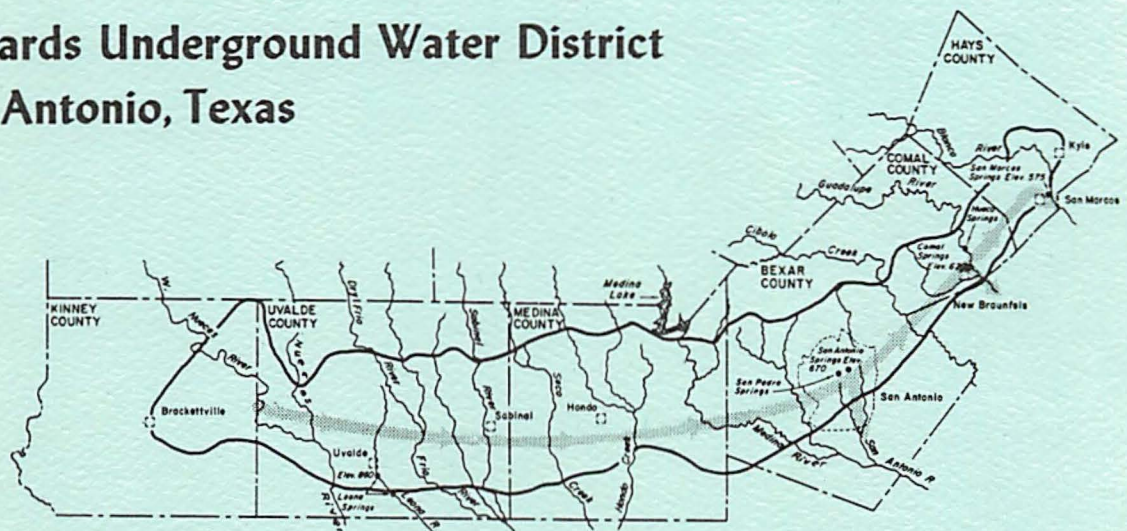


Records of Ground-Water Recharge, Discharge, Water Levels, and Chemical Quality of Water for the Edwards Aquifer in the San Antonio Area, Texas, 1934-81.

Bulletin 41

Edwards Underground Water District San Antonio, Texas



Prepared in Cooperation with the U. S. Geological Survey
and the Texas Department of Water Resources

EDWARDS UNDERGROUND WATER DISTRICT

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San Antonio, Texas 78205

BULLETIN 41

COMPILATION OF HYDROLOGIC DATA FOR THE EDWARDS AQUIFER,
SAN ANTONIO AREA, TEXAS, 1981, WITH 1934-81 SUMMARY

Compiled by

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Prepared by the U.S. Geological Survey in cooperation
with the Edwards Underground Water District,
the City Water Board of San Antonio, and
the Texas Department of Water Resources

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CONTENTS

	Page
Abstract	14
Introduction	15
Previous and related studies.	18
Well-numbering system	19
Precipitation.	20
Ground-water recharge.	20
Ground-water discharge	21
Water levels and ground-water storage.	22
Water quality for wells and springs.	25
Surface-water data	25
Selected references.	28

ILLUSTRATIONS

	Page
Figure 1. Map showing hydrologic features in the San Antonio area . . .	16
2. Map showing drainage basins and data-collection sites in the San Antonio area.	17
3. Graph showing accumulated recharge and discharge, 1934-81 . .	23
4. Map showing locations of water-quality data-collection sites for wells and springs in the San Antonio area	26

TABLES

	Page
Table 1. Annual and long-term average precipitation at selected stations, 1978-81	35
2. Calculated annual recharge to the Edwards aquifer by basin, 1934-81.	36
3. Calculated annual discharge from the Edwards aquifer by county, 1934-81	37
4. Calculated discharge from the Edwards aquifer by county and by water use, 1981.	38
5. Annual high and low water levels in selected observation wells in the Edwards aquifer, 1978-81	39
6. Water levels in observation wells in the Edwards aquifer, 1981.	40
7. Water-quality data for wells and springs in the Edwards aquifer, 1981	46
8. Summary of regulations for selected water-quality con- stituents and properties for public water systems	58
9. Streamflow, spring flow, reservoir contents, and water- quality data for streams, October 1980 to September 1981.	59

DEFINITIONS OF TERMS

Technical terms and abbreviations as used in this report are defined as follows:

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, about 326,000 gallons, or 1,233 cubic meters.

bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped in colonies. Some bacteria cause disease, 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 48 hours at 35°C (degrees Celsius). In the laboratory these bacteria are defined as the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C $\pm$ 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL (milliliters) of sample.

fecal coliform bacteria are bacteria that are present in the intestines 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 which produce blue colonies within 24 hours when incubated at 44.5°C $\pm$ 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 in intestines 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 $35^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ on M-enterococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

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.

cfs-day is the volume of water represented by 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 2,447 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.

color unit is produced by 1 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, and unless otherwise indicated is computed on the basis of a level pool. The computation does not include bank storage.

control designates a feature downstream from a 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.

cubic foot per second per square mile (CFSM) 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.

cubic foot per second (FT³/S, ft³/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second. This rate is equivalent to approximately 7.48 gallons per second, 448.8 gallons per minute, or 0.02832 cubic meter per second.

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- μ m (micrometer) 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.

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 location. Figures of drainage area given herein include all closed basins or noncontributing areas within the area, unless otherwise noted.

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.HT.) 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.

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.

methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

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 1 milligram per liter.

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

National Geodetic Vertical Datum of 1929 (NGVD) 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. 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.

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.

pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides and herbicides, which control insects and plants, respectively, and are the two categories reported.

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.

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.

sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. This ratio should be known especially for water used for irrigation.

solute is any substance derived from the atmosphere, vegetation, soil, or rocks 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 micromhos 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 concentration in the water. Commonly, the concentration of dissolved solids (in milligrams per

liter) is about 55 percent for wells and 65 percent for streams. This relation is not constant from well to well or 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 the amount 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.

suspended, recoverable refers to 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- μ 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 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 would be 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 refers to the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45- μ 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.

total refers to 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 water-suspended sediment mixture and that the analytical method determines all of the constituent in the sample.)

total, recoverable refers to 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 would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual basic-data reports.

WRD is used as an abbreviation for "Water Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

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

METRIC CONVERSIONS

The inch-pound units of measurement used in this report may be converted to metric units by using the following conversions factors:

<u>From</u>	<u>Multiply by</u>	<u>To obtain</u>
acre-feet (acre-ft)	1233	cubic meters (m ³)
	0.001233	cubic hectometers (hm ³)
cubic feet per second (ft ³ /s)	0.02832	cubic meters per second (m ³ /s)
feet (ft)	0.3048	meters (m)
feet per mile (ft/mi)	0.189	meters per kilometer (m/km)
inches (in)	25.4	millimeters (mm)
miles (mi)	1.609	kilometers (km)
million gallons per day (Mgal/d)	0.04381	cubic meters per second (m ³ /s)
square miles (mi ²)	2.590	square kilometers (km ²)

To convert °C (degrees Celsius) to °F (degrees Fahrenheit): °F = 9/5 x °C + 32.

COMPILATION OF HYDROLOGIC DATA FOR THE EDWARDS AQUIFER,
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ABSTRACT

The average annual ground-water recharge to the Edwards aquifer in the San Antonio area, Texas, from 1934 through 1981, was 612,400 acre-feet. The recharge in 1981 was 1,448,400 acre-feet, which is the third highest annual recharge since 1934. A maximum annual recharge of 1,711,200 acre-feet occurred in 1958, and a minimum annual recharge of 43,700 acre-feet occurred in 1956.

The calculated annual discharge by wells and springs in 1981 was 794,400 acre-feet. Annual discharge by wells and springs ranged from a maximum of 960,900 acre-feet in 1977 to a minimum of 388,800 acre-feet in 1955. The annual discharge by wells was 387,100 acre-feet in 1981.

Although water levels in many of the wells in the Edwards aquifer fluctuated near the midpoint between record high and low levels during the first 5 months of 1981, the volume of ground water in storage in the aquifer was above average for most of the year.

Analyses of water samples from 56 wells and 3 springs show that the water is of a significantly better quality than the level established for public water systems.

INTRODUCTION

This annual compilation of the records of ground-water recharge, discharge, water levels, and water quality for the Edwards aquifer and for surface-water data in the San Antonio area, Texas, is part of a continuing investigation by the U.S. Geological Survey in cooperation with the Edwards Underground Water District, the City Water Board of San Antonio, and the Texas Department of Water Resources.

The calculations of annual recharge are based on data collected from a network of streamflow-gaging stations and on assumptions that relate the runoff characteristics of gaged areas to ungaged areas (Puente, 1978). The basic approach is a water-balance equation in which recharge within a stream basin is the difference between measured streamflow above and below the infiltration area plus the estimated runoff within the infiltration area. Hydrologic features in the San Antonio area are shown in figure 1, and the drainage basins and data-collection sites are shown in figure 2.

Annual discharge is compiled from: (1) Data collected by the Texas Department of Water Resources on pumpage for municipal, military, and industrial use; (2) calculations of pumpage for irrigation as determined from records of power consumption and irrigated acreage; and (3) Geological Survey records of spring flow at points of discharge.

Periodic measurements have been made in observation wells in the Edwards aquifer since 1929 to determine changes in ground-water storage in the aquifer. The first continuous water-stage recorders were installed on some observation wells during the late 1930's. During 1981, periodic water-level measurements were made in 18 wells, and continuous water-stage recorders were in operation on 16 wells.

Surface-water data for Texas for the 1981 water year are presented in three volumes, appropriately identified by river basins. Data in each volume consist of records of stage, discharge, and water quality of streams and canals and records of stage, contents, and water quality of lakes and reservoirs. Records for a few pertinent stations in bordering states also are included. These data represent that part of the National Water Data System operated by the Geological Survey in cooperation with State and Federal agencies in Texas.

Previous and Related Studies

The Geological Survey and the Texas Department of Water Resources have been collecting hydrologic and geologic data in the San Antonio area on a continuing basis since 1929. Comprehensive reports of previous investigations include Arnow (1959); Bennett and Sayre (1962); DeCook (1963); Garza (1962, 1966); George (1952); Holt (1959); Lang (1954); Livingston, Sayre, and White (1936); MacIay and Small (1976); Petitt and George (1956); and Welder and Reeves (1962). The Texas Department of Water Resources has conducted extensive hydrologic and geologic studies to provide data for construction of a digital model of the aquifer.

In 1968, the Geological Survey, in cooperation with the Texas Department of Water Resources and the Edwards Underground Water District, began a continuing program to collect historical-reference data for detecting pollution and for determining changes in the quality of water in the Edwards aquifer. The results of the study from August 1968 to August 1969 were reported by Reeves and Blakey (1970), and the results from August 1968 to April 1972 were reported by Reeves, Rawson, and Blakey (1972). A progress report for August 1968 to January 1975 was made by Reeves (1976). Compilations of water-quality data for February 1975 to September 1977 were reported by Reeves (1978), for October

1977 to September 1978 and October 1978 to December 1979 were reported by Reeves, Maclay, Grimm, and Davis (1980, 1981), and for January 1980 to December 1980 were reported by Reeves, Maclay, and Davis (1982).

In related studies, the Geological Survey, in cooperation with the Texas Department of Water Resources and the City of San Antonio, collected data from 1969 to 1980 on the quantity and quality of urban runoff in San Antonio. Data collected in the urban study have been reported in an annual series of hydrologic-data reports by Land (1971-72), Steger (1973-75), Gonzalez (1976), Harmsen (1977-78), Perez and Harmsen (1980), and Perez (1981-83).

Additional reports on the geology and hydrology of the San Antonio area as well as reports on recharge, discharge, water levels, and water quality for the Edwards aquifer are given in the section "Selected References."

Well-Numbering System

The well-numbering system in Texas was developed by the Texas Department of Water Resources for use throughout the State. Under this system, each 1-degree quadrangle is given a number consisting of two digits. These are the first two digits in the well number. Each 1-degree quadrangle is divided into 7-1/2-minute quadrangles which are given two-digit numbers from 01 to 64. These are the third and fourth digits of the well number. Each 7-1/2-minute quadrangle is divided into 2-1/2-minute quadrangles which are given a single-digit number from 1 to 9. This is the fifth digit of the well number. Finally, each well within a 2-1/2-minute quadrangle is given a two-digit number in the order in which it was inventoried, starting with 01. These are the last two digits of the well number.

In addition to the seven-digit well number, a two-letter prefix is used to identify the county. The prefix for each county in the San Antonio area is as follows: AY, Bexar; DX, Comal; LR, Hays; TD, Medina; and YP, Uvalde.

Each water-level observation well is also identified by a 15-digit number based on latitude and longitude and by a local number that is provided for continuity with older reports. The first 6 digits of the 15-digit number are degrees, minutes, and seconds of north latitude; the next 7 digits are degrees (including a leading 0 for those less than 100), minutes, and seconds of west longitude; and the final 2 digits are sequential numbers assigned in the order in which the wells are established in that 1-second quadrangle. The second seven-digit number is the State well number. Where there is a number inside parentheses, it is a number assigned to the well in some publication prior to 1978.

PRECIPITATION

The annual and long-term average precipitation at selected stations in the San Antonio area for 1978-81 are given in table 1. Annual rainfall in 1978 and 1980 was below average at most of the stations. Annual rainfall in 1979 and 1981 was above average at most of the stations in the San Antonio area as a result of significant storms in March, April, and June 1979 and April, June, and October 1981.

GROUND-WATER RECHARGE

Recharge to the Edwards aquifer is derived mainly by seepage from streams that cross the outcrop of the aquifer (fig. 1). Some recharge is derived from direct infiltration of precipitation on the outcrop.

The calculated annual recharge by basins for 1934-81 and the average annual recharge for 1934-81 are given in table 2. Recharge in the Guadalupe River basin is not included because the amount of net recharge to the aquifer is not significant.

The annual recharge for 1934-81 ranged from 43,700 acre-feet in 1956 to 1,711,200 acre-feet in 1958. The average annual recharge for 1934-81 was 612,400 acre-feet. Recharge in 1981 was 1,448,400 acre-feet, which is the third highest annual recharge since 1934.

GROUND-WATER DISCHARGE

The calculated discharge, by county, from the Edwards aquifer during 1934-81 is given in table 3. The calculated discharge by county and by water use in 1981 is given in table 4.

The discharge from springs was from San Marcos Springs in Hays County, Comal Springs in Comal County, San Antonio and San Pedro Springs in Bexar County, and Leona River Springs in Uvalde County. The calculated discharge from Leona River Springs includes underflow in the gravel underlying the springs.

The major discharge from wells was in Bexar, Uvalde, and Medina Counties, while the major spring flow was from Comal and Hays Counties. Many wells in Bexar County supplied water for municipal and military use. Other wells in Bexar County and most of the large wells in Uvalde and Medina Counties supplied water for irrigation of about 93,000 acres during 1981. The remaining discharge, principally from wells in Bexar County, was for industrial use, domestic supply, and miscellaneous uses.

The calculated total discharge from wells and springs in 1981 was 794,400 acre-feet (table 4). The discharge from wells declined from 491,100 acre-feet in 1980, which was a record high for 1934-80, to 387,100 acre-feet in 1981 because of above average rainfall throughout most of the area. In 1981, about 49 percent of the total discharge was from wells, and approximately 60 percent of this amount was discharge from wells in Bexar County. The discharge from wells in 1981 was 21 percent less than in 1980, while spring flow increased by about 24 percent. The total discharge from wells and springs in 1981 was about 3 percent less than in 1980 and about 32 percent more than the average discharge for 1934-80.

The relationship between accumulated recharge and discharge for 1934-81 is shown in figure 3.

WATER LEVELS AND GROUND-WATER STORAGE

Water levels have been measured periodically in selected observation wells in the Edwards aquifer since 1929 to determine changes in ground-water storage. During the late 1930's, continuous water-level recorders were installed on some of the observation wells.

Water levels in wells fluctuate mainly in response to change in ground-water storage in the aquifer. When recharge is greater than discharge, water levels rise, and flow of the springs increases; when discharge is greater than recharge, water levels decline, and spring flow decreases. In general, the water levels are lowest during the summer because of the increased withdrawals from wells.

The annual high and low water levels recorded in five selected observation wells in the artesian part of the aquifer during 1978-81 are given in table 5. The water levels in observation wells in 1981 are given in table 6. The measured and recorded data show that the water levels during the first 5 months of 1981 fluctuated near average conditions when compared with historically recorded high and low measurements. However, recharge from a major storm in June 1981 increased the amount of water in storage and caused the water levels to rise. The water levels in most of the wells then fluctuated above average conditions. The volume in storage in the Edwards aquifer was above average during most of 1981.

In 1981, 18 wells were measured periodically, and continuous recorders were in operation on 16 wells (fig. 2). Water levels in about 80 additional wells are measured annually in the San Antonio area by personnel of the Texas Department of Water Resources. Tabulations of current and historical water-level measurements are available on from the Texas Department of Water Resources in Austin, Texas. These records also are on file in the office of the Geological Survey in San Antonio, Texas.

Water-level measurements are reported in feet below land-surface datum (lsd) unless otherwise indicated. Water levels above land surface are indicated by a plus (+) sign. Water levels in wells equipped with recorders are reported every fifth day and at the end of the month (eom). If known, the altitude of the land surface above NGVD of 1929 is given in the well description.

WATER QUALITY FOR WELLS AND SPRINGS

The water-quality data-collection sites are shown in figure 4, which also shows the sites for which data are given in Reeves (1976, 1978). Although some of the wells are no longer in use, additional samples can be collected at most of the sites in order to detect any deterioration in water quality.

The results of the analyses of water samples that were collected from 56 wells and 3 springs in the Edwards aquifer during 1981 are given in table 7. The samples were analyzed for more than 50 properties or constituents, most of which affect the suitability of the water for domestic use. The analyses included determinations of the concentrations of bacteria; major inorganic constituents; minor elements, including heavy metals; and pesticides.

Analyses of samples from the wells and springs show that the water is of a significantly better quality than the level established for public water systems (table 8).

SURFACE-WATER DATA

Records of discharge (or stage) of streams and of contents (or stage) of lakes and reservoirs, and records of chemical quality, water temperature, and suspended-sediment data for streams are published in Geological Survey water-supply papers or in Geological Survey water-data reports. These reports may be seen in the libraries of principal cities of the United States or in the offices of the Water Resources Division of the Geological Survey.

Records of streamflow and contents of reservoirs and measurements of spring flow and water quality of streams and reservoirs for selected stations in the vicinity of the Edwards aquifer in the San Antonio area are given in

table 9. These data are used in the calculation of the annual recharge to the aquifer or in the calculation of the annual discharge from the aquifer.

Water-quality data collected at stations upstream from the recharge zone are used to evaluate the quality of recharge water for the aquifer. Data collected at stations in Bexar County provide streamflow and water-quality information for areas of different types of utilization and for floods of various magnitudes during all seasons of the year. Data-collection sites are shown in figure 2.

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Table 1.--Annual and long-term average precipitation at selected stations, 1978-81¹

Station	Precipitation (inches)				Long-term average	
	1978	1979	1980	1981	Inches	Years of record
Brackettville	19.04	16.34	18.33	28.73	20.87	90
Uvalde	18.48	32.35	23.05	26.24	24.75	78
Sabinal	21.28	31.44	22.67	30.19	25.92	58
Hondo	24.64	28.83	21.27	27.40	28.73	75
San Antonio	35.99	36.64	24.23	36.37	28.36	103
Boerne	35.17	39.97	29.02	41.05	33.21	85
New Braunfels	37.79	36.72	33.69	43.23	31.84	86
San Marcos	33.08	38.74	29.56	49.62	33.66	79

¹ Precipitation data from the U.S. Department of Commerce (1978-81).

Table 2.--Calculated annual recharge to the Edwards aquifer by basin, 1934-81
(in thousands of acre-feet)

Calendar year	Nueces-West Nueces River basin	Frio-Dry Frio River basin ¹	Sabinal River basin ¹	Area between Sabinal River and Medina River basins ¹	Medina Lake	Area between Cibolo Creek and Medina River basins ¹	Cibolo-Dry Comal Creek basin	Blanco River basin ¹	Total
1934	8.6	27.9	7.5	19.9	46.5	21.0	28.4	19.8	179.6
1935	411.3	192.3	56.6	166.2	71.1	138.2	182.7	39.8	1,258.2
1936	176.5	157.4	43.5	142.9	91.6	108.9	146.1	42.7	909.6
1937	28.8	75.7	21.5	61.3	80.5	47.8	63.9	21.2	400.7
1938	63.5	69.3	20.9	54.1	65.5	46.2	76.8	36.4	432.7
1939	227.0	49.5	17.0	33.1	42.4	9.3	9.6	11.1	399.0
1940	50.4	60.3	23.8	56.6	38.8	29.3	30.8	18.8	308.8
1941	89.9	151.8	50.6	139.0	54.1	116.3	191.2	57.8	850.7
1942	103.5	95.1	34.0	84.4	51.7	66.9	93.6	28.6	557.8
1943	36.5	42.3	11.1	33.8	41.5	29.5	58.3	20.1	273.1
1944	64.1	76.0	24.8	74.3	50.5	72.5	152.5	46.2	560.9
1945	47.3	71.1	30.8	78.6	54.8	79.6	129.9	35.7	527.8
1946	80.9	54.2	16.5	52.0	51.4	105.1	155.3	40.7	556.1
1947	72.4	77.7	16.7	45.2	44.0	55.5	79.5	31.6	422.6
1948	41.1	25.6	26.0	20.2	14.8	17.5	19.9	13.2	178.3
1949	166.0	86.1	31.5	70.3	33.0	41.8	55.9	23.5	508.1
1950	41.5	35.5	13.3	27.0	23.6	17.3	24.6	17.4	200.2
1951	18.3	28.4	7.3	26.4	21.1	15.3	12.5	10.6	139.9
1952	27.9	15.7	3.2	30.2	25.4	50.1	102.3	20.7	275.5
1953	21.4	15.1	3.2	4.4	36.2	20.1	42.3	24.9	167.6
1954	61.3	31.6	7.1	11.9	25.3	4.2	10.0	10.7	162.1
1955	128.0	22.1	0.6	7.7	16.5	4.3	3.3	9.5	192.0
1956	15.6	4.2	1.6	3.6	6.3	2.0	2.2	8.2	43.7
1957	108.6	133.6	65.4	129.5	55.6	175.6	397.9	76.4	1,142.6
1958	266.7	300.0	223.8	294.9	95.5	190.9	268.7	70.7	1,711.2
1959	109.6	158.9	61.6	96.7	94.7	57.4	77.9	33.6	690.4
1960	88.7	128.1	64.9	127.0	104.0	89.7	160.0	62.4	824.8
1961	85.2	151.3	57.4	105.4	88.3	69.3	110.8	49.4	717.1
1962	47.4	46.6	4.3	23.5	57.3	16.7	24.7	18.9	239.4
1963	39.7	27.0	5.0	10.3	41.9	9.3	21.3	16.2	170.7
1964	126.1	57.1	16.3	61.3	43.3	35.8	51.1	22.2	413.2
1965	97.9	83.0	23.2	104.0	54.6	78.8	115.3	66.7	623.5
1966	169.2	134.0	37.7	78.2	50.5	44.5	66.5	34.6	615.2
1967	82.2	137.9	30.4	64.8	44.7	30.2	57.3	19.0	466.5
1968	130.8	176.0	66.4	198.7	59.9	83.1	120.5	49.3	884.7
1969	119.7	113.8	30.7	84.2	55.4	60.2	99.9	46.6	610.5
1970	112.6	141.9	35.4	81.6	68.0	68.8	113.8	39.5	661.6
1971	263.4	212.4	39.2	155.6	68.7	81.4	82.4	22.2	925.3
1972	108.4	144.6	49.0	154.6	87.9	74.3	104.2	33.4	756.4
1973	190.6	256.9	123.9	286.4	97.6	237.2	211.7	82.2	1,486.5
1974	91.1	135.7	36.1	115.3	96.2	68.1	76.9	39.1	658.5
1975	71.8	143.6	47.9	195.9	93.4	138.8	195.7	85.9	973.0
1976	150.7	238.6	68.2	182.0	94.5	47.9	54.3	57.9	894.1
1977	102.9	193.0	62.7	159.5	77.7	97.9	191.6	66.7	952.0
1978	69.8	73.1	30.9	103.7	76.7	49.6	72.4	26.3	502.5
1979	128.4	201.4	68.6	203.1	89.4	85.4	266.3	75.2	1,117.8
1980	58.6	85.6	42.6	25.3	88.3	18.8	55.4	31.8	406.4
1981	205.0	365.2	105.6	252.1	91.3	165.0	196.8	67.3	1,448.4
AVERAGE	104.3	110.5	38.9	94.5	59.6	66.1	101.4	37.1	2612.4

¹ Includes recharge from gaged and ungaged areas within the basin.

² Average totals may not be identical because of rounding procedures.

Table 3.--Calculated annual discharge from the Edwards aquifer
by county, 1934-81
(in thousands of acre-feet)

Year	Kinney- Uvalde Counties	Medina County	Bexar County	Comal County	Hays County	Total	Total spring discharge	Total well discharge
1934	12.6	1.3	109.3	229.1	85.6	437.9	336.0	101.9
1935	12.2	1.5	171.8	237.2	96.9	519.6	415.9	103.7
1936	26.6	1.5	215.2	261.7	93.2	598.2	485.5	112.7
1937	28.3	1.5	201.8	252.5	87.1	571.2	451.0	120.2
1938	25.2	1.6	187.6	250.0	93.4	557.8	437.7	120.1
1939	18.2	1.6	122.5	219.4	71.1	432.8	313.9	118.9
1940	16.1	1.6	116.7	203.8	78.4	416.6	296.5	120.1
1941	17.9	1.6	197.4	250.0	134.3	601.2	464.4	136.8
1942	22.5	1.7	203.2	255.1	112.2	594.7	450.1	144.6
1943	19.2	1.7	172.0	249.2	97.2	539.3	390.2	149.1
1944	11.6	1.7	166.3	252.5	135.3	567.4	420.1	147.3
1945	12.4	1.7	199.8	263.1	137.8	614.8	461.5	153.3
1946	6.2	1.7	180.1	261.9	134.0	583.9	428.9	155.0
1947	13.8	2.0	193.3	256.8	127.6	593.5	426.5	167.0
1948	9.2	1.9	159.2	203.0	77.3	450.6	281.9	168.7
1949	13.2	2.0	165.3	209.5	89.8	479.8	300.4	179.4
1950	17.8	2.2	177.3	191.1	78.3	466.7	272.9	193.8
1951	16.9	2.2	186.9	150.5	69.1	425.6	215.9	209.7
1952	22.7	3.1	187.1	133.2	78.8	424.9	209.5	215.4
1953	27.5	4.0	193.7	141.7	101.4	468.3	238.5	229.8
1954	26.6	6.3	208.9	101.0	81.5	424.3	178.1	246.2
1955	28.3	11.1	215.2	70.1	64.1	388.8	127.8	261.0
1956	59.6	17.7	229.6	33.6	50.4	390.9	69.8	321.1
1957	29.0	11.9	189.4	113.2	113.0	456.5	219.2	237.3
1958	23.7	6.6	199.5	231.8	155.9	617.5	398.2	219.3
1959	43.0	8.3	217.5	231.7	118.5	619.0	384.5	234.5
1960	53.7	7.6	215.4	235.2	143.5	655.4	428.3	227.1
1961	56.5	6.4	230.3	249.5	140.8	683.5	455.3	228.2
1962	64.6	8.1	220.0	197.5	98.8	589.0	321.1	267.9
1963	51.4	9.7	217.3	155.7	81.9	516.0	239.6	276.4
1964	49.3	8.6	201.0	141.8	73.3	474.0	213.8	260.2
1965	46.8	10.0	201.1	194.7	126.3	578.9	322.8	256.1
1966	48.5	10.4	198.0	198.9	15.4	571.2	315.3	255.9
1967	81.1	15.2	239.7	139.1	82.3	557.4	216.1	341.3
1968	58.0	9.9	207.1	238.2	146.8	660.0	408.3	251.7
1969	88.5	13.6	216.3	218.2	122.1	658.7	351.2	307.5
1970	100.9	16.5	230.6	229.2	149.9	727.1	397.7	329.4
1971	117.0	32.4	262.8	168.2	99.1	679.5	272.7	406.8
1972	112.6	28.8	247.7	234.3	123.7	747.1	375.8	371.3
1973	96.5	14.9	273.0	289.3	164.3	838.0	527.6	310.4
1974	133.3	28.6	272.1	286.1	141.1	861.2	483.8	377.4
1975	112.0	22.6	259.0	296.0	178.6	868.2	540.4	327.8
1976	136.4	19.4	253.2	279.7	164.7	853.4	503.9	349.5
1977	156.5	19.9	317.5	295.0	172.0	960.9	580.3	380.6
1978	154.3	38.7	269.5	245.7	99.1	807.3	375.5	431.8
1979	130.1	32.9	294.5	300.0	157.0	914.5	523.0	391.5
1980	151.0	39.9	300.3	220.3	107.9	819.4	328.3	491.1
1981	104.2	26.1	280.7	241.8	141.6	794.4	407.3	387.1

Table 4.--Calculated discharge from the Edwards aquifer by county and
by water use, 1981

County	Springs	Municipal supply and military use	Irrigation	Industrial use	Domestic supply, stock, and miscellaneous use	Total (million gallons per day)	Total (thousand acre-feet per year)
Million gallons per day							
Kinney	--	--	--	--	0.2	0.2	0.2
Uvalde	23.7	4.4	63.1	--	1.6	92.8	104.0
Medina	--	3.8	18.8	--	.7	23.3	26.1
Bexar	19.4	181.7	8.2	9.6	31.7	250.6	280.7
Comal	203.6	9.8	.2	1.7	.6	215.9	241.8
Hays	116.9	7.2	.6	--	1.7	126.4	141.6
Total (million gallons per day)	363.6	206.9	90.9	11.3	36.5	709.2	
Total (thousand acre-feet per year)	407.3	231.8	101.8	12.6	40.9		794.4

Table 5.--Annual high and low water levels in selected observation wells in the Edwards aquifer, 1978-81
(feet above NGVD of 1929)

Well	1978		1979		1980		1981		Record high	Record low	Period of record
	High	Low	High	Low	High	Low	High	Low			
YP-69-50-302 ¹ H-5-1 (Uvalde Co.)	882.61	875.67	882.00	876.11	879.12	868.05	881.85	867.95	886.26 May 1977	811.0 Apr. 1957	1929-32 1934-81
TD-68-41-301 ¹ J-1-82 (Medina Co.)	722.36	681.62	728.18	710.25	716.05	666.72	723.13	693.25	737.78 May 1977	622.3 Aug. 1956	1950-81
AY-68-37-203 ^{1,2} J-17 (Bexar Co.)	684.11	650.13	690.52	676.25	680.29	640.76	685.98	661.27	696.5 Oct. 1973	3612.5 Aug. 1956	1932-81 4
DX-68-23-302 ¹ G-49 (Comal Co.)	628.05	624.52	628.97	627.25	627.49	623.00	627.96	625.34	630.17 Apr. 1977	613.3 Aug. 1956	1948-81
LR-67-01-304 ¹ H-23 (Hays Co.)	572.00	540.40	584.86	572.95	571.97	551.82	586.15	565.50	593.8 Mar. 1968	540.4 July 1978	1937-81

¹ New State well number replaces old well number.

² Replaces well 26 and reflects the same water level; composite record of wells 26 and AY-68-37-203.

³ Record low for well 26.

⁴ Composite record of wells 26 and AY-68-37-203.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1981
(Water levels furnished by Edwards Underground Water District)

291342098475401. AL-68-50-201. Public supply artesian well in Edwards aquifer, diam. 10 to 8 in., depth 2,379 ft, cased to 2,304 ft. Lsd 724.14 ft above msl. Highest water level 14.12 ft below lsd, Nov. 12, 1973; lowest 87.62 ft below lsd, Jan. 12, 1957. Records available 1957-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8, 1981	39.96	Apr. 6, 1981	46.10	June 24, 1981	22.31	Oct. 2, 1981	34.09
Feb. 2	34.31	May 2	36.95	July 30	35.82	Oct. 28	28.37
Feb. 27	39.12	May 29	45.88	Sept. 2	33.01	Dec. 6	26.31

293345098405901. AY-68-27-512. Unused water-table well in Edwards aquifer, diam. 6 in., depth 502 ft, cased to 18 ft. Lsd 992.0 ft above msl. Highest water level 130.09 ft below lsd, Oct. 26, 1973; lowest 241.10 ft below lsd, July 6, 1978. Records available 1971-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1981	194.26	June 24, 1981	166.51	Sept. 2, 1981	195.18	Oct. 28, 1981	195.19
May 7	193.65	July 30	184.93	Sept. 30	197.95	Dec. 7	194.89
May 27	195.06						

293522098291201. AY-68-29-103 (F-214). Unused water-table well in Edwards aquifer, diam. 10 in., depth 547 ft, cased to 100 ft. Lsd 952.67 ft above msl. Highest water level 224.80 ft below lsd, May 31, 1977; lowest 284.35 ft below lsd, Nov. 21, 1957. Records available 1957-81.

Highest 1981 water level 252.31 ft below lsd on Dec. 22; lowest 1981 water level 264.00 ft below lsd on May 25.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	262.34	262.55	263.19	263.13	263.47	263.02	254.05	255.80	254.84	256.38	252.48	252.92
10	262.72	.....	263.46	263.00	262.96	262.49	253.65	256.17	254.76	254.87	252.98	252.48
15	262.63	.....	262.91	263.19	262.82	258.77	253.25	255.53	254.99	254.61	252.90	252.71
20	261.74	.....	262.25	262.79	263.54	.....	253.59	255.15	255.01	254.59	252.80	252.56
25	262.47	262.99	262.64	263.35	264.00	255.80	254.38	255.45	255.28	254.56	252.58	252.71
Eom	262.46	263.13	262.98	262.74	263.18	255.25	255.09	254.90	255.51	254.40	252.54	252.70

293215098274601. AY-68-29-701 (F-172). Unused artesian well in Edwards aquifer, diam. 10 in., depth 500 ft, casing information not available. Lsd 778.8 ft above msl. Highest water level 74.84 ft below lsd, Oct. 21, 1973; lowest 165.10 ft below lsd, Aug. 17, 1956. Records available 1952-81.

Highest 1981 water level 86.92 ft below lsd on June 19; lowest 1981 water level 115.99 ft below lsd on May 23.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	109.08	108.10	107.72	109.91	105.84	103.71	90.00	102.38	100.49	104.61	94.22	97.19
10	109.29	107.37	108.10	111.49	105.99	102.95	90.61	103.81	99.69	97.90	94.42	96.58
15	109.42	107.72	105.27	111.89	109.12	93.01	.....	104.29	100.37	98.33	94.88	.....
20	107.91	108.05	106.31	110.28	113.12	87.20	.....	102.31	100.55	98.74	96.17	.....
25	107.68	108.77	107.80	107.55	113.16	88.71	.....	102.06	.....	98.00	96.60	.....
Eom	108.22	108.36	108.85	107.16	106.87	88.87	100.07	101.57	104.57	96.58	96.63	.....

293617098194001. AY-68-30-211 (G-69). Unused artesian well in Edwards aquifer, diam. 6 in., depth 777 ft, cased to 230 ft. Lsd 776.45 ft above msl. Highest water level 85.70 ft below lsd, Oct. 16, 1973; lowest 152.34 ft below lsd, Aug. 17, 1967. Records available 1964-81.

Highest 1981 water level 102.41 ft below lsd on July 1; lowest 1981 water level 121.10 ft below lsd on May 23.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	116.94	116.10	115.92	117.29	115.07	114.39	102.82	110.32	110.06	112.57	106.40	107.11
10	117.04	115.65	116.07	118.46	115.01	113.11	103.06	109.25	109.60	109.35	106.03	107.16
15	117.05	115.88	114.85	118.81	116.62	106.22	104.17	109.25	109.86	108.93	106.02	107.13
20	116.43	116.10	115.07	117.89	119.57	102.79	105.85	110.37	109.98	108.92	106.53	107.29
25	116.05	116.48	115.85	116.55	119.87	102.81	107.83	110.95	111.07	108.40	106.71	107.55
Eom	116.14	116.30	116.41	116.00	116.42	102.45	108.72	110.71	112.07	108.34	106.66	107.73

292845098255401. AY-68-37-203 (J-17)b/. Unused artesian well in Edwards aquifer, diam. 6 in., depth 874 ft, cased to 491 ft. Lsd 730.81 ft above msl. Highest water level 34.29 ft below lsd, Oct. 22, 1973; lowest 110.05 ft below lsd, Aug. 17, 1956. Records available 1932-81d/.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	61.90	60.92	60.70	62.98	59.41	58.75	46.04	57.09	54.48	58.19	49.81	51.15
10	62.07	60.28	61.03	64.96	59.46	57.47	46.46	58.15	53.91	52.88	49.44	51.27
15	62.21	60.65	59.03	65.04	62.71	50.33	48.35	58.40	54.46	52.71	49.57	51.20
20	61.24	61.18	59.93	63.34	67.51	45.22	50.94	56.64	54.52	52.78	50.51	51.17
25	60.66	61.53	61.03	61.31	67.06	45.21	53.76	56.34	56.20	51.88	50.31	51.63
Eom	61.04	61.30	.....	60.49	61.29	45.17	54.63	55.58	57.77	52.19	50.67	51.78

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1981--Continued

292244098295801. AY-6R-45-102 (CY-175). Unused artesian well in Edwards aquifer, diam. 8 in., depth 2,103 ft, cased to 1,200 ft. Lsd 621.60 ft above msl. Highest water level 65.8 ft above lsd, May 20, 1977; lowest 18.01 ft above lsd, Aug. 2, 1956. Records available 1933-36, 1950-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 8, 1981	e+47.45	Oct. 27, 1981	e+49.15	Nov. 19, 1981	e+53.71	Dec. 28, 1981	e+52.67
Jan. 23	e+43.30						

294720098030001. DX-6R-16-801 (G-25). Domestic water-table well in Edwards aquifer, diam. 6 in., depth 210 ft, casing information not available. Lsd 752.71 ft above msl. Highest water level 128.19 ft below lsd, June 22, 1981; lowest 169.56 ft below lsd, Oct. 1, 1956. Records available 1936-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1981	145.10	Apr. 27, 1981	145.25	July 29, 1981	133.07	Oct. 26, 1981	141.72
Feb. 23	144.66	May 26	142.03	Aug. 31	137.42	Nov. 30	140.32
Mar. 30	144.17	June 22	128.19	Sept. 28	140.11		

294310098080001. DX-6R-23-302 (G-49). Unused water-table well in Edwards aquifer, diam. 7 to 3 in., depth 230 ft, cased to 27 ft. Lsd 642.7 ft above msl. Highest water level 12.53 ft below lsd, Apr. 20, 1977; lowest 29.36 ft below lsd, Aug. 21, 1956. Records available 1948-81.

Highest 1981 water level 14.74 ft below lsd on July 5; lowest 1981 water level 17.36 ft below lsd on May 24.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	17.06	16.97	16.93	16.97	16.80	16.68	14.74	15.78	15.83	16.09	15.34	15.34
10	17.05	16.92	16.96	17.13	16.78	16.66	15.01	15.94	15.81	15.89	15.30	15.34
15	17.11	16.93	16.81	17.20	16.91	15.83	15.09	15.96	15.81	15.81	15.25	15.33
20	16.99	16.96	16.79	17.14	17.17	15.13	15.24	15.95	15.79	15.81	15.30	15.35
25	16.97	16.97	16.86	17.05	17.32	15.12	15.45	15.92	15.89	15.72	15.28	15.38
Eom	16.98	16.98	16.91	16.95	17.09	15.01	15.59	15.86	16.03	14.99	15.28	15.44

293855098125901. DX-6R-23-701 (H-20). Domestic artesian well in Edwards aquifer, diam. 4 in., depth 300 ft, cased to 300 ft. Lsd 684.45 ft above msl. Highest water level 17.84 ft below lsd, Oct. 29, 1973; lowest 70.07 ft below lsd, Oct. 2, 1956. Records available 1934, 1937-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1981	36.15	Apr. 27, 1981	g37.15	July 29, 1981	f32.33	Oct. 28, 1981	30.87
Feb. 23	36.34	May 26	f43.48	Aug. 31	f33.93	Dec. 2	31.66
Mar. 30	f46.75	June 22	f27.31	Sept. 30	f37.19		

293636098190901. DX-6R-30-208 (H-36). Unused artesian well in Edwards aquifer, diam. 8 in., depth 292 ft, casing slotted 272-292 ft. Lsd 797.81 ft above msl. Highest water level 111.26 ft below lsd, Oct. 17, 1973; lowest 184.45 ft below lsd, Aug. 18, 1956. Records available 1945, 1955-81.

Highest 1981 water level 123.38 ft below lsd on June 17; lowest 1981 water level 142.40 ft below lsd on May 23.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	139.07	138.17	138.11	139.27	137.34	136.74	125.10	131.86	132.03	134.28	128.72	129.32
10	139.14	137.81	138.18	140.28	137.23	135.25	125.23	132.97	131.65	131.77	125.35	129.36
15	139.09	138.00	137.23	140.73	138.40	126.11	126.15	133.68	131.81	131.28	128.38	129.32
20	138.60	138.18	137.26	140.00	140.83	124.34	127.62	a132.86	131.92	131.22	128.73	129.49
25	138.18	138.46	137.92	138.88	141.75	125.05	129.42	132.65	a132.78	131.00	128.74	129.70
Eom	138.13	138.40	138.38	138.19	138.67	124.75	130.36	132.50	133.68	130.88	128.86	130.07

300025097533501. LR-5R-57-902 (E-65). Domestic water-table well in Edwards aquifer, diam. 6 in., depth 450 ft, casing information not available. Lsd 821.55 ft above msl. Highest water level 179.86 ft below lsd, May 25, 1977; lowest 247.63 ft below lsd, Aug. 29, 1956. Records available 1943, 1950-52, 1954, 1956, 1958, 1961, 1971-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1981	224.90	Apr. 27, 1981	210.16	July 29, 1981	189.06	Oct. 26, 1981	197.42
Feb. 23	220.23	May 26	210.86	Aug. 31	192.03	Nov. 30	201.81
Mar. 30	213.09	June 22	187.38	Sept. 28	194.77		

300510097504001. LR-5R-58-101 (E-36). Domestic artesian well in Edwards aquifer, diam. 5 in., depth 244 ft, cased to 230 ft. Lsd 707.23 ft above msl. Highest water level 53.05 ft below lsd, Nov. 29, 1973; lowest 148.76 ft below lsd, July 12, 1956. Records available 1937-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1981	131.11	Apr. 27, 1981	101.06	July 29, 1981	77.12	Oct. 26, 1981	h89.74
Feb. 23	131.07	May 26	108.60	Aug. 31	78.93	Nov. 30	f91.20
Mar. 30	100.48	June 22	68.42	Sept. 28	83.83		

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1981--Continued

29590907523301. LR-67-01-304 (LR-67-02-102) (H-23). Unused artesian well in Edwards aquifer, diam. 5 in., depth 372 ft, cased to 340 ft. Lsd 718.0 ft above msl. Highest water level 124.23 ft below lsd, Mr. 29, 1968; lowest 177.60 ft below lsd, July 10, 1978. Records available 1937-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1981	152.50	Apr. 27, 1981	150.02	July 29, 1981	144.95	Oct. 9, 1981	135.55
Feb. 23	151.19	May 26	151.24	Aug. 31	148.67	Oct. 26	131.85
Mar. 30	151.27	June 22	141.20	Sept. 28	138.56	Nov. 30	132.25

295344097575001. LR-67-01-701 (H-75a). Domestic artesian well in Edwards aquifer, diam. 6 in., depth and casing information not available. Lsd 734.40 ft above msl. Highest water level 150.63 ft below lsd, June 22, 1981; lowest 177.15 ft below lsd, Nov. 2, 1972. Records available 1954-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1981	158.52	Apr. 27, 1981	158.10	July 29, 1981	155.20	Oct. 26, 1981	156.83
Jan. 23	158.29	May 26	158.14	Aug. 31	155.15	Nov. 30	157.44
Mar. 30	158.21	June 22	150.63	Sept. 28	156.69		

295103097583301. LR-67-09-102 (LR-68-16-601) (H-95). Unused artesian well in Edwards aquifer, diam. 6 in., depth 194 ft, casing information not available. Lsd 696.80 ft above msl. Highest water level 108.48 ft below lsd, June 1, 1976; lowest 125.30 ft below lsd, Apr. 11, 1978. Records available 1937-57, 1959-72, 1974-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1981	119.74	May 26, 1981	119.66	Aug. 31, 1981	115.62	Nov. 30	118.79
Feb. 23	120.11	June 22	111.89	Sept. 28	117.04		
May 6	119.50	July 29	113.65	Oct. 26	117.74		

295035097585501. LR-67-09-110. Unused artesian well in Edwards aquifer, diam. 7 in., depth 634 ft, cased to 141.50 ft. Lsd 685.00 ft above msl. Highest water level 92.17 ft below lsd, June 15, 1975; lowest 101.60 ft below lsd, May 19, 1980. Records available 1973-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1981	100.90	Apr. 27, 1981	100.52	July 29, 1981	94.43	Oct. 26, 1981	98.77
Feb. 23	100.70	May 26	100.56	Aug. 31	96.84	Nov. 30	99.26
Mar. 30	100.57	June 22	92.79	Sept. 28	98.12		

292519099531701. TD-68-33-604 (J-1-41). Domestic artesian well in Edwards aquifer, diam. 6 in., depth 641 ft, cased to 58 ft. Lsd 846.00 ft above msl. Highest water level 96.90 ft below lsd, Apr. 28, 1977; lowest 217.74 ft below lsd, Aug. 31, 1956. Records available 1930, 1934-46, 1951-52, 1954-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1981	138.12	Apr. 29, 1981	134.55	July 30, 1981	118.64	Oct. 28, 1981	118.23
Feb. 25	138.75	May 27	143.01	Sept. 2	121.70	Dec. 6	117.35
Apr. 1	138.98	June 24	110.89	Sept. 30	124.64		

292110098530001. TD-68-41-301 (J-1-82). Unused artesian well in Edwards aquifer, diam. 6 in., depth 712 ft, casing information not available. Lsd 756.80 ft above msl. Highest water level 19.02 ft below lsd, May 1, 1977; lowest 134.53 ft below lsd, Aug. 18, 1956. Records available 1950-81.

