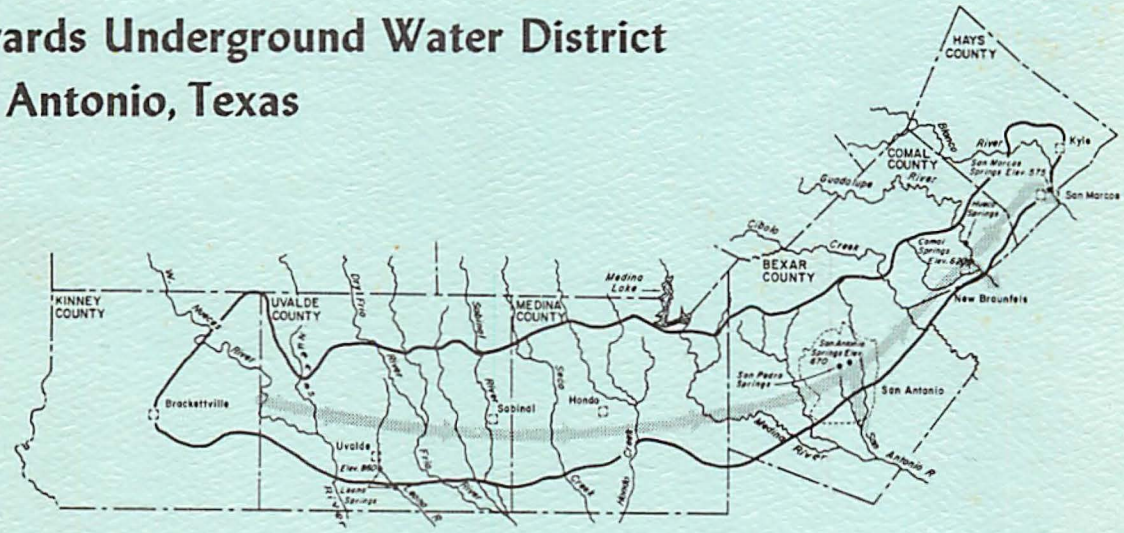
Records of Ground-Water Recharge, Discharge, Water Levels, and Chemical Quality of Water for the Edwards Aquifer in the San Antonio Area, Texas, 1934-79.

Bulletin 39

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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BULLETIN 39

COMPILATION OF HYDROLOGIC DATA FOR THE EDWARDS AQUIFER, SAN ANTONIO AREA, TEXAS, 1934-79

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
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CONTENTS

ILLUSTRATIONS

TABLES

COMPILATION OF HYDROLOGIC DATA FOR THE EDWARDS AQUIFER, SAN ANTONIO AREA, TEXAS, 1934-79

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ABSTRACT

The average annual ground-water recharge to the Edwards aquifer in the San Antonio area, Texas, from 1934 through 1979, was 598,800 acre-feet. The recharge in 1979 was 1,117,800 acre-feet, which was the fifth highest estimated 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 estimated annual discharge by wells and springs in 1979 was 914,500 acre-feet. A maximum annual discharge of 960,900 acre-feet occurred in 1977, and a minimum annual discharge of 388,800 acre-feet occurred in 1955.

During 1979, water levels in wells in the Edwards aquifer fluctuated near record highs; consequently, the volume of ground water in storage in the aquifer also was near the record high.

Analyses of water samples from 77 wells and 3 springs show no evidence of significant degradation of water quality in the Edwards aquifer, and the data show no trend of degradation in water quality.

INTRODUCTION

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. A compilation of records pertaining to the Edwards aquifer will be published annually to provide for a more timely release of data.

The calculations of annual recharge are based on data collected from a network of stream-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) U.S. 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 in the late 1930's. During 1979, 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 1979 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 are also included. These data represent that part of the National Water Data System operated by the U.S. Geological Survey in cooperation with State and Federal agencies in Texas.

Previous and Related Studies

The U.S. 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); Maclay 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 the period August 1968 to January 1975 was made by Reeves (1976). Compilations of water-quality data from February 1975 to September 1977 were reported by Reeves (1978), and corresponding data for the period October 1977 to September 1978 were reported by Reeves, Maclay, Grimm, and Davis (1980).

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

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.

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 such 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°C ± 1.0°C on M-enterrococcus 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 (FT^3/S, ft^3/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-µm (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: the stronger the concentration of detergent, the deeper its shade of blue.

micrograms per liter (UG/L, µg/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 content in the water. Commonly, the concentration of dissolved solids (in milligrams per liter) expressed as a percentage of the specific conductance (in micromhos) 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-µm 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-µm 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" to refer to State annual basic-data reports.

WRD is used as an abbrevation for "Water Resources Data" 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:

From	Multiply by	To obtain
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 (million gal/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.

PRECIPITATION

The annual and long-term average precipitation at selected stations in the San Antonio area for 1976-79 are given in table 1. Annual rainfall during 1976 and 1979 was above average at most of the stations in the San Antonio area as a result of significant storms in July and October 1976 and March, April, and June 1979. Annual rainfall during 1977-78 was below average at most of the stations. Rainfall was mostly deficient in the western section of the area where the major part of the recharge occurs.

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 during 1934-79 and the average annual recharge for 1934-79 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 1979 annual recharge was the fifth highest estimated recharge since 1934. Floods resulting from heavy rains provided most of the recharge.

The annual recharge during 1934-79 ranged from 43,700 acre-feet in 1956 to 1,711,200 acre-feet in 1958. The average annual recharge for 1934-79 was 598,800 acre-feet. Recharge in 1979 was 1,117,800 acre-feet.

GROUND-WATER DISCHARGE

The calculated discharge, by county, from the Edwards aquifer during 1934-79 is given in table 3. The calculated discharge by county and by water use during 1979 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 90,000 acres in 1979. 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 1979 was 914,500 acre-feet (table 4). The discharge from wells declined from 431,800 acre-feet in 1978, which was a record high for 1934-79, to 391,500 acre-feet in 1979 because of above average rainfall throughout most of the area. In 1979, about 43 percent of the total discharge was from wells, and approximately 61 percent of this amount was discharge from wells in Bexar County. The discharge from wells in 1979 was 9 percent less than in 1978, while spring flow increased by about 39 percent. The total discharge from wells and springs in 1979 was about 13 percent more than in 1978 and about 53 percent more than the average discharge for 1934-78.

The relationship between accumulated recharge and discharge for 1934-79 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. In 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 1976-79 are given in table 5. The water levels in observation wells in 1979 are given in table 6. During 1979, water levels fluctuated near record highs, reflecting above normal rainfall throughout most of the area; consequently, the volume of ground water in storage in the aquifer was near the record high.

During 1978, 16 wells were measured periodically, and continuous recorders were in operation on 18 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 computer printouts from the Texas Department of Water Resources in Austin, Texas. The computer printouts also are on file in the office of the U.S. 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 the National Geodetic Vertical Datum of 1929 (NGVD) 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 from 77 wells and 3 springs in the Edwards aquifer collected from October 1978 to December 1979 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 there is no evidence of significant degradation of water quality in the Edwards aquifer, and the data show no trend of degradation in water quality.

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 U.S. Geological Survey water-supply papers or in U.S. 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 U.S. Geological Survey.

Records of streamflow and of 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 8. 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 obtained from areas of different types of utilization and from floods of various magnitudes during all seasons of the year. Data-collection sites are shown in figure 2.

SELECTED REFERENCES

Arnow, Ted, 1959, Ground-water geology of Bexar County, Texas: Texas Board of Water Engineers Bulletin 5911, 62 p.

Bennett, R. R., and Sayre, A. N., 1962, Geology and ground-water resources of Kinney County, Texas: Texas Water Commission Bulletin 6216, 176 p.

DeCook, K. J., 1963, Geology and ground-water resources of Hays County, Texas: U.S. Geological Survey Water-Supply Paper 1612, 72 p.

DeCook, K. J., and Doyel, W. W., 1955, Records of wells in Hays County, Texas: Texas Board of Water Engineers Bulletin 5501, 60 p.

Dupuy, A. J., and Schulze, J. A., 1972, Selected water-quality records for Texas surface waters, 1970 water year: Texas Water Development Board Report 149, 211 p., 1 fig.

Follett, C. R., 1956, Records of water-level measurements in Bexar County, Texas: Texas Board of Water Engineers Bulletin 5606, 60 p.

_____1956, Records of water-level measurements in Medina County, Texas, 1930 to March 1956: Texas Board of Water Engineers Bulletin 5609, 24 p.

_____1956, Records of water-level measurements in Comal and Guadalupe Counties, Texas, 1933 to March 1956: Texas Board of Water Engineers Bulletin 5610, 32 p.

_____1956, Records of water-level measurements in Kinney, Uvalde, and Val Verde Counties, Texas, 1929 to March 1956: Texas Board of Water Engineers Bulletin 5611, 70 p.

_____1956, Records of water-level measurements in Hays, Travis, and Williamson Counties, Texas, 1937 to May 1956: Texas Board of Water Engineers Bulletin 5612, 74 p.

Garza, Sergio, 1962, Recharge, discharge, and changes in ground-water storage in the Edwards and associated limestones, San Antonio area, Texas, a progress report on studies, 1955-59: Texas Board of Water Engineers Bulletin 6201, 51 p.

_____1963, Ground-water discharge from the Edwards and associated limestones, 1955-62, San Antonio area, Texas: Edwards Underground Water District Bulletin 2, 4 p.

_____1963, Records of precipitation, aquifer heaad, and ground-water discharge to the Edwards and associated limestones, 1960-62, San Antonio area, Texas: Edwards Underground Water District Bulletin 3, 7 p.

_____1964, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1963: Edwards Underground Water District Bulletin 5, 3 p.

_____1964, Records of precipitation, aquifer head, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1963: Edwards Underground Water District Bulletin 6, 7 p.

_____1966, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1965: Edwards Underground Water District Bulletin 11, 4 p.

_____1966, Ground-water resources of the San Antonio area, Texas, a progress report on studies 1960-64: Texas Water Development Board Report 34, 31 p.

George, W. O., 1952, Geology and ground-water resources of Comal County, Texas: U.S. Geological Survey Water-Supply Paper 1138, 126 p.

Gonzalez, Victor, 1976, Hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1974: U.S. Geological Survey open-file report, 109 p., 1 fig.

Hackett, O. M., 1962, Ground-water levels in the United States, 1956-59, South-Central States: U.S. Geological Survey Water-Supply Paper 1549, 192 p.

Harmsen, Lynn, 1977, Hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1975: U.S. Geological Survey Open-File Report 77-221, 91 p., 1 fig.

_____1978, Hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1976: U.S. Geological Survey Open-File Report 78-164, 132 p., 1 fig.

Holt, C. L. R., Jr., 1959, Geology and ground-water resources of Medina County, Texas: U.S. Geological Survey Water-Supply Paper 1422, 213 p.

Land, L. F., 1971, Annual compilation and analysis of hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1969: U.S. Geological Survey open-file report, 109 p.

_____1972, Annual compilation and analysis of hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1970: U.S. Geological Survey open-file report, 178 p.

Lang, J. W., 1954, Ground-water resources of the San Antonio area, Texas, a progress report of current studies: Texas Board of Water Engineers Bulletin 5412, 30 p.

Livingston, Penn, Sayre, A. N., and White, W. N., 1936, Water resources of the Edwards limestone in the San Antonio area, Texas: U.S. Geological Survey Water-Supply Paper 773-B, p. 59-113.

Maclay, R. W., and Rappmund, R. A., 1979, Records of ground-water recharge and discharge for the Edwards aquifer in the San Antonio area, Texas, 1934-77: Edwards Underground Water District Bulletin 37, 21 p.

Maclay, R. W., Rettman, P. L., and Small, T. A., 1980, Hydrochemical data for the Edwards aquifer in the San Antonio area, Texas: Texas Department of Water Resources LP-131, 38 p.

Maclay, R. W., and Small, T. A., 1976, Progress report on geology of the Edwards aquifer, San Antonio area, Texas, and preliminary interpretations of borehole geophysical and laboratory data on carbonate rocks: U.S. Geological Survey Open-File Report 76-627, 65 p.

Maclay, R. W., Small, T. A, and Rettman, P. L., 1980, Water-level, recharge, discharge, specific capacity, well-yield, and aquifer-test data for the Edwards aquifer in the San Antonio area, Texas: Texas Department of Water Resources LP-133, 83 p.

_____1981, Application and analysis of borehole data for the Edwards aquifer in the San Antonio area, Texas: Texas Department of Water Resources LP-139, 88 p.

McGuiness, C. L., 1967, Ground-water levels in the United States, 1960-64, South-Central States: U.S. Geological Survey Water-Supply Paper 1824, 152 p.

Perez, Roberto, and Harmsen, Lynn, 1980, Hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1977: U.S. Geological Survey Open-File Report 80-508.

Petitt, B. M., Jr., and George, W. O., 1956, Ground-water resources of the San Antonio area, Texas: Texas Board of Water Engineers Bulletin 5608, v. I, 80 p.; v. II, pt. III, 231 p.

Puente, Celso, 1969, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1968: Edwards Underground Water District Bulletin 20, 5 p.

_____1970, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1969: Edwards Underground Water District Bulletin 23, 7 p.

_____1971, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1970: Edwards Underground Water District Bulletin 26, 7 p.

_____1971, Records of precipitation, water levels, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1970: Edwards Underground Water District Bulletin 27, 11 p.

_____1972, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1971: Edwards Underground Water District Bulletin 29, 8 p.

_____1972, Records of precipitation, water levels, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1971: Edwards Underground Water District Bulletin 30, 11 p.

_____1973, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1972: Edwards Underground Water District Bulletin 31, 8 p.

_____1974, Records of precipitation, water levels, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1972-73: Edwards Underground Water District Bulletin 33, 12 p.

_____1978, Method of estimating natural recharge to the Edwards aquifer in the San Antonio area, Texas: U.S. Geological Survey Water-Resources Investigations Report 78-10, 38 p., 11 figs.

Rappmund, R. A., 1974, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1973: Edwards Underground Water District Bulletin 32, 9 p.

_____1975, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1974: Edwards Underground Water District Bulletin 34, 8 p.

_____1976, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1975: Edwards Underground Water District Bulletin 35, 7 p.

_____1977, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1976: Edwards Underground Water District Bulletin 36, 8 p.

Rawson, Jack, 1974, The quality of surface waters in Texas: U.S. Geological Survey Water-Resources Investigations Report 7-74, 73 p., 9 figs.

Reeves, R. D., 1976, Chemical and bacteriological quality of water at selected sites in the San Antonio area, Texas, August 1968-January 1975: Edwards Underground Water District report, 122 p.

_____1978, Chemical and bacteriological quality of water at selected sites in the San Antonio area, Texas, February 1975-September 1977: Edwards Underground Water District report, 33 p.

Reeves, R. D., and Blakey, J. F., 1970, Geology and water quality at selected locations in the San Antonio area, Texas, progress report, 1969: Edwards Underground Water District report, 17 p.

Reeves, R. D., Maclay, R. W., Grimm, K. C., and Davis, M. F., 1980, Records of ground-water recharge and discharge, 1934-78; water levels, 1975-78; and chemical quality of water, 1977-78, for the Edwards aquifer in the San Antonio area, Texas: Edwards Underground Water District Bulletin 38, 53 p.

Reeves, R. D., Rawson, Jack, and Blakey, J. F., 1972, Chemical and bacteriological quality of water at selected sites in the San Antonio area, Texas, August 1968-April 1972: Edwards Underground Water District report, 69 p.

Rettman, P. L., 1965, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1964: Edwards Underground Water District Bulletin 8, 4 p.

_____1966, Records of precipitation, aquifer head, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1965: Edwards Underground Water District Bulletin 12, 8 p.

_____1967, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1966: Edwards Underground Water District Bulletin 14, 4 p.

_____1967, Records of precipitation, aquifer head, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1966: Edwards Underground Water District Bulletin 15, 9 p.

_____1968, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1967: Edwards Underground Water District Bulletin 17, 4 p.

_____1968, Records of precipitation, aquifer head, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1967: Edwards Underground Water District Bulletin 18, 9 p.

_____1969, Records of precipitation, aquifer head, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1968: Edwards Underground Water District Bulletin 21, 9 p.

_____1970, Records of precipitation, water levels, and ground-water recharge to the Edwards and associated limestones, San Antonio area, Texas, 1969: Edwards Underground Water District Bulletin 24, 11 p.

Schroeder, E. E., Massey, B. C., and Waddell, K. M., 1979, Floods in central Texas, August 1978: U.S. Geological Survey Open-File Report 79-682, 121 p.

Schulze, J. A., Dupuy, A. J., and Manigold, D. B., 1970, Biochemical-oxygen-demand, dissolved oxygen, selected nutrients, and pesticides records of Texas surface waters, 1969 water year: Texas Water Development Board Report 120, 22 p., 1 fig.

Schulze, J. A., Dupuy, A. J., and McPherson, Emma, 1973, Selected water-quality records for Texas surface waters, 1971 water year: Texas Water Development Board Report 176, 268 p., 2 figs.

Steger, R. D., 1973, Annual compilation and analysis of hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1971: U.S. Geological Survey open-file report, 109 p.

_____1974, Hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1972: U.S. Geological Survey open-file report, 102 p.

_____1975, Hydrologic data for urban studies in the San Antonio, Texas, metropolitan area, 1973: U.S. Geological Survey open-file report, 127 p.

U.S. Department of Commerce, 1976, Climatological data, annual summary for Texas, 1976: National Oceanic and Atmospheric Administration, Environmental Data Service, v. 81, no. 13.

_____1977, Climatological data, annual summary for Texas, 1977: National Oceanic and Atmospheric Administration, Environmental Data Service, v. 82, no. 13.

_____1978, Climatological data, annual summary for Texas, 1978: National Oceanic and Atmospheric Administration, Environmental Data Service, v. 83, no. 13.

_____1979, Climatological data, annual summary for Texas, 1979: National Oceanic and Atmospheric Administration, Environmental Data and Information Service, v. 84, no. 13.

U.S. Geological Survey, 1970, Surface water supply of the United States 1961-65, Part 8, Western Gulf of Mexico basins, vol. 2, Basins from Lavaca River to Rio Grande: U.S. Geological Survey Water-Supply Paper 1923, 786 p.

_____1971, Ground-water levels in the United States 1965-69, South-Central States: U.S. Geological Survey Water-Supply Paper 1979, 158 p.

_____1974 [1975], Surface water supply of the United States, 1966-70, Part 8, Western Gulf of Mexico basins, vol. 2, Basins from Lavaca River to Rio Grande: U.S. Geological Survey Water-Supply Paper 2123, 861 p.

_____1976, Water resources data for Texas, water year 1975: U.S. Geological Survey Water-Data Report TX-75-1, v. 1-3.

_____1976, Ground-water levels in the United States 1970-74, South-Central States: U.S. Geological Survey Water-Supply Paper 2172, 172 p.

_____1977, Water resources data for Texas, water year 1976: U.S. Geological Survey Water-Data Report TX-76-1, TX-76-2, TX-76-3.

_____1978, Water resources data for Texas, water year 1977: U.S. Geological Survey Water-Data Report TX-77-1, TX-77-2, TX-77-3.

_____1979, Water resources data for Texas, water year 1978: U.S. Geological Survey Water-Data Report TX-78-1, TX-78-2, TX-78-3.

_____1980, Water resources data for Texas, water year 1979: U.S. Geological Survey Water-Data Report TX-79-1, TX-79-2, TX-79-3.

Welder, F. A., and Reeves, R. D., 1962, Geology and ground-water resources of Uvalde County, Texas: Texas Water Commission Bulletin 6212, 252 p.

Table 1.--Annual and long-term average precipitation at selected stations, 1976-79[1]

Station	Precipitation (inches)				Long-term average	
	1976	1977	1978	1979	Inches	Years of record
Brackettville	34.40	15.06	19.04	16.34	20.77	88
Uvalde	46.04	19.90	18.48	32.35	24.75	76
Sabinal	40.82	17.06	21.28	31.44	25.91	56
Hondo	45.21	19.40	24.64	28.83	28.85	73
San Antonio	39.13	29.64	35.99	36.64	28.32	101
Boerne	45.24	32.43	35.17	39.97	33.17	83
New Braunfels	49.06	24.83	37.79	36.72	31.72	84
San Marcos	47.46	27.69	33.08	38.74	33.51	77

[1] Precipitation data from the U.S. Department of Commerce (1976-79).

Table 2.--Calculated annual recharge to the Edwards aquifer by basin, 1934-79
(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	577.8
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.	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
AVERAGE	103.1	105.5	37.4	92.6	58.3	65.0	100.3	36.6	[2]598.8

[1] Includes recharge from gaged and ungaged areas within the basin.
[2] Average totals may not be identical because of round procedures.

Table 3.--Calculated annual discharge from the Edwards aquifer by county, 1934-79
(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

Table 4.--Calculated discharge from the Edwards aquifer by county and by water use, 1979

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	31.9	4.6	76.8	0.2	2.5	116.0	129.9
Medina	--	3.0	25.8	--	0.6	29.4	32.9
Bexar	48.7	163.6	9.6	10.4	30.6	262.9	294.5
Comal	256.9	8.3	0.3	1.7	0.6	267.8	300.0
Hays	129.4	7.0	0.7	1.3	1.8	140.2	157.0
Total (million gallons per day)	466.9	186.5	113.2	13.6	36.3	816.5	
Total (thousand are-feet per year)	523.0	208.9	126.8	15.2	40.7		[1]914.5

[1] Average totals may not be identical because of rounding procedures.

Table 5.--Annual high and low water levels in selected observation wells in the Edwards aquifer, 1976-79
(feet above NGVD of 1929)

Well	1976		1977		1978		1979		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.)	884.98	876.02	886.26	881.36	882.61	875.67	882.00	876.11	886.26 May 1977	811.0 Apr. 1957	1929-32 1934-79
TD-68-41-301[1] J-1-82 (Medina Co.)	732.32	694.84	737.78	715.65	722.36	681.62	728.18	710.25	737.78 May 1977	622.3 Aug. 1956	1950-79
AY-68-37-203[1,2] J-17 (Bexar Co.)	693.09	663.76	695.95	675.63	684.11	650.13	690.52	676.25	696.5 Oct. 1973	[3]612.5 Aug. 1956	1932-79[4]
DX-68-23-302[1] G-49 (Comal Co.)	629.38	625.76	630.15	627.61	628.05	624.52	628.97	627.25	630.17 Apr. 1977	613.3 Aug. 1956	1948-79
LR-67-01-304[1] H-23 (Hays Co.)	584.55	571.20	587.95	567.80	572.00	540.40	584.86	572.95	593.8 Mar. 1968	540.4 July 1978	1937-79

[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, 1979
(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 1957-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3, 1979	29.78	Mar. 28, 1979	22.82	June 29, 1979	32.00	Nov. 1, 1979	29.75
Feb. 8	24.54	May 4	18.00	Aug. 2	26.60	Nov. 28	27.90
Mar. 8	25.29	May 30	24.68	Aug. 28	29.80	Dec. 27	26.20

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 1971-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29, 1979	175.56	Apr. 26, 1979	167.34	Aug. 2, 1979	170.74	Nov. 1, 1979	193.94
Mar. 1	181.52	June 4	170.20	Aug. 30	180.84	Nov. 28	194.44
Mar. 27	167.54	June 25	171.75	Sept. 26	188.73	Dec. 28	193.67

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 1957-79.

Highest 1979 water level 231.44 ft below lsd on June 22; lowest 1979 water level 251.64 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	251.09	246.62	244.13	239.85	234.90	233.44	232.85	233.20	235.36	237.17	239.30	240.75
10	250.31	246.28	244.01	240.18	234.24	232.28	232.73	233.46	235.80	238.06	238.37	241.49
15	247.97	244.58	245.47	240.41	234.19	232.12	232.93	234.00	236.83	239.00	240.08	241.50
20	247.18	244.12	244.34	238.70	234.57	231.52	233.24	234.10	236.52	238.85	240.37	241.46
25	246.53	244.99	241.11	236.23	234.66	232.24	232.60	234.21	236.59	238.75	240.41	242.39
Eom	247.93	243.95	240.22	235.62	234.87	232.37	232.89	234.75	236.80	238.98	241.23	242.73

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 1952-79.

Highest 1979 water level 82.86 ft below lsd on May 2; lowest 1979 water level 100.19 ft below lsd on Oct. 29.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	97.13	91.47	91.51	86.85	83.23	85.50	95.28	91.55	95.59	99.05	99.37	97.81
10	95.16	90.12	92.76	86.87	84.53	83.39	93.22	93.78	96.16	99.42	99.34	98.39
15	92.33	90.16	93.11	88.25	86.08	85.03	93.18	92.60	97.24	99.49	99.37	97.84
20	91.71	90.41	92.31	87.47	89.62	88.18	91.71	93.67	96.03	99.63	98.42	97.78
25	91.58	90.83	87.55	83.39	90.33	91.53	91.33	93.91	96.64	99.74	97.44	97.50
Eom	91.83	91.28	86.97	83.03	90.60	94.88	90.35	94.70	98.02	99.31	97.87	96.39

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 1964-79.

Highest 1979 water level 96.19 ft below lsd on May 3; lowest 1979 water level 108.68 ft below lsd on Oct. 29.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	107.19	102.98	102.51	99.09	96.33	98.30	104.22	101.62	104.75	107.63	108.23	107.49
10	106.44	102.03	103.11	98.85	96.89	96.77	103.07	103.04	105.09	108.13	108.33	107.66
15	104.26	101.81	103.33	99.63	97.66	97.24	103.10	102.64	106.14	108.14	108.36	107.38
20	103.54	101.82	102.95	99.42	100.07	98.96	102.51	103.23	105.56	108.41	107.87	107.32
25	103.23	102.12	100.24	97.09	100.46	101.12	102.15	103.66	105.81	108.51	107.18	107.16
Eom	103.28	102.24	99.42	96.60	100.83	103.46	101.07	104.05	106.80	108.33	107.60	106.56

292845098255401. AY-68-37-203 (J-17)[a/]. 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[b/] below lsd, Aug. 17, 1956. Records available 1932-79[c/].

Highest 1979 water level 40.29 ft below lsd on May 2; lowest 1979 water level 54.56 ft below lsd on Oct. 22.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	d51.74	46.95	46.99	43.34	40.46	43.56	51.55	47.48	d50.68	53.92	53.44	52.27
10	50.82	46.00	47.91	43.24	41.61	40.93	49.18	49.43	51.08	54.24	53.60	52.37
15	48.13	45.87	48.21	44.43	42.91	42.11	49.00	48.38	52.33	53.98	53.56	51.73
20	47.30	45.86	47.51	43.97	46.09	44.94	47.95	49.10	51.05	54.18	52.70	51.75
25	47.22	46.33	44.49	40.98	46.69	47.87	47.40	49.45	51.65	54.19	51.54	51.52
Eom	47.27	46.66	43.49	40.61	46.58	51.05	46.53	49.95	52.73	53.56	52.40	50.63

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1979
(Water levels furnished by Edwards Underground Water District)--Continued

292244098295801. AY-68-45-102 (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, 1950-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 5, 1979	+50.08	Mar. 29, 1979	e+57.89	Sept. 30	+53.66	Nov. 15, 1979	+49.25
Jan. 10	+50.90	May 4	e+61.30	Oct. 5	+51.56	Dec. 5	+51.00
Feb. 10	+53.52	May 30	e+56.97	Nov. 5	+49.05	Dec. 10	+50.80
Feb. 15	+54.37	July 10	e+57.14	Nov. 10	+49.05	Dec. 15	+50.60
Feb. 19	e+54.61	Aug. 1	e+60.14	Nov. 13	e+48.85	Dec. 29	e+55.84
Mar. 8	e+56.30	Aug. 28	e+60.37				

294720098030001. DX-68-16-801 (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 131.70 ft below lsd, May 25, 1977; lowest 169.56 ft below lsd, Oct. 1, 1956. Records available 1936-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1979	138.28	Apr. 24, 1979	134.59	July 25, 1979	138.90	Oct. 25, 1979	142.15
Feb. 26	136.31	May 29	135.14	Aug. 27	139.21	Nov. 27	143.34
Mar. 26	135.14	June 26	136.15	Sept. 25	140.61	Dec. 26	143.73

294310098080001. DX-68-23-302 (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 1948-79.

Highest 1979 water level 13.73 ft below lsd on Apr. 29; lowest 1979 water level 15.45 ft below lsd on Jan. 3-4.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	15.44	14.85	14.67	14.30	13.85	.....	14.46	14.30	14.63	15.03	15.28	15.28
10	14.96	14.72	14.72	14.24	13.85	.....	14.37	14.45	14.69	15.12	15.29	15.27
15	15.03	14.66	14.74	14.28	13.88	.....	14.37	14.41	14.80	15.15	15.31	15.28
20	14.97	14.65	.....	14.27	13.95	.....	14.39	14.47	14.80	15.22	15.27	15.28
25	14.91	14.66	.....	14.10	14.05	.....	14.38	14.52	14.83	15.25	15.19	15.24
Eom	14.91	14.65	14.32	14.00	14.10	14.28	14.27	14.56	14.93	15.28	15.29	15.22

293855098125901. DX-68-23-701 (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, 1937-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1979	32.58	Apr. 24, 1979	22.28	July 25, 1979	26.10	Oct. 25, 1979	30.50
Feb. 26	29.65	May 29	24.28	Aug. 27	26.51	Nov. 27	29.40
Mar. 26	24.14	June 26	25.92	Sept. 25	27.92	Dec. 26	34.97

293636098190901. DX-68-30-208 (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, 1955-79.

Highest 1979 water level 118.33 ft below lsd on May 3; lowest 1979 water level 130.51 ft below lsd on Oct. 28.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	129.24	125.16	124.64	121.15	118.43	120.01	125.61	123.19	126.35	129.20	130.23	129.57
10	128.53	124.21	.....	120.91	118.90	118.80	124.57	124.40	126.72	129.68	130.31	129.76
15	.....	123.97	.....	121.67	119.57	119.17	124.65	124.26	127.68	129.80	130.38	129.50
20	.....	123.97	.....	121.55	121.25	120.50	124.25	124.76	127.40	130.21	129.91	129.40
25	.....	124.27	121.90	119.30	122.09	122.45	123.89	125.35	127.60	130.36	129.35	129.27
Eom	125.45	124.32	121.32	118.77	122.60	125.51	122.70	125.70	128.44	130.35	129.65	128.78

300025097533501. LR-58-57-902 (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, 1971-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1979	208.84	Apr. 24, 1979	189.82	July 25, 1979	192.30	Oct. 25, 1979	205.35
Feb. 26	200.49	May 29	187.80	Aug. 27	195.10	Nov. 27	210.17
Mar. 26	194.75	June 26	189.94	Sept. 25	199.49	Dec. 26	215.19

300510097504001. LR-58-58-101 (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 1937-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1979	92.42	Apr. 24, 1979	77.80	July 25, 1979	85.17	Oct. 25, 1979	109.03
Feb. 26	108.19	May 29	91.86	Aug. 27	80.94	Nov. 27	113.68
Mar. 26	95.78	June 26	81.68	Sept. 25	105.87	Dec. 26	111.58

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1979
(Water levels furnished by Edwards Underground Water District)--Continued

295909097523301. 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, Mar. 29, 1968; lowest 177.60 ft below lsd, July 10, 1978. Records available 1937-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1979	145.05	Apr. 24, 1979	138.34	July 25, 1979	141.44	Oct. 25, 1979	144.41
Feb. 26	142.42	May 29	133.14	Aug. 27	142.34	Nov. 27	142.88
Mar. 26	138.65	June 26	138.70	Sept. 25	142.53	Dec. 26	144.30

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 151.23 ft below lsd, Oct. 29, 1973; lowest 177.15 ft below lsd, Nov. 2, 1972. Records available 1954-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1979	155.88	Apr. 24, 1979	152.75	July 25, 1979	155.47	Oct. 25, 1979	157.24
Feb. 26	155.29	May 29	152.90	Aug. 27	155.90	Nov. 27	157.51
Mar. 26	153.93	June 26	154.34	Sept. 25	156.72	Dec. 26	157.68

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, 1974-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1979	116.75	Apr. 24, 1979	113.23	July 25, 1979	115.88	Oct. 25, 1979	117.97
Feb. 26	115.96	May 29	113.26	Aug. 27	116.24	Nov. 27	118.31
Mar. 26	114.84	June 26	114.70	Sept. 25	117.29	Dec. 26	118.55

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 101.55 ft below lsd, Aug. 28, 1978. Records available 1973-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 26, 1979	97.90	Apr. 24, 1979	94.23	July 25, 1979	96.95	Oct. 25, 1979	99.07
Feb. 26	97.33	May 29	97.00	Aug. 27	97.32	Nov. 27	99.40
Mar. 26	95.82	June 26	95.75	Sept. 25	98.40	Dec. 26	99.68

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, 1954-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29, 1979	120.81	Apr. 26, 1979	108.98	Aug. 2, 1979	114.23	Nov. 1, 1979	123.19
Mar. 1	120.34	May 30	118.85	Aug. 30	118.24	Nov. 28	121.62
Mar. 27	115.80	June 29	126.33	Sept. 26	120.91	Dec. 27	121.10

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 1950-79.

