1510	47	39	38	28	11	152	.00	.35
9	.41	7.6	2.6	891	47	39	37	23	9.2	60	.00	.29
10	108	5.6	2.6	524	47	40	40	19	8.0	38	.00	.34
11	109	4.4	2.6	293	44	43	41	22	7.7	27	.00	.47
12	108	3.6	2.8	224	41	41	35	19	6.6	19	.02	.60
13	107	3.0	3.8	193	38	40	34	15	5.8	13	.00	1.3
14	108	2.5	4.6	179	34	41	32	13	4.6	9.1	.00	2.5
15	107	2.2	4.8	184	32	41	31	11	3.3	6.3	.00	1.8
16	107	1.8	4.8	188	30	43	30	9.4	2.4	4.7	.02	1.5
17	2260	1.6	4.8	162	28	124	29	20	2.1	3.7	.03	1.4
18	3520	1.5	4.8	149	27	408	28	38	14	2.8	.04	1.5
19	1960	1.4	5.0	136	26	486	28	38	230	1.9	.06	1.6
20	1160	1.2	5.0	112	24	210	28	42	354	1.3	.06	1.2
21	391	1.2	5.4	101	23	103	28	131	44	.89	.03	.51
22	87	1.1	5.9	123	22	77	28	253	30	.65	.05	.45
23	51	1.0	6.1	160	22	64	27	114	16	.38	.06	.41
24	35	.97	5.9	153	21	57	24	69	11	.24	.08	.30
25	27	.86	5.9	132	19	51	24	55	14	.19	.10	.30
26	21	.86	5.9	113	19	47	772	49	15	.13	.11	.25
27	18	.86	5.6	108	18	44	930	37	9.7	.10	.10	.16
28	16	.83	5.2	103	48	41	1090	29	162	.02	.09	2.7
29	144	.65	5.0	97	---	40	316	24	204	.00	.12	2480
30	311	.59	5.4	90	---	40	80	34	92	.00	.13	6920
31	132	---	7.1	83	---	38	---	89	---	.00	.18	---
TOTAL	10935.21	669.82	124.07	15124	1081	2507	4029	1988.4	1447.4	1164.70	1.40	9421.53
MEAN	353	22.3	4.00	488	38.6	80.9	134	64.1	48.2	37.6	.045	314
MAX	3520	283	7.1	4140	76	486	1090	255	354	371	.18	6920
MIN	.64	.59	.59	17	18	38	24	9.4	2.1	.00	.00	.16
AC-FT	21690	1330	246	30000	2140	4970	7990	3940	2870	2310	2.8	18690
CAL YR 1984	TOTAL	13049.94	MEAN	35.7	MAX	3520	MIN	.00	AC-FT	25880		
WTR YR 1985	TOTAL	48493.53	MEAN	133	MAX	6920	MIN	.00	AC-FT	96190		



## NUECES RIVER BASIN

08206700 SAN MIGUEL CREEK NEAR TILDEN, TX

LOCATION.--Lat 28°35'14", long 98°32'44", McMullen County, Hydrologic Unit 12110109, on left bank 25 ft downstream from State Highway 16, 0.3 mi upstream from mouth of Bruce Branch, 0.9 mi downstream from mouth of Far Live Oak Creek, 3 mi upstream from San Patricio Creek, 7 mi downstream from Clear Creek, 8.7 mi north of Tilden, and 12.9 mi upstream from mouth.

DRAINAGE AREA.--783 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1964 to current year.

REVISED RECORDS.--WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 242.95 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. There are five diversions above station, but amounts are unknown. At times, excess water from Bexar-Medina-Atascosa Counties Water Improvement District No. 1 system enters San Miguel Creek basin via Chacon Creek 52 mi upstream (amounts unknown). Satellite telemeter located at station.

AVERAGE DISCHARGE.--21 years, 62.9 ft<sup>3</sup>/s (45,570 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,600 ft<sup>3</sup>/s May 16, 1980 (gage height, 27.31 ft); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1919, 32.6 ft in 1942; stage of 1919 flood not known, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 900 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 11	1600	2,130	14.92	July 4	1800	1,410	13.05
Oct. 15	0100	1,780	14.07	Sept. 29	1300	*3,590	*17.33

Minimum daily discharge, no flow for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	110	1.4	108	2.6	10	2.0	1.2	2.5	9.8	.04	.00
2	.00	64	1.5	22	2.4	6.7	2.0	.69	2.0	5.9	.03	.00
3	.00	43	2.6	8.5	2.2	5.1	1.8	.49	1.8	31	.03	.00
4	.00	21	1.4	5.2	2.2	4.1	1.8	.26	1.4	972	.02	.00
5	.00	11	1.2	3.7	2.2	3.4	1.6	.18	1.0	903	.01	.00
6	.00	6.8	1.0	2.7	2.1	3.0	1.6	.09	.73	255	.00	.00
7	2.9	5.0	.76	2.2	2.0	3.0	1.5	.05	.34	65	.00	.00
8	66	3.8	1.6	1.8	2.0	3.0	1.4	.04	.23	38	.00	.00
9	188	2.9	1.6	1.5	1.8	3.2	2.0	.04	.09	26	.00	.00
10	204	2.1	1.6	1.4	1.8	3.0	1.8	.04	20	18	.00	.00
11	1240	1.8	1.6	1.3	1.8	2.6	3.7	.02	15	13	.00	.00
12	977	1.4	1.7	1.6	1.6	3.2	2.1	.02	8.5	9.7	.00	.00
13	575	1.2	1.9	2.8	1.4	2.4	1.5	.02	5.9	7.4	.00	31
14	804	1.2	2.0	3.6	1.4	12	1.1	.01	201	5.7	.00	9.9
15	1240	.97	3.5	31	1.4	111	.97	.01	29	4.5	.00	2.7
16	398	.74	4.1	22	1.4	52	.97	.00	8.6	3.8	.00	.98
17	73	.74	2.9	14	1.4	26	.97	65	4.5	3.3	.00	.16
18	36	.74	2.3	11	1.4	18	.75	131	5.4	3.0	.00	.04
19	21	.74	1.9	23	1.4	20	1.3	212	152	2.5	.00	.02
20	13	.74	1.8	25	1.5	16	2.8	361	260	2.0	.00	.00
21	8.9	.74	1.8	16	1.6	11	2.4	130	172	1.8	.00	.00
22	6.6	.64	2.0	11	1.8	8.3	1.9	48	21	1.5	.00	.00
23	5.2	.51	2.0	7.4	2.2	6.4	1.7	25	59	1.2	.00	.00
24	4.6	.51	2.0	5.6	1.7	5.2	1.4	22	26	.97	.00	.00
25	4.0	.83	2.0	5.0	1.4	4.3	81	149	12	.70	.00	.00
26	3.6	1.1	2.0	4.4	27	3.7	389	34	6.4	.36	.00	.00
27	3.9	1.2	2.0	4.8	32	3.2	20	15	4.1	.23	.00	.00
28	3.6	1.2	2.0	4.8	15	2.9	6.3	9.4	3.4	.15	.00	17
29	3.0	1.2	2.2	4.0	---	2.7	4.0	6.0	66	.10	.00	2680
30	2.6	1.2	3.5	3.0	---	2.4	2.4	4.0	24	.07	.00	703
31	2.3	---	98	2.9	---	2.3	---	3.1	---	.07	.00	---
TOTAL	5886.20	289.00	157.86	361.2	118.7	360.1	559.96	1217.66	1113.89	2385.75	.13	3444.80
MEAN	190	9.63	5.09	11.7	4.24	11.6	18.7	39.3	37.1	77.0	.004	115
MAX	1240	110	98	108	32	111	389	361	260	972	.04	2680
MIN	.00	.51	.76	1.3	1.4	2.3	.75	.00	.09	.07	.00	.00
AC-FT	11680	573	313	716	235	714	1110	2420	2210	4730	.3	6830
CAL YR 1984	TOTAL	6956.31	MEAN	19.0	MAX	1240	MIN	.00	AC-FT	13800		
WTR YR 1985	TOTAL	15895.25	MEAN	43.5	MAX	2680	MIN	.00	AC-FT	31530		

NUECES RIVER BASIN

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08208000 ATASCOSA RIVER AT WHITSETT, TX

LOCATION.--Lat 28°37'19", long 98°16'52", Live Oak County, Hydrologic Unit 12110110, on right bank at downstream side of bridge on Farm Road 99, 1.1 mi southwest of Whitsett, 4.2 mi downstream from La Parita Creek, and 12.9 mi upstream from mouth.

DRAINAGE AREA.--1,171 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1924 to May 1926, May 1932 to current year.

GAGE.--Water-stage recorder. Datum of gage is 159.04 ft above National Geodetic Vertical Datum of 1929. Prior to May 8, 1926, nonrecording gage at bridge at site 200 ft upstream at 1.38 ft higher datum. May 8, 1926, to Feb. 16, 1983, water-stage recorder at site 1,000 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Considerable losses of flow into various permeable formations occurs upstream from this station. The Campbellton water wells discharge into the Atascosa River 12 mi upstream from this station to supplement streamflow during dry periods. Records of the Lower Nueces River Water Supply District indicate that during the year, the Campbellton water wells discharged 3,140 acre-ft into the Atascosa River. There are several small diversions above station.

AVERAGE DISCHARGE.--54 years (water years 1925, 1933-85), 129 ft<sup>3</sup>/s (93,460 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 121,000 ft<sup>3</sup>/s Sept. 23, 1967 (gage height, 41.3 ft, from floodmark), from rating curve extended above 24,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; no flow at times. Maximum stage since at least 1881, that of Sept. 23, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Second highest stage, 41 ft, discharge 106,000 ft<sup>3</sup>/s, occurred in September 1919.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 14	0200	1,780	18.91	Apr. 27	1100	*3,490	*23.16

Minimum daily discharge, 0.10 ft<sup>3</sup>/s Sept. 27.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.2	37	22	23	15	15	7.8	44	11	35	1.4	.19
2	4.7	107	25	87	15	16	9.5	32	7.7	19	1.1	.17
3	6.8	233	23	72	15	17	7.8	24	5.6	19	.81	.17
4	5.5	118	23	45	14	17	7.6	19	4.3	439	.70	.17
5	3.9	62	24	34	14	14	7.6	17	3.8	969	.62	.17
6	4.8	42	24	26	14	13	6.8	14	3.7	977	.54	.17
7	4.9	30	23	22	14	12	6.4	12	3.8	160	.47	.17
8	20	27	23	22	14	12	6.1	11	4.5	70	.42	.17
9	221	27	23	23	13	11	5.8	10	3.9	47	.33	.17
10	203	25	24	22	13	11	221	9.2	3.4	36	.22	.17
11	420	23	23	20	13	11	899	8.2	3.0	29	.15	.19
12	398	22	23	21	12	11	394	7.8	2.3	24	.15	18
13	1230	22	23	23	12	11	112	7.4	2.2	21	3.1	97
14	1280	22	24	29	12	160	52	7.0	13	19	.32	236
15	536	22	25	74	12	410	42	6.8	86	18	.29	154
16	950	21	27	108	12	299	30	6.4	76	16	.22	35
17	309	21	27	95	12	115	20	28	36	14	.22	14
18	98	20	27	84	12	73	16	69	34	11	.18	11
19	73	19	27	67	12	48	12	210	50	9.7	.17	9.4
20	59	19	24	51	12	34	10	92	121	8.5	.17	4.2
21	48	18	24	38	12	26	9.3	45	150	7.8	.17	1.8
22	42	16	23	27	12	20	8.0	27	178	7.7	.17	1.1
23	39	14	22	24	12	18	9.0	18	81	6.6	.17	.83
24	36	14	22	22	12	16	8.2	16	85	5.6	.18	.45
25	42	14	21	21	13	15	8.9	109	50	4.5	.25	.26
26	102	14	20	21	15	12	825	113	34	3.8	.27	.14
27	154	14	21	21	15	11	3140	94	26	3.2	.19	.10
28	83	16	20	21	14	12	1310	54	29	3.2	.17	2.0
29	52	16	20	19	---	12	115	31	78	3.0	.57	192
30	43	15	20	19	---	9.2	67	20	69	2.4	.61	1280
31	39	---	22	17	---	8.2	---	14	---	1.5	.29	---
TOTAL	6511.8	1070	719	1198	367	1469.4	7373.8	1175.8	1255.2	2990.5	14.62	2059.19
MEAN	210	35.7	23.2	38.6	13.1	47.4	246	37.9	41.8	96.5	.47	68.6
MAX	1280	233	27	108	15	410	3140	210	178	977	3.1	1280
MIN	3.9	14	20	17	12	8.2	5.8	6.4	2.2	1.5	.15	.10
AC-FT	12920	2120	1430	2380	728	2910	14630	2330	2490	5930	29	4080
CAL YR 1984	TOTAL	10586.30	MEAN	28.9	MAX	1280	MIN	.00	AC-FT	21000		
WTR YR 1985	TOTAL	26204.31	MEAN	71.8	MAX	3140	MIN	.10	AC-FT	51980		

## NUECES RIVER MAIN STEM

08210000 NUECES RIVER NEAR THREE RIVERS, TX  
(National stream-gaging accounting network)

LOCATION.--Lat 28°25'38", long 98°10'40", Live Oak County, Hydrologic Unit 12110111, on right bank at U.S. Highway 281, 1.0 mi downstream from Frio River, 2.2 mi south of Three Rivers, and at mile 100.2.

DRAINAGE AREA.--15,427 mi<sup>2</sup>, of which 5,490 mi<sup>2</sup> is above Choke Canyon Dam. See Remarks.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1915 to current year. Monthly discharge only for November 1919 to January 1920, published in WSP 1312.

REVISED RECORDS.--WSP 548: 1920-21. WSP 1562: 1916, 1918-21, 1922(M), 1923, 1929. WDR TX-83-3: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 99.26 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 5, 1932, nonrecording gage at railroad bridge 0.8 mi upstream at datum 1.87 ft higher. Apr. 5, 1932, to Aug. 9, 1983, recording gage at a site 0.8 mi upstream at datum 1.87 ft higher.

REMARKS.--No estimated daily discharges. Records good. Since mid-July 1982, flow of the Frio River has been impounded in Choke Canyon Reservoir (conservation-pool storage of 696,800 acre-ft), about 11 mi upstream on the Frio River. Part of flow of the Nueces and its headwater tributaries enter the Edwards and associated limestones in the Balcones fault zone upstream from U.S. Highway 90 (see REMARKS for station 08205500). Considerable loss of flow into various permeable formations also occurs downstream from the Balcones fault zone. Many small diversions for irrigation and municipal supply above station. There is minor upstream regulation by small reservoirs and by ground-water supplements (see station 08208000 Atascosa River at Whitsett). Satellite telemeter located at station.

AVERAGE DISCHARGE.--70 years, 833 ft<sup>3</sup>/s (603,500 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 141,000 ft<sup>3</sup>/s Sept. 23, 1967 (gage height, 49.21 ft); no flow at times.

Maximum stage since about 1875, that of Sept. 23, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,560 ft<sup>3</sup>/s May 28 at 0700 hours (gage height, 21.66 ft, from floodmark); minimum daily, 0.93 ft<sup>3</sup>/s Oct. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.2	118	4.7	20	175	37	72	1200	2200	724	7.1	3.7
2	1.1	675	8.4	27	147	41	67	1410	1500	809	7.0	3.7
3	.93	1140	10	113	138	59	64	1770	362	858	6.6	3.6
4	1.1	1400	9.5	238	134	196	54	2000	184	1670	6.1	3.6
5	1.3	965	12	170	128	332	48	2780	131	2160	5.7	3.6
6	1.1	840	10	116	123	330	44	2920	98	2210	5.5	3.7
7	1.1	638	10	78	115	311	42	2580	74	1730	5.3	4.0
8	34	314	9.6	548	110	278	39	2110	60	1110	5.0	4.1
9	252	155	9.8	882	108	248	35	1400	52	1180	4.9	4.1
10	377	109	10	994	104	225	71	386	52	1390	9.3	4.2
11	967	78	10	1110	98	207	1660	173	43	1680	5.1	4.5
12	1950	57	9.8	1320	92	190	1660	124	35	2080	4.3	5.2
13	2550	45	11	1500	86	177	961	95	28	2500	4.5	83
14	3770	38	10	1960	84	342	814	71	149	2690	4.5	314
15	3160	32	11	2540	81	940	841	56	806	1160	4.4	292
16	3010	26	14	2660	76	811	948	80	1160	120	4.1	115
17	2980	23	15	2010	74	645	1100	142	1270	77	4.0	39
18	2020	20	13	663	73	743	1270	238	1340	59	3.8	24
19	1840	16	14	461	67	845	1480	560	1510	48	3.8	20
20	1850	14	13	391	62	946	1330	892	1730	41	3.9	18
21	1660	12	12	337	56	1030	233	913	1660	35	3.7	17
22	1090	9.9	11	289	50	1100	93	1020	1190	30	3.5	15
23	1150	7.9	10	250	52	640	63	1200	1170	24	3.8	12
24	1260	6.4	11	230	44	221	54	1530	1280	20	3.9	11
25	1500	5.9	10	222	38	163	39	2310	1460	17	4.8	176
26	2380	5.2	9.9	219	35	134	160	2500	1450	14	7.4	80
27	3220	5.1	11	222	38	117	1910	4280	633	12	5.0	30
28	3720	4.6	10	207	37	105	3120	4490	200	11	4.4	19
29	3270	4.7	11	214	---	97	1860	3860	224	9.6	4.0	50
30	1030	4.8	11	316	---	88	1080	3260	413	8.2	4.0	965
31	178	---	18	261	---	76	---	2670	---	7.6	3.8	---
TOTAL	45225.83	6769.5	339.7	20568	2425	11674	21212	49020	22464	24484.4	153.2	2328.0
MEAN	1459	226	11.0	663	86.6	377	707	1581	749	790	4.94	77.6
MAX	3770	1400	18	2660	175	1100	3120	4490	2200	2690	9.3	965
MIN	.93	4.6	4.7	20	35	37	35	56	28	7.6	3.5	3.6
AC-FT	89710	13430	674	40800	4810	23160	42070	97230	44560	48560	304	4620
CAL YR 1984	TOTAL	68100.09	MEAN	186	MAX	3770	MIN	.55	AC-FT	135100		
WTR YR 1985	TOTAL	206663.63	MEAN	566	MAX	4490	MIN	.93	AC-FT	409900		

NUECES RIVER MAIN STEM

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08210000 NUECES RIVER NEAR THREE RIVERS, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1941 to September 1947, September 1950 to September 1952. Chemical and biochemical analyses: January 1968 to current year. Pesticide analyses: January 1968 to September 1982.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1945 to September 1947, September 1950 to September 1952, October 1974 to September 1981.

WATER TEMPERATURES: October 1975 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,310 microsiemens Jan. 17, 1977; minimum daily, 157 microsiemens May 26, 1975.

WATER TEMPERATURES: Maximum daily, 32.0°C on several days during summer of 1977-78 and 1981; minimum daily, 7.0°C Jan. 2, 3, 1979.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

									OXYGEN, DIS- SOLVED	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	COLOR (PLAT- INUM- COBALT UNITS)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	(MG/L)	
DATE	TIME										
OCT 30...	1250	775	430	8.2	24.5	450	170	5.6	67	4.4	1400
JAN 29...	1207	200	618	8.1	12.0	80	53	10.1	92	1.2	K30
MAR 06...	1510	333	760	8.2	18.5	70	41	9.1	96	2.6	120
MAY 09...	1502	13000	482	7.8	27.0	80	46	6.1	76	1.2	K40
29...	0940	32900	427	--	--	75	11	--	--	.8	--
31...	1010	21500	406	7.5	29.0	70	31	5.4	73	--	K72
JUL 29...	1752	9.5	1550	7.9	33.0	35	20	7.5	104	.5	K24
	STREP- TOCOC- CI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)	HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
DATE											
OCT 30...	1400	130	0	46	4.3	37	1	8.7	150	28	28
JAN 29...	K60	210	40	69	10	50	2	4.6	174	58	58
MAR 06...	140	230	64	71	14	69	2	4.0	171	73	92
MAY 09...	K500	170	18	58	5.3	34	1	13	149	30	53
29...	--	130	6	48	3.3	32	1	7.2	128	19	45
31...	940	--	--	--	--	--	--	--	126	--	--
JUL 29...	30	290	110	100	9.4	170	5	19	180	80	310
	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	SOLIDS, VOLTA- TILE, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
DATE											
OCT 30...	.50	18	276	260	196	24	.18	.020	.20	.18	.050
JAN 29...	.20	11	389	370	70	19	2.2	.030	2.2	2.3	.130
MAR 06...	.20	2.4	436	430	67	1	1.2	.020	1.2	1.2	.040
MAY 09...	.20	14	286	300	106	12	.08	.020	.10	.10	.090
29...	.10	19	251	250	29	10	--	.020	<.10	<.10	.050
31...	--	--	--	--	60	9	--	.010	<.10	--	.070
JUL 29...	.80	28	868	830	29	11	.27	.030	.30	.28	.070

## NUECES RIVER MAIN STEM

08210000 NUECES RIVER NEAR THREE RIVERS, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	SEDI- MENT, SUS- PENDEDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINE THAN .062 MM
OCT 30...	.050	1.3	1.3	.440	.250	.220	11	210	439	99
JAN 29...	.120	1.2	1.3	.140	.140	.080	5.5	88	48	96
MAR 06...	.040	.56	.60	.090	.030	.020	5.2	117	105	88
MAY 09...	.030	1.7	1.8	.290	.200	.160	8.6	95	3330	99
29...	.070	.85	.90	.230	.200	.160	--	--	--	--
JUL 31...	--	.73	.80	.260	--	--	8.5	78	4530	91
29...	.050	.63	.70	.350	.320	.280	8.8	29	.74	99
DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 30...	1250	4	86	<.0	<1	<1	<3	3	34	2
JAN 29...	1207	1	81	<.5	<1	3	<3	1	6	<1
MAY 09...	1502	3	110	<.5	<1	<1	<3	5	28	7
29...	0940	2	82	<.5	<1	<1	<3	6	32	8
JUL 29...	1752	<1	230	<.5	<1	<1	<3	1	7	<1
DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 30...	15	3	<.1	<10	4	<1	<1	230	9	12
JAN 29...	15	10	<.1	<10	<1	<1	<1	320	<6	5
MAY 09...	12	<1	<.1	<10	3	<1	<1	320	9	9
29...	11	<1	<.1	<10	2	<1	<1	250	6	18
JUL 29...	43	41	<.1	<10	2	1	<1	680	10	10



NUECES RIVER BASIN

381

08210400 LAGARTO CREEK NEAR GEORGE WEST, TX

LOCATION.--Lat 28°03'34", long 98°05'48", Live Oak County, Hydrologic Unit 12110111, near right bank 75 ft downstream from bridge on U.S. Highway 281, 0.6 mi upstream from Dix Hollow, and 19.3 mi south of George West.

DRAINAGE AREA.--155 mi<sup>2</sup>.

PERIOD OF RECORD.--April 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 197.77 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. No known regulation or diversion.

AVERAGE DISCHARGE.--13 years, 1.97 ft<sup>3</sup>/s (1,430 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,350 ft<sup>3</sup>/s Aug. 11, 1980 (gage height, 16.50 ft); no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since about 1887, 25.1 ft Oct. 17, 1971 (discharge, 33,500 ft<sup>3</sup>/s). Second highest stage, 24.3 ft occurred Sept. 12, 1971 (discharge, 29,500 ft<sup>3</sup>/s). The third and fourth highest floods occurred in 1914 and September 1967 (stages unknown).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 50 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 10	1500	209	7.67	June 12	2200	131	7.07
May 18	1500	*2,510	*13.03	June 28	0600	184	7.49
May 25	0100	227	7.79				

Minimum daily discharge, no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	1.3	3.6	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.40	2.8	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.06	5.5	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.1	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.7	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.2	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.1	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.34	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.06	.00	.00
10	.00	.00	.00	.00	.00	.00	50	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	97	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	60	.00	22	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	18	.00	17	.00	.00	.00
14	3.0	.00	.00	.00	.00	.00	5.9	.00	3.9	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	1.5	.00	2.7	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.14	.00	.91	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	1040	.09	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	179	1.7	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	55	2.5	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	29	17	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	19	27	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	13	15	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	22	11	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	140	7.8	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	44	5.4	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	20	4.1	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	11	51	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	6.9	12	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	4.3	6.2	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	2.6	---	.00	.00	---
TOTAL	3.00	.00	.00	.00	.00	.00	232.54	1585.80	209.19	25.40	.00	.00
MEAN	.097	.000	.000	.000	.000	.000	7.75	51.2	6.97	.82	.000	.000
MAX	3.0	.00	.00	.00	.00	.00	97	1040	51	6.1	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	6.0	.00	.00	.00	.00	.00	461	3150	415	50	.00	.00

CAL YR 1984	TOTAL	3.00	MEAN	.008	MAX	3.0	MIN	.00	AC-FT	6.0
WTR YR 1985	TOTAL	2055.93	MEAN	5.63	MAX	1040	MIN	.00	AC-FT	4080

## 08210500 LAKE CORPUS CHRISTI NEAR MATHIS, TX

LOCATION.--Lat 28°02'17", long 97°52'15". San Patricio-Jim Wells County line, Hydrologic Unit 12110111, on right upstream corner of outlet tower at right end of Wesley E. Seale Dam on Nueces River, 0.6 mi upstream from bridge on State Highway 359, and 4.5 mi southwest of Mathis.

DRAINAGE AREA.--16,656 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1948 to current year. Prior to October 1960, month end records only. The Soil Conservation Service, U.S. Department of Agriculture, in cooperation with the Texas Board of Water Engineers (now Texas Department of Water Resources), collected fragmentary gage-height records in connection with sedimentation studies from Feb. 2, 1942, to July 10, 1947.

REVISED RECORDS.--WSP 1923: 1953(M), 1957(M).

GAGE.--Nonrecording gage read twice daily. Supplemental water-stage recorder operated by city of Corpus Christi. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1957, nonrecording gage at various sites 0.2 mi upstream at datum 0.52 ft higher. Oct. 1, 1957, to Apr. 3, 1961, nonrecording gage near left end of Mathis Dam 0.2 mi upstream at present datum.

REMARKS.--Mathis Dam was completed and storage began July 24, 1934. The original capacity at spillway crest (elevation, 74.5 ft) was 54,000 acre-ft, but by March 1948 had decreased to 39,400 acre-ft because of sedimentation. Wesley E. Seale Dam was completed and deliberate impoundment began on Apr. 26, 1958, submerging the old Mathis Dam. Wesley E. Seale Dam is a rolled earthfill dam, 5,930 ft long, including two spillways. The 1,320-foot north spillway has 33 gates that are operated by movable hydraulic lifts. The 1,080-foot south spillway has 27 gates that are electrically operated from the control tower. The gates were repaired and modified in August 1966. All gates in both spillways are 37.5 by 8.75 ft wide. Water for municipal supply for the city of Corpus Christi is released downstream through a 4.0-foot-diameter cylinder valve and three 2.5- by 4.0-foot rectangular openings. The releases are diverted from the river at Calallen 35 mi downstream for domestic, municipal, irrigation, mining, and industrial uses in the Corpus Christi area. The city of Alice withdrew 3,430 acre-ft from the lake during the current year for municipal use. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	106.0	
Top of north spillway gates.....	94.46	281,300
Top of south spillway gates.....	94.0	272,000
Crest of spillways.....	88.0	170,200
Lowest gated outlet (invert).....	55.5	646

COOPERATION.--The capacity curve is from an October 1972 survey. Elevation record provided by the city of Corpus Christi and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 320,000 acre-ft Sept. 22, 1967 and Sept. 12, 1971; maximum elevation, 94.82 ft Sept. 22, 1967; minimum contents, 14,740 acre-ft May 5, 1951, elevation, 67.62 ft.

EXTREMES (AT 0600) FOR CURRENT YEAR.--Maximum contents, 274,300 acre-ft May 6, 19, 21, 25, June 20, and July 5, 8, (elevation, 94.1 ft); minimum, 98,460 acre-ft Oct. 7 (elevation, 82.5 ft).