Highest 1981 water level 33.67 ft $\pm$ below lsd on June 24; lowest 1981 water level 63.25 ft $\pm$ below lsd on May 27.

Highest water level for the day, from recorder graph, 1981

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	57.81	56.98	57.05	58.38	53.01	51.50	35.16	42.96	42.92	45.90	38.11	38.96
10	58.13	56.18	57.17	59.48	53.04	.....	34.62	44.44	42.28	42.30	37.62	38.82
15	57.91	56.71	55.77	59.89	.....	.....	35.66	46.04	42.43	41.05	37.39	38.98
20	57.45	56.92	55.34	58.23	.....	.....	37.49	44.52	42.82	40.46	38.04	39.08
25	56.88	57.51	56.24	54.93	.....	33.79	39.96	43.74	44.14	39.53	37.95	39.58
Eom	56.94	57.65	57.06	54.12	57.32	34.49	40.95	43.41	45.17	39.87	38.05	39.90

292618099165901. TD-69-38-601 (I-2-104). Unused water-table well in Edwards aquifer, diam. 7 in., depth 538 ft, cased to 74 ft. Lsd 1,008.3 ft above msl. Highest water level 73.41 ft below lsd, Sept. 1, 1979; lowest 274.60 ft below lsd, Sept. 21, 1957. Records available 1957-81.

Highest 1981 water level 79.70 ft below lsd on Oct. 16, 17; lowest 1981 water level 115.87 ft below lsd on Apr. 5.

Highest water level for the day, from recorder graph, 1981

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	111.02	113.28	.....	115.87	110.35	103.63	86.10	83.80	82.64	81.99	80.42	80.91
10	111.41	113.35	115.44	.....	110.26	102.71	83.85	83.65	82.46	81.51	80.58	80.90
15	111.69	114.06	115.25	.....	109.86	97.11	.....	83.40	82.33	79.83	80.40	81.14
20	111.92	114.34	115.25	.....	109.95	.....	.....	83.25	82.16	80.17	80.65	81.25
25	112.25	114.78	115.60	.....	107.22	88.66	.....	83.05	82.11	80.17	80.42	81.51
Eom	112.67	.....	115.49	.....	105.83	87.46	83.93	82.70	82.06	80.36	80.51	81.76

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1981--Continued

291550099211001. TD-69-46-701 (I-4-12). Domestic artesian well in Edwards aquifer, diam. 8 in., depth 1,303 ft, casing information not available. Lsd 950.00 ft above msl. Highest water level 132.42 ft below lsd, Apr. 28, 1977; lowest 291.37 ft below lsd, Aug. 31, 1956. Records available 1930, 1934, 1937-38, 1940-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1981	g195.75	May 2, 1981	174.20	July 31, 1981	g195.47	Oct. 30, 1981	148.10
Mar. 6	g197.70	May 28	192.51	Sept. 4	g172.53	Dec. 4	148.01
Apr. 3	184.33	July 10	g167.03	Oct. 2	g179.81		

292209099094801. TD-69-47-302 (I-3-148). Unused artesian well in Edwards aquifer, diam. 5 in., depth 1,410 ft, casing information not available. Lsd 956.1 ft above msl. Highest water level 182.26 ft below lsd, May 18, 1977; lowest 294.74 ft below lsd, June 15, 1971. Records available 1960-81.

Highest 1981 water level 201.19 ft below lsd on Nov. 15; lowest 1981 water level 240.50 ft below lsd on May 23.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	229.76	229.47	229.78	230.00	221.89	219.60	203.01	207.41	207.82	210.86	202.22	202.80
10	230.15	228.75	229.85	231.31	221.70	217.70	201.73	208.67	207.58	207.36	201.60	202.80
15	229.97	229.27	228.29	230.77	229.50	208.95	202.21	210.14	207.29	205.88	201.19	203.14
20	229.64	229.48	227.77	228.72	237.76	.....	203.54	209.12	207.41	204.70	201.76	203.47
25	229.23	230.04	228.42	224.95	233.00	202.25	205.40	208.16	208.84	203.50	201.85	204.17
Eom	229.47	230.29	228.89	223.09	225.66	203.26	205.98	207.95	209.84	203.50	201.83	205.25

292110099054501. TD-69-48-102 (I-3-146). Irrigation artesian well in Edwards aquifer, diam. 12 in., depth 1,654 ft, cased to 1,320 ft. Lsd 867.2 ft above msl. Highest water level 95.26 ft below lsd, Apr. 28, 1977; lowest 257.36 ft below lsd, Aug. 14, 1963. Records available 1958-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5, 1981	141.20	Apr. 3, 1981	141.27	June 24, 1981	113.49	Oct. 2, 1981	123.79
Jan. 28	140.64	Apr. 29	135.56	Aug. 25	122.94	Oct. 30	117.69
Feb. 27	146.78	May 28	145.15	Sept. 2	121.08	Dec. 6	115.98

29233099401501. YP-69-35-602 (YP-69-35-501) (H-2-23). Unused water-table well in Edwards aquifer, diam. 7 in., depth 237 ft, cased to 57 ft. Lsd 1,170.8 ft above msl. Highest water level 23.52 ft below lsd, July 18, 1976; lowest 69.15 ft below lsd, Jan. 28, 1964. Records available 1957-81.

Highest 1981 water level 29.25 ft below lsd on June 26; lowest 1981 water level 65.46 ft below lsd on Feb. 11.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	64.55	65.27	61.54	57.47	39.81	49.62	31.99	45.20	52.89	57.76	54.22	61.20
10	64.79	65.20	61.18	58.60	41.78	49.90	33.78	46.99	53.71	52.36	56.10	61.81
15	64.87	65.33	59.26	59.27	43.60	38.45	35.78	48.84	54.52	42.51	57.60	62.31
20	64.95	65.24	59.59	45.61	45.37	.....	37.83	48.76	.....	46.17	58.64	63.12
25	65.09	65.30	60.25	37.76	47.51	.....	40.18	50.66	.....	47.89	59.67	63.79
Eom	65.04	65.20	54.55	40.40	49.25	29.89	43.14	52.13	.....	51.43	60.20	64.25

292711099282201. YP-69-37-402. Unused water-table well in Edwards aquifer, diam. 6 in., depth 694 ft, cased to 233 ft. Lsd 1,158 ft above msl. Highest water level 256.05 ft below lsd, July 21, 1977; lowest 328.50 ft below lsd, Mar. 5, 1981. Records available 1974-81.

Highest 1981 water level 279.11 ft below lsd on Nov. 30; lowest 1981 water level 328.50 ft below lsd on Mar. 5.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	326.41	327.28	328.50	.....	.....	308.65	297.48	289.62	284.72	282.87	280.24	279.42
10	326.66	327.26	327.78	323.36	.....	307.19	296.12	288.66	284.15	282.59	280.12	.....
15	326.58	327.74	326.93	323.03	.....	305.10	294.65	287.64	283.78	282.04	279.57	.....
20	326.51	328.14	325.85	321.99	.....	302.35	293.36	286.88	283.22	281.43	279.71	.....
25	326.60	328.22	325.56	320.60	.....	300.84	292.10	286.05	283.03	280.64	279.13	.....
Eom	326.86	328.38	324.85	317.78	310.07	299.10	290.73	285.06	282.88	280.54	279.11	.....

291633099413301. YP-69-43-804. Irrigation artesian well in Edwards aquifer, diam. 16 in., depth 967 ft, cased to 365 ft. Lsd 975.00 ft above msl. Highest water level 80.28 ft below lsd, May 26, 1977; lowest 283.80 ft below lsd, June 7, 1971. Records available 1971-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5, 1981	137.23	Apr. 3, 1981	g180.51	June 25, 1981	105.54	Oct. 2, 1981	95.72
Jan. 30	134.33	May 2	139.02	Aug. 3	98.46	Oct. 30	89.96
Mar. 4	152.43	May 28	120.27	Sept. 4	f148.89	Dec. 4	90.51

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1981--Continued

291909099281001. YP-69-45-401 (1-4-35) (1-4-4). Unused artesian well in Edwards aquifer, diam. 10 in., depth 1,476 ft, cased to 937 ft. Lsd 954.04 ft above msl. Highest water level 118.64 ft below lsd, May 20, 1977; lowest 290.03 ft below lsd, Oct. 13, 1956. Records available 1956-81.

Highest 1981 water level 136.47 ft below lsd on Nov. 15; lowest 1981 water level 181.53 ft below lsd on Mar. 2.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	180.31	180.71	180.88	177.40	165.13	164.18	146.36	143.95	144.49	147.24	137.71	138.20
10	180.85	180.20	180.77	177.25	164.08	162.55	145.09	144.68	144.11	144.81	136.90	138.61
15	180.88	180.61	178.58	176.77	165.51	156.19	143.57	145.40	144.39	141.83	136.47	139.48
20	180.37	180.65	177.68	174.25	170.78	149.60	143.50	144.72	144.29	140.10	136.74	140.20
25	180.40	181.03	177.78	169.09	173.45	147.71	143.59	143.80	145.21	138.79	137.03	140.81
Eom	180.63	181.31	177.74	166.85	169.23	147.35	143.49	144.16	146.24	.....	137.03	141.62

291426099510201. YP-69-50-101 (H-4-6). Stock artesian well in Edwards aquifer, diam. 8 in., depth 100 ft, casing information not available. Lsd 950.6 ft above msl. Highest water level 48.15 ft below lsd, May 29, 1980; lowest 126.17 ft below lsd, Mar. 14, 1957. Records available 1929-33, 1935-42, 1944-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5, 1981	68.66	Apr. 6, 1981	f69.83	June 25, 1981	61.23	Oct. 2, 1981	f62.80
Jan. 30	f68.85	May 2	65.47	Aug. 3	f59.87	Oct. 31	f56.54
Mar. 4	70.80	May 28	f63.90	Sept. 5	f58.79	Dec. 4	f56.05

291414099475301. YP-69-50-202. Unused artesian well in Edwards aquifer, diam. 6 in., depth 137 ft, cased 65 ft. Lsd 928.00 ft above msl. Highest water level 33.10 ft below lsd, Apr. 6, 1977; lowest water level 115.02 ft below lsd, Mar. 11, 1957. Records available 1956-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5, 1981	54.09	Apr. 6, 1981	57.19	June 26, 1981	47.30	Oct. 2, 1981	44.43
Jan. 30	54.69	May 2	52.05	Aug. 3	44.87	Oct. 31	41.37
Mar. 4	56.91	May 28	50.46	Sept. 5	43.95	Dec. 5	40.53

291237099471201. YP-69-50-302 (H-5-1). Unused artesian well in Edwards aquifer, diam. 12 in., depth 350 ft, casing information not available. Lsd 904.9 ft above msl. Highest water level 18.64 ft below lsd, May 23, 1977; lowest 93.90 ft below lsd, Apr. 13, 1957. Records available 1929-32, 1934-81.

Highest 1981 water level 23.05 ft below lsd on Dec. 22, 28, 31; lowest 1981 water level 36.95 ft below lsd on Mar. 9.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	34.17	34.81	36.90	36.33	32.15	30.51	28.25	27.71	26.62	.....	23.84	23.22
10	34.23	35.15	36.91	36.16	31.52	30.45	27.88	27.58	26.33	25.20	23.64	23.16
15	34.27	35.72	36.65	35.76	30.98	30.18	27.84	27.57	.....	24.85	23.44	23.12
20	34.24	36.18	36.41	35.22	30.76	29.52	27.75	27.23	.....	24.57	23.47	23.10
25	34.30	36.59	36.34	33.76	30.81	29.00	27.88	27.10	.....	24.16	23.33	23.14
Eom	34.52	36.78	36.26	33.12	30.76	28.65	27.71	26.92	.....	23.97	23.22	23.05

291127099501201. YP-69-50-402 (H-4-60). Unused artesian well in Edwards aquifer, diam. 10 in., depth 536 ft, casing information not available. Lsd 918.9 ft above msl. Highest water level 39.19 ft below lsd, May 26, 1977; lowest 111.31 ft below lsd, Feb. 13, 1957. Records available 1954, 1957, 1961-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5, 1981	50.30	May 2, 1981	48.61	Aug. 3, 1981	49.68	Oct. 31, 1981	44.53
Jan. 30	51.17	May 28	48.55	Sept. 5	48.27	Dec. 4	44.44
Apr. 6	53.15	June 25	47.28	Oct. 2	46.37		

291025099442701. YP-69-51-406 (H-5-259). Unused water-table well in Leona Formation, diam. 14 in., depth 74 ft, casing information not available. Lsd 874.9 ft above msl. Highest water level 23.25 ft below lsd, June 6, 1979; lowest 61.38 ft below lsd, Mar. 13, 1957. Records available 1956-57, 1966-81.

Highest 1981 water level 27.47 ft below lsd on May 4; lowest 1981 water level 34.88 ft below lsd on Aug. 1.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	29.51	33.39	32.30	30.63	27.54	30.11	28.89	34.74	30.24	29.22	28.20	28.05
10	30.50	33.48	31.92	30.77	27.71	31.50	30.46	34.21	29.54	28.71	28.37	27.94
15	29.96	33.76	30.87	30.38	28.29	30.36	32.29	33.84	28.99	28.37	28.52	28.01
20	29.91	34.04	30.51	29.26	29.47	29.15	33.23	32.90	28.60	28.89	28.55	27.95
25	31.37	34.32	30.17	27.57	30.45	28.66	34.67	32.02	29.29	28.34	28.20	28.14
Eom	32.37	33.40	30.62	27.71	30.72	28.50	34.85	31.66	29.49	28.30	28.01	28.12

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1981--Continued

292344100002701. YP-70-40-901 (G-3-19). Unused water-table well in Edwards aquifer, diam. 7 in., depth 140 ft, cased to 70 ft. Lsd 1,122.0 ft above msl. Highest water level 38.85 ft below lsd, Sept. 15, 1974; lowest 42.95 ft below lsd, Sept. 19, 1964. Records available 1957-81.

Highest 1981 water level 40.41 ft below lsd on June 17; lowest 1981 water level 42.40 ft below lsd on Jan. 31, Sept. 30, and Oct. 5.

Highest water level for the day, from recorder graph, 1981												
Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	42.34	42.39	42.32	42.25	42.02	42.29	42.18	42.36	42.27	42.40	42.15	42.20
10	42.37	42.39	42.32	42.19	42.15	42.33	42.23	42.34	42.34	42.24	42.16	42.21
15	42.36	42.39	42.30	42.24	42.22	41.67	42.27	42.37	42.37	41.17	42.17	42.23
20	42.35	42.38	42.29	41.86	42.23	41.49	42.12	42.37	42.36	42.00	42.18	42.23
25	42.35	42.38	42.31	41.26	42.27	41.92	42.25	42.37	42.39	42.11	42.18	42.24
Eom	42.40	42.37	42.22	41.93	42.27	42.03	42.35	42.39	42.40	42.13	42.18	42.25

291412100033001. YP-60-56-201 (G-6-4). Domestic water-table well in Austin Chalk, diam. 6 in., depth 120 ft, casing information not available. Lsd 1,008.00 ft above msl. Highest water level 34.00 ft below lsd, Dec. 1, 1976; lowest 77.78 ft below lsd, Apr. 8, 1953. Records available 1937-81.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5, 1981	55.80	Apr. 6, 1981	68.40	June 25, 1981	53.42	Oct. 2, 1981	66.15
Jan. 30	56.09	May 2	50.43	Aug. 3	53.56	Oct. 30	51.93
Mar. 4	56.32	May 28	52.85	Sept. 4	53.41		

- a Estimated.
- b Replaces well 26 and reflects the same water level; composite record of wells 26 and AY-68-37-203.
- c Record low for well 26. Equivalent water level for AY-68-37-203 would be 118.30 ft below lsd.
- d Composite record of wells 26 and AY-68-37-203.
- e Measured.
- f Well pumping.
- g Well pumped recently.
- h Nearby well pumping.

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981
BEXAR COUNTY

LOCAL IDENT- IFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
AY-68-21-804	81-07-24	0955	60	279	5.0	531	6.8	23.5	<1	<1
AY-68-27-303	81-07-22	1455	60	354	15	527	6.9	22.5	<1	<1
AY-68-27-305	81-07-22	1325	60	253	3.0	541	6.8	22.0	<1	<1
AY-68-27-503	81-07-15	1400	22	435	275	525	6.9	22.0	<1	<1
AY-68-27-504	81-08-27	1230	15	508	525	545	6.9	23.0	K14	K4
AY-68-28-202	81-07-17	0950	120	457	125	518	7.1	22.5	1	<1
AY-68-28-501	81-07-17	1110	120	469	100	523	7.0	22.5	<1	<1
AY-68-28-502	81-07-17	1225	120	506	110	542	7.0	23.0	<1	<1
AY-68-28-508	81-07-16	1310	120	396	150	435	7.0	23.5	>7	K7
AY-68-28-512	81-07-23	1025	60	400	7.0	533	6.8	22.5	<1	<1
AY-68-28-608	81-07-23	1440	60	500	15	547	6.8	22.5	K5	<1
AY-68-28-903	81-07-21	1050	40	767	3500	705	6.8	22.0	<1	<1
AY-68-29-109	81-07-14	1045	60	460	450	580	6.9	23.0	<1	<1
AY-68-29-208	81-07-24	0835	60	266	10	510	7.0	23.5	<1	<1
AY-68-29-209	81-07-23	1610	60	315	10	521	6.7	23.0	<1	<1
AY-68-29-210	81-07-24	1230	60	330	3.0	519	6.8	23.0	<1	<1
AY-68-29-303	81-07-16	1010	60	527	150	520	6.8	22.0	4	<1
AY-68-29-410	81-07-14	0950	60	318	620	546	7.0	23.0	--	--
AY-68-29-702	81-07-29	1325	60	872	3000	572	7.0	22.0	--	--
AY-68-29-804	81-07-20	1045	120	761	2100	541	7.0	23.0	--	--
AY-68-37-101	81-07-27	1040	30	1005	7700	530	7.0	23.0	<1	<1
AY-68-37-404	81-07-27	1225	40	1326	13800	484	7.0	24.5	<1	<1
AY-68-37-506	81-07-29	1440	120	1407	7600	477	7.2	26.5	<1	<1
AY-68-37-705	81-07-27	1355	--	1798	3000	482	7.2	27.0	<1	<1

LOCAL IDENT- IFIER	DATE OF SAMPLE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CAC03) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY FIELD (MG/L AS CAC03) (00410)
AY-68-21-804	81-07-24	<1	266	6	102	2.8	3.8	.1	.6	260
AY-68-27-303	81-07-22	<1	263	13	89	10	5.2	.1	.8	250
AY-68-27-305	81-07-22	<1	268	8	92	9.3	4.9	.1	.9	260
AY-68-27-503	81-07-15	K14	257	27	78	15	7.4	.2	.9	230
AY-68-27-504	81-08-27	25	266	26	85	13	8.2	.2	1.5	240
AY-68-28-202	81-07-17	13	268	18	89	11	6.4	.2	1.3	250
AY-68-28-501	81-07-17	<1	266	16	95	6.9	6.1	.2	1.1	250
AY-68-28-502	81-07-17	<1	277	17	88	14	6.3	.2	1.2	260
AY-68-28-508	81-07-16	K1	223	33	68	13	5.6	.2	.8	190
AY-68-28-512	81-07-23	<1	265	15	88	11	6.2	.2	1.0	250
AY-68-28-608	81-07-23	K1	287	37	95	12	7.2	.2	1.1	250
AY-68-28-903	81-07-21	<1	328	8	110	13	21	.5	1.5	320
AY-68-29-109	81-07-14	<1	291	21	100	10	8.0	.2	.8	270
AY-68-29-208	81-07-24	<1	263	13	100	3.2	5.0	.1	.5	250
AY-68-29-209	81-07-23	<1	284	24	110	2.2	4.4	.1	.7	260
AY-68-29-210	81-07-24	K1	271	21	95	8.3	5.0	.1	.7	250
AY-68-29-303	81-07-16	K2	267	17	94	7.8	4.8	.1	.9	250
AY-68-29-410	81-07-14	--	291	21	90	16	6.7	.2	.9	270
AY-68-29-702	81-07-29	--	290	30	93	14	8.6	.2	1.1	260
AY-68-29-804	81-07-20	--	265	25	78	17	8.6	.2	1.3	240
AY-68-37-101	81-07-27	K4	265	45	78	17	9.3	.3	1.2	230
AY-68-37-404	81-07-27	K4	231	31	66	16	9.1	.3	1.1	200
AY-68-37-506	81-07-29	<1	232	32	65	17	9.9	.3	1.1	200
AY-68-37-705	81-07-27	<1	230	30	64	17	9.8	.3	1.1	200

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
BEXAR COUNTY--Continued

LOCAL IDENT- I- FIER	DATE OF SAMPLE	SULFATE DIS- SOLVED (MG/L AS S04) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)
AY-68-21-804	81-07-24	<1.0	7.8	.2	13	--	2.3	.020	.170	.76
AY-68-27-303	81-07-22	1.0	10	.5	11	278	2.5	.020	.150	.53
AY-68-27-305	81-07-22	<1.0	7.9	.4	12	--	2.1	.020	.170	1.1
AY-68-27-503	81-07-15	23	15	.1	12	289	1.7	.010	.100	.03
AY-68-27-504	81-08-27	25	13	.2	12	302	.95	.030	.260	.22
AY-68-28-202	81-07-17	18	12	.1	12	300	.85	.000	.070	.47
AY-68-28-501	81-07-17	--	--	--	13	--	.88	.000	.060	.54
AY-68-28-502	81-07-17	18	14	.2	13	311	.96	.020	.130	.72
AY-68-28-508	81-07-16	18	12	.1	11	242	2.2	.010	.100	.08
AY-68-28-512	81-07-23	7.0	11	.5	12	287	1.8	.020	.170	.83
AY-68-28-608	81-07-23	24	10	.6	12	312	.95	.020	.150	.51
AY-68-28-903	81-07-21	27	25	.1	16	406	2.0	.030	.290	1.2
AY-68-29-109	81-07-14	2.0	17	.1	14	314	1.4	.010	.120	.05
AY-68-29-208	81-07-24	6.0	7.4	.3	14	287	1.1	.020	.140	.48
AY-68-29-209	81-07-23	1.8	16	.2	14	306	1.4	.020	.150	.75
AY-68-29-210	81-07-24	10	7.7	.4	12	290	1.1	.020	.140	.82
AY-68-29-303	81-07-16	<1.0	8.9	.1	12	--	1.7	.020	.140	1.4
AY-68-29-410	81-07-14	4.0	14	.1	13	307	1.1	.010	.120	.00
AY-68-29-702	81-07-29	26	12	.6	12	323	1.6	.020	.380	.72
AY-68-29-804	81-07-20	28	17	.2	13	307	1.8	.020	.130	.73
AY-68-37-101	81-07-27	31	13	.5	13	301	1.9	.020	.150	.81
AY-68-37-404	81-07-27	16	16	.5	13	258	2.0	.020	.160	.74
AY-68-37-506	81-07-29	23	16	.5	13	266	.24	.020	.160	.17
AY-68-37-705	81-07-27	25	17	.5	13	267	1.3	.030	.180	.08

LOCAL IDENT- I- FIER	DATE OF SAMPLE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)
AY-68-21-804	81-07-24	.93	3.2	.030	<.1
AY-68-27-303	81-07-22	.68	3.2	.030	<.1
AY-68-27-305	81-07-22	1.30	3.4	.030	1.4
AY-68-27-503	81-07-15	.13	1.8	.020	.0
AY-68-27-504	81-08-27	.48	1.5	.110	.9
AY-68-28-202	81-07-17	.54	1.4	.060	2.2
AY-68-28-501	81-07-17	.60	1.5	.010	3.4
AY-68-28-502	81-07-17	.85	1.8	.030	<.1
AY-68-28-508	81-07-16	.18	2.4	.020	.0
AY-68-28-512	81-07-23	1.00	2.8	.050	<.1
AY-68-28-608	81-07-23	.66	1.6	.040	1.2
AY-68-28-903	81-07-21	1.50	3.5	.040	.8
AY-68-29-109	81-07-14	.17	1.6	.020	.0
AY-68-29-208	81-07-24	.62	1.7	.040	.4
AY-68-29-209	81-07-23	.90	2.3	.050	.8
AY-68-29-210	81-07-24	.96	2.1	.030	.1
AY-68-29-303	81-07-16	1.50	3.2	.040	.2
AY-68-29-410	81-07-14	.12	1.2	.020	.8
AY-68-29-702	81-07-29	1.10	2.7	.030	.1
AY-68-29-804	81-07-20	.86	2.7	.030	35
AY-68-37-101	81-07-27	.96	2.9	.030	2.1
AY-68-37-404	81-07-27	.90	2.9	.030	<.1
AY-68-37-506	81-07-29	.33	.59	<.010	.1
AY-68-37-705	81-07-27	.26	1.6	<.010	<.1

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
BEXAR COUNTY--Continued

LOCAL IDENT- IFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
AY-68-21-804	81-07-24	0955	279	60	5.0	0	30	<1	10	<10
AY-68-27-302	81-07-20	1355	365	60	10	0	30	<2	20	<10
AY-68-27-303	81-07-22	1455	354	60	15	0	30	<1	10	<10
AY-68-27-305	81-07-22	1325	253	60	3.0	0	30	<1	10	<10
AY-68-27-503	81-07-15	1400	435	22	275	1	30	<1	10	<10
AY-68-27-504	81-08-27	1230	508	15	525	1	30	<1	0	<10
AY-68-28-202	81-07-17	0950	457	120	125	1	30	<1	10	<10
AY-68-28-501	81-07-17	1110	469	120	100	1	40	<1	0	<10
AY-68-28-502	81-07-17	1225	506	120	110	0	30	<1	10	<10
AY-68-28-508	81-07-16	1310	396	120	150	1	30	<1	10	<10
AY-68-28-512	81-07-23	1025	400	60	7.0	0	30	<1	10	<10
AY-68-28-608	81-07-23	1440	500	60	15	0	30	<1	10	<10
AY-68-28-903	81-07-21	1050	767	40	3500	0	50	<1	10	<10
AY-68-29-109	81-07-14	1045	460	60	450	0	40	<1	10	<10
AY-68-29-208	81-07-24	0835	266	60	10	1	30	<1	0	<10
AY-68-29-209	81-07-23	1610	315	60	10	1	30	<1	10	<10
AY-68-29-210	81-07-24	1230	330	60	3.0	0	30	<1	0	<10
AY-68-29-303	81-07-16	1010	527	60	150	0	30	<1	20	<10
AY-68-29-410	81-07-14	0950	318	60	620	1	40	<1	10	<10
AY-68-29-702	81-07-29	1325	872	60	3000	1	30	<1	10	<10
AY-68-29-804	81-07-20	1045	761	120	2100	1	40	<1	0	<10
AY-68-37-101	81-07-27	1040	1005	30	7700	1	40	<1	10	<10
AY-68-37-404	81-07-27	1225	1326	40	13800	0	60	<1	10	<10
AY-68-37-506	81-07-29	1440	1407	120	7600	0	110	<1	10	<10
AY-68-37-705	81-07-27	1355	1798	--	3000	1	120	<1	10	<10

LOCAL IDENT- IFIER	DATE OF SAMPLE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
AY-68-21-804	81-07-24	<10	<10	<1	.0	0	0	1200
AY-68-27-302	81-07-20	<10	<10	<1	.0	0	0	200
AY-68-27-303	81-07-22	<10	<10	<1	.0	0	0	280
AY-68-27-305	81-07-22	<10	<10	4	.0	0	0	2900
AY-68-27-503	81-07-15	<10	<10	<1	.0	0	0	5
AY-68-27-504	81-08-27	<10	<10	<1	.0	0	0	4
AY-68-28-202	81-07-17	<10	15	<1	.0	0	0	8
AY-68-28-501	81-07-17	<10	<10	<1	.0	0	0	9
AY-68-28-502	81-07-17	<10	<10	<1	.0	0	0	10
AY-68-28-508	81-07-16	<10	<10	<1	.0	0	0	2
AY-68-28-512	81-07-23	<10	<10	1	.0	0	0	470
AY-68-28-608	81-07-23	<10	12	<1	.0	0	0	450
AY-68-28-903	81-07-21	<10	<10	<1	.0	0	0	10
AY-68-29-109	81-07-14	<10	<10	<1	.2	0	0	10
AY-68-29-208	81-07-24	<10	<10	<1	.0	0	0	570
AY-68-29-209	81-07-23	<10	17	<1	.0	0	0	720
AY-68-29-210	81-07-24	<10	16	7	.0	0	0	820
AY-68-29-303	81-07-16	<10	<10	<10	.0	0	0	<3
AY-68-29-410	81-07-14	<10	<10	2	.1	0	0	10
AY-68-29-702	81-07-29	<10	20	<1	.0	0	0	<3
AY-68-29-804	81-07-20	<10	<10	<1	.0	1	0	4
AY-68-37-101	81-07-27	<10	<10	<1	.0	0	0	5
AY-68-37-404	81-07-27	<10	<10	<1	.0	0	0	3
AY-68-37-506	81-07-29	<10	14	<1	.0	0	0	5
AY-68-37-705	81-07-27	<10	14	<1	.0	0	0	5

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
BEXAR COUNTY--Continued

LOCAL IDENT- I- FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	PCB, TOTAL (UG/L) (39516)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	CHLOR- DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)
AY-68-27-504	81-08-27	1230	508	15	525	.00	.00	.00	.00	.00
AY-68-29-208	81-07-24	0835	266	60	10	.00	.00	.00	.00	.00
AY-68-29-702	81-07-29	1325	872	60	3000	.00	.00	.00	.00	.00

LOCAL IDENT- I- FIER	DATE OF SAMPLE	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI- AZINON, TOTAL (UG/L) (39570)	DI- ELDRIN TOTAL (UG/L) (39380)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)
AY-68-27-504	81-08-27	.00	.00	.00	.00	.00	.00	.00	.00	.00
AY-68-29-208	81-07-24	.00	.00	.00	.00	.00	.00	.00	.00	.00
AY-68-29-702	81-07-29	.00	.00	.00	.00	.00	.00	.00	.00	.00

LOCAL IDENT- I- FIER	DATE OF SAMPLE	LINDANE TOTAL (UG/L) (39340)	MALA- THION, TOTAL (UG/L) (39530)	METHYL PARA- THION, TOTAL (UG/L) (39600)	METHYL TRI- THION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PARA- THION, TOTAL (UG/L) (39540)	PER- THANE TOTAL (UG/L) (39034)	TOX- APHENE, TOTAL (UG/L) (39400)
AY-68-27-504	81-08-27	.00	.00	.00	.00	.00	.00	.00	0
AY-68-29-208	81-07-24	.00	.00	.00	.00	.00	.00	.00	0
AY-68-29-702	81-07-29	.00	.00	.00	.00	.00	.00	.00	0

LOCAL IDENT- I- FIER	DATE OF SAMPLE	TOTAL TRI- THION (UG/L) (39786)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	SILVEX, TOTAL (UG/L) (39760)
AY-68-27-504	81-08-27	.00	.00	.00	.00
AY-68-29-208	81-07-24	.00	--	--	--
AY-68-29-702	81-07-29	.00	.00	.00	.00

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
COMAL COUNTY

LOCAL IDENT- IFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
DX-68-15-901	81-07-28	1355	--	--	--	578	6.8	22.0	K6	K1
DX-68-16-502	81-07-01	0940	30	230	300	579	6.9	23.0	<1	<1
DX-68-22-901	81-06-30	0935	90	255	1350	533	6.8	22.5	<1	<1
DX-68-22-902	81-06-30	1030	150	240	750	535	6.9	22.5	<1	<1
DX-68-23-317	81-07-30	1000	30	360	80	555	7.0	22.5	<1	<1
DX-68-23-301	81-06-08	1500	--	--	--	543	7.0	23.0	2	<1
DX-68-23-303	81-07-29	0840	30	1045	4700	543	7.1	24.0	<1	<1
DX-68-23-316	81-07-24	1415	60	350	10	540	6.9	22.5	<1	<1
DX-68-23-602	81-07-29	0925	30	790	2750	543	7.1	23.0	<1	<1

LOCAL IDENT- IFIER	DATE OF SAMPLE	STREP- TOCOCCEI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CAC03) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY FIELD (MG/L AS CAC03) (00410)
DX-68-15-901	81-07-28	K2	291	21	100	10	7.4	.2	1.3	270
DX-68-16-502	81-07-01	<1	293	33	91	16	9.0	.2	1.0	260
DX-68-22-901	81-06-30	<1	264	14	86	12	6.5	.2	1.0	250
DX-68-22-902	81-06-30	<1	267	17	87	12	5.9	.2	1.0	250
DX-68-23-317	81-07-30	<1	295	25	90	17	6.3	.2	1.0	270
DX-68-23-301	81-06-08	1	261	30	78	16	9.4	.3	1.3	230
DX-68-23-303	81-07-29	<1	257	27	75	17	9.8	.3	1.5	230
DX-68-23-316	81-07-24	K1	283	13	92	13	5.9	.2	.9	270
DX-68-23-602	81-07-29	<1	262	22	80	15	8.3	.2	1.3	240

LOCAL IDENT- IFIER	DATE OF SAMPLE	SULFATE DIS- SOLVED (MG/L AS S04) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)
DX-68-15-901	81-07-28	10	11	.6	12	314	1.6	.030	.150	.95
DX-68-16-502	81-07-01	21	14	.2	13	321	2.0	.000	.050	.61
DX-68-22-901	81-06-30	3.6	11	.1	12	282	2.1	.010	.060	.67
DX-68-22-902	81-06-30	.7	17	.1	12	286	2.0	.010	.060	.63
DX-68-23-317	81-07-30	11	9.2	.6	12	309	1.3	.030	.170	.33
DX-68-23-301	81-06-08	24	14	.2	12	293	2.2	.000	.030	.27
DX-68-23-303	81-07-29	30	15	.5	13	300	1.8	.020	.200	.80
DX-68-23-316	81-07-24	6.0	8.7	.5	12	301	1.3	.030	.140	.12
DX-68-23-602	81-07-29	16	7.4	.6	12	285	1.9	.020	.190	.91

LOCAL IDENT- IFIER	DATE OF SAMPLE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)
DX-68-15-901	81-07-28	1.10	2.7	.030	<.1
DX-68-16-502	81-07-01	.66	2.7	.040	.0
DX-68-22-901	81-06-30	.73	2.8	.040	.2
DX-68-22-902	81-06-30	.69	2.7	.040	.0
DX-68-23-317	81-07-30	.50	1.8	.010	2.9
DX-68-23-301	81-06-08	.30	2.5	.010	.4
DX-68-23-303	81-07-29	1.00	2.8	.020	<.1
DX-68-23-316	81-07-24	.26	1.6	<.010	.4
DX-68-23-602	81-07-29	1.10	3.0	.030	<.1

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
COMAL COUNTY--Continued

LOCAL IDENT- IFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
DX-68-15-901	81-07-28	1355	--	--	--	1	30	<1	10	<10
DX-68-16-502	81-07-01	0940	230	30	300	1	100	<1	0	<10
DX-68-22-901	81-06-30	0935	255	90	1350	1	100	<1	10	<10
DX-68-22-902	81-06-30	1030	240	150	750	0	100	<1	0	<10
DX-68-23-317	81-07-30	1000	360	30	80	1	40	<1	0	<10
DX-68-23-301	81-06-08	1500	--	--	--	1	100	<1	0	<10
DX-68-23-303	81-07-29	0840	1045	30	4700	1	50	<1	10	<10
DX-68-23-316	81-07-24	1415	350	60	10	0	30	<1	10	<10
DX-68-23-602	81-07-29	0925	790	30	2750	0	40	<1	10	<10

LOCAL IDENT- IFIER	DATE OF SAMPLE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
DX-68-15-901	81-07-28	<10	<10	<1	.1	0	0	<3
DX-68-16-502	81-07-01	20	<10	<1	.0	0	0	6
DX-68-22-901	81-06-30	10	<10	<1	.0	0	0	10
DX-68-22-902	81-06-30	20	<10	<1	.2	0	0	<3
DX-68-23-317	81-07-30	20	<10	4	.0	0	0	210
DX-68-23-301	81-06-08	<10	<10	<1	.0	0	0	<3
DX-68-23-303	81-07-29	<10	<10	<1	.0	0	0	<3
DX-68-23-316	81-07-24	<10	22	<1	.0	0	0	520
DX-68-23-602	81-07-29	<10	<10	<1	.0	0	0	<3

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
HAYS COUNTY

LOCAL IDENT- I- FIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
LR-58-58-403	81-07-30	1400	60	390	800	583	7.0	22.5	<1	<1
LR-67-01-302	81-07-30	1145	60	360	800	707	7.1	25.0	<1	<1
LR-67-01-801	81-06-29	1130	--	--	--	625	--	22.0	K15	K4
	81-06-30	1140	--	--	--	620	6.9	21.5	K5	K1
LR-67-01-806	81-06-26	1330	40	128	2700	620	6.8	22.5	--	--
LR-67-09-105	81-06-08	1322	1440	330	1500	626	6.8	23.0	3	<1
LR-67-09-111	81-07-01	1055	30	264	1000	596	6.8	23.0	<1	<1

LOCAL IDENT- I- FIER	DATE OF SAMPLE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CAC03) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY FIELD (MG/L AS CAC03) (00410)
LR-58-58-403	81-07-30	<1	292	22	74	26	6.5	.2	1.2	270
LR-67-01-302	81-07-30	<1	329	99	64	41	9.8	.2	1.9	230
LR-67-01-801	81-06-29	22	298	48	88	19	15	.4	2.0	250
	81-06-30	K1	--	--	--	--	--	--	--	--
LR-67-01-806	81-06-26	--	305	35	94	17	13	.3	1.2	270
LR-67-09-105	81-06-08	1	302	42	93	17	14	.4	1.4	260
LR-67-09-111	81-07-01	<1	300	40	92	17	11	.3	1.1	260

LOCAL IDENT- I- FIER	DATE OF SAMPLE	SULFATE DIS- SOLVED (MG/L AS S04) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)
LR-58-58-403	81-07-30	28	10	.5	12	320	.09	.020	.170	.34
LR-67-01-302	81-07-30	130	11	2.9	14	413	1.4	.020	.130	.29
LR-67-01-801	81-06-29	33	27	.2	11	345	1.5	.000	.060	.44
	81-06-30	--	--	--	--	--	--	--	--	--
LR-67-01-806	81-06-26	29	20	.2	13	349	2.2	.010	.100	.71
LR-67-09-105	81-06-08	30	23	.2	12	347	1.7	.000	.040	.10
LR-67-09-111	81-07-01	25	18	.2	13	333	1.9	.010	.060	1.2

LOCAL IDENT- I- FIER	DATE OF SAMPLE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)
LR-58-58-403	81-07-30	.51	.62	<.010	.4
LR-67-01-302	81-07-30	.42	1.8	<.010	<.1
LR-67-01-801	81-06-29	.50	2.0	.040	.9
	81-06-30	--	--	--	--
LR-67-01-806	81-06-26	.81	3.0	.040	.0
LR-67-09-105	81-06-08	.14	1.8	.010	4.0
LR-67-09-111	81-07-01	1.30	3.2	.050	.3

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
HAYS COUNTY--Continued

LOCAL IDENT- I- FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
LR-58-58-403	81-07-30	1400	390	60	800	1	140	<1	0	<10
LR-67-01-302	81-07-30	1145	360	60	800	2	60	<1	0	<10
LR-67-01-801	81-06-29	1130	--	--	--	0	100	<1	10	<10
LR-67-01-806	81-06-26	1330	128	40	2700	1	100	<1	0	<10
LR-67-09-105	81-06-08	1322	330	1440	1500	0	90	<1	0	<10
LR-67-09-111	81-07-01	1055	264	30	1000	1	100	<1	10	<10
LOCAL IDENT- I- FIER	DATE OF SAMPLE	TIME	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	
LR-58-58-403	81-07-30		11	24	<1	.0	0	0	12	
LR-67-01-302	81-07-30		19	<10	<1	.0	0	0	<3	
LR-67-01-801	81-06-29		<10	<10	<1	.0	0	0	<3	
LR-67-01-806	81-06-26		<10	<10	<1	.0	0	0	7	
LR-67-09-105	81-06-08		<10	<10	<1	.1	0	0	<3	
LR-67-09-111	81-07-01		<10	<10	<1	.0	0	0	3	
LOCAL IDENT- I- FIER	DATE OF SAMPLE	TIME	PCB, TOTAL (UG/L) (39516)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	CHLOR- DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI- AZINON, TOTAL (UG/L) (39570)
LR-67-01-801	81-06-29	1130	.00	.00	.00	.00	.00	.00	.00	.00
LOCAL IDENT- I- FIER	DATE OF SAMPLE	DI- ELDRIN TOTAL (UG/L) (39380)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)	MALA- THION, TOTAL (UG/L) (39530)	METHYL PARA- THION, TOTAL (UG/L) (39600)
LR-67-01-801	81-06-29	.00	.00	.00	.00	.00	.00	.00	.00	.00
LOCAL IDENT- I- FIER	DATE OF SAMPLE	METHYL TRI- THION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PARA- THION, TOTAL (UG/L) (39540)	PER- THANE TOTAL (UG/L) (39034)	TOX- APHENE, TOTAL (UG/L) (39400)	TOTAL TRI- THION (UG/L) (39786)			
LR-67-01-801	81-06-29	.00	.00	.00	.00	0	.00			

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
MEDINA COUNTY

LOCAL IDENT- IFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
TD-68-26-701	81-08-13	1345	105	750	500	531	7.2	23.0	<1	<1
TD-68-33-202	81-08-24	1135	60	279	10	464	7.1	22.5	<1	<1
TD-68-41-303	81-08-13	1530	420	717	390	489	7.2	23.5	<1	<1
TD-68-42-503	81-08-25	1050	30	1373	380	461	7.0	25.5	--	--
TD-69-37-302	81-08-17	1315	50	410	20	529	6.9	23.5	K2	K1
TD-69-46-601	81-08-18	1400	300	1289	400	475	7.2	23.5	<1	<1
TD-69-47-301	81-08-25	1255	240	1510	1000	470	7.0	24.0	--	--
TD-69-56-507	81-08-19	1530	240	2157	300	474	7.2	33.5	<1	<1