Highest 1979 water level 28.62 ft below lsd on June 12; lowest 1979 water level 46.55 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	45.45	40.78	40.96	35.50	30.29	33.23	44.70	36.44	40.24	43.67	43.51	41.78
10	44.73	40.12	41.88	34.74	31.62	29.04	40.74	38.22	40.09	44.03	43.86	42.36
15	42.41	39.71	42.16	.....	35.58	29.51	39.77	37.67	41.67	43.57	43.82	42.09
20	41.46	39.66	41.54	.....	42.30	36.77	37.61	38.19	40.80	43.80	42.75	41.08
25	40.97	40.25	37.58	30.61	42.20	40.50	36.02	38.86	41.39	44.17	41.86	41.65
Eom	41.30	40.23	35.94	30.60	39.25	45.16	35.39	39.44	42.47	43.84	42.12	41.05

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 1957-79.

Highest 1979 water level 73.41 ft below lsd on Sept. 1; lowest 1979 water level 107.38 ft below lsd on Jan. 31.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	106.99	107.16	106.62	98.94	91.60	83.29	e75.29	74.05	73.44	.....	.....	77.35
10	107.14	106.99	106.50	98.02	91.03	78.74	75.04	73.83	73.46	74.13	.....	77.91
15	107.24	106.62	106.60	97.96	90.89	76.91	.....	73.80	73.61	74.27	.....	78.40
20	106.82	106.63	105.76	94.96	90.50	76.28	.....	73.63	73.49	74.40	.....	78.70
25	107.05	106.77	100.67	92.35	90.41	75.87	.....	73.51	73.73	74.79	.....	79.23
Eom	107.38	106.43	99.39	92.09	90.11	75.48	74.16	73.45	73.77	74.92	77.26	79.70

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1979
(Water levels furnished by Edwards Underground Water District)--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, 1940-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30, 1979	173.10	Apr. 26, 1979	158.30	June 25, 1979	155.29	Nov. 1, 1979	165.81
Feb. 28	188.76	May 31	164.37	Aug. 29	165.75	Nov. 28	160.09
Mar. 27	186.82						

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 1960-79.

Highest 1979 water level, 195.32 ft below lsd on June 13; lowest 1979 water level 218.31 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	217.26	213.36	213.75	205.97	200.00	200.75	211.27	203.83	206.41	210.23	210.28	208.71
10	216.53	212.85	214.67	206.56	202.11	195.88	207.02	204.62	206.44	210.41	210.68	209.30
15	214.86	212.44	214.97	206.38	207.98	196.52	206.05	204.29	207.88	209.80	210.73	209.13
20	213.89	212.30	213.84	204.86	214.54	205.43	204.09	204.71	207.40	210.15	209.60	208.84
25	213.53	212.93	208.68	200.59	214.21	207.98	202.24	205.29	208.30	210.76	208.71	208.71
Eom	213.87	212.79	206.65	200.35	209.24	213.60	201.82	205.96	209.39	210.42	208.94	208.36

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 1958-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29, 1979	122.59	Apr. 26, 1979	110.27	July 30, 1979	112.68	Nov. 1, 1979	121.46
Feb. 28	121.87	May 31	118.97	Aug. 29	116.96	Nov. 28	119.69
Mar. 27	117.55	June 29	125.31	Sept. 26	119.25	Dec. 27	119.10

292339099401501. 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 1957-79.

Highest 1979 water level 32.33 ft below lsd on June 11; lowest 1979 water level 65.80 ft below lsd on Nov. 6 and Dec. 24.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	65.40	65.35	65.22	50.00	45.73	34.37	42.32	56.04	61.98	64.93	65.74	65.54
10	65.45	64.91	65.28	52.40	47.88	32.37	44.59	57.65	62.69	65.20	65.78	65.65
15	65.53	64.82	65.26	54.60	50.70	32.69	46.98	58.65	.....	65.35	65.78	65.66
20	65.42	65.03	.....	49.05	53.00	34.04	49.53	59.83	.....	65.42	65.54	65.70
25	65.45	65.20	.....	42.96	54.86	36.45	51.82	60.58	.....	65.60	66.62	65.73
Eom	65.60	65.12	47.89	44.17	56.75	39.50	54.06	61.33	.....	65.69	65.66	65.75

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 315.19 ft below lsd, Apr. 4, 1976. Records available 1974-79.

Highest 1979 water level 276.51 ft below lsd on Aug. 28; lowest 1979 water level 309.59 ft below lsd on Jan. 14.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	309.15	308.92	307.14	302.54	295.07	288.91	281.67	277.63	276.80	279.04	283.10	286.11
10	309.16	308.72	306.87	300.82	293.95	287.36	.....	277.08	277.07	279.77	283.56	287.09
15	309.31	307.95	306.90	300.34	293.23	285.74	.....	276.94	.....	.....	284.59	287.75
20	308.90	307.54	306.42	298.94	292.19	284.55	.....	276.65	.....	.....	284.82	.....
25	308.90	307.62	304.96	297.00	291.72	283.46	.....	276.58	.....	.....	285.32	.....
Eom	309.35	307.03	303.53	296.10	291.06	282.37	278.04	276.58	278.60	282.53	286.17	.....

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 1971-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Apr. 30, 1979	106.93	June 27, 1979	103.82	Aug. 31, 1979	98.49	Nov. 30, 1979	109.94
May 31	125.44	July 31	96.14				

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1979
(Water levels furnished by Edwards Underground Water District)--Continued

291909099281001. YP-69-45-401 (I-4-35) (I-4-4). Unused artesian well in Edwards aquifer, diam 10 in, depth 1,476 ft, cased tc 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 1956-79.

Highest 1979 water level 140.22 ft below lsd on June 16; lowest 1979 water level 170.31 ft below lsd on Jan. 1.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	169.22	166.87	167.42	157.18	148.60	143.90	149.11	144.90	147.80	151.18	152.75	151.69
10	168.70	166.59	168.45	155.59	.....	.....	146.98	146.18	148.12	151.58	152.77	152.37
15	168.19	166.20	168.47	156.48	.....	.....	146.97	146.23	148.93	151.18	153.20	152.48
20	167.47	166.04	166.23	154.21	.....	142.72	146.40	146.75	149.58	151.58	152.20	152.28
25	167.15	166.39	161.68	150.60	.....	145.87	144.32	147.55	150.74	152.19	151.81	152.35
Eom	167.37	166.33	158.62	149.45	156.70	149.30	143.91	147.95	151.00	152.10	152.02	152.45

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 50.81 ft below lsd, Feb. 11, 1975; lowest 126.17 ft below lsd, Mar. 14, 1957. Records available 1929-33, 1935-42, 1944-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30, 1979	60.19	Apr. 30, 1979	58.03	July 31, 1979	57.28	Oct. 29, 1979	58.96
Feb. 27	61.34	May 31	59.06	Aug. 31	57.80	Nov. 30	59.20
Mar. 29	60.51	June 27	55.88	Oct. 1	58.39		

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 1956-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30, 1979	45.99	Apr. 30, 1979	43.36	July 31, 1979	41.72	Oct. 29, 1979	43.11
Feb. 27	46.85	May 31	44.50	Aug. 31	42.21	Nov. 30	43.39
Mar. 29	46.60	June 27	40.60	Oct. 1	42.85		

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, 1934-79.

Highest 1979 water level 22.90 ft below lsd on June 18; lowest 1979 water level 28.79 ft below lsd on Mar. 17, 18.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	27.62	27.71	28.42	27.81	25.49	23.47	23.86	24.75	25.04	25.55	25.84	25.74
10	27.58	27.76	28.63	27.54	25.43	23.37	24.08	25.03	25.07	25.63	25.98	25.75
15	27.57	27.87	28.76	27.44	25.66	23.00	24.46	24.95	25.24	25.63	26.14	25.72
20	27.55	28.04	28.76	27.05	25.93	22.95	24.55	25.00	25.10	25.70	26.00	25.70
25	27.57	28.15	28.48	26.09	26.10	23.26	24.31	24.96	25.31	25.76	25.86	25.69
Eom	27.61	28.25	28.12	25.77	26.26	23.67	24.68	24.97	25.48	25.78	25.82	25.76

291127099501201. YP-69-50-403 (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, 1961-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 30, 1979	46.34	Apr. 40, 1979	44.50	July 31, 1979	45.19	Oct. 1, 1979	47.60
Feb. 27	47.40	May 31	45.47	Aug. 31	45.87	Nov. 30	45.56
Mar. 29	46.33	June 27	42.41				

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, 1966-79.

Highest 1979 water level 23.25 ft below lsd on June 6; lowest 1979 water level 32.06 ft below lsd on May 27.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	28.70	30.55	29.74	27.82	28.31	23.55	30.18	31.28	30.04	31.85	30.75	28.85
10	28.65	30.67	29.88	27.76	28.89	24.20	30.73	30.98	30.48	29.95	30.20	28.80
15	28.12	31.83	29.55	28.22	30.01	25.29	30.80	30.94	30.30	.....	29.92	28.67
20	29.56	31.13	28.61	27.60	31.15	27.22	.....	.....	31.02	.....	29.11	28.55
25	30.42	30.57	28.11	27.00	31.88	28.13	.....	.....	30.31	.....	28.67	28.45
Eom	30.45	30.19	27.89	27.28	29.98	29.40	30.91	.....	.....	30.40	28.56	28.35

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1979
(Water levels furnished by Edwards Underground Water District)--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 1957-79.

Highest 1979 water level 40.40 ft below lsd on Jan. 17, 18; lowest 1979 water level 42.39 ft below lsd on Oct. 31 and Nov. 2.

Highest water level for the day, from recorder graph, 1979

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	42.34	42.28	42.32	42.10	42.14	41.98	42.15	42.00	42.18	42.33	42.37	42.34
10	42.27	42.29	42.30	42.13	42.05	42.00	42.12	42.03	42.23	42.34	42.12	42.32
15	41.14	42.29	42.21	41.83	42.14	42.09	41.36	42.16	42.29	42.35	42.35	42.32
20	41.29	42.30	42.24	41.83	42.10	42.12	42.17	42.11	42.32	42.35	42.35	42.34
25	41.66	42.32	42.06	41.99	42.12	41.90	42.05	42.15	42.34	42.35	42.34	42.33
Eom	42.22	42.32	42.14	42.07	42.15	42.16	42.20	42.16	42.34	42.39	42.35	42.34

291412100033001. YP-70-56-201 (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 1937-79.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 27, 1979	61.78	Apr. 30, 1979	47.91	June 27, 1979	59.66	Aug. 31, 1979	48.51
Mar. 29	49.24	May 31	49.17	July 31	47.65	Oct. 29	49.84

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

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979
BEXAR COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	OXYGEN DEMAND, CHEMICAL (LOW LEVEL) (MG/L) (00335)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L) (00310)
AY-68-21-804	78-12-13	1230	60	279	10	530	6.9	23.5	--	.2
	79-04-06	1130	60	279	10	525	7.1	23.5	--	.6
	79-06-21	1200	60	279	10	526	6.9	23.5	--	--
	79-10-25	1300	60	279	5.0	535	7.0	23.5	--	.8
AY-68-27-302	79-07-23	1230	60	365	10	499	--	23.0	--	--
AY-68-27-303	78-12-11	1430	60	354	15	528	6.9	22.5	--	.2
	79-04-04	1400	60	354	15	533	7.0	22.5	--	.4
	79-10-04	1230	60	354	15	470	7.0	22.5	--	.4
AY-68-27-305	79-04-04	1230	60	253	3.0	537	6.9	22.5	--	1.4
	79-10-04	1030	--	253	--	485	7.0	22.0	--	1.3
AY-68-27-503	79-07-23	1045	180	435	275	536	7.1	21.5	--	--
AY-68-27-504	79-07-23	1015	120	508	525	449	7.0	23.0	--	--
AY-68-28-202	79-07-24	1200	240	457	125	530	7.1	23.0	--	--
AY-68-28-203	79-07-24	1115	180	435	350	597	7.0	23.5	--	--
AY-68-28-501	79-08-27	1200	240	469	100	550	6.9	22.5	--	--
AY-68-28-502	79-08-27	1230	270	506	110	555	6.9	23.1	--	--
AY-68-28-508	79-08-01	1130	1440	396	150	449	6.9	23.0	--	--
AY-68-28-512	78-11-29	1200	60	400	7.5	510	6.8	23.0	--	.2
	78-12-12	1130	60	400	7.0	510	6.8	23.0	--	.2
	79-04-05	1030	60	400	7.0	525	7.1	23.0	--	1.1
	79-06-20	1320	60	400	7.0	535	7.0	22.5	--	.6
	79-10-09	1000	60	400	7.0	515	6.9	22.5	--	.0
AY-68-28-608	78-12-12	1430	60	500	15	526	6.8	22.0	--	.0
	79-04-06	1400	60	500	15	556	7.1	20.5	--	2.5
	79-06-20	1500	60	500	15	564	7.0	22.0	--	--
	79-10-09	1130	60	500	15	535	7.0	21.5	--	.4
AY-68-28-903	79-08-01	1000	60	762	3500	748	6.9	22.5	--	--
AY-68-29-104	79-07-23	1415	180	602	400	622	7.0	23.0	--	--
AY-68-29-109	79-07-23	1500	60	460	450	592	7.1	23.5	--	--
AY-68-29-208	78-11-29	1500	60	266	10	511	6.7	23.0	--	.4
	78-12-13	1340	60	266	10	520	6.9	23.0	--	.3
	79-04-06	1015	60	266	10	521	7.1	23.0	--	2.2
	79-06-21	1345	60	266	10	521	7.0	23.0	--	--
AY-68-29-208	79-10-25	1400	30	266	10	528	6.9	23.5	--	.4
AY-68-29-209	78-11-29	1330	60	315	10	497	6.7	23.0	--	.2
	78-12-13	1100	60	315	10	--	--	--	--	.3
	79-04-06	1250	60	315	10	509	7.0	23.0	--	.8
	79-06-21	1015	60	315	10	507	7.0	23.5	--	--
	79-10-25	1130	60	315	10	520	6.9	23.0	--	.4
AY-68-29-303	79-08-01	1330	1440	527	150	547	6.9	22.5	--	--
AY-68-29-401	79-07-23	1430	360	517	600	606	7.0	23.0	--	--
AY-68-29-405	79-08-27	1330	120	395	100	623	6.8	23.0	--	--
AY-68-29-702	79-07-25	1000	1440	872	3000	577	7.0	22.5	--	--
AY-68-29-805	79-07-19	1030	45	800	2700	556	7.2	23.0	--	--
AY-68-35-102	78-11-06	1100	30	796	--	545	6.9	22.5	--	--
	79-07-25	1145	90	796	200	555	7.1	22.5	2	--
AY-68-36-102	79-07-25	1315	1440	768	9000	568	7.0	22.0	--	--
AY-68-36-508	78-12-22	1330	120	950	5500	475	7.2	24.0	--	--
	79-08-09	1015	240	950	5500	477	6.9	24.5	--	--
AY-68-37-101	79-07-30	1340	1440	1005	7700	550	--	23.0	--	--
AY-68-37-404	79-07-26	1200	960	1326	4000	483	7.1	25.0	--	--
AY-68-37-506	79-07-30	1440	240	1407	7600	479	--	27.0	--	--
AY-68-37-705	79-07-26	1430	1440	1798	3000	496	7.1	28.0	--	--
AY-68-44-107	79-08-02	1230	1440	1820	1500	469	7.0	26.0	--	--
AY-68-44-215	79-08-02	1030	1440	1174	430	482	6.9	26.0	--	--

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)
AY-68-21-804	78-12-13	10	<1	2	250	0	98	2.3	2.9	2
	79-04-06	<1	<1	<1	290	24	110	2.9	3.9	3
	79-06-21	<1	<1	<1	290	25	110	3.1	3.8	3
	79-10-25	<1	<1	<1	280	14	110	2.4	3.6	3
AY-68-27-302	79-07-23	<1	<1	<1	260	26	86	12	5.5	5
AY-68-27-303	78-12-11	<1	<1	<1	270	19	93	10	4.6	4
	79-04-04	<1	<1	K1	280	29	92	11	5.5	4
	79-10-04	<1	<1	<1	260	12	89	8.7	4.8	4
AY-68-27-305	79-04-04	460	<1	K12	290	32	100	8.9	5.3	4
	79-10-04	4	<1	<1	260	8	92	7.9	5.1	4
AY-68-27-503	79-07-23	<1	<1	<1	270	27	83	14	6.4	6
AY-68-27-504	79-07-23	1300	30	46	220	22	71	10	6.8	6
AY-68-28-202	79-07-24	11	1	6	250	0	83	9.4	6.0	6
AY-68-28-203	79-07-24	<1	<1	<1	280	19	100	7.7	8.3	7
AY-68-28-501	79-08-27	--	--	--	280	30	100	6.4	7.0	5
AY-68-28-502	79-08-27	--	--	--	290	30	94	14	6.5	5
AY-68-28-508	79-08-01	<1	<1	<1	210	22	68	10	5.4	6
AY-68-28-512	78-11-29	<1	<1	<1	270	23	92	9.5	5.2	4
	78-12-12	<1	<1	3	240	4	82	9.0	5.1	4
	79-04-05	K1	<1	<1	290	40	100	8.8	5.9	4
	79-06-20	<1	<1	<1	270	22	92	9.4	6.0	5
	79-10-09	<1	<1	<1	250	37	89	6.9	4.2	4
AY-68-28-608	78-12-12	27	6	2	250	0	93	4.5	5.4	4
	79-04-06	K110	K19	K14	280	21	97	10	6.5	5
	79-06-20	21	5	5	290	29	97	12	7.2	5
	79-10-09	<1	<1	<1	260	13	95	5.4	5.8	5
AY-68-28-903	79-08-01	<1	<1	<1	320	0	110	12	25	16
AY-68-29-104	79-07-23	<1	<1	<1	290	10	81	21	5.8	6
AY-68-29-109	79-07-23	<1	<1	<1	290	4	100	10	8.9	7
AY-68-29-208	78-11-29	2	<1	<1	290	27	110	3.5	4.6	3
	78-12-13	<1	<1	<1	250	0	96	2.7	4.6	4
	79-04-06	<1	<1	<1	260	2	98	2.8	5.3	4
	79-06-21	<1	<1	<1	290	24	110	2.9	5.3	4
AY-68-29-208	79-10-25	<1	<1	<1	290	23	110	2.7	5.4	4
AY-68-29-209	78-11-29	<1	<1	<1	260	6	100	2.6	3.8	3
	78-12-13	<1	<1	<1	--	--	--	--	--	--
	79-04-06	<1	<1	<1	260	5	100	2.4	4.4	4
	79-06-21	<1	<1	<1	260	6	100	2.6	4.2	3
	79-10-25	<1	<1	<1	280	28	110	1.8	4.3	3
AY-68-29-303	79-08-01	<1	<1	<1	280	19	98	8.8	5.1	4
AY-68-29-401	79-07-23	--	--	--	290	4	100	10	8.1	7
AY-68-29-405	79-08-27	--	--	--	320	25	110	11	10	6
AY-68-29-702	79-07-25	<1	<1	<1	300	36	98	13	7.9	7
AY-68-29-805	79-07-19	--	--	--	280	42	84	17	10	7
AY-68-35-102	78-11-06	--	--	--	--	--	--	--	--	--
	79-07-25	--	--	--	260	36	75	17	7.4	6
AY-68-36-102	79-07-25	--	--	--	260	21	79	15	9.3	9
AY-68-36-508	78-12-22	--	--	--	230	20	67	14	7.2	6
	79-08-09	--	--	--	220	10	63	14	7.9	10
AY-68-37-101	79-07-30	<1	<1	<1	250	22	73	16	8.4	9
AY-68-37-404	79-07-26	<1	<1	<1	210	5	61	14	7.7	10
AY-68-37-506	79-07-30	<1	<1	<1	210	15	60	15	8.5	11
AY-68-37-705	79-07-26	<1	<1	<1	220	18	61	16	8.5	11
AY-68-44-107	79-08-02	--	--	--	230	31	65	16	7.7	9
AY-68-44-215	79-08-02	--	--	--	240	40	70	17	7.5	6

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE (MG/L AS HCO3) (00440)	CARBONATE (MG/L AS CO3) (00445)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	BROMIDE DISSOLVED (MG/L AS BR) (71870)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)
AY-68-21-804	78-12-13	.1	.6	310	0	.5	9.4	.0	--	12
	79-04-06	.1	1.0	320	0	4.7	7.3	.1	--	10
	79-06-21	.1	.7	320	0	7.5	7.6	.1	--	11
	79-10-25	.1	.7	330	0	4.7	7.4	.1	--	13
AY-68-27-302	79-07-23	.2	.9	290	0	14	10	.2	--	10
AY-68-27-303	78-12-11	.1	.8	310	0	5.0	13	.1	--	11
	79-04-04	.1	1.0	300	0	15	11	.2	--	14
	79-10-04	.1	.9	300	0	13	10	.1	--	11
AY-68-27-305	79-04-04	.1	.9	310	0	10	9.8	.1	--	14
	79-10-04	.1	.9	310	0	13	11	.1	--	11
AY-68-27-503	79-07-23	.2	1.1	290	0	21	11	.2	--	11
AY-68-27-504	79-07-23	.2	2.1	240	0	21	10	.2	--	10
AY-68-28-202	79-07-24	.2	1.2	300	0	19	12	.2	--	12
AY-68-28-203	79-07-24	.2	1.3	320	0	12	26	.1	--	13
AY-68-28-501	79-08-27	.2	1.0	300	0	6.3	16	.1	--	12
AY-68-28-502	79-08-27	.2	1.2	320	0	20	13	.2	--	12
AY-68-28-508	79-08-01	.2	.9	230	0	19	12	.2	--	11
AY-68-28-512	78-11-29	.1	.9	300	0	8.8	11	.1	--	11
	78-12-12	.1	.8	290	0	11	11	.1	--	11
	79-04-05	.2	1.1	300	0	15	9.9	.1	--	15
	79-06-20	.2	1.0	300	0	18	11	.1	--	11
	79-10-09	.1	1.1	260	0	16	9.9	.1	--	11
AY-68-28-608	78-12-12	.1	1.1	310	0	5.5	12	.1	--	13
	79-04-06	.2	1.2	320	0	17	10	.1	--	8.8
	79-06-20	.2	1.1	320	0	25	10	.2	--	9.5
	79-10-09	.2	1.3	300	0	16	11	.1	--	12
AY-68-28-903	79-08-01	.6	1.6	400	0	27	26	.2	--	16
AY-68-29-104	79-07-23	.1	3.2	340	0	17	12	.3	--	12
AY-68-29-109	79-07-23	.2	.9	350	0	10	19	.2	--	14
AY-68-29-208	78-11-29	.1	.6	320	0	2.4	12	.1	--	13
	78-12-13	.1	.5	310	0	.9	11	.1	--	13
	79-04-06	.1	.5	310	0	6.2	9.3	.1	--	11
	79-06-21	.1	.7	320	0	9.1	9.5	.1	--	12
AY-68-29-208	79-10-25	.1	.5	320	0	5.9	9.8	.1	--	14
AY-68-29-209	78-11-29	.1	.7	310	0	1.2	7.7	.1	--	13
	78-12-13	--	--	--	--	--	--	--	--	--
	79-04-06	.1	.8	310	0	5.7	7.5	.1	--	17
	79-06-21	.1	.8	310	0	7.5	7.6	.1	--	12
	79-10-25	.1	.7	310	0	4.4	8.7	.1	--	14
AY-68-29-303	79-08-01	.1	1.0	320	0	9.8	8.9	.2	--	12
AY-68-29-401	79-07-23	.2	1.0	350	0	12	15	.2	--	13
AY-68-29-405	79-08-27	.2	1.5	360	0	19	17	.2	--	13
AY-68-29-702	79-07-25	.2	1.2	320	0	23	12	.2	.1	12
AY-68-29-805	79-07-19	.3	1.5	290	0	32	14	.2	--	11
AY-68-35-102	78-11-06	--	--	250	0	--	--	--	--	--
	79-07-25	.2	1.3	270	0	42	15	.3	.1	12
AY-68-36-102	79-07-25	.3	1.4	290	0	27	18	.2	.1	12
AY-68-36-508	78-12-22	.2	1.1	250	0	17	14	.1	--	12
	79-08-09	.2	1.1	250	0	17	15	.2	--	13
AY-68-37-101	79-07-30	.2	1.4	276	0	33	17	.2	.1	12
AY-68-37-404	79-07-26	.2	1.1	250	0	16	19	.2	.1	12
AY-68-37-506	79-07-30	.3	1.2	240	0	22	17	.3	.1	12
AY-68-37-705	79-07-26	.3	1.2	244	0	24	19	.3	.1	12
AY-68-44-107	79-08-02	.2	1.0	240	0	15	15	.2	--	13
AY-68-44-215	79-08-02	.2	1.1	250	0	21	15	.2	--	11

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)
AY-68-21-804	78-12-13	279	3.0	.00	.01	.22	.23	3.2
	79-04-06	299	.86	.00	.00	.06	.06	.92
	79-06-21	302	1.5	.00	.00	.08	.08	1.6
	79-10-25	305	2.5	.02	.04	.34	.38	2.9
AY-68-27-302	79-07-23	282	1.7	.02	.00	.15	.15	1.9
AY-68-27-303	78-12-11	290	2.4	.00	.01	.36	.37	2.8
	79-04-04	298	1.7	.00	.02	.07	.09	1.8
	79-10-04	285	1.5	.00	.01	.44	.45	2.0
AY-68-27-305	79-04-04	304	2.0	.00	.00	.10	.10	2.1
	79-10-04	294	1.4	.00	.01	.38	.39	1.8
AY-68-27-503	79-07-23	291	1.7	.02	.00	.18	.18	1.9
AY-68-27-504	79-07-23	249	.87	.02	.00	.90	.90	1.8
AY-68-28-202	79-07-24	291	.91	.02	.00	.11	.11	1.0
AY-68-28-203	79-07-24	326	.98	.02	.00	.21	.21	1.2
AY-68-28-501	79-08-27	297	.78	.02	.00	.07	.07	.87
AY-68-28-502	79-08-27	319	.79	.02	.00	.17	.17	.98
AY-68-28-508	79-08-01	240	2.5	.02	.01	.18	.19	2.7
AY-68-28-512	78-11-29	286	1.5	.01	.01	.36	.37	1.9
	78-12-12	273	--	--	.01	--	--	1.9
	79-04-05	304	1.4	.00	.00	.09	.09	1.5
	79-06-20	296	1.5	.00	.00	.03	.03	1.5
	79-10-09	266	.56	.00	.03	.33	.36	.92
AY-68-28-608	78-12-12	287	1.1	.00	.01	.19	.20	1.3
	79-04-06	309	.64	.00	.00	.10	.10	.74
	79-06-20	320	.67	.00	.00	.04	.04	.71
	79-10-09	295	.63	.00	.01	.33	.34	.97
AY-68-28-903	79-08-01	415	1.5	.02	.02	.23	.25	1.8
AY-68-29-104	79-07-23	320	.86	.02	.00	.12	.12	1.0
AY-68-29-109	79-07-23	336	1.6	.02	.00	.07	.07	1.7
AY-68-29-208	78-11-29	304	1.1	.01	.01	2.4	2.4	3.5
	78-12-13	282	1.1	.00	.01	.27	.28	1.4
	79-04-06	287	.96	.00	.00	.07	.07	1.0
	79-06-21	307	.85	.00	.00	.02	.02	.87
AY-68-29-208	79-10-25	306	.97	.02	.03	.32	.35	1.3
AY-68-29-209	78-11-29	282	1.1	.01	.01	.31	.32	1.4
	78-12-13	--	--	--	.01	--	--	1.4
	79-04-06	291	--	--	.00	--	--	.77
	79-06-21	288	1.0	.00	.01	.04	.05	1.1
	79-10-25	297	1.6	.02	.04	.41	.45	2.1
AY-68-29-303	79-08-01	302	1.7	.02	.01	.10	.11	1.8
AY-68-29-401	79-07-23	332	1.2	.00	.00	.09	.09	1.3
AY-68-29-405	79-08-27	359	1.7	.02	.00	.78	.78	2.5
AY-68-29-702	79-07-25	325	1.1	.00	.00	.08	.08	1.2
AY-68-29-805	79-07-19	313	1.9	.02	.00	.16	.16	2.1
AY-68-35-102	78-11-06	--	--	--	--	--	--	--
	79-07-25	303	1.5	.02	.00	.21	.21	1.7
AY-68-36-102	79-07-25	305	1.8	.02	.00	.14	.14	1.9
AY-68-36-508	78-12-22	256	--	--	.00	.32	.32	2.0
	79-08-09	255	1.7	.00	.00	.05	.05	1.8
AY-68-37-101	79-07-30	297	1.7	.00	.01	.14	.15	1.9
AY-68-37-404	79-07-26	254	1.5	.02	.00	.13	.13	1.6
AY-68-37-506	79-07-30	255	1.5	.00	.00	.00	.00	1.5
AY-68-37-705	79-07-26	263	1.3	.02	.00	.26	.26	1.6
AY-68-44-107	79-08-02	251	1.5	.02	.01	.08	.09	1.6
AY-68-44-215	79-08-02	266	.94	.02	.00	.10	.10	1.1