Capacity table (elevation, in feet, and contents, in acre-feet)

82.0	93,190	88.0	170,200	94.0	272,400
84.0	115,500	90.0	201,400	95.0	292,100
86.0	141,300	92.0	235,300		

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 0600

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101700	179300	183900	180800	209600	209600	224800	272400	272400	272400	260900	237000
2	101700	183900	183900	185500	211200	209600	224800	272400	272400	272400	260900	237000
3	100600	183900	183900	180800	211200	209600	223000	272400	272400	272400	260900	235300
4	100600	185500	183900	180800	211200	209600	221300	272400	272400	272400	259000	235300
5	100600	188600	185500	180800	211200	209600	221300	272400	272400	274300	257100	235500
6	99540	190200	183900	179300	211200	209600	221300	274300	272400	272400	257100	233500
7	98460	190200	182400	179300	211200	209600	221300	272400	272400	272400	255300	231700
8	100600	190200	182400	179300	209600	209600	221300	272400	272400	274300	255300	231700
9	99540	191800	182400	180800	209600	211200	221300	272400	270400	272400	255300	231700
10	100600	191800	182400	180800	209600	211200	221300	272400	270400	272400	253400	231700
11	101700	191800	182400	183900	211200	211200	238800	272400	270400	272400	253400	231700
12	101700	191800	182400	185500	209600	211200	242400	272400	268500	272400	251600	230000
13	103900	190200	182400	188600	207900	211200	246100	270400	268500	272400	251600	230000
14	110800	190200	182400	190200	207900	211200	249700	270400	268500	272400	249700	230000
15	114300	190200	180800	191800	209600	212900	249700	270400	268500	272400	249700	230000
16	120400	191800	180800	196500	207900	214600	251600	270400	268500	272400	247900	230000
17	126700	190200	182400	201400	207900	217900	253400	270400	272400	272400	247900	230000
18	130600	188600	182400	204600	207900	217900	253400	272400	272400	272400	247900	228200
19	134500	188600	180800	206300	207900	219600	255300	274300	272400	270400	246100	228200
20	138600	188600	180800	214600	207900	221300	257100	272400	274300	270400	246100	228200
21	139900	188600	180800	207900	207900	223000	260900	274300	272400	270400	246100	228200
22	144000	187100	180800	207900	207900	223000	260900	272400	272400	268500	244200	228200
23	146800	187100	180800	207900	207900	224800	260900	272400	272400	268500	242400	228200
24	148200	187100	180800	207900	207900	224800	260900	272400	272400	266600	242400	228200
25	151100	185500	182400	207900	207900	224800	260900	274300	272400	266600	240600	226500
26	155400	185500	180800	207900	207900	224800	262800	272400	272400	266600	240600	226500
27	159800	187100	179300	207900	209600	224800	262800	272400	272400	264700	240600	226500
28	165700	185500	179300	209600	209600	224800	264700	272400	272400	264700	238800	224800
29	171700	185500	179300	209600	---	224800	270400	272400	272400	264700	238800	224800
30	176200	183900	179300	209600	---	224800	272400	272400	272400	262800	238800	231700
31	179300	---	179300	209600	---	224800	---	272400	---	262800	238800	---
MAX	179300	191800	185500	214600	211200	224800	272400	274300	274300	274300	260900	237000
MIN	98460	179300	179300	179300	207900	209600	221300	270400	268500	262800	238800	224800
(†)	88.6	88.9	88.6	90.5	90.5	91.4	94.0	94.0	94.0	93.5	92.2	91.8
(‡)	+76500	+4600	-4600	+30300	0.0	+15200	+47600	0.0	0.0	-9600	-24000	-7100
CAL YR 1984	MAX	191800	MIN	98460	†	+128900						
WTR YR 1985	MAX	274300	MIN	98460	†	-6200						

† Elevation, in feet, at end of month.

‡ Change in contents, in acre-feet.

NUECES RIVER MAIN STEM

383

08211000 NUECES RIVER NEAR MATHIS, TX

LOCATION (revised).--Lat 28°02'17", long 97°51'36", San Patricio-Jim Wells County line, Hydrologic Unit 12110111, on left bank 169 ft downstream from pier of bridge on State Highway 359, 200 ft downstream from Texas and New Orleans Railroad Co. bridge, 0.6 mi downstream from Wesley E. Seale Dam, 4 mi southwest of Mathis, and at mile 46.7. Prior to Nov. 5, 1984, at site 163 ft upstream.

DRAINAGE AREA.--16,660 mi<sup>2</sup>.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 26.53 ft above National Geodetic Vertical Datum of 1929. Prior to Aug. 29, 1984, at present site at datum 1.0 ft higher.

REMARKS.--Estimated daily discharges: Oct. 20 to Nov. 4, and Dec. 6. Records good except those for estimated daily discharges, which are fair. Flow is regulated by Lake Corpus Christi (station 08210500) 0.6 mi upstream. Upstream from Lake Corpus Christi, flow is affected by recharge to permeable formations, small diversions, and minor regulation. Water for municipal and industrial uses at Corpus Christi is released from Lake Corpus Christi above gage and is diverted from river at Calallen 34 mi downstream.

AVERAGE DISCHARGE.--46 years, 809 ft<sup>3</sup>/s (586,100 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 138,000 ft<sup>3</sup>/s Sept. 24, 1967 (gage height, 48.7 ft, from floodmark), present datum; minimum daily, 6.8 ft<sup>3</sup>/s Aug. 15, 1940.  
Maximum stage since at least 1888, that of Sept. 24, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of about 41 ft, present datum, occurred Sept. 20, 1919, from information by Texas and New Orleans Railroad Co. and is the second highest known.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,300 ft<sup>3</sup>/s Apr. 10 at 2000 hours (gage height, 21.47 ft); minimum daily, about 19 ft<sup>3</sup>/s Nov. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	88	47	84	43	84	97	120	1220	2210	149	175	141
2	88	38	84	95	94	100	120	1510	1940	591	171	140
3	89	19	74	116	137	90	127	1150	798	933	185	152
4	88	20	64	153	137	81	165	993	150	1180	150	185
5	85	22	65	104	110	81	161	1560	135	1720	150	167
6	89	20	72	103	110	87	137	2800	136	2380	153	159
7	102	55	90	103	100	85	141	2610	106	1700	195	159
8	55	102	89	97	95	94	131	2400	92	1260	208	154
9	74	92	91	84	76	125	115	1910	78	1190	204	153
10	106	69	114	84	81	120	1630	571	81	1140	190	154
11	120	67	119	85	104	120	3350	137	106	1390	191	153
12	107	70	112	77	117	120	199	134	115	1700	194	148
13	90	83	88	70	103	104	127	111	116	2120	193	137
14	61	82	84	125	85	84	122	157	101	2420	191	136
15	61	91	93	156	110	95	120	96	94	2190	190	139
16	93	97	107	105	173	87	121	89	104	196	189	130
17	104	97	116	87	136	85	120	146	522	125	189	123
18	96	96	114	102	120	93	119	733	877	110	189	115
19	92	101	104	102	116	94	120	1170	2940	104	189	113
20	55	92	100	92	101	96	120	1360	4100	102	184	117
21	45	87	100	78	111	94	120	2370	1840	100	181	117
22	44	86	100	113	115	101	108	1450	1490	127	182	117
23	42	84	117	133	114	112	96	1050	1570	146	182	117
24	42	76	127	124	98	106	103	1350	1050	191	187	117
25	79	90	114	103	79	97	114	2710	1580	172	189	117
26	49	100	89	102	109	108	71	3390	1450	131	190	117
27	24	102	86	94	70	118	24	3040	1200	129	190	117
28	44	100	91	91	55	117	65	4460	376	162	182	117
29	69	101	99	116	---	117	940	3870	254	190	165	117
30	56	93	109	98	---	121	1200	3300	172	176	156	73
31	49	---	87	97	---	116	---	2560	---	181	149	---
TOTAL	2286	2269	2983	3132	2940	3145	10206	50407	25783	24405	5633	4001
MEAN	73.7	75.6	96.2	101	105	101	340	1626	859	787	182	133
MAX	120	102	127	156	173	125	3350	4460	4100	2420	208	185
MIN	24	19	64	43	55	81	24	89	78	100	149	73
AC-FT	4530	4500	5920	6210	5830	6240	20240	99980	51140	48410	11170	7940
CAL YR 1984	TOTAL	47248	MEAN 129	MAX 246	MIN 19	AC-FT 93720						
WTR YR 1985	TOTAL	137190	MEAN 376	MAX 4460	MIN 19	AC-FT 272100						

## NUECES RIVER MAIN STEM

08211000 NUECES RIVER NEAR MATHIS, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1947 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1947 to current year.

WATER TEMPERATURES: October 1947 to current year.

REMARKS.--Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,580 microsiemens Apr. 19, 20, 1977; minimum daily, 216 microsiemens Sept. 19, 1971.

WATER TEMPERATURES (1947-76, 1980-85): Maximum daily, 36.0°C Aug. 8, 1964; minimum daily, 3.0°C Jan. 19, 1968.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,130 microsiemens Oct. 20; minimum daily, 546 microsiemens July 31.

WATER TEMPERATURES: Maximum daily, 32.5°C Aug. 26; minimum daily, 9.0°C Feb. 4, 5.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
JUN 17...	1249	497	614	30.5	160	18	54	7.1	57

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
JUN 17...	2	8.5	146	37	79	.20	13	340

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1984	2286	1040	584	3600	190	1190	79	487	270
NOV. 1984	2269	898	507	3110	150	915	69	425	240
DEC. 1984	2983	827	469	3780	130	1050	65	520	230
JAN. 1985	3132	792	450	3810	120	1030	62	526	220
FEB. 1985	2940	754	430	3410	110	888	60	473	210
MAR. 1985	3145	733	418	3550	110	907	58	493	210
APR. 1985	10206	647	370	10200	88	2420	52	1430	190
MAY 1985	50407	658	377	51300	90	12200	53	7170	190
JUNE 1985	25783	606	348	24200	79	5470	49	3400	180
JULY 1985	24405	557	321	21200	69	4540	45	2980	170
AUG. 1985	5633	557	321	4880	69	1050	45	688	170
SEPT 1985	4001	564	325	3510	70	758	46	494	170
TOTAL	137190	**	**	137000	**	32400	**	19100	**
WTD.AVG.	376	643	369	**	88	**	52	**	190

## NUECES RIVER MAIN STEM

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08211000 NUECES RIVER NEAR MATHIS, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985												
DAY	EQUIVALENT MEAN											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1030	974	845	800	762	749	731	674	630	577	565	565
2	1030	961	844	801	762	740	749	672	632	578	558	572
3	1040	916	885	804	759	743	735	675	650	573	558	555
4	1030	1050	886	803	773	739	737	670	652	563	565	553
5	1040	933	852	815	749	745	763	678	638	560	558	563
6	1010	1030	853	812	763	751	764	674	644	558	554	557
7	1040	961	837	805	759	741	767	674	642	562	558	550
8	1120	942	844	810	762	734	736	673	637	564	555	551
9	1050	930	836	804	761	739	738	674	645	566	556	559
10	1030	933	830	803	758	739	588	690	635	564	550	557
11	1070	928	839	819	739	739	572	683	633	554	548	559
12	1030	894	825	792	753	735	668	679	628	550	555	564
13	1040	903	849	789	761	739	803	697	624	550	558	560
14	1040	903	831	789	763	755	772	671	619	548	556	560
15	1010	915	820	792	747	719	721	694	609	551	554	562
16	1040	898	822	797	749	731	706	711	606	549	554	558
17	1030	898	822	793	759	728	779	675	607	561	559	560
18	1030	896	824	784	751	734	693	666	611	566	556	558
19	1030	895	830	789	757	735	695	665	605	562	553	570
20	1130	867	820	798	751	728	683	663	604	559	553	558
21	1120	875	822	784	761	729	678	650	607	554	554	562
22	1060	893	821	778	760	728	695	653	594	551	555	561
23	1070	889	813	776	740	726	693	651	597	554	561	564
24	1100	892	806	777	704	726	700	655	581	547	558	562
25	1110	863	824	805	789	724	693	652	579	555	558	559
26	998	865	835	766	746	727	839	657	574	552	564	558
27	1040	861	817	762	740	723	782	651	579	555	556	563
28	1010	849	816	800	738	722	782	644	594	553	558	557
29	1010	858	788	767	---	723	683	644	607	548	564	594
30	1030	857	788	787	---	727	689	638	604	547	560	720
31	998	---	782	775	---	726	---	641	---	546	562	---
MEAN	1050	911	829	793	754	734	721	668	616	557	557	566

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985												
DAY	ONCE-DAILY											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24.5	24.5	17.0	19.5	10.5	16.0	23.0	25.5	27.0	30.0	31.0	32.0
2	24.5	---	16.5	15.0	11.0	16.0	23.0	25.0	27.0	31.0	31.0	32.0
3	24.0	---	16.0	15.5	11.0	16.5	23.0	25.0	27.5	30.0	31.0	32.0
4	24.0	---	16.0	15.5	9.0	16.0	23.0	25.0	28.0	30.0	31.0	32.0
5	24.0	---	15.0	16.0	9.0	16.0	23.0	25.0	28.0	30.0	31.0	32.0
6	24.0	---	15.0	16.0	9.5	16.0	23.0	25.5	28.5	30.0	---	32.0
7	28.0	23.0	15.0	16.0	10.0	18.0	23.0	26.0	28.5	30.0	31.0	32.0
8	28.0	24.0	15.5	16.0	10.5	19.0	21.0	26.5	29.0	30.0	31.0	32.0
9	25.0	23.0	15.5	16.0	10.5	19.0	21.0	26.0	30.0	29.5	31.0	32.0
10	25.0	23.0	16.0	15.0	10.5	20.0	---	26.0	30.0	30.0	31.0	31.0
11	25.0	22.5	15.5	15.0	10.5	20.0	22.0	27.0	30.0	30.0	31.0	31.0
12	25.0	23.0	15.5	11.0	11.0	20.0	22.0	27.0	29.5	30.0	30.5	31.0
13	25.0	22.5	16.0	11.0	10.5	20.0	22.0	27.0	30.0	30.0	31.0	31.0
14	25.0	23.0	16.0	11.0	12.0	19.5	23.0	26.5	30.5	30.0	31.0	31.0
15	25.0	23.0	17.0	11.5	13.0	19.5	24.0	26.5	30.5	30.0	31.0	30.0
16	25.5	23.0	17.0	12.0	13.0	19.5	25.0	26.5	31.0	31.0	31.0	30.0
17	25.0	23.0	20.0	13.0	13.0	20.0	25.0	27.0	30.5	31.0	31.0	30.0
18	26.0	23.0	20.0	13.0	13.5	20.0	25.0	26.5	28.0	31.0	31.0	30.0
19	26.0	22.0	17.5	13.5	13.5	20.0	24.0	27.0	28.0	31.0	31.0	30.0
20	26.0	19.0	19.5	10.5	14.0	20.5	25.0	27.0	27.0	31.0	31.0	31.0
21	26.0	19.0	20.0	11.0	16.0	21.5	25.0	27.0	28.5	31.0	31.0	31.0
22	24.0	17.0	19.0	10.0	16.0	22.0	25.0	27.0	28.5	31.0	31.0	31.0
23	23.0	17.0	19.0	10.0	16.0	22.0	25.0	27.0	28.5	31.0	31.0	31.0
24	23.0	17.5	19.5	10.0	16.0	22.5	25.0	27.0	28.0	30.5	31.0	32.0
25	24.0	18.0	19.0	11.0	18.0	22.5	25.5	27.0	28.5	30.0	31.0	30.0
26	25.0	18.0	19.0	11.0	17.0	22.5	25.0	27.0	28.0	31.0	32.5	29.0
27	24.0	16.5	20.0	11.0	16.0	22.0	25.5	27.0	30.0	---	32.0	30.0
28	25.0	16.0	19.5	11.0	16.0	---	25.0	27.0	---	---	31.0	30.0
29	24.5	17.0	20.0	12.0	---	22.0	25.5	27.0	29.0	31.0	30.0	29.0
30	25.0	17.0	20.0	12.5	---	21.0	25.0	27.0	29.0	31.0	30.5	25.5
31	25.0	---	19.5	11.0	---	22.5	---	27.0	---	31.0	31.0	---
MEAN	25.0	20.5	17.5	13.0	12.5	19.5	24.0	26.5	29.0	30.5	31.0	31.0



## OSO CREEK MAIN STEM

08211520 OSO CREEK AT CORPUS CHRISTI, TX

LOCATION.--Lat 27°42'40", long 97°30'06", Nueces County, Hydrologic Unit 12110202, on left downstream end of bridge on Farm Road 763, 1.5 mi south of intersection of Farm Roads 763 and 665, 1.6 mi downstream from mouth of West Oso Creek, and 1.9 mi southwest of intersection of Farm Road 665 and State Highway 357.

DRAINAGE AREA.--90.3 mi<sup>2</sup>.

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1972 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1.91 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Apr. 1-17, May 31 to June 10, and Sept. 11-14. Records good except those for estimated daily discharges, which are poor. No known diversions above station. An undetermined amount of water from oilfield operations enters stream upstream at various points. Recording rain gage located at station.

AVERAGE DISCHARGE.--13 years, 33.7 ft<sup>3</sup>/s (24,420 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,100 ft<sup>3</sup>/s Aug. 10, 1980 (gage height, 29.37 ft); minimum, 0.25 ft<sup>3</sup>/s Aug. 26, 27, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 24.5 ft occurred in May 1968, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 8	1100	1,100	16.52	Nov. 3	0100	1,180	16.94
Oct. 22	1200	1,580	18.66	Sept. 30	2100	*2,500	*21.42

Minimum daily discharge, 0.61 ft<sup>3</sup>/s Dec. 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.5	2.9	.71	4.2	2.7	99	1.2	2.5	2.4	2.1	1.3	2.9
2	1.2	451	.75	8.8	2.1	44	1.2	2.8	2.3	4.3	1.3	2.4
3	1.3	767	.93	14	2.0	22	1.3	2.1	2.3	3.7	1.2	2.3
4	1.2	212	.96	12	2.5	11	1.2	2.2	2.4	4.1	1.2	2.0
5	1.2	71	1.6	7.2	2.2	5.2	1.2	2.0	2.4	4.4	1.2	2.1
6	1.5	23	1.4	3.9	2.2	4.4	1.1	2.0	2.3	6.1	1.2	2.3
7	228	10	1.2	2.7	2.1	3.4	2.5	1.8	2.3	7.1	1.2	1.7
8	896	5.9	1.3	2.2	1.8	2.9	2.0	2.2	2.2	4.1	1.2	1.4
9	350	4.0	1.6	2.1	1.6	2.6	16	3.3	2.2	3.2	1.3	1.5
10	198	2.8	1.6	2.0	1.5	2.4	48	2.9	2.1	3.1	1.7	1.6
11	619	1.9	1.8	1.7	1.5	2.5	26	2.8	2.0	3.4	1.7	1.5
12	70	1.2	1.6	4.4	1.6	2.4	12	2.5	1.9	3.1	1.7	1.4
13	21	1.0	1.8	9.8	1.8	1.4	9.0	2.9	3.5	3.1	1.7	1.5
14	443	1.1	1.5	14	2.5	1.0	7.6	2.4	9.3	3.1	1.7	1.5
15	284	1.1	1.7	16	2.1	10	6.8	3.7	6.5	2.5	1.8	1.7
16	51	1.1	1.3	12	2.2	54	6.0	4.2	2.6	2.0	2.1	3.7
17	25	5.4	1.1	7.8	2.0	36	5.0	3.1	2.6	1.7	1.6	4.8
18	13	3.0	.66	5.2	1.8	15	5.6	132	2.1	1.7	1.6	9.9
19	8.2	1.9	.82	3.9	1.8	6.3	4.7	195	11	1.7	1.6	9.3
20	9.1	1.7	.76	2.5	1.7	4.0	4.3	35	48	1.7	1.6	5.9
21	250	1.5	.61	2.2	2.2	3.3	4.2	115	70	1.7	1.7	23
22	1230	1.5	.82	2.0	2.0	2.1	4.3	122	39	1.7	1.3	15
23	330	.97	1.0	2.5	1.8	1.5	3.7	41	14	1.6	1.4	7.1
24	97	.82	.93	2.8	4.1	1.6	3.3	17	6.2	1.6	1.2	6.8
25	35	.98	.93	2.4	21	1.6	3.8	78	4.1	1.8	1.0	7.5
26	22	1.1	.98	2.2	21	1.4	10	165	3.4	1.5	1.2	4.8
27	17	.93	1.2	14	55	1.4	3.9	44	3.0	1.8	1.4	4.9
28	8.1	.93	1.9	6.4	287	2.4	3.5	14	2.8	2.3	1.7	4.9
29	4.9	.92	2.0	6.4	---	2.7	3.2	3.8	2.8	2.1	17	82
30	4.5	.71	1.7	5.3	---	1.8	3.1	2.6	2.3	1.7	7.4	1980
31	5.2	---	18	3.7	---	1.2	---	2.5	---	1.5	4.5	---
TOTAL	5226.9	1579.36	55.16	186.3	433.8	350.5	205.7	1012.3	260.0	85.5	69.7	2197.4
MEAN	169	52.6	1.78	6.01	15.5	11.3	6.86	32.7	8.67	2.76	2.25	73.2
MAX	1230	767	18	16	287	99	48	195	70	7.1	17	1980
MIN	1.2	.71	.61	1.7	1.5	1.0	1.1	1.8	1.9	1.5	1.0	1.4
AC-FT	10370	3130	109	370	860	695	408	2010	516	170	138	4360

CAL YR 1984	TOTAL	11695.22	MEAN	32.0	MAX	1400	MIN	.61	AC-FT	23200
WTR YR 1985	TOTAL	11662.62	MEAN	32.0	MAX	1980	MIN	.61	AC-FT	23130

## OSO CREEK MAIN STEM

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08211520 OSO CREEK AT CORPUS CHRISTI, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: July 1972 to current year. Pesticide analyses: July 1972 to September 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	HARD- NESS (MG/L AS CaCO3)	HARD- NESS, NONCAR- BONATE (MG/L CaCO3)
DEC 05...	1035	1.7	6800	7.8	12.7	5.7	11.0	105	2.4	1200	1000
JAN 23...	1345	2.4	4480	7.8	7.0	15	11.0	91	2.4	670	520
MAR 13...	1100	2.1	5560	8.1	23.5	10	10.4	124	3.7	890	680
APR 24...	1125	3.4	5100	7.6	27.5	23	7.9	101	4.4	880	280
JUN 11...	1135	2.0	5220	8.2	30.5	11	7.4	100	4.1	830	630
JUL 11...	1135	1.6	5220	8.2	31.0	--	--	--	--	--	--
AUG 22...	1000	1.3	4590	7.8	29.0	41	6.9	91	4.4	740	560

DATE	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CaCO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
DEC 05...	360	69	990	13	19	180	310	2100	.70	18
JAN 23...	210	36	620	11	11	150	200	1200	.60	7.4
MAR 13...	280	47	760	12	13	212	250	1600	.50	18
APR 24...	270	49	720	11	10	602	190	1200	.40	24
JUN 11...	260	45	770	12	17	203	270	1500	.60	22
JUL 11...	--	--	--	--	--	203	--	--	--	--
AUG 22...	230	41	780	13	20	188	390	1300	.90	26

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS- PENDED (MG/L)	NITRO- GEN, NITRATE TOTAL (MG/L AS N)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
DEC 05...	4000	11	7.4	.190	7.6	.200	1.1	1.3	6.00	8.8
JAN 23...	2400	17	5.3	.230	5.5	.340	1.2	1.5	2.20	9.1
MAR 13...	3100	23	2.9	.160	3.1	.170	1.6	1.8	2.50	10
APR 24...	2800	53	1.4	.020	1.4	.140	.96	1.1	1.90	5.5
JUN 11...	3000	40	1.2	.040	1.2	.150	1.9	2.0	2.20	13
JUL 11...	--	--	--	--	--	--	--	--	--	--
AUG 22...	2900	73	--	<.010	<.10	.110	1.7	1.8	1.70	15

## OSO CREEK MAIN STEM

08211520 OSO CREEK AT CORPUS CHRISTI, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
JAN 23...	1345	10	200	<1	40	3	40
AUG 22...	1000	17	<100	1	<10	3	170

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	ZINC, DIS- SOLVED (UG/L AS ZN)
JAN 23...	<1	490	<.1	<1	<1	10
AUG 22...	<1	640	.2	<1	<1	60

## SAN FERNANDO CREEK MAIN STEM

389

08211800 SAN DIEGO CREEK AT ALICE, TX

LOCATION.--Lat 27°45'59", long 98°04'31", Jim Wells County, Hydrologic Unit 12110204, at bridge on Edith Drive in Alice, 540 ft downstream from Texas and New Orleans Railroad Co. bridge, and 3.2 mi upstream from confluence with Chiltipin Creek.

DRAINAGE AREA.--319 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1963 to current year.

REVISED RECORDS.--WDR TX-72-1: 1971.

GAGE.--Water-stage recorder. Datum of gage is 189.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Flow is affected at times by discharge from the flood-detention pools of ten floodwater-retarding structures with a combined detention capacity of 35,980 acre-ft. These structures control runoff from 170 mi<sup>2</sup> in the San Diego-Rosita drainage basins.

AVERAGE DISCHARGE.--22 years, 8.49 ft<sup>3</sup>/s (6,150 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft<sup>3</sup>/s Oct. 17, 1971 (gage height, 17.70 ft); no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1928, 18.2 ft April 1949, equivalent gage height in channel modified in 1955, 17.2 ft, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
May 21	1800	*1,140	*7.45	No other peak greater than base discharge.			

Minimum daily discharge, no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.21	.54	2.3	.02	.37	.75	.18	.00	.00
2	.00	1.0	.00	.08	.31	.90	.01	1.3	.56	.19	.00	.00
3	.00	.62	.00	.25	.18	.38	.00	.74	.51	.19	.00	.00
4	.00	.27	.00	.18	.14	.17	.00	.30	.42	.16	.00	.00
5	.00	.15	.00	.07	.07	.09	.00	.15	.48	.16	.00	.00
6	.00	.09	.00	.03	.22	.07	.00	.08	.55	.24	.00	.00
7	.00	.03	.00	.00	.61	.07	.00	.07	.78	.25	.00	.00
8	.00	.01	.00	.00	.43	.04	.00	.11	.86	.22	.00	.00
9	.00	.00	.00	.00	.28	.05	.00	.27	.77	.20	.00	.00
10	.00	.00	.00	.00	.21	.04	12	.08	.55	.17	.00	.00
11	.00	.00	.00	.50	.12	.04	93	.04	.40	.14	.00	.00
12	.00	.00	.00	.95	.06	.07	21	.02	.34	.13	.00	.00
13	.00	.00	.00	.47	.10	.04	9.2	.02	.35	.10	.00	.00
14	.00	.02	.00	.58	.14	.02	3.3	.01	3.1	.10	.00	.00
15	.00	.03	.00	.51	.14	.29	1.4	.02	2.8	.08	.00	.00
16	.00	.00	.00	.55	.08	.24	1.6	.03	.92	.09	.00	.00
17	.00	.00	.00	.51	.06	.24	.83	.10	.47	.06	.00	.00
18	.00	.00	.00	.38	.06	.23	.48	308	.37	.05	.00	.00
19	.00	.00	.00	.29	.05	.15	.35	218	.80	.04	.00	.00
20	.00	.00	.00	.18	.03	.19	.31	52	6.4	.02	.00	.00
21	.00	.00	.00	.08	.13	.17	.25	632	19	.02	.00	.00
22	.00	.00	.00	.05	.26	.10	.22	133	10	.01	.00	.00
23	.00	.00	.00	.03	.18	.03	.17	38	2.1	.00	.00	.00
24	.00	.00	.00	.03	.16	.00	.13	20	1.5	.00	.00	.00
25	.00	.00	.00	.03	.16	.00	.09	17	.88	.00	.00	.00
26	.00	.00	.00	.02	.14	.00	.24	6.9	.59	.00	.00	.17
27	.03	.00	.00	.37	2.7	.03	4.8	2.9	.37	.00	.00	.00
28	.00	.00	.00	.17	2.3	.02	2.6	1.8	.30	.00	.00	.00
29	.00	.00	.02	.58	---	.00	.93	1.4	.28	.00	.00	.00
30	.02	.00	.00	.47	---	.00	.46	1.1	.22	.00	.00	.26
31	.00	---	.75	.39	---	.00	---	.86	---	.00	.00	---
TOTAL	.05	2.22	.77	7.96	9.86	5.97	153.39	1436.67	57.42	2.80	.00	.43
MEAN	.002	.074	.025	.26	.35	.19	5.11	46.3	1.91	.090	.000	.014
MAX	.03	1.0	.75	.95	2.7	2.3	93	632	19	.25	.00	.26
MIN	.00	.00	.00	.00	.03	.00	.00	.01	.22	.00	.00	.00
AC-FT	.10	4.4	1.5	16	20	12	304	2850	114	5.6	.00	.9

CAL YR 1984 TOTAL 129.58 MEAN .35 MAX 87 MIN .00 AC-FT 257  
WTR YR 1985 TOTAL 1677.54 MEAN 4.60 MAX 632 MIN .00 AC-FT 3330

## 08211850 LAKE ALICE AT ALICE, TX

LOCATION.--Lat 27°47'25", long 98°03'39", Jim Wells County, Hydrologic Unit 12110204, on right bank just upstream from Alice Dam on Chiltipin Creek, 1.8 mi upstream from confluence of Chiltipin and San Diego Creeks, and 2.6 mi north-east of Alice.

DRAINAGE AREA.--150 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by city of Alice).

REMARKS.--The lake is formed by a rolled earthfill dam 11,525 ft long. The dam consists of the main embankment 3,470 ft long and two protective levees. The west protective levee is 4,275 ft long and the east protective levee is 2,343 ft long. Storage began Oct. 26, 1964, and the dam was completed Mar. 16, 1965. The spillway, 1,000 ft wide, is located between the main embankment and the west levee. Collapsible flashboards, 3.5 ft high, were added to the crest of the spillway. The main spillway is 414 ft wide with thirteen 30-foot-wide slots for gates, but no gates have been installed at the present time. The main spillway is located between the main embankment and the east levee. The spillway is a concrete siphon-type spillway, 22.5 ft wide with a 3.5-foot opening, and is in the main embankment section. The dam is the property of the Alice Water Authority and was built to store water for use by the city of Alice. The area and capacity tables are based on revised maps surveyed in 1963. Flow is affected at times by discharge from flood-detention pools of eight floodwater-retarding structures with a combined detention capacity of 25,160 acre-ft. These structures control runoff from 131 mi<sup>2</sup>. Records provided by the city of Alice show that 3,210 acre-ft was diverted during the current year for municipal use. Records provided by the city of Corpus Christi show that 3,440 acre-ft was diverted to Lake Alice from Lake Corpus Christi during the current year. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam.....	205.0	-
Top of west levee.....	202.0	-
Top of collapsible flashboards.....	199.5	5,300
Top of east levee.....	199.0	4,910
Crest of main spillway.....	196.5	3,110
Crest of spillway.....	196.0	2,780
Crest of siphon spillway (lowest outlet).....	196.0	2,780

COOPERATION.--The area and capacity tables are provided by the Alice Water Authority.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 4,780 acre-ft Sept. 12, 1971 (elevation, 198.83 ft, from floodmark); minimum, 14 acre-ft Feb. 3, 1965 (elevation, 185.67 ft).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 2,050 acre-ft May 26 at 0100 hours (elevation, 194.78 ft); minimum, 180 acre-ft Sept. 16 (elevation, 189.90 ft).