LOCAL IDENT- IFIER	DATE OF SAMPLE	STREP- TOCOCCHI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CAC03) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY FIELD (MG/L AS CAC03) (00410)
TD-68-26-701	81-08-13	<1	265	55	73	20	7.0	.2	1.4	210
TD-68-33-202	81-08-24	<1	224	34	73	10	6.3	.2	1.1	190
TD-68-41-303	81-08-13	<1	239	39	71	15	8.5	.2	1.1	200
TD-68-42-503	81-08-25	--	223	33	63	16	7.8	.2	1.0	190
TD-69-37-302	81-08-17	K1	258	38	85	11	8.8	.2	1.2	220
TD-69-46-601	81-08-18	<1	244	34	73	15	8.3	.2	1.0	210
TD-69-47-301	81-08-25	--	229	19	67	15	7.6	.2	1.1	210
TD-69-56-507	81-08-19	44	223	33	53	22	11	.3	1.1	190

LOCAL IDENT- IFIER	DATE OF SAMPLE	SULFATE DIS- SOLVED (MG/L AS S04) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)
TD-68-26-701	81-08-13	53	14	.2	12	307	.99	.010	.020	.45
TD-68-33-202	81-08-24	28	11	.1	12	256	--	<.020	<.060	--
TD-68-41-303	81-08-13	16	19	.1	12	263	2.5	.000	.020	.44
TD-68-42-503	81-08-25	13	18	.2	13	246	--	<.020	.020	.60
TD-69-37-302	81-08-17	26	14	.2	14	292	1.2	.010	.040	.82
TD-69-46-601	81-08-18	19	15	.2	13	271	1.5	.020	.070	.62
TD-69-47-301	81-08-25	13	20	.2	13	263	--	<.020	.040	.31
TD-69-56-507	81-08-19	35	13	.6	15	265	.31	.020	.060	.25

LOCAL IDENT- IFIER	DATE OF SAMPLE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)
TD-68-26-701	81-08-13	.47	1.5	.010	.3
TD-68-33-202	81-08-24	.29	1.1	.030	.8
TD-68-41-303	81-08-13	.46	3.0	.020	<.1
TD-68-42-503	81-08-25	.62	2.2	.020	.7
TD-69-37-302	81-08-17	.86	2.1	.020	.3
TD-69-46-601	81-08-18	.69	2.2	.010	.1
TD-69-47-301	81-08-25	.35	1.9	.020	.6
TD-69-56-507	81-08-19	.31	.64	.010	.1

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
MEDINA COUNTY--Continued

LOCAL IDENT- IFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	ARSENIC DIS- SOLVED (UG/L) AS AS (01000)	BARIUM, DIS- SOLVED (UG/L) AS BA (01005)	CADMIUM DIS- SOLVED (UG/L) AS CD (01025)	CHRO- MIUM, DIS- SOLVED (UG/L) AS CR (01030)	COPPER, DIS- SOLVED (UG/L) AS CU (01040)
TD-68-26-701	81-08-13	1345	750	105	500	0	30	<1	0	<10
TD-68-33-202	81-08-24	1135	279	60	10	0	32	<1	0	<10
TD-68-41-303	81-08-13	1530	717	420	390	0	50	<1	0	<10
TD-68-42-503	81-08-25	1050	1373	30	380	1	70	<1	0	<10
TD-69-37-302	81-08-17	1315	410	50	20	0	40	<1	0	<10
TD-69-46-601	81-08-18	1400	1289	300	400	0	40	<1	0	<10
TD-69-47-301	81-08-25	1255	1510	240	1000	0	40	<1	0	<10
TD-69-56-507	81-08-19	1530	2157	240	300	1	190	<1	0	<10

LOCAL IDENT- IFIER	DATE OF SAMPLE	IRON, DIS- SOLVED (UG/L) AS FE (01046)	LEAD, DIS- SOLVED (UG/L) AS PB (01049)	MANGA- NESE, DIS- SOLVED (UG/L) AS MN (01056)	MERCURY DIS- SOLVED (UG/L) AS HG (71890)	SELE- NIUM, DIS- SOLVED (UG/L) AS SE (01145)	SILVER, DIS- SOLVED (UG/L) AS AG (01075)	ZINC, DIS- SOLVED (UG/L) AS ZN (01090)
TD-68-26-701	81-08-13	<10	<10	<1	.0	0	0	<3
TD-68-33-202	81-08-24	<10	<10	<1	.0	0	0	170
TD-68-41-303	81-08-13	<10	<10	<1	.0	0	0	3
TD-68-42-503	81-08-25	<10	<10	<1	.0	0	0	<3
TD-69-37-302	81-08-17	<10	<10	<1	.0	0	0	120
TD-69-46-601	81-08-18	11	<10	2	.0	0	0	35
TD-69-47-301	81-08-25	<10	<10	<1	.0	0	0	5
TD-69-56-507	81-08-19	18	<10	1	.0	11	0	5

LOCAL IDENT- IFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	PCB, TOTAL (UG/L) (39516)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	CHLOR- DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)
TD-69-37-302	81-08-17	1315	410	50	20	.00	.00	.00	.00	.00

LOCAL IDENT- IFIER	DATE OF SAMPLE	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI- AZINON, TOTAL (UG/L) (39570)	DI- ELDRIN TOTAL (UG/L) (39380)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	CHLOR EPOXIDE TOTAL (UG/L) (39420)
TD-69-37-302	81-08-17	.00	.00	.00	.00	.00	.00	.00	.00	.00

LOCAL IDENT- IFIER	DATE OF SAMPLE	LINDANE TOTAL (UG/L) (39340)	MALA- THION, TOTAL (UG/L) (39530)	METHYL PARA- THION, TOTAL (UG/L) (39600)	METHYL TRI- THION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PARA- THION, TOTAL (UG/L) (39540)	PER- THANE TOTAL (UG/L) (39034)	TOX- APHENE, TOTAL (UG/L) (39400)
TD-69-37-302	81-08-17	.00	.00	.00	.00	.00	.00	.00	0

LOCAL IDENT- IFIER	DATE OF SAMPLE	TOTAL TRI- THION (UG/L) (39786)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	SILVEX, TOTAL (UG/L) (39760)
TD-69-37-302	81-08-17	.00	.00	.00	.00

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
UVALDE COUNTY

LOCAL IDENT- IFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	SPE- CIFIC CON- DUCT- ANCE (UMHOS) (00095)	PH (STAND- ARD UNITS) (00400)	TEMPER- ATURE (DEG C) (00010)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLI- FORM, FECAL, 0.7 UM-HF (COLS./ 100 ML) (31625)
YP-69-35-803	81-08-11	1200	1440	682	1500	432	7.1	23.0	--	--
YP-69-36-702	81-08-26	1145	360	538	1250	473	7.0	22.0	--	--
YP-69-42-606	81-08-22	1600	480	525	1200	625	7.0	23.0	--	--
YP-69-43-302	81-08-22	1500	1440	630	1900	548	7.0	23.0	--	--
YP-69-43-603	81-08-26	1415	60	1373	250	610	7.0	31.0	--	--
YP-69-43-606	81-08-26	1300	20	698	550	513	7.0	23.5	--	--
YP-69-45-404	81-08-14	1530	10	1493	250	552	--	23.0	<1	<1
YP-69-45-405	81-08-14	1445	420	1211	650	484	7.2	22.5	--	--
YP-69-50-203	81-08-14	1200	240	525	480	562	--	23.5	<1	<1
YP-69-50-506	81-08-14	1245	300	525	1400	576	7.1	23.0	<1	<1

LOCAL IDENT- IFIER	DATE OF SAMPLE	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARD- NESS (MG/L AS CAC03) (00900)	HARD- NESS, NONCAR- BONATE (MG/L CAC03) (00902)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LITY FIELD (MG/L AS CAC03) (00410)
YP-69-35-803	81-08-11	--	213	23	64	13	5.9	.2	.9	190
YP-69-36-702	81-08-26	--	221	31	62	16	8.5	.3	.9	190
YP-69-42-606	81-08-22	--	276	76	94	9.9	19	.5	1.2	220
YP-69-43-302	81-08-22	--	250	49	80	12	14	.4	1.1	200
YP-69-43-603	81-08-26	--	247	67	71	17	13	.4	2.2	180
YP-69-43-606	81-08-26	--	234	44	74	12	<10	--	1.3	190
YP-69-45-404	81-08-14	<1	264	54	76	18	13	.4	1.8	210
YP-69-45-405	81-08-14	--	240	30	73	14	6.9	.2	1.1	210
YP-69-50-203	81-08-14	<1	265	55	88	11	14	.4	1.0	210
YP-69-50-506	81-08-14	<1	259	49	90	8.4	15	.4	1.0	210

LOCAL IDENT- IFIER	DATE OF SAMPLE	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L) (70301)	NITRO- GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO- GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO- GEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITRO- GEN, ORGANIC TOTAL (MG/L AS N) (00605)
YP-69-35-803	81-08-11	9.0	14	.1	12	233	1.5	.010	.060	.53
YP-69-36-702	81-08-26	11	26	.1	13	251	--	<.020	<.060	--
YP-69-42-606	81-08-22	15	54	.1	13	338	3.7	.020	.100	.17
YP-69-43-302	81-08-22	12	37	.1	13	290	2.6	.020	.100	.68
YP-69-43-603	81-08-26	110	9.7	3.0	16	350	--	<.020	.080	.25
YP-69-43-606	81-08-26	18	28	.1	13	258	--	<.020	<.060	--
YP-69-45-404	81-08-14	49	20	.2	13	317	--	<.010	.020	.48
YP-69-45-405	81-08-14	19	13	.2	13	266	1.4	.000	.000	.48
YP-69-50-203	81-08-14	16	40	.1	13	309	2.4	.010	.030	.37
YP-69-50-506	81-08-14	22	35	.1	13	310	1.8	.010	.040	.39

LOCAL IDENT- IFIER	DATE OF SAMPLE	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, TOTAL (MG/L AS N) (00600)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)
YP-69-35-803	81-08-11	.59	2.1	.020	.3
YP-69-36-702	81-08-26	.68	2.8	.010	.8
YP-69-42-606	81-08-22	.27	4.0	<.010	.1
YP-69-43-302	81-08-22	.78	3.4	<.010	.5
YP-69-43-603	81-08-26	.33	--	.020	.7
YP-69-43-606	81-08-26	.76	3.8	.010	1.2
YP-69-45-404	81-08-14	.50	2.1	.020	<.1
YP-69-45-405	81-08-14	.48	1.9	.020	.2
YP-69-50-203	81-08-14	.40	2.8	.020	<.1
YP-69-50-506	81-08-14	.43	2.2	.020	.4

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1981--Continued
UVALDE COUNTY--Continued

LOCAL IDENT- IFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)
YP-69-35-R03	81-08-11	1200	682	1440	1500	0	40	<1	0	<10
YP-69-36-702	81-08-26	1145	538	360	1250	0	40	<1	0	<10
YP-69-42-606	81-08-22	1600	525	480	1200	1	60	<1	0	<10
YP-69-43-302	81-08-22	1500	630	1440	1900	1	50	<1	0	<10
YP-69-43-603	81-08-26	1415	1373	60	250	2	80	<1	0	<10
YP-69-43-606	81-08-26	1300	698	20	550	3	50	<1	0	<10
YP-69-45-404	81-08-14	1530	1493	10	250	0	50	<1	0	<10
YP-69-45-405	81-08-14	1445	1211	420	650	0	40	<1	0	<10
YP-69-50-203	81-08-14	1200	525	240	480	1	50	<1	0	<10
YP-69-50-506	81-08-14	1245	525	300	1400	1	60	<1	0	<10

LOCAL IDENT- IFIER	DATE OF SAMPLE	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MERCURY DIS- SOLVED (UG/L AS HG) (71890)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)
YP-69-35-R03	81-08-11	<10	<10	<1	.0	0	0	<3
YP-69-36-702	81-08-26	<10	<10	<1	.0	0	0	<3
YP-69-42-606	81-08-22	<10	<10	<1	.0	1	1	3
YP-69-43-302	81-08-22	<10	<10	<1	.0	0	0	6
YP-69-43-603	81-08-26	470	<10	8	.0	0	0	7
YP-69-43-606	81-08-26	<10	<10	<1	.0	1	0	3
YP-69-45-404	81-08-14	<10	<10	<1	.0	1	0	<3
YP-69-45-405	81-08-14	<10	<10	<1	.0	0	0	<3
YP-69-50-203	81-08-14	<10	<10	<1	.0	0	0	7
YP-69-50-506	81-08-14	<10	<10	1	.0	0	0	<3

LOCAL IDENT- IFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAM- PLING (MIN) (72004)	FLOW RATE, INSTAN- TANEOUS (GPM) (00059)	PCB, TOTAL (UG/L) (39516)	NAPH- THA- LENES, POLY- CHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	CHLOR- DANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)
YP-69-36-702	81-08-26	1145	538	360	1250	.00	.00	.00	.00	.00

LOCAL IDENT- IFIER	DATE OF SAMPLE	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DI- AZINON, TOTAL (UG/L) (39570)	DI- ELDRIN TOTAL (UG/L) (39380)	ENDO- SULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTA- CHLOR, TOTAL (UG/L) (39410)	HEPTA- CHLOR EPOXIDE TOTAL (UG/L) (39420)
YP-69-36-702	81-08-26	.00	.00	.00	.00	.00	.00	.00	.00	.00

LOCAL IDENT- IFIER	DATE OF SAMPLE	LINDANE TOTAL (UG/L) (39340)	MALA- THION, TOTAL (UG/L) (39530)	METHYL PARA- THION, TOTAL (UG/L) (39600)	METHYL TRI- THION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PARA- THION, TOTAL (UG/L) (39540)	PER- THANE TOTAL (UG/L) (39034)	TOX- APHENE, TOTAL (UG/L) (39400)
YP-69-36-702	81-08-26	.00	.00	.00	.00	.00	.00	.00	0

LOCAL IDENT- IFIER	DATE OF SAMPLE	TOTAL TRI- THION (UG/L) (39786)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	SILVEX, TOTAL (UG/L) (39760)
YP-69-36-702	81-08-26	.00	.01	.00	.00

Table 8.--Summary of regulations for selected water-quality constituents and properties for public water systems

DEFINITIONS

Contaminant-----Any physical, chemical, biological, or radiological substance or matter in water.

Public

water system-----A system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves at least 25 individuals daily at least 60 days during the year.

Maximum

contaminant level----The maximum permissible level of a contaminant in water which is delivered to the free-flowing outlet of the ultimate user of a public water system. Maximum contaminant levels are those levels set by the U.S. Environmental Protection Agency (1976) in the National Interim Primary Drinking Water Regulations. These regulations deal with contaminants that may have a significant direct impact on the health of the consumer and are enforceable by EPA.

Secondary maximum

contaminant level----The advisable maximum level of a contaminant in water which is delivered to the free-flowing outlet of the ultimate user of a public water system. Secondary maximum contaminant levels are those levels proposed by EPA (1977) in the National Secondary Drinking Water Regulations. These regulations deal with contaminants that may not have a significant direct impact on the health of the consumer, but their presence in excessive quantities may affect the esthetic qualities and discourage the utilization of a drinking water supply by the public.

INORGANIC CHEMICALS AND RELATED PROPERTIES

Contaminant	Maximum contaminant level	Secondary maximum contaminant level
Arsenic (As)	50 µg/L	--
Barium (Ba)	1,000 µg/L	--
Cadmium (Cd)	10 µg/L	--
Chloride (Cl)	--	250 mg/L
Chromium (Cr)	50 µg/L	--
Copper (Cu)	--	1,000 µg/L
Iron (Fe)	--	300 µg/L
Lead (Pb)	50 µg/L	--
Manganese (Mn)	--	50 µg/L
Mercury (Hg)	2 µg/L	--
Nitrate (as N)	10 mg/L	--
pH	--	6.5 - 8.5
Selenium (Se)	10 µg/L	--
Silver (Ag)	50 µg/L	--
Sulfate (SO ₄)	--	250 mg/L
Zinc (Zn)	--	5,000 µg/L
Dissolved solids	--	500 mg/L

Fluoride-----The maximum contamination level for fluoride depends on the annual average of the maximum daily air temperatures for the location in which the community water system is situated. A range of annual averages of maximum daily air temperatures and corresponding maximum contamination level for fluoride are given in the following tabulation.

Average of maximum daily air temperatures (degrees Celsius)	Maximum contaminant level for fluoride (mg/L)
12.0 and below	2.4
12.1 - 14.6	2.2
14.7 - 17.6	2.0
17.7 - 21.4	1.8
21.5 - 26.2	1.6
26.3 - 32.5	1.4

ORGANIC CHEMICALS

Contaminant	Maximum contaminant level (µg/L)
Chlorinated Hydrocarbons	
Endrin	0.2
Lindane	4
Methoxychlor	100
Toxaphene	5
Chlorophenoxys	
2,4-D	100
Silvex	10

Table 9.--Streamflow, spring flow, reservoir contents, and water-quality
data for streams, October 1980 to September 1981

GUADALUPE RIVER BASIN

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 (0.8 km) downstream from Cypress Creek, and at mile 396.2 (637.5 km).

DRAINAGE AREA.--839 mi² (2,173 km²).

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 (418.134 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 27, 1939, nonrecording gage. Nov. 27, 1939, to June 2, 1980 recording at gage site 0.4 mi (0.6 km) upstream at datum 0.22 ft (0.067 m) lower.

REMARKS.--Records good. Many small diversions above station for irrigation. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--42 years (water years 1940-81), 186 ft³/s (5.268 m³/s), 134,800 acre-ft/yr (166 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 240,000 ft³/s (6,800 m³/s) Aug. 2, 1978, gage height, 40.90 ft (12.466 m), from high-water mark in well, from rating curve extended above 74,000 ft³/s (2,100 m³/s) on basis of current-meter measurement of 124,000 ft³/s (3,510 m³/s) at gage height 32.47 ft (9.897 m) and slope-area measurement of 182,000 ft³/s (5,150 m³/s) at gage height 38.4 ft (11.70 m), made at former gaging station "near Comfort" 5 mi (8 km) 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 (12.28 m), from report by Corps of Engineers. Flood of July 1, 1932, reached a stage of 38.4 ft (11.70 m), 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 above base of 2,600 ft³/s (73.6 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 16	0230	19,600 555	15.40 4.694	June 4	2030	5,700 161	8.51 2.594
Mar. 4	0200	4,090 116	7.18 2.188	June 12	1730	7,700 218	9.87 3.008
Mar. 29	0130	16,700 473	14.30 4.359	June 14	1200	4,150 118	7.23 2.204
Apr. 18	1830	5,750 163	8.55 2.606	June 16	1700	*24,200 685	16.92 5.157
Apr. 23	1900	9,150 259	10.74 2.274				

Minimum discharge, 126 ft³/s (3.57 m³/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	479	181	194	161	153	168	503	524	328	595	253	197
2	335	180	190	156	144	187	460	533	312	570	249	559
3	278	179	185	156	141	698	473	592	317	563	245	284
4	244	175	190	156	146	1810	454	587	1490	564	242	237
5	225	168	192	152	161	586	409	525	1650	647	234	220
6	208	165	195	155	160	457	402	490	685	693	222	211
7	195	166	190	158	153	412	396	460	503	625	228	209
8	185	167	198	158	149	372	382	444	430	600	232	207
9	175	162	208	156	147	355	375	446	386	570	226	197
10	166	158	204	156	171	335	371	403	353	540	238	194
11	160	158	192	154	153	352	368	393	339	515	243	189
12	154	157	188	151	152	499	362	393	1880	490	222	187
13	148	156	186	151	155	503	351	378	1320	470	210	256
14	143	154	184	155	155	440	338	372	2020	450	209	236
15	143	154	194	152	151	413	334	360	1290	435	213	400
16	4750	217	194	151	148	383	338	347	12900	420	206	260
17	435	223	189	150	145	378	335	349	4410	405	220	217
18	801	189	187	144	144	369	2350	344	2370	390	313	201
19	504	172	187	166	145	342	1310	321	1470	380	298	192
20	317	167	187	186	146	347	661	323	1180	365	263	190
21	274	168	189	170	145	348	537	305	1040	352	236	188
22	251	169	187	166	144	332	491	288	931	340	223	187
23	235	179	187	168	134	315	3710	301	842	330	214	186
24	220	173	184	165	132	316	2010	302	791	320	212	184
25	206	181	179	157	135	316	929	396	752	311	204	182
26	202	279	177	156	139	313	740	324	724	300	203	176
27	206	243	175	154	143	309	659	296	769	334	194	174
28	203	218	170	155	151	515	609	275	729	319	193	170
29	200	204	168	158	---	4040	594	268	693	296	191	163
30	188	195	163	163	---	740	548	278	645	287	198	174
31	184	---	163	157	---	572	---	372	---	270	200	---
TOTAL	12414	5457	5776	4893	4142	17522	21799	11989	43549	13746	7034	6627
MEAN	400	182	186	158	148	565	727	387	1452	443	227	221
MAX	4750	279	208	186	171	4040	3710	592	12900	693	313	559
MIN	143	154	163	144	132	168	334	268	312	270	191	163
AC-FT	24620	10820	11460	9710	8220	34750	43240	23780	86380	27270	13950	13140
CAL YR 1980	TOTAL	61391	MEAN 168	MAX 4750	MIN 12	AC-FT 121800						
WTR YR 1981	TOTAL	154948	MEAN 425	MAX 12900	MIN 132	AC-FT 307300						

GUADALUPE RIVER BASIN

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX

LOCATION (revised).--Lat 29°23'00", long 98°23'00", Comal County, Hydrologic Unit 12100201, on downstream side of bridge on Ranch Road 311, 1.9 mi (3.1 km) southeast of Spring Branch Post Office, 7.5 mi (12.1 km) downstream from Curry Creek, and at mile 334.4 (538.0 km). Gage moved 220 ft (67 m) upstream to downstream side of bridge Jan. 14, 1981.

DRAINAGE AREA.--1,315 mi² (3,406 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1922 to current year.

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 (288.981 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. Several small diversions above station for irrigation. Several observations of water temperature were made during the year. Gage-height telemeter located at station.

AVERAGE DISCHARGE.--59 years, 312 ft³/s (8.836 m³/s), 226,000 acre-ft (279 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 160,000 ft³/s (4,530 m³/s) Aug. 3, 1978, gage height, 45.25 ft (13.792 m), from floodmark, from rating curve extended above 55,600 ft³/s (1,570 m³/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 (16.2 m) in 1869; flood in July 1900 reached a stage of about 49 ft (14.9 m), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 16	2200	12,400 351	15.55 4.740	June 5	1500	10,400 295	13.99 4.264
Mar. 4	1900	5,010 142	9.04 2.755	June 13	1200	5,380 152	9.44 2.877
Mar. 29	2000	8,840 250	12.72 3.877	June 14	--	15,600 442	-- --
Apr. 19	1100	5,280 150	9.34 2.847	June 16	--	16,000 453	-- --
Apr. 24	1400	7,510 213	11.55 3.520	June 17	1200	*24,500 694	23.03 7.020

Minimum discharge, 135 ft³/s (3.82 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1470	215	291	203	193	184	802	698	415	1260	405	268
2	748	208	287	199	182	194	688	673	351	1200	383	263
3	528	208	266	195	172	245	639	736	326	1130	373	659
4	403	201	262	194	176	2910	630	794	373	1080	363	380
5	336	196	267	190	189	2020	573	717	5920	1230	352	310
6	309	186	270	192	206	973	517	624	2330	1410	348	284
7	261	182	270	192	210	740	505	572	1240	1280	334	264
8	241	175	270	192	198	646	494	531	974	1110	337	259
9	223	176	266	192	192	554	474	510	843	1050	323	243
10	207	173	270	192	196	515	455	493	742	987	333	229
11	194	163	270	192	206	478	448	432	835	956	339	221
12	183	158	255	189	227	552	438	424	921	895	341	209
13	175	153	247	185	201	950	419	420	3170	834	321	207
14	171	151	243	195	198	832	400	401	7440	795	301	709
15	170	151	247	192	198	739	381	385	8230	756	303	605
16	3940	178	251	188	195	662	378	378	9660	716	291	547
17	2630	218	249	183	191	614	379	363	17400	693	282	330
18	864	275	243	180	187	598	417	348	7280	658	314	258
19	1310	232	240	200	183	550	3110	328	3880	622	449	229
20	843	201	229	213	180	506	1350	299	2980	599	425	214
21	554	186	225	247	179	513	877	293	2540	569	366	206
22	432	187	240	227	174	491	644	280	2250	550	326	199
23	367	190	240	215	168	455	1690	266	2020	532	306	194
24	326	194	243	215	166	427	4970	292	1840	504	298	188
25	287	201	240	214	158	416	2130	747	1690	484	290	180
26	266	268	236	205	161	411	1310	487	1700	472	272	170
27	263	419	232	200	163	405	1030	349	1650	474	263	161
28	247	364	223	190	166	403	906	300	1580	487	254	151
29	243	317	218	187	---	3050	852	274	1450	475	251	148
30	236	292	213	186	---	2300	759	265	1340	454	251	139
31	222	---	208	187	---	1080	---	444	---	435	265	---
TOTAL	18649	6418	7711	6131	5215	25413	28665	14123	93370	24697	10059	8424
MEAN	602	214	249	198	186	820	956	456	3112	797	324	281
MAX	3940	419	291	247	227	3050	4970	794	17400	1410	449	709
MIN	170	151	208	180	158	184	378	265	326	435	251	139
AC-FT	36990	12730	15290	12160	10340	50410	56860	28010	185200	48990	19950	16710
CAL YR 1980 TOTAL	82385											
WTR YR 1981 TOTAL	248875											
MEAN 225												
MAX 3940												
MIN 139												
AC-FT 163400												
AC-FT 493600												

GUADALUPE RIVER BASIN

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1980 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)	HARD- NESS, NONCAR- BONATE (MG/L CACO3)
NOV 13...	1824	153	507	8.2	17.5	10	.60	8.4	90	1.4	230	15
JAN 09...	1115	229	508	8.3	11.0	0	2.0	10.6	98	1.4	240	14
MAY 05...	1631	229	497	8.2	23.5	5	12	8.3	101	1.3	250	22
JUN 17...	1220	23400	306	8.0	22.0	30	560	6.9	81	4.4	150	13
JUL 28...	1108	478	497	7.8	27.0	0	8.2	7.5	96	.6	240	30
SEP 09...	1445	247	474	--	26.5	0	13	8.0	103	.8	230	31

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 (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, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)
NOV 13...	61	20	12	.3	2.0	220	15	21	.2	10	--
JAN 09...	63	21	12	.3	1.3	230	27	18	.3	8.2	--
MAY 05...	68	20	10	.3	1.6	230	25	14	.2	12	--
JUN 17...	46	9.3	4.0	.1	2.5	140	2.9	4.6	.1	13	--
JUL 28...	60	22	12	.4	1.6	210	23	14	.2	14	277
SEP 09...	58	21	12	.3	1.9	200	23	17	.2	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)
NOV 13...	273	0	1	.85	.000	.85	.030	.41	.44	.040	7.6
JAN 09...	289	2	8	.82	.000	.82	.030	.56	.59	.080	9.3
MAY 05...	289	16	10	.30	.000	.30	.060	.62	.68	.010	2.9
JUN 17...	167	1200	82	.37	.020	.39	.100	3.0	3.1	.230	48
JUL 28...	273	11	7	.95	.010	.96	.160	.94	1.1	.020	2.6
SEP 09...	264	22	0	--	<.020	.65	.060	.60	.66	.020	2.4

GUADALUPE RIVER BASIN

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
NOV 13...	1824	1	40	<1	0	<10	10
JAN 09...	1115	0	40	3	0	<10	<10
JUN 17...	1220	1	80	<1	0	<10	100
SEP 09...	1445	1	0	0	0	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)
NOV 13...	<10	1	.2	0	0	5
JAN 09...	46	<1	.2	0	0	4
JUN 17...	<10	6	.3	0	0	40
SEP 09...	2	0	.3	0	0	10

GUADALUPE RIVER BASIN

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 (19 km) northwest of New Braunfels, and at mile 303.0 (487.5 km).

DRAINAGE AREA.--1,432 mi² (3,709 km²).

WATER-DISCHARGE RECORDS

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 Corps of Engineers). Prior to Sept. 24, 1964, nonrecording gage at present site and datum. Corps of Engineers gage-height telemeter at station.

REMARKS.--The lake is formed by a rolled earthfill dam 6,830 ft (2,082 m) long, consisting of the main dam 4,410 ft (1,344 m) long, an earthen dike 210 ft (64 m) long, a 1,260-foot-long (384 m) uncontrolled broad-crested-type spillway, and a 950-foot (290 m) 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 (3.0 m) conduit controlled by two 5.7 by 10.0-foot (1.7 by 3.0 m) 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. 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 Corps of Engineers and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 588,400 acre-ft (725 hm³) Aug. 4, 1978, elevation, 930.61 ft (283.650 m); minimum observed since conservation pool first reached in April 1968, 338,600 acre-ft (417 hm³) Sept. 5, 1980, elevation, 903.54 ft (275.399 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 472,000 acre-ft (582 hm³) June 18 at 0300 hours, elevation, 919.20 ft (280.172 m); minimum, 349,300 acre-ft (431 hm³) Sept. 14 at 0800 hours, elevation, 904.92 ft (275.820 m).

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

904.0	342,200	908.0	373,800	916.0	442,400
905.0	349,900	910.0	390,300	918.0	460,800
906.0	357,800	912.0	407,300	920.0	479,600
907.0	365,800	914.0	424,600		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	356000	357700	357200	359200	360100	357700	373800	381500	367400	418500	388600	356300
2	356600	357500	357200	359200	359900	357600	373900	381000	367000	419300	387700	355000
3	356600	357300	357200	359200	359800	357800	374000	380800	367000	420000	386800	354800
4	356800	357000	357500	359000	360300	361500	373700	380400	367000	420700	385800	353900
5	356500	356700	357600	359100	360500	364000	373400	380000	375000	422300	384900	352700
6	356200	356300	357900	359100	360700	365400	373000	379500	377400	423600	384100	351600
7	355900	356100	358200	359000	360700	366300	372800	378700	378300	420700	383100	350600
8	355600	355800	358800	359200	360700	367000	372400	378000	378700	413300	382200	349900
9	355200	355600	358700	359200	360900	367400	372200	377300	378900	406000	381300	349700
10	354800	355400	358700	359200	361000	367500	371800	376100	378900	402100	380200	349600
11	354300	355400	358800	359200	360200	367800	371500	375000	380000	402400	379000	349500
12	353900	355100	358800	359100	360100	368400	371200	374200	383700	402700	377800	349500
13	353400	355000	358900	359200	359900	369200	370700	373900	391300	402700	376700	349400
14	353100	354900	359200	359200	359800	369900	370200	373400	405100	400700	375600	350600
15	352900	355000	359300	359100	359700	370400	369700	372900	422300	398500	374500	351300
16	358600	356000	359400	358900	359500	370700	369300	372800	440500	398300	373300	351700
17	363600	355700	359400	358800	359400	371100	368700	372400	467800	398100	372200	351500
18	364800	355700	359500	358700	359300	370800	368300	372100	471900	397700	371200	351300
19	365800	355600	359500	359500	359200	370400	370900	371500	470200	397100	370400	351200
20	366200	355600	359300	359800	359100	370200	372500	370900	466800	396800	369100	351100
21	365500	355500	359200	359900	359000	370000	372400	370200	462200	398200	368200	351000
22	364700	355500	359100	359900	358600	369500	372000	369700	457000	394800	366900	350900
23	363900	355500	359200	359900	358300	369100	374000	369100	451500	395100	365800	350800
24	362800	355400	359400	359900	358100	368700	380200	369600	445600	394300	365200	350800
25	361800	356100	359200	360000	358000	368300	382000	369900	439900	393600	364200	350600
26	360800	356100	359200	360100	357900	367900	382400	369700	434200	393200	363000	350500
27	360200	356400	359200	360200	357600	367500	382500	369200	427800	392500	361900	350400
28	359000	356500	359200	360200	357600	367200	382400	368700	421500	391900	360600	350200
29	358600	356700	359400	360300	---	369400	382200	368300	416500	391100	359500	350000
30	358400	356900	359300	360100	---	373000	381800	367800	417100	390100	358400	349900
31	358000	---	359200	360300	---	373700	---	367400	---	389600	357600	---
MAX	366200	357700	359500	360300	361000	373700	382500	381500	471900	423600	388600	356300
MIN	352900	354900	357200	358700	357600	357600	368300	367400	367000	389600	357600	349400
(†)	906.03	905.89	906.18	906.31	905.97	907.98	908.98	907.21	913.14	909.91	905.97	905.00
(‡)	+3900	-1100	+2300	+1100	-2700	+16100	+8100	-14400	+49700	-27500	-32000	-7700

CAL YR 1980 MAX 369000 MIN 338600 ‡ +3500
WTR YR 1981 MAX 471900 MIN 349400 ‡ -4200

† Elevation, in feet, at end of month.

‡ Change in contents, in acre-feet.

GUADALUPE RIVER BASIN

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD---Chemical analyses: October 1969 to current year.

295148098115201 CANYON LAKE SITE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
11...	1536	1.00	348	7.9	30.0	8.6	116
11...	1538	10.0	350	7.9	29.5	8.5	113
11...	1540	20.0	361	7.8	29.0	7.4	97
11...	1542	30.0	361	7.7	29.0	6.7	88
11...	1544	40.0	377	7.4	28.5	4.4	58
11...	1546	50.0	414	7.1	27.5	.5	6
11...	1548	60.0	407	7.1	26.0	.7	9
11...	1550	70.0	397	7.1	26.0	.5	6
11...	1552	80.0	380	7.1	25.5	.4	5
11...	1555	90.0	370	7.1	25.5	.4	5

295206098115501 CANYON LAKE SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK (M)	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)
FEB										
23...	1146	1.00	387	7.9	13.5	3.1	9.2	90	<1	<1
23...	1149	10.0	387	7.8	13.0	--	9.2	88	--	--
23...	1151	20.0	387	7.8	13.0	--	9.2	88	--	--
23...	1153	30.0	387	7.8	13.0	--	9.2	88	--	--
23...	1155	40.0	387	7.8	13.0	--	9.2	88	--	--
23...	1157	50.0	387	7.8	12.5	--	9.1	87	--	--
23...	1159	60.0	387	7.7	12.0	--	9.1	86	--	--
23...	1201	70.0	388	7.7	11.5	--	9.1	85	--	--
23...	1203	80.0	388	7.7	11.5	--	9.0	84	--	--
23...	1205	90.0	389	7.7	11.5	--	9.0	84	--	--
23...	1207	100	389	7.7	11.0	--	9.0	83	--	--
23...	1209	110	389	7.7	11.0	--	9.3	86	--	--
23...	1211	124	395	7.7	11.0	--	8.9	82	--	--
MAY										
06...	1123	6.30	--	--	--	--	--	--	--	--
06...	1124	1.00	392	7.9	23.5	3.8	6.4	75	<1	<1
06...	1126	10.0	392	7.8	23.0	--	6.5	76	--	--
06...	1127	20.0	392	7.8	22.5	--	6.6	77	--	--
06...	1130	30.0	392	7.8	21.5	--	6.7	76	--	--
06...	1133	40.0	392	7.7	18.5	--	6.0	64	--	--
06...	1135	50.0	392	7.6	18.5	--	6.0	64	--	--
06...	1139	60.0	393	7.8	18.5	--	6.3	67	--	--
06...	1142	70.0	393	7.6	17.5	--	6.1	64	--	--
06...	1145	80.0	393	7.5	16.5	--	5.8	59	--	--
06...	1148	90.0	393	7.5	16.5	--	5.4	55	--	--
06...	1150	100	394	7.4	15.5	--	4.6	46	--	--
06...	1153	110	395	7.3	15.0	--	4.0	40	--	--
06...	1156	120	396	7.2	14.5	--	3.6	34	--	--
06...	1158	130	397	7.2	14.0	--	3.6	35	--	--
06...	1200	140	398	7.2	14.0	--	3.6	36	--	--
06...	1202	148	399	7.2	14.0	--	3.3	32	--	--
AUG										
11...	1430	1.00	345	8.0	31.5	2.20	8.6	119	<1	260
11...	1433	10.0	346	7.9	30.0	--	8.6	116	--	--
11...	1436	20.0	354	7.8	29.5	--	7.4	99	--	--
11...	1439	30.0	356	7.7	29.0	--	6.9	91	--	--
11...	1442	40.0	384	7.3	28.5	--	3.0	39	--	--
11...	1445	50.0	416	7.1	27.0	--	.2	2	--	--
11...	1448	60.0	415	7.1	26.5	--	.4	5	--	--
11...	1451	70.0	392	7.1	25.0	--	.3	4	--	--
11...	1454	80.0	373	7.1	25.0	--	.2	2	--	--
11...	1457	90.0	373	7.0	24.5	--	.2	2	--	--
11...	1500	100	376	7.0	24.0	--	.2	2	--	--
11...	1503	110	389	6.9	23.5	--	.2	2	--	--
11...	1506	120	388	6.9	22.5	--	.2	2	--	--
11...	1509	130	399	6.9	21.0	--	.2	2	--	--
11...	1512	3.60	--	--	--	--	--	--	--	--
11...	1513	140	408	7.0	17.5	--	.2	2	--	--
11...	1515	150	408	7.0	16.5	--	.2	2	--	--

GUADALUPE RIVER BASIN
CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 CANYON LAKE SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
FEB										
23...	190	26	43	19	11	.4	1.9	160	21	15
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	190	28	44	19	11	.3	1.9	160	26	16
MAY										
06...	--	--	--	--	--	--	--	--	--	--
06...	190	27	45	18	10	.3	1.8	160	24	15
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--	--
06...	190	27	45	18	11	.4	1.8	160	25	19
AUG										
11...	160	10	36	17	9.2	.3	2.0	150	19	16
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--	--
11...	190	13	46	19	11	.4	1.8	180	6.0	17

GUADALUPE RIVER BASIN
CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 CANYON LAKE SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)	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)
FEB									
23...	.2	10	217	.36	.46	.82	.070	<10	<1
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	.33	.47	.80	.080	10	0
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	10	224	.43	.67	1.1	.070	<10	2
MAY									
06...	--	--	--	--	--	--	--	--	--
06...	.1	9.3	219	.32	.67	.99	.030	<10	<1
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	.33	.53	.86	.040	10	0
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	11	227	.34	.54	.88	.030	30	40
AUG									
11...	.2	9.4	199	.11	.57	.68	.010	<10	<1
11...	--	--	--	.12	.68	.80	.010	0	0
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	.54	.62	1.2	.010	0	10
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	14	224	.11	.80	.91	.020	430	330

GUADALUPE RIVER BASIN

CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295210098142001 CANYON LAKE SITE BR

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
AUG							
11...	1047	1.00	350	7.9	30.0	8.1	109
11...	1049	10.0	350	7.9	29.5	8.1	108
11...	1051	20.0	350	7.9	29.0	8.0	105
11...	1053	30.0	362	7.6	29.0	5.8	76
11...	1055	40.0	392	7.3	28.0	2.2	29
11...	1057	50.0	420	7.1	25.5	.4	5
11...	1105	64.0	408	7.1	25.0	.4	5

295241098132101 CANYON LAKE SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
23...	1232	1.00	368	7.9	14.0	9.1	90
23...	1234	10.0	367	7.9	13.5	9.2	90
23...	1235	20.0	366	7.9	13.0	9.2	88
23...	1237	30.0	366	7.8	12.5	9.1	87
23...	1238	40.0	365	7.8	12.0	9.1	86
23...	1240	50.0	365	7.8	12.0	9.2	87
23...	1241	60.0	365	7.8	11.5	9.1	85
23...	1243	70.0	364	7.8	11.5	9.2	86
23...	1244	80.0	364	7.8	11.0	9.2	85
23...	1246	90.0	364	7.7	11.0	9.1	84
23...	1247	100	364	7.8	11.0	9.1	84
23...	1248	100	367	7.7	11.0	9.1	84
23...	1249	118	368	7.7	11.0	8.6	80
MAY							
06...	1320	1.00	394	7.8	23.5	8.6	101
06...	1322	10.0	394	7.9	23.5	8.6	101
06...	1324	20.0	394	7.8	23.0	8.6	100
06...	1326	30.0	400	7.8	19.0	7.9	85
06...	1327	40.0	400	7.6	18.5	6.9	73
06...	1328	50.0	400	7.6	18.0	6.9	73
06...	1329	60.0	402	7.6	17.0	7.0	72
06...	1330	70.0	402	7.6	17.0	6.8	70
06...	1331	80.0	402	7.6	16.5	6.3	64
06...	1332	90.0	402	7.5	16.0	5.3	54
06...	1333	100	405	7.4	16.0	5.2	53
06...	1334	110	405	7.2	14.5	3.1	30
06...	1335	120	405	7.1	14.0	2.6	25
06...	1337	130	405	7.1	14.0	.0	0
AUG							
11...	1018	1.00	345	7.9	30.0	8.4	114
11...	1019	10.0	345	7.9	29.5	8.3	111
11...	1020	20.0	346	7.9	29.0	8.0	105
11...	1022	30.0	361	7.6	28.5	5.3	70
11...	1024	40.0	405	7.1	27.5	.8	10
11...	1025	50.0	422	7.1	26.0	.3	4
11...	1027	60.0	417	7.1	25.5	.3	4
11...	1028	70.0	416	7.0	25.0	.3	4
11...	1030	80.0	406	7.0	24.5	.3	4
11...	1032	90.0	406	7.0	24.0	.4	5
11...	1034	100	482	6.8	23.5	.4	5
11...	1036	110	485	6.8	23.0	.4	5
11...	1038	120	485	6.8	22.5	.4	5
11...	1040	131	466	6.8	19.5	.4	4

GUADALUPE RIVER BASIN
CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295240098152001 CANYON LAKE SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
23...	1302	1.00	388	7.9	13.5	10.1	99
23...	1304	10.0	387	7.9	13.0	10.1	97
23...	1306	20.0	387	7.9	13.0	10.1	97
23...	1309	30.0	385	7.8	12.0	9.9	93
23...	1311	40.0	385	7.8	11.5	9.8	92
23...	1314	50.0	385	7.8	11.5	9.7	91
23...	1316	60.0	385	7.8	11.5	9.5	89
23...	1318	70.0	385	7.8	11.0	9.4	87
23...	1320	83.0	385	7.8	11.0	9.3	86
MAY							
06...	1400	1.00	393	7.8	25.0	8.4	101
06...	1402	10.0	395	7.8	24.0	8.4	100
06...	1403	20.0	398	7.7	21.5	8.0	91
06...	1405	30.0	404	7.7	20.5	7.1	79
06...	1406	40.0	406	7.6	19.5	6.5	71
06...	1408	50.0	408	7.5	18.5	5.6	60
06...	1409	60.0	408	7.5	18.5	5.5	59
06...	1410	70.0	408	7.5	17.5	4.7	49
06...	1411	85.0	408	7.4	17.0	4.0	41
AUG							
11...	1114	1.00	350	7.9	30.0	8.1	109
11...	1116	10.0	352	7.9	29.5	7.8	104
11...	1118	20.0	353	7.9	29.5	7.6	101
11...	1120	30.0	366	7.6	26.0	5.7	71
11...	1122	40.0	391	7.3	28.0	2.5	32
11...	1124	50.0	441	7.1	26.5	.3	4
11...	1125	60.0	448	7.1	26.0	.4	5
11...	1126	75.0	442	7.1	25.5	.4	5

295349098143101 CANYON LAKE SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)
FEB							
23...	1358	1.00	388	7.9	13.0	10.0	96
23...	1359	10.0	388	7.9	12.5	10.0	95
23...	1400	20.0	388	7.8	12.0	9.8	92
23...	1402	30.0	388	7.8	11.5	9.8	92
23...	1403	40.0	388	7.8	11.5	9.8	92
23...	1405	50.0	388	7.8	11.5	9.7	91
23...	1406	60.0	388	7.8	11.0	9.7	90
23...	1408	70.0	388	7.8	11.0	9.6	89
23...	1409	80.0	388	7.8	11.0	9.6	89
23...	1410	91.0	394	7.8	11.0	9.3	86
MAY							
06...	1435	1.00	395	7.8	25.0	8.2	99
06...	1436	10.0	398	7.8	24.0	8.3	99
06...	1437	20.0	400	7.8	22.5	8.2	95
06...	1438	30.0	405	7.7	21.5	7.4	84
06...	1440	40.0	409	7.5	20.0	6.6	73
06...	1441	50.0	409	7.6	19.0	6.2	67
06...	1442	60.0	409	7.4	17.0	5.3	55
06...	1443	70.0	409	7.4	17.0	5.2	54
06...	1444	80.0	409	7.4	17.0	5.0	52
AUG							
11...	1136	1.00	352	7.9	30.5	7.9	107
11...	1137	10.0	352	7.9	30.0	7.9	107
11...	1139	20.0	352	7.9	29.5	7.9	105
11...	1141	30.0	365	7.6	29.0	7.6	100
11...	1143	40.0	404	7.2	28.0	.8	10
11...	1145	50.0	458	7.1	26.5	.3	4
11...	1147	60.0	472	7.0	26.0	.3	4
11...	1148	70.0	462	7.0	25.5	.3	4
11...	1149	80.0	462	7.0	25.0	.3	4
11...	1150	87.0	462	7.0	25.0	.4	5