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC TOTAL (MG/L AS C) (00680)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L) (38260)
AY-68-21-804	78-12-13	.010	1.4	--	--
	79-04-06	.000	.4	--	.00
	79-06-21	.010	1.7	--	--
	79-10-25	.020	11	--	--
AY-68-27-302	79-07-23	.040	--	.7	--
AY-68-27-303	78-12-11	.000	.8	--	--
	79-04-04	.000	1.3	--	.00
	79-10-04	.000	2.9	--	--
AY-68-27-305	79-04-04	.000	1.4	--	.00
	79-10-04	.000	2.4	--	--
AY-68-27-503	79-07-23	.030	--	.5	--
AY-68-27-504	79-07-23	.060	--	1.6	--
AY-68-28-202	79-07-24	.040	--	.2	--
AY-68-28-203	79-07-24	.030	--	.1	--
AY-68-28-501	79-08-27	.010	--	8.9	--
AY-68-28-502	79-08-27	.010	--	.0	--
AY-68-28-508	79-08-01	.000	--	.8	--
AY-68-28-512	78-11-29	.030	.2	--	--
	78-12-12	.010	.1	--	--
	79-04-05	.020	2.7	--	.00
	79-06-20	.000	4.1	--	--
	79-10-09	.020	.7	--	--
AY-68-28-608	78-12-12	.010	.5	--	--
	79-04-06	.000	.3	--	.00
	79-06-20	.020	.9	--	--
	79-10-09	.000	.9	--	--
AY-68-28-903	79-08-01	.000	--	5.6	--
AY-68-29-104	79-07-23	.030	--	1.1	--
AY-68-29-109	79-07-23	.040	--	.0	--
AY-68-29-208	78-11-29	.020	.4	--	--
	78-12-13	.000	.3	--	--
	79-04-06	.000	.2	--	.00
	79-06-21	.080	.0	--	--
AY-68-29-208	79-10-25	.010	5.5	--	--
AY-68-29-209	78-11-29	.020	.2	--	--
	78-12-13	.010	1.1	--	--
	79-04-06	.000	.2	--	.00
	79-06-21	.190	.2	--	--
	79-10-25	.060	4.8	--	--
AY-68-29-303	79-08-01	.050	--	3.6	--
AY-68-29-401	79-07-23	.040	--	.8	--
AY-68-29-405	79-08-27	.010	--	18	--
AY-68-29-702	79-07-25	.040	--	1.0	--
AY-68-29-805	79-07-19	.050	--	.0	--
AY-68-35-102	78-11-06	--	--	--	--
	79-07-25	.050	--	1.5	--
AY-68-36-102	79-07-25	.050	--	.0	--
AY-68-36-508	78-12-22	.040	--	.6	.10
	79-08-09	.000	--	1.4	--
AY-68-37-101	79-07-30	.010	--	2.3	--
AY-68-37-404	79-07-26	.070	--	.2	--
AY-68-37-506	79-07-30	.010	--	4.4	--
AY-68-37-705	79-07-26	.050	--	.0	--
AY-68-44-107	79-08-02	.000	--	2.5	--
AY-68-44-215	79-08-02	.100	--	1.5	--

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, DISSOLVED (UG/L AS CU) (01040)
AY-68-21-804	78-12-13	1230	279	10	60	--	--	--	--	--
	79-04-06	1130	279	10	60	0	0	1	0	0
	79-06-21	1200	279	10	60	--	--	--	--	--
	79-10-25	1300	279	5.0	60	--	--	--	--	--
AY-68-27-302	79-07-23	1230	365	10	60	1	30	<1	0	2
AY-68-27-303	78-12-11	1430	354	15	60	--	--	--	--	--
	79-04-04	1400	354	15	60	0	0	0	0	0
	79-10-04	1230	354	15	60	--	--	--	--	--
AY-68-27-305	79-04-04	1230	253	3.0	60	0	0	0	10	0
	79-10-04	1030	253	--	--	--	--	--	--	--
AY-68-27-503	79-07-23	1045	435	275	180	1	30	<1	0	4
AY-68-27-504	79-07-23	1015	508	525	120	1	0	0	0	4
AY-68-28-202	79-07-24	1200	457	125	240	1	30	<1	0	5
AY-68-28-203	79-07-24	1115	435	350	180	1	40	<1	0	2
AY-68-28-501	79-08-27	1200	469	100	240	1	0	0	0	0
AY-68-28-502	79-08-27	1230	506	110	270	1	0	0	10	1
AY-68-28-508	79-08-01	1130	396	150	1440	1	30	<1	10	1
AY-68-28-512	78-11-29	1200	400	7.5	60	--	--	--	--	--
	78-12-12	1130	400	7.0	60	--	--	--	--	--
	79-04-05	1030	400	7.0	60	0	0	0	0	0
	79-06-20	1320	400	7.0	60	--	--	--	--	--
	79-10-09	1000	400	7.0	60	--	--	--	--	--
AY-68-28-608	78-12-12	1430	500	15	60	--	--	--	--	--
	79-04-06	1400	500	15	60	0	0	0	0	0
	79-06-20	1500	500	15	60	--	--	--	--	--
	79-10-09	1130	500	15	60	--	--	--	--	--
AY-68-28-903	79-08-01	1000	762	3500	60	1	50	<1	0	2
AY-68-29-104	79-07-23	1415	602	400	180	1	30	<1	0	3
AY-68-29-109	79-07-23	1500	460	450	60	1	50	6	0	2
AY-68-29-208	78-11-29	1500	266	10	60	--	--	--	--	--
	78-12-13	1340	266	10	60	--	--	--	--	--
	79-04-06	1015	266	10	60	0	0	0	0	0
	79-06-21	1345	266	10	60	--	--	--	--	--
AY-68-29-208	79-10-25	1400	266	10	30	--	--	--	--	--
AY-68-29-209	78-11-29	1330	315	10	60	--	--	--	--	--
	79-04-06	1250	315	10	60	0	0	0	10	0
	79-06-21	1015	315	10	60	--	--	--	--	--
	79-10-25	1130	315	10	60	--	--	--	--	--
AY-68-29-303	79-08-01	1330	527	150	1440	1	30	<1	10	2
AY-68-29-401	79-07-23	1430	517	600	360	1	40	<1	0	2
AY-68-29-405	79-08-27	1330	395	100	120	1	0	0	0	1
AY-68-29-702	79-07-25	1000	872	3000	1440	1	40	<1	0	3
AY-68-29-805	79-07-19	1030	800	2700	45	1	0	0	0	3
AY-68-35-102	79-07-25	1145	796	200	90	1	30	1	0	3
AY-68-36-102	79-07-25	1315	768	9000	1440	1	40	<1	0	1
AY-68-36-508	78-12-22	1330	950	5500	120	1	40	<1	20	1
	79-08-09	1015	950	5500	240	1	40	<1	0	2
AY-68-37-101	79-07-30	1340	1005	7700	1440	1	40	<1	10	1
AY-68-37-404	79-07-26	1200	1326	4000	960	1	50	<1	0	1
AY-68-37-506	79-07-30	1440	1407	7600	240	1	100	<1	20	0
AY-68-37-705	79-07-26	1430	1798	3000	1440	1	100	<1	0	0
AY-68-44-107	79-08-02	1230	1820	1500	1440	1	80	<1	10	2
AY-68-44-215	79-08-02	1030	1174	430	1440	1	100	0	0	0

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	VANADIUM, DISSOLVED (UG/L AS V) (01085)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
AY-68-21-804	78-12-13	--	1	--	--	--	--	--	--
	79-04-06	0	4	10	.1	1	0	1.4	980
	79-06-21	--	5	--	--	--	--	--	--
	79-10-25	--	0	--	--	--	--	--	--
AY-68-27-302	79-07-23	<0	1	<1	.1	0	0	--	380
AY-68-27-303	78-12-11	--	1	--	--	--	--	--	--
	79-04-04	20	1	0	.0	0	0	1.6	380
	79-10-04	--	4	--	--	--	--	--	--
AY-68-27-305	79-04-04	10	0	20	.0	0	0	1.6	2300
	79-10-04	--	3	--	--	--	--	--	--
AY-68-27-503	79-07-23	<0	0	<1	.1	0	0	--	<3
AY-68-27-504	79-07-23	10	0	0	.0	0	0	--	10
AY-68-28-202	79-07-24	<10	0	<1	.0	0	0	--	8
AY-68-28-203	79-07-24	<10	0	<1	.1	0	0	--	9
AY-68-28-501	79-08-27	0	0	0	.0	0	0	--	10
AY-68-28-502	79-08-27	0	0	10	.0	0	0	--	10
AY-68-28-508	79-08-01	<10	0	<1	.0	0	0	--	<3
AY-68-28-512	78-11-29	--	5	--	--	--	--	--	--
	78-12-12	--	5	--	--	--	--	--	--
	79-04-05	10	0	0	.0	0	0	1.6	470
	79-06-20	--	4	--	--	--	--	--	--
	79-10-09	--	0	--	--	--	--	--	--
AY-68-28-608	78-12-12	--	4	--	--	--	--	--	--
	79-04-06	0	0	10	.0	1	0	1.2	310
	79-06-20	--	3	--	--	--	--	--	--
	79-10-09	--	3	--	--	--	--	--	--
AY-68-28-903	79-08-01	<10	0	<1	.0	0	0	--	8
AY-68-29-104	79-07-23	<10	0	<1	.0	0	0	--	6
AY-68-29-109	79-07-23	10	0	6	.1	0	0	--	8
AY-68-29-208	78-11-29	--	11	--	--	--	--	--	--
	78-12-13	--	3	--	--	--	--	--	--
	79-04-06	0	2	10	.0	0	0	1.7	480
	79-06-21	--	5	--	--	--	--	--	--
AY-68-29-208	79-10-25	--	4	--	--	--	--	--	--
AY-68-29-209	78-11-29	--	4	--	--	--	--	--	--
	79-04-06	10	1	0	.0	0	0	1.5	590
	79-06-21	--	3	--	--	--	--	--	--
	79-10-25	--	2	--	--	--	--	--	--
AY-68-29-303	79-08-01	<10	0	<1	.0	0	0	--	<3
AY-68-29-401	79-07-23	<10	0	<1	.0	0	0	--	<3
AY-68-29-405	79-08-27	0	0	10	.0	1	0	--	50
AY-68-29-702	79-07-25	<10	0	<1	.0	0	0	--	<3
AY-68-29-805	79-07-19	0	0	0	.1	0	0	--	10
AY-68-35-102	79-07-25	10	0	1	.0	0	0	--	60
AY-68-36-102	79-07-25	<10	0	<1	.0	1	0	--	<3
AY-68-36-508	78-12-22	<0	3	<1	.0	1	0	--	<3
	79-08-09	<10	0	<1	.0	0	0	--	<3
AY-68-37-101	79-07-30	<10	0	<1	.0	0	0	--	<3
AY-68-37-404	79-07-26	<10	0	<1	.0	0	0	--	<3
AY-68-37-506	79-07-30	<10	0	<1	.0	0	0	--	<3
AY-68-37-705	79-07-26	<10	0	<1	.0	1	0	--	5
AY-68-44-107	79-08-02	<10	0	<1	.0	0	0	--	<3
AY-68-44-215	79-08-02	0	0	10	.1	0	0	--	10

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	PCB, TOTAL (UG/L) (39516)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	CHLORDANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)
AY-68-21-804	79-04-06	1130	279	10	60	.0	--	.00	.0	.00
AY-68-27-303	79-04-04	1400	354	15	60	.0	--	.00	.0	.00
AY-68-27-305	79-04-04	1230	253	3.0	60	.0	--	.00	.0	.00
AY-68-28-508	79-08-01	1130	396	150	1440	.0	.00	.00	.0	.00
AY-68-28-512	79-04-05	1030	400	7.0	60	.0	--	.00	.0	.00
AY-68-28-608	79-04-06	1400	500	15	60	.0	--	.00	.0	.00
AY-68-29-208	79-04-06	1015	266	10	60	.0	--	.00	.0	.00
AY-68-29-209	79-04-06	1250	315	10	60	.0	.00	.00	.0	.00
AY-68-35-102	78-11-06	1100	796	--	30	.0	.00	.00	.0	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DIAZINON, TOTAL (UG/L) (39570)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)
AY-68-21-804	79-04-06	.00	.00	.00	.00	.00	.00	.00	.00	.00
AY-68-27-303	79-04-04	.00	.00	.00	.00	.00	.00	.00	.00	.00
AY-68-27-305	79-04-04	.00	.00	.00	.00	.00	.00	.00	.00	.00
AY-68-28-508	79-08-01	.00	.00	.00	.00	.00	.00	.00	.00	.00
AY-68-28-512	79-04-05	.00	.00	.00	.00	.03	.00	.00	.00	.00
AY-68-28-608	79-04-06	.00	.00	.00	.00	.00	.00	.00	.00	.00
AY-68-29-208	79-04-06	.00	.00	.00	.00	.00	.00	.00	.00	.00
AY-68-29-209	79-04-06	.00	.00	.00	.00	.00	.00	.00	.00	.00
AY-68-35-102	78-11-06	.00	.00	.00	.00	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	LINDANE TOTAL (UG/L) (39340)	MALATHION, TOTAL (UG/L) (39530)	METHYL PARATHION, TOTAL (UG/L) (39600)	METHYL TRITHION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PARATHION, TOTAL (UG/L) (39540)	PERTHANE TOTAL (UG/L) (39034)
AY-68-21-804	79-04-06	.00	.00	.00	.00	.00	.00	.00
AY-68-27-303	79-04-04	.00	.00	.00	.00	.00	.00	.00
AY-68-27-305	79-04-04	.00	.00	.00	.00	.00	.00	.00
AY-68-28-508	79-08-01	.00	.00	.00	.00	.00	.00	.00
AY-68-28-512	79-04-05	.00	.00	.00	.00	.00	.00	.00
AY-68-28-608	79-04-06	.00	.00	.00	.00	.00	.00	.00
AY-68-29-208	79-04-06	.00	.00	.00	.00	.00	.00	.00
AY-68-29-209	79-04-06	.00	.00	.00	.00	.00	.00	.00
AY-68-35-102	78-11-06	.00	.00	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	TOXAPHENE, TOTAL (UG/L) (39400)	TOTAL TRITHION (UG/L) (39786)	2,4-D, TOTAL (UG/L) (39730)	SILVEX, TOTAL (UG/L) (39760)
AY-68-21-804	79-04-06	0	.00	.00	.00
AY-68-27-303	79-04-04	0	.00	--	--
AY-68-27-305	79-04-04	0	.00	.00	.00
AY-68-28-508	79-08-01	0	.00	.00	.00
AY-68-28-512	79-04-05	0	.00	.00	.00
AY-68-28-608	79-04-06	0	.00	--	--
AY-68-29-208	79-04-06	0	.00	.00	.00
AY-68-29-209	79-04-06	0	.00	.00	.00
AY-68-35-102	78-11-06	0	.00	.00	.00

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued

COMAL COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
DX-68-15-901	79-08-22	1330	--	--	--	577	6.9	21.5	--	--
DX-68-16-502	79-08-23	1130	30	230	300	560	7.1	23.0	<1	<1
DX-68-22-901	79-08-22	1000	120	255	300	523	7.1	22.5	<1	<1
DX-68-22-902	79-08-22	1050	20	240	750	516	7.1	22.0	<1	<1
DX-68-23-301	79-08-22	1230	--	--	--	540	7.0	23.5	12	<1
DX-68-23-303	79-08-21	1040	160	1045	4700	547	--	23.5	<1	<1
DX-68-23-601	79-08-21	1120	20	365	2100	544	--	23.5	<1	<1
DX-68-23-602	79-08-21	1140	220	790	2750	545	--	23.5	<1	<1

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)
DX-68-15-901	79-08-22	--	300	24	100	11	8.2	6	.2	1.4
DX-68-16-502	79-08-23	<1	290	18	89	17	8.3	6	.2	1.1
DX-68-22-901	79-08-22	<1	260	18	86	12	6.2	5	.2	1.2
DX-68-22-902	79-08-22	<1	260	18	86	12	6.3	5	.2	.9
DX-68-23-301	79-08-22	<1	260	25	79	16	9.2	7	.2	1.5
DX-68-23-303	79-08-21	<1	280	44	80	19	9.8	7	.3	1.4
DX-68-23-601	79-08-21	<1	270	28	80	16	9.0	7	.2	1.5
DX-68-23-602	79-08-21	<1	270	21	84	15	7.9	6	.2	1.4

LOCAL IDENTIFIER	DATE OF SAMPLE	BICARBONATE (MG/L AS HCO3) (00440)	CARBONATE (MG/L AS CO3) (00445)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)
DX-68-15-901	79-08-22	330	0	9.7	13	.2	11	317	1.7	.02
DX-68-16-502	79-08-23	334	0	23	15	.2	13	331	1.8	.02
DX-68-22-901	79-08-22	300	0	7.6	11	.2	12	284	2.2	.02
DX-68-22-902	79-08-22	300	0	8.0	11	.1	12	284	1.8	.02
DX-68-23-301	79-08-22	290	0	26	15	.3	13	303	1.8	.02
DX-68-23-303	79-08-21	285	0	34	18	.2	12	315	1.7	.02
DX-68-23-601	79-08-21	290	0	26	14	.3	13	303	1.8	.02
DX-68-23-602	79-08-21	305	0	23	13	.2	12	307	1.9	.02

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)
DX-68-15-901	79-08-22	.00	.16	.16	1.9	.020	7.5
DX-68-16-502	79-08-23	.00	.05	.05	1.9	.010	4.2
DX-68-22-901	79-08-22	.00	.10	.10	2.3	.010	11
DX-68-22-902	79-08-22	.00	.40	.40	2.2	.010	--
DX-68-23-301	79-08-22	.01	.04	.05	1.9	.010	19
DX-68-23-303	79-08-21	.03	.10	.13	1.8	.010	--
DX-68-23-601	79-08-21	.00	.09	.09	1.9	.010	--
DX-68-23-602	79-08-21	.00	.44	.44	2.3	.010	--

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
COMAL COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTAN-TANEOUS (GPM) (00059)	PUMP OR FLOW PERIOD PRIOR TO SAM-PLING (MIN) (72004)	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	79-08-22	1330	--	--	--	0	100	0	10	0
DX-68-16-502	79-08-23	1130	230	300	30	1	40	<1	10	0
DX-68-22-901	79-08-22	1000	255	300	120	0	30	<1	10	0
DX-68-22-902	79-08-22	1050	240	750	20	1	30	<1	10	0
DX-68-23-301	79-08-22	1230	--	--	--	1	50	<1	0	0
DX-68-23-303	79-08-21	1040	1045	4700	160	0	0	0	0	0
DX-68-23-601	79-08-21	1120	365	2100	20	0	50	<1	0	0
DX-68-23-602	79-08-21	1140	790	2750	220	0	40	<1	0	0

LOCAL IDENT-I-FIER	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	79-08-22	0	0	0	.0	1	0	10
Dx-68-16-502	79-08-23	<10	0	<1	.0	0	0	<3
Dx-68-22-901	79-08-22	<10	0	<1	.0	0	0	<3
Dx-68-22-902	79-08-22	<10	0	<1	.0	0	0	<3
Dx-68-23-301	79-08-22	<10	0	<1	.0	0	0	4
Dx-68-23-303	79-08-21	0	0	0	.0	1	0	10
Dx-68-23-601	79-08-21	<10	1	<1	.0	0	0	<3
Dx-68-23-602	79-08-21	<10	0	<1	.2	0	0	<3

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued

HAYS COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML) (31625)
LR 58-57-101	79-07-09	0900	20	125	--	619	7.2	20.5	23000	3
LR 58-57-202	79-07-09	0950	20	200	15	670	7.2	23.0	2	<1
LR 58-57-303	79-07-09	1215	20	--	--	580	6.9	23.0	<1	<1
LR 58-57-502	79-07-09	1045	60	385	--	580	6.8	22.5	230	<1
LR 58-58-105	79-07-11	1225	20	477	--	499	6.9	22.0	600	<1
LR 58-58-407	79-07-11	0730	20	634	--	650	6.8	24.0	<1	<1
LR-58-57-402	79-07-09	0805	20	380	--	560	7.2	22.5	110	<1
LR-58-57-901	79-07-11	0820	60	575	--	480	6.9	23.0	<1	<1
LR-58-58-106	79-07-18	1030	30	450	--	570	7.1	23.0	<1	<1
LR-58-58-403	79-08-24	1410	10	390	800	588	7.0	22.0	<1	<1
LR-67-01-801	79-09-04	1415	--	--	--	588	6.9	22.0	--	--
LR-67-01-806	79-09-04	1315	330	128	2700	617	7.1	22.5	--	--
LR-67-09-105	79-08-24	1500	1440	330	1500	617	6.9	23.0	--	--
LR-67-09-111	79-08-23	1300	300	264	1000	587	7.0	23.0	<1	<1

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)
LR 58-57-101	79-07-09	45	320	4	95	19	5.7	4	.1	1.5
LR 58-57-202	79-07-09	<1	350	16	80	37	6.4	6	.2	1.6
LR 58-57-303	79-07-09	<1	310	11	78	27	5.7	6	.1	.9
LR 58-57-502	79-07-09	1	310	45	90	20	6.2	4	.2	.8
LR 58-58-105	79-07-11	1	240	23	60	23	6.4	5	.2	1.3
LR 58-58-407	79-07-11	<1	310	50	74	31	5.8	4	.1	1.1
LR-58-57-402	79-07-09	4	300	8	59	36	5.7	8	.2	2.2
LR-58-57-901	79-07-11	<1	220	42	48	25	4.8	4	.1	1.2
LR-58-58-106	79-07-18	<1	290	33	69	28	6.3	5	.2	1.4
LR-58-58-403	79-08-24	<1	290	19	73	26	6.1	4	.2	1.2
LR-67-01-801	79-09-04	--	290	26	86	18	11	8	.3	1.5
LR-67-01-806	79-09-04	--	300	33	92	16	12	8	.3	1.2
LR-67-09-105	79-08-24	--	310	50	94	19	14	4	.3	1.5
LR-67-09-111	79-08-23	<1	290	31	91	16	10	7	.3	1.3

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
HAYS COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	BICARBONATE (MG/L AS HCO3) (00440)	CARBONATE (MG/L AS CO3) (00445)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)
LR 58-57-101	79-07-09	380	0	26	9.4	.3	11	355	.08	.00
LR 58-57-202	79-07-09	410	0	19	13	.3	12	371	1.0	.00
LR 58-57-303	79-07-09	360	0	12	11	.2	11	323	1.3	.00
LR 58-57-502	79-07-09	320	0	17	15	.2	11	314	4.1	.00
LR 58-58-105	79-07-11	270	0	24	12	.4	9.8	270	1.6	.00
LR 58-58-407	79-07-11	320	0	68	10	1.1	10	354	.13	.02
LR-58-57-402	79-07-09	350	0	24	9.1	.4	12	321	.05	.00
LR-58-57-901	79-07-11	220	0	21	8.0	.5	11	224	.44	.02
LR-58-58-106	79-07-18	310	0	39	9.3	1.0	11	318	.42	.02
LR-58-58-403	79-08-24	330	0	31	11	.5	11	322	1.4	.02
LR-67-01-801	79-09-04	320	0	24	20	.2	11	324	1.3	.00
LR-67-01-806	79-09-04	320	0	27	23	.2	12	341	1.3	.00
LR-67-09-105	79-08-24	320	0	34	26	.4	11	358	1.7	.02
LR-67-09-111	79-08-23	320	0	26	18	.2	12	332	1.8	.02

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L) (38260)
LR 58-57-101	79-07-09	.00	.00	.00	.08	.010	--	.00
LR 58-57-202	79-07-09	.01	.00	.00	1.0	.000	--	.00
LR 58-57-303	79-07-09	.00	.00	.00	1.3	.050	--	.00
LR 58-57-502	79-07-09	.01	.00	.00	4.1	.000	--	.10
LR 58-58-105	79-07-11	.04	.01	.05	1.7	.010	--	.00
LR 58-58-407	79-07-11	.04	.00	.04	.19	.010	--	.00
LR-58-57-402	79-07-09	.01	.00	.00	.05	.000	--	.00
LR-58-57-901	79-07-11	.01	.08	--	--	.000	--	--
LR-58-58-106	79-07-18	.00	.03	.03	.87	.040	--	.00
LR-58-58-403	79-08-24	.09	.01	.10	1.5	.010	2.5	--
LR-67-01-801	79-09-04	.01	.67	.68	2.0	.010	4.9	--
LR-67-01-806	79-09-04	.00	.53	.53	1.8	.010	2.3	--
LR-67-09-105	79-08-24	.01	.06	.07	1.8	.010	12	--
LR-67-09-111	79-08-23	.00	.16	.16	2.0	.000	13	--

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
HAYS COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PCB, TOTAL (UG/L) (39516)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	CHLORDANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DIAZINON, TOTAL (UG/L) (39570)
LH-67-01-801	79-09-04	1415	.0	.00	.00	.0	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)	MALATHION, TOTAL (UG/L) (39530)	METHYL PARATHION, TOTAL (UG/L) (39600)
LH-67-01-801	79-09-04	.00	.00	.00	.00	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	METHYL TRITHION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PARATHION, TOTAL (UG/L) (39540)	PERTHANE TOTAL (UG/L) (39034)	TOXAPHENE, TOTAL (UG/L) (39400)	TOTAL TRITHION (UG/L) (39785)	2,4-D, TOTAL (UG/L) (39730)	SILVEX, TOTAL (UG/L) (39760)
LH-67-01-801	79-09-04	.00	.00	.00	.00	0	.00	.00	.00

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued

MEDINA COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
TD-68-26-701	79-08-04	1020	30	750	100	540	7.0	22.5	<1	<1
TD-68-33-202	79-08-13	1300	30	--	10	469	7.0	22.5	<1	<1
TD-68-33-701	79-08-07	1500	420	1242	800	479	7.1	24.0	--	--
TD-68-41-303	79-08-06	1545	480	717	380	489	7.0	24.0	--	--
TD-68-42-503	79-08-17	1215	30	1373	400	461	7.1	26.0	<1	<1
TD-69-38-905	79-08-08	1215	240	997	1500	449	7.1	24.5	--	--
TD-69-40-403	78-10-10	1200	240	518	1000	447	6.9	23.0	--	--
TD-69-46-601	79-08-07	1230	30	1289	350	483	7.1	23.5	--	--
TD-69-47-303	79-08-03	1300	60	1803	1150	469	7.0	24.5	<1	<1

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)
TD-68-26-701	79-08-04	<1	260	57	72	20	7.3	8	.2	1.4
TD-68-33-202	79-08-13	<1	210	26	70	9.6	5.8	7	.2	1.0
TD-68-33-701	79-08-07	--	220	10	68	13	7.5	9	.2	1.1
TD-68-41-303	79-08-06	--	240	31	68	16	8.3	7	.2	1.1
TD-68-42-503	79-08-17	<1	230	33	64	17	7.5	7	.2	.9
TD-69-38-905	79-08-08	--	210	3	62	13	6.7	9	.2	1.3
TD-69-40-403	78-10-10	--	240	22	79	9.3	5.1	4	.1	1.0
TD-69-46-601	79-08-07	--	210	6	63	13	7.1	9	.2	1.0
TD-69-47-303	79-08-03	<1	250	34	71	17	7.4	6	.2	1.1

LOCAL IDENTIFIER	DATE OF SAMPLE	BICARBONATE (MG/L AS HCO3) (00440)	CARBONATE (MG/L AS CO3) (00445)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)
TD-68-26-701	79-08-04	250	0	54	14	.3	13	305	.66	.02
TD-68-33-202	79-08-13	230	0	29	15	.2	12	256	.87	.02
TD-68-33-701	79-08-07	260	0	17	14	.2	13	262	1.6	.00
TD-68-41-303	79-08-06	250	0	17	18	.2	11	263	1.2	.02
TD-68-42-503	79-08-17	240	0	9.2	19	.2	11	248	1.6	.00
TD-69-38-905	79-08-08	250	0	14	9.2	.2	13	243	.77	.02
TD-69-40-403	78-10-10	260	0	11	8.8	.1	12	255	1.1	.01
TD-69-46-601	79-08-07	250	0	18	15	.2	12	253	1.6	.00
TD-69-47-303	79-08-03	260	0	18	14	.2	13	270	1.7	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L) (38260)
TD-68-26-701	79-08-04	.08	.00	.08	.76	.000	1.4	--
TD-68-33-202	79-08-13	.00	.08	.08	.97	.000	1.4	--
TD-68-33-701	79-08-07	.00	.17	.17	1.8	.000	2.9	--
TD-68-41-303	79-08-06	.01	.08	.09	1.3	.000	1.7	--
TD-68-42-503	79-08-17	.00	.05	.05	1.6	.000	3.6	--
TD-69-38-905	79-08-08	.00	.15	.15	.94	.010	13	--
TD-69-40-403	78-10-10	.01	1.2	1.2	2.3	.000	.8	.10
TD-69-46-601	79-08-07	.01	.11	.12	1.7	.000	.8	--
TD-69-47-303	79-08-03	.00	.14	.14	1.4	.120	1.3	--

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
MEDINA COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, DISSOLVED (UG/L AS CU) (01040)
TD-68-26-701	79-08-04	1020	750	100	30	1	30	<1	0	1
TD-68-33-202	79-08-13	1300	--	10	30	1	30	<1	0	1
TD-68-33-701	79-08-07	1500	1242	800	420	1	40	<1	10	3
TD-68-41-303	79-08-06	1545	717	380	480	1	200	0	0	2
TD-68-42-503	79-08-17	1215	1373	400	30	1	400	0	0	2
TD-69-38-905	79-08-08	1215	997	1500	240	1	40	<1	0	3
TD-69-40-403	78-10-10	1200	518	1000	240	1	0	0	0	1
TD-69-46-601	79-08-07	1230	1289	350	30	1	40	<1	20	2
TD-69-47-303	79-08-03	1300	1803	1150	60	0	0	0	0	4

LOCAL IDENTIFIER	DATE OF SAMPLE	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
TD-68-26-701	79-08-04	10	0	4	.0	0	0	<3
TD-68-33-202	79-08-13	<10	2	<1	.0	0	0	410
TD-68-33-701	79-08-07	<10	2	<1	.0	0	0	<3
TD-68-41-303	79-08-06	0	0	10	.0	0	0	10
TD-68-42-503	79-08-17	0	0	0	1.6	0	0	20
TD-69-38-905	79-08-08	<10	0	<1	.0	0	0	8
TD-69-40-403	78-10-10	10	0	0	.0	0	0	10
TD-69-46-601	79-08-07	<10	0	<1	.0	1	0	<3
TD-69-47-303	79-08-03	0	0	10	.1	0	0	20

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
MEDINA COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	FLOW RATE, INSTANTANEOUS (GPM) (00059)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	PCB, TOTAL (UG/L) (39516)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	CHLORDANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)	DDE, TOTAL (UG/L) (39365)
TD-68-33-202	79-08-13	1300	10	30	.0	.00	.00	.0	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	DDT, TOTAL (UG/L) (39370)	DIAZINON, TOTAL (UG/L) (39570)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)	LINDANE TOTAL (UG/L) (39340)
TD-68-33-202	79-08-13	.00	.00	.00	.00	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	MALATHION, TOTAL (UG/L) (39530)	METHYL PARATHION, TOTAL (UG/L) (39600)	METHYL TRITHION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PARATHION, TOTAL (UG/L) (39540)	PERTHANE TOTAL (UG/L) (39034)
TD-68-33-202	79-08-13	.00	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	TOXAPHENE, TOTAL (UG/L) (39400)	TOTAL TRITHION (UG/L) (39786)	2,4-D, TOTAL (UG/L) (39730)	SILVEX, TOTAL (UG/L) (39760)
TD-68-33-202	79-08-13	0	.00	.00	.00