Capacity table (elevation, in feet, and total contents, in acre-feet)

189.0	82	192.0	754	194.0	1,640
190.0	195	193.0	1,160	195.0	2,180
191.0	423				

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	435	478	291	472	487	545	513	1690	1930	1320	423	529
2	435	503	303	478	475	548	510	1670	1900	1290	403	526
3	438	491	307	484	456	555	491	1640	1860	1270	380	507
4	441	475	328	491	444	565	487	1600	1830	1260	358	469
5	447	459	336	494	429	561	469	1580	1810	1230	338	435
6	447	456	325	478	417	555	462	1550	1780	1210	323	400
7	456	459	328	462	406	539	462	1530	1760	1180	303	369
8	438	462	323	444	406	542	472	1550	1740	1150	291	338
9	432	469	325	426	403	545	478	1540	1710	1130	273	307
10	423	475	325	432	389	548	1680	1510	1680	1100	258	279
11	406	475	328	444	366	548	2040	1480	1660	1070	264	256
12	397	478	336	459	352	548	2030	1460	1640	1040	275	237
13	391	481	344	459	341	551	2010	1430	1600	1000	298	218
14	420	475	347	459	352	555	2040	1410	1580	988	328	202
15	412	462	355	466	358	608	2020	1390	1550	955	355	186
16	412	444	363	478	363	624	1990	1370	1530	927	369	182
17	417	429	372	491	366	631	1960	1350	1490	895	380	189
18	414	414	375	494	361	631	1930	1660	1480	860	406	203
19	519	397	383	497	363	652	1920	1670	1470	829	432	211
20	535	375	386	494	369	652	1890	1690	1560	799	459	221
21	542	355	391	497	380	655	1870	1910	1550	769	484	230
22	539	344	400	497	389	631	1840	1950	1530	740	507	239
23	539	328	400	507	394	611	1820	1950	1510	708	519	246
24	542	307	406	510	409	591	1800	2020	1480	680	519	252
25	568	303	414	513	417	565	1780	2050	1470	645	519	271
26	568	291	420	526	429	548	1780	2050	1450	614	516	336
27	558	273	426	555	510	539	1730	2050	1420	588	516	377
28	542	273	432	555	526	516	1750	2030	1400	551	516	412
29	526	279	435	551	---	507	1730	2010	1370	519	523	447
30	507	286	438	539	---	523	1710	1990	1340	484	526	469
31	491	---	475	503	---	510	---	1970	---	456	529	---
MAX	568	503	475	555	526	655	2040	2050	1930	1320	529	529
MIN	391	273	291	426	341	507	462	1350	1340	456	258	182
(+)	191.22	190.49	191.17	191.26	191.33	191.28	194.15	194.63	193.40	191.11	191.34	191.15
(+)	+56	-205	+189	+28	+23	-16	+1200	+260	-630	-884	+73	-60

CAL YR 1984 MAX 841 MIN 273 (+) -106  
WTR YR 1985 MAX 2050 MIN 182 (+) +34

(+) Elevation, in feet, at end of month.  
(+) Change in contents, in acre-feet.



## SAN FERNANDO CREEK MAIN STEM

08211900 SAN FERNANDO CREEK AT ALICE, TX

LOCATION.--Lat 27°46'20", long 98°02'00", Jim Wells County, Hydrologic Unit 12110204, on left bank 34 ft downstream from downstream bridge of two bridges on State Highways 44 and 359, 0.5 mi downstream from confluence of San Diego and Chiltipin Creeks, 2.3 mi upstream from head of Pintas Creek, and 2.7 mi northeast of Alice.

DRAINAGE AREA.--507 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1964 to current year.

GAGE.--Water-stage recorder. Datum of gage is 161.68 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 1-11, 23-25, Apr. 11-17, and May 5-15. Records good except those for Apr. 11-17, which are poor. San Diego Creek joins Chiltipin Creek below Lake Alice to form San Fernando Creek. Flow is regulated by Lake Alice (station 08211850) 2.3 mi upstream from Chiltipin Creek since Oct. 26, 1964. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08211800. Records furnished by city of Alice show that 2,180 acre-ft of sewage effluent was discharged into San Diego Creek 1.3 mi upstream, which comprises most of the low flow. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years (water years 1966-85), 23.4 ft<sup>3</sup>/s (16,950 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,800 ft<sup>3</sup>/s Sept. 12, 1971 (gage height, 16.51 ft); minimum daily, 0.2 ft<sup>3</sup>/s Aug. 2 and Sept. 16, 1965.

Maximum stage since at least 1949, that of Sept. 12, 1971. Another high stage for this period was 15.86 ft Sept. 23, 1967 (discharge, 16,900 ft<sup>3</sup>/s).

EXTREMES OUTSIDE PERIOD OF RECORD.--Other high stages since at least 1949 are 15.5 ft Sept. 9, 1962 (discharge, 14,600 ft<sup>3</sup>/s from field estimate), and 14.2 ft Sept. 14, 1951. Discharge for flood of Sept. 14, 1951, may have exceeded that for 1962 as the highway was raised between 1952 and 1962. Flood in 1951 was higher at site of discontinued station "San Fernando Creek near Alice." Flood in 1962 was higher than that of 1967 at site of discontinued station; there is a diversion into the Pintas Creek basin between the two gaging sites, and apparently this diversion was greater in 1967 than in 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,110 ft<sup>3</sup>/s Apr. 11, time unknown (gage height, 9.59 ft, from flood-mark); minimum daily, 0.43 ft<sup>3</sup>/s Oct. 13 and Nov. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	1.3	1.1	1.2	2.1	4.0	1.3	2.2	3.1	2.0	1.5	1.6
2	1.6	2.4	1.1	1.2	2.4	3.3	1.2	2.1	2.9	2.0	1.5	1.7
3	1.5	3.5	1.2	1.7	2.2	2.2	1.0	2.3	2.9	2.1	1.4	1.8
4	1.7	2.4	1.2	1.5	2.2	1.9	1.2	2.3	2.9	2.1	1.4	1.6
5	1.7	1.6	1.3	1.5	2.0	1.6	1.6	1.3	3.0	2.0	1.4	1.8
6	1.2	1.2	1.3	1.5	1.9	1.6	1.3	1.3	3.0	2.1	1.3	1.8
7	1.7	1.3	1.6	1.7	1.8	1.7	1.4	1.2	2.8	1.9	1.4	1.7
8	1.7	1.2	1.4	1.5	2.0	1.6	1.4	1.2	2.5	2.0	1.3	1.6
9	1.1	.84	1.4	1.5	2.0	1.5	1.5	1.1	2.4	1.9	1.5	1.8
10	1.8	.59	.92	1.5	1.7	1.5	139	1.1	2.4	1.9	1.4	2.0
11	1.5	1.1	.92	1.1	1.7	1.6	2140	1.2	2.4	1.8	1.3	2.2
12	1.1	1.2	1.0	1.8	1.6	1.6	450	1.2	2.2	1.7	1.4	2.2
13	.43	1.2	.84	1.9	1.3	1.6	25	1.2	2.3	1.7	1.4	2.2
14	1.3	.92	.84	2.0	1.6	1.6	3.0	1.3	2.5	1.7	1.4	2.1
15	1.6	1.1	1.2	1.6	1.5	2.3	2.1	1.5	3.2	1.7	1.5	2.0
16	1.6	1.1	1.1	1.9	1.6	3.1	2.0	1.9	2.7	1.7	1.6	2.1
17	1.6	.92	1.2	1.8	1.7	2.4	1.9	2.0	2.4	1.7	1.6	2.2
18	1.5	1.2	1.9	1.8	1.9	2.2	1.9	511	2.2	1.5	1.6	2.1
19	2.6	.92	1.6	1.9	1.8	2.2	1.9	605	2.7	1.5	1.6	2.1
20	16	.43	1.5	1.6	1.8	2.2	2.0	50	7.2	1.5	1.2	1.9
21	3.9	.92	1.5	1.6	1.8	1.9	2.4	1120	8.9	1.5	1.6	1.9
22	1.6	1.3	1.6	1.6	1.7	1.9	2.0	469	7.4	1.5	1.9	1.9
23	1.4	1.2	1.5	2.0	1.7	1.8	1.8	46	3.8	1.4	1.7	1.9
24	1.3	1.4	1.6	1.8	1.9	1.7	1.6	25	3.3	1.5	2.1	1.9
25	1.2	1.4	1.4	1.7	1.8	1.6	1.7	102	3.1	1.4	2.1	2.0
26	6.6	1.4	1.3	1.6	2.1	1.5	3.5	12	2.8	1.4	1.7	3.9
27	4.7	1.3	1.5	2.2	5.8	1.5	5.6	5.9	2.3	1.4	1.9	1.9
28	2.5	.72	1.6	1.6	6.3	2.4	5.9	4.4	2.5	1.3	1.7	1.8
29	1.6	.49	1.5	1.7	---	2.0	3.4	3.8	2.5	1.3	1.2	2.3
30	1.3	.80	1.4	1.7	---	1.4	2.5	3.5	2.0	1.5	2.0	2.5
31	1.3	---	2.3	1.7	---	1.4	---	3.2	---	1.2	1.8	---
TOTAL	72.23	37.35	41.82	51.4	59.9	60.8	2811.1	2987.2	96.3	51.9	48.4	60.5
MEAN	2.33	1.25	1.35	1.66	2.14	1.96	93.7	96.4	3.21	1.67	1.56	2.02
MAX	16	3.5	2.3	2.2	6.3	4.0	2140	1120	8.9	2.1	2.1	3.9
MIN	.43	.43	.84	1.1	1.3	1.4	1.0	1.1	2.0	1.2	1.2	1.6
AC-FT	143	74	83	102	119	121	5580	5930	191	103	96	120
CAL YR 1984	TOTAL	987.04	MEAN	2.70	MAX	150	MIN	.23	AC-FT	1960		
WTR YR 1985	TOTAL	6378.90	MEAN	17.5	MAX	2140	MIN	.43	AC-FT	12650		

## RIO GRANDE MAIN STEM

08364000 RIO GRANDE AT EL PASO, TX

LOCATION.--Lat 31°48'10", long 106°32'25", El Paso County, Hydrologic Unit 13030102, at gaging station on the downstream side of the Courchesne Bridge, 5.6 mi upstream from the Santa Fe Street-Juarez Avenue bridge between El Paso, Tex., and Cd. Juarez, Mex., and 1.7 mi upstream from the American Dam.

DRAINAGE AREA.--29,267 mi<sup>2</sup>.

PERIOD OF RECORD.--Chemical analyses: February 1930 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1984 are given in International Boundary and Water Commission Water Bulletins Nos. 54 and 55.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)
OCT											
15...	0915	327	1490	7.9	10.5	--	--	--	--	--	330
NOV											
12...	0900	132	1930	8.3	10.0	20	9.6	98	1100	750	470
19...	0850	131	2020	7.9	3.5	--	--	--	--	--	470
DEC											
20...	0830	178	2090	8.0	3.0	--	--	--	--	--	520
JAN											
03...	1000	118	1860	8.3	4.0	58	11.4	99	680	39000	390
16...	0840	109	2120	8.1	.0	--	--	--	--	--	440
FEB											
28...	1125	96	2240	8.1	8.5	--	--	--	--	--	450
MAR											
07...	1000	500	1120	8.2	12.0	18	8.7	93	390	1000	260
21...	0845	614	969	7.5	4.0	--	--	--	--	--	240
APR											
17...	1545	580	1110	7.9	23.5	--	--	--	--	--	260
MAY											
05...	1400	520	1220	8.4	24.0	65	--	--	530	380	300
15...	0740	7840	946	7.9	16.0	--	--	--	--	--	240
JUN											
17...	0835	959	966	7.9	21.5	--	--	--	--	--	240
JUL											
10...	1000	850	1010	8.2	24.0	66	7.1	97	400	380	260
16...	0830	1360	915	8.0	20.5	--	--	--	--	--	230
AUG											
20...	0815	1530	852	7.7	20.5	--	--	--	--	--	220
SEP											
06...	1400	9.3	1100	8.2	23.5	81	7.6	103	2300	800	260
18...	0730	894	1080	7.7	19.0	--	--	--	--	--	270

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT											
15...	110	96	21	190	5	8.6	220	330	160	--	22
NOV											
12...	310	140	29	280	6	10	--	470	240	.80	25
19...	190	140	30	270	6	12	280	470	250	--	27
DEC											
20...	250	150	36	290	6	11	270	470	250	--	27
JAN											
03...	130	110	29	290	7	7.2	--	450	240	.70	29
16...	190	130	29	290	6	9.3	250	450	250	--	26
FEB											
28...	200	130	31	310	7	11	249	500	260	--	20
MAR											
07...	16	78	17	140	4	6.0	--	220	130	.60	18
21...	75	71	15	110	3	6.0	164	170	88	--	15
APR											
17...	82	79	16	120	3	7.1	182	210	110	--	15
MAY											
05...	110	88	18	160	4	8.9	--	250	130	.60	15
15...	73	73	15	100	3	6.6	171	190	81	--	13
JUN											
17...	71	72	15	110	3	6.8	171	190	80	--	14
JUL											
10...	84	76	16	130	4	6.9	--	200	88	.60	14
16...	63	71	14	100	3	8.1	172	180	77	--	12
AUG											
20...	62	65	13	90	3	6.1	154	160	70	--	13
SEP											
06...	85	74	18	130	4	6.8	--	220	120	1.7	15
18...	91	81	17	130	4	7.1	182	220	100	--	16

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 15...	--	960	--	--	--	--	--	--	--	--	--
NOV 12... 19...	1390 --	1300 1400	.46 --	.080 --	.50 --	.160 --	.180 --	.100 --	38 --	14 --	76 --
DEC 20... JAN 03... 16...	-- -- 1340 --	1400  1300 1300	--  .65 --	--  .310 --	--  .70 --	--  .350 --	--  .240 --	--  .230 --	--  99 --	--  32 --	--  94 --
FEB 28... MAR 07... 21...	-- 750 --	1400 760 570	-- .42 --	-- .060 --	-- 1.5 --	-- .530 --	-- .110 --	-- .110 --	-- 536 --	-- 724 --	-- 80 --
APR 17... MAY 05... 15...	-- 797 --	670 780 580	-- .14 --	-- .060 --	-- .60 --	-- .240 --	-- .070 --	-- .060 --	-- 148 --	-- 208 --	-- 96 --
JUN 17... JUL 10... 16...	-- 646 --	590 640 570	-- .34 --	-- .120 --	-- .80 --	-- .330 --	-- .070 --	-- .060 --	-- 202 --	-- 464 --	-- 96 --
AUG 20... SEP 06... 18...	-- 712 --	510 690 680	-- .29 --	-- .080 --	-- .60 --	-- .100 --	-- .060 --	-- .040 --	-- 167 --	-- 4.2 --	-- 97 --

## RIO GRANDE MAIN STEM

08377200 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TX  
(National stream-quality accounting network)

LOCATION.--Lat 29°46'50", long 101°45'20", Val Verde County, Hydrologic Unit 13040212, at gaging station 0.1 mi downstream from Terrell-Val Verde County line, 16.9 mi from Langtry, and 597.2 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--80,742 mi<sup>2</sup>, United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: April 1944 to current year. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: October 1975 to September 1982.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to September 1981.

WATER TEMPERATURES: October 1974 to September 1981.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,110 microsiemens Dec. 4, 1974; minimum daily, 225 microsiemens May 2, 1981.

WATER TEMPERATURES: Maximum daily, 32.0°C June 13, 1977, July 25, 26 1979, July 4, 1980, and June 8, 1981; minimum daily, 9.0°C Jan. 12, 1975, Jan. 8, 1976, and Jan. 18, 1981.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (FER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)
OCT 17...	1350	2040	740	7.4	22.0	--	8.8	105	1.1	3300	3600	190
FEB 13...	1500	936	1630	8.2	13.5	29	8.6	86	2.2	K6	26	380
JUN 05...	1315	1260	1130	7.5	27.0	960	8.8	116	.6	280	840	280
AUG 07...	1250	807	1020	8.0	28.0	2000	8.6	115	1.0	210	250	310

DATE	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 17...	77	62	7.4	79	3	4.3	110	170	56	.80	15
FEB 13...	210	110	24	210	5	6.2	170	380	210	1.4	20
JUN 05...	160	90	13	130	4	7.4	120	300	88	1.1	21
AUG 07...	190	100	15	110	3	6.0	127	290	62	1.1	21

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITU- ENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTH- DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTH- DIS- SOLVED (MG/L AS P)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 17...	458	460	.54	.030	5.5	.020	.030	.020	--	--	--
FEB 13...	1090	1100	.77	.040	.60	.030	<.010	<.010	46	116	98
JUN 05...	760	720	.61	.080	3.4	--	.060	<.010	2630	8950	100
AUG 07...	696	680	1.2	.020	.50	.050	.100	.020	2160	4710	100

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 17...	1350	3	76	2.0	3	2	<3	2	57	3
FEB 13...	1500	13	82	<.5	<1	<1	<3	1	7	<1
JUN 05...	1315	3	150	<.5	<1	<1	<3	2	79	5
AUG 07...	1250	6	91	.7	<1	<1	<3	2	13	<1

RIO GRANDE MAIN STEM

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08377200 RIO GRANDE AT FOSTER RANCH NEAR LANGTRY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 17...	44	5	<.1	<10	1	<1	<1	1000	7	28
FEB 13...	100	<1	<.1	20	<1	1	1	1900	6	20
JUN 05...	73	2	<.1	<10	1	<1	<1	1300	8	9
AUG 07...	64	3	<.1	<10	16	<1	<1	1800	9	7



## RIO GRANDE BASIN

08407500 PECOS RIVER AT RED BLUFF, NM  
(National stream-quality accounting network station)

LOCATION.--Lat 32°04'30", long 104°02'21", in SW1/4NW1/4NE1/4 Sec.1, T.26 S., R.28 E., Eddy County, Hydrologic Unit 13060011, on right bank at Red Bluff, 0.2 mi downstream from Red Bluff Draw, 1.6 mi northwest of the El Paso Natural Gas (Pecos River) compressor station, 5.2 mi north of the New Mexico-Texas state line, 5.5 mi upstream from the Delaware River, and at mile 411.2.

DRAINAGE AREA.--19,540 mi<sup>2</sup>, approximately (contributing area).

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1937 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,850.05 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Oct. 22-28 and Apr. 12-25. Records good except those for periods of estimated daily discharge, which are poor. Flow is regulated by many reservoirs and diversion dams. Diversions and ground-water withdrawals upstream from station for irrigation of about 202,000 acres, 1959 determination.

AVERAGE DISCHARGE.--48 years, (1938-85), 161 ft<sup>3</sup>/s (116,600 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 111,000 ft<sup>3</sup>/s Aug. 23, 1966, gage height, 33.32 ft, from rating curve extended above 32,000 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 0.19 ft<sup>3</sup>/s Aug. 1, 1966.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in October 1904 reached a stage of 28.0 ft, from information by Panhandle and Santa Fe Railway Co.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,700 ft<sup>3</sup>/s Sept. 19 at 2145 hours (gage height, 7.67 ft); minimum, 20 ft<sup>3</sup>/s part of each day on Sept. 2, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	73	73	66	135	108	40	40	51	27	27	25
2	95	73	73	63	131	101	37	36	48	27	27	22
3	106	74	72	63	139	85	42	32	40	26	26	24
4	83	72	72	62	141	77	50	32	46	25	26	30
5	77	72	71	62	137	77	49	37	51	24	27	24
6	80	73	71	62	135	67	63	41	37	24	27	23
7	74	72	72	62	134	64	62	42	43	24	27	29
8	97	72	72	62	130	61	48	40	49	23	27	46
9	89	72	66	62	128	56	41	38	45	23	27	83
10	85	70	61	61	128	53	39	34	37	23	27	70
11	82	69	60	62	128	74	37	32	32	23	27	71
12	71	69	60	61	124	55	45	30	36	22	26	70
13	70	69	59	60	123	54	52	27	50	22	24	62
14	69	71	60	61	131	52	54	25	44	22	22	68
15	77	71	68	63	126	55	56	26	38	22	22	95
16	84	72	79	67	132	59	52	41	34	22	22	169
17	75	70	82	72	145	58	48	36	32	25	34	127
18	72	64	81	109	151	46	47	45	28	24	34	88
19	64	63	75	125	149	36	48	94	26	24	30	762
20	75	63	74	128	156	38	50	74	27	34	29	771
21	105	63	73	132	164	38	45	66	33	27	29	554
22	100	62	72	133	159	51	42	64	35	23	27	275
23	110	63	71	132	150	40	38	62	29	22	26	180
24	150	77	69	134	144	48	33	64	33	21	26	119
25	150	83	68	136	130	49	32	60	43	22	29	90
26	140	98	68	136	126	50	34	60	48	23	37	79
27	105	89	68	137	117	50	39	62	54	23	35	74
28	88	76	66	138	110	46	70	83	56	27	28	84
29	80	71	68	139	---	43	46	67	45	38	26	82
30	78	71	68	140	---	39	39	55	33	36	26	71
31	75	---	69	138	---	38	---	53	---	32	26	---
TOTAL	2796	2157	2161	2928	3803	1768	1378	1498	1203	780	853	4267
MEAN	90.2	71.9	69.7	94.5	136	57.0	45.9	48.3	40.1	25.2	27.5	142
MAX	150	98	82	140	164	108	70	94	56	38	37	771
MIN	64	62	59	60	110	36	32	25	26	21	22	22
AC-FT	5550	4280	4290	5810	7540	3510	2730	2970	2390	1550	1690	8460
CAL YR 1984	TOTAL	40344	MEAN	110	MAX	7550	MIN	14	AC-FT	80020		
WTR YR 1985	TOTAL	25592	MEAN	70.1	MAX	771	MIN	21	AC-FT	50760		

RIO GRANDE BASIN

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08407500 PECOS RIVER AT RED BLUFF, NM--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1937 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1937 to current year.

WATER TEMPERATURES: October 1952 to current year.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 51,400 microsiemens June 20, 1972; minimum daily, 268 microsiemens Sept. 18, 1946.

WATER TEMPERATURES: Maximum daily, 36.0°C July 31, 1966, July 13, 1970; minimum daily, 1.0°C Jan. 10, 11, 1962, Jan. 13, 1963, Dec. 19, 1980.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)
DATE	TIME										
OCT 29...	1300	80	8800	8.2	14.5	7.9	10.4	117	--	--	2100
DEC 27...	1215	68	9200	8.4	7.5	9.0	14.8	142	7	180	1800
MAR 12...	0915	53	10300	8.8	16.0	4.3	11.0	128	7	8	2100
APR 25...	0845	34	13800	8.4	21.0	5.2	9.5	126	10	4	2400
JUN 25...	1015	44	14600	8.1	26.0	14	9.3	134	63	8	--
AUG 29...	0930	26	14000	8.4	26.0	3.7	9.4	134	56	44	2500

DATE	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 29...	2000	500	200	1200	12	28	130	1700	2200	.70	13
DEC 27...	1700	430	180	1500	16	35	--	1600	2400	.70	6.1
MAR 12...	2100	490	220	1800	17	42	--	1800	2700	.70	<1.0
APR 25...	2300	530	250	1900	18	53	85	1900	3600	.80	9.7
JUN 25...	--	--	--	--	--	--	70	2600	5500	.80	5.8
AUG 29...	2400	610	240	2500	22	76	78	2300	4400	.90	11

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, DIS- CHARGE, SUS- PENDEED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	
OCT 29...	6050	5900	.80	.180	1.0	.040	.010	<.010	25	5.4	97
DEC 27...	6460	6300	1.2	.210	1.4	.070	.010	<.010	21	3.9	63
MAR 12...	7060	--	<.10	.220	1.9	.140	.020	<.010	67	9.6	66
APR 25...	8780	8300	<.10	.220	1.7	.100	.030	<.010	41	3.8	96
JUN 25...	9970	--	<.10	.350	1.8	.120	.010	<.010	65	7.7	96
AUG 29...	9980	10000	<.10	.210	1.4	.040	.030	.010	115	8.1	77

## RIO GRANDE BASIN

08407500 PECOS RIVER AT RED BLUFF, NM--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 29...	1300	1	<100	<10	<1	<1	<1	1	100	4
APR 25...	0845	1	400	<10	<1	<1	<1	3	100	<1
JUN 25...	1015	--	--	--	--	--	--	--	--	--
AUG 29...	0930	3	100	<10	1	<1	1	2	370	4

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 29...	70	20	--	2	2	2	<1	7400	35	50
APR 25...	100	50	.1	2	1	<1	3	7200	61	30
JUN 25...	--	--	.8	--	--	--	--	--	22	--
AUG 29...	100	80	.3	4	3	2	<1	7600	69	40

RIO GRANDE BASIN

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08408500 DELAWARE RIVER NEAR RED BLUFF, NM

LOCATION.--Lat 32°01'23", long 104°03'15", in NE1/4SW1/4SE1/4 sec.23., T.26 S., R.28 E., Eddy County, Hydrologic Unit 13070002, near center of channel at downstream side of pier of bridge on U.S. Highway 285, 2.1 mi north of the New Mexico-Texas state line, 3.6 mi southwest of Red Bluff, 3.7 mi upstream from mouth and 14 mi south of Malaga. Mouth at Pecos River is at mile 405.6.

DRAINAGE AREA.--689 mi<sup>2</sup>.

PERIOD OF RECORD--April 1912 to September 1913, May 1914 to June 1915, October 1937 to current year. Published as "near Malaga" 1912-13, and as "near Angeles, Texas" 1914-15.

GAGE.--Water-stage recorder. Elevation of gage is 2,900.66 ft above National Geodetic Vertical Datum of 1929. (U.S. Boundary Commission post). Prior to May 1914, at site 3.0 mi upstream at different datum. May 1914 to June 1915, at site 2.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. There is one small diversion upstream. Several observations of water temperatures were made during the year.

AVERAGE DISCHARGE.--48 years (1938-85), 12.9 ft<sup>3</sup>/s (9,350 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,400 ft<sup>3</sup>/s Oct. 2, 1955, gage height, 27.0 ft, from floodmarks, from rating curve extended above 6,500 ft<sup>3</sup>/s on basis of slope-area measurements at gage heights, 12.84 ft, 17.55 ft, and 27.0 ft; no flow for many days most year.