GUADALUPE RIVER BASIN
CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295329098151001 CANYON LAKE SITE EC
WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	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)
FEB										
23...	1328	1.00	392	7.9	13.5	2.40	10.0	98	<1	<1
23...	1330	10.0	391	7.9	13.5	--	10.1	99	--	--
23...	1332	20.0	390	7.9	13.0	--	10.1	97	--	--
23...	1335	30.0	388	7.8	12.5	--	10.0	95	--	--
23...	1337	40.0	386	7.8	12.0	--	9.8	92	--	--
23...	1340	50.0	386	7.8	11.5	--	9.7	91	--	--
23...	1342	60.0	386	7.8	11.5	--	9.6	90	--	--
23...	1345	70.0	386	7.8	11.0	--	9.6	89	--	--
23...	1347	80.0	386	7.8	11.0	--	9.6	89	--	--
23...	1349	92.0	414	7.7	11.0	--	9.1	84	--	--
MAY										
06...	1453	1.00	405	7.8	25.0	2.19	8.4	101	<1	<1
06...	1455	10.0	405	7.8	24.5	--	8.4	100	--	--
06...	1457	20.0	405	7.6	22.5	--	6.9	80	--	--
06...	1459	30.0	405	7.6	20.5	--	7.0	78	--	--
06...	1501	40.0	406	7.5	20.0	--	6.5	71	--	--
06...	1503	50.0	406	7.6	19.0	--	6.6	71	--	--
06...	1505	60.0	410	7.3	17.5	--	4.5	47	--	--
06...	1507	70.0	418	7.4	17.0	--	4.7	48	--	--
06...	1509	80.0	418	7.4	16.0	--	4.0	40	--	--
06...	1511	90.0	419	7.3	15.5	--	.0	0	--	--
06...	1512	99.0	419	7.3	15.5	--	.0	0	--	--
AUG										
11...	1338	1.00	352	7.9	30.5	1.80	8.3	112	<1	K13
11...	1341	10.0	353	7.9	30.0	--	8.2	110	--	--
11...	1343	20.0	365	7.7	29.5	--	5.9	79	--	--
11...	1346	30.0	370	7.6	28.5	--	5.2	68	--	--
11...	1348	40.0	392	7.3	28.5	--	2.9	38	--	--
11...	1351	50.0	470	7.1	26.5	--	.2	2	--	--
11...	1354	60.0	487	7.1	26.0	--	.2	2	--	--
11...	1357	70.0	487	7.1	26.0	--	.2	2	--	--
11...	1400	80.0	487	6.9	25.0	--	.3	4	--	--
11...	1403	90.0	528	6.8	24.5	--	.3	4	--	--
11...	1406	101	549	6.7	24.5	--	.3	4	--	--

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)
FEB									
23...	180	22	43	18	11	.4	1.9	160	23
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	200	16	47	19	11	.3	1.8	180	24
MAY									
06...	200	18	48	19	10	.3	1.8	180	24
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	200	21	49	19	11	.3	1.8	180	25
AUG									
11...	160	10	36	17	9.4	.4	1.8	150	19
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	270	0	81	16	8.4	.2	1.4	270	11

GUADALUPE RIVER BASIN
CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295329098151001 CANYON LAKE SITE EC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)	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)
FEB									
23...	15	9.6	218	.39	.46	.85	.060	<10	<1
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	.34	.42	.76	.070	0	10
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	16	9.3	236	.60	.49	1.1	.060	<10	2
MAY									
06...	14	9.5	235	.40	1.10	1.5	.030	10	2
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	.37	.66	1.0	.050	70	10
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	.38	.86	1.2	.030	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	15	11	240	.39	.67	1.1	.050	50	40
AUG									
11...	13	9.5	196	.10	.62	.72	.010	<10	2
11...	--	--	--	.12	.65	.77	.010	10	0
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	.24	.75	.99	.010	530	90
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	12	14	292	.19	1.20	1.4	.030	28	220

295349098173701 CANYON LAKE SITE FC

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SAMP- LING DEPTH (FT)	SPE- CIFIC CON- DUCT- ANCE (UMHOS)	PH (UNITS)	TEMPER- ATURE (DEG C)	TRANS- PAR- ENCY (SECCHI DISK) (M)	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)
FEB										
23...	1421	1.00	407	7.9	15.0	.90	10.2	103	<1	<1
23...	1424	10.0	407	7.9	14.5	--	10.1	101	--	--
23...	1427	20.0	412	7.8	12.5	--	9.7	92	--	--
23...	1430	30.0	416	7.7	12.0	--	9.5	90	--	--
23...	1433	40.0	420	7.7	12.0	--	9.4	89	--	--
23...	1436	50.0	455	7.6	11.5	--	8.9	83	--	--
23...	1438	60.0	482	7.6	11.0	--	8.6	80	--	--
23...	1441	65.0	485	7.6	11.0	--	8.4	78	--	--
MAY										
06...	1546	1.00	426	7.8	25.5	.98	8.0	98	<1	<1
06...	1547	1.60	--	--	--	--	--	--	--	--
06...	1549	10.0	426	7.7	25.0	--	7.5	90	--	--
06...	1552	20.0	450	7.4	23.0	--	4.4	51	--	--
06...	1555	30.0	386	7.2	20.5	--	4.0	44	--	--
06...	1558	40.0	410	7.3	19.5	--	4.3	47	--	--
06...	1601	50.0	439	7.2	19.0	--	4.0	43	--	--
06...	1603	60.0	467	7.0	18.5	--	.0	0	--	--
06...	1606	66.0	467	7.0	18.0	--	.0	0	--	--
AUG										
11...	1203	1.00	354	8.0	31.5	1.20	8.3	115	<1	K2
11...	1208	10.0	356	7.9	30.5	--	7.9	107	--	--
11...	1213	20.0	403	7.3	30.0	--	2.0	27	--	--
11...	1218	30.0	444	7.1	29.5	--	.2	3	--	--
11...	1223	40.0	421	7.2	28.5	--	.6	8	--	--
11...	1228	50.0	471	7.1	27.0	--	.2	3	--	--
11...	1233	60.0	507	6.9	26.5	--	.2	3	--	--
11...	1235	1.90	--	--	--	--	--	--	--	--
11...	1238	68.0	517	6.9	26.0	--	.3	4	--	--

GUADALUPE RIVER BASIN

CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295349098173701 CANYON LAKE SITE FC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
FEB									
23...	190	23	46	19	11	.3	1.8	170	23
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	240	28	59	22	13	.4	1.5	210	26
MAY									
06...	210	19	54	18	9.6	.3	1.8	190	25
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	--	--	--	--	--	--
06...	230	23	62	19	10	.3	1.7	210	25
AUG									
11...	160	14	36	18	9.7	.4	1.9	150	20
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	250	13	70	19	9.9	.3	1.7	240	7.0

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)	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)
FEB									
23...	17	8.9	229	.39	.41	.80	.070	<10	<1
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	.49	.51	1.0	.080	20	0
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	17	8.1	273	.89	.55	1.4	.060	<10	2
MAY									
06...	12	10	245	.53	1.10	1.6	.040	<10	1
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	.54	1.10	1.6	.070	10	0
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	.68	.67	1.4	.040	--	--
06...	--	--	--	--	--	--	--	--	--
06...	--	--	--	.52	.68	1.2	.110	30	10
06...	--	--	--	--	--	--	--	--	--
06...	14	11	269	.56	1.60	2.2	.040	10	130
AUG									
11...	14	9.8	200	.11	.59	.70	.010	<10	<1
11...	--	--	--	.12	.56	.68	.020	0	0
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	.50	.72	1.2	--	20	30
11...	--	--	--	.36	.66	1.0	.010	0	20
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	--	--	--	--	--	--	--	--	--
11...	15	15	282	.39	.92	1.3	.020	93	180

GUADALUPE RIVER BASIN
CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 CANYON LAKE SITE AC

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE	MAY 6, 81	AUG 11, 81
TIME	1123	1512
TOTAL CELLS/ML	220	3400
DIVERSITY: DIVISION	1.1	1.4
..CLASS	1.1	1.4
..ORDER	1.1	1.4
...FAMILY	1.1	1.8
....GENUS	1.1	1.8

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)				
..CHLOROPHYCEAE				
...CHLOROCOCCALES				
....COELASTRACEAE				
.....COELASTRUM	--	-	330	10
..ZYGNEMATALES				
...DESMIDIACEAE				
....COSMARIUM	--	-	21	1
CHRYSOPHYTA				
..BACILLARIOPHYCEAE				
...PENNALES				
....FRAGILARIACEAE				
.....SYNEDRA	--	-	520#	15
...NAVICULACEAE				
....NAVICULA	--	-	1300#	38
CRYPTOPHYTA (CRYPTOMONADS)				
..CRYPTOPHYCEAE				
...CRYPTOMONADALES				
....CRYPTOMONADACEAE				
.....CRYPTOMONAS	51#	24	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)				
..CYANOPHYCEAE				
...CHROOCOCCALES				
....CHROOCOCCACEAE				
.....ANACYSTIS	150#	71	--	-
...HORMOGONALES				
...NOSTOCACEAE				
....APHANIZOMENON	--	-	1200#	37
PYRRHOPHYTA (FIRE ALGAE)				
..DINOPHYCEAE				
...PERIDINIALES				
....GLENODINIACEAE				
.....GLENODINIUM	13	6	--	-

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

GUADALUPE RIVER BASIN
CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295349098173701 CANYON LAKE SITE FC

PHYTOPLANKTON ANALYSES, OCTOBER 1980 TO AUGUST 1981

DATE	MAY 6, 81	AUG 11, 81
TIME	1547	1235
TOTAL CELLS/ML	610	2200
DIVERSITY: DIVISION	1.7	1.1
..CLASS	1.7	1.1
..ORDER	2.0	1.1
...FAMILY	2.4	1.8
....GENUS	2.6	2.0

ORGANISM	CELLS /ML	PER- CENT	CELLS /ML	PER- CENT
CHLOROPHYTA (GREEN ALGAE)				
..CHLOROPHYCEAE				
...CHLOROCOCCALES				
...CHARACIACEAE				
....SCHROEDERIA	13	2	--	-
...COELASTRACEAE				
....COELASTRUM	--	-	450#	20
...OOCYSTACEAE				
....ANKISTRODESMUS	--	-	1200#	55
....TETRAEDRON	13	2	14	1
...SCENEDESMACEAE				
....CRUCIGENIA	26	4	--	-
...SCENEDESMUS	150#	26	--	-
..VOLVOCALES				
...CHLAMYDOMONADACEAE				
....CHLAMYDOMONAS	39	6	--	-
CHRYSOPHYTA				
..BACILLARIOPHYCEAE				
...CENTRALES				
...COSCINODISCACEAE				
....CYCLOTELLA	13	2	--	-
..PENNALES				
...FRAGILARIACEAE				
....SYNEDRA	--	-	56	2
...NAVICULACEAE				
....NAVICULA	--	-	98	4
...NITZSCHIACEAE				
....NITZSCHIA	13	2	--	-
CRYPTOPHYTA (CRYPTOMONADS)				
..CRYPTOPHYCEAE				
...CRYPTOMONADALES				
...CRYPTOCHRYSIDACEAE				
....CHROOMONAS	100#	17	--	-
...CRYPTOMONADACEAE				
....CRYPTOMONAS	26	4	42	2
CYANOPHYTA (BLUE-GREEN ALGAE)				
..CYANOPHYCEAE				
...CHROOCOCCALES				
...CHROOCOCCACEAE				
....ANACYSTIS	210#	34	--	-
...HORMOGONALES				
...OSCILLATORIACEAE				
....LYNGBYA	--	-	200	9
....OSCILLATORIA	--	-	140	6
PYRRHOPHYTA (FIRE ALGAE)				
..DINOPHYCEAE				
...PERIDINIALES				
...PERIDINIAEAE				
....PERIDINIUM	--	-	14	1

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

GUADALUPE RIVER BASIN.

08167800 GUADALUPE RIVER AT SATTLER, TX

LOCATION.--Lat 29°51'32", long 98°10'47", Comal County, Hydrologic Unit 12100202, on right bank 200 ft (61 m) upstream from Horseshoe Falls, 0.8 mi (1.3 km) north of Sattler, 1.8 mi (2.9 km) downstream from Canyon Dam, 2.3 mi (3.7 km) upstream from Heiser Hollow, 11.2 mi (18.0 km) north of New Braunfels, and at mile 301.2 (484.6 km).

DRAINAGE AREA.--1,436 mi² (3,719 km²), of which 1,432 mi² (3,709 km²) is above Canyon Dam.

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 742.24 ft (226.235 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Water-discharge records good. Flow completely regulated since July 21, 1962, by Canyon Lake (station 08167700) 1.8 mi (2.9 km) upstream. Small diversions above station for irrigation. Gage-height telemeter located at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years (water years 1962-81) since regulation began at Canyon Lake, 407 ft³/s (11.53 m³/s), 294,900 acre-ft/yr (364 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft³/s (589 m³/s) Oct. 29, 1960, gage height, 12.20 ft (3.719 m). Maximum discharge since closure of Canyon Dam on July 21, 1962, 5,850 ft³/s (166 m³/s) Aug. 5, 1978, gage height, 8.31 ft (2.533 m); 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 (11.9 m); maximum stage since at least 1904, 39 ft (11.9 m) in July 1932 and June 1935, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,490 ft³/s (155 m³/s) June 18 at 1200 hours, gage height, 8.21 ft (2.502 m); minimum, 35 ft³/s (0.99 m³/s) June 15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	197	309	197	197	197	309	685	908	646	515	772	809
2	197	309	197	197	197	309	685	916	649	769	772	809
3	269	309	197	197	200	309	685	916	649	776	772	809
4	355	309	197	197	200	305	685	916	649	749	772	809
5	355	309	197	197	200	304	685	916	649	786	772	809
6	355	309	197	197	200	304	685	916	649	791	772	809
7	355	309	197	197	200	304	685	916	649	2770	772	809
8	355	309	197	197	200	304	685	916	649	5290	764	602
9	355	309	197	197	228	375	685	916	649	5250	756	237
10	355	244	197	195	304	509	685	916	649	2960	769	237
11	355	197	197	195	304	512	685	908	653	782	807	237
12	355	197	197	195	304	512	685	818	441	781	818	237
13	355	197	197	195	304	519	685	664	237	781	818	237
14	275	197	197	195	304	528	685	638	141	1820	818	237
15	200	197	197	195	304	523	685	621	139	1780	822	237
16	200	197	197	197	304	518	685	616	245	782	828	237
17	200	197	197	197	304	596	685	614	1930	781	828	237
18	201	197	197	197	304	685	685	614	4980	781	828	237
19	200	197	197	197	304	685	685	614	5420	781	828	237
20	364	197	197	197	304	685	784	569	5390	781	828	241
21	677	197	197	197	304	685	876	635	5360	781	828	241
22	677	197	197	197	304	685	896	635	5360	781	828	241
23	677	197	197	197	306	685	914	635	5340	781	828	241
24	677	197	197	197	309	685	906	642	5320	781	829	241
25	677	197	197	197	309	685	906	642	5270	781	828	241
26	677	197	197	197	309	678	906	636	5250	774	828	241
27	677	197	197	197	309	677	906	635	5290	772	828	241
28	588	197	197	197	309	677	906	635	5340	772	828	241
29	304	197	197	197	---	677	906	635	4510	772	821	241
30	304	197	197	197	---	681	906	642	1170	772	809	241
31	309	---	197	197	---	685	---	642	---	772	809	---
TOTAL	12097	6965	6107	6095	7625	16595	22827	22842	74273	39045	24980	11523
MEAN	390	232	197	197	272	535	761	737	2476	1260	806	384
MAX	677	309	197	197	309	685	914	916	5420	5290	829	809
MIN	197	197	197	195	197	304	685	569	139	515	756	237
AC-FT	23990	13820	12110	12090	15120	32920	45280	45310	147300	77450	49550	22860
CAL YR 1980	TOTAL	70443	MEAN 192	MAX 677	MIN 48	AC-FT 139700						
WTR YR 1981	TOTAL	250974	MEAN 688	MAX 5420	MIN 139	AC-FT 497800						

GUADALUPE RIVER BASIN

08167800 GUADALUPE RIVER AT SATTTLER, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1980 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM 5 DAY (MG/L)	HARD- NESS (MG/L AS CACO3)
FEB 23...	1551	296	389	7.9	11.5	0	1.1	10.7	100	.4	190
MAY 06...	1735	916	413	7.6	14.5	5	1.7	10.8	106	.6	190
AUG 11...	1637	818	385	7.3	23.5	5	2.5	9.2	110	.7	200

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 (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 23...	26	43	19	11	.4	1.9	160	24	18	.2	10
MAY 06...	23	46	19	11	.3	2.0	170	22	16	.2	10
AUG 11...	15	55	14	6.5	.2	2.2	180	20	12	.6	13

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)
FEB 23...	223	7	2	.26	.010	.27	.060	.21	.27	.040	9.3
MAY 06...	228	0	0	.51	.020	.53	.070	.62	.69	.030	6.6
AUG 11...	231	36	12	.27	.030	.30	.160	.45	.61	.020	3.5

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)
FEB 23...	1551	1	30	<1	0	<10	30
MAY 06...	1735	1	30	<1	0	<10	10
AUG 11...	1637	2	31	<1	0	<10	38

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...	<10	<1	.1	0	0	<3
MAY 06...	<10	2	.1	0	1	<3
AUG 11...	<10	85	.0	0	0	4

GUADALUPE RIVER BASIN

08168000 HUECO SPRINGS NEAR NEW BRAUNFELS, TX

LOCATION.--Lat 29°45'34", long 98°08'24", Comal County, Hydrologic Unit 12100202, two springs located 1,700 ft (520 m) upstream from mouth of unnamed tributary which enters the Guadalupe River at Slumber Falls, and 4.2 mi (6.8 km) north of New Braunfels.

DRAINAGE AREA.--Not applicable.

PERIOD OF RECORD.--August 1944 to current year. Miscellaneous measurements only.

GAGE.--None.

REMARKS.--Discharge represents flow from springs. Surface runoff from precipitation is excluded. No diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum spring discharge measured 131 ft³/s (3.71 m³/s) Jan. 21, 1968; no flow at times in 1948-49, 1951-57, 1963-64, 1967.

DISCHARGE MEASUREMENTS, IN CUBIC FEET PER SECOND WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
Oct. 9, 1980	18	Feb. 11, 1981	32	June 22, 1981	99
Nov. 20	20	Mar. 26	45	July 29	82
Jan. 5, 1981	18	May 6	71	Sept. 10	56

GUADALUPE RIVER BASIN

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 (1.8 km) upstream from Comal River, 21.9 mi (35.2 km) downstream from Canyon Lake, and at mile 281.1 (452.3 km).

DRAINAGE AREA.--1,518 mi² (3,932 km²).

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 (178.811 m) National Geodetic Vertical Datum of 1929.

REMARKS.--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 (35.2 km) 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 ft³/s (10.54 m³/s), 269,500 acre-ft/yr (332 hm³/yr); 19 years (water year 1963-81) regulated, 501 ft³/s (14.19 m³/s), 363,000 acre-ft/yr (448 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 101,000 ft³/s (2,860 m³/s) June 15, 1935, gage height, 32.95 ft (10.043 m); no flow July 8, 9, July 17 to Aug. 20, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1845, 38 ft (11.6 m) July 8, 1869, and in December 1913, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,060 ft³/s (200 m³/s) June 13 at 2200 hours, gage height, 7.57 ft (2.307 m); minimum, 223 ft³/s (6.32 m³/s) Jan. 12-19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	251	338	287	238	243	341	749	1030	722	563	918	974
2	251	338	283	230	237	333	750	1070	720	988	915	966
3	251	337	275	229	234	336	759	1080	726	987	911	968
4	369	334	271	229	247	340	751	1070	774	976	911	966
5	373	333	275	229	256	338	749	1070	807	992	907	954
6	373	336	269	231	257	338	749	1060	767	1020	906	953
7	373	338	269	229	257	339	749	1060	760	1990	906	942
8	373	338	280	230	257	337	749	1060	756	5580	905	907
9	373	335	289	230	258	334	749	1050	752	5560	905	346
10	373	318	287	229	341	548	749	1040	749	4060	909	325
11	373	242	281	229	351	563	749	1040	828	999	956	325
12	373	240	281	224	348	579	749	1010	1180	974	983	325
13	368	240	276	225	346	621	749	751	1590	966	989	318
14	356	241	275	227	345	631	746	729	1110	1540	991	318
15	382	243	275	223	345	631	743	688	601	2310	991	319
16	277	280	271	223	345	631	747	688	856	969	989	318
17	273	271	269	223	345	667	742	679	1560	961	979	318
18	296	267	269	223	345	817	743	674	5250	963	989	316
19	279	262	259	255	345	814	739	669	5920	955	983	316
20	280	259	253	264	339	814	797	614	5860	953	979	312
21	722	257	251	258	341	810	940	697	5820	951	979	312
22	729	260	251	253	338	803	991	698	5780	951	978	305
23	729	257	251	251	338	799	1080	694	5740	947	975	305
24	721	257	251	249	338	792	1060	711	5700	942	968	305
25	718	273	245	248	338	794	1060	719	5680	941	970	305
26	718	306	242	245	338	794	1050	718	5690	943	966	305
27	718	308	241	245	337	792	1040	718	5680	936	966	305
28	716	302	240	245	331	793	1040	722	5640	932	966	303
29	368	295	240	245	---	792	1030	738	5320	930	968	303
30	338	293	240	241	---	792	1030	729	1860	926	1000	302
31	338	---	240	240	---	784	---	722	---	923	1030	---
TOTAL	13432	8698	8186	7340	8740	19097	25328	25998	85198	44628	29688	14536
MEAN	433	290	264	237	312	616	844	839	2840	1440	958	485
MAX	729	338	289	264	351	817	1080	1080	5920	5580	1030	974
MIN	251	240	240	223	234	333	739	614	601	563	905	302
CFSM	.29	.19	.17	.16	.21	.41	.56	.55	1.87	.95	.63	.32
IN.	.33	.21	.20	.18	.21	.47	.62	.64	2.09	1.09	.73	.36
AC-FT	26640	17250	16240	14560	17340	37880	50240	51570	169000	88520	58890	28830
CAL YR 1980	TOTAL	89452	MEAN	244	MAX	731	MIN	75	CFSM	.16	IN	2.19
WTR YR 1981	TOTAL	290869	MEAN	797	MAX	5920	MIN	223	CFSM	.53	IN	7.13
									AC-FT	177400	AC-FT	576900

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 (61 m) upstream from San Antonio Street viaduct in New Braunfels and 1.1 mi (1.8 km) upstream from mouth.

DRAINAGE AREA.--130 mi² (337 km²). 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 (177.637 m) National Geodetic Vertical Datum of 1929.

REMARKS.--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 (1.6 km) upstream. Diurnal fluctuations from steam powerplant 0.5 mi (0.8 km) upstream. Flow is affected at times by discharge from flood-detention pools of five floodwater-retarding structures with combined detention capacity of 17,580 acre-ft (21.7 hm³). These structures control runoff from 74.6 mi² (193 km²). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--49 years (water years 1933-81), 299 ft³/s (8.468 m³/s), 216,600 acre-ft/yr (267 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,800 ft³/s (1,720 m³/s) May 11, 1972, gage height, 36.55 ft (11.140 m), from floodmark, from rating curve extended above 13,000 ft³/s (368 m³/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 (11.250 m), from painted and dated marks in old Remmert Brewery 0.5 mi (0.8 km) downstream; the flood of Oct. 17, 1870, reached a stage of 37.65 ft (11.476 m) at same site (probably some backwater from Guadalupe River).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,100 ft³/s (31.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 2	0700	1,190 33.7	5.83 1.777
June 13	2100	2,520 71.4	8.00 2.438
June 16	1100	*3,810 108	9.88 3.011

Minimum daily discharge, 250 ft³/s (7.08 m³/s) Oct. 10, 14-16.

**DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	264	270	286	304	299	299	286	290	301	353	317	322
2	258	266	286	299	292	294	286	538	304	360	312	317
3	254	266	282	299	294	294	286	350	344	350	312	322
4	258	270	282	299	304	294	278	322	439	350	304	322
5	258	266	286	299	304	290	282	308	335	391	308	322
6	254	270	286	299	299	290	282	304	312	360	304	322
7	254	270	286	299	299	294	278	299	317	350	304	317
8	254	270	299	299	299	294	278	294	304	345	304	322
9	254	266	294	299	299	294	278	294	304	345	304	317
10	250	270	290	294	304	290	278	294	304	345	308	317
11	254	266	290	294	299	294	282	294	343	350	304	317
12	254	266	290	294	299	308	278	290	423	350	299	317
13	254	266	290	299	299	317	278	290	934	345	304	317
14	250	266	290	299	299	304	278	294	664	345	304	322
15	250	270	294	299	299	299	278	290	380	345	304	322
16	250	299	290	294	299	294	274	294	1510	335	308	317
17	254	299	294	299	299	294	274	290	503	335	308	308
18	352	295	294	299	299	294	274	286	434	335	308	312
19	351	274	294	345	299	290	278	278	412	330	322	312
20	270	274	294	350	299	294	282	282	402	330	312	312
21	270	274	294	312	294	294	270	278	390	335	312	312
22	270	274	308	304	294	290	274	270	385	330	317	308
23	262	274	299	299	290	294	369	278	380	330	312	312
24	266	274	304	299	290	290	308	304	375	322	317	317
25	266	286	299	294	290	290	304	286	370	322	312	308
26	270	317	299	294	290	290	312	282	365	322	312	312
27	270	290	304	299	290	290	294	274	365	326	312	308
28	270	286	304	294	294	294	290	278	360	317	308	308
29	266	286	304	299	---	290	282	484	355	317	312	304
30	270	286	304	294	---	290	288	366	360	322	346	304
31	270	---	304	299	---	290	---	326	---	315	344	---
TOTAL	8247	8306	9120	9349	8315	9123	8579	9607	12974	10507	9654	9449
MEAN	266	277	294	302	297	294	286	310	432	339	311	315
MAX	352	317	308	350	304	317	369	538	1510	391	346	322
MIN	250	266	282	294	290	290	270	270	301	315	299	304
CFSM	2.05	2.13	2.26	2.32	2.29	2.26	2.20	2.39	3.32	2.61	2.39	2.42
IN	2.36	2.38	2.61	2.68	2.38	2.61	2.45	2.75	3.71	3.01	2.76	2.70
AC-FT	16360	16470	18090	18540	16490	18100	17020	19060	25730	20840	19150	18740

CAL YR 1980	TOTAL	104474	MEAN 285	MAX 398	MIN 184	CFSM 2.19	IN 29.90	AC-FT 207200
WTR YR 1981	TOTAL	113230	MEAN 310	MAX 1510	MIN 250	CFSM 2.39	IN 32.40	AC-FT 224600

GUADALUPE RIVER BASIN

COMAL SPRINGS AT NEW BRAUNFELS, TX

LOCATION.--Lat 29°42'21", long 98°07'20", Comal County, Hydrologic Unit 12100202, on right bank 200 ft (61 m) upstream from San Antonio Street viaduct in New Braunfels and 1.1 mi (1.8 km) upstream from mouth.

DRAINAGE AREA.--Not applicable. Flow at station has been corrected to reflect only flow from Comal Springs.

PERIOD OF RECORD.--1882 to current year (1882 to November 1927, discharge measurements only).

GAGE.--Water-stage recorder. Concrete control since Oct. 1, 1955. Datum of gage is 582.80 ft (177.637 m) National Geodetic Vertical Datum of 1929.

REMARKS.--The flow from Comal Springs emerges from the Edwards and associated limestones in the Balcones Fault Zone. Except during period of rainfall, flow of river is primarily from Comal Springs about 1.0 mi (1.6 km) upstream. Flow at gaging station 08169000 Comal River at New Braunfels, Tex., has been corrected to reflect only that flow from Comal Springs.

AVERAGE DISCHARGE.--54 years (water years 1928-81), 290 ft³/s (8.213 m³/s), 210,100 acre-ft/yr (259 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily spring discharge, 534 ft³/s (15.121 m³/s) Oct. 16, 1973; no flow June 13 to Nov. 4, 1956.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	264	270	286	304	299	294	286	290	301	353	317	322
2	258	266	286	299	292	294	286	360	290	360	312	317
3	254	266	282	299	294	294	286	350	317	350	312	322
4	258	270	282	299	304	294	278	322	370	350	304	317
5	258	266	286	299	304	290	282	308	335	360	308	322
6	254	270	286	299	299	290	282	304	312	360	304	322
7	254	270	286	299	299	294	278	299	317	350	304	317
8	254	270	299	299	299	294	278	294	304	345	304	322
9	254	266	294	299	299	294	278	294	304	345	304	317
10	250	270	290	294	304	290	278	294	304	345	308	317
11	254	266	290	294	299	294	282	294	317	350	304	317
12	254	266	290	294	299	304	278	290	330	350	299	317
13	254	266	290	299	299	317	278	290	434	345	304	317
14	250	266	290	299	299	304	278	294	478	345	304	322
15	250	270	294	299	299	299	278	290	370	345	304	322
16	250	299	290	294	299	294	274	294	402	335	308	317
17	254	299	294	299	299	294	274	290	456	335	308	308
18	278	282	294	299	299	294	274	286	434	335	308	312
19	322	274	294	322	299	290	270	278	412	330	317	312
20	270	274	294	345	299	294	274	282	402	330	312	312
21	270	274	294	312	294	290	270	278	390	330	312	312
22	270	274	308	304	294	290	274	270	385	330	317	308
23	262	274	299	299	290	294	312	278	380	330	312	312
24	266	274	304	299	290	290	308	290	375	322	317	317
25	266	282	299	294	290	290	290	286	370	322	312	308
26	270	308	299	294	290	290	312	282	365	322	312	312
27	270	290	304	299	290	290	294	274	365	326	312	308
28	270	286	304	294	294	294	290	278	360	317	308	308
29	266	286	304	299	--	290	282	308	355	317	312	304
30	270	286	304	294	--	290	288	345	360	322	326	304
31	270	--	304	299	--	290	--	326	--	315	330	--
TOTAL	8144	8280	9120	9321	8315	9110	8492	9218	10894	10471	9615	9444
MEAN	263	276	294	301	297	294	283	297	363	338	310	315
MAX	322	308	308	345	304	317	312	360	478	360	330	322
MIN	250	266	262	294	290	290	270	270	290	315	299	304
AC-FT	16150	16420	15090	18480	16490	18070	16840	18280	21610	20770	19070	18730
CAL YR 1980	TOTAL	104035	MEAN	284	MAX	396	MIN	184	AC-FT	206400		
WTR YR 1981	TOTAL	110424	MEAN	303	MAX	360	MIN	250	AC-FT	219000		

GUADALUPE RIVER BASIN

08170000 SAN MARCOS RIVER SPRING FLOW AT SAN MARCOS, TX

LOCATION.--Lat 29°52'06", long 97°55'38", Hays County, Hydrologic Unit 12100203, on left bank 0.7 mi (1.1 km) downstream from bridge on Interstate Highway 35 and U.S. Highway 81, 1.2 mi (1.9 km) southeast of courthouse in San Marcos, and 2.1 mi (3.4 km) upstream from Blanco River.

DRAINAGE AREA.--93.0 mi² (240.9 km²). 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 spring flow 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 (163.623 m) National Geodetic Vertical Datum of 1929. June 10, 1915, to Jan. 19, 1916, nonrecording gage at site 1.2 mi (1.9 km) upstream, and Mar. 13, 1916, to Sept. 7, 1921, water-stage recorder near present site, datum relations unknown.

REMARKS.--Records good. Flow slightly regulated by utilities dam about 1.5 mi (2.4 km) upstream. Entire flow of river is from San Marcos Springs, about 1.8 mi (2.9 km) upstream, except during period of local runoff. Springs emerge from the Edwards and associated limestones in the Balcones Fault Zone. 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.--25 years (water years 1957-81), 168 ft³/s (4.758 m³/s), 121,700 acre-ft/yr (150 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily spring discharge (estimated), 350 ft³/s (9.91 m³/s) June 20, 1981; maximum discharge, 76,600 ft³/s (2,170 m³/s) May 15, 1970, gage height, 35.12 ft (10.705 m); minimum daily spring discharge, 46 ft³/s (1.30 m³/s) Aug. 15, 16, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1913, 38.6 ft (11.77 m) Sept. 10, 1921 (from floodmark, backwater from Blanco River), present datum.

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge (estimated) 350 ft³/s (9.91 m³/s) June 20; maximum gage height, 31.76 ft (9.680 m) June 13 at 2100 hours (flood runoff), from floodmark; minimum daily spring discharge, 117 ft³/s (3.31 m³/s) Mar. 9, 10.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	126	122	127	132	121	132	140	142	316	258	223
2	136	128	125	124	130	120	134	140	144	312	258	221
3	137	127	131	123	129	120	134	140	144	308	256	223
4	137	127	135	124	127	120	132	140	145	306	254	222
5	138	128	133	122	126	121	131	140	147	306	252	219
6	136	127	131	123	126	121	131	140	145	306	250	218
7	134	127	130	121	127	121	131	139	145	304	250	217
8	132	129	130	121	126	119	129	140	145	303	248	216
9	131	129	129	121	125	117	129	140	145	302	247	216
10	130	128	125	123	124	117	130	140	144	298	245	216
11	130	128	125	123	121	119	131	140	154	294	240	218
12	129	126	127	122	122	124	131	139	181	294	240	218
13	130	125	126	121	123	127	131	139	208	294	241	216
14	130	124	129	121	125	130	130	137	235	292	238	216
15	132	124	129	122	127	131	132	140	262	289	239	213
16	133	125	131	120	128	130	134	140	289	285	238	209
17	133	126	131	120	127	131	135	140	316	284	236	208
18	135	125	132	120	125	131	136	140	325	281	235	209
19	135	124	133	129	126	131	137	138	345	280	233	210
20	135	124	132	130	126	134	136	137	350	279	231	208
21	133	122	131	130	124	135	136	137	345	273	230	210
22	134	125	131	131	123	134	135	138	340	271	229	208
23	136	125	132	130	124	132	135	140	335	271	230	206
24	133	124	129	130	123	132	138	140	330	268	232	206
25	131	122	128	130	123	132	140	141	328	267	231	206
26	131	124	127	130	123	133	141	143	326	266	230	205
27	131	125	129	130	121	133	140	141	324	268	228	204
28	128	125	130	134	122	134	140	141	322	266	229	202
29	129	123	130	133	---	132	140	141	320	263	229	201
30	127	124	128	133	---	132	140	143	318	262	224	200
31	128	---	129	134	---	131	---	144	---	258	224	---
TOTAL	4111	3766	4010	3902	3505	3945	4031	4338	7399	8866	7405	6364
MEAN	133	126	129	126	125	127	134	140	247	286	239	212
MAX	138	129	135	134	132	135	141	144	350	316	258	223
MIN	127	122	122	120	121	117	129	137	142	258	224	200
AC-FT	8150	7470	7950	7740	6950	7820	8000	8600	14680	17590	14690	12620
CAL YR 1980	TOTAL	48380	MEAN 132	MAX 162	MIN 111	AC-FT 95960						
WTR YR 1981	TOTAL	61642	MEAN 169	MAX 350	MIN 117	AC-FT 122300						

GUADALUPE RIVER BASIN

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 (0.5 km) southeast of Wimberley, 2,200 ft (671 m) downstream from Cypress Creek, and at mile 29.0 (46.7 km).

DRAINAGE AREA.--355 mi² (919 km²).

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 (242.996 m) National Geodetic Vertical Datum of 1929. Aug. 6, 1924, to Sept. 30, 1926, nonrecording gage at site 1,030 ft (314 m) upstream at datum 5.00 ft (1.524 m) higher. Recording gage June 6, 1928, to June 12, 1975, at site 1,000 ft (305 m) upstream at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good. Numerous small diversions above station. Flow is affected at times by discharge from flood-detention pool of a floodwater-retarding structure with a detention capacity of 185 acre-ft (228,000 m³). This structure controls runoff from 0.61 mi² (1.58 km²) in the Town Creek drainage basin. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--55 years (water years 1925-26, 1929-81), 124 ft³/s (3.512 m³/s), 4.74 in/yr (120 mm/yr), 89,840 acre-ft/yr (111 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 113,000 ft³/s (3,200 m³/s) May 28, 1929, gage height, 33.9 ft (10.33 m), present site and datum, from floodmarks, from rating curve extended above 30,000 ft³/s (850 m³/s) on basis of slope-area measurements of 95,000 and 113,000 ft³/s (2,690 and 3,200 m³/s); minimum, 0.6 ft³/s (0.017 m³/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 26 ft (7.9 m), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,800 ft³/s (51.0 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 16	1215	5,700 161	9.53 2.905	June 13	1845	10,000 283	12.07 3.679
Mar. 4	0930	2,530 71.6	7.19 2.192	June 14	2015	9,440 267	11.75 3.581
June 11	1430	7,260 206	10.49 3.197	June 16	1130	*17,900 507	15.62 4.761
June 12	1215	7,320 207	10.53 3.210				

Minimum daily discharge, 25 ft³/s (0.71 m³/s) Oct. 12-14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	41	58	40	46	66	139	98	66	362	91	68
2	34	39	55	38	39	57	127	87	68	331	89	67
3	32	37	52	38	39	61	121	87	72	300	86	68
4	30	35	52	38	45	760	110	86	70	280	86	68
5	31	33	52	37	51	315	100	86	535	370	83	66
6	30	35	49	38	52	197	90	87	243	313	83	61
7	28	35	49	38	54	173	90	84	155	296	86	54
8	28	35	58	38	54	165	90	81	123	272	83	56
9	27	36	60	41	54	146	89	77	104	249	83	51
10	27	34	58	39	59	148	88	73	98	231	83	50
11	26	32	55	37	52	157	83	67	1300	214	83	50
12	25	34	53	37	54	154	81	68	2290	201	83	49
13	25	33	50	36	56	231	80	68	2410	187	81	50
14	25	33	49	40	57	238	78	66	3040	181	78	50
15	32	34	47	36	57	220	75	66	1760	170	75	53
16	922	58	46	36	57	207	73	69	5490	163	75	55
17	231	56	46	35	57	202	72	62	1980	153	75	54
18	100	49	46	35	58	191	75	57	1410	146	75	52
19	65	52	44	53	58	188	79	54	1130	143	78	51
20	61	52	40	58	58	181	82	52	942	133	77	51
21	58	47	39	54	60	181	80	52	812	130	77	50
22	54	47	39	52	58	176	78	52	709	126	75	49
23	52	47	40	51	52	158	102	52	628	120	74	52
24	49	43	42	50	52	148	102	66	560	117	73	52
25	47	55	39	49	52	153	113	73	519	114	71	50
26	45	73	41	49	51	149	100	61	615	114	71	48
27	45	67	42	48	50	149	97	61	542	108	69	48
28	43	63	40	46	49	144	95	58	456	105	71	47
29	43	62	41	45	---	146	96	57	408	105	71	47
30	41	61	40	44	---	199	101	55	390	100	73	46
31	41	---	40	43	---	156	---	55	---	94	76	---
TOTAL	2333	1358	1462	1319	1481	5816	2786	2117	28925	5928	2434	1613
MEAN	75.3	45.3	47.2	42.5	52.9	188	92.9	68.3	964	191	78.5	53.8
MAX	922	73	60	58	60	760	139	98	5490	370	91	68
MIN	25	32	39	35	39	57	72	52	66	94	69	46
CFSM	.21	.13	.13	.12	.15	.53	.26	.19	2.72	.54	.22	.15
IN.	.24	.14	.15	.14	.16	.61	.29	.22	3.03	.62	.26	.17
AC-FT	4630	2690	2900	2620	2940	11540	5530	4200	57370	11760	4830	3200
CAL YR 1980	TOTAL	20529	MEAN	56.1	MAX	922	MIN	18	CFSM	.16	IN	2.15
WTR YR 1981	TOTAL	57572	MEAN	158	MAX	5490	MIN	25	CFSM	.45	IN	6.03
									AC-FT	40720		
										114200		

GUADALUPE RIVER BASIN

08171300 BLANCO RIVER NEAR KYLE, TX

LOCATION.--Lat 29°58'45", long 97°54'35", Hays County, Hydrologic Unit 12100203, on left bank 800 ft (240 m) downstream from Tarbutton Ranch House (Hatchett Ranch), 2.2 mi (3.5 km) southwest of Kyle, 4.2 mi (6.8 km) downstream from Halifax Creek, and 6.3 mi (10.1 km) upstream from bridge on U.S. Highway 81.

DRAINAGE AREA.--412 mi² (1,067 km²).

PERIOD OF RECORD.--May 1956 to current year.

REVISED RECORDS.--WSP 1923: 1957-58, 1960(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 620.12 ft (189.013 m) Corps of Engineers datum.

REMARKS.--Records good. Small diversions above station for irrigation. Most of the low flow of the Blanco River enters the Edwards and associated limestones in the Balcones Fault Zone which crosses the basin upstream from this station and below the station at Wimberley. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08171000. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years (water years 1957-81), 153 ft³/s (4.333 m³/s), 5.04 in/yr (128 mm/yr), 110,800 acre-ft/yr (137 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,000 ft³/s (2,780 m³/s) May 2, 1958, gage height, 36.3 ft (11.06 m); from floodmark, from rating curve extended above 37,000 ft³/s (1,050 m³/s) on basis of slope-area measurement of 139,000 ft³/s (3,940 m³/s) and slope-conveyance study; no flow at times in 1956-57, 1963-65, 1967, 1971, and 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, about 40 ft (12.2 m) in May 1929, from information by local residents, discharge, 139,000 ft³/s (3,940 m³/s). Flood of Sept. 11, 1952, reached a stage of 38.0 ft (11.58 m), discharge, 115,000 ft³/s (3,260 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (70.8 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 16	1900	3,050 86.4	a11.38 3.469	June 13	2045	*29,000 821	23.96 7.303
June 11	1445	8,910 252	16.00 4.877	June 14	2330	10,300 292	16.77 5.111
June 12	1530	9,050 256	16.08 4.901	June 16	1500	22,400 634	21.88 6.669

a From floodmark.