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued

UVALDE COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	SPECIFIC CONDUCTANCE (MICROMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE, WATER (DEG C) (00010)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
YP-69-35-803	79-08-29	1815	600	682	1500	395	7.0	23.0	<1	<1
YP-69-36-702	79-08-28	1400	360	538	1250	470	7.0	22.5	<1	<1
YP-69-43-606	79-08-28	1445	10	698	600	530	7.1	23.0	<1	<1
YP-69-44-502	79-08-29	1330	15	1380	1500	532	7.1	28.0	<1	<1
YP-69-45-404	79-08-29	1220	30	1493	250	540	7.1	23.0	<1	<1
YP-69-45-405	79-08-28	1330	300	1211	1000	487	7.1	22.5	<1	<1
YP-69-50-203	79-08-30	1230	20	525	1400	580	7.1	23.0	<1	<1
YP-69-50-506	79-08-30	1145	30	525	480	612	7.0	23.0	<1	<1

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)
YP-69-35-803	79-08-29	<1	220	24	67	13	6.5	6	.2	.9
YP-69-36-702	79-08-28	<1	230	44	65	17	8.6	10	.2	1.0
YP-69-43-606	79-08-28	<1	250	43	81	11	12	10	.3	1.1
YP-69-44-502	79-08-29	<1	250	52	78	13	13	10	.4	1.1
YP-69-45-404	79-08-29	<1	270	53	77	18	13	10	.3	1.4
YP-69-45-405	79-08-28	<1	250	33	74	15	8.2	7	.2	1.0
YP-69-50-203	79-08-30	<1	270	57	90	11	15	11	.4	.9
YP-69-50-506	79-08-30	<1	280	56	95	9.7	18	12	.5	1.2

LOCAL IDENTIFIER	DATE OF SAMPLE	BICARBONATE (MG/L AS HCO3) (00440)	CARBONATE (MG/L AS CO3) (00445)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)
YP-69-35-803	79-08-29	240	0	12	12	.1	12	242	1.9	.00
YP-69-36-702	79-08-28	230	0	9.5	26	.2	11	252	2.2	.00
YP-69-43-606	79-08-28	250	0	13	30	.2	12	284	3.0	.00
YP-69-44-502	79-08-29	240	0	20	38	.3	13	295	1.8	.02
YP-69-45-404	79-08-29	260	0	45	21	.2	13	317	2.0	.00
YP-69-45-405	79-08-28	260	0	23	14	.2	12	276	--	--
YP-69-50-203	79-08-30	260	0	21	41	.1	12	319	2.9	.00
YP-69-50-506	79-08-30	270	0	28	41	.3	12	338	3.6	.02

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)
YP-69-35-803	79-08-29	--	--	.02	1.9	.000	.0
YP-69-36-702	79-08-28	.01	.15	.16	2.4	.000	5.2
YP-69-43-606	79-08-28	.07	.09	.16	3.2	.000	8.4
YP-69-44-502	79-08-29	.02	.25	.27	2.1	.010	9.9
YP-69-45-404	79-08-29	.01	.24	.25	2.3	.000	17
YP-69-45-405	79-08-28	.03	--	--	2.1	.000	16
YP-69-50-203	79-08-30	.01	.15	.16	3.1	.010	7.2
YP-69-50-506	79-08-30	.03	.22	.25	3.9	.010	12

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, October 1978 to December 1979--Continued
UVALDE COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, DISSOLVED (UG/L AS CU) (01040)
YP-69-35-803	79-08-29	1815	682	1500	600	1	40	<1	10	0
YP-69-36-702	79-08-28	1400	538	1250	360	1	0	0	0	0
YP-69-43-606	79-08-28	1445	698	600	10	1	0	0	0	2
YP-69-44-502	79-08-29	1330	1380	1500	15	1	70	<1	10	0
YP-69-45-404	79-08-29	1220	1493	250	30	1	60	<1	20	0
YP-69-45-405	79-08-28	1330	1211	1000	300	1	0	0	0	1
YP-69-50-203	79-08-30	1230	525	1400	20	1	0	0	0	0
YP-69-50-506	79-08-30	1145	525	480	30	1	0	0	10	0

LOCAL IDENTIFIER	DATE OF SAMPLE	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
YP-69-35-803	79-08-29	<10	0	<1	.0	0	0	4
YP-69-36-702	79-08-28	0	0	20	.0	0	0	10
YP-69-43-606	79-08-28	0	0	0	.0	1	0	10
YP-69-44-502	79-08-29	<10	0	<1	.0	2	0	9
YP-69-45-404	79-08-29	<10	0	<1	.0	1	0	3
YP-69-45-405	79-08-28	0	0	10	.0	0	0	10
YP-69-50-203	79-08-30	10	0	0	.1	1	0	4
YP-69-50-506	79-08-30	0	0	10	.0	1	0	8

Table 8.--Streamflow, spring flow, and water-quality data for streams, October 1978 to September 1979

08167000 GUADALUPE RIVER AT COMFORT, TX

LOCATION.--Lat 29°57'55", long 98°53'49", Kendall County, Hydrologic Unit 12100201, on left bank at downstream side of pier of bridge on U.S. Highway 87, 0.1 mi (0.2 km) downstream from Cypress Creek, and at mile 396.6 (638.1 km).

DRAINAGE AREA.--838 mi² (2,170 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 1,372.05 ft (418.201 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 27, 1939, nonrecording gage.

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

AVERAGE DISCHARGE.--40 years (water years 1940-79), 181 ft³/s (5.126 m³/s), 131,100 acre-ft/yr (162 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.
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.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft³/s (73.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	1000	3,660	104	11.26	3.463	June 1	1600	*8,610	244	14.89	4.538
Apr. 21	0200	7,570	214	14.36	4.377	June 5	1800	5,610	159	13.17	4.014

Minimum discharge, 126 ft³/s (3.57 m³/s) Sept. 28, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	302	204	215	268	228	315	612	529	3330	362	217	174
2	296	207	213	233	228	318	616	526	2070	348	219	171
3	286	203	215	221	233	466	613	518	974	335	225	166
4	281	201	210	218	260	382	574	494	907	326	221	163
5	277	238	204	218	331	356	538	457	3990	319	203	163
6	272	427	204	218	615	335	519	442	2380	336	193	165
7	265	284	203	218	538	314	510	422	1280	342	186	166
8	285	239	202	215	497	306	521	413	986	353	179	163
9	300	224	197	211	451	299	497	408	870	319	177	167
10	286	215	193	229	445	302	495	421	836	333	175	163
11	273	207	193	303	425	304	487	457	755	331	570	158
12	279	203	193	268	407	304	459	429	702	304	608	154
13	262	202	193	260	391	294	438	395	665	282	379	154
14	249	200	212	243	382	284	430	364	629	269	291	148
15	245	205	206	239	374	284	416	343	603	261	252	146
16	242	298	200	239	348	451	403	321	576	253	231	144
17	236	322	194	239	343	501	461	307	553	248	220	146
18	234	274	193	246	341	483	497	301	536	318	219	144
19	235	254	193	268	341	462	684	288	528	334	203	144
20	235	248	193	261	343	455	547	289	513	334	196	143
21	232	240	190	246	345	2390	2090	402	501	366	189	142
22	226	233	189	243	344	1280	769	570	490	297	185	140
23	224	229	186	244	477	933	660	409	473	269	274	139
24	223	224	186	233	428	774	609	352	455	254	299	135
25	232	225	183	235	367	703	563	315	447	242	241	136
26	236	227	180	243	345	663	531	281	441	229	214	132
27	221	237	180	239	332	631	496	267	462	391	197	131
28	213	228	180	232	331	620	478	295	415	504	188	130
29	208	220	183	235	---	633	727	300	395	321	182	131
30	208	217	186	241	---	629	581	282	379	253	176	127
31	206	---	352	231	---	585	---	307	---	226	174	---
TOTAL	7769	7135	6221	7437	10490	17056	17821	11904	28141	9659	7483	4485
MEAN	251	238	201	240	375	550	594	384	938	312	241	150
MAX	302	427	352	303	615	2390	2090	570	3990	504	608	174
MIN	206	200	180	211	228	284	403	267	379	226	174	127
AC-FT	15410	14150	12340	14750	20810	33830	35350	23610	55820	19160	14840	8900

CAL YR 1978 TOTAL 206713 MEAN 566 MAX 74200 MIN 36 AC-FT 410000
WTR YR 1979 TOTAL 135601 MEAN 372 MAX 3990 MIN 127 AC-FT 269000

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX

LOCATION.--Lat 29°51'38", long 98°22'58", Comal County, Hydrologic Unit 12100201, on right bank at downstream side of bridge on county road, 226 ft (69 m), downstream from 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).

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

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.--Records good. Several small diversions above station for irrigation. Several observations of water temperature were made during the year. Guadalupe-Blanco River Authority gage-height telemeter located at station.

AVERAGE DISCHARGE.--57 years, 308 ft³/s (8.723 m³/s), 223,100 acre-ft (275 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 31	1600	4,620	131	8.63	2.630	June 1	1200	5,380	152	9.45	2.880
Mar. 21	0600	*11,800	334	15.08	4.596	June 2	1300	7,070	200	11.14	3.395
Apr. 21	2100	5,610	159	9.69	2.954	June 6	1200	5,920	168	10.02	3.054

Minimum discharge, 182 ft³/s (5.15 m³/s) Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	485	267	327	1230	496	788	1610	1500	1780	899	450	268
2	467	263	326	768	490	769	2230	1430	4910	870	428	264
3	460	265	324	628	497	940	1740	1380	3260	843	423	258
4	445	263	312	580	515	927	1650	1320	2140	799	420	256
5	434	281	310	566	722	821	1500	1200	2710	782	410	250
6	421	925	308	546	1540	792	1400	1140	5200	769	385	245
7	400	528	300	529	1690	759	1330	1100	3390	783	365	244
8	390	405	293	502	1350	739	1330	1060	2650	797	350	240
9	401	356	291	480	1190	723	1300	1030	2330	767	340	238
10	413	337	287	572	1100	699	1230	1020	2130	713	338	233
11	410	330	283	1620	1080	692	1210	998	2290	701	357	237
12	393	318	279	1050	1030	685	1140	1040	1890	676	811	232
13	385	309	279	918	988	684	1070	959	1760	622	710	226
14	359	304	279	793	951	662	1030	912	1670	587	509	221
15	341	306	297	730	936	628	1000	876	1580	546	416	215
16	333	312	296	715	884	642	976	837	1540	516	374	206
17	329	374	287	697	832	844	994	801	1460	495	344	205
18	322	402	284	684	834	916	1060	776	1400	517	327	210
19	317	388	283	690	808	883	1160	757	1350	601	321	213
20	315	377	285	692	807	867	1360	738	1300	673	305	215
21	309	365	276	639	798	6380	3210	729	1250	626	291	215
22	308	356	268	596	790	4410	2720	1190	1230	638	285	212
23	301	345	266	591	1010	3220	1850	1010	1180	563	284	210
24	296	341	266	561	1350	2550	1590	852	1150	528	377	211
25	295	340	260	549	943	2190	1450	774	1080	507	397	200
26	299	357	259	569	863	1960	1340	716	1070	483	341	198
27	304	340	259	559	842	1780	1230	692	1290	968	311	193
28	294	345	259	534	818	1680	1140	662	1080	1030	292	196
29	278	344	259	522	---	1630	1680	669	996	778	283	184
30	276	332	259	529	---	1900	2040	646	936	580	276	182
31	271	---	2240	514	---	1730	---	596	---	494	270	---
TOTAL	11051	10775	10801	21153	26154	44890	44570	29410	58002	21151	11790	6677
MEAN	356	359	348	682	934	1448	1486	949	1933	682	380	223
MAX	485	925	2240	1620	1690	6380	3210	1500	5200	1030	811	268
MIN	271	263	259	480	490	628	976	596	936	483	270	182
AC-FT	21920	21370	21420	41960	51880	89040	88400	58330	115000	41950	23390	13240

CAL YR 1978 TOTAL 240049 MEAN 658 MAX 76500 MIN 23 AC-FT 476100
WTR YR 1979 TOTAL 296424 MEAN 812 MAX 6380 MIN 182 AC-FT 588000

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 ft (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, 340,700 acre-ft (420 hm³) Oct. 6, 1975, elevation, 903.81 ft (275.481 m).

EXTREMES FOR CURRENT YEAR.--Maximum contents, 414,400 acre-ft (511 hm³) June 7, elevation, 912.83 ft (278.231 m); minimum, 348,000 acre-ft (429 hm³) Sept. 30, elevation, 904.75 ft (275.768 m).

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

904.0	342,200	910.0	390,300
906.0	357,800	912.0	407,300
908.0	373,800	914.0	424,600

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	390300	368300	373800	389100	394200	382700	392800	405900	388500	384700	374400	355000
2	389200	367600	374200	390100	393900	383200	395300	404700	395400	384100	373400	354600
3	388300	367000	374400	390900	393800	383600	393600	403500	399200	383600	372800	354300
4	387300	366400	374500	390800	393800	383700	387400	403100	401000	383200	371900	353900
5	386200	368000	374600	390600	394500	384000	383500	404000	404300	383000	371200	353500
6	384900	368700	375000	390300	396600	384100	383100	404900	412400	383100	370400	353300
7	383600	368300	375100	389900	398300	384300	385000	401800	412600	382800	369500	352900
8	382400	367900	375100	389300	399700	384400	386300	394300	406500	382400	368600	352400
9	381300	367400	374900	388800	400600	384500	387400	388500	400800	381800	367500	352000
10	380500	367000	375000	390500	401700	384500	388500	384100	396100	382000	366600	351500
11	380200	366600	375200	393300	402400	384300	389500	382200	396000	381400	366300	351000
12	379800	366200	375600	395400	401800	384100	390200	382600	395300	380800	366200	350600
13	379300	366200	376000	396300	397100	384200	390800	382800	390000	380000	365800	350200
14	378700	366500	376500	396200	394200	384000	391300	383200	385000	379500	365400	349900
15	378100	367100	376900	396500	391800	383800	391700	383600	382700	378700	364600	349600
16	377600	367400	377300	396800	391700	384000	392200	384100	383500	378000	363600	349400
17	376900	367700	377600	397100	391800	384500	390600	384500	384000	377200	362900	349200
18	376500	368100	378100	397400	392000	385100	386700	385000	384500	376700	362000	349600
19	375900	368800	378600	397700	392100	387400	385100	385100	385000	376300	361000	349600
20	375400	369300	379100	397500	392400	389900	386600	385200	385300	376000	360100	349500
21	374700	369700	379200	397200	392800	401300	390800	385700	385600	375500	359100	349300
22	374200	370100	379500	397100	393100	409000	393900	386600	385700	375000	358000	349200
23	373700	370400	379900	396900	394100	408900	395800	387200	385700	374300	357200	349100
24	373000	370800	380200	396600	395400	404200	397400	387300	385700	373600	356900	348900
25	372700	371200	380500	396600	395600	398600	398700	387100	385700	372800	356800	348800
26	372000	371800	380800	396300	394100	392700	399800	387000	385600	372600	356600	348700
27	371500	372600	381000	396000	389900	386700	400800	386800	385600	376300	356400	348500
28	370900	372800	381400	395700	386000	384600	401500	386700	385700	376500	356100	348400
29	370300	373200	382000	395500	---	386600	405600	386800	385600	376300	355700	348100
30	369600	373400	382600	395200	---	389000	406400	386600	385300	375900	355700	348000
31	369000	---	387000	394700	---	390900	---	386300	---	375100	355400	---
MAX	390300	373400	387000	397700	402400	409000	406400	405900	412600	384700	374400	355000
MIN	369000	366200	373800	388800	386000	382700	383100	382200	382700	372600	355400	348000
(†)	907.40	907.95	909.60	910.52	909.48	910.07	911.90	909.52	909.40	908.16	905.70	904.75
(‡)	-22300	+4400	+13600	+7700	-8700	+4900	+15500	-20100	-1000	-10200	-19700	-7400

CAL YR 1978 MAX 588400 MIN 354700 ‡ +32300
WTR YR 1979 MAX 412600 MIN 348000 ‡ -43300

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

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO
FEB 05...	1330	410	9.0	180	6	45	16	9.1	.3

DATE	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
FEB 05...	2.3	210	0	20	14	.3	11	221

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.

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.--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. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years (water years 1962-79) since regulation began at Canyon Lake, 406 ft³/s (11.50 m³/s), 294,100 acre-ft/yr (363 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, 5,530 ft³/s (157 m³/s) May 7, gage height, 8.22 ft (2.505 m); minimum, 20 ft³/s (0.57 m³/s) Jan. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	936	568	206	90	755	2120	772	3080	791	781	772	426
2	936	568	206	88	755	747	772	2430	791	781	771	425
3	936	568	205	451	755	746	2740	2420	791	781	763	416
4	936	568	203	740	755	746	5030	1540	805	781	763	421
5	936	575	203	737	751	746	3400	809	802	781	763	421
6	936	571	203	737	746	740	1330	809	800	787	763	422
7	927	561	203	737	746	741	772	2860	2810	781	763	421
8	926	561	203	737	746	746	772	5490	5470	776	762	421
9	926	561	203	737	746	746	772	4840	5490	781	755	421
10	791	561	203	744	746	746	772	3660	4490	784	755	421
11	574	561	149	288	748	746	772	2240	1690	781	755	421
12	574	561	88	461	1790	746	772	800	2130	781	750	421
13	574	331	88	755	3080	746	772	800	4090	781	746	329
14	574	203	88	755	3080	746	772	800	4100	781	746	224
15	569	204	88	755	1930	746	764	735	2450	781	746	224
16	568	203	88	755	746	746	763	657	791	781	737	224
17	568	203	88	755	746	746	1980	656	791	781	737	224
18	568	203	88	755	746	746	2980	666	791	784	737	225
19	568	203	88	755	746	595	2030	730	791	791	737	224
20	568	203	88	755	746	217	764	755	791	791	741	224
21	568	203	88	755	746	457	765	633	791	791	746	222
22	568	203	88	755	746	573	763	744	791	787	746	221
23	568	203	88	755	757	3000	763	781	791	781	746	224
24	568	203	88	755	755	5180	763	781	791	781	560	224
25	568	203	88	755	755	5120	755	781	791	781	426	224
26	568	208	88	755	1890	5110	755	781	791	785	426	224
27	568	207	88	755	3080	5110	755	781	791	1000	426	224
28	568	206	87	755	3080	2820	755	781	791	1060	426	224
29	568	206	87	755	---	776	392	781	783	781	426	221
30	568	206	87	755	---	772	1320	787	781	781	426	221
31	568	---	90	755	---	772	---	793	---	781	426	---
TOTAL	21139	10585	3946	20892	33668	45294	37287	45201	49347	24756	20842	9184
MEAN	682	353	127	674	1202	1461	1243	1458	1645	799	672	306
MAX	936	575	206	755	3080	5180	5030	5490	5490	1060	772	426
MIN	568	203	87	88	746	217	392	633	781	776	426	221
AC-FT	41930	21000	7830	41440	66780	89840	73960	89660	97880	49100	41340	18220

CAL YR 1978 TOTAL 213679 MEAN 585 MAX 5680 MIN 84 AC-FT 423800
WTR YR 1979 TOTAL 322141 MEAN 883 MAX 5490 MIN 87 AC-FT 639000

08168000 HUECO SPRINGS NEAR NEW BRAUNFELS, TX

LOCATION.--Lat 29°45'34", long 98°08'24", Comal County, Hydrologic Unit 12100-202, 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 ft^3/s (3.71 m^3/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 1978 TO SEPTEMBER 1979

Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
Oct. 6, 1978	44	Feb. 6, 1979	100	June 4, 1979	115
Nov. 13	38	Mar. 21	114	July 16	92
Dec. 26	36	Apr. 30	92	Aug. 30	64

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); 17 years (water year 1963-79) regulated, 502 ft³/s (14.22 m³/s), 363,700 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, 13,000 ft³/s (368 m³/s) July 27, gage height, 11.77 ft (3.587 m); minimum, 149 ft³/s (4.22 m³/s) Dec. 20.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1130	614	331	226	942	2850	1040	3790	1000	918	973	465
2	1120	615	328	218	946	974	1030	2740	1020	918	949	463
3	1120	613	323	361	952	955	1980	2710	1020	918	937	459
4	1120	607	317	911	958	943	5490	2210	1020	918	928	471
5	1110	782	313	911	974	942	4420	1090	1040	918	906	473
6	1110	740	313	917	1040	942	2010	1070	1040	966	891	474
7	1100	670	310	913	1030	942	1000	2140	2200	918	882	468
8	1100	667	305	906	1030	942	992	5660	5720	918	882	466
9	1100	659	299	906	1020	943	985	5370	5700	906	878	467
10	1030	657	299	984	1020	945	983	3920	5170	906	873	475
11	652	649	291	988	1010	942	981	3130	2300	894	886	475
12	647	642	188	451	1640	942	976	1050	1710	894	890	475
13	644	554	178	1060	3350	942	972	1030	4220	894	865	461
14	640	256	176	1030	3360	942	972	1020	4220	894	859	302
15	640	289	176	1010	2720	947	970	981	3260	894	859	299
16	640	302	174	1000	989	947	972	842	1020	894	859	305
17	640	300	170	994	978	950	1660	837	979	894	859	301
18	640	297	170	991	966	947	3310	838	966	904	856	320
19	640	300	170	981	966	1150	2980	909	966	911	854	318
20	640	310	170	973	966	467	1000	961	966	907	882	312
21	638	318	164	962	966	1060	1090	856	966	908	879	308
22	633	318	161	956	966	951	1040	976	966	908	868	305
23	631	318	161	955	998	2550	1020	983	954	902	870	305
24	631	312	158	953	983	5810	1020	990	954	900	741	305
25	636	309	157	958	971	5750	1020	979	942	900	492	305
26	628	371	155	954	1620	5690	1020	994	930	915	475	303
27	621	347	153	946	3330	5650	1010	973	930	2820	472	305
28	621	345	153	942	3320	4330	1000	999	930	1220	467	305
29	621	343	153	947	---	1100	1040	1010	918	1060	468	305
30	620	337	153	943	---	1060	832	997	918	1020	466	305
31	618	---	193	942	---	1050	---	979	---	992	465	---
TOTAL	24361	13841	6762	27189	40011	55555	44815	53034	54945	30729	24431	11300
MEAN	786	461	218	877	1429	1792	1494	1711	1832	991	788	377
MAX	1130	782	331	1060	3360	5810	5490	5660	5720	2820	973	475
MIN	618	256	153	218	942	467	832	837	918	894	465	299
AC-FT	48320	27450	13410	53930	79360	110200	88890	105200	109000	60950	48460	22410

CAL YR 1978 TOTAL 237747 MEAN 651 MAX 5600 MIN 112 AC-FT 471600
WTR YR 1979 TOTAL 386973 MEAN 1060 MAX 5810 MIN 153 AC-FT 767600

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 four floodwater-retarding structures with combined detention capacity of 9,875 acre-ft (12.2 hm³). These structures control runoff from 44.4 mi² (115 km²). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--47 years (water years 1933-79), 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 5	2300	*3,390	96.0	9.28	2.829	Mar. 21	0700	1,240	35.1	5.91	1.801
Nov. 26	1200	1,560	44.2	6.45	1.966	Apr. 21	0600	1,370	38.8	6.13	1.868
Jan. 11	2300	1,500	42.5	6.35	1.935	July 28	0100	1,380	39.1	6.15	1.875

Minimum daily discharge, 330 ft³/s (9.36 m³/s) Oct. 1-4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	330	335	385	536	418	396	402	508	390	429	429	424
2	330	335	385	402	418	396	402	424	402	424	440	424
3	330	330	375	385	424	390	407	412	396	418	429	424
4	330	330	375	390	440	390	396	407	396	418	440	412
5	336	793	375	390	517	380	396	402	465	418	440	407
6	345	759	375	402	632	375	385	402	456	440	434	407
7	345	360	375	402	462	375	385	407	451	429	424	402
8	345	355	375	390	434	375	390	418	451	429	424	412
9	345	345	375	390	424	375	385	418	451	418	429	412
10	345	345	375	598	424	380	385	418	451	418	424	407
11	345	345	375	744	424	370	385	412	451	418	429	402
12	345	345	375	440	424	370	380	402	446	418	451	402
13	345	345	375	418	424	370	380	402	440	407	429	402
14	345	345	375	412	424	370	375	396	440	424	424	402
15	345	370	375	412	418	380	380	396	440	418	412	402
16	345	424	375	418	407	385	375	390	440	418	418	402
17	345	380	375	412	407	380	385	390	440	408	424	396
18	345	355	375	412	407	380	390	385	440	412	424	424
19	345	355	375	418	407	412	412	390	440	407	424	402
20	345	355	375	424	407	427	396	390	440	412	424	402
21	345	355	375	412	402	728	760	390	440	429	424	402
22	345	360	375	412	402	591	407	390	434	429	412	407
23	340	360	375	412	418	412	396	390	446	424	429	402
24	335	360	375	412	412	396	390	390	446	418	424	396
25	335	355	375	412	402	396	385	390	440	418	429	396
26	340	802	375	418	402	396	385	385	429	418	424	396
27	340	434	375	418	402	390	385	385	429	766	424	396
28	340	380	375	418	402	385	380	385	429	720	412	396
29	340	375	375	418	---	385	542	380	418	456	414	396
30	340	375	375	424	---	390	438	390	424	440	424	396
31	335	---	553	424	---	390	---	385	---	429	412	---
TOTAL	10566	12062	11823	13375	11984	12535	12259	12429	13061	13730	13200	12150
MEAN	341	402	381	431	428	404	409	401	435	443	426	405
MAX	345	802	553	744	632	728	760	508	465	766	451	424
MIN	330	330	375	385	402	370	375	380	390	407	412	396
AC-FT	20960	23920	23450	26530	23770	24860	24320	24650	25910	27230	26180	24100

CAL YR 1978 TOTAL 120938 MEAN 331 MAX 1210 MIN 226 AC-FT 239900
WTR YR 1979 TOTAL 149174 MEAN 409 MAX 802 MIN 330 AC-FT 295900

GUADALUPE RIVER BASIN

COMAL SPRINGS AT NEW BRAUNFELS, TEX.

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 periods 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.--52 years (water years 1928-79), 289.8 ft^3/s (8.206 m^3/s), 209,800 acre-ft/yr (258 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily spring discharge, 534 ft^3/s (15.121 m^3/s) Oct. 16, 1973; no flow June 13 to Nov. 4, 1956.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	330	335	385	440	418	396	402	423	390	429	429	424
2	330	335	385	402	418	396	402	424	402	424	440	424
3	330	330	375	385	424	390	407	412	396	418	429	424
4	330	330	375	390	440	390	396	407	396	418	440	412
5	336	360	375	390	445	380	396	402	434	418	440	407
6	345	412	375	402	500	375	385	402	456	424	434	407
7	345	360	375	402	462	375	385	407	451	429	424	402
8	345	355	375	390	434	375	390	418	451	429	424	412
9	345	345	375	390	424	375	385	418	451	418	429	412
10	345	345	375	418	424	380	385	418	451	418	424	407
11	345	345	375	478	424	370	385	412	451	418	429	402
12	345	345	375	440	424	370	380	402	446	418	451	402
13	345	345	375	418	424	370	380	402	440	407	429	402
14	345	345	375	412	424	370	375	396	440	424	424	402
15	345	370	375	412	418	380	380	396	440	418	412	402
16	345	424	375	418	407	385	375	390	440	418	418	402
17	345	380	375	412	407	380	385	390	440	408	424	396
18	345	355	375	412	407	380	390	385	440	412	424	424
19	345	355	375	418	407	390	396	390	440	407	424	402
20	345	355	375	424	407	409	390	390	440	412	424	402
21	345	355	375	412	402	429	434	390	440	429	424	402
22	345	360	375	412	402	440	407	390	434	429	412	407
23	340	360	375	412	418	412	396	390	446	424	429	402
24	335	360	375	412	412	396	390	390	446	418	424	396
25	335	355	375	412	402	396	385	390	440	418	429	396
26	340	396	375	418	402	396	385	385	429	418	424	396
27	340	402	375	418	402	390	385	385	429	412	424	396
28	340	380	375	418	402	385	380	385	429	495	412	396
29	340	375	375	418	---	385	396	380	418	456	414	396
30	340	375	375	424	---	390	412	390	424	440	424	396
31	335	---	418	424	---	390	---	385	---	429	412	---
TOTAL	10566	10844	11688	12833	11780	12045	11739	12344	13030	13135	13200	12150
MEAN	341	361	377	414	421	389	391	398	434	424	426	405
MAX	345	424	418	478	500	440	434	424	456	495	451	424
MIN	330	330	375	385	402	370	375	380	390	407	412	396
AC-FT	20960	21510	23180	25450	23370	23890	23280	24480	25850	26050	26180	24100

CAL YR 1978 TOTAL 117717 MEAN 323 MAX 424 MIN 226 AC-FT 233500
WTR YR 1979 TOTAL 145354 MEAN 398 MAX 500 MIN 330 AC-FT 288300

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.--23 years (water years 1957-79), 170 ft³/s (4.814 m³/s), 123,200 acre-ft/yr (152 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily spring discharge, 316 ft³/s (8.95 m³/s) June 12, 1975; 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, 277 ft³/s (7.84 m³/s) May 3; maximum gage height, 19.52 ft (5.950 m) Apr. 19 (flood runoff); minimum daily spring discharge, 112 ft³/s (3.17 m³/s) Nov. 2.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	130	113	143	162	173	221	240	262	244	218	224	200
2	129	112	143	158	175	222	241	266	246	214	224	198
3	129	113	146	155	176	222	246	277	248	214	222	197
4	129	115	145	155	179	222	243	271	247	212	222	194
5	129	115	145	155	190	221	238	270	247	215	221	193
6	124	119	144	160	203	219	235	269	247	216	219	193
7	128	122	144	154	216	219	236	267	249	216	218	192
8	129	122	143	150	216	221	238	267	248	217	216	188
9	128	122	143	151	216	222	233	264	246	216	216	186
10	127	122	143	158	214	223	233	262	244	212	213	182
11	128	121	140	194	213	221	234	264	241	210	215	180
12	127	122	138	206	211	220	231	264	240	209	215	180
13	125	123	139	200	210	219	227	262	238	207	215	180
14	125	122	140	194	212	219	225	262	237	206	216	182
15	125	122	141	190	211	221	222	260	238	207	217	181
16	124	122	140	190	207	220	222	259	237	204	213	181
17	121	122	138	189	206	219	221	259	236	203	214	182
18	122	122	136	190	205	221	228	259	233	203	213	183
19	122	125	139	189	205	219	237	258	233	203	210	186
20	122	133	138	187	207	225	242	258	231	204	207	183
21	121	133	136	186	207	237	247	258	231	206	204	180
22	121	135	135	183	207	250	254	256	226	203	203	178
23	120	134	134	179	215	255	258	256	226	200	201	177
24	120	134	134	178	226	259	259	254	225	198	201	179
25	118	134	134	180	219	256	258	252	223	196	200	177
26	118	135	133	182	216	254	254	250	224	194	198	174
27	116	144	135	179	214	248	251	248	222	206	200	172
28	118	144	135	178	217	242	251	248	220	231	201	170
29	118	143	133	178	---	242	256	246	218	232	203	172
30	114	141	133	179	---	240	263	244	217	231	203	172
31	113	---	138	174	---	240	---	242	---	230	201	---
TOTAL	3820	3786	4308	5463	5766	7139	7223	8034	7062	6533	6545	5492
MEAN	123	126	139	176	206	230	241	259	235	211	211	183
MAX	130	144	146	206	226	259	263	277	249	232	224	200
MIN	113	112	133	150	173	219	221	242	217	194	198	170
AC-FT	7580	7510	8540	10840	11440	14160	14330	15940	14010	12960	12980	10890

CAL YR 1978 TOTAL 44074 MEAN 121 MAX 146 MIN 100 AC-FT 87420
WTR YR 1979 TOTAL 71171 MEAN 195 MAX 277 MIN 112 AC-FT 141200

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).