EXTREMES FOR CURENT YEAR.--Peak discharges greater than base discharge of 1,700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Sept. 21	0245	*1,810	*7.27	No other peak greater than base discharge.			
Minimum discharge, no flow July 16-23.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	3.2	3.3	3.2	3.3	3.0	2.7	2.1	1.4	1.2	.79	.04
2	2.6	3.1	3.2	3.2	3.2	3.0	2.7	2.0	1.4	1.1	.64	.01
3	2.6	3.1	3.2	3.1	3.0	2.9	2.7	2.0	1.3	.99	.57	.54
4	2.7	3.1	3.3	3.1	3.1	2.8	2.7	2.0	20	.95	.52	8.0
5	2.4	3.0	3.3	3.2	3.1	2.8	2.7	1.9	124	.91	.49	3.3
6	2.2	3.0	3.3	3.2	3.0	2.8	2.6	1.8	7.6	.81	.63	1.4
7	2.2	3.0	3.2	3.2	3.0	2.9	2.6	1.8	2.8	.70	.57	1.0
8	2.2	2.9	3.3	3.3	2.9	3.0	2.6	1.8	1.9	.62	.46	.89
9	2.2	2.8	3.3	3.2	2.9	3.0	2.7	1.8	1.6	.54	.36	.78
10	2.2	2.8	3.3	3.1	2.9	3.0	2.7	1.8	1.4	.43	.27	.75
11	2.3	2.9	3.3	3.1	2.8	3.0	2.7	1.6	1.4	.34	.32	1.6
12	2.3	3.0	3.3	3.1	2.9	3.0	2.7	1.5	1.4	.27	.64	3.0
13	2.2	3.1	3.3	3.3	3.0	2.8	2.9	1.4	1.4	.22	2.5	1.6
14	2.4	3.1	3.1	3.3	3.0	2.8	2.8	1.5	1.4	.14	1.4	1.6
15	2.3	3.1	3.6	3.4	3.0	2.9	2.8	1.5	1.3	.06	1.2	1.8
16	2.2	3.1	3.7	3.3	3.0	3.0	2.7	1.7	1.1	.00	1.3	15
17	2.1	3.3	3.5	3.3	3.1	3.0	2.6	59	.97	.00	1.4	24
18	2.1	3.3	3.3	3.3	3.0	2.9	2.4	41	14	.00	.88	4.9
19	2.1	3.3	3.3	3.3	3.1	2.8	2.3	5.3	2.9	.00	.74	3.3
20	2.1	3.2	3.3	3.2	3.5	2.8	2.2	4.1	1.5	.00	.87	7.3
21	2.5	3.2	3.3	3.1	3.4	2.8	2.1	2.9	1.3	.00	.93	560
22	6.9	3.3	3.2	3.1	3.2	2.7	2.1	2.3	1.1	.00	.77	45
23	6.0	3.3	3.1	3.2	3.0	2.7	2.1	2.1	1.0	.00	.64	12
24	5.8	4.5	3.1	3.3	3.1	2.8	2.1	2.1	.97	.36	.54	6.8
25	5.1	4.4	3.1	3.3	3.1	2.8	2.1	2.2	1.0	.33	.48	5.2
26	4.5	3.6	3.1	3.3	3.0	2.8	2.1	2.1	8.2	101	.40	4.5
27	4.1	3.3	3.1	3.3	3.0	2.8	2.4	1.9	3.7	28	.30	4.1
28	3.6	3.4	3.3	3.3	3.0	2.7	2.4	1.5	2.0	3.4	.22	8.9
29	3.3	3.4	3.4	3.3	---	2.7	2.1	1.4	1.5	1.7	.12	23
30	3.3	3.3	3.3	3.2	---	2.7	2.1	1.3	1.2	1.3	.07	4.2
31	3.3	---	3.3	3.2	---	2.7	---	1.3	---	.93	.03	---
TOTAL	94.5	97.1	101.7	100.0	85.6	88.4	74.4	158.7	212.74	146.30	21.05	754.51
MEAN	3.05	3.24	3.28	3.23	3.06	2.85	2.48	5.12	7.09	4.72	.68	25.2
MAX	6.9	4.5	3.7	3.4	3.5	3.0	2.9	59	124	101	2.5	560
MIN	2.1	2.8	3.1	3.1	2.8	2.7	2.1	1.3	.97	.00	.03	.01
AC-FT	187	193	202	198	170	175	148	315	422	290	42	1500

CAL YR 1984	TOTAL	4021.09	MEAN	11.0	MAX	960	MIN	.00	AC-FT	7980
WTR YR 1985	TOTAL	1935.00	MEAN	5.30	MAX	560	MIN	.00	AC-FT	3840

## RIO GRANDE BASIN

08410000 RED BLUFF RESERVOIR NEAR ORLA, TX

LOCATION.--Lat 31°54'04", long 103°54'35", Reeves County, Hydrologic Unit 13070001, at right end of Red Bluff Dam on the Pecos River, 2.8 mi upstream from Salt Creek, and 5.2 mi north of Orla.

DRAINAGE AREA.--20,720 mi<sup>2</sup>, approximately (contributing area).

PERIOD OF RECORD.--February 1937 to current year. Monthly contents only for some periods, published in WSP 1312.

GAGE.--Nonrecording gage. Datum of gage is 0.43 ft below National Geodetic Vertical Datum of 1929.

REMARKS.--The reservoir is formed by a rock-faced earthfill dam 9,200 ft long. The dam was completed and storage began in September 1936. The dam and reservoir are owned and operated by the Red Bluff Water Power Control District. The water is used for power development and for irrigation from Mentone to Grandfalls. The uncontrolled emergency spillway, 790 ft wide, is a cut through natural ground located to the right of right end of dam. The controlled service spillway is equipped with 12 tainter gates that are 25 by 15 ft high. Inflow is regulated by many reservoirs and diversions dams. The capacity curve is based on Geological Survey topographic map, survey of 1925. Figures given herein represent total contents. Data regarding the dam and reservoir are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam.....	2,856.0	-
Crest of spillway.....	2,845.0	340,000
Top of gates (top of conservation pool).....	2,842.0	310,000
Crest of spillway.....	2,827.0	166,500
Lowest gated outlet (invert).....	2,764.0	3,000

COOPERATION.--Gage-height records and capacity curve were furnished by the Red Bluff Water Power and Control District.

EXTREMES (AT 0800) FOR PERIOD OF RECORD.--Maximum contents observed, 352,000 acre-ft Sept. 27, 28, 1941 (gage height, 2,846.2 ft), observed on nonrecording gage at service spillway (affected by variable drawdown due to flow through tainter gates); minimum observed, 11,080 acre-ft May 13, 1948 (gage height, 2,781.4 ft).

EXTREMES (AT 0800) FOR CURRENT YEAR.--Maximum contents observed, 102,000 acre-ft Mar. 13-25 (gage height, 2,816.6 ft); minimum observed, 56,850 acre-ft Sept. 16-18 (gage height, 2,806.1 ft).

Capacity table (gage height, in feet, and total contents, in acre-feet)

2,806.0	56,500	2,814.0	89,000
2,810.0	71,500	2,817.0	104,000

RESERVOIR STORAGE (AC-FT), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	89500	91500	91000	91000	96000	101500	97500	89500	86750	77300	70300	65900
2	89500	92000	91000	91500	96000	101500	96500	89500	86300	76400	69900	65900
3	89500	92000	91000	91500	96500	101500	96000	89500	86300	75950	69900	65100
4	89500	92000	91000	91500	96500	101500	95500	89500	86750	75100	69900	64300
5	89500	92000	91000	91500	97000	101500	95000	89500	86750	74300	69900	63500
6	89500	92000	91000	91500	97000	101500	94000	89500	86750	73500	69900	62800
7	90000	92000	91000	92000	97000	101500	93500	89500	86300	72700	69500	62100
8	90000	92500	91000	92000	97000	101500	92500	89000	86300	72300	69500	61400
9	90000	92500	91000	92000	97500	101500	92000	89000	86300	72300	69500	60700
10	90000	92500	91000	92000	97500	101500	91500	88550	85850	72300	69500	60000
11	90000	92000	91000	92500	98000	101500	91000	88550	85400	72300	69500	59650
12	90000	92000	91000	92500	98000	101500	90000	88100	85400	72300	69100	59300
13	90000	92000	91000	92500	98000	102000	89500	88100	85400	71900	69100	58600
14	90000	92000	91000	93000	98500	102000	89500	87650	84950	71900	69100	57900
15	90000	92000	91000	93000	98500	102000	89500	87650	84950	71900	69100	57200
16	90000	92000	91000	93000	99000	102000	89500	87200	84950	71900	68700	56850
17	90000	91500	91000	93000	99000	102000	89500	87200	84500	71500	68700	56850
18	90000	91500	91000	93000	99000	102000	89500	87200	84500	71500	68700	56850
19	90000	91500	91000	93500	99500	102000	89500	87200	84500	71100	68300	57200
20	90000	91500	91000	93500	100000	102000	89500	87200	84500	70300	68300	58950
21	90000	91500	91000	93500	100000	102000	89500	87200	84500	70300	68300	60700
22	90000	91500	91000	93500	100500	102000	89500	87200	83600	69900	68300	62450
23	90000	91500	91000	94000	100500	102000	89500	87650	82700	69900	67900	62800
24	90500	91000	91000	94000	100500	102000	89500	87650	82250	69900	67900	63150
25	90500	91000	91000	94000	101000	102000	89500	87650	81350	69900	67900	62800
26	91000	91000	91000	94500	101000	101500	89500	87650	80900	69500	67500	62800
27	91000	91000	91000	95000	101000	100500	89500	87650	80000	69900	67500	62800
28	91500	91000	91000	95000	101000	100000	89500	87650	79550	69900	67100	62800
29	91500	91000	91000	95000	---	99500	89500	87650	78650	69900	66700	62450
30	91500	91000	91000	95500	---	98500	89500	87650	78200	69900	66300	62450
31	91500	---	91000	96000	---	98000	---	87200	---	69900	66300	---
MAX	91500	92500	91000	96000	101000	102000	97500	89500	86750	77300	70300	65900
MIN	89500	91000	91000	91000	96000	98000	89500	87200	78200	69500	66300	56850
(†)	2814.5	2814.4	2814.4	2815.4	2816.4	2815.8	2814.1	2813.6	2811.6	2809.6	2808.7	2807.7
(‡)	+2000	-500	0	+5000	+5000	-3000	-8500	-2300	-9000	-8300	-3600	-3850

CAL YR 1984 MAX 92500 MIN 41750 (‡) +46700  
WTR YR 1985 MAX 102000 MIN 56850 (‡) -27050

(†) Gage height, in feet, at end of month.  
(‡) Change in contents, in acre-feet.



## RIO GRANDE BASIN

401

08412500 PECOS RIVER NEAR ORLA, TX

LOCATION.--Lat 31°52'21", long 103°49'52", Reeves County, Hydrologic Unit 13070001, on right bank at bridge on Farm Road 652, 5.5 mi downstream from Salt Creek (Screw Bean Arroyo), 5.9 mi northeast of Orla, and 8.5 mi downstream from Red Bluff Reservoir.

DRAINAGE AREA.--21,210 mi<sup>2</sup>, approximately (contributing area).

## WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1937 to current year.

REVISED RECORDS.--WSP 928: 1937.

GAGE.--Water-stage recorder. Datum of gage is 2,730.86 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 16, 1969, at site 6.9 mi downstream at datum 12.81 ft lower.

REMARKS.--No estimated daily discharges. Records fair. Most of flow are releases from storage in Red Bluff Reservoir (station 08410000). Occasional runoff from draws between dam and station. There are many diversions above Red Bluff Reservoir for irrigation.

AVERAGE DISCHARGE.--48 years (water years 1938-85), 157 ft<sup>3</sup>/s (113,700 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,700 ft<sup>3</sup>/s Sept. 29, 1941 (gage height, 20.74 ft), site and datum then in use; no flow at times in 1946 and 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 435 ft<sup>3</sup>/s June 25 at 0800 hours (gage height, 6.65 ft); minimum daily, 4.2 ft<sup>3</sup>/s Aug. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	38	82	22	15	71	322	13	150	342	17	103
2	52	16	82	16	13	23	322	12	50	341	14	112
3	54	15	82	14	14	14	318	12	25	343	11	267
4	54	14	82	14	14	15	315	12	14	340	9.9	282
5	59	14	82	14	15	14	313	11	51	338	8.6	280
6	52	14	82	14	16	13	314	13	193	340	7.8	280
7	49	14	82	13	16	14	314	34	99	339	7.4	279
8	48	14	82	13	18	15	314	87	100	113	6.7	279
9	49	29	82	12	16	15	313	87	155	39	6.1	280
10	49	80	82	11	17	16	313	87	238	80	6.0	280
11	48	92	80	12	22	17	314	87	64	85	4.7	279
12	49	93	80	11	22	18	314	87	63	46	5.1	284
13	48	96	66	11	21	17	264	87	72	37	4.2	285
14	48	93	66	11	19	17	56	87	187	34	15	288
15	48	91	62	10	19	17	46	87	67	31	67	288
16	49	85	63	11	19	18	16	87	67	30	46	285
17	48	85	64	10	19	19	14	87	70	28	44	119
18	46	85	64	10	20	23	13	70	73	48	44	94
19	47	85	63	10	20	25	12	62	75	147	43	106
20	46	85	62	10	22	21	12	62	78	185	39	100
21	47	84	61	10	69	25	11	62	101	75	39	124
22	50	84	59	10	79	26	11	31	341	73	39	109
23	61	84	59	10	77	25	11	12	355	70	40	101
24	62	87	59	10	74	24	11	12	353	63	44	100
25	58	88	59	10	73	64	11	12	385	58	93	99
26	54	89	56	11	73	282	11	13	352	60	96	100
27	50	88	48	11	73	284	12	13	345	66	97	101
28	49	89	47	13	73	288	12	14	344	56	98	101
29	47	89	47	13	---	324	13	14	342	37	99	102
30	46	87	45	15	---	322	13	60	342	28	101	105
31	45	---	45	17	---	322	---	215	---	21	102	---
TOTAL	1562	2007	2069	379	948	2388	4335	1629	5151	3893	1254.5	5612
MEAN	50.4	66.9	66.7	12.2	33.9	77.0	145	52.5	172	126	40.5	187
MAX	62	96	82	22	79	324	322	215	385	343	102	288
MIN	45	14	45	10	13	13	11	11	14	21	4.2	94
AC-FT	3100	3980	4100	752	1880	4740	8600	3230	10220	7720	2490	11130
CAL YR 1984	TOTAL	13872.9	MEAN	37.9	MAX	844	MIN	2.2	AC-FT	27520		
WTR YR 1985	TOTAL	31227.5	MEAN	85.6	MAX	385	MIN	4.2	AC-FT	61940		

## RIO GRANDE BASIN

08412500 PECOS RIVER NEAR ORLA, TX--Continued

## WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: July 1937 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1937 to current year.

WATER TEMPERATURES: March 1953 to current year.

REMARKS.--October 1937 to September 1969, this station was published as 08410100 Pecos River below Red Bluff Dam, near Orla. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 29,400 microsiemens May 16, 1978; minimum daily, 1,600 microsiemens June 19, 1984.

WATER TEMPERATURES: Maximum daily, 31.0°C Aug. 13, 1978, and Aug. 13, 1982; minimum daily, 0.0°C on several days during winter months of 1982-85.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 19,500 microsiemens Oct. 5; minimum daily, 8,400 microsiemens Apr. 1.

WATER TEMPERATURES: Maximum daily, 29.0°C July 17, Aug. 13; minimum daily, 0.0°C Jan. 15, Feb. 2.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)
OCT 11...	1130	48	15700	20.0	3000	2900	730	290	2600
NOV 07...	1520	15	17600	16.0	3200	3100	770	300	3100
APR 30...	1435	>13	13600	24.0	2500	2400	620	230	2100
JUN 25...	1310	219	9980	25.0	1900	1800	500	170	1600
JUL 30...	1230	26	12100	28.0	2100	2100	580	170	2400
AUG 27...	1410	98	10400	26.0	2100	2000	520	200	1900

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT 11...	21	62	100	2400	4400	1.0	7.3	11000
NOV 07...	25	49	110	2600	5000	1.1	4.9	12000
APR 30...	19	43	110	2000	3600	.90	4.7	8700
JUN 25...	16	35	102	1600	2800	.70	6.5	6800
JUL 30...	23	21	87	1600	4000	.90	3.3	8800
AUG 27...	19	44	102	2100	2900	.70	8.5	7700

## RIO GRANDE BASIN

403

08412500 PECOS RIVER NEAR ORLA, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT. 1984	1562	16000	10800	45700	4600	19300	2400	10100	*
NOV. 1984	2007	13800	9290	50400	3900	20900	2100	11500	*
DEC. 1984	2069	11600	7700	43000	3100	17500	1800	10200	*
JAN. 1985	379	15400	10400	10700	4400	4490	2300	2370	*
FEB. 1985	948	13000	8730	22400	3600	9240	2000	5160	*
MAR. 1985	2388	10100	6680	43100	2700	17400	1600	10400	*
APR. 1985	4335	8840	5810	68000	2300	26900	1500	17000	1700
MAY 1985	1629	10100	6640	29200	2700	11700	1600	7140	*
JUNE 1985	5151	9570	6300	87600	2500	34900	1600	21700	1800
JULY 1985	3893	9940	6560	68900	2600	27600	1600	16900	1900
AUG. 1985	1254.5	10600	7010	23700	2800	9550	1700	5760	*
SEPT 1985	5612	10700	7110	108000	2900	43400	1700	26100	*
TOTAL	31227.5	**	**	600000	**	243000	**	144000	**
WTD.AVG.	86	10700	7120	**	2900	**	1700	**	**

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	EQUIVALENT MEAN											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16700	14400	13100	10800	15800	10200	8400	13000	9150	9600	12300	10500
2	16400	14700	13000	15000	15700	10300	8570	13100	9230	9600	12300	10500
3	16300	17100	13100	15500	15600	12600	8600	12800	10000	9500	12200	10400
4	16000	17400	13000	16000	15800	15200	8590	12800	10700	9600	12200	10500
5	19500	17500	12900	15000	15800	15500	8600	12900	11300	9600	12100	10500
6	18800	17600	12300	15500	16100	15200	8600	12800	9710	9600	12000	10500
7	17200	17600	12700	16000	16800	15100	8640	12600	9630	9600	11900	10500
8	16400	17700	12500	15900	16700	15000	8600	9400	9430	9700	11900	10600
9	16100	16800	12400	15000	14600	15100	8600	9350	9350	10000	11700	10600
10	16000	14000	12200	16000	16000	15000	8600	9340	9250	12200	11600	10600
11	15700	13600	12000	14000	15900	15200	8640	9300	9720	10100	11500	10600
12	15600	13500	12100	15000	15800	15400	8640	9300	9580	10000	11300	10600
13	15500	13600	12000	15000	15600	15500	8700	9250	9550	10100	11200	10600
14	15400	13700	12400	15500	15500	15300	10200	9200	9260	10200	11400	10600
15	15400	13600	9000	16000	15300	15300	10900	9170	9780	10800	10500	10700
16	15100	13700	10100	16200	15100	15400	11100	9160	9820	11300	10600	10800
17	15000	13600	10900	16400	15200	15700	14500	9050	9660	11400	10500	11800
18	14800	13700	10800	16700	15200	16100	14600	10300	9700	11400	10500	11700
19	15000	13600	10400	16400	15000	16400	14200	10200	9900	10000	10400	11300
20	14800	13600	10200	16200	15000	16200	14200	10000	9830	10000	10500	11000
21	14700	13700	10300	16000	14800	16300	15000	11000	9700	10000	10500	11900
22	14600	13600	10200	15800	14600	18500	13600	12000	9360	10100	10700	12400
23	15600	13500	10100	15500	10900	17100	13400	13000	9370	10000	10300	11700
24	17400	13300	10100	15400	10400	16400	13200	13300	9360	10100	10500	10900
25	17000	13800	10300	15500	10300	14800	12900	13000	10500	10200	10400	10900
26	16600	14200	10500	15700	10400	8880	12800	13100	9560	11900	10400	10600
27	16000	13800	10900	16000	10200	8600	12900	13000	9470	12300	10400	10600
28	15200	13400	11000	16200	10200	8600	12900	12800	9470	9500	10400	10600
29	15000	13300	11000	16400	---	8550	12800	13800	9460	11200	10500	10600
30	14800	13000	11300	16300	---	8600	13300	12600	9440	12200	10400	10600
31	14700	---	11200	15800	---	8570	---	9300	---	12400	10400	---
MEAN	15900	14600	11400	15600	14400	13900	11100	11300	9670	10500	11100	10900

## RIO GRANDE BASIN

08412500 PECOS RIVER NEAR ORLA, TX--Continued

DAY	TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985											
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20.0	20.0	10.0	9.0	---	12.0	16.0	21.0	22.0	24.0	28.0	25.0
2	19.0	16.0	10.0	5.0	.0	12.0	16.0	25.0	23.0	26.0	27.0	25.0
3	21.0	14.5	9.0	3.5	2.0	15.0	16.0	27.0	25.0	25.0	---	26.0
4	19.0	14.0	10.0	8.0	4.0	15.0	15.5	23.0	25.0	27.0	28.0	25.0
5	18.0	14.0	11.0	6.0	7.0	11.0	17.0	23.0	24.0	25.0	28.0	25.0
6	20.0	13.0	9.0	7.0	7.0	13.0	16.0	22.0	22.0	25.0	27.0	25.0
7	19.0	13.0	8.0	8.0	7.0	15.0	15.0	25.0	23.0	25.0	28.0	25.0
8	20.0	15.0	9.5	10.0	6.0	17.5	15.0	23.0	23.0	24.0	28.0	25.0
9	20.0	17.5	11.0	10.0	9.0	18.0	15.0	21.0	24.0	25.0	28.0	25.0
10	21.0	13.0	10.5	8.0	11.0	19.0	16.0	20.0	24.0	27.0	26.0	25.0
11	21.0	13.0	12.0	7.0	9.0	19.0	17.0	18.0	25.0	27.0	25.0	25.0
12	22.0	15.0	12.0	3.0	9.0	18.0	15.0	21.0	23.0	28.0	26.0	26.0
13	22.0	16.5	12.0	2.0	10.0	16.0	17.0	19.0	23.0	26.0	29.0	25.0
14	19.0	15.0	10.0	2.0	9.0	15.0	18.0	19.0	22.0	27.0	25.0	24.0
15	19.0	16.0	7.0	.0	8.0	13.0	18.0	19.0	25.0	26.0	26.0	24.0
16	18.0	14.0	7.5	2.0	14.0	12.0	19.0	20.0	26.0	27.0	26.0	24.0
17	17.0	14.5	8.0	5.0	11.0	13.0	21.0	20.0	28.0	29.0	27.0	24.0
18	20.0	14.0	9.0	6.0	11.0	14.0	22.0	20.0	25.0	27.0	26.0	24.0
19	18.0	14.5	10.0	7.0	12.0	16.0	21.0	21.0	25.0	25.0	27.0	23.0
20	18.0	12.0	11.0	6.0	14.0	14.0	20.0	22.0	26.0	25.0	27.0	23.0
21	17.5	12.0	11.0	4.0	15.0	14.0	22.0	21.0	25.0	21.0	25.0	22.0
22	18.0	12.0	8.0	4.0	14.0	15.0	19.5	22.0	24.0	27.0	27.0	23.0
23	16.0	13.0	10.0	4.0	12.0	15.0	18.0	22.0	25.0	25.0	27.0	22.0
24	14.0	12.5	10.0	5.0	12.0	15.0	19.0	23.0	25.0	26.0	26.0	23.0
25	14.0	12.0	---	8.0	12.0	15.0	20.0	26.0	24.0	26.0	25.0	21.0
26	15.0	12.0	8.0	9.0	12.0	---	20.0	27.0	25.0	25.0	26.0	20.0
27	14.5	10.0	9.0	8.5	11.0	15.0	19.0	24.0	23.0	24.0	25.0	20.0
28	16.0	10.0	11.0	8.0	13.0	15.0	20.0	25.0	25.0	25.0	25.0	22.0
29	16.0	11.5	12.0	10.0	---	15.0	21.0	25.0	25.0	26.0	25.0	20.0
30	20.0	10.0	9.0	10.0	---	14.0	20.0	25.0	24.0	26.0	---	18.0
31	19.5	---	10.0	7.0	---	14.0	---	21.0	---	27.0	25.0	---
MEAN	18.5	13.5	10.0	6.0	9.5	15.0	18.0	22.5	24.5	25.5	26.5	23.5

## RIO GRANDE BASIN

405

08414500 REEVES COUNTY WATER IMPROVEMENT DISTRICT NO. 2 CANAL NEAR MENTONE, TX

LOCATION.--Lat 31°37'57", long 103°34'30", Loving County, Hydrologic Unit 13070001, on right bank 173 ft downstream from headgate, 5.3 mi south of Mentone, and 15 mi northwest of Pecos.

PERIOD OF RECORD.--February 1922 to July 1925, August 1939 to May 1941, March 1942 to September 1957, and March 1964 to current year. Records from August 1939 to October 1940, not equivalent because diversion was not included. Published as "Farmers Independent Canal near Porterville" 1922-25.

GAGE.--Water-stage recorder. Concrete weir since Mar. 1, 1964. Elevation of gage is 2,640 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 22, 1925, at site 250 ft downstream at different datum. Mar. 10, 1939, to Oct. 4, 1940, at site 2.5 mi downstream at different datum. Oct. 5, 1940, to Feb. 19, 1943, at site 123 ft upstream at datum 1.10 ft higher. Feb. 20, 1943, to Mar. 1, 1954, at site 123 ft upstream at present datum.

REMARKS.--No estimated daily discharges. Records good. At times local runoff is deleted from daily discharge record. Water is diverted from right bank of Pecos River and is used for irrigation between Mentone and Pecos.

AVERAGE DISCHARGE.--39 years (water years 1923-24, 1940, 1943-57, 1965-85), 7.64 ft<sup>3</sup>/s (5,540 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 160 ft<sup>3</sup>/s June 14, 1922; no flow at times each year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.02	20
2	.00	.00	.00	.00	.00	.00	.00	.00	.12	.07	.02	19
3	.00	.00	.00	.00	.00	.00	.00	.00	2.7	.07	.00	19
4	.00	.00	.00	.00	.00	.00	.00	.00	19	.07	.00	20
5	.00	.00	.00	.00	.00	.00	.00	.00	31	.07	.00	25
6	.00	.00	.00	.00	.00	.00	.00	.00	20	.07	.00	20
7	.00	.00	.00	.00	.00	.00	.00	.00	21	.07	.00	10
8	.00	.00	.00	.00	.00	.00	.00	.00	40	.07	.00	9.8
9	.00	.00	.00	.00	.00	.00	.00	.00	40	.07	.00	17
10	.00	.00	.00	.00	.00	.00	.00	.00	38	.07	.00	28
11	.00	.00	.00	.00	.00	.00	.00	.00	46	.04	.00	27
12	.00	.00	.00	.00	.00	.00	.00	.00	18	.02	.00	26
13	.00	.00	.00	.00	.00	.00	.00	.00	27	.01	.00	26
14	.00	.00	.00	.00	.00	.00	.00	.00	24	.00	.00	20
15	.00	.00	.00	.00	.00	.00	.00	.00	37	.00	.00	11
16	.00	.00	.00	.00	.00	.00	.00	2.6	39	.00	.00	14
17	.00	.00	.00	.00	.00	.00	.00	17	27	.00	.00	11
18	.00	.00	.00	.00	.00	.00	.00	17	11	.00	.07	11
19	.00	.00	.00	.00	.00	.00	.00	14	11	.00	.05	9.3
20	.00	.00	.00	.00	.00	.00	.00	.24	13	.01	.02	10
21	.00	.00	.00	.00	.00	.00	.00	.14	12	36	2.2	1.8
22	.00	.00	.00	.00	.00	.00	.00	.08	12	41	7.3	.07
23	.00	.00	.00	.00	.00	.00	.00	.07	22	25	9.8	.07
24	.00	.00	.00	.00	.00	.00	.00	.07	12	23	11	.07
25	.00	.00	.00	.00	.00	.00	.00	.07	13	20	11	.07
26	.00	.00	.00	.00	.00	.00	.00	.07	13	25	11	.04
27	.00	.00	.00	.00	.00	.00	.00	.02	12	21	15	.02
28	.00	.00	.00	.00	.00	.00	.00	.00	11	.08	6.5	.02
29	.00	.00	.00	.00	---	.00	.00	.00	12	.07	12	.02
30	.00	.00	.00	.00	---	.00	.00	.00	8.0	.07	20	.02
31	.00	---	.00	.00	---	.00	---	.00	---	.05	20	---
TOTAL	.00	.00	.00	.00	.00	.00	.00	51.36	591.82	192.05	125.98	355.30
MEAN	.000	.000	.000	.000	.000	.000	.000	1.66	19.7	6.20	4.06	11.8
MAX	.00	.00	.00	.00	.00	.00	.00	17	46	41	20	28
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.02
AC-FT	.00	.00	.00	.00	.00	.00	.00	102	1170	381	250	705
CAL YR 1984	TOTAL	0.00	MEAN	.000	MAX	.00	MIN	.00	AC-FT	.00		
WTR YR 1985	TOTAL	1316.51	MEAN	3.61	MAX	46	MIN	.00	AC-FT	2610		



## 08415000 WARD COUNTY WATER IMPROVEMENT DISTRICT NO. 3 CANAL NEAR BARSTOW, TX

LOCATION.--Lat 31°34'28", long 103°30'04", Ward County, Hydrologic Unit 13070001, on left bank 96 ft upstream from concrete culvert that crosses canal, 2 mi downstream from headgate, and 10.5 mi northwest of Barstow.

PERIOD OF RECORD.--August 1939 to May 1941, August to September 1941, December 1941 to September 1957, and March 1964 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,600 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Dec. 14, 1940, at site 1.75 mi upstream at datum 2.98 ft higher. Dec. 14, 1940, to May 26, 1941, at site 1.4 mi upstream at datum 1.72 ft higher.

REMARKS.--No estimated daily discharges: Records good. At times local runoff is deleted from daily discharge record. Water is diverted from the left bank of Pecos River, and is used for irrigation in the vicinity of Barstow.

AVERAGE DISCHARGE.--37 years (water years 1940, 1943-57, 1965-85), 8.32 ft<sup>3</sup>/s (6,030 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 189 ft<sup>3</sup>/s Sept. 28, 1978; no flow at times each year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CAL YR 1984	TOTAL	0.33	MEAN	.001	MAX	.07	MIN	.00	AC-FT	.7		
WTR YR 1985	TOTAL	0.00	MEAN	.000	MAX	.00	MIN	.00	AC-FT	.00		

## RIO GRANDE BASIN

407

## 08418000 WARD COUNTY IRRIGATION DISTRICT NO. 1 CANAL NEAR BARSTOW, TX

LOCATION.--Lat 31°32'26", long 103°29'42", Ward County, Hydrologic Unit 13070001, on left bank 0.6 mi downstream from headgate and 7.9 mi northwest of Barstow.

PERIOD OF RECORD.--February 1922 to September 1925 (published as "Barstow Canal near Barstow"), August 1939 to May 1941, October 1941 to September 1957, and March 1964 to current year.