Minimum discharge, 12 ft³/s (0.34 m³/s) Oct. 14.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	34	20	40	32	37	48	109	65	44	441	96	52		
2	27	19	38	32	36	54	102	63	70	404	92	48		
3	24	19	36	31	34	47	100	61	201	369	90	56		
4	21	19	36	30	37	536	98	59	123	342	87	49		
5	19	18	38	30	49	365	92	56	402	427	84	46		
6	18	18	37	31	49	187	86	54	308	419	81	45		
7	16	18	36	31	49	155	84	52	167	359	78	43		
8	16	18	40	30	48	142	84	50	121	335	76	45		
9	15	19	55	32	48	130	82	50	96	305	74	42		
10	14	19	51	30	51	118	81	45	85	280	72	39		
11	14	18	47	29	50	129	79	43	2410	260	70	39		
12	13	17	44	28	47	128	76	43	2890	243	68	39		
13	13	17	43	28	50	173	74	44	7150	230	66	38		
14	13	17	43	30	51	216	72	43	3900	215	64	40		
15	13	17	43	29	50	188	70	42	2920	204	63	44		
16	664	28	41	28	49	175	69	48	7010	192	61	44		
17	336	38	40	27	49	164	66	44	2690	181	60	43		
18	96	29	40	26	48	159	72	40	1820	172	67	41		
19	56	26	39	38	47	150	68	36	1410	164	70	40		
20	41	26	37	58	45	140	64	33	1170	155	63	39		
21	39	26	35	50	44	139	63	33	992	148	63	39		
22	36	25	35	46	47	134	61	34	863	141	60	38		
23	33	27	35	44	43	125	90	35	758	134	58	36		
24	30	26	35	43	42	113	77	52	678	127	57	35		
25	27	28	33	43	42	115	96	52	619	123	56	33		
26	26	45	33	42	43	116	82	46	673	118	54	32		
27	26	42	34	40	41	112	72	42	654	115	52	31		
28	24	42	34	39	40	111	68	40	549	109	50	30		
29	22	42	33	38	---	110	64	42	493	107	51	29		
30	22	41	33	37	---	144	65	44	462	103	60	29		
31	21	---	32	35	---	126	---	43	---	98	72	---		
TOTAL	1769	764	1196	1087	1266	4749	2366	1434	41728	7020	2115	1204		
MEAN	57.1	25.5	38.6	35.1	45.2	153	78.9	46.3	1391	226	68.2	40.1		
MAX	664	45	55	58	51	536	109	65	7150	441	96	56		
MIN	13	17	32	26	34	47	61	33	44	98	50	29		
CFSM	.14	.06	.09	.09	.11	.37	.19	.11	3.38	.55	.17	.10		
IN.	.16	.07	.11	.10	.11	.43	.21	.13	3.77	.63	.19	.11		
AC-FT	3510	1520	2370	2160	2510	9420	4690	2840	82770	13920	4200	2390		
CAL YR 1980	TOTAL	14415.0	MEAN	39.4	MAX	664	MIN	3.0	CFSM	.10	IN	1.30	AC-FT	28590
WTR YR 1981	TOTAL	66698.0	MEAN	183	MAX	7150	MIN	13	CFSM	.44	IN	6.02	AC-FT	132300

GUADALUPE RIVER BASIN

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 (167 m) upstream from bridge on U.S. Highway 183, 2.7 mi (4.3 km) north of Lockhart, 3.7 mi (6.0 km) upstream from Town Creek, 5.0 mi (8.0 km) downstream from Brushy Creek, and 30.4 mi (48.9 km) upstream from mouth.

DRAINAGE AREA.--112 mi² (290 km²).

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 (131.427 m) National Geodetic Vertical Datum of 1929. Apr. 30, 1959, to July 25, 1968, at site 548 ft (167 m) downstream at present datum.

REMARKS.--Records good. No known diversion above station. Flow at times is affected by discharge from the flood-detention pools of 17 floodwater-retarding structures with combined detention capacity of 24,850 acre-ft (30.6 hm³). These structures control runoff from 67.8 mi² (175.6 km²) above this station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--22 years, 49.1 ft³/s (1.391 m³/s), 35,570 acre-ft/yr (43.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,600 ft³/s (753 m³/s) Oct. 29, 1960, gage height, 20.62 ft (6.285 m); no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1905, 22 ft (6.7 m) in June 1936 at present site; flood in 1951 reached a stage of 20 ft (6.1 m) at present site, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
June 11	2000	3,950	112	15.68	4.779
June 13	2330	*18,000	510	19.26	5.870
June 16	1830	3,250	92.0	15.42	4.700

Minimum discharge, no flow for many days.

**DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES**

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.23	.50	.00	.00	.00	211	2.2	.00
2	.00	.00	.00	.00	.19	2.3	.00	.00	.00	167	1.6	.00
3	.00	.00	.00	.00	.12	6.8	.00	.00	57	141	1.3	.00
4	.00	.00	.00	.00	.35	8.2	.00	.00	301	124	1.1	3.9
5	.00	.00	.00	.00	2.8	16	.00	.00	129	124	.96	3.9
6	.00	.00	.00	.00	24	12	.00	.00	35	125	.79	2.9
7	.00	.00	.00	.00	25	8.0	.00	.00	9.6	100	.61	1.9
8	.00	.00	.00	.00	19	6.0	.00	.00	1.9	113	.43	1.5
9	.00	.00	.00	.00	14	5.1	.00	.00	.15	100	.23	1.2
10	.00	.00	.00	.00	11	4.5	.00	.00	.00	83	.13	1.1
11	.00	.00	.00	.00	11	3.8	.00	.00	958	73	.08	.93
12	.00	.00	.00	.00	9.4	8.3	.00	.00	1100	66	.05	.78
13	.00	.00	.00	.00	4.8	30	.00	.00	3010	59	.03	.64
14	.00	.00	.00	.00	2.3	25	.00	.00	7340	46	.00	.54
15	.00	.00	.00	.00	1.8	18	.00	.00	1800	33	.00	.70
16	.00	.00	.00	.00	1.7	13	.00	.00	2120	25	.00	.78
17	.00	.00	.00	.00	1.6	8.5	.00	.00	1520	20	.00	.58
18	.00	.00	.00	.00	1.4	5.2	.00	.00	1150	16	.00	.39
19	.00	.00	.00	1.1	.99	2.8	.00	.00	1070	13	.00	.27
20	.00	.00	.00	65	.67	1.1	.00	.00	1000	11	.00	.19
21	.00	.00	.00	25	.82	.28	.00	.00	896	9.1	.00	.13
22	.00	.00	.00	14	.62	.07	.00	.00	781	7.6	.00	.09
23	.00	.00	.00	9.0	.10	.09	.00	.00	713	6.4	.00	.07
24	.00	.00	.00	6.6	.38	.04	.01	.00	631	5.5	.00	.05
25	.00	.00	.00	4.4	.09	.00	.17	.00	562	4.7	.00	.03
26	.00	.00	.00	2.5	.00	.00	.00	.00	500	4.3	.00	.00
27	.00	.00	.00	1.6	.00	.00	.00	.00	448	4.7	.00	.00
28	.00	.00	.00	.81	.00	.00	.00	.00	402	4.9	.00	.00
29	.00	.00	.00	.65	---	.02	.00	.00	336	5.0	.00	.00
30	.00	.00	.00	.46	---	.02	.00	.00	271	4.4	.00	.00
31	.00	---	.00	.26	---	.00	---	.00	---	3.4	.00	---
TOTAL	.00	.00	.00	131.38	134.36	185.62	.18	.00	27141.65	1710.0	9.51	22.57
MEAN	.000	.000	.000	4.24	4.80	5.99	.006	.000	905	55.2	.31	.75
MAX	.00	.00	.00	65	25	30	.17	.00	7340	211	2.2	3.9
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	3.4	.00	.00
AC-FT	.00	.00	.00	261	267	368	.4	.00	53840	3390	19	45

CAL YR 1980	TOTAL	4784.66	MEAN 13.1	MAX 1430	MIN .00	AC-FT 9490
WTR YR 1981	TOTAL	29335.27	MEAN 80.4	MAX 7340	MIN .00	AC-FT 58190

GUADALUPE RIVER BASIN

08177600 OLMOS CREEK TRIBUTARY AT FARM ROAD 1535, SHAVANO PARK, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°34'35", long 98°32'45", Bexar County, Hydrologic Unit 12100301, at culvert on Farm Road 1535 at Shavano Park and 1.9 mi (3.1 km) southeast of intersection of Farm Roads 1535 and 1604.

DRAINAGE AREA.--0.33 mi² (0.85 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Digital recorders (stage and rainfall) and crest-stage gages. Datum of gage is 907.92 ft (276.734 m) National Geodetic Vertical Datum of 1929, San Antonio supplementary adjustments of 1951 and 1953.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 303 ft³/s (8.58 m³/s) Sept. 26, 1973, gage height, 6.26 ft (1.908 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 43 ft³/s (1.22 m³/s) Dec. 28 at 1630 hours, gage height, 3.09 ft (0.942 m), no peak above base of 50 ft³/s (1.42 m³/s); no flow most of time.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: May 1970 to current year. Water temperature: May 1970 to current year. Bacteria analyses: April 1976 to current year.

REMARKS.--No water-quality samples were made during the current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)
JUN										
13...	1542	37	166	6.2	24.0	70	17	--	--	3.2
13...	1554	72	137	7.1	24.0	60	35	--	--	4.2
13...	1604	86	121	7.3	--	--	--	--	--	3.7
13...	1637	219	102	7.5	24.0	80	70	--	--	4.5
13...	1702	278	90	7.4	22.5	80	52	8.4	98	3.7
13...	1733	141	92	7.4	22.5	80	34	8.2	95	3.0
13...	1822	67	109	7.5	22.0	--	--	8.7	101	2.9

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, UM-MF (COLS./ 100 ML)	STREP- TOCOCCT 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
JUN									
13...	46000	26000	130000	71	4	26	1.5	2.7	.1
13...	--	--	--	60	1	22	1.3	2.5	.1
13...	--	--	--	--	--	--	--	--	--
13...	--	--	--	47	3	17	1.1	1.9	.1
13...	--	--	--	42	1	15	1.0	1.5	.1
13...	--	--	--	42	1	15	1.0	1.6	.1
13...	--	--	--	--	--	--	--	--	--

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY (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)
JUN									
13...	5.8	67	11	3.8	.1	15	106	47	5
13...	5.1	59	6.0	3.3	.0	13	88	151	36
13...	--	57	--	--	--	--	--	--	--
13...	4.3	44	3.1	1.8	.0	9.8	65	227	38
13...	4.3	41	3.1	1.6	.1	9.9	61	153	22
13...	4.3	41	3.0	1.8	.0	9.7	61	65	5
13...	--	49	--	--	--	--	--	--	--

GUADALUPE RIVER BASIN

08177600 OLMOS CREEK TRIBUTARY AT FARM ROAD 1535, SHAVANO PARK TX--CONTINUED
(Flood-hydrograph partial-record station)

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
JUN									
13...	.28	.020	.30	.320	1.3	1.6	.290	17	14
13...	.26	.020	.28	.210	1.4	1.6	.200	20	--
13...	--	--	--	--	--	--	--	--	--
13...	.18	.020	.20	.220	1.7	1.9	.390	19	--
13...	.20	.020	.22	.140	1.4	1.5	.280	18	11
13...	.22	.020	.24	.120	1.5	1.6	.270	17	--
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)
JUN							
13...	1554	1	100	<1	0	<10	70
13...	1637	1	200	<1	0	<10	30
13...	1733	1	100	<1	0	<10	80

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)
JUN						
13...	<10	2	.0	0	0	<3
13...	<10	2	.0	0	0	<3
13...	<10	3	.0	0	0	9

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)
JUN									
13...	1554	.00	.00	.00	.00	.00	.00	.00	.03
13...	1733	.00	.00	.00	.00	.00	.01	.00	.49

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JUN									
13...	.00	.00	.00	.00	.00	.00	.00	.00	.00
13...	.00	.00	.00	.00	.00	.00	.00	.01	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN									
13...	.00	.00	.00	.00	0	.00	.01	.01	.00
13...	.00	.00	.00	.00	0	.00	.02	.03	.00

GUADALUPE RIVER BASIN

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX

LOCATION.--Lat 29°29'56", long 98°30'36", Bexar County, Hydrologic Unit 12100301, on right bank 30 ft (9 m) downstream from low-water bridge on Dresden Drive at San Antonio, 0.15 mi (0.24 km) west of intersection of Blanco Road and Dresden Drive, and 4.0 mi (6.4 km) upstream from Olmos Dam.

DRAINAGE AREA.--21.2 mi² (54.9 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 726.10 ft (221.315 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good prior to April and poor thereafter. 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, 4.34 ft³/s (0.123 m³/s), 2.78 in/yr (71 mm/yr), 3,140 acre-ft/yr (3.87 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,450 ft³/s (211 m³/s) Sept. 13, 1978, gage height, 14.82 ft (4.517 m), 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 (2.59 m), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s (11.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 13	unknown	*2,500 70.8	unknown ---
Sept. 8	unknown	1,800 51.0	unknown ---

Minimum daily discharge, 0.01 ft³/s (0.0003 m³/s) Feb. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.56	.05	.25	.06	.19	16	.10	.40	3.0	.80	.25	1.2
2	.97	.05	.21	.05	.13	.60	.10	3.0	2.0	.40	.25	1.1
3	.26	.05	.22	.05	.01	6.0	.10	6.6	1.4	.30	.25	1.0
4	.25	.05	.15	.05	4.8	2.5	.12	1.0	4.0	.30	.25	.80
5	.18	.03	.49	.05	3.2	.40	.14	.60	5.0	2.5	.25	.70
6	.13	.03	.50	.10	.86	.30	.14	.55	2.5	.80	.25	.68
7	.14	.05	.30	.05	.28	.25	.14	.40	2.0	.50	2.0	.68
8	.11	.05	12	.60	.19	.22	.10	.40	1.8	.45	1.0	150
9	.10	.04	2.4	.26	.30	.20	.07	.40	1.4	.42	.40	20
10	.08	.05	.65	.14	.28	.15	.05	.40	1.0	.40	.40	2.4
11	.08	.05	3.3	.10	.15	7.0	.08	.35	.80	.35	.40	1.6
12	.06	.03	.33	.06	.15	7.4	.08	.32	10	.35	.40	1.4
13	.04	.05	.20	.06	.11	1.0	.08	.30	350	.35	.40	1.2
14	.04	.04	.23	.32	.07	.50	.10	.28	250	.35	.60	1.0
15	.03	1.1	.23	.10	.09	.35	.10	.25	25	.35	.45	.80
16	.18	31	.17	.06	.18	.22	.20	.22	35	.35	.43	.60
17	.10	3.9	.15	.05	.22	.20	.30	.20	2.0	.33	.40	.42
18	32	.42	.17	.06	.22	.15	.30	.18	1.0	.33	10	.40
19	4.7	.25	.20	42	.21	.12	.20	.18	.80	.33	2.0	.40
20	.23	.20	.06	3.2	.20	.10	.10	.18	.60	.33	1.3	.37
21	.14	.21	.03	.48	.20	.08	3.0	.18	.50	.30	1.0	.35
22	.10	.84	.05	.29	.13	.05	10	.18	.40	.30	.80	.35
23	.07	.58	.06	.39	.22	.05	35	.18	.35	.28	.65	.35
24	.04	.20	.06	.32	.30	.05	8.6	25	.30	.30	.58	.35
25	.02	25	.05	.27	.28	.05	11	6.0	.30	.40	.52	.35
26	.02	10	.03	.30	.21	.08	5.0	2.0	8.0	.38	.45	.35
27	.04	.62	.03	.28	.16	.10	3.0	.60	.40	.40	.40	.35
28	1.4	.63	.04	.22	.35	.15	2.0	.20	.20	.35	.40	.35
29	.07	.26	.06	.22	---	.15	1.0	80	5.0	.28	.40	.35
30	.05	.25	.06	.21	---	.12	.60	20	2.0	.28	2.5	.35
31	.05	---	.05	.17	---	.10	---	7.0	---	.25	1.2	---
TOTAL	42.24	76.08	22.73	50.57	13.69	44.64	81.80	157.55	716.75	13.81	30.58	190.25
MEAN	1.36	2.54	.73	1.63	.49	1.44	2.73	5.08	23.9	.45	.99	6.34
MAX	32	31	12	42	4.8	16	35	80	350	2.5	10	150
MIN	.02	.03	.03	.05	.01	.05	.05	.18	.20	.25	.25	.35
CFSM	.06	.12	.03	.08	.02	.07	.13	.24	1.13	.02	.05	.30
IN.	.07	.13	.04	.09	.02	.08	.14	.28	1.26	.02	.05	.33
AC-FT	84	151	45	100	27	89	162	313	1420	27	61	377

CAL YR 1980	TOTAL	730.34	MEAN	2.00	MAX	103	MIN	.00	CFSM	.09	IN	1.28	AC-FT	1450
WTR YR 1981	TOTAL	1440.69	MEAN	3.95	MAX	350	MIN	.01	CFSM	.19	IN	2.53	AC-FT	2860

GUADALUPE RIVER BASIN

08177600 OLMOS CREEK TRIBUTARY AT FARM ROAD 1535, SHAVANO PARK TX--CONTINUED
(Flood-hydrograph partial-record station)

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)
JUN									
13...	.28	.020	.30	.320	1.3	1.6	.290	17	14
13...	.26	.020	.28	.210	1.4	1.6	.200	20	--
13...	--	--	--	--	--	--	--	--	--
13...	.18	.020	.20	.220	1.7	1.9	.390	19	--
13...	.20	.020	.22	.140	1.4	1.5	.280	18	11
13...	.22	.020	.24	.120	1.5	1.6	.270	17	--
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)
JUN							
13...	1554	1	100	<1	0	<10	70
13...	1637	1	200	<1	0	<10	30
13...	1733	1	100	<1	0	<10	80

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)
JUN						
13...	<10	2	.0	0	0	<3
13...	<10	2	.0	0	0	<3
13...	<10	3	.0	0	0	9

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)
JUN									
13...	1554	.00	.00	.00	.00	.00	.00	.00	.03
13...	1733	.00	.00	.00	.00	.00	.01	.00	.49

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JUN									
13...	.00	.00	.00	.00	.00	.00	.00	.00	.00
13...	.00	.00	.00	.00	.00	.00	.00	.01	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN									
13...	.00	.00	.00	.00	0	.00	.01	.01	.00
13...	.00	.00	.00	.00	0	.00	.02	.03	.00

GUADALUPE RIVER BASIN

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX

LOCATION.--Lat 29°29'56", long 98°30'36", Bexar County, Hydrologic Unit 12100301, on right bank 30 ft (9 m) downstream from low-water bridge on Dresden Drive at San Antonio, 0.15 mi (0.24 km) west of intersection of Blanco Road and Dresden Drive, and 4.0 mi (6.4 km) upstream from Olmos Dam.

DRAINAGE AREA.--21.2 mi² (54.9 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 726.10 ft (221.315 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good prior to April and poor thereafter. 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, 4.34 ft³/s (0.123 m³/s), 2.78 in/yr (71 mm/yr), 3,140 acre-ft/yr (3.87 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,450 ft³/s (211 m³/s) Sept. 13, 1978, gage height, 14.82 ft (4.517 m), 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 (2.59 m), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s (11.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 13	unknown	*2,500 70.8	unknown ---
Sept. 8	unknown	1,800 51.0	unknown ---

Minimum daily discharge, 0.01 ft³/s (0.0003 m³/s) Feb. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.56	.05	.25	.06	.19	16	.10	.40	3.0	.80	.25	1.2
2	.97	.05	.21	.05	.13	.60	.10	3.0	2.0	.40	.25	1.1
3	.26	.05	.22	.05	.01	6.0	.10	6.6	1.4	.30	.25	1.0
4	.25	.05	.15	.05	4.8	2.5	.12	1.0	4.0	.30	.25	.80
5	.18	.03	.49	.05	3.2	.40	.14	.60	5.0	2.5	.25	.70
6	.13	.03	.50	.10	.86	.30	.14	.55	2.5	.80	.25	.68
7	.14	.05	.30	.05	.28	.25	.14	.40	2.0	.50	2.0	.68
8	.11	.05	12	.60	.19	.22	.10	.40	1.8	.45	1.0	150
9	.10	.04	2.4	.26	.30	.20	.07	.40	1.4	.42	.40	20
10	.08	.05	.65	.14	.28	.15	.05	.40	1.0	.40	.40	2.4
11	.08	.05	3.3	.10	.15	7.0	.08	.35	.80	.35	.40	1.6
12	.06	.03	.33	.06	.15	7.4	.08	.32	10	.35	.40	1.4
13	.04	.05	.20	.06	.11	1.0	.08	.30	350	.35	.40	1.2
14	.04	.04	.23	.32	.07	.50	.10	.28	250	.35	.60	1.0
15	.03	1.1	.23	.10	.09	.35	.10	.25	25	.35	.45	.80
16	.18	31	.17	.06	.18	.22	.20	.22	35	.35	.43	.60
17	.10	3.9	.15	.05	.22	.20	.30	.20	2.0	.33	.40	.42
18	32	.42	.17	.06	.22	.15	.30	.18	1.0	.33	10	.40
19	4.7	.25	.20	42	.21	.12	.20	.18	.80	.33	2.0	.40
20	.23	.20	.06	3.2	.20	.10	.10	.18	.60	.33	1.3	.37
21	.14	.21	.03	.48	.20	.08	3.0	.18	.50	.30	1.0	.35
22	.10	.84	.05	.29	.13	.05	10	.18	.40	.30	.80	.35
23	.07	.58	.06	.39	.22	.05	35	.18	.35	.28	.65	.35
24	.04	.20	.06	.32	.30	.05	8.6	25	.30	.30	.58	.35
25	.02	25	.05	.27	.28	.05	11	6.0	.30	.40	.52	.35
26	.02	10	.03	.30	.21	.08	5.0	2.0	8.0	.38	.45	.35
27	.04	.62	.03	.28	.16	.10	3.0	.60	.40	.40	.40	.35
28	1.4	.63	.04	.22	.35	.15	2.0	.20	.20	.35	.40	.35
29	.07	.26	.06	.22	---	.15	1.0	80	5.0	.28	.40	.35
30	.05	.25	.06	.21	---	.12	.60	20	2.0	.28	2.5	.35
31	.05	---	.05	.17	---	.10	---	7.0	---	.25	1.2	---
TOTAL	42.24	76.08	22.73	50.57	13.69	44.64	81.80	157.55	716.75	13.81	30.58	190.25
MEAN	1.36	2.54	.73	1.63	.49	1.44	2.73	5.08	23.9	.45	.99	6.34
MAX	32	31	12	42	4.8	16	35	80	350	2.5	10	150
MIN	.02	.03	.03	.05	.01	.05	.05	.18	.20	.25	.25	.35
CFSM	.06	.12	.03	.08	.02	.07	.13	.24	1.13	.02	.05	.30
IN.	.07	.13	.04	.09	.02	.08	.14	.28	1.26	.02	.05	.33
AC-FT	84	151	45	100	27	89	162	313	1420	27	61	377

CAL YR 1980	TOTAL	730.34	MEAN	2.00	MAX	103	MIN	.00	CFSM	.09	IN	1.28	AC-FT	1450
WTR YR 1981	TOTAL	1440.69	MEAN	3.95	MAX	350	MIN	.01	CFSM	.19	IN	2.53	AC-FT	2860

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 (9 m) upstream from Thousand Oaks Boulevard and 4.2 mi (6.8 km) upstream from mouth.

DRAINAGE AREA.--4.05 mi² (10.5 km²).

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.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 600 ft³/s (17.0 m³/s) Oct. 18, 1980, at 1335 hours, gage height, 2.59 ft (0.789 m); no flow most of time.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Oct. 18	1335	*600	17.0	2.59	0.789
June 13	1830	275	7.79	2.31	0.704
June 14	0740	121	3.43	2.05	0.625

Minimum discharge, 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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)
OCT										
18...	1215	.80	112	7.9	--	80	31	--	--	--
18...	1232	6.0	96	7.4	21.0	100	71	8.3	95	6.3
APR										
23...	0910	3.5	147	--	20.5	--	--	9.2	102	--
23...	1030	26	151	--	20.5	--	--	--	--	--
23...	1045	28	153	--	--	--	--	--	--	--
23...	1100	25	150	--	--	--	--	--	--	--
23...	1112	19	126	--	20.5	--	--	9.2	102	--
23...	1115	19	154	--	--	--	--	--	--	--
23...	1130	16	150	--	--	--	--	--	--	--
MAY										
29...	1307	1.6	138	--	--	80	6.8	--	--	4.0
29...	1325	7.8	133	--	--	100	33	--	--	4.6
29...	1354	16	133	--	--	100	17	--	--	4.2
29...	1424	11	114	--	--	80	24	--	--	3.0
29...	1524	4.2	114	--	--	60	18	--	--	3.6

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	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)
OCT										
18...	180000	K73000	68000	--	--	--	--	--	--	--
18...	280000	130000	64000	34	2	12	.9	2.6	.2	5.0
APR										
23...	380000	88000	170000	--	--	--	--	--	--	--
23...	260000	44000	84000	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--	--
MAY										
29...	210000	16000	190000	61	0	22	1.5	1.5	.1	6.7
29...	K120000	K95000	310000	56	0	20	1.4	2.2	.1	8.1
29...	200000	K60000	390000	53	016	49	1.4	2.5	.1	7.8
29...	K160000	16000	140000	50	1	18	1.3	1.6	.1	5.5
29...	>31000	14000	130000	52	1	19	1.2	1.5	.1	4.7

GUADALUPE RIVER BASIN

08178620 LORENCE CREEK AT THOUSAND OAKS BLOULEVARD, SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	ALKA- LINITY (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)
OCT									
18...	--	--	--	--	--	--	44	42	.63
18...	32	2.7	4.2	.1	8.4	55	139	28	.89
APR									
23...	--	--	--	--	--	--	--	--	3.5
23...	--	--	--	--	--	--	--	--	2.8
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
MAY									
29...	61	3.0	2.1	.1	14	88	67	18	.75
29...	56	3.8	2.6	.0	13	85	36	15	.46
29...	57	2.6	2.7	.0	14	84	49	14	.88
29...	49	2.2	1.6	.0	12	72	53	16	.63
29...	51	2.2	1.5	.0	11	72	19	15	.42

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)	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)
OCT									
18...	.030	.66	.170	1.2	1.4	.230	--	12	--
18...	.040	.93	.090	--	--	.410	--	16	--
APR									
23...	.050	3.5	.240	1.9	2.1	4.400	.460	--	--
23...	.030	2.8	.160	1.8	2.0	.430	.410	8.1	7.9
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
23...	--	--	--	--	--	--	--	--	--
MAY									
29...	.020	.77	.140	1.3	1.4	.210	--	14	14
29...	.310	.77	.130	1.4	1.5	.310	--	19	--
29...	.030	.91	.120	1.5	1.6	.340	--	15	12
29...	.030	.66	.110	1.2	1.3	.240	--	12	--
29...	.030	.45	.110	1.1	1.2	.220	--	10	9.6

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)
OCT							
18...	1232	3	6	1	0	18	90
MAY							
29...	1307	2	100	<1	0	<10	210
29...	1325	2	200	<1	0	<10	110
29...	1354	2	200	<1	0	<10	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)
OCT						
18...	<10	4	.3	0	0	10
MAY						
29...	<10	7	.2	0	0	20
29...	<10	10	.3	0	0	10
29...	<10	4	.2	0	0	5

GUADALUPE RIVER BASIN

08178620 LORENCE CREEK AT THOUSAND OAKS BOULEVARD, SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
OCT 18...	1232	.00	.0	.00	.1	.00	.00	.00	.09
MAY 29...	1307	.00	.0	.00	.0	.00	.00	.00	.01
29...	1325	.00	.0	.00	.0	.00	.00	.00	.03
29...	1354	.00	.0	.00	.0	.00	.00	.00	.08

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
OCT 18...	.00	.00	.00	.00	.00	.01	.01	.00	.00
MAY 29...	.00	.00	.00	.00	.00	.00	.00	.00	.00
29...	.00	.00	.00	.00	.00	.00	.00	.00	.00
29...	.00	.00	.00	.00	.00	.00	.00	.01	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION TOTAL (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT 18...	.00	.00	.00	.00	0	.00	.03	.02	.00
MAY 29...	.00	.00	.00	.00	0	.00	.01	.02	.00
29...	.00	.00	.00	.00	0	.00	.01	.03	.00
29...	.00	.00	.00	.00	0	.00	.01	.02	.00

GUADALUPE RIVER BASIN

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 (2.9 km) upstream from mouth of East Elm Creek, 2.1 mi (3.4 km) upstream from Farm Road 1604, and 7.0 mi (11.3 km) north of San Antonio International Airport.

DRAINAGE AREA.--2.45 mi² (6.35 km²).

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 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,000 ft³/s (56.6 m³/s) Nov. 1, 1977, gage height, 5.82 ft (1.774 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,300 ft³/s (36.8 m³/s) June 13 at 1655 hours, gage height, 5.43 ft (1.655 m); no flow most of time.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, pesticide, and bacteria analyses: May 1976 to current year. Water temperatures: May 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, IMMED. 0.7 UM-MF (COLS./ 100 ML)	
OCT 18...	1538	14	94	8.0	21.0	200	440	8.0	92	4.7	>68000	68000	
DATE	TIME	STREP- TOCOCCEI 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 (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 18...	22000	40	10	15	.5	1.3	.1	2.7	30	6.9	2.1	.1	
DATE	TIME	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)	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...	4.6	51	765	490	.47	.040	.51	.100	1.7	1.8	.150	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)						
OCT 18...	1538	1	0	0	0	0	100						

GUADALUPE RIVER BASIN

08178640 WEST ELM CREEK AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

	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...	0	20	.3	0	0	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)
OCT 18...	1538	.00	.0	.00	.1	.00	.00	.00	1.3
DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
OCT 18...	.00	.00	.00	.00	.00	.00	.00	.00	.00
DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
OCT 18...	.00	.00	.00	.00	0	.00	.11	.00	.00

GUADALUPE RIVER BASIN

08178645 EAST ELM CREEK AT SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°37'04", long 98°25'41", Bexar County, Hydrologic Unit 12100301, at mid-channel, 2.1 mi (3.4 km) upstream from Farm Road 1604, and 6.9 mi (11.1 km) north of San Antonio International Airport.

DRAINAGE AREA.--2.33 mi² (6.03 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1975 to current year.

GAGE.--Digital recorders (stage and rainfall) and crest-stage gages. Gage is not referenced to National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 310 ft³/s (8.78 m³/s) May 7, 1976, gage height, 6.78 ft (2.067 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 267 ft³/s (7.56 m³/s) June 13, gage height, 6.52 ft (1.987 m), no other peak discharge above base of 100 ft³/s (2.83 m³/s).

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and bacteria analyses: May 1976 to current year. Water temperatures: May 1976 to current year.

REMARKS.--No samples obtained during current year.

GUADALUPE RIVER BASIN

08178690 SALADO CREEK TRIBUTARY AT BITTERS ROAD, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°31'36", long 98°26'25", Bexar County, Hydrologic Unit 12100301, at culvert on Bitters Road immediately east of MacArthur High School in San Antonio.

DRAINAGE AREA.--0.26 mi² (0.67 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1968 to September 1981 (discontinued).

GAGE.--Digital recorders (stage and rainfall) and crest-stage gage. Gage is not referenced to National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 253 ft³/s (7.16 m³/s) May 7, 1972, gage height, 7.88 ft (2.402 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft³/s (1.42 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
aApr. 23	unknown	104 2.95	5.08 1.548	June 11	1030	53 1.50	4.05 1.234
aApr. 25	unknown	78 2.21	4.57 1.393	June 16.	0650	97 2.75	4.94 1.506
May 24	2335	56 1.59	4.12 1.256	Sept. 8	0755	112 3.17	5.24 1.597
May 29	1225	*169 4.79	6.35 1.935	Sept. 14	1900	117 3.31	5.35 1.631

a From crest-stage gage.

Minimum discharge, no flow most of time.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to September 1981 (discontinued). Sediment analyses: April to September 1973. Water temperatures: November 1968 to September 1981 (discontinued). Bacteria analyses: April 1976 to September 1981 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM 5 DAY (MG/L)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
AUG													
18...	1444	17	77	8.1	27.5	60	57	6.8	87	18	350000	240000	
18...	1449	39	89	8.2	28.0	55	37	6.3	82	>23	640000	380000	
18...	1500	41	80	7.9	27.5	40	16	6.5	83	>23	>600000	600000	
18...	1515	33	79	7.5	27.5	40	12	6.2	79	18	>820000	820000	
18...	1543	22	89	--	28.0	45	8.0	5.2	67	15	>480000	480000	
		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 (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)
AUG													
18...	860000	40	15	14	1.2	1.7	.1	3.0	25	8.0	4.3	.1	
18...	1100000	26	3	9.2	.7	.8	.1	9.1	23	2.0	9.0	.0	
18...	310000	30	5	10	1.1	1.2	.1	8.9	25	2.0	2.9	.0	
18...	250000	29	4	10	.9	1.3	.1	7.6	25	5.0	3.3	.0	
18...	420000	35	5	12	1.2	1.3	.1	3.6	30	5.0	2.9	.0	
		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)	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)
AUG													
18...	2.4	50	0	0	.86	.050	.91	.360	2.1	2.5	.730	29	
18...	1.7	46	231	58	.93	.070	1.0	.440	3.2	3.6	.860	38	
18...	1.8	43	80	20	.80	.050	.85	.420	2.0	2.4	.560	20	
18...	1.8	45	21	6	.80	.060	.86	.360	1.2	1.6	.400	18	
18...	2.3	46	7	2	.73	.090	.82	.360	1.2	1.6	.410	17	

GUADALUPE RIVER BASIN

08178690 SALADO CREEK TRIBUTARY AT BITTERS ROAD, SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
AUG							
18...	1444	1	10	<1	10	<10	54
18...	1449	1	7	<1	10	<10	44
18...	1515	1	7	<1	0	<10	44

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)
AUG						
18...	58	19	.1	0	0	19
18...	35	13	.0	0	0	12
18...	44	12	.0	0	0	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)
AUG									
18...	1444	.00	.0	.00	.1	.00	.00	.00	.30
18...	1449	.00	.0	.00	.4	.00	.01	.00	1.0

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
AUG									
18...	.01	.00	.00	.00	.00	.01	.00	.04	.00
18...	.02	.00	.00	.00	.00	.02	.01	.02	.68

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
AUG									
18...	.00	.00	.00	.00	0	.00	.03	.03	.00
18...	.00	.00	.00	.00	0	.00	.04	.05	.01

GUADALUPE RIVER BASIN

08178700 SALADO CREEK (UPPER STATION) AT SAN ANTONIO, TX

LOCATION (revised).--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 (1.6 km) west of Northeast School, 1.1 mi (1.8 km) upstream from Perrin-Beitel Creek, and 2.7 mi (4.3 km) east of San Antonio International Airport.

DRAINAGE AREA.--137 mi² (355 km²).

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 (208.666 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records poor prior to June 12 and good there after. No known diversion above station. Recording rain gage located at station with four additional recording rain gages located in watershed. Flow is affected at times by discharge from flood-detention pools of nine floodwater-retarding structures with combined detention capacity of 24,460 acre-ft (30.2 hm³). These structures control runoff from 67.7 mi² (175.3 km²) above this station.

AVERAGE DISCHARGE.--21 years, 9.72 ft³/s (0.275 m³/s), 7,040 acre-ft/yr (8.68 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft³/s (705 m³/s) May 12, 1972, gage height, 15.22 ft (4.639 m), from rating curve extended above 8,000 ft³/s (227 m³/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 (7.0 to 7.3 m) in October 1913. Flood in September 1921 reached a stage of 18 ft (5.5 m), and flood of Sept. 27, 1946, reached a stage of 18.2 ft (5.55 m), and are the highest since 1899.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s (7.08 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	Discharge (m ³ /s)	Gage height (ft)	Gage height (m)
Apr. 23	0900	332	9.40	4.38	1.335
June 13	2400	*1,070	30.3	5.84	1.780
June 16	1230	930	26.3	5.60	1.707

a From floodmark.

Minimum discharge, no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	.80	1.2	.38	.10	3.0	.00	2.3	3.7	7.2	.00	.80
2	1.4	.65	1.8	.38	.05	3.7	.00	5.0	2.6	6.9	.00	.81
3	.50	.52	2.0	.38	.04	2.0	.00	8.2	5.0	6.6	.00	.74
4	.18	.40	2.0	.38	2.5	3.0	.00	6.0	3.0	6.5	.00	1.3
5	.18	.25	1.7	.60	.70	1.6	.00	3.4	2.1	7.9	.00	.73
6	.18	.18	2.0	.40	.30	1.2	.00	2.5	2.0	7.4	.00	.67
7	.18	.12	2.5	.80	.20	1.1	.00	2.0	1.8	4.6	.00	.56
8	.18	.06	3.9	1.1	.15	1.0	.00	1.4	1.7	1.9	.00	12
9	.18	.00	2.0	.80	.13	2.0	.00	1.0	1.6	.99	.00	1.4
10	.18	.00	1.2	.60	.10	3.0	.00	.70	1.6	.60	.00	.99
11	.18	.00	.90	.60	.09	5.0	.00	.40	4.0	.50	.00	4.7
12	.18	.00	.60	.60	.08	2.5	.00	.20	40	.40	.00	5.3
13	.18	.00	.58	2.1	.07	1.6	.00	.04	267	.35	.00	5.3
14	.20	.00	.70	1.0	.06	1.0	.00	.15	384	.30	.01	5.7
15	.20	.00	1.1	.60	.05	.70	.00	.20	38	.25	.00	3.4
16	.20	.00	.90	.55	.07	.50	.20	.30	357	.20	.00	1.5
17	.20	.00	.65	.56	.08	.40	.20	.20	79	.18	.00	.72
18	5.4	.00	.58	.60	.08	.30	.20	.02	35	.15	1.4	.65
19	2.4	.00	.50	11	.08	.20	.20	.04	20	.12	7.4	.88
20	1.4	.00	.48	2.0	.08	.19	.20	.12	14	.10	4.5	1.0
21	1.7	.00	.46	.40	.08	.17	.20	1.6	13	.08	3.0	.86
22	1.3	.00	.44	.30	.08	.12	5.0	1.4	11	.08	.70	.13
23	.90	.00	.44	.20	.08	.10	25	1.4	12	.05	.33	.03
24	.50	.00	.44	.20	.08	.08	9.4	9.8	12	.05	.06	.00
25	.60	10	.44	.18	.08	.05	10	5.4	11	.05	.00	.00
26	.80	3.5	.42	.15	.20	.04	6.0	3.0	9.9	.05	.00	3.8
27	1.0	2.1	.40	.15	.45	.03	3.7	2.4	9.4	.03	.10	1.1
28	1.2	1.6	.40	.15	.80	.02	3.0	1.9	9.8	.00	.35	.90
29	1.2	1.2	.40	.15	---	.18	2.7	90	9.4	.00	.53	.85
30	1.1	1.0	.40	.15	---	.10	2.4	8.4	7.3	.00	2.0	.63
31	.95	---	.40	.10	---	.02	---	5.0	---	.00	2.2	---
TOTAL	27.85	22.38	31.93	27.56	6.86	34.90	68.40	164.47	1367.9	53.53	22.58	57.45
MEAN	.90	.75	1.03	.89	.25	1.13	2.28	5.31	45.6	1.73	.73	1.92
MAX	5.4	10	3.9	11	2.5	5.0	25	90	384	7.9	7.4	12
MIN	.18	.00	.40	.10	.04	.02	.00	.02	1.6	.00	.00	.00
AC-FT	55	44	63	55	14	69	136	326	2710	106	45	114
CAL YR 1980	TOTAL	1222.86	MEAN	3.34	MAX	140	MIN	.00	AC-FT	2430		
WTR YR 1981	TOTAL	1885.81	MEAN	5.17	MAX	384	MIN	.00	AC-FT	3740		

GUADALUPE RIVER BASIN

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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)
JUN										
13...	1750	698	218	--	25.0	100	1800	7.0	85	5.8
13...	1852	738	203	--	25.0	100	3300	6.8	83	6.3
13...	2015	574	223	8.2	25.0	50	1200	7.6	93	4.9
14...	1306	312	214	--	25.0	60	120	6.4	78	3.1
15...	1109	29	364	7.2	25.0	35	32	5.6	68	2.8

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	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)	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)
JUN										
13...	--	--	--	65	1	24	1.3	7.7	.4	11
13...	78000	62000	350000	78	9	29	1.4	7.3	.4	6.7
13...	540000	98000	300000	87	13	32	1.6	7.9	.4	6.8
14...	48000	10000	28000	92	7	34	1.6	4.5	.2	6.0
15...	K18000	K7000	K910	150	24	57	2.8	10	.4	10

DATE	ALKA- LINITY (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)
JUN									
13...	64	26	6.6	.5	11	126	2440	370	.25
13...	69	24	7.8	.3	11	128	3720	420	.31
13...	74	24	8.8	.3	12	137	1690	340	.31
14...	85	8.9	5.6	.1	13	125	154	52	.11
15...	130	32	10	.2	17	217	48	106	.35

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)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	METHY- LENE BLUE ACTIVE SUB- STANCE (MG/L)
JUN									
13...	.070	.32	.180	1.2	1.4	.890	45	--	.10
13...	.030	.34	.110	2.1	2.2	2.200	43	4.0	.10
13...	.020	.33	.120	1.1	1.2	.960	25	--	--
14...	.020	.13	.010	2.3	2.3	.230	7.7	--	.00
15...	.040	.39	.210	4.1	4.3	.130	4.2	--	--

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)
JUN							
13...	1750	3	0	0	10	0	90
13...	1852	2	0	0	10	0	60
13...	2015	--	--	--	--	--	--
14...	1306	2	300	<1	0	<10	30

GUADALUPE RIVER BASIN

08178700 SALADO CREEK (UPPER STATION) AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
JUN						
13...	0	0	.1	0	0	0
13...	--	0	.1	0	0	0
13...	0	--	--	--	--	--
14...	<10	3	.1	0	0	4

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)
JUN									
13...	1750	.00	.0	.00	.0	.00	.00	.00	.43
13...	1852	.00	.0	.00	.0	.00	.00	.00	.42

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JUN									
13...	.00	.00	.00	.00	.00	.00	.00	.00	.00
13...	.00	.00	.00	.00	.00	.00	.00	.01	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN									
13...	.00	.00	.00	.00	0	.00	.13	.04	.03
13...	.00	.00	.00	.00	0	.00	.07	.02	.01

GUADALUPE RIVER BASIN

08179000 MEDINA RIVER NEAR PIPE CREEK, TX

LOCATION.--Lat 29°40'31", long 98°58'33", Bandera County, Hydrologic Unit 12100302, on right bank 500 ft (150 m) upstream from Bandera Falls, 0.6 mi (1.0 km) upstream from Red Bluff Creek, and 4.1 mi (6.6 km) southwest of Pipe Creek.

DRAINAGE AREA.--474 mi² (1,228 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1922 to June 1935, October 1952 to current year. Monthly discharge only for some periods published in WSP 1312 and 1732.

REVISED RECORDS.--WSP 1312: 1925(M). WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,067.37 ft (325.334 m) Corps of Engineers datum. December 1922 to June 1935, water-stage recorder at site 1.9 mi (3.1 km) upstream at different datum.

REMARKS.--Water-discharge records good except those for periods of no gage-height record, which are poor. Small diversion above station.

AVERAGE DISCHARGE.--41 years (water years 1923-34, 1953-81), 144 ft³/s (4.078 m³/s), 4.13 in/yr (105 mm/yr), 104,300 acre-ft/yr (129 km³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 281,000 ft³/s (7,960 m³/s) Aug. 2, 1978, gage height, 49.6 ft (15.12 m), from floodmark, from rating curve extended above 32,000 ft³/s (906 m³/s) on basis of slope-area measurements of 64,000 and 281,000 ft³/s (1,810 and 7,960 m³/s); minimum, 0.2 ft³/s (0.006 m³/s) July 14-16, 1956.

Maximum stage since at least 1880, that of Aug. 2, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1919 reached a stage of about 43 ft (13.1 m), present site and datum, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,600 ft³/s (45.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Oct. 16	1100	2,420 68.5	6.67 2.033
Apr. 23	1000	8,440 239	11.95 3.642
June 16	unknown	a29,800 844	a22.78 6.943

a From floodmark.