WATER-DISCHARGE RECORDS

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. 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.--Water-discharge 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.

AVERAGE DISCHARGE.--53 years (water years 1925-26, 1929-79), 125 ft³/s (3.540 m³/s), 4.78 in/yr (121 mm/yr), 90,560 acre-ft/yr (112 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 19	1700	*11,100	314	12.54	3.822	Apr. 21	0445	3,880	110	8.29	2.527
Mar. 21	0915	5,690	161	9.52	2.902	May 1	2030	2,450	69.4	7.12	2.170

Minimum daily discharge, 33 ft³/s (0.93 m³/s) Nov. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	73	34	62	363	176	291	752	1100	256	113	143	78
2	68	35	62	237	175	286	1030	932	419	108	133	78
3	68	35	63	184	178	319	837	747	400	105	124	75
4	66	33	62	177	194	291	779	673	334	103	116	78
5	61	75	63	175	327	270	724	589	355	101	110	81
6	58	104	63	173	790	264	689	554	405	153	106	86
7	56	68	61	166	700	258	646	521	338	192	102	81
8	54	66	58	156	589	253	663	500	313	158	97	78
9	52	60	56	149	516	248	594	493	301	119	94	78
10	52	56	57	215	487	240	560	480	278	116	92	75
11	49	52	57	820	461	232	542	456	277	109	110	78
12	46	47	56	523	435	231	482	465	252	100	110	78
13	44	46	56	428	407	226	456	410	239	94	133	78
14	42	43	58	358	390	217	434	388	233	92	117	75
15	41	49	60	332	371	210	428	374	219	90	97	75
16	42	52	58	322	339	215	409	358	209	87	91	75
17	40	54	58	305	321	242	424	356	197	85	81	73
18	40	51	58	291	316	251	526	341	187	101	81	90
19	38	57	58	288	308	1810	425	325	174	185	81	74
20	38	58	58	270	304	736	429	316	167	346	78	75
21	38	63	56	249	296	3080	1640	303	159	202	75	75
22	37	63	54	234	287	1680	833	675	155	145	75	74
23	37	63	54	230	412	1290	702	430	149	126	75	74
24	36	61	54	216	492	1080	614	345	142	115	75	75
25	38	61	53	211	342	938	562	311	138	106	78	78
26	37	63	55	217	314	819	510	294	129	99	81	79
27	36	63	54	209	313	754	482	285	126	386	81	77
28	36	61	52	192	308	718	449	283	125	477	81	75
29	36	62	52	189	---	694	796	276	122	252	81	75
30	35	61	52	191	---	819	660	271	116	189	78	73
31	35	---	111	184	---	810	---	259	---	157	78	---
TOTAL	1429	1696	1831	8254	10548	19772	19077	14110	6914	4811	2954	2314
MEAN	46.1	56.5	59.1	266	377	638	636	455	230	155	95.3	77.1
MAX	73	104	111	820	790	3080	1640	1100	419	477	143	90
MIN	35	33	52	149	175	210	409	259	116	85	75	73
CFSM	.13	.16	.17	.75	1.06	1.80	1.79	1.28	.65	.44	.27	.22
IN.	.15	.18	.19	.86	1.11	2.07	2.00	1.48	.72	.50	.31	.24
AC-FT	2830	3360	3630	16370	20920	39220	37840	27990	13710	9540	5860	4590

CAL YR 1978	TOTAL	18362	MEAN	50.3	MAX	613	MIN 18	CFSM .14	IN 1.92	AC-FT	36420	
WTR YR 1979	TOTAL	93710	MEAN	257	MAX	3080	MIN 33	CFSM .72	IN 9.82	AC-FT	185900	

08171000 BLANCO RIVER AT WIMBERLEY, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to September 1979 (discontinued).

PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: December 1976 to September 1978 (discontinued).

INSTRUMENTATION.--Continuous recording of water temperature was discontinued at this station.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURES: Maximum daily, 36.0°C July 16, 1978, minimum daily, 2.5°C Jan. 20, 1978.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
OCT 18...	0930	39	463	8.0	17.0	0	2.0	8.5	91	.4
DEC 06...	0950	63	492	7.8	14.0	0	1.0	9.5	97	.0
FEB 07...	1015	713	476	7.6	10.0	0	30	10.9	100	.6
APR 05...	0950	720	500	7.4	16.5	0	6.0	9.0	97	.1
JUN 13...	1310	360	420	7.9	26.0	5	2.5	8.7	107	.1
AUG 08...	1040	123	470	7.3	26.0	0	1.3	8.0	100	1.2

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO
OCT 18...	120	54	36	220	25	59	18	8.4	.2
DEC 06...	80	22	35	240	20	67	18	8.0	.2
FEB 07...	3100	300	2700	240	16	72	14	6.1	.2
APR 05...	110	84	140	230	0	69	14	7.3	.2
JUN 13...	320	100	27	210	9	56	16	8.0	.2
AUG 08...	96	57	47	230	46	66	15	7.5	.2

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
OCT 18...	1.4	240	0	29	15	.2	9.4	259	2
DEC 06...	1.3	270	0	25	14	.2	8.5	275	5
FEB 07...	1.0	270	0	18	13	.1	8.5	266	39
APR 05...	1.1	280	0	15	11	.2	9.5	265	11
JUN 13...	1.1	240	0	19	11	.2	9.7	239	0
AUG 08...	1.2	220	0	20	12	.2	9.7	240	4

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)
OCT 18...	1	.22	.01	.23	.01	.22	.23	.00	1.5
DEC 06...	3	.37	.01	.38	.02	.03	.05	.06	1.2
FEB 07...	4	.37	.00	.37	.01	.09	.10	.04	2.3
APR 05...	2	.49	.00	.49	.00	.14	.14	.01	2.2
JUN 13...	0	.38	.04	.42	.03	.12	.15	.00	9.8
AUG 08...	0	.17	.02	.19	.00	.10	.10	.00	--

08171000 BLANCO RIVER AT WIMBERLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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 07...	1015	0	0	0	10	0	0
JUN 13...	1310	0	30	<1	0	0	<0
AUG 08...	1040	1	30	<1	0	2	<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)
FEB 07...	0	0	.0	1	0	10
JUN 13...	0	2	.0	0	0	<3
AUG 08...	0	<1	.1	0	0	<3

DATE	TIME	PCB, 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)
FEB 07...	1015	.0	.00	.0	.00	.00	.00	.00
AUG 08...	1040	.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)	METHYL PARA-THION, TOTAL (UG/L)
FEB 07...	.00	.00	.00	.00	.00	.00	.00	.00	.00
AUG 08...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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)
FEB 07...	.00	.00	.00	0	.00	.00	.00	.00
AUG 08...	.00	.00	.00	0	.00	--	--	--

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.--23 years (water years 1957-79), 157 ft³/s (4.446 m³/s), 5.17 in/yr (131 mm/yr), 113,700 acre-ft/yr (140 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), revised, and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 19	2100	*12,900	365	18.08	5.511	Apr. 21	0900	3,870	110	12.27	3.740
Mar. 21	1245	5,600	159	13.78	4.200	May 1	2345	2,560	72.5	10.79	3.289

Minimum discharge, 16 ft³/s (0.45 m³/s) Nov. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	17	57	305	200	320	661	943	246	112	130	54
2	34	17	57	266	198	309	956	1210	387	107	120	52
3	33	17	57	193	204	332	782	786	387	104	110	51
4	35	17	56	174	218	331	704	710	353	101	100	50
5	32	40	54	172	330	292	631	641	335	102	94	53
6	30	161	54	175	767	281	586	610	407	137	91	56
7	28	65	55	170	834	274	557	581	341	186	87	57
8	27	51	53	161	676	265	566	554	310	173	82	50
9	28	48	51	153	596	260	532	531	291	107	78	49
10	28	44	50	169	555	261	502	517	278	96	77	47
11	27	41	50	906	532	250	492	504	265	99	84	46
12	26	39	49	649	502	246	447	517	253	83	111	46
13	25	36	48	514	470	239	414	458	236	76	108	46
14	22	34	49	430	446	230	388	426	225	73	118	45
15	20	38	52	381	426	224	371	404	218	73	91	43
16	20	56	49	365	397	227	351	382	207	69	78	44
17	22	62	47	339	370	247	348	363	197	66	74	44
18	21	52	46	317	363	265	583	346	189	73	71	59
19	20	53	47	314	351	1470	642	330	179	79	70	60
20	19	66	47	301	344	889	393	314	174	350	67	51
21	19	67	46	276	336	3260	1700	307	166	227	65	47
22	19	71	44	257	322	1820	941	551	160	137	64	45
23	19	69	44	251	368	1440	735	504	155	109	62	44
24	18	65	44	241	602	1130	653	365	148	96	62	43
25	19	63	43	236	408	982	606	315	141	88	63	42
26	22	65	43	242	356	907	568	291	135	83	65	40
27	20	65	42	238	346	829	531	280	130	281	64	40
28	18	60	42	220	340	714	504	283	127	583	61	40
29	18	59	42	214	---	613	772	278	126	285	60	40
30	18	59	42	215	---	664	786	267	117	181	58	39
31	17	---	101	210	---	821	---	255	---	148	59	---
TOTAL	741	1597	1561	9054	11857	20392	18702	14823	6883	4484	2524	1423
MEAN	23.9	53.2	50.4	292	423	658	623	478	229	145	81.4	47.4
MAX	37	161	101	906	834	3260	1700	1210	407	583	130	60
MIN	17	17	42	153	198	224	348	255	117	66	58	39
CFSM	.06	.13	.12	.71	1.03	1.60	1.51	1.16	.56	.35	.20	.12
IN.	.07	.14	.14	.82	1.07	1.84	1.69	1.34	.62	.40	.23	.13
AC-FT	1470	3170	3100	17960	23520	40450	37100	29400	13650	8890	5010	2820

CAL YR 1978 TOTAL 12055.53 MEAN 33.0 MAX 678 MIN .00 CFSM .08 IN 1.09 AC-FT 23910
WTR YR 1979 TOTAL 94041.00 MEAN 258 MAX 3260 MIN 17 CFSM .63 IN 8.49 AC-FT 186500

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. 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.--20 years, 49.3 ft³/s (1.396 m³/s), 35,720 acre-ft/yr (44.0 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.--Maximum discharge, 3,130 ft³/s (88.6 m³/s) Dec. 31, gage height, 15.36 ft (4.682 m), no other peak above base of 2,000 ft³/s (56.6 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	12	877	27	33	85	603	7.0	.10	15	.00
2	.00	.00	9.7	402	24	29	165	365	19	.05	10	.00
3	.00	.00	8.0	321	29	28	178	203	42	.03	7.2	.00
4	.00	.00	6.5	242	62	27	104	310	39	.02	4.6	.00
5	.00	.00	5.8	175	300	24	80	250	45	.00	3.7	.00
6	.00	20	4.3	141	797	22	65	70	100	.00	3.1	.00
7	.00	9.0	3.7	129	368	20	55	46	55	.00	2.6	.00
8	.00	7.0	3.4	90	199	18	50	36	40	.00	2.1	.00
9	.00	4.6	3.2	63	118	17	47	30	28	.00	1.7	.00
10	.00	2.7	2.9	114	77	16	43	25	22	.00	1.2	.00
11	.00	1.7	2.6	694	61	17	41	33	18	.00	.85	.00
12	.00	1.3	2.3	324	54	17	36	310	15	.00	.96	.00
13	.00	.93	2.3	200	44	16	28	80	13	.00	.31	.00
14	.00	.74	2.2	126	37	15	22	50	11	.00	.19	.00
15	.00	.74	2.5	84	33	15	19	39	9.5	.00	.13	.00
16	.00	.59	3.0	64	29	15	17	31	8.0	.00	.05	.00
17	.00	.88	3.5	52	26	19	31	25	7.0	.00	.01	.00
18	.00	1.3	3.0	51	24	23	51	20	6.4	.00	.00	.00
19	.00	1.8	2.8	68	23	24	109	16	5.8	.00	.00	.00
20	.00	3.2	2.7	68	23	23	113	14	5.2	.00	.00	.00
21	.00	11	2.7	57	23	940	275	12	4.5	.00	.00	.00
22	.00	10	2.6	42	24	643	226	15	3.4	.00	.00	.00
23	.00	9.9	2.4	37	185	371	104	12	2.5	.00	.00	.00
24	.00	8.3	2.0	32	201	223	62	13	1.9	.00	.00	.00
25	.00	6.5	1.9	27	95	142	45	11	1.7	.00	.00	.00
26	.00	118	1.9	36	58	104	34	10	1.4	.00	.00	.00
27	.00	52	1.8	48	45	84	25	9.4	1.1	45	.00	.00
28	.00	29	1.7	39	39	72	20	8.8	.93	126	.00	.00
29	.00	20	1.8	33	---	67	183	8.2	.70	62	.00	.00
30	.00	15	2.3	34	---	70	152	7.6	.29	34	.00	.00
31	.00	---	1290	35	---	87	---	7.1	---	22	.00	---
TOTAL	.00	336.18	1397.5	4705	3025	3221	2465	2670.1	514.32	289.20	53.70	.00
MEAN	.000	11.2	45.1	152	108	104	82.2	86.1	17.1	9.33	1.73	.000
MAX	.00	118	1290	877	797	940	275	603	100	126	15	.00
MIN	.00	.00	1.7	27	23	15	17	7.1	.29	.00	.00	.00
AC-FT	.00	667	2770	9330	6000	6390	4890	5300	1020	574	107	.00

CAL YR 1978 TOTAL 1770.89 MEAN 4.85 MAX 1290 MIN .00 AC-FT 3510
WTR YR 1979 TOTAL 18677.00 MEAN 51.2 MAX 1290 MIN .00 AC-FT 37050

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, 45 ft³/s (1.27 m³/s) Mar. 21, gage height, 3.12 ft (0.951 m), no peak above base of 50 ft³/s (1.42 m³/s); water-quality samples were made on this date.

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
MAR												
21...	0230	44	143	8.1	16.5	220	85	4.6	K90000	32000	150000	57
21...	0440	32	167	8.1	16.0	280	50	4.4	K91000	K65000	K260000	68

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
MAR												
21...	3	21	1.1	3.5	.2	5.2	66	0	7.5	4.0	.0	12
21...	6	25	1.4	3.3	.2	5.4	76	0	11	5.4	.0	15

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)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)
MAR												
21...	87	164	36	.23	.02	.25	.06	1.3	1.4	.43	20	.00
21...	104	44	20	.31	.04	.35	.04	.96	1.0	.37	16	.10

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
MAR							
21...	0230	1	10	<1	0	20	110
21...	0440	1	10	<1	0	13	100

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)
MAR						
21...	2	3	.0	0	0	20
21...	0	3	.0	0	0	10

08177600 OLMOS CREEK TRIBUTARY AT FARM ROAD 1535, SHAVANO PARK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)
MAR								
21...	0230	.0	.00	.0	.00	.00	.00	.37
21...	0440	.0	.00	.0	.00	.00	.00	.16

DATE	DIELDRIN TOTAL (UG/L)	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)
MAR									
21...	.00	.00	.00	.00	.00	.00	.01	.61	.00
21...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
MAR								
21...	.00	.00	.00	0	.00	.00	.01	.00
21...	.00	.00	.00	0	.00	.00	.04	.00

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).

WATER-DISCHARGE RECORDS

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.--Water-discharge records good. Recording rain gage located at station, with three additional recording rain gages located in watershed. City of San Antonio rain gage and gage-height telemeters at station.

AVERAGE DISCHARGE.--11 years, 4.60 ft³/s (0.130 m³/s), 2.95 in/yr (75 mm/yr), 3,330 acre-ft/yr (4.11 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 5	1930	882	25.0	6.95	2.118	Apr. 21	0030	932	26.4	7.08	2.158
Nov. 26	0900	530	15.0	b5.89	1.795	aApr. 29	0900	577	16.3	6.05	1.844
aJan. 10	1915	336	9.52	5.14	1.567	aJune 1	1130	*1,080	30.6	b7.44	2.268
aMar. 15	1215	187	5.30	4.38	1.335						

a Water-quality samples were obtained on this date.
b From floodmark.

Minimum discharge, no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	.63	1.2	28	.82	.33	1.4	1.6	173	.10	.03	.00
2	1.6	.57	1.1	3.5	.72	3.4	4.8	1.9	4.5	.05	.00	.01
3	1.1	.66	1.2	1.5	2.4	8.2	1.4	1.5	.65	.05	.00	.08
4	1.1	.78	.63	2.6	7.5	.30	.91	1.3	.32	.07	.00	.15
5	1.1	168	.80	2.6	8.5	.33	1.0	1.2	89	45	.00	.27
6	.93	26	.61	1.9	11	.33	1.1	1.3	2.6	.98	.03	.10
7	.68	.59	.67	1.4	1.4	.34	1.2	1.3	.61	12	.00	.05
8	4.5	.32	.59	1.2	.82	.33	1.2	1.2	.71	3.6	.00	.04
9	1.6	.30	.63	1.4	.62	.40	1.2	.82	.43	.11	.00	.05
10	1.2	.38	.63	81	.54	8.5	1.1	.90	.22	.14	.01	.05
11	.93	.59	.63	28	.54	1.2	.99	5.1	.25	.08	1.5	.05
12	.80	1.2	.63	3.0	.54	.95	.89	.84	.26	.06	14	.05
13	.79	1.1	.63	1.4	.54	.99	1.1	.67	.21	.07	.01	.06
14	.32	.95	.72	1.2	.62	.97	1.1	.74	.22	.11	.01	.09
15	.18	15	.72	1.2	.62	20	1.2	.71	.20	.15	.01	.09
16	.18	8.2	.65	1.2	.38	2.0	1.2	.66	.20	.07	.01	.08
17	.11	2.7	.63	1.3	.38	5.6	20	.67	.21	.09	.02	.09
18	.08	.77	.72	5.2	.38	.66	3.3	.66	.19	55	.04	2.0
19	.08	3.5	.72	2.2	.46	.40	28	.67	.16	1.8	.01	1.4
20	.14	3.5	.79	7.6	.54	.71	14	.98	.17	.49	.01	.24
21	.18	1.0	.75	.93	.46	71	243	.75	.18	.17	.05	.09
22	.23	.72	.72	.93	.46	24	3.6	12	.19	.12	.00	.07
23	.23	.72	.77	.82	1.2	1.4	1.6	.73	.14	.15	2.6	.10
24	.36	.72	.94	.72	.45	1.0	1.4	.66	.15	.15	.20	.11
25	1.9	.72	1.1	3.3	.24	.96	1.5	.54	.12	.15	.00	.10
26	4.9	121	1.1	2.6	.35	.90	1.4	.58	.12	.05	.00	.09
27	1.7	4.0	.92	.82	.41	.78	1.6	.59	.11	46	.00	.09
28	.75	1.0	.87	.62	.35	.75	1.7	4.2	.12	.33	.00	.08
29	.72	.85	.92	5.0	---	.99	93	.71	.12	.01	.00	.10
30	.66	1.1	.95	1.3	---	1.7	4.0	.63	.10	.00	.01	1.1
31	.63	---	24	.72	---	1.2	---	.63	---	.00	.00	---
TOTAL	31.88	367.57	47.94	195.16	43.24	160.62	439.89	46.74	275.46	167.15	18.55	6.88
MEAN	1.03	12.3	1.55	6.30	1.54	5.18	14.7	1.51	9.18	5.39	.60	.23
MAX	4.9	168	24	81	11	71	243	12	173	55	14	2.0
MIN	.08	.30	.59	.62	.24	.30	.89	.54	.10	.00	.00	.00
CFSM	.05	.58	.07	.30	.07	.24	.69	.07	.43	.25	.03	.01
IN.	.06	.64	.08	.34	.08	.28	.77	.08	.48	.29	.03	.01
AC-FT	63	729	95	387	86	319	873	93	546	332	37	14
(††)	.36	6.36	1.71	3.12	1.16	3.14	5.86	1.05	4.87	4.48	1.20	1.17

CAL YR 1978 TOTAL 2183.72 MEAN 5.98 MAX 791 MIN .00 CFSM .28 IN 3.83 AC-FT 4330 †† 35.36
WTR YR 1979 TOTAL 1801.08 MEAN 4.93 MAX 243 MIN .00 CFSM .23 IN 3.16 AC-FT 3570 †† 34.48

†† Weighted-mean rainfall, in inches, based on four rain gages.

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: October 1972 to September 1973. Water temperatures: November 1968 to current year. Bacteria analyses: April 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
JAN										
10...	1505	81	210	7.4	7.0	90	380	10.8	92	7.1
10...	1610	81	196	6.9	6.0	180	560	--	--	11
11...	0940	28	231	6.9	5.5	180	120	11.0	90	2.9
MAR										
15...	1250	140	177	8.2	12.0	100	260	9.2	87	6.3
JUN										
01...	1536	81	134	8.0	22.5	100	430	8.2	96	3.8

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)
JAN										
10...	94000	6200	72000	86	8	31	2.1	9.1	.4	3.5
10...	65000	6400	63000	69	8	25	1.5	8.9	.5	3.0
11...	57000	5900	84000	95	14	35	1.8	8.0	.4	3.6
MAR										
15...	K28000	K7600	66000	60	19	23	.6	4.4	.2	2.3
JUN										
01...	220000	K38000	45000	54	4	20	.9	4.3	.3	3.1

DATE	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
JAN									
10...	95	0	17	11	.1	7.1	128	720	185
10...	74	0	14	8.0	.1	5.5	103	1220	150
11...	98	0	15	7.8	.1	9.9	130	160	40
MAR									
15...	50	0	--	--	.1	3.5	--	518	152
JUN									
01...	60	0	5.1	4.4	.1	5.6	73	760	132

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, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)
JAN									
10...	.37	.06	.43	.02	.48	.50	.56	20	.00
10...	.42	.12	.54	.02	.35	.37	.89	28	.00
11...	.79	.02	.81	.01	.37	.38	.24	12	.00
MAR									
15...	.57	.14	.71	.23	.36	.59	.12	15	.10
JUN									
01...	.44	.10	.54	.07	--	--	--	21	.00

08177700 OLMOS CR AT DRESDEN DRIVE, SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
JAN						
10...	1505	1	30	<1	0	3
10...	1610	2	20	<1	0	5
11...	0940	1	20	<1	0	5
MAR						
15...	1250	2	0	0	10	0

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN							
10...	80	10	20	.0	0	1	<3
10...	100	15	20	.0	0	1	<3
11...	110	2	10	.0	0	1	<3
MAR							
15...	90	3	20	.0	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)
JAN									
10...	1505	.0	--	.00	.2	.00	.01	.01	.12
10...	1610	.0	--	.00	.3	.00	.01	.02	.13
11...	0940	.0	--	.00	.0	.00	.00	.00	.05
MAR									
15...	1250	.0	--	.00	.3	.01	.01	.01	.61
JUN									
01...	1536	.0	.00	.00	.1	.00	.00	.00	.48

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)	METHYL PARA-THION, TOTAL (UG/L)
JAN									
10...	.01	.00	.00	.00	.02	.01	.01	.04	.00
10...	.00	.00	.00	.00	.04	.01	.04	.41	.00
11...	.00	.00	.00	.00	.00	.00	.00	.01	.00
MAR									
15...	.01	.00	.00	.00	.01	.01	.03	.23	.00
JUN									
01...	.01	.00	.00	.00	.01	.01	.00	.02	.00

DATE	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								
10...	.00	.00	.00	0	.00	.00	.01	.00
10...	.00	.00	.00	0	.00	.02	.02	.00
11...	.00	.00	.00	0	.00	.00	.00	.00
MAR								
15...	.00	.00	.00	0	.00	.46	.11	.01
JUN								
01...	.00	.00	.00	0	.00	.03	.04	.00

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 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, 335 ft³/s (9.49 m³/s) Sept. 28 1976, elevation, 4.30 ft (1.311 m).

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

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Elevation (ft)	Elevation (m)
aJan. 10	1920	108	3.06	3.59	1.094
aMar. 21	0305	*156	4.42	3.80	1.158
aJune 1	1220	154	4.36	3.79	1.155

a Water-quality samples were made on this date.

Minimum discharge, 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 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
MAR										
21...	0635	1.2	166	8.0	16.0	180	40	12.6	130	2.9
JUN										
01...	1106	12	84	8.6	20.5	250	600	8.2	93	3.0
01...	1331	32	122	8.1	20.5	50	15	7.2	81	2.6

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)
MAR										
21...	96000	48000	190000	77	1	29	1.0	1.5	.1	3.2
JUN										
01...	390000	20000	29000	39	6	15	.3	.6	.0	2.4
01...	370000	K26000	K34000	53	2	20	.7	1.2	.1	2.9

DATE	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
MAR									
21...	92	0	6.9	3.0	.0	11	101	61	22
JUN									
01...	40	0	7.6	1.7	.1	9.5	57	632	272
01...	62	0	3.0	3.7	.0	9.3	71	24	12

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)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)
MAR									
21...	.04	.02	.06	.03	.70	.73	.04	14	.00
JUN									
01...	.45	.12	.57	.11	2.6	2.7	.19	30	.00
01...	.65	.08	.73	.05	.89	.94	.09	13	.10

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
MAR 21...	0635	0	10	<1	0	9	40

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAR 21...	0	2	.0	0	0	0	8

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)
MAR 21...	0635	.0	--	.00	.0	.00	.02	.02	.00
JUN 01...	1106	.0	.00	.00	.0	.00	.00	.00	.00
01...	1331	.0	.00	.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)	METHYL PARA-THION, TOTAL (UG/L)
MAR 21...	.00	.00	.00	.00	.00	.00	.01	.00	.00
JUN 01...	.00	.00	.00	.00	.00	.00	.00	.00	.00
01...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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)
MAR 21...	.00	.00	.00	0	.00	.00	.00	.00
JUN 01...	.00	.00	.00	0	.00	.00	.01	.00
01...	.00	.00	.00	0	.00	.00	.00	.00

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 West Elm Creek, 2.4 mi (3.9 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, elevation, 6.78 ft (2.067 m).

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

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Elevation (ft)	Elevation (m)
Jan. 10	0940	*101	2.86	4.88	1.487
aMar. 21	0315	90	2.55	4.76	1.451
aJune 1	1050	71	2.01	4.55	1.387

a Water-quality samples were made on this date.

Minimum discharge, 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 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
MAR										
21...	0830	8.0	138	8.2	17.0	200	25	13.0	136	2.3
JUN										
01...	1200	69	75	7.9	20.0	100	2.9	7.1	79	3.9
01...	1417	47	90	7.9	20.5	50	3.9	7.0	79	3.0

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)
MAR										
21...	43000	4000	28000	59	0	22	1.0	1.2	.1	3.2
JUN										
01...	430000	K18000	33000	30	4	11	.6	.6	.0	4.4
01...	440000	K19000	32000	38	5	14	.7	1.2	.1	4.1

DATE	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
MAR									
21...	73	0	5.9	2.1	.0	15	87	30	14
JUN									
01...	32	0	7.6	1.7	.0	13	55	13	11
01...	40	0	7.1	1.7	.1	14	63	6	6

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, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)
MAR									
21...	.03	.02	.05	.06	.74	.80	.02	9.6	.00
JUN									
01...	.70	.10	.80	.11	.89	1.0	.08	13	.00
01...	.47	.08	.55	.04	.92	.96	.08	13	.00

08178645 EAST ELM CREEK AT SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
MAR 21...	0830	0	8	<1	0	25	70

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAR 21...	0	2	.0	0	0	0	30

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)
MAR 21...	0830	.0	--	.00	.0	.00	.00	.00	.00
JUN 01...	1200	.0	.00	.00	.0	.00	.00	.00	.00
01...	1417	.0	.00	.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)	METHYL PARA-THION, TOTAL (UG/L)
MAR 21...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUN 01...	.00	.00	.00	.00	.00	.00	.00	.00	.00
01...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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)
MAR 21...	.00	.00	.00	0	.00	.00	.00	.00
JUN 01...	.00	.00	.00	0	.00	.00	.02	.00
01...	.00	.00	.00	0	.00	.00	.01	.00

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 current year.

GAGE.--Digital recorders (stage and rainfall). 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, elevation, 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 (ft³/s)	Discharge (m³/s)	Elevation (ft)	Elevation (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Elevation (ft)	Elevation (m)
Nov. 26	0745	*190	5.38	6.73	2.051	May 11	1230	79	2.24	4.58	1.396
aMar. 15	1040	68	1.93	4.37	1.332	aJune 1	1035	139	3.94	5.78	1.762
Apr. 17	0610	55	1.56	4.08	1.244	aJuly 5	0905	55	1.56	4.09	1.247
Apr. 20	2245	112	3.17	5.24	1.597	July 10	1710	62	1.76	4.23	1.289
Apr. 29	0725	81	2.29	4.62	1.408	July 27	1145	109	3.09	5.18	1.579

a Water-quality samples were made on this day.

Minimum discharge, no flow most of time.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: April to September 1973. Water temperatures: November 1968 to current year. Bacteria analyses: April 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
MAR 15...	1150	16	108	7.9	11.5	70	20	9.6	101	5.7
JUN 01...	1035	139	63	8.6	--	60	84	--	--	4.9
JUL 05...	1130	17	77	7.4	26.0	40	6.8	6.7	83	4.7

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)
MAR 15...	48000	7800	62000	36	11	13	.8	1.0	.1	3.6
JUN 01...	K730000	90000	120000	27	0	10	.4	1.0	.1	2.1
JUL 05...	K1200000	K1200000	46000	34	3	13	.3	1.1	.1	2.7

DATE	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
MAR 15...	30	0	14	2.0	.1	1.9	51	29	20
JUN 01...	32	0	2.5	1.5	.1	1.2	35	308	62
JUL 05...	38	0	9.7	1.6	.1	2.1	49	9	3

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, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)
MAR 15...	1.2	.12	1.3	.50	.44	.94	.44	7.8	.10
JUN 01...	.25	.04	.29	.11	1.1	1.2	.36	17	.00
JUL 05...	.18	.10	.28	.01	.61	.62	.27	--	.10

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
MAR 15...	1150	1	0	0	0	0	10
JUN 01...	1035	1	0	0	0	11	300

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)
MAR 15...	9	10	.0	1	0	20
JUN 01...	27	10	.1	0	0	30

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)
MAR 15...	1150	.0	--	.00	.1	.00	.00	.00	.46
JUN 01...	1035	.0	.00	.00	.4	.00	.00	.03	1.6
JUL 05...	1130	.2	.00	.00	.0	.00	.00	.00	1.7

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)	METHYL PARA-THION, TOTAL (UG/L)
MAR 15...	.01	.00	.00	.00	.01	.01	.01	.20	.00
JUN 01...	.00	.00	.00	.00	.00	.03	.00	.00	.00
JUL 05...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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)
MAR 15...	.00	.00	.00	0	.00	.04	.00	.01
JUN 01...	.00	.00	.00	0	.00	.01	.01	.00
JUL 05...	.00	.00	.00	0	.00	.02	.01	.00

GUADALUPE RIVER BASIN

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

LOCATION.--Lat 29°30'57", long 98°25'51", Bexar County, Hydrologic Unit 12100301, on upstream side of upstream bridge of two bridges 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 good. 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 seven floodwater-retarding structures with combined detention capacity of 17,390 acre-ft (21.4 hm³). These structures control runoff from 48.4 mi² (125.4 km²) above this station.