GAGE.--Water-stage recorder. Concrete weir since Nov. 20, 1968. Elevation of gage is 2,600 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Aug. 15, 1939, at site about 3,000 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. At times local runoff is deleted from daily discharge record. Water is diverted from left bank of Pecos River and is used for irrigation in the vicinity of Barstow. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--41 years (water years 1923-25, 1940, 1942-57, 1965-85), 25.5 ft<sup>3</sup>/s (18,470 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 385 ft<sup>3</sup>/s Aug. 30, 1923; no flow at times each year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.4	.00	.00	.00	.00	4.2	.00	.00	.00	.00	49
2	.20	1.4	.00	.00	.00	.00	3.9	.00	.03	.00	.00	42
3	.25	1.4	.00	.00	.00	.00	3.3	.00	.04	.00	.00	27
4	.27	1.4	.00	.00	.00	.00	3.3	.00	6.8	.00	.00	33
5	.20	.84	.00	.00	.00	.00	3.2	.00	32	.00	.00	40
6	2.2	.00	.00	.00	.00	.00	3.3	.00	27	.00	.00	38
7	1.9	.00	.00	.00	.00	.00	3.2	.00	31	14	.00	35
8	1.6	.00	.00	.00	.00	.00	3.0	.00	28	51	.00	36
9	1.6	.00	.00	.00	.00	.00	32	.00	25	26	.00	43
10	1.5	.00	.00	.00	.00	.00	33	.00	18	26	.00	47
11	1.4	.00	.00	.00	.00	.00	4.8	.00	22	22	.00	47
12	1.4	.00	.00	.00	.00	.00	27	27	13	22	.00	47
13	1.4	.84	.00	.00	.00	.00	26	39	.21	27	.00	50
14	1.4	2.2	.00	.00	.00	.00	26	40	.00	.00	.00	57
15	1.4	.84	.00	.00	.00	.00	13	39	.00	.00	.00	58
16	1.3	.00	.00	.00	.00	.00	1.7	30	.00	.00	.00	58
17	.84	.00	.00	.00	.00	.00	1.2	9.8	.00	.00	.00	42
18	.84	.00	.00	.00	.00	.00	.59	.10	.00	.00	.00	25
19	.84	.00	.00	.00	.00	.00	.47	.10	.00	.00	15	28
20	.84	.00	.00	.00	.00	.00	.32	7.7	.00	.00	33	27
21	.84	.00	.00	.00	.00	.00	.59	21	.00	.00	34	29
22	1.2	.00	.00	.00	.00	.02	.02	7.3	.00	14	31	33
23	1.4	.00	.00	.00	.00	1.6	.02	5.7	.00	7.0	18	31
24	1.4	.00	.00	.00	.00	1.6	.00	10	4.4	21	14	29
25	1.4	.00	.00	.00	.00	1.7	.00	.00	28	21	15	29
26	1.4	.00	.00	.00	.00	1.9	.00	.00	28	20	16	28
27	1.4	.00	.00	.00	.00	1.9	.00	.00	33	16	15	38
28	1.4	.00	.00	.00	.00	3.0	.00	.00	39	22	29	45
29	1.4	.00	.00	.00	---	4.6	.00	.00	34	27	46	40
30	1.4	.00	.00	.00	---	4.0	.00	.00	12	27	51	36
31	1.4	---	.00	.00	---	4.1	---	.00	---	24	50	---
TOTAL	36.02	10.32	.00	.00	.00	24.42	194.11	236.70	381.48	387.00	367.00	1167
MEAN	1.16	.34	.000	.000	.000	.79	6.47	7.64	12.7	12.5	11.8	38.9
MAX	2.2	2.2	.00	.00	.00	4.6	33	40	39	51	51	58
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	25
AC-FT	71	20	.00	.00	.00	48	385	469	757	768	728	2310
CAL YR 1984	TOTAL	91.59	MEAN	.25	MAX	7.0	MIN	.00	AC-FT	182		
WTR YR 1985	TOTAL	2804.05	MEAN	7.68	MAX	58	MIN	.00	AC-FT	5560		

## RIO GRANDE BASIN

08431700 LIMPIA CREEK ABOVE FORT DAVIS, TX  
(Hydrologic bench-mark station)

LOCATION.--Lat 30°36'48", long 104°00'04", Jeff Davis County, Hydrologic Unit 13070005, on left downstream side of bridge on State Highway 118, about 1,400 ft upstream from Jones Creek, and 6.8 mi west of Fort Davis.

DRAINAGE AREA.--52.4 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1965 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 5,175.00 ft above National Geodetic Vertical Datum of 1929. Prior to Mar. 1, 1979, at site 600 ft upstream at datum 3.71 ft higher.

REMARKS.--No estimated daily discharges. Records good. No diversion above station. Recording rain gage at station.

AVERAGE DISCHARGE.--20 years, 2.95 ft<sup>3</sup>/s (0.76 in/yr), 2,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,610 ft<sup>3</sup>/s June 19, 1984 (gage height, 9.00 ft, from floodmark), present datum, from rating curve extended above 720 ft<sup>3</sup>/s on basis of slope-area measurement of 8,610 ft; no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1925, about 9.00 ft in 1939, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Oct. 2	2000	*105	*3.75				

Minimum daily discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	9.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	1.4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	11.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MEAN	.36	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MAX	9.7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	.007	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
IN.	.01	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CAL YR 1984	TOTAL	4655.89	MEAN 12.7	MAX 1700	MIN .00	CFSM .24	IN 3.31	AC-FT 9230				
WTR YR 1985	TOTAL	11.10	MEAN .030	MAX 9.7	MIN .00	CFSM .001	IN .01	AC-FT 22				

## RIO GRANDE BASIN

409

08436500 PECOS COUNTY WATER IMPROVEMENT DISTRICT NO. 2 (UPPER DIVERSION) CANAL NEAR GRANDFALLS, TX

LOCATION.--Lat 31°18'43", long 102°55'10", Ward County, Hydrologic Unit 13070001, on left bank about 2.5 mi upstream from bridge on State Highway 18, 4.6 mi southwest of Grandfalls, and 12.5 mi downstream from headgate of canal.

PERIOD OF RECORD.--March 1922 to July 1925 (published as "Imperial Highline Canal near Grandfalls"), August 1939 to September 1957, and March 1964 to current year.

GAGE.--Water-stage recorder. Concrete weir since Dec. 8, 1947. Elevation of gage is 2,455 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Aug. 21, 1939, water-stage recorder at site 8.5 mi upstream at different datum. Aug. 21, to Oct. 3, 1939, and May 25 to Aug. 4, 1941, staff gage, Oct. 4, 1939, to May 21, 1941, and Aug. 5, 1941, to Sept. 30, 1957, water-stage recorder at site 2.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. At times local runoff is deleted from daily discharge record. Water is diverted from right bank of Pecos River and is used for irrigation and to supply water for Imperial Reservoir. Water is released from Imperial Reservoir into Pecos County Water Improvement District No. 2 canal and into Pecos County Water Improvement District No. 3 canal for irrigation.

AVERAGE DISCHARGE.--40 years (water years 1924, 1940-57, 1965-85), 28.5 ft<sup>3</sup>/s (20,650 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 368 ft<sup>3</sup>/s Sept. 18, 1923; no flow at times each year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	103	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	106	.00	.00
3	.00	.00	.00	.00	.00	.00	29	.00	.00	114	.00	.00
4	.00	.00	.00	.00	.00	.00	148	.00	.00	125	.00	.00
5	.00	.00	.00	.00	.00	.00	153	.00	.00	124	.00	.00
6	.00	.00	.00	.00	.00	.00	152	.00	.00	95	.00	.00
7	.00	.00	.00	.00	.00	.00	156	.00	.00	97	.00	.00
8	.00	.00	.00	.00	.00	.00	155	.00	.00	99	.00	.00
9	.00	.00	.00	.00	.00	.00	155	.00	.00	113	.00	.00
10	.00	.00	.00	.00	.00	.00	159	.00	.00	139	.00	.00
11	.00	.00	.00	.00	.00	.00	157	.00	.00	134	.00	71
12	.00	.00	.00	.00	.00	.00	153	.00	.00	134	.00	85
13	.00	.00	.00	.00	.00	.00	142	.00	.00	115	.00	86
14	.00	.00	.00	.00	.00	.00	138	.00	.00	65	.00	89
15	.00	.00	.00	.00	.00	.00	122	.00	.00	30	.00	92
16	.00	.00	.00	.00	.00	.00	114	.00	.00	2.9	.00	95
17	.00	.00	.00	.00	.00	.00	153	.00	.00	.03	.00	97
18	.00	.00	.00	.00	.00	.00	147	.00	.00	.00	.00	101
19	.00	.00	.00	.00	.00	.00	86	.00	.00	.00	.00	106
20	.00	.00	.00	.00	.00	.00	50	.00	.00	.00	.00	114
21	.00	.00	.00	.00	.00	.00	33	.00	.00	.00	.00	116
22	.00	.00	.00	.00	.00	.00	2.2	.00	.00	.00	.00	103
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	71
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	53
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	9.6
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.31
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	79	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	.00	.00	.00	.00	.00	.00	2404.20	.00	79.00	1595.93	.00	1288.91
MEAN	.000	.000	.000	.000	.000	.000	80.1	.000	2.63	51.5	.000	43.0
MAX	.00	.00	.00	.00	.00	.00	159	.00	79	139	.00	116
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	4770	.00	157	3170	.00	2560
CAL YR 1984	TOTAL	345.62	MEAN	.94	MAX	152	MIN	.00	AC-FT	686		
WTR YR 1985	TOTAL	5368.04	MEAN	14.7	MAX	159	MIN	.00	AC-FT	10650		

## RIO GRANDE BASIN

## 08437500 PECOS COUNTY WATER IMPROVEMENT DISTRICT NO. 2 CANAL NEAR IMPERIAL, TX

LOCATION.--Lat 31°16'38", long 102°43'54", Pecos County, Hydrologic Unit 13070001, on left bank about 2.4 mi west of Imperial and 7.7 mi downstream from Imperial Reservoir.

PERIOD OF RECORD.--April 1940 to May 1941, March 1942 to September 1957, and March 1964 to current year. Records since March 1942 are equivalent to earlier records if diversions to Pecos County Water Improvement District No. 3 canal near Imperial (station 08437600) are added to flow past this station.

GAGE.--Water-stage recorder. Wooden weir June 1, 1943, to Feb. 29, 1964, and concrete weir since Mar. 1, 1964. Elevation of gage is about 2,400 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to July 11, 1940, at site 1.5 mi upstream at different datum. July 12, 1940, to Mar. 23, 1942, at site 2.5 mi upstream at datum 3.36 ft higher. Mar. 24, 1942, to May 31, 1943, at site 0.5 mi upstream at datum 0.70 ft higher.

REMARKS.--No estimated daily discharges. Records good. At times local runoff is deleted from daily discharge record. Water is diverted from Imperial Reservoir (on right bank of Pecos River) for irrigation in the vicinity of Imperial, and at times includes water diverted from the Pecos River through Cut Around Canal. The total flow at this station does not include water diverted from canal 75 ft upstream, or water diverted into Pecos County Improvement District No. 3 canal (see station 08437600), 0.6 mi upstream.

AVERAGE DISCHARGE.--36 years (water years 1943-57, 1965-85), 11.0 ft<sup>3</sup>/s (7,970 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 144 ft<sup>3</sup>/s July 27, 28, 31, Aug. 1, 1945; no flow at times each year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	28	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	30	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	8.9	.00	31	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	16	.00	25	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	10	.28	13	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	9.9	.02	16	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	11	.00	16	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	16	.00	2.0	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	16	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	16	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	13	16	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	24	17	2.0	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	17	17	.73	.00	16	.00
14	.00	.00	.00	.00	.00	.00	16	18	.94	.00	26	.00
15	.00	.00	.00	.00	.00	.00	17	13	.80	.00	30	.00
16	.00	.00	.00	.00	.00	.00	14	14	.02	.00	28	.00
17	.00	.00	.00	.00	.00	.00	13	12	.00	.00	26	.00
18	.00	.00	.00	.00	.00	.00	8.2	13	.00	.00	26	.00
19	.00	.00	.00	.00	.00	.00	11	.87	.00	14	22	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	14	17	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	11	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	.53	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.0	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	21	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	33	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	27	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	26	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	.00	.00	.00	.00	.00	.00	133.20	224.67	111.79	225.00	202.53	.00
MEAN	.000	.000	.000	.000	.000	.000	4.44	7.25	3.73	7.26	6.53	.000
MAX	.00	.00	.00	.00	.00	.00	24	18	33	31	30	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	264	446	222	446	402	.00

CAL YR 1984 TOTAL 67.22 MEAN .18 MAX 16 MIN .00 AC-FT 133  
WTR YR 1985 TOTAL 897.19 MEAN 2.46 MAX 33 MIN .00 AC-FT 1780



## 08437600 PECOS COUNTY WATER IMPROVEMENT DISTRICT NO. 3 CANAL NEAR IMPERIAL, TX

LOCATION.--Lat 31°16'51", Long 102°44'26", Pecos County, Hydrologic Unit 13070001, on left bank about 220 ft upstream from bridge on Farm Road 11, 0.3 mi downstream from headgate (Pecos No. 2 canal), and 2.9 mi west of Imperial.

PERIOD OF RECORD.--March 1940 to September 1941, March 1942 to September 1957, and March 1964 to current year.

GAGE.--Water-stage recorder. Concrete weir since Mar. 7, 1944. Elevation of gage is 2,390 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Jan. 10, 1941, at site 350 ft downstream at datum 6.79 ft lower. Jan. 10, 1941, to Mar. 29, 1942, at site 200 ft downstream at datum 3.65 ft lower.

REMARKS.--No estimated daily discharges. Records are good. At times local runoff is deleted from daily discharge record. Water is diverted from Imperial Reservoir (on right bank of Pecos River), 7.6 mi upstream, for irrigation in the vicinity of Imperial, and at times includes water diverted from the Pecos River by Cut Around Canal.

AVERAGE DISCHARGE.--37 years (water years 1941, 1943-57, 1965-85), 8.17 ft<sup>3</sup>/s (5,920 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 175 ft<sup>3</sup>/s Aug. 11, 1940; no flow at times each year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	15
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	28
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	28
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.6	.00	36
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	.00	11
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	16	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.7	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	21	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	20	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	4.4	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	1.0	.00	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	1.0	5.6	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	1.0	20	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	1.0	18	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.59	10	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.14	.00	.00	4.5	8.1	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	17	16	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	14	17	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.08	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.6	.00
TOTAL	.00	.00	.00	.00	.00	.00	50.13	53.60	.00	75.80	60.78	118.00
MEAN	.000	.000	.000	.000	.000	.000	1.67	1.73	.000	2.45	1.96	3.93
MAX	.00	.00	.00	.00	.00	.00	21	20	.00	17	17	36
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	99	106	.00	150	121	234
CAL YR 1984	TOTAL	38.70	MEAN .11	MAX 21	MIN .00	AC-FT 77						
WTR YR 1985	TOTAL	358.31	MEAN .98	MAX 36	MIN .00	AC-FT 711						



## RIO GRANDE BASIN

413

08446500 PECOS RIVER NEAR GIRVIN, TX

LOCATION.--Lat 31°06'47", long 102°25'02", Pecos County, Hydrologic Unit 13070008, on right bank 2.1 mi upstream from Comanche Creek, 3.8 mi northwest of Girvin, and 7.2 mi upstream from bridge on U.S. Highway 67. Water-quality sampling site on left bank 7.2 mi downstream.

DRAINAGE AREA.--29,560 mi<sup>2</sup> approximately, for contributing area of supplementary gage 7.2 mi<sup>2</sup> downstream.

PERIOD OF RECORD.--August 1939 to current year.

Water-quality records.--Chemical analyses: October 1939 to June 1941, October 1946 to September 1947, October 1953 to September 1982. Pesticide analyses: October 1968 to September 1974.

GAGE.--Water-stage recorder with concrete control and measuring flume. Datum of gage not determined. Supplementary water-stage recorder, used as regular gage prior to July 17, 1951, is now used only for peaks exceeding about 400 ft<sup>3</sup>/s, 7.2 mi downstream at datum 2,269.65 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Estimated daily discharges: Feb. 2 to Mar. 3, Apr. 13-28. Records poor. Flow is largely regulated by Red Bluff Reservoir (station 08410000). Numerous diversions above station for irrigation.

AVERAGE DISCHARGE.--46 years, 81.4 ft<sup>3</sup>/s (58,970 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft<sup>3</sup>/s Oct. 5, 1941 (gage height, 20.49 ft, at supplementary gage); minimum daily, 1.9 ft<sup>3</sup>/s June 19, July 14, 1982.  
Maximum stage since at least 1932, that of Oct. 5, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 468 ft<sup>3</sup>/s July 23 at 2200 hours (gage height, 3.40 ft); minimum daily, 5.0 ft<sup>3</sup>/s Apr. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	42	35	45	27	26	91	6.8	16	16	14	7.4
2	13	40	35	45	26	28	46	6.6	53	18	12	7.4
3	14	40	35	45	26	30	22	7.3	19	31	12	7.4
4	16	39	35	46	26	32	12	7.2	15	107	12	7.8
5	22	37	36	46	25	38	10	6.9	11	70	11	8.0
6	24	35	36	47	26	40	8.4	6.9	8.9	41	14	9.4
7	21	36	37	47	26	40	7.2	6.9	8.5	26	53	11
8	21	36	38	45	26	41	6.1	6.9	8.8	19	32	11
9	23	36	39	44	25	40	5.6	6.9	9.6	17	20	10
10	24	36	39	43	25	41	5.2	6.9	11	16	14	12
11	24	36	40	42	25	42	5.0	7.2	12	16	11	12
12	24	36	40	39	24	39	6.0	7.2	15	16	11	13
13	27	36	41	38	24	35	6.0	7.2	12	15	12	17
14	33	36	41	36	24	30	6.0	7.2	24	15	10	13
15	34	35	41	35	23	28	6.1	7.1	46	14	8.1	24
16	32	35	41	34	23	27	6.1	7.3	37	13	7.4	27
17	31	35	40	34	22	25	6.2	7.4	37	13	6.9	22
18	31	35	40	33	22	24	6.2	7.3	31	12	8.5	20
19	31	35	40	32	22	22	6.3	6.9	21	12	7.0	24
20	31	35	40	31	21	23	6.3	6.9	18	12	6.7	31
21	31	35	40	30	21	22	6.4	7.1	38	12	6.4	26
22	31	35	41	29	20	21	6.4	7.2	44	13	6.0	23
23	34	35	43	28	20	21	6.5	7.3	30	136	6.0	22
24	36	35	44	28	20	21	6.5	7.3	22	249	5.8	22
25	37	35	45	26	20	20	6.6	7.4	18	47	6.5	21
26	38	35	46	25	20	20	6.7	8.1	17	20	6.8	21
27	39	35	46	25	22	19	6.8	8.3	18	23	6.9	21
28	38	35	46	26	24	18	6.9	8.4	20	18	7.1	21
29	39	35	46	27	---	17	7.0	8.4	18	16	7.2	21
30	39	35	45	27	---	16	6.9	8.6	17	18	7.3	21
31	41	---	45	27	---	33	---	17	---	16	7.4	---
TOTAL	891	1081	1256	1105	655	879	340.4	236.1	655.8	1067	356.0	513.4
MEAN	28.7	36.0	40.5	35.6	23.4	28.4	11.3	7.62	21.9	34.4	11.5	17.1
MAX	41	42	46	47	27	42	91	17	53	249	53	31
MIN	12	35	35	25	20	16	5.0	6.6	8.5	12	5.8	7.4
AC-FT	1770	2140	2490	2190	1300	1740	675	468	1300	2120	706	1020
CAL YR 1984	TOTAL	7345.3	MEAN	20.1	MAX	46	MIN	4.5	AC-FT	14570		
WTR YR 1985	TOTAL	9035.7	MEAN	24.8	MAX	249	MIN	5.0	AC-FT	17920		

## RIO GRANDE BASIN

08447020 INDEPENDENCE CREEK NEAR SHEFFIELD, TX

LOCATION.--Lat 30°27'07", long 101°43'58", Terrell County, Hydrologic Unit 13070010, on left bank 0.5 mi downstream from Joe Chandler Ranch Headquarters, 1.0 mi upstream from mouth, 6 mi downstream from bridge on Farm Road 1217, and 17 mi southeast of Sheffield.

DRAINAGE AREA.--763 mi<sup>2</sup>.

PERIOD OF RECORD.--January 1974 to September 1985 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 1,883 ft above National Geodetic Vertical Datum of 1929, by Topographic Division plane table survey.

REMARKS.--No estimated daily discharges. Records good. The Chandler Estate and Roden Ranch have permits to divert 243 and 530 acre-ft (annually) respectively. Rain gage and gage-height satellite telemeter at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--11 years, 27.8 ft<sup>3</sup>/s (20,140 acre-ft/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,100 ft<sup>3</sup>/s Sept. 20, 1974 (gage height, 16.74 ft), from rating curve extended above 130 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum, 13 ft<sup>3</sup>/s July 26, 1974, and Nov. 16, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Apr. 20	1945	*1,100	*3.94	No other peak greater than base discharge.			
Minimum daily discharge, 14 ft <sup>3</sup> /s on many days.							

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	22	20	26	19	22	22	21	19	23	17	14
2	20	22	20	24	19	22	23	21	25	21	17	14
3	20	22	20	23	19	22	23	21	22	20	17	14
4	23	21	20	23	19	22	23	21	22	20	16	14
5	22	19	20	22	19	22	23	21	23	21	16	14
6	21	18	20	22	19	22	23	21	21	21	16	14
7	21	18	20	22	19	22	23	20	20	21	17	15
8	21	18	19	22	19	22	23	21	19	21	16	14
9	20	18	20	22	20	22	23	20	19	22	16	14
10	20	18	20	22	20	22	23	20	19	21	15	14
11	21	19	20	22	20	22	23	22	19	26	16	15
12	19	20	20	22	20	22	23	21	32	27	16	17
13	18	20	20	22	20	22	23	20	26	23	17	15
14	23	20	20	22	20	22	23	20	22	22	17	19
15	19	20	20	22	20	22	23	21	22	21	17	25
16	19	19	20	22	20	22	22	21	21	18	17	19
17	19	19	20	22	20	22	22	21	21	18	16	18
18	20	19	20	22	20	22	22	21	20	18	16	17
19	19	19	20	22	20	23	23	21	21	18	15	17
20	19	20	20	22	20	28	165	21	21	18	15	16
21	19	20	20	21	20	25	94	21	20	20	15	16
22	19	19	20	20	21	24	37	20	20	27	15	15
23	20	19	20	20	24	24	31	20	20	20	15	15
24	20	22	20	20	22	24	29	19	20	20	15	15
25	20	24	19	20	22	24	27	21	20	19	15	14
26	24	21	19	20	22	23	26	22	31	18	15	14
27	24	20	19	20	22	23	25	19	32	18	15	15
28	22	20	19	20	22	23	24	19	27	17	16	15
29	22	20	19	20	---	22	22	19	24	17	16	53
30	22	20	22	20	---	22	21	18	23	17	14	25
31	21	---	31	20	---	22	---	19	---	17	14	---
TOTAL	637	596	627	669	567	703	934	633	671	630	490	516
MEAN	20.5	19.9	20.2	21.6	20.3	22.7	31.1	20.4	22.4	20.3	15.8	17.2
MAX	24	24	31	26	24	28	165	22	32	27	17	53
MIN	18	18	19	20	19	22	21	18	19	17	14	14
AC-FT	1260	1180	1240	1330	1120	1390	1850	1260	1330	1250	972	1020

CAL YR 1984 TOTAL 7350 MEAN 20.1 MAX 46 MIN 14 AC-FT 14580  
WTR YR 1985 TOTAL 7673 MEAN 21.0 MAX 165 MIN 14 AC-FT 15220

RIO GRANDE BASIN

415

08447410 PECOS RIVER NEAR LANGTRY, TX  
(National stream-quality accounting network)

LOCATION.--Lat 29°48'10", long 101°26'45", Val Verde County, Hydrologic Unit 13040212, at gaging station 7.4 mi east of Langtry, 15.0 mi upstream from confluence with the Rio Grande, and 638.2 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--35,179 mi<sup>2</sup>.

PERIOD OF RECORD.--Chemical analyses: October 1954 to current year. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: October 1975 to September 1982.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1980 to September 1985 (discontinued).

WATER TEMPERATURES: November 1980 to September 1985 (discontinued).

INSTRUMENTATION.--Beginning November 1980, specific conductance and water temperature were recorded continuously at this station and discontinued September 1985.

REMARKS.--Interruptions in the record were due to malfunctions of the instrument. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Records of discharge for water year 1984 are given in International Boundary and Water Commission Water Bulletins Nos. 53 and 54. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 6,000 microsiemens Mar. 21, 22, 1981; minimum daily, 230 microsiemens Oct. 11, 1981.

WATER TEMPERATURES: Maximum daily, 32.5°C June 8, 1981; minimum daily, 1.5°C Dec. 26, 27, 1983.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,170 microsiemens Jan. 24; minimum daily, 800 microsiemens June 19.

WATER TEMPERATURE: Minimum daily, 3.0°C Feb. 3.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)
OCT 17...	0950	310	2990	7.5	24.5	--	9.7	123	1.3	25	28	590
DEC 05...	1030	169	3100	8.1	11.0	1.3	10.6	100	1.0	K14	K17	670
FEB 13...	1200	160	3820	8.3	12.0	--	10.1	98	1.1	<1	K14	800
APR 03...	0955	134	3920	8.3	21.0	.50	8.6	102	1.2	K2	K11	780
JUN 05...	1040	92	3070	7.8	26.0	1.7	8.4	110	.8	23	48	600
AUG 07...	0925	120	3190	8.1	30.0	1.8	8.3	116	1.2	K5	21	630

DATE	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 17...	460	130	64	380	7	7.5	130	380	670	.80	11
DEC 05...	530	150	71	430	7	7.1	140	440	770	.80	12
FEB 13...	650	180	85	540	9	8.7	150	540	870	.80	10
APR 03...	660	170	87	600	10	8.9	120	550	1000	.90	9.7
JUN 05...	500	130	66	420	8	6.0	103	410	750	.80	14
AUG 07...	530	140	69	430	8	8.0	105	440	740	.90	12



## RIO GRANDE BASIN

08447410 PECOS RIVER NEAR LANGTRY, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, CHARGE, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
OCT 17...	1800	1700	.36	.080	.30	<.010	<.010	<.010	--	--	--
DEC 05...	2040	2000	.65	.060	.20	<.010	.010	<.010	5	2.3	94
FEB 13...	2510	2300	.77	.090	.20	.010	.010	<.010	7	3.0	95
APR 03...	2550	2500	.34	.060	3.1	.010	.010	<.010	3	1.1	78
JUN 05...	1890	1900	<.10	.120	.70	.020	<.010	<.010	9	2.2	48
AUG 07...	1960	1900	.13	.090	.50	.020	<.010	.010	7	2.3	50

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 17...	0950	<1	<100	<10	<1	<1	<1	<1	70	5
FEB 13...	1200	<1	<100	<10	<1	<1	<1	<1	20	<1
JUN 05...	1040	<1	300	<10	<1	<1	2	<1	20	4
AUG 07...	0925	1	<100	<10	1	<1	<1	1	30	<1

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 17...	60	<10	<.1	5	<1	<1	<1	2400	17	30
FEB 13...	80	<10	<.1	2	<1	<1	<1	3200	22	<10
JUN 05...	70	20	.1	7	2	<1	<1	2600	19	20
AUG 07...	80	<10	<.1	5	<1	<1	<1	320	18	30

## RIO GRANDE BASIN

417

08447410 PECOS RIVER NEAR LANGTRY, TX--Continued

## MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA,MG) (MG/L)
OCT.	1984	5849	2570	1500	23800	570	8980	320	4990	520
NOV.	1984	4570	3060	1800	22300	690	8500	380	4730	610
DEC.	1984	5738	3540	2110	32700	810	12600	450	7040	700
JAN.	1985	6055	3780	2270	37100	880	14400	490	8040	740
FEB.	1985	4448	3890	2330	28000	900	10900	510	6080	760
MAR.	1985	4660	3900	2340	29400	910	11400	510	6390	760
APR.	1985	4056	3750	2240	24500	870	9490	480	5310	740
MAY	1985	3191	3350	1990	17100	760	6580	430	3670	660
JUNE	1985	4718	2250	1310	16700	490	6270	270	3480	460
JULY	1985	4421	2240	1300	15500	490	5820	270	3230	460
AUG.	1985	3571	2970	1750	16900	670	6430	370	3580	600
SEPT	1985	4810	2360	1380	17900	520	6760	290	3760	480
TOTAL		56087	**	**	282000	**	108000	**	60300	**
WTD.AVG.		154	3140	1860	**	710	**	400	**	620

## SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	1900	1780	1850	---	---	2960	3310	3240	3270	2580	2190	2400
2	2030	1900	1980	---	---	2990	3320	3260	3290	3270	2510	2820
3	2070	1910	2030	---	---	2950	3330	3280	3310	3510	3280	3430
4	2120	1870	2060	---	---	2970	3350	3320	3330	3640	3500	3570
5	2160	2040	2110	---	---	2980	3360	3120	3220	3680	3600	3630
6	2180	2070	2130	---	---	2960	3180	3110	3150	3760	3630	3690
7	2260	2110	2190	---	---	2950	3250	3160	3200	3770	3670	3730
8	---	---	2040	---	---	2930	3310	3230	3270	3840	3730	3780
9	---	---	2170	---	---	2920	3390	3270	3330	3890	3780	3850
10	---	---	2250	---	---	2940	3440	3340	3390	3930	3830	3880
11	---	---	2130	---	---	2930	3480	3420	3450	3990	3870	3910
12	---	---	2280	---	---	2940	3560	3460	3520	3980	3870	3900
13	---	---	2440	---	---	2950	3610	3550	3580	3920	3870	3900
14	---	---	2600	---	---	2970	3620	3360	3580	3900	3840	3880
15	---	---	2740	3010	2940	2990	3630	3130	3460	3920	3820	3870
16	---	---	2870	3050	3000	3030	3650	3010	3490	4000	3890	3940
17	---	---	2990	3080	3040	3060	3580	2990	3370	4020	3920	3970
18	---	---	2950	3110	3070	3090	3750	3580	3680	4080	3950	3990
19	---	---	2930	3160	3090	3120	3840	3750	3810	4060	3960	4000
20	---	---	2900	3140	3120	3130	3890	3830	3870	4000	3940	3970
21	---	---	2920	3190	3140	3160	3930	3870	3890	4050	3940	4010
22	---	---	2910	3200	3170	3180	3950	3860	3900	4100	4010	4050
23	---	---	2940	3190	3170	3180	3970	3880	3930	4110	4050	4090
24	---	---	2890	3220	3160	3190	3990	3910	3950	4170	4080	4110
25	---	---	2900	3240	3170	3200	3910	3880	3890	4160	4070	4110
26	---	---	2920	3230	3180	3210	4040	3880	3940	4090	4060	4070
27	---	---	2860	3180	3140	3160	4020	3990	4000	4140	4050	4080
28	---	---	2880	3230	3150	3190	4070	4020	4030	4110	4020	4060
29	---	---	2910	3250	3190	3220	4080	4030	4050	4100	4040	4070
30	---	---	2940	3300	3220	3250	4070	2420	3730	4110	4040	4070
31	---	---	2950	---	---	---	3700	2320	3040	4020	3910	3960
MONTH	2260	1780	2570	3300	2940	3060	4080	2320	3580	4170	2190	3830

## RIO GRANDE BASIN

08447410 PECOS RIVER NEAR LANGTRY, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	3980	3950	3970	3820	3740	3780	4020	3920	3970	3720	3570	3650
2	4050	3970	4000	3800	3770	3790	4070	3930	3990	3620	3520	3570
3	4080	4020	4040	3840	3790	3810	4000	3850	3930	3570	3490	3520
4	4060	4010	4040	3860	3780	3810	3910	3820	3850	3580	3490	3530
5	4060	4000	4020	3890	3770	3820	3870	3800	3830	3570	3500	3530
6	4060	3980	4010	3900	3810	3860	3880	3800	3830	3570	3490	3520
7	4050	3980	4010	3960	3870	3940	3830	3790	3810	3560	3480	3520
8	4020	3960	3990	3950	3910	3930	3830	3760	3790	3560	3480	3520
9	4020	3930	3990	3960	3900	3920	3780	3750	3760	3540	3460	3500
10	4010	3940	3980	3930	3880	3890	3770	3720	3750	3510	3450	3470
11	3970	3890	3930	3920	3860	3880	3750	3690	3720	3510	3410	3450
12	4000	3890	3930	3890	3860	3880	3730	3670	3690	3490	3410	3440
13	3930	3820	3890	3910	3850	3890	3730	3660	3690	3490	3400	3440
14	3860	3790	3820	3890	3810	3850	3720	3630	3670	3450	3360	3400
15	3870	3770	3820	3870	3770	3820	3730	3610	3660	3410	3340	3370
16	3880	3780	3820	3860	3730	3830	3710	3610	3650	3400	3320	3360
17	3850	3780	3820	3890	3760	3840	3670	3590	3630	3370	3310	3340
18	3850	3820	3830	3920	3830	3850	3680	3600	3630	---	---	3320
19	3870	3820	3840	3920	3840	3880	3700	3630	3670	---	---	3290
20	3870	3820	3840	3940	3840	3900	3750	3660	3700	---	---	3300
21	3830	3800	3820	3970	3860	3910	3710	3660	3680	---	---	3310
22	3870	3800	3820	3970	3820	3910	3730	3620	3670	---	---	3210
23	3810	3750	3780	3980	3870	3930	3710	3620	3660	---	---	3170
24	3750	3720	3730	4040	3930	3980	3690	3620	3650	---	---	3190
25	3810	3710	3760	4040	3970	3990	3690	3640	3660	---	---	3200
26	3830	3760	3800	4070	3970	4010	3810	3670	3740	---	---	3170
27	3820	3780	3800	4070	3990	4030	3830	3750	3790	---	---	3140
28	3800	3760	3770	4040	3990	4000	3860	3780	3800	---	---	3120
29	---	---	---	4040	3980	4000	3820	3720	3780	---	---	3110
30	---	---	---	3990	3920	3950	3860	3720	3790	---	---	3130
31	---	---	---	4010	3900	3950	---	---	---	---	---	3120
MONTH	4080	3710	3890	4070	3730	3900	4070	3590	3750	3720	3310	3350

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	3130	1920	1830	1860	2930	2300	2640	2820	2770	2780
2	---	---	3140	2130	1920	2020	3060	2580	2790	2800	2740	2790
3	---	---	3150	2220	2130	2180	3180	2680	2880	2820	2780	2800
4	---	---	3140	2290	2220	2250	3220	2740	2970	2830	2780	2810
5	3140	3080	3110	2280	2160	2260	3260	3200	3230	2830	2810	2820
6	3140	2970	3060	2100	1650	1800	3240	3190	3220	2830	2810	2820
7	3060	2960	3010	2270	1760	2090	3190	3160	3180	2820	2810	2810
8	2950	2640	2850	2320	2280	2300	3170	3130	3150	2820	2790	2810
9	2900	2640	2770	2320	2230	2280	3140	3100	3120	2790	2530	2760
10	2990	2900	2960	2340	2250	2290	3110	3060	3080	2770	2530	2670
11	2950	2610	2810	2410	2220	2320	3070	3030	3050	2750	2510	2590
12	2590	2200	2360	2430	2070	2300	3040	2990	3020	2770	2540	2640
13	2340	2200	2290	2440	2060	2350	3000	2950	2970	2780	2550	2660
14	2360	2320	2340	2450	2120	2370	2950	2910	2930	2730	2490	2680
15	2360	2300	2340	2460	2070	2360	2900	2840	2870	2710	2680	2690
16	2390	2320	2360	2480	2020	2290	2840	2810	2820	2690	1900	2300
17	2380	2280	2330	2520	2050	2330	2810	2730	2780	2360	2050	2210
18	2280	830	2080	2530	2070	2390	2720	2670	2680	2630	2370	2510
19	2080	800	1530	2560	2300	2440	2750	2690	2720	2740	2630	2680
20	1970	1700	1840	2560	2320	2450	2850	2740	2800	2800	2740	2780
21	1910	1830	1870	2560	2130	2410	2980	2850	2920	2750	2690	2720
22	1920	1690	1790	2540	2110	2410	3070	2980	3030	2790	2720	2760
23	2270	1940	2110	2540	2140	2390	3160	3040	3110	2910	2790	2850
24	2340	2170	2260	2500	2250	2360	3250	3060	3200	3000	2920	2960
25	2370	2140	2290	2470	2010	2320	3300	3200	3240	3020	3000	3010
26	2400	2170	2300	2460	1830	2220	3230	3130	3180	3040	3010	3030
27	2440	1540	1960	2470	2080	2260	3170	3120	3140	3080	3040	3060
28	1570	1440	1470	2290	1860	2040	3130	3020	3080	3080	3010	3070
29	1690	1500	1590	2250	1940	2080	3040	2960	3000	3840	1580	2870
30	1850	1680	1780	2430	2060	2220	2960	2910	2930	1410	840	960
31	---	---	---	2690	1900	2340	2900	2800	2860	---	---	---
MONTH	3140	800	2400	2690	1650	2260	3300	2300	2990	3840	840	2700

08447410 PECOS RIVER NEAR LANGTRY, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	21.0	19.0	20.0	---	---	---	12.5	11.5	12.0	16.0	14.0	15.0
2	21.0	20.0	20.5	---	---	---	13.0	12.0	13.0	13.5	10.0	11.5
3	22.0	20.5	21.0	---	---	---	13.5	12.0	13.0	9.5	7.5	8.0
4	23.5	21.5	22.5	---	---	---	12.5	11.5	12.0	8.0	7.0	7.5
5	24.5	22.5	23.5	---	---	---	11.5	10.5	11.0	9.0	8.0	8.5
6	26.0	23.5	25.0	---	---	---	11.0	10.0	10.5	10.0	9.0	9.5
7	26.5	24.5	25.5	---	---	---	10.5	10.0	10.5	11.0	10.5	10.5
8	26.5	25.5	26.0	---	---	---	11.0	10.0	11.0	11.5	11.0	11.0
9	---	---	---	---	---	---	11.5	10.5	11.0	12.0	11.5	12.0
10	---	---	---	---	---	---	12.5	11.5	12.5	12.5	11.5	12.0
11	---	---	---	---	---	---	14.5	12.5	14.0	12.0	10.5	11.5
12	---	---	---	---	---	---	15.5	14.5	15.0	10.5	6.5	8.5
13	---	---	---	---	---	---	16.0	15.5	15.5	6.5	4.5	5.5
14	---	---	---	---	---	---	16.0	14.0	15.5	5.0	3.5	4.0
15	---	---	---	18.5	18.0	18.5	14.5	12.5	13.5	7.0	4.5	5.5
16	---	---	---	19.0	18.0	18.5	13.0	11.5	12.5	8.5	7.0	8.0
17	---	---	---	18.5	18.0	18.0	12.0	11.5	12.0	9.0	8.5	9.0
18	---	---	---	18.0	16.0	17.0	13.5	12.0	13.0	10.0	9.5	9.5
19	---	---	---	16.0	15.0	15.5	15.5	13.5	15.0	10.5	10.0	10.5
20	---	---	---	15.0	13.0	14.5	17.0	15.5	16.5	11.0	8.5	9.5
21	---	---	---	13.0	12.5	13.0	17.5	17.0	17.0	8.5	7.0	8.0
22	---	---	---	12.5	11.5	12.0	17.5	16.5	17.0	7.5	5.5	6.5
23	---	---	---	11.5	10.5	11.0	16.5	15.5	16.5	6.5	5.5	6.0
24	---	---	---	11.0	10.5	11.0	16.0	15.5	16.0	7.0	5.5	6.0
25	---	---	---	11.0	10.5	10.5	15.5	13.0	14.5	8.5	7.0	8.0
26	---	---	---	12.0	11.0	12.0	13.0	12.5	13.0	10.5	9.0	10.0
27	---	---	---	12.5	11.5	12.0	13.0	13.0	13.0	12.0	10.0	11.0
28	---	---	---	12.0	11.5	12.0	15.5	13.5	14.5	12.5	11.5	12.0
29	---	---	---	12.0	11.0	11.5	17.5	15.5	16.5	13.0	12.0	12.5
30	---	---	---	12.0	11.0	11.5	18.0	17.0	17.5	14.0	13.0	13.5
31	---	---	---	---	---	---	17.5	15.5	16.5	14.0	9.5	12.0
MONTH	26.5	19.0	23.0	19.0	10.5	13.5	18.0	10.0	14.0	16.0	3.5	9.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	9.5	6.5	8.0	15.5	14.0	14.5	20.5	18.5	19.5	34.0	31.5	32.5
2	6.5	4.0	5.0	16.5	15.5	16.0	20.5	18.5	19.5	34.0	31.0	32.5
3	4.0	3.0	3.5	18.5	16.0	17.5	21.5	19.0	20.5	34.0	31.5	32.5
4	4.5	3.5	4.5	18.0	16.0	17.0	23.0	20.0	21.5	34.0	29.0	32.0
5	5.5	4.5	5.0	17.0	16.0	16.5	23.0	21.5	22.0	33.0	30.5	31.5
6	7.5	6.0	6.5	16.5	15.5	16.0	23.5	21.5	22.0	33.0	30.0	31.5
7	9.0	7.5	8.5	16.5	15.5	16.0	23.5	21.5	22.5	33.5	28.5	31.5
8	9.5	8.0	9.0	18.5	16.5	18.0	21.5	19.5	20.5	34.0	30.5	32.5
9	10.5	9.5	10.5	20.0	18.5	19.5	19.5	18.0	19.0	34.5	29.5	33.0
10	12.0	10.5	11.5	20.5	19.5	20.0	19.0	18.0	18.5	35.0	32.0	34.0
11	12.0	11.0	11.5	21.5	20.5	21.0	20.5	18.0	19.5	36.0	33.0	34.5
12	12.0	11.0	11.5	22.0	20.5	21.5	22.5	19.5	21.0	37.0	33.5	35.0
13	12.0	11.5	11.5	20.5	20.0	20.5	24.0	21.5	23.0	37.0	34.0	35.5
14	12.5	11.5	12.0	20.0	18.0	18.5	25.5	22.5	24.0	35.5	32.5	34.0
15	12.5	11.5	12.0	18.5	17.0	17.5	27.0	24.5	25.5	35.0	30.0	33.0
16	13.0	12.0	13.0	17.0	16.0	16.5	27.5	26.0	27.0	35.0	32.5	34.0
17	14.0	12.5	13.5	16.0	15.5	16.0	28.5	27.0	27.5	35.0	33.0	34.0
18	15.5	13.5	15.0	16.0	15.5	16.0	27.5	24.5	26.5	---	---	---
19	16.0	15.0	16.0	16.0	15.5	15.5	27.0	25.0	26.0	---	---	---
20	16.5	16.0	16.5	16.5	15.5	16.0	28.0	26.0	27.0	---	---	---
21	17.0	16.5	17.0	16.5	15.5	16.0	28.0	26.5	27.5	---	---	---
22	18.0	17.0	17.5	17.5	16.5	17.0	30.0	26.0	28.5	---	---	---
23	18.0	17.0	17.5	18.5	17.0	18.0	30.0	27.5	29.0	---	---	---
24	17.0	15.0	16.5	19.5	18.0	19.0	29.0	24.0	28.0	---	---	---
25	15.5	15.0	15.0	21.0	19.5	20.5	28.0	25.0	27.0	---	---	---
26	16.0	14.0	15.0	21.5	20.0	21.0	28.0	25.5	27.0	---	---	---
27	14.5	14.0	14.0	22.5	21.0	21.5	29.5	27.0	28.5	---	---	---
28	14.0	14.0	14.0	23.0	22.0	22.5	31.0	28.5	29.5	---	---	---
29	---	---	---	23.5	22.0	22.5	31.0	27.0	29.5	---	---	---
30	---	---	---	22.5	19.5	21.5	33.0	29.0	31.5	---	---	---
31	---	---	---	20.5	19.0	19.5	---	---	---	---	---	---
MONTH	18.0	3.0	12.0	23.5	14.0	18.5	33.0	18.0	24.5	37.0	28.5	33.0

## RIO GRANDE BASIN

08447410 PECOS RIVER NEAR LANGTRY, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	29.0	27.5	28.0	29.0	27.5	28.5			
2	---	---	---	28.0	27.0	27.5	29.5	27.0	29.0			
3	---	---	---	28.0	27.0	27.5	30.0	28.0	29.0			
4	---	---	---	28.0	27.0	27.5	30.0	28.0	29.5			
5	27.5	26.0	27.5	29.0	28.0	28.5	31.0	28.0	30.0			
6	29.0	26.5	27.5	29.5	28.0	29.0	31.0	29.5	30.0			
7	29.0	27.5	28.5	30.0	29.0	29.5	---	---	---			
8	30.0	29.0	29.5	30.0	27.5	29.5	---	---	---			
9	30.5	28.5	29.5	29.5	28.0	29.0	---	---	---			
10	29.0	28.0	28.5	29.0	27.5	28.5	---	---	---			
11	29.0	27.5	28.0	30.0	28.0	29.0	---	---	---			
12	28.0	26.5	27.5	30.5	27.5	29.0	---	---	---			
13	26.5	25.5	26.0	29.5	28.5	29.0	---	---	---			
14	27.0	26.0	26.5	29.5	27.5	28.5	---	---	---			
15	27.5	26.5	27.0	29.5	26.0	28.0	---	---	---			
16	28.5	27.0	28.0	29.5	26.5	28.5	---	---	---			
17	29.0	28.0	28.5	29.5	27.5	29.0	---	---	---			
18	29.5	25.0	28.5	29.5	27.0	29.0	---	---	---			
19	27.5	25.0	26.5	30.0	27.5	29.0	---	---	---			
20	27.5	26.5	27.0	30.5	28.5	29.5	---	---	---			
21	28.0	27.5	28.0	30.0	28.5	29.5	---	---	---			
22	29.0	27.5	28.0	30.5	28.0	30.0	---	---	---			
23	29.0	28.0	28.5	30.5	26.5	29.0	---	---	---			
24	29.0	27.5	28.0	30.0	26.0	29.0	---	---	---			
25	28.5	27.5	28.0	30.0	28.5	29.5	---	---	---			
26	28.5	26.5	27.5	30.5	27.5	28.5	---	---	---			
27	27.5	26.0	27.0	30.5	29.0	29.5	---	---	---			
28	27.5	25.5	26.0	30.0	27.5	29.5	---	---	---			
29	27.5	26.5	27.0	30.5	29.5	30.0	---	---	---			
30	28.5	27.5	28.0	30.0	29.0	29.5	---	---	---			
31	---	---	---	29.0	28.0	29.0	---	---	---			
MONTH	30.5	25.0	27.5	30.5	26.0	29.0	31.0	27.0	29.5			



## 08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX

LOCATION.--Lat 29°40'35", long 101°00'00", Val Verde County, Hydrologic Unit 13040302, on left bank 10 mi east of Comstock, and 25.5 mi upstream from mouth.

DRAINAGE AREA.--3,961 mi<sup>2</sup>.

PERIOD OF RECORD.--Chemical and biochemical analyses: January 1978 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: February 1978 to September 1985 (discontinued).

WATER TEMPERATURES: February 1978 to September 1985 (discontinued).

INSTRUMENTATION.--Beginning October 1980, specific conductance and water temperature were recorded continuously at this station and discontinued September 1985.

REMARKS.--Interruptions in the record were due to malfunctions of the instruments. Where maximum or minimum specific conductance values are not shown, mean value is estimated. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 763 microsiemens Oct. 18, 1984; minimum daily, 105 microsiemens Oct. 20, 1983.

WATER TEMPERATURES: Maximum daily, 38.0°C May 6, 1984; minimum daily, 0.0 °C Feb. 1, 2, 1985.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 763 microsiemens Oct. 18; minimum daily, 283 microsiemens June 6.

WATER TEMPERATURES: Minimum daily, 0.0°C Feb. 1, 2.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)
OCT 16...	1150	216	380	7.6	25.0	--	10.0	127	.8	25	28	180
DEC 04...	1200	177	420	8.1	11.5	1.0	13.1	124	1.4	K5	K8	190
FEB 12...	1430	225	399	8.1	12.0	.50	12.2	116	1.6	<1	K1	200
APR 02...	1135	200	398	8.1	19.5	.90	12.0	134	1.2	K3	K4	210
JUN 04...	1145	173	340	7.8	24.5	3.5	12.0	151	1.0	K10	K12	170
AUG 06...	1205	170	390	7.6	27.0	4.8	12.0	157	.7	K13	31	170
DATE		HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 16...		8	51	12	7.5	.3	1.3	170	10	13	.30	13
DEC 04...		10	53	14	8.3	.3	1.3	180	9.1	13	.40	13
FEB 12...		21	57	14	8.6	.3	1.2	180	9.1	20	.30	12
APR 02...		54	58	15	8.6	.3	1.3	153	9.3	20	.30	13
JUN 04...		23	46	14	8.8	.3	1.3	150	8.7	14	.30	16
AUG 06...		22	46	14	8.5	.3	1.3	151	8.9	14	.60	16
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (MG/L)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	
OCT 16...		210	210	1.5	.110	.50	<.010	.010	<.010	--	--	--
DEC 04...		205	220	1.5	.010	.30	<.010	.010	<.010	3	1.4	78
FEB 12...		210	230	1.7	.040	<.20	.010	<.010	<.010	4	2.4	91
APR 02...		197	220	1.4	.050	.40	<.010	<.010	<.010	12	6.5	97
JUN 04...		190	200	1.1	.050	.20	<.010	<.010	<.010	8	3.7	92
AUG 06...		200	200	.10	.060	.40	<.010	<.010	.010	17	7.8	88

## RIO GRANDE BASIN

08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 16...	1150	<1	110	2.0	1	<1	<3	<1	6	2
FEB 12...	1430	<1	110	2.6	<1	<1	<3	<1	<3	<1
JUN 04...	1145	<1	110	<.5	<1	<1	<3	1	28	6
AUG 06...	1205	1	110	<.5	<1	<1	<3	1	<3	<1

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
OCT 16...	10	3	<.1	<10	<1	<1	<1	430	8	21
FEB 12...	7	5	<.1	<10	1	<1	1	470	8	<3
JUN 04...	9	1	<.1	<10	<1	<1	<1	450	9	8
AUG 06...	8	3	<.1	<10	<1	<1	<1	450	9	4

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	5670	437	232	3550	16	252	11	162	200
NOV.	1984	4667	450	235	2960	17	211	11	136	200
DEC.	1984	5925	403	223	3560	16	251	10	160	190
JAN.	1985	9206	383	217	5390	15	378	9.6	239	180
FEB.	1985	5765	387	218	3400	15	239	9.7	151	190
MAR.	1985	5769	370	213	3320	15	232	9.4	146	180
APR.	1985	5185	376	215	3010	15	211	9.5	133	180
MAY	1985	5180	355	208	2900	14	203	9.1	127	180
JUNE	1985	5771	354	207	3220	14	225	9.0	141	180
JULY	1985	5434	343	203	2980	14	208	8.8	130	170
AUG.	1985	4648	391	219	2750	15	194	9.8	123	190
SEPT	1985	5917	385	217	3470	15	244	9.7	154	190
TOTAL		69137	**	**	40500	**	2850	**	1800	**
WTD.AVG.		189	386	217	**	15	**	9.6	**	190

08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	522	409	450			463	---	---	415	357	317	337
2	520	418	461			466	---	---	417	347	310	323
3	525	417	463			468	---	---	416	398	350	382
4	511	401	457			470	427	409	418	406	397	402
5	524	418	457			469	433	410	422	399	392	395
6	534	400	450			471	429	401	417	404	393	398
7	526	410	459			472	430	411	423	403	394	399
8	547	419	463			470	430	421	425	404	398	400
9	520	413	452			471	465	410	425	405	398	401
10	534	407	447			474	464	412	427	401	390	396
11	420	293	362			475	425	396	415	397	386	392
12	445	384	420			473	424	413	420	389	376	382
13	462	436	447			473	458	396	423	379	372	376
14	455	421	444			478	413	329	405	388	381	385
15	452	403	433			476	405	332	390	396	389	392
16	422	353	365			478	417	408	413	397	389	393
17	404	342	380			475	459	410	419	398	390	395
18	763	312	436			452	419	407	413	401	392	395
19	---	---	440			455	422	407	415	401	390	395
20	---	---	442			440	450	404	415	399	389	395
21	---	---	445			431	482	370	407	402	393	397
22	---	---	450			435	405	379	395	402	395	398
23	---	---	452			437	409	399	404	403	397	399
24	---	---	451			422	408	378	400	407	395	401
25	---	---	442			407	414	401	407	403	391	396
26	---	---	445			408	417	404	413	406	392	397
27	---	---	443			410	415	410	413	405	382	394
28	---	---	447			411	414	398	407	399	387	392
29	---	---	453			414	403	387	396	397	386	392
30	---	---	458			413	403	358	387	398	381	392
31	---	---	459				393	300	361	399	381	394
MONTH	763	293	441			452	482	300	410	407	310	390

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	402	396	399	391	339	387	381	311	368	375	343	362
2	425	394	401	389	377	382	394	372	382	372	354	365
3	407	398	401	389	367	379	395	381	388	382	362	370
4	404	399	401	379	358	368	395	381	386	377	360	369
5	444	393	405	378	363	371	395	361	380	376	359	366
6	438	393	402	378	363	372	394	377	385	374	360	366
7	403	390	396	383	364	375	394	372	381	375	362	366
8	402	389	396	375	360	369	395	369	383	376	347	366
9	397	384	392	379	359	370	397	382	389	375	356	364
10	424	373	391	373	357	367	394	381	387	372	354	364
11	394	369	383	374	366	369	390	350	382	377	357	364
12	392	376	385	379	366	372	394	379	388	374	353	365
13	391	380	386	381	357	373	394	374	383	373	321	351
14	390	370	382	381	361	371	385	371	379	377	330	354
15	391	378	384	383	354	367	390	371	387	373	361	367
16	391	379	384	382	363	373	389	373	379	373	364	368
17	388	379	387	379	358	372	389	364	377	376	346	364
18	387	374	380	383	359	372	381	366	372	---	---	331
19	389	377	383	390	364	367	384	363	373	---	---	335
20	389	375	382	385	352	364	381	361	368	---	---	337
21	390	369	380	382	348	367	380	360	368	---	---	339
22	384	365	375	378	365	372	371	352	363	---	---	343
23	392	357	367	383	349	367	375	347	363	---	---	345
24	384	363	374	382	366	374	381	363	371	---	---	349
25	385	370	377	381	361	372	377	359	370	---	---	351
26	384	363	375	378	366	371	380	360	371	---	---	352
27	389	369	380	375	341	367	376	352	368	---	---	355
28	392	372	381	370	358	364	375	320	360	---	---	354
29	---	---	---	375	358	367	377	361	366	---	---	351
30	---	---	---	371	292	349	381	361	370	---	---	355
31	---	---	---	377	337	363	---	---	---	---	---	357
MONTH	444	357	387	391	292	370	397	311	376	382	321	356

## RIO GRANDE BASIN

08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	358			342			374			399
2	---	---	357			341			378			401
3	---	---	359			315			383			404
4	---	---	360			321			385			406
5	369	342	358			325			388			405
6	366	283	327			332			390			403
7	376	337	358			336			389			406
8	375	343	370			340			389			402
9	383	355	371			342			390			397
10	377	353	371			340			391			398
11	388	359	369			337			393			400
12	---	---	373			334			395			402
13	---	---	373			338			397			404
14	---	---	377			343			399			401
15	---	---	379			346			401			398
16	---	---	376			348			398			400
17	---	---	378			350			389			403
18	---	---	384			353			391			401
19	---	---	379			354			393			398
20	---	---	327			358			388			399
21	---	---	335			361			389			403
22	---	---	339			363			394			407
23	---	---	346			355			392			410
24	---	---	350			340			395			412
25	---	---	355			344			390			413
26	---	---	353			349			392			416
27	---	---	319			346			388			418
28	---	---	327			348			391			403
29	---	---	331			354			394			342
30	---	---	337			359			395			347
31	---	---	---			366			397			
MONTH	388	283	357			345			391			400

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1							---	---	---	19.0	12.0	16.0
2							---	---	---	12.0	6.5	8.5
3							---	---	---	11.5	5.5	8.5
4							11.5	8.5	10.5	12.5	7.5	10.0
5							14.0	7.5	10.0	14.0	9.0	11.0
6							15.5	7.0	10.5	13.5	9.5	11.5
7							13.0	6.5	10.0	15.0	10.0	12.0
8							13.0	8.5	11.0	13.5	10.0	12.0
9							16.5	9.0	13.0	16.5	11.5	13.5
10							18.0	11.0	14.5	14.5	11.0	12.5
11							18.0	14.5	16.0	12.0	8.5	10.0
12							17.0	13.5	15.5	8.0	3.0	5.0
13							18.5	14.5	16.5	5.5	2.0	4.0
14							18.0	10.5	15.5	10.0	4.5	7.0
15							12.0	10.5	11.5	11.5	7.0	9.0
16							15.5	11.0	13.0	12.5	8.0	10.0
17							17.5	12.5	15.0	13.5	8.0	10.5
18							17.5	15.5	16.5	13.5	8.5	11.0
19							18.0	17.0	17.5	14.5	9.5	12.0
20							18.5	17.0	17.5	11.0	4.0	7.0
21							24.0	16.0	17.5	9.5	3.5	6.0
22							18.0	14.0	15.5	9.5	4.0	6.5
23							17.0	13.5	15.5	9.0	5.5	7.0
24							18.5	14.0	16.5	13.0	7.0	9.5
25							13.0	9.5	10.5	17.5	9.5	13.0
26							12.5	9.5	11.5	13.5	10.0	11.5
27							16.5	12.0	14.5	16.5	9.5	12.0
28							18.5	16.5	17.5	16.0	10.5	13.0
29							19.0	17.5	18.5	15.5	11.5	13.0
30							18.5	16.5	17.5	20.0	13.5	15.5
31							23.0	15.0	17.5	15.0	2.0	7.0
MONTH							24.0	6.5	14.5	20.0	2.0	10.0

## 08449400 DEVILS RIVER AT PAFFORD CROSSING NEAR COMSTOCK, TX--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	2.5	.0	1.0	18.5	13.0	16.5	---	---	---	29.0	20.5	23.5
2	6.0	.0	4.0	17.5	16.0	17.0	---	---	---	30.0	18.5	22.5
3	8.0	2.5	5.0	19.5	17.0	18.0	20.0	13.5	17.0	26.5	18.5	22.5
4	9.0	5.5	6.5	17.0	11.5	14.5	21.0	15.0	18.0	23.5	19.5	21.0
5	13.0	6.0	9.0	17.0	10.0	14.0	23.0	14.0	18.0	24.0	17.5	20.5
6	13.5	7.0	10.0	15.0	12.5	13.5	21.0	14.5	17.5	23.5	17.5	20.5
7	12.0	8.5	10.0	18.5	14.0	16.0	18.0	15.0	17.0	25.0	18.5	21.5
8	13.0	8.5	10.5	20.0	17.0	18.0	15.0	12.5	14.0	27.0	20.0	22.5
9	15.0	10.0	11.5	20.0	17.5	18.5	14.5	12.0	13.5	28.5	19.0	23.0
10	16.5	12.0	13.5	19.5	17.0	18.0	16.5	12.5	14.5	25.5	20.0	22.0
11	14.0	8.0	10.5	23.0	17.5	20.0	24.5	14.0	17.5	28.5	20.5	23.5
12	13.0	7.0	10.0	20.5	18.5	19.5	21.5	16.5	18.5	29.0	20.5	24.0
13	14.0	7.5	10.0	19.0	15.0	18.0	20.5	17.0	18.5	30.0	20.0	24.0
14	17.5	9.0	12.5	18.5	12.0	15.0	25.0	15.5	19.5	27.5	15.5	21.0
15	15.5	9.0	11.5	17.0	13.0	14.5	25.5	16.0	20.0	23.0	19.0	20.5
16	15.0	9.0	11.5	16.5	12.5	14.5	24.0	16.5	20.0	24.0	20.0	21.5
17	16.5	11.0	14.0	18.5	10.5	14.0	23.5	18.0	20.5	28.0	19.5	23.5
18	16.0	14.5	15.5	16.0	12.0	14.0	18.5	17.0	17.5	---	---	---
19	17.5	15.0	16.0	16.5	13.0	14.5	22.5	17.0	19.0	---	---	---
20	16.5	16.0	16.0	18.0	12.0	15.0	23.5	18.5	20.5	---	---	---
21	17.5	16.0	17.0	19.5	11.0	15.0	23.5	19.0	20.5	---	---	---
22	17.5	16.5	17.5	19.5	12.0	15.5	29.0	19.5	23.0	---	---	---
23	19.0	13.0	16.0	22.5	13.0	17.0	25.5	17.5	20.5	---	---	---
24	15.0	11.5	12.5	21.5	12.5	17.5	22.5	15.0	19.0	---	---	---
25	17.0	9.5	13.0	22.5	17.5	19.5	20.5	16.0	18.0	---	---	---
26	16.0	13.0	14.5	19.5	17.5	18.0	23.5	17.0	20.0	---	---	---
27	14.5	11.5	13.0	---	---	---	26.0	20.0	21.5	---	---	---
28	13.5	12.5	13.0	---	---	---	24.5	19.5	21.5	---	---	---
29	---	---	---	---	---	---	30.0	18.5	23.0	---	---	---
30	---	---	---	---	---	---	28.0	21.0	24.5	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	19.0	.0	11.5	23.0	10.0	16.5	30.0	12.0	19.0	30.0	15.5	22.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	30.0	24.0	26.0	---	---	---	---	---	---	---	---	---
6	---	---	27.0	---	---	---	29.0	25.5	27.5	---	---	---
7	---	---	27.5	---	---	---	30.0	23.5	26.5	---	---	---
8	---	---	27.5	---	---	---	30.0	24.0	26.5	---	---	---
9	31.0	20.0	26.5	---	---	---	29.0	23.5	26.0	---	---	---
10	30.5	20.0	26.0	---	---	---	28.5	22.0	25.0	---	---	---
11	30.0	20.0	25.5	---	---	---	28.5	23.0	25.5	---	---	---
12	27.5	25.5	26.0	---	---	---	28.5	23.0	25.5	---	---	---
13	---	---	---	---	---	---	28.0	23.0	25.0	---	---	---
14	---	---	---	---	---	---	28.0	23.0	25.0	---	---	---
15	---	---	---	---	---	---	29.5	22.5	25.5	---	---	---
16	---	---	---	---	---	---	28.5	23.5	25.5	---	---	---
17	---	---	---	---	---	---	28.5	23.5	25.5	---	---	---
18	---	---	---	---	---	---	28.5	23.5	25.5	---	---	---
19	---	---	---	---	---	---	28.0	22.5	25.0	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	---	---	---
24	---	---	---	---	---	---	---	---	---	---	---	---
25	---	---	---	---	---	---	---	---	---	---	---	---
26	---	---	---	---	---	---	---	---	---	---	---	---
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	31.0	20.0	26.5	---	---	---	30.0	22.0	25.5	---	---	---



## RIO GRANDE MAIN STEM

08450900 RIO GRANDE BELOW AMISTAD DAM NEAR DEL RIO, TX

LOCATION.--Lat 29°25'30", long 101°27'00", Val Verde County, Hydrologic Unit 13080001, 2.2 mi downstream from Amistad Dam and 10 mi northwest of Del Rio.