Minimum daily discharge, 87 ft³/s (2.46 m³/s) Feb. 23, 24.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	506	155	180	140	105	106	408	424	275	610	230	134
2	380	150	176	134	101	117	382	604	265	558	222	169
3	319	147	169	134	99	230	382	735	265	517	217	179
4	287	142	169	132	101	540	362	672	500	478	210	151
5	256	139	172	132	106	390	342	559	600	517	200	142
6	238	134	176	129	105	355	328	494	460	644	193	137
7	218	130	176	129	100	325	323	463	350	503	190	131
8	205	127	175	129	98	305	323	435	310	480	188	127
9	190	122	176	129	97	290	318	414	300	441	183	123
10	179	122	175	129	104	280	305	370	290	408	188	120
11	167	121	170	124	98	300	305	349	270	391	190	117
12	158	120	168	121	98	360	292	337	600	387	173	115
13	152	119	167	121	99	430	283	321	570	386	168	113
14	147	116	167	121	99	390	274	309	650	379	163	204
15	147	115	169	118	97	365	270	300	550	370	159	141
16	914	144	167	118	95	350	270	297	8000	362	149	139
17	455	171	164	118	94	345	270	282	3000	356	145	124
18	390	161	161	118	93	340	459	265	1500	349	169	118
19	510	146	155	124	93	334	561	245	1200	338	192	115
20	322	140	152	132	93	328	442	236	1000	329	173	113
21	271	133	149	132	93	323	388	232	900	321	156	111
22	241	135	149	126	92	305	370	232	800	313	147	110
23	224	138	152	121	87	296	4790	245	700	303	140	109
24	206	134	149	118	87	296	1420	437	760	289	138	108
25	195	144	143	116	88	292	855	317	807	281	137	105
26	186	187	143	114	90	287	683	260	945	291	136	104
27	185	209	146	111	92	287	578	250	767	280	133	103
28	179	197	146	109	96	292	518	240	940	283	133	101
29	173	188	140	109	---	936	474	235	799	269	131	98
30	163	184	140	111	---	623	436	245	703	251	134	98
31	158	---	140	108	---	466	---	285	---	243	135	---
TOTAL	8321	4370	4981	3807	2700	10883	17411	11089	29076	11927	5222	3759
MEAN	268	146	161	123	96.4	351	580	358	969	385	168	125
MAX	914	209	180	140	106	936	4790	735	8000	644	230	204
MIN	147	115	140	108	87	106	270	232	265	243	131	98
CFSM	.57	.31	.34	.26	.20	.74	1.22	.76	2.04	.81	.35	.26
IN.	.65	.34	.39	.30	.21	.85	1.37	.87	2.28	.94	.41	.30
AC-FT	16500	8670	9880	7550	5360	21590	34530	22000	57670	23660	10360	7460
CAL YR 1980 TOTAL	42298		MEAN 116	MAX 6600	MIN 14	CFSM .25	IN 3.32	AC-FT 83900				
WTR YR 1981 TOTAL	113546		MEAN 311	MAX 8000	MIN 87	CFSM .66	IN 8.91	AC-FT 225200				

NOTE.--No gage-height record Jan. 29 to Mar. 19, May 26 to June 25.

GUADALUPE RIVER BASIN

08179000 MEDINA RIVER NEAR PIPE CREEK, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 20...	1405	132	540	8.2	11.5	0	.50	12.2	114	.4	--	K2
APR 20...	1346	430	479	8.1	24.0	5	11	9.7	118	1.2	330	150
AUG 10...	1329	194	498	7.9	28.0	0	.90	9.2	121	.6	--	K11

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- LINITY (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)
JAN 20...	K3	270	71	77	19	8.5	.2	1.0	200	70	11	.3
APR 20...	30	240	55	70	17	7.3	.2	1.3	190	51	9.2	.2
AUG 10...	84	250	59	70	18	8.7	.3	1.4	190	59	19	.2

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, 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 20...	9.7	317	16	1	.70	.000	.70	.040	.30	.34	.010	6.1
APR 20...	9.4	280	17	2	.70	.000	.70	.020	.50	.52	.020	2.0
AUG 10...	13	304	3	3	--	<.020	.61	.110	.41	.52	.010	1.1

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)
JAN 20...	1405	0	30	<1	0	<10	10
AUG 10...	1329	0	40	<1	0	<10	<10

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)
JAN 20...		<10	<1	.0	0	0	<3
AUG 10...	13	13	2	.4	0	0	<3

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)
JAN 20...	1405	.00	.0	.00	.0	.00	.00	.00	.00
AUG 10...	1329	.00	.0	.00	.0	.00	.00	.00	.00

GUADALUPE RIVER BASIN

08179000 MEDINA RIVER NEAR PIPE CREEK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JAN 20...	.00	.00	.00	.00	.00	.00	.00	.00	.00
AUG 10...	.00	.00	.00	.00	.00	.00	.00	.00	.00
DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 20...	.00	.00	.00	.00	0	.00	.00	.00	.00
AUG 10...	.00	.00	.00	.00	0	.00	.00	.00	.00

GUADALUPE RIVER BASIN

08179100 RED BLUFF CREEK NEAR PIPE CREEK, TX

LOCATION.--Lat 29°40'51", long 98°57'19", Bandera County, Hydrologic Unit 12100302, on left bank 0.8 mi (1.3 km) upstream from bridge on Farm Road 1283, 1.8 mi (2.9 km) downstream from Pipe Creek, 1.9 mi (3.1 km) upstream from mouth, and 3.2 mi (5.1 km) south of Pipe Creek.

DRAINAGE AREA.--56.3 mi² (145.8 km²).

PERIOD OF RECORD.--April 1956 to September 1981 (discontinued).

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,107.2 ft (337.475 m) Corps of Engineers datum.

REMARKS.--Records good. Small dams on upstream tributaries affect flow during time of storm runoff. No known diversion. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--25 years (water years 1957-81), 12.5 ft³/s (0.354 m³/s), 3.02 in/yr (77 mm/yr), 9,060 acre-ft/yr (11.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,900 ft³/s (1,330 m³/s) Sept. 27, 1964, gage height, 22.64 ft (6.901 m), from rating curve extended above 2,000 ft³/s (56.6 m³/s) on basis of slope-area measurement of peak flow; no flow for many days each year.

Maximum stage since at least 1905, that of Sept. 27, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of about 17 ft (5.2 m) was reached in July 1937. Flood in October 1953 reached a stage of 13.8 ft (4.21 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 23	0800	290 8.21	4.19 1.277	June 4	1900	10,900 309	12.63 3.850
May 24	0230	1,440 40.8	5.99 1.826	June 14	1000	*11,900 337	13.06 3.981
May 25	0230	1,090 30.9	5.44 1.658	June 16	1000	916 25.9	5.11 1.558

Minimum discharge, no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	91	43	4.6	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	87	38	4.1	.00
3	.00	.00	.00	.00	.00	.00	.00	8.3	85	34	3.6	.00
4	.00	.00	.00	.00	.00	.00	.00	36	1730	31	3.2	.00
5	.00	.00	.00	.00	.00	.00	.00	40	658	29	2.9	.00
6	.00	.00	.00	.00	.00	.00	.00	39	328	45	2.5	.00
7	.00	.00	.00	.00	.00	.00	.00	37	221	38	2.0	.00
8	.00	.00	.00	.00	.00	.00	.00	36	164	43	1.7	.00
9	.00	.00	.00	.00	.00	.00	.00	35	123	32	1.5	.00
10	.00	.00	.00	.00	.00	.00	.00	29	95	25	1.3	.00
11	.00	.00	.00	.00	.00	.00	.00	26	79	22	.94	.00
12	.00	.00	.00	.00	.00	.00	.00	22	114	19	.69	.00
13	.00	.00	.00	.00	.00	.00	.00	20	99	17	.59	.00
14	.00	.00	.00	.00	.00	.00	.00	17	1520	15	.42	.00
15	.00	.00	.00	.00	.00	.00	.00	12	410	13	.24	.00
16	.00	.00	.00	.00	.00	.00	.00	14	492	11	.13	.00
17	.00	.00	.00	.00	.00	.00	.00	10	360	10	.04	.00
18	.00	.00	.00	.00	.00	.00	.00	4.9	281	9.2	.01	.00
19	.00	.00	.00	.00	.00	.00	.00	.66	223	8.5	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	184	8.4	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	152	7.4	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	127	7.4	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	109	6.9	.00	.00
24	.00	.00	.00	.00	.00	.00	47	2.9	306	100	6.4	.00
25	.00	.00	.00	.00	.00	.00	.06	354	88	6.3	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	170	80	6.2	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	133	72	6.1	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	112	62	5.8	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	111	54	5.4	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	107	48	5.0	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	106	.00	4.8	.00	.00
TOTAL	.00	.00	.00	.00	.00	.00	49.96	1785.86	8236	558.8	30.46	.00
MEAN	.000	.000	.000	.000	.000	.000	1.67	57.6	275	18.0	.98	.000
MAX	.00	.00	.00	.00	.00	.00	47	354	1730	45	4.6	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	48	4.8	.00	.00
CFSM	.000	.000	.000	.000	.000	.000	.03	1.02	4.89	.32	.02	.000
IN.	.00	.00	.00	.00	.00	.00	.03	1.18	5.44	.37	.02	.00
AC-FT	.00	.00	.00	.00	.00	.00	99	3540	16340	1110	60	.00

CAL YR 1980 TOTAL 0.00 MEAN .000 MAX .00 MIN .00 CFSM .000 IN .00 AC-FT 0
WTR YR 1981 TOTAL 10661.08 MEAN 29.2 MAX 1730 MIN .00 CFSM .52 IN 7.04 AC-FT 21150

NOTE.--No gage-height record July 28 to Sept. 1.

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 (176 m) from left end of Medina Dam on Medina River, 4.2 mi (6.8 km) upstream from Medina diversion dam, 13 mi (21 km) north of Castroville, 28 mi (45 km) west of San Antonio, and 70.4 mi (113.3 km) upstream from mouth. Water-quality sampling site at the center of low-water bridge 0.6 mi (1.0 km) downstream.

DRAINAGE AREA.--634 mi² (1,642 km²).

WATER-DISCHARGE RECORDS

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 (2.377 m) below National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a gravity-type concrete dam, 1,580 ft (482 m) long. The dam was completed and storage began May 7, 1913. The uncontrolled emergency spillway is a cut through natural rock 880 ft (268 m) long, with a 3-foot-wide (1 m) cutoff wall, located near right end of dam. The dam and lake are owned by the Bexar-Medina-Atascosa Counties Water Improvement District No. 1, which has a permit from the Texas Department of Water Resources to irrigate 150,000 acres (60,700 hm²) 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 furnished 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 (365 hm³) Sept. 16, 1919, gage height, 1,078.0 ft (328.57 m); minimum observed since lake first filled, 780 acre-ft (0.962 hm³) about Apr. 11, 1948, gage height, 944.0 ft (287.73 m).

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents, 265,600 acre-ft (327 hm³) June 4, 14, gage height, 1,074.0 ft (327.35 m); minimum, 191,200 acre-ft (236 hm³) Oct. 12-16, gage height, 1,059.8 ft (323.03 m).

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

1,055.0	171,000	1,070.0	242,400
1,060.0	192,000	1,074.0	265,600
1,065.0	217,200		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	191600	196000	197000	199600	200600	200100	215200	244700	256300	258100	255200	254000
2	191600	196000	197000	199600	200600	200100	216200	245900	256300	258100	255200	254000
3	191600	196000	197000	199600	200600	200100	216700	248200	256300	257500	255200	254000
4	191600	196000	197500	199600	200600	200100	217200	248800	256600	257500	255200	254000
5	191600	196000	197500	199600	200600	203600	217700	249400	262700	257500	255200	254000
6	191600	196000	197500	199600	200600	203600	218200	251100	259800	257500	254600	254000
7	191600	196000	198100	199600	200600	204100	218200	252900	259200	256900	254600	254000
8	191600	196000	198100	200100	200600	204100	218700	254000	258100	256900	254600	254000
9	191600	196000	198100	200100	200600	204600	218700	254000	257500	256900	254600	254000
10	191600	196000	198600	200100	200600	205100	218700	254600	256900	256900	254600	254000
11	191600	195500	198600	200100	200600	206100	219200	255200	256300	256300	254600	254000
12	191200	195500	198600	200100	200600	206600	219200	255200	256300	256300	254600	254000
13	191200	195500	199100	200100	200600	207100	219200	255200	259800	256300	254600	253400
14	191200	195500	199100	200100	200600	208100	219200	255200	265600	256300	254600	253400
15	191200	195500	199100	200100	200600	208600	219500	255700	264400	256300	254600	253400
16	191200	195500	199100	200100	200600	209100	219700	255700	264400	256300	254600	253400
17	192500	195500	199100	200100	200600	209100	220200	255700	263300	255700	254600	253400
18	193500	195500	199100	200100	200100	209700	220700	255700	263300	255700	254600	253400
19	194500	195500	199100	200100	200100	210200	221200	255700	262100	255700	254600	253400
20	196000	195500	199100	200100	200100	210200	221800	255500	262100	255700	254000	253400
21	196000	195500	199600	200100	200100	210700	222300	255500	261000	255200	254000	253400
22	196000	196000	199600	200600	200100	210700	222800	255200	261000	255200	254000	253400
23	196000	196000	199600	200600	200100	211200	228800	255200	259800	255200	254000	253400
24	196000	196000	199600	200600	200100	211700	234900	257500	259200	255200	254000	253400
25	196000	196500	199600	200600	200100	211700	235900	257500	259200	255200	254000	252900
26	196000	196500	199600	200600	200100	212200	236400	257500	259200	255200	254000	252900
27	196000	196500	199600	200600	200100	212200	237400	256900	258600	255200	254000	252900
28	196000	196500	199600	200600	200100	212700	238900	256900	258600	255200	254000	252300
29	196000	197000	199600	200600	---	212700	240400	256900	258600	255200	254000	251700
30	196000	197000	199600	200600	---	213200	243600	256900	258100	255200	254000	251700
31	196000	---	199600	200600	---	214200	---	256300	---	255200	254000	---
MAX	196000	197000	199600	200600	200600	214200	243600	257500	265600	258100	255200	254000
MIN	191200	195500	197000	199600	200100	200100	215200	244700	256300	255200	254000	251700
(†)	1060.8	1061.0	1061.5	1061.7	1061.6	1064.4	1070.2	1072.4	1072.7	1072.2	1072.0	1071.6
(‡)	+4400	+1000	+2600	+1000	-500	+14400	+29400	+12700	+1800	-2900	-1200	-2300

CAL YR 1980 MAX 230800 MIN 167200 ‡ -31200
WTR YR 1981 MAX 265600 MIN 191200 ‡ +60100

† Gage height, in feet, at end of month.
‡ Change in contents, in acre-feet.

GUADALUPE RIVER BASIN

08179500 MEDINA LAKE NEAR SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

DATE	TIME	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	TEMPER- ATURE, WATER (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)
MAR 20...	1020	411	15.0	200	48	53	16	8.2

DATE	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY (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)
MAR 20...	.3	1.7	150	49	11	.3	9.5	239

GUADALUPE RIVER BASIN

08180000 MEDINA CANAL NEAR RIOMEDINA, TX

LOCATION.--Lat 29°30'19", long 98°54'11", Medina County, Hydrologic Unit 12100302, in center of canal, 54 ft (16 m) upstream from center pier of double-barrel flume, 350 ft (107 m) downstream from county highway bridge, 1,900 ft (579 m) downstream from head of canal and diversion dam, 4.6 mi (7.4 km) downstream from Medina Dam, 4.7 mi (7.6 km) north of Riomedina, and 25 mi (40 km) 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. Altitude of gage is 910 ft (277 m), from topographic map.

REMARKS.--Records good. Station is above all diversions from canal. Canal diverts from right end of Medina Diversion Dam 1,900 ft (579 m) upstream from gage for irrigation downstream near Lacoste and Natalia.

AVERAGE DISCHARGE.--35 years (water years 1923-33, 1958-81), 41.0 ft³/s (1.161 m³/s), 29,700 acre-ft/yr (36.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 216 ft³/s (6.12 m³/s) May 6, 1971; no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	38	.00	47	.00	39	57	.00	45	101	98	43
2	50	38	.00	38	22	24	52	.00	34	78	98	30
3	66	47	.00	28	32	.01	49	.00	33	51	98	31
4	67	67	.00	28	21	.00	48	.00	22	52	98	31
5	67	71	.00	31	6.8	.00	48	.00	1.8	51	100	32
6	67	64	.00	32	.00	.00	54	10	.81	50	107	32
7	67	59	.00	23	.00	.00	70	31	.08	39	106	32
8	67	59	.00	23	.00	.00	77	41	7.9	38	105	32
9	67	59	.00	23	.00	.00	82	40	9.8	38	105	33
10	67	52	.00	23	.00	.00	82	34	30	38	103	33
11	67	43	.00	21	.00	.00	78	50	43	38	102	33
12	67	46	.00	10	.00	.00	76	81	.00	38	100	33
13	67	57	.00	10	.00	.00	76	82	.00	68	99	33
14	70	49	.00	10	.00	.00	74	89	.80	89	98	38
15	81	38	.00	10	.00	.00	59	103	.66	88	96	46
16	75	38	.00	30	13	.00	36	113	.14	89	93	35
17	50	17	.00	28	28	20	50	113	.29	90	90	33
18	50	.00	.00	22	28	31	28	142	.03	77	88	44
19	50	.00	.00	5.9	28	26	.00	173	.00	54	65	43
20	45	.00	.00	.00	27	25	6.4	173	.00	72	54	44
21	40	.00	.00	.00	26	25	32	170	.00	95	56	54
22	47	.00	.00	.00	26	24	30	162	.00	95	56	60
23	59	.00	.00	.00	26	24	6.3	171	11	96	56	66
24	49	.00	.00	.00	36	27	.00	160	21	96	57	75
25	40	.00	.00	.00	39	37	.00	136	21	97	56	73
26	40	.00	.00	.00	46	45	.00	123	22	97	56	72
27	48	.00	.00	.00	34	48	.00	122	22	98	56	70
28	64	.00	33	.00	34	36	.00	121	28	99	56	68
29	63	.00	54	.00	---	30	.00	102	68	99	56	67
30	48	.00	53	.00	---	43	.00	69	100	100	55	68
31	38	---	50	.00	---	55	---	69	---	99	55	---
TOTAL	1783	842.00	190.00	442.90	472.80	559.01	1170.70	2680.00	522.31	2310	2518	1384
MEAN	57.5	28.1	6.13	14.3	16.9	18.0	39.0	86.5	17.4	74.5	81.2	46.1
MAX	81	71	54	47	46	55	82	173	100	101	107	75
MIN	38	.00	.00	.00	.00	.00	.00	.00	.00	38	54	30
AC-FT	3540	1670	377	878	938	1110	2320	5320	1040	4580	4990	2750
CAL YR 1980	TOTAL	23320.43	MEAN	63.7	MAX	175	MIN	.00	AC-FT	46260		
WTR YR 1981	TOTAL	14874.72	MEAN	40.8	MAX	173	MIN	.00	AC-FT	29500		

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 (13 m) left of and 44 ft (13 m) downstream from centerline of bridge on State Highway 16, 0.1 mi (0.2 km) northwest of Helotes, and 8.6 mi (13.8 km) upstream from mouth.

DRAINAGE AREA.--15.0 mi² (38.8 km²).

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 (309.317 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records fair. An undetermined amount of flow is diverted for domestic use above the station, and some flow enters the Edwards and associated limestones through the Balcones Fault Zone in the vicinity of the gage. Recording rain gage located at station, with two additional recording rain gages located in watershed.

AVERAGE DISCHARGE.--13 years, 4.63 ft³/s (0.131 m³/s), 4.19 in/yr (106 mm/yr), 3,350 acre-ft/yr (4.13 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,680 ft³/s (217 m³/s) July 16, 1973, gage height, 10.8 ft (3.29 m), from floodmarks, from rating curve extended above 5,000 ft³/s (142 m³/s); no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1923, 13.7 ft (4.18 m) in 1927, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 140 ft³/s (3.96 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
June 12	1315	959 27.2	4.02 1.225
June 14	1200	*1,260 35.7	4.47 1.362

Minimum discharge, no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	.00	.00	.00	.00	.00	.03	.00	.00	4.1	7.4	.00	.00		
2	.00	.00	.00	.00	.00	.00	.00	.03	3.1	6.1	.00	.00		
3	.00	.00	.00	.00	.00	.00	.00	.16	1.9	5.2	.00	.00		
4	.00	.00	.00	.00	.00	.00	.00	.00	2.4	4.4	.00	.00		
5	.00	.00	.00	.00	.00	.00	.00	.00	8.0	6.8	.00	.00		
6	.00	.00	.00	.00	.00	.00	.00	.00	7.7	5.8	.00	.00		
7	.00	.00	.00	.00	.00	.00	.00	.00	6.7	3.9	.00	.00		
8	.00	.00	.00	.00	.00	.00	.00	.00	5.3	3.1	.00	.00		
9	.00	.00	.00	.00	.00	.00	.00	.00	4.0	2.4	.00	.00		
10	.00	.00	.00	.00	.00	.00	.00	.00	2.6	2.1	.00	.00		
11	.00	.00	.00	.00	.00	.00	.00	.00	1.5	1.3	.00	.00		
12	.00	.00	.00	.00	.00	.32	.00	.00	166	1.0	.00	.00		
13	.00	.00	.00	.00	.00	.00	.00	.00	280	.50	.00	.00		
14	.00	.00	.00	.00	.00	.00	.00	.00	606	.24	.00	.00		
15	.00	.03	.00	.00	.00	.00	.00	.00	385	.05	.00	.00		
16	.00	.12	.00	.00	.00	.00	.00	.00	288	.00	.00	.00		
17	.00	.00	.00	.00	.00	.00	.00	.00	198	.00	.00	.00		
18	1.3	.00	.00	.00	.00	.00	.00	.00	134	.00	.11	.00		
19	.00	.00	.00	.13	.00	.00	.00	.00	89	.00	.00	.00		
20	.00	.00	.00	.00	.00	.00	.00	.00	63	.00	.00	.00		
21	.00	.00	.00	.00	.00	.00	.00	.00	49	.00	.00	.00		
22	.00	.00	.00	.00	.00	.00	.00	.00	38	.00	.00	.00		
23	.00	.00	.00	.00	.00	.00	.17	.00	32	.00	.00	.00		
24	.00	.00	.00	.00	.00	.00	.00	.30	27	.00	.00	.00		
25	.00	.23	.00	.00	.00	.00	.03	.03	21	.00	.00	.00		
26	.00	.00	.00	.00	.00	.00	.00	.00	18	.00	.00	.00		
27	.00	.00	.00	.00	.00	.00	.00	.00	15	.00	.00	.00		
28	.00	.00	.00	.00	.00	.00	.00	.00	13	.00	.00	.00		
29	.00	.00	.00	.00	.00	.00	.00	.09	11	.00	.00	.00		
30	.00	.00	.00	.00	.00	.00	.00	.48	8.5	.00	.00	.00		
31	.00	.00	.00	.00	.00	.00	.00	3.9	.00	.00	.00	.00		
TOTAL	1.30	.38	.00	.13	.00	.35	.20	4.99	2488.8	50.29	.11	.00		
MEAN	.042	.013	.000	.004	.000	.011	.007	.16	83.0	1.62	.004	.000		
MAX	1.3	.23	.00	.13	.00	.32	.17	3.9	606	7.4	.11	.00		
MIN	.00	.00	.00	.00	.00	.00	.00	.00	1.5	.00	.00	.00		
CFSM	.003	.001	.000	.000	.000	.001	.000	.01	5.53	.11	.000	.000		
IN.	.00	.00	.00	.00	.00	.00	.00	.01	6.17	.12	.00	.00		
AC-FT	2.6	.8	.00	.3	.00	.7	.4	9.9	4940	100	.2	.00		
CAL YR 1980	TOTAL	4.65	MEAN	.013	MAX	1.3	MIN	.00	CFSM	.001	IN	.01	AC-FT	9.2
WTR YR 1981	TOTAL	2546.55	MEAN	6.98	MAX	606	MIN	.00	CFSM	.47	IN	6.32	AC-FT	5050

GUADALUPE RIVER BASIN

08181400 HELOTES CREEK AT HELOTES, TX--Continued

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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)
JUN										
12...	1145	247	384	7.9	24.5	5	33	7.4	89	2.3
12...	1204	882	304	7.5	24.0	30	290	7.4	88	3.4
12...	1240	754	255	7.8	24.0	35	140	7.6	90	4.1
12...	1406	662	283	7.8	24.0	50	150	--	--	4.2
12...	1454	429	--	--	--	--	--	7.7	92	3.8
12...	1546	295	309	7.8	24.5	30	150	7.7	93	3.1

DATE	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCEI 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
JUN									
12...	54000	--	89000	200	18	61	11	6.3	.2
12...	110000	K19000	K120000	160	9	49	8.9	4.4	.2
12...	>16000	K16000	K62000	130	7	40	6.6	3.6	.1
12...	21000	K13000	42000	150	19	48	7.0	3.2	.1
12...	--	--	--	--	--	--	--	--	--
12...	9800	7400	24000	160	10	52	7.3	4.3	.1

DATE	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY (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, 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)
JUN									
12...	1.4	180	14	13	.1	8.5	--	223	118
12...	2.1	150	10	7.1	.1	7.6	--	179	824
12...	2.5	120	13	5.3	.1	7.7	4140	151	462
12...	2.5	130	18	5.7	.1	7.9	--	170	472
12...	--	--	--	--	--	--	--	--	--
12...	2.4	150	13	7.1	.1	8.4	--	174	312

DATE	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)
JUN									
12...	38	.38	.010	.39	.060	.94	1.0	.080	7.5
12...	136	.36	.030	.39	.150	2.2	2.3	.330	48
12...	72	.44	.020	.46	.100	2.5	2.6	.190	23
12...	80	.54	.020	.56	.100	2.2	2.3	.220	32
12...	--	--	--	--	--	--	--	--	--
12...	64	.63	.020	.65	.100	1.9	2.0	.120	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)
JUN							
12...	1145	1	200	<1	10	<10	20
12...	1204	1	0	0	10	0	40
12...	1406	1	0	0	0	0	40

GUADALUPE RIVER BASIN

08181400 HELOTES CREEK AT HELOTES, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
JUN						
12...	<10	3	.2	0	0	5
12...	0	0	.1	0	0	0
12...	0	0	.1	0	0	0

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)
JUN									
12...	1145	.00	.0	.00	.0	.00	.00	.00	.00
12...	1204	.00	.0	.00	.1	.00	.00	.00	.01

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JUN									
12...	.00	.00	.00	.00	.00	.00	.01	.00	.00
12...	.00	.00	.00	.00	.00	.00	.01	.00	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JUN									
12...	.00	.00	.00	.00	0	.00	.00	.00	.00
12...	.00	.00	.00	.00	0	.00	.00	.00	.00

GUADALUPE RIVER BASIN
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 (1.0 km) upstream from Southern Pacific Lines bridge, 0.9 mi (1.4 km) downstream from Menger Creek, and 2.5 mi (4.0 km) southeast of Boerne.

DRAINAGE AREA.--68.4 mi² (177.2 km²).

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

REVISED RECORDS.--WRD 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 (408.313 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No know diversion above station. Flow is affected at times by discharge from flood-detention pools of four floodwater-retarding structures with a combined detention-capacity of 8,850 acre-ft (10.9 hm³). This structure controls runoff from 34.0 mi² (88.1 km²). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years, 30.2 ft³/s (0.855 m³/s), 6.00 in/yr (152 mm/yr), 21,880 acre-ft/yr (27.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,400 ft³/s (1,030 m³/s) Sept. 27, 1964, gage height, 19.15 ft (5.837 m), from floodmark, from rating curve extended above 2,500 ft³/s (70.8 m³/s) on basis of slope-area measurement at 12,000 ft³/s (340 m³/s) and contracted-opening measurement of 36,400 ft³/s (81,030 m³/s); no flow at times in 1962-64, 1966-67, and 1971.
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 (4.97 m), discharge 25,600 ft³/s (725 m³/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 900 ft³/s (25.5 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
May 24	2400	1,080 30.6	4.56 1.390	June 14	1530	*8,550 242	10.95 3.338
June 4	1930	4,790 136	7.74 2.359	July 6	1630	2,550 72.2	5.85 1.783
June 12	1415	2,330 66.0	5.68 1.731				

Minimum discharge, 2.2 ft³/s (0.062 m³/s) Nov. 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	7.8	4.2	5.3	4.2	4.8	11	15	45	41	76	23	10		
2	7.3	4.2	5.7	4.2	4.0	6.7	14	252	41	69	24	9.4		
3	6.4	4.2	5.5	4.2	3.8	17	15	179	38	62	27	7.3		
4	6.9	4.2	5.4	4.2	6.1	40	15	130	943	57	27	9.1		
5	7.3	3.9	6.0	4.0	7.1	10	13	106	1250	90	27	10		
6	6.9	3.3	5.8	4.5	5.2	8.9	13	86	1120	365	27	7.4		
7	7.3	3.2	5.9	4.2	4.6	10	12	75	599	163	33	6.5		
8	8.3	3.3	22	3.9	4.6	10	13	65	301	110	32	7.0		
9	7.3	3.4	33	4.1	4.6	9.2	13	59	178	90	32	6.4		
10	6.4	3.1	28	3.9	5.4	10	13	44	138	77	31	5.2		
11	6.0	3.3	12	3.8	4.6	16	12	37	141	68	29	4.5		
12	5.6	3.2	7.5	3.7	4.5	21	12	35	493	61	31	4.2		
13	5.2	3.3	7.5	3.8	4.6	18	12	33	438	54	28	4.2		
14	5.2	3.0	7.3	4.5	4.8	15	12	32	2130	47	27	27		
15	5.2	4.0	6.4	4.6	5.1	15	13	29	1130	43	30	36		
16	5.6	18	6.2	5.0	5.5	15	14	30	920	40	31	20		
17	6.9	5.4	5.8	4.7	5.5	16	13	27	613	36	29	14		
18	20	2.7	6.1	4.8	5.6	16	13	25	451	34	65	11		
19	15	2.4	5.9	9.3	6.0	15	13	21	335	31	43	12		
20	6.9	2.6	5.2	6.7	6.4	15	13	18	259	29	33	13		
21	6.9	2.5	5.0	4.9	6.7	16	13	17	220	27	30	15		
22	6.0	3.3	4.9	4.6	7.0	16	13	17	186	25	31	15		
23	6.4	3.5	5.3	4.9	6.6	15	121	18	161	24	29	14		
24	6.0	3.2	5.3	5.1	7.4	16	34	129	149	22	31	14		
25	5.6	17	4.8	5.2	7.5	16	22	189	134	22	29	13		
26	5.6	13	4.9	5.0	7.5	15	19	67	121	27	24	11		
27	6.0	5.6	5.0	5.2	7.1	14	15	47	112	29	23	11		
28	6.4	5.1	4.7	4.9	6.7	14	14	36	100	29	16	10		
29	6.0	5.0	4.6	4.5	---	27	14	34	90	27	12	9.4		
30	4.9	5.4	4.4	4.8	---	20	14	41	82	25	12	9.4		
31	4.5	---	4.3	4.5	---	16	---	53	---	25	15	---		
TOTAL	217.8	148.5	245.7	145.9	159.3	479.8	542	1976	12914	1884	881	346.0		
MEAN	7.03	4.95	7.93	4.71	5.69	15.5	18.1	63.7	430	60.8	28.4	11.5		
MAX	20	18	33	9.3	7.5	40	121	252	2130	365	65	36		
MIN	4.5	2.4	4.3	3.7	3.8	6.7	12	17	38	22	12	4.2		
CFSM	.10	.07	.12	.07	.08	.23	.27	.93	6.29	.89	.42	.17		
IN.	.12	.08	.13	.08	.09	.26	.29	1.07	7.02	1.02	.48	.19		
AC-FT	432	295	487	289	316	952	1080	3920	25610	3740	1750	686		
CAL YR 1980	TOTAL	1602.48	MEAN	4.38	MAX	47	MIN	.05	CFSM	.06	IN	.87	AC-FT	3180
WTR YR 1981	TOTAL	19940.00	MEAN	54.6	MAX	2130	MIN	2.4	CFSM	.80	IN	10.84	AC-FT	39550

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 (1.0 km) downstream from Missouri-Kansas-Texas Railroad Co. bridge and 0.9 mi (1.4 km) upstream from bridge on Interstate Highway 35 at Selma.

DRAINAGE AREA.--274 mi² (710 km²).

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 (221.998 m) National Geodetic Vertical Datum of 1929.

REMARKS.--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 one near Boerne (station 08183900). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--35 years, 15.5 ft³/s (0.439 m³/s), 11,230 acre-ft/yr (13.8 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,000 ft³/s (1,840 m³/s) July 16, 1973, gage height, 26.2 ft (7.99 m), from floodmark, from rating curve extended above 16,000 ft³/s (453 m³/s) on basis of field estimate of 54,000 ft³/s (1,530 m³/s) and contracted-opening measurement of 65,000 ft³/s (1,840 m³/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 (7.9 m) occurred in 1889, but stage for flood in 1913 is unknown, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s (11.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
June 14	2300	*16,900	479	14.67	4.471
June 16	1500	10,600	300	12.10	3.688

Minimum discharge, no flow most of time.

**DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
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	.74	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.45	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.29	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.22	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.21	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	429	.20	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	455	.16	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	173	.16	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	27	.12	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	2.6	.10	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.82	.06	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	7.0	.02	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	279	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	2630	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	3080	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	3210	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	1310	.00	.00	.00
18	4.9	.00	.00	.00	.00	.00	.00	.00	718	.00	.00	.00
19	2.8	.00	.00	.00	.00	.00	.00	.00	479	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	315	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	214	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	151	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	108	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	74	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	74	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	104	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	54	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	15	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.00	.00	3.4	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	1.3	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	7.70	.00	.00	.00	.00	.00	.00	.00	13914.12	2.73	.00	.00
MEAN	.25	.000	.000	.000	.000	.000	.000	.000	464	.088	.000	.000
MAX	4.9	.00	.00	.00	.00	.00	.00	.00	3210	.74	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	15	.00	.00	.00	.00	.00	.00	.00	27600	5.4	.00	.00

CAL YR 1980	TOTAL	9.82	MEAN	.027	MAX	4.9	MIN	.00	AC-FT	19
WTR YR 1981	TOTAL	13924.55	MEAN	38.1	MAX	3210	MIN	.00	AC-FT	27620

NUECES RIVER BASIN

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 (0.8 km) downstream from Sycamore Creek, 1.0 mi (1.6 km) northeast of Laguna, and at mile 395.4 (636.2 km).

DRAINAGE AREA.--764 mi² (1,979 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to current year.

REVISED RECORDS.--WSP 1562: 1930, 1931(M), 1932, 1939.

GAGE.--Water-stage recorder. Datum of gage is 1,119.72 ft (341.291 m) National Geodetic Vertical Datum of 1929. Prior to Jan. 26, 1925, nonrecording gage at site 2 mi (3 km) downstream at different datum.

REMARKS.--Water-discharge records good. Many small diversions above station for irrigation.

AVERAGE DISCHARGE.--58 years, 149 ft³/s (4.220 m³/s), 2.65 in/yr (67 mm/yr), 108,000 acre-ft/yr (133 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 307,000 ft³/s (8,690 m³/s) Sept. 24, 1955, gage height, 29.95 ft (9.129 m), in gage well, 32.7 ft (9.97 m), from floodmarks, from rating curve extended above 40,000 ft³/s (1,130 m³/s) on basis of float measurement of 110,000 ft³/s (3,120 m³/s) and slope-area measurements of 213,000 and 307,000 ft³/s (6,030 and 8,690 m³/s); minimum, 2.6 ft³/s (0.074 m³/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 (8.8 m), discharge 210,000 ft³/s (5,950 m³/s); flood of Sept. 21, 1923, reached a stage of about 26.5 ft (8.08 m), discharge 160,000 ft³/s (4,530 m³/s); from information by local residents. Discharges based on rating curve mentioned above.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 700 ft³/s (19.8 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)	Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
Apr. 19	0100	1,040	29.5	6.43	1.960	June 14	0800	10,700	303	9.93	3.027
Apr. 23	0430	15,900	450	11.53	3.514	June 16	1500	*21,400	606	13.10	3.993

Minimum discharge, 38 ft³/s (1.08 m³/s) Nov. 12-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	119	42	47	52	49	55	107	385	182	467	200	170
2	117	41	46	52	48	53	102	409	178	449	195	198
3	105	42	46	51	49	72	100	470	176	431	191	189
4	95	42	47	51	50	83	97	457	181	414	186	252
5	87	41	47	51	50	94	95	406	176	426	181	356
6	80	40	46	51	49	92	93	366	169	424	175	252
7	74	40	47	51	50	84	92	341	167	395	170	222
8	69	40	51	51	49	78	92	325	165	380	210	213
9	64	39	50	51	49	74	91	308	162	367	282	199
10	61	39	52	52	49	72	91	288	158	354	229	190
11	58	39	53	52	48	74	89	273	156	342	207	185
12	55	38	53	52	48	85	88	262	156	329	195	178
13	53	38	52	52	49	93	87	253	490	318	189	178
14	52	38	53	51	48	92	88	246	1460	305	185	194
15	50	41	54	51	48	90	102	238	475	296	174	201
16	49	55	53	50	48	89	103	234	9880	285	167	239
17	48	46	53	52	48	90	113	226	7550	276	178	212
18	49	48	51	52	48	90	322	218	3210	268	193	199
19	49	48	51	59	47	90	727	208	1140	259	195	192
20	50	46	53	57	47	90	397	200	924	256	207	188
21	49	45	53	58	46	91	306	197	808	245	216	186
22	48	48	53	56	45	90	276	195	733	238	210	182
23	47	45	53	55	45	90	4060	190	680	234	204	173
24	45	45	53	53	45	90	1950	187	636	226	199	170
25	45	50	52	52	45	89	872	190	604	222	199	164
26	44	51	53	52	45	89	622	187	581	220	195	159
27	44	50	52	51	45	89	513	183	578	222	187	155
28	43	50	52	50	46	97	456	178	553	219	182	151
29	43	49	51	50	---	185	416	177	513	211	177	148
30	43	48	52	49	---	137	381	179	487	208	173	146
31	42	---	52	50	---	116	---	186	---	203	169	---
TOTAL	1877	1324	1581	1617	1333	2803	12928	8162	33328	9489	6020	5841
MEAN	60.5	44.1	51.0	52.2	47.6	90.4	431	263	1111	306	194	195
MAX	119	55	54	59	50	185	4060	470	9880	467	282	356
MIN	42	38	46	49	45	53	87	177	156	203	167	146
CFSM	.08	.06	.07	.07	.06	.12	.56	.34	1.45	.40	.25	.26
IN.	.09	.06	.08	.08	.06	.14	.63	.40	1.62	.46	.29	.28
AC-FT	3720	2630	3140	3210	2640	5560	25640	16190	66110	18820	11940	11590

CAL YR 1980	TOTAL	16470	MEAN	45.0	MAX	336	MIN	14	CFSM	.06	IN	.80	AC-FT	32670
WTR YR 1981	TOTAL	86303	MEAN	236	MAX	9880	MIN	38	CFSM	.31	IN	4.20	AC-FT	171200

NUECES RIVER BASIN

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 1980 TO SEPTEMBER 1981

		STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
DATE	TIME												
JAN 21...	0906	57	408	8.0	13.5	0	.40	9.4	92	.4	K30	K6	
APR 21...	0926	314	404	8.0	21.0	5	1.0	8.3	95	.8	170	52	
AUG 11...	1742	202	451	7.9	29.0	0	.40	8.0	110	.3	52	K15	
		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- LINITY (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	100 ML)												
JAN 21...	K9	200	18	56	14	8.1	.3	.7	180	15	13	.2	
APR 21...	35	200	16	57	13	6.9	.2	1.0	180	16	11	.2	
AUG 11...	K10	210	15	59	14	9.4	.3	1.1	190	11	17	.1	
		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, VOL- 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)
DATE	TIME												
JAN 21...	11	226	16	1	.74	.000	.74	.020	.29	.31	.000	3.9	
APR 21...	11	224	1	1	1.5	.000	1.5	.020	.57	.59	.010	8.3	
AUG 11...	14	240	0	3	--	<.020	1.3	.110	.49	.60	.010	1.4	
				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 21...	0906			0	40	<1	0	<10	10				
AUG 11...	1742			0	40	<1	0	<10	<10				
		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	TIME												
JAN 21...		<10	<1	.1	0	0	<3						
AUG 11...		<10	1	.2	0	0	8						

NUECES RIVER BASIN

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
JAN 21...	0906	.00	.0	.00	.0	.00	.00	.00	.00
AUG 11...	1742	.00	.0	.00	.0	.00	.00	.00	.00

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JAN 21...	.00	.00	.00	.00	.00	.00	.00	.00	.00
AUG 11...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 21...	.00	.00	.00	.00	0	.00	.00	.00	.00
AUG 11...	.00	.00	.00	.00	0	.00	.00	.00	.00

NUECES RIVER BASIN

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 (2.1 km) upstream from Miguel Canyon, 16.0 mi (25.7 km) northeast of Brackettville, and 40.2 mi (64.7 km) upstream from mouth.

DRAINAGE AREA.--700 mi² (1,800 km²).

PERIOD OF RECORD.--September 1939 to September 1950, April 1956 to current year.

REVISED RECORDS.--WSP 1312: 1949(M).

GAGE.--Water-stage recorder. Datum of gage is 1,326.79 ft (404.406 m) National Geodetic Vertical Datum of 1929. Prior to Mar. 14, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good except those below 10 ft³/s (0.28 m³/s) which are fair. In ordinary years, a large part of streamflow from basis is lost by seepage into the Balcones Fault Zone of the Edwards and associated limestones above station. No known diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--36 years (water years 1940-50, 1957-81), 35.7 ft³/s (1.011 m³/s), 25,860 acre-ft/yr (31.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 246,000 ft³/s (6,970 m³/s) Sept. 20, 1964, gage height, 31.3 ft (9.54 m), from floodmark, from rating curve extended above 4,500 ft³/s (127 m³/s) on basis of slope-area measurements of 10,000, 51,000, 150,000, and 246,000 ft³/s (283, 1,440, 4,250, and 6,970 m³/s); no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1879, about 40 ft (12.2 m) June 14, 1935, discharge 550,000 ft³/s (15,600 m³/s), based on slope-area measurements of 580,000 ft³/s (16,400 m³/s) at site 33 mi (53 km) upstream from gage and 536,000 ft³/s (15,200 m³/s) at site 24 mi (39 km) downstream from gage, present site and datum, from gage-height relation of 1935 and 1955 flood peaks at site 0.6 mi (1.0 km) upstream. Flood in 1900 reached a stage of about 34 ft (10.4 m), and flood of Sept. 24, 1955, reached a stage of 27.1 ft (8.26 m), from floodmark at present site, discharge 150,000 ft³/s (4,250 m³/s), by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 23	1430	16,300 462	13.78 4.200
June 12	1800	8,240 233	10.80 3.292
June 16	1600	*19,300 547	14.79 4.508

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	20	1.8	148	9.5	4.5
2	.00	.00	.00	.00	.00	.00	.00	56	1.6	134	8.6	4.4
3	.00	.00	.00	.00	.00	.00	.00	48	1.5	121	7.9	4.3
4	.00	.00	.00	.00	.00	.00	.00	35	1.8	112	7.3	4.5
5	.00	.00	.00	.00	.00	.00	.00	26	2.8	253	6.8	5.4
6	.00	.00	.00	.00	.00	.02	.00	20	4.2	232	6.3	5.2
7	.00	.00	.00	.00	.00	.02	.00	16	3.4	110	5.9	5.0
8	.00	.00	.00	.00	.00	.00	.00	13	2.2	94	5.9	4.5
9	.00	.00	.00	.00	.00	.00	.00	11	1.6	83	7.9	4.4
10	.00	.00	.00	.00	.00	.00	.00	9.9	1.2	75	8.5	4.5
11	.00	.00	.00	.00	.00	.00	.00	9.7	.90	68	7.5	4.4
12	.00	.00	.00	.00	.00	.00	.00	9.2	1990	62	6.7	4.2
13	.00	.00	.00	.00	.00	.00	.00	8.5	996	56	6.1	4.1
14	.00	.00	.00	.00	.00	.10	.00	7.8	857	51	5.5	4.2
15	.00	.00	.00	.00	.00	.09	.00	7.5	303	46	4.9	4.3
16	.00	.00	.00	.00	.00	.03	.00	7.0	10300	41	4.6	4.3
17	.00	.00	.00	.00	.00	.00	.00	6.3	3300	37	4.3	4.5
18	.00	.00	.00	.00	.00	.00	1.1	5.7	966	33	3.9	4.0
19	.00	.00	.00	.00	.00	.00	4.6	5.5	475	30	3.9	3.9
20	.00	.00	.00	.00	.00	.00	7.5	5.0	381	27	4.0	3.8
21	.00	.00	.00	.00	.00	.00	8.4	4.6	334	24	4.0	3.9
22	.00	.00	.00	.00	.00	.00	8.4	4.4	305	22	4.2	3.7
23	.00	.00	.00	.00	.00	.00	3890	4.0	280	20	4.3	3.7
24	.00	.00	.00	.00	.00	.00	1170	3.7	261	18	4.4	3.6
25	.00	.00	.00	.00	.00	.00	228	3.4	248	16	4.5	3.5
26	.00	.00	.00	.00	.00	.00	122	3.0	243	15	4.7	3.5
27	.00	.00	.00	.00	.00	.00	88	2.6	238	15	5.0	3.5
28	.00	.00	.00	.00	.00	.00	60	2.4	203	14	4.9	3.5
29	.00	.00	.00	.00	---	.00	40	2.2	182	13	4.8	3.4
30	.00	.00	.00	.00	---	.00	29	2.2	164	12	4.6	3.5
31	.00	---	.00	.00	---	.00	---	2.0	---	10	4.6	---
TOTAL	.00	.00	.00	.00	.00	.26	5657.00	361.6	22049.00	1992	176.0	124.2
MEAN	.000	.000	.000	.000	.000	.008	189	11.7	735	64.3	5.68	4.14
MAX	.00	.00	.00	.00	.00	.10	3890	56	10300	253	9.5	5.4
MIN	.00	.00	.00	.00	.00	.00	.00	2.0	.90	10	3.9	3.4
AC-FT	.00	.00	.00	.00	.00	.5	11220	717	43730	3950	349	246

CAL YR 1980 TOTAL 0.94 MEAN .003 MAX .58 MIN .00 AC-FT 1
WTR YR 1981 TOTAL 30360.06 MEAN 83.2 MAX 10300 MIN .00 AC-FT 60220

NOTE.--No gage-height record Aug. 18 to Sept. 30.