AVERAGE DISCHARGE.--19 years, 10.3 ft³/s (0.292 m³/s), 1.02 in/yr (26 mm/yr), 7,460 acre-ft/yr (9.20 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), revised, and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 26	0915	732	20.7	b6.58	2.006	aApr. 21	0330	*6,120	173	9.74	2.969
Jan. 11	0045	416	11.8	5.62	1.713	aApr. 29	1000	395	11.2	5.50	1.676
aMar. 15	1300	99	2.80	3.51	1.070	June 1	1215	1,980	56.1	7.80	2.377

a Water-quality samples were obtained on this date.
b From floodmark.

Minimum discharge, no flow Sept. 10, 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	.08	5.7	11	4.9	2.6	8.6	14	648	.13	2.5	2.0
2	4.6	.08	5.7	4.9	4.8	3.9	8.6	12	90	1.4	3.3	2.0
3	4.4	.08	5.7	.95	5.6	2.9	5.8	11	13	4.6	6.4	1.8
4	4.2	.07	5.4	.85	8.3	3.9	4.6	11	12	3.1	4.7	1.9
5	3.8	5.8	5.0	2.1	17	3.9	4.2	10	104	8.1	2.5	5.3
6	.67	6.2	4.9	5.1	22	4.2	4.2	10	37	7.9	2.5	5.8
7	.14	4.6	4.7	4.9	8.6	4.2	4.2	9.7	15	8.9	2.5	3.8
8	.14	4.2	3.9	4.3	6.1	3.1	4.2	9.6	14	11	5.1	.23
9	.18	3.6	.90	.87	5.3	.38	4.2	9.2	14	7.8	5.2	.03
10	.14	.20	.62	83	5.3	7.5	4.5	9.0	13	8.5	4.1	.00
11	.10	.11	.62	106	4.9	7.0	4.9	14	13	3.6	4.9	.00
12	.09	.11	.62	13	4.9	5.9	4.8	11	12	2.6	5.7	2.5
13	.51	.10	.62	10	4.9	5.0	4.7	8.7	12	2.3	2.4	3.6
14	4.1	.14	.62	8.1	5.0	1.4	4.2	8.3	11	5.0	1.9	5.3
15	4.2	3.1	.87	7.3	4.9	16	4.1	8.0	7.5	7.4	1.6	5.3
16	3.9	6.3	4.5	6.8	4.6	8.8	4.1	7.8	7.8	3.4	4.6	1.3
17	3.4	4.4	4.6	6.6	4.6	12	8.7	5.1	8.6	3.8	4.5	2.3
18	3.6	3.1	4.6	7.4	4.6	6.0	6.8	5.7	8.6	44	.79	1.2
19	2.1	.46	4.6	7.1	4.3	10	6.6	5.7	8.3	21	.34	.73
20	.16	.38	4.2	11	4.3	8.4	7.0	5.6	8.0	14	.43	1.6
21	.10	.22	.65	6.4	4.2	44	1210	5.7	8.0	6.8	3.5	1.4
22	.10	.17	.41	5.3	4.2	35	28	10	7.7	6.1	6.0	1.4
23	.10	.14	.41	5.3	4.4	9.6	16	2.4	7.4	5.9	8.1	1.4
24	.10	.11	.41	4.9	3.8	7.2	15	5.3	7.3	5.3	6.2	1.4
25	1.1	.10	.41	4.9	3.8	6.7	14	4.0	7.0	4.0	6.9	1.3
26	5.6	118	.33	4.9	3.5	6.8	13	4.0	6.7	18	1.3	1.3
27	4.6	8.8	1.3	5.7	1.8	7.8	13	4.6	6.0	45	.58	4.7
28	4.6	7.5	4.5	5.3	1.8	8.6	12	6.6	4.6	13	6.0	1.6
29	4.3	6.9	4.5	7.4	---	8.6	114	4.8	.39	6.4	6.4	1.5
30	2.8	6.6	4.6	6.6	---	9.1	21	4.6	.17	2.0	5.1	1.3
31	.12	---	8.3	5.3	---	8.6	---	5.2	---	.72	2.4	---
TOTAL	68.55	191.65	94.19	363.27	162.4	269.08	1565.0	242.6	1112.06	281.75	118.44	63.99
MEAN	2.21	6.39	3.04	11.7	5.80	8.68	52.2	7.83	37.1	9.09	3.82	2.13
MAX	5.6	118	8.3	106	22	44	1210	14	648	45	8.1	5.8
MIN	.09	.07	.33	.85	1.8	.38	4.1	2.4	.17	.13	.34	.00
CFSM	.02	.05	.02	.09	.04	.06	.38	.06	.27	.07	.03	.02
IN.	.02	.05	.03	.10	.04	.07	.42	.07	.30	.08	.03	.02
AC-FT	136	380	187	721	322	534	3100	481	2210	559	235	127
(††)	.35	7.07	.66	4.63	5.45	5.51	5.96	1.24	5.10	4.78	1.60	1.88

CAL YR 1978 TOTAL 6493.96 MEAN 17.8 MAX 4040 MIN .00 CFSM .13 IN 1.76 AC-FT 12880 †† 33.24
WTR YR 1979 TOTAL 4532.98 MEAN 12.4 MAX 1210 MIN .00 CFSM .09 IN 1.23 AC-FT 8990 †† 44.23

†† Weighted-mean rainfall, in inches, based on four rain gages.

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 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
MAR										
15...	1335	68	1130	8.1	15.5	7	50	9.8	100	2.2
APR										
21...	1758	168	271	8.8	--	--	140	7.8	90	3.2
29...	0900	190	844	10.2	20.5	25	72	7.8	92	3.8

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)
MAR										
15...	10000	K1300	5700	220	0	75	9.1	47	1.4	160
APR										
21...	100000	17000	74000	110	17	40	1.8	6.3	.3	8.3
29...	110000	4400	27000	280	23	100	7.0	33	.9	61

DATE	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
MAR									
15...	290	0	240	36	.7	12	723	97	45
APR									
21...	110	0	25	7.2	.2	11	154	178	17
29...	312	0	140	25	.5	18	538	162	54

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, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)
MAR									
15...	1.4	.02	1.4	.03	.40	.43	.01	5.5	.10
APR									
21...	.68	.08	.76	.10	.43	.53	.19	12	.10
29...	.70	.25	.95	.39	.51	.90	.11	9.6	.10

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
MAR							
15...	1335	1	0	0	10	0	20
APR							
21...	1758	2	0	0	0	4	90
29...	0900	1	0	0	10	0	20

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAR						
15...	0	10	.0	2	0	10
APR						
21...	1	10	.0	0	0	10
29...	0	20	.1	1	0	30

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)
MAR												
15...	1335	.0	--	.00	.0	.00	.00	.00	.00	.00	.00	.00
APR												
21...	1758	.0	.00	.00	.0	.00	.00	.00	.28	.00	.00	.00
29...	0900	.0	.00	.00	.0	.00	.00	.00	.02	.00	.00	.00

DATE	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, 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)
MAR												
15...	.00	.00	.00	.00	.00	.00	.00	0	.00	.01	.01	.00
APR												
21...	.00	.00	.00	.06	.00	.00	.00	0	.00	.04	.03	.00
29...	.00	.00	.00	.00	.00	.00	.00	0	.00	.01	.05	.00

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. Small diversion above station.

AVERAGE DISCHARGE.--39 years (water years 1923-34, 1953-79), 141 ft³/s (3.993 m³/s), 4.04 in/yr (103 mm/yr), 102,200 acre-ft/yr (126 hm³/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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	0600	3,720	105	a8.08	2.463	June 1	2400	1,680	47.6	5.74	1.750
Mar. 22	0800	2,380	67.4	a6.62	2.018	June 3	0200	2,810	79.6	7.11	2.167
Apr. 21	0200	3,760	106	8.12	2.475	June 5	0800	*4,000	113	8.35	2.545

a From floodmark.

Minimum discharge, 62 ft³/s (1.76 m³/s) Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND , WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	245	146	183	207	191	242	659	437	493	355	153	95
2	241	144	183	172	206	238	637	435	1140	349	151	93
3	244	141	182	161	205	275	616	435	1260	347	163	91
4	244	137	173	158	213	263	595	412	767	338	192	89
5	246	141	170	157	254	246	575	387	2710	337	170	86
6	241	217	173	155	357	240	554	376	1780	353	161	91
7	232	209	166	152	384	235	532	365	1190	341	143	94
8	240	179	162	146	356	234	519	356	1000	328	132	84
9	242	166	161	145	337	228	505	348	916	300	124	84
10	239	159	158	163	332	229	492	348	843	291	124	78
11	228	158	158	209	329	227	478	339	901	279	132	77
12	220	152	158	203	323	225	457	357	746	262	157	76
13	211	149	158	190	322	221	445	330	683	246	167	75
14	198	148	155	183	314	214	433	315	639	230	154	73
15	186	145	155	179	309	212	424	303	603	216	137	71
16	183	263	155	180	295	237	414	297	563	205	132	69
17	181	270	152	184	285	320	431	291	533	194	127	69
18	178	231	149	194	283	387	466	283	507	210	126	67
19	174	217	149	206	278	387	609	277	491	215	119	68
20	174	208	149	210	275	417	614	273	466	199	114	69
21	168	199	146	209	280	2690	1330	271	438	197	109	71
22	162	194	143	208	282	1790	687	290	421	182	109	68
23	156	190	143	208	277	1140	589	276	403	184	134	67
24	154	184	141	203	275	952	543	262	390	173	154	65
25	155	183	138	207	262	851	518	252	376	164	142	67
26	154	185	137	219	258	814	489	244	366	156	122	67
27	153	188	135	205	254	784	470	239	363	258	106	65
28	150	190	134	200	242	767	455	249	360	281	102	65
29	146	190	134	201	---	735	477	250	351	232	99	64
30	144	187	135	201	---	712	465	239	349	184	96	62
31	142	---	314	198	---	689	---	229	---	168	95	---
TOTAL	6031	5470	4949	5813	7978	17201	16478	9765	22048	7774	4146	2260
MEAN	195	182	160	188	285	555	549	315	735	251	134	75.3
MAX	246	270	314	219	384	2690	1330	437	2710	355	192	95
MIN	142	137	134	145	191	212	414	229	349	156	95	62
CFSM	.41	.38	.34	.40	.60	1.17	1.16	.67	1.55	.53	.28	.16
IN.	.47	.43	.39	.46	.63	1.35	1.29	.77	1.73	.61	.33	.18
AC-FT	11960	10850	9820	11530	15820	34120	32680	19370	43730	15420	8220	4480

CAL YR 1978 TOTAL 113355.5 MEAN 311 MAX 41700 MIN 9.2 CFSM .66 IN 8.90 AC-FT 224800
WTR YR 1979 TOTAL 109913.0 MEAN 301 MAX 2710 MIN 62 CFSM .64 IN 8.63 AC-FT 218000

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 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
NOV 20...	1222	208	527	8.1	15.5	0	10	9.1	94	.6
JAN 02...	1410	170	531	8.1	8.0	0	10	11.3	98	.9
MAR 26...	1525	814	533	8.0	18.5	10	15	9.8	106	1.1
APR 30...	1535	466	551	7.2	21.0	3	5.7	9.7	113	.4
JUN 15...	1023	602	531	8.1	23.0	0	5.5	8.3	99	.8

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO
NOV 20...	7400	K1700	360	270	56	78	18	7.2	.2
JAN 02...	1300	1000	2000	270	71	81	16	7.1	.2
MAR 26...	K220	K58	330	270	36	80	16	7.0	.2
APR 30...	K72	34	144	280	63	81	18	8.6	.2
JUN 15...	120	84	140	230	11	65	17	8.7	.2

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
NOV 20...	1.4	260	0	57	16	.2	11	317	19
JAN 02...	1.5	240	0	61	13	.2	10	308	11
MAR 26...	1.2	280	0	45	9.1	.2	11	308	60
APR 30...	.9	260	0	55	15	.3	10	317	19
JUN 15...	1.3	270	0	43	10	.3	13	291	20

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)
NOV 20...	6	.70	.01	.71	.02	.26	.28	.02	1.9
JAN 02...	0	.79	.01	.80	.01	.19	.20	.02	1.7
MAR 26...	32	.40	.00	.40	.01	.13	.14	.01	1.9
APR 30...	17	.97	--	--	--	.12	--	--	3.9
JUN 15...	15	.88	.02	.90	.01	.08	.09	.00	5.5

08179000 MEDINA RIVER NEAR PIPE CREEK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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 02...	1410	1	30	<1	10	1	0

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 02...	0	3	.0	1	0	<3

DATE	TIME	PCB, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)	DI-ELDRIN TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)
JAN 02...	1410	.0	.00	.0	.00	.00	.00	.00	.00	.00	.00	.00

DATE	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, 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 02...	.00	.00	.00	.00	.00	.00	0	.00	.00	.00	.00

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 current year.

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.--23 years (water years 1957-79), 12.3 ft³/s (0.348 m³/s), 2.97 in/yr (75 mm/yr), 8,910 acre-ft/yr (11.0 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Dec. 31	0630	414	11.7	4.58	1.396	June 3	0100	718	20.3	5.26	1.603
Mar. 21	0200	*781	22.1	5.38	1.640	June 5	0730	414	11.7	4.58	1.396

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	78	10	5.9	44	26	.27	.15	.00	.00
2	.00	.00	.00	50	10	6.2	43	27	11	.00	.00	.00
3	.00	.00	.00	41	11	12	39	26	162	.00	.00	.00
4	.00	.00	.00	35	11	5.8	36	23	59	.00	.00	.00
5	.00	.00	.00	30	15	4.9	34	20	224	.00	.00	.00
6	.00	.00	.00	26	31	4.2	32	18	216	.00	.00	.00
7	.00	.00	.00	22	28	3.6	32	17	176	.00	.00	.00
8	.00	.00	.00	18	27	2.9	32	15	134	.00	.00	.00
9	.00	.00	.00	17	26	2.3	30	15	98	.00	.00	.00
10	.00	.00	.00	21	24	3.9	30	14	76	.00	.00	.00
11	.00	.00	.00	26	24	3.0	27	13	61	.00	.00	.00
12	.00	.00	.00	25	23	2.0	24	11	51	.00	.00	.00
13	.00	.00	.00	24	21	1.1	22	9.3	44	.00	.00	.00
14	.00	.00	.00	22	20	.42	20	8.0	39	.00	.00	.00
15	.00	.00	.00	21	20	.93	19	5.9	34	.00	.00	.00
16	.00	.00	.00	20	18	1.5	17	4.7	31	.00	.00	.00
17	.00	.00	.00	19	17	3.0	19	3.8	27	.00	.00	.00
18	.00	.00	.00	22	16	2.8	18	3.1	24	.00	.00	.00
19	.00	.00	.00	23	14	1.7	34	2.5	21	.00	.00	.00
20	.00	.00	.00	22	14	18	28	2.1	18	.00	.00	.00
21	.00	.00	.00	21	13	336	39	2.1	16	.00	.00	.00
22	.00	.00	.00	21	12	300	33	5.4	14	.00	.00	.00
23	.00	.00	.00	20	11	197	33	1.8	12	.00	.00	.00
24	.00	.00	.00	19	9.7	146	32	.31	10	.00	.00	.00
25	.00	.00	.00	20	9.2	107	32	.03	8.3	.00	.00	.00
26	.00	.00	.00	19	8.5	82	30	.00	6.4	.00	.00	.00
27	.00	.00	.00	16	7.4	67	28	.00	5.0	.00	.00	.00
28	.00	.00	.00	15	6.4	57	27	.00	3.5	1.2	.00	.00
29	.00	.00	.00	15	---	53	35	.00	2.1	.00	.00	.00
30	.00	.00	.00	13	---	50	30	.00	.90	.00	.00	.00
31	.00	---	102	11	---	45	---	.00	---	.00	.00	---
TOTAL	.00	.00	102.00	752	457.2	1526.15	899	274.04	1584.47	1.35	.00	.00
MEAN	.000	.000	3.29	24.3	16.3	49.2	30.0	8.84	52.8	.044	.000	.000
MAX	.00	.00	102	78	31	336	44	27	224	1.2	.00	.00
MIN	.00	.00	.00	11	6.4	.42	17	.00	.27	.00	.00	.00
CFSM	.000	.000	.06	.43	.29	.87	.53	.16	.94	.001	.000	.000
IN.	.00	.00	.07	.50	.30	1.01	.59	.18	1.05	.00	.00	.00
AC-FT	.00	.00	202	1490	907	3030	1780	544	3140	2.7	.00	.00

CAL YR 1978 TOTAL 177.41 MEAN .49 MAX 102 MIN .00 CFSM .009 IN .12 AC-FT 352
WTR YR 1979 TOTAL 5596.21 MEAN 15.3 MAX 336 MIN .00 CFSM .27 IN 3.70 AC-FT 11100

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).

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, 261,500 acre-ft (322 hm³) June 6, gage height, 1,073.3 ft (327.14 m); minimum, 248,200 acre-ft (306 hm³) Sept. 29, 30, gage height, 1,071.0 ft (326.44 m).

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

1,070.0	242,400	1,073.0	259,800
1,071.0	248,200	1,075.0	271,400

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	255200	253400	254000	253400	255200	255700	257500	256300	255200	255700	255200	253400
2	255200	253400	254000	255200	255200	255700	257500	256300	257500	255700	255200	253400
3	255200	253400	254000	255200	255200	255700	257500	256300	258600	255200	254600	253400
4	255200	253400	254000	255200	254600	255200	257500	256300	258600	255200	254600	252900
5	255200	253400	254000	255200	254600	255200	257500	256300	259800	255200	254600	252900
6	254600	254000	254000	255200	254600	255200	256900	256300	261500	255200	254600	252900
7	254600	254000	254000	255200	255700	255200	256900	256300	260400	255200	254600	252900
8	254600	254000	254000	255200	255700	255200	256900	256300	259800	255200	254000	252900
9	254600	254000	254000	255200	255700	255200	256900	255700	259200	255200	254000	252900
10	254600	254000	254000	255200	255700	255200	256900	255700	258600	255200	254000	252900
11	254600	254000	253400	255200	255700	255200	256900	255700	258600	255200	254000	252900
12	254600	253400	253400	255200	255700	255200	256300	255700	258100	255200	254600	252900
13	254600	253400	253400	255200	255700	255200	256300	255700	258100	255200	254600	252900
14	254600	253400	253400	255200	255700	255200	256300	255700	257500	255200	254000	252300
15	254600	253400	253400	254600	255700	255200	256300	255700	257500	254600	254000	252300
16	254600	253400	253400	254600	255700	255700	256300	255700	256900	254600	254000	252300
17	254000	253400	253400	254600	255700	255700	256300	255200	256900	254600	254000	251700
18	254000	253400	253400	254600	255700	255700	256300	255200	256300	254600	254000	251700
19	254000	253400	253400	254600	255700	255700	256900	255200	256300	255200	254000	251100
20	254000	254000	253400	254600	255200	255700	256900	255200	256300	255200	254000	250500
21	254000	254000	253400	254600	255200	259800	258100	255200	256300	255200	254000	250500
22	254000	254000	253400	254600	255200	260400	258100	255200	256300	255200	253400	250000
23	254000	254000	253400	255200	255200	259800	257500	255200	256300	255200	253400	250000
24	254000	254000	252900	255200	255200	259200	257500	255200	256300	255200	253400	249400
25	254000	254000	252900	255200	255200	259200	256900	255200	256300	254600	253400	248800
26	254000	254000	252900	255200	255200	258600	256900	255200	255700	254600	253400	248800
27	253400	254000	252900	255200	255700	258100	256900	255200	255700	254600	254000	248800
28	253400	254000	252900	255200	255700	258100	256900	255200	255700	255200	253400	248800
29	253400	254000	252900	255200	---	258100	256900	255200	255700	255200	253400	248200
30	253400	254000	252900	255200	---	257500	256900	255200	255700	255200	253400	248200
31	253400	---	252900	255200	---	257500	---	255200	---	255200	253400	---
MAX	255200	254000	254000	255200	255700	260400	258100	256300	261500	255700	255200	253400
MIN	253400	253400	252900	253400	254600	255200	256300	255200	255200	254600	253400	248200

CAL YR 1978 MAX 280100 MIN 188200
WTR YR 1979 MAX 261500 MIN 248200

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. Several observations of water temperatures were made during the year.

AVERAGE DISCHARGE.--33 years (water years 1923-33, 1958-79), 40.2 ft³/s (1.138 m³/s), 29,120 acre-ft/yr (35.9 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 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	34	.00	.12	30	38	.00	7.5	30	128	28	34
2	27	47	.00	.00	9.6	37	.00	7.8	.50	137	28	.29
3	47	57	.00	.00	.00	37	.00	7.6	.00	169	28	.00
4	52	40	6.9	.00	.00	30	.00	12	.00	174	28	30
5	73	15	25	.00	.00	22	.00	36	.16	132	37	53
6	65	.00	25	.00	.00	12	.00	42	.36	91	66	53
7	53	.00	24	.00	.00	.13	19	44	.26	75	77	51
8	43	.00	17	.00	.00	.08	37	36	.16	75	77	37
9	31	.00	.16	.00	.00	.05	25	20	.08	68	77	36
10	22	.00	.12	.00	.00	.10	14	22	.04	59	58	58
11	21	.00	.08	.00	.00	22	14	30	.00	67	42	69
12	21	.00	13	.00	.00	46	14	30	.00	80	44	53
13	34	.00	25	.00	.00	25	23	31	27	81	41	54
14	41	.00	27	.00	.00	22	30	49	50	81	41	60
15	41	.00	25	.00	.00	15	43	76	51	80	41	59
16	51	.00	9.3	.00	.00	6.8	50	95	80	80	43	58
17	66	.00	.27	.00	1.2	6.8	17	111	92	81	42	58
18	65	19	9.9	.00	1.9	6.3	5.5	146	123	51	42	68
19	64	27	29	.00	1.9	6.2	16	183	150	29	42	51
20	63	27	29	.00	7.3	6.1	.25	190	163	.87	62	62
21	62	27	27	.00	6.7	.28	.28	166	160	.55	88	71
22	61	10	16	.00	.02	.38	.16	104	152	.40	86	69
23	52	.00	.05	.00	.02	2.6	.04	131	116	3.9	55	69
24	42	.00	.06	.00	.00	9.2	.00	136	101	62	30	70
25	29	.00	.03	.00	.00	9.0	.00	113	118	48	45	78
26	30	.06	18	.00	.00	14	13	123	140	49	65	77
27	46	.00	37	.00	.00	16	29	115	139	31	64	76
28	51	.00	34	.00	14	6.4	17	74	140	1.8	63	82
29	50	.00	18	.00	---	6.4	7.9	43	141	1.6	62	87
30	35	.00	6.2	32	---	3.2	7.1	72	142	45	54	85
31	25	---	.24	37	---	.01	---	93	---	45	34	---
TOTAL	1376	303.06	422.31	69.12	72.64	406.03	382.23	2345.9	2116.56	2027.12	1590	1708.29
MEAN	44.4	10.1	13.6	2.23	2.59	13.1	12.7	75.7	70.6	65.4	51.3	56.9
MAX	73	57	37	37	30	46	50	190	163	174	88	87
MIN	13	.00	.00	.00	.00	.01	.00	7.5	.00	.40	28	.00
AC-FT	2730	601	838	137	144	805	758	4650	4200	4020	3150	3390

CAL YR 1978 TOTAL 20645.54 MEAN 56.6 MAX 196 MIN .00 AC-FT 40950
WTR YR 1979 TOTAL 12819.26 MEAN 35.1 MAX 190 MIN .00 AC-FT 25430

GUADALUPE RIVER BASIN

08181000 LEON CREEK TRIBUTARY AT FARM ROAD 1604, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°35'14", long 98°37'40", Bexar County, Hydrologic Unit 12100301, 97 ft (30 m) upstream from culvert on Farm Road 1604 at San Antonio and 1.5 mi (2.4 km) west of bridge on Leon Creek.

DRAINAGE AREA.--5.57 mi² (14.43 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1968 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, 1,790 ft³/s (50.7 m³/s) July 16, 1973, elevation, 10.91 ft (3.325 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 242 ft³/s (6.85 m³/s) Mar. 21, elevation, 4.07 ft (1.241 m); water-quality samples were made on Mar. 21 and Apr. 29.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: May 1970 to current year. Sediment analyses: May 1972 to June 1973. Water temperatures: May 1970 to current year. Bacteria analyses: April 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
MAR 21...	0310	198	174	8.2	16.5	240	180	13.2	138	3.0
APR 29...	1005	67	59	8.6	19.0	100	230	9.2	102	3.4

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)
MAR 21...	K62000	37000	78000	81	12	30	1.4	1.3	.1	2.6
APR 29...	96000	K32000	K36000	45	9	17	.6	.9	.1	1.8

DATE	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
MAR 21...	84	0	12	2.4	.0	9.1	100	260	40
APR 29...	44	0	7.2	1.2	.1	5.3	56	304	70

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)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)
MAR 21...	.39	.02	.41	.03	.84	.87	.07	19	.00
APR 29...	.36	.02	.38	.05	.94	.99	.07	12	.00

08181000 LEON CREEK TRIBUTARY AT FARM ROAD 1604, SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
MAR 21...	0310	1	10	<1	0	3	40
APR 29...	1005	2	0	0	10	3	50

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)
MAR 21...	1	2	.0	0	0	<3
APR 29...	0	10	.0	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)
MAR 21...	0310	.0	--	.00	.0	.00	.00	.00	.00
APR 29...	1005	.0	.00	.00	.0	.00	.00	.00	.02

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)	METHYL PARA-THION, TOTAL (UG/L)
MAR 21...	.00	.00	.00	.00	.00	.00	.00	.00	.00
APR 29...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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)
MAR 21...	.00	.00	.00	0	.00	.00	.00	.00
APR 29...	.00	.00	.00	0	.00	.00	.00	.00

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 good. 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.--11 years, 4.84 ft³/s (0.137 m³/s), 4.38 in/yr (111 mm/yr), 3,510 acre-ft/yr (4.33 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 discharges above base of 140 ft³/s (3.96 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 5	2045	159	4.50	2.45	0.747	bMar. 22	0830	326	9.23	2.88	0.878
Nov. 26	0745	151	4.28	2.40	.732	June 1	1200	*592	16.8	a3.4	1.04
bMar. 21	0400	440	12.5	a3.10	.945	July 27	1430	440	12.5	3.10	.945

a From floodmark.
b Water-quality samples were obtained on this date.

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	9.8	16	4.6	2.3	18	15	200	.27	3.4	.00
2	.00	.00	8.0	13	4.6	2.2	18	15	219	.00	3.2	.00
3	.00	.00	6.6	11	4.8	3.8	16	14	82	.07	2.5	.00
4	.00	.00	5.4	10	4.6	2.1	14	12	13	.00	2.0	.00
5	.00	24	4.2	9.0	5.9	1.1	14	11	22	.24	1.7	.00
6	.00	21	2.9	7.7	8.6	1.4	13	11	26	.41	1.5	.00
7	.00	10	2.1	7.2	9.4	1.0	12	11	21	.06	1.4	.00
8	.00	5.4	1.0	6.0	9.4	.60	12	10	16	.00	1.3	.00
9	.00	3.4	.34	5.2	9.1	.17	10	9.7	13	.00	1.0	.00
10	.00	1.9	.02	12	9.3	.81	11	9.1	12	.00	.54	.00
11	.00	.65	.00	25	9.1	.61	10	7.5	10	.00	3.2	.00
12	.00	.01	.07	26	8.4	.21	8.4	6.5	9.1	.00	2.2	.00
13	.00	.00	.00	22	7.4	.02	7.7	5.8	8.2	.00	1.0	.00
14	.00	.00	.00	17	6.9	.00	7.0	5.0	7.2	.00	.74	.00
15	.00	.00	.00	15	6.5	.04	6.1	3.9	6.7	.00	.61	.00
16	.00	.01	.00	13	6.0	.67	5.4	3.2	5.9	.00	.43	.00
17	.00	.00	.00	11	5.8	2.1	7.9	2.6	5.5	.00	.36	.00
18	.00	.00	.00	11	5.7	1.8	6.1	2.4	4.9	6.9	.42	.00
19	.00	.00	.00	10	5.8	.87	8.3	1.7	4.4	1.8	.09	.00
20	.00	.00	.00	9.6	5.7	.72	6.3	1.3	3.7	.31	.01	.00
21	.00	.00	.00	8.8	5.0	110	33	.98	3.5	.07	.00	.00
22	.00	.00	.00	8.6	4.6	131	33	2.6	3.1	.00	.00	.00
23	.00	.00	.00	8.0	4.3	93	26	1.2	2.5	.00	.00	.00
24	.00	.00	.00	7.0	3.6	65	22	.32	2.1	.00	.05	.00
25	.00	.00	.00	7.1	3.0	48	20	.06	1.8	.00	.00	.00
26	.00	32	.00	6.7	3.0	37	17	.00	1.7	.00	.00	.00
27	.00	23	.00	6.0	3.5	30	15	.00	1.2	44	.00	.00
28	.00	16	.00	5.2	2.9	25	14	.00	1.0	9.6	.00	.00
29	.00	13	.00	5.3	---	24	28	.00	.76	6.3	.00	.00
30	.00	11	.00	5.3	---	22	18	.00	.46	4.7	.00	.00
31	.00	---	21	4.8	---	18	---	.00	---	4.3	.00	---
TOTAL	.00	161.37	61.43	329.5	167.5	625.52	437.2	162.86	707.72	79.03	27.65	.00
MEAN	.000	5.38	1.98	10.6	5.98	20.2	14.6	5.25	23.6	2.55	.89	.000
MAX	.00	32	21	26	9.4	131	33	15	219	44	3.4	.00
MIN	.00	.00	.00	4.8	2.9	.00	5.4	.00	.46	.00	.00	.00
CFSM	.000	.36	.13	.71	.40	1.35	.97	.35	1.57	.17	.06	.000
IN.	.00	.40	.15	.82	.42	1.55	1.08	.40	1.76	.20	.07	.00
AC-FT	.00	320	122	654	332	1240	867	323	1400	157	55	.00
(††)	.26	7.27	.55	4.16	1.31	4.36	5.24	1.57	3.98	6.50	2.24	1.29

CAL YR 1978 TOTAL 358.60 MEAN .98 MAX 49 MIN .00 CFSM .07 IN .89 AC-FT 711 †† 31.86
WTR YR 1979 TOTAL 2759.78 MEAN 7.56 MAX 219 MIN .00 CFSM .50 IN 6.84 AC-FT 5470 †† 38.75

†† Weighted-mean rainfall, in inches, based on three rain gages.
NOTE.--No gage-height record May 11 to June 3.