DRAINAGE AREA.--123,143 mi<sup>2</sup>.

PERIOD OF RECORD.--Chemical analyses: July 1968 to current year.

REMARKS.--The flow is controlled largely by releases from Amistad Reservoir. Records of daily mean discharge for water year 1985 are given in International Boundary and Water Commission Water Bulletins Nos. 54 and 55.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
17...	1445	879	1120	8.0	23.5	270	160	77	20
NOV									
21...	0830	537	1110	8.1	16.5	270	150	75	20
DEC									
24...	1055	1580	1150	8.0	16.0	280	170	81	20
JAN									
16...	0830	52	1170	8.2	11.0	280	150	79	20
FEB									
20...	1055	2310	1280	8.2	11.0	310	180	89	22
MAR									
21...	0830	2300	1220	7.9	14.0	310	180	87	22
APR									
17...	0830	2390	1220	8.0	19.0	290	150	80	21
MAY									
17...	0700	2340	1180	8.0	15.0	290	160	80	22
JUN									
17...	0700	1340	1200	8.0	16.5	300	160	84	21
JUL									
17...	0730	1370	1190	7.9	26.0	310	170	88	21
AUG									
20...	0745	1350	1200	8.1	19.0	300	160	85	21
SEP									
18...	1220	1050	1190	7.8	21.0	300	170	85	21

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT								
17...	130	4	5.4	120	260	120	18	700
NOV								
21...	130	4	5.3	120	260	130	19	710
DEC								
24...	130	3	5.8	120	270	130	18	730
JAN								
16...	130	4	5.0	130	260	130	19	720
FEB								
20...	150	4	5.5	130	280	150	19	790
MAR								
21...	140	4	5.3	130	270	140	18	760
APR								
17...	130	3	5.3	132	260	140	18	730
MAY								
17...	140	4	5.4	132	260	140	18	740
JUN								
17...	140	4	5.3	133	250	150	18	750
JUL								
17...	140	4	5.5	136	260	150	17	760
AUG								
20...	130	3	5.4	136	240	150	18	730
SEP								
18...	140	4	5.0	133	260	150	19	760

RIO GRANDE MAIN STEM

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08459000 RIO GRANDE AT LAREDO, TX  
(National stream-quality accounting network)

LOCATION.--Lat 27°29'45", long 99°29'30", Webb County, Hydrologic Unit 13080002, at gaging station 1.1 mi downstream from the highway bridge between Laredo and Nuevo Laredo, Tamaulipas, Mex., and 891.0 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--132,578 mi<sup>2</sup>, United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 45.

PERIOD OF RECORD.--Chemical analyses: July 1955 to current year. Chemical, biochemical, and sediment analyses: January 1973 to current year. Pesticide analyses: October 1978 to September 1979.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1974 to current year.

WATER TEMPERATURES: October 1974 to August 1976.

REMARKS.--Records of discharge for water year 1985 are given in International Boundary and Water Commission Water Bulletin Nos. 54 and 55.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,690 microsiemens June 1, 1963; minimum daily, 214 microsiemens Sept. 26, 1964.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 1,270 microsiemens Mar. 16; minimum daily, 378 microsiemens Oct. 14.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED CENT SATUR- ATION	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, U.7 UM-MF (COLS./ 100 ML)
OCT										
31...	1544	1060	1020	8.5	25.1	35	8.1	99	1.6	34000
JAN										
31...	1051	2840	1050	8.4	14.0	22	9.6	94	1.6	7800
MAR										
07...	1117	2610	1220	8.1	17.0	23	8.8	91	2.1	4400
MAY										
03...	0945	2750	783	7.9	25.0	130	6.8	82	2.0	8000
JUN										
11...	1445	1040	1110	8.1	30.0	27	7.4	99	1.7	450000
JUL										
31...	1538	1390	1110	8.3	29.0	75	7.5	98	1.5	56000

DATE	100 ML)	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER CACO3)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L AS CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)
OCT											
31...	9200	290	140	85	19	100	3	4.0	150	220	
JAN											
31...	6400	290	170	81	20	110	3	4.3	120	240	
MAR											
07...	2200	320	180	91	22	140	4	4.9	142	260	
MAY											
03...	3400	210	110	64	13	79	2	4.6	104	170	
JUN											
11...	7300	270	160	75	20	130	4	5.1	115	260	
JUL											
31...	6800	280	150	79	19	110	3	4.6	123	220	

DATE	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NITRITE TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N)
OCT									
31...	110	.90	17	676	650	--	--	.60	--
JAN									
31...	110	.90	13	673	650	--	--	.30	--
MAR									
07...	150	1.0	16	762	770	<.010	.70	.66	.060
MAY									
03...	82	.70	12	498	490	--	--	.64	--
JUN									
11...	140	1.0	13	732	710	--	--	.16	--
JUL									
31...	120	.80	15	666	640	--	--	.44	--

## RIO GRANDE MAIN STEM

08459000 RIO GRANDE AT LAREDO, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

		NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
DATE										
OCT 31...		.070	--	.40	.070	.030	.020	40	114	93
JAN 31...		.050	--	.50	.050	.010	.010	83	636	94
MAR 07...		.070	.34	.40	.030	.010	.010	91	641	81
MAY 03...		.090	--	.80	.050	.010	.020	134	995	98
JUN 11...		.090	--	.50	.090	.030	.020	57	160	90
JUL 31...		.100	--	.50	.070	.040	.030	96	360	98

		ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
DATE	TIME									
OCT 31...	1544	3	120	<.0	<1	<1	<3	<1	<3	3
JAN 31...	1051	3	95	<.5	<1	1	<3	<1	<3	<1
MAY 03...	0945	2	91	3.1	<1	<1	<3	5	8	<1
JUL 31...	1538	3	110	<.5	<1	<1	<3	<1	6	<1

		LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
DATE											
OCT 31...	48	3	<.1	<10	2	<1	<1	1400	<6	17	
JAN 31...	50	6	<.1	<10	5	1	<1	1300	<6	12	
MAY 03...	37	4	<.1	<10	2	<1	<1	980	9	<3	
JUL 31...	50	4	<.1	<10	5	<1	<1	1300	7	11	

RIO GRANDE MAIN STEM

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08459000 RIO GRANDE AT LAREDO, TX--Continued

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	89950	735	455	111000	75	18200	150	35500	220
NOV.	1984	22776	1030	632	38900	110	7030	210	13200	280
DEC.	1984	42465	1120	690	79200	130	15000	240	27600	290
JAN.	1985	78120	1090	668	141000	120	26300	230	48600	280
FEB.	1985	80920	1090	668	146000	120	27300	230	50400	280
MAR.	1985	85000	1190	730	168000	140	32900	260	59600	290
APR.	1985	90170	1040	642	156000	120	29000	220	53800	270
MAY	1985	107670	904	558	162000	97	28200	180	53700	250
JUNE	1985	68150	1010	622	114000	110	20800	210	38800	270
JULY	1985	56520	936	578	88200	100	15500	190	29300	260
AUG.	1985	34308	1100	679	62900	130	11800	240	21800	280
SEPT	1985	49630	1070	662	88700	120	16500	230	30500	280
TOTAL		805679	**	**	1356000	**	249000	**	463000	**
WTD.AVG.		2207	1010	623	**	110	**	210	**	270

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DAY	OCT	NOV	DEC	JAN	EQUIVALENT MEAN		FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1120	984	1140	1050	1140	1210	1180	873	1130	868	1000	1170	1180	1180
2	1040	999	1130	1100	1130	899	1150	1110	1110	827	1040	1180	1180	1180
3	995	998	1120	1080	1120	1190	1190	954	1110	777	993	1170	1170	1170
4	1020	1010	1120	1040	1120	1200	1200	811	1110	730	988	1170	1170	1170
5	1100	1010	1120	1060	1140	1180	1190	652	1110	478	1060	913	1170	1170
6	1100	1010	1100	980	1120	1220	1160	896	950	910	1110	1160	1160	1160
7	1110	1010	1100	1020	1110	1220	1170	1080	1120	1020	1120	893	1160	1160
8	1070	1040	1090	1040	1100	1220	1070	1140	1130	1060	1120	1200	1120	1200
9	1080	1020	1090	1110	1100	1230	657	1140	1140	1000	1130	1150	1150	1150
10	1120	989	1100	1130	1100	1230	728	803	1130	945	1120	1050	1120	1050
11	1100	998	1110	1150	1100	1240	953	973	1150	934	1140	1090	1140	1090
12	1070	1000	1110	1130	1110	1250	741	1140	1150	997	1130	1200	1130	1200
13	501	1000	907	1140	1110	1230	472	1090	1160	1020	1140	982	1140	982
14	378	1000	1090	1130	747	1220	1010	1060	1170	1010	1130	1080	1130	1080
15	412	1050	838	1120	834	1240	1120	1070	1050	1040	1130	1120	1130	1120
16	482	1060	1130	1110	1110	1270	782	499	793	1050	1130	1140	1130	1140
17	555	1060	1130	706	1130	1240	1170	678	969	1070	1130	1150	1130	1150
18	515	1060	1150	1080	1130	1250	1180	921	1080	1060	1140	1150	1140	1150
19	498	1070	1150	1100	1130	1240	1180	663	1110	761	1140	1160	1140	1160
20	558	1050	1150	1110	1130	1220	1190	664	1010	1060	1140	1150	1140	1150
21	642	1050	1160	1110	1130	1190	1170	615	668	1040	1140	895	1140	895
22	764	1050	1150	1110	1150	1200	1170	871	508	1080	816	1070	1140	1070
23	874	1050	1140	1120	1150	760	1170	761	694	1070	1140	1070	1140	1070
24	945	1040	1150	1120	1160	1200	1170	960	680	1050	1150	1080	1150	1080
25	959	1040	1160	1110	800	1200	1160	1060	1020	1060	1170	882	1170	882
26	991	1030	1170	1110	1150	1200	1170	1120	1080	739	1160	1010	1160	1010
27	1010	1050	1170	1090	905	1190	1170	1100	1070	1100	1190	1070	1190	1070
28	1020	1040	1170	1100	1220	1190	1170	1120	1030	1080	1170	1080	1170	1080
29	1020	1030	1160	1120	---	1190	957	1110	953	1080	1170	1080	1170	1080
30	764	1020	1170	1120	---	1190	1140	1120	952	1070	987	1070	1170	1070
31	1010	---	1140	1090	---	1170	---	1130	---	1040	1170	---	1170	---
MEAN	865	1030	1120	1080	1080	1190	1060	941	1010	969	1110	1070	1110	1070

## RIO GRANDE BASIN

08461300 RIO GRANDE BELOW FALCON DAM, TX

LOCATION.--Lat 26°33'25", long 99°10'05", Starr County, Hydrologic Unit 13090001, U.S. Tailrace at Falcon Dam.

DRAINAGE AREA.--159,270 mi<sup>2</sup>, United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: July 1955 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1985 are given in International Boundary and Water Commission Water Bulletins Nos. 54 and 55.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 24...	0930	--	1150	7.7	24.5	270	170	71	23
NOV 20...	1040	--	1100	7.9	21.0	260	160	68	22
DEC 18...	0930	--	1110	7.7	19.0	270	160	73	22
JAN 22...	0930	--	1170	8.0	12.0	290	180	77	23
FEB 20...	0900	--	1180	8.0	11.0	300	180	81	23
MAR 18...	1045	--	1180	7.9	18.0	310	190	86	23
APR 15...	1300	--	1180	7.9	20.0	290	170	80	22
MAY 14...	1045	--	1140	7.8	25.5	280	170	76	23
JUN 18...	0915	--	1100	7.9	26.5	270	160	73	21
JUL 17...	1100	--	1060	7.7	28.0	260	160	72	20
AUG 19...	1100	--	1070	7.8	28.0	260	160	70	20
SEP 16...	0930	3300	1070	7.9	28.0	250	160	69	20

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)
OCT 24...	130	4	5.6	98	270	140	14	710
NOV 20...	130	4	5.2	100	260	140	14	700
DEC 18...	130	4	5.5	110	260	140	14	710
JAN 22...	130	3	4.8	110	260	130	13	700
FEB 20...	130	3	5.0	113	270	130	13	720
MAR 18...	130	3	5.1	116	270	130	13	730
APR 15...	120	3	5.1	121	260	130	13	700
MAY 14...	130	3	5.3	112	260	140	13	710
JUN 18...	120	3	5.3	107	250	130	12	680
JUL 17...	120	3	5.4	103	240	130	11	660
AUG 19...	120	3	5.8	102	240	130	11	660
SEP 16...	120	3	5.2	97	240	130	12	650



RIO GRANDE MAIN STEM

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08464700 RIO GRANDE AT FORT RINGGOLD, RIO GRANDE CITY, TX

LOCATION.--Lat 26°22'05", long 98°48'20", Starr County, Hydrologic Unit 13090001, at gaging station about 1 mi downstream from Rio Grande City, 3.9 mi downstream from mouth of Rio San Juan, and 1,014.3 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--174,362 mi<sup>2</sup>, United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 44.

PERIOD OF RECORD.--Chemical analyses: January 1959 to current year.

REMARKS.--Records of specific conductance and discharge for water year 1985 are given in International Boundry and Water Commission Water Bulletins Nos. 54 and 55.

WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
16...	1145	811	1480	7.9	26.5	300	180	77	26
NOV									
19...	1300	1690	1140	8.1	18.5	260	160	68	23
DEC									
18...	1400	1330	1330	7.7	20.5	310	200	85	24
JAN									
15...	1430	1430	1290	8.0	13.5	300	190	79	24
FEB									
19...	1350	1200	1280	7.9	19.0	310	190	84	24
MAR									
18...	1430	1140	1340	7.8	20.0	320	200	87	25
APR									
19...	1100	2480	1180	7.9	23.5	290	170	79	22
MAY									
13...	1330	12200	1140	7.7	--	280	160	76	22
JUN									
17...	1300	3570	1130	7.9	25.5	270	160	73	21
JUL									
15...	1400	710	2050	7.8	30.0	390	260	110	28
AUG									
19...	1145	3200	1100	7.8	26.0	260	160	71	20
SEP									
18...	1230	1260	1280	7.8	30.0	290	180	78	23

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LILITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT								
16...	190	5	5.5	120	320	220	15	930
NOV								
19...	140	4	5.2	100	270	150	12	730
DEC								
18...	150	4	5.7	110	270	200	12	810
JAN								
15...	150	4	4.9	110	290	160	13	790
FEB								
19...	150	4	5.3	116	290	150	9.3	780
MAR								
18...	160	4	5.3	123	290	170	13	820
APR								
19...	130	3	5.0	120	260	140	11	720
MAY								
13...	130	3	5.2	116	260	140	13	720
JUN								
17...	130	4	5.2	108	260	140	12	710
JUL								
15...	290	7	7.1	130	380	370	13	1300
AUG								
19...	120	3	5.5	105	240	130	12	660
SEP								
18...	160	4	5.7	106	280	180	13	800

## RIO GRANDE MAIN STEM

08466300 RIO GRANDE NEAR LOS EBANOS, TX

LOCATION.--Lat 26°14'15", long 98°33'49", Hidalgo County, Hydrologic Unit 13090001, on Farm Road 886 at U.S. Border Port of Entry near Los Ebanos and at mile 204.37.

PERIOD OF RECORD.--Chemical analyses: June 1977 to current year.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT 18...	1045	900	1540	7.7	26.5	340	220	88	28
NOV 19...	1400	910	1270	8.1	18.5	290	180	75	25
DEC 20...	1230	400	1280	7.8	21.5	310	190	83	24
JAN 16...	1330	944	1350	8.0	12.0	320	200	88	25
FEB 19...	1515	1400	1450	8.0	19.0	330	210	88	27
MAR 19...	1100	1650	1430	7.9	19.5	360	230	98	27
APR 19...	1415	1380	1230	7.8	25.0	300	180	84	21
MAY 16...	1755	13900	836	7.8	26.5	210	110	60	14
JUN 17...	1355	3820	1200	7.9	24.0	290	170	78	23
JUL 15...	1445	470	2240	7.9	29.5	510	330	140	38
AUG 19...	0900	4240	1130	7.8	24.5	280	170	78	20
SEP 17...	1400	2770	1150	7.8	30.0	270	170	73	21

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L)
OCT 18...	190	5	5.8	120	330	220	16	950
NOV 19...	160	4	5.4	110	290	180	12	810
DEC 20...	150	4	5.7	120	290	170	13	810
JAN 16...	150	4	4.9	120	290	170	14	810
FEB 19...	170	4	5.5	120	330	190	10	890
MAR 19...	170	4	5.3	128	310	180	14	880
APR 19...	140	4	5.3	118	260	160	11	750
MAY 16...	93	3	5.0	94	180	94	10	510
JUN 17...	140	4	5.7	115	260	150	13	740
JUL 15...	280	6	7.0	179	480	390	18	1500
AUG 19...	130	4	5.6	108	250	140	12	700
SEP 17...	130	4	5.6	102	250	150	12	700

## 08469200 RIO GRANDE BELOW ANZALDUAS DAM, TX

LOCATION.--Lat 26°08'00", long 98°20'05". Hidalgo County, Hydrologic Unit 13090002, at gaging station 0.5 mi downstream from Anzalduas Dam, 12.2 mi from Hidalgo, and 1,077.1 mi downstream from the American Dam at El Paso.

DRAINAGE AREA.--176,112 mi<sup>2</sup>, United States and Mexico; from International Boundary and Water Commission Water Bulletin No. 45.

PERIOD OF RECORD.--Chemical analyses: March 1959 to current year. Pesticide analyses: October 1968 to September 1971.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

REMARKS.--Records of and discharge for water year 1985 are given in International Boundary and Water Commission Water Bulletins Nos. 54 and 55. Mean monthly and annual concentrations and loads for selected chemical constituents have been computed using the daily (or continuous) records of specific conductance and regression relationships between each chemical constituent and specific conductance. Regression equations developed for this station may be obtained from the Geological Survey District office upon request.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 3,310 microsiemens Feb. 12, 1984; minimum daily, 392 microsiemens Feb. 27, 1983.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum daily, 2,990 microsiemens Mar. 28, July 19; minimum daily, 610 microsiemens Apr. 16.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)
OCT									
16...	0900	500	1920	8.0	26.0	420	260	110	35
NOV									
21...	1105	650	1590	8.1	18.0	370	240	98	31
DEC									
20...	1130	650	2250	7.9	21.5	530	350	140	43
JAN									
14...	1000	300	1560	8.0	6.0	350	230	96	27
FEB									
21...	1200	300	1650	8.0	20.0	380	240	100	31
MAR									
19...	1030	450	2570	7.9	20.0	560	370	150	44
APR									
16...	0955	300	620	7.8	24.0	160	61	47	9.2
MAY									
14...	1000	4340	1220	7.9	26.5	290	170	77	23
JUN									
19...	0800	2900	1400	7.9	20.0	300	190	82	24
JUL									
17...	1030	790	2700	7.9	29.0	550	380	150	42
AUG									
21...	1000	1400	1240	8.0	29.0	260	160	71	20
SEP									
17...	1430	1540	1220	7.9	28.5	280	170	76	22

DATE	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CACO3)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)
OCT								
16...	240	5	6.4	160	380	310	16	1200
NOV								
21...	200	5	5.7	130	340	240	14	1000
DEC								
20...	270	5	6.8	180	430	390	19	1400
JAN								
14...	180	4	4.9	120	340	210	12	940
FEB								
21...	200	5	5.4	133	350	230	10	1000
MAR								
19...	320	6	6.6	184	480	420	17	1500
APR								
16...	58	2	4.3	94	100	63	5.7	340
MAY								
14...	140	4	5.3	117	280	150	13	760
JUN								
19...	170	4	5.4	119	290	190	13	850
JUL								
17...	380	7	6.8	172	520	480	19	1700
AUG								
21...	140	4	5.5	105	250	150	12	710
SEP								
17...	140	4	5.5	106	270	160	12	750

RIO GRANDE MAIN STEM  
08469200 RIO GRANDE BELOW ANZALDUAS DAM, TX

MONTHLY AND ANNUAL MEANS AND LOADS FOR OCTOBER 1984 TO SEPTEMBER 1985

MONTH	YEAR	DISCHARGE (CFS-DAYS)	SPECIFIC CONDUCT- ANCE (MICRO- MHOS)	DIS- SOLVED SOLIDS (MG/L)	DIS- SOLVED SOLIDS (TONS)	DIS- SOLVED CHLORIDE (MG/L)	DIS- SOLVED CHLORIDE (TONS)	DIS- SOLVED SULFATE (MG/L)	DIS- SOLVED SULFATE (TONS)	HARDNESS (CA, MG) (MG/L)
OCT.	1984	17727	1470	907	43400	210	9990	300	14400	350
NOV.	1984	16994	1560	968	44400	230	10500	320	14600	370
DEC.	1984	13959	1460	905	34100	210	7790	300	11400	350
JAN.	1985	12228	1670	1040	34300	250	8260	340	11100	400
FEB.	1985	13606	1720	1070	39200	260	9480	350	12700	410
MAR.	1985	13644	1780	1110	41000	280	10200	350	13000	420
APR.	1985	38384	1310	810	83900	180	18400	280	28500	320
MAY	1985	101923	1200	739	203000	160	42900	260	70300	290
JUNE	1985	65466	1420	878	155000	200	34800	300	52200	340
JULY	1985	26353	1940	1220	86900	320	22800	380	26800	460
AUG.	1985	47075	1190	728	92600	150	19300	250	32100	290
SEPT	1985	28113	1300	802	60900	170	13200	270	20800	310
TOTAL		395472	**	**	919000	**	208000	**	308000	**
WTD.AVG.		1083	1390	861	**	190	**	290	**	330

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C), WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985  
EQUIVALENT MEAN

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1840	1270	1470	1410	1700	1470	2480	1250	1840	1450	1490	1200
2	1660	1270	1400	1440	1650	1510	1780	1270	1970	1680	1290	1210
3	1660	1270	1320	1530	1670	1560	1440	1270	2090	1950	1140	1220
4	1590	1270	1320	1420	1630	1560	1350	1230	1970	2000	1130	1240
5	1440	1280	1310	1410	1650	1590	1360	1260	1740	2700	1130	1290
6	1260	1280	1280	1440	1600	1560	1460	1230	1560	2830	1170	1300
7	1000	1290	1290	1580	1580	1600	1400	1240	1420	2760	1150	1410
8	898	1340	1260	1640	1590	1550	1340	1250	1380	2470	1310	1380
9	756	1360	1280	1590	1640	1580	1280	1250	1380	2320	1130	1430
10	711	1410	1260	1560	1560	1650	1230	1260	1330	1930	1130	1340
11	721	1460	1250	1720	1530	1720	1130	1220	1300	1650	1100	1310
12	860	1720	1260	1860	1690	1700	1260	1120	1290	1430	1120	1340
13	1320	2090	1260	1650	1790	1720	1270	1220	1310	1510	1110	1360
14	1620	2320	1260	1580	1690	1760	977	1220	1300	1510	1120	1340
15	1860	2620	1270	1400	1840	1850	719	1220	1300	1490	1100	1310
16	1920	2310	1280	1500	1840	2010	610	1040	1480	2090	1100	1250
17	1640	1920	1330	1450	2100	2280	835	876	1320	2690	1090	1200
18	1420	1660	1430	1480	2310	2990	1100	1350	1360	2950	1090	1210
19	1380	1560	1520	1460	1940	2700	1580	1300	1400	2990	1140	1180
20	1410	1600	2020	1450	1740	2300	1360	886	1370	2640	1120	1170
21	1500	1600	2320	1420	1650	1940	1010	1280	1260	1770	1120	1180
22	1620	1570	1890	2080	1650	1770	1070	1210	1390	1570	1130	1180
23	1680	1430	1710	1940	1650	1720	1370	1450	1620	1660	1160	1180
24	1670	1360	1570	2020	1650	1650	1430	1570	1590	1730	1260	1210
25	1680	1360	1520	2550	1690	1590	1360	1790	1640	1680	1240	1260
26	1630	1310	1490	2180	1710	1540	1320	1670	1650	1770	1270	1280
27	1560	1290	1460	1820	1690	1490	1300	1670	1670	1590	1420	1440
28	1490	1310	1450	1760	1650	1490	1320	1640	1720	1470	1400	1490
29	1450	1380	1460	1710	---	1540	1310	1370	1550	1520	1330	1600
30	1380	1490	1430	1680	---	1730	1060	1370	1420	1520	1260	1660
31	1300	---	1400	1620	---	2150	---	1550	---	1570	1190	---
MEAN	1420	1550	1440	1660	1720	1780	1280	1310	1520	1960	1190	1310

## RIO GRANDE MAIN STEM

435

08475000 RIO GRANDE NEAR BROWNSVILLE, TX  
(National stream-quality accounting network)

LOCATION.--Lat 25°52'35", long 97°27'15", Cameron County, Hydrologic Unit 13090002, at International Boundary and Water Commission gaging station, 1,000 ft downstream from El Jardin pumping plant, 6.8 mi below International Bridge between Brownsville and Matamoros, Tamps., Mex., and 48.8 mi above the Gulf of Mexico.