NUECES RIVER BASIN

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
JAN 21...	0906	.00	.0	.00	.0	.00	.00	.00	.00
AUG 11...	1742	.00	.0	.00	.0	.00	.00	.00	.00

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JAN 21...	.00	.00	.00	.00	.00	.00	.00	.00	.00
AUG 11...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 21...	.00	.00	.00	.00	0	.00	.00	.00	.00
AUG 11...	.00	.00	.00	.00	0	.00	.00	.00	.00

NUECES RIVER BASIN

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 (2.1 km) upstream from Miguel Canyon, 16.0 mi (25.7 km) northeast of Brackettville, and 40.2 mi (64.7 km) upstream from mouth.

DRAINAGE AREA.--700 mi² (1,800 km²).

PERIOD OF RECORD.--September 1939 to September 1950, April 1956 to current year.

REVISED RECORDS.--WSP 1312: 1949(M).

GAGE.--Water-stage recorder. Datum of gage is 1,326.79 ft (404.406 m) National Geodetic Vertical Datum of 1929. Prior to Mar. 14, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good except those below 10 ft³/s (0.28 m³/s) which are fair. In ordinary years, a large part of streamflow from basis is lost by seepage into the Balcones Fault Zone of the Edwards and associated limestones above station. No known diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--36 years (water years 1940-50, 1957-81), 35.7 ft³/s (1.011 m³/s), 25,860 acre-ft/yr (31.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 246,000 ft³/s (6,970 m³/s) Sept. 20, 1964, gage height, 31.3 ft (9.54 m), from floodmark, from rating curve extended above 4,500 ft³/s (127 m³/s) on basis of slope-area measurements of 10,000, 51,000, 150,000, and 246,000 ft³/s (283, 1,440, 4,250, and 6,970 m³/s); no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1879, about 40 ft (12.2 m) June 14, 1935, discharge 550,000 ft³/s (15,600 m³/s), based on slope-area measurements of 580,000 ft³/s (16,400 m³/s) at site 33 mi (53 km) upstream from gage and 536,000 ft³/s (15,200 m³/s) at site 24 mi (39 km) downstream from gage, present site and datum, from gage-height relation of 1935 and 1955 flood peaks at site 0.6 mi (1.0 km) upstream. Flood in 1900 reached a stage of about 34 ft (10.4 m), and flood of Sept. 24, 1955, reached a stage of 27.1 ft (8.26 m), from floodmark at present site, discharge 150,000 ft³/s (4,250 m³/s), by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
Apr. 23	1430	16,300	462	13.78	4.200
June 12	1800	8,240	233	10.80	3.292
June 16	1600	*19,300	547	14.79	4.508

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	20	1.8	148	9.5	4.5
2	.00	.00	.00	.00	.00	.00	.00	56	1.6	134	8.6	4.4
3	.00	.00	.00	.00	.00	.00	.00	48	1.5	121	7.9	4.3
4	.00	.00	.00	.00	.00	.00	.00	35	1.8	112	7.3	4.5
5	.00	.00	.00	.00	.00	.00	.00	26	2.8	253	6.8	5.4
6	.00	.00	.00	.00	.00	.02	.00	20	4.2	232	6.3	5.2
7	.00	.00	.00	.00	.00	.02	.00	16	3.4	110	5.9	5.0
8	.00	.00	.00	.00	.00	.00	.00	13	2.2	94	5.9	4.5
9	.00	.00	.00	.00	.00	.00	.00	11	1.6	83	7.9	4.4
10	.00	.00	.00	.00	.00	.00	.00	9.9	1.2	75	8.5	4.5
11	.00	.00	.00	.00	.00	.00	.00	9.7	.90	68	7.5	4.4
12	.00	.00	.00	.00	.00	.00	.00	9.2	1990	62	6.7	4.2
13	.00	.00	.00	.00	.00	.00	.00	8.5	996	56	6.1	4.1
14	.00	.00	.00	.00	.00	.10	.00	7.8	857	51	5.5	4.2
15	.00	.00	.00	.00	.00	.09	.00	7.5	303	46	4.9	4.3
16	.00	.00	.00	.00	.00	.03	.00	7.0	10300	41	4.6	4.3
17	.00	.00	.00	.00	.00	.00	.00	6.3	3300	37	4.3	4.5
18	.00	.00	.00	.00	.00	.00	1.1	5.7	966	33	3.9	4.0
19	.00	.00	.00	.00	.00	.00	4.6	5.5	475	30	3.9	3.9
20	.00	.00	.00	.00	.00	.00	7.5	5.0	381	27	4.0	3.8
21	.00	.00	.00	.00	.00	.00	8.4	4.6	334	24	4.0	3.9
22	.00	.00	.00	.00	.00	.00	8.4	4.4	305	22	4.2	3.7
23	.00	.00	.00	.00	.00	.00	3890	4.0	280	20	4.3	3.7
24	.00	.00	.00	.00	.00	.00	1170	3.7	261	18	4.4	3.6
25	.00	.00	.00	.00	.00	.00	228	3.4	248	16	4.5	3.5
26	.00	.00	.00	.00	.00	.00	122	3.0	243	15	4.7	3.5
27	.00	.00	.00	.00	.00	.00	88	2.6	238	15	5.0	3.5
28	.00	.00	.00	.00	.00	.00	60	2.4	203	14	4.9	3.5
29	.00	.00	.00	.00	---	.00	40	2.2	182	13	4.8	3.4
30	.00	.00	.00	.00	---	.00	29	2.2	164	12	4.6	3.5
31	.00	---	.00	.00	---	.00	---	2.0	---	10	4.6	---
TOTAL	.00	.00	.00	.00	.00	.26	5657.00	361.6	22049.00	1992	176.0	124.2
MEAN	.0000	.0000	.0000	.0000	.0000	.0088	189	11.7	735	64.3	5.68	4.14
MAX	.00	.00	.00	.00	.00	.10	3890	56	10300	253	9.5	5.4
MIN	.00	.00	.00	.00	.00	.00	.00	2.0	.90	10	3.9	3.4
AC-FT	.00	.00	.00	.00	.00	.5	11220	717	43730	3950	349	246

CAL YR 1980 TOTAL 0.94 MEAN .003 MAX .58 MIN .00 AC-FT 1
WTR YR 1981 TOTAL 30360.06 MEAN 83.2 MAX 10300 MIN .00 AC-FT 60220

NOTE.--No gage-height record Aug. 18 to Sept. 30.

NUECES RIVER BASIN

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 (9.2 km) upstream from bridge on U.S. Highway 83, 8.8 mi (14.2 km) southwest of Uvalde, 18.2 mi (29.3 km) downstream from West Nueces River, and at mile 366.0 (588.9 km).

DRAINAGE AREA.--1,947 mi² (5,043 km²).

PERIOD OF RECORD.--April 1939 to current year. October 1927 to April 1939, published as "near Uvalde"; records equivalent only during periods of floodflow.

REVISED RECORDS.--WSP 1732: 1956(M).

GAGE.--Water-stage recorder. Datum of gage is 796.12 ft (242.657 m) National Geodetic Vertical Datum of 1929. Oct. 4, 1927, to Apr. 30, 1939, water-stage recorder at site 6.2 mi (10.0 km) upstream at different datum.

REMARKS.--Records good. Part of flow of Nueces River enters Edwards and associated limestones in the Balcones Fault Zone which 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.--42 years, 118 ft³/s (3.342 m³/s), 85,490 acre-ft/yr (105 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 189,000 ft³/s (5,350 m³/s) Sept. 24, 1955, gage height, 24.61 ft (7.501 m), from floodmark, from rating curve extended above 34,000 ft³/s (963 m³/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 (12.31 m) June 14, 1935, from floodmark discharge at former site, 616,000 ft³/s (17,400 m³/s), by slope-area measurement. Large floods also occurred in 1901 and 1913, stages unknown.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s (7.08 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s)	(m ³ /s)	Gage height (ft)	(m)
Apr. 23	1130	12,100	343	11.24	3.426
June 16	2200	*25,900	733	13.42	4.090
Sept. 6	0030	276	7.82	4.31	1.314

Minimum daily discharge, 8.8 ft³/s (0.25 m³/s) Mar. 22, Apr. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	10	11	12	12	11	9.1	319	83	592	147	109
2	14	11	11	12	12	11	9.2	359	83	542	146	110
3	14	11	11	12	12	12	9.5	375	80	492	141	119
4	14	11	11	12	13	11	8.8	456	77	454	135	119
5	14	11	11	12	13	10	8.9	420	77	429	133	153
6	14	11	12	12	13	10	9.0	353	78	477	129	256
7	14	11	12	12	12	9.9	9.2	304	73	433	125	202
8	14	11	12	12	12	10	9.0	273	70	390	128	177
9	14	11	11	12	12	10	9.0	250	68	361	133	158
10	14	11	11	13	12	10	12	222	66	337	203	143
11	13	11	11	13	11	10	9.8	202	65	320	184	129
12	13	11	11	13	11	12	9.4	186	69	306	162	118
13	12	11	11	13	12	11	9.0	174	64	288	146	118
14	12	11	12	13	12	11	9.7	163	811	273	135	137
15	12	12	13	13	12	9.9	13	155	1050	262	129	126
16	12	15	12	13	12	9.9	11	148	7220	247	120	123
17	12	12	11	13	12	9.7	11	141	13700	239	113	143
18	12	12	11	13	12	9.3	13	132	9540	227	113	141
19	11	11	11	14	11	9.4	11	121	4140	219	124	132
20	11	11	11	14	11	9.6	10	112	2380	210	127	125
21	11	10	12	13	11	9.2	10	104	1750	200	130	117
22	11	11	12	13	11	8.8	11	100	1410	192	139	114
23	12	11	12	13	11	9.4	4490	97	1200	187	141	110
24	11	11	12	13	11	9.6	5820	93	1050	178	138	106
25	11	12	11	13	11	9.0	2050	89	925	172	131	100
26	11	11	11	13	11	9.3	1000	87	854	170	134	98
27	11	11	12	13	11	9.7	714	87	812	171	135	94
28	11	11	12	13	11	9.8	554	82	882	170	126	92
29	9.6	11	11	13	---	9.3	443	81	727	166	120	90
30	9.5	11	11	13	---	9.2	368	83	648	161	114	87
31	9.5	---	12	13	---	9.0	---	82	---	153	111	---
TOTAL	378.6	336	355	396	327	309.0	15660.6	5850	50052	9018	4192	3846
MEAN	12.2	11.2	11.5	12.8	11.7	9.97	522	189	1668	291	135	128
MAX	15	15	13	14	13	12	5820	456	13700	592	203	256
MIN	9.5	10	11	12	11	8.8	8.8	81	64	153	111	87
AC-FT	751	666	704	785	649	613	31060	11600	99280	17890	8310	7630

CAL YR 1980	TOTAL	5485.1	MEAN	15.0	MAX	61	MIN	7.4	AC-FT	10880
WTR YR 1981	TOTAL	90720.2	MEAN	249	MAX	13700	MIN	8.8	AC-FT	179900

NUECES RIVER BASIN

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 (1.1 km) southeast of Concan Post Office, 15 mi (24 km) upstream from Dry Frio River, and 224.1 mi (360.6 km) upstream from mouth.

DRAINAGE AREA.--405 mi² (1,049 km²).

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).

GAGE.--Water-stage recorder. Datum of gage is 1,203.71 ft (366.891 m) National Geodetic Vertical Datum of 1929. Oct. 26, 1923, to July 28, 1924, nonrecording gage at site 86 ft (26 m) upstream at datum 5.08 ft (1.548 m) 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 (40 m) downstream at present datum.

REMARKS.--Water-discharge records good. Many small diversions for irrigation above station.

AVERAGE DISCHARGE.--56 years (water years 1925-29, 1931-81), 113 ft³/s (3.200 m³/s), 3.79 in/yr (96 mm/yr), 81,870 acre-ft/yr (101 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 162,000 ft³/s (4,590 m³/s) July 1, 1932, gage height, 34.44 ft (10.497 m), from floodmarks, from rating curve extended above 44,000 ft³/s (1,250 m³/s) on basis of flow-over-dam measurement of 56,600 ft³/s (1,600 m³/s) and slope-area measurement of 162,000 ft³/s (4,590 m³/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 above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 29	0330	3,090 87.5	6.75 2.057	June 14	1300	5,150 146	7.86 2.396
Apr. 18	1030	22,600 640	14.22 4.334	June 16	0930	*40,900 1,160	19.82 6.041
Apr. 23	1230	23,500 666	14.54 4.432	July 5	2300	1,410 39.9	5.60 1.707
May 2	1500	1,950 55.2	6.01 1.832				

Minimum daily discharge, 72 ft³/s (2.04 m³/s) Feb. 24, 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	265	108	105	105	88	88	277	447	220	504	234	158
2	223	108	105	102	85	89	258	878	217	490	228	160
3	204	108	105	102	85	118	250	606	212	477	223	166
4	187	108	102	102	86	160	240	447	205	473	216	161
5	171	105	105	102	86	221	225	440	214	561	211	169
6	160	102	105	102	86	206	208	440	212	735	206	163
7	149	102	105	102	83	179	208	434	191	532	200	153
8	141	98	108	98	83	164	207	427	177	506	207	148
9	134	98	115	98	83	156	204	421	167	480	211	142
10	128	95	118	98	82	154	200	421	160	454	201	142
11	121	95	122	98	79	156	198	414	155	438	194	139
12	116	92	126	95	80	176	194	414	393	421	187	133
13	112	92	126	95	80	176	190	408	494	406	183	132
14	107	92	126	95	80	178	185	402	1530	391	180	142
15	104	89	129	92	80	177	185	402	812	376	175	134
16	101	108	126	92	78	174	185	394	12900	365	171	136
17	99	111	122	92	78	171	216	380	4110	352	190	130
18	106	105	122	92	78	167	5570	363	1950	341	227	125
19	114	102	118	98	78	164	1040	344	1430	330	320	122
20	111	98	118	102	78	167	545	327	1180	321	255	119
21	109	95	115	98	77	165	439	311	1000	312	222	118
22	109	95	115	95	75	160	424	299	864	301	208	118
23	109	98	115	94	73	158	8900	290	736	292	198	112
24	105	98	111	92	72	155	1780	279	670	283	186	110
25	105	98	108	92	72	154	897	271	633	276	179	108
26	105	111	108	92	75	151	606	263	623	272	174	107
27	110	108	108	92	75	150	524	255	629	272	168	105
28	111	108	108	92	75	152	495	246	601	265	165	104
29	111	105	108	92	---	1070	467	237	544	255	163	102
30	111	105	105	89	---	408	454	230	517	248	161	101
31	111	---	105	89	---	312	---	224	---	242	158	---
TOTAL	4049	3037	3514	2979	2230	6276	25771	11714	33746	11971	6201	3959
MEAN	131	101	113	96.1	79.6	202	859	378	1125	386	200	132
MAX	265	111	129	105	88	1070	8900	878	12900	735	320	169
MIN	99	89	102	89	72	88	185	224	155	242	158	101
CFSM	.32	.25	.28	.24	.20	.50	2.12	.93	2.78	.95	.49	.33
IN.	.37	.28	.32	.27	.20	.58	2.37	1.08	3.10	1.10	.57	.36
AC-FT	8030	6020	6970	5910	4420	12450	51120	23230	66940	23740	12300	7850
CAL YR 1980	TOTAL	37746	MEAN 103	MAX 6270	MIN 12	CFSM .25	IN 3.47	AC-FT 74870				
YR 1981	TOTAL	115447	MEAN 316	MAX 12900	MIN 72	CFSM .78	IN 10.60	AC-FT 229000				

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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 21...	1119	99	437	8.2	11.0	0	.40	10.8	100	.5	K7	K7
APR 21...	1407	427	431	8.2	22.0	5	2.1	8.2	98	.6	430	170
AUG 11...	1336	199	410	8.0	26.5	0	.40	8.0	104	.4	47	40

DATE	STREP- TOCOCCEI 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 (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 21...	K8	220	17	62	15	7.2	.2	.6	200	16	11	.1
APR 21...	200	220	18	66	13	6.1	.2	1.2	200	19	9.1	.2
AUG 11...	59	210	15	59	14	9.1	.3	1.0	190	13	15	.1

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, 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 21...	10	242	14	3	1.2	.000	1.2	.060	.32	.38	.000	6.7
APR 21...	11	246	3	1	1.7	.000	1.7	.010	.76	.77	.010	10
AUG 11...	13	238	0	0	1.4	.020	1.4	.120	.45	.57	<.010	1.6

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)
JAN 21...	1119	0	40	<1	0	<10	<10
AUG 11...	1336	0	40	<1	0	<10	<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 21...	<10	<1	.1	0	0	4
AUG 11...	<10	<1	.1	1	0	8

NUECES RIVER BASIN

08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
JAN 21...	1119	.00	.0	.00	.0	.00	.00	.00	.00
AUG 11...	1336	.00	.0	.00	.0	.00	.00	.00	.00

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JAN 21...	.00	.00	.00	.00	.00	.00	.00	.00	.00
AUG 11...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 21...	.00	.00	.00	.00	0	.00	.00	.00	.00
AUG 11...	.00	.00	.00	.00	0	.00	.00	.00	.00

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 (3.7 km) upstream from bridge on U.S. Highway 83, 3.1 mi (5.0 km) upstream from Rocky Creek, and 4.3 mi (6.9 km) south-east of Reagan Wells.

DRAINAGE AREA.--117 mi² (303 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1952 to current year.

REVISED RECORDS.--WSP 1712: 1953. WSP 1923: 1955(M).

GAGE.--Water-stage recorder. Datum of gage is 1,335.2 ft (406.97 m) State Department of Highways and Public Transportation datum.

REMARKS.--Water-discharge records good. Several small diversions above station.

AVERAGE DISCHARGE.--29 years, 35.3 ft³/s (1.000 m³/s), 4.10 in/yr (104 mm/yr), 25,570 acre-ft/yr (31.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 123,000 ft³/s (3,480 m³/s) Aug. 13, 1966, gage height, 27.6 ft (8.41 m), from floodmark, from rating curve extended above 900 ft³/s (25.5 m³/s) on basis of slope-area measurements of 11,400, 30,700, 64,700, and 123,000 ft³/s (323, 869, 1,830, and 3,480 m³/s); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875 occurred in 1880, about 33 ft (10.1 m). Flood of June 14, 1935, reached a stage of 26.0 ft (7.92 m), discharge at site 2.6 mi (4.2 km) upstream, 64,700 ft³/s (1,830 m³/s), and that of July 1, 1932, reached a stage of 23 ft (7.0 m), discharge at site 2.0 mi (3.2 km) upstream, 30,700 ft³/s (869 m³/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 29	0130	1,490 42.2	5.22 1.591	May 2	0200	286 8.10	3.18 0.969
Apr. 18	0630	3,910 111	8.47 2.582	June 14	0930	7,430 210	11.70 3.566
Apr. 23	0530	13,900 394	15.66 4.773	June 16	0600	*14,600 413	16.04 4.889

Minimum discharge, 8.2 ft³/s (0.23 m³/s) Oct. 3-8.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	11	19	16	13	23	74	178	52	110	29	17
2	8.9	11	18	15	13	21	67	209	50	105	28	20
3	8.6	10	18	15	13	31	62	183	46	100	27	20
4	8.5	10	18	15	14	51	56	172	46	95	26	27
5	8.5	10	19	15	15	51	51	153	49	97	25	22
6	8.5	9.9	19	15	14	44	47	139	42	120	25	18
7	8.5	10	19	14	14	39	44	129	39	128	24	17
8	8.6	10	21	15	14	36	42	122	37	92	24	16
9	8.8	9.5	23	14	14	34	40	117	36	84	30	15
10	8.9	9.7	24	14	14	32	39	106	34	78	39	15
11	8.9	9.6	22	14	13	34	37	99	33	75	29	14
12	8.6	9.4	21	14	13	46	35	95	39	72	23	14
13	8.6	9.8	21	14	14	48	34	91	42	69	21	17
14	9.0	9.8	21	14	14	47	33	87	1000	66	21	36
15	9.0	11	22	14	14	43	37	83	130	63	20	21
16	9.3	19	21	13	14	39	36	81	3130	60	20	19
17	9.0	18	20	14	14	37	56	77	794	57	23	17
18	10	16	20	14	14	36	1200	71	427	54	29	16
19	12	15	19	16	14	34	233	66	297	51	28	15
20	11	15	18	16	14	32	133	62	250	48	25	15
21	11	14	19	15	14	32	101	60	220	46	23	15
22	11	15	19	14	14	31	102	60	200	44	21	15
23	11	15	19	14	13	29	2970	59	180	44	21	15
24	11	15	18	14	13	29	666	55	165	40	20	14
25	10	18	17	13	14	27	404	57	155	37	19	14
26	10	24	17	13	14	27	300	57	145	35	19	14
27	11	22	17	14	14	26	245	51	135	36	18	13
28	11	20	17	13	14	28	214	48	130	37	17	13
29	11	20	16	13	---	474	191	47	120	35	17	13
30	10	19	16	13	---	134	175	49	115	32	18	13
31	10	---	16	13	---	92	---	54	---	30	18	---
TOTAL	298.4	415.7	594	440	386	1687	7724	2917	8138	2040	727	510
MEAN	9.63	13.9	19.2	14.2	13.8	54.4	257	94.1	271	65.8	23.5	17.0
MAX	12	24	24	16	15	474	2970	209	3130	128	39	36
MIN	8.5	9.4	16	13	13	21	33	47	33	30	17	13
CFSM	.08	.12	.16	.12	.12	.47	2.20	.80	2.32	.56	.20	.15
IN.	.09	.13	.19	.14	.12	.54	2.46	.93	2.59	.65	.23	.16
AC-FT	592	825	1180	873	766	3350	15320	5790	16140	4050	1440	1010

CAL YR 1980	TOTAL	3981.22	MEAN	10.9	MAX	538	MIN	.94	CFSM	.09	IN	1.27	AC-FT	7900
WTR YR 1981	TOTAL	25877.10	MEAN	70.9	MAX	3130	MIN	8.5	CFSM	.61	IN	8.23	AC-FT	51330

NUECES RIVER BASIN

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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	
JAN 21...	1402	15	385	8.1	12.0	0	.20	10.6	100	.6	K3	K2	
APR 21...	1716	94	418	8.0	22.0	5	1.0	7.8	93	1.2	520	77	
AUG 11...	1019	32	402	7.8	26.5	0	.30	6.6	86	.4	96	52	
DATE	100 ML)	STREP- TOCOCCE 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 (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 21...	K2	190	17	55	12	6.3	.2	.3	170	18	11	.1	
APR 21...	150	210	10	66	11	5.6	.2	.9	200	17	8.4	.1	
AUG 11...	110	190	19	56	12	7.6	.3	.6	170	8.0	13	.1	
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 (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)	
JAN 21...	8.0	213	14	0	.99	.010	1.0	.060	.41	.47	.000	1.9	
APR 21...	9.5	239	3	2	1.5	.000	1.5	.010	.67	.68	.020	12	
AUG 11...	12	212	14	4	.87	.030	.90	.110	.27	.38	.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)						
JAN 21...	1402	0	30	<1	0	<10	10						
AUG 11...	1019	0	40	<1	10	<10	<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 21...	<10	<1	.1	0	0	10							
AUG 11...	<10	1	.1	0	0	10							

NUECES RIVER BASIN

08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
JAN 21...	1402	.00	.0	.00	.0	.00	.00	.00	.00
AUG 11...	1019	.00	.0	.00	.0	.00	.00	.00	.00

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JAN 21...	.00	.00	.00	.00	.00	.00	.00	.00	.00
AUG 11...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 21...	.00	.00	.00	.00	0	.00	.00	.00	.00
AUG 11...	.00	.00	.00	.00	0	.00	.00	.00	.00

NUECES RIVER BASIN

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 (1.8 km) upstream from Farm Road 1023, 5.7 mi (9.2 km) downstream from Dry Frio River, 6.3 mi (10.1 km) downstream from bridge on U.S. Highway 90, and 7.2 mi (11.6 km) northeast of Uvalde.

DRAINAGE AREA.--661 mi² (1,712 km²).

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.

GAGE.--Water-stage recorder. Datum of gage is 882.47 ft (268.977 m) National Geodetic Vertical Datum of 1929.

REMARKS.--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. An observation of water temperature was made during the year.

AVERAGE DISCHARGE.--29 years, 30.3 ft³/s (0.858 m³/s), 21,950 acre-ft/yr (27.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 88,500 ft³/s (2,510 m³/s) Aug. 13, 1966, gage height, 23.88 ft (7.279 m), from floodmark, from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of slope-area measurements of 24,400, 53,000, and 88,500 ft³/s (691, 1,500, and 2,510 m³/s); no flow most of time each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1887, about 35 ft (10.7 m) in 1894. Flood of July 1, 1932, reached a stage of about 30 ft (9.1 m). A higher flood than that of 1894 occurred prior to 1887. Above information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 18	1700	15,200	430	June 14	1930	4,260	121
Apr. 23	1230	24,300	688	June 16	1530	*40,200	1,140
							8.07 2.460
							17.54 5.346

a/ From floodmark.

Minimum discharge, no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1700	.00	.00	.00	.00	.00	10	286	.00	270	.09	.00
2	40	.00	.00	.00	.00	.00	1.1	370	.00	237	.03	.00
3	3.0	.00	.00	.00	.00	.00	.23	577	.00	209	.00	.00
4	1.0	.00	.00	.00	.00	.00	.02	329	.00	185	.00	.00
5	.10	.00	.00	.00	.00	.00	.00	252	.00	161	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	211	.00	381	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	177	.00	259	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	151	.00	175	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	135	.00	144	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	106	.00	117	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	87	.00	97	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	74	.00	82	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	62	.99	67	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	50	.764	51	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	35	.751	37	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	29	13000	23	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	20	4890	12	.00	.00
18	.00	.00	.00	.00	.00	.00	3430	8.0	2200	7.7	.00	.00
19	.00	.00	.00	.00	.00	.00	1210	2.9	1290	7.0	.00	.00
20	.00	.00	.00	.00	.00	.00	415	1.7	990	6.7	.00	.00
21	.00	.00	.00	.00	.00	.00	262	1.3	819	5.5	.00	.00
22	.00	.00	.00	.00	.00	.00	218	.80	681	4.7	.00	.00
23	.00	.00	.00	.00	.00	.00	10200	.48	582	3.8	.00	.00
24	.00	.00	.00	.00	.00	.00	2320	.26	500	3.2	.00	.00
25	.00	.00	.00	.00	.00	.00	865	.15	436	2.5	.00	.00
26	.00	.00	.00	.00	.00	.00	591	.04	413	2.0	.00	.00
27	.00	.00	.00	.00	.00	.00	471	.00	454	1.4	.00	.00
28	.00	.00	.00	.00	.00	.00	396	.00	439	1.0	.00	.00
29	.00	.00	.00	.00	---	171	354	.00	362	.72	.00	.00
30	.00	.00	.00	.00	---	167	312	.00	305	.45	.00	.00
31	.00	---	.00	.00	---	52	---	.00	---	.25	.00	---
TOTAL	1744.10	.00	.00	.00	.00	390.00	21055.35	2966.63	28975.00	2553.92	.12	.00
MEAN	56.3	.0000	.0000	.0000	.0000	12.6	702	95.7	966	82.4	.004	.0000
MAX	1700	.00	.00	.00	.00	171	10200	577	13000	381	.09	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.25	.00	.00
AC-FT	3460	.00	.00	.00	.00	774	41760	5880	57470	5070	.2	.00
CAL YR 1980	TOTAL	13583.52	MEAN	37.1	MAX	4900	MIN	.00	AC-FT	26940		
WTR YR 1981	TOTAL	57685.12	MEAN	158	MAX	13000	MIN	.00	AC-FT	114400		

NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX

LOCATION.--Lat 29°29'35", long 99°29'49", Uvalde County, Hydrologic Unit 12110106, on right bank 108 ft (33 m) upstream from concrete dam, 2.3 mi (3.7 km) downstream from mouth of Onion Creek, and 12.5 mi (20.1 km) north of Sabinal.

DRAINAGE AREA.--206 mi² (534 km²).

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 (344.790 m) National Geodetic Vertical Datum of 1929. Prior to Apr. 9, 1971, at site 0.3 mi (0.5 km) downstream at same datum.

REMARKS.--Water-discharge records. Several small diversions above station for irrigation.

AVERAGE DISCHARGE.--39 years, 57.0 ft³/s (1.614 m³/s), 3.76 in/yr (96 mm/yr), 41,300 acre-ft/yr (50.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,200 ft³/s (1,560 m³/s) June 17, 1958, gage height, 28.3 ft (8.63 m), from floodmark at present site, from rating curve extended above 6,900 ft³/s (195 m³/s) on basis of slope-area measurement of 55,200 ft³/s (1,560 m³/s); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1892, about 33 ft (10.1 m) 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 (19.2 m), see flood history for station 08198500.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 23	1000	*12,400 351	13.49 4.112	June 14	1000	4,920 139	9.01 2.746
May 24	0330	3,610 102	8.36 2.548	June 16	0900	9,580 271	11.74 3.578
June 12	1730	1,710 48.4	6.81 2.076	July 5	2000	2,870 81.3	7.69 2.344

Minimum daily discharge, 24 ft³/s (0.68 m³/s) Feb. 26-28.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP		
1	93	50	43	42	35	31	121	372	182	610	127	72		
2	64	49	40	42	34	38	116	395	164	584	123	74		
3	59	48	39	41	32	61	114	379	149	580	122	77		
4	60	46	39	40	32	270	109	362	304	550	122	74		
5	59	44	40	40	34	149	103	335	353	860	120	76		
6	61	42	42	40	34	119	97	318	260	723	120	72		
7	62	42	42	40	34	109	97	307	234	580	112	67		
8	63	41	42	36	34	99	99	300	224	533	111	63		
9	62	40	45	37	34	94	97	287	203	496	116	63		
10	62	40	48	39	33	92	95	267	191	448	108	60		
11	61	38	48	39	30	93	94	259	180	412	103	59		
12	59	37	48	39	30	108	92	259	830	379	96	58		
13	56	37	48	37	30	111	89	254	604	346	94	56		
14	54	36	48	37	30	105	88	247	2150	314	89	70		
15	53	36	48	39	30	104	88	238	1040	280	87	103		
16	76	55	48	39	30	100	88	237	3570	261	87	86		
17	80	59	46	37	30	97	95	229	1840	245	82	70		
18	84	51	46	37	30	97	315	224	1460	230	136	65		
19	89	46	43	41	30	92	204	213	1270	214	143	62		
20	73	42	42	43	29	92	169	207	1150	194	115	63		
21	64	40	42	42	29	92	155	197	1070	181	103	61		
22	59	40	42	40	27	92	152	198	993	173	90	59		
23	56	40	42	39	26	90	3780	200	926	165	87	58		
24	56	39	43	39	26	90	758	593	860	158	84	56		
25	54	41	42	39	26	90	599	262	815	152	79	56		
26	54	52	42	39	24	90	527	194	763	156	78	52		
27	55	54	42	38	24	88	476	168	798	153	74	53		
28	52	49	42	37	24	90	442	172	778	149	72	51		
29	52	46	42	37	---	266	416	183	700	142	69	48		
30	51	46	42	37	---	166	393	210	652	137	73	48		
31	48	---	42	36	---	135	---	223	---	132	77	---		
TOTAL	1931	1326	1348	1208	841	3350	10068	8289	24713	10537	3099	1932		
MEAN	62.3	44.2	43.5	39.0	30.0	108	336	267	824	340	100	64.4		
MAX	93	59	48	43	35	270	3780	593	3570	860	143	103		
MIN	48	36	39	36	24	31	88	168	149	132	69	48		
CFSM	.30	.22	.21	.19	.15	.52	1.63	1.30	4.00	1.65	.49	.31		
IN.	.35	.24	.24	.22	.15	.60	1.82	1.50	4.46	1.90	.56	.35		
AC-FT	3830	2630	2670	2400	1670	6640	19970	16440	49020	20900	6150	3830		
CAL YR 1980	TOTAL	17014.9	MEAN	46.5	MAX	4000	MIN	1.1	CFSM	.23	IN	3.07	AC-FT	33750
WTR YR 1981	TOTAL	68642.0	MEAN	188	MAX	3780	MIN	24	CFSM	.91	IN	12.40	AC-FT	136200

NUECES RIVER BASIN

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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM 5 DAY (MG/L)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 22...	0944	40	479	8.1	10.0	0	.20	10.8	97	.3	K24	K16
APR 22...	1511	151	440	8.1	21.5	5	.70	8.7	102	1.0	>59	59
AUG 12...	1012	102	455	7.9	25.0	0	.50	7.6	96	.5	190	K64

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 (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 22...	K18	240	25	71	14	7.6	.2	.7	210	30	12	.2	
APR 22...	40	220	23	68	13	6.6	.2	1.0	200	25	9.1	.2	
AUG 12...	90	220	19	68	12	8.9	.3	1.1	200	21	12	.2	

DATE	TIME	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)	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 22...	11	273	14	1	.71	.000	.71	.030	.21	.24	.000	1.5	
APR 22...	11	254	4	3	.66	.000	.66	.030	.53	.56	.010	1.1	
AUG 12...	14	258	6	2	.97	.030	1.0	.120	.27	.39	.010	.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)
JAN 22...	0944	0	30	<1	0	<10	10
AUG 12...	1012	0	40	<1	10	<10	<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 22...	<10	<1	.1	0	0	<3
AUG 12...	14	1	.1	0	0	6

NUECES RIVER BASIN

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
JAN 22...	0944	.00	.0	.00	.0	.00	.00	.00	.00
AUG 12...	1012	.00	.0	.00	.0	.00	.00	.00	.00

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JAN 22...	.00	.00	.00	.00	.00	.00	.00	.00	.00
AUG 12...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 22...	.00	.00	.00	.00	0	.00	.00	.00	.00
AUG 12...	.00	.00	.00	.00	0	.00	.00	.00	.00

NUECES RIVER BASIN

08198500 SABINAL RIVER AT SABINAL, TX

LOCATION.--Lat 29°18'47", long 99°28'46", Uvalde County, Hydrologic Unit 12110106, on left bank 80 ft (24 m) downstream from bridge on U.S. Highway 90, 1,100 ft (335 m) downstream from Southern Pacific Lines railroad bridge, 0.8 mi (1.3 km) west of Sabinal, and 5.8 mi (9.3 km) upstream from Ranchero Creek.

DRAINAGE AREA.--247 mi² (640 km²).

PERIOD OF RECORD.--September 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 882.17 ft (268.885 m) 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 (24 m) upstream at same datum.

REMARKS.--Records good. Several small diversions for irrigation above station. Most of low flow of the Sabinal River enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin upstream from this station and downstream from Sabinal River near Sabinal (station 08198000). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--29 years, 33.6 ft³/s (0.952 m³/s), 24,340 acre-ft/yr (30.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,300 ft³/s (2,080 m³/s) June 17, 1958, gage height, 33.3 ft (10.15 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, 40 ft (12.2 m) Aug. 24, 1919, from information by local residents. Flood of July 2, 1932, reached a stage of 31 ft (9.4 m), discharge 60,000 ft³/s (1,700 m³/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 (21.3 to 24.4 m), 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 above base of 100 ft³/s (2.83 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Mar. 29	2100	183 5.18	5.76 1.756	June 12	2100	1,760 49.8	9.44 2.877
Apr. 18	1900	310 8.78	6.33 1.929	June 14	1300	4,230 120	12.55 3.825
Apr. 23	1600	*12,600 357	18.52 5.645	June 16	1300	9,050 256	16.39 4.996
May 24	0800	2,050 58.1	9.91 3.021	July 6	0200	2,290 64.9	10.26 3.127
June 5	0600	461 13.1	6.83 2.082				

Minimum discharge, 0.92 ft³/s (0.026 m³/s) Mar. 2, 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	135	3.5	2.3	1.8	1.7	1.0	40	235	92	358	47	7.9
2	80	3.3	2.3	1.8	1.7	.95	33	282	78	321	43	8.8
3	62	3.3	2.3	1.9	1.7	.97	29	256	70	292	39	8.6
4	48	3.3	2.3	2.0	1.7	1.1	25	231	75	277	36	7.9
5	38	3.3	2.3	2.0	1.6	1.4	22	189	288	249	33	7.7
6	30	3.2	2.3	2.0	1.6	3.0	18	165	152	840	30	7.5
7	22	3.1	2.3	2.0	1.6	9.4	16	150	123	373	28	7.3
8	16	3.0	2.3	2.0	1.6	7.5	15	136	107	294	26	8.4
9	12	2.9	2.4	2.0	1.6	5.7	12	130	97	277	25	7.1
10	9.0	3.0	2.4	2.0	1.5	4.6	11	115	88	242	25	6.9
11	7.4	3.0	2.4	1.9	1.8	4.3	9.8	104	84	224	22	6.8
12	6.4	3.0	2.4	1.9	1.9	4.4	8.5	98	609	206	20	6.8
13	5.7	3.0	2.4	1.9	1.9	5.3	7.7	93	672	193	18	7.4
14	5.4	2.9	2.4	1.9	1.9	11	6.9	87	2020	176	17	8.0
15	5.1	3.0	2.4	1.9	1.8	10	6.2	79	1290	163	15	7.3
16	5.0	38	2.4	1.9	1.7	8.4	6.2	77	3410	151	14	6.8
17	4.8	2.8	2.4	1.8	1.7	7.3	6.5	73	2000	140	12	6.7
18	5.0	2.7	2.4	1.8	1.7	6.1	101	64	1490	128	16	6.6
19	4.8	2.7	2.4	1.8	1.6	5.7	165	56	1220	118	20	6.6
20	4.7	2.6	2.4	1.8	1.4	5.1	84	50	1050	111	27	6.5
21	4.5	2.6	2.4	1.8	1.4	4.8	64	45	924	104	20	6.4
22	4.3	2.5	2.4	1.8	1.4	4.6	57	44	825	95	16	6.3
23	4.2	2.5	2.3	1.8	1.4	4.8	4340	44	740	87	14	6.1
24	3.9	2.5	2.3	1.8	1.4	5.0	1110	462	657	79	12	6.0
25	3.9	2.9	2.2	1.7	1.3	4.8	601	210	578	74	11	5.9
26	3.9	2.6	2.1	1.7	1.1	4.7	458	156	532	70	9.7	5.6
27	3.9	2.4	2.2	1.7	1.0	4.5	381	123	580	69	9.0	5.4
28	3.8	2.4	2.1	1.7	1.0	4.5	323	106	570	65	8.6	5.3
29	3.7	2.3	2.0	1.7	---	30	287	99	473	59	8.3	5.1
30	3.6	2.3	1.9	1.6	---	93	251	96	405	55	8.1	5.1
31	3.6	---	1.9	1.7	---	52	---	104	---	50	8.1	---
TOTAL	549.6	120.6	71.0	57.1	43.7	315.92	8494.8	4159	21299	5940	637.8	204.8
MEAN	17.7	4.02	2.29	1.84	1.56	10.2	283	134	710	192	20.6	6.83
MAX	135	38	2.4	2.0	1.9	93	4340	462	3410	840	47	8.8
MIN	3.6	2.3	1.9	1.6	1.0	.95	6.2	44	70	50	8.1	5.1
AC-FT	1090	239	141	113	87	627	16850	8250	42250	11780	1270	406

CAL YR 1980	TOTAL	6565.81	MEAN	17.9	MAX	1750	MIN	.45	AC-FT	13020
WTR YR 1981	TOTAL	41893.32	MEAN	115	MAX	4340	MIN	.95	AC-FT	83100

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 (140 m) downstream from bridge on Ranch Road 462, 6.3 mi (10.1 km) southeast of Tarpley, and 16.6 mi (26.7 km) northwest of Hondo.

DRAINAGE AREA.--86.2 mi² (223.3 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1952 to current year.

REVISED RECORDS.--WSP 1712: 1957.

GAGE.--Water-stage recorder. Datum of gage is 1,169.1 ft (356.34 m) Magnolia Oil Co. datum.

REMARKS.--Water-discharge records good. Several small diversions for irrigation above station.

AVERAGE DISCHARGE.--29 years, 40.3 ft³/s (1.141 m³/s), 6.35 in/yr (161 mm/yr), 29,200 acre-ft/yr (36.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,800 ft³/s (1,980 m³/s) June 17, 1958, gage height, 28.2 ft (8.60 m), from floodmark, from rating curve extended above 2,600 ft³/s (73.6 m³/s) on basis of slope-area measurements of 18,600 and 69,800 ft³/s (527 and 1,980 m³/s); no flow at times in 1952-57, 1962-64, 1967, and 1971.