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 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
MAR										
21...	0350	97	355	8.1	17.0	70	140	13.4	141	2.4
22...	0915	279	465	8.6	17.0	20	55	8.4	88	3.1
JUL										
18...	0841	33	337	7.9	25.5	15	22	7.0	86	--

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)
MAR										
21...	K65000	K15000	77000	170	18	54	9.4	5.6	.2	1.7
22...	K15000	3800	28000	220	10	73	10	5.5	.2	1.1
JUL										
18...	32000	14000	15000	150	3	44	10	8.0	.3	2.2

DATE	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
MAR									
21...	190	0	14	9.1	.1	8.3	196	121	50
22...	260	0	14	9.2	.1	9.2	250	98	22
JUL									
18...	180	0	14	12	.1	11	190	43	21

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)	METHY-LENE BLUE ACTIVE SUB-STANCE (MG/L)
MAR									
21...	.30	.02	.32	.02	.64	.66	.01	11	.00
22...	.58	.02	.60	.02	.42	.44	.05	5.8	.00
JUL									
18...	.25	.02	.27	.04	.49	.53	.03	6.8	.00

GUADALUPE RIVER BASIN

08181400 HELOTES CREEK AT HELOTES, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
MAR						
21...	0350	1	20	<1	0	2
22...	0915	0	20	<1	0	2
JUL						
18...	0841	1	100	1	0	18

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAR							
21...	20	0	1	.0	0	0	3
22...	0	0	2	.0	0	0	3
JUL							
18...	10	3	20	.1	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)
MAR									
21...	0350	.0	--	.00	.0	.00	.00	.00	.00
22...	0915	.0	--	.00	.0	.00	.00	.00	.00
JUL									
18...	0841	.0	.00	.00	.0	.00	.00	.00	.03

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)	METHYL PARA-THION, TOTAL (UG/L)
MAR									
21...	.00	.00	.00	.00	.00	.00	.00	.00	.00
22...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL									
18...	.00	.00	.00	.00	.00	.00	.00	.00	.01

DATE	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)
MAR								
21...	.00	.00	.00	0	.00	.01	.00	.00
22...	.00	.00	.00	0	.00	.00	.00	.00
JUL								
18...	.00	.00	.00	0	.00	.01	.00	.00

08183900 CIBOLO CREEK 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 a multiple-purpose floodwater-retarding structure with detention-capacity of 4,693 acre-ft (5.79 hm³). This structure controls runoff from 19.8 mi² (51.3 km²). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years, 30.3 ft³/s (0.858 m³/s), 6.02 in/yr (153 mm/yr), 21,950 acre-ft/yr (27.1 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), revised, and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 5	1800	924	26.2	4.38	1.335	June 2	2400	2,520	71.4	5.83	1.777
Dec. 31	0500	3,930	111	7.00	2.134	June 5	0730	916	25.9	4.37	1.332
Mar. 22	0630	1,330	37.7	4.83	1.472	July 18	0630	924	26.2	4.38	1.335
aMar. 20	2230	*5,620	159	8.48	2.585	July 27	1200	2,860	81.0	6.12	1.865
Apr. 19	0200	1,170	33.1	4.66	1.420						

a From floodmark.

Minimum discharge, 4.5 ft³/s (0.13 m³/s) Nov. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	5.6	11	225	36	42	224	110	212	24	32	9.4
2	10	5.6	12	94	40	44	207	116	187	24	29	11
3	10	5.4	13	77	45	66	156	107	419	23	27	11
4	10	4.9	11	77	68	42	143	93	138	23	25	11
5	10	176	12	71	104	41	133	83	386	24	24	11
6	9.3	41	12	63	231	40	123	77	240	29	23	11
7	8.1	8.8	13	55	121	41	124	72	180	40	22	10
8	8.2	6.6	12	47	105	40	128	69	153	25	20	9.4
9	8.3	6.1	12	47	92	40	100	69	127	21	20	9.8
10	8.3	6.0	11	186	89	43	74	66	112	20	20	10
11	8.3	6.2	11	124	86	41	69	62	97	20	24	10
12	7.7	6.8	11	80	80	39	61	57	86	21	21	10
13	7.3	6.9	11	69	77	34	55	51	79	24	20	11
14	6.2	6.9	11	65	71	35	53	47	71	24	19	11
15	5.7	9.2	11	65	70	39	51	45	66	24	18	11
16	5.6	19	11	63	61	44	49	42	61	24	17	11
17	5.6	11	9.7	59	59	67	61	41	56	26	17	10
18	5.6	9.1	9.4	82	56	51	54	40	50	217	16	11
19	6.1	9.2	9.4	73	55	47	255	39	45	49	15	11
20	6.6	9.4	9.4	65	55	492	103	37	42	30	15	10
21	6.2	10	9.0	53	51	1060	327	36	38	26	15	8.7
22	6.2	11	8.9	51	51	529	149	46	37	23	16	8.3
23	6.1	11	8.9	50	130	304	144	37	35	20	19	7.8
24	6.1	11	8.9	46	62	263	129	34	32	19	11	7.3
25	6.2	12	8.9	50	50	230	122	33	30	17	8.9	7.0
26	6.4	12	8.9	55	47	209	118	30	28	16	8.1	6.5
27	5.4	15	8.9	43	46	218	107	29	28	270	7.8	6.1
28	5.2	12	8.9	40	44	225	100	30	27	56	7.3	5.9
29	5.3	11	8.9	44	---	229	191	31	26	43	7.3	5.5
30	5.5	11	8.9	45	---	273	125	28	24	37	7.3	5.1
31	5.4	---	773	37	---	214	---	25	---	34	8.9	---
TOTAL	220.9	475.7	1085.0	2201	2082	5082	3735	1682	3112	1273	540.6	277.8
MEAN	7.13	15.9	35.0	71.0	74.4	164	125	54.3	104	41.1	17.4	9.26
MAX	10	176	773	225	231	1060	327	116	419	270	32	11
MIN	5.2	4.9	8.9	37	36	34	49	25	24	16	7.3	5.1
CFSM	.10	.23	.51	1.04	1.09	2.40	1.83	.79	1.52	.60	.25	.14
IN.	.12	.26	.59	1.20	1.13	2.76	2.03	.91	1.69	.69	.29	.15
AC-FT	438	944	2150	4370	4130	10080	7410	3340	6170	2520	1070	551

CAL YR 1978 TOTAL 3688.13 MEAN 10.1 MAX 773 MIN .04 CFSM .15 IN 2.01 AC-FT 7320
WTR YR 1979 TOTAL 21767.00 MEAN 59.6 MAX 1060 MIN 4.9 CFSM .87 IN 11.84 AC-FT 43170

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 except those for period of no gage-height record, June 6 to July 25, which are fair. 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.--33 years, 15.3 ft³/s (0.433 m³/s), 11,080 acre-ft/yr (13.7 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	1400	*7,890	223	10.81	3.295
June 2	0100	695	19.7	5.19	1.582

Minimum discharge, no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.08	19	.00	.00	100	5.0	37	.00	.15	.00
2	.00	.00	.07	21	.00	.00	72	7.7	274	.00	.12	.00
3	.00	.00	.04	3.8	.00	.00	77	1.1	28	.00	.09	.00
4	.00	.00	.01	.21	.00	.00	56	.34	36	.00	.07	.00
5	.00	.00	.00	.10	.00	.00	29	.24	83	.00	.04	.00
6	.00	.00	.00	.08	.00	.00	13	.20	167	.00	.02	.00
7	.00	.00	.00	.07	.00	.00	3.3	.20	50	.00	.01	.00
8	.00	.00	.00	.05	.01	.00	.68	.19	15	.00	.00	.00
9	.00	.00	.00	.04	.01	.00	.32	.16	3.5	.00	.00	.00
10	.00	.00	.00	6.5	.01	.00	.28	.16	1.2	.00	.00	.00
11	.00	.00	.00	8.5	.00	.00	.22	.15	.62	.00	.00	.00
12	.00	.00	.00	.29	.00	.00	.18	.12	.42	.00	.00	.00
13	.00	.00	.00	9.1	.00	.00	.16	.10	.30	.00	.00	.00
14	.00	.00	.00	1.7	.00	.00	.16	.10	.26	.00	.00	.00
15	.00	.00	.00	.23	.00	.00	.15	.07	.25	.00	.00	.00
16	.00	.00	.00	.14	.00	.00	.13	.05	.25	.00	.00	.00
17	.00	.00	.00	.11	.00	.00	.14	.03	.23	.00	.00	.00
18	.00	.00	.00	.10	.00	.00	.10	.01	.23	.00	.00	.00
19	.00	.00	.00	.10	.00	.00	.09	.00	.18	.00	.00	.00
20	.00	.00	.00	.10	.00	.00	.10	.00	.14	.00	.00	.00
21	.00	.00	.00	.08	.00	1640	30	.00	.12	.00	.00	.00
22	.00	.00	.00	.08	.00	685	153	.00	.10	.00	.00	.00
23	.00	.00	.00	.07	.00	617	63	.00	.07	.00	.00	.00
24	.00	.00	.00	.05	.00	329	32	.00	.04	.00	.00	.00
25	.00	.00	.00	.06	.00	252	17	.00	.02	.00	.00	.00
26	.00	28	.00	.06	.00	195	6.3	.00	.01	.00	.00	.00
27	.00	.58	.00	.03	.00	145	1.2	.00	.00	40	.00	.00
28	.00	.11	.00	.02	.00	118	.29	.00	.00	4.2	.00	.00
29	.00	.10	.00	.01	---	107	27	.00	.00	.26	.00	.00
30	.00	.09	.00	.01	---	95	2.6	.00	.00	.19	.00	.00
31	.00	---	.00	.00	---	126	---	.00	---	.16	.00	---
TOTAL	.00	28.88	.20	71.69	.03	4309.00	685.40	15.92	697.94	44.81	.50	.00
MEAN	.000	.96	.006	2.31	.001	139	22.8	.51	23.3	1.45	.016	.000
MAX	.00	28	.08	21	.01	1640	153	7.7	274	40	.15	.00
MIN	.00	.00	.00	.00	.00	.00	.09	.00	.00	.00	.00	.00
AC-FT	.00	57	.4	142	.06	8550	1360	32	1380	89	1.0	.00

CAL YR 1978 TOTAL 823.61 MEAN 2.26 MAX 407 MIN .00 AC-FT 1630
WTR YR 1979 TOTAL 5854.37 MEAN 16.0 MAX 1640 MIN .00 AC-FT 11610

NOTE.--No gage-height record June 6 to July 25.

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.--56 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 discharges above base of 700 ft³/s (19.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 20	2000	*5,610	159	8.36	2.548
Apr. 19	2330	2,700	76.5	7.28	2.219
June 5	0330	1,240	35.1	6.43	1.960

Minimum discharge, 29 ft³/s (0.82 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	47	74	65	61	65	154	153	124	107	59	42
2	56	47	73	64	61	66	151	152	136	103	63	41
3	55	46	72	65	63	67	160	150	164	101	74	41
4	54	46	71	66	66	67	156	144	184	99	67	42
5	53	80	70	66	72	67	148	139	506	98	63	43
6	54	126	69	67	80	63	145	134	377	97	61	42
7	58	101	68	67	82	63	144	131	317	95	59	43
8	57	84	68	66	79	62	143	129	282	95	57	43
9	58	76	68	65	77	62	140	127	255	95	55	42
10	57	72	67	64	76	63	138	125	246	92	53	41
11	56	71	65	64	76	62	135	122	227	91	54	40
12	55	72	64	64	76	63	131	120	212	88	54	40
13	54	74	63	63	74	62	128	117	202	85	57	39
14	53	71	63	62	74	62	122	114	188	82	58	39
15	52	79	64	62	72	65	120	109	177	80	56	38
16	51	84	63	62	71	69	119	107	162	78	54	39
17	51	84	62	62	71	74	220	105	154	75	53	39
18	50	81	62	64	70	77	166	102	149	76	51	39
19	49	81	62	64	69	77	467	101	145	78	50	39
20	49	80	62	65	70	485	421	105	145	79	48	38
21	49	80	61	65	70	684	300	120	143	86	47	37
22	48	79	61	63	70	387	258	127	139	84	46	36
23	48	77	60	62	69	299	231	116	135	82	46	36
24	48	76	60	62	70	235	214	108	132	78	45	35
25	50	76	60	62	69	201	198	102	128	74	45	35
26	49	84	60	62	68	180	180	101	124	72	45	34
27	49	86	59	62	67	168	169	102	122	70	44	34
28	50	81	60	62	66	163	162	103	119	69	44	33
29	49	78	60	62	---	160	158	101	114	66	44	33
30	48	75	61	62	---	159	155	98	111	62	43	32
31	48	---	63	62	---	156	---	95	---	60	43	---
TOTAL	1615	2294	1995	1973	1989	4533	5533	3659	5619	2597	1638	1155
MEAN	52.1	76.5	64.4	63.6	71.0	146	184	118	187	83.8	52.8	38.5
MAX	58	126	74	67	82	684	467	153	506	107	74	43
MIN	48	46	59	62	61	62	119	95	111	60	43	32
CFSM	.07	.10	.08	.08	.09	.19	.24	.15	.25	.11	.07	.05
IN.	.08	.11	.10	.10	.10	.22	.27	.18	.27	.13	.08	.06
AC-FT	3200	4550	3960	3910	3950	8990	10970	7260	11150	5150	3250	2290

CAL YR 1978 TOTAL 27440 MEAN 75.2 MAX 775 MIN 24 CFSM .10 IN 1.34 AC-FT 54430
WTR YR 1979 TOTAL 34600 MEAN 94.8 MAX 684 MIN 32 CFSM .12 IN 1.68 AC-FT 68630

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
NOV 21...	0932	80	420	8.0	18.5	0	.00	8.2	90	.4
JAN 03...	0930	62	410	8.0	10.0	0	1.0	11.0	101	.4
MAR 27...	1205	167	404	8.1	18.5	0	1.0	9.0	99	1.2
MAY 01...	1140	154	424	7.6	20.0	5	.40	8.6	98	.1
JUN 12...	1458	212	419	8.0	25.0	4	2.3	9.0	111	.7

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO
NOV 21...	73	31	94	200	15	55	14	8.2	.3
JAN 03...	56	K17	K13	180	11	52	13	7.5	.2
MAR 27...	K150	26	180	190	21	56	13	7.2	.2
MAY 01...	78	14	74	200	3	62	11	7.2	.2
JUN 12...	K60	K7	K14	180	3	52	13	9.1	.3

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
NOV 21...	.9	220	0	13	13	.1	12	225	0
JAN 03...	.8	210	0	14	14	.1	10	215	0
MAR 27...	.8	210	0	14	13	.1	10	218	0
MAY 01...	.8	240	0	13	15	.2	9.4	237	3
JUN 12...	.8	220	0	15	10	.2	13	222	6

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)
NOV 21...	0	1.1	.01	1.1	.01	.14	.15	.00	2.2
JAN 03...	0	1.1	.01	1.1	.01	.19	.20	.01	.8
MAR 27...	0	1.5	.02	1.5	.01	.11	.12	.00	1.0
MAY 01...	0	1.6	.00	--	.00	.14	--	.10	2.7
JUN 12...	0	1.1	.06	1.2	.01	.08	.09	.00	3.6

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
JAN 03...	0930	1	30	<1	10	2

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 03...	<0	2	<1	.0	1	0	<3

DATE	TIME	PCB, 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 03...	0930	.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)	METHYL PARA-THION, TOTAL (UG/L)
JAN 03...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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 03...	.00	.00	.00	0	.00	.00	.00	.00

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 above 10 ft³/s (0.28 m³/s) and fair below. 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 temperatures were made during the year.

AVERAGE DISCHARGE.--34 years (water years 1940-50, 1957-79), 35.4 ft³/s (1.003 m³/s), 25,650 acre-ft/yr (31.6 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 6	0100	2,030	57.5	6.64	2.024
Mar. 21	0500	*3,420	96.9	7.86	2.396

Minimum discharge, no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.04	.00	.00	.00	11	1.2	.04	.02	.00	.00
2	.00	.00	.04	.00	.00	.00	8.6	1.2	.04	.02	.00	.00
3	.00	.00	.03	.00	.00	.00	7.6	1.1	.15	.01	.00	.00
4	.00	.00	.03	.00	.00	.00	7.5	.78	.26	.01	.00	.00
5	.00	18	.03	.00	.00	.00	7.0	.68	.99	.01	.00	.00
6	.00	714	.02	.00	.00	.00	6.2	.61	3.1	.01	.00	.00
7	.00	45	.02	.00	.00	.00	5.5	.53	4.7	.01	.00	.00
8	.00	10	.02	.00	.00	.00	4.7	.48	5.0	.00	.00	.00
9	.00	6.9	.01	.00	.00	.00	4.3	.42	4.1	.00	.00	.00
10	.00	5.0	.01	.00	.00	.00	3.9	.35	3.4	.00	.00	.00
11	.00	3.9	.01	.00	.00	.00	3.3	.31	2.8	.00	.00	.00
12	.00	3.2	.01	.00	.00	.00	3.0	.23	2.8	.00	.00	.00
13	.00	2.5	.01	.00	.00	.00	2.7	.17	2.4	.00	.00	.00
14	.00	2.1	.01	.00	.00	.00	2.3	.13	2.0	.00	.00	.00
15	.00	1.8	.00	.00	.00	.00	2.1	.09	1.6	.00	.00	.00
16	.00	1.5	.00	.00	.00	.00	2.0	.07	1.3	.00	.00	.00
17	.00	1.2	.00	.00	.00	.00	2.2	.06	1.0	.00	.00	.00
18	.00	1.1	.00	.00	.00	.00	1.8	.05	.84	.00	.00	.00
19	.00	.91	.00	.00	.00	.00	1.9	.05	.65	.00	.00	.00
20	.00	.74	.00	.00	.00	.38	3.1	.05	.52	.00	.00	.00
21	.00	.60	.00	.00	.00	1080	4.8	.10	.38	.01	.00	.00
22	.00	.50	.00	.00	.00	207	5.3	.06	.29	.01	.00	.00
23	.00	.39	.00	.00	.00	135	4.8	.04	.20	.01	.00	.00
24	.00	.31	.00	.00	.00	111	4.0	.03	.16	.01	.00	.00
25	.00	.28	.00	.00	.00	92	3.0	.03	.11	.00	.00	.00
26	.00	.19	.00	.00	.00	76	2.3	.03	.09	.00	.00	.00
27	.00	.11	.00	.00	.00	58	1.9	.03	.06	.00	.00	.00
28	.00	.07	.00	.00	.00	41	1.7	.03	.05	.00	.00	.00
29	.00	.05	.00	.00	---	30	1.6	.03	.03	.00	.00	.00
30	.00	.05	.00	.00	---	21	1.4	.03	.03	.00	.00	.00
31	.00	---	.00	.00	---	15	---	.02	---	.00	.00	---
TOTAL	.00	820.40	.29	.00	.00	1866.38	121.5	8.99	39.09	.13	.00	.00
MEAN	.000	27.3	.009	.000	.000	60.2	4.05	.29	1.30	.004	.000	.000
MAX	.00	714	.04	.00	.00	1080	11	1.2	5.0	.02	.00	.00
MIN	.00	.00	.00	.00	.00	.00	1.4	.02	.03	.00	.00	.00
AC-FT	.00	1630	.6	.00	.00	3700	241	18	78	.3	.00	.00

CAL YR 1978 TOTAL 1763.26 MEAN 4.83 MAX 714 MIN .00 AC-FT 3500
WTR YR 1979 TOTAL 2856.78 MEAN 7.83 MAX 1080 MIN .00 AC-FT 5670

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.--40 years, 117 ft³/s (3.313 m³/s), 84,770 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	1630	437	12.4	4.55	1.387	June 3	0600	1,460	41.3	5.43	1.655
Apr. 20	1300	995	28.2	5.06	1.542	June 5	1130	*6,040	171	8.42	2.566

Minimum discharge, 20 ft³/s (0.57 m³/s) Feb. 24, Mar. 3.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	31	28	26	24	22	92	133	109	90	52	37
2	31	31	28	25	24	23	93	132	119	88	52	37
3	30	31	28	26	25	22	92	130	512	85	52	37
4	30	31	28	26	26	21	95	124	160	83	51	37
5	30	43	28	26	27	22	98	118	2030	79	49	36
6	30	32	28	26	25	22	96	114	768	77	49	36
7	29	31	28	25	24	21	95	111	518	76	48	36
8	30	31	27	24	24	21	97	109	395	75	48	35
9	29	31	27	25	24	21	96	108	325	72	48	35
10	29	30	27	26	24	21	97	105	282	70	47	35
11	30	31	27	25	24	21	95	102	258	67	47	35
12	30	30	27	25	24	21	92	98	238	68	46	35
13	29	31	27	24	24	21	89	95	215	67	46	35
14	29	31	27	25	24	21	87	93	202	65	45	34
15	29	31	27	25	23	21	86	90	187	64	45	33
16	29	30	27	25	23	24	88	87	172	62	44	33
17	29	29	27	26	23	24	125	84	161	60	44	34
18	29	29	27	26	23	22	234	82	152	60	44	34
19	28	30	27	26	23	22	220	81	145	57	43	33
20	29	29	26	24	23	28	578	82	140	58	42	33
21	29	29	26	25	23	184	402	81	131	56	42	33
22	29	29	26	25	23	194	286	80	128	56	42	33
23	29	29	26	24	23	163	237	79	124	54	42	32
24	28	29	26	25	22	140	205	82	119	53	41	32
25	29	29	26	26	22	117	184	80	115	53	41	32
26	31	29	26	26	22	104	171	77	107	54	39	30
27	30	29	26	25	22	96	159	76	104	54	38	30
28	31	28	26	25	22	92	148	75	101	54	37	30
29	30	28	26	26	---	91	142	73	99	53	38	30
30	30	28	27	25	---	90	136	73	94	53	38	30
31	30	---	28	24	---	90	---	72	---	53	37	---
TOTAL	916	910	835	782	660	1802	4715	2926	8210	2016	1377	1012
MEAN	29.5	30.3	26.9	25.2	23.6	58.1	157	94.4	274	65.0	44.4	33.7
MAX	31	43	28	26	27	194	578	133	2030	90	52	37
MIN	28	28	26	24	22	21	86	72	94	53	37	30
AC-FT	1820	1800	1660	1550	1310	3570	9350	5800	16280	4000	2730	2010

CAL YR 1978 TOTAL 18105 MEAN 49.6 MAX 2670 MIN 22 AC-FT 35910
WTR YR 1979 TOTAL 26161 MEAN 71.7 MAX 2030 MIN 21 AC-FT 51890

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.--54 years (water years 1925-29, 1931-79), 110 ft³/s (3.115 m³/s), 3.69 in/yr (94 mm/yr), 79,700 acre-ft/yr (98.3 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	0730	3,580	101	7.03	2.143	June 2	2400	887	25.1	5.14	1.567
Apr. 19	0500	1,010	28.6	5.26	1.603	June 5	0230	*7,390	209	8.92	2.719

Minimum discharge, 54 ft³/s (1.53 m³/s) Sept. 29, 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	65	58	86	79	72	80	214	203	150	161	95	85
2	64	58	86	77	72	80	206	198	207	154	100	85
3	65	58	86	77	75	82	204	195	288	148	102	82
4	65	58	83	77	80	83	199	184	244	144	96	79
5	65	108	83	78	84	83	190	177	2770	144	92	78
6	64	98	83	78	87	81	182	170	1010	143	88	78
7	65	80	83	78	89	80	178	166	634	138	85	77
8	66	72	83	77	89	79	176	162	534	133	87	74
9	66	72	83	78	87	79	172	161	471	128	87	75
10	67	72	80	80	84	83	171	157	433	128	86	72
11	68	70	83	78	83	81	163	157	393	124	94	72
12	65	70	83	80	83	80	157	148	359	118	102	70
13	65	70	83	76	84	80	153	141	333	117	96	69
14	63	70	83	75	85	80	149	136	313	112	91	68
15	63	75	83	75	86	87	145	132	298	114	87	68
16	63	92	80	75	84	100	142	130	290	114	86	67
17	63	98	80	75	83	104	156	126	274	111	91	65
18	63	95	80	79	83	99	151	124	262	108	89	65
19	63	89	80	79	83	98	448	121	251	116	88	66
20	60	86	80	75	84	121	324	124	238	119	88	65
21	60	83	78	75	83	1320	328	127	234	117	86	64
22	60	80	78	75	84	682	282	127	225	113	82	63
23	60	80	78	73	83	430	267	123	212	108	83	63
24	60	80	78	74	82	324	250	121	201	108	92	62
25	65	83	78	74	81	280	238	115	197	104	100	60
26	63	83	78	73	81	256	228	113	188	101	95	60
27	63	98	78	72	80	242	220	111	182	102	91	56
28	60	92	78	73	80	229	213	116	171	116	88	56
29	60	86	78	75	---	230	215	112	167	103	86	55
30	58	86	78	73	---	227	212	111	165	98	86	55
31	58	---	79	72	---	216	---	108	---	97	86	---
TOTAL	1955	2400	2510	2355	2311	6176	6333	4396	11694	3741	2805	2054
MEAN	63.1	80.0	81.0	76.0	82.5	199	211	142	390	121	90.5	68.5
MAX	68	108	86	80	89	1320	448	203	2770	161	102	85
MIN	58	58	78	72	72	79	142	108	150	97	82	55
CFSM	.16	.20	.20	.19	.20	.49	.52	.35	.96	.30	.22	.17
IN.	.18	.22	.23	.22	.21	.57	.58	.40	1.07	.34	.26	.19
AC-FT	3880	4760	4980	4670	4580	12250	12560	8720	23200	7420	5560	4070

CAL YR 1978 TOTAL 27592 MEAN 75.6 MAX 834 MIN 21 CFSM .19 IN 2.53 AC-FT 54730
WTR YR 1979 TOTAL 48730 MEAN 134 MAX 2770 MIN 55 CFSM .33 IN 4.48 AC-FT 96660

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
NOV 21...	1333	83	412	8.1	16.0	0	.00	9.5	99	.6
JAN 03...	1340	78	424	8.1	7.0	0	1.0	11.8	100	1.1
MAR 27...	1640	238	419	8.2	19.0	0	1.0	8.8	97	1.2
MAY 02...	1140	194	441	7.8	20.5	1	.60	8.6	99	.4
JUN 13...	1305	331	453	8.1	22.9	5	.60	8.4	100	.8

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO
NOV 21...	160	68	110	200	6	55	14	6.9	.2
JAN 03...	K5	<1	K4	200	9	56	14	6.7	.2
MAR 27...	140	33	270	200	11	60	12	5.8	.2
MAY 02...	140	29	140	220	20	67	12	7.2	.2
JUN 13...	K60	K16	25	200	0	58	13	8.0	.2

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
NOV 21...	.8	230	0	14	14	.1	11	229	0
JAN 03...	.8	230	0	14	12	.1	9.9	227	0
MAR 27...	.8	230	0	14	8.2	.1	9.8	224	7
MAY 02...	.9	240	0	16	15	.2	9.0	246	0
JUN 13...	.8	250	0	17	10	.2	12	242	0

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)
NOV 21...	0	.73	.01	.74	.01	.20	.21	.01	1.6
JAN 03...	0	.88	.01	.89	.01	.09	.10	.01	.9
MAR 27...	6	.54	.02	.56	.01	.16	.17	.01	1.6
MAY 02...	0	1.4	.02	--	.01	.17	--	.01	1.6
JUN 13...	0	1.3	.00	1.3	.01	.12	.13	.00	2.3

08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
JAN 03...	1340	1	30	<1	0	0

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 03...	<0	2	<1	.0	1	0	<3

DATE	TIME	PCB, 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 03...	1340	.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)	METHYL PARA-THION, TOTAL (UG/L)
JAN 03...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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 03...	.00	.00	.00	0	.00	.00	.00	.00

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) southeast of Reagan Wells.

DRAINAGE AREA.--117 mi^2 (303 km^2).

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.--27 years, 35.0 ft^3/s (0.991 m^3/s), 4.06 in/yr (103 mm/yr), 25,360 acre-ft/yr (31.3 hm^3/yr).

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875 occured 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 ft^3/s (1,830 m^3/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 ft^3/s (869 m^3/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft^3/s (5.66 m^3/s) and maximum (*):

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Mar. 21	unknown	2,720	77.0	7.09	2.161
Apr. 20	0130	1,790	50.7	5.73	1.747
June 5	0230	*8,070	229	12.15	3.703

Minimum discharge, 4.5 ft^3/s (0.13 m^3/s) Oct. 20-22.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	5.8	17	13	12	14	69	63	43	71	30	9.1
2	5.7	5.7	17	12	13	14	65	62	49	69	32	10
3	5.6	5.7	17	11	14	14	61	60	75	66	34	8.5
4	5.6	5.8	16	11	15	14	57	56	191	61	26	7.9
5	5.5	17	16	12	18	14	53	51	1480	61	26	7.9
6	5.5	20	15	12	20	14	49	49	410	61	24	8.0
7	5.8	14	15	12	20	14	48	46	273	58	22	8.1
8	6.6	13	14	11	19	14	47	44	217	53	20	8.2
9	6.9	13	14	11	19	14	44	43	187	53	17	8.3
10	6.7	13	14	11	18	14	43	42	181	49	16	7.7
11	6.6	13	14	12	18	14	41	40	184	49	17	7.4
12	6.5	13	13	12	17	14	38	37	159	47	23	7.0
13	6.2	13	13	11	17	14	35	35	137	44	26	6.9
14	5.7	13	13	11	17	14	33	33	130	42	18	6.7
15	5.0	14	13	11	17	19	32	31	125	39	16	6.5
16	4.8	20	13	11	16	22	31	30	123	35	14	6.5
17	4.8	21	12	11	16	23	44	28	112	34	15	6.4
18	4.8	21	12	13	16	21	42	27	104	32	17	6.4
19	4.8	20	12	14	16	20	223	27	98	37	12	6.8
20	4.7	19	13	14	16	40	428	29	92	40	11	7.0
21	4.6	18	12	13	16	500	192	29	86	34	11	6.7
22	4.7	18	12	13	16	300	144	25	82	32	10	6.2
23	5.0	18	12	13	16	190	118	25	82	28	11	5.9
24	5.4	17	12	13	15	140	103	25	74	24	9.9	5.7
25	6.2	17	12	13	14	120	92	26	66	22	8.8	5.6
26	7.1	17	12	14	14	105	84	27	68	21	9.3	5.4
27	6.8	21	11	13	14	90	76	27	66	21	8.8	5.4
28	6.2	21	11	13	14	82	70	28	66	24	8.8	5.3
29	6.2	20	12	13	---	78	68	28	70	37	8.9	5.1
30	6.0	18	12	13	---	75	70	27	72	32	8.8	5.1
31	5.9	---	13	13	---	69	---	25	---	27	9.5	---
TOTAL	178.1	465.0	414	380	453	2090	2500	1125	5102	1303	520.8	207.7
MEAN	5.75	15.5	13.4	12.3	16.2	67.4	83.3	36.3	170	42.0	16.8	6.92
MAX	7.1	21	17	14	20	500	428	63	1480	71	34	10
MIN	4.6	5.7	11	11	12	14	31	25	43	21	8.8	5.1
CFSM	.05	.13	.12	.11	.14	.58	.71	.31	1.45	.36	.14	.06
IN.	.06	.15	.13	.12	.14	.66	.79	.36	1.62	.41	.17	.07
AC-FT	353	922	821	754	899	4150	4960	2230	10120	2580	1030	412

CAL YR 1978 TOTAL 4695.25 MEAN 12.9 MAX 334 MIN .72 CFSM .11 IN 1.49 AC-FT 9310
WTR YR 1979 TOTAL 14738.60 MEAN 40.4 MAX 1480 MIN 4.6 CFSM .35 IN 4.69 AC-FT 29230

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 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
NOV 21...	1125	19	384	8.0	16.5	0	.00	9.1	96	.3
JAN 03...	1205	12	396	8.1	9.0	0	.00	11.3	101	.5
MAR 27...	1445	90	428	8.1	18.5	5	1.0	8.0	88	.9
MAY 01...	1455	64	448	7.4	20.0	5	.40	8.2	94	.2
JUN 13...	1650	128	451	8.0	25.7	5	.40	7.8	100	.5

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO
NOV 21...	120	K7	30	190	20	57	12	6.5	.2
JAN 03...	36	K10	K18	180	10	53	12	6.1	.2
MAR 27...	K130	40	230	210	18	63	12	5.7	.2
MAY 01...	160	33	79	220	18	68	11	6.3	.2
JUN 13...	K40	27	28	230	23	70	13	6.8	.2

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
NOV 21...	.5	210	0	15	16	.1	9.1	220	0
JAN 03...	.4	210	0	16	11	.1	7.7	210	0
MAR 27...	.6	230	0	16	12	.1	9.0	232	0
MAY 01...	.6	240	0	14	14	.1	7.8	240	0
JUN 13...	.7	250	0	16	10	.1	11	251	0

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)
NOV 21...	0	.71	.01	.72	.01	.18	.19	.00	7.1
JAN 03...	0	.97	.01	.98	.01	.19	.20	.01	.9
MAR 27...	0	1.5	.02	1.5	.01	.06	.07	.00	2.3
MAY 01...	0	.79	.00	--	.01	.19	--	.00	1.8
JUN 13...	0	1.3	.00	1.3	.01	.14	.15	.00	3.1

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
JAN 03...	1205	0	30	<1	20	1

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 03...	<0	0	<1	.0	1	0	<3

DATE	TIME	PCB, 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 03...	1205	.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)	METHYL PARA-THION, TOTAL (UG/L)
JAN 03...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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 03...	.00	.00	.00	0	.00	.00	.00	.00

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.