DRAINAGE AREA.--176,333 mi<sup>2</sup>.

PERIOD OF RECORD.--Chemical analyses: October 1967 to January 1968. Chemical and biochemical analyses: October 1974 to current year. Pesticide analyses: October 1975 to September 1982. Sediment analyses: October 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1967 to September 1983.

WATER TEMPERATURES: October 1966 to September 1983.

SUSPENDED-SEDIMENT DISCHARGE: February 1966 to September 1983.

REMARKS.--Records of discharge furnished by International Boundary and Water Commission.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum daily, 4,130 micromhos May 29, 1972; minimum daily, 337 micromhos Sept. 3, 1967.

WATER TEMPERATURES (1966-69, 1970-75, 1977-83): Maximum daily, 35.0°C on several days during summer months of 1982 and 1983; minimum daily, 8.0°C Jan. 10, 1967.

SEDIMENT CONCENTRATIONS: Maximum daily mean, 6,000 mg/L Feb. 28, 1983; minimum daily mean, 4 mg/L Apr. 26, 1970, Aug. 16, 18, 24, 27, 1977.

SEDIMENT LOADS: Maximum daily, 181,000 tons Feb. 28, 1983; minimum daily, 0.12 tons Aug. 26, 1983.

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUC- TANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	OXYGEN DEMAND, BIO- CHEM- ICAL, 5 DAY (MG/L)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAK (COLS. PER 100 ML)	HARD- NESS (MG/L AS CAC03)
NOV 01...	1624	247	1480	8.4	28.0	35	8.4	107	3.1	1100	140	360
JAN 20...	1100	68	--	--	19.5	--	--	--	--	--	--	--
JAN 30...	1100	13	1990	8.1	19.5	13	9.9	107	1.8	K32	K40	510
MAY 08...	1710	59	1240	8.2	29.0	15	10.6	137	1.6	110	120	310
JUL 30...	1650	61	2730	8.1	31.5	22	8.0	108	2.2	88	1000	550
DATE		HARD- NESS, NONCAR- BONATE (MG/L CAC03)	CALCIUM DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY FIELD (MG/L AS CAC03)	SULFATE DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SI02)
NOV 01...	220	96	29	180	4	5.5	140	330	220	1.0	16	
JAN 20...	--	--	--	--	--	--	--	--	--	--	--	--
JAN 30...	320	140	39	230	5	5.7	190	390	290	.80	14	
MAY 08...	210	83	25	150	4	5.6	107	280	180	.80	12	
JUL 30...	390	140	48	360	7	7.6	156	540	480	.70	18	
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P)	SEDI- MENT, SUS- PENDEED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDEED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 01...	969	960	.31	.020	.60	.060	.010	<.010	48	32	100	
JAN 20...	--	--	--	--	--	--	--	--	46	8.4	89	
JAN 30...	1280	1200	.40	.060	1.0	.010	.040	<.010	78	2.7	84	
MAY 08...	811	800	<.10	.040	.90	.070	<.010	<.010	62	9.9	90	
JUL 30...	1730	1700	<.10	.040	.70	.060	<.010	.010	55	9.1	90	



## RIO GRANDE MAIN STEM

08475000 RIO GRANDE NEAR BROWNSVILLE, TX--Continued

## WATER QUALITY DATA, WATER YEAR OCTOBER 1984 TO SEPTEMBER 1985--Continued

DATE	TIME	ARSENIC DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
NOV 01...	1624	4	110	<.0	<1	<1	<3	2	<3	3
JAN 30...	1100	2	110	<.5	<1	2	<3	<1	<3	<1
MAY 08...	1710	4	100	<.5	<1	<1	<3	2	5	6
JUL 30...	1650	6	200	<10	<1	<1	<1	1	30	<1

DATE	LITHIUM DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)
NOV 01...	64	3	.1	<10	1	<1	<1	1700	<6	16
JAN 30...	62	25	<.1	10	<1	<1	<1	2200	<6	<3
MAY 08...	58	<1	<.1	<10	5	<1	<1	1500	<6	7
JUL 30...	90	<10	<.1	13	6	<1	1	1900	15	30

## COLORADO RIVER BASIN

## Colorado River Low-flow Investigation

PURPOSE.--To determine the change in quantity of flow from Austin to Bay City, Texas.

REACH.--The investigation began at streamflow station 08158000 Colorado River at Austin and ended at streamflow station 08162500 Colorado River near Bay City, Texas. This involved a distance of 257.6 mi along the Colorado River.

PREVIOUS INVESTIGATIONS.--An investigation in July 1918 was made in this reach of the Colorado River and results were published in Texas Board of Water Engineers Bulletin 5807D, "Channel Gain and Loss Investigations, Texas Streams 1918-1958", dated April 1960.

SUMMARY.--This investigation was conducted Aug. 19-21, 1985. During the investigation, no storm runoff occurred, and there had been no significant rainfall in the study reach for more than thirty days prior to the study. Major diversions upstream from Bay City (mile 32.5) are made by the Lower Colorado River Authority for irrigation purposes. All inflow along the study reach was measured. Evapotranspiration was probably significant, since rainfall was deficient and the weather was extremely hot.

Location and description of data-collection sites, Colorado River and tributaries, water year 1985

Stream	Location	Date 1985	River miles above mouth	Water temp. (°C)	Discharge (ft <sup>3</sup> /s) main tribu- stream tary		Specific conductance (micro- siemens 25°C)	Remarks
Colorado River	Lat 30°14'40", long 97°41'39", at streamflow station 08158000 Colorado River at Austin.	Aug. 19	290.1	27.0	1,990	-	550	Cross section was uniform-- sand and gravel. Rocks and rifle control below gage.
Walnut Creek	Lat 30°15'58", long 97°39'24", at partial-record station 08158640 Walnut Creek at Southern Pacific RR, Austin.	Aug. 19	a286.7	25.7	-	43.5	713	Sand and gravel bar 400 ft below gage 1.73 mi upstream from Colorado River.
Onion Creek	Lat 30°11'20", long 97°37'06", at discontinued site 08159100 Onion Creek below Del Valle.	Aug. 19	a274.8	27.7	-	4.45	652	Channel at State Hwy 71. Sandy loam 4.25 mi up- stream from Colorado River.
Colorado River	Lat 30°10'02", long 97°24'09", at Farm Road 969 near Utley.	Aug. 19	221.6	28.0	1,780	-	592	Cross section section prob- ably sandy loam and gravel.
.....Do.....	Lat 30°06'20", long 97°19'08", at 08159200 Colorado River at Bastrop.	Aug. 19	236.7	29.0	1,850	-	245	Cross section was sand.
Gazley Creek	Lat 30°00'35", long 97°09'54", at Farm Road 2571 at Smithville.	Aug. 20	a212.0	27.0	-	1.10	798	Cross section was mud 0.22 mi upstream from Colorado River.
Colorado River	Lat 30°01'02", long 97°08'41", at new bridge on State Hwy 71 at Smithville.	Aug. 20	210.0	29.0	1,760	-	609	Cross section was sandy loam and gravel.
.....Do.....	Lat 29°53'45", long 96°52'15", at discontinued partial-record site 08160500 Colorado River at La Grange.	Aug. 20	174.5	30.7	1,760	-	598	Cross section was sand and gravel.
Buckners Creek	Lat 29°51'56", long 96°55'59", at Farm Road 609 near La Grange.	Aug. 20	a175.5	30.2	-	.15	580	Estimated discharge. Cross section was sandy loam 4.55 mi upstream from Colorado River.
Colorado River	Lat 29°43'09", long 96°34'16", at 08160700 Colorado River above Columbus.	Aug. 20	143.6	31.0	1,720	-	624	Cross section was sand drift and potholes.
Cummins Creek	Lat 29°44'50", long 96°33'06", at Farm Road 109 near Columbus.	Aug. 20	a137.5	27.0	-	1.77	687	Upstream 5.95 mi from Colo- rado River.
Colorado River	Lat 29°42'22", long 96°32'12", at 08161000 Colorado River at Columbus.	Aug. 20	135.1	32.5	1,880	-	590	
.....Do.....	Lat 29°34'48", long 96°25'03", at U.S. Hwy 90 at bridge near Altair.	Aug. 20	113.4	31.5	1,860	-	626	Cross section was sand and gravel, drift island, and potholes.
.....Do.....	Lat 29°27'12", long 96°23'48", at Farm Road 950 near Garwood.	Aug. 20	102.9	35.0	1,090	-	595	
.....Do.....	Lat 29°20'09", long 96°11'54", at Farm Road 960 near Glen Flora.	Aug. 21	75.9	30.0	1,000	-	620	Cross section was firm sand and gravel.
.....Do.....	Lat 29°18'32", long 96°06'13", at 08162000 Colorado River at Wharton.	Aug. 21	66.6	30.8	881	-	625	Cross section was sand.

a River miles.

## LOW-FLOW INVESTIGATION

## COLORADO RIVER BASIN

Location and description of data-collection sites, Colorado River and tributaries, water year 1985--Continued								
Stream	Location	Date 1985	River miles above mouth	Water temp. (°C)	Discharge (ft <sup>3</sup> /s) main tribu- stream tary		Specific conductance (micro- siemens 25°C)	Remarks
Jones Creek	Lat 29°09'08", long 96°03'45", at county road near Lane City.	Aug. 20	a48.3	29.2	-	8.17	608	Cross section was sandy loam with gravel and sand 2.94 mi upstream from Colorado River.
Blue Creek	Lat 29°07'39", long 96°03'35", at county road near Lane City.	Aug. 20	a41.9	31.5	-	44.1	620	Cross section was silt 10.5 mi upstream from Colorado River.
Colorado River	Lat 28°58'26", long 96°00'44", at 08162500 Colorado River near Bay City.	Aug. 21	32.5	26.1	459	-	598	Cross section was sand.

a River miles at mouth.

Because the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than continuous stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage of those events. The data collected for special reasons are called measurements at miscellaneous sites.

Streamflow data collected at partial-record stations where water-quality data other than observations of water temperature are not obtained are presented in two tables. The first is a table of discharge measurements at low-flow partial-record stations; the second is a table of annual maximum stage and (or) discharge at crest-stage stations. Discharge measurements made at miscellaneous sites for both low and high flows are given in a third table. Discharge measurements and water-quality data collected at partial-record stations are presented in downstream order in the section of this report entitled "Gaging-station records."

#### Low-flow partial-record stations

Measurements of streamflow at low-flow partial-record stations that are not published in the gaging-station section are given in the following table. Most of the measurements of low flow were made during periods when streamflow was sustained primarily by ground-water discharge. These measurements, when correlated with the simultaneous discharge of a nearby stream where continuous records are available, will indicate the low-flow potential of the stream. The years listed in the column headed "Period of record" identifies the water years in which measurements were made at the same or at practically the same site.

Discharge measurements made at low-flow partial-record station during water year 1985

Discharge measurements made at low-flow partial-record station during water year 1985						
Station no.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (ft <sup>3</sup> /s)
Colorado River basin						
08129500	Dove Creek Spring near Knickerbocker, Tex.	Lat 31°11'06", long 100°43'51", Irion County, at headquarters ranchhouse, 500 ft upstream from Dove Creek, 1.8 mi upstream from Stilson Dam on Dove Creek, and 8.5 mi southwest of Knickerbocker.	(a)	1944-58†, 1959-85	10-18-84 12- 3-84 1-22-85 3- 7-85 4-19-85 5-29-85 6-25-85 8-14-85	10.3 8.23 11.1 19.37 9.08 11.7 10.1 10.5
08143900	Springs at Fort McKavett, Tex.	Lat 30°50'03", long 100°05'37", Menard County, at Fort McKavett.	(a)	1902, 1905, 1922, 1942, 1948-49, 1951-52, 1955-56, 1958-85	1-25-85 8-22-85	17.0 12.5
08146500	San Saba Springs, at San Saba, Tex.	Lat 31°11'44", long 98°42'42", San Saba County, 150 ft upstream from bridge on U.S. Highway 190 at San Saba and 0.8 mi east of courthouse.	(a)	1939, 1952, 1957, 1959-85	2-27-85 7- 9-85	8.84 9.11
08149400	South Llano River near Telegraph, Tex.	Lat 30°15'43", long 99°56'01", Edwards County, 3.7 mi upstream from Paint Creek, 5.7 mi south of Telegraph, and 18.7 mi southwest of Junction.	(a)	1939, 1952, 1956, 1959-85	1-25-85 7-11-85	22.9 14.6
08149500	Seven Hundred Springs near Telegraph, Tex.	Lat 30°16'12", long 99°55'22", Edwards County, about 3 mi upstream from Paint Creek, about 5 mi south of Telegraph, and about 18 mi southwest of Junction.	(a)	1939, 1952, 1955-56, 1959-85	1-25-85 7-11-85	21.0 14.7
08155400	Barton Creek above Barton Springs at Austin, Tex.	Lat 30°15'48", long 97°46'19", Travis County, just upstream from upper dam of Barton Creek swimming pool in Zilker Park and upstream from all springs known as Barton Springs at Austin.	125	1919-85	1-28-85 5-31-85 7-10-85	95.6 0 2.48
Guadalupe River basin						
08168000	Hueco Springs near New Braunfels, Tex.	Lat 29°45'33", long 98°08'23", Comal County, two springs located 400 and 500 ft west of the Guadalupe River, 600 ft downstream from the mouth of Elm Creek, and 4.2 mi north of New Braunfels.	(a)	1944-85	10-16-84 12-10-84 1-17-85 2-25-85 4-16-85 6- 4-85 7-16-85 9-12-85	9.9 0 69.0 81.0 90.0 40.0 94.0 67.0

† Operated as a continuous-record station.

a Not applicable.

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at low-flow partial-record stations during water year 1985--Continued						
Station no.	Station name	Location	Drainage area (sq mi)	Period of record	Measurements	
					Date	Discharge (ft <sup>3</sup> /s)
Guadalupe River basin--Continued						
08168600	Bliders Creek at New Braunfels, Tex.	Lat 29°43'14", long 98°07'23", Comal County, at Grove Avenue crossing in northwest New Braunfels and 0.25 mi upstream from mouth.	-	1962-85	1-30-85 7-16-85	0 0
08168700	Panther Canyon at New Braunfels, Tex.	Lat 29°42'47", long 98°08'14", Comal County, at Landa Park Drive crossing in Landa Park at New Braunfels.	-	1962-85	1-30-85 7-16-85	0 0
08168800	Dry Comal Creek at New Braunfels, Tex.	Lat 29°41'52", long 98°08'11", Comal County, at Floral Avenue crossing in New Braunfels, 0.6 mi upstream from Missouri Pacific Railroad Co. bridge, and 0.9 mi upstream from mouth.	-	1962-85	1-30-85 7-16-85	1.3 3.2
Nueces River basin						
08204000	Leona River spring flow near Uvalde, Tex.	Lat 29°09'15", long 99°44'35", Uvalde County, at old road crossing on White's Ranch, 2.0 mi downstream from Cooks Slough, and 4.7 mi south-east of Uvalde.	(a)	1935-65†, 1966-85	10-22-84 12-12-84 1-10-85 3- 5-85 4-16-85 6- 7-85 8- 2-85 9-25-85	0 0 0 10 13 8.1 3.6 7.9
Rio Grande basin						
08425500	Phantom Lake Spring near Toyahvale, Tex.	Lat 30°56'01", long 103°50'43", Jeff Davis County, 375 ft downstream from source of spring, 3.5 mi southwest of Toyahvale, and 7.0 mi southwest of Balmorhea.	(a)	1931-33†, 1942-66†, 1967-85†	10-11-84 11- 7-84 1- 8-85 3- 5-85 5- 1-85 6- 5-85 7-31-85 8-27-85	3.18 3.80 2.82 2.26 1.18 1.11 .81 .48
08427000	Giffin Springs at Toyahvale, Tex.	Lat 30°56'51", long 103°47'19", Reeves County, 2,000 ft northwest of post office in Toyahvale.	(a)	1919, 1922-23, 1925, 1932-33†, 1941-85	1- 8-85 7-31-85	3.10 4.03
08427500	San Solomon Springs at Toyahvale, Tex.	Lat 30°56'34", long 103°47'16", Reeves County, on South Canal at Toyahvale, 540 ft downstream from headgate at pool of springs, and 4.0 mi southwest of Balmorhea.	(a)	1931-33†, 1941-65†, 1966-85	10-11-84 11- 7-84 1- 8-85 3- 5-85 5- 1-85 6- 5-85 7-31-85 8-27-85	32.4 28.3 23.7 28.6 32.3 35.0 24.9 26.8
08456300 c/	Las Moras Springs at Brackettville, Tex.	Lat 29°18'33", long 100°25'13", Kinney County, in springflow pool at Brackettville, 160 ft south of U.S. Highway 90, and 1,550 ft upstream from bridge on Brackettville-Fort Clark Road.	(a)	1896, 1899-1900, 1902, 1904-06, 1910, 1912, 1925, 1928, 1951-85	10-23-84 11- 6-84 12-11-84 1- 8-85 2-12-85 3-12-85 4-16-85 5-14-85 6-11-85 7- 9-85 8-13-85 9-10-85	12.0 11.0 9.9 40.0 33.0 29.0 22.0 19.0 14.0 38.0 25.0 14.0

† Operated as a continuous-record station.

a Not applicable.

c Records were furnished by the International Boundary and Water Commission.



## Crest-stage partial-record stations

The following table contains annual maximum stage and (or) discharge at partial-record stations operated primarily for the purpose of defining the flooding characteristics of the streams. At stations where discharge is given, or is footnoted "to be determined", a stage-discharge relation has been, or will be, defined by discharge measurements obtained by current meter or by indirect procedures. Water-stage recorders are located at these flood-hydrograph stations to facilitate complete hydrograph definition. At stations where only the maximum stage is given (discharge column is dashed), data are generally collected for use in stage-frequency studies of flood-profile definition. Gages at these stations usually consist of a device that will register the peak stage occurring between inspections of the gage. The years used in the column "Period of record" identify the years in which the annual maximum has been determined.

Annual maximum stage and (or) discharge during water year 1985							
Station no.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (ft /s)
Colorado River basin							
08142000	Hords Creek at Coleman, Tex.	Lat 31°50'50", long 99°25'25", Coleman County, on right bank in city park, 1,250 ft downstream from bridge on U.S. Highways 84 and 283 and State Highway 206, 1 mi north of courthouse in Coleman, 3.9 mi downstream from Bachelor Creek, 12 mi downstream from Hords Creek Dam, and at mile 14.3.	107	1941-70†, 1971-85	12-31-84	2.38	230
08155550	West Bouldin Creek at Riverside Drive, Austin, Tex.	Lat 30°15'49", long 97°45'17", Travis County, on upstream side of eastbound bridge on Riverside Drive in Austin.	3.12	1975-85	10-10-84	4.70	1,130
08158100	Walnut Creek at Farm road 1325 near Austin, Tex.	Lat 30°24'35", long 97°42'41", Travis County, on downstream side of bridge on Farm Road 1325 and 9.5 mi north of the State Capitol Building in Austin.	12.6	1975-85	10-10-84	10.41	1,564
08158300	Ferguson Branch at Springdale Road, Austin, Tex.	Lat 30°19'53", long 97°39'12", Travis County, on downstream side of bridge on Springdale Road in Austin.	1.63	1975-85	10-21-84	8.69	394
08158380	Little Walnut Creek at Georgian Drive, Austin, Tex.	Lat 30°21'15", long 97°41'52", Travis County, on left upstream side of bridge on Georgian Drive in Austin.	5.22	1983-85	9-14-85	11.90	3,490
08158880	Boggy Creek (South) at Circle S Road, Austin, Tex.	Lat 30°10'50", long 97°46'55", Travis County, on downstream side of bridge on Circle S Road in Austin.	3.58	1976-85	10-10-84	10.09	2,670
08158930	Williamson Creek at Manchaca Road, Austin, Tex.	Lat 30°13'16", long 97°47'36", Travis County, on downstream side of bridge on Manchaca Road in Austin.	19.0	1975-85	10-10-84	13.00	5,940
08159180	Dogwood Creek near McDade, Tex.	Lat 30°14'29", long 97°17'03", Bastrop County, in Camp Swift and 4 mi southwest of McDade.	.53	1980-85	12-31-84	6.20	96.0
08159185	Dogwood Creek at Highway 95 near McDade, Tex.	Lat 30°13'49", long 97°19'03", Bastrop county, at bridge on State Highway 95 and 5.7 mi southwest of McDade.	5.03	1980-85	12-31-84	4.50	125
Guadalupe River basin							
08169500	Guadalupe River at New Braunfels, Tex.	Lat 29°41'52", long 98°06'23", Comal County, Comal Mills in New Braunfels and 0.4 mi upstream from Interstate Highway 35.	1,652	1898-1902, 1915-27†, 1974-85	4-20-77 9-13-78 7-27-79 6- 6-85	13.00 12.50 14.45 12.67	a7,680 a5,950 a12,200 6,500
08173900	Guadalupe River at Gonzales, Tex.	Lat 29°29'49", long 97°27'17", Gonzales County, at Gonzales Hydro Station in Gonzales and 1.4 mi upstream from U.S. Highway 183.	-	1977-85	6- 8-85	22.70	12,400
08177820	Olmos Creek at Hildebrand Street, San Antonio, Tex.	Lat 29°27'56", long 98°28'01", Bexar County, at upstream side of bridge on Hildebrand Street, 0.8 mi downstream from Olmos dam in San Antonio.	34.8	1980-85	7- 3-85	8.75	1,370
08177900	San Antonio River at Navarro Street, San Antonio, Tex.	Lat 29°25'50", long 98°29'24", Bexar County, at bridge on Navarro Street in San Antonio.	-	1973-85	7- 3-85	d637.26	-

† Operated as a continuous-record station.

a Revised.

d Elevation, in feet, above National Geodetic Vertical Datum of 1929.

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Annual maximum stage and (or) discharge during water year 1985--Continued							
Station no.	Station name	Location	Drainage area (sq mi)	Period of record	Annual maximum		
					Date	Gage height (feet)	Dis-charge (ft <sup>3</sup> /s)
Guadalupe River basin--Continued							
08177920	San Antonio River at Dolorosa Street, San Antonio, Tex.	Lat 29°25'24", long 98°29'32", Bexar County, just downstream from Dolorosa Street in San Antonio.	-	1980-85	7-13-85	22.05	-
08178100	San Pedro Creek at Santa Rosa Street, San Antonio, Tex.	Lat 29°25'51", long 98°29'49", Bexar County, at bridge on Santa Rosa Street in San Antonio.	-	1973-85	10- 7-84	d647.07	-
08178350	Martínez Creek at Fredericksburg Road, San Antonio, Tex.	Lat 29°27'22", long 98°31'04", Bexar County, at bridge on Fredericksburg Road in San Antonio.	-	1973-85	6- 6-85	d682.24	-
08178400	Alazan Creek at West Martin Street, San Antonio, Tex.	Lat 29°25'51", long 98°30'51", Bexar County, at bridge on West Martin Street in San Antonio.	-	1973-85	6- 6-85	d636.34	-
08178450	Apache Creek at South Zarzamora Street, San Antonio, Tex.	Lat 29°24'47", long 98°31'42", Bexar County, at bridge on South Zarzamora Street in San Antonio.	-	1973-85	10-15-76 9- 7-78 6- 1-79 5- 1-80 6-13-81 10- 7-81 7- 5-83 5-19-84 6- 6-85	ad629.52 ad630.18 ad628.71 ad626.62 ad631.14 ad630.31 ad626.76 ad625.56 d628.13	- - - - - - - - -
08178500	San Pedro Creek at Furnish Street, San Antonio, Tex.	Lat 29°24'22", long 98°30'38", Bexar County, at bridge on Furnish Street in San Antonio.	-	1973-85	10- 7-84	d605.94	-
08178550	San Antonio River at Ashley Street (Berg's Mill), San Antonio, Tex.	Lat 29°20'04", long 98°27'20", Bexar County, at bridge on Ashley Street in San Antonio.	-	1973-85	6- 6-85	d516.23	-
Nueces River basin							
08207220	Rutledge Hollow at 7th Street, Poteet, Tex.	Lat 29°02'07", long 98°34'18", Atascosa County, in city of Poteet at 7th Street and 2.0 mi above Atascosa River.	9.74	1979-85	9-30-85	421.09	-
08207300	Atascosa River at U.S. Highway 281, Pleasanton, Tex.	Lat 28°57'44", long 98°28'51", Atascosa County, at bridge on U.S. Highway 281 in Pleasanton.	-	1973-85	10- 9-84	344.27	-
08211500	Nueces River at Calallen, Tex.	Lat 27°52'34", long 97°37'32", Nueces County, at the Cunningham pumping station in Corpus Christi, and 0.4 mi upstream from Calallen dam.	16,920	e1915-50, 1983-85	10-20-84	8.99	3,520
San Fernando Creek basin							
08212300	Tranquitas Creek at Kingsville, Tex.	Lat 27°31'33", long 97°52'02", Kleberg County, at bridge on U.S. Highway 77 Business Route in Kingsville, 4.9 mi above San Fernando Creek, and 5.9 mi downstream from Tranquitas Dam.	48.5	1965-82, 1984-85	10- 8-84	2.90	-

a Revised.

d Elevation, in feet, above National Geodetic Vertical Datum of 1929.

e Gage heights only during 1918-50.

## DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

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Measurements of streamflow at points other than gaging stations of partial-record stations are given in the following table:

Discharge measurements made at miscellaneous sites during water year 1985						
Stream	Tributary to	Location	Drainage area (sq mi)	Measured previously (water years)	Measurements	
					Date	Discharge (ft <sup>3</sup> /s)
Guadalupe River basin						
San Antonio Springs	San Antonio River	Lat 29°27'56", long 98°28'04", Bexar County, just below Hildebrandt Street in San Antonio, Tex.	-	1951-52, 1959-62, 1972, 1974-77, 1979-85	2-12-85 7-26-85	0 0
San Pedro Springs	San Pedro Creek	Lat 29°26'42", long 98°30'06", Bexar County, at San Pedro Park in San Antonio, Tex.	-	1933-35, 1951-52, 1958-61, 1966, 1971, 1974-77, 1979-85	2-12-85 7-26-85	.27 1.9
Rio Grande basin						
Mud Springs <u>1/</u>	Mud Creek	Lat 29°27'10", long 100°37'30", Kinney County, on Mays Ranch and about 16 mi northwest of Brackettville, Tex.	-	1939-41, 1952-53, 1962, 1965-85	10-23-84 11- 6-84 12-11-84 1- 8-85 2-12-85 3-12-85 4-16-85 5-14-85 6-11-85 7- 9-85 8-13-85 9-10-85	12.0 12.0 11.0 9.1 11.0 12.0 11.0 11.0 11.0 9.7 9.1 7.5
Pinto Springs <u>1/</u>	Pinto Creek	Lat 29°24'10", long 100°27'15", Kinney County, on C. C. Belcher Ranch and 7.5 mi northwest of Brackettville, Tex.	-	1939-41, 1952-53, 1965-85	10-23-84 11- 6-84 12-11-84 4-16-85 5-14-85 6-11-85 7- 9-85 8-13-85 9-10-85	0 0 0 0 0 0 0 0 0

1/ Measurements by International Boundary and Water Commission.



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## FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI). This report contains both the inch-pound and SI unit equivalents in the station manuscript descriptions.

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	$2.54 \times 10^1$	millimeters (mm)
	$2.54 \times 10^{-2}$	meters (m)
feet (ft)	$3.048 \times 10^{-1}$	meters (m)
miles (mi)	$1.609 \times 10^0$	kilometers (km)
<i>Area</i>		
acres	$4.047 \times 10^3$	square meters (m <sup>2</sup> )
	$4.047 \times 10^{-1}$	square hectometers (hm <sup>2</sup> )
	$4.047 \times 10^{-3}$	square kilometers (km <sup>2</sup> )
square miles (mi <sup>2</sup> )	$2.590 \times 10^0$	square kilometers (km <sup>2</sup> )
<i>Volume</i>		
gallons (gal)	$3.785 \times 10^0$	liters (L)
	$3.785 \times 10^0$	cubic decimeters (dm <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic meters (m <sup>3</sup> )
million gallons	$3.785 \times 10^3$	cubic meters (m <sup>3</sup> )
	$3.785 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
cubic feet (ft <sup>3</sup> )	$2.832 \times 10^1$	cubic decimeters (dm <sup>3</sup> )
	$2.832 \times 10^{-2}$	cubic meters (m <sup>3</sup> )
acre-feet (acre-ft)	$1.233 \times 10^3$	cubic meters (m <sup>3</sup> )
	$1.233 \times 10^{-3}$	cubic hectometers (hm <sup>3</sup> )
	$1.233 \times 10^{-6}$	cubic kilometers (km <sup>3</sup> )
<i>Flow</i>		
cubic feet per second (ft <sup>3</sup> /s)	$2.832 \times 10^1$	liters per second (L/s)
	$2.832 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$2.832 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
gallons per minute (gal/min)	$6.309 \times 10^{-2}$	liters per second (L/s)
	$6.309 \times 10^{-2}$	cubic decimeters per second (dm <sup>3</sup> /s)
	$6.309 \times 10^{-5}$	cubic meters per second (m <sup>3</sup> /s)
million gallons per day	$4.381 \times 10^1$	cubic decimeters per second (dm <sup>3</sup> /s)
	$4.381 \times 10^{-2}$	cubic meters per second (m <sup>3</sup> /s)
<i>Mass</i>		
tons (short)	$9.072 \times 10^{-1}$	megagrams (Mg) or metric tons



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