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 (7.9 m), discharge 58,500 ft³/s (1,660 m³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 18	0600	8,910 252	10.30 3.139	June 16	0800	3,710 105	6.42 1.957
May 24	2400	4,570 129	7.11 2.167	June 28	0400	788 22.3	3.68 1.122
June 4	1700	5,010 142	7.46 2.274	July 6	1800	1,170 33.1	4.20 1.280
June 12	1200	*10,700 303	11.42 3.481				

Minimum discharge, 7.2 ft³/s (0.20 m³/s) Feb. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	18	31	22	14	15	51	175	132	208	47	22
2	31	17	30	21	14	13	51	172	126	190	46	31
3	31	16	28	21	14	20	52	190	116	178	44	22
4	30	16	27	21	16	42	49	175	750	165	42	21
5	30	16	31	20	18	40	46	158	280	182	42	20
6	30	15	32	21	16	36	45	145	220	334	40	19
7	30	16	30	20	15	34	45	140	202	185	38	18
8	30	15	32	20	14	31	45	140	188	175	41	18
9	29	14	30	20	14	30	44	132	175	152	37	18
10	29	14	29	19	14	30	44	116	160	138	36	16
11	28	14	28	19	12	33	44	112	148	130	34	16
12	28	12	28	18	13	41	43	106	1840	122	33	16
13	28	11	29	18	13	44	42	104	665	114	32	21
14	28	16	31	18	14	44	40	97	791	106	32	48
15	28	12	32	18	13	45	40	96	692	97	34	21
16	28	28	31	17	13	44	43	96	1470	94	30	18
17	28	23	28	16	13	44	41	91	898	90	28	16
18	44	18	28	16	13	43	60	84	740	84	39	16
19	44	18	28	22	13	42	53	79	608	80	41	15
20	25	18	27	20	13	42	47	76	525	76	31	16
21	25	14	26	18	13	42	46	76	446	73	28	14
22	24	19	26	16	12	41	47	78	392	70	26	14
23	23	19	26	16	12	39	2110	73	350	65	24	14
24	21	17	26	16	12	39	402	674	302	63	24	13
25	20	22	25	16	12	38	314	617	272	59	23	13
26	20	32	25	16	13	38	269	217	252	62	22	13
27	20	29	24	16	13	37	241	178	255	68	21	13
28	20	31	24	15	13	40	217	155	448	59	20	13
29	20	31	24	14	---	103	199	152	262	55	20	12
30	18	31	23	14	---	57	180	164	230	51	22	12
31	18	---	23	14	---	54	---	155	---	49	21	---
TOTAL	839	572	862	558	379	1241	4950	5023	13935	3574	998	539
MEAN	27.1	19.1	27.8	18.0	13.5	40.0	165	162	465	115	32.2	18.0
MAX	44	32	32	22	18	103	2110	674	1840	334	47	48
MIN	18	11	23	14	12	13	40	73	116	49	20	12
CFSM	.31	.22	.32	.21	.16	.46	1.91	1.88	5.39	1.33	.37	.21
IN.	.36	.25	.37	.24	.16	.54	2.14	2.17	6.01	1.54	.43	.23
AC-FT	1660	1130	1710	1110	752	2460	9820	9960	27640	7090	1980	1070
CAL YR 1980	TOTAL	6638.80	MEAN	18.1	MAX	1900	MIN	.60	CFSM	.21	IN	2.86
WTR YR 1981	TOTAL	33470.00	MEAN	91.7	MAX	2110	MIN	11	CFSM	1.06	IN	14.44
									AC-FT	13170	AC-FT	66390

NUECES RIVER BASIN

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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)	
JAN 22...	1410	16	448	8.0	11.0	0	.50	11.4	106	.5	
APR 23...	1131	1370	238	8.1	19.5	50	200	8.7	98	2.7	
AUG 13...	1038	33	443	7.9	25.5	0	.50	7.6	97	.5	
DATE	TIME	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	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)	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)
JAN 22...	K2	K2	<1	220	38	69	11	7.6	.2	.8	
APR 23...	24000	12000	22000	120	13	42	4.4	3.1	.1	2.4	
AUG 13...	120	88	150	210	26	66	10	9.9	.3	1.1	
DATE	TIME	ALKA- LINITY (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, NITRATE DIS- SOLVED (MG/L AS N)
JAN 22...	180	40	10	.3	10	257	17	1	.48	--	
APR 23...	110	16	3.4	.2	8.9	147	510	11	.23	.23	
AUG 13...	180	31	13	.2	14	253	7	3	.59	--	
DATE	TIME	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)	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)	PHOS- PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN 22...	.000	--	.48	--	.040	--	.91	.95	.000	5.5	
APR 23...	.000	.000	.23	.23	.050	.060	.87	.92	.080	15	
AUG 13...	.020	--	.61	--	.110	--	.42	.53	.010	.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)				
JAN 22...	1410	0	30	<1	0	<10	<10				
AUG 13...	1038	0	30	<1	10	<10	<10				

NUECES RIVER BASIN

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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...	<10	<1	.0	1	0	4
AUG 13...	16	2	.0	0	0	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)
JAN 22...	1410	.00	.0	.00	.0	.00	.00	.00	.00
AUG 13...	1038	.00	.0	.00	.0	.00	.00	.00	.00

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JAN 22...	.00	.00	.00	.00	.00	.00	.00	.00	.00
AUG 13...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 22...	.00	.00	.00	.00	0	.00	.00	.00	.00
AUG 13...	.00	.00	.00	.00	0	.00	.00	.00	.00

NUECES RIVER BASIN

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 (0.5 km) downstream from county road low-water crossing, 3.1 mi (5.0 km) north of Hondo, and 7.8 mi (12.6 km) upstream from Verde Creek.

DRAINAGE AREA.--142 mi² (368 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 897.87 ft (273.671 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Most of the low flow of Hondo Creek enters Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Tarpley (station 08200000) and this station. Small diversions above station for irrigation, amounts unknown.

AVERAGE DISCHARGE.--21 years, 15.2 ft³/s (0.430 m³/s), 11,010 acre-ft/yr (13.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,900 ft³/s (1,330 m³/s) July 15, 1973, gage height, 16.4 ft (5.00 m), from floodmark, from rating curve extended above 9,800 ft³/s (278 m³/s) on basis of contracted-opening measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875, 21 ft (6.4 m) in September 1919, from information by local resident. Other floods occurred in July 1932, stage 18 ft (5.5 m) and June 17, 1958, stage 17 ft (5.2 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 23	0900	9,440 267	8.18 2.493	June 4	1930	8,020 227	7.69 2.344
May 24	0900	719 20.4	3.44 1.049	June 12	1500	*14,900 422	9.83 2.996
May 25	0400	1,960 55.5	4.73 1.442	June 16	1130	3,430 97.1	5.66 1.725

Minimum discharge no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	1.2	1.2	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.05	.02	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	827	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	180	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	47	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	20	5.6	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	5.8	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.39	.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	2350	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	198	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	243	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	205	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	825	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	383	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	276	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	197	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	139	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	102	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	74	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	1890	.00	56	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	502	151	37	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	194	372	20	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	71	65	15	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	23	25	12	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	4.8	4.4	69	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.48	6.9	28	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	1.9	8.9	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	50	.00	.00	.00	.00
TOTAL	.00	.00	.00	.00	.00	.00	2685.28	676.20	6319.34	6.82	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	89.5	21.8	211	.22	.000	.000
MAX	.00	.00	.00	.00	.00	.00	1890	372	2350	5.6	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	5330	1340	12530	14	.00	.00

CAL YR 1980 TOTAL 4619.50 MEAN 12.6 MAX 4350 MIN .00 AC-FT 9160
WTR YR 1981 TOTAL 9687.64 MEAN 26.5 MAX 2350 MIN .00 AC-FT 19220

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 (61 m) upstream from county road crossing, 4.5 mi (7.2 km) downstream from Cascade Creek, and 7.9 mi (12.7 km) south-east of Utopia.

DRAINAGE AREA.--43.1 mi² (111.6 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder, crest-stage gages, and concrete control. Datum of gage is 1,265.8 ft (385.82 m) Magnolia Oil Co. datum, adjustment unknown.

REMARKS.--Water-discharge records good. No known diversion above station.

AVERAGE DISCHARGE.--20 years, 19.4 ft³/s (0.549 m³/s), 6.11 in/yr (155 mm/yr), 14,060 acre-ft/yr (17.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft³/s (1,090 m³/s) July 15, 1973, gage height, 14.4 ft (4.39 m), from floodmark, from rating curve extended above 910 ft³/s (25.8 m³/s) on basis of field estimate of flow over and around end of dam, 14,100 ft³/s (399 m³/s), and slope-area measurement of 52,600 ft³/s (1,490 m³/s); no flow for many days in 1963-64.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1901, 16.4 ft (5.00 m) June 17, 1958, from floodmarks, discharge 52,600 ft³/s (1,490 m³/s), by slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17.0 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 23	0600	*4,430 125	5.85 1.783	June 14	0900	1,120 31.7	3.81 1.161
May 24	0200	3,650 103	5.45 1.661	June 16	0700	2,050 58.1	4.54 1.384
May 24	2300	1,440 40.8	4.09 1.247	June 27	1800	1,010 28.6	3.70 1.128
June 4	1500	1,220 34.6	3.90 1.189	June 28	0200	1,260 35.7	3.94 1.201
June 12	1200	2,070 58.6	4.55 1.387	July 5	1700	1,860 52.7	4.41 1.344
June 13	1500	643 18.2	3.30 1.006	July 6	1700	1,500 42.5	4.14 1.262

Minimum daily discharge, 3.4 ft³/s (0.096 m³/s) Oct. 10-17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	4.6	11	7.9	5.3	6.5	21	68	72	160	42	13
2	4.9	4.6	11	7.4	4.6	4.6	20	65	68	144	40	14
3	4.6	4.6	11	7.4	4.6	9.0	20	70	66	128	38	13
4	4.6	4.6	11	7.4	4.9	4.6	19	62	173	117	35	11
5	4.3	4.3	12	7.4	5.3	25	18	57	98	223	33	11
6	3.9	4.3	12	7.4	5.3	20	17	54	89	237	31	10
7	3.9	4.3	12	7.4	5.3	19	17	51	84	160	30	10
8	3.6	4.3	13	7.4	5.3	18	17	50	81	152	28	9.8
9	3.6	4.3	13	7.4	5.3	16	17	47	77	132	27	9.6
10	3.4	4.3	12	7.4	4.9	16	16	44	73	117	24	9.0
11	3.4	4.3	12	7.0	3.9	17	15	45	69	110	23	8.9
12	3.4	3.9	12	6.5	3.9	21	15	42	405	103	21	8.4
13	3.4	3.9	12	6.1	3.9	23	14	40	310	94	19	8.4
14	3.4	3.9	12	6.1	3.6	23	13	38	536	91	19	9.9
15	3.4	4.6	12	6.1	3.6	23	14	36	374	88	19	8.8
16	3.4	14	12	5.7	3.6	23	16	36	713	87	19	7.9
17	3.4	7.0	11	5.7	3.6	23	18	34	437	85	19	7.4
18	14	5.7	11	5.7	3.6	21	60	33	344	82	26	7.4
19	11	5.7	10	8.4	3.6	19	37	29	282	77	20	7.4
20	7.0	5.7	9.6	7.0	3.6	19	34	28	242	75	19	7.4
21	6.1	5.3	9.6	6.1	3.6	18	33	27	206	72	17	7.0
22	5.7	5.7	10	5.7	3.6	18	33	27	178	69	16	7.0
23	5.7	6.1	10	5.7	3.6	17	818	26	156	67	16	6.8
24	5.3	5.7	9.0	5.7	3.6	17	169	487	140	64	15	6.5
25	4.9	8.4	8.4	5.7	3.6	16	127	251	132	59	14	6.5
26	4.9	12	8.4	5.7	3.6	16	104	129	120	57	14	6.1
27	4.9	12	8.4	6.1	3.6	15	91	108	251	54	13	5.7
28	6.1	11	7.9	6.1	3.6	21	82	95	368	52	12	5.7
29	5.3	11	7.9	6.1	---	38	75	87	214	50	11	5.7
30	4.9	11	7.9	5.7	---	23	71	87	179	46	16	5.3
31	4.6	---	7.9	5.3	---	21	---	80	---	44	16	---
TOTAL	156.3	191.1	327.0	202.7	116.5	612.1	2021	2333	6537	3096	692	254.6
MEAN	5.04	6.37	10.5	6.54	4.16	19.7	67.4	75.3	218	99.9	22.3	8.49
MAX	14	14	13	8.4	5.3	46	818	487	713	237	42	14
MIN	3.4	3.9	7.9	5.3	3.6	4.6	13	26	66	44	11	5.3
CFSM	.12	.15	.24	.15	.10	.46	1.56	1.75	5.06	2.32	.52	.20
IN.	.13	.16	.28	.17	.10	.53	1.74	2.01	5.64	2.67	.60	.22
AC-FT	310	379	649	402	231	1210	4010	4630	12970	6140	1370	505

CAL YR 1980 TOTAL 1377.42 MEAN 3.76 MAX 38 MIN .08 CFSM .09 IN 1.19 AC-FT 2730
WTR YR 1981 TOTAL 16539.30 MEAN 45.3 MAX 818 MIN 3.4 CFSM 1.05 IN 14.27 AC-FT 32810

NUECES RIVER BASIN

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 1980 TO SEPTEMBER 1981

DATE	TIME	STREAM- FLOW, INSTAN- TANEOUS (CFS)	SPE- CIFIC CON- DUCT- ANCE (MICRO- MHOS)	PH FIELD (UNITS)	TEMPER- ATURE, WATER (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, BIOCHEM UNINHIB 5 DAY (MG/L)	COLI- FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 22...	1121	5.7	450	8.2	10.5	0	.30	11.4	104	.3	K3	K2
APR 22...	1048	33	430	8.1	20.5	5	1.1	8.8	10	.4	310	120
AUG 12...	1532	21	428	8.0	31.0	0	.30	7.4	106	.4	K8	K8

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- LINITY (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 22...	K7	220	64	70	12	7.8	.2	.8	160	56	11	.2
APR 22...	52	210	33	67	11	6.2	.2	1.0	180	37	8.9	.2
AUG 12...	55	200	29	63	10	9.4	.3	1.0	170	29	15	.2

DATE	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, SUM OF CONSTITU- ENTS, 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)
JAN 22...	10	264	10	0	.69	.000	.69	.030	.26	.29	.000	2.4
APR 22...	10	250	2	0	.54	.000	.54	.020	.66	.68	.010	2.3
AUG 12...	15	245	5	4	--	<.020	.62	.130	.37	.50	.010	.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)
JAN 22...	1121	0	30	<1	0	<10	<10
AUG 12...	1532	0	30	<1	10	<10	<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 22...	<10	<1	.1	1	0	<3
AUG 12...	17	2	.2	1	0	5

NUECES RIVER BASIN

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

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)
JAN 22...	1121	.00	.0	.00	.0	.00	.00	.00	.00
AUG 12...	1532	.00	.0	.00	.0	.00	.00	.00	.00

DATE	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)	METH- OXY- CHLOR, TOTAL (UG/L)
JAN 22...	.00	.00	.00	.00	.00	.00	.00	.00	.00
AUG 12...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARA- THION, TOTAL (UG/L)	METHYL TRI- THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA- THION, TOTAL (UG/L)	TOX- APHENE, TOTAL (UG/L)	TOTAL TRI- THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 22...	.00	.00	.00	.00	0	.00	.00	.00	.00
AUG 12...	.00	.00	.00	.00	0	.00	.00	.00	.00

NUECES RIVER BASIN

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 (4.7 km) north of D'Hanis and 8.0 mi (12.9 km) downstream from Rocky Creek.

DRAINAGE AREA.--168 mi² (435 km²).

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

GAGE.--Water-stage recorder. Datum of gage is 900.88 ft (274.588 m) National Geodetic Vertical Datum of 1929. Prior to October 1970, published as "at Crook Ranch, near D'Hanis".

REMARKS.--Records good. All of low flow of Seco Creek enters Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Miller Ranch (station 08201500) and this station. No known diversion above station. Several observation of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years (water years 1962-81), 9.28 ft³/s (0.263 m³/s), 6,720 acre-ft/yr (8.29 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,500 ft³/s (864 m³/s) July 15, 1973, gage height, 26.0 ft (7.92 m), from floodmark, from rating curve extended above 16,000 ft³/s (453 m³/s) on the basis of slope-area measurement of 35,800 ft³/s (1,010 m³/s); no flow most of time each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 35.7 ft (10.88 m) May 31, 1935, from information by local resident. Other floods occurred Aug. 31, 1894, 33 ft (10.1 m); September 1919, 28 ft (8.5 m); July 2, 1932, 28.2 ft (8.60 m), discharge 35,800 ft³/s (1,010 m³/s), by slope-area measurement; June 17, 1958, 32.4 ft (9.88 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17.0 m³/s) and maximum (*):

Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)	Date	Time	Discharge (ft ³ /s) (m ³ /s)	Gage height (ft) (m)
Apr. 23	0900	*13,200 374	18.09 5.514	June 12	1400	7,680 217	15.30 4.663
May 24	0800	1,350 38.2	10.80 3.292	June 14	1500	886 25.1	10.15 3.094
June 4	2030	1,550 43.9	11.03 3.362	June 16	1200	1,420 40.2	10.88 3.316

Minimum discharge, no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981 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	1.6	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.23	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	156	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	122	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.75	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.08	66	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.3	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.19	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	1170	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	173	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	339	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	222	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	446	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	259	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	198	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	128	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	76	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	43	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	15	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	2150	.00	2.4	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	79	219	.37	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	7.0	159	.11	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	1.7	9.3	.01	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.45	.36	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.17	.07	113	.00	.00	.00
29	.00	.00	.00	.00	.00	.00	.04	.00	47	.00	.00	.00
30	.00	.00	.00	.00	.00	.00	.00	.00	14	.00	.00	.00
31	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
TOTAL	.00	.00	.00	.00	.00	.00	2238.36	387.73	3524.72	69.36	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	74.6	12.5	117	2.24	.000	.000
MAX	.00	.00	.00	.00	.00	.00	2150	219	1170	66	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	4440	769	6990	138	.00	.00
CAL YR 1980	TOTAL	1753.98	MEAN	4.79	MAX	1740	MIN	.00	AC-FT	3480		
WTR YR 1981	TOTAL	6220.17	MEAN	17.0	MAX	2150	MIN	.00	AC-FT	12340		

NUECES RIVER BASIN

08204000 LEONA RIVER SPRING FLOW NEAR UVALDE, TX

LOCATION.--Lat 29°09'15", long 99°44'35", Uvalde County, Hydrologic Unit 12110106 at old road crossing on White's Ranch, 2.0 mi (3.2 km) downstream from Cooks Slough, and 4.7 mi (7.6 km) southeast of Uvalde.

DRAINAGE AREA.--Not applicable. Normal flow of river comes from springs.

PERIOD OF RECORD.--1939 to current year. Occasional discharge measurements 1925-39 in connection with seepage investigations. Operated as continuous record station from January 1939 to September 1965. Occasional discharge measurements since September 1965.

GAGE.--Nonrecording. Datum of gage is 838.39 ft (255.541 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Discharge represents flow from several springs that enter river above station and below Uvalde. Surface runoff from precipitation is excluded. No known diversion above station.

AVERAGE DISCHARGE.--26 years (during period of continuous record, water years 1940-65), 9.72 ft³/s (0.275 m³/s), 7,040 acre-ft/yr (8.68 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--(1939 to current year) Maximum measured spring discharge, 82 ft³/s (2.32 m³/s) May 25, 1977; no flow at times in 1948-49, 1951-59, 1964-68.

DISCHARGE MEASUREMENTS, IN CUBIC FEET PER SECOND WATER YEAR OCTOBER 1980 TO SEPTEMBER 1981

Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
Oct. 28, 1980	11	Mar. 4, 1981	5.7	July 8, 1981	29
Dec. 11	14	Apr. 14	10	Aug. 19	23
Jan. 20, 1981	16	May 27	6.8		

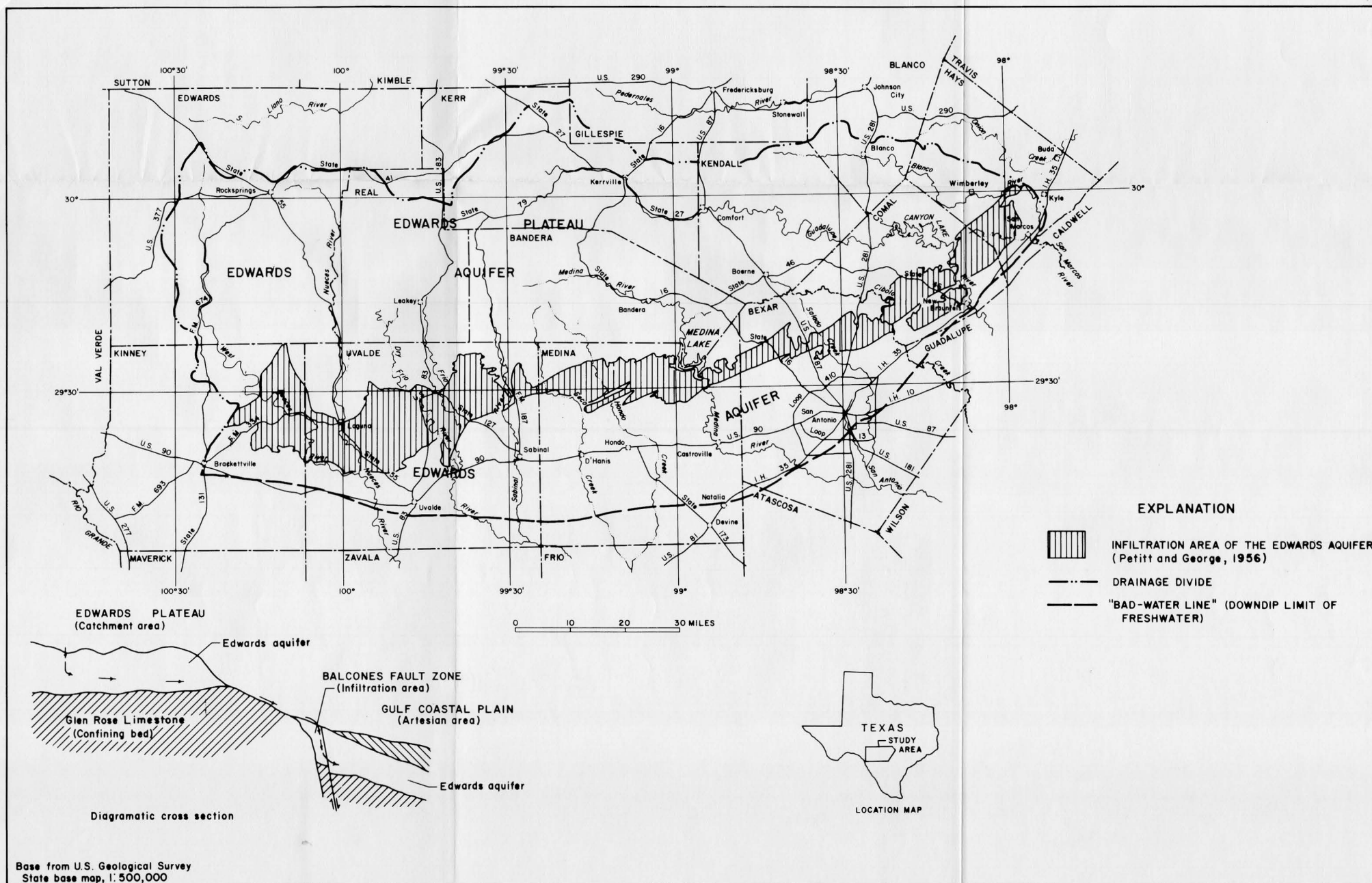


FIGURE 1.-Hydrologic features in the San Antonio area

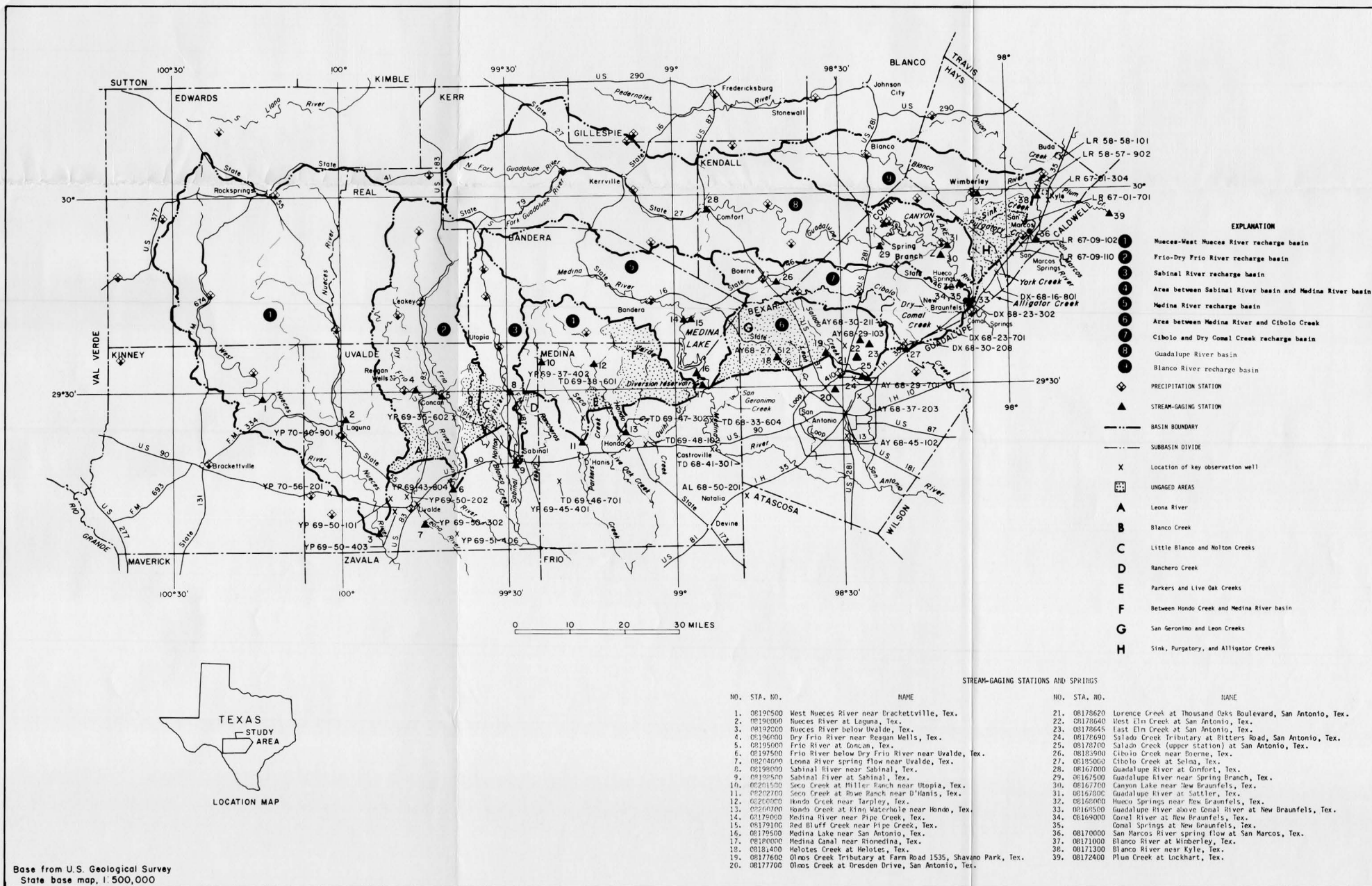


FIGURE 2.-Drainage basins and data-collection sites in the San Antonio area

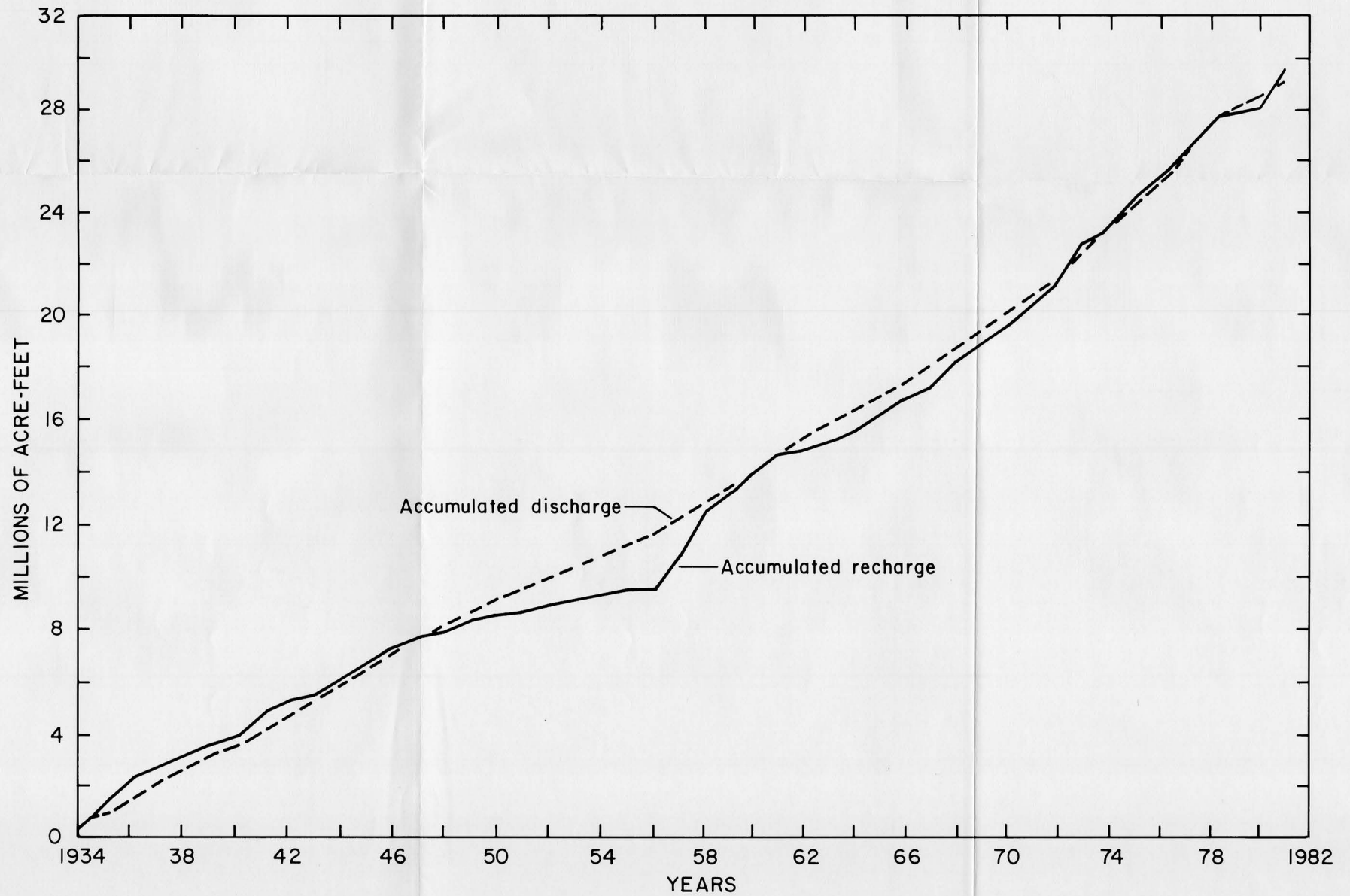


FIGURE 3.-Accumulated recharge and discharge, 1934-81



Note: Large-format versions of the original plates are on the following pages.

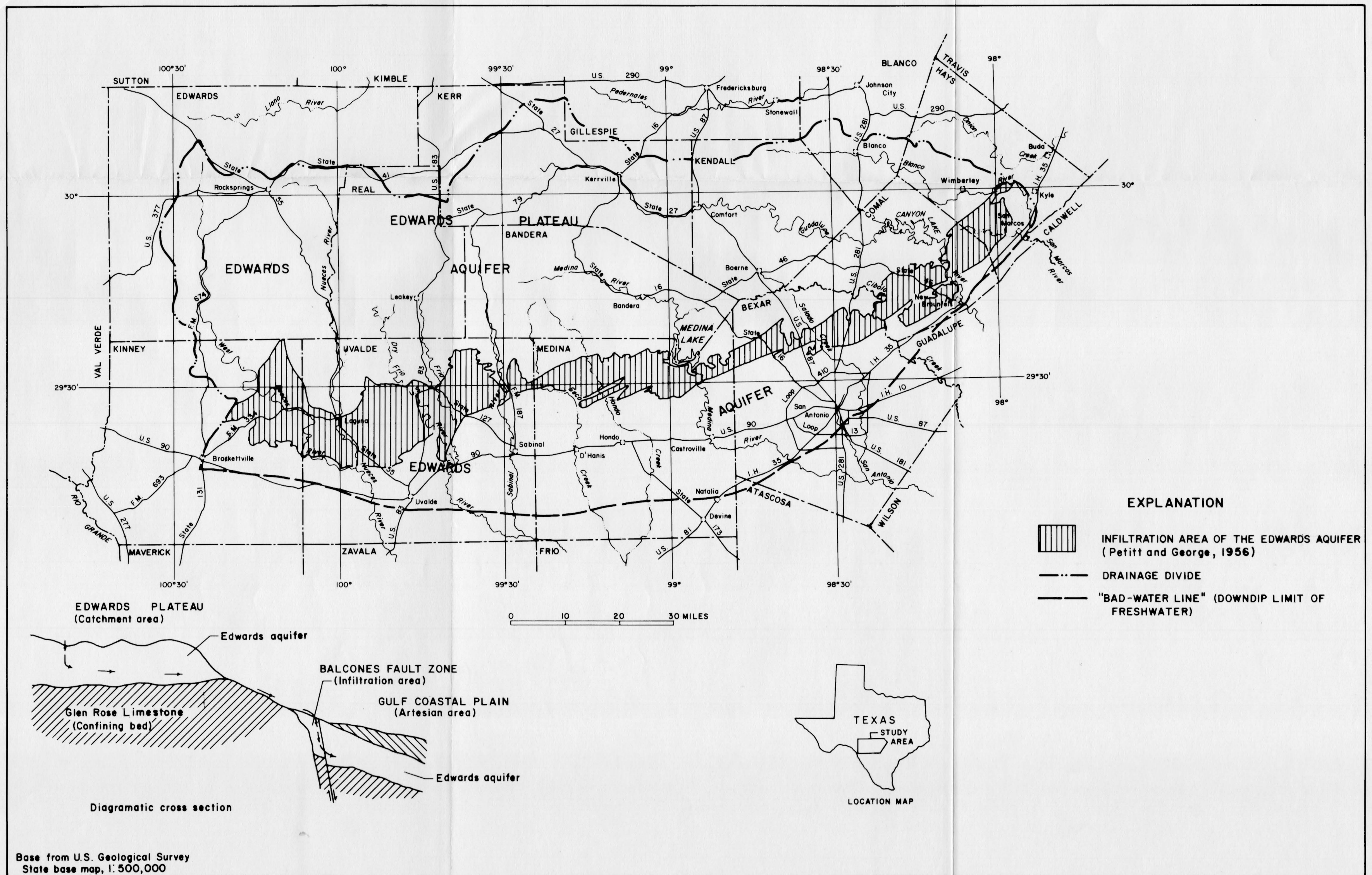


FIGURE 1.-Hydrologic features in the San Antonio area

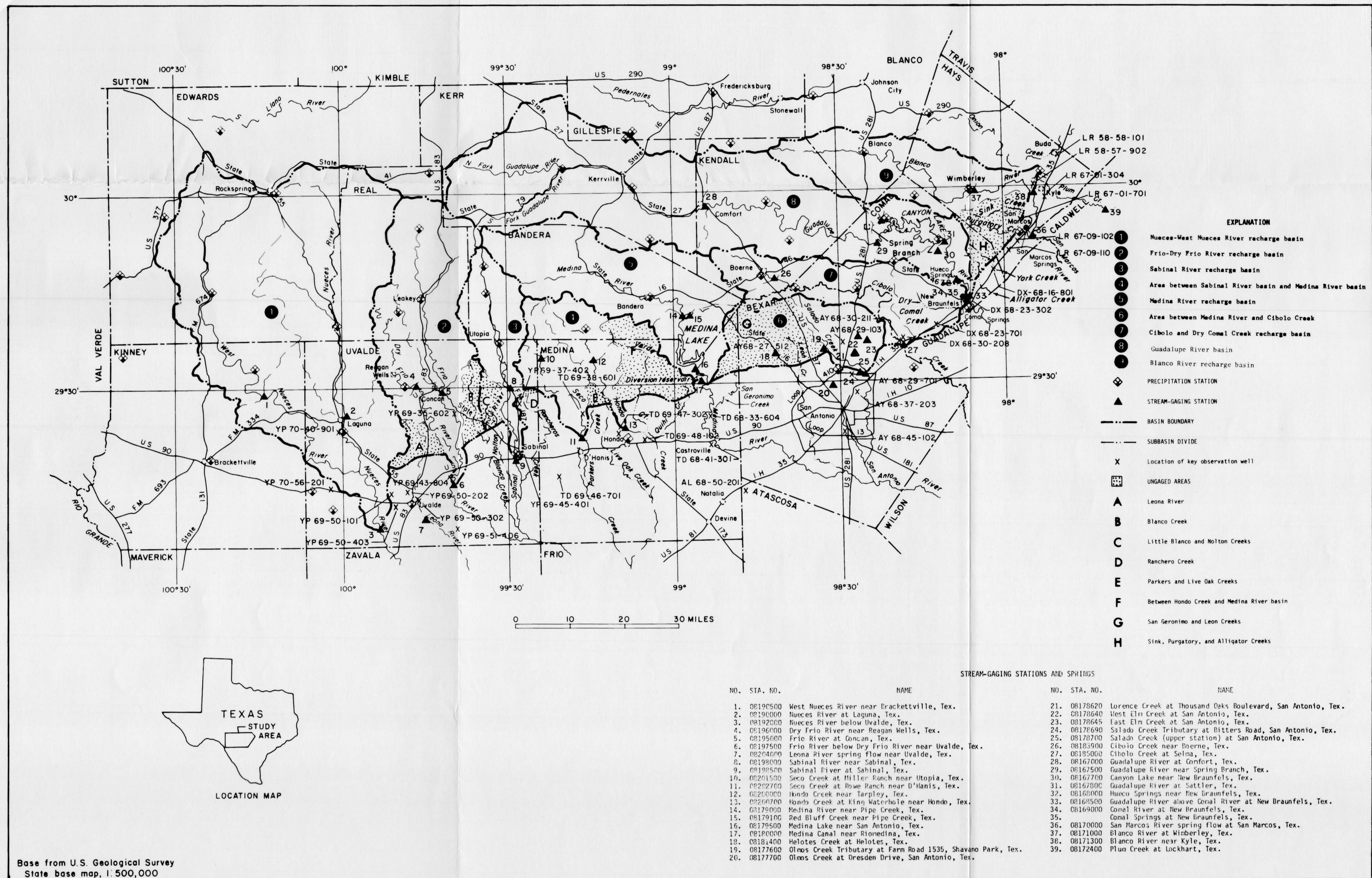


FIGURE 2.-Drainage basins and data-collection sites in the San Antonio area

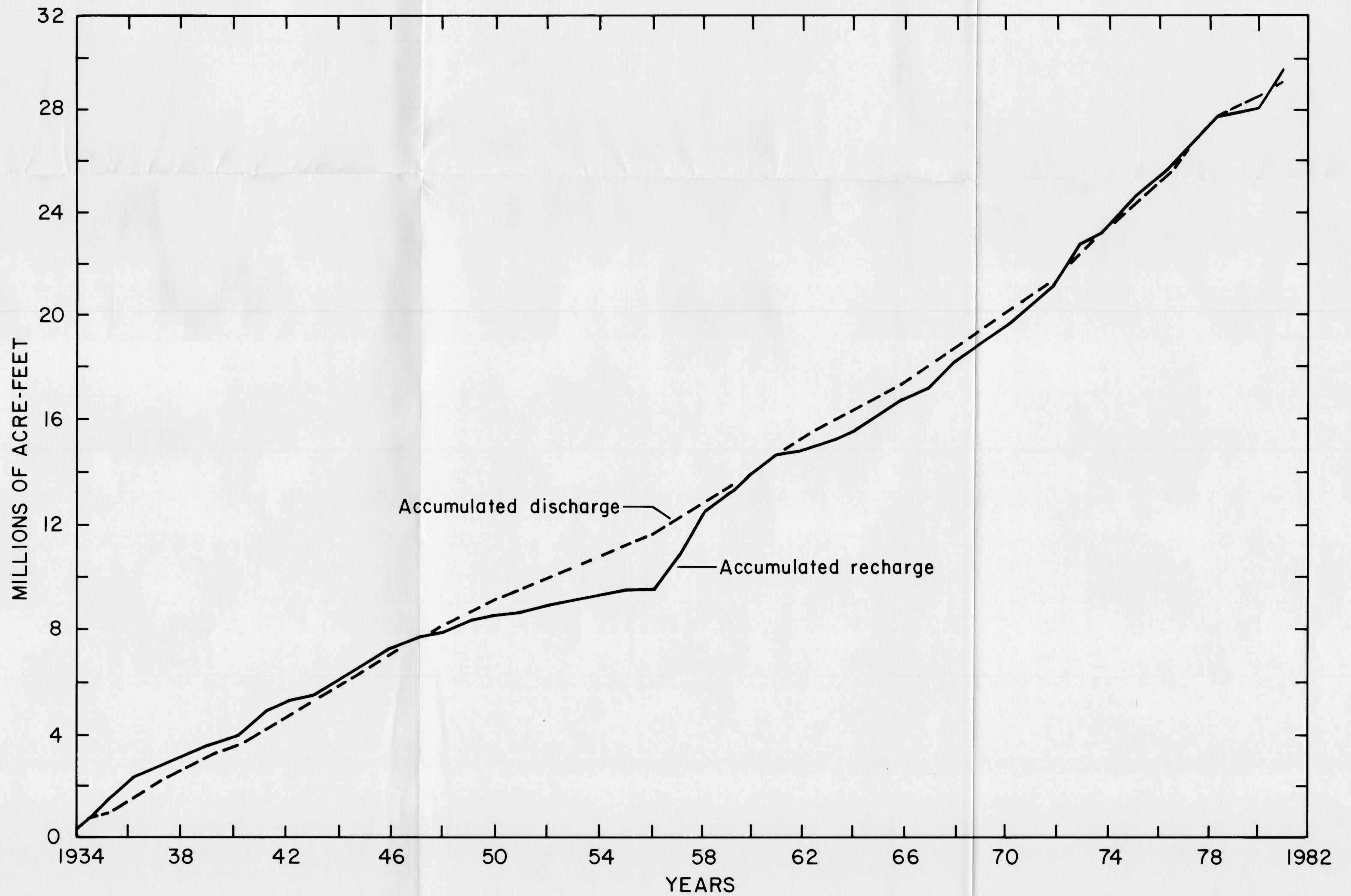
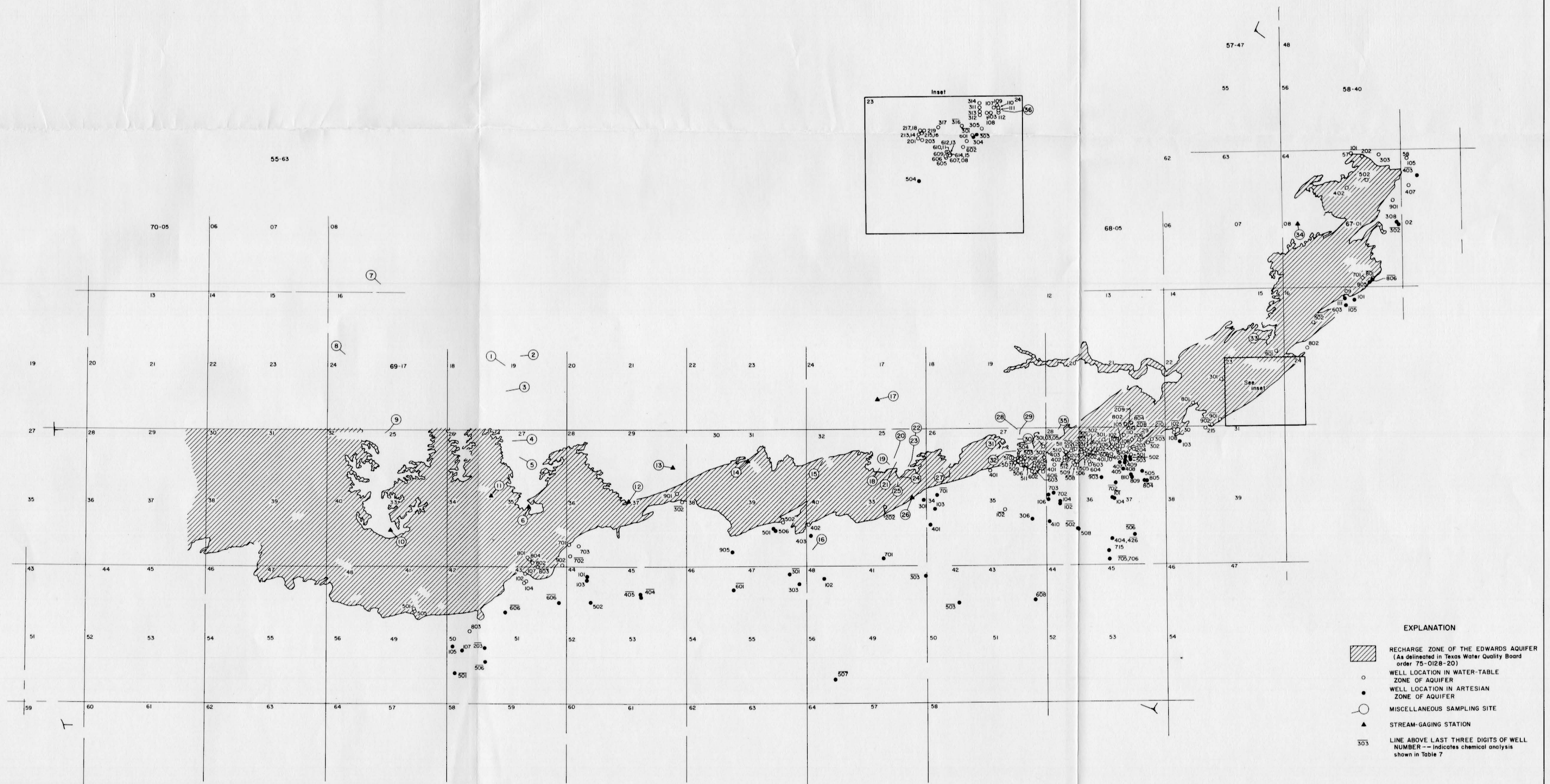


FIGURE 3.-Accumulated recharge and discharge, 1934-81



Base from U.S. Geological Survey
1:250,000 quadrangles

FIGURE 4.-Locations of water-quality data-collection sites for wells and springs in the San Antonio area