AVERAGE DISCHARGE.--27 years, 25.5 ft³/s (0.722 m³/s), 18,470 acre-ft/yr (22.8 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	1830	1,020	28.9	5.47	1.667
June 5	0900	*18,700	530	13.18	4.017

Minimum discharge, no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	17	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	39	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	145	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	10	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	4720	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	841	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	348	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	225	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	173	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	134	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	117	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	91	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	74	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	59	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	43	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	28	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	16	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	6.3	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	2.5	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	37	.00	1.5	.00	.00	.00
21	.00	.00	.00	.00	.00	216	211	.00	.88	.00	.00	.00
22	.00	.00	.00	.00	.00	356	28	.00	.58	.00	.00	.00
23	.00	.00	.00	.00	.00	180	3.4	.00	.38	.00	.00	.00
24	.00	.00	.00	.00	.00	80	.48	.00	.23	.00	.00	.00
25	.00	.00	.00	.00	.00	34	.12	.00	.05	.00	.00	.00
26	.00	.00	.00	.00	.00	8.6	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.94	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.25	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.03	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	875.82	280.00	.00	7092.42	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	28.3	9.33	.000	236	.000	.000	.000
MAX	.00	.00	.00	.00	.00	356	211	.00	4720	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	1740	555	.00	14070	.00	.00	.00

CAL YR 1978	TOTAL	934.59	MEAN	2.56	MAX	480	MIN	.00	AC-FT	1850
WTR YR 1979	TOTAL	8248.24	MEAN	22.6	MAX	4720	MIN	.00	AC-FT	16360

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 good. Several small diversions above station for irrigation.

AVERAGE DISCHARGE.--37 years, 54.0 ft³/s (1.529 m³/s), 3.56 in/yr (90 mm/yr), 39,120 acre-ft/yr (48.2 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), revised, and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	0430	1,540	43.6	7.05	2.149	June 2	2400	2,780	78.7	7.90	2.408
Mar. 22	1100	1,150	32.6	6.74	2.054	June 5	0500	4,140	117	8.63	2.630
Apr. 20	2330	*4,160	118	8.64	2.633						

Minimum daily discharge, 29 ft³/s (0.82 m³/s) Sept. 28-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	32	50	39	36	41	215	221	171	159	71	47
2	44	30	50	38	35	42	224	217	266	160	74	43
3	42	30	50	39	37	46	201	216	461	156	68	42
4	40	30	48	39	41	46	192	206	246	150	65	41
5	38	85	47	39	45	44	182	196	1860	148	65	42
6	38	68	48	38	52	44	178	190	634	148	69	40
7	38	51	46	37	60	43	175	186	519	146	61	39
8	40	43	46	36	58	43	175	183	466	137	60	39
9	40	42	45	37	54	42	167	182	444	129	60	38
10	40	42	45	37	52	42	164	179	436	126	57	39
11	38	42	45	40	52	42	162	175	408	120	54	39
12	40	42	44	41	54	42	152	171	368	117	61	39
13	40	40	44	37	54	42	146	171	343	112	59	38
14	37	40	44	34	53	41	138	161	329	111	55	37
15	35	40	45	34	53	41	134	157	304	116	51	35
16	35	68	45	34	48	59	132	154	278	112	50	36
17	35	67	40	34	48	73	151	154	266	108	49	35
18	35	58	40	35	50	80	146	151	258	105	47	35
19	34	54	40	37	52	80	259	142	250	110	46	35
20	34	52	40	38	52	100	435	135	244	122	47	36
21	32	50	38	36	54	673	716	135	233	117	46	34
22	32	48	37	35	54	564	328	130	227	105	46	34
23	32	48	37	35	54	339	291	127	215	94	57	34
24	30	48	36	34	48	287	290	127	204	89	56	32
25	32	48	38	35	41	257	264	121	196	84	50	32
26	35	48	39	37	42	241	259	118	186	79	48	31
27	35	50	39	38	42	226	246	118	182	80	48	30
28	35	50	39	36	42	219	237	118	175	114	47	29
29	34	51	39	35	---	218	233	118	171	91	48	29
30	34	51	37	37	---	218	225	118	164	80	48	29
31	32	---	40	37	---	205	---	124	---	73	50	---
TOTAL	1134	1448	1321	1138	1363	4480	6817	4901	10504	3598	1713	1089
MEAN	36.6	48.3	42.6	36.7	48.7	145	227	158	350	116	55.3	36.3
MAX	48	85	50	41	60	673	716	221	1860	160	74	47
MIN	30	30	36	34	35	41	132	118	164	73	46	29
CFSM	.18	.23	.21	.18	.24	.70	1.10	.77	1.70	.56	.27	.18
IN.	.20	.26	.24	.21	.25	.81	1.23	.89	1.90	.65	.31	.20
AC-FT	2250	2870	2620	2260	2700	8890	13520	9720	20830	7140	3400	2160

CAL YR 1978 TOTAL 21924.1 MEAN 60.1 MAX 5710 MIN 6.8 CFSM .29 IN 3.96 AC-FT 43490
WTR YR 1979 TOTAL 39506.0 MEAN 108 MAX 1860 MIN 29 CFSM .52 IN 7.13 AC-FT 78360

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
NOV 21...	1527	50	468	8.1	16.0	0	.00	9.5	99	3.0
JAN 04...	0910	38	480	6.9	8.0	0	.00	11.2	97	.8
MAR 28...	1020	217	470	8.1	18.5	0	2.0	9.0	98	1.7
MAY 02...	0905	217	454	7.5	20.0	1	--	8.6	98	.7
JUN 14...	1049	330	490	8.0	22.0	4	.50	8.4	97	.9

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO
NOV 21...	K18	K7	26	220	17	66	14	7.5	.2
JAN 04...	76	19	58	230	28	72	13	7.4	.2
MAR 28...	580	K88	350	230	16	72	12	6.5	.2
MAY 02...	160	K65	180	--	--	--	--	--	--
JUN 14...	K100	34	40	240	21	79	11	8.5	.3

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
NOV 21...	1.0	250	0	26	10	.1	12	260	0
JAN 04...	1.0	250	0	28	13	.1	11	269	0
MAR 28...	.9	260	0	21	6.9	.2	11	259	0
MAY 02...	--	--	--	--	--	--	--	--	--
JUN 14...	1.0	270	0	20	10	.2	13	276	0

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)
NOV 21...	0	.60	.01	.61	.01	.09	.10	.000	1.8
JAN 04...	0	.76	.01	.77	.01	.15	.16	.020	1.1
MAR 28...	0	.63	.00	.63	.01	.05	.06	.000	1.2
MAY 02...	--	1.1	.02	--	.01	.14	--	.010	3.3
JUN 14...	0	1.1	.00	1.1	.01	.00	.00	.000	2.2

08198000 SABINAL RIVER NEAR SABINAL, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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 04...	0910	0	30	<1	10	1	<0

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 04...	2	<1	.0	1	0	<3

DATE	TIME	PCB, 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 04...	0910	.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)	METHYL PARA-THION, TOTAL (UG/L)
JAN 04...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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 04...	.00	.00	.00	0	.00	.00	.00	.00

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.--27 years, 31.2 ft³/s (0.884 m³/s), 22,600 acre-ft/yr (27.9 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	1000	1,060	30.0	8.19	2.496	Apr. 21	0400	3,880	110	a11.98	3.652
Mar. 22	1600	1,050	29.7	8.17	2.490	June 3	0300	*4,710	133	a12.83	3.911
Apr. 2	0900	237	6.71	5.71	1.740	June 5	0900	4,430	125	a12.54	3.822
Apr. 19	1600	346	9.80	6.23	1.899						

a From floodmark.

Minimum discharge, 0.28 ft³/s (0.008 m³/s) Mar. 5-7, 12-15.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	1.2	1.4	1.1	.85	.60	141	116	129	70	6.5	3.8
2	1.8	1.2	1.4	1.1	.85	.54	185	112	125	65	6.2	3.8
3	1.7	1.2	1.4	1.1	.85	.41	157	109	1090	62	5.9	3.7
4	1.7	1.2	1.3	1.1	.87	.33	142	99	179	58	5.9	3.5
5	1.7	2.1	1.3	1.1	.92	.28	125	89	2190	54	5.7	3.4
6	1.6	1.4	1.2	1.1	.95	.28	113	85	874	52	5.4	3.3
7	1.6	1.2	1.2	1.1	.99	.30	105	81	592	50	5.3	3.4
8	1.6	1.2	1.2	1.1	.99	.32	105	77	483	46	5.3	3.4
9	1.7	1.2	1.2	1.1	.92	.32	98	74	433	42	5.1	3.5
10	1.5	1.2	1.2	1.0	.85	.32	92	72	385	38	4.9	3.3
11	1.2	1.2	1.2	.99	.85	.32	88	70	383	33	4.8	3.1
12	1.4	1.2	1.2	.99	.85	.28	78	70	318	30	4.8	3.0
13	1.5	1.2	1.2	.99	.87	.29	69	64	287	26	4.8	2.9
14	1.5	1.2	1.2	.99	.77	.29	64	60	262	23	4.5	3.0
15	1.4	1.2	1.2	1.0	.65	.30	60	54	240	20	4.4	2.9
16	1.4	1.3	1.2	1.0	.51	.32	54	50	220	19	4.4	2.9
17	1.4	1.4	1.2	.99	.49	.45	71	46	202	17	4.2	2.6
18	1.4	1.4	1.2	1.1	.54	.49	89	43	185	14	4.4	2.8
19	1.4	1.4	1.2	1.0	.60	.49	197	41	172	13	4.2	2.7
20	1.3	1.4	1.2	.99	.65	.86	206	42	158	12	3.9	2.8
21	1.3	1.4	1.2	1.1	.72	479	1230	41	144	21	3.8	2.6
22	1.3	1.4	1.2	1.0	.72	543	321	40	134	22	3.9	2.7
23	1.3	1.4	1.2	.99	.72	384	230	37	122	16	4.1	2.7
24	1.3	1.4	1.2	.99	.72	320	193	32	109	13	4.1	2.5
25	1.3	1.4	1.2	.92	.72	299	172	28	101	11	4.1	2.5
26	1.3	1.4	1.1	.91	.75	237	156	24	92	9.8	4.1	2.4
27	1.3	1.4	1.1	.85	.81	208	140	24	86	9.1	4.1	2.4
28	1.3	1.4	1.1	.85	.80	179	130	43	83	8.9	3.9	2.4
29	1.2	1.4	1.1	.85	---	168	127	28	79	7.7	3.7	2.4
30	1.2	1.4	1.1	.85	---	170	127	24	74	7.3	3.6	2.5
31	1.2	---	1.1	.85	---	154	---	19	---	6.8	3.9	---
TOTAL	44.7	40.0	37.4	31.10	21.78	3148.79	5065	1794	9931	876.6	143.9	88.9
MEAN	1.44	1.33	1.21	1.00	.78	102	169	57.9	331	28.3	4.64	2.96
MAX	1.9	2.1	1.4	1.1	.99	543	1230	116	2190	70	6.5	3.8
MIN	1.2	1.2	1.1	.85	.49	.28	54	19	74	6.8	3.6	2.4
AC-FT	89	79	74	62	43	6250	10050	3560	19700	1740	285	176

CAL YR 1978 TOTAL 8024.53 MEAN 22.0 MAX 4590 MIN .32 AC-FT 15920
WTR YR 1979 TOTAL 21223.17 MEAN 58.1 MAX 2190 MIN .28 AC-FT 42100

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.--27 years, 39.4 ft³/s (1.116 m³/s), 6.21 in/yr (158 mm/yr), 28,550 acre-ft/yr (35.2 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 20	2400	4,380	124	6.96	2.121	June 3	0100	4,910	139	7.38	2.249
Mar. 22	0700	1,790	50.7	4.90	1.494	June 5	0600	4,040	114	6.68	2.036
Apr. 19	0100	*6,640	188	8.76	2.670						

Minimum discharge, 7.2 ft³/s (0.20 m³/s) Sept. 30.

DISCHARGE, IN CUBIC FEET PER SECOND), WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	14	18	23	43	52	178	128	136	73	42	16
2	31	14	18	17	44	53	162	124	194	70	40	15
3	31	14	18	16	47	59	155	119	938	66	57	14
4	30	14	18	17	52	50	140	106	314	64	45	14
5	28	24	17	18	59	48	132	100	1200	69	41	14
6	28	20	18	18	82	47	124	97	578	65	38	14
7	27	17	18	17	90	46	120	94	495	70	36	13
8	28	17	16	18	91	46	118	91	433	69	34	13
9	26	17	16	18	90	45	110	90	384	57	33	13
10	24	17	16	28	90	46	110	86	350	55	31	12
11	24	17	16	36	90	45	104	82	322	53	36	12
12	23	17	16	34	88	43	97	78	272	52	31	11
13	22	17	16	34	85	42	92	72	244	49	28	11
14	20	17	16	33	84	42	88	70	214	49	27	10
15	19	17	16	34	82	44	85	66	195	48	25	9.6
16	19	17	16	36	72	59	85	64	182	46	24	9.6
17	18	17	16	36	72	84	114	63	172	44	23	9.3
18	18	17	16	46	69	102	99	62	165	49	22	9.3
19	18	17	16	47	68	98	880	60	155	46	21	9.3
20	17	17	16	47	68	538	202	60	148	52	21	9.3
21	16	16	16	46	66	694	270	59	138	52	20	9.3
22	16	16	16	46	66	623	205	58	126	46	20	9.3
23	16	16	18	48	64	442	193	53	116	44	25	9.3
24	16	16	18	47	60	374	180	51	110	42	21	9.0
25	17	18	18	50	56	322	170	49	104	40	18	8.6
26	16	18	18	51	55	276	160	48	97	39	18	8.6
27	16	21	18	48	54	248	148	48	92	99	18	8.2
28	15	20	18	46	53	220	142	51	86	71	17	8.2
29	15	18	18	48	---	220	145	48	82	50	19	7.6
30	14	18	20	47	---	196	132	46	78	46	18	7.6
31	14	---	34	43	---	178	---	46	---	42	16	---
TOTAL	655	515	545	1093	1940	5382	4940	2269	8120	1717	865	324.1
MEAN	21.1	17.2	17.6	35.3	69.3	174	165	73.2	271	55.4	27.9	10.8
MAX	33	24	34	51	91	694	880	128	1200	99	57	16
MIN	14	14	16	16	43	42	85	46	78	39	16	7.6
CFSM	.25	.20	.20	.41	.80	2.02	1.91	.85	3.14	.64	.32	.13
IN.	.28	.22	.24	.47	.84	2.32	2.13	.98	3.50	.74	.37	.14
AC-FT	1300	1020	1080	2170	3850	10680	9800	4500	16110	3410	1720	643

CAL YR 1978 TOTAL 9442.89 MEAN 25.9 MAX 3270 MIN .24 CFSM .30 IN 4.08 AC-FT 18730
WTR YR 1979 TOTAL 28365.10 MEAN 77.7 MAX 1200 MIN 7.6 CFSM .90 IN 12.24 AC-FT 56260

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
NOV 20...	1457	17	397	8.1	13.5	0	.00	9.8	97	.5
JAN 04...	1300	19	433	8.0	6.0	0	1.0	11.6	96	.5
MAR 28...	1615	234	461	8.0	19.0	5	1.0	9.0	100	1.4
MAY 03...	1340	126	470	7.7	21.5	1	.30	8.0	95	1.1
JUN 15...	0842	200	484	8.0	20.5	4	.40	8.5	98	.6

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO
NOV 20...	110	25	120	200	42	63	9.9	6.2	.2
JAN 04...	140	38	130	200	25	63	9.8	5.9	.2
MAR 28...	K220	50	160	220	18	75	9.1	5.9	.2
MAY 03...	700	110	204	240	33	79	10	7.6	.2
JUN 15...	K280	59	100	240	31	82	9.6	7.5	.2

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
NOV 20...	1.0	190	0	36	12	.2	10	232	0
JAN 04...	1.0	210	0	36	9.6	.1	9.4	238	0
MAR 28...	1.0	252	0	24	11	.2	11	261	0
MAY 03...	.9	250	0	27	13	.3	9.5	271	6
JUN 15...	1.1	260	0	23	10	.2	13	275	0

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)
NOV 20...	0	.27	.00	.27	.01	.08	.09	.01	1.1
JAN 04...	0	.47	.01	.48	.01	.09	.10	.02	.9
MAR 28...	0	.65	.02	.67	.01	.12	.13	.01	1.0
MAY 03...	4	.84	.02	.86	.02	.08	.10	.00	1.5
JUN 15...	0	.88	.06	.94	.01	.08	.09	.00	50

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
JAN 04...	1300	0	20	<1	20	2

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 04...	0	1	<1	.0	1	0	<3

DATE	TIME	PCB, 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 04...	1300	.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)	METHYL PARA-THION, TOTAL (UG/L)
JAN 04...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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 04...	.00	.00	.00	0	.00	.00	.00	.00

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 except those below 4 ft³/s (0.11 m³/s), which are fair. 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. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--19 years, 14.7 ft³/s (0.416 m³/s), 10,650 acre-ft/yr (13.1 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	0230	10,400	295	a8.50	2.591	June 1	1500	2,560	72.5	5.08	1.548
Mar. 22	1200	1,220	34.6	3.93	1.198	June 3	0130	*16,100	456	a10.14	3.091
Apr. 19	0500	8,330	236	7.80	2.377	June 5	0800	5,790	164	6.81	2.076

a From floodmark.

Minimum daily discharge, 0.02 ft³/s (0.001 m³/s) for several days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.02	.05	1.4	.09	.07	8.5	.30	550	.20	.14	.37
2	.07	.02	.04	.62	.09	.07	8.0	.24	85	.19	.13	.33
3	.06	.02	.04	.30	.09	.06	3.3	.21	2470	.17	.12	.31
4	.06	.02	.04	.23	.08	.06	.31	.18	122	.16	.12	.28
5	.06	2.5	.03	.20	.08	.06	.29	.17	1360	.15	.11	.26
6	.05	.90	.03	.19	.20	.06	.26	.15	345	.14	.10	.24
7	.30	.35	.03	.17	.18	.06	.24	.14	249	.14	.10	.23
8	.10	.27	.03	.16	.17	.06	.22	.13	195	.13	.09	.21
9	.07	.21	.03	.15	.15	.06	.20	.12	165	.12	.09	.20
10	.06	.18	.03	.20	.14	.06	.18	.12	124	.12	.09	.19
11	.05	.15	.03	.27	.13	.05	.17	.11	119	.11	.08	.17
12	.05	.14	.02	.19	.12	.05	.16	.10	85	.10	.08	.16
13	.04	.12	.02	.17	.11	.05	.15	.10	67	.10	.08	.16
14	.04	.11	.02	.15	.11	.05	.14	.09	48	.09	.07	.15
15	.04	.10	.02	.14	.10	.50	.13	.09	30	.09	.07	.14
16	.03	.09	.02	.13	.10	.37	.12	.09	16	.09	.07	.13
17	.03	.09	.02	.13	.09	.29	.24	.08	5.2	.08	.07	.12
18	.03	.08	.02	.16	.09	.23	.20	.08	2.0	1.0	.07	.11
19	.03	.07	.02	.15	.09	.18	1030	.08	1.1	.60	.06	.11
20	.03	.07	.02	.15	.09	.16	83	.07	.76	.56	.06	.10
21	.03	.06	.02	.14	.08	1930	112	.07	.63	.45	.06	.10
22	.02	.06	.02	.13	.08	448	50	.20	.52	.32	.06	.09
23	.02	.06	.02	.12	.08	272	28	.18	.44	.28	1.3	.09
24	.02	.06	.02	.12	.08	196	12	.16	.38	.26	1.0	.08
25	.02	.05	.02	.11	.07	139	3.9	.14	.34	.23	.84	.08
26	.02	.13	.02	.11	.07	96	1.2	.12	.31	.22	.72	.08
27	.02	.09	.02	.10	.07	69	.84	.11	.28	.20	.62	.08
28	.02	.07	.02	.10	.07	54	.54	1.0	.26	.18	.54	.07
29	.02	.06	.02	.10	---	41	.43	.45	.23	.17	.48	.07
30	.02	.05	4.0	.10	---	35	.35	.26	.22	.16	.44	.07
31	.02	---	3.0	.09	---	18	---	.22	---	.15	.40	---
TOTAL	1.51	6.20	7.74	6.48	2.90	3300.55	1345.07	5.56	6042.67	6.96	8.26	4.78
MEAN	.049	.21	.25	.21	.10	106	44.8	.18	201	.22	.27	.16
MAX	.30	2.5	4.0	1.4	.20	1930	1030	1.0	2470	1.0	1.3	.37
MIN	.02	.02	.02	.09	.07	.05	.12	.07	.22	.08	.06	.07
AC-FT	3.0	12	15	13	5.8	6550	2670	11	11990	14	16	9.5

CAL YR 1978 TOTAL 3292.75 MEAN 9.02 MAX 2660 MIN .01 AC-FT 6530
WTR YR 1979 TOTAL 10738.68 MEAN 29.4 MAX 2470 MIN .02 AC-FT 21300

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) southeast 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 except those for period of no gage-height record Jan. 6 to Feb. 15, which are fair. No known diversion above station.

AVERAGE DISCHARGE.--18 years, 18.9 ft³/s (0.535 m³/s), 5.96 in/yr (151 mm/yr), 13,690 acre-ft/yr (16.9 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 22	0645	626	17.7	3.28	1.000
June 5	0400	*1,900	53.8	4.44	1.353

Minimum daily discharge, 1.3 ft³/s (0.037 m³/s) Nov. 4.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	3.6	16	9.0	16	17	69	48	79	38	12	5.6
2	9.5	3.1	16	7.9	16	17	64	48	67	36	12	5.3
3	9.0	2.1	15	7.4	18	21	59	47	124	34	13	4.9
4	8.4	1.3	14	7.4	23	16	55	43	95	32	13	4.6
5	8.4	34	14	7.4	27	16	51	40	462	30	12	4.6
6	7.9	13	14	7.9	30	14	49	40	235	32	11	4.6
7	7.9	9.0	14	8.0	32	14	48	38	190	29	10	4.6
8	9.0	8.4	13	8.0	33	14	48	36	171	28	9.5	4.3
9	8.0	6.9	12	9.0	33	14	45	36	144	27	10	4.3
10	7.4	6.5	12	12	33	17	44	36	169	26	8.9	3.9
11	7.0	6.5	12	14	33	14	43	47	144	25	11	3.9
12	6.5	6.1	11	13	32	13	40	41	124	22	12	3.9
13	6.1	5.7	11	12	30	13	38	36	110	21	12	3.6
14	5.6	5.7	10	12	29	12	36	33	105	19	8.9	3.6
15	5.3	22	10	12	27	14	36	33	95	19	8.6	3.6
16	5.1	23	10	13	24	22	35	31	89	18	8.4	3.6
17	4.9	17	9.0	14	24	26	43	30	82	17	7.9	3.4
18	4.6	16	9.0	16	23	38	43	30	76	18	7.4	3.1
19	4.6	15	9.0	16	22	40	105	28	71	17	6.9	3.1
20	4.6	15	9.0	16	21	84	62	28	66	17	6.5	3.1
21	4.3	15	8.4	16	21	117	72	28	63	17	6.4	3.1
22	4.3	14	8.4	16	21	195	66	27	60	16	8.2	3.1
23	4.2	14	8.4	16	21	142	63	25	56	15	17	3.1
24	3.9	13	7.9	16	20	121	61	24	54	14	7.9	2.9
25	4.8	15	7.4	16	18	104	58	22	51	13	6.4	2.8
26	4.5	15	7.4	17	18	92	56	21	49	12	6.1	2.8
27	4.0	19	7.0	17	18	82	54	20	47	24	5.7	2.8
28	3.9	16	7.0	17	18	76	52	21	44	23	5.3	2.8
29	3.6	16	7.0	17	---	78	52	21	42	16	5.3	2.8
30	3.6	16	7.9	16	---	76	50	19	40	14	5.3	2.6
31	3.6	---	11	16	---	69	---	18	---	13	5.7	---
TOTAL	184.5	372.9	327.8	402.0	681	1588	1597	995	3204	682	280.3	110.4
MEAN	5.95	12.4	10.6	13.0	24.3	51.2	53.2	32.1	107	22.0	9.04	3.68
MAX	10	34	16	17	33	195	105	48	462	38	17	5.6
MIN	3.6	1.3	7.0	7.4	16	12	35	18	40	12	5.3	2.6
CFSM	.14	.29	.25	.30	.56	1.19	1.23	.75	2.48	.51	.21	.09
IN.	.16	.32	.28	.35	.59	1.37	1.38	.86	2.77	.59	.24	.10
AC-FT	366	740	650	797	1350	3150	3170	1970	6360	1350	556	219

CAL YR 1978 TOTAL 3767.59 MEAN 10.3 MAX 1070 MIN .09 CFSM .24 IN 3.25 AC-FT 7470
WTR YR 1979 TOTAL 10424.90 MEAN 28.6 MAX 462 MIN 1.3 CFSM .66 IN 9.00 AC-FT 20680

NOTE.--No gage-height record Jan. 6 to Feb. 15.

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)
NOV 22...	0943	14	443	8.1	14.0	0	.00	9.6	96	.9
JAN 04...	1105	7.4	463	8.0	7.0	0	1.0	11.6	98	.4
MAR 28...	1245	77	474	8.0	18.5	5	1.0	8.7	95	1.5
MAY 03...	1155	46	461	8.0	21.0	5	.20	8.2	96	.7
JUN 14...	1420	107	482	8.0	25.4	0	.40	7.9	98	.6

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO
NOV 22...	K17	K3	24	210	47	63	13	6.2	.2
JAN 04...	120	20	33	240	50	74	13	6.4	.2
MAR 28...	360	47	90	230	25	74	11	6.1	.2
MAY 03...	120	41	120	250	51	76	14	7.4	.2
JUN 14...	K12	K7	28	220	13	69	11	7.2	.2

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)
NOV 22...	1.0	200	0	52	8.3	.2	11	253	0
JAN 04...	.8	230	0	46	11	.1	9.8	275	0
MAR 28...	.9	250	0	29	10	.2	11	265	0
MAY 03...	.9	240	0	29	14	.2	10	270	0
JUN 14...	.9	250	0	25	10	.2	13	259	0

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, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV 22...	0	.78	.01	.79	.01	.14	.15	.00	1.3
JAN 04...	0	.83	.01	.84	.01	.19	.20	.01	.8
MAR 28...	0	.66	.00	.66	.01	.08	.09	.01	1.7
MAY 03...	0	.82	.00	--	.01	.09	--	.02	3.0
JUN 14...	0	.91	.00	.91	.01	.05	.06	.00	2.1

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979

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)
JAN 04...	1105	1	20	<1	10	1

DATE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 04...	<0	3	<1	.0	1	0	<3

DATE	TIME	PCB, 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 04...	1105	.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)	METHYL PARA-THION, TOTAL (UG/L)
JAN 04...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	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 04...	.00	.00	.00	0	.00	.00	.00	.00

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 fair. 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 observations of water temperature were made during the year.

AVERAGE DISCHARGE.--18 years (water years 1962-79), 9.10 ft³/s (0.258 m³/s), 6,590 acre-ft/yr (8.13 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 (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Mar. 21	0400	4,370	124	13.32	4.060	June 1	1430	1,210	34.3	10.46	3.188
Apr. 19	0530	6,100	173	a14.4	4.39	June 3	0230	*24,200	685	a23.30	7.102
Apr. 21	0500	1,430	40.5	a10.7	3.26	June 5	0800	6,850	144	a14.84	4,523

a From floodmark

Minimum discharge, no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1978 TO SEPTEMBER 1979
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	275	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	90	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	3190	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	21	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	1130	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	87	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	31	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	9.6	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	3.1	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	2.0	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	1.2	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.73	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.46	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.30	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.11	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.05	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	736	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	165	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	431	250	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	43	6.7	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	14	1.4	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	1.1	.53	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.36	.22	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.14	.08	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.06	.02	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	489.68	1159.95	.00	4841.72	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	15.8	38.7	.000	161	.000	.000	.000
MAX	.00	.00	.00	.00	.00	431	736	.00	3190	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	971	2300	.00	9600	.00	.00	.00

CAL YR 1978 TOTAL 713.97 MEAN 1.96 MAX 652 MIN .00 AC-FT 1420
WTR YR 1979 TOTAL 6491.35 MEAN 17.8 MAX 3190 MIN .00 AC-FT 12880

NUECES RIVER BASIN

08204000 LEONA RIVER SPRING FLOW NEAR UVALDE, TX

LOCATION.--Lat 29°09'15", long 99°44'35", Uvalde County, Hydrologic Unit 1211-0106 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 ft^3/s (0.275 m^3/s), 7,040 acre-ft/yr (8.68 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--(1939 to current year) Maximum measured spring discharge, 82 ft^3/s (2.32 m^3/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 1978 TO SEPTEMBER 1979

Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
Oct. 2, 1978	31	May 2, 1979	23	July 25, 1979	41
Nov. 20	27	June 12	63	Sept. 5	39
Jan. 2, 1979	30				